Portsmouth Airway Fellowship
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Program background
The Portsmouth Airway Fellowship is based at the Queen Alexandra Hospital which serves the city of Portsmouth on the south coast of England (Fig. 1). It is open to anesthetists who have already finished their anesthetic training and have gained their Certificate for Completion of Training (or equivalent). They must also be registered by the General Medical Council. The year-long post offers them the opportunity to develop specialist skills in difficult airway management and head and neck, maxillofacial and dental anesthesia before applying for consultant jobs. The Queen Alexandra is a busy hospital with 1200 inpatient beds and a tertiary head and neck surgery unit. As well as delivering anesthesia the airway fellow undertakes educational and quality improvement activities which support the practice of safe airway management by the 80 permanent and 25 trainee anesthetists who staff the hospital’s large operating theater complex. In addition to the airway fellowship, the hospital also has a 6-month “advanced level airway management” post open to anesthetic trainees near the end of their training. This post offers a very similar experience to the fellowship but post-holders naturally do not attain quite the same level of independent practice.

City of Portsmouth history
Portsmouth is a busy port that is positioned within easy reach of London. The city is steeped in maritime history, having had a Royal Naval Base located there since 1194. The historic dockyard is home to the warship HMS Victory which led fleets in the American War of Independence and most famously established Britain’s position as a great naval power in the Battle of Trafalgar. The Solent, which is the expanse of water between Portsmouth and the nearby Isle of Wight, is prime sailing territory and the venue for events including the Royal Cowes Regatta and the Americas Cup World Series. The city also has a vibrant literary heritage as the birthplace of Charles Dickens and home to Sir Arthur Conan Doyle. While working as a doctor in Portsmouth, Doyle embarked upon his writing career with the creation of the character, Sherlock Holmes.

Portsmouth Hospitals NHS Trust
Queen Alexandra Hospital underwent a major redevelopment in 2009, to become a modern and ergonomic acute care facility (Fig. 2). It is proud to host the largest of 5 Ministry of Defence Hospital Units in England and trains military clinicians from all 3 armed forces (Fig. 3). The hospital has 29 operating theaters which includes head and neck, general, urological, renal transplant, paediatric, orthopedic, obstetric, and gynecological surgical specialties. The Head and Neck team comprises national and international fellowship trained surgeons and anesthetists who offer complex surgical services including oncology, reconstruction, and orthognathics. The Head and Neck Unit accommodates 20 inpatients at any one time, who have been admitted for elective or emergency surgery and provides daily consultant led ward rounds. The theaters are equipped for airway laser and transoral robotic surgery. However, surgery requiring mediastinal access and cardiopulmonary bypass is not available on site and patients who require this are transferred to nearby Southampton University Hospital. This is also the case for complex pediatric head and neck surgery. The tertiary catchment area of the Head and Neck cancer service extends to a population exceeding a million people. The atypical population demographic of Portsmouth is reflected to a certain extent in the presenting pathology. Social deprivation, prevalence of smoking and smoking-related deaths are higher than average. The incidence of cancer, and in particular malignant melanoma, is also higher than average for England.

The airway fellowship
The basic working week of the fellow involves four days allocated to single theaters with the fifth day set aside for quality improvement activities, education, research, and audit. Two and a half or 3 theater days a week are allocated to delivering head and neck, maxillofacial and dental anesthesia. For the remainder, the Fellow is allocated to give anesthetics for other surgical specialties. This helps the anesthetic department meet service demands and the fellow in turn to maintain their broad clinical capabilities. A fellow working full-time will complete 40 hours clinical work (four 10-h days) and is paid for an additional 8 hours nonclinical work (educational, research, and quality improvement activities) a week.

