VITAL ANAESTHESIA SIMULATION TRAINING

PARTICIPANT HANDBOOK

VAST

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VERSION 1.0 - 2018

Authors

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VAST has been developed with the support of

DALHOUSIE UNIVERSITY
FACULTY OF MEDICINE

SCSC HF
Scottish Centre for Simulation and Clinical Human Factors

UNIVERSITY OF RWANDA

WFSA
WORLD FEDERATION OF SOCIETIES OF ANAESTHESIOLOGISTS

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Dr Adam Mossenson
Founder and Managing Director - VAST

Disclaimer

The authors of this manual have endeavoured to provide accurate and up-to-date information. This manual may contain errors. Ultimate clinical responsibility rests with the individual practitioner, not the authors. Health care providers must use their clinical judgement, check local guidelines and be aware that treatment modalities may vary across and within countries.

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Foreword

Simulation is a unique and powerful way of learning.

In anesthesia, we must be capable of effectively managing routine everyday tasks as well as complex crisis situations. We are required to simultaneously execute psychomotor skills such as airway management, cognitive skills such as clinical decision making and social skills such as leadership and communication.

Putting all this together when it matters can't be learned in a text book, or a lecture, or even in a really interactive tutorial. There comes a point when you have to learn by doing. But then comes the challenge: how can you learn by doing for an event with a one in ten thousand incidence? Or when you're practising unsupervised in the middle of the night? How can you stand back and let your learner take charge and learn through mistakes when a mother's life is on the line? For this reason, simulation has been described as an "ethical imperative". An effective learning space that is safe for both patient and learner. It is arguably still more an imperative in low- and middle-income countries where the anesthesia human resource crisis leaves the majority of the world's population without access to safe anesthesia care.

It's easy to get caught up in the tech, but simulation is a technique, not a technology. It's increasingly understood that the same learning outcomes can be achieved with very low-cost resources as with high-end tech. It's more important to have a simulation model that is aligned with the learning objective, well constructed scenarios, organized facilitators and a thoughtful reflective debriefing for learning afterwards. The VAST Course is an "off the shelf" solution that provides the scenarios and the organization. It provides everything you need to start a simulation program with minimal cost. It builds on established content for low- and middle-income countries such as the SAFE, Primary Trauma Care and Essential Pain Medicine courses. Its focus is aligned with the Bellwether surgical procedures which must be offered safely in even rural district hospitals.

Like any form of teaching, simulation-based education is a learned skill that must be honed over many hours of practise and feedback. The companion VAST Facilitator Course provides essential tools to facilitate a debrief and empowers faculty to take the first steps along a career as a simulation educator. VAST and its Facilitator Course are a wonderful resource for those who want to bring simulation to where there is currently no simulation training. It can be the start of a kind of learning uniquely positioned to impact patient outcomes without risking patient harm.

Dr Dylan Bould
Associate Professor of Anesthesiology, University of Ottawa
Chair of CASIEF

Introduction

Welcome to the VAST Course

Over the next three days, we focus on some essential aspects relating to provision of safe anaesthesia. We will use simulation throughout many of the sessions in the Course.

The learning will be driven by you:

- You will get out of the Course what you put in to it
- Please be on time for all sessions
- Please respect your colleagues and the learning environment

Contents

Timetable

Day 1	
Time	***Session***
0800-0815	Registration
0815-1000	Welcome and introduction to simulation
1000-1030	Morning tea
1030-1230	Discussion and simulation
1230-1315	Lunch
1315-1445	Skills station and simulation
1445-1515	Afternoon tea
1515-1645	Discussion and skills station
1645-1650	Day 1 evaluation

Day 2	
Time	***Session***
0800-0830	Reflection on day 1
0830-1000	Case discussion and simulation
1000-1030	Morning tea
1030-1200	Simulation
1200-1245	Lunch
1245-1415	Simulation
1415-1445	Afternoon tea
1445-1615	Simulation
1615-1620	Day 2 evaluation

Day 3	
Time	***Session***
0800-0830	Reflection on day 2
0830-1000	Case discussion and simulation
1000-1015	Morning tea
1015-1200	Simulation and discussion
1200-1245	Lunch
1245-1415	Simulation
1415-1445	Afternoon tea
1445-1600	Discussion and commitment to change
1600-1615	Final evaluation and certificate presentation

