

'One team': our experience teaching catheter care and difficult urethral catheterisation to NHS Nightingale Hospital London volunteer staff members

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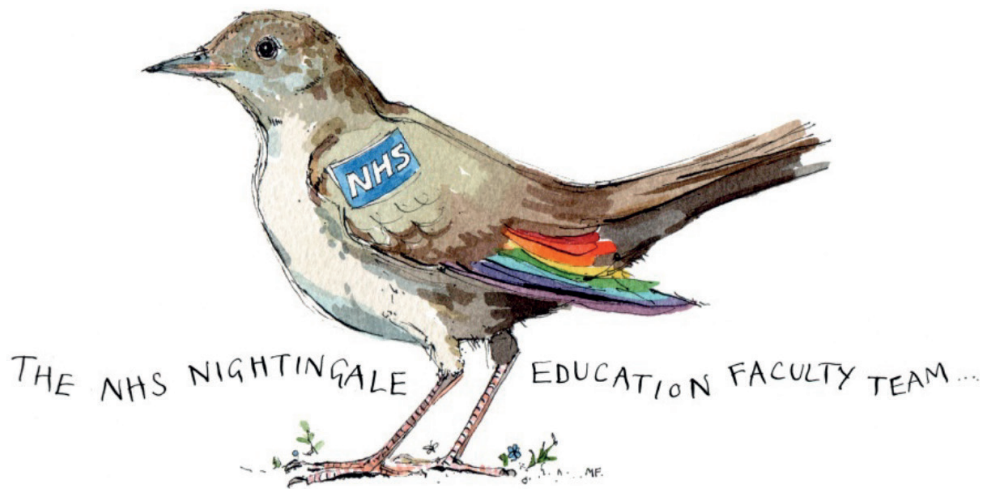


Illustration by Madeleine Floyd.

The NHS Nightingale Hospital London was launched in response to the COVID-19 pandemic. In mid-March 2020, the predicted scale of the pandemic was uncertain and there was concern that COVID-19 might overwhelm existing intensive care unit (ICU) capacity within weeks. This was an exceptional situation and demanded a fast-paced response. Within two weeks, the ExCeL conference centre in east London was converted into a 500-bed ICU, designed to provide critical care to intubated and ventilated patients from overwhelmed local hospitals. In an unprecedented effort, over 2000 volunteers and staff were trained to work in pandemic conditions at the NHS Nightingale Education and Training Centre (from 30 March to 6 May, 38 days). The NHS Nightingale Hospital London remained open for 36 days at the height of the pandemic (from 3 April to 8 May), treating 54 critically unwell COVID-19 positive patients with 34 successful discharges and 20 deaths. The hospital currently remains on 'stand-by', ready to resume operations if needed.

The University College London Hospital (ULCH) urology department responded to a call from Health Education England (HEE) to join the NHS Nightingale Education and Training Centre faculty. The faculty included healthcare workers and educators from a wide range of backgrounds, specialties and geographic areas. The education centre was guided by the following principles: i) patient safety; ii) staff physical and psychological wellbeing; iii) effective communication between team-members; iv) evidence-informed practice [1].



Clinical Nurse Practitioner Mariya Dragova teaching management of difficult urethral catheterisation

Staff who volunteered to work at NHS Nightingale Hospital London would attend a comprehensive induction course at the Education and Training Centre (including local orientation, basic / advanced life support, personal protective equipment, simulation stations, communication skills, staff wellbeing, other clinical skills). Volunteer staff members came from a variety of different backgrounds, ranging from non-healthcare workers (e.g. airline employees) to healthcare professionals with varying levels of critical care experience. The induction course would be targeted to the self-reported experience of volunteer staff members, who were divided into groups ('Green' = critical care

“It was quickly apparent that this unique ‘field hospital’ environment would pose challenges to urological nursing and medical care”

Box 1: Catheter care guidelines

Catheter care should be routinely undertaken at least once per shift.

Check catheter appropriately secured to upper inner thigh with STATLOCK®.

Ensure no tension on catheter.

Check catheter bag is below level of patient.

Monitor urine output at least hourly. If there is no urine output, check tubing for kinks and flush catheter (if trained to do so). Escalate if still no urine output or if catheter is blocked / displaced.

Report blood in the urine to ITU nurse or doctor.

