tion also applies to flight instructors. To maintain an instructor’s licence the candidate must furnish proof that he or she has trained and checked a minimum number of trainees in a certain period. Again, all this is internationally standardized and legally binding.

Conclusion

Training in aviation is often ‘on the job’ training. High training costs and the overall demand for safety require exceedingly efficient training methods. Especially during the clinical phases of medical training, certain parallels to aviation training can be drawn. It is now the time to move beyond the traditional master-apprentice relationship in clinical teaching. Detailed, standardized syllabuses and objective performance-rating tools, together with sound educational training of the instructors, will lead to more effectiveness, more efficiency and ultimately to more safety in medical training.

The key elements for aviation training

- Intensive selection of candidates before training;
- Technical, procedural and interpersonal training;
- Detailed programme/syllabus;
- Objective evaluation of performance;
- Simulation;
- Life-long recurrent training and qualification.

Conflict of interest

Kai-Jörg Sommer is a fully qualified airline pilot and certified Instructor on the Boeing B747 with a major European airline. In addition he has studied medicine and participated in surgery in orthopaedics. He is also the owner of a consulting firm (www.smacmed.com) that specializes in transferring aviation safety concepts to healthcare. He regularly lectures on safety and quality in healthcare at the Healthcare Management Institute of the European Business School in Oestrich-Winkel, Germany.

Source of funding

Salary as Pilot, fees from lecturing and consulting.

References

[1] Official Journal of the European Commission, Commission Regulation (EU) No. 1178/2011; 3 November 2011. Available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:311:0001:0193:EN:PDF>.
[2] The Intercollegiate Surgical Curriculum, General Surgery, 2013; Available from: <http://www.gmc-uk.org/General_Surgery_Curriculum_August_2013.pdf_51331157.pdf>.
[3] Amalberti, Valot, WP5 Guideline for Implementation of NOTECHS, JARTEL WP5 Draft 4, 2001: 4.
[4] Klampfer B, Flin R, Helmreich RL, Hausler R, Sexton B, Fletcher G, et al. Enhancing performance in high risk environments: Recommendations for the use of Behavioural Markers. Behavioural Markers Workshop, Swissair, Zurich, 2001: 26. Available from: <http://homepage.psy.utexas.edu/homepage/group/helmreichlab/publications/pubfiles/pub262.pdf>.

Editorial comment

Both surgeons and pilots work in a highly controlled, highly technical, high-risk environment. However, whilst the aircraft industry has improved and standardized training for decades, this process in surgical training advances only slowly and mostly at a national level. Some countries have adopted structured training and re-training for surgeons, whereas others still follow a largely uncontrolled apprenticeship model, widely depending on incidental skills and the personalities of the trainers.

The UK is the first country to have introduced a rigorous 5-year re-validation process, which is described in detail elsewhere in this special issue. It is mandatory for all doctors, although not specifically for surgeons. However, as it involves a complete feedback from peers and trainees alike, as well as a review of clinical outcomes, some important aspects of performance in surgery and surgical training will be highlighted.

However, the airline industry is far ahead of even the most sophisticated surgical training, where virtual reality simulation is still in its infancy and training centres are scattered, if existing at all. Such simulators are also expensive and therefore often unaffordable in developing countries. Surgical simulators lack structured modules of ‘worst-case’ scenarios (i.e., a laparoscopic ‘red-out’).

More importantly, the non-technical skills are often not addressed during surgical training, such as crisis management, decision making, and leadership and communication skills. Only recently have trainees in the UK undergone leadership courses, but this is on a private basis and not part of their mandatory training.

Given the differences between health and economic systems in various countries, we are far from being able to standardise surgical training. Even when models from so-called developed countries are adopted in developing countries, the implementation may be sketchy, random and inefficient, as described in this issue.

Not everybody can be a trainer, independently of their title or qualifications on paper. Being a trainer needs developed inter-human skills. ‘Train-the-trainer’ courses and frequent revalidation and re-assessment of
the trainers are needed, and, most importantly, the courage to face the consequences of removing inefficient trainers from the training process.

All too frequently, hierarchical structures stand in the way of development and efficacy. This would not be tolerated in the airline industry, so why should it be in surgery?

Noor Buchholz

E-mail address: nb@londonurologyconsultant.com