



Cabin Operations Safety

Best Practices Guide 3rd Edition



NOTICE

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Section 1— Introduction

1.1 Foreword

The world of cabin safety is constantly growing and cabin safety professionals must constantly update their knowledge of many different areas and new initiatives. Fatigue Risk Management, Safety Management Systems, Auditing, and Risk Assessments are all topics that now regularly feature in the work of IATA Cabin Safety.

IATA continues to help operators manage safe cabin operations by sharing best practices guidance and keeping its members informed of developments in cabin safety. The IATA Cabin Operations Safety Conference (<http://www.iata.org/events/pages/cabin-safety>) continues to grow and has become a popular and useful event for delegates to network, learn about recent updates and initiatives as well as attend learning workshops to increase their understanding of regulations and policies.

In line with its strong commitment to cabin safety, IATA steadily works to improve cabin safety standards, revise recommended practices and update best practice guidelines. These efforts contribute to positive operator safety performance and provide operators with the necessary information to address emerging risks and consider new best practices.

IATA is, therefore, proud to present the *Cabin Operations Safety Best Practices Guide (3rd Edition)*, which addresses numerous policies and procedures for cabin crew in normal, abnormal and emergency situations. These guidelines are intended to assist operators in implementing integrated, proactive, effective and efficient cabin safety policies and procedures. We thank the cabin safety experts who provided their inputs, particularly the **IATA Cabin Operations Safety Task Force** ([Ref 2.1.6.1](#)) for their dedication and hard work, as well as other experts from operators and government bodies who have contributed to the creation and update of this document.

1.2 Definitions

The *IOSA Standards Manual* contains a complete list of cabin operations safety definitions. These can be viewed at: www.iata.org/iosa. For the purposes of this guide, the following definitions apply:

Cabin crew	Crewmembers designated to perform safety duties in the passenger cabin in accordance with the requirements of the operator and the Authority; qualified to perform cabin functions in emergency situations and enact procedures to ensure a safe and orderly evacuation of passengers when necessary. Other personnel who are designated to perform non-safety related duties on board are not considered cabin crewmembers. Equivalent terms: Flight Attendant, Cabin Attendant.
Crewmember	Either a flight crewmember or cabin crewmember; when used in the plural (i.e., crewmembers) refers to flight and cabin crew collectively.
Crew rest seat	Seat intended for crew rest during cruise.
Emergency exit rows	Passenger seat rows adjacent to emergency exits with direct access not obstructed by an aisle or a monument.
Evacuation	Passengers and/or crew evacuate aircraft via emergency exits (i.e., doors, over-wing exits, hatches, or gaps in the fuselage), usually initiated in life-threatening or catastrophic events.
Flight crew	Crewmembers essential to the operation of the aircraft. For each flight, flight crewmembers shall include the Pilot-in-Command and may include, as appropriate:

	<ul style="list-style-type: none"> • One or more copilots; • When a separate flight engineer's station is incorporated in the design of an aircraft, one flight engineer assigned to that station, unless the duties associated with that station can be satisfactorily performed by another flight crewmember holding a flight engineer license, without interference with regular duties; • One member who holds a flight navigator license where, as determined by the State of the operator, navigation necessary for the safe conduct of the flight cannot be adequately accomplished by the pilots from the pilot station; • One member who holds a valid license, issued or rendered valid by the State of registry, authorizing operation of the type of radio transmitting equipment to be used.
Infant	<p>Small children as defined by the Authority. If the Authority does not have a definition, the operator will publish its own definition in its Operations Manual.</p> <p>An infant is typically defined as a child that is less than two years of age.</p>
Pilot-in-Command	<p>The pilot designated by the operator as being in command of the aircraft and charged with responsibility for the operational control and safe conduct of a flight.</p>
Rapid deplaning	<p>Passengers and/or crew rapidly exit aircraft via boarding doors and via jet bridge or stairs as a precautionary measure.</p>
Safety	<p>The state in which the possibility of harm to persons or of property damage is reduced and maintained at or below an acceptable level. This is achieved through a continuous process of hazard identification and safety risk management.</p>
Security	<p>The safeguarding of civil aviation against acts of unlawful interference. This is achieved by a combination of measures as well as human and material resources.</p>
Senior Cabin Crewmember	<p>Cabin crewmember appointed by the operator to act as chief/lead of the cabin crew. The Senior Cabin Crewmember takes orders directly from the Pilot-in-Command.</p>
Unaccompanied minor	<p>A child, usually under 12 years of age, travelling without a parent or guardian to attend to them during an emergency situation.</p>

1.3 Abbreviations

A	
A4A	Airlines for America
ABP	Able-Bodied Passenger
AC	Advisory Circular
A/C	Aircraft
ACARS	Aircraft Communication Addressing and Reporting System
ACAS	Airborne Collision and Avoidance System
ACO	Aircraft Catering Order
ACTF	Accident Classification Task Force
ADA	Americans with Disabilities Act
AEA	Association of European Airlines
AED	Automatic External Defibrillator
AIRIMP	A4A/IATA Reservations Interline Message Procedures - Passenger
ALARP	As Low As Reasonably Practicable
AOC	Air Operators Certificate
AO	Audit Organization
APU	Auxiliary Power Unit
ARC	Aviation Rulemaking Committee
ASR	Air Safety Report
ATA	Actual Time of Arrival
ATC	Air Traffic Control
ATD	Actual Time of Departure
B	
BITE	Built-In Test Equipment
BP	Best Practice
BSCT	Bassinet/Skycot
C	
CAA	Civil Aviation Authority
CAB	IOSA Section on Cabin Operations
CAIR	Confidential Aviation Incident Reporting (Australia)
CASA	Civil Aviation Safety Authority
CB	Circuit Breaker
CBP	Customs and Border Protection (USA)
CBT	Computer-Based Training
CCM	Cabin Crewmember
CDC	Center for Disease Control

CFR	Code of Federal Regulations (USA)
COG	Chemical Oxygen Generator
COSTF	IATA Cabin Operations Safety Task Force
CRD	Child Restraint Device
CRM	Crew Resource Management
CRS	Child Restraint System
CPR	Cardio-Pulmonary Resuscitation
CSR	Cabin Safety Report
CVR	Cockpit Voice Recorder
D	
DEPA	Deportee (accompanied)
DEPU	Deportee (unaccompanied)
DG	Dangerous Goods
DGR	IATA Dangerous Goods Regulations
DGCA	Director General of Civil Aviation
DNR	Do not Resuscitate
DOT	Department of Transport
DTL	Duty Time Limitation
DVT	Deep Vein Thrombosis
E	
EASA	European Aviation Safety Agency
EDW	Electronically Dimmable Windows
ELT	Emergency Locator Transmitter
EMC	Electromagnetic Compatibility
EMK	Emergency Medical Kit
EOW	Extended Over Water
EP	Emergency Procedure(s)
EROPS	Extended Range Operations
ESAN	Emotional Support Animal (USA)
ETD	Estimated Time of Departure
ETA	Estimated Time of Arrival
ETOPS	Extended Twin Engine Operations
F	
FA	Flight Attendant
FAA	Federal Aviation Administration
FAK	First Aid Kit
FAQ	Frequently Asked Question(s)

FAR	Federal Aviation Regulations
FCC	Federal Communications Commission
FDP	Flight Duty Period
FDR	Flight Data Recorder
FL	Flight Level
F/O	First Officer
FOD	Foreign Object Debris / Foreign Object Damage
FREMEC	Frequent Traveler's Medical Card
FRMS	Fatigue Risk Management System
FTL	Flight and Duty Time Limitations
G	
GADM	Global Aviation Data Management (IATA)
GM	Guidance Material
GMT	Greenwich Mean Time
GPS	Global Positioning System
GPU	Ground Power Unit
H	
HAZMAT	Hazardous Materials
HF	High Frequency
I	
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDQP	IATA Drinking-Water Quality Pool
IFALPA	International Federation of Airline Pilots' Associations
IFB	In-Flight Board
IFC	In-Flight Council
IFE	In-Flight Entertainment
INFT	Infant
INTL	International
IOC	IOSA Oversight Committee
IOSA	IATA Operations Safety Audit
ISARPs	IOSA Standards and Recommended Practices
ISASI	International Society of Air Safety Investigators
ISD	Inadvertent Slide Deployment
ISM	IOSA Standards Manual
IV	Intravenous
J	

K	
L	
LAR	Live Animal Regulations (IATA)
LAV	Lavatory
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LEO	Law Enforcement Officer
LH	Long Haul
LJ	Life Jacket
LT	Local Time
M	
MAG	Medical Advisory Group
MEDIF	Medical Information Sheet
MEL	Minimum Equipment List
MMEL	Master Minimum Equipment List
MoU	Memorandum of Understanding
MPED	Medical Portable Electronic Device
N	
NAA	National Aviation Authority
NOTOC	Notification to Captain
NTSB	National Transportation Safety Board
O	
O2	Oxygen
OFSH	Operators Flight Safety Handbook
OHB	Overhead Bin
OM	Operations Manual
OPD	Orthotic Positioning Device
OSH	Occupational Safety and Health
P	
PA	Public Address
PAX	Passenger(s)
PBE	Portable/Protective Breathing Equipment
PDA	Personal Digital Assistant
PED	Portable Electronic Device (non-transmitting)
PIC	Pilot-in-Command
PIL	Passenger Information List
POB	Portable Oxygen Bottle

POC	Portable Oxygen Concentrator
PRM	Person (Passenger) with Reduced Mobility
PSU	Passenger Service Unit
Q	
QA	Quality Assurance
QC	Quality Control
QRH	Quick Reference Handbook
R	
RFF	Rescue and Firefighting
RON	Remain Overnight
RP	Recommended Practice
RTCA	Radio Technical Commission for Aeronautics (now RTCA Inc.)
RTO	Rejected Takeoff
S	
SAG	Safety Action Group
SARP	ICAO Standard and Recommended Practice
SCCM	Senior Cabin Crewmember
SeMS	Security Management System
SEP	Safety Equipment and Procedures
SH	Short Haul
SMS	Safety Management System
SOP	Standard Operating Procedure
SPI	Safety Performance Indicators
SPML	Special Meal
SRB	Safety Review Board
SSR	Special Service Request
STD	Scheduled Time of Departure
STU	Standard Unit
T	
TCAS	Traffic Collision Avoidance System
TEM	Threat and Error Management
T/O	Takeoff
TPED	Transmitting Portable Electronic Device
TSA	Transportation Security Administration (USA)
TSR	Transportation Security Regulations (USA)
TTL	Taxi, Takeoff and Landing
TUC	Time of Useful Consciousness

U	
UMNR	Unaccompanied Minor
UPK	Universal Precaution Kit
V	
VCC / VCI	Video Control Center / Video Control Insert
VDU	Video Display Unit
VHF	Very High Frequency
VLTA	Very Large Transport Aircraft
W	
WG	Working Group
WHO	World Health Organization

1.4 Cabin Operations Safety Best Practices Guide

This is the third edition of the *IATA Cabin Operations Safety Best Practices Guide*. It is intended to provide a central reference source for industry-agreed best practices, sample procedures, recommended practices and regulations relating to the delivery of safe and efficient cabin operations. This guide contains valuable benchmarks for airline management to use when establishing their corporate policies, procedures and training programs for cabin crew.

These guidelines are not intended to replace or contradict any current State regulations nor the *IOSA Standards Manual*. Operators should always comply with the regulations and requirements of their competent Authority.

This guide is available in electronic format with links to pertinent websites containing key cabin operations safety information. We expect these guidelines to develop and improve over time. Please contribute to their evolution by sending feedback and suggestions to IATA Cabin Safety at cabin_safety@iata.org

Section 2—IATA Cabin Safety

Cabin safety is a key area impacting operational safety. Historically, the safety role of cabin crew was seen as limited to post-accident evacuations. Although this remains an important and essential duty of cabin crew, today the safety role of cabin crew goes much further.

Cabin safety deals with all activities that cabin crew should perform during the operation of an aircraft to maintain safety in the cabin. Cabin crew contribute to safe, effective and efficient operations in normal, abnormal and emergency situations. As demonstrated by numerous events, cabin crew play an important role in preventing serious incidents and accidents, including (but not limited to) events such as in-flight fires, unruly passengers, depressurization, and turbulence. It is for this reason that IATA focuses on cabin safety and continues to develop standards and recommended practices to ensure safety in all aspects of cabin operations.

IATA works with operators, manufacturers and other industry partners to raise global safety standards and promote the implementation of best practices.

Cabin safety is a critical component of an operator's safety management program, including proactive data collection and prevention activities regarding:

- Cabin design and operation
- Equipment
- Procedures
- Crew training
- Human performance
- Passenger management

2.1 IATA Cabin Safety Initiatives

IATA seeks to contribute to the continuous reduction in the number and severity of incidents and accidents, as well as in the costs associated with ensuring the safe operation of commercial aircraft. This is achieved through the:

- Development and promotion of global recommended practices for the industry at large
- Analysis of worldwide trends and the initiation of corrective actions
- Cooperation with aircraft manufacturers in developing technical installations, equipment and design
- Organization of conferences and workshops to bring together a broad spectrum of experts and stakeholders

2.1.1 Cabin Safety Extranet Site

The IATA private cabin safety extranet site for airline operators provides access to a variety of cabin safety-related resources. The extranet site allows members to discuss issues of concern and benchmark against each other's standards.

After registration at <http://extranet2.iata.org> airlines may request access to the cabin safety extranet site.

2.1.2 Cabin Operations Safety Conference

The IATA Cabin Operations Safety Conference is a regular networking event attended by regulators, crew training specialists, operators, solution providers, suppliers, manufacturers and cabin safety specialists. In addition to providing great networking opportunities, the conference provides workshops and plenary sessions covering cabin safety topics and concerns.

Find out more about the next event at www.iata.org/events.

2.1.3 Cabin Safety Guidelines

In addition to the *Cabin Operations Safety Best Practices Guide*, specific guidance documents on topical issues of concern to the industry are provided regularly.

These can be obtained at <http://www.iata.org/whatwedo/safety/pages/cabin-safety>

2.1.4 Health and Safety Guidelines

In the airline industry, health-related issues concerning passengers or crew are crucial to most activities, such as aircraft operations, passenger transport, and cargo transport. They cover matters as diverse as duty time limitations, transmission of communicable diseases, and disinsectization.

Guidelines have been developed by IATA's Medical Advisory Group, addressing general medical issues and aviation-specific issues. They have been reviewed and welcomed by the World Health Organization (WHO) and are meant to help operators address emergency public health issues, particularly in the case of suspected communicable diseases.

These guidelines can be obtained from <http://www.iata.org/whatwedo/safety/health>

2.1.5 Cabin Safety Data and Analysis

IATA's Global Aviation Data Management (GADM) is an electronic platform that provides an evolving range of cabin safety materials. For more information on GADM, please visit www.iata.org/gadm.

IATA member airlines may request access to the GADM site by registering at <http://extranet2.iata.org>.

IATA also provides a business intelligence tool called Safety Trend Evaluation, Analysis and Data Exchange System (STEADES™) which provides access to data on established key performance indicators in comparison to worldwide benchmarks. This allows members to compare their performance to their peers and identify where improvements can be made.

Examples of STEADES™ in-depth cabin safety metrics include:

- Inadvertent slide deployments
- Fire, smoke and fume events
- Passenger and cabin crew injuries
- Turbulence injuries or incidents
- Rapid deplaning and evacuations
- Unruly passenger incidents
- Operational pressure

For more information on STEADES™, please visit www.iata.org/steades.

2.1.6 IATA Cabin Operations Safety Task Force (COSTF)

IATA represents all member airlines and the Cabin Operations Safety Task Force (COSTF) is established to maintain a close working link with the operational environment.

The members of COSTF are industry experts in cabin safety areas of interest and include safety investigators, policymakers, cabin crew trainers and safety auditors. A global representation of member airlines is maintained and this is reviewed every two years.

COSTF reviews all aspects of cabin operations and provides subject matter expertise to support IATA Cabin Safety in the following areas:

- Cabin safety and operations
- Cabin safety training
- Accident/incident investigation
- Human factors
- Quality assurance

COSTF's mandate includes:

- Maintaining the IATA Operations Standards Audit (IOSA) Standards Manual (ISM) by conducting the annual revision of Section 5, Cabin Operation (CAB) and providing input or opinions relating to questions regarding the CAB section of the ISM, as applicable.
- Supporting the development of programs for IATA conferences, seminars, exhibitions and training related to cabin operations and safety.
- Supporting the Accident Classification Task Force (ACTF) through the review of the accident classification for the Cabin Safety section of the IATA Safety Report.
- Developing strategies to reduce injuries or costs associated with the operation of commercial aviation safety.
- Acting as a forum where issues on current and anticipated cabin operations safety issues can be discussed and guidance provided regarding the effected business process or activity.
- Providing advice and support to the IATA-nominated representatives involved in activities with regulatory authorities, the industry in general and any other relevant organization.

2.1.6.1 Cabin Operations Safety Task Force Members 2016-2017

Stephane Soum AIR FRANCE	Catherine Chan (Vice-Chair) CATHAY PACIFIC	Warren Elias QATAR AIRWAYS
Shane Constable AIR NEW ZEALAND	Anabel Brough EMIRATES AIRLINE	Johnny Chin SINGAPORE AIRLINES
Gennaro Anastasio ALITALIA	Jonathan Jasper (Secretary) IATA	Lerato Luti SOUTH AFRICAN AIRWAYS
Brett Garner AMERICAN AIRLINES	Lorena Guardia LAN AIRLINES	Martin Ruedisueli (Chair) SWISS INTERNATIONAL AIR LINES
Ruben Inion AUSTRIAN AIRLINES	Gisa Todt/Alexandra Wolf LUFTHANSA	Carlos Mouzaco Dias TAP PORTUGAL
Nathalie Calenge BOLIVIANA de AVIACION	Rosnina Abdullah MALAYSIA AIRLINES BERHAD	Mary Gooding VIRGIN ATLANTIC AIRWAYS

2.1.7 IATA Operational Safety Audit (IOSA)

The IATA Operational Safety Audit (IOSA) program is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an operator. All IATA members are IOSA-registered and must remain registered to maintain IATA membership. Non-IATA member operators may voluntarily obtain IOSA accreditation.

Every year, the IOSA Standards Manual (ISM) undergoes a thorough revision in all sections, which includes the review of Section 5, Cabin Operations (CAB).

Section 5 addresses key elements of cabin operations, including standards for:

- Management and control
- Training and qualification
- Line operations
- Cabin systems and equipment

Benefits of IOSA for operators and regulators include:

- A quality audit program under the stewardship of IATA
- Continuous updating of standards to reflect regulatory revisions and best practices
- Elimination of audit redundancy, reducing costs and audit resource requirements
- Accredited audit organizations with formally trained and qualified auditors
- Accredited training organizations with auditor training courses
- Structured audit methodology with standardized checklists

For more information on IOSA and to download the latest version of the ISM, which includes the CAB standards and recommended practices, please go to: www.iata.org/iosa

Section 3—Safety Management

Within the context of aviation, safety is: “The state in which the possibility of harm to persons or of property damage is reduced to and maintained at or below an acceptable level through a continuing process of hazard identification and safety risk management” ([ICAO Safety Management Manual \(SMM\), Doc 9859, Third Edition, 2013](#)).

Safety is the air transport industry's number one priority. In 2015, there were no fatal jet accidents compared to 0.10 per million sectors in 2014 and the fatal accident rate for turboprops fell by more than half from 1.48 per million sectors to 0.65. By definition, the fatality risk for jets was zero in 2015, and, for turboprops, it was 0.60 per million sectors. To download the complete IATA Safety Report free of charge, go to: www.iata.org/safety-report.

Operators have a responsibility for the safety and security of their passengers and crew, and to ensure that their company policies are communicated to their employees. Cabin crew need to have a strong commitment to safety and security, and understand their role in the event of an emergency. In particular, cabin crew should be encouraged to report any concerns they may have regarding any aspect of safety or security on board.

When establishing a safety policy, it is important for operators to infuse a safety culture into all their personnel as well as determine the responsibilities of all relevant departments and ensure coordination between them.

In the event of conflict between safety and service duties, cabin crew should be instructed that safety always takes priority.

3.1 Safety Management System (SMS) in Cabin Operations

The International Civil Aviation Organization (ICAO) defines a Safety Management System (SMS) as a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures.

An effective SMS includes policies, processes and evidence of the following components:



3.2 Safety Risk Management

There is no such thing as absolute safety. In aviation, it is simply not possible to eliminate all risks. However, risks can be managed to a level “as low as reasonably practicable”.

Safety Risk Management is the identification, analysis and elimination (or mitigation to an acceptable or tolerable level) of hazard. It is a data-driven approach to safety that aims at a balanced allocation of resources to address viable risk control and mitigation.

Risk mitigation is the process of incorporating defenses or preventive controls to lower the severity and/or likelihood of a hazard’s projected consequence ([ICAO Safety Management Manual \(SMM\), Doc 9859, Third Edition, 2013](#)). Risk mitigation can be measured and balanced against time, cost and the difficulty of taking measures to reduce or eliminate the risk. Effective risk management seeks to maximize the benefits of accepting a risk (e.g., a reduction in time and/or cost) while minimizing the risk itself.

Risk control strategies include the following:

- **Avoidance** – An operation or activity is cancelled because the risks exceed the benefits
- **Reduction** – The frequency of an operation or activity is reduced, or action is taken to reduce the magnitude of the consequences of an accepted risk
- **Segregation** of exposure – Action is taken to isolate the effects or consequences of a hazard, or build-in redundancy to protect against it

For more information on safety management, please consult [ICAO Annex 19](#) and the [ICAO Safety Management Manual Doc 9859](#).

3.2.1 Risk Assessments in Cabin Operations

Risk assessments should be carried out when proposing a new product or service, and when assessing or proposing changes to existing cabin safety or service procedures.

If efficiently and correctly carried out before commercial decisions are made, risk assessments can:

- Identify new and improved processes
- Allow introduction of new products and services that were not previously envisaged in safety regulation
- Moderate safety concerns to a realistic and measured level
- Prevent waste of resources on unrealistic initiatives
- Prevent costs of injury or incapacitation
- Improve engagement with workforce

Risk assessments should be carried out, or have oversight, by experts in the area of Cabin Operations to ensure that appropriate hazards and risks are identified. Persons involved in carrying out risk assessments should receive appropriate training in identification of hazards and their associated risks.

Hazard: A condition, object or activity with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or the reduction of ability to perform a prescribed function.

Consequence/Risk: The potential outcome(s) of the hazard.

Throughout this document, high-level risk assessments have been included to give operators examples of the hazards and risks that might be present when formulating specific policies and procedures; however the actual circumstances and identified mitigations to manage the risks will differ between operators.

3.2.2 Safety Performance Indicators (SPIs)

IOSA CAB 1.11.5 *If the Operator conducts passenger flights with cabin crew, the Operator shall have processes in the cabin operations organization for setting performance measures as a means to monitor the safety performance of cabin operations and to validate the effectiveness of risk controls.*



In an effective SMS, Safety Performance Indicators (SPIs) are determined in order to assess any change in the level of risk exposure as well as help ensure that these can be reviewed and managed.

The first step in identifying SPIs is to review the data of safety incidents on board aircraft, at both the operator and industry level.

Sources of such information include:

- **Database of existing cabin safety reports** — In addition to the operator's own database, IATA's GADM team provides IATA member operators access to the STEADES database and benchmarking tool, including data from approximately 191 operators globally.
<http://www.iata.org/whatwedo/safety/pages/safety-data.aspx>
- **Benchmarking surveys from other operators** — The IATA Cabin Safety extranet site provides a private forum for operators to discuss safety incidents, hazards and risks as well as to benchmark with each other.
<https://extranet2.iata.org/sites/cabinsafety/default.aspx>
- **News and media reports** of incidents and accidents.
- **Forums and conferences** — IATA hosts a regular Cabin Operations Safety Conference, which helps facilitate discussion among member and non-member operators.
<http://www.iata.org/events/Pages/cabin-safety.aspx>

Once a list of hazards and risks has been identified, an operator should determine its level of exposure and prioritize actions accordingly through regular meetings and communication with stakeholders. An operator's

risk/issues log should be regularly reviewed in order to ensure that new and emerging risks are identified and addressed appropriately.

Safety performance monitoring and measurement activities provide the means to verify company safety performance in reference to its safety policy. The Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs) validate the effectiveness of safety risk controls.

- **Safety Performance Indicators (SPI):** Are short-term, measurable objectives reflecting the safety performance of a SMS
- **Safety Performance Targets (SPT):** Are long-term, measurable objectives reflecting the safety performance of a SMS

The Chair of each Safety Board uses present data and predictive data to set realistic SPIs and SPTs that are relevant to their departmental activities at the beginning of each year. All SPIs and SPTs should be accepted by the local regulatory Authority, as required by regulation.

SPIs can be formulated by calculating the rate of incidents (trend). This figure can be further enhanced by taking into account the severity of the associated risks so that the SPI = Event (Likelihood) + Risk (Severity).

Once a SPI is identified, the team responsible for oversight should determine what level is acceptable and set the SPT appropriately. Performance against this target can then be tracked and reviewed at regular intervals and, if necessary, additional mitigations introduced.

Below is an example of a register (table) that could be used to capture the SPIs and SPTs.

The register should be updated regularly and presented at Safety Board meetings so senior management is kept informed of the status of the SPIs and SPTs.

Safety Performance Indicator/Target (SPI/SPT)

	2015 Actual		2015 Target			Result
	Events	Rate	Events	Rate	Definition	
Cabin Crew Slide Deployment Incidents ⁽¹⁾	1	0.05	4	0.23	Rate of 0.23 or not more than 4 incidents.	Target Achieved
Conventional Oven Smoke/Fire ⁽²⁾	47	0.25	45	0.25	Rate of 0.25 or not more than 45 incidents.	Target Achieved
Microwave Oven Smoke/Fire ⁽³⁾	4	0.21	5	0.28	Rate of 0.28 or not more than 5 incidents.	Target Achieved

Notes:

- (1) Rate calculation is per **ten thousand (10,000)** departures.
- (2) Rate calculation is per **one thousand (1,000)** departures.
- (3) Rate calculation is per **ten thousand (10,000)** departures.

Examples of SPIs commonly used in cabin operations include:

- Rate of cabin crew and passenger injury due to scalding
- Rate of cabin crew and passenger injury due to turbulence
- Rate of inadvertent slide deployment
- Rate of injuries attributed to cabin design
- Onboard and in-flight fires/smoke incidents
- Cabin crew fatigue reporting rates
- Cabin crew compliance/nonconformance rates

3.3 SMS Training

IOSA ORG 1.6.5 *The Operator shall have a program that ensures personnel are trained and competent to perform SMS duties. The scope of such training shall be appropriate to each individual's involvement in the SMS.*

IOSA CAB 2.4.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have a program that ensures cabin operations personnel are trained and competent to perform SMS duties. The scope of such training shall be appropriate to each individual's involvement in the SMS.*

Within a SMS, both management personnel (including the accountable executive) and non-management personnel are expected to complete SMS training. The content of such training should be appropriate to the individual's responsibilities and involvement in the SMS.

Typically, a training curriculum for cabin crew will include modules that provide an overview of the elements of SMS, such as:

- Event investigation and analysis techniques
- Hazard identification
- Risk assessment and mitigation
- Audit principles and methodology
- Communication techniques
- Safety reporting and culture
- SMS implementation, analysis and continual improvement
- Emergency response preparedness

IATA offers SMS training courses for operators and regulators. For details, visit the IATA Training web page at: www.iata.org/training/subject-areas/Pages/safety-courses.aspx.

For more information on IATA SMS initiatives, please contact the IATA SMS team at: sms@iata.org.

3.4 Safety Reporting

IOSA CAB 1.11.3 *If the Operator conducts passenger flights with cabin crew, the Operator shall have an operational safety reporting system in the cabin operations organization that:*

- i. Encourages and facilitates cabin operations personnel to submit reports that identify safety hazards, expose safety deficiencies and raise safety concerns;*
- ii. Ensures mandatory reporting in accordance with applicable regulations;*
- iii. Includes analysis and cabin operations management action to address safety issues identified through the reporting system.*

IOSA CAB 1.11.4 *If the Operator conducts passenger flights with cabin crew, the Operator should have a confidential safety reporting system in the cabin operations organization that encourages and facilitates the reporting of events, hazards and/or concerns resulting from or associated with human performance in operations.*

An important component of a SMS is a strong reporting system and culture. Successful reporting programs are built on the principle of an open reporting culture, where the focus is on safety improvement and not on the assignment of blame.

Cabin crew should always report any flight-related safety concerns to the Pilot-in-Command and follow the operator's guidelines on reporting incidents.

Examples of most often used safety report types include:

Cabin Safety Report (CSR) — To report any incident, occurrence, near-miss or concern during the period of a cabin crewmember's duty.

Air Safety Report (ASR) — To report any incident, occurrence, near-miss or concern which directly affected the safe operation of the flight, typically submitted by a flight crewmember.

Confidential Human Factors Report — To report human factors events, hazards or concerns relating to human performance in operations. These should be submitted independently from safety reports.

An operator may also require additional reports relating to specific areas of concern, such as unruly passengers, mandatory occurrence reporting to the State regulator, and medical events.

Managing a large quantity of reports and distilling useful information usually involves a tailored software application, and may require extensive review and analysis of the narrative parts of the reports to prioritize and classify them effectively. Nevertheless, a functional and effective reporting system is a rich source of information, highlighting:

- Operational threats and their approximate frequencies and demographics
- Specificities of routes, destinations and other operational factors
- Capability of the crew to cope with various real-life situations
- Errors experienced in operations

A comprehensive and efficient database of cabin safety reports can be used to identify trends and set SPIs, which can be reviewed at the appropriate Safety Action Group required by the SMS.

3.4.1 Characteristics of Effective Reports

Effective safety report writing is an integral part of the SMS of any operator. It is imperative that training in effective report writing be provided to appropriate personnel.

As cabin crew will normally write their reports while on board the aircraft and often during a period of high stress and/or workload, reporting processes and forms should be made as simple as possible, requiring minimal input from the cabin crew. Much of the data relating to the flight can be obtained from sources other than the reporter (e.g., the aircraft registration, configuration and total number of passengers and crew can easily be identified by

an investigator from other flight paperwork). Keeping the reporting form as simple as possible will encourage more reports in the long run.

Reporting forms may be electronic using tablet or PC devices, or more traditional paper forms.

To assist with the investigation of a report, the following key information is normally required:

- Title of report
- Details of the event:
 - Date of occurrence
 - Flight number
 - Aircraft type
 - Registration
 - Time of incident
 - Route/sector flown
 - Phase of flight in which the incident occurred
 - Place of occurrence (IATA airport code)
- Persons involved:
 - Name(s)
 - Contact details, where appropriate
 - Seat number
 - Frequent flyer number, if applicable
 - Role (cabin crew, passenger or ground staff)
 - Staff (employee) number, where applicable
 - Door assigned or work position, where applicable
 - Details of the reporter
- Description of the event:
 - Facts of the incident in short and concise points
 - Timing of event in UTC (or other standard time zone, if stated)
- Action taken:
 - Steps taken to resolve the issue
 - Is the report only for information or is action required?
 - Relevant paperwork/manual references
 - Was the issue resolved or does it require follow up?
 - Any other specific details or evidence that might make investigation/follow-up easier

Sample Cabin Safety Report

Cabin Safety Report (CSR)			
Reporter Name	[Name/employee number]		
Date of report	Flight number	Route From/To	Time of incident
/ / (UTC*)		/	: (UTC*)
Title of report – <i>The subject of the issue/incident/accident/concern.</i>			
Incident details – <i>Describe what happened.</i>			
Actions taken – <i>What did you do?</i>			
Outcome – <i>Was the situation resolved?</i>			
Other relevant information – <i>Include details of other crewmembers involved, witnesses, etc.</i>			

The most effective reports can be described using the 6C + F process:

Courteous	Be businesslike when reporting. Write in plain English – avoid jargon. Consider who may be reading the report. Avoid negative and offensive words.
Concise	The report should be brief and follow the sequence of events. Consider completing it in bullet point format. State relevant information only.
Clear	Think before you write. Ensure that the report is organized and has an appropriate heading. Avoid using unnecessary words and capital letters in the body of the text. Ensure it is written legibly.
Complete	Provide all necessary customer and crew details (e.g., name, address, telephone). Ensure that all ‘who, what, where, when, why and how’ questions are covered.
Constructive	Avoid opinions and emotions. Offer suggestions and solutions.
Correct	The report must be written properly using the basic rules of grammar and spelling. Proofread before submitting.
Factual	Ensure that the report is accurate. State the facts of the events rather than subjective opinions.

Reports that take the 6C+F into consideration will more likely:

- Be objective
- Provide the receiver with the required information for further action
- Provide facts without emotion
- Be broken down into relevant sections that capture the data in an easy-to-follow format

3.4.2 Process Flow

In an industry where the main events take place outside of the office, operators and their safety personnel rely heavily on the reports submitted to them by the cabin crew. Decisions cannot be made on the ground to enhance safety in the air without the hazards and consequences being identified through effective report writing.

The process flow illustrated below is an example of how a safety report should be processed.



To encourage more reporting, feedback should always be provided to the reporter so that they feel that their reports are valued and worthwhile.

3.4.3 Submission of Reports

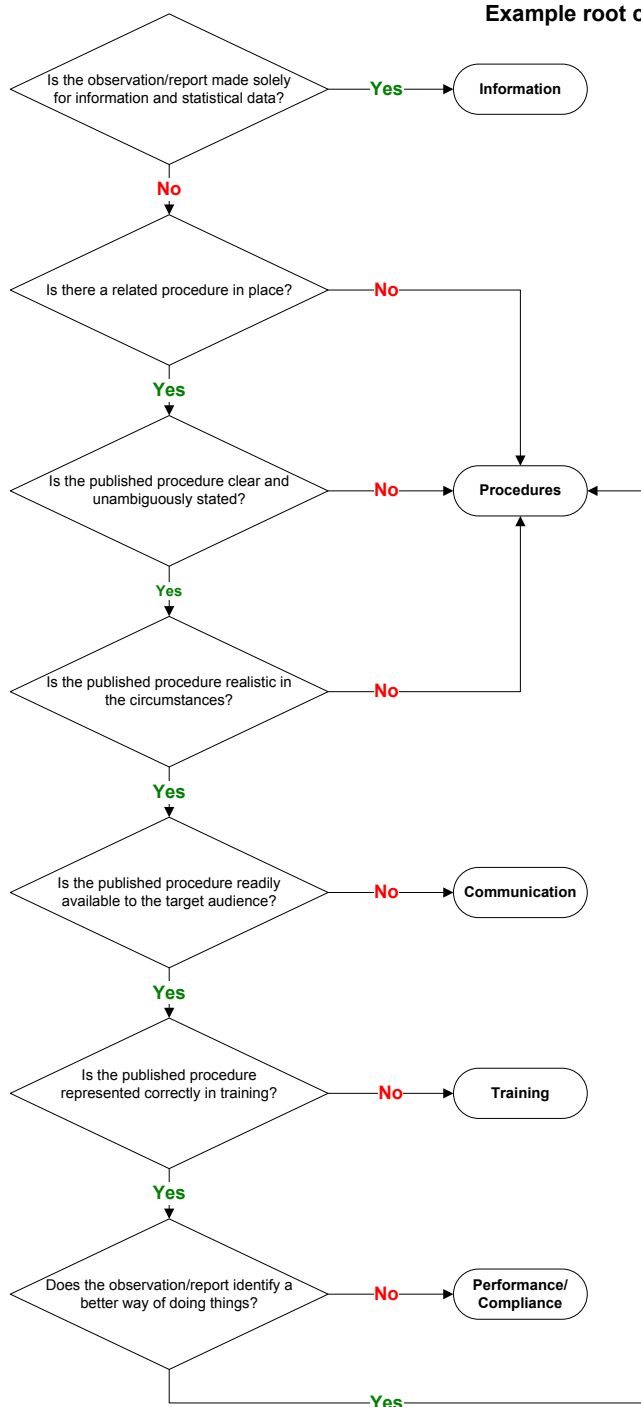
All reports should be submitted as soon as possible after the event, preferably within 24 hours so that the appropriate action can be taken at the earliest opportunity. Depending on the size of the operator, reports may be submitted electronically or in paper format.

3.4.4 Evaluation and Classification of a Report

Once a report is received by the investigator, it may need additional information added to it. Once all relevant information is available, the report will be evaluated and investigated, as appropriate.

It is important that, wherever possible, the root cause of the incident or observation be noted so that the identified remedial action can be directed to the appropriate department and monitored.

Example root cause analysis



The Threat and Error Management (TEM) framework described in Chapter 5 (5.8.1) may assist in identifying where changes to procedures may help prevent recurrence of an incident, as well as identify where additional cabin crew training or awareness of threats may be needed.

Classification of each report is important in order to maintain statistical evidence of occurrence rates. Reports should be classified consistently after analysis of the event in order to manage easy retrieval of the data afterwards, and to create meaningful statistics for reporting to the appropriate Safety Action Group as part of the SMS.

Typically, classifications include the **event**, the **immediate effect** and **operational effect**.

Some operators submit Cabin Safety Reports to IATA's Global Aviation Data Management program to help with statistical analysis of safety issues worldwide. When submitting reports to IATA, the operator's event classifications should match, or be able to be mapped to, IATA's.

3.4.4.1 Event Descriptors

These terms are used to describe the content of the report and include:

Cabin Equipment	Cabin Crew Seat	Fire/Sparks/Smoke/Fumes	Smoke/Fumes - Flight Deck
Cabin Equipment	Cabin Divider	Fire/Sparks/Smoke/Fumes	Smoke/Fumes - Toilet
Cabin Equipment	Cabin Trolley	Fire/Sparks/Smoke/Fumes	Fire/Sparks - Crew Rest Area
Cabin Equipment	Catering Lift	Fire/Sparks/Smoke/Fumes	Smoke/Fumes - Crew Rest Area
Cabin Equipment	Flight Deck Seat	Fire/Sparks/Smoke/Fumes	Smoke/Fumes - Cabin
Cabin Equipment	Floor Covering	Fire/Sparks/Smoke/Fumes	Fire/Sparks/Smoke - IFE
Cabin Equipment	Galley Equipment	Passenger	Apparent Intoxication
Cabin Equipment	Overhead Lockers	Passenger	Deportee/INAD Passenger
Cabin Equipment	Oxygen Masks	Passenger	Flight Deck Intrusion
Cabin Equipment	Passenger Seat	Passenger	Inappropriate Behavior
Cabin Equipment	Passenger Service Units	Passenger	Mobile Phone/PED
Cabin Equipment	Toilets	Passenger	Passenger - Abusive
Cabin Equipment	Cabin Trim and Fittings	Passenger	Passenger - Assault
Cabin Equipment	Crew Rest Area	Passenger	Passenger - Fatality
Cabin Management	Cabin Baggage	Passenger	Passenger - Illness
Cabin Management	Cabin Crew - Illness	Passenger	Passenger - Injury
Cabin Management	Cabin Crew - Injury	Passenger	Smoking in Cabin
Cabin Management	Cabin Crew Procedures	Passenger	Smoking in Toilet
Cabin Management	Cabin Not Secure	Ramp/Terminal Management	External Utilities
Cabin Management	Flight/Cabin Crew Comms	Ramp/Terminal Management	Aircraft Anti/Icing
Cabin Management	Inadvertent Slide Activation	Ramp/Terminal Management	Aircraft Servicing
Cabin Management	Cabin Crew - Fatigue/Stress	Ramp/Terminal Management	Baggage Handling
Communication Systems	Interphone	Ramp/Terminal Management	Cabin Door Procedure
Communication Systems	Passenger Address	Ramp/Terminal Management	Dangerous Goods

Communication Systems	Prerecorded Announcement	Ramp/Terminal Management	Flight/Ground Crew Comms
Electrics	Circuit Breaker Tripped	Ramp/Terminal Management	FOD on Ramp
Fire Protection/Detection	Fire Detection System - Toilet	Ramp/Terminal Management	Hold Door Procedure
Fire Protection/Detection	Fire False Warning - Toilet	Ramp/Terminal Management	Passenger Handling
Fire Protection/Detection	Fire Protection System - Toilet	Ramp/Terminal Management	Ramp - Injury
Fire Protection/Detection	Fire Detection System - Crew Rest Area	Ramp/Terminal Management	Refueling Procedure
Fire Protection/Detection	Fire False Warning - Crew Rest Area	Ramp/Terminal Management	Air bridge/Jetty
Fire/Sparks/Smoke/Fumes	Fire/Smoke - Galley	Ramp/Terminal Management	Catering Supplies
Fire/Sparks/Smoke/Fumes	Fire/Sparks - Cabin	Safety/Emergency Equipment	Emergency Locator Transmitter
Fire/Sparks/Smoke/Fumes	Fire/Sparks - Flight Deck	Safety/Emergency Equipment	Emergency Torches
Fire/Sparks/Smoke/Fumes	Fire/Sparks - Toilet	Safety/Emergency Equipment	Escape Rope
Safety/Emergency Equipment	Escape Slide/Raft	Security	Passenger Boarded Incorrect Aircraft
Safety/Emergency Equipment	Jemmy /Fire Axe	Security	Passenger Boarded with Prohibited Items
Safety/Emergency Equipment	Life Jackets	Security	Stowaway
Safety/Emergency Equipment	Medical Kit	Security	Suspicious Object in Cabin
Safety/Emergency Equipment	Megaphones	Security	Terminal Security
Safety/Emergency Equipment	Portable Fire Extinguishers	Security	Unattended Aircraft not Secured
Safety/Emergency Equipment	Safety Equipment Incorrectly Stowed	Security	Unauthorized Aircraft Access
Safety/Emergency Equipment	Safety Equipment of Incorrect Type	Security	Airport Security
Safety/Emergency Equipment	Seatbelts	Water/Waste	Potable Water Contaminated
Safety/Emergency Equipment	Smoke Hoods/Masks	Water/Waste	Potable Water Leak
Safety/Emergency Equipment	Safety Equipment Missing	Water/Waste	Toilet Fluid Leak in Cabin
Security	Air bridge/Jetway Door Open	Water/Waste	Toilets Full/Inoperative
Security	Aircraft Security Check	Weather	Turbulence
Security	Bomb Threat	Windows	Window - Dirty/Obscured
Security	Hold Baggage Screening		

3.4.4.2 Immediate Effect Descriptors

These terms are used to describe the immediate actions taken at the time of the incident. Examples include:

Abnormal Landing	Incapacitation - Flight Crew
Emergency Checklist	Medical Procedure On Board
Emergency Declaration - Mayday	Oxygen - Passengers
Emergency Descent	Passenger Caution
Emergency Evacuation	Passenger Off-Loaded
Fire Extinguisher - Portable Used	Passenger Restraint
Go Around	Rapid Disembarkation
Incapacitation - Cabin Crew	Smoke Detector Activated

3.4.4.3 Operational Effect Descriptors

These terms are used to describe the impact (if any) on the operation. Examples include:

Air Turnback	Extra Security Checks
Aircraft Unfit for Service	Ferry Flight
Ambulance/Paramedic	Fire Services
Cancellation	Maintenance Action
Delay	Police/Security Services
Diversion	Return to Stand

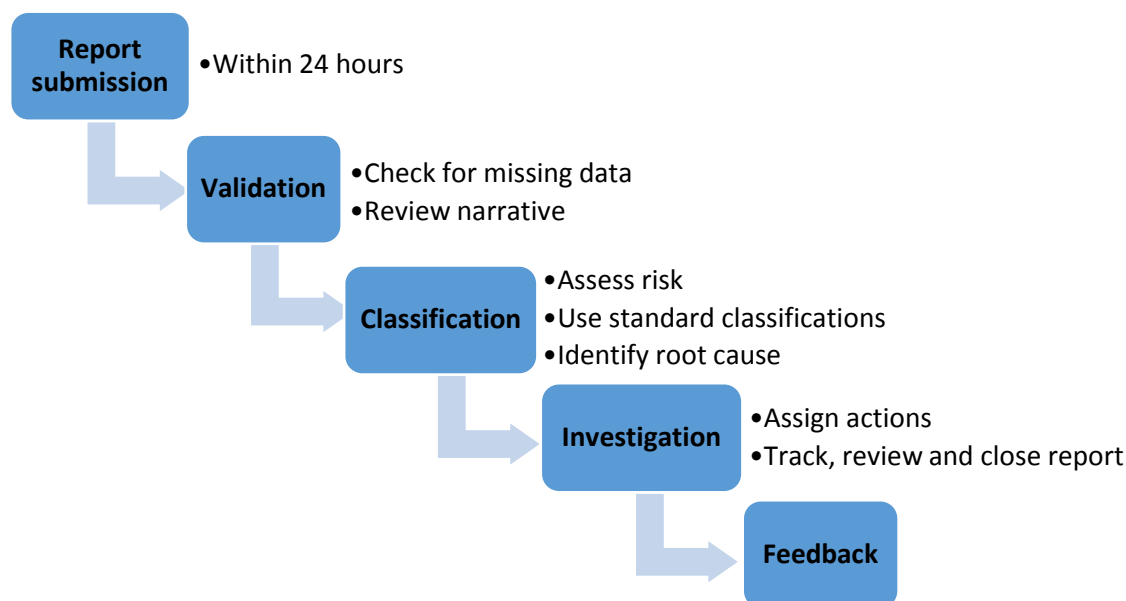
3.4.4.4 Risk Assessment for Safety Reports

As part of the classification process, each report can be assessed for the severity and likelihood of the associated hazards and risk. This helps to determine which reports should take priority and require the most resources to resolve.

Once a report has been investigated, actioned and closed, it is important to provide feedback to the reporter so that they recognize the value of their report and are more likely to report future occurrences.

3.4.5 Closure of Reports

Closure of reports should only be carried out once all assigned actions have been completed and mitigation measures in place are effective. Even after closure, it may be necessary to review reports periodically to ensure that the associated risks are mitigated sufficiently.



3.4.6 The Value of Effective Cabin Safety Reports

A comprehensive database of Cabin Safety Reports can be used to help the operator identify Safety Performance Indicators (SPIs), as well as contribute to the identification and classification of risks when carrying out Cabin Safety risk assessments before the introduction of new products or services, or changes to existing procedures.

