

## HOW WE...

# How we established a new undergraduate firm on a Medical Admissions Unit

TAHIR NAZIR, SIMON WALLIS, JACKIE HIGHAM, KATE NEWTON, MARK PUGH & ALEXANDER WOYWODT

Lancashire Teaching Hospitals NHS Foundation Trust, UK

## Abstract

Medical Admission Units (MAUs) were introduced in the UK in the 1980s primarily driven by a governance and service improvement agenda. In the UK this has led to the development of Acute Medicine as a specialty in its own right, together with a strong role of this specialty in postgraduate teaching. In contrast, the role of MAUs, if any, in undergraduate medical education is currently unclear. Prompted by an expansion of our undergraduate student numbers, our aim was to establish a Year 3 undergraduate firm on a 33-bedded MAU in a large academic teaching hospital in the National Health Service (NHS). Despite initial scepticism from clinicians, managers, and educators, the new firm placement on MAU became an instant success and continues to attract excellent feedback from our Year 3 undergraduate students. Students enjoy the bedside teaching with a high percentage of consultant-delivered teaching and also liked the involvement of Foundation Doctors. Here, we report our experience on how to make such a firm work, based on student feedback and the tutors' experience. We provide an overview and a step-by-step guide of how to construct a successful new undergraduate firm on a busy MAU. We also discuss opportunities and challenges and discuss the relevant literature. We conclude that undergraduate teaching is feasible and rewarding in an extremely busy MAU setting. We note that identifying enthusiastic educators within the MAU team, utilisation of peripheral learning opportunities, structured timetables and induction, and a robust framework for quality assurance are all crucial to success.

## Introduction

Dedicated units to accommodate unplanned medical admissions were first established in the UK, Australia and New Zealand in the 1990s, primarily with a governance (Rooney et al. 2008) and efficiency agenda (Moloney et al. 2005). Key drivers included an ever-increasing number of admissions from an ageing population and also government targets around waiting times in emergency care. The nomenclature of such units remains poorly defined and multiple terms, such as medical admission unit (MAU), acute medical unit (AMU), and others, are in use. The use of such units for undergraduate medical education is not well described: A literature search in PubMed for "Medical Admissions Unit" and "Teaching" did not yield a single publication title. Many contemporary reviews of the current state of MAUs in the UK (Houghton & Hopkins 1996; Jayawarna et al. 2010) also omit the topic. We have recently utilised our own hospital's MAU to establish a new firm of Year 3 medical undergraduates following the University of Manchester's MBChB curriculum. Here, we would like to report our experience with an emphasis on how to make such a firm work in an extremely busy clinical environment.

## What we did first

The development of this new firm was prompted by the expansion of our Year 3 Undergraduate student numbers from around 40 per year to more than 80. It was clear that more or less all clinical areas were already utilised for our purposes, with the exception of MAU. We therefore set out to establish an additional firm on MAU.

We first acknowledged that, in comparison to other medical and surgical wards, the MAU environment is inherently busy and may seem chaotic to learners. While general wards feature structured opportunities (ward round, history taking and examination of elective admissions), MAUs features input from multiple teams who will see patients in a seemingly disorderly manner. Patients will be called for investigations while others arrive, or are discharged. Scepticism regarding our project stemmed from several quarters. However, recurring themes were the claim that MAUs are just too busy to provide learning opportunities as well as concerns about an increase in workload for clinical staff and patient safety issues.

Conversely, we identified inherent advantages associated with teaching on MAU, such as the degree of daily consultant involvement which compares very favourably with a general

*Correspondence:* Dr Tahir Nazir, Consultant Physician, Medical Admissions Unit, Department of Medicine, Lancashire Teaching Hospitals NHS Trust, Royal Preston Hospital, Sharoe Green Lane, Preston, PR2 9HT, UK. Tel: 0044-177252; Fax: 0044-; E-mail: Tahir.Nazir@lthtr.nsh.uk

## Practice points

- Medical Admission Units (MAUs) are a rich learning environment for undergraduate teaching. Main advantages include the broad variety of conditions encountered, the multidisciplinary team work, and the high level of daily consultant input when compared to general medical or surgical wards.
- Educationalists need to harness the enthusiasm of team members already working on MAU and also identify appropriate learning opportunity at the periphery of MAU, such as rapid access clinics, outreach teams, and specialist nurses.
- MAUs represent a seemingly chaotic environment. Learning objectives need to be clearly defined in a formal induction, and reiterated in an induction booklet.
- Undergraduates may be too overwhelmed by the experience on MAU to reflect on professionalism. Roles and boundaries need to be clearly defined and enforced.
- It must be made clear to all patients and relatives that they may decline to participate in teaching without any impact on their clinical care.
- Educationalists and professional societies in Acute Medicine should work together to utilise learning opportunities in their field and to define learning objectives and teaching tools relevant to their specialty.

ward. Also, compared with a general ward the MAU ward rounds will include a higher percentage of undifferentiated problems. The seemingly endless number of specialties and health care professionals providing input can also be seen as a varied and interesting landscape for learning. Similarly, there are probably few if any clinical environments where undergraduate learners can grasp the concept of multi-disciplinary care in quite the same way as on MAU.

We felt that success or failure would depend critically on key personnel, particularly the firm lead. In our case we learned that MAU staff included a consultant physician with a degree in education as well as a former Hospital Dean. We identified both as key personnel for the success of this new firm. We propose that within any large Teaching or University Hospital MAU team there will be at least some team members with an interest in education, or with some educational role. We also advertised our project to trainees already working on MAU and involved year 5 undergraduate students who were already based on our MAU to help with signposting learning opportunities to their younger colleagues.

