

Review

Challenging hierarchy in healthcare teams – ways to flatten gradients to improve teamwork and patient care

B. Green^a, R.S. Oeppen^b, D.W. Smith^c, P.A. Brennan^{d,*}

^a Department of Gastroenterology, Torbay Hospital, Torquay, UK

^b Department of Diagnostic Radiology, University Hospital Southampton, UK

^c Easyjet (A320 training Captain), Gatwick, UK

^d Department of Oral and Maxillofacial Surgery, Queen Alexandra Hospital, Portsmouth, UK

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Abstract

In healthcare, mistakes that are potentially harmful or fatal to patients are often the result of poor communication between members of a team. This is particularly important in high-risk areas such as operating theatres or during any intervention, and the ability to challenge colleagues who are in authority when something does not seem right or is clearly wrong, is crucial. Colleagues in oral and maxillofacial surgery recognised the importance of this as early as 2004, and it is now well known that failure or reluctance to challenge others who might be wrong can severely compromise a patient's safety. The Royal College of Surgeons of Edinburgh runs popular regular courses (Non-technical Skills for Surgeons, NOTSS) that teach how to ensure safety through good communication and teamwork. In this paper we introduce the concept of hierarchical challenge, and discuss models and approaches to address situations when problems arise within a team.

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Introduction to hierarchy in medicine

In the past, medicine, and surgery in particular, were seen predominantly as male-dominated professions, and they often attracted people with strong personalities, courage, and high levels of expertise. These times have thankfully been confined to history, but some negative aspects of medical practice, such as a lack of candour or lack of insight into one's own attitudes and behaviour, can still have a damaging effect on our workplace culture.

There is a potential risk of unintentional harm in 3%–16% of inpatients^{1,2} as a result of human error and other factors such as organisational complexity, lack of systematic

communication, poor teamwork, and a reliance on highly technical equipment.^{3,4} The operating theatre can be a stressful place and is one of the main areas where this can happen.^{5,6} The Kennedy inquiry into cardiac surgery at the Bristol Royal Infirmary, UK, in 2001⁷ showed that some clinicians lacked insight, and their behaviour was perceived as being flawed. The report concluded that a few colleagues had too much control, and this had resulted in an imbalance of power and a steep hierarchical gradient.⁷

Another example is the well-known Elaine Bromiley case, in which a healthy woman died from hypoxic brain injury after attempts to intubate by two anaesthetists had failed during a routine elective ear, nose, and throat (ENT) operation.⁸ Two of the nurses involved subsequently reported that they had known what should have been done but had not asserted themselves because of the hierarchy in the operating theatre. Instead, they had used passive and indirect statements,

* Corresponding author at: Maxillofacial Unit, Queen Alexandra Hospital, Portsmouth PO6 3LY, UK. Tel.: +44 2392 286736; fax: +44 2392 286089.
E-mail address: Peter.brennan@porthosp.nhs.uk (P.A. Brennan).

which had had no effect during the crisis. A steep hierarchical gradient, whether perceived or real, can also be linked to other issues in the workplace, and one study found that 38% (421/1100) of staff had been bullied.⁹

A flat hierarchical gradient at a senior level can also cause problems. In this situation, the team leader lacks self-confidence, is constantly unsure, and usually relies on the rest of the team to make decisions. These individuals are poor leaders and role models. In the armed forces, leadership skills are taught at an early stage, as they are vital in battle. In hospitals, a rapid change in gradient is sometimes needed – for example, when an inexperienced surgical trainee causes a major haemorrhage and is unable to deal with it, and the senior clinician must rapidly take control. Debriefing after such an event is an invaluable part of a trainee's education.

Hierarchical gradients in aviation

During the 1970s and 80s several serious aircraft accidents resulted from the failure of the co-pilot to challenge the incorrect and dangerous decisions of the captain.¹⁰ Airlines quickly realised that human factors were an important feature in these accidents, and they rapidly identified and adopted remedial measures to allow crew to challenge each other about anything that could compromise safety, without fear of retribution.