Effective reports can, therefore, be used in three different ways:

Reactively — To address a problem that has already happened

Proactively — To prevent a similar situation from occurring again

Predictively — To indicate the likelihood of an incident or problem

3.5 Documentation

IOSA CAB 1.6.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have an Operations Manual (OM), which may be issued in separate parts, that contains the policies, procedures and other guidance or information necessary for cabin crew members to perform their duties and be in compliance with applicable regulations, laws, rules and Operator standards. The content of the OM shall be in accordance with specifications in Table 5.1 (see 3.5.2)*

IOSA CAB 1.5.3 *If the Operator conducts passenger flights with cabin crew, the Operator shall ensure documentation used in the conduct or support of cabin operations:*

- i. Contains legible and accurate information;*
- ii. Is written in language(s) understood by cabin operations personnel;*
- iii. Is presented in a format appropriate for use by cabin operations personnel;*
- iv. If applicable, is accepted or approved by the Authority.*

IOSA CAB 1.6.5 *If the Operator conducts passenger flights with cabin crew, the Operator shall ensure a minimum of one complete version of the OM as specified in CAB 1.6.1 is accessible on board the aircraft for passenger flights and located in a manner that provides for:*

- i. If used directly for the conduct of cabin operations, immediate access by each cabin crew member;*
- ii. If utilized as a reference document only, unobstructed access by the cabin crew.*

Cabin crew may be issued with their own copy of the OM to carry on each flight, or they may be put on board the aircraft with unobstructed access. They may be in electronic format or hard (paper) copy in accordance with the State regulator's requirements. Whichever method is used, the operator must also have in place a process to ensure that the documents are kept up to date with all amendments and revisions.

Operators may also choose to issue a Quick Reference Handbook (QRH) to cabin crew comprising of relevant checklists and other selected information from the OM to help cabin crew carry out their duties in normal, abnormal and emergency situations.

Operators should consider how to ensure that the requirement of CAB 1.6.5 can be met, while ensuring that such manuals are kept up-to-date in accordance with the requirement of Document Control.

3.5.1 Document Control

IOSA CAB 1.5.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have a system for the management and control of cabin operations documentation and/or data used directly in the conduct or support of operations. Such system shall include elements as specified in ORG 2.1.1.*

The primary purpose of document control is to ensure necessary, accurate and up-to-date documents are available to appropriate personnel, including, in the case of outsourced operational functions, employees of external service providers.

Examples of documents that are controlled include, but are not limited to, operations manuals, checklists, quality manuals, training manuals, policy and procedure manuals, and standard operating procedures.

In the area of cabin safety, document control also applies to safety announcements, safety briefing cards, cabin crew checklists, and other safety-related working documentation used in training and on board the aircraft.

Electronic issue of such documentation allows the operator to have more control over the version being referred to by each crewmember, as they can easily be updated and distributed immediately. Where hard (paper) copies

are installed on board aircraft for reference, the operator must ensure a process is in place to update with revisions as soon as they are issued.

Methods employed by operators to keep documentation up-to-date include:

- Issuing tablet devices with all necessary documentation to at least one cabin crewmember on each flight. Documents can be refreshed or updated remotely, or by user action.
- Internet/Intranet documentation control systems.
- Audit program and inspection of documentation held by each cabin crewmember.
- Audit program and inspection of documents placed on each aircraft.

Each document should be given a controlled reference number or title and effective date or version number to support the audit program. Where a document has multiple pages or sections, a list of effective pages should be maintained as part of the document in order to identify whether any sections or pages are missing.

3.5.2 IOSA Table 5.1 – Operations Manual Content Specifications

The content of the Operations Manual shall address the following areas of cabin operations:

- (i) Compliance or conformity with:
 - (a) Applicable laws, regulations and rules;
 - (b) Standard operating procedures for each phase of flight.
- (ii) Administration of first aid, to include guidelines for:
 - (a) Life threatening medical emergencies;
 - (b) Cardiopulmonary resuscitation (CPR);
 - (c) Injuries and illnesses;
 - (d) Use of medical equipment (e.g., Automatic External Defibrillator, if applicable).
- (iii) Response to emergency, abnormal, suspected security situations:
 - (a) Aircraft emergency evacuation;
 - (b) Cabin decompression, if applicable;
 - (c) Onboard fires, smoke and fumes;
 - (d) Emergency landing, ditching;
 - (e) Leakage or spillage of suspected dangerous goods;
 - (f) Suspected bomb or explosives, least risk bomb locations (specific to aircraft type);
 - (g) Cabin search;
 - (h) Hijacking or unlawful intervention.
- (iv) Use of cabin systems and equipment, to include malfunctions:
 - (a) Oxygen systems, if applicable;
 - (b) Communication systems;
 - (c) Entry and exit doors;
 - (d) Lifesaving equipment;
- (v) Dangerous goods manual or parts relevant to the cabin crew, to include:
 - (a) Dangerous goods prohibited in passenger and crew baggage;
 - (b) Information/instructions for dangerous goods permitted in passenger and crew baggage;
 - (c) Action to be taken in the event of an emergency.
- (vi) Use of emergency, survival equipment.
- (vii) Cabin crew training program:
 - (a) Abnormal and emergency situations, emergency evacuation;
 - (b) Use of emergency and lifesaving equipment;
 - (c) Lack of oxygen, loss of pressurization, as applicable;
 - (d) Other cabin crewmember assignments and functions;
 - (e) Dangerous goods;
 - (f) Human performance, crew resource management (CRM).
- (viii) Limitations pertaining to flight time, flight duty periods and rest periods.

Section 4—Fatigue Risk Management

4.1 Definition of Fatigue

ICAO defines crewmember fatigue as:

“A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair a crew member’s alertness and ability to safely operate an aircraft or perform safety-related duties.”

Fatigue is a major human factors hazard because it affects most aspects of a crewmember’s ability to do their job. Fatigue, therefore, has important implications for safety.

4.1.1 Transient Fatigue

Transient fatigue is short-term tiredness caused by extended wakefulness. It can usually be addressed by increasing or improving sleep.

4.1.2 Cumulative Fatigue

With repeated periods of extended wakefulness or reduced sleep opportunities, cumulative fatigue can occur. Symptoms can include both physical and psychological issues.

4.2 Fatigue Risk Management System (FRMS)

IOSA CAB 3.1.4A *If the Operator conducts passenger flights with cabin crew, the Operator shall have a methodology for the purpose of managing fatigue-related safety risks to ensure fatigue occurring in one flight, successive flights or accumulated over a period of time does not impair a cabin crew member’s alertness and ability to perform safety-related cabin duties. Such methodology shall consist of:*

- (i) Flight time, flight duty period, duty period and rest period limitations that are in accordance with the applicable prescriptive fatigue management regulations of the State, and/or,*
- (ii) If applicable, the Operator’s Fatigue Risk Management System (FRMS) approved or accepted by the State and established in accordance with CAB 3.1.4B.*

ICAO defines a Fatigue Risk Management System (FRMS) as:

“A data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness”.

The traditional regulatory approach to manage crewmember fatigue has been to prescribe limits on maximum flight and duty hours and minimum breaks within and between duty periods.

The introduction of an effective FRMS can allow an operator, with State approval, to adapt flight and duty time limitation (FTL) rules to more comfortably suit the operation and effectively manage cabin crew fatigue.

FRMS can be used as a stand-alone system to replace prescriptive FTL rules, or it can be used to supplement existing processes. Whichever method is used, FRMS shares responsibility for fatigue prevention between the operator and individual crewmembers, and requires commitment from all stakeholders to work effectively.

4.2.1 Stakeholders

All parties involved in the cabin crew FRMS should receive appropriate training relevant to their role. This includes the following workgroups:

- Cabin Crew
- Cabin Crew Management
- Crew Scheduling and Operations
- Workforce Representatives (e.g., unions and staff committees)
- Health and Safety Department (including Occupational Health, where appropriate)

4.2.2 Components of a FRMS

Like SMS, a FRMS relies on the active involvement of all stakeholders and an effective reporting culture where personnel have been trained and are encouraged to report hazards without fear of reprisal. Cabin crew should be aware of the FRMS at their operator and know when and how to report fatigue.

An effective FRMS includes policies, processes and evidence of the following components:



4.2.3 Fatigue Management Guide for Airline Operators

The [Fatigue Management Guide for Airline Operators](#) is the result of collaboration between IATA, ICAO and the International Federation of Airline Pilots' Associations (IFALPA) to jointly guide and serve the industry in fatigue management, using the most current scientific findings and operational experience. The guide presents a common approach for pilots, operators, and regulators regarding the complex issue of fatigue. The guide includes valuable insight into the methodology and framework for implementing an effective FRMS and an explanation of the science supporting it. The information is also applicable to cabin crew.

There is scientific and operational evidence that a FRMS is an effective means of mitigating fatigue risks. For this reason, IATA issued a [white paper on FRMS](#) in January 2013 that provides an overview of FRMS and its benefits. In 2014, to further support member operators with FRMS implementation, IATA published "[Fatigue Safety Performance Indicators \(SPIs\): A Key Component of Proactive Fatigue Hazard Identification](#)". This document reviews different SPIs to help operators develop processes and procedures to monitor the effectiveness of their own fatigue management program.

For more information, please contact frms@iata.org.

4.2.4 FRMS Policy and Documentation

An operator's FRMS policy should include:

- Terms of reference of the FRMS
- Scope and elements of the FRMS
- Responsibilities of all employees and workgroups, including lines of accountability
- Declaration of management's commitment

Documentation should describe all elements of the FRMS and provide a record of FRMS activities, including:

- Policy and objectives
- Processes and procedures
- Accountabilities, responsibilities and authorities
- Mechanism for involvement of all stakeholders
- Training records
- Planned and actual times worked
- Outputs (findings, recommendations and actions)

The documentation can be centralized in a FRMS Manual or integrated into an operator's SMS Manual.

4.2.5 Fatigue Safety Action Group

It is recommended that a working group be established to manage and coordinate the FRMS activities, which include:

- Developing and maintaining the FRMS documentation
- Managing the FRMS processes
- Contributing to the FRMS safety assurance processes
- Promoting the FRMS

Operators may also elect to create a FRMS Governance Group to guide the working group within the framework of the SMS, and may also establish an Independent Alertness Assurance Panel.

4.2.6 Fatigue Risk Management Processes

Fatigue Risk Management (FRM) processes within an FRMS follow the same principles as SMS, but are specifically designed to manage risk related to crewmember fatigue.

Fatigue Risk Management (FRM) processes should:



4.2.6.1 Identification of Fatigue Hazards

There are three different methods of identifying fatigue hazards, all of which should be incorporated into the FRMS:

Predictive	Proactive	Reactive
Identify fatigue hazards by examining the flight schedule (actual or proposed) and predicting the likelihood of fatigue	Identify fatigue hazards within the current operation	Identify the contribution of fatigue hazards to reports and events associated with a potentially negative safety consequence
e.g., bio-mathematical software models	e.g., crew fatigue surveys	e.g., fatigue reports, crew performance reports and audits

4.2.6.2 Risk Assessment

Once fatigue hazards are identified, the potential outcomes and associated impact on safe operations should be assessed, taking into account any existing safety barriers or controls (mitigations).

In addition to safety concerns, the impact of cabin crew fatigue may also adversely affect their ability to provide passenger service levels to the standard the operator requires, or increase the likelihood of injury on board aircraft. A review of injury rates and customer complaint data on specific flights may assist in determining this risk.

Effective assessment of the fatigue risks will help the operator to determine whether additional mitigations are necessary.

4.2.6.3 Risk Mitigation

Where fatigue risks are identified as unacceptable to the operator, additional mitigation strategies are required in order to reduce the likelihood or severity of an event.

Options to reduce cabin crew fatigue risks may include:

- Improve specification and standard of rest facilities (e.g., onboard rest area or hotel accommodation)
- Alter schedules or flight plans
- Increase rest time for cabin crewmembers before, during or after flight
- Increase cabin crew complement, thereby reducing workload
- Limit or reduce the number of cabin crew sectors in a roster period
- Reduce cabin crew exposure to operations within the Window of Circadian Low (i.e., night sectors).

4.2.6.4 FRMS Safety Assurance Processes

Safety assurance processes such as regular audits, inspections and reviews should be established to monitor the effectiveness of the FRMS. These processes should focus on verifying that the FRMS is:

- Functioning as intended
- Meeting the safety objectives defined in the FRMS policy
- Meeting regulatory requirements
- Proactively identifying changes in the operating environment that have the potential to increase fatigue risk
- Identifying areas for improvement

If necessary, particularly where the FRMS is not mature, an independent assurance panel can be formed to provide expert guidance and review the work of the FRMS. Composition of such a panel may include representatives from:

- FRMS Governance Group members
- Fatigue Safety Action Group members
- Regulators
- Other suitable internal or external fatigue research specialists

4.2.7 FRMS Promotion Processes

FRMS promotion processes include training programs and a communication plan.

FRMS training should ensure all involved personnel are trained and competent to undertake their respective FRMS responsibilities. Standards for initial and recurrent training should be specified in the FRMS documentation.

Central elements of FRMS training are the key principles of fatigue science: managing sleep and understanding the effects of the circadian body clock. These are relevant not only to people's roles in the FRMS, but also to the inter-relatedness of their lives outside of work.

FRMS training covers issues that everyone can identify with personally, which can help promote the concept of shared responsibility in an FRMS.

An effective FRMS requires a comprehensive communications plan aimed at encouraging the full support of operating crew to provide quality information into the system, develop knowledge, understand and implement mitigation strategies, and have confidence in the resulting actions of their reporting.

Factors such as accessibility and ease of reporting, timeliness and accuracy of reports, along with regular fatigue Safety Action Group newsletters detailing results and actions, build confidence in the FRMS and drive quality reporting and data validity.

4.3 Cabin Crew Fatigue

4.3.1 Sleep

Adequate sleep is a necessity and sleep deprivation may lead to serious health disorders. It is essential that crewmembers be well rested, both at home and while on a layover, before working any flight.

Sleep deprivation is defined as the lack of sleep. The need for sleep varies for each individual. While some people need more sleep than others, 90% of people sleep between six and nine hours in each 24-hour period. However, it should be noted that:

- Each individual has his/her own sleeping pattern
- Sleeping patterns may change according to health and age
- Identifying and respecting your sleep pattern is a condition for good performance

If the amount of sleep has not been sufficient, particularly over a few days, the individual will build up a “sleep deficit” that will need to be recovered, otherwise it will affect their level of performance.

Crewmembers’ sleeping patterns will often be disrupted due to flying duties. Short-haul flying will often require multiple sectors working very early in the morning or late into the night. Long-haul flights have the added consequence of crossing multiple time zones, which means that rest is taken at a time the body is not used to.

Jet lag can affect sleep. This common problem is defined as a difficulty adjusting to time zones. It is unavoidable following rapid travel over three or more time zones and is exacerbated by:

- Stress
- Overeating
- Dehydration
- Increasing age
- Travelling in an easterly direction (advancing time zones prematurely)
- Sleep deprivation
- Excessive alcohol consumption

Crewmembers should not sleep during duty or appear to be asleep, except during approved crew rest periods and in designated crew rest areas.

4.3.2 Contributory Factors

When people are suffering from fatigue, their ability to carry out tasks can be impaired. During flight operations, reduced alertness or performance due to fatigue can pose serious risks to safety.

Fatigue usually results from lack of sleep or disruption of normal sleep patterns. However, there are many contributory factors:

- Sleep loss
 - Less than the individual’s needed sleep in the last 24 hours
 - Shortened rest periods
 - Reduced sleep quality
 - Cumulative sleep loss over successive 24-hour periods
- Continuous hours awake (more than 17 hours since last major sleep period)
 - Time since awakening
 - Length of duty day
- Disruption of the circadian system (i.e., working out-of-sync with the body’s internal clock)
 - Crossing multiple time zones (jet lag)
 - Working between midnight and 6 a.m.
 - Getting up very early/going to bed late
- Workload intensity
 - Multiple sectors in succession
 - Long duty periods
- Other:
 - Illness
 - Side effects of medication, alcohol

4.3.3 Symptoms and Effects of Fatigue

Symptoms may not be noticed when stimuli such as noise, physical activity, caffeine, nicotine, thirst, hunger, excitement or other distractions are present. However, once the stimuli are gone, fatigue symptoms such as the following can be observed:

- Eyes going in and out of focus
- Persistent yawning
- Wandering or poorly organized thoughts
- Reduced short-term memory
- Worsened mood (i.e., irritability)
- Lack of concentration
- Lack of situational awareness

Symptoms such as those listed above can have severe consequences on an individual's performance, including:

- Slower reaction time
- Reduced motor skills and coordination
- Impaired judgment
- Poor decision making
- Reduced flexibility
- Reduced situational awareness
- Decreased work efficiency
- Degraded crew coordination
- Reduced motivation
- Decreased vigilance
- Increased variability of work performance

4.3.4 Fatigue Preventive Strategies

It is of utmost importance to execute flight operations as alertly as possible. Negative occurrences, such as sleep disturbance and/or circadian disruptions, may be successfully counteracted if proper preventive measures are taken. The following recommendations are general and have to be adapted to one's own needs:

- Restful sleep requirements ("good sleep habits")
- Protect your individually required sleep time
- Keep a regular sleep/wake schedule (when possible)
- Use a suitable sleep environment (i.e., shades, lower temperature, earplugs)
- Develop and practice a regular pre-sleep routine
- Eat a light snack, if hungry, and avoid eating immediately before bedtime
- No alcohol before bedtime (alcohol induces sleep, but has a negative effect on sleep quality)
- No coffee, black tea or other sources of caffeine before bedtime
- No exercise before bedtime
- On short layovers, try to stay aligned to home base time
- Avoid use of TV, mobile phone or tablet devices while in bed
- If you do not fall asleep within 30 minutes, get out of the bed for a time (don't toss and turn)

4.3.5 Personal Mitigation Strategies

Every flight duty must be performed in good physical and mental condition. Crew should be well-rested as a result of appropriate personal conduct with regard to sleep, nutrition and consideration of the effects of medications, alcohol, caffeine, nicotine, etc. The following are strategies that can be used to ensure one is adequately prepared for flight duty:

- Daily
 - Get as much sleep as possible prior to the trip
 - Try to take an afternoon nap, in a bed in a darkened room, before operating a night flight
 - Practice active ways to relax after work
 - Do regular physical activity
- During a short layover (less than three days)
 - Try to sleep as much within 24 hours (in one or more sleep periods) as in a normal 24-hour period at home
 - If the circumstances permit, sleep if you are sleepy
 - Try to maintain the sleep/wake rhythm of your original time zone
- In flight
 - Give preference to light food and high-protein meals
 - Avoid high-fat and high-carbohydrate food
 - Drink plenty of fluids, preferably water
 - Caffeine can help counteract noticeable fatigue symptoms, if used strategically
 - Use the crew rest area (bunk), if planned

4.3.6 IMSAFE

IMSAFE is a mnemonic used by some aircraft pilots to assess their fitness to fly. The IMSAFE checklist assesses whether “I am free from factors that could affect my physical or mental capacity to operate safely”. Although the job function is different, the IMSAFE checklist is equally applicable to cabin crew:

- **I**llness
- **M**edication
- **S**tress
- **A**lcohol
- **F**atigue
- **E**ating deficiencies

4.3.7 Flight Time, Flight Duty Periods and Rest Periods

Regulations specifying the limits applicable to flight time, flight duty periods and rest periods for cabin crew are usually approved by national Civil Aviation Authorities. The prime objective of flight time duty limitations and subsequent rest periods is to ensure that crewmembers are adequately rested at the beginning of each flying duty period and subsequently during the flight. Crewmembers must be sufficiently free of fatigue that they can operate in all normal, abnormal and emergency situations.

4.3.7.1 Flight Duty Period

A flight duty period is intended to cover a continuous period of duty, including a flight or a series of flights. It includes all duties a cabin crew may be required to carry out from the time of reporting for duty on the day of a flight or series of flights, until completion of all duties relating to the flight or series of flights.

4.3.7.2 Rest Periods

The definition of a rest period implies an absence of duty and is intended to provide adequate time for rest following a flight or series of flights. Operators should ensure that procedures are followed to make sure that cabin crew do not exceed their flight time limitations and that adequate controls are in place to ensure that cabin crew are not assigned duties during required rest periods. Cabin crew have a responsibility to use their rest periods to rest. Time spent by cabin crew positioning or deadheading to or from duty assignments is not considered part of a rest period.

4.3.7.3 In-flight Rest Facilities

Operators should comply with their regulatory requirements to provide adequate in-flight crew rest facilities. When establishing duty times and rest periods, the size of the crew complement and the tasks to be performed should be taken into account. When private, horizontal rest facilities are provided in the aircraft, flight duty periods may be extended according to the State's standards and regulations.

4.3.8 Cabin Crew Fatigue Awareness Training

To assist in educating cabin crew on the subject of Fatigue Awareness and Mitigation Strategies (FAMS), IATA has produced the FAMS Cabin Crew eLearning course which can be purchased on the following web page: <http://www.iata.org/training/courses/Pages/fatigue-awareness-talp54.aspx>. A demo is available in the sidebar.

Section 5—Cabin Crew

5.1 Number and Composition of Cabin Crew

IOSA CAB 3.1.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall specify and require a minimum number of cabin crew members for each aircraft type that is utilized in passenger operations. Such minimum cabin crew specification shall:*

- i. Be based on aircraft seating capacity or number of passengers carried;*
- ii. Be in accordance with minimum cabin crew requirements of the Authority;*
- iii. Ensure the minimum number of cabin crew members necessary to effect a safe and expeditious evacuation of the aircraft.*

The number and composition of cabin crew is stipulated in [ICAO Annex 6, Operation of Aircraft, Chapter 12 Cabin Crew, Section 12.1, Assignment of Emergency Duties](#), which states, in part:

“An operator shall establish, to the satisfaction of the State of the Operator, the minimum number of Cabin Crew required for each type of aeroplane, based on seating capacity or the number of passengers carried, in order to effect a safe and expeditious evacuation of the aeroplane, and the necessary functions to be performed in an emergency or a situation requiring emergency evacuation [...]”

Civil aviation regulations specify the minimum number of cabin crew based on either the number of passengers on board or passenger seats. Where this specification is not stipulated, it is recommended that there be a minimum of one fully qualified cabin crew for every 50 passengers, or passenger seats, installed on the same deck of an aircraft.

The minimum number of cabin crew established by the operator should also demonstrate that normal and emergency procedures are achievable during periods when in-flight rest is undertaken.

5.1.1 Cabin Crew Safety Responsibilities

Cabin crew are responsible for carrying out safety-related duties principally in the aircraft cabin during a specific flight. These duties are essential to the safety and well-being of passengers and fellow crewmembers. Cabin crew are expected to comply with all applicable operator regulations, instructions and orders issued for cabin crew duties.

5.1.2 Senior Cabin Crewmember

IOSA CAB 3.1.2 *If the Operator conducts passenger flights with cabin crew, and utilizes aircraft that require more than one cabin crew member, the Operator shall ensure designation of a cabin crew leader who has overall responsibility for the conduct and coordination of normal and emergency cabin procedures for flights with more than one cabin crew member.*

When required to carry more than one cabin crewmember, an operator should appoint a person to the post of Senior Cabin Crewmember (SCCM). The SCCM will act as the liaison with the flight crew and has responsibility to the Pilot-in-Command for the conduct and coordination of normal, abnormal and emergency procedures specified in operator operations procedures manuals. The position of SCCM might have a different title or name according to the operator (e.g., purser, lead flight attendant, senior purser or onboard leader).

Prior to being designated a SCCM, the following criteria should be met:

- Minimum experience considered acceptable by the applicable national Authority
- Successful completion of the operator’s cabin crew leadership training (e.g., SCCM course) as required by national regulations

The SCCM is responsible for all of the cabin crew under the authority of the aircraft Pilot-in-Command. The functions of the SCCM include, but are not limited to:

- Applying all safety, security and service standards and procedures as outlined in the operators operations manual and other sources
- Briefing with the Pilot-in-Command prior to each flight or series of flights
- Briefing the cabin crew on all relevant safety, security and service aspects for the conduct of the flight
- Providing effective leadership to the cabin crew
- Liaising between the flight crew and cabin crew
- Performing emergency preparations according to the Pilot-in-Command and/or special instructions
- Reporting to the Pilot-in-Command, manage all incidents/accidents, safety concerns of fellow crew or passengers, and situations affecting the safety of the operation
- Reporting/logging all technical irregularities in coordination with the Pilot-in-Command

5.1.3 Other Cabin Crew

All cabin crew are an essential part of the team and their roles include, but are not limited to:

- Applying all safety, security and service standards and procedures as outlined in the operator's operations manual and other sources
- Following all directives of the SCCM under the authority of the aircraft Pilot-in-Command
- Reporting to the SCCM all situations affecting the safety of the operation and/or any safety concerns they may have, or that may have been communicated to them by a passenger

5.2 Cabin Crew Qualifications

Cabin crew must comply with local regulations, hold a license or attestation where required by the State and be registered as qualified cabin crew based on successful completion of the necessary training programs. It is recommended that cabin crew be at least 18 years of age.

All cabin crew should have passed a medical examination or comply with other operator medical requirements to ensure that they are medically fit and physically capable of fulfilling the duties specified. They should remain medically fit to continue to discharge their duties throughout the term of their employment.

Cabin crew are expected to remain familiar and comply with all regulations, procedures, policies, instructions and orders pertinent to the performance of their duties.

5.3 Cabin Crew Uniforms

While it is recognized that cabin crew uniforms represent the brand image of an operator, they also should be designed with safety, cultural and practical aspects in mind. Care should be exercised to ensure that the style and materials used for cabin crew uniforms do not affect the ability of the crew to perform their normal duties or to help passengers in the event of an abnormal or emergency situation (i.e., fire, evacuation). The following is intended to serve as a guideline for operators when selecting uniforms for their cabin crew. In addition to safety considerations, cabin crew uniforms should be developed with comfort in mind:

Adverse event	Likely Cause	Undesired outcome	Recommendations
Entanglement with door operating handles or other cabin fixtures	Loose necklaces, ID lanyards, jewelry, scarves, neckties	Cabin crew unable to operate exit during evacuation	Remove lanyards while on board or provide alternative method of display. Formulate policy to keep jewelry covered under uniform.
Obstruction to evacuation	Wearing of high or sharp pointed heels on shoes	Damage to evacuation slides/rafts	Appropriate footwear to be worn during evacuation
Health and safety outside the aircraft on the tarmac or during evacuation	Environmental conditions outside the aircraft, such as spilt fuel, hydraulic fluids	Cabin crew injury	Appropriate footwear to be worn on the tarmac and during evacuation
Cabin crew thermal discomfort	Temperature and climate differences at origin/destination/route	Cabin crew complaints, illness or incapacitation	Variations of uniform appropriate to climate and environmental conditions at origin and destination
Cabin crew burn	Wearing flammable clothing while dealing with an onboard fire.	Cabin crew incapacitation during firefighting	Use fabrics with high flammability protection
Cabin crew injury	Sharp items carried on the person being pressed into the body while wearing crew harness	Cabin crew puncture wound or incapacitation	Pocket or pouch for stowage of pens or other items frequently used by cabin crew. Formulate policy to remove pens from pockets during takeoff and landing while secured in crew seats. Name and rank badges designed and worn in a manner that prevents injury

It is recommended that cabin crew wear their full uniform for takeoff and landing (in accordance with their operator's policies and procedures) to offer them the best protection in the event of an emergency and to better identify cabin crew to passengers and emergency responders if an emergency arises.

5.4 Cabin Crew Medical Standards

[Section 3.2 of the IATA Medical Manual](#) states that medical standards for professional and private pilots have long been clearly specified in international regulations (ICAO, Annex 1, Chapter 6). While there is no equivalent for cabin crew (usually the operator determines the appropriate pre-employment health assessment required), a certain number of countries require cabin crew to be licensed to private pilot standards.

5.4.1 Aeromedical Assessment

In the absence of specific licensing Authority requirements, many operators have found that a clear, targeted health questionnaire is a reliable screening tool to provide sufficient information to ensure that safety and the operator's duty of care are addressed. Other operators prefer to conduct a full medical assessment starting with a full medical history. The majority of applicants will be assessed as medically fit and will enjoy good health throughout their entire flying career. For those who may experience disease or accident, the operator's physician should not only be an aviation medicine expert, but also an adviser taking into account every aspect of the individual's medical problems. Each situation will be unique and will have to be addressed using the following criteria:

- Is the cabin crew's medical condition likely to be aggravated by resumption of work?
- Is the medical condition likely to jeopardize flight safety?

5.4.2 Alcohol, Drugs and Medication

No cabin crew shall consume alcohol or prohibited drugs while performing their duties. Operators should establish procedures to provide for the testing for misuse of alcohol or drugs, or as required by national legislation.

The taking of over-the-counter medicine or prescribed drugs can impair the ability of cabin crew to perform their duties. Operator corporate policies should, therefore, contain clear instructions as to when medicine or drugs may and may not be taken by cabin crew. Cabin crew must comply with such operator regulations prior to and during a flight.

For more information, please consult the IATA Medical Manual at www.iata.org/Medical-Manual.

5.5 Media and Social Media Policy

Events involving air travel can attract media attention and it is common for the media to approach cabin crew for their views on sometimes sensitive issues or to share their experience of an incident/accident. Operators should ensure that their policy with respect to dealing with media queries is clearly communicated to all cabin crew so that these situations can be dealt with in a consistent and professional manner.

It is recommended that cabin crew be advised to not speak directly to the media without explicit approval of the operator.

A social media policy should be published by the operator defining the accepted level of use by all employees. Cabin crew should be reminded that negative or impulsive comments or speculation made via electronic means, even privately, can easily be reproduced out of context and used to discredit them or their employer.

5.6 Human Factors

Human Factors is a science that focuses on how humans interact with the environment in their workplace. For cabin crew, it is about understanding how crew use equipment, interpret policies, interact with each other, and generally operate within their working environment.

ICAO defines human factors or performance as the human capabilities and limitations that have an impact on the safety and efficiency of aeronautical operations. More information from ICAO on human performance can be found in the following documents:

- Human Factors Digest 15 – Human Factors in Cabin Safety
- Human Factors Training Manual (Doc 9683)
- Cabin Crew Safety Training Manual (Doc 10002 1st Edition, 2014)

To obtain copies of these documents, please visit: www.store1.icao.int

5.6.1 Human Factors Training

Cabin crew should be provided with an understanding and awareness of the human factors that can potentially lead to errors. Key components of human factors awareness training are often referred to as the “Dirty Dozen”. These are (in no specific order of importance):

- Poor communication
- Distraction
- Inadequate resources
- Stress
- Complacency
- Poor teamwork
- Pressure
- Lack of awareness
- Lack of knowledge
- Fatigue
- Nonassertive behavior
- Norms (meaning workplace practices and culture, which can be both good and bad or safe and unsafe)

Awareness of these components increases the understanding of how humans can contribute to accidents and incidents. The objective of human factors awareness training is for the cabin crew to understand how they can affect safety and act accordingly to mitigate and prevent human errors.

IOSA has provisions pertaining to training in human performance that typically include basic human factor concepts and Crew Resource Management:

IOSA CAB 2.2.8 *If the Operator conducts passenger flights with cabin crew, the Operator shall ensure cabin crew members receive training in human performance to gain an understanding of the human factors involved in conducting cabin safety duties and coordinating with the flight crew during the execution of onboard emergency procedures. Such training shall be included in the cabin crew initial and re-qualification training courses, and in the recurrent training course, on a frequency in accordance with requirements of the Authority, but not less than once every 36 months or, if applicable, in accordance with the Operator's AQP as specified in CAB 2.1.1B. (GM)*

IATA provides comprehensive training in human factors in aviation. For more information, please consult: www.iata.org/training/courses/Pages/aviation-human-factors-tcvt05.aspx

5.7 Crew Resource Management (CRM)

Crew Resource Management (CRM) promotes safe operations and overall crew performance through the optimum use of available resources including people, procedures and equipment. A prerequisite of effective CRM is a skilled, knowledgeable crewmember who contributes to the overall crew effectiveness. CRM is an essential aspect of airline operations influencing how safely and effectively crewmembers perform their duties.

CRM encourages efficient and effective communication, cooperation and coordination within a crew. Its objective is to:

- Promote and maintain a safe operation at all times
- Promote effective and efficient decision making
- Mitigate and prevent human error
- Increase the chance of survival in an incident or accident
- Manage effectively and efficiently all available resources (human or physical)

To promote CRM, crewmembers should:

- Understand each other's roles and responsibilities
- Possess an excellent understanding of their airline's safety and security policies and procedures
- Effectively communicate with each other
- Cooperate and coordinate their efforts
- Resolve or work through any differences or conflicts

CRM is a system of applying human factors concepts to improve crew performance and, subsequently, improve safety. Effective CRM results in all crewmembers functioning as a team, rather than a collection of technically competent individuals. High technical proficiency does not guarantee safe aircraft operation in the absence of effective crew coordination.

5.7.1 CRM Training

While operators aim to encourage appropriate contributions from all crewmembers to ensure a consistently high level of safe and efficient operations, together with service excellence, it is important to note that training cannot cover every possible scenario a crew may face.

CRM is an essential component of safety training. It allows airlines to influence the way that cabin crew and flight crew work more effectively together by providing the technical and behavioral skills necessary for each to know what to expect from their fellow crewmembers in any given situation. It is recommended that CRM form an integral part of initial and recurrent/refresher cabin crew training programs.

The following best practices should be taken into consideration when formulating effective CRM training programs:

- Standards for Human Factors and CRM for cabin crew to be combined with those for flight crew
- Specialist trainers should be used and these trainers should undergo specific training on CRM
- Check flights/audits to be set to measure whether training methods are carried out in flight
- Guidelines on all training to be designed with the specific needs of the operator taken into consideration (i.e., cultural training)
- When incidents occur on board, airlines should consider using the facts related to these as case studies in future CRM training
- Encourage crews to talk about incidents and share their views at cabin crew preflight briefings
- Build trust between crew and management so crew feel comfortable to "open up"
- Role play simulated flights, where:
 - Everyone has a role to play

- “Passengers” are given cards with scenarios to enact
- A full debriefing is conducted as a learning exercise, not as criticism of what could have been done better
- All key topics from the debriefing to be included in future case studies

5.8 Threat and Error Management (TEM)

Threat and Error Management Framework



Threat and Error Management (TEM) is the promotion of safe operations through the continuous process of identifying, avoiding, capturing and managing operational threats and human errors. TEM is an integral component of CRM. The human error factor is always a possibility in the performance of cabin crew functions, and threats are always a component of their environment. The ultimate goal of TEM is to maximize flight safety by minimizing incidents and accidents caused by human factors. IOSA defines TEM as the actions taken by the flight crew (or cabin crew) to reduce threats or manage errors.

According to the TEM framework developed by the Human Factors Research Project (HFRP) at the University of Texas in Austin, threats are defined as events or errors that occur beyond the influence of the crew. Such threats increase operational complexity and should be properly managed to maintain acceptable margins of safety. TEM categorizes threats based on whether or not the sources of operational pressure are internal or external to the airline. TEM analysis breaks down the sources of pressure experienced by the flight crew and those experienced by the cabin crew.

The ABCs for TEM are to follow all SOPs and:

- **A**ctively monitor and assess potential sources of error
- **B**alance available barriers to avoid and trap errors
- **C**ommunicate threats and intentions quickly and effectively

5.8.1 Threat and Error Management Framework

HFRP developed TEM as a conceptual framework to interpret data obtained from both normal and abnormal operations. For many years, IATA has worked closely with the HFRP team, ICAO, member airlines, and manufacturers to apply TEM to its many safety activities. The following are definitions of terms and tables that describe the TEM framework:

Latent Conditions: Conditions present in the system before the accident, made evident by triggering factors. These often relate to deficiencies in organizational processes and procedures.

Threat: An event or error that occurs outside the influence of the crew, but which requires crew attention and management to properly maintain safety margins.

Type of Threat	Examples
Operational	<ul style="list-style-type: none"> • Time pressures • Flight diversion • Unfamiliar cabin/galley configurations • Abnormal operations (i.e., rejected takeoff) • Traffic and ground congestion • Adverse weather/turbulence • Airport construction
Flight deck events	<ul style="list-style-type: none"> • Pilot incapacitation • Flight crew error/distraction/interruption
Crew support threats	<ul style="list-style-type: none"> • Errors by maintenance, catering, security or ground crew • Faulty equipment boarded • Paperwork errors (e.g., passenger load, cabin defect logbook) • Crew scheduling errors
Aircraft	<ul style="list-style-type: none"> • Equipment malfunction • Design issues • Particular galley/cabin configuration
Passenger	<ul style="list-style-type: none"> • Abusive or unruly passengers • Passengers smoking in the lavatory • Passengers standing during turbulence/taxi • Baggage not stowed • Unlawful entry into the flight deck

Cabin Crew Error: An observed cabin crew deviation from organizational expectations or crew intentions.

Type of Error	Description	Examples
Intentional non-compliance	These errors result from the crew's deliberate and premeditated deviation from SOPs or regulations.	<ul style="list-style-type: none"> • Disregarding sterile cockpit rule • Not performing the safety equipment checklist prior to flight • Omitting required safety briefing to passengers with special needs • Not reporting missing or defective equipment • Standing for non-safety related duties during taxi-out • Failure to report smoke detector alarm
Procedural	Unintentional deviation in the execution of operator procedures and/or regulations. The cabin crew has the necessary knowledge and skills. The intention is correct, but the execution is flawed. It may also include situations where cabin crews forget or omit relevant appropriate action.	<ul style="list-style-type: none"> • Crewmember completes the preflight equipment checklist, but forgets to check one piece of equipment on the list • Crewmember sets the oven to a higher temperature than indicated in the meal preparation instructions • SCCM boards the checklist for the wrong aircraft type/configuration • When briefing a special needs passenger, the crewmember forgets to mention the location of the life vest
Communication	Miscommunication, misinterpretation or failure to communicate pertinent information within the cabin crew or between the cabin crew and an external agent (e.g., flight crew). CRM issues typically fall under this category.	<ul style="list-style-type: none"> • Crewmember to crewmember errors • Cabin crew to flight crew errors • Crewmember to external agent errors (i.e., ground, catering, security)
Proficiency	Cabin crew performance failures due to deficient knowledge or skills. This may be exacerbated by lack of experience, knowledge or training.	<ul style="list-style-type: none"> • Crewmember is unable to work the control panel at L1 • Crewmember opens door not realizing that the slide is armed • Crewmember does not know the procedure to contact the flight deck via the interphone in an emergency situation
Operational decision	The adoption or continuation by cabin crews of a course of action that unnecessarily increases operational risks. To qualify under this category, the following prerequisites must exist: (1) the cabin crew had an alternative course of action within operational reason; (2) the alternative course of action was contemplated by the operator's SOPs, which were clear and unambiguous; (3) the cabin crew had time to select the alternative course of action, but did not use it; (4) the cabin crew did not recognize or ignored the alternative course of action.	<ul style="list-style-type: none"> • Accepting instructions from the flight deck that unnecessarily increase risk • Continuation of service during turbulence • Failure to secure cabin for landing • Decision to arm doors without the approval of the SCCM or the Pilot-in-Command • Failure to complete a checklist in a timely manner (i.e., the emergency equipment checklist before takeoff) • Failure to cross-verify documentation such as the Minimum Equipment List (MEL) when equipment is unserviceable • Non-essential communications between cabin crew during takeoff

Undesired Cabin/Aircraft State: A cabin crew induced a cabin/aircraft state that clearly reduces safety margins; a safety-compromising situation that results from ineffective threat/error management. An undesired aircraft state is recoverable.

Type of State	Examples
Configuration	<ul style="list-style-type: none"> • Cabin systems: electrical, lighting, electronic (control panels, IFE), water and/or communications in wrong mode or configuration • Slides in wrong mode • Slide/door unserviceable • Galley equipment left switched on • Safety equipment (fire extinguishers, oxygen bottles, radio beacon) missing, malfunctioning or inaccessible • Flight deck door left unlocked in flight
Critical phase/turbulence	<ul style="list-style-type: none"> • Passengers not seated/seatbelt not fastened • Seats/trays not in upright position • Items in cabin/galley not secured • Cabin crew not seated/seatbelt not fasten • Isles/exits not cleared • Crew rest area not vacated • Portable Electronic Devices (PEDs) in use
Cabin/passenger handling	<ul style="list-style-type: none"> • Passengers not complying to fastened seatbelt sign • Passengers smoking in cabin or lavatories • Passengers intoxicated or abusive • Seating restrictions not respected (i.e., person with reduced mobility seating at an over-wing exit) • Passengers not briefed • Dangerous goods present in the cabin
Ground states	<ul style="list-style-type: none"> • Passengers smoking during refueling • Incorrect refueling procedures (i.e., designated evacuation doors left unarmed or unmanned, passengers not briefed on SOPs) • Doors/exits/isles obstructed • Curtains closed • Oversize/overweight baggage boarded • Unclaimed baggage left on board • Doors left armed during a stopover

End State: An end state is a reportable event. An end state is unrecoverable (e.g., an inadvertent slide deployment).

Distinction between “Undesired Aircraft State” and “End State”: An unstable approach is recoverable: this is an Undesired Aircraft State. A runway excursion is unrecoverable. Therefore, this is an End State.

5.8.1.1 TEM Example

“The flight departed late with a high passenger load. While passing FL200, the SCCM called the Pilot-in-Command to inform of a fire in the rear galley oven with orange/yellow flames, thick smoke and an electrical burning smell. The oven had been ‘On’ and unattended for approximately 10 minutes and contained a single crew meal. The flight crew electrically isolated the galley and the SCCM confirmed that the fire had been extinguished. A ‘PAN’ was then declared (urgency on board the aircraft, but for the time being at least there is no immediate danger to anyone’s life or to the aircraft itself). The SCCM made a public announcement to passengers. After landing, passengers disembarked normally.

The meal and foil container in the oven were not burnt. A build-up of grease at the rear of the oven interior is likely to have been ignited by a combination of high oven temperature and timer settings in excess of those required to reheat the meal. The examination conducted by Engineering determined that the thermal protection switch had tripped, indicating normal overheat protection. Ground handling services noted that oven trays are removed and oven interiors are cleaned every night”.

Threats	Threat Management	Errors	Error Management
Late departure	None	Oven temperature set higher than required	High temperature not detected
High passenger load	None	Oven timer set longer than required	Incorrect timer setting not detected
Contaminated ovens	Oven not checked or cleaned prior to use.		
Galley/Oven fire	Extinguished in accordance with SOPs		

5.9 Cabin Crew Training

IOSA CAB 2.1.1A *If the Operator conducts passenger flights with cabin crew, the Operator shall have a training and evaluation program that is approved or accepted by the Authority, and that ensures cabin crew members understand their responsibilities and are competent to perform the duties and functions associated with cabin operations. The cabin crew training program shall also, as a minimum, address:*

- i. Initial qualification;*
- ii. Continuing qualification;*
- iii. Re-qualification;*
- iv. If applicable, aircraft transition or conversion;*
- v. If applicable, other specialized training requirements;*
- vi. If applicable, each traditional training program requirement that is replaced by a requirement under an Advanced Qualification Program (AQP) as approved or accepted by the Authority.*

IOSA CAB 2.1.1B *If the Operator conducts passenger flights with cabin crew and conducts cabin crew training and evaluation in accordance with an Advanced Qualification Program (AQP), such AQP shall be approved or accepted by the Authority and incorporate the applicable elements and specifications contained in Table 5.2 and Table 5.3 in the ISARP.*

All trainees must successfully complete full training before they can be assigned as cabin crew. Operators shall establish training programs in accordance with the requirements of the applicable national Authority of their State/country or, in its absence, in accordance with recommendations found in the IOSA Standard Manual, Section 5, Cabin Operations and Chapter 2 Training and Qualification: www.iata.org/iosa.

5.9.1 Training Records

Operators should maintain complete and accurate records of all training undertaken by individual cabin crew. The duration and validity of training courses undertaken by cabin crew should be in line with State/country regulatory requirements or, as a minimum, as specified in the IOSA Standard Manual when no local regulatory requirements exist: www.iata.org/iosa.

5.9.2 Competency-based Training

In 2014, ICAO released its Cabin Crew Safety Training manual (Doc 10002, 1st Edition). ICAO drafted this manual with a competency-based approach for the training of cabin crew. The main benefits acquired from competency-based training for cabin crew are that the:

- Training is focused on both job performance and the adult learner
- Competencies acquired are observable and measurable
- Training is adaptable
- Training is intended to address the specialized needs of crew coordination and workload management
- Measurement of the competencies acquired can be used as a tool to improve the quality of training and to validate if current policies and procedures work or need improvement

In the modern, complex world of aviation, it is simply impossible to train for a successful outcome of an almost infinite number of possible abnormal or emergency situations. The challenge is to successfully equip cabin crew to handle the challenges of modern operations with a move from prescribed task-based training to competency-based training.

In order for cabin crew to operate safely, effectively and efficiently in the commercial air transport environment, a competency-based training program needs to identify, develop and evaluate cabin crew competencies.

The implementation of a competency-based program should enable operators to develop more effective training programs and to improve operational safety. It is advantageous to develop, train and assess competencies utilizing scenarios that are relevant to operations. Scenarios can sometimes be identified through the data collection and analysis process. In some cases, the data may highlight the importance of certain competencies in the operation, which may lead to a focus on specific areas as part of the training program.

Section 6—Communication

6.1 Authority Definitions

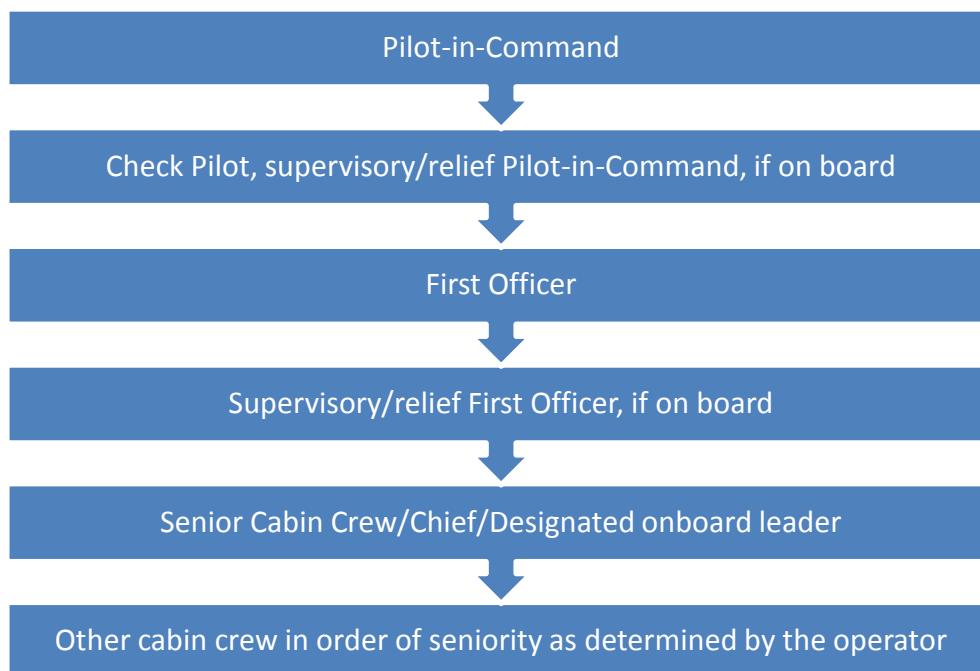
Pilot-in-Command (PIC): Has full control and authority of the operation of the aircraft, without limitation, and over the other crewmembers while on duty. The PIC is designated by the operator as being in command of the aircraft and charged with responsibility for the operational control and safe conduct of a flight. Equivalent terms: Captain, Commander.

