

SUTURE

Surgical Education for Undergraduates



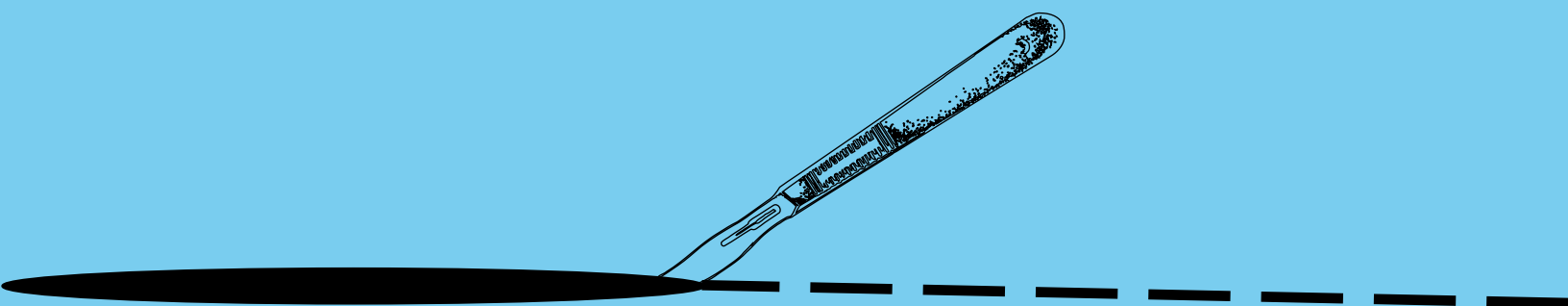
PROPOSAL

PAGE 5 - Read about the current deficiencies in undergraduate surgical education in the UK.

PAGE 13 - Find out about how the SUTURE UK model will work and how you can work with us to deliver quality surgical skills training to medical students.

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SUMMARY

Inconsistent accessibility and standard of undergraduate surgical skills training.

Basic surgical skills are relevant to many medical and surgical specialties.

SUTURE UK aims to standardise surgical skills training through student surgical societies.

This scheme will foster interest in surgical education amongst students and trainees.

Our framework will complement skills courses organised by professional organisations.

We work in 3 key areas: Education, Research, and Industry.

OUR MISSION STATEMENT



SUTURE UK has set out to provide structured, accessible and affordable surgical skills training for medical students across the UK. We firmly believe that good technical and non-technical habits start early. Students participating in this scheme will have access to high-quality and focused surgical skills education with regular assessment and feedback to help them develop the aptitudes and proficiencies required to pursue a successful surgical career. The SUTURE UK scheme can provide an environment for students to exercise reflective practice specific to surgical skills. These key aspects of surgical practice will not only improve students' prospects in getting into surgical training but also support them to becoming the best surgeons they can be. Our approach will improve the standard and consistency of undergraduate surgical skills training across the UK. In turn, students enrolled on our scheme can gain better insights into their skills when attending courses organised by professional bodies. We are passionate about surgical education. SUTURE UK is preparing future surgeons, now.

Education

In collaboration with practising surgeons, SUTURE UK will develop a surgical skills curriculum encompassing technical and non-technical skills. This will be the framework for the delivery of consistent and relevant training. Weekly skills sessions with assessment and feedback will enable recording of quantifiable progress. Peer assessed online educational materials and video skills assessment can provide equal educational opportunities to all students in the future.



Research

SUTURE UK will describe the existing surgical skills education across the UK and identify specific regional barriers to accessing high-quality training. We will evaluate novel online teaching and assessment methods of surgical skills, which may also be applicable to postgraduate training in the future.



Industry

We are collaborating with industry to build an online platform to help deliver our skills curriculum. To improve accessibility to equipment for surgical skills practice, SUTURE UK will liaise with industry partners, identify high-quality products and facilitate affordable purchases to maximise value.





INTRODUCTION

Inconsistent undergraduate skills training

Medical graduates are required to have training in basic procedural and surgical skills such as suturing, wound care and local anaesthetic administration (Taylor *et al.*, 2005). However, relatively few students learn to perform such procedures in medical school (Coberly & Goldenhar, 2007). Recent medical graduates consistently feel underprepared in clinical skills and practical procedures (Tallentire *et al.*, 2011; Wall, Bolshaw & Carolan, 2009). They also perform poorly in these domains when assessed by registrars and consultants (Matheson & Matheson, 2009).

