UPLOADS: Overview of a new approach to incident reporting for the outdoor sector

Natassia Goode (USCAR)
Paul Salmon (USCAR)
Clare Dallat (OEG)
This project is proudly supported by:
Overview

- Problem statement: the motivation behind the project
- UPLOADS Accident Causation Model
- UPLOADS data collection and analysis system
Background

• Acknowledged risk of severe and frequent injury in active pursuits (Finch et al, 2007)

• Accidents & injuries occur in led outdoor industry domain

• Industry desire to better understand injury causation

• Systems required to enhance understanding do not exist
What can we do about it?

• Appropriate study of accidents an accepted approach for enhancing safety

• Accident and injury surveillance systems/Databases

• Theories and methods used to understand accidents critical

• Application of contemporary theories and methods e.g. Systems approach to accident causation
Collective Mindfulness
Accident causation
Our vision: UPLOADS

A standardised, industry-wide, approach to incident reporting and learning.

To assist outdoor organisations to:

• Collect detailed information on near misses and adverse events using an electronic database, so they can detect trends and formulate countermeasures.

• Contribute deidentified data to an industry-wide database. The results will be regularly analysed and disseminated so that the industry can understand the risks it faces and take appropriate action.
Collecting useful incident data requires...

1. Domain-appropriate model of accident causation
2. Comprehensive data collection system

Both ingredients are necessary to identify the factors impacting on safety and develop appropriate countermeasures.
UPLOADS Model of Accident Causation

• Underpinned by the systems approach
• Rasmussen’s Risk Management Framework adapted for the outdoor activity context
The key principles of the systems approach

1. Safety is impacted by the decisions and actions of everyone in the led outdoor activity system not just front line workers.

2. Near misses and adverse events are caused by multiple, interacting, contributing factors.

3. Effective countermeasures focus on systemic changes rather than individuals.

The goal of UPLOADS is not to assign blame to any individual, but to identify how factors across the led outdoor activity system combine to create accidents and incidents.
A systems approach: Rasmussen’s Risk Management Framework

The basis for all aspects of UPLOADS.

Key ideas:

• Decisions and actions at all levels contribute to accidents.
• ‘Vertical integration’ is required to maintain safe operations.
Adapted for the outdoor context

Based on:
- Incident reports from Australian outdoor activity providers; and
- Incident reports from NZ MSC

- Inadequate funding
- Poor land management
- Inadequate policy/legislation
- Failure to conduct audit/inspection
- Inadequate auditing process
- Accreditation check inadequate
- Parents - Fail to inform organisers of medical condition
- Schools - High staff/student ratio
- Activity centre - Inadequate risk/hazard management system
- Failure to check weather forecasts
- Failure to consider staff skill sets
- Poor rostering
- Group - Bullying
- Participant - Failed to follow instructions
- Instructor - Lack of competence/skills/capabilities
- Animal/insect hazard
- Activity clothing/PPE not used
- Rain
UPLOADS data collection system

- Specifically designed for outdoor activity providers
- Systematic record keeping
- Domain-specific taxonomy for coding causal factors
- Tools for analysing complex data
- Paper-based and video training
- Secure and confidential contribution to industry database
Specifically designed for outdoor activity providers

- The database fields are specific to outdoor activities.
Based on the accident causation model developed for the outdoor context

- A domain-specific taxonomy is provided to code the causal factors involved in incidents, that is based on the accident causation model.
Systematic record keeping

UPLOADS helps you track:

- Near miss and adverse events during activities.
- Staff contact details, qualifications, medical records and dietary requirements.
- Participant/teacher/volunteer contact details, medical records, dietary requirements and behavioural issues.
- Course times, locations, participants and supervisors.