Second-in-Command: A licensed and qualified pilot that assists or relieves the PIC; does not include a pilot that is on board the aircraft for the sole purpose of receiving flight instruction. Equivalent terms: Copilot, First Officer.

Cruise Relief Pilot: A flight crewmember who possesses a type rating limiting privileges to act as a pilot to only the cruise phase of flight or any flight crewmember assigned to perform pilot tasks during cruise flight. The role of the Cruise Relief Pilot is to allow the PIC or a copilot to obtain planned rest. Equivalent terms: Cruise Relief Officer, Relief Pilot, Relief Flight Officer.

6.2 Chain of Command

In case of incapacitation of any crewmember(s), the recommended chain of command is:



6.3 Common Language

IOSA FLT 3.1.1 *The Operator shall ensure the designation of a common language(s) for use by all flight crew members for communication:*

- i. On the flight deck during line operations;*
- ii. If the Operator conducts passenger flights with cabin crew, between the flight crew and cabin crew during line operations;*
- iii. During flight crew training and evaluation activities.*

Operators should determine their common language and ensure that it is used during training as well as normal, abnormal and emergency operations.

Language testing should be considered at the cabin crew recruitment stage in order to determine a satisfactory level of understanding and fluency before commencement of training.

6.4 Signals and Commands

IOSA CAB 3.3.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have a policy and associated procedures that define a sterile flight deck during critical phases of flight, to include:*

- i. A procedure for communication between the cabin crew and flight crew;*
- ii. A procedure for notification of the flight crew in the event of an emergency.*

IOSA FLT 3.13.3 *If the Operator conducts passenger flights with cabin crew, the Operator shall have procedures for communication and coordination between the flight crew and the cabin crew to ensure a combined and coordinated process in addressing:*

- i. Passenger safety information;*
- ii. Cabin readiness prior to first aircraft movement, takeoff and landing;*
- iii. If applicable, arming or disarming of cabin entry door slides;*
- iv. Preparation for an encounter with turbulence;*
- v. Flight or cabin crew member incapacitation;*
- vi. Emergency evacuation;*
- vii. Abnormal situations;*
- viii. Emergency situations. (GM)*

Operators should determine the methods by which cabin crew and flight crew will communicate significant operational events in normal, abnormal and emergency situations. Events that require coordination between flight and cabin crew include, but are not limited to:

- Door closure, arming, disarming and opening
- Prior to movement on the ground
- Verification of Cabin Secure checks/security searches before departure, landing and during turbulence
- Prior to entering the active runway for departure
- Cabin crew to be seated for takeoff/landing
- Cabin crew alert (e.g., notification of abnormal and emergency situations)
- Prior to commencement of descent

Signals and commands relating to these events may comprise verbal communications or visual cues using cabin crew call systems (i.e., interphone) or cabin ordinance signs.

Cabin crew should be competent in the use of the interphone and the procedures used for calling the flight deck, receiving calls from the flight deck, and handling calls between members of the cabin crew under normal, abnormal and emergency situations.

Procedures for signals and commands must take into account the need to prevent interruption of the flight crew at critical stages of flight. See [12.7 Sterile Flight Deck](#).

6.5 Read-Back Instructions

Repeating or “read-back” instructions are a good communication strategy for both face-to-face and interphone communications to ensure effective and correct communications. When the flight crew communicates a message, the cabin crew should read back or repeat the instructions to prevent error. This method is a means of confirming information and ensuring it is accurately understood.

For example, if the Pilot-in-Command warns the crew that turbulence will be encountered in 15 minutes, the cabin crew may understand 50 minutes, leaving them less time than they think to secure the cabin. When the cabin crew read back the instructions and state 50 minutes, the Pilot-in-Command will hear the error and reconfirm the correct time.

6.6 Cooperation and Coordination

Effective cooperation and coordination is the hallmark of good teamwork. High mutual assistance, low discord and timely communication and feedback all contribute towards effective cooperation and coordination. Cooperation and coordination assist crew to function effectively, make decisions and mitigate problems as they arise.

It is also important to coordinate and cooperate with other airport and airline team members, including maintenance personnel, catering staff and ground staff.

Communicating with passengers will make them feel comfortable and able to communicate problems to the crew.

Section 7—Operator Policies

7.1 In-flight Entertainment (IFE) Systems

Whenever the aircraft is fitted with an In-flight Entertainment (IFE) system, the operator will determine its policy regarding when to offer such services on board in accordance with national regulations. Where the use of IFE is permitted while on the ground, the operator is normally required by the regulator to complete a risk assessment to demonstrate that hazards and risks are mitigated effectively.

Such hazards include, but are not limited to:

- Potential obstruction to egress due to trailing headphone cables
- Reduced situational awareness of passengers who are distracted by audio/visual IFE

7.2 Personal Transportation Devices

Personal Transportation Devices (PTDs) powered by lithium batteries are for recreational use and are not to be confused with wheelchairs or other similar mobility aids for use by passengers with reduced mobility. Devices carried by such passengers may be accepted for carriage in accordance with restrictions detailed in the IATA Dangerous Goods Regulations section 2.3.2.4.

PTDs have a variety of trade names and may differ in their operation, but where they are powered by rechargeable lithium batteries, they are classified as Portable Electronic Devices (PEDs) for the purpose of carriage on board aircraft and are included in the IATA Dangerous Goods Regulations section 2.3.4.7. Some devices are designed as cabin baggage or have wheeled cases, but are also classified as PEDs (Ref. [7.5.2](#)).



Examples of device types and names include:

- Segway™ and mini-Segway™
- Hoverboard™
- Self-balancing scooter
- Airwheel™
- Solowheel™
- Balance wheel

7.2.1 Operators' Experience and Risk Assessment of PTDs

Most operators that have been exposed to PTDs have completed safety risk assessments to determine whether to accept them for carriage. Many have refused their carriage based on the following risks and observations:

- Damage may occur while removing the battery, resulting in thermal runaway and ignition of the device.
- Many PTDs are too large to submerge in a container following thermal runaway. Therefore, it is not possible to carry out effective lithium battery firefighting procedures.
- PTDs generally contain batteries with power ratings of 160 Watt-hours (Wh) or more, making them too large for carriage as checked and carry-on baggage.
- PTDs are often heavier and larger than the maximum permitted carry-on baggage allowance and do not allow for safe stowage in the cabin, as they may cause injury if they fall from overhead stowage bins.
- PTD documentation often states a power rating of marginally below the 160 Wh maximum permitted for carriage (e.g., 158.4 Wh).

7.2.2 Recommendations regarding PTDs

7.2.2.1 Airlines

It is recommended that the following be considered before determining a policy on whether to permit PTDs for carriage:

- These items should be restricted to carry-on baggage only and operators should assess whether this is permitted in accordance with their stated carry-on baggage size and/or weight restrictions
- Suitable stowage locations that will prevent the item from falling or causing injury should be provided
- The availability of appropriate firefighting equipment, including containers to submerge the device in water, if necessary

When permitted for carriage, these devices should not be charged on board and should be protected from accidental activation either by being in their original packaging, or by taping over the on/off switch.

Airlines should consider developing passenger awareness information for display on websites, social media, self-service check-in kiosks and check-in counters to alert passengers to the conditions applicable for the carriage of PTDs powered by lithium batteries.

Cabin crew should be made aware of the restrictions for carriage and how to determine the battery rating. They should offload any devices that do not comply.

7.2.2.2 Airports

At airports in areas where PTDs are readily available or popular, operators may wish to bring this matter to the attention of the airport operator's committee so that a coordinated and consistent message is presented to passengers. The airport operator's committee may also wish to coordinate with the airport operator to ensure that on-airport retailers are made aware of the restrictions that apply to the carriage of these devices by passengers, and to restrict or prohibit the sale of devices with a lithium battery rating of 100 Wh, or more, to passengers.

Passenger handling staff and ground service providers should be made aware of the restrictions for carriage and how to determine the battery rating in order to ensure that the devices are handled correctly.

7.3 Portable Electronic Devices (PEDs)

IOSA CAB 3.4.8 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall have guidelines and associated procedures to ensure control of the use of portable electronic devices in the passenger cabin.*

Permission to operate Portable Electronic Devices (PEDs) on board aircraft varies as it is regulated by each applicable national aviation Authority. However, all authorities share a common concern regarding the possibility of Electromagnetic Interference (EMI) with aircraft frequencies by the transmitting function of PEDs, particularly in critical phases of flight.

All operators must determine their own PED policy, which is accepted by the regulator. If EMI is suspected at any time, the Pilot-in-Command will instruct passengers to turn off all PEDs.

7.3.1 Transmitting and Non-transmitting Electronic Devices

Transmitting devices (T-PEDs) are designed to transmit or receive data through various technologies, including cellular, wireless (Wi-Fi) and other radio frequencies (i.e., Bluetooth® and infra-red).

Non-transmitting devices (PEDs) are not designed to transmit or receive data, but can still emit EMI at low levels.

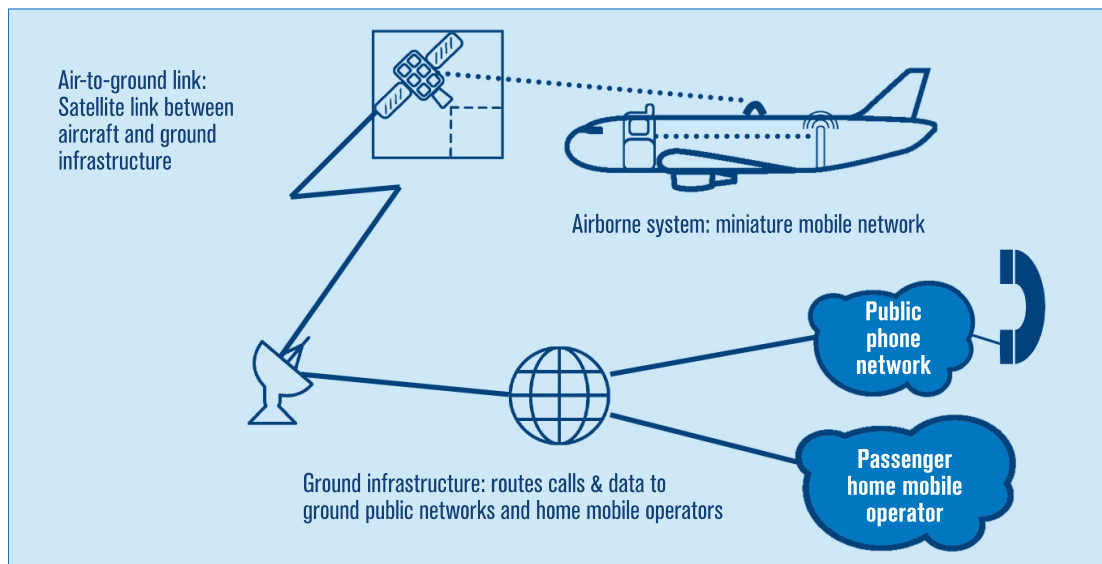
Category	PED	T-PED
Description	Non-transmitting Portable Electronic Devices	Devices designed to transmit or receive data using Wi-Fi, Bluetooth™, SMS, MMS, etc.
Examples	<ul style="list-style-type: none"> Cameras Watches Heart pacemakers Hearing aids Music players Some electronic games 	<ul style="list-style-type: none"> Mobile telephones Tablets Laptop computers Radio transmitters/receivers <p><i>Many T-PEDS allow the user to disable the transmitting function (e.g., flight mode, flight safe mode, airplane mode). When disabled, the T-PED becomes a non-transmitting device.</i></p>

7.3.2 Use of Picocell System for Mobile Phones in Flight

Mobile phone use is normally prohibited during all phases of flight unless the device is set to flight safe mode and becomes a non-transmitting device. Some operators allow cell phone use prior to takeoff until the aircraft door is closed or after landing once the aircraft has left the active runway.

Onboard connectivity can be made available through the use of a picocell system (a small mobile base station that improves in-aircraft cellular coverage) to connect calls/data by Wi-Fi or an airborne Internet access system via satellite to a designated global ground infrastructure, while preventing all other cellular communication to the ground

The picocell system is able to send and receive phone calls, SMS messages and email messages as well as provide Internet access while flying at altitudes above 3,000 meters, or 9,840 feet. Cabin crew are able to turn off the system or restrict usage to text services like SMS, in accordance with the operator's policies and procedures. Some States restrict access to such systems while in their airspace and coverage in some countries may be inconsistent.



7.3.3 Use of Portable Electronic Devices on Board

In recent years, proliferation and daily use of lightweight/small handheld PEDs such as mobile phones, smartphones, e-readers, tablets, laptops and media players has been the catalyst for the operator industry to call for the reassessment of regulations on the use of PEDs on board aircraft. Lightweight/small handheld PEDs are devices that can be held firmly in one hand and leave the other hand free to unbuckle the seatbelt.

An operator should obtain approval from its national aviation Authority if it provides, or intends to provide, a PED as part of its IFE or other services on board the aircraft.

The following guidance materials have been issued to assist operators and regulators in determining acceptable policies to extend the use of PEDs, including during critical stages of flight:

[ICAO Circular 340-AN198](#) (2014)

[FAA InFO13010](#) (28th October 2013)

[FAA InFO13010 SUP](#) (9th June 2014)

[EASA AMC1 CAT.GEN.MPA.140](#) (24th April 2014)

[Transport Canada Advisory Circular \(AC\) 700-005](#) (15th April 2014)

7.3.3.1 Technical Analysis

Prior to an operator allowing the extended usage of PEDs on board, thorough technical analyses and tests are required to be conducted in order to obtain the regulator's approval. The responsibility for determining if passenger-operated PEDs will cause interference is placed on the operator.

The operator's engineering and technical teams are required to fulfill all of the requirements as per the guidance offered by its regulator, including immunity, analysis and mitigations for eligible phases of flight. The implementation plan needs to include all relevant SOPs described in the guidance and/or safety alerts produced by the regulator.

In the absence of any local regulator guidance, operators should refer to the guidance material of ICAO, the Federal Aviation Administration (FAA) or the European Aviation Safety agency (EASA) prior to seeking approval from the local regulator.

7.3.4 Risk Assessment - PEDs

In addition to the technical aspects, matters related to cabin safety are to be considered when determining the policy on the use of PEDs. These should be risk-assessed as applicable to each operator's operation and for each phase of flight and include, but not be limited to:

Hazards	Outcomes/Risks
Passenger distraction during safety briefings	Incorrect or inadequate response during emergency
Passengers not hearing cabin crew commands in emergency evacuation due to wearing of headsets	Delay to egress during evacuation
Trailing cables from devices	Entanglement and delay to egress during evacuation
Loose/unsecured devices during critical stages of flight or emergency situations	Injury to crew and passengers
Inadequate securing of larger PEDs	Damage to PED and/or lithium battery falling from seat pocket or other unapproved stowage
PEDs falling into seat mechanisms (particularly articulating seats) and being crushed	Lithium battery fire due to damaged battery
Antisocial behavior by passengers (e.g., using speakers instead of headsets, talking loudly on telephone)	Increase of unruly passenger incidents
Unauthorized filming of abnormal/emergency situations on board	Potential for negative publicity when shared on social media and other websites
Inconsistent policies with partner operators	Passenger confusion and increase of noncompliance with safety procedures
Policies differing between aircraft types according to systems fitted (e.g., picocell on one type, but not another)	Passenger confusion and non-compliance. Cabin crew confusion and/or difficulty in enforcing compliance.

7.3.4.1 Risk Management - PEDs

Having identified the hazards associated with PEDs and their potential consequences, the operator may wish to identify suitable mitigations so that PEDs are less likely to impact safe operations.

In most cases, the regulator will need to be satisfied that the operator has considered the implications of its policy and taken steps to ensure that risks are managed effectively.

The following list of considerations is not exhaustive, but gives suggestions on options that might be used in preparing the most suitable policy for use of PEDs.

Risks	Potential mitigations
Disputes between passengers	Consider a policy to restrict the use of mobile telephones/voice-over-Internet in order to avoid excessive noise during times when others wish to sleep. Consider producing a courtesy guide to inform all passengers of the policy and publicizing it effectively.
Crew distraction	Consider applying restrictions on flight and cabin crew use of PEDs while on duty.
Inappropriate or delayed passenger response during evacuation	Consider using visual cues such as cabin crew actions or on-screen messages on the IFE system.
Trip/entanglement hazards due to headsets and associated delay to egress during evacuation.	Consider carrying out evacuation demonstrations to determine the likelihood of entanglement. Consider issuing company headsets with shortened cables to minimize the risk of long cables. Consider restricting the type of headsets to in-ear bud-types rather than overhead types to reduce the risk of entanglement around the neck.
Passenger inability to hear crew evacuation commands due to use of headsets	Consider training crew to use visual action commands to supplement verbal commands. Consider positioning of crew during an evacuation to ensure they are more likely to be seen as well as heard.
Filming on board	Consider a policy of prohibiting filming on board without the permission of crew.
Passenger confusion and misunderstanding of policy	Consider using media such as safety cards, supplemental information cards, in-flight magazines, IFE system, websites, emails and e-tickets to publicize the policy to passengers.
Cabin crew confusion on policy details	Consider additional cabin crew training, awareness and newsletters.

7.3.5 Permitted, Restricted and Prohibited Portable Electronic Devices

Most current regulations permit the unrestricted use of non-transmitting PEDs. In general, any other device that the operator has determined will not cause interference with the navigation or communication system of the aircraft may also be permitted.

T-PEDs should only be permitted where PED tolerance testing has been carried out, or it has been otherwise demonstrated that they are safe to use. PED tolerance testing may not address all transmitters, so it may be necessary to prohibit some devices unless additional analysis or testing is completed to permit their use.

Unmonitored charging of devices using onboard power supply should not be encouraged due to risks involved with overheating lithium batteries. If allowed, their charging shall be restricted during taxi, takeoff and landing as effective cabin crew response to battery overheating is more limited during critical stages of flight.

7.3.5.1 Sample List of Permitted, Restricted and Prohibited Devices

Permitted at any time	Restricted –used during non-critical stages of flight.	Prohibited
<ul style="list-style-type: none"> Electronic watches Cameras Portable voice recorders Hearing aids Heart pacemakers Approved medical portable electronic devices (MPEDS), as determined by the operator. 	<ul style="list-style-type: none"> Mobile telephones and smartphones with a flight safe mode activated Laptop computers and tablet devices with Wi-Fi/Bluetooth disabled E-readers with Wi-Fi disabled Electronic games with Wi-Fi disabled/not installed Digital media players 	<ul style="list-style-type: none"> Mobile telephones without flight safe mode Paging devices AM/FM transmitters and receivers (including televisions, radios) Remote-control devices (customer-owned) VHF scanners/receivers Two-way transmitters such as walkie-talkies, amateur radios Citizen Band (CB) radios

7.3.5.2 Additional Risk Assessment - Regulator

Where an operator has carried out the required risk assessment to the satisfaction of the regulator, lightweight/small handheld non-transmitting devices may be permitted to be used during critical stages of flight, provided they are secured effectively in a manner so as not to cause injury or obstruction (e.g., held firmly in one hand or in the user's pocket, allowing the other hand to be free to release the seatbelt).

Larger devices such as laptops and notebooks that are unable to be held in one hand should remain switched off and stowed in approved locations during critical stages of flight. Seat pockets might not be approved to hold the weight of a laptop, therefore, risk assessments should include appropriate stowage locations for such devices.

7.3.5.3 Aircraft Fitted with Onboard Connectivity

Where an operator has installed onboard Wi-Fi or mobile telephone connectivity, PED tolerance testing is normally carried out at installation. On these aircraft, transmitting devices with cellular and Wi-Fi capability may be used provided the associated connectivity system is activated.

7.3.6 Medical Portable Electronic Devices

See [18.5](#).

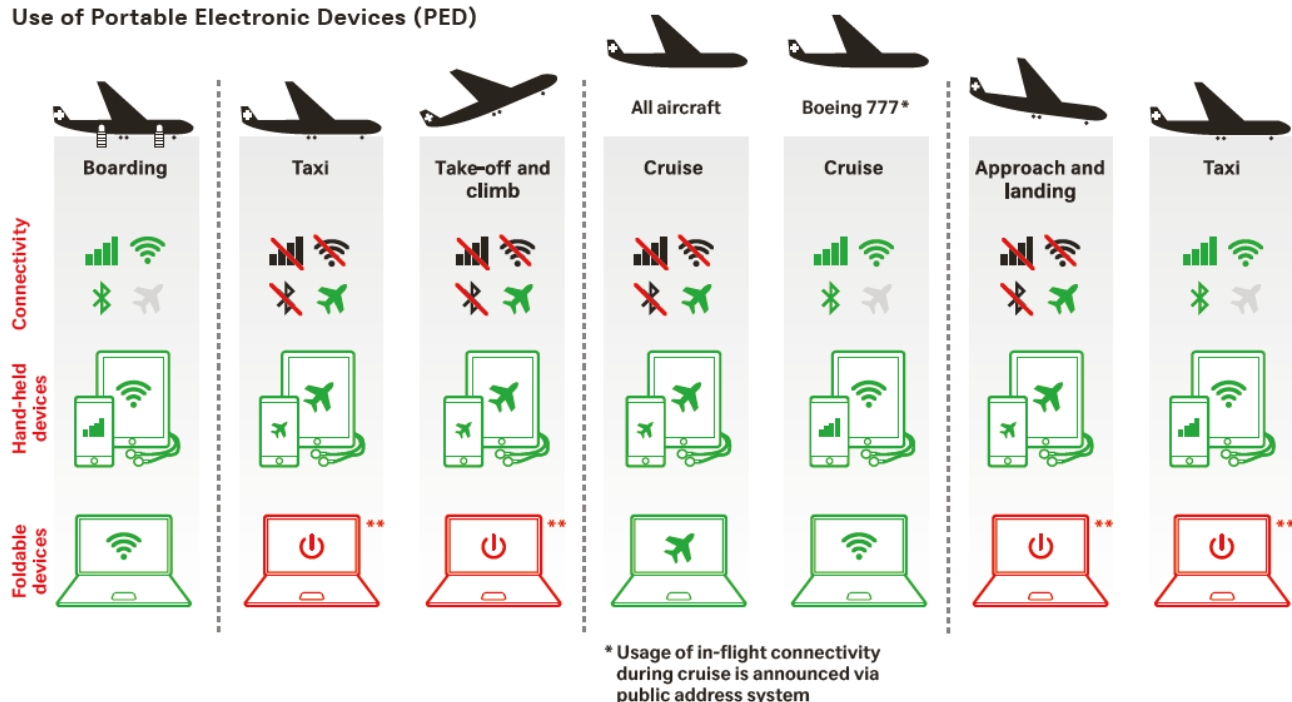
7.3.7 Monitoring PED Use in the Cabin

As it is not possible for cabin crew to verify that each individual device is set correctly in the appropriate flight mode at all times, cabin crew are expected to inform passengers of the operator's policy on the expanded use of PEDs rather than enforce it. During the cabin secure checks for takeoff and landing, if a passenger is identified with a T-PED, cabin crew may request the passenger to check that the device is in Airplane Mode. If the passenger is unable to confirm whether the device is in Airplane Mode or if Airplane Mode on the device cannot be enabled, the passenger should be instructed to switch the device OFF.

7.3.8 Passenger Awareness of PED Policy

Operators should use easily recognized symbols and signs to advise passengers of their policy on the acceptable use of PEDs on board. Visual information may be presented through a variety of onboard media types, including safety cards, in-flight magazines, video presentations and placards.

Use of Portable Electronic Devices (PED)



Example of Passenger Information (credit: Swiss International)

7.3.9 Low-Visibility Operations

All PEDs should be switched off during Low Visibility Operations (LVOs) on aircraft types that are not determined to be tolerant of EMI interference. The Pilot-in-Command shall advise the SCCM to make a public announcement (PA).

Sample PA:

"The Pilot-in-Command requires all personal electronic devices, including mobile phones and smartphones, tablets and e-readers, to be switched off and stowed. You may switch your device back on only when instructed to do so by the cabin crew."

7.3.10 Suspected Electromagnetic Interference Report

Should the Pilot-in-Command suspect EMI at any time, they will prohibit the use of all PEDs. An entry should be recorded in the Technical Log and an Air Safety Report should be completed. The operator should have established procedures to terminate the operation of a device suspected of causing interference with aircraft systems.

Once safe to do so, cabin crew should assist with investigation of the device suspected to have caused the interference.

Where the suspected device is able to be identified, crewmembers should:

- Instruct the passenger(s) to terminate the use of the suspected device
- Prohibit the use of the device
- Recheck the aircraft systems and equipment
- Photograph the suspected PED, if possible, and submit with the report

The Pilot-in-Command will report incidents of EMI interference using the operator's Air Safety Reporting system, including the following additional information:

- Effects on aircraft systems, including radio frequency, identification, duration, severity and other pertinent information
- Actions taken by crew to identify cause or source of interference
- Description of suspected device, including brand name, model, serial number, mode of operation, device location, International Mobile Equipment Identity (IMEI) number, if applicable, or any other type of certification
- Name and contact details of the owner/user of the device

7.3.11 Publication of PED policy

The operator's policy on the use of PEDs on board should be published in the following locations, as applicable:

- **Public:** Website
- **Internal:** Operations manuals, flight and cabin crew training courses and documentation
- **Passenger:** In-flight magazine, safety briefing cards, onboard safety announcements, safety video

Other methods of communication of the policy may also be considered (e.g., email, newsletters, e-tickets, SMS messaging)

7.3.12 Cabin Crew Training

Cabin crew training should include training on the operator's policies and procedures for the use of both PEDs and T-PEDS.

Initial training should include:

- The differences in technology (i.e., transmitting and non-transmitting devices)
- Which device type can be used in each phase of the flight
- Restrictions on use
- Reasons why they can only be used during certain phases of flight
- Courtesy guide and specific company policy
- Procedural variation between aircraft types, if any
- Human factors
- Conflict management to de-escalate any event
- Incident reporting

Recurrent training should include:

- Any revisions to the operator's policy (how to interpret them and apply them)
- Recent examples of known occurrences of interference with aircraft systems, if any
- New devices cabin crew may encounter on board, particularly new technologies that may be forbidden for use on board

7.4 Onboard Smoking Policy

IOSA CAB 3.4.11 *If the Operator conducts passenger flights with cabin crew, the Operator shall have guidance and associated cabin crew procedures to ensure passengers:*

- Are informed and receive instruction on all restrictions pertaining to onboard smoking;*
- Comply with the Fasten Seat Belt sign and, if applicable, the No Smoking sign.*

Most, if not all, airlines prohibit smoking on board. Passengers should be informed of all restrictions pertaining to onboard smoking. In addition, cabin crew should inform passengers that their compliance with the "No Smoking" ordinance signs, placards and instructions is required at all times. Passengers should also be advised that, for their safety, lavatories are fitted with smoke detectors and that tampering with a smoke detector is a serious offence that may lead to prosecution.

Operators should undertake all essential safety precautions to bring to passengers' attention the restrictions on smoking. Such precautions should include:

- Announcements over PA systems prior to each takeoff and at regular intervals during the flight
- Individual seat messaging where this option is installed in the IFE system
- Installation of smoke detectors in all lavatories to provide an alert of fire
- Installation of "No Smoking" placards on each side of lavatory doors
- Installation of "No Cigarette Disposal" placards on or near each waste disposal receptacle in all lavatories
- Installation of ashtrays on or near the entry side of all lavatory doors

Passengers should also be made aware via PA, passenger awareness material or the IFE that triggering, tampering or disabling a smoke detector is a serious matter that may lead to diversion of the aircraft and/or, depending on the jurisdiction, prosecution leading to a fine or imprisonment.

7.4.1 Electronic Cigarettes

Operators should determine their policy on the carriage and use of electronic cigarettes, e-cigars and vaporizers taking into consideration:

- Dangerous goods regulations
- Local restrictions at countries of origin and destination
- Smoking regulations on board aircraft
- Recommendations and guidance from regulators

Where not forbidden by local restriction or custom at origin or destination, these devices may be accepted on board in the passenger's carry-on baggage or on the person, provided they remain individually protected, stowed and unused at all times. Charging on board, whether from an aircraft or personal power supply, is not permitted.

Where smoking is forbidden on board, the use of electronic or simulated smoking or vaping materials should also be prohibited for both passengers and crew at all times. Permitting the use of these devices on board could insinuate that smoking is allowed and result in passengers attempting to smoke real cigarettes or other smoking products, resulting in increased unruly passenger events.

As electronic cigarettes must not be carried in checked baggage, operators should develop procedures to ensure passengers are advised to remove electronic cigarettes from their carry-on baggage in the event of a gate check operation (e.g., valet/sky check) or in cases where excess carry-on baggage must be placed in the hold.

Operators are encouraged to communicate their electronic cigarette policy to passengers as widely as possible, including, but not limited to:

- On their website
- During ticket purchase
- At the check-in process (e.g., online, kiosks, check-in agents)
- Through any other means already established to inform passengers of dangerous goods regulations and related company policies

The following references may be useful in developing a policy regarding electronic cigarettes:

International Civil Aviation Organization (ICAO), Electronic Bulletin (EB) 2014/074 AN 11/2.1, [Dangerous Goods Carried by Passenger and Crew — Incidents Related to Electronic Cigarettes](#) (December 10, 2014).

Federal Aviation Administration (FAA), Safety Alert for Operators (SAFO) 15003, [Fire Risk of Electronic Cigarettes \(e-cigarettes\) in Checked Baggage](#) (22 January 2015).

International Air Transport Association (IATA), [Dangerous Goods Regulations](#).

US Department of Transport (DoT) Final Rule – [Use of electronic cigarettes on aircraft](#) (2 March 2016)

7.5 Carry-On Baggage

IOSA CAB 3.2.3: *If the Operator conducts passenger flights with cabin crew, the Operator shall have a procedure to ensure the cabin crew verifies that:*

- Passenger and crew baggage in the passenger cabin is securely stowed;*
- If applicable, cargo packages and/or passenger items being transported in passenger seats are properly secured.*

The IATA Baggage Reference Manual contains information on the rules and industry-accepted procedures relating to the carriage of baggage: <http://www.iata.org/publications/store/Pages/baggage-reference-manual.aspx>.

For the purpose of this publication, the term “carry-on baggage” is synonymous with unchecked baggage, hand baggage and cabin baggage, and the terms are used interchangeably.

The IATA Passenger Services Conference Resolutions Manual contains all IATA Resolutions and Recommended Practices (RPs) and can be purchased from: <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>. RP1749 pertains to carry-on baggage.

7.5.1 Contents of Carry-on Baggage

Passengers travel with a multitude of items in their carry-on baggage for various reasons. When removing passengers’ carry-on baggage for stowage in the aircraft hold, passengers should be asked to verify the contents in order to ensure that dangerous goods, which may only be carried in the cabin, are not relocated to the aircraft hold.

7.5.1.1 Personal Effects

The key items passengers need for their journey and will most likely have on their person or in their carry-on baggage are personal effects, including:

- Passport or identity documents
- Cash and/or credit/debit cards

- Personal electronic devices
- Ticket and travel documents
- Medicinal items and toiletries
- Valuable items

Passengers will usually want to carry toiletries or medicinal articles with them. In order to pass through security checkpoints, the volume of liquids, non-solid foods, gels and pastes is limited typically to 100ml/100g/3.4 oz per item with a combined total of not more than 1 litre/quart.

Personal electronic devices include mobile telephones, tablets, laptop computers, games and toys. As many of these devices are powered by lithium batteries and are often expensive, they are usually carried in carry-on baggage rather than checked into the hold.

Some items (e.g., musical instruments, religiously significant items or artwork) are considered too valuable to be carried as checked baggage and passengers may wish to purchase space for these in the passenger cabin. Not all airlines will accept such items for carriage, but where they are accepted, specific conditions must be met in relation to their stowage on board. (Ref [7.5.9](#))

7.5.2 Motorized Carry-on Baggage

Motorized carry-on bags are identified as personal transportation devices powered by lithium batteries (Ref [7.2](#)).

As the function of these devices is not always obvious, airport staff and cabin crew should remain vigilant to ensure that these devices are only carried in accordance with the operator's policy and dangerous goods regulations.



7.5.3 Risk Assessment – Carry-on Baggage

Carry-on baggage can pose multiple risks in the cabin if not correctly managed:

Adverse Event	Potential Cause	Outcome/Risk
Baggage is thrown loose during turbulence	Unsecured baggage during flight Overhead lockers left open by passengers in unmonitored cabins	Crew or passenger injury/incapacitation
Baggage is thrown loose during emergency landing/ditching	Unsecured baggage or inappropriate stowage	Obstruction to egress during evacuation Crew or passenger injury/incapacitation
Passengers take baggage during emergency evacuation	Inappropriate emergency response Unfamiliarity with procedures or briefing Unclear communication during briefings and evacuation commands	Obstruction to egress during evacuation and/or injury Speed of evacuation may be reduced Injury to passengers when opening overhead compartments to obtain baggage
Baggage falls from stowage during normal operations	Passenger stowing incorrectly Overfilled stowage locations	Crew or passenger injury/incapacitation
Damage/structural failure to stowage compartments	Overfilling with overweight, multiple or large items	Broken cabin components Reduced stowage space Injury to crew and/or passengers
Heavy carry-on baggage stowed above head height	Inappropriate carry-on baggage policy Ineffective enforcement of policy	Crew or passenger injury/incapacitation
Excessive cabin baggage identified on board the aircraft before departure	Lack of stowage space Inefficient stowing of baggage during boarding Lack of available cabin crew Passenger attempts to avoid charges for checked baggage due to operator policy Seasonal climate variations on route resulting in different clothing being worn/carried	Delay to departure Departure with unsecured baggage Noncompliance of cabin crew in enforcing correct and safe stowage
Lifting excessive weights above head height	Heavy bags being lifted by cabin crew assisting passengers	Cabin crew injury or incapacitation
Obstruction of emergency equipment	Excessive carry-on baggage Emergency equipment stowed in overhead lockers	Delay to emergency response due to obstructed equipment
Excessive weight of pivoting overhead lockers	Stowage of multiple heavy items	Cabin crew injury during closure of lockers

When formulating or updating a carry-on baggage policy, operators should consider their exposure to these and other risks and determine how to mitigate them effectively. A review of the following will help mitigate some of the risks of carry-on baggage.

- Assessment of available stowage space by weight and volume. This will help determine the maximum amount of stowage space that can be used by passengers and shared among the collective carry-on baggage limits.
- Assessment of anticipated volume and weight of carry-on baggage. This could be achieved by surveys at check-in desks to identify the normal amounts that passengers carry on board.
- Offloading procedures, ensuring that dangerous goods originally intended for carriage in the cabin are not inadvertently carried in the hold.
- Labelling procedures to help identify carry-on baggage that has been verified and validated as acceptable.
- Proactive management of carry-on baggage entering the aircraft by crew and ground staff, including identifying excess at the gate and ineffective stowage on board during the boarding process.
- Proactive management of carry-on baggage at check-in and gate areas. Identifying excess before it gets to the aircraft will help ensure that pre-departure checked baggage procedures can be completed without delaying the departure.
- Passenger education and awareness.
- Safety briefings and emergency evacuation commands to reinforce the need to leave all items behind.

For further information on the effects of cabin baggage during evacuation, refer to [16.5.6](#).

7.5.4 Carry-on Baggage Allowance

IATA Recommended Practice 1749 states that carry-on baggage shall be of a size, weight and shape to fit under a passenger seat or in an enclosed storage compartment and that it may have a maximum length of 56 cm (22 in), width of 45 cm (18 in) and depth of 25 cm (10 in). These dimensions include wheels, handles, side pockets, etc. Many operators apply a smaller dimension limit.

Operators should also consider a maximum permitted weight for carry-on baggage. If the operator is considering increasing the permitted weight of carry-on baggage from an existing weight limitation, it should consider the impact on the standard weights for passengers used in the aircraft load-sheet and make adjustments where necessary.

Operators should consider their fare structure and its impact on the amount of cabin baggage that passengers may wish to carry on board. Where a checked baggage amount is added to the fare, passengers may wish to carry more into the cabin to avoid paying additional fees.

Carry-on baggage allowances may vary according to class of travel or cabin configuration. As in the case of premium cabins, a reduced number of seats provides an increased ratio of overhead stowage space per seat.

As part of their policy, operators should determine any additional personal items that can be accepted as carry-on baggage. Such items might include:

- Reading materials
- Tax free shopping items purchased after check-in
- Camera, laptop or other personal electronic devices
- Coat
- Infant food/toiletry items
- Laptop computer/bag
- Medical equipment needed for the flight

As individual operators formulate their own carry-on baggage allowance, operators with codeshare or interline agreements should ensure that passengers are made aware of the differences between the allowances of their partners.

7.5.5 Identification of Carry-on Baggage

In order to provide a means of verifying whether a piece of carry-on baggage has been submitted to the carrier at the check-in or boarding point, a carry-on baggage tag/label may be affixed to each piece of baggage that is confirmed to be of a size and weight accepted for carriage in the cabin.

7.5.6 Excess Carry-on Baggage

The operator's policy should include procedures to prevent excessive cabin baggage being carried into the cabin. Early interception of excess items will help prevent delays and inconvenience. Suggestions include:

- Identification at check-in desks, including weighing
- Identification and verification at departure gate, including baggage sizing frames

Excess carry-on baggage (including items purchased on departure), which cannot be stowed on board the aircraft, should be handled and labeled as checked baggage and stowed in the cargo hold.

Before removing excess carry-on baggage, passengers should be asked to verify the contents and ensure that items that must be carried on the person are retained. Examples of such items include:

- Passport or identity documents
- Cash and/or credit/debit cards
- Personal electronic devices
- Ticket and travel documents
- Medication that may be required during the flight
- Other high-value items

In addition, ensure that dangerous goods, such as spare lithium batteries or other items not permitted in checked baggage, are removed.

7.5.7 Passenger Awareness of Carry-on Baggage

RP1749 gives full details of what should be included in a passenger awareness campaign. Multiple methods may be considered and these should be tailored to suit the type of operation and passengers carried.

Traditional methods of publicizing a policy, such as inclusion on ticket wallets or timetables, may no longer be relevant and, in some countries, access to the operator's website may be limited or inconsistent. Operators should consider their own circumstances and ensure that carry-on baggage policies are communicated effectively.

7.5.7.1 Suggested Communication Methods

Leaflets	In-flight magazines
TV and media	Travel agencies
Ticket covers	In-flight entertainment
Tour operators	Signage at boarding gates
Frequent flyer mailings	Website
Airport authorities	Flight information displays at airports
Posters	Public address announcements
Airline sales departments	Airline call center hold message

7.5.7.2 Suggested Information to Include in Passenger Awareness Campaigns

- Size and weight limitations
- Differences with codeshare or partner airlines
- Safe stowage of carry-on baggage on board
- Dangerous goods and restricted items in carry-on baggage
- The benefits to passenger comfort and safety when carrying less carry-on baggage
- Passenger responsibilities
- The importance of leaving carry-on baggage behind during emergency evacuation

It is recommended that operators belonging to the same alliance or working with codeshare partners agree on consistent guidelines. Similarly, consideration needs to be given when passengers are connecting on to a smaller aircraft type.

Some operators have adopted an announcement during the boarding of passengers to solicit timely compliance and cooperation regarding cabin baggage. Such an announcement could include:

"May we draw your attention to the following information: There are two designated stowage areas for your hand baggage: the overhead bin and the floor space in front of you. Please use both areas, placing softer, lightweight items carefully in the overhead bins and heavier, more solid items underneath the seat in front of you. Baggage must not be left on empty seats. To help us facilitate an on-time departure, please do not block the aisle while stowing your hand baggage. For those passengers seated in the exit rows or in the first rows of the cabin, all items of hand baggage must be placed carefully in the overhead bins. Exit areas, aisles and the floor space around your feet must be kept clear of baggage for takeoff and landing."

7.5.8 Responsibilities

Responsibilities for the management of carry-on baggage should be clearly defined in the operator's policy. It should be noted that with automated check-in systems the opportunity to intercept excessive carry-on baggage is limited and the first interaction between a passenger and an airline representative may be the departure gate.

Although responsibilities may be clearly defined, teamwork and understanding of problems will help ensure a seamless approach without attributing blame. All teams should be educated in the operator policy and be provided with the necessary tools and processes to enforce it.

In the case of outsourced handling agents, the operator should ensure that its policy for acceptable carry-on baggage is clearly detailed and available for reference, as it may vary from other operators handled by the same agency.

The earlier excess carry-on baggage is intercepted, the less impact there will be on timely departure.

The following are the suggested allocation of responsibilities:

Team	Responsibilities
Check-in staff	Identify and verify size and weight of carry-on baggage at check-in desk. Label/identify bags that have been accepted.
Gate agents	Identify and verify size and weight of carry-on baggage at departure gate. Remove excessive carry-on baggage for stowage in the hold. Verify that any items of dangerous goods not permitted in the hold are removed from the baggage. Provide passenger with baggage receipt.

Cabin crew	<p>Identify and verify size and weight of carry-on baggage on board.</p> <p>Ensure that carry-on baggage in the cabin is stowed safely and effectively, making best use of available space.</p> <p>Remove excessive carry-on baggage for stowage in the hold after ensuring that items needed for the flight, including medicines, travel documents and money, are retained by the passenger.</p> <p>Verify that any items of dangerous goods not permitted in the hold are removed from the baggage.</p>
Dispatchers and turnaround staff	<p>Ensure that the aircraft hold remains open for late stowage of excessive carry-on baggage.</p> <p>Facilitate timely loading of carry-on baggage removed from the cabin.</p> <p>Record weights of carry-on baggage loaded in the hold as Last Minute Changes (LMCs) on the aircraft load sheet, if required.</p>

7.5.9 Oversized, Fragile and Special Articles

It is recommended that all items of cabin baggage be stowed in an overhead bin or other closed compartment. Where this is not possible due to the item's size, value or fragility, an operator may choose to transport special items of cabin baggage secured in passenger seats. They should:

- Be properly secured by a safety belt or other approved means of eliminating the possibility of movement under normal conditions
- Be packed or covered with approved materials to avoid possible injury to passengers
- Not impose a load on seats or the floor structure that exceeds the load limitation for those components
- Not be located in a position that restricts access to or use of any emergency equipment, exit, or the aisle
- Not obstruct any sign, placard or screen where safety information is displayed to passengers

7.6 Pets in the Passenger Cabin

Some operators will not accept animals for carriage in the passenger cabin. Other carriers may carry animals in passenger cabins under special conditions in accordance with their own company policy and government regulations.

When passengers travel with their pets (i.e., domestic dogs, cats, ferrets, rabbits, birds) in the cabin, the animal must travel in a suitable container according to IATA's Live Animal Regulations (i.e., the animal can stand in a natural position, turn around and lie down).

Containers should not exceed the dimensions for carry-on baggage and should be able to be stowed under the seat for taxi, takeoff and landing. The container must be well-ventilated, securely fastened and made of material that is leak-proof and cannot be easily destroyed by the animal inside it. Animals should not be taken out of the container at any time during the flight.

Cabin crew should avoid any physical contact with the animal and observe strict personal hygiene rules at all times. All animals, including domestic pets, are capable of transmitting a variety of diseases to humans. Therefore, they must not be stowed in close proximity to foodstuffs during any stage of the flight because of the risks of contamination. In the event that the cabin crew is required to handle animals during the flight they should:

- Wear protective gloves
- Wash their hands after handling the animal

- Report to a doctor as soon as possible after being bitten or scratched by an animal and provide information on the species and origin of the animal
- Ensure that the wound is thoroughly washed with soap and water and covered with a dry dressing until medical attention can be obtained
- Avoid contaminating skin, clothing or surfaces with the blood or excretion of animals
- Change contaminated clothing and send for cleaning as soon as possible
- Clean skin and surface contamination using a germicidal soap

7.7 Carriage of Lithium Batteries

Passengers carry a multitude of PEDs powered by lithium batteries and the majority of flights pass without incident. Operators also carry many devices powered by lithium batteries for use on board aircraft, such as within emergency equipment (e.g., portable electronic locator beacons) or within other equipment, including retail sales computers, electronic flight bags and tablet devices for In-Flight Entertainment.

IATA recommends that operators publicize the risks of lithium battery-powered devices to passengers. This can be addressed through:

- Passenger awareness campaigns
- Websites
- Check-in processes
- Departure gate announcements
- Safety cards
- Safety videos/briefings on board

Batteries on board

Safety: facts on lithium batteries



Example of Passenger Information on Lithium Batteries (credit: Swiss International)

Lithium batteries are classified as dangerous goods and are regulated for transport by air. For air transport, the provisions of the UN Model Regulations are incorporated into the [Technical Instructions for the Safe Transport of Dangerous Goods by Air](#) published by ICAO. IATA publishes the Dangerous Goods Regulations (DGR), which

incorporate all of the provisions of the ICAO Technical Instructions (ICAO TIs) together with additional operational requirements developed by the IATA Dangerous Goods Board.

Lithium batteries can be divided into two groups:

Primary (Non-rechargeable) Lithium Metal Batteries	Secondary (Rechargeable) Lithium-ion and Lithium Polymer Batteries
Used in smaller devices such as watches, calculators and cameras, or as a back-up power supply	Larger and more powerful, used in devices such as laptop computers and mobile phones

Batteries pose a unique hazard during transport because they contain stored energy which, if released through a short circuit, is capable of causing a fire. Because of their chemistry, lithium batteries also pose a chemical hazard due to the presence of metallic lithium or flammable liquid electrolyte.

7.7.1 Damaged or Faulty Lithium Batteries

Damaged or faulty lithium batteries pose a risk of ignition and PEDs require careful handling to ensure their continued safety. Charging of PEDs at any time increases the risk of ignition.

IATA recommends that operators take steps to ensure that damaged devices carried by passengers are only carried in the cabin and not used or charged on board aircraft. When cabin crew identify a passenger using a damaged device on board, IATA recommends that they advise the passenger to switch it off, disconnect it from any charging facility and stow it in a position where it can be monitored for signs of smoke or overheating.

From time to time, faulty manufacturing processes are identified that result in large scale device or battery recalls for safety reasons. Operators are required to carry out Risk Assessments as part of their Safety Management System and these require regular reviews of emerging and known risks and mitigations. Risk assessments may determine that, for example, devices are not carried in checked baggage, remain switched off at all times, or not used or charged on board.

IATA provides the Cabin Safety Private Website newsfeed for member airlines at:

<https://extranet2.iata.org/sites/cabinsafety/default.aspx> to assist in keeping its members up-to-date with emerging risks and battery recalls.

Identification of affected devices is problematic for cabin crew on board aircraft as these are often only identified by serial numbers. Recognition of a repaired or replaced device compared to a recalled device is also sometimes difficult. IATA recommends that operators emphasize the passenger's own responsibility to ensure that affected devices are not used on board and that, where doubt exists, all affected devices, whether repaired, replaced or not are prohibited from use.