There is a shortage of robust surgical skills training for students. In a national survey, 87% of medical undergraduates reported inadequate suture training during medical school, with 22% of students seeking additional extra-curricular training (Rufai *et al.*, 2016). Most medical schools provide minimal training in basic surgical skills: gowning and gloving (73%), instrument handling (29%), knot-tying (17%) and suturing (25%) (Davis *et al.*, 2014). The implementation of surgical skills training in undergraduates can have a positive impact on attitudes towards surgical careers and accelerates acquisition of technical skills (McAnena *et al.*, 2018).

Value of surgical societies

Student surgical societies play a key role in early exposure to surgery and often provide more surgical skills teaching than medical schools themselves (Davis *et al.*, 2014). Many societies deliver suturing and knot-tying workshops, facilitated by senior medical students or junior surgical trainees. However, organising these activities can be challenging given competing clinical commitments, lack of training in teaching and logistical challenges of sourcing equipment. Societies have their own challenges depending on local availability of technical, educational and financial support. Identifying and overcoming these through a collective effort would be advantageous.

Addressing the challenges

This led to the inception of SUTURE UK, a national initiative that aims to standardise the delivery of undergraduate surgical skills training in collaboration with student societies. We believe high-quality skills training that is affordable, accessible, and engaging should be available for every medical student. We aim to foster interest in surgical education through a network of motivated and committed medical students, foundation doctors and surgical trainees.

SUTURE UK recognises that there are several excellent introductory surgical skills courses

for medical students run by the Royal Colleges and other professional organisations such as the Association of Surgeons in Training. However, these courses may not be accessible to all interested students due to associated costs. Furthermore, opportunities for consistent application of learned skills are scarce. The SUTURE UK scheme will complement these courses by providing training opportunities before and after so that students can maximise the value of feedback from senior surgeons during the course. This will enhance engagement with educational activities throughout the students' undergraduate and postgraduate career.

Our vision of providing high-quality and accessible skills training to students is synergistic with student surgical societies.

SUTURE UK will work with surgical societies to identify and address specific challenges, enabling them to deliver our curriculum regardless of pre-existing resources or funding. As our programme continues to develop, we will look to approach medical schools to implement and enhance the curriculum.

SUTURE UK works in 3 key domains that are essential components of effective surgical skills training delivery:

1. **Education**
2. **Research**
3. **Industry**

These domains are strongly interconnected and serve as the core of our initiative. This proposal will now address the scope and objectives in each domain.

EDUCATION



Education is the core tenet of SUTURE UK's vision and we aim to target our priorities through a combination of innovative teaching methods and continuous, targeted assessment.

Curriculum Development

SUTURE UK's current working curriculum has been drafted in line with curricula delivered by professional bodies, such as the Basic Surgical Skills course offered by the Royal College of Surgeons. We will be working with a panel of surgeons, surgical trainees and medical students to develop our curriculum, utilising a Modified Delphi process to select for technical and non-technical skills which are deemed necessary and desirable for the surgically minded undergraduate. The implementation of non-technical skills into an undergraduate surgical skills curriculum is novel and will enhance the way students consider and apply their skills, supporting them in their journey from the tutorial room into theatre.

Creation of Learning Resources

Each curriculum topic will be supported by an online video demonstration which will be peer assessed to ensure accuracy and clarity. Resource content and quality will be subject to rigorous review at both undergraduate and postgraduate level to ensure that we are delivering accurate, clear material for our students and affiliated

skills clubs' perusal. This will give rise to a bank of resources with which SUTURE UK can support affiliated student societies to structure curriculum coverage at their teaching sessions. They can also be used by the individual student for revision and practice in their own time.

To accompany the curriculum and online video resources, SUTURE UK will prepare a set of step by step instructions to guide the student to correctly perform each of the curriculum skills from the moment they pick up their instruments, to having completed the skill and safely disposing of their equipment.

Teaching resources will be available to all affiliated skills clubs and their students through our website (www.SUTUREUK.com) via a purpose-built online platform.