This changed the culture in aviation, and the use of Crew Resource Management (CRM) training programmes, which included communication, situational awareness, problem-solving, teamwork, and decision-making, levelled out the hierarchical gradient between the captain and co-pilot on the flight deck (Fig. 1). Instruction was based on case studies of fatal accidents with video reconstruction, and it concentrated particularly on situations when the co-pilot did not speak up despite realising that something was seriously wrong. Senior pilots were concerned about cultural change and were reluctant to admit to making mistakes, but gradually it has become more acceptable for co-pilots to speak up. Today, captains can



Fig. 1. A gentle hierarchical gradient on the flight deck of an Airbus A320. This practice should be commonplace in healthcare as well as in aviation.

be disciplined if they fail to listen to, or act upon, a concern of the co-pilot, irrespective of seniority or experience. The CRM programme has created a strong safety culture, an awareness of human error, and the need for reliability.¹⁰ The principles involved are increasingly being used in healthcare.

Following rules and regulations

In addition to these training programmes, standard operating procedures (SOPs) were introduced in aviation, and simulation was developed to improve teamwork and further facilitate a gentler hierarchical gradient (rather than the historical model in which the “captain knows everything and is always right”).

Flight decks are now fitted with voice recorders, and despite some early opposition, airlines adopted SOPs from which any deviation requires detailed justification. An example of such a procedure in healthcare is the WHO preoperative checklist.¹¹

In many organisations, particularly in aviation, high-fidelity simulation is used for training in teamwork.¹⁰ This can also benefit medical teams, as it allows them to rehearse and practice events that rarely occur. In any simulation it is important to remain aware of what is happening around you, as loss of “situational awareness” has a considerable impact on the clinical environment and can potentially affect a patient's safety.⁸

Hierarchy in healthcare

Human error is as old as humanity itself and we all make mistakes, but errors can often be prevented. The publication in 2000 of *To err is human: building a safer health system* was instrumental in improving the recognition of human error on both sides of the Atlantic,³ but there is still much more to do. It reported that up to 98 000 deaths/year in US hospitals were caused by human error, and many were related to problems within a team. Better teamwork can prevent error, or at least minimise risk, and is therefore crucial if we are to improve patient care.

Many factors can affect a person's position within the hierarchy of a team. These include the medical or surgical specialty, sex, personality (introvert or extrovert, passive or aggressive), and education outside of the country of practice. They also include increased responsibility, the hierarchy within and between professions, and professionalism. A study from Denmark¹² described how a flat hierarchical gradient between medical and nursing staff enabled effective communication and better patient care. Unfortunately, in some healthcare systems, nurses can be seen as subservient to clinicians, and this creates a potentially steep hierarchical gradient between them. Regular use of the simple expression “there is no I in team” quickly focuses attention on the importance of good teamwork and one's own role within it.

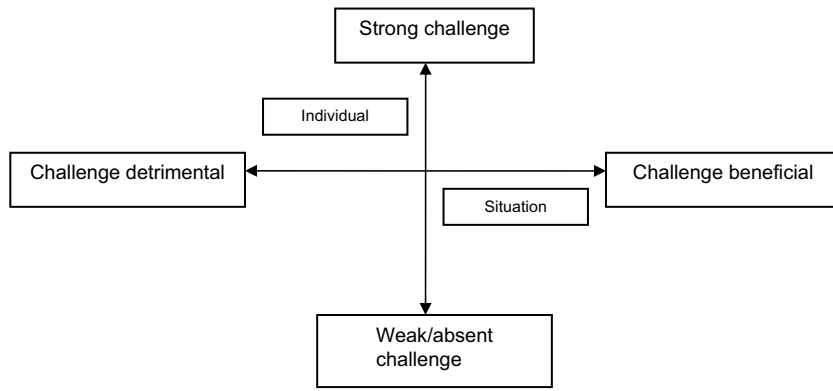


Fig. 2. Theoretical model of hierarchical challenge.¹³ It is important that challenges are made when necessary. Ideally, a challenge that is unfounded should not be detrimental to the individual.

A simulation study of 44 trainee anaesthetists showed that a steep hierarchical gradient had a negative effect on working relationships, and there was a tendency to avoid conflict.¹³ The trainees often saw themselves as bystanders in the operating theatre, and surprisingly, some thought that this steep hierarchy was essential in healthcare, particularly when there was a crisis. A theoretical model was therefore proposed to show that a challenge to authority in a crisis can either be clear and effective or weak and oblique (Fig. 2). This is similar to the well-known assertiveness triangle that we use in our teaching programmes on human factors (Fig. 3) to show that a change of strategy might be needed if a senior member

of the team is unwilling to accept that there is a potentially serious problem.