7.7.2 Carriage without Prior Approval of the Operator

The provisions in the IATA DGR permit crewmembers and passengers to carry lithium battery-powered equipment in checked or carry-on baggage without prior approval, provided the battery size/rating does not exceed:

Primary (Non-rechargeable) Lithium Metal Batteries	Secondary (Rechargeable) Lithium-ion and Lithium Polymer Batteries
A lithium content of not more than 2g. <i>Batteries larger than AA size typically exceed this allowance.</i>	A Watt-hour rating of not more than 100 Wh. <i>Lithium-ion batteries in typical consumer electronic devices will not usually exceed a capacity of 100 Wh and a typical laptop computer battery has a rating of approximately 53 Wh. All new lithium-ion batteries should be marked with the Wh rating.</i>

Spare batteries for such devices are also permitted, but they must be isolated from short circuit and are only allowed in carry-on baggage. These permitted quantities are for personal use only. Batteries for distribution or sale are prohibited.

7.7.3 Carriage with Prior Approval of the Operator

In the case of larger devices, including devices for medical use, carriage with the approval of the operator with the following limitations apply:

Primary (Non-rechargeable) Lithium Metal Batteries	Secondary (Rechargeable) Lithium-ion and Lithium Polymer Batteries
For medical devices only, a lithium content of not more than 8g.	A Watt-hour rating of not more than 160 Wh. <i>See 8.7 for lithium battery powered wheelchairs and mobility devices.</i>

If installed in equipment, the equipment may be placed in either checked or carry-on baggage.

A maximum of two spare batteries for such devices are also permitted, but they must be isolated from short circuit and are only allowed in carry-on baggage.

7.7.4 Risk Assessment - Lithium Batteries

Preventing lithium battery events in the passenger cabin is important to flight safety. Operators should be aware of the requirements to implement procedures as stipulated in the IATA DGR Ref 1.4.2.1(a).

Risk	Potential Mitigations
Spare lithium batteries originally intended for carry-on baggage being carried in checked baggage due to offload/insufficient space in the cabin. <i>See IATA DGR 1.4.2 Information to Operator Employees, subsection 1.4.2.1(a).</i>	Gate agents and cabin crew should seek confirmation from passengers who surrender their carry-on baggage at the boarding gate or aircraft for loading into the cargo hold that the bag does not contain any spare lithium batteries, e-cigarettes or, if applicable to the operator's procedure, any PEDs.
PEDs becoming trapped/crushed in electrically operated seats.	Promote passenger awareness of the need to stow PEDs safely in such seats. Installation/design of additional safe stowage locations to be used during flight. Policy to isolate power and/or prohibit operation of seat if a device is known to have become trapped or lost.
Passenger carrying lithium batteries due to insufficient knowledge of operator policy.	Public awareness campaign, including: <ul style="list-style-type: none"> Website information Online or kiosk check-in warning Verbal confirmation at bag-drop Inclusion on safety briefing card Inclusion in onboard safety announcements
Overheat of charging battery during critical stage of flight when cabin crew are unable to respond.	Policy to prohibit the charging of lithium batteries at critical stages of flight.
Batteries of poor manufacture overheating while charging.	Policy to prohibit charging devices on board.

Further information can be found at:

[IATA - Lithium batteries risk mitigation for operators](#)

[UK CAA – Lithium batteries guidance for crew members](#)

[UK CAA – Lithium batteries guidance for cargo and ramp personnel](#)

[UK CAA – Lithium batteries guidance for passenger handling staff](#)

[CASA – Traveling safely with lithium batteries](#)

IATA and ICAO have developed procedures for cabin crew to address incidents involving lithium batteries and PEDs (see Appendix A and Appendix B).

7.7.5 Passenger Awareness of Lithium Batteries

IATA, in conjunction with the Dangerous Goods Board and the IATA Dangerous Goods Training Task Force, has developed three lithium battery outreach and awareness products:

- Lithium battery passenger pamphlet:
www.iata.org/whatwedo/cargo/dgr/Documents/LithiumBattery_PassengerFlyer.jpg
- Lithium battery booklet for shippers and acceptance staff
- Lithium battery awareness poster

This information is available at: www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx

For hard copies, please contact IATA Dangerous Goods at: dangood@iata.org



What's your type?

Information for Airline passengers on Lithium Batteries

For more information contact your airline or visit:
www.iata.org/dangerousgoods

Whether a lithium battery can be carried by air or not depends on its configuration and either Watt-hour (Wh) rating (for rechargeable) or Lithium Content (LC) (for non-rechargeable).
Use the following table to determine if your battery is acceptable:

Watt Hour Rating (Wh) or (Li Content)	Configuration	Carry-on Baggage	Checked Baggage	Operator Approval
≤100 Wh (Up)	In Equipment	Yes	Yes	No
	Spare	Yes (No Limit)	No	
>100 to ≤160 Wh	In Equipment	Yes	Yes	Yes
	Spare	Yes (Max 2)	No	
>160 Wh	Must be presented and carried as Cargo in accordance with the IATA Dangerous Goods Regulations			

To convert Amp-hours (Ah) to Watt-hours (Wh) multiply Ah x Voltage

The terminals of all spare batteries must be protected from short circuit by: enclosing them in their original retail packaging or taping over the terminals or separate plastic bags for each battery.

Spare batteries may not be placed in checked baggage.
Batteries contained in equipment such as laptop computers, cameras, mobile phones, etc must be switched off and measures taken to ensure that they cannot be accidentally activated when placed in checked baggage.

Examples of Lithium Batteries

- Small Lithium Batteries and Cells** include mobile phone batteries, watch batteries, MP3 player batteries and most original laptop batteries. The maximum rating for these batteries is 100 watt-hours (Wh).
- Medium Lithium batteries and cells** include some extended life batteries for laptop computers, and batteries used by audiovisual professionals. A "medium" battery provides between 100 and 160 watt-hours of power.
- Large lithium batteries and cells** are primarily those used in industry. A large rechargeable battery provides over 160 watt-hours of power. Large batteries may be found in some electric and hybrid vehicles, as well as mobility devices and scooters.

Note: Other commercially available types of batteries such as Ni-Cad (nickel cadmium), and alkaline can be carried safely in either checked or carry-on baggage provided they are adequately protected against short circuit.

7.8 Expectant Mothers

Expectant mothers are normally accepted for travel without requiring medical clearance, unless there is uncertainty regarding the progress of the pregnancy. Medical clearance is recommended when travelling less than four weeks prior to the planned date of delivery (eight weeks for multiple pregnancies) or if any complications in delivery may be expected. It is recommended that cabin crew be alerted via a note in the Passenger Information List (PIL) where medical clearance has been required.

Passengers beyond the 28th week of pregnancy should carry a medical certificate confirming that:

- The expected delivery date and that both mother and fetus are in good health
- Whether the pregnancy is “Complication-Free Single” or “Multiple “ or “Complicated”
- Appropriate “date & contact details” stamp from a qualified doctor
- Premature delivery is not expected within the planned journey, including transit and return flights

Passengers with normal pregnancies and no previous history of premature labor can travel up to the 36th week.

Cases that do not meet the above criteria should require approval from the airline, except if the passenger was missed at origin and is in transit; then, she should be cleared towards the safest/shortest route, either back to origin or onwards to next destination.

Air travel is not recommended for women within the last seven days prior to delivery and within the first seven days after delivery.

Expectant mothers should fasten their seatbelts below the stomach. When necessary, seatbelt extensions should be provided.

7.9 Passengers of Size

Within Canada, where a passenger cannot occupy a single seat due to their size, a second seat must be provided free of charge by domestic operators.

Elsewhere, it is a commercial decision for operators whether to charge full or discounted fares for a second seat.

Seatbelt extensions should be provided to passengers who are unable to fasten their seatbelt.

Cabin crew should be familiar with their operator’s policy with respect to seat allocation for such passengers so as to be able to deal effectively with any requests for seat changes on board.

7.10 Non-discrimination

IATA encourages operators to publish and maintain a policy of non-discrimination against passengers based on race, color, national or ethnic origin, age, religion, disability, sex, sexual orientation, gender identity or expression. In having such a policy, all passengers can expect to be treated fairly and equally, and travel in security free of harassment.

Cabin crew should be trained in the sensitive handling of any issue that arises on board, which may be perceived to be due to discriminatory beliefs or behavior.

Section 8—Carriage of Special Category Passengers

8.1 Deportees and Prisoners

IOSA CAB 3.4.1 *If the Operator conducts passenger flights with cabin crew, and transports passengers that require special handling, the Operator shall have a policy and associated procedures for the acceptance and onboard handling of such passengers by the cabin crew. Such policy and procedures shall be in accordance with applicable regulations and, as a minimum, address:*

- i. *Intoxicated and/or abusive passengers;*
- ii. *Passengers with disabilities or reduced mobility;*
- iii. *Passengers with injuries or illness;*
- iv. *Infants and unaccompanied children;*
- v. *Inadmissible passengers;*
- vi. *Deportees*
- vii. *Passengers in custody.*

For information relating to carriage of deportees and prisoners, please refer to the IATA Security Manual www.iata.org/publications/Pages/security-manual.aspx or contact securitymanual@iata.org

8.2 Unaccompanied Minors

Operator policies regarding the designated age of an unaccompanied child/minor (UMNR) vary; however, they are usually applicable to a child who is travelling alone and aged between five and 12 years old.

IATA Recommended Practice 1753 taken from the Passenger Services Conference Resolutions Manual contains guidance on the carriage of UMNRs.

Wherever practicable, it is recommended that UNMRs be seated close to cabin crew stations and working areas to facilitate communication with and monitoring of UNMRs.

8.2.1 Risk Assessment – Unaccompanied Minors

When determining a policy for the carriage of UMNRs, the operator should consider the following risks:

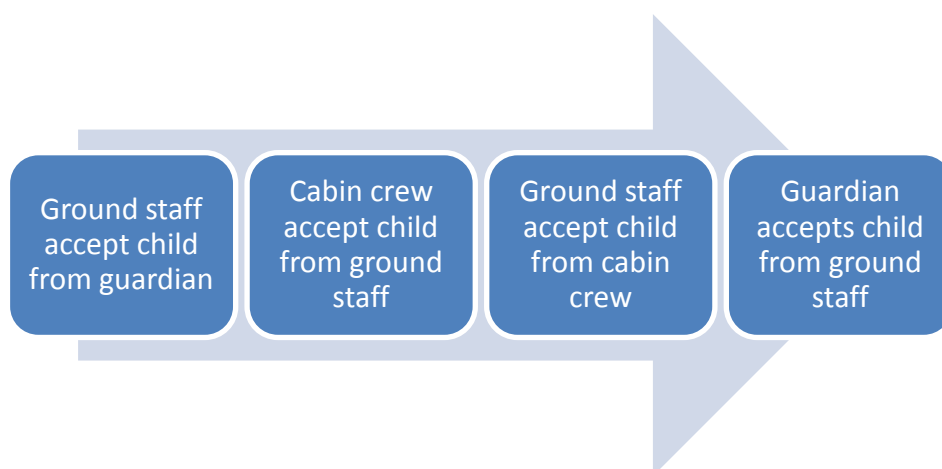
Adverse Event	Cause	Outcome/Risk
Child gets lost at airport (departure or arrival).	No available staff to escort or accompany the child through the airport. Poor tracking processes.	Litigation. Negative media and publicity.
Onboard care and monitoring of children neglected or overlooked.	Too many unaccompanied children for cabin crew to monitor during services.	Poor behavior of children. Complaints from other passengers. Endangerment of child.
Child left unattended in unsafe or unknown location/country.	Unexpected diversion or other disruption resulting in hotel accommodation without childcare.	Litigation. Negative media and publicity.
Care of child during evacuation neglected or overlooked.	Too many unaccompanied children for cabin crew to evacuate.	Slow response of child during evacuation.

Adverse Event	Cause	Outcome/Risk
Disruptive deportee/prisoner.	Child sitting next to or near deportee/prisoner.	Child feels scared or threatened.
Inefficient tracking of child.	Child delivered to wrong person on arrival.	Litigation. Negative media and publicity.
Child unable to fit own oxygen mask during depressurization	Child too young to understand requirement to fit mask.	Child becomes unconscious.

8.2.2 Tracking of Unaccompanied Minors

The operator is responsible for the safe delivery of UMNRs to the receiving guardian at the transfer station or final destination. It is recommended that operators use a form to track the movement of each UMR in its care.

The form should be completed at each relevant point of the UMR journey when transferring responsibility to others:



Use of a carbonized form with multiple sheets may assist in providing a receipted tracking system throughout the child's journey.

It is recommended that operators use a special identification tag/badge for unaccompanied minors, preferably displaying the letters UMR. The children should wear the badges during transit through airports.

Note: Where a codeshare arrangement exists between operators, the UMR policy of all operators involved in the proposed journey should be verified before making the reservation.

8.2.3 Care of Unaccompanied Minors On Board

The maximum number of UMNRs carried on each aircraft is left to the discretion of each operator. It is highly recommended that operators ensure that there is a sufficient number of cabin crew in proportion to the number of UMNRs in their care.

It is recommended that cabin crew:

- Ensure that ground staff have seated UMNRs together, in close proximity to crew areas and lavatories, but not in emergency exit rows
- Provide a special safety briefing
- Check on UMNRs frequently throughout the flight, including during meal services
- Not serve alcoholic beverages to UMNRs

Tickets and other travel documents of UMNRs, including baggage identification tag(s), guardian's permission, and health certificates, should be carried by the SCCM. When this is not possible, these documents may be retained by the UNMR, preferably in a wallet provided by the carrier.

8.3 Passengers with Children

It is recommended that passengers travelling with children be seated next to or near each other so that appropriate care can be provided during normal, abnormal and emergency situations. Wherever practicable, there should be no more than one seat row or aisle between them.

During an emergency evacuation it is unlikely that a guardian or parent will voluntarily leave the aircraft without their child and may fight against the flow of evacuating passengers to find them, so they should be seated as close to each other as possible. Some regulators require operators to ensure that, where adults are travelling in a different class of cabin than their children, efforts are made to sit them together in the event of a planned emergency.

See [16.5.8](#) for guidance on guardians evacuating with young children.

8.4 Passengers with Infants

Healthy newborn infants, provided not prematurely born, may travel following the first seven days after birth. Premature infants are subject to medical clearance depending on individual operator policies.

Infants shall be restrained for takeoff, landing and whenever the FASTEN SEATBELT sign is illuminated in an approved infant restraint device or held by an adult with the seatbelt fastened around the adult passenger only (not around the infant). Refer to separate [IATA guidance](#) for more detail on safety of infants and children on board.

Operators should refer to national aviation requirements for information on approved restraint systems, including those that require restraint of lap-held infants. Child seats used in flight must meet requirements for aviation use.

When assigning seats to passengers with lap-held infants, consideration should be given to the availability of additional oxygen masks in the Passenger Service Units above the assigned seat row(s) to ensure that there are sufficient masks for all occupants.

See [16.5.8](#) for guidance on guardians evacuating with infants.

8.4.1 Infants Reaching Two Years of Age within the Validity of Ticket

[IATA Passenger Tariff Coordinating Conference Composite Resolution](#) #012 defines an infant as follows:

"A person who has not reached his/her second birthday as of the date of commencement of travel".

Example: JED-LHR-JED travel dates 24MAY2016 JEDLHR and 01JUN2016 LHRJED

The date of birth of the minor is 26 MAY 2014 and the first travel date on the ticket is 24 MAY 2016. For pricing purposes, the passenger is considered an infant (no seat) as the key date is the date of commencement and not the date of return.

Safety regulations require a child aged two years or more to be provided with a seat; therefore, operators should ensure that ticketing and reservations processes and procedures are in place to identify and provide a seat when the infant becomes a child.

8.4.2 Bassinets and Infant Floatation Equipment

The number of bassinets available will depend on the bulkhead locations available on particular types of aircraft. Operators should inform passengers of the status and availability of bassinets on board. Effective coordination with ground staff is essential to ensure that bassinet requests are reflected in the Passenger Information List (PIL).

Bassinets should only be used during cruise flight. In other phases of flight, infants should be restrained as per State regulations. See also [9.4 Bassinets](#)

Operators must carry appropriate flotation equipment for all passengers carried, including infants. Some State regulators require that such equipment be distributed to guardians of infants before departure and that guardians be briefed on their use.

8.5 Child and Infant Restraints

IOSA CAB 3.4.5 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall have procedures to ensure that require the secure restraint of infants during the phases of flight and conditions specified in CAB 3.4.4.*

The use of an approved child restraint system (CRS) is the recommended means to secure an infant or child on board an aircraft.

8.5.1 Infant Restraint

An infant (less than two years of age) should be restrained in an approved child restraint system that meets the product limitations (height and weight) as established by the CRS manufacturer.

If the responsible person does not provide an approved infant restraint system, or if the CRS is not accepted in accordance with the airline's policy or State regulations, the infant should be held by a responsible person. The seatbelt should be fastened around the responsible person for takeoff, landing, when the FASTEN SEATBELT sign is illuminated, and recommended at all times while seated in case of unexpected turbulence. Currently, some States require a lap-held infant to be additionally restrained by a supplemental loop belt. When a supplemental loop belt is required, the operator's procedures should require cabin crew to advise the responsible person on how to use it, and the safest orientation for the infant.

8.5.2 Child Restraint

A child (two years of age or older) should be restrained in an approved child restraint system which meets the product limitations (height and weight) as established by the CRS manufacturer.

If the responsible person does not provide an approved child restraint system, or if the CRS is not accepted in accordance with the airline Authority's regulations, and if the child is able to sit upright unassisted, the child shall be restrained by a seat belt for takeoff, landing, when the FASTEN SEATBELT sign is illuminated and recommended at all times while seated in case of unexpected turbulence. Another consideration for securing a child on board could be the use of a passenger provided aviation safety harness, where acceptable to the regulator.

8.5.3 Policies and Procedures

Operators should determine a policy on the use of CRSs on board aircraft, including:

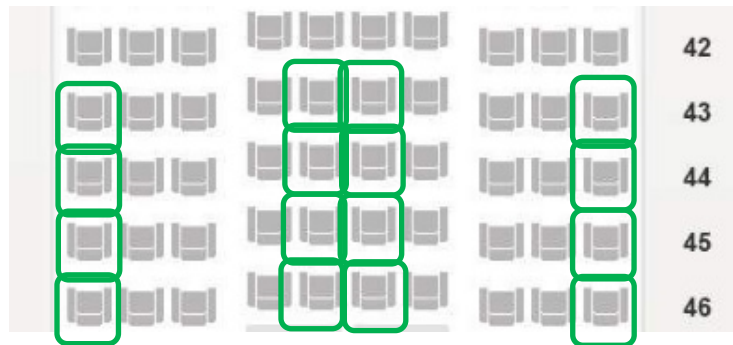
- The permitted use of CRSs
- Recognition of approved and prohibited devices
- Restrictions (if any) on the number of infants a single responsible person may travel with

Not all regulators accept foreign-approved CRSs. Acceptance is based on the applicable State criteria and should be reflected in the operator's policy.

8.5.4 Permitted Locations in the Cabin

Operator procedures should contain information on the placement of CRSs on board, including the recommended preferred location for CRSs in order to not hinder the egress of other passengers, for example:

- A window seat
- An inner seat of a center row on dual aisle aircraft provided that all persons in the row have unobstructed access to an aisle



The responsible person must accompany the infant or child occupying the CRS.

Procedures should be determined that clearly address whether the use of a CRS is permitted or prohibited on unique design seats (e.g., angled or aft-facing seats) and any locations in which the CRS is not permitted, for example:

- In an emergency exit row
- In a row immediately forward or aft of an emergency exit row (if this is stipulated as per State regulations)
- On a seat fitted with an inflatable seatbelt (unless permitted when deactivated with the manufacturer's seatbelt deactivator)
- In any location that could:
 - Prevent access to safety and/or emergency equipment
 - Block access to an aisle of the aircraft

8.5.5 Awareness of Policy

All operational staff should be aware of the operator's policy regarding the acceptable use of CRSs; therefore, it should be published in the Operations Manuals and included in the training syllabus for cabin crew and airport staff.

Reservations staff, authorized agents and passengers should be provided with access to the relevant information. It should, therefore, be included in all associated marketing material, websites and reservations manuals.

8.6 Passengers with Reduced Mobility

IATA Resolution 700 Acceptance and Carriage of Passengers Requiring Special Assistance defines a passenger with reduced mobility (PRM) as any person whose mobility is reduced due to physical deficiency (locomotory or sensory, permanent or temporary), intellectual deficiency, age, illness or any other cause of disability, and who needs some degree of special accommodation or assistance over and above that provided to other passengers. This requirement will become apparent from special requests made by the passenger and/or their family, a medical authority, operator personnel or other industry-associated persons (e.g., travel agents).

The level of assistance required from the airport and/or the operator can vary depending on the needs of the individual PRM when travelling by air.

Operators should assist PRMs in a manner compatible with the relevant safety regulations and operational considerations found in: www.iata.org/pressroom/pr/Documents/agm69-resolution-passenger-rights.pdf.

The information provided below stems from IATA Resolution 700 Acceptance and Carriage of Passengers Requiring Special Assistance and IATA Recommended Practice 1700b Carriage of Passengers with Reduced Mobility and Escorts. The Resolution and Recommended Practice can be found in the IATA Passenger Services Conference Resolutions Manual, which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>.

In addition, ICAO provides a manual entitled Access to Air Transport by Persons with Disabilities (Doc9984). To obtain a copy of this document, please visit: <http://store1.icao.int>. Please note that the ICAO manual is guidance material and should not be interpreted as regulation. A State may choose to follow or exceed this guidance.

Operators should be aware of the applicability of other State regulations regarding non-discrimination on the basis of disability, which may apply to foreign carriers, for example: USA - [14 CFR Part 382](#).

When a passenger requests assistance on board the aircraft, it is important that cabin crew are advised at the earliest opportunity, preferably no later than the preflight briefing, so that appropriate arrangements can be made.

8.6.1 Categories and Codes

Passengers with reduced mobility are categorized into various groups distinguished by the disability of the passenger requiring assistance. These are identified in operator messages by AIRIMP code:

AIRIMP Code	Description
BLND	Blind passenger – specify if accompanied by seeing-eye dog or other service animal
DEAF	Deaf passenger – specify if accompanied by a service animal
DPNA	Disabled passenger with intellectual or developmental disability needing assistance – specify details
MAAS	Meet and assist – specify details
SP	Special needs passenger – details to be optionally entered after the passenger's name on the ticket
WCHR 1	Wheelchair - Ramp – passenger can ascend/descend steps and make his/her own way to/from cabin seat, but requires wheelchair for distance to/from aircraft (i.e., across ramp, finger dock or to mobile lounge, as applicable). When a service animal is accompanying the passenger, specify the type of animal in the free text of the Special Service Request (SSR) item.
WCHS 1	Wheelchair - Steps – passenger cannot ascend/descend steps, but is able to make own way to/from cabin seat; requires wheelchair for distance to/from aircraft or mobile lounge and must be carried up/down steps. When a service animal is accompanying the passenger, specify the type of animal in the free text of the SSR item.
WCHC 1	Wheelchair - Cabin Seat – passenger completely confined to wheelchair; requires wheelchair to/from aircraft/mobile lounge and must be carried up/down steps and to/from cabin seat by trained

	personnel. When a service animal is accompanying the passenger, specify the type of animal in the free text of the SSR item.
WCLB 1	Wheelchair - Lithium-ion Battery – Requires advance notification/preparation. Weight and dimensions may be specified. Wheelchair and battery must be claimed and rechecked at each interline transfer point.
LEGL	Leg in cast - Left – for passengers with their left leg in a full cast or with a fused knee (only to be used in conjunction with SSR code MEDA)
LEGR	Leg in cast - Right - for passengers with their right leg in a full cast or with a fused knee (only to be used in conjunction with SSR code MEDA)
LEGB	Legs in cast - Both - for passengers with both legs in full casts or with fused knees (only to be used in conjunction with SSR code MEDA)
MEDA	Medical case – company medical clearance may be required. Generally not to be used for PRMs who only require special assistance or handling. However, depending on the reason for reduced mobility, it may be necessary to have a medical clearance.
OXYG	Oxygen – for passengers travelling seated or on a stretcher needing oxygen during the flight (only to be used in conjunction with SSR code MEDA)
STCR	Stretcher passenger

8.6.2 Boarding and Disembarking

PRMs who self-identify as needing assistance or additional time should be offered the opportunity to pre-board (i.e., prior to all other passengers) and disembark separately (i.e., after all other passengers). Assistance in getting on and off the aircraft should be provided promptly to PRMs.

8.6.3 Maximum Number and Requirement for Assistants

In circumstances where the number of PRMs forms a significant proportion of the total number of passengers carried on board, the number of PRMs should not exceed the number of able-bodied persons capable of assisting with an emergency evacuation.

PRMs who are not able to reach an emergency exit without assistance in a reasonable time should be escorted by a safety assistant suitable to their needs. Assistants shall be at least 16 years old as well as physically and mentally able and willing to evacuate the PRM in case of an emergency (IATA Recommended Practice 1700b).

A safety assistant is required when it is evident that, without assistance, the PRM would pose a risk to safety during an evacuation. A safety assistant must be capable of providing the help needed by the PRM to reach an emergency exit. If lifting is required in such events, an operator may require that there be more than one safety assistant.

8.6.3.1 Personal Care Assistants

Operators are not required to provide personal care assistance to PRMs. Examples of personal care assistance include the following:

- Assistance with eating
- Assistance in a lavatory or with elimination functions
- Provision of medical services, including administration of medication

When PRMs are incapable of providing basic levels of personal care during their journey, they should be encouraged, at the booking stage, to provide a personal care assistant suitable to their needs.

8.6.4 Evacuation Procedure

During an emergency evacuation, the cabin crew is responsible for the overall evacuation of all passengers, including those with reduced mobility that are not able to reach an emergency exit without assistance in a reasonable time.

PRMs requiring assistance to reach an emergency exit and who are escorted by a safety assistant should be evacuated by their assistant. Depending on the situation, cabin crew may assist (IATA Recommended Practice 1700b).

8.6.5 Seating

PRMs should be assigned seats that meet their needs, subject to safety requirements. For instance:

- A seat with a movable armrest for a passenger who cannot easily transfer over a fixed aisle armrest
- A seat that provides additional leg room for a passenger who cannot bend his/her leg(s) — although not at an emergency exit
- A seat close to a lavatory or exit

Once seats have been assigned, PRMs should not be moved from the seats that are most appropriate for them, other than for safety reasons. In the event of an equipment change, PRMs should be reassigned to an appropriate seat.

8.6.6 Accessible Lavatories

Where aircraft type, size and configuration permit, at least one lavatory should be accessible to PRMs. PRMs are entitled to assistance in moving from their seat to an aircraft lavatory; however, cabin crew are not required to lift a passenger or provide assistance in using the lavatory facilities.

8.7 Individual Safety Briefings

The presence on board an aircraft of any of the categories of passengers mentioned in 8.6.1 requires special individual safety briefings suitable to their needs, prior to taxiing. Briefings should cover safety and emergency procedures, cabin layout and any relevant specialized equipment supplied by the operator on board.

Responsibility for such personal briefings rests with cabin crew. When the passenger requiring the briefing is capable of understanding the content, cabin crew should ensure that they give the individual safety briefing to the passenger and not just to the travelling companion or assistant.

If individual safety briefings are provided, they should be done as discreetly as possible. They may be provided verbally and/or visually according to the needs of the passenger and their ability to understand.

Visually impaired passengers may be briefed verbally and braille brochures may be provided as a back-up. Hearing impaired passengers may be able to lip-read and where safety briefings are conducted by video media, closed captioning should be made available, where possible. This will help ensure that persons with sensory impairments have equal access to the same information provided to all other passengers. Upon request, aircraft operators should provide verbal or visual information about the equipment features of an aircraft, such as the location of call buttons and lavatories.

During a flight, cabin crew should continue to make periodic enquiries concerning the needs of a PRM.

8.8 Incapacitated Passengers

Acceptance of incapacitated passengers for travel may require input from:

- The operator's medical department
- The passenger's medical advisor
- The operator's reservations, ticketing and operations departments

8.8.1 Medical Clearance

Clearance from the medical department of the operator shall be required whenever the operator has received information that any passengers:

- May be suffering from any disease that is believed to be actively contagious and communicable
- Who, because of certain diseases or incapacitation, may have or develop an unusual behavior or physical condition that could have an adverse effect on the welfare and comfort of other passengers and/or crew (keep in mind that some countries may question or challenge this approach)
- Could be considered to be a potential hazard to the safety or punctuality of the flight (including the possibility of diversion and unscheduled landing of the flight)
- Would require medical attention and/or special equipment to maintain their health during the flight
- Might have their medical condition aggravated during, or because of, the flight.

Such passengers shall be subject to prior clearance for air travel by the medical department of the operator prior to travel. The operator's advisors will obtain relevant information from a licensed physician who is familiar with the passenger's physical or mental condition.

Subject to local laws on medical confidentiality, the information must be provided to another operator when seats are requested on a connecting or partner flight. Also, when an operator receives a request for travel and has reasonable grounds for doubt about the passenger's incapacitation, such operator is free to require additional medical information for clearance purposes.

Operators can deny transportation to passengers needing medical clearance. For more information, see IATA Resolution 700 which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>

8.8.2 Refusal or Removal of Incapacitated Passengers

In the event a cabin crew suspects that a passenger is not fit to travel, or may represent a danger to themselves or other passengers, they should inform the Pilot-in-Command and determine appropriate action in close coordination with ground staff.

If an incapacitated passenger is denied transportation at point of origin or at a connecting point, the person taking the decision to refuse or remove the passenger should immediately notify all down-line transfer stations and the destination station shown on the passenger's ticket, as well as the originating operator (if known), stating the reason for the refusal/removal and full details of any consequent action taken or to be taken.

8.8.3 Disembarkation of Incapacitated Passengers

Operators should make arrangements for assisting incapacitated passengers in matters relating to inbound government clearance and baggage delivery. Wheelchairs and other assistive devices checked in should, within the shortest possible time, be delivered as close as possible to the door of the aircraft. However, passengers may at their option, use a station/airport wheelchair.

8.8.4 Transit of Incapacitated Passengers

Incapacitated passengers may be permitted to stay on board during a transit stop (with their assistant/s), subject to the observance of applicable government or other safety and security rules.

8.8.5 Group Travel

Special arrangements should be made for the carriage of incapacitated passengers in groups. Such groups should be handled independently of individual incapacitated passengers. Travel by groups of incapacitated passengers should always be subject to applicable government and carrier air safety rules and regulations.

8.8.6 Medical Information Form

A completed Medical information Form (MEDIF) or equivalent is required for passengers:

- Whose fitness to travel is in doubt, as evidenced by a recent illness, disease, treatment, operation or other condition
- Whose medical condition requires provision of special services (i.e., stretcher, oxygen), other medical assistance or the carriage of special medical equipment

See a sample MEDIF in the IATA Medical Manual. www.iata.org/Medical-Manual.

8.8.7 Frequent Traveler's Medical Card

In order to facilitate air travel by regular passengers who are permanently or chronically incapacitated, any operator's medical department may provide a standard Frequent Traveler's Medical Card (FREMEC) or equivalent. Please see the IATA Medical Manual: www.iata.org/Medical-Manual.

The provision of such cards is governed by the issuing operator's terms and conditions. Whenever special assistance or handling is required, the Information Sheet for Passengers Requiring Special Assistance should be used to obtain the detailed requirements.

8.9 Medical Equipment

The following medical equipment may be provided in accordance with individual operator policies and the respective government regulations:

- Wheelchairs
- Oxygen
- Incubators
- Stretchers
- Devices for supporting limbs
- Mobility aids
- Any other specialized equipment to support incapacitated passengers

8.9.1 Wheelchairs

Electrically operated wheelchairs must be carried in accordance with dangerous goods regulations.

Collapsible/folding wheelchairs or mobility devices powered by lithium batteries may be carried in the cabin or the hold provided the battery is removed and carried in the cabin in accordance with dangerous goods regulations.

Passengers travelling with their own folding wheelchair or other assistive device may request it to be carried in the passenger cabin where storage facilities are available. Where facilities do not exist, the wheelchair or assistive device should be loaded into the baggage hold in such a way that it is easily accessible for a timely return to the passenger.

8.9.1.1 Onboard Wheelchairs

Aircraft with accessible lavatory facilities should be equipped with an onboard wheelchair.

An aircraft that is not equipped with accessible washrooms should carry an onboard wheelchair when a PRM requests one, subject to the aircraft having the capacity to stow and restrain such equipment.

Onboard wheelchairs should be designed to permit the easy transfer of an occupant and easy maneuvering of the wheelchair, and should include:

- Footrests and armrests that are moveable or removable
- An occupant restraint device
- Wheel locks or other adequate means to prevent the chair from moving during transfer or turbulence

8.9.2 Oxygen

IOSA CAB 3.4.14 *If the Operator conducts passenger flights with cabin crew, the Operator shall have a policy that defines the acceptance of passengers that have the potential need for supplementary oxygen and, if such passengers are accepted, procedures for the administration and stowing of supplementary oxygen*

Operators should formulate procedures to ensure the safe administration of oxygen, when necessary. The use of compressed oxygen should not be permitted near a source of ignition. It is, therefore, important to reinforce a no smoking policy in the vicinity.

8.9.3 Stretchers

The rules concerning the exact number of seats and the locations required for the installation of stretchers or similar devices (i.e., couches, divans) on board vary between carriers and aircraft types.

Assistants are always required for passengers needing a stretcher and they should be seated next to the passenger for whom they are caring, and occupy a seat towards the aisle.

8.9.4 Loading of Special Equipment

Special equipment required by PRMs in connection with their trip, if not carried in the passenger cabin, should be loaded in the baggage hold where it is easily accessible for timely return to the passenger. Any such item should:

- Be properly identified and tagged
- Always travel with the passenger
- Be loaded in such a way as to be readily and immediately available at transfer and destination points

For more information, see IATA Resolution 745b in the IATA Passenger Services Conference Resolutions Manual, which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>

8.9.5 Mobility Aids

Mobility aids such as canes, walking sticks and frames should be stowed during the flight in a manner as to prevent them from sliding into the aisle, obstructing access to emergency exits or becoming a dangerous projectile during an emergency or turbulence.

Electrically operated mobility aids may only be carried in accordance with dangerous goods regulations, ref 7.7.3.

8.10 Service Animals

Dogs (or other animals as approved by State regulators) brought into the cabin should be properly harnessed and remain with the passenger throughout the flight. Cabin crew and other passengers should not approach the animal. Food and water should only be provided at the owner's request. Guidelines regarding service animals on board include the following:

- Operators should not impose charges for transporting service animals.
- PRMs and aircraft operators should take the steps necessary to comply with the animal health regulations, if any, of the State of arrival, to permit the legal transportation of a service animal into the destination airport.

If the use of a service animal is required by a PRM, aircraft operators should provide seating with sufficient space so that the animal can remain on the floor at the passenger's seat, in accordance with applicable safety regulations. This may require an extra seat to be provided by the aircraft operator or purchased by the passenger in order for there to be enough floor space for the animal to lie down, without discomfort to the animal, the PRM or other passengers. The accommodation should ensure that the animal is able to carry out its duties without contravening safety regulations.

The following should be considered when determining the required amount of floor space:

- A service animal should have sufficient space to be able to assume other positions besides a "tight curl", especially on long flights.
- Entry paths of seat rows affect the space available for a service animal to lie down. An entry path for this purpose is measured from the front of the seat cushion to the back of the seat in front, and should be wide enough for the animal to get in and out of the row without having to be squeezed through the space.
- No part of a service animal should have to extend into an aisle where it could get in the way of carts or people walking.
- Sufficient space is required to allow a PRM to sit without his/her legs or feet lying on or under the service animal, which may result in injury to the person if the animal is startled or gets up quickly for any reason.

In an emergency evacuation, the service animal and the owner will evacuate normally with other passengers.

If the aircraft diverts to a country that does not permit animals to travel without quarantine restrictions, the service animal and the owner/handler must remain on board until a container is made available. If permitted landside, local quarantine procedures will apply.

8.10.1 Emotional Support or Psychiatric Service Animals

Emotional support or psychiatric service animals are usually not accepted on most domestic or international flights; however, for flights inbound or outbound of the United States, operators should be aware of the applicability of the U.S. Department of Transportation (DOT) 14 CFR Part 382, Non-discrimination on the Basis of Disability in Air as related to emotional support animals. Acceptance under this regulation usually includes the following stipulations:

- A dog is accepted as an emotional support or psychiatric service animal
- On U.S. codeshare flights (domestic, trans-border and international), an operator may be required to accept other types of emotional support or psychiatric service animals
- It is recommended that the emotional support or psychiatric service animal be harnessed and seated at the passenger's feet during the flight

For more information and to ensure compliance with the applicable regulations, refer to U.S. DOT at: www.dot.gov/contact-us

Section 9—Safety Equipment and Systems

All aircraft are equipped with various safety equipment and systems. Operators should ensure that cabin crew receive training to understand the function and operation of cabin emergency equipment and to execute associated preflight checks. All cabin crew should be familiar with the location and use of all safety equipment and systems on board the aircraft. For medical equipment, refer to 18.6.

The aircraft manufacturer will supply the Master Minimum Equipment List (MMEL) to the operator that lists the minimum systems and equipment with which the aircraft is considered safe to operate. The operator will in turn determine their own Minimum Equipment List (MEL) that details the systems and equipment required for operation and the intervals by which equipment must be repaired or replaced.

9.1 Preflight Checks

IOSA CAB 4.1.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have procedures to ensure the availability, accessibility and serviceability of aircraft cabin emergency systems and equipment for passenger flights. Such procedures shall include a preflight inspection of systems and equipment, which, as a minimum, shall be conducted by the cabin crew or, if applicable, by the flight crew prior to the first flight:*

- (i) After a new cabin crew has assumed control of the aircraft cabin;*
- (ii) After an aircraft has been left unattended by a flight crew or cabin crew for any period of time.*

Prior to each flight, the cabin crew should ensure that all safety equipment in the cabin is operative. The cabin crew should check that it is available, accessible, ready for use and secured in its designated stowage location and sealed (if applicable). A process should be in place to ensure that equipment expiry dates are not exceeded. Some operators include this in the cabin crew checks, while others require maintenance teams to check this at regular intervals.

In the event of any discrepancy, the MEL is used by the crew and maintenance/engineering personnel to verify details as to which equipment should be operational, under what conditions, for a flight to be dispatched. It also lists the items that may be missing or inoperative, as applicable to each aircraft type.

If any safety equipment is missing or deemed inoperative, the cabin crew should immediately advise the SCCM to ensure the equipment is replaced or repaired as per the MEL. The SCCM will advise the PIC who will advise engineering/maintenance personnel. Operators should publish procedures for cabin crew to report any missing or faulty equipment and ensure that all cabin crew are advised prior to departure.

9.2 Usage of Equipment

All service and safety equipment on board should be used only in accordance with the manufacturer's instructions.

After using emergency equipment, the cabin crew should always advise the SCCM and the PIC so that its use can be reported to maintenance teams for checking and/or replacement.

Depending on the item used, additional procedures may be necessary in order to stow it safely for landing until it can be replaced. Procedures should be determined in order to ensure that depleted or used equipment is not confused with serviceable equipment. For example:

- Marking it as inoperative
- Stowing in an alternative appropriate location

Note: Used Protective Breathing Equipment (PBE), such as a smoke hood, are considered dangerous goods due to the chemicals contained inside the oxygen generators. These must be handled with care in accordance with dangerous goods regulations.

9.3 Axes

IOSA FLT 4.3.9 The Operator shall ensure all aircraft in its fleet are equipped with a minimum of one crash axe or crowbar located on the flight deck and/or the passenger cabin unless constrained by certification or security requirements of the Authority and/or State.

An axe is stored on the aircraft as per regulatory requirements and security considerations. Passengers should not be able to identify the location of the axe through placarding and cabin crew should ensure that its location is not made evident to passengers.

9.4 Bassinets

Bassinets are devices intended for the comfort and safety of infants, and the convenience of guardians, and must be used in accordance with manufacturer's instructions. Bassinets are usually intended for use during flight, but not during taxi, takeoff and landing. Use of the device is restricted by infant size and weight.

An infant should be secured when using a bassinet at all times in case of unexpected turbulence. An infant should be removed from a bassinet and secured in an approved restraint device in the event of turbulence unless the bassinet type is approved for use in this situation.

9.5 Cabin Crew Stations

IOSA CAB 4.2.14 If the Operator conducts passenger flights with cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with forward or rearward facing seats at each emergency evacuation station for use by cabin crew members as specified in CAB 3.1.1. Such seats shall be located near floor level exits and fitted with a safety harness.

Cabin crew stations vary according to aircraft type. Components include, but are not limited to:

- Crew seat/spring-loaded jump seat
- Lap belt/shoulder harness (retractable/non-retractable)
- Portable emergency equipment
- PA/interphone system

9.6 Cabin Crew High-visibility Outerwear

Cabin crew should be easily identifiable in the cabin and outside the aircraft following an evacuation. It is recommended that, where an operator issues a variety of different uniforms to its cabin crew, or the uniform is not easily distinguishable from regular passenger clothing, the provision of additional high-visibility outer garments be considered for use in an emergency situation.

Some airport bylaws also require the use of high-visibility clothing by crew at any time while walking on the apron area outside the aircraft.

9.7 Doors and Exits

Doors are classified according to their size and design, and each allows a specific maximum number of seats to be installed on the aircraft.

Type	Description	Seats
Type I	Floor-level exit with a rectangular opening of not less than 61 cm (24 in) wide by 1.22 m (48 in) high, with corner radii not greater than 20.3 cm (8 in).	45
Type II	Rectangular opening of not less than 51 cm (20 in) wide by 1.12 m (44 in) high, with corner radii not greater than 17.8 cm (7 in). Type II exits must be floor-level exits unless located over the wing, in which case they must not have a step-up inside the aircraft of more than 25 cm (10 in) nor a step-down outside the aircraft of more than 43 cm (17 in).	40
Type III	Rectangular opening of not less than 51 cm (20 in) wide by 91.4 cm (36 in) high with corner radii not greater than 17.8 cm (7 in), and with a step-up inside the aircraft of not more than 51 cm (20 in). If the exit is located over the wing, the step-down outside the aircraft may not exceed 69 cm (27 in).	35
Type IV	Rectangular opening of not less than 48 cm (19 in) wide by 66 cm (26 in) high, with corner radii not greater than 16 cm (6.3 in), located over the wing, with a step-up inside the aircraft of not more than 73.7 cm (29 in) and a step-down outside the aircraft of not more than 91.4 cm (36 in).	9
Type A	Floor-level exit with a rectangular opening of not less than 1.07 m (42 in) wide by 1.83 m (72 in) high, with corner radii not greater than 17.8 cm (7 in).	110
Type B	Floor-level exit with a rectangular opening of not less than 81.3 cm (32 in) wide by 182.9 cm (72 in) high, with corner radii not greater than 15.3 cm (6 in).	75
Type C	Floor-level exit with a rectangular opening of not less than 76.2 cm (30 in) wide by 121.9 cm (48 in) high, with corner radii not greater than 25.4 cm (10 in).	55

Other types of exits may also be installed:

Type	Description
Ventral	An exit from the passenger compartment through the pressure shell and the bottom fuselage skin. The dimensions and physical configuration of this type of exit must allow at least the same rate of egress as a Type I exit with the aircraft in the normal ground attitude, with landing gear extended.
Tail Cone	An aft exit from the passenger compartment through the pressure shell and through an openable cone of the fuselage aft of the pressure shell. The means of opening the tail cone must be simple and obvious, and must employ a single operation.
Flight Deck Exit	One exit on each side of the aircraft or a top hatch. Each exit must encompass an unobstructed rectangular opening of at least 48.3 cm by 50.8 cm (19 by 20 inches) unless satisfactory exit utility can be demonstrated by a typical crewmember.

Depending on the type of door/exit and its height from the ground, an escape device is usually fitted. This could include:

- A slide or slide raft (See 9.24)
- An escape rope
- Integral stairs
- An inertia reel descent device

9.8 Emergency Lighting

IOSA CAB 4.2.11 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet with more than 9 passenger seats for which the individual certificate of airworthiness was first issued after 1 January 1958 are equipped with a cabin emergency escape path lighting system.*

The aircraft is fitted with an emergency floor path lighting system to assist passengers and crew during an evacuation in both dark and smoke-filled cabins. Other fixed emergency lighting systems include:

- Ceiling flood lights
- Exit lights
- Exterior lights
- Integrated lights on slides and slide/rafts

9.9 Emergency Locator Transmitters

IOSA FLT 4.3.13 *If the Operator conducts international flights, the Operator shall ensure all aircraft utilized for such flights, except those aircraft specified in FLT 4.3.14, are equipped with emergency locator transmitters (ELTs) as follows:*

- Aircraft with more than 19 passenger seats shall have a minimum of either one automatic ELT or two ELTs of any type;*
- Aircraft with 19 passenger seats or less shall have a minimum of one ELT of any type;*
- All ELTs shall operate on 121.5 MHz and 406 MHz simultaneously.*

Emergency locator transmitters may be fixed to the aircraft and automatically activated. Portable transmitters may also be carried and activated manually by cabin crew following an emergency landing away from an airport.

9.10 Portable Fire Extinguishers

IOSA CAB 4.2.5 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with hand-held fire extinguishers uniformly distributed throughout the passenger cabin (when two or more extinguishers are required), readily accessible at each galley not located on a main passenger deck, and if applicable, available for use in each cargo compartment that is accessible to the crew. Fire extinguishers shall be of a type that will minimize the hazard of toxic gas concentration within the aircraft.*

IOSA CAB 4.2.23B *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure lavatories on aircraft in its fleet with 20 or more passenger seats, and for which the application for certification was submitted on or after 2 March 2004, are equipped with a built-in fire extinguisher system for each receptacle intended for the disposal of towels, paper or waste.*

Cabin fire extinguishers typically contain halon 1211 (BromoChlorodiFluoromethane – BCF) or water as the extinguishing agent.

Where both types are carried on the same aircraft, they should be easily distinguishable from each other by cabin crew.

Halon replacement chemical fire extinguishers are currently being evaluated.

9.11 Automatic Fire Extinguishers

IOSA CAB 4.2.23B *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure lavatories on aircraft in its fleet with 20 or more passenger seats, and for which the application for certification was submitted on or after 2 March 2004, are equipped with a built-in fire extinguisher system for each receptacle intended for the disposal of towels, paper or waste.*

On aircraft with more than 19 seats, built in fire extinguishers are installed immediately above waste bins in each lavatory. These are designed to activate automatically when heat is present in the waste bin. Care should be taken to ensure that the action of lining the waste bin container does not obstruct the extinguisher discharge nozzles.

