Waikato Cardiothoracic Unit - surgical dexterity booster workshop review

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Elwyn is a 6th year medical student who grew up in South Auckland and is currently placed at the Waikato Hospital. He is very passionate about Surgery and General Practice, and in his spare time enjoys tramping and playing tennis.

Throughout medical school, a significant proportion of our time is spent learning how to examine patients, list differential diagnoses and formulate basic management plans. While all of these are undoubtedly core skills required by a PGY1 doctor, they fail to touch on an element that is attractive to many medical students - surgery. After all, despite the almost exclusive reference to studying 'Medicine,' after the many years of toil, students receive a Bachelor of Medicine and a Bachelor of Surgery! Yes, medical students are allowed to occasionally suture an incision site or even excise small skin lesions, but does spending a vast majority of our surgical time observing or applying skin retraction entitle us to the surgical component of our qualification? Given that Olympic champions require approximately 10,000 hours of training to achieve precision, accuracy and speed in their given sport, why are junior surgical trainees expected to arrive fully competent with their basic surgical skills after such a remarkably limited amount of practice?

In an attempt to address this issue, the Cardiothoracic faculty at Waikato Hospital recently looked at new ways to allow medical students and newly graduated doctors to develop their surgical skills. Aiming to explore fun and innovative approaches to improve basic surgical skills outside of operating theatres, the Cardiothoracic multidisciplinary team held the Surgical Dexterity Booster workshop on 25th January 2017.

Lured by promises of learning how to master surgery, we joined a group of thirty senior medical students and house officers filled with eagerness and trepidation about what we were about to face. Cardiothoracic surgeon Mr. David McCormack fired up the afternoon with a stirring address about what he hoped we would take away from the workshop and introduced the other members of the cardiothoracic faculty who would be nurturing our fingers that afternoon. A distinct contrast to other workshops was immediately apparent as we learned that each station was designed to showcase how using everyday objects found in an average home could provide practical dexterity training. Concluding by taking our orders for complementary barista–made coffee was the icing to what was becoming an increasingly fine–looking cake!

The first three stations perfectly captured the refreshing approaches to learning we would encounter throughout the afternoon. The starting station was led by Cardiothoracic nurses Kelsey Simpson and Jacque Roberts, who had the pleasure of covering basic suturing technique with the twist of forgoing traditional mediums like pork bellies (or patients) in favour of various fabrics. Groups were tasked to suture together the striped patterns on tea towels and after a brief kick-start of our imaginations, it became glaringly obvious that the lines before us were wound margins! Our hosts quickly proved themselves excellent teachers of correct surgical instrument handling and soon even the slightly rustier surgeons among us were wielding simple interrupted and subcuticular sutures like professionals. The final exercise was to close the gaping hole between the dark margins of a surgical cap, a stimulating challenge for those eager to test their newly sharpened suturing skills. While this station did not have the most technically demanding tasks, it was an ideal refresher for those without recent surgical rotations. Confidence with suturing is one of the most important surgical skills a student can develop, and using fabrics was a novel but brilliant approach to practising suturing that was surprisingly effective at building muscle memory.

The second station introduced knot tying, taught by cardiothoracic surgeons Mr. Nand Kejriwal and Mr. Grant Parkinson. After quickly demonstrating our ability to tie fine sewing threads with surgical instruments, we moved onto hand-tying which tested our dexterity as we advanced from thick cords to smaller threads which were increasingly difficult to see. Ingeniously, this station was entirely performed on wooden blocks, tying

the knots around small hooks and later around a pair of stretched rubber bands which cleverly simulated skin tension. For the more tactilely gifted among us, large cups were used to mimic the awkwardness of operating at depth. Slowly but surely, the calm and patient advice of our hosts won out on the day as everyone gradually built familiarity handling knots and (with varying speeds) were able to replicate the slick hand movements of experienced surgeons. This station was especially challenging for those of us who had never ventured into the territory of hand-tying before, but also captivated the more experienced hands among us through simple changes that demanded finer dexterity.