Teaching Delivery

SUTURE UK recognises the variability of teaching delivery across student societies and will provide individualised recommendations for the delivery of our curriculum.

SUTURE UK will provide guidance and support for participating skills clubs to ensure

that they are able to deliver the material across the academic year. The individual skills clubs' will be able to follow the curriculum and utilise the learning resources to structure their skills sessions, with guidance from the lead tutor.

Assessment

There are 3 main components to the assessment: continuous assessment at skills club sessions, online video assessment and scheduled local assessment days.

Continual assessment at skills club sessions enables the student to be assessed by local tutors on the various curriculum component(s) covered in that session. For students unable to receive in-person observation of skills and real time feedback, we will be trialling our online platform whereby the student can upload a video recording of their skill for assessment and feedback by our skills tutors. Scheduled assessment days provide an opportunity for students to be assessed on their choice of topic and will be conducted by accredited local tutors in person. There is scope for this to occur on our online platform and we will compare the results of both modes of assessment and feedback to ensure uniformity.

Quality Control & Certification

Every educational priority within SUTURE UK will be subject to rigorous quality checking to ensure that we provide the best in undergraduate surgical skills training. We will be working closely with students, societies, surgical trainees and surgeons to design and deliver this package. Feedback

will be sought regularly and diligently acted upon.

Demonstrating commitment to surgery is essential to the success of an application for surgical training. SUTURE UK recognises the importance of providing certification to students and societies that is recognised and accepted by the wider surgical community. To this end, we are currently exploring the process of accreditation with the Royal College of Surgeons (Edinburgh).

Summary

Within the education domain, SUTURE UK will:

1. Develop a recommended surgical skills curriculum for medical undergraduates, covering practical and non-technical skills, using a Modified Delphi process and a panel of expert surgical educators.
2. Create a dedicated bank of online learning materials mapped to the SUTURE UK curriculum.
3. Provide a recommended framework for student surgical societies to teach the SUTURE UK curriculum.
4. Provide individualised support to affiliated surgical societies and provide them with accredited tutors for teaching and assessment purposes.
5. Provide student surgical societies with assessment material for formally evaluating student surgical skills and offer certification to students who have successfully demonstrated competence in every aspect of the curriculum.

RESEARCH



Research will prove instrumental to the development, delivery and refinement of the SUTURE UK curriculum. By working in partnership with surgical societies and industry partners, we can gain information into attitudes to surgery, challenges facing students attempting to gain exposure to surgery and learning curves when acquiring new skills.

Assessing existing surgical skills teaching

The first wave of data will provide information on the current provision of undergraduate surgical skills education in the UK. We will approach surgical societies, medical schools and their students to provide insight into:

- Provision of surgical skills teaching through the medical school curricula and surgical societies.
- Accessibility of this provision.
- Student satisfaction/ quality of this provision.
- Barriers to provision and access of skills sessions for societies.
- Provision of assessment and feedback to students at a societal and university level.
- Student attitudes towards assessment and feedback.

Determining the impact of skills education

Effective education during undergraduate years can foster lasting interest and motivation towards a surgical career. A key focus for research is to determine perceptions surrounding a career in surgery and how student engagement can change as a result of being involved with our programme.

As the curriculum is established within surgical skills societies, we will aim to follow the student's journey towards a surgical career, extending into selection and application for surgical training posts.

Validation of a skills education model

Regular feedback from students and societies will allow continuous revision of the curriculum and teaching provision. We can expect to provide data on student proficiency before and after curriculum

changes, allowing identification of areas for improvement and teaching strategies that have worked well.

Build a research collaborative concerning surgical education

Data collection is integral to accomplishing several of the key priorities in research and student involvement will be central to this. Local leads (medical students and surgical trainees) will be guided on recruiting other collaborators and deploying standardised data collection tools in their respective surgical society. Ethical approval will be sought where necessary.

Involvement in data collection as a lead or collector will be credited appropriately when the data is used for publication. This will further enhance portfolio development and involve students with the academic aspects of a surgical career.

