IMJ
Official Journal of the Irish Medical Organisation

Ir Med J; February 2022; Vol 115; No. 2; P538

February 17th, 2022

The Inclusion of Practical Urology Skills in Intern Induction: A Pilot Programme

S. O'Meara[1], O. Cullivan[2], D. Galvin[1], D. Sadlier[3]

1. Department of Urology, Mater Misericordiae University Hospital, Dublin.
2. Department of Urology, University College Hospital Galway.
3. Department of Nephrology, Mater Misericordiae University Hospital, Dublin.

Abstract

Introduction

Intern is the first postgraduate year of training and gives interns the opportunity to practice skills in real-life settings. We aim to examine the undergraduate exposure to urology across all Irish Medical Schools and assess the impact of a mandatory urology training skills session delivered during induction on the preparedness of interns ahead of starting their intern year.

Methods

In July 2020 all interns mandated to attend the Dublin/Mid-Leinster (DML) network intern induction underwent a 120-minute urology teaching session. The session comprised of formal teaching, followed by practical training and an informal question and answer session. All interns were asked to complete a survey before and after the session that examined undergraduate urology exposure and confidence around practical skills.

Results

All interns (n=74) who attended induction completed the survey. Less than half [43% (n=32]) reported a compulsory urology placement in medical school and 57% (n=42) reported previous practical training sessions in urology. There was low level of confidence in the management of urological scenarios with only 45 % (n = 33) reporting confidence in the management of urosepsis and 26 % (n = 19) in the insertion of a male catheter. There was a significant increase in self-reported confidence following the teaching session with 78 % (n = 58) interns reporting confidence in the management of urosepsis and 81 % (n = 60) in the insertion of a male catheter.

Conclusion
To ensure best patient care interns need to be trained in the management of common urology presentations, but our results suggest the current undergraduate curriculum is not sufficient. A dedicated theory and practical urology teaching session during intern induction was able to improve self-reported confidence and better prepare interns. Therefore we support inclusion of practical urology skills session in network intern induction.

Introduction

Intern year gives newly qualified doctors to experience the reality of patient care and to practice the technical skills they have been taught in Medical School. The introduction of the European Working Time Directive and the centralisation of urology services means that the management of common urological issues is now in the realm of the intern doctor, at times without in-house urological support. It is imperative that we ensure our new doctors are adequately trained in these skills.

National and international data shows that medical school education in urology is lacking with many studies reporting graduating without compulsory urology education. [1-5] Gomez recently described the heterogeneity of urology education on a European level, and recommended the introduction of a European Urology curriculum to try tackle this issue. [6]. To date no standardised curriculum exists in Ireland, and there is a variety in undergraduate urology exposure and training. Most new interns report low confidence in the management of common urological emergencies and have not inserted male urethral catheters (MUC) prior to commencement of intern year. [1,5,7]

MUC insertion is common, with approximately 26% of patients catheterised during their hospital admission stay. [8] There is an incidence of catheter related injury of 6.7 per 1000 catheters inserted. [9] It has been reported that catheter related trauma is more likely with insertion by intern doctors, and thus many programmes have been put in place to attempt to tackle this issue. [1,5,7,10] These programmes have varied in style and timing but have largely focused on single centres and not across a single intern training network or on a national level.

We aim to assess exposure to urology in the undergraduate curriculum across all six Irish Medical Schools. Alongside this we developed a mandatory urology training skills session delivered during intern induction and assessed the impact of this on the preparedness of the Interns ahead of starting their intern year.

Method

A mandatory urology session was included in the intern induction week for the Dublin Mid Leinster (DML) Network in July 2020. The curriculum was developed by Urology and identified 6 common urology presentations seen on call and the session was delivered by Urology Specialist Registrar. There followed a practical session where all interns had the opportunity to practice supervised catheter insertion on a male catheter model (Limbs and Things, Standard Male Catheterization Trainer Set). This also encompassed an informal question and answer session to enable clarification of technique or resolve queries.

At the commencement of the session all interns completed a brief paper based anonymous survey that assessed their urology exposure in medical school, their confidence in the management of common urology emergencies and procedures, and their baseline urology knowledge (figure 1). Following the didactic and practical session, interns again completed the section regarding confidence in management of common emergencies. All data collection was anonymous with no identifying demographics collected.

All data was inputted into Microsoft excel to allow generation of graphs and data analysis.