Clinical frameworks

Handover

S – situation

B – background

A – assessment

R – recommendation

History

A – allergies

M – medications

P – past history

L – last ate (fasting status)

E – events + *exercise tolerance*

Examination

A – airway

B – breathing

C – circulation

D – disability

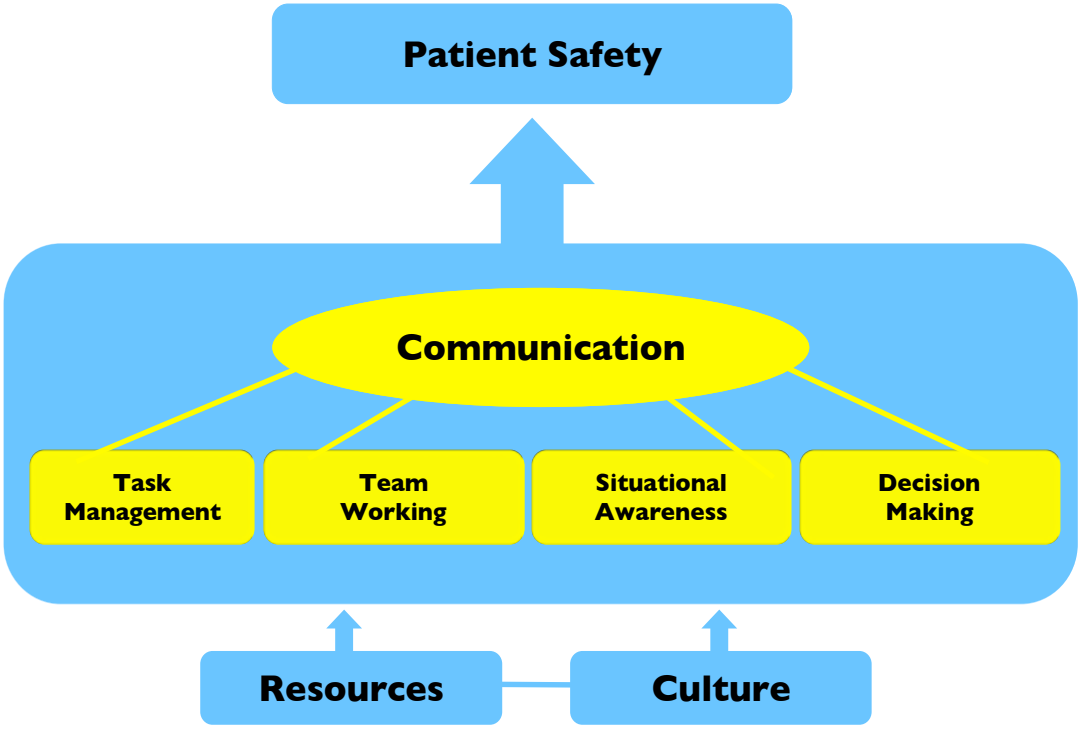
E – exposure

Non-technical skills

Non-technical skills relate to how people think, act and communicate as a team to enhance safe practice. They are also sometimes referred to as 'human factors'. Human factors are at the centre of up to 80% of all adverse outcomes in medicine. Good communication is an essential component behind all non-technical skills. Improving non-technical skills leads to safer practise. These skills can be developed through simulation training.

Available resources and cultural factors can influence non-technical skills. Some examples:

- A hierarchical culture may prevent staff from identifying unsafe practise
- Consistent lack of essential equipment may lower the expected standards of care