After publication of *To err is human* in 2000,³ colleagues in our own specialty evaluated strategies that can be used to challenge a difficult consultant who is going to operate on the wrong side, and presented them at the 2004 BAOMS Annual Scientific Conference.¹⁴ The results were reassuring, and junior members of the team intervened in the situations (which were, of course, planned by the consultants) so no patient was harmed. Challenges to perceived or real risks to a patient’s safety should not be detrimental to the challenger or the challenged. Employers should constantly emphasise the “no blame” culture that is promoted in aviation

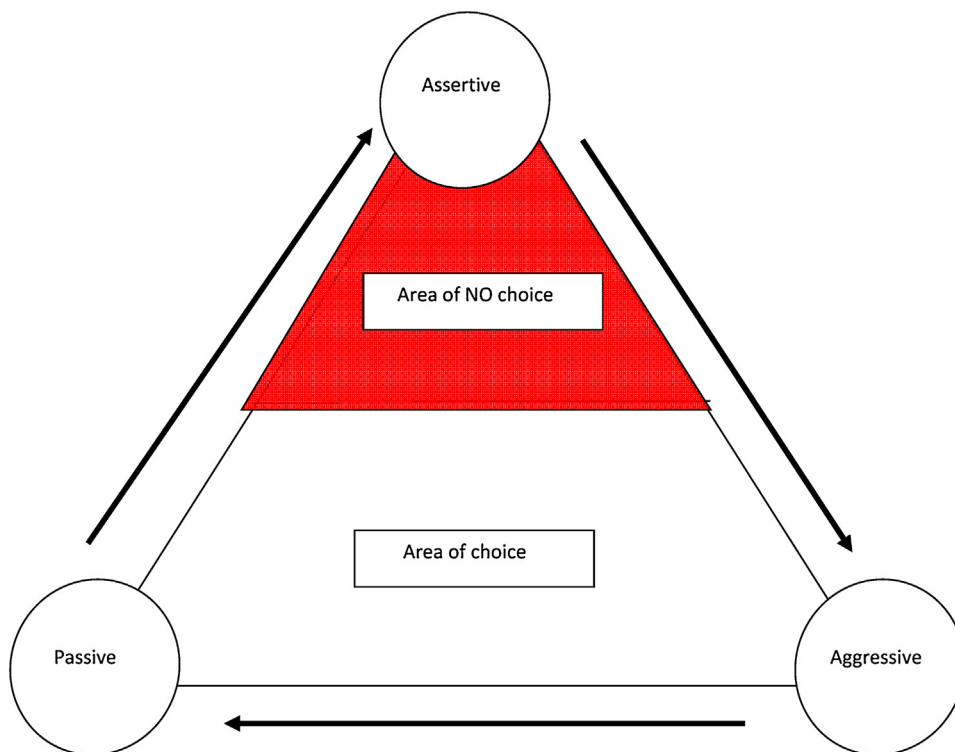


Fig. 3. Assertiveness triangle for use when something goes wrong. If an individual is being ignored, and an error or adverse event is about to happen, he/she should make their voice heard and assert themselves without becoming aggressive.

and healthcare, and encourage people to voice their concerns. The Royal Colleges of Surgeons have also developed courses in which simulations of different situations in the operating theatre help teams to learn how to cope. These include the Non-technical Skills for Surgeons (NOTSS) courses run by the Edinburgh College¹⁵ and an MSc in Human Factors¹⁶ offered by the Irish College. The English College used to offer courses on human factors but they have not been available for many years.

The Oxford Non-technical Skills (NOTECHS) method, which is a useful tool that classifies such skills into four categories (leadership and management, teamwork and co-operation, problem solving and decision making, and situational awareness),⁴ can be used to improve a team's technical performance.

Application to healthcare – how can we reduce hierarchical gradients?

Unfortunately, despite attempts to reduce them, steep hierarchical gradients still seem to exist both within healthcare professions and specialties, and between different professions. Our own practice has benefitted from close collaboration with airline pilots and from recognising the importance of a regular team brief that includes personal introductions and the crucial phrase that “anyone can and should speak up if you have any concerns whatsoever, without fear of retribution”. In our experience, this immediately flattens any perceived hierarchical gradient, particularly for new members of the team, and it is constantly reinforced throughout the day.