Summary

Within the research domain, SUTURE UK will:

1. Systematically assess the current provision, accessibility and quality of UK undergraduate surgical skills training on a national level.
2. Determine the impact of surgical skills training on attitudes towards surgery and surgical careers – in the short and long term.
3. Develop a validated framework for evaluating education strategies employed in the curriculum.
4. Build a network of students and trainees interested in surgical education research and critically evaluate methods in surgical education.

INDUSTRY



Logistical and financial constraints pose a challenge to the delivery of high-quality surgical skills education. This encompasses areas from acquiring surgical equipment to setting up methods of assessment that are accessible and reliable. The industry domain of SUTURE UK aims to involve relevant commercial partners to enable successful delivery of our curriculum.

Improving access to surgical skills equipment

Delivery of high-quality surgical skills training is fundamentally constrained by the cost of purchasing basic resources. Purchasing equipment from commercial organisations is expensive and student surgical societies often have a limited budget.

SUTURE UK aims to utilise the power of economies of scale when purchasing equipment from industry partners. The curriculum will require a basic resource package which will be developed in line with current availability in the market. We will negotiate price packages and discounts with industry partners and the resulting agreements can be disseminated onto affiliated surgical societies for individual order placement.

Harnessing innovative digital surgical technology

Innovative digital strategies are key to the construction and implementation of our curriculum. We are currently in discussion with EoSurgical© regarding using their online SurgTrac™ platform to deliver modules, videos and learning materials for the SUTURE UK curriculum. Members from SUTURE UK-affiliated student societies will be able to login to this platform to view curriculum content as well as record their progress. We are also exploring the possibility of members submitting video recordings of their surgical skills through the platform for remote assessment by trainees and consultants. Digital data capture offers unparalleled opportunity for informatics research and, together with EoSurgical©, we are looking to trial instrument-tracking software to evaluate learning curves in students as they progress through the SUTURE UK curriculum.

Exploring supplementary uses of cost-effective simulation

Research and development will be a core focus of this domain as we examine ways to devise cost-effective solutions for common problems encountered when using surgical training equipment, such as durability and fidelity. Generated ideas will be compiled into proposals and communicated with industry leaders to explore feasibility, manufacturing and distribution.

Supporting students with membership benefits

SUTURE UK intends to support students with benefits relevant to their current training requirements by liaising with corporate partners providing study resources and other relevant services. We intend to help procure deals for these services at affordable rates for students and trainees to support them in their professional development.

Summary

Within the industry domain, SUTURE UK will:

1. Develop a dedicated resource pack tailored to our curriculum and negotiate with commercial partners to provide discounts and deals for student surgical societies to acquire surgical skills equipment.
2. Explore digital surgical technology approaches to deliver online surgical skills training and to capture data for surgical skills research.
3. Explore improvements for simulation kits and models to increase cost-

effectiveness and/or fidelity of surgical simulation training.