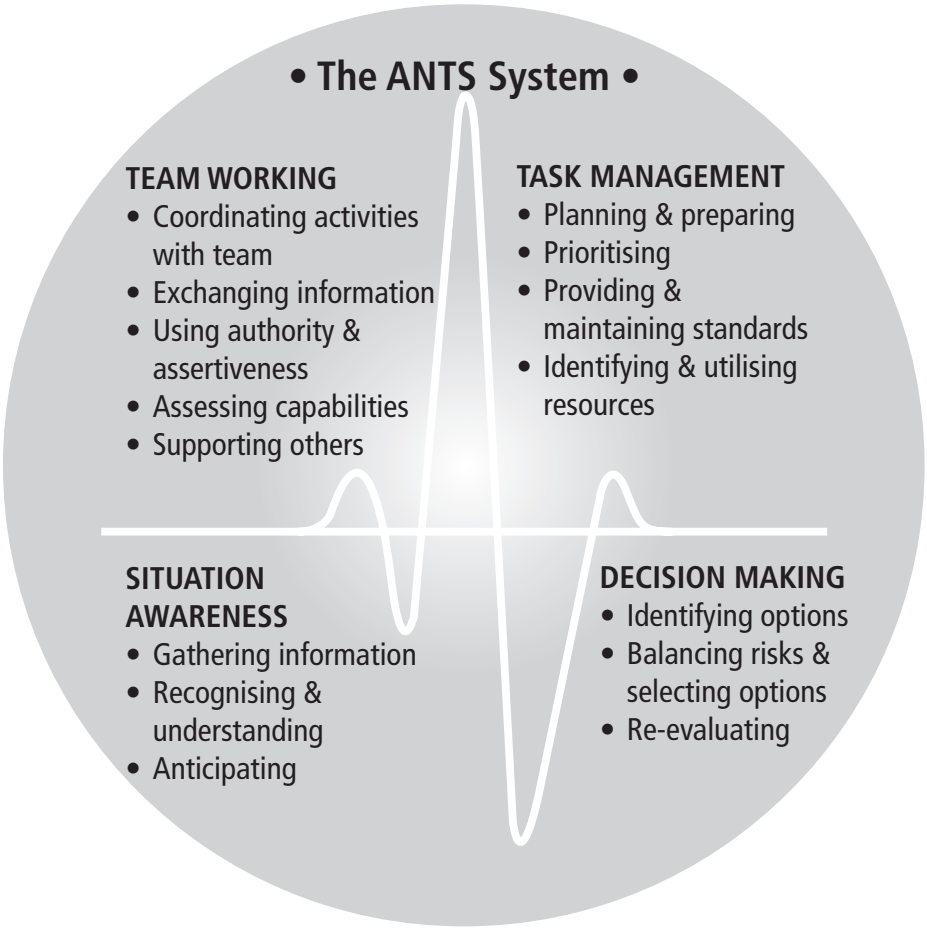
Adapted from – Livingston P, Zolpys L, Mukwesi C et al. Pan African Medical Journal. 2014; 19:97

Non-technical skills have been studied extensively in anaesthesia:

- 4 broad skill categories have been identified[1]:

Skill category	Description
Task management	Organising resources and required activities
Team working	Working effectively in a group context
Situational awareness	Developing and maintaining awareness in the workplace