When something does not go to plan, it is also good practice not to apportion blame and to avoid the issue of who is right or wrong.¹⁷ Styles of communication can differ between medical and nursing staff, but both professions should be able to challenge the other in a calm and non-confrontational manner when there are concerns about safety; an assertive challenge by the theatre nurses might have saved the life of Elaine Bromiley. Even before this tragic event, colleagues in OMFS had realised the importance of being able to challenge senior members of the team when a serious error was about to be made in theatre.¹⁴ The way in which individuals interact is also important, and problems between members of a team can arise from poor communication, lack of professionalism, or even rudeness.¹⁸

In healthcare, use of the acronym “PACE” can reduce the chance of error or harm when one member of a team recognises a problem but another does not (Table 1). This easily-remembered and incremental way to challenge colleagues can reduce the chances of a potential error, particularly in the early stages when the probe question gives a relatively easy “get out” reply such as: “Yes, of course you are right. How stupid of me to be about to operate on the wrong side”.

Table 1

Use of PACE and CUS to gain attention when faced with a steep hierarchical gradient.

PACE:	
Probe	“I thought we were doing the left side today not the right?”
Alert	“Mr X, we should be doing the left side.”
Challenge	“Please stop Mr X, I am not happy, you are about to start on the wrong side.”
Emergency	“Shout for help. Mr X is going to operate on the wrong side.”
CUS (use of provocative words to gain attention):	
C	I am Concerned
U	I am Uncomfortable, or this is Unsafe
S	I am Scared

Fig. 3 shows the assertiveness triangle. When situations deteriorate and colleagues become aggressive, potential escalation between individuals can further increase the likelihood of a patient being harmed. The choice of language used to attract the attention of a senior colleague and to level out the hierarchical gradient in a difficult situation, is important. The use of CUS, which was created by United Airlines for their crew, can readily be applied to healthcare, and phrases such as “I am concerned”, “this is unsafe”, or “I am scared”, will usually be heard regardless of the gradient (Table 1). The use of swearing is to be discouraged.

Two-challenge rule

An important technique used in military aviation is the two-challenge rule.^{19,20} Originally developed by US army pilots, it allows one member of the flight crew to assume the duties of another who fails to respond to two consecutive challenges – for example, if a pilot at the controls becomes fixated, confused, or overloaded, and allows the aircraft to enter an unstable position, the second pilot will take over if the second challenge is not acknowledged. This simple rule has been adopted by various other industries in the USA. With regards to being overloaded, how many times have you forgotten the name of an instrument in theatre because you are concentrating so hard and are potentially overwhelmed by the task?

The two-challenge rule has been adapted for healthcare²¹ by the analysis of two common patterns of conversation. The first, “mystery-mastery” in which a person's reasoning remains hidden and they seem to behave rationally at all times, seeking to achieve their own aims, is associated with poor strategy development and limited organisational learning.^{22,23} The alternative, “collaborative inquiry” involves a public test of reasoning and conclusions.^{24,25} The pairing of advocacy with inquiry is therefore part of a collaborative approach. It allows the members of the team to form an opinion and to ask questions, and their inclusion allows for dialogue that is self-correcting.

Managing the “toxic captain” (or senior colleague)

Sometimes an over-dominating airline captain is paired with a first officer who lacks the ability or experience to voice concerns about the captain’s decisions and actions. In 2007, this led to a fatal air crash (Kenyan Airways Flight 507) in which all 111 of those on board were killed. While a catastrophe of such a scale would not occur in healthcare, these so-called “toxic captains”²⁶ are familiar to many airlines, and if remedial steps taken in training do not improve the situation, they may be dismissed. A pairing in theatre between a strongly voiced senior colleague and a passive trainee can also lead to problems. In these circumstances, other trainees or theatre staff may be able to give evidence about previous behaviour. The senior colleague may not realise that there is a problem, and under such circumstances the team should act as a whole to address the problem. In this modern age, whistle-blowing should be used to raise concerns about poor clinical performance, and should also be a last resort if a colleague repeatedly fails to acknowledge the value of teamwork, particularly if there is a risk to the patient.

Teams that work together and understand each other have the potential power to prevent risks to patient safety.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients’ permission

Not required.

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