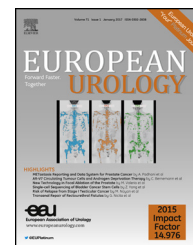


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European Association of Urology



## Platinum Opinion

# Safeguarding the Future of Urological Research and Delivery of Clinical Excellence by Harnessing the Power of Youth to Spearhead Urological Research

Veeru Kasivisvanathan<sup>a,b,c,\*</sup>, Alexander Kutikov<sup>d</sup>, Todd G. Manning<sup>e,f</sup>, John McGrath<sup>c,g,h</sup>,  
Matthew J. Resnick<sup>i</sup>, J.P. Michiel Sedelaar<sup>j</sup>, Mesrur S. Silay<sup>k</sup>

<sup>a</sup> Division of Surgery and Interventional Sciences, University College London, UK; <sup>b</sup> University College London Hospitals NHS Foundation Trust, London, UK; <sup>c</sup> British Urology Researchers in Surgical Training (BURST) Research Collaborative, UK; <sup>d</sup> Department of Surgical Oncology, Fox Chase Cancer Center, Temple University Health System, Philadelphia, PA, USA; <sup>e</sup> Department of Urology, University of Melbourne, Austin Health, Victoria, Australia; <sup>f</sup> The Young Urology Researchers Organisation (YURO), Melbourne, Australia; <sup>g</sup> Royal Devon and Exeter NHS Trust, Exeter, UK; <sup>h</sup> University of Exeter Medical School, Exeter, UK; <sup>i</sup> Department of Urologic Surgery, Vanderbilt University Medical Center, Nashville, TN, USA; <sup>j</sup> Department of Urology, Radboud University Medical Centre, Nijmegen, The Netherlands; <sup>k</sup> Department of Urology, Division of Paediatric Urology, Istanbul Medeniyet University, Istanbul, Turkey

Research plays a key role in driving urology forward and improving patient care. However, conducting large multi-centre studies can be extremely challenging. As an individual surgeon, it is difficult to assemble sufficient methodological, administrative, and financial support to conduct impactful studies. Driven by novel forms of electronic communication, one solution to this problem is trainee-led research collaboratives, typified by the British Urology Researchers in Surgical Training (BURST), the Australian Young Urology Researchers Organisation (YURO), the Young Academic Urologist section of the European Association of Urology Young Urology Office (EAU-YUO), and the American Urology Association (AUA) residents Committee and Young Urologic Oncologists (YUO) section of the Society of Urological Oncology. While trainee-led collaboratives have achieved success in other surgical specialities, they have only been attracting attention within urology in recent years (Table 1) [1].

Trainee-led research collaboratives provide a central network of expertise in methodology, mentoring, and knowledge of research processes. The committee for such an organisation typically comprises trainees, fellows, or junior urologists with close support from senior academic urologists and clinical trials collaboratives. Clinicians with ideas for research projects can present ideas to the collaborative, which provides detailed peer review and

offers key insights to optimise the proposed study design before assessing feasibility to roll out the study among its vast network of interested collaborators. The collaborative may assist with time-consuming administrative approvals required to run the study, develop data collection infrastructure, and provide administrative support to coordinate and run the study across many different centres.

A fundamental principle is that trainees take the lead in coordinating the study and collecting data at individual sites under the supervision of a local consultant. Contributors are recognised with PubMed-indexed collaborative authorship. Each trainee is only required to obtain data for a small number of patients, which gives them a very achievable goal, but among many trainees this scales exponentially to create a well-powered study that recruits quickly. An excellent example of this is the multicentre cohort study assessing the role of inflammatory markers in spontaneous stone passage in ureteric Colic (MIMIC), which had 220 collaborators across 71 sites collecting data for 4181 patients in seven countries over a 4-mo period, concluding that white cell count did not influence the likelihood of spontaneous stone passage in patients with acute renal colic [2].