Decision making	Reaching judgement and selecting a course of action

Each of the 4 non-technical skills categories can be broken down into a series of elements:



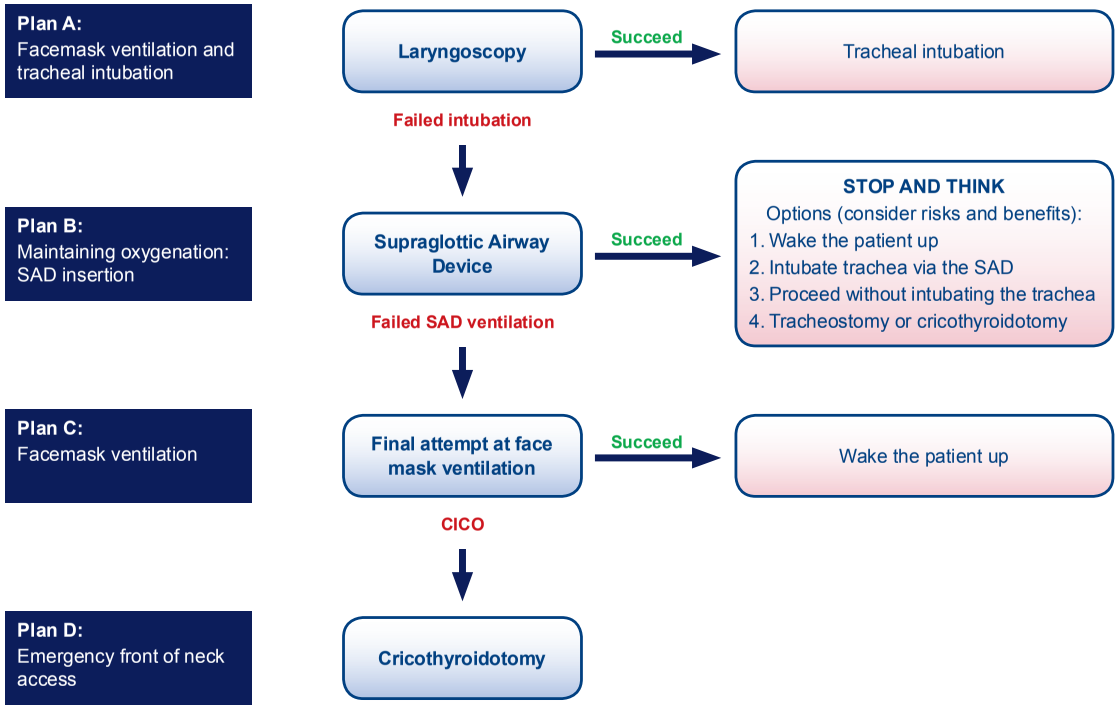
Framework for Observing and Rating Anaesthetists' Non-Technical Skills: Anaesthetists' Non-Technical Skills (ANTS) System Handbook v1.0. University of Aberdeen and Scottish Centre for Simulation and Clinical Human Factors. Available online https://www.rcoa.ac.uk/system/files/AaE-ANTS-HANDBOOK.pdf