Use body cleansing wipes to gently clean the area around the urethral meatus and the catheter tubing (wipe tubing away from patient).

For men, retract the foreskin for cleaning (if it comes back easily) and always reposition foreskin back over the head of the penis after cleaning. Never forcibly retract a tight foreskin – clean as best possible.

Change catheter bag every 7 days (and write date of bag change on new bag).

Reposition STATLOCK® every 7 days to other leg (and write date of change on STATLOCK®).

Always use alcohol wipe to remove STATLOCK® to avoid skin damage.

Box 2: Correct male urethral catheterisation technique

Do not perform male catheterisation at Nightingale Hospital if this is outside your regular scope of practice.

Always use aseptic technique.

Abandon urethral catheter insertion attempt if resistance encountered. **Never force the insertion of a urethral catheter.**

Do not inflate the catheter balloon until: i) catheter is fully inserted to the Y-junction hub; AND ii) urine is seen draining from catheter. If necessary, confirm urine drainage by gently pushing on the patient's abdomen OR aspirate urine using a syringe.

If insertion of a standard Foley catheter is unsuccessful, the Urethral Catheterisation Device (UCD®) is available for use by trained staff members. See QR code for instructional video.

If the patient is uncircumcised, always reposition the foreskin to cover the head of the penis after catheter insertion (to prevent paraphimosis).

Secure the catheter appropriately to prevent inadvertent dislodgement and to avoid traction.

Other tips for male urethral catheter insertion:

- Be generous with lubrication gel (use the full 10ml syringe).
- Ensure a firm grip behind the head of the penis (glans) to straighten the penis vertical to the horizontal, i.e. towards the roof, during catheter insertion. You can use a rolled sterile gauze to help achieve a firm grip.



Urology Fellow Nicola Jeffery teaching catheter care.

background; ‘Amber’ = non-critical care hospital staff; ‘Red’ = non-healthcare background).

The faculty members were briefed on the evolving concept of the NHS Nightingale Hospital London and it was quickly apparent that this unique ‘field hospital’ environment would pose challenges to urological nursing and medical care. All patients would arrive to the facility with indwelling urethral catheters (IDC) in situ. Accidental IDC removal (with the balloon inflated) is estimated to occur in 2-5% of ICU patients (0.34 per 100 catheter days), causing urethral trauma which can make IDC reinsertion difficult [2]. Furthermore, patients would commonly be repositioned prone (‘proning’) to improve their oxygenation, thereby exposing patients to further risk of IDC dislodgement. There was no immediate plan for provision of operating theatre facilities or equipment (e.g. cystoscopy). There would be an on-site interventional radiology service, with the ability to insert ultrasound-guided suprapubic catheters (SPC) at the bedside if needed. It was clear that easy troubleshooting of difficult IDC re-insertion would be essential for frontline staff on the ‘shop floor’, given that some patients would not be suitable for SPC (e.g. due to coagulopathy, prior abdominal surgery or high body mass index, BMI) and there would be no on-site operating theatre capacity. Thromboembolic disease requiring anticoagulation [3] and high BMI (>30) [4] appeared to be more common in COVID-19 positive ICU patients, making any potential SPC insertion less straightforward. Moreover, age and male gender are well-known risk factors for difficult urethral catheterisation and also proved to be risk factors for severe COVID-19 infection requiring ICU admission [4]. As the situation evolved, the UCLH urology department also volunteered to provide an on-call consultant urologist rota for clinical cover and to develop standard operating procedures (SOPs) (e.g. catheter care, catheterisation, paraphimosis, haematuria).

The urology aim from an educational perspective was to prevent and manage complications of urethral catheterisation, including accidental IDC removal, catheterisation-associated urethral injury (CAUI) and catheter-associated urinary tract infection (CAUTI). Implementation of education programmes has been shown to reduce CAUI and CAUTI [5-7]. We also sought to equip frontline qualified non-urology staff with a safe algorithm for difficult IDC re-insertion, adapted from the UCLH Male Catheterisation Guideline. After inadvertent IDC removal at the NHS Nightingale Hospital London, the algorithm

recommends that an experienced clinician should make a single attempt at reinsertion with a 16Fr Foley catheter, followed by a further attempt with the Urethral Catheterisation Device (UCD®) (Urethrotech). The on-call urology consultant should be contacted if these two attempts at catheter reinsertion are unsuccessful. The UCD® incorporates an integrated hydrophilic nitinol guidewire into its design, making the safe and effective Seldinger technique easily accessible and available to non-urology frontline staff [8-10].

