

# Bulletin

of The Royal College of Anaesthetists

September 2008

Issue 51

## Special human factors issue

Why anaesthesia patient safety has lagged behind aviation safety

There is no risk without people

Zero harm

A target for error management in anaesthesia

Advancing patient safety



# The '10-seconds-for-10-minutes principle'

## Why things go wrong and stopping them getting worse

Dr M Rall MD,

Center for Patient Safety and Simulation (TuPASS), University Hospital Tuebingen

Dr R J Glavin MPhil FRCA,

Educational Director, Scottish Clinical Simulation Centre

Professor R Flin,

Industrial Psychology Research Centre, School of Psychology, University of Aberdeen

### **'We are too fast' in critical situations**

What at first sounds paradoxical might turn into a milestone in promoting safer patient care. The '10-seconds-for-10-minutes principle' has emerged from more than ten years experience in trying to enhance patient safety in acute care settings, especially in 'realistic simulation team training' for professional healthcare providers.

### **The problem**

For the last ten years the instructors at TuPASS (Tuebingen Center for Patient Safety and Simulation) have been running realistic simulation sessions for all kinds of acute care teams from intensive care, anaesthesia in the operating theatre, pre-hospital care, air rescue (fixed wing and helicopters) and resuscitation. The instructors have frequently observed scenarios where 'good' professional teams make errors, forget important steps or even exhibit signs of high stress levels. They have thought a lot about why such highly qualified and experienced teams make

errors or forget things – mistakes or errors that the team members themselves recognise only a few minutes after the scenario has ended. The question is: 'Why do competent teams in emergency situations perform below their expected standard – sometimes resulting in severe errors?'

### **The cause**

After observing this phenomenon, it is apparent that the team members feel themselves to be under considerable time pressure during these emergency scenarios ('It's an emergency! – Quick! The patient's

dying!') contributing to the team's poor performance. This doesn't always happen – some teams are fast and effective, managing the clinical problem quickly and without errors. So our hypothesis is that whilst some teams perform well, others work so quickly that they make errors and so compromise safety. This trade off is seen in other domains; if you increase your speed of performance, you increase the risk of deterioration in other areas of the system such as safety or high reliability. Psychologists call this a speed/accuracy trade off and it has been associated with unsafe outcomes in

other professions. In a NASA study of safety reports, the association between perceived time pressure (e.g. pilots rushing to meet schedule deadlines) and error was so strong that the researchers labelled the problem 'The hurry-up syndrome'.

### The solution

We further hypothesised that, 'If the team would slow down just a little, they would be better able to apply all their knowledge to the benefit of the patient.' In fact, models of expert decision making (e.g. Orasanu's work with airline pilots)<sup>1</sup> show that an initial assessment of the situation improves decision making as judged by selection of the correct actions executed in the correct order. Successful management relies not only on identification of the problem, but also on accurate assessment of the level of risk and time available. Experienced decision makers undergo this process (albeit often subconsciously) when selecting a decision-making strategy, i.e. 'Do I have to apply a rule immediately or do I have time to think a little more about this problem?' On the other hand, novices characteristically underestimate the time available to think and often act too quickly, perhaps because of task anxiety. This concept is captured neatly in the words of a consultant surgeon to his trainee, 'Don't just do something, stand there'. Similarly, experienced airline pilots teach the phrase: 'When you get an abnormal alarm, sit on your hands first' to discourage novice pilots from making a swift, but possibly inappropriate, response.

The need to slow down appears to be greatest at the beginning of the treatment planning ('**Diagnosis**' in Figure 1) or in situations where the

team has problems and the initial treatment is not working ('**Feel stuck**').

So we propose the '10-seconds-for-10-minutes principle', presented here for the first time. The 10-for-10 principle states: 'When you see a patient in a critical condition, take your time, do not make a diagnosis

and start treatment within a fraction of a second, but take a deep breath and then a formal team time-out' ('**the 10 seconds**' part). Then work through the lower right-hand section of Figure 1.

#### Problem?

Ask yourself and all of your team members, 'What is the biggest problem right now?' – 'What is the most dangerous aspect of the problem?' ('What outcome would I like to have least?').

#### Opinions?

Clarify the above with all available team members.

#### Facts?

Gather available information.