During the VAST Course, you will have the opportunity to practise and develop your non-technical skills.

For more information on non-technical skills and anaesthesia, please see:

- [1]Flin R, Patey R, Galvin R, Maran N. Anaesthetist's non-technical skills. British Journal of Anaesthesia. 2010; 105(1): 38-44
- Livingston P, Zolpys L, Mukwesi C et al. Non-technical skills of anaesthesia providers in Rwanda: an ethnography. Pan African Medical Journal. 2014; 19:97

DAS Difficult intubation guidelines – overview



This flowchart forms part of the DAS Guidelines for unanticipated difficult intubation in adults 2015 and should be used in conjunction with the text.

C. Frerk, V. S. Mitchell, A. F. McNarry, et al. Difficult Airway Society intubation guidelines working group. *British Journal of Anaesthesia*. 2015; 115 (6): 827–848

Essential Pain Management bookmark

RECOGNIZE

- **Ask and look**

ASSESS

- **Severity?**
  - Measure at rest
  - Measure with movement
- **Type?**
  - Acute / chronic
  - Cancer / non-cancer
  - Nociceptive / neuropathic / mixed
- **Other factors?**
  - Physical
  - Psychological

TREAT

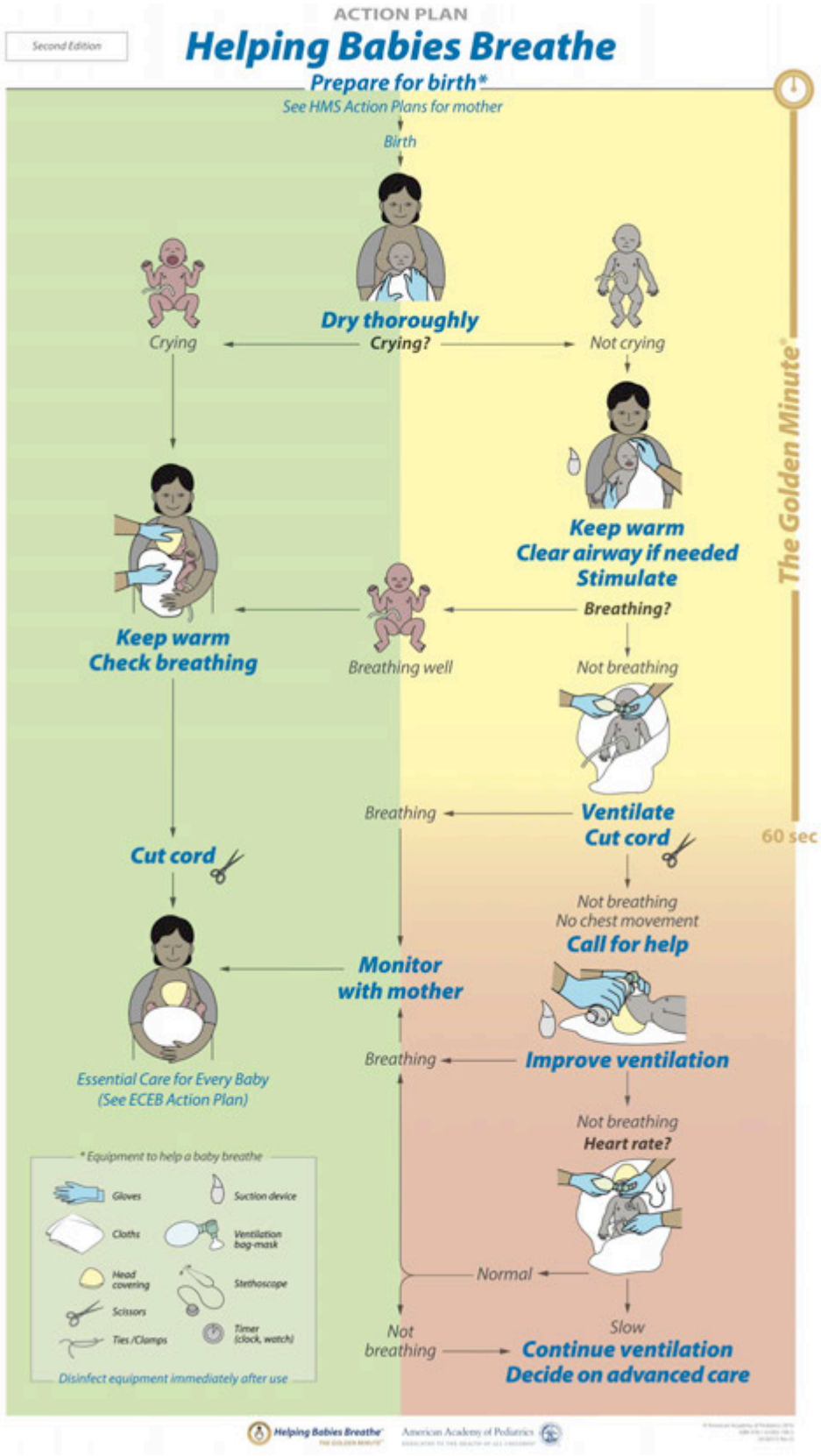
- **Non-pharmacological treatments – for both nociceptive and neuropathic**
  - Physical (e.g. rest, ice, elevation, physiotherapy, massage)
  - Psychological (e.g. reassurance, explanation, counselling)
- **Pharmacological treatments – nociceptive**
  - Consider paracetamol, NSAIMs, tramadol, codeine, morphine
  - Use combinations (e.g. paracetamol, NSAIM, opioid)
  - Use IV morphine for acute, severe pain
- **Pharmacological treatments – neuropathic**
  - Consider tramadol, tricyclic antidepressant (e.g. amitriptyline) or anticonvulsant (e.g. gabapentin)