9.12 Non-mandatory Firefighting Equipment

Operators may choose to equip their aircraft with additional non-mandatory firefighting equipment for cabin crew use, such as:

- Protective gloves
- Fire containment devices/bags
- A crowbar

9.13 Fixed Oxygen Systems

IOSA FLT 4.3.5 *If the Operator utilizes aircraft operated at flight altitudes greater than 10,000 feet (less than 700 hPa), but pressurized to maintain a cabin altitude of less than 10,000 feet (greater than 700 hPa), the Operator shall ensure all such aircraft can descend to an altitude after a loss of pressurization that will allow continued safe flight and landing and are equipped with oxygen storage and dispensing apparatus in accordance with requirements of the Authority and, as a minimum, also ensures:*

- The aircraft can continue at a pressure altitude that will allow continued safe flight and landing;*
- An amount of stored supplemental oxygen, in accordance with the requirements of the*
- Authority, and, as a minimum, to supply:*
 - The flight crew for any period the cabin altitude would be above 10,000 feet;*
 - All aircraft occupants for any period the cabin altitude would be above 15,000 feet;*
 - The flight crew and all aircraft occupants in accordance with a) and b) as appropriate for the route to be flown.*
- For aircraft that do not operate above 25,000 feet, the amount of stored oxygen for aircraft occupants specified in ii) b) above may be reduced, in accordance with the requirements of the Authority, if at all points along the route to be flown, the aircraft is able to descend safely within 4 minutes to a cabin pressure altitude of 15,000 ft. or less.*

Aircraft are equipped with fixed oxygen systems to provide oxygen to passengers and crew in the event of a depressurization. There are two types of fixed oxygen systems, depending on the aircraft type:

- Gaseous system, supplied by oxygen tanks
- Generator-based system, supplied by a chemical reaction within each generating unit

Regardless of which system is used, in the event of a depressurization, oxygen masks will drop down from compartments in Passenger Service Unit above each row of seats or from seatbacks in front of passengers, above cabin crew seats and inside crew rest areas and lavatories.

9.14 Flashlights

IOSA CAB 4.2.12 *If the Operator conducts passenger flights with cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with a flashlight (torch) at each required cabin crew station.*

IOSA CAB 4.2.7 *If the Operator conducts over-water passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet utilized for such flights are equipped with a minimum of one life jacket or equivalent individual flotation device for each person on board, with each life jacket or flotation device stowed for easy accessibility from individual seating positions.*

In addition to the installation of emergency flashlights, some operators require cabin crew to carry their own personal flashlight to be used when the cabin is dark.

9.15 Life Vests/Jackets

Life vests/jackets are available in two sizes: adult/child and infant. These are usually found under each passenger seat or in the armrest (premium cabin), at cabin crew seats and in designated stowage locations (i.e., for infant life vests and additional adult/child life vests).

Some State regulators require operators to provide infant life vests/jackets to passengers travelling with infants and ensure that they are stowed within reach from the seated position during takeoff and landing.

Infant flotation cots may be provided in place of infant life vests/jackets. These provide an enclosed survival space for small infants in a water evacuation.

9.16 Megaphones

IOSA CAB 4.2.17 *If the Operator conducts passenger flights with cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with portable battery-operated megaphones, stowed in a manner to be readily accessible for use by crew members during an emergency. Aircraft shall be equipped with:*

- (i) One megaphone for aircraft with 60 to 100 passenger seats;*
- (ii) Two megaphones for aircraft with more than 100 passenger seats.*

A megaphone is a battery-operated loudspeaker that enables cabin crew to give instructions to passengers and crew during or after an evacuation (outside the aircraft).

9.17 Passenger Address System

The Passenger Address (PA) system enables crewmembers to broadcast an announcement to all passengers. Handsets/microphones are typically located at crew stations, while speakers are located throughout the aircraft cabin, including in the lavatories, galleys and crew rest areas.

9.18 Passenger Safety Information Cards

IOSA CAB 4.2.16 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet are provisioned with a safety information card accessible to each passenger, which contains appropriate information, instructions, restrictions or locations relevant to:*

- (i) Seat belts;*
- (ii) Emergency exits;*
- (iii) If applicable, emergency escape path lighting;*
- (iv) Life jackets (personal flotation devices), if required;*
- (v) Passenger oxygen masks;*
- (vi) Smoking restrictions.*

A passenger safety information card must be located at each seat and must be visible from the seated position. Operators may provide braille and/or large print safety cards for passengers who are visually impaired. These may be distributed to visually impaired passengers during their personal preflight safety briefing. Operators shall have a process to ensure that the correct and most up-to-date version of the safety card is installed on each aircraft. Refer to [11.14](#) for additional information on Passenger Safety Information Cards.

9.19 Passenger Seats

IOSA CAB 4.2.13 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with a seat (or berth) for each person over a specific age as determined by the State, with each seat (or berth) fitted with a safety harness, seat belt or restraining device.*

Passenger seats vary according to aircraft size and features as well as commercial considerations. In addition to the mandatory seatbelt, most have the following components:

- Seat recline button
- Reclining seatback
- Underneath stowage area for carry-on baggage
- Life vest stowage

In addition, electrically operated seats usually include:

- Recline mechanism
- Leg rest mechanism
- Other attached features such as controls for the IFE

Operator procedures should include a method for checking serviceability of seats before departure, either by maintenance personnel or cabin crew. Where any part of a seat is unserviceable, the MEL should be checked before departure to determine whether use of the seat or others in the same area are restricted.

9.20 Seatbelts

IOSA CAB 3.4.4 *If the Operator conducts passenger flights with cabin crew, the Operator shall have cabin crew procedures that ensure all passengers are seated with their seat belts (or harness or other restraint provided) fastened:*

- i. *During the taxi phases of a flight;*
- ii. *During the takeoff and landing phases of flight;*
- iii. *Prior to and/or during turbulence;*
- iv. *During an emergency situation, if considered necessary.*

All passenger and crew seats are fitted with a seatbelt (or safety harness for crew) to restrain the occupants.

9.20.1 “Y Fixing” Seatbelts

Front row seats and those positioned close to a bulkhead or similar obstruction may be fitted with a Y-belt fixing. At the point where the seatbelt is anchored to the seat, the belt splits into two separate anchorage points. This changes the dynamics of the occupant during an impact reducing the likelihood of head injury.

9.20.2 Airbag Seatbelts

Front row seats and those positioned close to a bulkhead or similar obstruction, or seats positioned at an angle from the forward-aft axis of the aircraft, may be fitted with an integral airbag within the seatbelt. The airbag is designed to deploy automatically during a significant impact, reducing the likelihood of head injury for the occupant. Airbag seatbelts are not typically compatible with the use of a Child Restraint System in accordance with manufacturer's instructions.

9.20.3 Three-point Seatbelts

Three-point diagonal fixing seatbelts are occasionally installed in premium seats, including those positioned at an angle away from the forward/aft axis of the aircraft. The intent of the three-point harness is to protect the occupant from contact with the forward side of the seat shell.

In some cases, use of the shoulder harness is not recommended for smaller seat occupants. Operators should check the manufacturer's specification and ensure compliance with certification requirements.

Passengers using such seatbelts should be made aware that when fitting a life vest/jacket while seated, there is an increased likelihood of inadvertently securing the straps around the seatbelt, or inadvertently fitting the life vest/jacket over the shoulder strap. Operators should ensure that procedures include briefing the passengers to remove the shoulder strap while fitting a lifejacket.

Operators should also review the emergency brace position for passengers using a three point harness and ensure that instruction is provided on the Passenger Safety Information Card.

9.20.4 Extension Seatbelts

Passengers who are unable to fasten a seatbelt due to their size should be provided with an extender that is compatible with the seatbelt buckle and fabric, and is approved and certified as compatible.

Seatbelt fabrics are manufactured to different standards of elasticity; therefore, passengers should not be permitted to use their own extender or one from another carrier unless it can be determined as compatible.

9.20.5 Cabin Crew Seat Harness

Cabin crew seat harnesses may vary between aircraft, but are typically four-point harnesses securing over the shoulders and across the hips.

Operators should ensure that cabin crew are trained in the correct operation of the harness to minimize the likelihood of injury during an impact. Harnesses should be installed low and tight across the hips and with fastenings positioned correctly in accordance with manufacturer's instructions.

9.21 Portable Oxygen Bottles

IOSA CAB 4.2.15 *If the Operator conducts passenger flights with cabin crew, and utilizes pressurized passenger aircraft at flight altitudes above 10,000 feet, the Operator shall ensure all such aircraft in its fleet are equipped with oxygen storage and dispensing apparatus that can be used by cabin crew members when administering supplemental oxygen.*

Portable oxygen bottles are on board in accordance with regulatory requirements. These are used post-depressurization or to be administered to those with medical problems.

9.22 Protective Breathing Equipment

IOSA CAB 4.2.6 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all unpressurized passenger aircraft in its fleet having more than 19 passenger seats, as well as all pressurized passenger aircraft in its fleet, are equipped with a portable unit of protective breathing equipment (PBE) installed:*

- i. *Adjacent to each hand-held fire extinguisher as specified in CAB 4.2.5, or adjacent to each required cabin crew station, whichever is fewer;*
- ii. *Where a hand-held fire extinguisher is located in a cargo compartment, outside but adjacent to that cargo compartment.*

Protecting Breathing Equipment (PBE) typically refers to devices used by cabin crew while carrying out firefighting procedures, i.e. smoke hoods.

9.23 Restraining Devices for Unruly Passengers

Some operators provide restraining handcuffs or ties for cabin crew to utilize in the event that an unruly passenger requires restraining. Cabin crew should be trained in their location and use.

9.24 Safety Demonstration Kits

A safety demonstration kit usually contains the following equipment:

- Seatbelt
- Life vest
- Oxygen mask
- Passenger safety information card

9.25 Slides and Slide/Rafts

Where fitted, slides or slide/rafts are installed on the inside of the cabin door, or externally inside the fuselage of the aircraft. They are designed to inflate automatically within a few seconds when opening a door in armed mode.

Escape slides and slide/rafts are usually fitted with a manual inflation mechanism that allows cabin crew to inflate the slide if the automatic system fails. Manufacturers typically recommend using the manual inflation system only if the automatic inflation fails.

Slides and slide/rafts are often fitted with:

- Slide release handle(s) to allow release from the aircraft
- Lanyard and mooring line with breakpoint

- Apron slide handles to allow their use as a slide if they become deflated

Additionally, slide/rafts are usually fitted with:

- Hand pump fitting
- Lights
- Boarding station

9.26 Life Rafts

Where slide/raft capacity is not sufficient to accommodate all persons on board, additional life rafts may be required. These are typically installed in overhead/ceiling compartments in the cabin. Operators should ensure that ditching procedures include instructions on the removal and launching of any additional life rafts.

9.27 Emergency/Survival Equipment

IOSA CAB 4.2.18 *If the Operator conducts passenger flights with or without cabin crew, and conducts flights across land areas that have been designated by the State(s) concerned as areas in which search and rescue would be especially difficult, the Operator shall ensure all passenger aircraft in its fleet utilized for such flights are equipped with signaling devices and lifesaving equipment (including, means of sustaining life) in accordance with requirements of the applicable State(s).*

Emergency/survival equipment is typically installed in a pack inside the slide/raft or life raft containing equipment such as:

- Heaving line
- Hand pump
- Canopy
- Survival kit containing:
 - Flare(s)
 - Signaling Mirror
 - Compass
 - Flashlight (water activated)

Supplemental kits containing additional equipment may also be required depending on the route and regulations.

9.28 Smoke Detectors

IOSA CAB 4.2.23A *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure lavatories on aircraft in its fleet with 10 or more passenger seats are equipped with a smoke detection system.*

Aircraft are fitted with smoke detectors in the lavatories, crew rest compartments and main deck cargo compartments on COMBI aircraft.

Section 10—Aircraft Door Safety

When formulating door operation policies, operators should ensure the following procedures are included:

Door opening – On arrival, after being left unattended (e.g., parked overnight), during maintenance, for ventilation, during servicing, etc.

Door closing – On departure, during maintenance, after servicing, etc.

Abnormal conditions – To remove obstruction when arming, to allow maintenance to re-board to resolve a fault after original departure, to allow additional catering to be loaded, etc.

Each of these situations poses differing risks and hazards that should be identified and managed through SMS risk assessment processes.

10.1 Risk Assessment – Door Procedures

Adverse Event	Cause	Outcome/Risk
Door opens rapidly with force.	Residual pressurization inside the cabin pushes door outwards with force.	Cabin crew pulled outside aircraft. Injury to ground staff or other persons outside aircraft.
Occupant falls from aircraft.	Door left open and unsecured without platform or servicing equipment in place.	Injury or incapacitation of passenger, crew or staff.
Entrapment/entanglement with door.	Loose uniform or clothing items caught in doorframe during closure. Fingers trapped in door during closure.	Injury or incapacitation.
Inadvertent deployment of slide/escape device.	Distraction during normal opening procedures resulting in opening door in armed mode. Fatigue. Human factors.	Delays and associated costs. Injury to persons outside aircraft.
Obstruction to door arming system.	Waste/debris in doorsill area	Inability to arm door for departure.
Wet floor area around entry door.	Environmental conditions (precipitation).	Slip and injury or incapacitation
Raised step at doorsill.	Misalignment of ground equipment.	Trip and injury or incapacitation

It is, therefore, recommended that procedures include:

- Responsibility of door opening and closing to be clearly assigned to either ground staff or cabin crew
- When opening or closing a door, physical assistance should not be provided by any other person

- Coordination and communication throughout door opening and closing procedures
- Ensuring that floor areas are dry and clear of debris before door closure
- Loose clothing items (i.e., ID lanyards, ties, scarves) are secured before door operation
- Ground servicing equipment or other platform are in place whenever doors are opened
- Abnormal situations such as door reopening, partial opening, etc.
- Methods to confirm that steps/air bridge are positioned correctly before door opening
- Coordination with PIC before door opening/closing
- Signs and indications of residual pressurization and actions to be taken

Section 11—Preflight

11.1 Crew Briefings

Normally, State regulations require a crew preflight briefing. The preflight briefing is an important component of flight preparations as it encourages communication and teamwork, builds rapport among crewmembers and promotes high team performance. Communication and coordination between the flight crew and cabin crew is crucial and is an integral part of normal, abnormal and emergency procedures. A joint briefing enhances the One Team – One Crew concept. This, in turn, has a positive impact on the safety of the flight.

A cabin crew preflight briefing usually comprises three different elements. These can be delivered separately or combined depending on time and facilities available:

- **Joint cockpit/cabin crew journey briefing** – Given by the flight crew providing details of any anticipated issues during the duty (i.e., weather conditions, turbulence, flight time, security information, aircraft operation limitations)
- **Safety briefing** – To reinforce the need for cabin crew to think safety at all times
- **Service briefing** – To advise of any service procedures or passenger notes relevant to the flight or route

A predetermined process is necessary to ensure a flight and cabin crew coordination briefing takes place prior to each flight, which addresses relevant safety subjects (e.g., sterile flight deck, security, aircraft technical issues, flight crew incapacitation, cabin depressurization, onboard fire, emergency evacuation, forced landing or ditching). Following SOPs ensures that all crewmembers are familiar with flight standards and expectations.

The following are suggested places where briefings could be conducted:

- In a briefing room before departure from base
- In the aircraft cabin, with no passengers on board
- In a suitable place before leaving a hotel
- Another suitable private place (e.g., screened area at departure gate, private lounge)

11.1.1 Journey Briefing between Flight Crew and Cabin Crew

It is recommended that, when operationally possible, the preflight briefing be conducted by the PIC and involve all crewmembers. When flight crew and cabin crew are not following the same flight schedule and/or transit passengers are on board, the PIC should brief the SCCM, who in turn briefs the rest of the cabin crew.

This briefing should include, as a minimum:

- Anticipated weather and flying conditions (i.e., turbulence)
- Expected flight time and altitudes
- Aircraft operating limitations
- Any defective/inoperative equipment that could affect the flight/cabin service
- Any other necessary issues (i.e., a short taxi time, PA translation requirements)
- Flight deck door procedures
- Sterile flight deck procedures
- Security procedures

The SCCM should also review the following items with the PIC, as applicable:

- Cabin crew complement
- Special handling of certain categories of passengers (i.e., deportees)
- Announcements and requirements for translation by cabin crew

- Service to flight crew
- Any additional information necessary for the flight (i.e., inoperative equipment, service items on board, abnormalities that may affect the flight)

11.1.2 Safety Briefing of Cabin Crew

A cabin crew safety briefing must be conducted before the first departure of the day. Some of the following information may be obtained from the flight crew as part of a joint flight crew-cabin crew briefing. However, if a joint briefing does not take place, the information should be disseminated by the SCCM. The SCCM is responsible for conducting the preflight safety briefing to the cabin crew and should not delegate it. The safety briefing may include a discussion and/or question-and-answer session. The key objective is for the SCCM to be satisfied that all cabin crew present have the required level of knowledge to perform their duties and focus on safety.

The following suggestions may be incorporated into the operator's safety briefing requirements:

- A check that the required minimum number of cabin crewmembers are present
- The carriage by each cabin crew of specific items, if required by the operator (e.g., flashlight, spare glasses or contact lenses, vaccinations cards and other relevant documents)
- The assignment of cabin crew positions, duty stations and emergency duties
- The distribution of an emergency equipment checklist or equipment-check responsibilities, if applicable
- A customized briefing for the aircraft type
- The assignment of special duties to individual cabin crew (i.e., PAs, handling of special-category passengers)
- Review of any relevant recent changes or safety-related information issued by the operator
- Review of selected communication procedures
- Review of selected emergency procedures and equipment
- Review of selected safety and security procedures
- Destination-specific information
- Meteorological information
- Cabin defects

11.1.3 Service Briefing of Cabin Crew

The preflight briefing to cabin crew should include a service briefing in compliance with the in-flight service manual, including:

- Time schedule for meal service
- Special meal requirements
- Serving of meals to the flight deck
- Crew rest schedules
- Specific information relevant to the passengers carried

It is important to update all required information to the cabin crew if new information becomes available (e.g., changing meteorological conditions).

11.2 Cabin Inspectors

Inspectors from a Civil Aviation Authority (CAA) and/or auditors from an IATA audit organization (AO) could perform an inspection or audit to assess the following:

- Cabin crew training programs
- Crew briefings
- Onboard safety equipment

- Knowledge of safety/security procedures
- Onboard documents and operations

Article 16 of the Convention on International Civil Aviation (the Chicago Convention) stipulates that the appropriate CAA of each contracting State has the right to search aircraft and documents of other contracting States. Inspectors may enter the aircraft (or facilities) to inspect safety/emergency equipment (in the flight deck and cabin) aircraft log books and other documents or to question persons concerned with the safe operation of the aircraft.

If someone claims to be an inspector or auditor, cabin crew should validate their identification and inform the PIC before allowing them to observe or perform audit/inspection checks.

11.3 Safety Equipment Check

IOSA CAB 4.1.1 *If the Operator conducts passenger flights with cabin crew, the Operator shall have procedures to ensure the availability, accessibility and serviceability of aircraft cabin emergency systems and equipment for passenger flights. Such procedures shall include a preflight inspection of systems and equipment, which, as a minimum, shall be conducted by the cabin crew or, if applicable, by the flight crew prior to the first flight:*

- After a new cabin crew has assumed control of the aircraft cabin;*
- After an aircraft has been left unattended by a flight crew or cabin crew for any period of time.*

Prior to boarding passengers, at the beginning of a flight or series of flights, cabin crew should check all cabin safety, communications and other equipment to ensure that they are in full working order. It is recommended that a checklist be used for this purpose, and adapted to each aircraft type, variant and duty station. In addition, it is important for cabin crew to check their assigned seat, seatbelt/harness and inertia reels for proper operation, cut or worn edges, damaged stitching, and excessive wear or chafing.

SCCMs should consult the logbook before each flight and advise the cabin crew of any equipment that is missing or unserviceable for the flight.

11.4 Galley Checks

The galley should be checked as part of the equipment check. Galley checks should also include verification of electrical equipment in the galley and security checks or searches of stowage areas.

11.4.1 Reporting Defective Galley Equipment

IOSA CAB 3.2.9 *If the Operator conducts passenger flights with cabin crew, and utilizes movable carts or trolleys for passenger service in the aircraft cabin, the Operator shall:*

- Ensure such carts or trolleys are equipped with braking devices;*
- Have a process to ensure braking devices are operative;*
- Have procedures to ensure unserviceable carts or trolleys are withdrawn for repair or replacement.*

Cabin crew should identify and report any defective galley equipment immediately. It should be off-loaded, repaired and returned to service as soon as possible. Operators should establish means of recording and tracking damaged or broken equipment to enable repairs to be affected by the Engineering Department during routine turnarounds or line maintenance.

Defective galley appliances or other permanent equipment should be recorded by the SCCM in a logbook to be kept on the aircraft. Operators may also wish to establish a system for logging and identifying removable equipment such as damaged catering trolleys and containers so that these items can be removed from the system for repair. INOP or "Need Servicing" stickers may be placed on damaged equipment that is normally removed from the aircraft during servicing/catering. In all cases, when inoperative trolleys or carts remain on board, cabin crew should be advised not to use them during the flight.

11.5 Communication with Ground Staff

Effective and timely communication between ground staff and the designated cabin crew is essential during all passenger embarkation, disembarkation and transit stops. Some operators require the PIC and SCCM to give clearance to ground staff prior to the commencement of boarding. Other operators utilize a “green light boarding” or “precision boarding” policy, which means that boarding starts automatically at the scheduled time (as per each aircraft type) at every airport, unless the PIC or SCCM advises ground staff otherwise. A deferred boarding decision would usually be for reasons relating to safety or security.

11.6 Passenger Information List (PIL)

In order to provide cabin crew with necessary information concerning passengers on board and, optionally, about seats blocked for other purposes, it is recommended that operators use a Passenger Information List (PIL) as specified in IATA Recommended Practice RP 1716 from the Passenger Services Conference Resolutions Manual, which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>

The PIL should be produced after final passenger closeout and provided to the SCCM. Where so required, the PIL may be provided separately for each class and/or compartment of the passenger cabin.

11.7 Cabin Crew Positions for Boarding

During passenger boarding, cabin crew should be evenly distributed throughout the cabin, as close to the exits as practicable to help ensure that they are ready to carry out an evacuation, if necessary, without warning. Specific duties during passenger boarding should also include:

- Ensuring that all curtains and dividers are open
- Monitoring passenger flow
- Monitoring the exits and aisle(s) to ensure they remain clear of obstructions
- Monitoring restricted rows (e.g., over-wing emergency exit seating)
- Assisting passengers, especially those requiring special assistance
- Monitoring the size, weight and stowage of cabin baggage to ensure company policy is upheld
- Observing passengers for signs of sickness, intoxication or unruly behavior
- Boarding and seating PRMs and/or passengers requiring extra assistance prior to the embarkation of other passengers

Additional procedures may be required during boarding while fueling (Ref 11.10).

11.8 Passenger Seating

IOSA CAB 3.4.6 *If the Operator conducts passenger flights with or without cabin crew, and utilizes aircraft that have passenger seats adjacent to cabin emergency exits, the Operator shall have guidance and procedures to ensure passengers seated in such seats meet any applicable requirements and restrictions.*

Operators should establish and communicate a clear policy regarding seat assignments as aircraft seating arrangements have an important safety function.

Seat selection and assignment is normally carried out at check-in, but increasingly operators are using automation such as the Internet and self-service kiosks for passengers to assign their own seats.

Advance seat assignment can be requested either free of charge or for additional fee. The payment of a fee for advance seating requests should not imply that safety requirements can be overruled and there may be occasions

when passengers are deemed to be unsuitable to occupy their requested seats, particularly in the case of exit row seating.

Operators should take all reasonable steps to ensure that check-in systems and processes, including online and self-service passenger seating requests, have a method of validating that a passenger is suitable to occupy exit row seats.

Once on board the aircraft, it is essential that cabin crew are familiar with the categories of passengers that should not be seated in specific seat types or in emergency exit rows. Such passengers who have been seated in such areas, and whom cabin crew believe might impair an emergency evacuation, should be assisted in moving to another seat.

11.8.1 Risk Assessment - Use of Crew Seats by Passengers

Operators should establish a policy for the use of vacant crew seats in the cabin that are not assigned to operating crew, including whether or not these may be used by passengers. The policy should address the following risks and hazards along with any others identified by the operator:

Adverse Event	Cause	Outcome/Risk
Cabin crewmember cannot get to a crew seat during turbulence.	Crew seat in vicinity already occupied by a passenger.	Cabin crew injury.
Obstruction or hindrance during emergency evacuation.	Passenger occupying crew seat at door area and not knowing what to do during evacuation.	Slowed response or inappropriate reaction, including passenger operating exit when it shouldn't be opened.
Passenger taking inappropriate action during evacuation at unstaffed exit.	Passenger unaware of correct procedures during evacuation.	Slowed response or inappropriate reaction, including passenger operating exit when it shouldn't be opened.
Passenger unable to rapidly get out of crew seat.	Incorrect use of harness installed on crew seat.	Delay to operation of exit. Obstruction during evacuation.
Hazards to crew seat occupant.	Location of crew seat in galley or close to stairways.	Passenger injury.

11.9 Passenger Count

In the interests of safety and security, and if not established by other means, cabin crew should count the number of passengers on board prior to door closing, confirm the correct number with ground staff and relay the count to the PIC in order to ensure accurate load sheet information. Some operators choose to close and lock the lavatories during boarding to prevent headcount discrepancies from passengers occupying lavatories during this procedure.

11.9.1 Discrepancies

In the event of a discrepancy between the passenger headcount and the PIL, and when ordered by the ground staff or by the PIC, a recount may have to be completed. Recounts should be coordinated by the SCCM. Count all passengers only when boarding is complete and all passengers are in their assigned seat (an announcement may be required to request cooperation for the recount).

Should there be a discrepancy between the passenger count and load dispatch, cabin crew may be required to relocate passengers for takeoff and landing as per the PIC's instructions. Usually, relocated passengers may return to their originally assigned seats during flight; however, they must return to the specified seat as per the PIC's instructions for landing.

11.10 Fueling with Passengers Embarking, On Board or Disembarking

IOSA CAB 3.2.2 *If the Operator conducts passenger flights with cabin crew, the Operator shall have procedures to ensure a coordinated and expeditious cabin evacuation during aircraft fueling operations with passengers embarking, on board or disembarking. As a minimum, procedures shall require:*

- i. *Cabin exits are designated for rapid deplaning or emergency evacuation, and routes to such exits are unobstructed;*
- ii. *The area outside designated emergency evacuation exits is unobstructed;*
- iii. *One cabin crew member or other qualified person is positioned by the boarding door(s);*
- iv. *Means of communication are established among cabin crew members and with passengers;*
- v. *A suitable method of communication is established between qualified persons in a position to monitor passenger safety and personnel that have responsibility for fueling operations.*

Flight Deck	Flight crew will normally be in the flight deck to coordinate the necessary precautions and procedures to be observed when fueling the aircraft. Some regulatory authorities, however, permit fueling to take place without flight crew on board. When flight crew are not on board, the qualified maintenance engineer and/or the SCCM (who will be positioned in the vicinity of the main boarding door) may undertake these duties.
Lighting	The aircraft 'NO SMOKING' signs (where fitted) must be ON and the 'FASTEN SEATBELT' signs must be OFF. Sufficient interior lighting is required to enable emergency exits to be identified. Such lighting should remain ON until fueling operations are completed. The emergency lighting master switch should be set to ARM
Public Address	The PA system must be serviceable. Appropriate announcements should be made instructing passengers to unfasten their seatbelts and refrain from smoking. The cabin crew should also advise passengers and other responsible staff that fueling will take place and that they should not operate potential sources of ignition (i.e., flashbulbs and PEDs – as required by State regulations). All cleaning activities using electrical equipment within the aircraft must be stopped until conditions permit resumption.
Exits	Provision for safe, rapid evacuation of passengers in the event of an emergency should be made via the designated fueling exits. This involves designating at least two of the main passenger doors or a main passenger door plus one emergency exit, preferably at opposite ends of the aircraft. These doors must be constantly manned by a cabin crew throughout the fueling operation. The area outside of the designated fueling exits should be unobstructed. Catering equipment should not block aisles or exits at any time.
Senior Cabin Crewmember	The SCCM should be at the main cabin door during fueling. The SCCM is responsible for notifying the refueling staff immediately should the presence of any fuel vapor be detected in the passenger cabin or if any other hazard arises in the aircraft cabin.
Other Cabin Crew	<p>A minimum of one cabin crew is to be on board the aircraft for every 50 passengers, or 50 passenger seats (or fraction thereof as required by State regulations), with at least one cabin crew for each separate passenger cabin to initiate the rapid, safe evacuation of passengers if an incident occurs.</p> <p>Cabin crew must always be on board when passengers are on board, typically with at least one cabin crew positioned at each pair of aircraft doors, including the upper deck doors on the B747 and A380 when the upper decks are occupied. Cabin crew are required to supervise passengers and to ensure that aisles and emergency doors are unobstructed. Some aircraft types might require the designation of over-wing exits for evacuation.</p>

11.11 Ordinance Signs

IOSA CAB 3.4.11 *If the Operator conducts passenger flights with cabin crew, the Operator shall have guidance and associated cabin crew procedures to ensure passengers:*

- i. *Are informed and receive instruction on all restrictions pertaining to onboard smoking;*
- ii. *Comply with the Fasten Seat Belt sign and, if applicable, the No Smoking sign.*

11.11.1 No Smoking Sign

Aircraft cabins are fitted with illuminated NO SMOKING signs, or NO SMOKING placards. On flights where smoking is prohibited, the NO SMOKING signs, if fitted, should remain on for the duration of the flight. Procedures should include announcements to passengers to advise them of the on board smoking policy, including the use of electronic cigarettes. (Ref 7.4)

11.11.2 Fasten Seatbelt Sign

The PIC will turn on the FASTEN SEATBELT sign for taxi, takeoff, landing and at any time considered necessary (e.g., turbulence). To avoid undermining the importance of the illuminated signs during turbulence or emergency situation, it is recommended that the FASTEN SEATBELT sign only be illuminated when passenger compliance (by remaining seated) is mandatory.

When the FASTEN SEATBELT sign has been turned off, passengers should be advised to keep their seatbelt fastened at all times when seated. Whenever the FASTEN SEATBELT sign is switched on, the cabin crew should:

- Make a PA to alert passengers of the requirement to fasten their seatbelt and to keep it fastened at all times when seated
- Remind passengers to secure infants and children
- Ensure infants are secured in an infant/child restraint device, if available, or held by the parent or guardian as approved by the requirements of their CAA. Some recent bassinet models allow the infant to be maintained in the bassinet during turbulence. Check with the manufacturer's instructions to ensure proper usage
- Complete compliance checks (if flight conditions/turbulence levels permit cabin crew to do so)

Some operators reinforce these instructions to passengers via use the IFE and/or automatic PAs.

11.11.3 Portable Electronic Device Sign

Some aircraft are equipped with ordinance signs that alert passengers as to when permitted PEDs may be used.

11.12 Passenger Safety Briefing

IOSA CAB 3.4.12 *If the Operator conducts passenger flights with cabin crew, the Operator shall have cabin crew procedures and guidance to ensure passengers are familiar with location and use of:*

- i. *Seat belts;*
- ii. *Emergency exits;*
- iii. *Life jackets (individual flotation devices), if required;*
- iv. *Oxygen masks;*
- v. *Other emergency equipment provided for individual use, including safety briefing cards.*

Passenger safety briefings promote safety and are conducted pre-takeoff, pre-landing and in preparation for emergency landings.

11.12.1 Safety Announcements

It is important that passengers understand the safety announcements made on board. Operators should, therefore, take into account passenger demographics when determining the languages used for announcements by cabin crew and, where necessary, employ the use of translators or video. Announcements should be clear, well-paced and engage passenger attention.

11.12.1.1 Prior to Departure

In accordance with State regulations and operator policies, on each flight prior to push back from the gate, the cabin crew will brief passengers to:

- Stow carry-on baggage
- Ensure tables are stowed/locked and seatbacks are in the full upright position, with footrest and TV monitors stowed, if applicable
- Securely fasten seatbelts and secure lap-held infants, as appropriate
- Set PEDs to appropriate mode (e.g., airplane/flight mode or OFF) and secure appropriately
- Open window blinds, as appropriate
- Contact a cabin crewmember for assistance should they lose a PED in flight, or if they have any safety-related questions or concerns

On aircraft equipped with Electronically Dimmable Windows (EDW), it is recommended that cabin crew set and lock the EDWs in “full clear” mode for taxi, takeoff and climb up to 10,000 feet. Above that altitude the cabin crew may unlock the EDWs and allow each passenger to operate them freely.

11.12.1.2 Prior to Takeoff

On each flight prior to takeoff, cabin crew must provide a safety briefing (via demonstration or video) to all passengers on the following safety and emergency procedures:

- Ordinance signs
- Seatbelts
- Escape path lighting
- Emergency exits
- Passenger safety features card (where to find it and recommendation to review it prior to takeoff)
- Life vests or other flotation devices (when applicable)
- Oxygen system (and to secure their own mask prior to assisting another person)
- The importance of leaving all carry-on baggage behind during an emergency evacuation

During the safety briefing, cabin crew should not perform any service activities that may distract passengers' attention from the demonstration.

When demonstrating the emergency exits via a video briefing, it is recommended that cabin crew be present at their assigned “demo position” in the cabin to point out the exits and be vigilant in the cabin to ensure that the safety video is being played.

Passengers should be encouraged to bring any safety concerns to the attention of the cabin crew as they can be a great source of information and may sometimes be the first to bring important information (e.g., an unusual odor) to a crewmember's attention. Always take into account passengers' remarks regarding:

- The cabin (e.g., noise, fumes, smoke, fire, loose objects)
- Other passengers' behavior (e.g., loud voice)
- Aircraft exterior (e.g., wings, fuselage)
- Outside environment (e.g., runway, weather)

Cabin crew should follow up any reports from passengers regarding anything unusual and ensure that the SCCM and flight crew are informed. Operators should encourage passengers to communicate with the cabin crew. Some operators include an announcement in this regard in the passenger briefing. For example, “If you have any safety concern during the flight, please do not hesitate to bring it to the attention of a crewmember”. Something as simple as this could encourage passengers to voice an important concern.

Cabin crew should attempt to capture passengers’ attention for the preflight safety briefing. Some operators have designed creative preflight safety briefing videos in order to engage passengers’ attention on the important safety information. Nevertheless, it is the passenger’s choice whether or not to watch the safety demonstration. Cabin crew should never replace the safety briefing by simply asking passengers if they are familiar with the safety/emergency procedures, equipment and exits of the aircraft.

In the event of a long delay after the safety briefing has been delivered, it may be necessary to repeat elements of the safety briefing, according to local State regulations or operator procedures.

11.12.2 Briefing of Passengers Seated Adjacent to Self-help Exits

Operators should have clear policies regarding passengers seated in rows adjacent to emergency exits. Reservations and Check-in agents need to be aware of these policies. As per local regulatory requirements, cabin crew must brief the passengers seated in the over-wing emergency exit rows. In addition to communicating the required safety information, the cabin crew should listen to, observe and assess the passenger while giving instructions. From this they can gauge the passenger’s reactions and answer any questions they may have.

Time is critical during an emergency. Passengers seated adjacent to over-wing exits play a very important role in assisting the crew during an evacuation. While all passengers must act according to the crew’s verbal commands during the evacuation process, the reaction of passengers seated in an over-wing emergency exit row is even more crucial. The crew commands will vary depending on many factors (i.e., the nature and location of the emergency, potential fire and other dangers outside or inside the aircraft). It is vital that passengers seated in the over-wing emergency exit rows understand how and when to open specific exits and, perhaps more importantly, when **not to** open them.

Operators should develop procedures for cabin crew to conduct over-wing emergency exit briefings (i.e., briefing card, video or one-on-one, as applicable to the regulations of the Authority). The main benefit of a one-on-one interaction during the over-wing briefing is that cabin crew can assess if passengers have really understood what is expected of them should the need for an evacuation occur. They can also determine if the passenger should indeed occupy this restricted seating or be moved to another seat.

Prior to departure, the SCCM should ensure that the cabin crew have briefed passengers seated at an over-wing emergency window exit on:

- When to use the exit (only when advised to do so by a crewmember or upon hearing the command to evacuate)
- When NOT to open the exit
- How to open the exit.

The cabin crew should assist in reseating the passenger if:

- They are not comfortable with operating the emergency exit
- They cannot perform the procedures they were briefed on
- The cabin crew feel that the briefing information has not been clearly understood by the passenger (i.e., language barrier)
- The passenger does not meet the requirements to be seated in an emergency exit row (i.e., age, mobility impairment)

11.13 Safety Briefing Cards

IOSA CAB 4.2.16 *If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet are provisioned with a safety information card accessible to each passenger, which contains appropriate information, instructions, restrictions or locations relevant to:*

- i. *Seat belts;*
- ii. *Emergency exits;*
- iii. *If applicable, emergency escape path lighting;*
- iv. *Life jackets (personal flotation devices), if required;*
- v. *Passenger oxygen masks;*
- vi. *Smoking restrictions.*

Oral briefings must be supplemented with Safety Briefing Cards, which must be pertinent only to the type and model of aircraft and consistent with the operator's procedures. There should be sufficient Safety Briefing Cards for the number of passengers. The information on the cards should be consistent with the air carrier's manuals and regulatory requirements. When aircraft equipment is substantially different, even with the same model of aircraft, the air carrier should provide Safety Briefing Cards specific to that aircraft. In addition, the briefing cards should be designed to be understood by passengers who are totally unfamiliar with aircraft and safety equipment, and who may have a limited understanding of any of the languages used. Briefing cards must show the method used to operate the emergency exits in an emergency on land and water. They must also show other instructions necessary for the use of emergency equipment as well as ordinance signs and prohibitions or limitations associated with taxi, takeoff and landing phases of flight.

11.13.1 Design and Location

The Safety Briefing Card must be designed and located so that the seated passenger will be able to see it and have access to it when placed in its normal location. The Safety Briefing Card should be large enough so that, when placed in its normal location, the passenger seated for taxi, takeoff and landing will be able to visually locate and identify the card. It should not be possible for the card to slip out of sight of the passenger. The card should have an eye-catching title or symbol identifying it as safety and emergency instructions for passengers. The mode of presentation should be diagrammatic or pictorial, limiting written information to the extent possible.

When developing Safety Briefing Cards, it is recommended that operators use international symbols. All depictions should be easy to understand. Cards should also be interesting and attractive so passengers will want to read them. For example, a multi-colored card with pictures and drawings will be picked up and read more often than a black-and-white card.

Safety Briefing Cards should use standard colors: green for actions passengers can do and red for actions passengers cannot do. It is recommended to use standard symbols when highlighting an exit or an action to be followed. For example, emergency exits should be highlighted in green in accordance with those used on the ground in terminal buildings. When highlighting an exit that should not be used in certain situations, such as an over-wing exit on water, the exit should be indicated in red with a cross going through it.

The following features are normally included, but this is not an exhaustive list of typical information contained in a card:

- Seatbelts
- Emergency exits (location and operation)
- Egress assistive devices (i.e., slides or slide rafts)
- Bracing positions
- Emergency escape path lighting
- Life jackets (personal flotation devices)
- Passenger oxygen masks
- Smoking restrictions
- PED restrictions

If a multi-step process is included in a card (such as donning a life vest or detaching a slide), all operational steps should be depicted.

Safety Briefing Cards should contain only information that is essential for safety. Advertising, schedules and promotional information is not safety-related and should not be included.

It is recommended that Safety Briefing Cards be issued with a stock control or version number, so that audits can be carried out to ensure that the correct and up-to-date version is installed on each aircraft.

11.14 Cabin Service on the Ground in the Event of a Delay

In the event of a flight delay, operators should ensure that they have procedures in place regarding the type of cabin service to be performed on the ground, depending on the time available. It is recommended that cabin service on the ground be conducted under the following conditions:

- The aircraft should be parked and engines switched off (with or without a bridge or stairs in place)
- Cabin crew should be fully briefed by the PIC or their delegate with respect to the expected length of the delay
- All doors/exits should be clear of any obstructions at all times (i.e., chair tables at window exits should not be used; move the passenger(s) for the service, if required)
- Passengers should remain seated
- Cabin crew should be prepared for the possibility of an emergency evacuation
- Lighting should be set appropriately to ensure adequate visibility
- Hand service only to be conducted (i.e., carts and trolleys should not block the aisles, particularly in cabins with single aisles)
- All galley and service equipment should be stowed immediately after use
- The PIC should advise the cabin crew at least 10 minutes prior to any aircraft movement
- The cabin should be clear of all service items (e.g., meal trays, glasses) prior to any aircraft movement
- The SCCM should advise the PIC immediately after the service is completed and the cabin is secure for pushback or taxi
- Videos can be shown during extensive ground delays with the approval of the PIC, but the aircraft should be parked and engines switched off (with or without a bridge or stairs in place)
- Some operators have procedures for approved gate-to-gate IFE allowing for uninterrupted viewing

11.15 Operation of Aircraft Doors

The SCCM should confirm with the PIC that the cabin is secure for pushback and request permission for closure of the boarding doors.

Operators should ensure that they have clear policies and procedures for both cabin crew and ground staff with respect to the operation of aircraft doors on arrival and departure. Areas of responsibility, both on the ground and in the aircraft, should be clearly set out. (Ref Section 10 for aircraft door safety).

Effective communication between staff on the ground and in the aircraft is essential for the operation of cabin doors. Cabin doors (i.e., passenger entrance and service doors) should be operated by qualified staff, either from the outside or inside of the aircraft, depending on the aircraft type.

11.15.1 Signals

In order to prevent injury to personnel and damage to aircraft and equipment due to misinterpretation, only standard signals should be used to indicate to the cabin crew responsible for the door operation that:

- Ground equipment (i.e., passenger steps, passenger loading bridges, passenger transport vehicles/plane mates and galley loading vehicles) are correctly positioned
- The area for deployment of integral stairways is free from obstruction

The standard signals usually used for these purposes are:

- Knocking at the door
- Thumbs-up signal

11.15.2 Removal of Ground Equipment from Aircraft Cabin Access Doors

Before removing ground support equipment from cabin access doors, the operator should advise the cabin crew. Ground support equipment must not be removed until the aircraft door has been closed. No cabin door (the door that allows external access to the passenger cabin) should be opened, closed or left open without suitable ground equipment correctly installed (exception: some operators may permit doors to be opened, provided a full-size net or barrier safety strap is installed on the door).

Unless an emergency situation requires the slides to be deployed, cabin doors should only be opened when a suitable piece of ground equipment is attached to the doorway area (i.e., jetway, aircraft steps, high-lift truck).

Before opening an aircraft door under normal operations, cabin crew should:

- Request authorization from the PIC, who is responsible for advising ramp staff that ground equipment is required
- Assess outside conditions to verify that ground equipment is in place (i.e., stairs or bridge) prior to door opening
- Once the installation of the ground equipment is confirmed by the ramp staff, cabin crew must ensure the door is disarmed
- Move the door handle slowly to the full-and-open position
- Push the door out fully until locked against the fuselage using assist handles and hand grips (exception: some aircraft have electrically operated doors that open automatically after pushing a designated switch)

In the event that ground equipment is not available and the cabin requires cooling due to excessively hot temperatures, effort should be made to have the air conditioning turned on. In the event that power to the aircraft cannot be provided, it is recommended that authorization from the PIC be obtained to open a door using the following safety procedures:

- Open door as per normal procedures using extreme caution to secure oneself on the inside of the aircraft
- Immediately and with caution, attach the door barrier safety strap across the door
- Ensure no items are placed on the floor in the vicinity of the door
- Guard the door at all times while maintaining the safety of the crewmember
- When closing the door, extreme caution should be used

Door barrier safety straps on open doors are only a “visual” barrier; they do not provide fall protection and are intended only as a visual warning. Aircraft doors must never be left unprotected once opened by cabin crew. Some operators’ policies and procedures require that a full-door safety net be fitted by a qualified person if a door is to be opened with no platform in place.

11.16 Deicing and Anti-icing

In order for aircraft to maintain lift (prevent stall) during takeoff, all critical aircraft surfaces (e.g., wings, tail, lifting control surfaces and, in some cases, the fuselage) must be free of contaminants such as ice, frost or snow. Based on atmospheric conditions (i.e., temperature, precipitation, and accumulation), the PIC or other responsible person (e.g., Ground Lead) will decide to deice or apply anti-icing fluid on all critical surfaces of the aircraft.

- Deicing is the removal of contaminants such as ice, frost or snow from critical aircraft surfaces
- Anti-icing is the application of fluids to prevent the accumulation of contaminants on critical aircraft surfaces

Deicing procedures may take place on the ramp where the aircraft is parked, or it may take place soon after pushback or during movement to the active runway. It may be carried out more than once during taxi to the runway.

Deicing fluids are sprayed over the aircraft surfaces and, to avoid ingestion, air conditioning systems may be temporarily shut down and/or certain electrical systems isolated during this process. On some aircraft, this can cause interruption of IFE systems, which may be used to show the safety briefing video.

The SCCM must advise the PIC prior to takeoff roll of any:

- Ice, frost or snow adhering to the aircraft structure
- Concerns conveyed by a passenger or other crewmember

Section 12—Departure

12.1 Preparation for Aircraft Movement

The closing of the entry door(s) by the SCCM (after communication and coordination with the flight crew) usually indicates to the flight crew that the cabin is ready for aircraft movement.

While local regulations may stipulate additional items, the following should usually be completed before the door is closed:

- The required cabin crew complement is on board
- A preflight crew safety briefing has been performed
- Emergency equipment has been checked (at originating stations and crew change)
- A preflight security check has been performed
- Catering and servicing procedures are completed
- Passenger boarding is complete and passenger count verified
- All passengers are seated
- Infant life vests and infant/extension belts have been distributed and passengers briefed on their use, if applicable

Once the door is closed, the following procedures should be completed:

- Arming of doors as per operator procedures
- Briefing of passengers seated in exit rows, if applicable
- Loose cabin items, including carry-on baggage, are stowed in approved locations

12.2 Preparation of Doors for Departure

Operators should determine the most appropriate procedures to ensure that all doors are correctly prepared (armed) for departure. Procedures should be coordinated to ensure that all doors are prepared simultaneously and that a confirmation is provided to the SCCM and/or flight crew.

To reduce the risks relating to human factors during this period of high workload, it is recommended that, where possible, a cross-check procedure be included, which involves a second cabin crewmember visually and verbally confirming the arming action has been carried out.

