As surgical techniques develop faster than ever, practising consultant urologists are faced with the daunting task of safely and effectively acquiring new advanced minimally invasive operating skills. This is being demanded of them after completion of registrar training and whilst they continue to deliver local service commitments. Laparoscopy and robot-assisted techniques have led to an increasing need for the efficient mentoring of inexperienced surgeons by skilled instructors to bring them rapidly up to the required standards for performing these techniques [1]. Mentoring programmes must offer skills that are safe, cost-effective and transferable to the operating theatre in an era of shorter training times, subspecialization and rapid technological advancements [2]. In the present paper, we consider key aspects of mentoring and suggest criteria for successful skills acquisition.

The mentor–mentee relationship is a vital aspect of the entire process and should include a local observation period and the subsequent completion of several complex laparoscopic procedures with direct support from the mentor [3]. The mentor should provide critical and constructive feedback to improve performance. Through the exchange of tacit knowledge, hands-on learning and real-time feedback [4] the mentored surgeon can acquire new skills whilst maintaining their clinical workload [1] (Fig. 1). Mentorship programmes should provide an adequate and defined structure, including preoperative education (dry- and wet-lab training courses), clearly defined learning objectives and time for detailed postoperative discussion and evaluation feedback [3]. Both parties should be clear that the mentor should assume control if patient safety is potentiallycompromised or if procedures fail to progress given reasonable and agreed time points. A good mentor should be highly skilled and experienced in the procedure and be able to teach the required skills effectively [5]. They must also be consistent, provide support, advice and guidance to their mentee [6], communicate well and ultimately provide an honest objective assessment.

As urological techniques evolve, surgeons increasingly require an effective system to safely implement these innovations [7]. Through effective mentoring, the steep learning curves associated with many minimally invasive procedures should develop into a safe, structured and effective adoption into practice [8]. Despite the importance of mentoring in minimally invasive surgery, urology as a specialty has yet to formalize an effective mentorship programme. Mentorship programmes for other surgical specialties have been successfully implemented, e.g. the UK National Training Programme in Laparoscopic Colorectal Surgery (Lapco), which currently consists of over 100 specialist trainees [9]. Preliminary data have shown that inexperienced trainees have higher conversion rates than experienced surgeons and this is supported by results in terms of complication and mortality rates [10]. The outcomes of current educational efforts in urology have yet to be assessed and existing mentorship programmes have not been validated. In 2003, the British Urological Foundation, now The Urology Foundation (TUF), introduced a programme of observational and wet-lab visits to the Cleveland Clinic, OH, USA, which developed advanced skills and proved extremely popular [11]. TUF and others have subsequently developed training models for urologists to learn laparoscopic skills under mentored guidance and supervision before completing laparoscopic surgery at their base hospitals [12,13]. TUF has funded robotic preceptorships in the UK for the last 5 years. Unfortunately, there currently remains a significant need for evidence-based mentorship programmes and comprehensive teaching of surgeons in practice [7].

Urology is a field of continuing and rapid technical development, with innovative laparoscopic techniques (e.g. laparoscopic single-site surgery) and advanced robot-assisted techniques frequently being introduced. While efforts have been made to improve training through simulation [14], training programmes have not matched other rapid developments in the field [15]. Formalized mentorship programmes should provide successful certification of urologists by allowing them to reach required standards of competence for specific procedures [15] and would probably be used for revalidation purposes as evidence for the maintenance of skills [16]. Various organizations could participate and accredit these programmes, including the Royal College of Surgeons, BAUS, local training deaneries and individual institutions (Table 1). It is important that the mentoring schemes collaborate at many levels to ensure the sharing of expertise and transfer of knowledge.

Not all expert surgeons are expert mentors so it is vital that appropriate mentors are chosen.
Training and accreditation of the mentors themselves in effective teaching skills is essential for the successful uptake of mentorship programmes and the effective transfer of skills to trainees. Recognized mentors should ensure that trainees are safe to practise both simple and complicated cases independently. After the satisfactory completion of training, a ‘sign off’ or ‘certification’ needs to be recorded, by the mentor (or occasionally revoked). This can then be used as evidence of the safe completion of skills acquisition. Ultimately, the effectiveness of mentored training needs confirmation by the evaluation of objective patient outcomes. The best teaching associations may arise from existing local relationships[3], and commitment and dedication from both parties are essential for positive outcomes.

