commitment to team development. The wider pseudoteam must have a shared concern for quality of care and patient outcomes and have systems to critically appraise their performance. The pseudoteam’s ‘shared mental model’ can be supported and developed to enhance practice in the five team work principles (communication, coordination, leadership, mutual support, and situation monitoring) that are key in effective teamwork.

In aviation, a higher level of operational standardisation is present. This aids the five teamwork principles where operational procedures cover both normal and abnormal situations. They also provide an operational shell and act as a form of impersonal leadership. The introduction of the World Health Organization checklist, crisis checklists, and emergency guidelines (e.g. advanced life support, unanticipated difficult intubation, etc.) has helped to develop a national shared mental model.

At a local level, we, a group of clinicians and educators at the Royal London Hospital (RLH), have developed MATCH (Multidisciplinary Action Training in Crises and Human Factors). This 1 day team-building programme introduces, demonstrates, and consolidates the five teamwork principles. Exemplary team behaviour is explored to promote mutual understanding of the three subteams (nursing, surgical and anaesthesia).

To aid communication, each team develops its own ‘bespoke’ briefing, sign-out, debriefing, and operational formats. Incident reporting is reinvigorated as teams are given the opportunity to review their ‘own’ incidents over the previous 3 months. After-action review is introduced as a debriefing process whereby, after an event, a team can explore individual expectations, how they differed from the actual event, and what can be learned. Team members commit to changes and actions to improve teamwork and performance in the operating theatre. Resource folders are created by the teams during the day to support understanding and development. An engagement programme includes an educational seminar series that encourages involvement of the clinical and management teams.

This approach to improving teams, by understanding the culture of care, is endorsed by the reports of Francis, Berwick, Hull, Arora S, Kassab E, Kneebone R, Sevdalis N. Observational teamwork assessment for surgery: content validation and tool refinement. J Am Coll Surg 2011; 212: 234–43


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Re: Improving teamwork in anaesthesia and critical care: perhaps there really is no ‘I’ in ICU

Reply from the authors

Editor—I applaud the comments of Hunngher and colleagues and Ford regarding my editorial and their expertise. Attention to teamwork and its domains (communication, coordination, leadership, mutual support, and situational awareness) may benefit patients as much as any pharmacologic discovery or novel device. Their letters illustrate that, while many individuals can resuscitate, intubate, and pontificate, anaesthesia and critical care medicine (CCM) physicians should embrace making a ‘science of that team performance’, a ‘science of managing complexity’, and a ‘science of managing uncertainty’. Medical practice has traditionally argued whether it is best understood as ‘art’ or ‘science'; increasingly it is ‘engineering’, and we doctors are its ‘process safety engineers’.3

Declaration of interest

None declared.

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1 Brindley PG. Improving teamwork in anaesthesia and critical care: many lessons still to learn. Br J Anaesth 2014; 112: 399–401
Engineers accept that knowledge exceeds any individual, and reliability mandates extra capacity, fail-safes, and standard operating procedures, but especially attention to the team. Engineering also embraces ‘cognitive ergonomics’ to maximize mental processes (awareness, perception, reasoning) and expedite individualized responses.4 ‘Teamwork’ provides a useful prism through which to examine cognitive workload, decision making, reliability (vs safety vs efficiency), human–human interactions, human–computer interactions, and whether graduates are ‘fit for the task’. For example, if we were engineers then we would design checklists, simulations, rapid responses and service rotas based largely on whether they improve (or worsen) the team’s cognitive ability and problem solving. Hunningher nicely summarized this as the difference between ‘pseudo-teams’ and real teams. Ford wisely pointed out that we need high-functioning teams everyday, not just when excrement hits fans.

Traditionally, success has relied on the cult of the individual (Sir Lancelott Spratt comes to mind!).5 While more prosaic, modern heroes are those that create and direct high-performing teams (make way for Sully Sullenberger).1 While many critical care drug trials have recently been equivocal or negative, teams that could reliably implement those interventions still often had better outcomes. Perhaps, therefore, the effect of a functioning team matters more than a fortuitous hits fans.

There is danger that ‘teamwork’ is misinterpreted to mean nobody disagrees, nobody criticizes, or we strengthen our team by denigrating another. CCM and anaesthesia have a history of lambasting other teams (‘you call us too early’, ‘you always wait too late’). These negative interactions can impact interspecialty teamwork for years. We love debating which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse. For example, anaesthesia, CCM, and surgery can all manage difficult airways... which team is best and which is worse.

There are some times defined by subspecialty, but often by task or location.7 Provocatively, error rates appear higher when familiar procedures are performed in unfamiliar environments. For anaesthesia, ectopic intubation (done outside the operating room) may be more perilous because we are without our teams, and working with unfamiliar communication styles and subcultures. Regardless, if good teamwork were a drug we would study it rigorously and promote it widely.

**Declaration of interest**

None declared.

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1 Brindley PG. Improving teamwork in anaesthesia and critical care: many lessons still to learn. Br J Anaesth 2014; 112: 399–401  


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**Bone cement embolism attached to central venous catheter**

Editor—I read with interest the case report by Schummer and colleagues1 on the bone cement embolism attached to central venous catheter and applaud the team for the management of the case. In our centre, vertebroplasty is quite commonly performed. We use a general anaesthetic technique for all our patients and the majority of them do not require a central venous line insertion for this procedure and get transferred to the recovery room after the procedure. I have a few questions which I hope the authors can clarify. Is it a standard procedure for central venous line insertion in patients undergoing this procedure? And do these patients routinely go to the intensive care unit after the procedure? It is highly likely that this episode of bone cement embolism would be missed without a central venous line. Also, as rightly pointed out, if this procedure was carried out under local anaesthesia, there should be an anaesthetist in attendance and the procedure undertaken with standard monitoring.

**Declaration of interest**

None declared.

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1 Schummer W, Schlonski O, Breuer M. Bone cement embolism attached to central venous catheter. Br J Anaesth 2014; 112: 672–4

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**Reply from the author**

Editor—We thank Dr Khan for his interest in our case report.1 He has raised some questions which we would like to answer. The