12.3 Cabin Secure Check

IOSA CAB 3.2.7 *If the Operator conducts passenger flights with cabin crew, the Operator shall have procedures for preparation of the cabin prior to takeoff and landing.*

A check is required to ensure that exits and escape paths remain unobstructed in order to help facilitate a rapid evacuation, if necessary. The following checks may be carried out before the aircraft moves, but are typically completed during taxi, depending on the time available:

- A passenger safety briefing is completed
- All passengers have seatbelts secured
- Table trays and seatbacks are upright and locked
- Coat hooks must be free of clothes or other hanging articles at over-wing exits, exit seat rows and partition walls

- Electronic equipment is used as per applicable regulations and operator policy, or switched off and stowed
- Window shades are open at all exits (or in the entire aircraft as per applicable regulations and operator policy)
- Blankets are stowed (if applicable and as per regulatory requirements)
- All objects are secured
- Cabin dividers and curtains are secured in the open position
- Lavatories, crew rest compartment(s) and other compartments are unoccupied, doors closed and locked (as applicable)
- Galleys, containers, carts and trolleys are secured
- “Cabin checked” reported to SCCM by the assigned cabin crew
- “Cabin checked” reported to flight crew by the SCCM (this check must only be provided once all other checks are completed and cabin crew are seated)

12.4 Cabin Crew Seated for Departure

IOSA CAB 3.2.6 *If the Operator conducts passenger flights with cabin crew, the Operator should require cabin crew members to be seated with their safety harnesses fastened when the aircraft is taxiing, except to perform safety-related duties.*

Although ground movement of aircraft is usually coordinated and managed by airport operators, the risk of collision or sudden braking during taxi remains. To help mitigate the risk of injury to cabin crew while the aircraft is moving on the ground, wherever possible cabin crew should be seated in their assigned crew seat except while performing safety-related duties such as the safety demonstration and securing the cabin for departure.

Operators should determine a policy that ensures all cabin crew are seated as soon as safety duties are completed.

Where a command for cabin crew to be seated is given by PA, the term “takeoff” should be avoided, as this could be misunderstood if overheard by flight crew, as permission for takeoff. The term “departure” is used instead by some operators.

12.5 Takeoff Signal

An appropriate signal should be given to cabin crew to warn of imminent takeoff. This signal should be given with sufficient time for cabin crew to ensure that their crew seat harness is fitted correctly and in order to mentally prepare for departure.

See [6.4 Signals and Commands](#).

12.6 Silent Review

The objective of the Silent Review is to mentally prepare cabin crew for any eventualities that may occur during takeoff and landing, so that they are prepared for unexpected emergency situations, taking into account both inside and outside conditions.

The Silent Review helps the cabin crew to focus their attention on safety and be ready to act in the event of an emergency. It enables cabin crew to respond and adapt more quickly and correctly in the event of an emergency. While Silent Review can take any form (there are no hard and fast rules), it should contain all the elements needed to review evacuation duties and responsibilities.

Suggested reflections for the Silent Review should include, but are not limited to, the following:

- What aircraft type am I on?
- Am I taking off or landing over land or water?

- Which type of exit am I operating?
- Am I properly secured in my seat?
- Which commands do I expect to hear?
- What are the outside conditions?
- How do I initiate an evacuation?
- Where are the door assist handles?
- How do I open the exit?
- Where is the manual inflation handle?
- What are my evacuation commands?
- When, where and how do I redirect passengers?
- What equipment do I take with me and where is it located?
- What are my duties on the ground?
- What are the brace position and commands?
- Where are the nearest suitable Able-Bodied Passengers (ABPs)?
- Where are the passengers that need special assistance?

It is recommended that Silent Review be included in all safety training courses, both Initial and Recurrent.

Following is a mnemonic for Silent Review used by some operators to help review some critical components. This example is known as “OLD ABC”:

- O** – Operation of exits
- L** – Location of emergency equipment
- D** – Drills (e.g., brace for impact)
- A** – Able-bodied passengers and passengers with reduced mobility
- B** – Brace position
- C** – Commands

Another example of a mnemonic for the Silent Review is ALERT.

- A** – Aircraft type
- L** – Location
- E** – Equipment
- R** – Responsibility
- T** – Threat

Regardless of the format used for Silent Reviews, these help cabin crew to reflect on how to complete their emergency duties in the correct sequence, as applicable to the situation.

In times of high workload or stress, such as preparing for departure, it is easy to get distracted. When cabin crew take their positions for takeoff or landing, the use of the Silent Review will help to focus on emergency responsibilities, which will assist in the event of an emergency. The ability to anticipate a situation before it happens will enable cabin crew to respond more rapidly.

The cabin crew should be alert to any indication that a possible emergency situation exists, especially when preparing for takeoff and landing. Such indications may be fire, smoke, metal-on-metal scraping sounds or other unusual noises, the force of impact, or an unusual aircraft attitude.

12.7 Sterile Flight Deck

The purpose of a sterile flight deck procedure is to mitigate the risks of flight crew errors being made due to distraction or disturbance at times when full attention to the operation of the aircraft is required.

The concept is such that cabin crew should not contact or interrupt the flight crew in any way during the critical stages of flight.

The critical stages of flight are defined by the State regulator of the operator and usually include:

- Taxi
- Takeoff
- Initial climb (approx. 10 minutes after takeoff)
- Approach (approx. 10 minutes prior to landing)
- Any other phases of flight below 10,000 feet
- Landing

Procedures for a sterile flight deck during critical phases of flight usually allow a procedure for communication between the cabin crew and flight crew in the event of an emergency.

Cabin crew training should include how to recognize the times when contact with the flight deck is not permitted.

Flight Phase	From	To	Restriction
Pushback	Doors armed by cabin crew	Aircraft starts to taxi	Cabin crew must not contact flight crew
Taxi	Aircraft starts to taxi	Engine power applied for takeoff	Communication through the SCCM only
Takeoff	Engine power applied for takeoff	Aircraft is airborne, normally retraction of undercarriage	Cabin crew must not contact flight crew
Climb	Retraction of undercarriage	Seatbelt sign OFF	Communication through the SCCM only
Cruise	NO RESTRICTIONS		
Descent	Seatbelt sign ON	3,000 meters	Communication through the SCCM only
Landing	3,000 meters — SCCM instruction to be seated or flight deck advisory/announcement (call or chime)	Touchdown and roll down runway	Cabin crew must not contact flight crew
Taxi	Aircraft has vacated runway	Aircraft is parked on stand	Communication through the SCCM only

12.8 Entering and Leaving the Flight Deck

Security regulations restrict the types of persons permitted to enter or remain on the flight deck. The PIC may decide to exclude any person from the flight deck in the interests of safety. Operators should establish a clear policy regarding when the flight deck door is to be opened and when access to the flight deck is allowed.

It is recommended that safety procedures and training encourage cabin crew to monitor the areas around the lavatory, galley and flight deck door to prevent passengers from congregating in these areas.

Operators should establish a clear policy that ensures the area around the flight deck door is kept clear when a pilot leaves or returns to the flight deck.

Policies and/or procedures related to flight deck security are considered sensitive information and are normally provided to relevant personnel in a manner that protects the content from unnecessary disclosure.

Section 13—In Flight

13.1 Cabin Services

Operators should determine at what point after takeoff services may commence, taking into account the nature of the operation, type of service required and the angle of the aircraft cabin (floor) so as not to pose unnecessary hazard to the cabin crew or passengers. Operators should also determine at what point services should cease during descent in order to allow a timely cabin secure check to be carried out.

Onboard services should be designed so that they can be delivered safely and completed with the normal number of cabin crew within the anticipated flight time. Elements of the design should include, but not be limited to:

- Carts and trolleys must be equipped with braking devices
- Brakes should be applied as soon as the cart/trolley is stationary
- Carts/trolleys should only be left unattended for as short a time as possible in order to retrieve items from a galley or another cart in use
- Cabin crew should stow loose items into their proper carts/units and stow/latch each individual cart/unit if not needed to perform service
- Cabin crew should take care to close doors/lockers and secure them not only for takeoff and landing, but also when not in use during flight

IOSA CAB 3.2.11 *If the Operator conducts passenger flights with cabin crew, and utilizes movable carts or trolleys for passenger service in the aircraft cabin, the Operator shall have procedures to ensure cabin crew members do not leave such carts or trolleys unattended in the aircraft aisles unless the braking devices are engaged.*

13.1.1 Service of Hot Beverages

Burns and scalds remain one of the most common reported cabin safety issues, sometimes resulting in litigation and lost work time. Operators should carry out a risk assessment relating to the service and preparation of hot beverages and determine the safest methods of delivery and service appropriate to their operation.

Some operators choose to use lids on disposable coffee/tea cups; however, this can add additional hazards if not correctly managed. A loose fitting lid can fall from the cup while the passenger is drinking from it, inadvertently releasing the contents onto the passenger.

Sealed/enclosed coffee/tea pots can also add additional hazards if hot steam cannot be sufficiently released from the container before pouring. A buildup of steam inside the pot can cause unpredictable pouring of hot liquids on initial use of the pot.

A quality check of the tea/coffee pots during cleaning and catering cycles should be included to ensure that they have not become cracked or damaged, as this could increase the risk of accident or injury.

Use of hot water boilers/beverage makers in the galleys should be restricted to persons who have received appropriate training. Procedures should include purging the boilers/beverage makers of air when first heated in order to avoid hot liquids spurting from them in an uncontrolled manner.

It is recommended that the following risks be considered and, where possible, mitigating actions identified:

Adverse Event	Potential Cause	Outcome/Risk
Spilling of hot beverage on table.	Overfilling of container. Moderate turbulence.	Passenger scald/injury.
Spilling of hot beverage during transfer from crew to passenger.	Passing hot beverages by hand. Inattention to transfer of beverage. Limited space between passenger and seat back.	Passenger/crew scald/injury.
Crew collision while carrying hot beverage containers from galley to cabin.	Closed curtains at galleys and/or between cabin zones.	Passenger/crew scald/injury.
Rapid release of hot liquid from drinking container.	Incorrectly fitted lid.	Passenger scald/injury.
Rapid release of steam/over-pressure from pot.	Sealed pot with incorrectly fitted lid, or no venting mechanism.	Crew scald/injury.
Coffee/tea pot falls from galley side.	Inattention to stowage during busy service periods. Overstocked galley surfaces.	Crew scald/injury.
Coffee pot breaks in use, spilling contents.	Cracks or damage caused during cleaning/catering cycles.	Passenger/crew scald/injury.
Water spurts from boiler/beverage maker in uncontrolled manner.	Buildup of air pressure inside water boiler/beverage maker.	Crew scald/injury.

13.2 Monitoring the Cabin

Throughout the flight, regular safety monitoring checks should be carried out by cabin crew as per the operator's stated procedure. These checks can be conducted during regular service duties, but at times when services have ceased, such checks should be carried out at least every 20-30 minutes. The aim of these checks is to prevent any safety or security abnormality or problem from escalating into an incident or accident.

The following are examples of checks that operators should consider including in cabin crew procedures:

Cabin	<ul style="list-style-type: none"> Cabin crew look for abnormal smell, noise or temperature Proper storage of PEDs Passenger consumption of alcohol in accordance with the operator's policy Passenger behavior and interpersonal disputes Health or medical issues Passengers comply with the operator's no-smoking policy
Lavatories	<ul style="list-style-type: none"> Paper and toiletry waste disposed of correctly Signs of tampering with smoke detector or other evidence of passenger smoking Signs of water leak or moisture in unusual areas Floors remain dry so as not to create a slip hazard
Flight deck	<ul style="list-style-type: none"> Ensure flight crew alertness and wellbeing
Crew rest compartments	<ul style="list-style-type: none"> When not occupied, check for abnormal smell, noise or temperature

13.3 Galley Safety

Cabin crew are responsible for maintaining a safe working environment for themselves and their colleagues. When designing in-flight services, operators should carry out appropriate risk assessments to ensure that these can be carried out as safely as possible.

Where service requirements are such that carts/trolleys are set up in the galley areas, these should not be placed where they might obstruct access to emergency equipment or prevent use of the crew seat(s) during unexpected turbulence.

13.3.1 Use of Galley Equipment

Operators should provide appropriate training to enable cabin crew to use galley equipment correctly and safely. Cabin crew should ensure that equipment is always used for its intended purpose. Galley equipment that is identified as faulty should be reported appropriately for repair and all cabin crew advised.

Hot water faucets/ Beverage makers	<ul style="list-style-type: none"> Where possible, these should be installed at a height that allows cabin crew to observe them filling and to remove them before they are overfilled
Ovens	<ul style="list-style-type: none"> Cabin crew verify the contents of ovens before switching them on Ovens are not used as alternative stowage for items other than food Ovens are regularly cleaned and maintained Cabin crew report dirty ovens for cleaning
Carts and trolleys	<ul style="list-style-type: none"> Should remain stowed and secured when not in use Should have brakes applied whenever stationary Should not be parked where they obstruct access to emergency equipment, crew seats, or egress from crew rest compartments, where fitted
Trash compactors	<ul style="list-style-type: none"> Glass bottles or chinaware should not be disposed of in trash compactors as they may damage the trash compactor and create a risk for maintenance and cleaning staff
Air chillers	<ul style="list-style-type: none"> When air chillers are ON, chilled stowage doors should not be left open to avoid air chiller fans overheating.

13.3.2 Liquid Spillage from Galley Rubbish Bins and Drains

Cabin crew should refrain from pouring liquids into galley and lavatory sinks on the ground as this may result in injuries to ground staff outside the aircraft when drains release waste overboard.

Galley sink waste is usually drained overboard through heated waste masts. As aircraft drainage pipes are small, they can easily become blocked with solid waste or build-up.

When a galley or lavatory sink drain becomes blocked, waste will not drain and will flow back into the galley or through overflow drains, which result in wet floors. This, in turn, becomes a slip hazard and increases the possibility of galley floor corrosion. Flooding may also damage electrical equipment located under the floor.

Any leakage or flowing should be reported immediately to the flight crew.

The following precautions will help reduce the risk of blocked drains and associated flooding:

- Tea/coffee** – Ensure that tea leaves and coffee grounds do not enter the sink drain. Be particularly careful with burst tea bags and coffee pods/filters. Ensure that solids are disposed of elsewhere.
- Milk/cream** – When mixed with acidic liquids, milk and cream can curdle creating solid waste. Do not dispose of milk/cream at the same time as fruit juices.
- Juice pulp** – Fruit juices with pulp should not be disposed of in galley sinks.

Regular flushing of the sink drains with hot water will help ensure that the pipes are kept clear.

Waste liquids should not be poured into galley rubbish bins as these may leak and the liquid end up on the galley floor. Spillages should be cleaned up immediately to avoid slips/falls or electric shock.

13.3.3 Circuit Breakers

IOSA CAB 3.2.12 *If the Operator conducts passenger flights with cabin crew, and utilizes aircraft with electrical system circuit breakers that are accessible to cabin crew members, the Operator shall have procedures that specify limitations for resetting tripped circuit breakers by cabin crew members during flight. (GM)*

Circuit breakers are small fuse-like devices that are designed to cut the power supply to a device before it overheats. A circuit breaker that has tripped will usually have a white rim showing at its base.

In the event a circuit breaker trips, it is important to notify the PIC and not to reset it without investigation of the cause. The PIC may choose to give permission to reset the circuit breaker depending on the affected system(s), but resetting circuit breakers in flight should not be considered a SOP.

The following is an example of an operator circuit breaker procedure:

- Always advise the PIC when a circuit breaker has tripped
- If instructed by the PIC to reset the circuit breaker:
 - Confirm that the circuit breaker is fully out
 - If the appliance on the affected circuit breaker has an ON/OFF switch (e.g., coffeemaker, oven), place the appliance switch to OFF
 - Reset the circuit breaker by pushing it back in
- If applicable, return the appliance ON/OFF switch to ON

IMPORTANT: *Should the circuit breaker trip again, DO NOT ATTEMPT a second reset as there could be an abnormality in the wiring that could result in an electrical fire. Advise the PIC that the circuit breaker tripped a second time.*

13.4 Service to Flight Crew

Operators should establish a policy for serving meals and beverages to the flight crew in accordance with aviation regulations, where applicable. Regular patterns of flight deck entry should be avoided for security reasons.

To prevent the remote possibility of both pilots being incapacitated at the same time, it is recommended that the PIC and other flight crew not consume the same meal and avoid certain types of foods that are particularly liable to cause gastrointestinal symptoms (e.g., shellfish, crustaceans).

Beverages should be served separately from the meal tray in order to avoid spillage. No alcoholic beverages should be served to anyone in the flight deck at any time. The following are guidelines to be considered for offering meal/beverage service to the flight crew:

- Meal trays/casseroles should be kept in their assigned chilled compartment in the relevant galley until the food is required for consumption.
- The Pilot-in-Command and the First Officer should not have the same meal and not at the same time.
- Drinks and meal trays should be handed directly to the pilots and not left unattended in the flight deck.
- Drinks and dishes with liquid or gravy should not be passed over the central pedestal area due to the risk of spillage and consequential damage to electronics. They should be served via the window side; to the PIC from left side and FO from the right side.
- All beverages should be served to two-thirds of the cup or using cups with lids on them to avoid spillage.

All catering items should be removed from the flight deck before takeoff and landing, and cleared during the flight as necessary.

13.5 Service of Alcohol

Offering superior customer service and ensuring passenger satisfaction are common goals of operators. Serving alcoholic beverages to passengers is a practice that has endured for many years and will likely continue well into the future. There is a distinction, however, between consuming alcohol for pleasure and becoming intoxicated as a result of alcohol consumption. Intoxicated passengers can become a danger to themselves and others on board the aircraft. In the event of an abnormal or emergency situation, an intoxicated passenger would likely be less able to comprehend, cooperate with, respond to, or follow instructions to evacuate the aircraft.

Operators should not permit passengers to board an aircraft whenever there are reasonable grounds to believe that their faculties are impaired by alcohol to an extent that will become a hazard to the aircraft, to persons on board (crew or passengers) or to themselves.

Service of alcoholic beverages should be carried out in a responsible manner. This should include tactfully refusing to serve passengers alcoholic beverages when they are displaying signs of intoxication.

Passengers should only be permitted to drink alcohol served by the cabin crew. It is important that the cabin crew be proactive in identifying passengers that might be consuming their own alcohol.

On specific routes with increased incidents of unruly passengers, some operators implement alcohol sales rather than free service in an attempt to mitigate these incidents.

The operator may consider having a written policy that supports all employees in the enforcement of their alcohol policy. Some countries where IATA member operators operate require cabin crew to obtain Responsible Service of Alcohol (RSA) statements upon hiring (e.g., Australia). Other countries (e.g., USA) simply use their National Restaurants Association traffic light system to recognize and manage possible intoxication. These are classified as Green, Amber and Red behaviors as follows:

Green	Yellow/Amber	Red
<ul style="list-style-type: none"> • Sociable • Relaxed • Comfortable • Happy 	<ul style="list-style-type: none"> • Reduced inhibitions • Impaired judgment • Talking or laughing louder than normal • Being overly friendly • Arguing or baiting • Increased use of foul language • Increasing alcohol consumption • Careless with money 	<ul style="list-style-type: none"> • Moving in slow motion • Slow to respond to questions • Glassy-eyed • Losing train of thought • Making irrational statements • Spilling drinks • Walking awkwardly • Stumbling or falling down • Unable to sit up straight • Aggressive behavior

Notwithstanding the above indicators, it is important to distinguish behavior (e.g., talking too loudly) that may simply be a result of a person's personality, cultural background or medical condition from signs of intoxication. It is recommended that the operator adopt a method for handling disruptive and unruly passengers in a manner that is sensitive to issues of culture and custom. A concerned, upset or rude customer is best handled using conflict management techniques to defuse and/or avoid escalation of the situation.

For more information, please consult the IATA Guidance on Safe Service of Alcohol on Board guidelines which can be found at: <http://www.iata.org/whatwedo/safety/Documents/Guidance-Safe-Service-Alcohol-onBoard.pdf>

13.5.1 Cabin Crew Response to Signs of Intoxication

Traffic light procedures encourage the responsible serving of alcoholic beverages to passengers by observing their behaviors.

Green	Yellow/Amber	Red
<ul style="list-style-type: none"> Alcoholic beverages may continue to be served It is recommended to offer food to slow intoxication 	<ul style="list-style-type: none"> Notify the SCCM, other cabin crew and the flight crew Do not allow the passenger to transition to Red behaviors Delay requests for alcohol by offering food and water with drinks As applicable to the situation, stop serving alcohol to the passenger 	<ul style="list-style-type: none"> Stop serving alcohol to the passenger Advise all cabin crew not to serve alcohol to the passenger Inform the passenger that the crew will not be serving further alcohol Consider medical attention (certain medical conditions may cause similar symptoms to those of intoxication) Consider declaring an appropriate threat level (as required) Complete and submit required reports

When dealing with a passenger who appears to be intoxicated, it is recommended to be as tactful and discreet as possible. It is important to notify the SCCM and flight crew if a passenger appears to be intoxicated or drinks from their own supply of alcohol. If the passenger refuses to comply with cabin crew requests, the cabin crew should follow their company procedures.

13.6 Turbulence

Cabin crewmembers are injured due to turbulence at a disproportionate rate compared to passengers. Cabin crew injuries occur at a higher rate because their duties require them to be standing and moving about in the passenger cabin and/or galleys and, therefore, not always secure with their seatbelt fastened during flight. Cruise is the predominant phase associated with turbulence-related injuries; however, cabin crew also sustain physical injury during climb, descent and approach.

Investing in turbulence management strategies can result in fewer incidents or accidents, which in turn could also result in significant savings for airlines.

To effectively manage turbulence, SOPs should include the following:

- Definition of turbulence intensity and types
- Communication and coordination
- Cabin crew duties
- Procedures for turbulence management
- Human factors and prevention strategies

13.6.1 Risk Assessment – Turbulence

Hazard	Consequence/Risk
Unexpected moderate or severe turbulence	Injury to unrestrained persons in the cabin
Service of hot drinks/meals during turbulence	Burns/scalds to passengers/crew
Inadequate SOPs	Litigation from injured passengers/crew
Not complying with SOPs	Injury to passengers/crew
Customer service culture	Loose service items in cabin during turbulence Cabin crew not seated or secured
Cabin design	Unavailability of hand holds in galleys for crew

13.6.2 Levels of Turbulence

Operators should determine levels of turbulence so that cabin crew can identify them easily. Many operators choose the following standard definitions:

Light turbulence	Moderate turbulence	Severe turbulence
Liquids are shaking, but not splashing out of cups	Liquids are splashing out of cups	Items are falling over, unsecured objects are tossed about
Little difficulty in walking or standing	Difficult to walk or stand without balancing or holding on to something	Walking is impossible
Carts can be maneuvered with little difficulty	Carts are difficult to maneuver	Carts are unable to be controlled
Passengers may feel a light strain against seatbelts	Passengers feel definite strain against seatbelts	Passengers are forced violently against seatbelts.

13.6.3 Communication

Communication and coordination among all crewmembers is critical and should not be limited to preflight briefings.

The flight crew should proactively communicate turbulence advisories to the cabin crew and passengers using the interphone, PA system and FASTEN SEATBELT signs. The flight crew should inform the SCCM of upcoming expected turbulence (light, moderate, severe).

The SCCM should inform the remainder of the cabin crew and ensure that mitigation measures and/or service level adjustments are carried out as required.

The level of turbulence experienced may be more intense than expected, especially in the aft section of the aircraft. When turbulence is encountered, and the FASTEN SEATBELT signs have not been illuminated, cabin crew must communicate conditions in the cabin to the flight crew and, if required, request that the FASTEN SEATBELT sign be turned on.

13.6.4 Cabin Crew Response

Cabin crew responses should be appropriate to the level of turbulence encountered:

Light Turbulence	Moderate Turbulence	Severe Turbulence
Perform safety and seatbelt compliance checks. Continue service with caution according to operator policy. Consider suspension of hot beverage service.	Suspend service. Perform safety and seatbelt compliance checks, if safe to do so. Secure in crew seats.	Suspend service. Take immediate action to protect individual safety. If possible, sit in nearest available seat and fasten seatbelt/harness. Assist passengers when safe to do so.

For more information, please consult the IATA Turbulence Management guidelines which can be found at: <http://www.iata.org/whatwedo/safety/Documents/IATA-Guidance-on-Turbulence-Management.pdf>.

13.7 Dangerous Goods

Dangerous goods are substances or articles that can pose a risk to health, safety, property or the environment.

Cabin crew are required to recognize the hazards that each class of dangerous goods can represent. In case of any concerns, the cabin crew should always advise the PIC.

IATA offers a Dangerous Goods Training Program – Workbook 3 for Cabin Crew. For more information, please consult: www.iata.org/publications/dgr/Pages/training-books.aspx.

IATA's training programs are designed to familiarize students with the various sections of the IATA Dangerous Goods Regulations (DGR) manual as well as how and when to apply them. The IATA training workbooks are based on practical application of the DGR, which include all ICAO requirements.

After completing the IATA DGR Workbook 3 for Cabin Crew, the student should be able to:

- Recognize dangerous goods
- Know the origin of the regulations and be aware of their general philosophy
- Recognize the hazard/handling labels applicable to dangerous goods
- Recognize dangerous goods packaging
- Be able to identify potential hidden hazards in baggage and cargo
- Be aware of the provisions for dangerous goods in the baggage of passengers and crew
- Be familiar with dangerous goods emergency response procedures

Section 14—Descent and Landing

14.1 Descent

Effective communication between flight crew and cabin crew during flight will help ensure that cabin crew are fully prepared for descent. Operators should determine an effective and suitable signal to warn cabin crew of descent so that they are able to complete required checks in time for approach and landing. See [6.4 Signals and Commands](#).

14.2 Passenger Briefing Prior to Landing

In accordance with State regulations and operator policies, on each flight prior to landing, the cabin crew will brief passengers to:

- Stow carry-on baggage
- Ensure tables are stowed/locked and seatbacks are in the full upright position, with footrest and monitors stowed, if applicable
- Securely fasten seatbelts and secure lap-held infants, as appropriate
- Set PEDs to appropriate mode (e.g., OFF, if applicable) and secure appropriately
- Open window blinds, as appropriate

On aircraft equipped with electronically dimmable windows (EDW), it is recommended that cabin crew set and lock the EDWs in “full clear” mode for landing.

Investigations into numerous accidents have identified that crew commands to passengers to leave carry-on baggage behind during an emergency evacuation are not always followed. It is, therefore, recommended on each flight prior to landing to include clear direction to leave all carry-on baggage behind during an evacuation.

For more information, please see:

[Transport Canada Advisory Circular \(AC 700-012\) Passenger Safety Briefings.](#)

[EASA AMC1 CAT.OP.MPA.170 Passengers Briefing.](#)

14.3 Return of Coats, Jackets and Other Clothing

Where items of clothing such as coats and jackets are stowed for passengers prior to departure, it is recommended that these remain stowed during landing, if not worn by the passenger, so as not to add additional trip hazards in the cabin.

14.4 Pre-landing Cabin Secure Checks

Cabin secure checks are required to be repeated before landing. See [12.3](#).

The SCCM will inform the flight crew when the cabin is ready for landing and cabin crew are seated.

14.5 Descent and Landing Signals

An appropriate signal should be given to cabin crew to warn of descent and/or landing. This signal should be given with sufficient time for cabin crew to ensure that they are seated with their seatbelt/harness fitted correctly and in order to mentally prepare for landing. See [6.4 Signals and Commands](#).

14.6 Cabin Crew Seated for Landing and Arrival

To help mitigate the risk of injury to cabin crewmembers while the aircraft is moving on the ground, operator procedures should require that cabin crew are seated for landing as soon as all safety-related duties and checks have been completed and should remain seated until parked at the gate, except to perform safety-related duties such as disarming doors or responding to an abnormal or emergency situation.

Section 15—Arrival

15.1 Preparation of Doors for Arrival

Operators should determine their policy for disarming the doors upon arrival. Depending on the operation, the command to disarm doors may be given:

- By the flight crew as the aircraft makes its final approach to the parking gate
- By the SCCM after the aircraft is parked

Cabin crew should be particularly alert at this time as incidents have demonstrated that human factor implications may result in unconscious task behavior, where the cabin crewmember carries out a task without thinking about it. Contributory factors may include distraction, task conflict and/or fatigue, all of which may result in the inadvertent deployment of evacuation slides on arrival.

15.2 Door Opening

Operators should determine procedures for door operation taking into consideration the risks and hazards for ground and cabin crew. Ref [11.16](#) Operation of Cabin Doors and [10.1](#) Aircraft Door Safety.

15.3 Passenger Disembarkation

During the disembarkation process, the risk of an evacuation remains. Cabin crew should, therefore, remain alert to outside and inside conditions and remain available at the door area(s) to perform an evacuation should it become necessary.

Section 16—Emergency Procedures

16.1 Management of Emergencies

Cabin crew training programs should emphasize that each emergency situation is different and that it is impossible to train for an infinite number of possible abnormal scenarios. By managing emergencies, cabin crew contribute to minimizing injuries and fatalities as well as damage to property through appropriate actions. The success of these actions is influenced by the cabin crew's knowledge of their operator's safety and emergency procedures as well as their initiative, situational awareness, good judgment, communication, cooperation, coordination and training.

16.1.1 Levels of Stress

People react differently to stressful situations such as an emergency on board an aircraft. High levels of fear or stress can lead to panic, freezing and/or dependency on the part of both passengers and crew. It is important that cabin crew are trained to recognize these negative behaviors and use countermeasures to interrupt and change passenger actions and behaviors.

16.1.2 Landing Categories

There are three landing categories:

- Normal landing
- Abnormal landing (involving a condition that requires a higher alert level, such as an engine failure)
- Emergency landing (involving a serious situation requiring crewmembers to follow emergency procedures)

16.1.3 Unplanned and Planned Emergencies

Unplanned emergencies occur with no warning and give the crew little or no time to prepare a course of action. Most emergencies occur during takeoff or landing. The most important mitigation tool is the Silent Review.

In the case of a "planned" emergency, cabin crew receive advance warning and adequate time to prepare a course of action. For example, cabin crew can prepare passengers for an emergency landing using the Prepared Emergency Landing Card and brief multiple Able-bodied Passengers (ABPs) to assist as directed.

16.1.4 Urgent Communication

Operators should establish policies for urgent communications to and from the flight deck. For example, when immediate communication is required from the flight deck to the cabin crew, the PIC could announce: "Would the senior cabin crewmember call the flight deck immediately." The SCCM should immediately call the flight deck using the interphone. This announcement would also indicate to the remainder of the cabin crew to be on alert for further instruction from the SCCM.

Other discreet coded announcements or signals may be considered for different emergency situations; however, these should be limited in number and allow for easy and rapid understanding by all cabin crew.

When urgent contact is required from the cabin to the flight deck, the appropriate emergency call button/code should be used on the interphone handset.

16.2 Crewmember Incapacitation

Crewmember incapacitation is defined as the inability of a crewmember to carry out their normal, abnormal and emergency duties. Incapacitation may occur as a result of injury or illness and may require the crewmember to be temporarily or permanently removed from their duties for the duration of their duty period.

16.2.1 Flight Crew Incapacitation

Operator procedures for flight crew incapacitation should include measures to prevent a pilot from becoming incapacitated in their seat, because removal of a collapsed casualty in this position can be problematic. Suggested procedures include the flight crewmember getting up from their seat as soon as they begin to feel unwell.

The following are suggested operator procedures in case of flight crew incapacitation:

Alert cabin crew	Some operators choose to have a discreet PA which alerts the cabin crew to the problem without alarming passengers.
Cabin crew report to flight deck	The SCCM or designated crewmember should proceed to and enter the flight deck immediately. If the door is not opened upon request, the emergency access code should be used.
Remove pilot from controls	Slide the seat fully aft and remove the pilot from the controls without inadvertently touching any of them.
Secure pilot in seat	Secure the pilot's harness and lock it to prevent the pilot falling forward. If possible, recline the seatback.
Administer first aid as required	Call for medical assistance from other crew, if necessary. The operator should determine a risk-based policy on the use of defibrillators inside the flight deck, if carried.
Assist PIC as required	Consideration could be given to seeking the assistance of a type-qualified pilot on board to replace the incapacitated flight crew.

If the decision is made to leave the incapacitated pilot in the flight deck, a member of the cabin crew should stay with them until the aircraft has landed.

16.2.2 Suggested Cabin Crew Incapacitation Drill

Alert PIC	Use interphone to advise PIC of cabin crew incapacitation.
Treat incapacitated crewmember	Administer first aid as required
Reassign responsibilities as required	Operators should establish procedures to select the next most suitably qualified (or senior ranking) cabin crew to operate as SCCM in the event of the initial SCCM becoming unable to perform their duties.
Reassign door operation as required	Operators should establish procedures for a single cabin crewmember to operate a pair of exits. If incapacitation reduces cabin crew complement below minimum, consider briefing ABPs to operate exits.

16.3 Cabin Pressurization

Cabin pressurization is the active pumping of air into an aircraft cabin to increase the air pressure within the cabin. It is required when an aircraft reaches high altitudes to allow aircraft occupants to absorb sufficient oxygen. The air conditioning system on the aircraft ensure the cabin is pressurized during flight.

Operators' cabin crew procedures should include drills for non-pressurization as well as slow, rapid or explosive depressurization.

16.3.1 Non-pressurization

A fault in the air conditioning system during climb could result in non-pressurization of the aircraft. Cabin crew and passengers may not readily notice this, but would likely become more tired without realizing due to the effects of reduced oxygen (hypoxia). If the aircraft cabin reaches an altitude of 4,500 m (15,000 ft) before action is taken, passengers and crew will begin to suffer from lack of oxygen.

16.3.2 Depressurization

Should the pressurization system of the aircraft fail for any reason, it will be unable to maintain the required cabin pressure. Likewise, a failure of the aircraft structure or seals would cause a decrease in cabin pressure. This is known as a depressurization or decompression.

A depressurization may be slow, rapid or explosive depending on the cause and the pressure differential inside and outside the aircraft.

If the cabin altitude reaches the equivalent of 4260 m (14,000 ft), the aircraft's oxygen masks should deploy automatically. See [9.12](#) for details of oxygen systems.

16.3.2.1 Slow Depressurization

Slow depressurization may be caused by a failure of window/door seals or a fault in the air conditioning system. The term 'slow depressurization' is used to describe an event where it takes more than 10 seconds for the pressure inside and outside the cabin to equalize. Typically, the only sign to the cabin crew may be the appearance of the oxygen masks as the aircraft altitude rises.

16.3.2.2 Rapid and Explosive Depressurization

A rapid depressurization may take up to 10 seconds for the cabin pressure to equalize with the outside conditions.

An explosive depressurization make take only one or two seconds.

Rapid and explosive depressurization incidents are easier to recognize. Along with the deployment of oxygen masks, sudden changes of pressure can cause the following:

- Loud noise
- Sudden disturbance of dust and loose items due to the strong airflow
- Mist forming in the cabin due to moisture condensing
- Sudden reduction in cabin temperature
- Pain in ears and sinuses
- Discomfort or pain due to pressure of gases trapped in the body
- Shortness of breath
- Sudden boiling of liquids in hot beverage containers
- Bursting of carbonated drinks containers, sealed packages and inflated items (e.g., pillows)

16.3.3 Hypoxia

Oxygen is essential for life, required by every cell in the human body to carry out its functions. Cabin crew must be aware of the signs and symptoms related to lack of oxygen (hypoxia).

Initial signs of hypoxia manifest in different ways among individuals, but typically can include:

- Increased rate of breathing
- Headache
- Nausea
- Light-headedness
- Dizziness
- Tingling sensation in hands and feet
- Sweating
- Irritability

As time of exposure to reduced pressure at altitude increases, the following additional signs and symptoms appear:

10,000 – 20,000 feet	<ul style="list-style-type: none">• Mental impairment• Euphoria• Reduced situational awareness• Cyanosis (bluing of the lips and fingernails)
20,000 – 30,000 feet	<ul style="list-style-type: none">• Lack of muscular coordination• Drowsiness• Slurred speech• Collapse
30,000 – 40,000 feet	<ul style="list-style-type: none">• Unconsciousness• Death

Hypoxia can cause a false sense of well-being. It is possible for a person to be hypoxic and not be aware of their condition. It is important that all crewmembers recognize the signs of hypoxia and administer supplemental oxygen as soon as possible in order to prevent unconsciousness. When oxygen is administered, recovery will usually take place within minutes.

16.3.3.1 Time of Useful Consciousness

Time of Useful Consciousness (TUC) or Effective Performance Time (EPT) is the period of time from the interruption of the oxygen supply, or exposure to an oxygen-poor environment, to the time when an individual is no longer capable of taking proper corrective and protective action. The faster the rate of ascent, the worse the impairment and the shorter the TUC.

WARNING: TUC does not mean the onset of unconsciousness as impaired performance may be immediate. The higher the altitude, the worse the impairment and the shorter the TUC. Prompt use of 100% oxygen is critical.

The FAA Office of Aerospace Medicine's Civil Aerospace Medical Institute (CAMI) offers a Cabin Safety Workshop that includes physiology education on the effects of high-altitude flight operations on the human body. The workshop concludes with an altitude chamber flight simulation to allow the participants to actually experience the effects of depressurization. While the workshop includes numerous other cabin safety topics, it is not intended as basic training for cabin crew, but rather is designed to provide supplemental information. To learn more, please visit www.faa.gov/data_research/research/med_humanfacs/aeromedical/cabinsafety/workshops

16.3.4 Guidance for Depressurization Procedures

A review of depressurization incidents and accidents clearly indicated that aircraft depressurization events had a continuing presence in aviation operations. Many of the events were identical to events that had occurred in the past, a few of which escalated into fatal accidents. The events examined occurred around the world and on a variety of different pressurized aircraft. Multiple issues arose from the review:

- Cabin altitude warning horn not recognized by the flight crew
- Master Caution and passenger oxygen mask deployment indication not recognized by the flight crew
- Cabin crew not advising the flight crew of passenger oxygen mask deployment
- Cabin crew not establishing and maintaining open communication between the cabin and the flight deck
- Physiological effects of rising cabin altitude not recognized by the flight crew or cabin crew
- Insufficient flight crew understanding and appreciation of slow cabin depressurization, the insidious effects of hypoxia and the importance of using supplemental oxygen as a precaution

Several international accident investigation reports recommended improved communication between cabin crew and flight crew in the case of a suspected decrease in cabin pressure.

When the oxygen masks deploy in the cabin due to loss of or insufficient cabin pressure, if there is no evidence of the aircraft descending, the SCCM or the cabin crewmember situated closest to the flight deck must proceed to the flight deck to verify that flight crew are receiving emergency oxygen.

16.3.5 Suggested Cabin Crew Depressurization Drill

Put on nearest oxygen mask	Check oxygen is flowing to mask. Only help others once your own oxygen mask is activated.
Sit down	In nearest seat/space - do not try to get back to a crew seat unless it is very close. Fasten seatbelt, if applicable.
Prevent movement of service equipment	Brake carts/trolleys and wedge them between seats to prevent movement during descent.
Indicate to passengers to fit masks	If no automated announcement, shout or attempt to make a PA if the system is available nearby.
If no sign of descent, contact flight crew	Nearest crewmember should fit portable oxygen mask and enter the flight deck to check that pilots are receiving oxygen and taking action as required. The emergency flight deck access code should be used if the door is locked.
Remain seated until advised that it is safe to move	Check other crewmembers. Assist others and administer medical first aid and oxygen as required. Reassure passengers.

16.4 Rapid Deplaning

An abnormal situation may arise that has the potential to escalate into an emergency, and where passengers and crew need to deplane immediately and quickly as a precautionary measure. Such situations usually occur while the aircraft is parked at the gate or during taxi.

Normally the attached steps/air bridge will be used to evacuate the aircraft; but, depending on the severity of the incident, the use of one or more evacuation slides may be required. In this situation, the slide(s) will be used as a

precaution; therefore, descent may be more carefully controlled (i.e., sit and slide) than during an emergency evacuation.

Rapid deplaning is not recommended where boarding is carried out by airport passenger transfer vehicles, which directly connect to the aircraft before lowering to ground level, due to the delay in lowering safely from the aircraft.

Operators should be aware that air bridge/jetway doors may be locked for security reasons, preventing passengers from reentering the terminal building. Before initiating rapid deplaning, the flight crew and/or SCCM should liaise with ground staff to ensure access into the terminal is available. When this is not possible, an evacuation may be required using slides.

A rapid deplaning may be initiated by the pilots or, in their absence, the SCCM.

16.4.1 Suggested Cabin Crew Rapid Deplaning Drill

PA to alert cabin crew	May be made by the PIC or SCCM. Cabin crew to go to assigned crew stations and await instruction. Example: "Attention crew, standby."
PA to initiate rapid deplaning	May be made by the PIC or SCCM. Command should be different from the evacuation command. Example "Attention crew, rapid deplaning."
Ensure air bridge/steps in place	If no steps/air bridge are in place, an evacuation using one or more slides with controlled descent may be required. If so, brief cabin crew appropriately.
Command passengers to leave the aircraft	Use direct and short instructions. Passengers to leave carry-on baggage unless the PIC advises otherwise.
ABP, crew and/or ground staff lead passengers into terminal	As per procedures defined by the operator.
Crew disembark	Cabin crew remain on board until all passengers are deplaned. Cabin crew disembark unless advised otherwise by the PIC.

16.5 Emergency Evacuations

An evacuation is much more expeditious than a rapid deplaning event and will require using all available exits to empty the aircraft of occupants as quickly as possible.

An evacuation may take place without warning, or there may be sufficient time to plan and prepare. Cabin crew should always be alert to the potential requirement for evacuation while on the ground and be mentally prepared during takeoff and landing (see [12.6 Silent Review](#)).

Cabin crew evacuation training should stress the importance of communication and coordination between flight and cabin crew as well as the necessity for cabin crew to adapt to ever changing situations and circumstances. For example:

- Fire
- Smoke
- Ditching/water
- Slide/slide-raft malfunction
- Unusual aircraft attitude
- Landing gear collapse
- Severe structural damage
- No communication from flight crew

16.5.1 Initiating Evacuation

An evacuation should be initiated by the PIC; however, in catastrophic events the PIC may not be able to give this instruction. Cabin crew should be trained to recognize the situations where they are permitted to initiate an evacuation without waiting for an order, and that they may only do so once the aircraft is stationary with engines powered down.

Suggested circumstances for cabin crew to initiate evacuations include:

- A fire inside or outside the aircraft that is uncontained and getting worse
- Dense smoke in the cabin that is threatening life
- Ditching
- Obvious destruction of the aircraft

When making the decision to initiate an evacuation, cabin crew must evaluate the level of danger and the consequences that a delay in decision-making may lead to. Smoke or fire that is out of control would definitely require a rapid decision because of the danger presented to the occupants of the aircraft.

If cabin crew consider that an evacuation may be required, they must attempt to contact the flight crew in order to inform them of the situation and await instructions. If contact with the flight crew is not possible, cabin crew should initiate the evacuation.

Any evacuation requires crew coordination because not all crewmembers may be aware that a life-threatening situation exists. There are several possible methods of communication, depending on their availability:

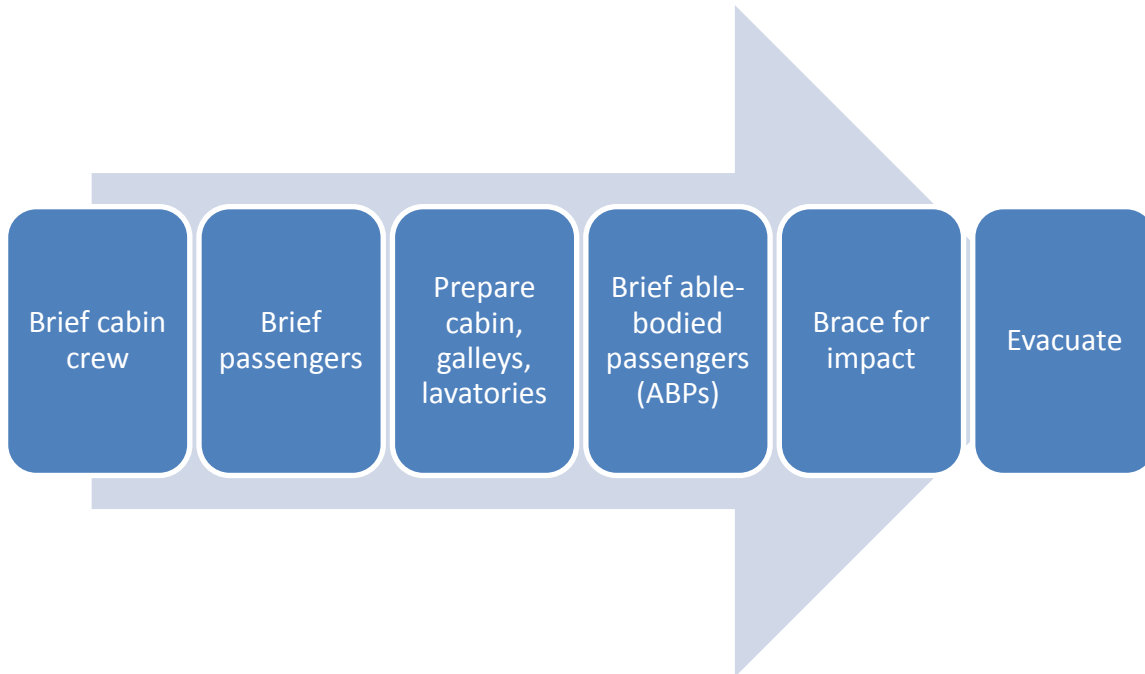
- Public address
- Interphone
- Megaphone
- Evacuation alarm (if applicable)
- Initiation of commands

16.5.2 Unplanned Emergency Evacuation

Many evacuations are not planned and occur with no prior warning on stand, during taxi, takeoff or landing. The silent review carried out by cabin crew during takeoff and landing helps to keep them mentally prepared to act with little or no notice during critical stages of flight.

16.5.3 Planned Emergency Evacuation

In-flight emergencies may result in the diversion of the aircraft and a planned emergency evacuation. Cabin crew will have some time to prepare the cabin and passengers for evacuation after landing.



16.5.3.1 Briefing of Cabin Crew

Operators should determine procedures for the flight crew to provide a briefing to the SCCM. This may be carried out in person or via interphone depending on the circumstances. The SCCM will then brief the cabin crew (where applicable).

Typically, the briefing should include the following information:

- Nature of the emergency (i.e., what has happened)
- Intention (i.e., whether to divert, land or ditch)
- Time remaining to landing/ditching
- Any factors that may affect the availability of evacuation routes, exits or may be pertinent to the evacuation
- Special instructions/considerations, as necessary

16.5.3.2 Briefing of Passengers

The flight crew or SCCM will advise the passengers of an emergency situation, depending on the time available and procedures.

The initial announcement will typically include:

- Explanation of the nature of the emergency
- The necessity to prepare the cabin
- Requirement to follow the instructions of the cabin crew

At the appropriate time according to operator procedures, the cabin crew will perform an emergency safety demonstration/briefing giving the passengers additional information relating to the planned emergency evacuation.

The aim of the briefing is to give passengers as much information as possible. The amount of time available will determine the extent of the briefing. Passengers and crewmembers will need to give their undivided attention to the briefing; therefore, there should be no unnecessary distractions. This may be the only opportunity to relay critical information.