The fellow initially undergoes a period of intense training while working with and learning from 2 consultant anesthetists in head and neck theaters. It is expected that they will rapidly develop the knowledge and skills to orchestrate the perioperative anesthetic management of a wide variety of patients with complex airways. Major cases frequently encountered include mandibullectomy, free-flap reconstruction, laryngectomy, radical neck dissection, and transoral robotic surgery (Fig. 4). The complex nature of these procedures enables the fellow not
only to develop advanced airway skills but also to consolidate skills in invasive cardiac monitoring, total intravenous anesthesia, and depth of anesthesia monitoring. It also equips them with the skills to safely manage tracheostomies. The fellow works closely with 8 head and neck anesthetists who will discuss their progress on a regular basis. Fellows may have had quite variable prior experience and so bespoke educational needs are considered by their supervisors when planning their timetable. After the initial period of training the fellow moves to undertake largely solo lists, but always with a consultant available to advise. Personal and professional development continues throughout the post, however, and there is a strong culture within the department for anesthetists to discuss complex cases with each other.

Didactics

The Head and Neck Cancer Service’s weekly multidisciplinary meeting is a valuable learning opportunity. In this forum, surgeons, pathologists, oncologists, radiologists, and nurse specialists discuss complex cases with the aid of imaging and pathologic findings and formulate treatment strategies. This meeting provides insight into the disease process and therapeutic options available to the patient. Directly following on from this meeting, these patients attend an outpatient clinic where assessment and airway planning can begin. This provides an enhanced level of patient-centered perioperative care and facilitates multidisciplinary airway management. It also gives
anesthetists a rare and privileged opportunity to see patients who have been discharged postoperatively and better understand their anesthetic experience. The surgeons and radiologists are also willing to facilitate skills development in fiberoptic nasendoscopy and neck ultrasound in an outpatient setting with regular hands-on practice and constructive feedback.

Clinical opportunity

The anesthetics department has a keen interest in embracing the latest techniques for perioperative airway management. Fellows are an important component of this initiative and experience. The use of videolaryngoscopy is widespread and theaters are well-equipped with difficult airway adjuncts including a high frequency jet ventilator and a rigid intubation endoscope. Awake fiberoptic intubation is commonplace and the fellow will be trained to undertake this independently. The department has links with other specialist units at the Royal Throat, Nose and Ear Hospital in London and The Queen Victoria, East Grinstead and the Fellow can visit these units to gain additional experience of complex surgery and techniques if desired.

The Trust hosts the annual Portsmouth Transoral Laryngopharyngeal Laser Course which attracts international faculty and
Delegates. This live surgical course runs over 3 days and includes CO2 laser and reconstructive laryngeal surgical techniques and the emerging role of transoral tumor excision. This is a great opportunity to gain valuable experience in laser safety and jet ventilation.

**Teaching and quality improvement activities**

It was a key recommendation of NAP4 that all UK hospitals should have a Difficult Airway Society/Royal College of Anaesthetists “Airway Lead”[1]. The airway fellow supports the Airway Lead in organizing local airway training for anesthetists, ensuring that local policies exist for difficult airway management and ensuring that difficult airway equipment is appropriate and standardized.

For safe airway management both anesthetists and their anesthetic assistants need to have regular airway training. The fellow and advanced level trainees are vital assets when it comes to meeting this need in a large hospital like ours. As they progress to independent practice, they become responsible for teaching techniques such as videolaryngoscopy, awake fiberoptic intubation, airway ultrasound, emergency front-of-neck access, and Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) to less experienced colleagues and trainees.

The transition from learning to teaching these advanced techniques is a particularly satisfying aspect of these posts. Additional airway teaching within the department includes an annual airway update meeting, the “airway tea trolley” (Fig. 5), a continually evolving caseload image database, in situ simulations and use of a high fidelity simulation suite (Fig. 6). The “airway tea trolley” comprises a mobile teaching team, manikins and equipment to facilitate in situ skills update on emergency front-of-neck access[2]. Once a year the Queen Alexandra Hospital hosts the well-established “Portsmouth Airway Workshop” (PAWS) course, which is approved by the Difficult Airway Society (DAS). Delegates have the opportunity to discuss complex airway cases and practice skills including fiberoptic intubation, videolaryngoscopy, and front-of-neck access. In 2007, the Portsmouth anesthetic department also organized and hosted the DAS Annual Scientific Conference. The department delivered a comprehensive program which included lectures from international speakers, lively debates, airway workshops, and an innovative simulation of a court room trial relating to an airway-related complication.