Intern Urology Bootcamp

1. **Where did you go to college?**

UCD UL TCD NUIG UCC RCSI Other

2. **Did you have practical urology sessions in college? E.G. Catheter education**

Yes No Other

3. **Did you have a compulsory Urology Placement in College?**

Yes No Other

4. **Had you ever put in a catheter?**

Yes No Other

5. **Are you confident in the management or/performing the following?**

	Yes	No
Managing Urosepsis		
Inserting a catheter		
Changing a suprapubic catheter		
Inserting a three way catheter		
Bladder washout		
Reducing a paraphimosis		

5. Do you know the indication for a three-way catheter?

Yes No Other

6. Which is a bigger size of catheter?

16Fr 20Fr

7. Any other feedback or comments?

8. Please Complete Again After the Session - Are you confident in the management or/performing the following?

	Yes	No
Managing Urosepsis		
Inserting a catheter		
Changing a suprapubic catheter		
Inserting a three way catheter		
Bladder washout		
Reducing a paraphimosis		

Figure 1: *Survey Completed by all Interns.*

Results

University Breakdown

A total of 74 interns were included. As detailed in figure 2 all Irish universities were represented, with a predominance of interns having attended University College Dublin (UCD) (N=42, 57%).

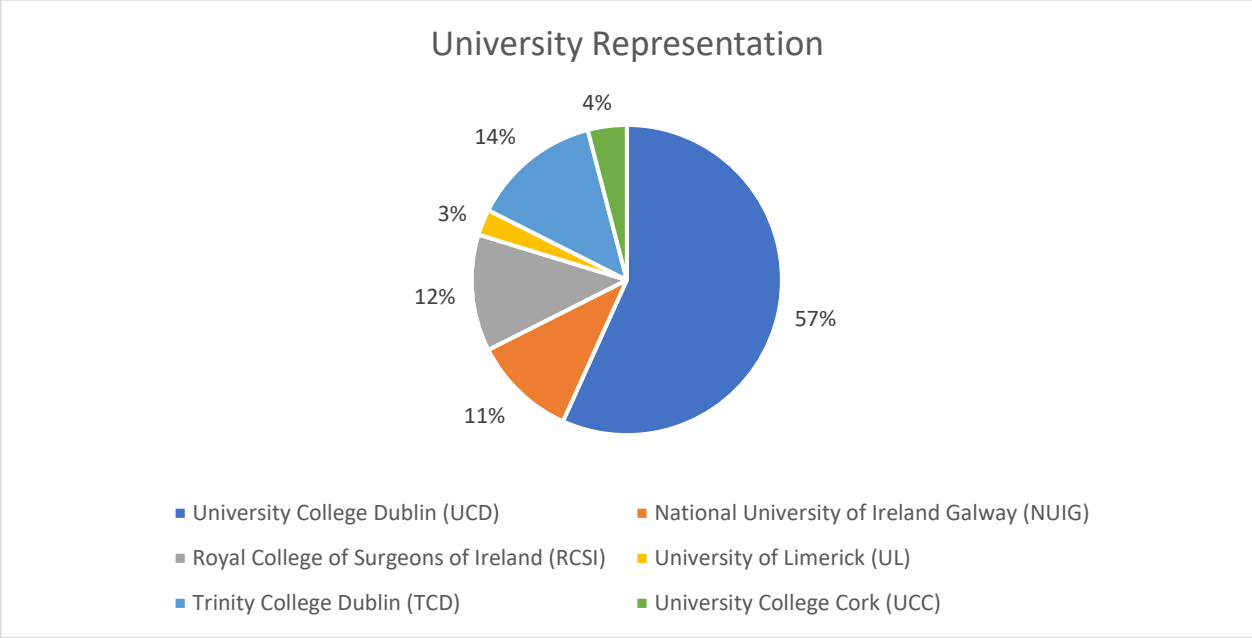

Figure 2: *Breakdown of interns by university.*

Previous Urology Exposure

Most incoming interns had undergone practical urology training during their medical school education (n=42, 57%), however only 43% (n=32) had a compulsory urology placement as detailed in table 1. There was variation amongst students who had attended the same university, with 12 (28%) UCD students, 1 (50%) University of Limerick (UL) students, 9 (90%) Trinity College Dublin (TCD) students not having undergone a urology placement. None of the students who had attended Royal College of Surgeons of Ireland (RCSI), National University of Ireland Galway (NUIG) or University College of Cork (UCC) reported a compulsory urology rotation. Despite this, all the UCC and RCSI graduates reported attending practical urology training sessions.