To avoid distraction, cabin crew should:

- Instruct passengers to stow all PEDs
- Stay in their assigned demo position
- Not walk up and down the aisle during the announcement
- Not talk during the demonstration
- Coordinate the demonstration with the briefing

When reading the briefing, the SCCM should pause at key points in order to allow the cabin crew time to demonstrate and check passenger compliance.

As a minimum, cabin crew should demonstrate:

- The safety card
- The brace position instructions
- The location of usable exits and escape path lighting
- The operation of life vests/jackets, if applicable

16.5.3.3 Preparing the Cabin, Galleys and Lavatories

During normal procedures for takeoff and landing, the cabin secure procedures are carried out to prepare the cabin for an unplanned emergency (See [12.3](#)).

During a planned emergency, as it is known that an evacuation is highly likely, some additional cabin preparations can be carried out to further mitigate risks, depending on the circumstances and time available:

- IFE, Internet and/or telecommunications systems, where fitted, should be switched OFF
- Switch off galley power and water supply
- Ensure passengers remove all loose and sharp objects from their person and secure them inside their cabin baggage

16.5.3.4 Able-bodied Passengers (ABP)

Procedures should include enlisting the help of able-bodied passengers (ABPs) who will be useful during the evacuation.

The selection of ABPs may be based on their physical strength and capabilities as well as their ability to understand instructions and respond appropriately. Deadheading crew, off-duty company crewmembers, military, police and fire service personnel are good choices because they are accustomed to following instructions and have the required strength and dexterity.

Cabin crew should reiterate to ABPs that the crew remain in control during the evacuation and that they should only take action as instructed.

ABP briefings should be short and simple. The intention is to provide only enough information for the ABPs to carry out their role and to check their understanding of responsibilities.

Briefing several ABPs at each door will help ensure sufficient help is available and briefing them collectively rather than assigning individual roles will ensure the greatest chance of procedures being understood and carried out. Other ABPs can be briefed to assist special categories of passengers who may require additional help.

The following are suggested instructions for APBs stationed at a door:

While cabin crew open door	Hold passengers back from the door area.
When door ready for use	Evacuate first and assist other passengers at bottom of slide. Move passengers away from aircraft.
If crewmember incapacitated	How to remove crewmember from crew seat and what to do with them.
Open door	Open door if commanded, or crewmember is obviously incapacitated. Check outside conditions to identify whether safe or not. Operation of door handle. Use of assist handles to prevent being pulled/pushed out.
Check slide inflation	Manual inflation procedure if slide does not inflate.
If door not to be used due to fault/failure/hazard	Where and how to redirect passengers.

In normal operations, passengers seated at over-wing exits will receive a briefing before departure. In a planned emergency, cabin crew should check that these passengers understand the following:

When to open exit	How to recognize the evacuation command.
Assess outside conditions	How to identify whether it is safe to open exit.
How to evacuate	How to climb out onto wing. Direction of movement off wing (forward/aft).
If door not to be used due to fault/failure/hazard	Where and how to redirect passengers.

The cabin crew should ensure that ABPs are assigned to passengers that require assistance to evacuate the aircraft. These passengers include:

- Passengers with reduced mobility
- Elderly
- Unaccompanied minors
- People traveling alone with more than one child

These passengers will need assistance from ABPs during the evacuation. When time permits, reseat an ABP with each passenger requiring assistance.

16.5.3.5 Cabin Preparation Complete

When the cabin has been secured and the cabin preparation is complete, cabin crew should report to the SCCM. The SCCM will notify the flight crew and ask for an update of the situation and an estimate of the amount of time remaining.

According to operator procedure, cabin crew should take their seats, adjust their harness, begin a “silent review”, and be prepared to “brace” when the command comes from the flight crew.

16.5.4 The Brace Position

The brace position can be described as the position a passenger should adopt in order to minimize the injuries associated with the rapid deceleration forces of an aircraft impacting the surface.

Each accident is different and the forces of impact vary; however, a passenger adopting a suitable brace position is more likely to be able to evacuate themselves following an impact.

There is no global standard for brace positions and these can vary according to the seat type, direction of travel and restraint type used. Operators should determine their brace positions based on State regulations and research.

The following considerations should be included in the passenger briefing information, as applicable to the operator:

- Forward facing seats
- Forward facing seats at a bulkhead
- Aft facing seats
- Three-point seatbelts
- Airbag seatbelts
- Guardians with lap-held infants
- Pregnant women

It is recommended to use the Safety Information Card to illustrate the brace position. The cabin crew should:

- Point out the brace position on the safety information card
- Demonstrate the recommended brace position
- Check passengers’ brace position and alternative brace positions

Once the brace position has been explained, the next step is to inform the passengers when to assume the brace position. For example: *“When you hear the crew shouting “BRACE! BRACE! BRACE!”, this will be your signal to take the brace position; you must remain in this position until the aircraft has come to a complete stop”.*

16.5.5 Suggested Cabin Crew Drill – Emergency Evacuation

Verify evacuation required	Wait for instruction from PIC to evacuate. Initiate evacuation in clearly catastrophic circumstances.
Release harness and move to assigned exit	Check outside conditions for signs of fire, smoke, water level.
Command passengers to move to exits	Use positive loud commands.
Open exit if safe to do so	Use ABPs to help hold others back while door is opened. Ensure escape device is deployed where appropriate.
Command passengers to evacuate	Use visual cues/signals where necessary.
Control and monitor evacuation	Observe passengers outside the aircraft. Follow advice of Fire & Rescue personnel, if applicable
Leave the aircraft	Check cabin is clear and leave the aircraft through nearest exit

16.5.6 Carry-on Baggage during an Evacuation

Passengers will endeavor to collect their personal belongings before evacuating the aircraft, particularly when the danger to life is not immediately evident to them.

Operators should be prepared for this eventuality and have a strategy in place to mitigate the risks involved with passengers removing cabin baggage during evacuation. Such strategies could include:

- Reinforcing and emphasizing the requirement to leave personal items behind by including it in the passenger announcements made in the following situations:
 - Preflight safety briefing
 - Emergency briefing
 - Before landing on every flight
- Clear graphics on safety cards emphasizing that baggage must not be taken in an emergency
- Simple, clear crew commands to leave baggage behind during evacuation
- Training of cabin crew in human response during emergency situations and how to influence passengers to leave their baggage

Passengers may be less likely to take carry-on baggage with them during an evacuation if they are encouraged to hold essential items that could be useful following an evacuation on their person. Such items typically include:

- Mobile phone
- Vital medications (e.g., asthma inhalers)
- Passport
- Wallet/purse

This advice could be included in the preflight safety briefing/video and reinforced during emergency briefings.

Despite all efforts to reinforce the message to passengers, some will likely ignore instructions. Operators should identify their accepted course of action for the cabin crew to take in this eventuality, bearing in mind the risks and potential consequences.

Action	Potential consequences
Forcibly removing carry-on baggage at the doorway	Buildup of items subsequently blocking exit routes. Slowed rate of egress due to confrontation. Injury to cabin crew carrying out the action from hoisting bags over seatbacks away from the exit row. Physical confrontation with passengers preventing the continuation of evacuation procedures.
Throwing carry-on baggage outside the aircraft	Injury to persons outside the aircraft. Injury to crewmember carrying out the action. Damage to ground equipment or slide. Damage to passengers' personal belongings and claims for cost of bag and contents.
Allowing passenger to take items that they insist on taking	Slowed rate of egress. Injury to passenger or others using the slide. Injury to persons assisting at the bottom of the slide. Damage to the slide. Buildup of debris at the bottom of the slides adding increased risks of injury.

16.5.7 The Effect of Smoke and Fire during Evacuation

It has been well documented in accident reports that smoke and fire in the cabin has presented frequent obstacles during evacuation. Smoke or fire in the cabin can also cause panic among passengers. Inhalation of smoke and toxic fumes has incapacitated people and limited their physical and mental ability to the extent that they have not been able to react, operate the exits or evacuate. Smoke also has the ability to obscure light, make visibility difficult, and incapacitate a person.

In the event of a smoke-filled cabin during evacuation, visibility and air quality are usually better at floor level. Passengers should be instructed to get down low and follow the escape path lighting to the exits.

16.5.8 Slide Evacuation with Infants and Young Children

In a planned emergency evacuation, parents/guardians should be briefed to hug their infant to them so that they can evacuate down the slide together.

When boarding an escape device (e.g., single or dual lane escape slide, slide raft, ramp slide) with infants, jumping together onto the escape device produces faster egress than sitting and sliding.

The carrying positions that provide the most protection for infants include:

- **Vertical position** — The parent/guardian protects the infant's head and neck as much as possible with one hand, placing the other arm around the buttocks and holding the infant

- **Horizontal position** — The parent/guardian should cradle the infant's head and neck in his/her arm and should keep infant's arms, legs and feet enfolded as much as possible in his/her arms

Climbing through a Type III over-wing exit while holding an infant promotes faster egress than passing the infant to another passenger who has already exited. The recommended carrying position of the infant is vertical. Horizontal carrying of larger infants is more likely to result in striking a part of the infant's body on the exit frame.

Evacuation methods with small children over age two depends on the age and size of the child. The carrying method when egressing should be the one most comfortable and natural for the parent and the child and, at the same time, providing adequate protection for the child and ensuring a fast egress from the aircraft.

16.5.9 Passenger Commands during an Emergency

Cabin crew use verbal commands to maintain passenger compliance with emergency evacuation procedures. Commands should be shouted in the designated language of the operator and may need to be supplemented by foreign language commands, as appropriate.

When formulating verbal commands, operators should ensure that they are kept short, simple and clear. Where possible, positive instruction should be given, avoiding the use of negative commands.

Commands should be delivered loudly, clearly and assertively by cabin crew, without causing panic or negative responses.

During an emergency evacuation, cabin crew have to observe many areas at once and will be required to shout various commands appropriate to the situation:

- Inside the cabin
- At the doorway and other doors nearby
- Outside the aircraft

16.5.9.1 Brace Command

When the need to brace is determined, a command is normally given by the flight crew. This command serves a dual purpose: advising the cabin crew that impact is imminent and advising passengers of the need to brace.

When passengers hear the brace command (typically "BRACE! BRACE!" or similar command) over the PA, they should adopt the appropriate brace position. In an unplanned emergency, they may not be expecting to hear this command and may take time to adopt the position.

It is, therefore, recommended that the brace command from the flight crew be explained during normal preflight safety briefings, while the recommended brace position appropriate to their seating area be demonstrated on the safety card.

In a planned emergency, the brace command from the flight crew should be reiterated in the cabin crew announcements to prepare passengers.

16.5.9.2 Prior to Impact

In many cases, the flight crew brace command is supplemented by additional cabin crew commands to passengers to help them identify and adopt the brace position. Commands such as "Heads down! Stay down!" can be given simultaneously by all cabin crew at regular intervals.

16.5.9.3 Initiating Evacuation

Once the aircraft has stopped and the need to evacuate has been identified, a command to commence evacuation will be given, normally by the flight crew. Such a command may need to be given by the cabin crew if it is clear that the requirement to evacuate is obvious. For example:

"This is an emergency. EVACUATE! EVACUATE!"

Upon hearing the command, all cabin crew should commence their evacuation duties.

16.5.9.4 While Opening and Preparing a Door for Evacuation

Initial commands should be aimed at passengers to get them to:

- Release seatbelts and stand up
- Retrieve and fit life vest (if appropriate and not already fitted)
- Leave all personal belongings
- Move into the aisle(s) and prepare to move to the nearest available exit

“Release seatbelts and get up!”

“Leave everything!”

“Get up, get out!”

During an evacuation on land, the first few passengers to reach the door while the cabin crewmember prepares and opens it could be instructed to help the cabin crew by:

- Staying at the bottom of the slide/raft/steps
- Assisting passengers off the escape device
- Assisting in moving passengers away from the aircraft

16.5.9.5 Once the Door is Safe for Evacuation

Once the door and associated escape device is ready and confirmed operational, the cabin crew should instruct passengers in the cabin to move towards it and prepare to evacuate.

“Come this way!”

At Type A exits, where an escape device has two slide lanes, passengers should be encouraged to divide into two lines at the doorway in order to evacuate as many passengers as possible simultaneously.

“Form two lines!”

16.5.9.6 As Passengers Leave the Aircraft

As passengers leave the aircraft, they should be instructed to use the escape device appropriately. Sample commands are shown below:

Land evacuation:

Slide	Onto Wing	Steps	From Door Sill Directly to Ground
<i>“Jump!”</i> <i>“Slide!”</i>	<i>“Step out!”</i> <i>“Step down!”</i> <i>“Walk to the back!”</i> <i>“Go down the slide!”</i> <i>“Follow the arrows!”</i>	<i>“Hold the handrail!”</i> <i>“Go down quickly!”</i>	<i>“Sit down!”</i> <i>“Jump down!”</i>

Water evacuation:

Using Life Vest		Using Seat Cushion	
<i>"Inflate life vest!"</i>		<i>"Grab seat cushion!"</i> <i>"Arms through straps!"</i> <i>"Hold to chest!"</i>	
Onto Slide/Raft	Into Water	Onto Wing	Into Life Raft
<i>"Inflate life vests!"</i> <i>"Crawl onto raft!"</i> <i>"Sit to the sides!"</i>	<i>"Inflate life vests!"</i> <i>"Jump into water!"</i> <i>"Hold onto slide!"</i>	<i>"Step out!"</i> <i>"Step down!"</i> <i>"Stay on the wing!"</i>	<i>"Climb into raft!"</i>

16.5.9.7 Managing Passenger Flow in the Cabin

Cabin crew need to monitor the evacuation to maintain an even flow of passengers from each exit. As the exits are not always clearly visible from each cabin, additional cabin crew not assigned responsibility for an exit may be required to move about the cabin to direct passengers towards all usable exits.

In addition to verbal commands, exaggerated visual cues may be necessary to attract passenger attention to the exits. Megaphones and flashlights may also be used, where available.

On larger aircraft with a multi-class cabin seating configuration, the aft and middle zones are usually more congested than the front of the aircraft during an evacuation. It may be necessary to redirect passengers to bypass their nearest exit to an available exit in another cabin to maximize the use of all exits and avoid congestion.

16.5.9.8 At Exits that Cannot Be Used

Exits may not be available for use due to failure of the door or escape mechanism, damage to the escape device or obstructions such as fire, water or other danger. In these circumstances, cabin crew should redirect passengers to usable exits:

"Exit blocked!"

"Go that way!"

"Go forward!"

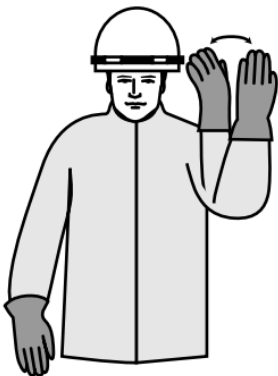
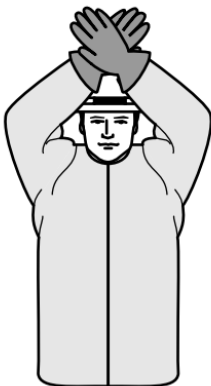
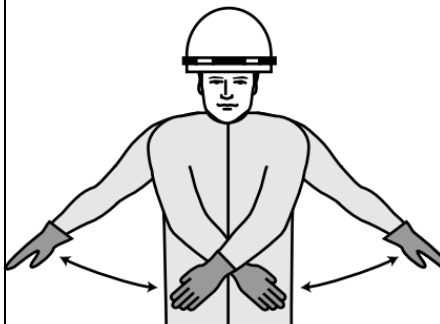
"Go back!"

"Go across!"

When redirecting passengers, crewmembers need to be aware of which exit to send passengers to. Cabin crew should listen for other crewmembers commands to "come this way" or "jump", indicating that the exit is usable.

16.5.10 Aircraft Rescue and Firefighting Signals

When evacuation takes place at an airport, airport rescue and firefighting services will use standard ICAO signals to indicate hazards to the cabin crew so that they can take appropriate action (i.e., slowing the evacuation, redirecting to alternative exits, stopping evacuation). Cabin crew should be trained to recognize the standard signals as follows:

Recommend Evacuation	Recommended STOP	Emergency Contained
		

16.5.11 Evacuation of Cabin Crew

Procedures and training should include the need for cabin crew to carry out a check of the cabin before evacuating themselves, depending on the degree of danger to personal safety. If the cabin is in darkness, a flashlight should be used to check the cabin.

A check of the following areas may be required:

- Aisles
- Seats (including the floor area between the seats)
- Galleys
- Lavatories
- Crew rest areas
- Flight deck area

After all remaining passengers have been evacuated, or if it is not possible to remain in the cabin, cabin crew should evacuate through the first available exit after taking the applicable emergency equipment from the aircraft (e.g., megaphone, first aid kit, flashlight). When evacuating during a ditching, cabin crew should evacuate through their own assigned exit, where possible, so that they can assume control of the slide/raft.

16.5.12 Post-evacuation

Once outside the aircraft, the cabin crew is responsible for the passengers until relieved by the authorities or emergency services. Until this help arrives, the cabin crew should:

- Direct passengers upwind and away from the aircraft
- Assemble passengers
- Direct passengers away from fuel, fire and vehicles
- Ensure no electronic devices are used in the vicinity
- Enforce “No Smoking”
- Assist passengers and provide first aid
- Start survival planning (if in a remote location)

16.5.13 Ditching

A ditching is an emergency landing on water and is a relatively rare occurrence in commercial aviation. During a “planned” ditching, the cabin crew will have prior notice and, therefore, some time to prepare the cabin and advise passengers to put on their life vests. An “unplanned” ditching leaves little or no time for the cabin crew to prepare passengers or themselves (e.g., donning life vests). The evacuation procedure should be in accordance with the aircraft type (i.e., over-wing exits, slides, slide-rafts, main deck only or upper deck) and as per the manufacturer recommendations.

After separation of the slide raft or raft, cabin crew should stay clear of the aircraft and debris. If in a remote location, once the passengers and crew are safe on a life raft, the cabin crew should:

- Close the canopy
- Activate the radio beacon
- Tie the radio beacon to the life raft (if more than one radio beacon is available, only launch and activate one at a time)
- Look out for other rafts and tie them loosely together using the lanyards
- Launch flares (when the crew sees potential rescuers)
- Drop sea dye-marker in water (during daylight when the crew sees potential rescuers)
- Aim flashlights or other signaling devices at noises
- Launch sea anchor

Flight crew or cabin crew should take command of the raft(s) and delegate duties to other occupants. Crew should ensure that no one removes their life vests.

16.6 Fire

An onboard fire has the potential to consume an aircraft quickly. Prevention is important and the prompt response by all crewmembers is critical. Each crewmember should be familiar with the location and operation of onboard firefighting and protective equipment.

16.6.1 Prevention and Early Detection

Fires are an especially serious event on board an aircraft. To prevent an onboard fire, the cabin crew should remain alert to any potential hazards and, in the event of a fire, detect its source quickly.

Cabin crew play an important role in fire prevention and should be on alert for fire hazards, such as:

Cabin	Galleys	Lavatories
<ul style="list-style-type: none"> Items in passenger and crew cabin baggage, including PEDs Paper/debris/waste build up Passengers smoking Dangerous goods 	<ul style="list-style-type: none"> Spilled fats or oils in ovens Inappropriate items in ovens Electrical appliances, such as ovens, coffeemakers, refrigeration units, and trash compactors 	<ul style="list-style-type: none"> Paper/debris/waste build up Overflowing waste bin Passengers smoking Faulty electrical systems
SOPs to mitigate these risks include, but are not limited to:		
<ul style="list-style-type: none"> Ensure correct use of in-seat power supply Ensure PEDs are stowed safely and not in a position where they become crushed Keep cabins tidy Regular cabin monitoring 	<ul style="list-style-type: none"> Clean up spills in ovens Report dirty/soiled ovens Ensure oven inserts are correctly installed, clean and undamaged (i.e., free of paper, labels, spilled fats or oils) Check ovens before switching on 	<ul style="list-style-type: none"> Ensure lavatories are kept tidy, waste bin flaps are closed and smoke detectors are not obstructed

Fire protection is an integral part of the design of modern aircraft. Examples of fire protection equipment in the passenger cabin include:

- Seats made of fire-retardant materials
- Lavatories equipped with smoke detectors
- Waste containers in the lavatory equipped with a fire extinguisher
- Crew rest areas equipped with smoke detectors and fire extinguishers
- IFE video control centers fitted with smoke detectors

Nevertheless, cabin fires still occur occasionally. Fires are not always obvious as smoke and flames may not be visible, but there may be other indications that a potential fire is in progress. Signs to be aware of and investigate include:

- Fumes or unusual odors
- Electrical malfunctions (e.g., circuit breakers “tripping”)
- Noises that may indicate electrical arcing (i.e., popping, snapping or crackling)
- Hot spots on sidewalls, floors and panels

If passengers or crew suddenly develop eye irritation, sore throat and/or headache, this may indicate that gas fumes are present, but may not have reached a level where they are visible. Cabin crew should immediately investigate any reports from passengers that may indicate a fire. The aim is to locate and extinguish a fire in its early stages.

Fires can be complex. In order to fight a fire successfully, cabin crew need to know the basics about fire chemistry and combustion as well as the appropriate extinguisher to use.

16.6.2 Smoke and Burning Odors

Not all smoke, fumes and burning odors are related to a fire. For example, smoke may result from deicing fluids being ingested by the engines. Burning smells may be the result of a new refrigeration compressor. Nevertheless, cabin crew should always report such incidents and investigate to ensure no danger exists.

Identifying the source of smoke, and taking immediate action, will significantly minimize the risk of fire on board the aircraft. The existence of smoke may impact flight operations and cause flight diversions, delays, cancellations, declared emergencies and evacuations. In addition, the presence of smoke may physically affect passengers and crewmembers if it is not dealt with rapidly and efficiently. It is important to ensure that the flight deck door remains closed to protect the flight crew from the smoke. The cabin crew should advise passengers to bend forward, cover their mouth and nose with clothing and take slow, shallow breaths. The cabin crew should don their protective breathing equipment (PBE).

16.6.2.1 Identifying the Source of the Smoke

In the main aircraft cabin, the only areas that are likely to have smoke detectors are the lavatories, the crew rest areas and the IFE video control center. Therefore, smoke detection and fire suppression rely heavily on human intervention.

It is wise to treat a smoke occurrence as a fire, until it has been proven otherwise. Smoke occurrences in the cabin usually involve equipment that is easily accessible to cabin crew. It can be observed directly if the smoke is coming from a coffeemaker, oven, seat video screen, or passenger seat control box, for example. Sometimes, the cabin crew may not see the smoke, but may be alerted to it by an odor. In this case, the odor should be traced to its strongest location. Keep in mind that the development of an odor takes some time to reach a level that is noticeable. In order to pinpoint the source of the smoke, another indication may be a surface that is abnormally warm.

If the source of the smoke is connected to an electrical source (e.g., coffeemaker), the circuit breaker relating to that equipment should be pulled. If the smoke is coming from the galley area, but cannot be pinpointed further, isolate the area by using the “galley shutoff” or by pulling all of the galley circuit breakers to cut off the power source. As a general rule, in case of smoke emissions from any electrical source, the first step is to remove the power source and keep firefighting equipment readily available in the event that the situation deteriorates.

16.6.3 Hidden Fires

The FAA’s Advisory Circular AC120-80A, In-Flight Fires, emphasizes the threat of hidden fires and the importance of crewmembers to:

- Recognize the sources of smoke
- Rapidly assess conditions
- Take immediate action to gain access to fire that is behind interior panels

One of the first indications of a hidden fire may be smoke emitting from areas that cannot be accessed easily by the cabin crew (i.e., sidewalls, overhead panels, air ducts, ceiling panels, cargo compartments). Many of these “hidden areas” involve wiring, air conditioning and/or insulation, and may hide a potential fire within the aircraft.

Smoke and fumes emitting from the seams or joints of a wall panel may indicate that electrical arcing has ignited a piece of material (i.e., insulation). Items in the cargo compartments are another source of smoke to consider. It is important for cabin crew to be aware of the potential sources of smoke on board the aircraft, including:

- **Overhead or “attic” area** — This is the area above the ceiling panels that includes wiring bundles and control surface cables as well as the emergency oxygen system, air conditioning system, and components of the IFE
- **Return air grill** — These are the vents at the foot of the sidewall panels on each side of the passenger cabin by which stale air is removed from the cabin
- **Cheek area** — This area below the floor outboard of the cargo area hosts hydraulic lines, electrical components and wiring bundles

16.6.4 Fighting a Fire

Depending on the number of cabin crewmembers carried, a team effort is the most effective way to combat an onboard fire.

Crew communication and coordination are important. The roles of the members of the cabin crew firefighting team complement each other because their tasks are performed simultaneously in order to optimize the firefighting effort. The roles of the members of the firefighting team can be defined as follows:

Firefighter	Communicator	Situation Manager
The crewmember who finds the fire.	The crewmember first called to assist by the firefighter.	The next crewmember called to help, or the SCCM (according to operator procedure).
Actively fights the fire: <ul style="list-style-type: none"> • Alert other cabin crew • Obtain the nearest fire extinguisher • Attempt to locate the source of the fire • Fight the fire 	Communicates with flight crew: <ul style="list-style-type: none"> • Location of the fire • Source of the fire • Severity, density, color of smoke/odor • Firefighting progress • Number of fire extinguishers used • Time firefighting action started • Situation in the cabin 	Manages the situation: <ul style="list-style-type: none"> • Supplies extra firefighting equipment • Supports the firefighting effort • Removes flammable material from the area • Manages the passengers

All other cabin crew should provide assistance as directed by the Situation Manager/SCCM. Additionally, it is important for cabin crew to maintain situational awareness as a fire may be used as a distraction; therefore, one cabin crew might be assigned to monitor cabin conditions for suspicious activity and/or security concerns.

Where fewer than three cabin crewmembers are carried, the responsibilities will need to be reassigned accordingly.

16.6.5 Firefighter Role

The firefighter’s role is to protect themselves from incapacitation or injury and to fight the fire using the appropriate firefighting procedures and equipment.

Halon or BCF (chemical name: bromochlorodifluoromethane) is a member of the chemical family of halogenated hydrocarbons, a liquefied gas that extinguishes fires by chemically interrupting a fire’s combustion chain, as opposed to physically smothering the fire. This is one of the main reasons why Halon is effective when the exact source of the fire cannot be positively determined. A small concentration of Halon in the air will prevent a fire from continuing to burn.

FAA Advisory Circular AC120-80A stresses the effectiveness of Halon when fighting in-flight fires. While it is recommended to always wear a PBE when operating a fire extinguisher and fighting a fire, “[...] The NTSB has expressed concern that the risks of exceeding the maximum recommended levels of Halon gas outlined in AC 20-42C Hand Fire Extinguishers for Use in Aircraft have been overemphasized in crewmember training programs,

especially when compared to the risks of an in-flight fire. The NTSB emphasizes, “that the potential harmful effects on passengers and crew [of Halon] are negligible compared to the safety benefits achieved by fighting in-flight fires aggressively”. The toxic effects of a typical aircraft seat fire, for example, far outweigh the potential toxic effects of discharging a Halon fire extinguisher”.

16.6.6 Communicator Role

The importance of effective crew communication, particularly in an abnormal or emergency situation such as a fire, is crucial. As it is important to keep the flight deck door closed wherever possible to prevent the spread of smoke, the actions taken by flight crew will very much depend on the information provided by cabin crew via the interphone.

It is vitally important that the flight crew receive a realistic account of the events in the cabin. Cabin crew should be trained to report conditions in the cabin in a clear and concise manner, including:

- The nature of the fire encountered
- The source of the fire/smoke
- The severity of the fire/smoke
- Passenger reactions
- Actions being taken to contain the incident and whether these are being effective

16.6.7 Situation Manager Role

The situation manager’s role is to take a holistic view of the incident and ensure that everything is being done that is necessary. This includes ensuring the provision of back-up equipment to the firefighter, ensuring their continued safety, delegating responsibilities, and making sure that communication to passengers and flight crew is maintained.

If there are passengers within close proximity of the fire, the cabin crew should move them away from the immediate area. If the amount of smoke or fumes is affecting the passengers, the cabin crew should encourage them to protect themselves from smoke inhalation by covering their nose and mouth with a cloth to protect from smoke particles. Better still, the cabin crew may distribute wet towels to the passengers, if available. If a passenger needs to be treated for smoke inhalation, and requires oxygen, the cabin crew should move the passenger from the affected area before administering the oxygen.

It is important to take into account the reactions of the passengers during an onboard fire. Most passengers will express concern, or may even panic. There is a definite need, therefore, for crewmembers to be present in the cabin to calm and reassure passengers. Crewmembers who are not actively involved in the firefighting effort should remain in the cabin to give assistance where required. Cabin crew should keep the passengers informed in a calm and reassuring manner by telling them what is happening.

16.6.8 Lithium Battery Fires

Fires involving lithium batteries require careful handling. When a lithium battery cell short circuits or heats, it becomes unstable and, depending on its size, can explode, quickly spreading a fire to surrounding items.

Lithium batteries are installed in most PEDs and rechargeable power banks, and are restricted for carriage under dangerous goods regulations. Smaller PEDs and spare batteries are usually permitted in the cabin, so it is important that operator procedures include cabin crew awareness that crushed, overheated or overcharged lithium batteries can cause a fire.

Larger lithium batteries are comprised of multiple cells connected in line inside a single casing; therefore, the risk of overheating spreading from one cell to the next is increased. This would result in multiple explosions as the cells ignite.

The priority in any instance of lithium battery overheating is to cool the device as quickly as possible with water or other non-flammable liquid in order to prevent or limit the number of cells that ignite. Where cells have already ignited, Halon fire extinguishers should be used to contain the spread of flames until it is safe to cool the device with water or other non-flammable liquid.

PED fire containment devices are available that can be used to store a device and contain any potential explosion; however, the priority is to immediately cool the PED with water. An already burning device should not be moved until after it has cooled enough to prevent ignition and explosion.

See [Appendix A](#) for recommended lithium battery fire procedures.

16.7 Cabin Fume Events

Cabin fume events may be related to a variety of situations, including:

- Air conditioning malfunction, contamination or overheating
- Use of strong cleaning fluids
- Dirty ovens
- Contamination of air supply with deicing fluids
- Other system failures

Any abnormality must be reported to the PIC and cabin crew should be trained to report such situations as quickly and efficiently as possible. Written reports should also be submitted as soon as possible so that patterns or problems may be identified and rectified by maintenance teams.

As odors and fumes can disappear as quickly as they are noticed, reports of such events should include the time the odor was present, a description of the odor (where possible) and the time it dissipated.

Section 17—Security

ICAO Annex 17 to the Chicago Convention requires that all operators produce an Operator Security Program. Many countries require a copy of an air carrier's security program before allowing them to fly inside their borders. The primary objective of international civil aviation security is to assure the protection and safeguarding of the aircraft, passengers, crew, ground personnel, the general public and airport facilities against acts of unlawful interference perpetrated on the ground or in flight.

17.1 IATA Security Manual

The objective of the IATA Security Manual is to provide operator personnel, at all levels, with security reference material, guidance and information required to competently perform their duties. It provides the reader with an understanding of current day principles of aviation security and various considerations to meet future threats. It also provides reference material that will assist in the management of security tasks not common to everyday operations.

The IATA Security Manual enables the industry and its stakeholders to further the goal of implementing integrated, proactive, effective and cost-efficient security procedures. Topics related to cabin crew include, but are not limited to:

- Acts of unlawful interference
- Crew training programs
- Types of unlawful seizures
- Bomb threats
- Least-risk bomb locations
- Cabin crew checklist for suspected in-flight chemical/biological weapons
- Prohibited items in the passenger cabin
- Catering security
- Removal of inadmissible passengers
- Deportees and other persons travelling under special status (e.g., prisoners)
- Human trafficking
- Unruly passengers that endanger the safety of the aircraft

For security reasons, sensitive information is not included in this manual. Security guidance, procedures and instructions for cabin crew are considered sensitive information and are normally only provided by the operator's security department to relevant personnel in a manner that protects the content from unnecessary disclosure.

To order the IATA Security Manual, go to: <http://www.iata.org/publications/store/Pages/security-manual.aspx> or contact securitymanual@iata.org.

For information on the IATA Security Course for crew offered by IATA Training, go to: www.iata.org/training/Pages/index.aspx.

17.2 Security Checks

Cabin crew (or other designated company personnel) should perform a search for any left-behind items and suspicious and/or restricted articles. This should be completed before passengers embark and after passengers disembark.

It is recommended that each cabin crewmember be assigned specific areas to check and report to the SCCM when searches are completed. A checklist indicating the specific areas to be checked should be available for cabin crew to use in order to assist with the task of security checks. The check should include all compartments that are accessible and are in general use by cabin crew and passengers on a flight.

17.3 Baggage Identification Check

Cabin crew (or other designated company personnel) may also be required to conduct a baggage identification check with passengers on board (e.g., during transit stops). Cabin crew should ask passengers on board to visually identify and verbally confirm their personal belongings. Cabin crew should verify not only items found in the overhead stowage compartment, but also items left on seats and in areas surrounding the seats. Seat pockets for seats unoccupied by passengers should be checked for any items that may have been left behind. Any unidentified item found on board should be offloaded from the aircraft prior to departure.

17.4 Reinforced Flight Deck Door

IOSA FLT 3.13.17 *If the Operator utilizes aircraft with a reinforced flight deck entry door in accordance with FLT 4.5.2 or FLT 4.5.3, the Operator shall provide guidance, procedures and instructions for the use of such door by the flight crew to ensure the security of the flight deck. Such guidance shall include, as a minimum, the procedural means by which the crew:*

- i. *Prevents access to the flight deck by unauthorized personnel;*
- ii. *Identifies authorized personnel requesting entry into the flight deck*

The principal intent of a reinforced flight deck door is to ensure the security of the flight deck by restricting access. Operators should provide the crew with appropriate guidance, procedures and instructions for use when a reinforced flight deck door is fitted.

17.5 Restricted Areas

Cabin crew should be alert for possible security breaches at all times. Only authorized personnel and passengers, as well as screened baggage, mail and cargo should have access to the aircraft, airside and/or other restricted areas. Cabin crew should report to the applicable authorities any situation that could affect the security of a flight. Cabin crew should challenge anyone attempting to gain access to the aircraft cabin without authorization or proper identification.

Potential security breaches should be reported to the PIC and the relevant security department of the organization. Cabin crew should report what the problem was, where/when it occurred, who noticed the situation, and why it is a concern.

17.6 Identification Badges

All cabin crew should be issued with a photo identity badge. It should be visibly displayed when on duty in all restricted areas. Cabin crew should always wear their identification badge as instructed by the applicable authorities.

Cabin crew should safeguard their identification badge at all times. Operators should have appropriate policies in place to handle cases where badges are lost or stolen.

It is also recommended for operators to have procedures for the withdrawal or return of company-issued identification badges and other company-issued items (e.g., manuals, uniforms).

17.7 Unruly Passengers

Unruly passengers are persons who fail to observe relevant instructions of the organization and its authorized staff, cause annoyance and problems to other passengers or staff, and jeopardize the safety and security of passengers, staff or aircraft by their disruptive behavior.

A clear operator policy is required to proactively address the issue. Crucial to the effectiveness of the process is the support of the operator's executive management at an early stage. A set of procedures offering specific guidelines on implementing the policy needs to be communicated to all frontline staff.

Conflicts can take many forms. Some may be resolved through de-escalation techniques and a satisfactory conclusion found, without further consequences. When a conflict becomes confrontational and hostile, however, it should be addressed immediately. Most important to consider is whether the unruly behavior of the passenger poses a threat to the safety of the flight. If the conflict occurs on the ground, it should be resolved before departure.

In using de-escalation techniques to reduce tension, it is recommended for cabin crew to:

- Listen
- Allow the passenger to express his/her concerns
- Be courteous, but firm
- Address the issue
- Appeal to reason before resorting to authority
- Ensure cabin safety
- Be assertive
- Do not take issues personally

Cabin crew should not hesitate to involve other crewmembers and/or the SCCM, as required. The SCCM should inform the flight crew of any incidents involving unruly passengers.

IATA has published Guidelines on Unruly Passenger Prevention and Management, which can be accessed at the following link: www.iata.org/cabin-safety.

In addition, IATA Recommended Practice 1724 General Conditions of Carriage (Passenger and Baggage) provides operators with useful guideline for dealing with difficult passengers. This includes Article 8, Section 8.1 Refusal and Limitation of Carriage and Article 11 Conduct Aboard Aircraft.

The IATA Recommended Practice 1724 can be found in the IATA Passenger Services Conference Resolutions Manual, which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>

17.8 Crew Protection

Some operators provide destination briefings or notices/communications to their crew. These can include references to current events and possible advisories in order to provide advice for the safety and security of their crewmembers while at the destination.

In addition, there are a number of precautions operators can include in cabin crew security training:

- Be discreet when communicating a room number to hotel staff and other crewmembers
- Establish a buddy system to contact each other in case of fire or other emergency at the hotel
- Note the room number of the SCCM and/or PIC
- Do not leave luggage unattended
- Ensure name tags are discreet and home address is not visible
- Do not walk in questionable or dark areas on layover, especially when alone
- Review hotel exit routes and other emergency procedures
- Protect passports and any other important documents (i.e., ID cards) as well as valuables in the hotel room by using the room/hotel safe
- Do not agree to transport packages or envelopes for others

Section 18—Health and Medical Care On Board

18.1 Cabin Insect Extermination (Disinsectization)

In accordance with the Chicago Convention ICAO Annex 9 part D, each State can impose a disinsectization requirement if it perceives a threat to health, agriculture and the environment.

States will determine whether disinsectization is required and which methods of disinsectization are acceptable in accordance with World Health Organization (WHO) recommendations:

18.1.1 Disinsectization Method 1: Preflight

A preflight aerosol containing an insecticide with rapid action and limited residual effect is applied by ground staff to the flight deck and passenger cabin, including toilet areas, open overhead and sidewall lockers, coat lockers, and crew rest areas. The spray is applied before the passengers board the aircraft, but not more than one hour before the doors are closed.

Preflight spraying is followed by another spray in-flight (i.e., as the aircraft starts its descent to the arrival airport).

18.1.2 Disinsectization Method 2: Blocks Away

Spraying is carried out by crewmembers when the passengers are on board, after closure of the cabin door and before the flight takes off. An aerosol containing a rapid-action insecticide is used. The air-conditioning system should be switched off during cabin spraying. The flight deck is sprayed before the pilots board (when no passengers are on board). Cargo holds should also be decontaminated.

As the overhead locker doors should be open during this process, spraying should be carried out as soon as the last aircraft door is closed and before movement of the aircraft, allowing time for spraying and the closure of overhead lockers by cabin crew.

18.1.3 Disinsectization Method 3: Top-of-descent

Top-of-descent spraying is carried out when the aircraft starts its descent to the arrival airport. An aerosol containing 2% D-phenothrin is currently recommended by the WHO for this purpose and is applied with the air recirculation system set at normal to high flow.

18.1.4 Disinsectization Method 4: Residual

The internal surfaces of the passenger cabin and cargo hold, excluding food preparation areas, are sprayed with a compression sprayer that has a constant flow valve and flat fan nozzle according to WHO specifications.

Residual sprays (recommended product: [permethrin 25:75 cis:trans](#)) are applied at intervals not exceeding two months by professional pest control operators and are intended for long-term residual activity on aircraft interior surfaces. After each treatment is completed, air-conditioning packs should be run for at least one hour before the crew and passengers embark to clear the air of the volatile components of the spray.

Areas that undergo substantial cleaning between treatments require supplementary 'touch-up' spraying.

18.1.5 Proof of Disinsectization

When an operator has carried out disinsectization with an approved method, they are required to provide written certification to the airport upon arrival. This is normally included on the General Declaration, or in the case of residual disinsectization, by separate certificate.

18.1.6 Risk Assessment - Disinsectization

When determining procedures for disinsectization and choosing the most appropriate method, operators should carry out a risk assessment, including at least the following:

Adverse Event	Potential Cause	Outcome/Risk
Inadvertent activation of lavatory smoke detector.	Spraying of insecticide in lavatory compartment.	Unnecessary pilot alarm at a critical stage of flight.
Residual build-up of contamination on lavatory smoke detector.	Spraying of insecticide in lavatory compartment.	Defective/inoperative lavatory smoke alarm.
Overhead compartments open during taxi.	Requirement to spray cabin with compartments open after door closure.	Unrestrained items falling during taxi. Passenger or crew injury.
Passenger discomfort/respiratory concern.	Allergy/sensitivity to pesticides (known or suspected).	Negative publicity and customer feedback.
Incorrect discharging of gas from aerosol can.	Inadequate training/procedures.	Freeze burns to cabin crew hands.

For more information on aircraft disinsectization, please refer to:

http://www.who.int/ihr/ports_airports/zika-aircraft-disinsection/en/

<http://www.who.int/ipcs/publications/ehc/ehc243.pdf?ua=1>

<https://www.transportation.gov/office-policy/aviation-policy/aircraft-disinsection-requirements>

<https://www.tc.gc.ca/eng/civilaviation/opssvs/managementservices-referencecentre-acslta-lta-002-947.htm>

18.2 Medical Care Policy

Some of the procedures in this section are derived from IATA Resolutions, which means they are mandatory for IATA member airlines.

Operators should have a policy in place to deal with medical events that occur on board. In developing a policy, it is important for operators to ensure that all necessary departments are identified and involved in the creation of the policy. Depending on the scale and scope of the operator, these departments may include:

- **Medical or Occupational Health** (or designated physician or clinic) — to ensure that medical equipment is adequate and appropriate, and that medico-legal requirements are met
- **Safety and Training** — for training of flight and cabin crew
- **In-flight Services** — for communication with cabin crew and coordination of cabin crew welfare issues
- **Flight Operations** — for agreement of procedures, including communications with the ground
- **Legal** — to deal with legal problems arising as a result of medical care provided to a passenger in flight
- **Customer Care**

18.3 Reporting of Medical Incidents

In developing their medical care policy, operators need to determine what information needs to be reported and how it should be reported. The following elements should be addressed:

- Use a simple form or electronic system to ensure that incidents are well documented
- Identify a central point of responsibility to receive and manage the reports
- Determine the circumstances when actions should be taken
- Define and communicate what actions should be taken
- Implement a process to ensure that medical supplies, equipment and training programs are appropriate to the type of incidents occurring
- Review incidents and outcomes in order to validate and amend procedures, where applicable

A sample Medical Incident Report form to be used by cabin crew to report incidents is available in the IATA Medical Manual: <http://www.iata.org/publications/Pages/medical-manual.aspx>

18.4 Handling of a Death on Board

In the event of a death on board, it is recommended that cabin crew follow IATA guidelines found at: www.iata.org/health. While only a medical doctor can formally pronounce a person dead, see the IATA guidelines for when a person may be presumed dead.

If an operator has predetermined areas for stowing a passenger's body, and the body has to be moved from another part of the aircraft, it is essential that cabin crew move the body discreetly. For example, an aircraft wheelchair may be used so as not to draw the attention of other passengers.

The PIC must be informed of the death.

Close cooperation needs to be established with national governments and airport authorities to ensure that procedures are properly communicated to ground staff.

When a serious medical emergency has occurred on board resulting in the death of a passenger, the crew needs to be trained in the handling of any accompanying passengers. There can also be lasting effects on the crew involved. It is recommended that operators develop procedures to ensure that crewmembers are properly supported after such incidents.

18.5 Carriage of Medical Portable Electronic Devices (MPEDs)

Passengers may wish to carry their own assistive medical devices on board. Disability regulations applicable to some States typically require that passengers with disabilities must be permitted to carry devices on board in addition to the normal carry-on baggage allowance, so long as they are compliant with safety regulations.

Operators may permit the carriage and use of such devices if it can be established that they do not transmit sufficient electromagnetic interference so as to present a hazard and that they comply with the dangerous goods regulations regarding carriage of lithium batteries and/or compressed gas, as well as any other regulations applied by the State.

18.5.1 Airway Pressure Devices

Continuous Positive Airway Pressure (CPAP) and Bi-level Positive Airway Pressure (BiPAP) machines are commonly used to treat sleeping disorders, such as sleep apnea, by providing a flow of oxygen under pressure.

18.5.2 Portable Oxygen Concentrators

These electrically operated devices separate oxygen from nitrogen in the air and provide the user with oxygen at a concentration of more than 90%. Oxygen is delivered continuously through a breathing mask or on demand through a nasal breathing tube (cannula).

18.5.3 Acceptance and Use of MPEDs

- Devices should be classified as Critical MPEDs and Non-critical MPEDs.
- If a critical MPED is battery operated, sufficient spare batteries must also be carried to power the device for the duration of the passenger's journey. Spare batteries must only be carried in accordance with dangerous goods regulations.
- Operators may permit the aircraft power supply to be used to power MPEDs; however, as the supply can fluctuate and become unavailable, or the device may not be compatible with the aircraft systems, this should be carefully managed, particularly in the case of critical MPEDs.
- Devices must be of a size that allows them to be safely and securely stowed in the cabin.
- The use of breathing tubes should not obstruct other passengers' access to the aisle.
- They should be positioned in a manner so that air intake/filters are not obstructed and the user can see the control switches and warning indications at all times.

For more information, please refer to: http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-95A.pdf.

18.6 Emergency Equipment and Supplies

A variety of emergency medical equipment and supplies should be kept on board in accordance with operator policies and Authority regulations.

18.6.1 First Aid Kits

IOSA CAB 4.2.1 If the Operator conducts passenger flights with or without cabin crew, the Operator shall ensure all passenger aircraft in its fleet are equipped with one or more first aid kits that are distributed as evenly as practicable throughout the passenger cabin(s) and are readily accessible for use by crew members.

It is essential that the first aid kits be distributed as evenly as practicable throughout the passenger cabin so they are readily accessible to cabin crew. In view of the possible use of medical supplies outside the aircraft in an emergency situation, some kits should be located near the exits.

18.6.2 Medical Kit

IOSA CAB 4.2.2 If the Operator conducts passenger flights with cabin crew, and utilizes aircraft with more than 100 passenger seats on flight sector lengths of more than two hours, the Operator should ensure all such passenger aircraft in its fleet are equipped with a minimum of one medical kit, stored in a secure location, for use by medical doctors or individuals with appropriate qualifications or training.

The extended medical kit, when carried, should be stored in an appropriate secure location, with a placard stating it is emergency equipment stowage and not for passenger use.

18.6.3 Universal Precaution Kit

IOSA CAB 4.2.3 If the Operator conducts passenger flights with cabin crew, the Operator should ensure all passenger aircraft in its fleet are equipped with one or more universal precaution kits for use by cabin crew members in managing:

- (i) Episodes of ill health associated with a case of suspected communicable disease;
- (ii) Cases of illness involving contact with body fluids.

IATA recommends one or two universal precaution kits per aircraft for normal operations, with additional kits being carried at times of increased public health risk.