Some procedures, initially learnt and provided laparoscopically, are now being performed with robot-assistance, if available, in specialist centres[17]. This requires a different type of translational mentoring as the procedure itself has already been learnt but the robotic approach is new, and the mentoring dynamics can be challenging. National funding, evidence showing the positives outcomes of robotic surgery, sufficient accredited trainers and structured guidelines for training are necessary for the widespread dissemination of a robot-assisted mentoring programme.

Despite the need to implement these new techniques safely into clinical practice, there will be barriers from individual surgeons who are uncomfortable with the evaluation of their skills by others and who will resist assistance from mentors[2]. Scheduling mentorship sessions during consultant practice is difficult[3], but leave to undertake a period of fellowship for several months is usually unrealistic. The logistics of scheduling mentoring into a near saturated timetable[18], potential differences in technique between mentoring surgeons and the need for uncomplicated initial cases are further challenges[7], as are compensation issues and the need for temporary operating privileges[2]. To overcome these obstacles the learning surgeons need to appreciate clearly the potential benefits to their practice and for the continued safety of their patients. An option to overcome these issues is telementoring or using video-trainers which could allow similar observation, analysis and constructive feedback[19,20].

### TABLE 1 Available programmes in the UK

<table>
<thead>
<tr>
<th>Training programme name</th>
<th>Description</th>
<th>Level of participants</th>
<th>Evidence of effectiveness in terms of validity and educational impact</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialist registrar in urology and consultant education</td>
<td>Aimed at Specialist Registrars (trainees) who are near completion of their training and applying for consultant posts</td>
<td>Senior trainees</td>
<td>None</td>
<td>Feedback from a few trainees is available</td>
</tr>
<tr>
<td>SpRUCE training programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endourology foundation travelling fellowship</td>
<td>Working in collaboration with the Section of Endourology, BAUS. This programme provides travel grants for urologists who have completed the Section’s residential training course and are planning overseas clinical visits to complement the course.</td>
<td>Senior trainees</td>
<td>None</td>
<td>Feedback from a few trainees is available</td>
</tr>
<tr>
<td>Robothically assisted surgery mentoring programme</td>
<td>The Urology Foundation supports the introduction of robotically assisted surgery in Leeds, Manchester, Reading, Bristol, Stevenage and Torquay. The objective of the programmes is to mentor the whole surgical team as well as the urological surgeon.</td>
<td>Senior trainees</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Robotically assisted surgery preceptorship programme</td>
<td>This programme is currently under development</td>
<td>Senior trainees</td>
<td>None</td>
<td>Not implemented yet</td>
</tr>
<tr>
<td>Visiting training fellowships</td>
<td>Robotic Prostatectomy Fellowship in Melbourne, Australia</td>
<td>Senior trainees</td>
<td>None</td>
<td>Feedback from a few trainees is available</td>
</tr>
<tr>
<td>Intuitive surgical fellowship (Guy’s Hospital, London)</td>
<td>Aimed for senior trainees. Technical skills training in urological robotics</td>
<td>Senior trainees</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

### FIG. 1. Structure of a mentorship programme.

- **Preoperative agreement of learning objectives and mentoring structure**
- **Observation of practice at mentoring institution**
- **Completion of new procedures (partially or full) with mentor assistance**
- **Feedback and sign-off**
Urological societies need to consider the following recommendations to establish appropriate mentorship programmes. Firstly, and pivotally, there needs to be leadership from recognized organizations at a local and national level to provide a suitable framework for implementing new surgical techniques in the most cost-effective manner that benefits all the stakeholders [7]. Secondly, there is a need to train and select the mentors and the assessors [21]. Thirdly, there must be financial support for trainers and hospital resource utilization [7]. Fourthly, there needs to be acceptance from specialists, which may be achieved through a comprehensive understanding of the purpose and their benefits. Fifthly, adequate time must be allocated for the programme [16]. Short training courses have shown little benefit [22,23]. Finally, an ongoing mentorship programme with significant time commitment is necessary for the adoption of new skills. A survey of American and Canadian surgeons showed that a lack of ongoing mentorship hindered the adoption of newly learnt skills into practice [22,23].

CONFLICT OF INTEREST
None declared.

REFERENCES
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ACKNOWLEDGEMENTS
Prokar Dasgupta acknowledges financial support from the Department of Health via the National Institute for Health Research comprehensive Biomedical Research Centre award to Guy’s & St Thomas’ NHS Foundation Trust in partnership with King’s College London and King’s College Hospital NHS Foundation Trust. He also acknowledges the support of the MRC Centre for Transplantation.

COMMENTS

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Abbreviation: TUF, The Urology Foundation.