There was discrepancy reported by students from UCD, UL, TCD and NUIG with regards to practical urology training sessions as seen in table 1. Overall, most students had practical urology training sessions (N=42, 57%). Despite this, only 22 (30%) of the group had previously inserted a MUC and only 19 (26%) reported being competent in catheter insertion. Half of the group (n=37, 50%) knew the indication for three-way catheter insertion, but only 4 (5%) reported confidence in insertion. Only 35 (47%) were correctly able to identify the larger catheter when given
two catheter sizes.

Of those students (n=32, 43%) who had a compulsory urology rotation as a student, 7 (21%) had placed a urinary catheter before and 11 (34%) were confident in catheter insertion. Of those students who had practical urology training sessions as a student (n=42), 15 (32%) had placed a catheter previously and 15 (35%) were confident in catheter insertion. Of those interns who had not had undergraduate training sessions (n=32) only 5 (16%) reported confidence in catheter insertion, and 24 (75%) had never inserted a MUC.

University	Total N (%)	Compulsory urology placement N (%)	Practical urology sessions N (%)	Previous Catheter Insertion N (%)
UCD	42 (57%)	30 (71%)	17 (40%)	9 (21%)
TCD	10 (14%)	1 (10%)	9 (90%)	5 (50%)
NUIG	8 (11%)	0 (0%)	3 (38%)	2 (25%)
UL	2 (3%)	1 (50%)	1 (50%)	0 (0%)
RCSI	9 (12%)	0 (0%)	9 (100%)	4 (44%)
UCC	3 (4%)	0 (0%)	3 (100%)	2 (67%)
Total	74 (100%)	32 (43%)	42 (57%)	22 (30%)

Table 1: *Previous Urology Exposure by University.*

Survey Results Post Teaching Session

The teaching session saw an improvement in self-reported ability to manage all urological procedures evaluated (Table 2). The greatest improvement was seen in MUC insertion with 81% (n=60) of the group reporting confidence in male catheter insertion in the follow-up survey.

Teaching Session	Urosepsis Management	Male Urethral Catheter insertion	Suprapubic Catheter Change	Three Way Catheter Insertion	Bladder Washout	Reduction of Paraphimosis
Before	33 (45%)	19 (26%)	1 (1%)	4 (5%)	5 (7%)	9 (12%)
After	58 (78%)	60 (81%)	44 (59%)	45 (61%)	34 (46%)	50 (68%)

Table 2: *Self-Reported Confidence in the Management of Common Urology Procedures Before and After Teaching Session.*

Discussion

Multiple previous studies over the last decade have shown a lack of practical undergraduate urology exposure across Irish medical schools: Nic An Ríogh reported in 2020 that 80% of interns surveyed had no patient-based catheter education training during their medical school training despite 55% of the cohort having undergone compulsory urology student placements.[5] Browne had previously described similar findings in 2018, and Thomas in 2009. [1,7] This is reflected internationally with papers from the United Kingdom, Philippines and Australia describing a paucity of undergraduate urology education. [2-4,11] Our results reflect this previous data, with insufficient practical urology medical education on a national level. Only 32 (43%) of those surveyed had a compulsory urology placement and 42 (57%) reported practical urology teaching sessions as a medical student. Surprisingly there was variation amongst students from the same universities which cannot be accounted for. Possible contributing factors could be due to placement at different clinical sites, variation between undergraduate and postgraduate programmes or variable student attendance. Despite this, only 26% of the group were confident in MUC insertion and 5% in three-way urethral catheter insertion.

The British Association of Urological Surgeons (BAUS) published an undergraduate urology curriculum that recommended all medical students should observe one female, one male, and two suprapubic catheter insertions or changes, and perform three MUC insertions. [12] Furthermore the General Medical Council details that MUCr insertion is a key skill that all medical students should be able to perform prior to graduation. [13]

In an Irish context no national undergraduate urology curriculum exists, but interns are expected to be able to perform male urethral catheter insertion in a "safe, confident and competent" manner by the end of intern year. [14] The National intern training programme also recommend that interns should initially be supervised in performing practical procedures until deemed "competent" to do so. [14] Despite this, previous papers have shown less than half of interns were supervised when first placing a urinary catheter. [1,7]

Our intervention saw an improvement in self-reported confidence in the management of all common urological emergencies discussed, as well as in MUC insertion. Of note only 33 (45%) interns reported confidence in the management of urosepsis, which increased to 58 (78%) following the session. It is assumed that all interns would have received education regarding sepsis in medical school, and it suggests that there may be difficulties in the application of this knowledge to specific scenarios.