The third station of the afternoon was focused on fine bi-manual dexterity and sought to stoke the still-smouldering competitiveness that had brought each of us into medical school. Mr. McCormack charged us to sprint against a partner by placing coloured grains of rice onto checkerboard squares, armed with only a pair of Debakey forceps and a wearying sense of hand-eye coordination. After moving 15 grains of red rice, the stakes were raised to moving 40 grains with our non-dominant hand and finally a race against the clock to fill an entire checkerboard with alternating colours of rice one at a time while switching hands! To cool off, the station ended leisurely with dropping rice into tiny openings of short straw segments held upright by Blu-Tack. Moving rice with forceps sounds trivial on paper, but throw in music and the driven nature of caffeine-deprived medical students, and suddenly tensions flared as though an Olympic medal was at stake! Remarkably, this station was a lot of fun and we found ourselves enjoying the exercises without realising they were a test of our fine dexterity. While potentially a subtle hint to the next generation of surgeons that operations are best enjoyed with accompanying music, this station also showcased an easy way to practise overcoming pressure while handling instruments.

After reinvigorating our aching minds and fingers with the previously mentioned barista coffee generously supplied to order by our cardiothoracic hosts, we dived back into the remaining trials. Kelsey Simpson and Jaque Roberts again drew inspiration from the kitchen to teach tissue handling and avoiding torque, this time through the handling of hard-boiled eggs. Challenged first to remove the fragile shell from the egg without scratching the inner surface, we then sliced our eggs in half and attempted to suture along the egg's surface. This activity proved harder than expected as any excess force tore the needle through the egg white, although more than one person did manage to successfully suture the two halves of their egg back together! Perhaps the most frustrating station of the afternoon, repeatedly running a suture through an egg effectively highlighted how easy it was to unconsciously use shortcuts instead of allowing the needle to follow its curvature. While not the most ideal medium compared to flesh, suturing with fragile eggs was a firm test of combining precision and delicacy which would appeal to anyone with a taste for egg salads!

The next station once more found itself rummaging through the kitchen, this time using bananas to practise fine suturing and appreciating suture angulation. This art was demonstrated by Mr. Kejriwal and Mr. Parkinson who taught us the principle of suturing blood vessels using small continuous sutures around the circumference of small holes punched into the bananas. Although a relatively short station compared to the others, it required an intense amount of focus to interact with the miniature operating site below us. Running a continuous suture around a one centimetre diameter hole also demanded an exceptional level of instrument control and manipulation of suture angulation, which many of us would have struggled with if not for the teaching from the previous stations. Seeing an immediate result of our progress was a very satisfying experience.

The final station of the day was a taste of the cardiothoracic speciality; cannulation and operating at depth. This station run by Mr. McCormack combined previous elements we have been taught and showcased how to suture two pursestrings in the ascending aorta (banana) where an arterial cannula would be placed. Despite being one of the more relaxed stations, it also required a degree of competence to smoothly transition between the different suture approaches to complete the pursestrings. By the end many of us felt like masters of the banana operating suite, requiring an additional challenge of operating through a deep box mimicking operative depth. A much greater test of our newly practised dexterity, the awkwardness reminded us that countless hours of practice awaited us before we would begin to feel comfortable performing the same movements on real patients.

Overall, the Surgical Dexterity Booster workshop was highly enjoyable and educational. A common interest in surgery was one of the only shared features among those attending, but at the end of the day each of us found the course a memorable experience. Bananas and eggs sound more like a cake recipe than a practice medium for suturing, but they proved entertaining ways to master fine finger movements and instrument handling in ways that could easily be replicated for hours at home.

In addition to covering all of these different components of surgical skills, each of these stations also contained something else that made the afternoon a success. The course was hosted by enthusiastic surgeons and nurses who looked like they enjoyed the course as much as we did, creating a fun environment for all involved and firmly proving that each of these household kitchen items had a place on the operating table of the future. Our only concern was their willingness to fuel the caffeine addictions of young doctors! A huge thank you to the Waikato cardiothoracic multidisciplinary team for hosting this event, and we eagerly await any future experiences hosted by them or other faculties with a creative flair for teaching. If you are a student and interested in becoming a surgeon, definitely watch this space!

Mr David McCormack is always happy to assist students! Please do not hesitate to get in touch with him if you want to be invited to further courses, organise an elective or see operations. Get in touch with him via his email: David.McCormack@waikatodhb.health.nz

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