<table>
<thead>
<tr>
<th>Staff ID</th>
<th>Person ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOODE, Tiffany</td>
<td></td>
</tr>
</tbody>
</table>

2. Adverse outcomes

a) Outcomes involving injuries, illnesses and/or social/psychological damage

- Was the incident fatal? [No] [Yes]
- Experience in activity associated with incident
  - Injury type
    - [Unknown] [Fracture]
  - Injury location
    - Head
  - Illness
    - Not applicable
- Social/psychological
- Treatment at the scene of the incident
- Evacuation method
- Hospitalisation required? [No] [Yes]
- Emergency services called? [No] [Yes]
- If yes, which emergency services were called?
Systematic record keeping

UPLOADS helps you track:

- Near miss and adverse events during activities.

- Staff contact details, qualifications, medical records and dietary requirements.

- Participant/teacher/volunteer contact details, medical records, dietary requirements and behavioural issues.

- Course times, locations, participants and supervisors.
Systematic record keeping

UPLOADS helps you track:

- Near miss and adverse events during activities.
- Staff contact details, qualifications, medical records and dietary requirements.
- Participant/teacher/volunteer contact details, medical records, dietary requirements and behavioural issues.
- Course times, locations, participants and supervisors.
Systematic record keeping

UPLOADS helps you track:

- Near miss and adverse events during activities.
- Staff contact details, qualifications, medical records and dietary requirements.
- Participant/teacher/volunteer contact details, medical records, dietary requirements and behavioural issues.
- Course times, locations, participants and supervisors.

![Sample screen capture](image-url)
Data analysis tools
Secure and confidential reporting

Data collection

Led Outdoor Activity Providers
- Instructor/Safety manager
  - Report incident
  - Organisation’s data system

Data analysis

UPLOADS system
- Auto de-identification
  - Activity Incident
  - Injury
  - Contributory factors

Reporting of aggregate data

- UPLOADS annual report
- Periodic reporting to industry
- Ad hoc data requests

*Note: organisations can run their own in-house analyses using own organisation level database

*Note data is non-identifiable regarding organisations, instructors, participants etc

*Note reporting shows aggregate data only and is non-identifiable

Products

- Standardised incident/near miss reporting form
- Organisation level database
- UPLOADS aggregate database
- UPLOADS analysis framework
Example: industry-wide accident causation analysis

<table>
<thead>
<tr>
<th>1014 Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number in brackets denotes frequency of occurrence of contributing factor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Government Policy and Budgeting</th>
<th>Government dept failed to fulfill safety responsibilities (12)</th>
<th>Actions of other organisations (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory Bodies and Associations, schools and parents</td>
<td>Parents failed to provide information (10)</td>
<td>Parents fail to pick up participants (1)</td>
</tr>
<tr>
<td></td>
<td>Parents judgement error on fitness for camp (1)</td>
<td>Late arrival of group (5)</td>
</tr>
<tr>
<td></td>
<td>School failure to provide adequate information (1)</td>
<td>Industry failure to identify equipment issues (1)</td>
</tr>
<tr>
<td></td>
<td>Inaccurate activity rating system (1)</td>
<td></td>
</tr>
<tr>
<td>Local area government, activity centre management, planning and budgeting</td>
<td>Poor/lack of risk management system (45)</td>
<td>Poor staff training evaluation system (33)</td>
</tr>
<tr>
<td></td>
<td>Poor/inadequate activity policy (13)</td>
<td>Lack of activity policy (2)</td>
</tr>
<tr>
<td></td>
<td>Subcontracting activities to other parties (11)</td>
<td>Poor incident learning systems (3)</td>
</tr>
<tr>
<td>Technical and operational management</td>
<td>Poor planning of activity (58)</td>
<td>Failure to adequately plan for participants with special needs (26)</td>
</tr>
<tr>
<td></td>
<td>High participant to staff ratio (26)</td>
<td>Failure to provide appropriate equipment (8)</td>
</tr>
<tr>
<td></td>
<td>Poor implementation of risk management procedures (8)</td>
<td>Failure to maintain activity area (8) and equipment (7)</td>
</tr>
<tr>
<td></td>
<td>Poor communications with instructors (6) and participants (2)</td>
<td>Lack of staff (4)</td>
</tr>
<tr>
<td>Physical processes and instructor/participant activities</td>
<td>Participant factors (1359)</td>
<td>Instructor factors (808)</td>
</tr>
<tr>
<td></td>
<td>Group factors (81)</td>
<td>Supervisor factors (19)</td>
</tr>
<tr>
<td></td>
<td>Other actors (30)</td>
<td>Student leader factors (4)</td>
</tr>
<tr>
<td></td>
<td>Other (6)</td>
<td></td>
</tr>
<tr>
<td>Equipment and surroundings</td>
<td>Hazardous terrain (509)</td>
<td>Lack of equipment (197) and equipment failures (144)</td>
</tr>
<tr>
<td></td>
<td>Adverse weather conditions (149) and temperature (76)</td>
<td>Plant hazard (65)</td>
</tr>
<tr>
<td></td>
<td>Animal hazard (63)</td>
<td>Visibility (46)</td>
</tr>
<tr>
<td></td>
<td>Poor communications with instructors (6) and participants (2)</td>
<td>Poor design of equipment (37)</td>
</tr>
</tbody>
</table>
Video and paper-based training

