

Health Hazards of International Aircraft Accident Investigation

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International Investigation Hazards

- Travel - Related Hazards
- Destination Country Hazards
- Site Hazards
- Psychological Hazards
- Prevention strategies
- Discussion

Travelling Safely

- “Jet Lag”
- Deep Vein Thrombosis
- Emergency escape
- Fluid balance
- In flight illness
- Cabin air quality

“Jet Lag”

- Sleep deprivation
- Irregular sleep/wake (loss)
- Sleep quality
- Circadian rhythms
- Hypoxia
- Sleep apnoea

Travellers' DVT

- Flights > 5 hours
- Bimodal age distribution
- Gender
- Genetics
- Dehydration
- Immobility
- Circulation and trauma

DVT Risk

- Family history
- Previous history
- Oral contraceptives
- Smoking
- Illness
- Obesity
- Physical constraints (posture, clothing)

Preventing DVTs

- Aspirin
- Anticoagulants
- Stockings
- “Thrombophilia” screening
- Fluids
- Avoid sleeping pills
- In seat exercises
- Moving around

Emergency Escape

- Flight selection
- Seat location
- Seating design
- Briefings/escape plans
- Smoke hoods
- Baggage
- Security

Fluid Loss

- Dehydration
- Fluid shifts
- Alcohol
- Coffee
- High protein foods
- Reduced fluid intake

In Flight Illness

- Hypoxia
- Stress/Fatigue
- Pressure change
- Medications in hold
- Lack of preparation

Cabin Air Quality

- Particulates
- Carbon monoxide
- TB
- Influenza
- General sensitisers
- Common colds
- Temperature

Destination hazards

- Bioterrorism
- MVA and other accidents
- Crime
- Alcohol
- Non-human wildlife
- Heat & humidity
- Infectious diseases
- Specific hazards (altitude)

Bioterrorism

- Anthrax, Smallpox, water
- Chemicals phosgene, Sarin
- Mail vs confined public spaces
- Anthrax
 - Pulmonary
 - Cutaneous
 - Non-contagious
- Self help and emergency care

Accidents

- MVA
- Falls and slips
- Local conditions (buildings, OSH)
- Alcohol
- Swimming
- Back injuries

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Crime

- Local knowledge
- Situational awareness
- Conspicuity
- Robbery
- Sexual assault
- Kidnap (Rohypnol)
- Murder

Non-Human Wildlife

- Animal bites & saliva
- Snakes scorpions and spiders
- Sharks, jellyfish parasites
- Animal borne disease:TB, Lepto, Brucella
- Skin diseases
- Major attacks

Heat and Humidity

- Acclimatisation
- Heat disorders
- Risk factors
- Skin care
- Sudden death (Brugada)
- Sunburn!

Infectious diseases

- Food & water
- Insects
- Human contact
- Sexual/blood contact
- Aerosols
- Skin
- Tetanus

Food & Water

- Travellers diarrhoea
- Hepatitis A
- Giardiasis
- Cholera / Typhoid
- Bacillus cereus
- Salmonella (incl botulinum)
- Listeria
- Campylobacter/cryptosporidiosis

Food Poisoning Risks

- Contamination
- Human touch
- High risk foods
- Poor quality food
- Temperature
- Oxygen
- TIME

Human Contact

- Influenza (local strains)
- Polio
- Diphtheria
- Measles Chickenpox & Rubella
- Haemophilus Influenzae B
- Meningococcus
- Leprosy

Aerosols

- Tuberculosis
- Legionnaires' disease
- Pontiac fever
- Sick building syndrome

Insect Borne Diseases

- Malaria
- Dengue Haemorrhagic Fever
- Yellow fever
- Japanese encephalitis
- Tick diseases (Ross & Murray River, Lyme, Nile, Typhus)

Prevention

- Food & water (Ciproxazine)
- Swimming & sand shoes
- Insect repellants
- Immunisations
- Doxycycline
- Barriers
- Post exposure

Specific Problems

- Cold/heat
- Altitude
- Isolation
- Psychological stress

Site Hazards

- Systematic prevention strategy
- Blood borne pathogens
- Accidental injuries
- Chemical hazards
- Radiation

Chemical

- Aircraft systems
- Cargo
- Pyrolysis products (organics, composites)
- Fuel
- Fire Extiguishers
- Agricultural chemicals

Physical

- Accidents
- OOS & manual handling
- Thermal - Burns, Survival, Heat Stress, Dehydration, Sunburn
- Electrical
- Radiation - UVL, MWRFR, Ionising
- Over-exertion

Blood Borne Pathogens

- NOT Hepatitis A
- Hepatitis B
- Hepatitis C
- Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS)

Prevalence in the general population

- Not clear how many would be travellers
- The risk is greatest in the very sick
- Probability is highest from carriers
- Prevalence:
 - Hep B: 5%
 - Hep C: 1-2%
 - HIV: < 0.1%

Virus Persistence

- Hep B: 2-7 days
 - can live in pooled blood for weeks
- Hep C: 2-3 days ??
 - Not so easily able to survive outside the human body
- HIV: < 1 day
 - Unable to live outside the body for any length of time

Factors Reducing Viral Survival

- External:
 - Drying
 - Cold
 - Alcohol
 - Bleach
- Internal:
 - Immunity
 - Specific treatments

Infectivity

- Rate at which transmission or infection occurs in penetrating injuries (sl. less for blood splashes and skin exposure)
- Hep B: 6 - 30%
- Hep C: 1 - 2%
- HIV: > 0.1%
- NB: Highly dependent on virus “dose”

General Protection Measures

- Policy, systems and procedures
- Good staff training
- Specific safety training
- “Universal precautions”
- Accident reporting & investigation
- Medical surveillance
- Post incident measures

Personal Protection

- Education
- Immunisation
- Personal Protective Equipment (PPE)
- Site Hazard Management
- Personal Risk Avoidance/Safe Work
- Immediate Actions
- Medical Assistance

Education

- All site entrants need briefing material
- Understand:
 - the hazards
 - control measures
 - use of PPE
 - Post incident actions (early and late)
 - “General precautions”

Working Safely

- Site hazard management
- Personal responsibility
- Ensure all PPE used and cuts covered
- Post-exposure support
- Coordination and communication
- Avoid heat stress & dehydration

Immediate Actions

- Remove gross contamination
- Rinse with water
- Use alcohol swabs
- Avoid scrubbing
- Drench eyes, nose mouth with water
- Showers, eyebaths, or basins
- Report exposure

Post Exposure Management

- Immediate assessment of risk
- Specialist input
- Immediate and 3m blood tests
- Hep B: - (booster if less than 10IU/mL
 - Anti Hep B Immunoglobulin
- Hep C: No action effective
- HIV: Consider anti-retroviral drugs

Site Hazard Management

- Hazard Identification/Marking
- Supplies of PPE
- Entry & exit control/site security and recording
- Decontamination
- Waste disposal
- Equipment (including reusable PPE)
- Adequate water

Any Questions?