One interesting aspect of this approach is that trainees often have fewer established clinical biases than their seniors, meaning that they tend to have good equipoise when considering study designs or recruiting patients to a

\* Corresponding author. Division of Surgery and Interventional Sciences, University College London, Charles Bell House, 67–73 Riding House Street, London, W1 7EJ, UK. Tel. +44 790 5507570.  
E-mail address: [veerukasi@hotmail.com](mailto:veerukasi@hotmail.com) (V. Kasivisvanathan).

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**Table 1 – Examples of trainee-led research projects in urology and allied surgical specialties with contact details for the collaborators**

| Study                                                                                                                                                                 | Collaborative                                                                                                                                                                        | Study design                               | Status                                                                  | Findings                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multicentre cohort study assessing the role of inflammatory markers in spontaneous stone passage in ureteric colic (MIMIC) [2,3]                                      | BURST<br>Twitter: @BURSTurology<br>E-mail: <a href="mailto:bursturology@gmail.com">bursturology@gmail.com</a>                                                                        | Retrospective cohort study<br><br>n = 4181 | Complete                                                                | White cell count was not associated with the likelihood of spontaneous stone passage; key predictors were stone size and stone position                                                       |
| Investigation and detection of urological neoplasia in patients referred with suspected urinary tract cancer (IDENTIFY)                                               | BURST                                                                                                                                                                                | Prospective cohort study, n = 5000         | Pilot study in 800 patients complete; main study open to registration   | Multicentre prospective study feasible; progress to the main study phase, with recruitment opening November 2017                                                                              |
| International postoperative intravesical chemotherapy study (IPIC)                                                                                                    | YURO<br><a href="http://ausyuro.wixsite.com/yuro">http://ausyuro.wixsite.com/yuro</a><br>Twitter: @AusYURO<br>E-mail: <a href="mailto:ausyuro@gmail.com">ausyuro@gmail.com</a>       | Retrospective cohort study, n = 1200       | Pilot study in 200 patients complete and domestic recruitment confirmed | Multicentre retrospective study feasible; progressing to international recruitment beginning October 2017                                                                                     |
| Global minimally invasive pyeloplasty study in children: results from the Paediatric Urology Expert Group of YAU working party [4]                                    | YAU<br><a href="http://uroweb.org/education/young-urologists-office-yuo/yau/">http://uroweb.org/education/young-urologists-office-yuo/yau/</a><br>Twitter: @EAUYAUrology             | Retrospective cohort study, n = 575        | Complete                                                                | Shorter hospitalisation time and lower postoperative complication rates with robotic pyeloplasty compared to laparoscopic approach in treating ureteropelvic junction obstruction in children |
| Use of XenX, the latest ureteric occlusion device with guide wire utility [5]                                                                                         | YAU                                                                                                                                                                                  | Prospective case control study, n = 82     | Complete                                                                | XenX was safe and effective for treatment of upper ureteric tract stones; may reduce the risk for the need for auxiliary procedures and for insertion of a JJ stent                           |
| Gleason 6 prostate cancer: translating biology into population health [6]                                                                                             | YUO<br><a href="http://suonet.org/y-u-o.aspx">http://suonet.org/y-u-o.aspx</a><br>Twitter: @SUO_YUO<br>E-mail: <a href="mailto:info@suonet.org">info@suonet.org</a>                  | Systematic review                          | Complete                                                                | The metastatic potential of contemporary Gleason 6 disease is negligible but not zero                                                                                                         |
| Sensitivity, specificity, and predictors of positive <sup>68</sup> Ga-prostate-specific membrane antigen positron emission tomography in advanced prostate cancer [8] | YURO                                                                                                                                                                                 | Systematic review and meta-analysis        | Complete                                                                | For biochemically recurrent prostate cancer the sensitivity and specificity profiles are favourable compared to choline-based imaging techniques                                              |
| RCT on reduction of surgical site infection using a novel intervention (ROSSINI) [9]                                                                                  | WMRC<br><a href="http://wmresearch.org.uk">http://wmresearch.org.uk</a><br>Twitter: @WMRC_UK<br>E-mail: <a href="mailto:enquiries@wmresearch.org.uk">enquiries@wmresearch.org.uk</a> | RCT, n = 760                               | Complete                                                                | Wound edge protection devices did not reduce surgical site infection rates when used during laparotomy                                                                                        |
| RCT of reinforcement of closure of stoma site using a biological mesh (ROCSS) [10]                                                                                    | WMRC                                                                                                                                                                                 | RCT, n = 560                               | Internal feasibility complete; main study recruiting                    | Multicentre randomisation was feasible, with no early safety concerns; progress to the main study phase                                                                                       |