Previous interventions have shown the benefit of urology-lead practical teaching programmes; however we suggest this should be incorporated into the national programme during intern induction.[1,5,10] Browne and Nic An Ríogh reported similar findings, however both of these programmes occurred at varying times during intern year. [1,5] Sullivan reported a reduction in urinary catheter related morbidity of 27% with the introduction of a formal intern education programme. [10] Similar to our study, this programme targeted interns at commencement of their internship. We had previously trialled training programmes during intern year and struggled to achieve sufficient attendance as well as receiving feedback that interns would prefer training at induction. Thomas previously described how most intern-related catheter morbidity occurs in the first six months of intern year, and we deemed it pertinent to revise correct catheter insertion technique prior to the commencement of clinical work.[7]

Furthermore, we saw an increase in self-reported confidence in all domains despite variation in previous undergraduate exposure. This suggests that even if interns had undergraduate rotations or teaching in urology they still benefit from the programme.

Previous studies have shown the impact of traumatic catheterisation, with morbidity for the patient, prolonged hospital stays and a negative fiscal impact. [7,9,10,15,16] Davis previously reported on a series of 37 iatrogenic urethral catheterisation injuries over

a 6-month period that incurred an additional inpatient stay of 9.4 days and a cost of €335,377 to the health service.[9]
Thomas detailed the workload traumatic catheterisation creates for the urology department, with 6% of all consults relating to same.[7] Furthermore 74% of traumatic catheterisations were performed by intern grade doctors, with the rate of UC-related morbidity decreasing throughout the year as clinical experience increases.[7] Some of the complications and fiscal costs associated with male urethral catheter insertion are potentially avoidable and might be prevented with adequate training and supervision of medical students and interns to ensure proper catheter insertion technique.

The authors agree that given the positive shift of clinical medicine towards patient safety and quality of care it is no longer deemed acceptable to gain experience in performing procedures by practising on patients unsupervised. Although simulation-based training is not perfect, it has been shown in various settings to enable the learning of skills that can be translated to clinical practice.[2,17-19] Sawyer suggests an evidence based framework for procedural skills training in medicine, with six key steps: Learn, see, practice, prove, do, maintain.[20] Simulation fits into the practice element of this framework, however many interns jump to the "do" stage without proof of competence in urethral catheter insertion, or indeed without any simulation based training, as evidenced by our data.

The authors argue that the implementation of a dedicated theory and practical urology teaching session during intern induction was able to significantly improve the intern confidence in this area and better prepare them for intern year.

Some limitations to our study include the lack of statistically significant data and the reliance on self-reported confidence rather than an assessment of competence. However, it is difficult to assign competence based on one observation of practice of a procedure on a model. It can be argued that our data may not be representative of undergraduate urology exposure as it is limited to one intern network, however multiple previous studies have detailed a lack of exposure on a national level. [1,5]

This paper reflects previously described national and international data that shows variety in urology practical education at an undergraduate level. Where there is urology exposure and practical training there still is heterogeneity and overall interns

report a lack of confidence in the management of common urology emergencies and catheter insertion.

Our pilot programme of practical urology education across the DML network at the time of intern induction shows an improvement in self-reported confidence in the management of these issues despite this hetergoenity. We would welcome the implementation of this programme on a national scale to allow the generation of large volume data with long term follow-up to assess the impact on adverse outcomes.

The authors welcome the recent recommendation for a European urology curriculum and advocate for practical urology exposure at an undergraduate level across all medical schools. More than half of the interns surveyed did not have a compulsory urology rotation in medical school, and addressing this issue is part of the solution as we try to ensure the doctors of tomorrow are adequately prepared.

Declaration of Conflicts of Interest:

The Authors confirm they have no financial, personal or academic interests or connections, direct or indirect, or other situations that might raise the question of bias in the work reported or the conclusions, implications or opinions stated.

