Medical Policy Formulation for Extreme Environments

SPP_GMU Research Team
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from Dr. Desmond Lugg
Medical Policy in Perspective

- In Mid 1942 the US Navy changes its selection medical policy:
  - Lowers the standards for the visual acuity
  - Lowers the dental requirements to "a functional demonstrated ability and enough teeth to chew"
  - Use of dentures
Proposed Classification for Extreme Environments

- Remote & Hostile
- Isolated &/or Remote
- Hostile & Isolated

CONTINUITY OF HEALTH CARE, RESCUE & ESCAPE CAPABILITY to be factored in
Extreme Environments Definition (s)

**Proposed Categories**

- **Geographic**
  - Remoteness
  - Isolation
  - Ecology
  - Physical and Environmental Characteristics

- **Survival**
  - Resources
  - Technology
  - Rescue/escape

- **Size of the Expedition**

**GMU Selected Survey Categories**

- Aviation
- Space
- Polar Regions
- Offshore
  - Drilling
  - Prospecting
- Wilderness
  - Fire & Rescue
  - Tourism
- Workers involved in
  - Mining
  - Nuclear & Radiation
**Format for Presentations**

- **Please identify in your presentation**
  - Stakeholders: private, commercial, federal, state (public)
  - Policy Makers: regulatory, legal, mandated
  - Environmental and Technological Health and Safety Induced Risks
  - Safety and Health Risks based on the duration of the expedition
  - Emphasis on “health and safety” or ‘safety as a substitute for health” (occupational vis.individual health and preventive care)
  - Evidence based policy formulation
  - Experience based policy formulation
    - What did or did not work
    - What had no added value
    - What did more harm than good
  - Facilitators and obstacles (resources, infrastructure, organizations, etc.)
  - Evaluation and training tools and requirements (continuous improvement)
  - Desired outcomes and impacts
  - Ultimate beneficiaries: explorers, public, others?

*For Session A & B Discussions Only*
Types of Risks Addressed

- Health
- Technology
- Environment
- Safety
- Exposure
- Protection
- Ethics
Ethics

- **Standard of Care**
  - Allocating limited resources
  - Training/Skills
  - Societal & Cultural Values

- **Priority in Care**
  - Triage
  - Survival
  - Evacuation/rescue

- **Decision Making**
  - No relatives
  - Euthanasia
  - Advance directive
  - Acceptance of Risk (s)
  - Consequences of each option
  - Research cost and benefit

- **Special Considerations**
  - Liability
  - Special Need Groups
Determinants in Safety and Health

- Environmental Characteristics
- Physical & Ecological Characteristics
- Health Maintenance/Care Systems*
- Crew/Patient Health Status
- Technology
- Health Care Provider(s)
- Knowledge
- Performance
- Compatibility
- RESOURCES
- OPTIONS/DECISIONS
- OUTCOMES
- SAFETY
- RISKS
- Health & Quality of Life

* Availability of Rescue and Evacuation
Relationship Between Protection and Exploration

Adapted from James Reason 1997
Risks

Tolerable Risks = Acceptable Risks

How do we define similarity or commonality
Health and Safety Policy
Formulation/Execution and Risks

Policy Execution

Policy Formulation Process

Duration of the Expedition

Adapted from C.F. Larry Heimann 2000
Approaches to Medical Policy Formulation

Medical Policy Reliance On
- Evidence
- Experience
- Rule
- None

Crew Health Care
- Correct
- Restrictive
- Arbitrary
- Unplanned

Risk (s)
- Low
- Medium
- High
- Excessive

Reliability & Effectiveness

Bioethics

Good Practices

Tolerable/Acceptable Risk

Effective

High cost

Can Impact Safety
Background Research
Federal regulations (establishing details of legislation, day-by-day regulation within the legislative mandate)

Judiciary (workplace safety and health case law – testing the limits and applications of legislation and regulations)

International (treaties and regulations, multilateral agreements)

Legislative- US Congress (establishing regulatory principles, appropriation of funds)

Privately-funded (expeditions, commercial activities)

Safety:
- Fitness
- Protection
- Training

Health:
- Selection
- Protection
- Training

POLICY FORMULATION

Safety: Health:
- Fitness
- Protection
- Training
- Selection
- Protection
- Training
Example of AltaVista Survey Results

- 4500 websites were surveyed
- 550 yielded significant results
  - 35 departments or organizations have issued health, safety, or health and safety regulations or recommendations related to exploration and/or travel in extreme environments
  - 15 relevant sub-links were detected for each department/organization.

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Special Reviews

Additional database searches, such as GPO’s database of the Code of Federal Regulations (15 years back), LexisNexis for related legal cases (10 years), and relevant actions in the U.S. Congress (10 years), National Library of Medicine for peer-reviewed articles, and The Library of Congress for books on health policy in extreme environments.
# US Regulations*, Policies & LAWS

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**Legend**

- **H** = Health
- **S** = Safety

*OSHA as applicable*
## International Policies and Laws

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- Aviation
- Mining
- Space Exploration
- Polar Exploration
- Wilderness Fire & Rescue*
- Wilderness Tourism*
- Offshore Drilling*
- Offshore Exploration*
- Radiation

* Not found in this search (will require additional investigations)
Proposed Modeling Approach
A Model for Expedition Policy Formulation Process

Integration

*Decision Process

Time

SUCCESS

Adapted from Nicogossian 2001