RCT = randomised controlled trial; BURST = British Association of Urological Surgeons in Surgical Training; YAU = Young Academic Urology section of the European Association of Urology; YURO = Australian Young Urology Researchers Organisation; YUO = Young Urologic Oncologists section of the Society of Urological Oncology; WMRC = West Midlands Research Collaborative.

study (Table 2). This may allow studies to be conducted in areas of urology that might otherwise be difficult to perform. The geographical flexibility provided by trainees who are spread over regions facilitates access to a wide range of different practice settings, thereby increasing the generalisability of the results and providing large samples sizes that are powered to investigate associations and disease areas that might otherwise be difficult to address. Types of research project that work well within trainee-led collaboratives are observational cohort studies [3,4], case-control studies [5], systematic reviews [6,7], meta-analyses [8], and randomised controlled trials [9,10].

The challenges of this approach include the lack of dedicated managerial infrastructure to coordinate large numbers of clinicians across different geographical areas. Open-source software such as Slack, social media platforms such as Twitter, and meeting forums provided

by organisations such as the EAU, British Association of Urological Surgeons, and the AUA may help to mitigate this issue. The development of clinical trial-compliant databases for data collection can be achieved using software such as Redcap, which gives clinicians anywhere at any time access to a robust electronic data entry system. Systematic reviews can be aided by Cochrane-endorsed software such as Covidence, which has enabled reviewers in different time zones to collaborate together easily.

Engagement by trainees and consultants may be variable at first until they are convinced that the concept has merit. As a result, lower-risk projects such as cohort studies in areas of a common pathology with short-term outcomes that can be easily run in most centres and study designs such as systematic review are often used to consolidate the network in the early stages of a collaborative. Typical areas of investigation include stone disease, treatment of lower

**Table 2 – Advantages and limitations of trainee-led collaborative research**

| Advantages                                                                                                                                            | Limitations                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Methodologically robust studies due to the peer review process                                                                                        | Engagement by trainees can be variable until it has been shown that the concept works                             |
| Large sample sizes achievable by distributing over a collaborative network                                                                            | Engagement by established urologists can be challenging as they may be unfamiliar with the concept                |
| Studies can recruit and complete quickly                                                                                                              | Central coordination is required and takes time to set up in the absence of a dedicated managerial infrastructure |
| Studies can be more generalisable as patients are from a wide range of centres                                                                        | It is challenging to design explanatory trials when a large number of sites are involved                          |
| Can investigate rare diseases                                                                                                                         | It is easier to successfully deliver studies in areas with of a common pathology                                  |
| Efficient and cheap as the collaborative utilises expertise within an existing network                                                                | Complex interventional studies are challenging to deliver and funding is still required for study success         |
| Trainees have fewer clinical biases and thus have good equipoise for designing studies and recruiting patients to otherwise challenging study designs | Individual units may have biases that limit involvement in a collaborative study                                  |
| Trainees gain transferable teamwork skills important for their careers                                                                                | The transferable skills gained depend on how well the team functions                                              |
| Trainees gain specific research skills equipping them to run clinical trials as consultants                                                           | Research skills gained depend on the expertise level within the collaborative network                             |
| Trainees and consultants are recognised for their contribution with authorship on PubMed-indexed peer-reviewed papers                                 | Not all national training bodies will recognise collaborative authorship                                          |

urinary tract symptoms, and bladder and prostate cancer management.