**Quality improvement activity**

In addition to their educational role, the Fellow takes part in airway-related quality improvement activities. The department has recently adopted a voluntary regional pediatric airway initiative “Making the Airway Safe”—known as MAST[3]. This innovative approach standardizes pediatric airway training, algorithms, and equipment (in the form of a MAST airway trolley) to optimize the emergency management of children with upper airway obstruction. The Airway Fellow is encouraged to attend the MAST course alongside members of the theater team and to then disseminate this philosophy and skill set among colleagues with regular updates and simulations.

The department is particularly interested in team-based planning of the obstructed airway. An advanced level trainee was recently involved in developing a cognitive aid (Fig. 7) and publication of a World Federation of Societies of Anaesthesiologists (WFSA) tutorial on the management of the obstructed airway[4]. The cognitive aid enhances strategic airway planning and contingency planning to optimize the safe transfer of patients with critical airways. This project has progressed to multidisciplinary team teaching on the impact of human factors on clinical practice. This teaching is delivered through a variety of media including interactive case studies and role play. Fictional staff and patients including “Verity Stracted” and “Anita Scopenstach” (likely familiar to readers who

![Figure 5. The "airway tea trolley" in action providing teaching of front of neck access technique (permission from all clinicians pictured).](image-url)
Figure 6. High fidelity simulation suite with scenario in progress (permission from all clinicians pictured).

Figure 7. A cognitive aid for use in the multidisciplinary team planning and management of the obstructed airway.
are fans of Bart Simpson!) bring scenarios to life and help to illustrate key points in enhancing team interaction.

**Research and innovation**

As a reflection of the forward-thinking nature of airway management at Portsmouth, several members of the department were consulted when the 2015 DAS Guidelines were written. The anesthetic department in Portsmouth is also only one of 15 nationwide to have achieved the Royal College of Anaesthetists Clinical Services Accreditation (ACSA).

Although there is no airway-related clinical trial ongoing within anesthesia, research interest and development is very much encouraged and facilitated by the department. The department is proactive in publishing case reports, letters, and educational articles. The Head and Neck Cancer Centre has a Research Nurse and a Research Assistant and is extensively involved in clinical studies including multicenter randomized control trials. Portsmouth Hospitals NHS Trust recently recruited 232 patients with cancer to the national Head and Neck 5000 study. This research investigates morbidity and mortality across the country, quality of life outcomes, prognostic indicators and health economics, and is the largest study of its type, worldwide.

**Evaluation of performance**

The fellow has a nominated Educational Supervisor who will help them identify specific learning needs and formulate a professional development plan. Assessment of competency is formative and builds on the recommendations of the Royal College of Anaesthetist’s assessment program for advanced training in airway management, head, neck, maxillofacial and dental surgery. As with any registered doctor in the United Kingdom, the fellow will have an (annual) appraisal in order to demonstrate their fitness to practice. They will need to collect supporting evidence and reflect on their practice and performance.

**A personal perspective from a recent Portsmouth advanced-level trainee**

“A particular highlight for me has been the culmination of my knowledge, skills and experience to be able to lead the safe transfer and perioperative anaesthetic management of patients with critically obstructed airways. Situations of this nature that I have encountered have been challenging and included patients with tumour recurrence after radiotherapy and those with life-threatening bleeding. My approach to these patients has drawn upon many elements of my training in this post such as advanced airway techniques (Fig. 8), application of our cognitive aid, lessons from the MAST initiative, detailed team briefings and contingency planning. If I was pressed to reflect upon any negative aspects of this training experience, I would mention only minor self-sacrifice(!) (Fig. 8) and the limited exposure that I personally had to jet ventilation.”

“I would recommend this post to motivated and proactive anaesthetists who are keen to develop a broad range of complex airway skills amongst a dynamic and forward-thinking multidisciplinary team. It is particularly suitable for those who enjoy leadership, teaching and service development and share the
philosophy of effective team work as the foundation for clinical excellence.”

For information about the Portsmouth Airway Fellowship please email the current Airway Lead at james.dinsmore@porthosp.nhs.uk.

**Conflict of interest disclosures**

The authors declare that they have no financial conflict of interest with regard to the content of this report.

**References**