REASSESS

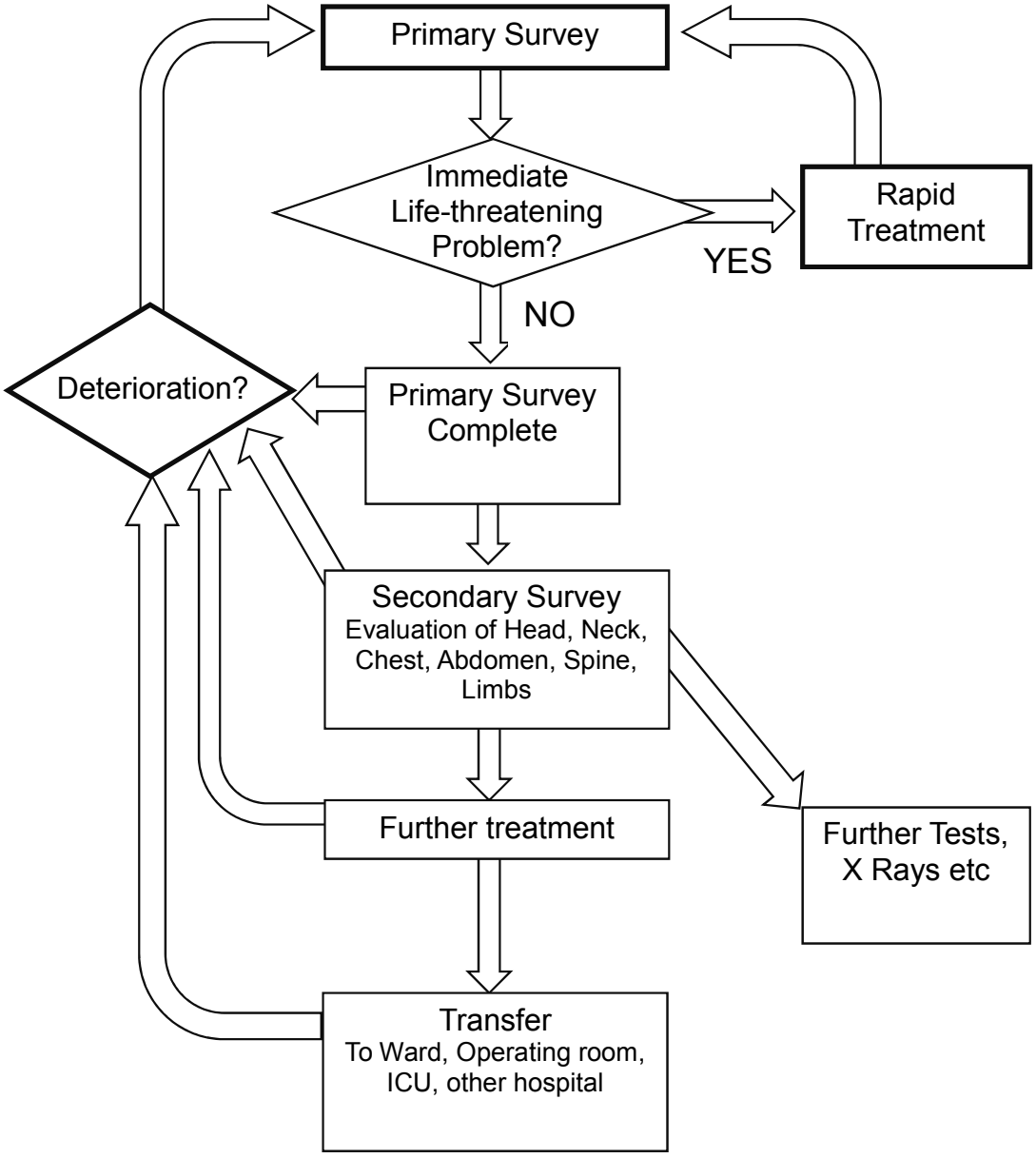
- Repeat RAT
- Is your treatment working?
- Are other treatments needed?

www.essentialpainmanagement.org

Helping Babies Breathe Action Plan



Trauma primary survey



Primary survey flowchart used with permission from the Primary Trauma Care Foundation.
Resources available at http://www.primarytraumacare.org

Burns - Parkland formula and surface area estimation

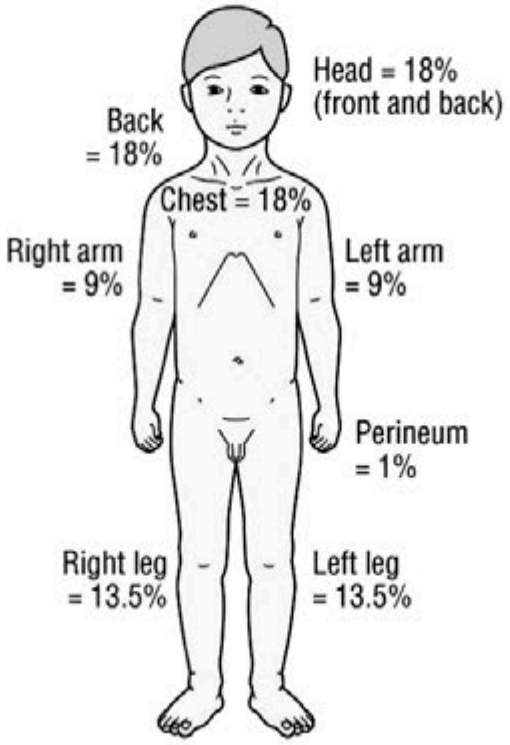
Parkland Formula:

% BSA burn x Weight x 4mls

- Give this in the **first 24 hours:**
  - Give **half the volume in first 8 hours**
  - Give the **remaining half over next 16 hours**
- In addition to this, remember to give the normal fluid maintenance that the patient requires

% Body Surface Area (BSA) estimation

- **Palmar surface:** the surface of the patient's palm (including adducted fingers) is approximately 1% of the patient's BSA
- **Wallace Rule of 9's:** this divides the total BSA into areas of 9%, as shown in the diagram. However, it can overestimate the extent of the burn in young children

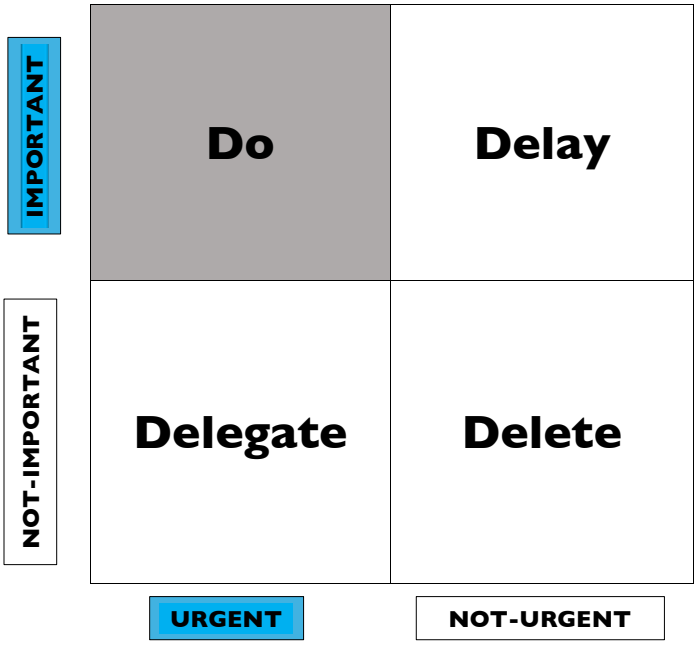


Adapted by permission from BMJ Publishing Group Ltd. Initial Management of Major Burns: II – Assessment and Resuscitation, Hettiaratchy S. *BMJ 2004; 329: 101*

Resources used with permission from the SAFE Paediatric and Obstetric Anaesthesia Pocket Handbook. Resources are available at https://www.wfsahq.org/images/Safe_Paediatric_and_Obstetric_book_2015.pdf

Eisenhower prioritisation matrix

Managing many tasks simultaneously can be difficult, particularly during a crisis:
- Prioritisation of tasks is important
- Ensure the right person does the task at the right time
- Review tasks in relation to how urgent and how important they are



Adapted from Stephen Covey's 7 Habits of Highly Effective People, Free Press, New York, 2004

Consider tasks as either:
- *Urgent and important*:
  - Take responsibility for these tasks. You should **DO** them immediately
  - If coordinating a team, direct another suitably skilled person do these immediately
- *Urgent and not important*:
  - These tasks should be completed immediately, however **DELEGATE** them to someone else
- *Not-urgent and important*:
  - Take responsibility for these tasks, however you should **DELAY** completing them until the urgent tasks are completed
- *Not urgent and not important*:
  - **DELETE** these tasks in order to prioritise completion of important or urgent tasks

Category	Example
DO	*Intubate a patient with an unprotected airway*
DELAY	*Document events*
DELEGATE	*Answer a ringing telephone*
DELETE	*Update social media feed*

Graded assertiveness

Effective communication is essential for patient safety:
- Everyone involved in patient care has a responsibility to raise their concerns
- Voicing concern, or 'speaking up' prior to a critical event occurring is essential
- The responsibility includes those in non-dominant roles
- Team performance improves when there is an open culture of 'speaking up'[1]

It can be difficult to 'speak up' for many reasons, including:
- Fear of repercussions
- Fear of embarrassment
- Not having a voice, due to cultural factors or traditional professional roles
- Colleagues not receiving information well when performing under stress

Graded assertiveness describes a communication technique:
- It is a stepwise way of voicing your concern
- An example is the PACE model:
    - Step 1 - Probe
    - Step 2 - Alert
    - Step 3 - Challenge
    - Step 4 - Emergency
- Each step represents an escalation of your concern
- The responsibility and power to act on the concern moves from:

Someone else's concern → A shared concern → You taking responsibility

Consider the following example:
- *A nurse on the surgical ward has called for review of a patient who she thinks is developing sepsis secondary to a wound infection*
- *The medical officer arrives, performs a brief assessment and does not think there is a problem*
- *The nurse uses the PACE model to progressively escalate the degree of her concern, ensuring patient safety*

	Using PACE: How to escalate the concern
Probe	*Do you know that the patient is febrile and has a low urine output?*
Alert	*I am worried that this patient has sepsis. She has an infected looking wound, a fever, low blood pressure and is becoming drowsy*
Challenge	*We need to treat this as sepsis. We should take blood cultures, start antibiotics and maybe go to theatre*
Emergency	*She is critically unwell. I am going to give a fluid bolus and call for a second opinion*

For more information on speaking up, please see:
- [1]Okuyama A, Wagner C, Bijnen B. Speaking up for patient safety by hospital-based health care professionals: a literature review. BMC Health Services Research. 2014. 8; 14: 61

Burnout

Burnout – a term describing the consequences of severe and prolonged stress

Burnout is a work related syndrome

Jobs with high demands, low levels of control and few social supports are associated with reduced psychological and physical wellbeing[1]. In resource-limited settings, work related stressors may be amplified, increasing the likelihood of burnout, for example there may be:

- Greater workload with limited resources
- Fewer institutional supports and clinical mentoring
- High disease complexity, patient acuity and high mortality rates
- Limited financial compensation and career building opportunities[2]

Key features of burnout	Potential consequences
1. Emotional exhaustion 2. Depersonalisation: - Alienation from work - Negativity and cynicism 3. Low personal achievement: - Feeling ineffective - Feeling a lack of accomplishment	Sub-optimal patient care Absenteeism Reduced retention of healthcare workers Breakdown of relationships Substance abuse Poor emotional and physical self-care Poor quality of life Mood-disorders Suicide

Factors that can promote wellness and reduce burnout[2]
Nutritious food, exercise, sleep
Emotional support and mentorship
Institutional support
Sense of control over work conditions
Financial security and professional growth opportunities
Increased awareness and screening for burnout

Note - there is limited specific evidence of effective interventions from low-resource settings

A resource for managers, employers and union representatives on work related stress:
http://www.who.int/occupational_health/publications/stress/en/

[1]Van der Doef M, Maes S. The job demand-control (-support) model and psychological well-being: A review of 20 years of empirical research. Work Stress. 1999; 13(2): 87-114

[2]Dugani S, Afari H, Hirschhorn L et al. Prevalence and factors associated with burnout among frontline primary health care providers in low- and middle-income countries: A systematic review. Gates Open Research. 2018: 2:4 (doi: 10.12688/gatesopenres.12779.1)

Commitment to change

Thank you for your participation in the VAST Course

Attending any educational course is only the first step:

- It is important to take the learning from the Course and implement it in your workplace
- Planning for future improvement in practise is central to creating sustained change

Please identify 3 changes you intend to make in your practice as a result of the course:

- *Example – routine use of uterine displacement in all obstetric patients*

1.

2.

3.

What obstacles do you anticipate encountering in attempting to make these changes?

- *Example – other team members not prioritising this management step*

What resources would help you to achieve these changes?

- *Example – creating a hospital policy for essential aspects of care for obstetric patients*

Logbook

This logbook is intended for your use after the VAST Course:

- The goal is to record clinical situations in which you were required to use your non-technical skills
- Reflect on the principles relating to non-technical skills discussed during VAST:
    - How were these relevant during the case
    - What was the effect on patient management
    - What was the outcome for the patient
    - Any reflections or comments

Date of case:
Reason for your involvement:
(e.g. routine caesarean section, anesthesia for laparotomy, anesthesia for ruptured uterus):

What was the issue that occurred:

Describe the management of the problem:

Non-technical skills used:

What was the outcome for the patient?

Other comments or reflections?

Date of case:
Reason for your involvement:
(e.g. routine caesarean section, anesthesia for laparotomy, anesthesia for ruptured uterus):

What was the issue that occurred:

Describe the management of the problem:

Non-technical skills used that you learnt on the course:

What was the outcome for the patient?

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Notes

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