• Manual Part 1 The UPLOADS Approach to Accident Analysis
• Manual Part 2 The UPLOADS Software Tool
• Seven training videos which demonstrate how to use each component of the software tool

• Additional training materials provided to train staff to report incidents
UPLOADS: summary of features

- Based on a systems theory framework.
- Specifically designed for outdoor activity providers.
- Systematically track incident, staff and participant data.
- Tools to analyse your own data.
- Video and paper-based training material.
- Allows you to contribute deidentified data to an industry database.
- Analysis of industry-level data will provide evidence to support systemic changes.
Research activities to improve the system

• 6 month prototype trial (as at 14\textsuperscript{th} October)

• Evaluation of prototype – outdoor experts and HF/injury surveillance researchers

• Coding reliability study – outdoor experts test the reliability of the coding framework
Six month trial progress

15 organisations

State (NSW = 5, QLD = 3, SA = 1, TAS = 1, VIC = 4, WA = 1)

Type of organisation (School = 2, RTO = 2, Neither = 10)

Type of organisation (Government agency/public sector = 2, Not-for-profit = 6, Commercial enterprise = 6)

Number of locations/operating sites (Range = 1 – 7, Mean = 2.85)
Initial incident data

- 8/15 organisations contributed incident data
- 118 reports
- 104 incidents associated with adverse outcomes
  - 83 injuries
  - 20 illnesses
  - 5 psychological/behaviour outcomes
  - 0 overdue/missing, equipment, environment
- 14 near misses
Incident associated with adverse outcomes

Near miss

Frequency

Severity
Incidents by activity

- Rafting
- Orienteering
- Quad biking
- Challenge ropes
- Rock climbing
- Canoeing
- Skiing
- Mountain biking
- Cooking
- Other
- Camping
- Bushwalking

Number of (reported) incidents (1st July - 30th September 2013)
Participation data

- 9/15 organisations contributed participation data

![](chart.png)

Total participation days (1st July - 30th September 2013)

- Caving
- Rafting
- Canyon
- Canoeing
- Challenge ropes courses
- Prussiking
- Rock climbing
- Catapults
- Orienteering
- Bushwalking
- Initiatives
- Camping (tents)
- Indoor climbing
- Camping (indoor)
Expert evaluation

Participants undertake a number of simulated reporting tasks, testing each aspect of the system. Asked for comments on all aspects, including software, forms and training.

Organisations involved in 6 month trial:

- 3/15 Complete Outdoor Education/Recreation:
  - 12/26 Complete

- 11/15 Complete Human Factors/Injury Surveillance Experts:
Coding reliability study

Participants were asked to use the coding taxonomy to code 10 incident reports.

15 participants:

- 11 outdoor education/recreation providers
- 2 outdoor educator training organisation
- 2 outdoor industry bodies/professional associations

Average 15 years experience in the outdoor education/recreation sector

Majority had outdoor-specific qualifications (n = 13)

Majority lead activities as part of their current role (n = 9)
Interested?

• Become involved in the one year trial.
• Receive full support from our research team.

Contact:

Natassia Goode
ngoode@usc.edu.au
07 5456 5850