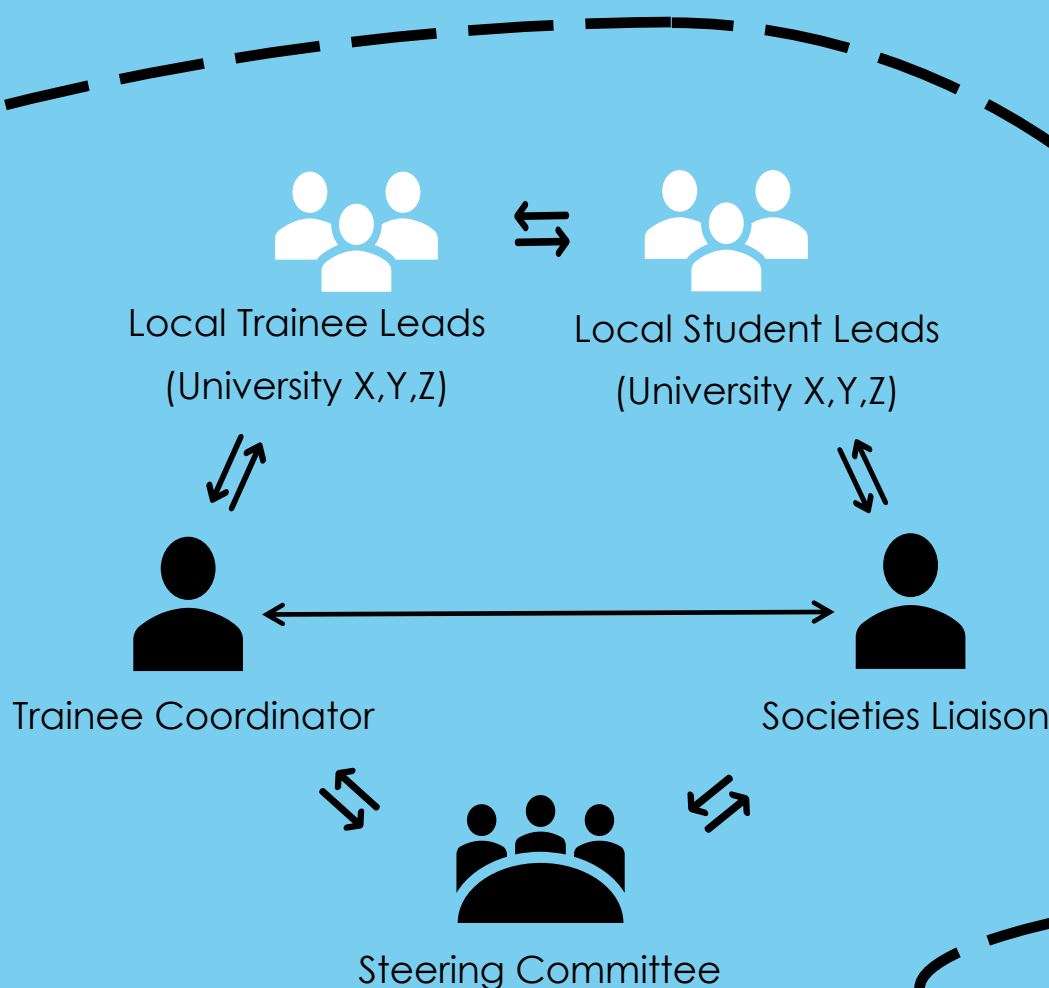
4. Negotiate with commercial partners to provide benefits and offers that are useful and relevant to affiliate members.



THE SUTURE UK MODEL:

Liaising with students and trainees

Central to the accomplishment of domain priorities is building strong networks of communication, student surgical societies engaging in the curriculum and postgraduate trainees delivering the teaching. This will be facilitated by our Societies Liaison and Trainee Coordinator.

