

Celebrating eight years of the nurse-led intravitreal injection service

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Moorfields Eye Hospital NHS Foundation Trust in London celebrated the eighth year of its nurse-led intravitreal (IVT) injection service in 2020.

In collaboration with Beaver-Visitec International (BVI), Moorfields' comprehensive one-day course for non-medical staff has blossomed into a thriving success. IVT injection therapy is commonly used for a wide spectrum of retinal conditions. The popular intravitreal injection course at Moorfields enables other institutions to establish their own non-medical delivered IVT injection services. The course includes a mix of practical wet lab training sessions as well as theoretical sessions, including legal and governance issues. This innovative model of care has radically reduced waiting times for the therapy and improved clinical outcomes as well as subsequent quality adjusted life years. Furthermore, a non-medical delivered injection model improves capacity for the medical retina services, since ophthalmologists can provide extra supervision for the juniors.

Intravitreal injection therapy and why it is nurse-led

In the UK, the most common diseases treated by anti-VEGF injections are neovascular age-related macular degeneration (nAMD), diabetic macular oedema, and retinal vein occlusion [1]. When we embarked on this journey in January 2012, we administered 10,000 IVT injections annually with a small cohort of nurse practitioners. Eight years later, with an increase in disease prevalence and subsequent growth in demand, we now have 50 trained nurse practitioners at Moorfields, administering an average of up to 25,000 to 30,000 injections per year.

It is estimated that more than 70,000 patients are diagnosed with wet macular degeneration annually in the UK. However, this figure does not include other ocular conditions requiring IVT treatment. Therefore, we had significant service demands with only a small pool of ophthalmologists available to administer it, leading to long waiting lists.

In comparison to other European countries, the UK falls short on trained ophthalmologists, with a mere c.1500 according to the Royal College of



Figure 1

Ophthalmologists Workforce Census [2]. Thus, not nearly enough to meet the rising demands of the ageing population and increased disease prevalence and deliver the IVT injection service to all patients. So, training nurses to administer the injections has relieved long wait times and improved patient experience leading to better clinical outcomes.

In the beginning...

When we started the very first nurse-led IVT course at Moorfields, we received an avalanche of enquiries about how we set it up. People from all over the globe wanted to know what we had done, how we had done it and how they could do it too. With this in mind, we developed a training programme outlining our legacy, safety and patient experience outcomes. Our branded IVT injection course highlights the integral multidisciplinary approach in establishing policies, the business cases we used, and how we set up the service. Due to the overwhelming interest in the course both globally and nationally, we approached BVI for potential collaborations. We were guided internally by our governance department in developing a joint public / private collaboration to brand, develop and market our external IVT injection course.

The Nurse-led IVT Injection Course

At Moorfields, we established the first course in December 2014, reaching an average attendance of 15 delegates. Over the years, there has been a dramatic increase

in demand for the course, which now runs quarterly. Designed for allied healthcare professionals, ophthalmic nurses and junior doctors both in the UK and internationally, the course focuses on disease understanding, treatment pathways, innovative models of care in retina subspecialty, and a showcase of our nurse-led injection safety outcomes. We have increased capacity and enhanced the course both in the UK and internationally. We started training allied healthcare professionals and nurses as far afield as Australia, Singapore, Hong Kong, Iceland, South Africa, Sweden, the United States of America, Ireland, Finland and Denmark. This global reach has given the course the international recognition we enjoy today. We have now trained more than 850 allied health professionals, nurses and junior doctors in the UK and globally.

The highly interactive course builds on the storytelling of our nurse-led intravitreal injection journey (Figure 1). It provides delegates with an enhanced overview of how to introduce an intravitreal injection service by covering topics such as:

- Planning and implementing an intravitreal injection service
- Medico-legal, indemnity and consent issues
- Staffing and supervision – a supervising ophthalmologist must be present in the building when a nurse administers the injection in case complications arise
- Corporate and clinical governance.

The teaching faculty is led by experts with a wide breadth of experience in retinal care

alongside our legal advisory lead. BVI plays a significant role in ensuring the smooth running of the day, providing logistics for the course and keeping everyone engaged.

The inclusion of a practical wet lab session where delegates can experience the injection procedure firsthand ensures that the knowledge base is related to clinical conditions in the workplace.

A nurse-led service is not only safe but necessary to meet demands

We did a pilot study in 2014 and published the results in *Eye*, 'Implementation of a nurse-delivered intravitreal injection service' [3]. The purpose of the study was to establish whether nurses were delivering safe and effective injections in the same way as medical doctors. We looked at a group of nurses giving IVT injections to 106 patients. Issues such as indemnity, clinical governance, training, planning and implementation were addressed. The outcome measures were patient safety, patient experience and clinic capacity.

The results showed no serious vision-threatening complications were recorded in a consecutive series of 4000 nurse-delivered IVT injections. We also demonstrated a significant increase in IVT injections ($P=0.003$) in the medical retina service after the introduction of nurse delivered IVT injections. Most patients accepted and were satisfied with a nurse-delivered IVT injection.

The nurse-led service showed very safe results with complications for consecutive

nurse-delivered IVT injections ($n=4000$) recorded over a 24-month period – no cases of endophthalmitis, retinal detachment, lens damage, loss of central artery perfusion, uveitis, or vitreous haemorrhage occurred [3].

The role and the outlook of the IVT injection course

The course aims to increase the medical retina treatment capacity. The earlier ocular disease is treated, the better the prognosis. So, increased waiting time due to staff shortages to administer the injections is not best practice. Training up other healthcare professionals such as nurses makes perfect sense to meet the demand for early intervention to achieve the best possible outcome.

The IVT injection course has had a positive impact on the medical retina service over the last eight years. The nurse-led service frees up the ophthalmologists to supervise trainees and provide more clinical leadership time in the clinic for other duties.

Previously patient waiting times for injections averaged approximately six months before they received their first injection. Now, the average wait time is two weeks, so that's a maximum impact on retinal services and patients' overall experience.

Continuity of care resulted positively from the nurse-led service because nurses appear to stay in their positions longer than doctors who move more frequently. Also, the patient sees the same nurse continually, which helps foster patient rapport, further enhancing patient experience.

The use of a dedicated IVT pack (BVI, Malosa[®]) ensures consistency of the IVT injection delivery. The IVT pack contains all the right tools ready in one convenient place. We have found it to be safe and effective. Not only do the single-use instruments in the pack eliminate sterilisation, but the instruments are of good quality and convenient.

Going forward, we hope to make the course more accessible for other localities. Also, the wet lab session will be further improved. In the future, we would also like to develop discussion focus groups where nurses can meet and share experience, therefore incorporating a supportive network for nurses.

Conclusion

We began the nurse-led IVT injection service because we did not have enough ophthalmologists to deliver the service – now, eight years later, we are treating more patients than ever, reducing waiting lists and increasing early interventions, thereby giving patients the best possible chance of a good outcome.

The nurse-led IVT injection course is the most frequently requested course at Moorfields Hospital and therefore a source of income for the trust. Reflecting on the

quality, our IVT injection multidisciplinary team at Moorfields has been nominated for several awards. We feel the course has developed into a huge success both commercially and academically and will grow over the next five years and beyond. With the rise in technological advances, we hope to apply digital innovation in delivering world class courses through e-learning, video conferences and establishing educational hubs in some parts of the world.

References

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Figure 2



Figure 3