Corresponding Author:

Ms. S. O'Meara,

Mater Misericoridae University Hospital,

E-Mail: sorchaomeara@rcsi.ie

References:

1. Browne C, Norton S, Nolan JM, et al. The impact of a structured clinical training course on interns' self-reported confidence with core clinical urology skills. Ir J Med Sci. 2018;187(1):255-260.
2. Cetti R, Singh R, Bissell L, Shaw R. The urological foot soldier: are we equipping our foundation-year doctors? The Bulletin of the Royal College of Surgeons of England. 2010;92(8):284-287.
3. Derbyshire LF, O'Flynn KJ. Medical students' exposure to Urology in the undergraduate curriculum, a web based survey. British Journal of Medical and Surgical Urology. 2012;5(1):4-10.
4. Manalo M, Lapitan MCM, Buckley BS. Medical interns' knowledge and training regarding urethral catheter insertion and insertion-related urethral injury in male patients. BMC Medical Education. 2011;11(1):73.

5. Nic An Ríogh AU, O'Connell C, Lonergan PE, Davis NF. Designing and assessing a urethral catheter skills workshop for intern doctors in a university teaching hospital. Ir J Med Sci. 2020;189(4):1501-1506.
6. Gómez Rivas J, Rodriguez Socarrás M, Somani B, et al. Undergraduate Education for Urology in Europe. Where Do We Stand? European Urology. 2020;78(3):381-384.
7. Thomas AZ, Giri SK, Meagher D, Creagh T. Avoidable iatrogenic complications of urethral catheterization and inadequate intern training in a tertiary-care teaching hospital. BJU Int. 2009;104(8):1109-1112.
8. Gardner A, Mitchell B, Beckingham W, Fasugba O. A point prevalence cross-sectional study of healthcare-associated urinary tract infections in six Australian hospitals. BMJ Open. 2014;4(7):e005099.
9. Davis NF, Quinlan MR, Bhatt NR, et al. Incidence, Cost, Complications and Clinical Outcomes of Iatrogenic Urethral Catheterization Injuries: A Prospective Multi-Institutional Study. J Urol. 2016;196(5):1473-1477.
10. Sullivan JF, Forde JC, Thomas AZ, Creagh TA. Avoidable iatrogenic complications of male urethral catheterisation and inadequate intern training: a 4-year follow-up post implementation of an intern training programme. Surgeon. 2015;13(1):15-18.
11. Azer S, Khan M, Hoag N, et al. Interns' perceptions of exposure to urology during medical school education in Victoria, Australia. ANZ J Surg. 2017;87(1-2):10-11.
12. H Hashim PJ, KJ O'Flynn, I Pearce, J Royle, M Shaw, AM Sinclair. An Undergraduate Syllabus for Urology. British Association of Urological Surgeons. https://www.baus.org.uk/_userfiles/pages/files/professionals/education/Undergraduate%20Syllabus.pdf. Published 2012. Accessed 26 October, 2020.
13. Council GM. Practical skills and procedures. 2019.
14. Ireland MCo. National Intern Training Programme (NITP). Education and Training in the Intern Year. 2012 2012.
15. Davis NF, Bhatt NR, MacCraith E, et al. Long-term outcomes of urethral catheterisation injuries: a prospective multi-institutional study. World J Urol. 2020;38(2):473-480.
16. Bhatt NR, Davis NF, Addie D, et al. Evaluating the cost of iatrogenic urethral catheterisation injuries. Ir J Med Sci. 2017;186(4):1051-1055.
17. Barnum T, Tatebe LC, Halverson AL, Helenowski IB, Yang AD, Odell DD. Outcomes Associated With Insertion of Indwelling Urinary Catheters by Medical Students in the Operating Room Following Implementation of a Simulation-Based Curriculum. Acad Med. 2020;95(3):435-441.

18. Motola I, Devine LA, Chung HS, Sullivan JE, Issenberg SB. Simulation in healthcare education: a best evidence practical guide. AMEE Guide No. 82. Med Teach. 2013;35(10):e1511-1530.
19. Van Cleynenbreugel B, Gözen AS, Tokas T. The value of simulation-based training in the path to laparoscopic urological proficiency. Curr Opin Urol. 2017;27(4):337-341.
20. Sawyer T, White M, Zaveri P, et al. Learn, see, practice, prove, do, maintain: an evidence-based pedagogical framework for procedural skill training in medicine. Acad Med. 2015;90(8):1025-1033.