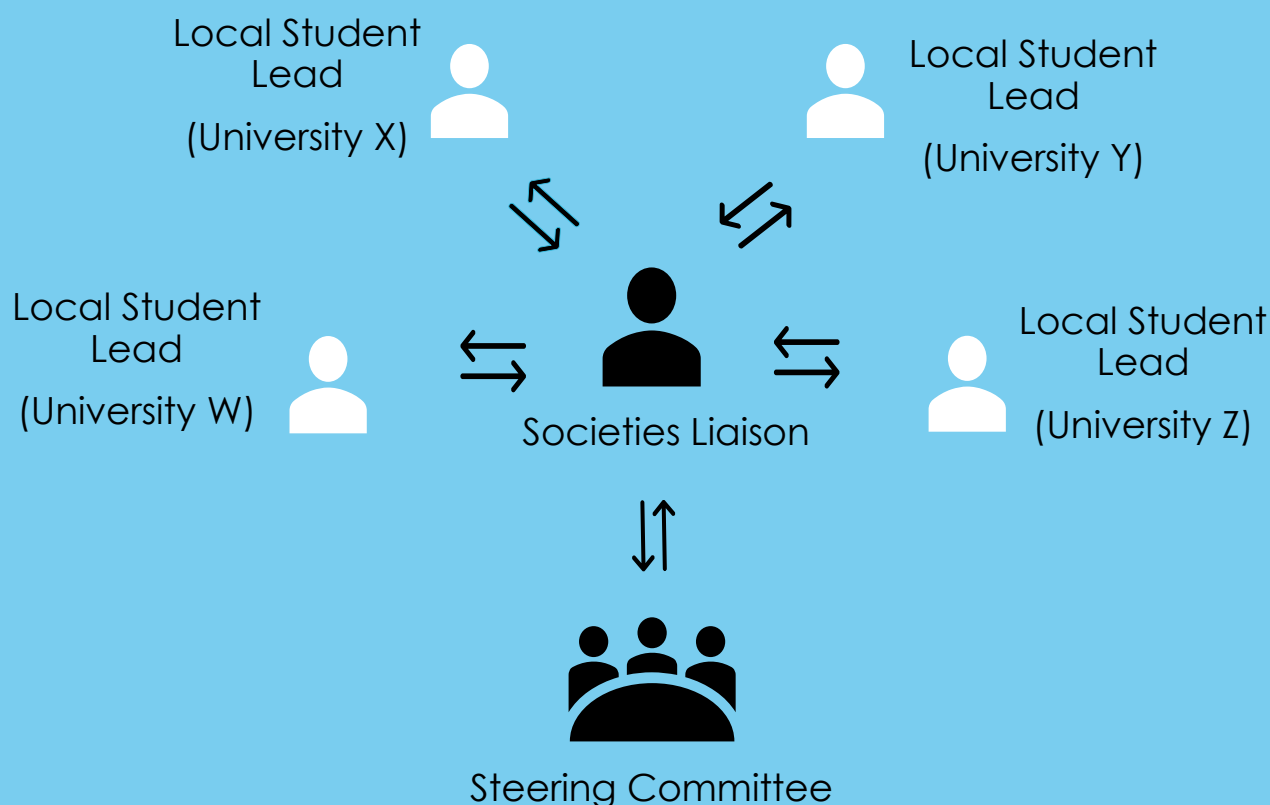




THE SUTURE UK MODEL:

Working with student surgical societies

Streamlined communication between SUTURE UK and student surgical societies will be essential to accomplish goals in each domain. We have a dedicated Societies Liaison who will serve as the primary point of contact between the SUTURE UK committee and student surgical societies.



To evaluate the current surgical skills provision by surgical societies

In partnership with the research team, our Societies Liaison will communicate with UK student societies to collect data exploring current surgical skills provision, common barriers faced in delivering skills training and the demand for a supportive scheme such as SUTURE UK. This will be achieved by inviting surgical societies to complete a standardised survey specifically designed by the research team. As the scheme progresses, the Societies Liaison will be involved in recruiting student surgical societies for involvement in the research collaborative outlined in the Research domain.

To promote SUTURE UK to student societies and recruit societies to join the scheme

Based upon survey responses, the Societies Liaison will establish contact with all societies and promote the unique selling points of SUTURE UK. Initial contact will be established electronically via e-mail or Social Media, depending on the societies' preferred means of communication. If further interest is expressed or there is a general need for further clarification on our scheme, virtual meetings will be set up so that information delivered to the different sites is standardised.

To work with local student leads to develop and support a local mechanism of education based on existing facilities and barriers faced

Once a set of societies have expressed their interest in collaborating with SUTURE UK, the Societies Liaison will be the first point of contact for the local Student Leads, a term we have assigned to the locally nominated student(s) tasked with facilitating surgical skills training in their respective society.

The Societies Liaison will work with the local Student Lead to help identify the barriers faced in delivering skills training at an individual society level, will feedback to SUTURE UK and will provide the society with a package that works for them. The Societies Liaison will ensure that the Student Leads have access to the educational resources offered by SUTURE UK and work with the Trainee Coordinator to ensure that the delivery of surgical skills training is facilitated.

To feedback to the Steering Committee on the quality standards maintained at individual society level