#### Plan?

Using input from the team, make a treatment plan. This includes

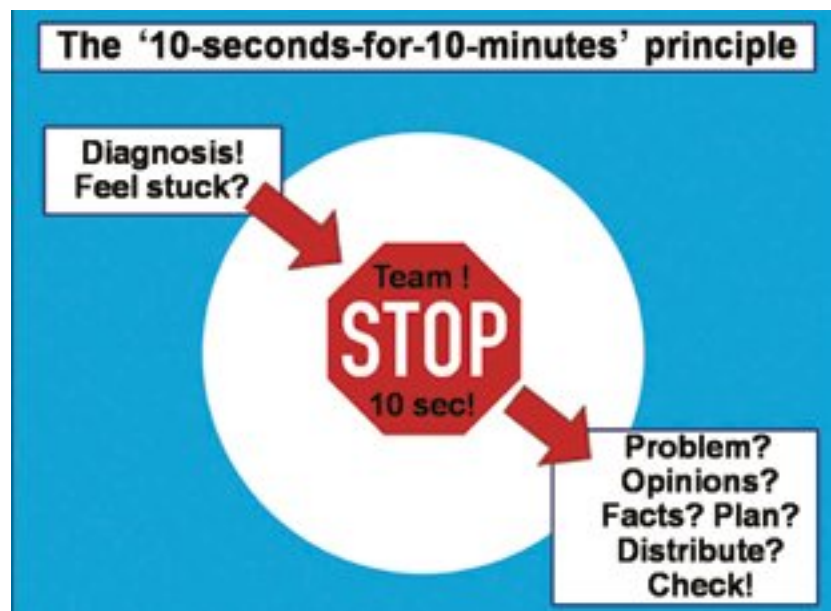
“Why do competent teams in emergency situations perform below their expected standard – sometimes resulting in severe errors?”

the plan as well as the sequence of actions. On many occasions we observed team leaders giving orders as ideas came to mind, not necessarily in order of priority.

#### Distribute?

Distribute the workload by assigning tasks and responsibilities. This may include such activities as reporting on thresholds, e.g. Keep an eye on the oxygen saturation and let me know if it falls below 94%.'

Figure 1 The '10-seconds-for-10 minutes' principle



## Check!

Before diving into work, involve all team members again to encourage them to raise any further concerns or suggestions for improvement or refinement.

The above list seems very long and one that would take a lot of time before initiating treatment. However, the first tests in the simulator at TuPASS using the 10-for-10-principle have shown:

- a that the above mentioned tasks can be undertaken very quickly, especially when the team knows and supports the principle
- b that any time lost using the 10-for-10-principle is often compensated by much more effective team action after the time-out.

That is the idea of the principle and why it is so named. Spend 10 seconds more in data gathering, diagnosing and team planning, and save time and improve safety for the next 10 minutes. Of course, the 10 seconds and the 10 minutes are symbolic – the 10 second time-out may save the patient from suffering for the next 10 years.

## The potential of the '10-seconds-for-10-minutes principle'

The first applications of the 10-for-10 principle in simulation training have shown very promising outcomes. Some teams who perform the 10-for-10-principle come up with a whole array of improved human factor behaviours (Crisis Resource Management or Non-Technical Skills) making patient care so much safer. In the view of the authors, no patient will suffer from a 10-second delay in treatment – in this sense medicine is usually a slow speed domain, where

negative outcomes and harm need to develop. In contrast, many patients have and will suffer from errors or omissions by teams who are stressed or act in an inappropriately rapid manner.

Finally, when patients suffer from preventable errors, healthcare professionals can suffer as 'second victims', especially in situations where they know that they have performed below their usual level and have made mistakes. We think that training teams responsible for the management of emergencies to use this principle effectively may help improve the safety of patients with critical conditions. Of course, this is a hypothesis that will need to be subjected to proper scientific study, but we are sufficiently impressed with our early results to share the concept and receive feedback from trials by others.

## Reference

- 1 Orasanu J, Fischer U. Finding Decisions in Natural Environments: The View from the Cockpit. In Zsombok CE, Klein G (eds) *Naturalistic Decision Making*. Lawrence Erlbaum Associates, Mahwah NJ 1997: 343–58.