Figure 1: Short instructional videos.

- Catheter care: <http://vimeo.com/405419828/bd4375f187>



- Difficult urethral catheterisation with the Urethral Catheterisation Device (UCD®): <https://vimeo.com/405474594/bafffd2e0b>



We developed educational resources for use at the NHS Nightingale Education and Training Centre. These included lesson plans (for 'catheter care' and 'difficult urethral catheterisation'), short instructional training videos (accessible by hyperlink or QR code - see Figure 1) and laminated resource cards (Box 1: Catheter Care Guidelines and Box 2: Correct Male Urethral Catheterisation Technique). The education centre made all lesson plans available to all volunteers on the 'Induction app' (accessible on smart phones). Volunteers were encouraged to review lesson plans and instructional videos ahead of their induction day, so that they could maximise their learning experience. Videos could be viewed from specific QR codes enabling them to be embedded into documents including SOPs.

The UCLH urology faculty (including clinical nurse practitioners, urology trainees and urologists) delivered brief catheter education sessions (20 minutes) to small groups (up to eight students per group), who rotated between different 'clinical skills' stations relevant for that group. We tailored the education sessions to volunteer self-reported experience. For volunteers from non-healthcare backgrounds, often with no practical catheter experience, we focused on 'catheter care' (Box 1), which included instruction on appropriate catheter fixation using the STATLOCK® device (to prevent IDC dislodgement), awareness and management of the catheter bag during 'proning', urine output monitoring, troubleshooting catheter blockage, foreskin care, catheter hygiene and advice on when to escalate concerns. For volunteers whose scope of practice included catheterisation, we provided a brief training intervention to refresh and standardise best practice in standard urethral catheterisation (Box 2) to avoid complications of CAUI, CAUTI and paraphimosis. We made all volunteers aware of the algorithm for difficult IDC re-insertion, and we instructed selected experienced volunteers on the use of the UCD®.

Educational resources and teaching methods were iteratively developed incorporating both feedback from volunteers, as well as clinical feedback from the NHS Nightingale Hospital London. For example, it soon became apparent that there were no sluice areas within the hospital, and so educational materials were updated to reflect this. Volunteers were instructed on waste

management using absorbent crystals (Vernacare) and patient hygiene using body cleansing wipes. There was a shift towards case-based teaching, because this was favoured by volunteers. For the 'Red' groups, catheter care was combined with patient hygiene, fluid balance / documentation, faecal catheters and chest drains to form a 'Fluids IN / Fluids OUT' clinical skill station with case-based teaching.

In conclusion, the NHS Nightingale Hospital London and its Education and Training Centre was developed rapidly to meet the urgent needs of the COVID-19 pandemic and exemplified the volunteer spirit and dedication that supported London through this exceptional crisis. Through our involvement in this endeavour, we have shown that a short training intervention can be feasibly delivered on a large scale to healthcare workers to refresh best practice in urinary catheter care and urethral catheterisation skills. We demonstrated how it was possible to use simple video resources as pre-learning, to augment face-to-face sessions, be available to clinical staff and incorporate knowledge acquisition into SOPs. We believe that catheter education (tailored to job role) should be included in the induction programme for all NHS hospitals and should form part of the ongoing mandatory training requirement for all relevant staff members (similar to 'Fire training' and 'Advanced Life Support'). Such education initiatives aim to reduce the incidence of preventable IDC complications, such as CAUI and CAUTI. At UCLH, we regularly run an 'Advanced Male Urethral Catheterisation Course', which we will seek to expand in the future.

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Declaration of competing interests: Daniela Andrich has developed a Foley-catheter innovation to solve difficult catheterisation and brought to market the Urethral Catheterisation Device (UCD®) by setting up a Urethrotech Ltd., a medical device company, in order to provide healthcare providers and patients with a safe catheterisation solution. DE Andrich is the founder of the non-profit organisation Advanced Urinary Catheterisation Academy Ltd., to provide healthcare professionals with accredited training programs for advanced.

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