Support from established senior surgeons who are recognised in their unit, region, or country is essential for this model to succeed. Obtaining funding can be challenging, but one of the advantages of the collaborative approach is that within the network there are often technology-savvy trainees who are able to contribute project infrastructure and specialist information technology and database skills that would otherwise be expensive to fund. Funders are now beginning to recognise the potential that these networks have in successfully delivering clinical studies, and large grants have been awarded to trainee-led collaboratives for the delivery of randomised studies of surgical interventions with longer-term follow up [8–10].

One of the key drivers of the success of this model is the motivation of trainees to be part of something that is not only successful and high profile but enhances their portfolio at a point in their careers when esteem is important. Trainees gain transferable skills in teamwork and leadership, as well as specific skills in research methodology. They learn how to critically appraise the literature, to write a protocol, to gain governance approvals for projects, to recruit patients to studies, to analyse data, to write scientific papers, and to present the findings. Thus, this approach provides the consultant workforce of tomorrow with the skills required to deliver practice-changing clinical studies in urology. These collaboratives have the potential to drive the “everyone as a researcher” mentality that carries the possibility that every surgical patient could be offered a trial or an opportunity to be involved in a clinical study that could improve patient care. In summary, trainee-led collaboratives offer exciting new perspectives and approaches to urological research, and time will tell whether they have the potential to deliver on their early promise.

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## References

- [1] Kasivisvanathan V, Ahmed H, Cashman S, et al. The BURST research collaborative: an alternative research model for carrying out large scale multi-centre urological studies. *BJU Int*. In press. <http://dx.doi.org/10.1111/bju.14040>.
- [2] Shah TT, O’Keefe AG, Gao C, et al. A multi-centre cohort study evaluating the role of inflammatory markers in patients presenting with acute ureteric colic (MIMIC). *Int J Surg Protoc*. In press.
- [3] Shah T, O’Keefe A, Gao C, et al. A multi-centre cohort study evaluating the role of inflammatory markers in patients presenting with acute ureteric colic (MIMIC). *Eur Urol Suppl* 2017;16:e723–4.
- [4] Silay MS, Spinoit AF, Undre S, et al. Global minimally invasive pyeloplasty study in children: results from the Pediatric Urology Expert Group of the European Association of Urology Young Academic Urologists working party. *J Pediatr Urol* 2016;12, 229.e1–7.
- [5] Sanguedolce F, Montanari E, Alvarez-Maestro M, et al. Use of XenX, the latest ureteric occlusion device with guide wire utility: results from a prospective multicentric comparative study. *World J Urol* 2016;34:1583–9.
- [6] Eggener SE, Badani K, Barocas DA, et al. Gleason 6 prostate cancer: translating biology into population health. *J Urol* 2015;194:626–34.
- [7] O’Brien JS, Perera M, Manning T, et al. Penile cancer: contemporary lymph node management. *J Urol* 2017;197:1387–95.
- [8] Perera M, Papa N, Christidis D, et al. Sensitivity, specificity, and predictors of positive  $^{68}\text{Ga}$ -prostate-specific membrane antigen positron emission tomography in advanced prostate cancer: a systematic review and meta-analysis. *Eur Urol* 2016;70:926–37.
- [9] Pinkney TD, Calvert M, Bartlett DC, et al. Impact of wound edge protection devices on surgical site infection after laparotomy: multicentre randomised controlled trial (ROSSINI trial). *BMJ* 2013;347:f4305.
- [10] Reinforcement of Closure of Stoma Site Collaborative, West Midlands Research Collaborative. Feasibility study from a randomized controlled trial of standard closure of a stoma site vs biological mesh reinforcement. *Colorect Dis* 2016;18:889–96.