

# Simulated intravitreal injection training – the way forward

Simulated surgical training is now recommended in the training curricula of all ophthalmologists in the United Kingdom [1]. Simulated training allows for familiarisation with a procedure, exercises the discipline of repetition, allows the resolution of technical difficulties and enables refinement of technique. It is also increasingly recognised as a valuable tool in improving the delivery of safer patient care by mitigating the risks to patients from inexperienced operators.

Simulation tools, made available to a wider range of healthcare professionals, have the potential to transform an entire service and improve the delivery of care to significant numbers of patients throughout the country. In this article, we discuss intravitreal injection training (IVT) of medical staff, nurses and other healthcare professionals.

Rates of neovascular age-related macular degeneration (AMD) are predicted to rise by 59% between 2015 and 2035 and services will need to dramatically expand their capacity in order to cope with treatment demands [2]. A similar rise in the burden of diabetic eye disease is predicted which will impact further. The RCOphth recognises that trained allied health professionals (AHPs) or non-medical health care professionals (HCP) represent an important personnel resource for the delivery of efficient injection services. Increasingly, trusts throughout the UK are developing team-based injection delivery services including consultants, trainees and HCPs. The RCOphth currently recommends that all non-medical HCPs are taught to inject by a consultant ophthalmologist.

The inaugural UK Intravitreal training meeting in 2017 convened with the aim of beginning the process of identifying best practice in intravitreal training and provided the first forum of its kind for services involving non-medical HCPs. Much of this training is solely conducted 'in-house'. However, many trusts realise the benefits of a training course to provide experiential learning for their non-medical HCP injector teams in advance of direct patient contact. There are now several centres delivering formal intravitreal training courses throughout the UK.

For most non-medical HCPs, performing an invasive procedure on a patient is a role for which they have never prepared during their own professional training. Simulated training, therefore, becomes even more critical in overcoming this unique challenge.



Nick Aliwell is an optometrist and AHP working within the AMD department in The Oxford Eye Hospital. He attended the Thames Valley IVT course and has been part of the in-hospital training program [3]. He says the following about his simulated training experience. "Working within an unfamiliar clinical setting driven by a procedure which has potential serious complications can be daunting but having had a chance to practise administering injections in a simulated environment I appreciate the value of this type of training in preparing me to perform injections and deliver a safe service to patients."

Feedback from IVT course attendees tells us that they have diverse training needs. Attendees clearly wish to gain the technical skills to deliver intravitreal injections but also attend to experience an immersive learning environment, gain enough confidence to transition to clinical practice and make a realistic assessment of the risk of complications and their management.

To satisfy these needs, an intravitreal training course offers an introduction to the principles of injection delivery and experiential procedural training. The curriculum of the knowledge based component includes discussion of relevant anatomy, infection control, complications of injections, risk reduction, indemnity, and the role of audit. The simulation aspect is an immersive environment offering several hours of skills training at the trainee's own pace supervised by an experienced trainer. This is undoubtedly the most popular part of the training day and provides a valuable opportunity for trainees to practise injection site identification, angle of needle insertion, and speed of injection. The artificial eyes are designed to have a similar resistance to sclera so that feedback felt is close to the

natural feedback experienced when the needle is inserted into a real globe.

Skills training for intravitreal injection:

- Videos of intravitreal injections and demonstrations of injections with artificial eyes
- Small group or 1:1 simulation of the process of injection with artificial eyes with an experienced ophthalmic trainer
- Practise draping and trolley set-up
- Exposure to devices to aid intravitreal injections
- Role playing practice with positive patient identification
- Q and A

Simulation need not be entirely separate from clinical experience. Starting this year, The Thames Valley Intravitreal Injector Course, will invite a patient to describe their own experience of undergoing IVT treatment.

Recognising the demands of the service we are delivering and the diverse needs of our students, we must offer experiential learning environments which include simulation tools. The adage 'see one, do one, teach one' has been distinctly superseded.

## References

1. Simulation in Training. The Royal College of Ophthalmologists. <https://www.rcophth.ac.uk/training/ost-information/simulation>
2. The Way Forward. The Royal College of Ophthalmologists. <https://www.rcophth.ac.uk/wp-content/uploads/2015/10/RCOphth-The-Way-Forward-AMD-300117.pdf>
3. For information on the next course contact [thamesvalleyivti@gmail.com](mailto:thamesvalleyivti@gmail.com) (All links last accessed October 2018).

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