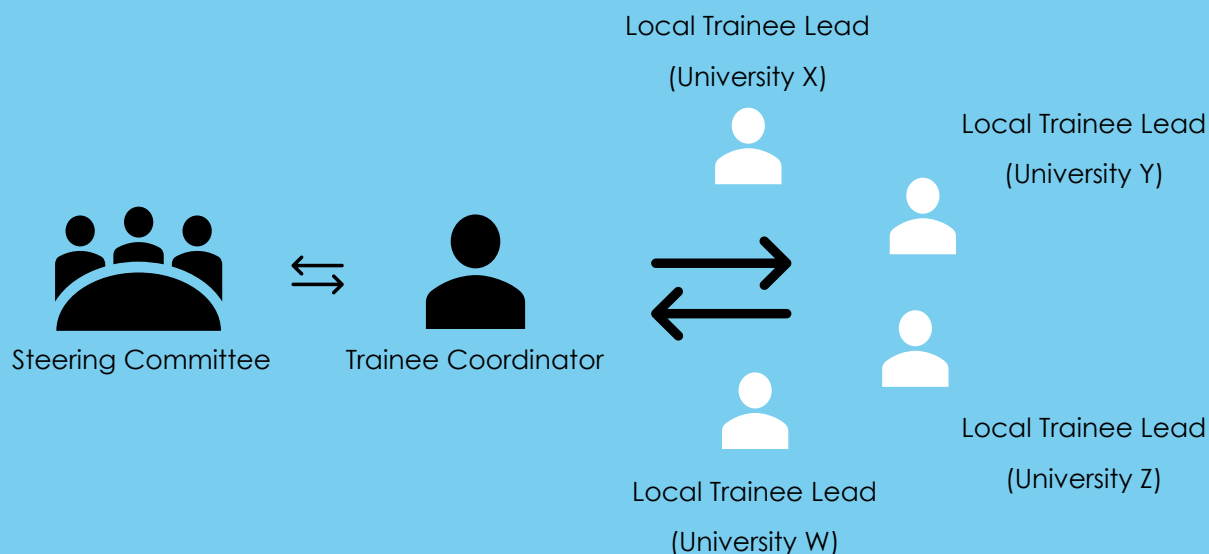
Continuous communication with individual societies throughout the academic year will enable regular monitoring and feedback on the SUTURE UK initiative at both a local and national level. The societies will have a direct means of communication with which to report any issues with access to educational resources, online platform facilities and general troubleshooting queries.



THE SUTURE UK MODEL:

Working with trainees

Surgical trainees frequently facilitate student surgical society skills training sessions. Their expertise is invaluable and the time and effort they commit to these sessions is especially commendable. This teaching experience is important for surgical trainees for multiple reasons: it prepares them for the training aspect of consultancy, gives them an opportunity to hone their own surgical skills and gives them important evidence of teaching for their own portfolio. SUTURE UK aims to expand and streamline potential teaching experience for trainees who are interested in tutoring medical students.



Recruiting local trainee leads

We are aware that all student surgical societies are organised differently, and that each will have varying requirements. Many will already have a group of trainees affiliated with their society who help provide teaching, and because of this we will first ask the surgical society to nominate a trainee lead who will act as a local liaison for tutors. If the society does not have a contact then SUTURE UK, via the Trainee Coordinator, will assist them in finding interested and keen trainees to take up this role.

Together with the local student lead, the trainee lead will help co-ordinate the design and delivery of local surgical skills training sessions. The trainee lead will be responsible for liaising with surgical trainees (who we would expect to be as a minimum Basic Surgical Skills qualified) to deliver these sessions. The trainee lead will ultimately be responsible for ensuring that a high standard of teaching is maintained across sessions and flagging up areas of concern such as repeated non-attendance by a surgical trainee. We hope that interest will be such that each surgical society can be supported by a group of local surgical trainees who themselves can agree a teaching schedule. They will also oversee assessment days and ensure their smooth running to maximise accessibility and fair provision of assessment.

Rewarding participation: personal professional development

SUTURE UK is committed to supporting the personal and professional development of

our local trainee and student leads. We aim to accomplish this in the following ways:

- a. Certification for student leads and trainee leads, clearly specifying their role in designing and delivering a predeveloped surgical skills course, which will prove an asset at both academic foundation, core and higher surgical interviews.
- b. Access to a dedicated webinar-series conducted by leading surgical educators.
- c. Highlight relevant resources for those interested in further study/training in surgical education.

Summary

The Societies Liaison and trainee co-ordinator for SUTURE UK will undertake the following;

1. Recruit local student leads from student surgical societies and trainee leads to deliver the SUTURE UK curriculum locally. Where it is necessary, we will facilitate the matching of local surgical trainee groups with individual surgical societies for delivery of the curriculum
2. Establish a robust means of communication between SUTURE UK, student leads and trainee leads.
3. Provide quality assurance for standards of society surgical skills teaching and assessment.
4. Provide personal and professional development opportunities for student leads and trainee leads.

SUTURE UK STEERING COMMITTEE

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