The contents of an aircraft universal precaution kit would typically include:

- Dry powder that can convert a small liquid spill into a granulated gel
- Germicidal disinfectant for surface cleaning
- Skin wipes
- Face/eye mask (separate or combined)
- Gloves (disposable)
- Impermeable full-length long-sleeved gown that fastens at the back
- Large absorbent towel
- Pick-up scoop with scraper
- Bio-hazard disposal waste bag
- Instructions

18.6.4 Automatic External Defibrillators

The carriage of Automatic External Defibrillators (AEDs) is determined by an operator on the basis of a risk assessment, taking into account the particular nature of the operation. Operators should ensure that they have established clear policies with respect to liability, maintenance, quality assurance and training standards, particularly the requirement for CPR (cardio-pulmonary resuscitation) training.

18.6.5 Survival Equipment

In addition to the usual survival equipment carried for flights over water (i.e., life vests), first aid kits should be carried in the slide rafts so they can be used for post-ditching medical care.

18.7 Training

Cabin crew training for in-flight medical events should be in accordance with recommendations found in CAB 2.2.11 of the [IOSA Standards Manual](#) Section 5 (CAB).

18.8 Cabin Crew Manual

Operators should ensure that their cabin crew manual contains specific company policies and procedures regarding the responsibilities of cabin crew in the case of a medical event, including information regarding:

- First aid care
- Safety considerations
- Administration of medication and oxygen
- Use of medical equipment
- Calling for a physician
- Notification of the flight deck
- Medical contacts

In addition, necessary instructions should be provided so that cabin crew can ensure that appropriate medical assistance is ready upon arrival.

18.9 Cabin Crew Protection

Operators should include in their training programs procedures regarding the prevention of cabin crew injury as a result of the handling of medical equipment such as syringes and needles. These should include hygienic protocols to ensure the safety of the cabin crew (e.g., wearing of gloves and face masks, use of sharps containers).

18.10 Crew Immunization

It is recommended that crew be immunized in accordance with the recommendations of the WHO and the operator's national public health Authority.

18.11 Carriage of Passengers with Communicable Diseases

Communicable diseases, particularly those with the potential of becoming public health emergencies of international concern, have important implications for airlines and their customers. Passengers and crew can be exposed, with or without their knowledge, to communicable diseases that are normally spread through close contact. Examples of such diseases include chicken pox, tuberculosis and influenza.

For this reason, it is important for operators to ensure that they receive up-to-date information regarding countries where there is a greater risk of exposure to communicable diseases. It is recommended that operators take into account the information, and follow the recommendations, published by the WHO. Operators should make this information available to cabin crew travelling to the countries concerned.

In the event that a cabin crewmember suspects that a passenger may suffer from a communicable disease, they should follow the IATA guidelines for cabin crew for suspected communicable disease found at: www.iata.org/whatwedo/safety/health/Pages/diseases.aspx.

Section 19—Food and Hygiene

Cabin crew play a crucial role in creating an operator's image to the passenger. It is, therefore, important for the service delivered by cabin crew to meet the operator's expected quality standards. Equally important is the need for cabin crew to ensure that food and beverages served on board meet the highest standards of hygiene and safety.

19.1 Acceptance of Catering Supplies on Aircraft

Effective interaction between the caterer and cabin crew is crucial. The SCCM or other person nominated by the operator acts as the interface with the caterer and should supervise the delivery of catering supplies onto the aircraft.

The caterer should hand over to the SCCM a delivery sheet containing details of the meals uplifted and ensure that:

- Each item is placed in the correct location (this will vary depending on the aircraft, operator and flight involved)
- Food is properly sealed and has been sufficiently protected against heat, dust and insects during loading
- The time interval between when food was taken out of the refrigerator and loaded onto the aircraft remains within acceptable limits, as cold chain should be maintained at all times until food is served to the final passenger

The SCCM should be satisfied that the delivery corresponds to the Aircraft Catering Order (ACO) and that, in the event of a delay, appropriate measures have been taken to prevent spoilage of the food (see [19.4.1](#)).

19.2 Crew Service Briefings

In order to ensure the smooth running of the in-flight food service and to minimize the risks associated with food handling, it is recommended that the SCCM review the service plans for the flight with the crew, including:

- Time scheduled and available for the meal service
- Special meal requirements
- Flight deck service
- Crew meals
- Proper handling of food in the heating and cooling processes
- Personal and galley hygiene

19.3 Hygiene and Sanitation

The World Health Organization (WHO) Guide to Hygiene and Sanitation was developed with the cooperation of IATA and can be found at the following link:

http://www.who.int/water_sanitation_health/hygiene/ships/guide_hygiene_sanitation_aviation_3_edition.pdf.

19.3.1 Risks and Prevention

Contamination of foodstuffs can occur from physical (e.g., foreign objects), chemical (e.g., cleaners), or biological (e.g., bacterial) means. Poor hygiene or unsatisfactory disposal of food waste can result in the contamination of food and influence safety on board, either directly or indirectly, in the following ways:

- Sudden incapacitation or collapse of a crewmember resulting from a short-incubation type of food poisoning due to bacterial toxins
- Sudden incapacitation of a crewmember at a critical phase of flight, as may occur in cases where there is toxemia prior to the onset of gastrointestinal symptoms (i.e., food poisoning)
- A suspected outbreak of acute food poisoning affecting a significant number of passengers; while in itself a minimal safety risk, the scenario may influence the flight crew to divert to an alternative airport

It is, therefore, essential that anyone engaged in the provision or handling of aircraft food be properly trained.

Cabin crew training should include:

- Company regulations and procedures
- Essentials of food hygiene
- Risks and precautions
- Health requirements of cabin crew
- Cabin galley features and use of all equipment, such as chillers
- Segregation practices for dirty items and food that has yet to be served
- Use of protective clothing
- Code of practice in handling food, cooking times, reheating and maintaining hot/cold food temperatures
- Personal hygiene, including proper hand washing prior to beverage and meal services
- Reporting illness
- Special meals
- Acceptance of the delivery of food onto the aircraft
- How to deal with cases of food poisoning
- Food complaint procedures

19.3.2 Personal Hygiene

It is recommended that all cabin crew should be medically screened before employment. Operators should give cabin crew the responsibility of confirming that they are in good health when signing on for duty, particularly when a staff member has returned to work following sickness related to a gastrointestinal disease or other food-related disease.

Cabin crew should follow the same code of practice as food handlers on the ground:

- Visible cuts/lesions should be covered with an easily visible waterproof dressing that is replaced regularly to keep clean
- Crew should never sneeze or cough over food, utensils or galley working surfaces
- When serving passengers, fingers should not be placed inside cups or glasses and cutlery/silverware should only be picked up by the handle

19.3.2.1 Handwashing

Prior to commencing food service, hands should always be washed with soap (preferably a non-perfumed liquid soap solution from a dispenser) and plenty of warm water. Cabin crew should wash their hands again if they have handled any article likely to be contaminated (e.g., an airsickness bag, waste, lavatories).

Hands should be dried with a disposable towel. Sanitizing gels may be used as an enhancement, but should not be used as the sole method of handwashing.

Some operators choose to provide disposable gloves for cabin crew clearing of waste in the cabin.

19.3.3 Galley Equipment

Food is stored in the galleys, which vary depending on the size and type of aircraft. Cabin crew should be trained in the proper use of all galley equipment on the aircraft.

It is the responsibility of cabin crew to ensure that the galley, equipment and utensils are kept clean and organized during the flight, including galley work surfaces and stowage drawers/units.

Used items (e.g., glasses, trays) should be kept separate from clean items at all times.

19.3.4 Special Cleaning

There are occasions when special cleaning is needed during a flight (e.g., when a sick passenger soils seats or carpets). This sickness might be the result of an infection and, apart from the nuisance caused to other passengers, there might be a health hazard. Since major cleaning involving the replacement of soiled seat covers cannot be undertaken until arrival at the next airport with suitable facilities, the cabin crew should be supplied with Universal Precaution Kits and appropriate materials to decontaminate the area. Where possible, passengers should be resealed.

Operator procedures should include a reporting method for cabin crew to advise cleaning staff of soiled areas requiring additional cleaning.

19.4 Food Safety

Food is responsible for the transmission of a large number of diseases. The subject of food sanitation and hygiene is sufficiently important that international health regulations govern the storing and handling of food. Various parties are involved in that responsibility and have an important role to play:

- National health administrations
- Local health authorities
- Operator catering companies
- Operators
- Aircraft manufacturers
- Catering equipment manufacturers

It is important to recognize that, in view of the millions of passengers now travelling by air each year, the incidence of food-borne infections and associated disorders is remarkably low due to the vigilance of operators as well as their catering departments and suppliers. There are many diverse authoritative books on the subject of food sanitation and it is recommended that operators be guided by relevant resources such as the Hazard Analysis and Critical Control Point (HACCP) analysis www.haccponline.ca/home and the International Flight Services Association (IFSA) Food Safety Guidelines http://www.ifsanet.com/?page=World_Guidelines and other references found in this section. Also, in order to promote worldwide meal definition standardization, guidelines have been set out in IATA Recommended Practice 1773, Passenger Services Conference Resolutions Manual, which is available for purchase at <http://www.iata.org/publications/store/Pages/passenger-services-conference-resolutions-manual.aspx>

The [Quality & Safety Alliance for Inflight Services \(QSAI\)](#), developed in consultation with and managed by [Medina Quality](#), is an alliance of international airlines that ensures diligent efforts are made to provide food that meets quality expectations and protects passengers against food safety risk. QSAI is the world's first auditing program that allows airlines to share the cost of monitoring and improving the safety and quality of passenger food according to industry-benchmarked standards that tackle international legal requirements.

19.4.1 Adequate Temperature

- Below 5°C (41°F) = Ideal to keep foodstuff and meals
- 20 - 50°C (68-122°F) = Bacteria multiply rapidly
- 75°C (167°F) = Ideal cooking temperature

19.4.2 Keeping Food at the Correct Temperature

All meals and foodstuff must be kept at the correct temperature on board an aircraft. Caterers keep food and meals refrigerated until loading on board the aircraft at a temperature between 5 - 7°C (41 - 44°F). In order to maintain safety and quality of the food, cabin crew should keep the food as close to this temperature range as possible at all times. Dairy products should be kept in chillers or special compartments made for this purpose. Special chilling equipment may be part of the equipment at some airlines and should be used at all times.

19.4.2.1 Delayed Flights

In the case of unexpected delays, after the food has been loaded onto the aircraft, the length of the delay will determine the course of action to be taken.

The responsibility for determining the course of action will depend on individual operator policies and the prevailing circumstances; however, once the crew has accepted a delivery of food, it becomes the responsibility of the operator.

In the event of a delay of several hours or where cabin crew have any doubts as to the safety of the food, the caterer should be asked to examine it. The final decision on action to be taken is usually the joint responsibility of the caterer and operator. All details relating to times, food temperatures, actions and decisions should be recorded.

19.4.3 Heating Process

Special care must be taken in heating the meals on board, depending on the type of food (e.g., poultry, meat, fish, pasta) and such information is usually given by the caterer and the operator during cabin crew training. It is important to remember the following:

- Meals should never be heated more than once
- Food must be heated to a temperature of more than 75°C, as only at that temperature are most bacteria killed.

19.4.4 Insects and Foreign Objects

Insects are a source of contamination, and one of the most common foreign objects found in aircraft meals. Cabin crew should keep a careful watch for insects and report their presence on board immediately to the PIC. Local regulations and individual operator policies will determine the action to be taken if a meal is discovered to be contaminated with insects or other foreign objects.

19.5 Suspected Food Poisoning

In the event a passenger or crewmember becomes ill during the flight due to suspected food poisoning, a Medical Incident Report form should be completed. Cabin crew should be appropriately trained in dealing with such cases. Further guidelines are set out on the IATA Health web page at: www.iata.org/health. Written reports should be provided so that sampling and testing of the food may be carried out, where necessary.

19.6 Allergen Management

Procedures should be in place to minimize the risk of undeclared allergen inclusion in food and drink to ensure accurate, up-to-date allergen information is available for allergic passengers, where legally required.

To ensure provision of accurate allergen information, many caterers around the world provide information to the operators through an allergen report or provide allergen information specific to the food that has been catered to enable passengers to make an informed food choice, when departing from countries where legally required and according to countries' legislation.

Information may be provided for food allergy enquiries via the operator's website, menus, food packaging, in-flight communication, or verbally by cabin crew.

UK Food Standards Agency, Allergen Resources - <https://www.food.gov.uk/business-industry/allergy-guide/allergen-resources>

US FDA - Food Allergen Labeling and Consumer Protection Act of 2004
<http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Allergens/ucm106890.htm>.

19.7 Special Meals

A passenger's special meal needs should be handled at the time of reservation, and reflected on the Passenger Information List (PIL). The cabin crew should be familiar with the characteristics of the different meal types in order to be able to identify such meals and respond appropriately to passenger needs.

Special meals should be identified by the caterer by attaching a special meal tag or label to the cart or container that the meals are in. The number and types of special meals are listed on the ACO. Crew should verify that the appropriate numbers of meals have been delivered and the passenger's name and seat number correspond to the information provided on the PIL.

The Quality & Safety Alliance – In-flight Services (QSAI), developed and managed by Medina Quality, is responsible for administration and definition of special meal codes globally. These QSAI Special Meals – Codes, Definitions & Interpretation Guidelines are freely available to all QSAI alliance members and to non-member organizations for a nominal fee.

See the table below for examples of the QSAI Special Meal Codes:

SPML	Special Meal	LSML	Low-Sodium Meal
AVML	Asian Vegetarian Meal	MOML	Muslim Meal
BBML	Baby Meal	NLML	Non-Lactose Meal
BLML	Bland Meal	RVML	Raw Vegetarian Meal
CHML	Child Meal	LFML	Low-Fat Meal
DBML	Diabetic Meal	SFML	Seafood Meal
FPML	Fruit Platter Meal	VGML	Vegan Meal
GFML	Gluten Intolerant Meal	VJML	Vegetarian Jain Meal
HNML	Hindu Meal	VLML	Vegetarian Lacto-Ovo Meal
KSML	Kosher Meal	VOML	Vegetarian Oriental Meal
LCML	Low-Calorie Meal		
LFML	Low-Fat Meal		

Source - QSAI Special Meal Codes (Contact Medina Quality for details – <http://www.medinaquality.com/#!/home>)

19.8 Potable Water and Ice

Operators should take into account the length of the flight and ensure that there is sufficient potable water on board. The quality standards and sanitary regulations regarding the potable water systems on board aircraft are published by the World Health Organization (WHO).

Only ice cubes manufactured from potable water and delivered to the aircraft in sealed polyethylene bags should be put into drinks. Broken block ice should only be used for chilling bottles and cans. Ice should be served by proper tongs, and never handled by hand. For more information, see the International Standards for Drinking Water: WHO Guide to Hygiene and Sanitation in Aviation at:

http://www.who.int/ihr/ports_airports/guide_hygiene_sanitation_aviation_3_edition_wcov.pdf.

19.8.1 IATA Drinking-Water Quality Pool

The IATA Drinking-Water Quality Pool (IDQP) was created by a number of operators to share audits on drinking water quality around the world. The IDQP also developed its own procedures for conducting airfield inspections, using the highest quality standards.

Benefits of membership include:

- Safeguarding the onboard health of passengers and crew by using the highest standards to ensure water quality
- Avoiding multiple audits of the same provider at the same location
- Potential financial savings from reductions of airport inspection workloads and associated costs

To avoid illnesses, all water for drinking and other personal use made available to crew and passengers must be free from harmful chemical substances and micro-organisms. The WHO and local authorities have issued sanitary requirements for the chlorination and handling of potable water.

For more information, please see: www.iata.org/whatwedo/safety/audit/Pages/idqp.aspx.

For more information on how to join the IDQP, please contact: IDQP@iata.org.

19.9 Feedback from Passengers and Crew

Cabin crew are able to provide valuable feedback regarding their operator catering service. Should a passenger or crewmember have a comment regarding any item of food, cabin crew should be encouraged to complete a report providing details. In the event of a complaint involving a foreign object in a food item, or suspected food poisoning, crew should retain samples of the suspect dish for analysis and hand it over at the arrival station for investigation.

19.10 Reporting of Service Delivery Irregularities

Cabin crew are the operator's link with the performance of the caterer. It is, therefore, essential that they report any discrepancies with respect to the delivery and quality of catering supplies. This will allow operators to review problems with the caterer in order to avoid a recurrence.

Food should not be served if the cabin crew has any doubts with respect to the quality of the food (e.g., abnormal smell, texture). A standard report should be available to cabin crew on board to report feedback to operator management.

Section 20—References and Appendices

20.1 Phonetic Alphabet

A	ALPHA	J	JULIET	S	SIERRA
B	BRAVO	K	KILO	T	TANGO
C	CHARLIE	L	LIMA	U	UNIFORM
D	DELTA	M	MIKE	V	VICTOR
E	ECHO	N	NOVEMBER	W	WHISKY
F	FOXTROT	O	OSCAR	X	XRAY
G	GOLF	P	PAPA	Y	YANKEE
H	HOTEL	Q	QUEBEC	Z	ZULU
I	INDIA	R	ROMEO		

20.2 References

20.2.1 Expanded use of PEDs

[EASA, Safety Information Bulletin \(SIB\) 2013-21, Use of Portable Electronic Devices during Commercial Air Transport Aircraft Operation, 09-Dec-2013](#)

[FAA, Notice 8900.240, Expanded Use of Passenger Portable Electronic Devices \(PED\), 31-Oct-13](#)

[FAA, Information for Operators \(InFO\) 13010, Expanding Use of Passenger Portable Electronic Devices \(PED\), 31-Oct-2013](#)

[FAA, Supplement to FAA InFO 13010, 10/31/13, FAA Aid to Operators for the Expanded Use of Passengers PEDs, 09-Jun-2014](#)

[EASA, Explanatory Note to ED Decision 2014/029/R, Portable Electronic devices AMC and GM to Part CAT, Issue 2 amendment 1, 24-09-2014](#)

[FAA, Advisory Circular \(FAA AC\) 91.21-1B, Use of Portable Electronic Devices Aboard Aircraft, 25-Aug-2006](#)

[RTCA, document no. DO-160E, Environmental Conditions and Test Procedures for Airborne Equipment, 9-Dec-2004](#)

[RTCA, document no. DO-294B, Guidance on Allowing Transmitting Portable Electronic Devices \(T-PEDS\) on Aircraft, 16-Dec-2008](#)

[RTCA, document no. DO-307, Aircraft Design and Certification for Portable Electronic Device \(PED\) Tolerance, 16-Dec-2008](#)

[Transport Canada, Advisory Circular \(AC\) No 700-005 Use of Transmitting and Non-Transmitting Portable Electronic Devices](#)

[Civil Aviation Authority UK \(CAA\), Civil Aviation Publication \(CAP\) 756, Portable Electronic Device Generated Electro-magnetic Fields on Board a Large Transport Aeroplane, Nov-2005](#)

20.2.2 Electronic cigarettes

[FAA, Safety Alert for Operators \(SAFO\) 15003, Fire Risk of Electronic Cigarettes \(e-cigarettes\) in Checked Baggage, 22-Jan-2015](#)

20.2.3 Evacuation

[EASA, Safety Information Bulletin \(SIB\) No. 2013-06, Evacuation of Infants, 17 May 2013](#)

20.2.4 Lithium Batteries

Civil Aviation Authority UK (CAA):

[Lithium batteries guidance for cabin crew and cargo workers](#)
[Electronic devices in seat mechanism fire hazard](#)

Civil Aviation Safety Authority (CASA):

[Traveling safely with batteries](#)
[Dangerous Goods lithium batteries poster](#)

United States Federal Aviation Administration (US FAA):

[SAFO 09013 - Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices](#)
[Aviation Cargo and Passenger Baggage events involving smoke, fire, extreme heat or explosion, involving lithium batteries or unknown battery types.](#)
[SAFO 15010 - Carriage of Spare Lithium Batteries in Carry-on and Checked Baggage](#)
[SAFO 15003 – Fire Risk of Electronic Cigarettes \(e-cigarettes\) in Checked Baggage](#)

International Air Transport Association (IATA):

[Dangerous Goods webpage:](#)
[Cargo & Dangerous Goods Regulations Training Courses:](#)
[Guidance materials relating to personal transportation devices, electronic cigarettes and cabin crew lithium battery fire fighting procedures](#)



International Civil Aviation Organization (ICAO):

[Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods \(Doc 9481 AN/926\)](#):

SKYbrary:

[Lithium-Ion Aircraft Batteries as a Smoke/Fire Risk](#):

Transport Canada:

[Service Difficulty Alert - Procedures for fighting fires caused by Lithium Type batteries in Portable Electronic Devices](#):

20.3 Related Organizations

Air Safe	<u>www.airsafe.com</u>
Flight Safety Foundation (FSF)	<u>www.flightsafety.org</u>
International Society of Air Safety Investigators (ISASI)	<u>www.isasi.org</u>
National Transportation Safety Board (NTSB)	<u>www.nts.gov/index.html</u>
SKYbrary	<u>www.skybrary.aero</u>
Southern California Safety Institute (SCSI)	<u>www.scsi-inc.com</u>

REGULATORY

[Australia - Civil Aviation Safety Authority Australia - CASA](#)

[Brazil - Agencia Nacional de Aviacao Civil - ANAC](#)

[Canada - Transport Canada](#)

[Chile - Direccion General de Aeronautica Civil - DGAC](#)

[China - Civil Aviation Administration China - CAAC](#)

[Colombia - Aeronautica Civil](#)

[Eastern Caribbean Civil Aviation Authority - ECCAA](#)

[Eire - Irish Aviation Authority - IAA](#)

[European Aviation Safety Agency \(EASA\)](#)

[France - Direction generale de l'aviation civile - DGAC](#)

[Germany - Luftfahrt-Bundesamt \(federal Aviation Office\)](#)

[Greece - Hellenic Civil Aviation Authority](#)

[Hong Kong - Civil Aviation Department - CAD](#)
[Icelandic Transport Authority - ICETRA](#)
[India - Directorate General of Civil Aviation - DGCA](#)
[International Civil Aviation Organization \(ICAO\)](#)
[Jamaica Civil Aviation Authority - JCAA](#)
[New Zealand - Civil Aviation Authority of New Zealand](#)
[Norway - Luftfartstilsynet](#)
[Qatar - Civil Aviation Authority - CAA](#)
[South African Civil Aviation Authority](#)
[Switzerland - Federal Office of Civil Aviation - FOCA](#)
[Turkey - Directorate General of Civil Aviation - DGCA](#)
[UAE - General Civil Aviation Authority - GCAA](#)
[UK - Civil Aviation Authority - CAA](#)
[USA - Federal Aviation Administration - FAA](#)

CATERING

International Flight Services Association	<u>www.ifsanet.com</u>
Medina Quality Food Assurance Services	<u>www.medinaquality.com</u>

HEALTH AND MEDICAL CARE

Aerospace Medical Association (ASMA)	<u>www.asma.org</u>
The Centers for Disease Control and Prevention	<u>www.cdc.gov</u>
FAA Aeromedical Reports/CAMI	<u>www.cami.jccbi.gov</u>
The Medical Department of the International Civil Aviation Organization (ICAO)	<u>www.icao.int/icao/en/med/aviomed.htm</u>
World Health Organization (WHO)	<u>www.who.int</u>
World Health Organization (WHO) – Disease Outbreak Site	<u>www.who.int/csr/don/en</u>
World Health Organization (WHO) – International Travel and Health Publication	<u>www.who.int/ith</u>
World Medical Association	<u>www.wma.net</u>

Appendix A – Cabin Crew Checklist for Fires Involving Batteries and Portable Electronic Devices (PED)

BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE	
Step	Cabin Crew Action
1	Identify the item <i>Note — It may not be possible to identify the item (source of fire) immediately. In this case, apply Step 2 first, and then attempt to identify the item.</i> <u>Caution:</u> In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.
2	Apply firefighting procedures <ol style="list-style-type: none"> Obtain and use the appropriate fire extinguisher Retrieve and use protective equipment, as applicable to the situation Move passengers away from the area, if possible Notify the PIC and other cabin crewmembers <i>Note — Actions should occur simultaneously in a multi-crew operation.</i>
3	Remove power <ol style="list-style-type: none"> Disconnect the device from the power supply, if safe to do so Turn off in-seat power, if applicable Verify that power to the remaining electrical outlets remains off, if applicable <u>Caution:</u> Do not attempt to remove the battery from the device.
4	Douse the device with water (or other non-flammable liquid) <i>Note — Liquid may turn to steam when applied to the hot battery.</i>
5	Leave the device in its place and monitor for any reignition <i>Note — If smoke or flames reappear, repeat Steps 2 then 4</i> <u>Caution:</u> <ol style="list-style-type: none"> Do not attempt to pick-up or move the device Do not cover or enclose the device Do not use ice or dry ice to cool the device
6	When the device has cooled (approximately 10 to 15 minutes) <ol style="list-style-type: none"> Obtain a suitable empty container Fill the container with enough water (or other non-flammable liquid) to submerge the device Using protective equipment, place the device in the container and completely submerge it in water (or other non-flammable liquid) Stow and (if possible) secure the container to prevent spillage
7	Monitor the device and the surrounding area for the remainder of the flight
8	After landing at the next destination, apply operator's post-incident procedures

OVERHEAD BIN BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE	
Step	Cabin Crew Action
1	<p>Apply firefighting procedures</p> <ul style="list-style-type: none"> i. Obtain and use the appropriate fire extinguisher ii. Retrieve and use protective equipment, as applicable to the situation iii. Move passengers away from the area, if possible iv. Notify the PIC and other cabin crewmembers <p><i>Note. — Actions should occur simultaneously in a multi-crew operation.</i></p>
2	<p>Identify the item if the device is visible and accessible, or</p> <p>If the device is contained in baggage and flames are visible:</p> <ul style="list-style-type: none"> i. Reapply Step 1 to extinguish the flames ii. Apply Steps 3 to 5 <p>If smoke is coming from the overhead bin, but the device is not visible or accessible:</p> <ul style="list-style-type: none"> i. Remove other baggage from the overhead bin to access the affected baggage/item ii. Identify the item iii. Apply Steps 3 to 5 <p><u>Caution:</u></p> <p>In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames.</p>
3	<p>Douse the device (baggage) with water (or other non-flammable liquid)</p> <p><i>Note — Liquid may turn to steam when applied to the hot battery.</i></p>
4	<p>When the device has cooled</p> <ul style="list-style-type: none"> i. Obtain a suitable empty container ii. Fill the container with enough water (or other non-flammable liquid) to submerge the device (baggage) iii. Using protective equipment, place the device (baggage) in the container and completely submerge it in water (or other non-flammable liquid) iv. Stow and (if possible) secure the container to prevent spillage
5	<p>Monitor the device and the surrounding area for the remainder of the flight</p>
6	<p>After landing at the next destination, apply the operator's post-incident procedures</p>

OVERHEATED BATTERY / ELECTRICAL SMELL INVOLVING A PORTABLE ELECTRONIC DEVICE (PED) - NO VISIBLE FIRE OR SMOKE

Step	Cabin Crew Action
1	Identify the item
2	Instruct the passenger to turn off the device immediately
3	Remove power <ol style="list-style-type: none"> Disconnect the device from the power supply, if safe to do so Turn off in-seat power, if applicable Verify that power to the remaining electrical outlets remains off, if applicable Verify that the device remains off for the remainder of the flight <p><u>Caution:</u> Do not attempt to remove the battery from the device.</p>
4	Instruct the passenger to keep the device visible and monitor closely <p><u>Caution:</u> Unstable batteries may ignite even after the device is turned off.</p>
5	If smoke or flames appear apply the BATTERY / PED FIRE / SMOKE checklist (see Appendix B)
6	After landing at the next destination, apply the operator's post-incident procedures

PED INADVERTENTLY CRUSHED OR DAMAGED IN AN ELECTRICALLY ADJUSTABLE SEAT

Step	Cabin Crew Action
1	Notify the PIC and other cabin crewmembers
2	Obtain information from the passenger <ol style="list-style-type: none"> Identify the item Indicate where he/she suspects that the item may have dropped or slipped into Whether the seat was moved since misplacing the item
3	Retrieve the item using protective equipment , if available <p><u>Caution:</u> Do not move the seat electrically or mechanically when attempting to retrieve the item.</p>
4	If smoke or flames appear, apply the BATTERY / PED FIRE / SMOKE checklist (see Appendix B)
5	After landing at the next destination, apply the operator's post-incident procedures

Appendix B – Amplified Cabin Crew Checklist for Fires Involving Batteries and Portable Electronic Devices (PEDs)

Note: Although this guidance material presents sequences of tasks, some of these actions occur simultaneously when carried out by a multi-crew operation.

BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE	
Step	Cabin Crew Action and Guidance
1	<p>Identify the item</p> <p>It may not be possible to identify the item (the source of the fire) right away, especially if the fire has started in a seat pocket or the device is not readily accessible. In this case, firefighting procedures should be applied as a first step. Once it is possible to do so, identify the item after the fire is under control.</p> <p>If the item is contained in baggage, the crew's actions would be similar to the actions for a device that is visible or readily accessible.</p> <p><u>Caution:</u></p> <p>In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames. In certain situations, however, cabin crew may assess and deem it necessary to slightly open the baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft.</p>
2	<p>Apply firefighting procedures</p> <p>Any occurrence concerning a fire in the cabin should be notified immediately to the PIC who should be kept informed of all actions taken and of their effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each are kept fully informed of the other's actions and intentions.</p> <p>Appropriate firefighting and emergency procedures must be used to deal with any fire. In a multi-crew operation, the actions detailed in the firefighting procedures should be conducted simultaneously. On aircraft operated with only one cabin crewmember, the aid of a passenger should be sought in dealing with the situation.</p> <p>A Halon, Halon-replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (e.g., protective breathing equipment, fire gloves) when fighting a fire.</p> <p>If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.</p> <p>Minimizing the spread of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft; therefore, it is essential to keep the flight deck door closed at all times. Crew communication and coordination is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>
3	<p>Remove power</p> <p>It is important to instruct the passenger to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire.</p> <p>Turn off the in-seat power to the remaining electrical outlets so a potentially malfunctioning aircraft system does not contribute to additional failures of the passengers' PEDs.</p> <p>Visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in.</p>

	<p>The removal of power may occur simultaneously to other cabin crew actions (e.g., obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crew.</p> <p><u>Caution:</u></p> <p>Do not attempt to remove the battery from the device.</p>
4	<p>Douse the device with water (or other non-flammable liquid)</p> <p>Water (or other non-flammable liquid) must be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. If water is not available, any non-flammable liquid may be used to cool the device.</p> <p><i>Note — Liquid may turn to steam when applied to the hot battery. Do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.</i></p>
5	<p>Leave the device in its place and monitor for any reignition</p> <p>A battery involved in a fire can reignite and emit flames multiple times as heat is transferred to other cells in the battery; therefore, the device must be monitored regularly to identify if there is any indication that a fire risk still exists. If there is any smoke or indication of fire, the device must be doused with more water (or other non-flammable liquid).</p> <p><u>Caution:</u></p> <p>Do not attempt to pick-up or move the device; batteries may explode or burst into flames without warning. The device must not be moved if displaying any of the following: flames/flaring, smoke, unusual sounds (such as crackling), debris, or shards of material separating from the device.</p> <p>Do not cover or enclose the device as this could cause it to overheat; and do not use ice or dry ice to cool the device. Ice or other materials insulate the device, increasing the likelihood that additional battery cells will reach thermal runaway.</p>
6	<p>When the device has cooled (approximately 10 to 15 minutes)</p> <p>The device can be moved with caution following a certain period (approximately 10 to 15 minutes), once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire.</p> <p>A suitable empty container (i.e., pot, jug, galley unit or lavatory waste bin) must be filled with enough water or other non-flammable liquid to completely submerge the device. It is important to wear available protective equipment (e.g., protective breathing equipment, fire gloves) when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and, if possible, secured to prevent spillage.</p> <p><u>Caution:</u></p> <p>The waiting period for a device to cool may vary based on the device and its size. The different circumstances (e.g., types of devices, phases of flight) should be addressed in the operator's training program.</p>
7	<p>Monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further risk.</p>
8	<p>After landing at the next destination, apply operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item.</p> <p>Complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.</p>

OVERHEAD BIN BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE	
Step	Cabin Crew Action and Guidance
1	<p>Apply firefighting procedures</p> <p>Any occurrence concerning a fire in the cabin should be notified immediately to the PIC who should be kept informed of all actions taken and of their effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each are kept fully informed of the other's actions and intentions.</p> <p>Appropriate firefighting and emergency procedures must be used to deal with an overhead bin fire. In a multi-crew operation, the actions detailed in the firefighting procedure should be conducted simultaneously. On aircraft operated with only one cabin crewmember, the aid of a passenger should be sought in dealing with the situation.</p> <p>A Halon, Halon-replacement or water extinguisher should be used to extinguish the fire and prevent its spread to additional flammable materials. It is important to wear available protective equipment (e.g., protective breathing equipment, fire gloves) when fighting a fire.</p> <p>If fire develops, cabin crew should take prompt action to move passengers away from the area involved and, if necessary, provide wet towels or cloths and give instructions for passengers to breathe through them.</p> <p>Minimizing the spread of smoke and fumes into the flight deck is critical for the continued safe operation of the aircraft; therefore, it is essential to keep the flight deck door closed at all times. Crew communication and coordination is of utmost importance. The use of the interphone is the primary means of communication unless the interphone system fails.</p>
2	<p>Identify the item if the device is visible and accessible</p> <p>It may not be possible to identify the item right away, especially if the fire has started in the overhead bin and the device is not readily accessible.</p> <p>If the device is visible and accessible, or if the device is contained in baggage and flames are visible, the firefighting procedure should be applied as a first step.</p> <p>If smoke is coming from the overhead bin, but the device is not visible or accessible, or there is no indication of fire, the firefighting procedures should be applied as a first step. Afterwards, all baggage should be removed from the overhead bin with caution until the item can be identified. Once the item is identified, apply steps 3 to 5 of the OVERHEAD BIN BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE checklist.</p> <p><u>Caution:</u></p> <p>In order to avoid injury from a flash fire, it is not recommended to open the affected baggage when there is any indication of smoke or flames; however, in certain situations, cabin crew may assess and deem it necessary to slightly open baggage to allow entry of the extinguishing agent and non-flammable liquid. This should be done with extreme caution and only after donning appropriate protective equipment available on the aircraft. Do not open baggage when there is any indication of smoke or flame.</p>
3	<p>Douse the device (baggage) with water (or other non-flammable liquid)</p> <p>Water (or other non-flammable liquid) must be used to cool a battery that has ignited to prevent the spread of heat to other cells in the battery. If water is not available, any non-flammable liquid may be used to cool the device. Do not use ice as this may have the opposite effect by temporarily insulating the device and increasing heat.</p> <p><i>Note — Liquid may turn to steam when applied to the hot battery.</i></p>

4	<p>When the device has cooled</p> <p>The device should be moved from the overhead bin to prevent a hidden fire from potentially developing. The device can be safely moved with caution following a certain period, once it has cooled down and if there is no evidence of smoke, heat, or if there is a reduction in the crackling or hissing sound usually associated with a lithium battery fire. The waiting period may vary based on the device and its size. The different circumstances (e.g., types of devices, phases of flight) should be addressed in the operator's training program. Following this period, the device can be moved, with caution.</p> <p>A suitable empty container (i.e., pot, jug, galley unit or lavatory waste bin) must be filled with enough water or other non-flammable liquid to completely submerge the device. It is important to wear available protective equipment (e.g., protective breathing equipment, fire gloves) when moving any device involved in a fire. Once the device is completely submerged, the container used must be stowed and, if possible, secured to prevent spillage.</p>
5	<p>Monitor the device and the surrounding area for the remainder of the flight to verify that the device does not pose further risk.</p>
6	<p>After landing at the next destination, apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is stowed and providing all information about the item.</p> <p>Complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.</p>

OVERHEATED BATTERY / ELECTRICAL SMELL INVOLVING A PORTABLE ELECTRONIC DEVICE (PED) - NO VISIBLE FIRE OR SMOKE	
Step	Cabin Crew Action and Guidance
1	Identify the item Identify the source of overheat or electrical smell. Ask the passenger concerned to identify the item.
2	Instruct the passenger to turn off the device <u>immediately</u> .
3	Remove power It is important to instruct the passenger or crewmember to disconnect the device from the power supply, if it is deemed safe to do so. A battery has a higher likelihood of catching fire due to overheating during or immediately following a charging cycle, although the effects may be delayed for some period of time. By removing the external power supply from the device, it will be assured that additional energy is not being fed to the battery to promote a fire. Turn off the in-seat power to the remaining electrical outlets until it can be assured that a malfunctioning aircraft system does not contribute to additional failures of the passengers' PEDs. Visually check that power to the remaining electrical outlets remains off until the aircraft's system can be determined to be free of faults, if the device was previously plugged in. The removal of power may occur simultaneously to other cabin crew actions (e.g., obtaining water to douse the device). Depending on the aircraft type, in-seat power may have to be turned off by the flight crewmembers. It is important to verify that the device remains powered off for the duration of the flight. <u>Caution:</u> Do not attempt to remove the battery from the device.
4	Instruct the passenger to keep the device visible and monitor closely. The device must remain visible (i.e., not stowed in baggage, seat pocket or in the passenger's pocket) and should be monitored closely. Unstable batteries may ignite even after the device is turned off. Verify that the device is stowed for landing.
5	If smoke or flames appear , apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE checklist.
6	After landing at the next destination, apply the operator's post-incident procedures. These may include identifying to ground personnel where the item is located and providing all information about the item. Complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and the emergency response kit or any aircraft equipment used is replenished or replaced, if applicable.

Due to the design of some electrically adjustable passenger seats, a PED can slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Inadvertent crushing of the device poses a risk of fire.

PED INADVERTENTLY CRUSHED OR DAMAGED IN AN ELECTRICALLY ADJUSTABLE SEAT

Step	Cabin Crew Action
1	<p>Notify the PIC and other cabin crewmembers</p> <p>Any occurrence concerning a risk of fire in the cabin should be notified immediately to the PIC who should be kept informed of all actions taken and of their effect. It is essential that the cabin crew and the flight crew coordinate their actions and that each are kept fully informed of the other's actions and intentions.</p>
2	<p>Obtain information from the passenger</p> <p>Ask the passenger concerned to identify the item, and where he/she suspects it may have dropped or slipped into, and if he/she has moved the seat since misplacing the item.</p>
3	<p>Retrieve the item</p> <p>If available, cabin crew should don fire gloves before trying to retrieve the item.</p> <p>To prevent crushing of the PED and to reduce the potential fire risk to the device and the surrounding area, cabin crew and/or passengers must not use the electrical or mechanical seat functions in an attempt to retrieve the item. Move the passenger and, if applicable, the passenger seated next to the affected seat from the area to facilitate the search. Do not move the seat. If the cabin crew is unable to retrieve the item, it may be necessary to move the passenger to another seat.</p>
4	<p>Smoke or flames</p> <p>If smoke or flames appear, apply the BATTERY / PORTABLE ELECTRONIC DEVICE (PED) FIRE / SMOKE checklist.</p>
5	<p>After landing at the next destination, apply the operator's post-incident procedures.</p> <p>These may include identifying to ground personnel where the item is located and providing all information about the item.</p> <p>Complete the required documentation, as per operator procedures, so that the operator is notified of the event, proper maintenance action is undertaken and any aircraft equipment used is replenished or replaced, if applicable.</p>

Appendix C – Lithium Battery Fire Prevention - PED inadvertently crushed or damaged in electrically adjustable seats¹

Lithium batteries are widely used as a power source in portable electrical devices (PEDs). The overall rate of failure associated with the use of lithium batteries is very low when compared with the total number of batteries in use worldwide. Lithium batteries are required to be manufactured to high safety standards and are subjected to testing protocols, including a crush test. Nevertheless, there have been reported incidents on board aircraft as a result of the inadvertent crushing or damage of PEDs. This has raised safety concerns.

Small PEDs (i.e., mobile phones, smartphones, mini-tablets, e-readers, MP3 players) can become a potential fire hazard if they inadvertently slip or are dropped between the mechanical parts of an electrically adjustable seat and are crushed or damaged. These types of seats are primarily installed in premium-class cabins such as First Class and Business Class.

Due to the design of some electrically adjustable passenger seats, it is possible for a PED to slip under a seat covering and/or cushion, behind an armrest or down the side of a seat. Cabin crew should not move the seat electrically or mechanically when attempting to retrieve the passenger's PED. The seat movement may crush/damage the PED's lithium battery and potentially result in a lithium battery fire.

Passenger awareness on how to use and stow their devices while in flight can help mitigate these incidents. This can be mass communicated to passengers via a verbal announcement, the in-flight magazine or the in-flight entertainment system (IFE).

Recommended Practice

Cabin crew should always advise the flight deck of the situation. To prevent crushing the PED and to reduce the potential fire risk to the device and the surrounding area, cabin crew and/or passengers **must not use the electrical or mechanical seat functions in an attempt to retrieve a PED**. Ask the passenger concerned to identify the item, where they suspect it may have dropped or slipped into, and if they have moved the seat since misplacing the PED. Move the passenger and, if applicable, the passenger seated next to the affected seat from the area. If available, don fire gloves before trying to retrieve the item. **Do not move the seat!** If unable to retrieve the item, it may be necessary to move the passenger to another seat and request maintenance and engineering to retrieve the item upon/after landing.

In the event that the situation develops into a lithium battery fire, cabin crew should apply the following in accordance with their respective operator procedures:

- Lithium battery firefighting procedures
- Post-event procedures (on board)
- First point of landing offloading procedures

¹ IATA updated and reissued the Lithium Battery Risk Mitigation Guidance for Operators in March 2016. This free online guidance material provides airline operators with critical information related to the safe handling and transport of lithium batteries by air. <http://www.iata.org/whatwedo/cargo/dgr/Documents/lithium-battery-guidance-document-2016-en.pdf>

Appendix D – Cabin Crew Seat Safety and Lithium Batteries

In further preventing lithium battery events, the following crew seat safety precautions must be adhered to at all times in order to mitigate the risk of spare batteries or PEDs, particularly those required for in-flight use by cabin crew, from becoming crushed in crew seats.

CABIN CREW SEAT SAFETY

PEDs or spare batteries may not be placed on a crew seat.

If a crewmember experiences difficulty in raising or lowering a crew seat, the seat must not be forced into position.

Should a battery or PED become inadvertently stuck in a cabin crew seat:

- If the crew seat has not been opened (lowered) and the PED/spare battery is accessible, remove the PED/spare battery.
- Check the wedges in the seat for the PED/spare battery and remove the article(s), if possible without injury or damage to the crew seat.
- Do not attempt to remove the PED/spare battery if someone has attempted to open (lower) the crew seat, as the crew seat motion may have damaged the PED/spare battery, which may cause a fire as a result of thermal runaway.
- Report the situation to the PIC and follow the MEL procedures for an inoperative crew seat.
- Document the malfunction as established by the operator.
- Remove all emergency equipment (e.g., life vests, oxygen bottles) that are in close proximity (i.e., under the crew seat) and ensure they are secured elsewhere. Notify all crewmembers of the location of the relocated equipment.
- Ensure there is a Halon or BCF extinguisher and sufficient non-flammable liquid nearby to initiate firefighting procedures should thermal runaway occur due to damaged PEDs/spare battery.

In the event of a fire originating in the crew seat as a result of the damaged article(s), follow the firefighting procedures for lithium batteries.

Appendix E – Sample Fatigue Report Form for Cabin Crew

Fatigue Report Form – Cabin Crew			
Name		Staff number	
Flight date		Time when fatigue occurred	
(UTC*) / /		: (UTC*)	
		_____ from _____ to _____	
Roster type		From standby (if applicable)	
<input type="checkbox"/> Full roster <input type="checkbox"/> Reserve roster <input type="checkbox"/> Swapped flight		<input type="checkbox"/> Home <input type="checkbox"/> Airport	
Aircraft type (add as per operator)			
Describe what happened and what you observed			
Tick off how you felt			
<input type="checkbox"/> 1. Fully alert, wide awake		<input type="checkbox"/> 5. Moderately tired, let down	
<input type="checkbox"/> 2. Very lively, somewhat responsive, but not at peak		<input type="checkbox"/> 6. Extremely tired, very difficult to concentrate	
<input type="checkbox"/> 3. OK, somewhat fresh		<input type="checkbox"/> 7. Completely exhausted, unable to function effectively	
<input type="checkbox"/> 4. A little tired, less than fresh			
Potential contributing factors (more than one may apply)			
<input type="checkbox"/> Fatigue prior to duty	<input type="checkbox"/> Duty itself	<input type="checkbox"/> In-flight rest	<input type="checkbox"/> Hotel
<input type="checkbox"/> Circadian dysrhythmia*	<input type="checkbox"/> Roster or combination of duties	<input type="checkbox"/> Not rested during rostered rest (personal, health)*	<input type="checkbox"/> Not rested during rostered rest (company)*

<input type="checkbox"/> Extended delay (technical, weather)	<input type="checkbox"/> Operating with reduced crew complement	<input type="checkbox"/> Extensive in- flight turbulence	<input type="checkbox"/> In-flight passenger issues (medical, unruly pax)
<input type="checkbox"/> Other	Comments:		
What actions were taken to manage or reduce fatigue:			
<input type="checkbox"/> Arrange/request extra rest on board		<input type="checkbox"/> Caffeine	
<input type="checkbox"/> Other	Comments:		
If onboard rest was used, was the length in accordance with the cabin crew rest policy and/or the published crew rest strategy:			
<input type="checkbox"/> Yes	<input type="checkbox"/> I don't know	<input type="checkbox"/> Not applicable, this flight does not have onboard rest	
<input type="checkbox"/> No (please explain)			
Which rest period did you take, if any			
<input type="checkbox"/> First period	<input type="checkbox"/> Second period	<input type="checkbox"/> Third period	<input type="checkbox"/> Fourth period
<input type="checkbox"/> None, there is no rest on this flight		<input type="checkbox"/> Other (please explain)	
What corrective action do you suggest			
<input type="checkbox"/> More home preflight rest	<input type="checkbox"/> More home post-flight rest	<input type="checkbox"/> Shorter layover (to reduce circadian shift)	
<input type="checkbox"/> More layover rest	<input type="checkbox"/> Crew augment	<input type="checkbox"/>	
<input type="checkbox"/> Other	Comments:		
* Instructions			
Date and time in UTC: UTC stands for Coordinated Universal Time. This is the date and time used by the flight crew and company systems and must be used for the flight date and for the time the fatigue occurred.			
Contributing factors: You should check all factors that may have contributed to the fatigue. Circadian dysrhythmia: Better known as 'jet lag' or body clock shift. Not rested during rostered rest (personal, health): You did not achieve (enough) rest for personal reasons (i.e., due to stress or family issue) during a roster rest period or on days off. Not rested during rostered rest (company): You did not achieve (enough) rest for reasons that are concerned with the company (i.e., a noisy hotel or accommodation, a call from crewing while you were resting), during a roster rest period or on days off.			