2.4. Challenges in Defence Medicine in the Asia-Pacific Region

Research Requirements in Disaster Medicine

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Research methodology in disaster medicine has progressed, but there still are major problems. The validity and reliability of data gathering before, during, and after a disaster remains a major area for improvement. The Utstein Templates represent the most comprehensive extant model defining the mechanisms underpinning the field of study and the phasing of disasters. However, the model needs to be validated, and this will take time. Research priorities within the Template structures need to be identified to drive research initiatives. At the same time, management of research and research findings is a critical issue. Development of collaborating groups around operationally valid research topics in quasi-Cocharane Collaborating Centres could be a solution.

Keywords: Cocharane Collaborating Centre; methodology; research; Utstein Templates; validity
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2.5. Defence Medicine I

"Blood Does Not Grow on Trees!": Planning for a Disaster

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Historically, the needs of those wounded in war have led to many major advances in blood transfusion. One important lesson learned is the need for meticulous planning. Every hospital and blood centre should have a disaster plan covering six areas: what fluids to use; where they are to be obtained; to what degree they will be tested; how will they be transported to the disaster scene; once there, how will they be stored; and finally, how will communications be made between the disaster scene and base? Once drawn up, this plan must be exercised regularly and periodically revised. This ensures rapid and efficient implementation when an emergency arises.

Triage is vital in mass casualty situations, ensuring that scarce resources are used for those with the best chance of recovery. Although patients can survive with low haemoglobin levels for considerable periods, speedy treatment of hypovolaemia is imperative if irreversible shock is not to be avoided. When perflourochemicals and haemoglobin solutions become available for general clinical use, they will play a major role in disasters. Similarly, a simple method for the cryopreservation of red cells, will allow stockpiles to be established. Unfortunately, none of these are available presently, although some are undergoing clinical trials and could be licensed within the next two years.

Keywords: blood transfusion; disaster; hemoglobin; mass casualties; perflourochemicals; planning; triage
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Field Anaesthesia: An Update

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During the last decades, several new intravenous drugs, volatile agents, and elegant electronic equipment for delivering and monitoring anaesthesia and for monitoring the patients, have been introduced into anaesthesia. Unfortunately, several defence forces have copied the high-tech anaesthetics of their stationary hospitals into their field hospitals, often without evaluating the consequences as to vulnerability.

Field anaesthesia has the same objectives as everyday anaesthesia: full analgesic and anaesthetic effect with maximum patient safety and optimal patient comfort. In hostile environments, with limited resources and a heavy workload, equipment and anaesthetic concepts require special attention. Field anaesthesia should take advantage of established anaesthesia gains, and at the same time, focus on technical solutions that function also in dire circumstances, ensuring reliability, flexibility, and adaptability. Field equipment should not be as good as stationary hospital equipment: it should be better!

In the Norwegian Defence Forces, these requirements are met through:

1. Convertible anaesthetic machines (from Boyle's anaesthetic machine to Draw-over machine in less than 10 seconds)
2. Multi-agent vaporizers
3. Complete replacement of N_2O with air
4. Introduction of oxygen concentrators
5. Pulse oximetres to monitor the patient and to avoid the waste of oxygen
6. Nonvasodilating anaesthesia
7. Extended use of regional and local anaesthesia, including acute surgery
8. 1:1:2 concept, i.e., one anaesthetic machine serving one surgical team using two operating tables.

The use of dinitrous-oxide (N_2O) has many disadvantages especially in field anaesthesia. Its omission has reduced risk for mishaps and simplified the logistical systems.

Carefully selected concepts improve a field anaesthetic system and enhance our ability to provide optimal anaesthesia with maximum safety and minimal logistical support.

Keywords: anaesthesia; field; oxygen; vaporizers
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