We proposed that any MAU in a teaching hospital will have a whole array of learning opportunities in its vicinity. We first identified a 10-bedded Rapid Assessment Unit (RAU) as an excellent opportunity. The RAU cares for patients referred directly from general practitioners and avoidance of admission lies at the heart of the unit's philosophy. Students can gain insight into good communication with primary care and

encounter a broad variety of medical and surgical problems, sepsis, minor injuries, and social issues. Students will usually work closely with an advanced nurse practitioner and supervised by one of the consultants.

In addition, we provided a number of sign-up opportunities that we felt would be beneficial. Cardiovascular disease and stroke as well as respiratory disorders make up a large part of the MAU workload. We therefore provided sign-up opportunities in the form of a cardiology clinic and ward round, transient ischemic attack rapid access clinic, and respiratory clinic and, finally, bronchoscopy. Further signups include the respiratory specialist nurses for asthma and lung cancer and also our critical care outreach team, which provide insight into the management of the acutely unwell adult, and also a glimpse of ethically difficult scenarios around of resuscitation and admission to intensive care.

We currently define expectations and learning objectives for the Year 3 MAU placement as follows, taking into account Bloom's taxonomy of educational objectives (Bloom et al. 1956):

- Knowledge:
  - Relate patients to PBL topics
  - Recognize common medical emergencies
- Comprehension:
  - Describe acid base physiology and common disorders
  - Describe a normal electrocardiogram (ECG)
  - Identify abnormal ECGs and list common ECG abnormalities
  - Identify ethically difficult scenarios
- Application
  - Practice history taking including social and occupational history
  - Practice physical examination, including general physical examination and systemic examination
  - Practice communication skills, for example by explaining common procedures to patients during the ward round
  - Practice skills in line with the curriculum and after appropriate skills teaching and sign off in our skills lab
- Analysis
  - Examine how clinicians formulate a differential diagnosis.
  - Compare different styles of diagnostic reasoning
- Synthesis
  - Formulate diagnostic and management plans for common medical conditions seen on MAU

We deliberately kept the objectives rather basic, and with an emphasis on history taking and examination skills. Others have emphasised that medical undergraduates are at risk of neglecting the basics, particularly clinical examination and skills (Tekian 2002; Dehmer et al. 2013).

We recognised that there was a clear danger that undergraduates would be overwhelmed by this challenging environment. We therefore devised an induction that is considerably more structured than in all other Year 3 firms. Here, students will have the opportunity to meet all key personnel and be introduced to the unit's work patterns and etiquette. We also noted that the sheer number of health care professionals on a busy MAU can easily confuse student learners. We therefore included a very brief introduction at the start of each ward round to ensure that all learners are clear

about team members' roles and responsibilities. This will also help them greatly to feel part of the team. Finally, we also invite the undergraduates to join most of the team's meetings, such as board rounds and the team's two weekly teaching sessions for the medical trainees.

In order to add value to the induction and set out expectations we wrote a 20-page induction booklet for this firm. The students find this very useful to get a quick overview and familiarise themselves with processes and key contacts. The booklet also contains learning objectives, expectations regarding attendance and professionalism. We have found this so successful that we have since then developed introduction booklets for all year 3 firms in our hospital trust.

We also thought very carefully about the firm timetable. We assumed that undergraduates would perceive a continued placement exclusively on MAU as very intense and possibly overwhelming. As described above we therefore thought very carefully about a good mix of time on MAU itself complemented by a variety of signups and other opportunities. Second, we also felt that it would be important not to overwhelm our already busy MAU with too many students at the same time, i.e. a full group of six students in one place. In an average morning shift two students therefore join the two parallel ward rounds and the remaining students go to RAU and signups, respectively. We also invite students to come for a late shift, as there are more acute admissions during that time period.

We also tried to harness the principles of Task-based learning (TBL). TBL is an educational strategy that takes advantage of the rich opportunities and experiences to which a student can be exposed in a real clinical setting (Harden et al. 2000). On MAU the principle of TBL can be utilised by assigning appropriate tasks to the undergraduates and focussing the learning around these tasks. Obtaining samples of venous blood, for example, represents a substantial part of the clinical workload on MAU. Once appropriately trained and signed off, year 3 undergraduates can undertake this task and further learning can include investigations and interpretation of results and differential diagnosis. During the ward round, students can be invited to discuss test results, an X-ray film, or an ECG. All of this will help the students understand not only the skills and procedures themselves but also the underlying concepts.

From the start we have sought to involve junior (i.e. Foundation Year) and middle grade trainees in the teaching on MAU. Members of the educational team have presented to our Foundation Year doctor cohort and a link scheme has been introduced. Junior doctor handover is another interesting opportunity to see the team in action and to witness forms of communication, safety netting, and prioritisation. Handover practices in the UK (Roughton & Severs 1996) and elsewhere (Bomba & Prakash, 2005) are still highly variable and omissions in handover contribute to clinical error. We also note that handovers typically include a number of case vignettes of unstable or meta-stable patients for early prioritisation and decision making and therefore present even more learning opportunities.

During the planning stage we were concerned about professionalism and also patient safety. We also feared that

students may be too overwhelmed to consciously reflect on these issues during their placement. In our induction booklet, we therefore outline expectations as follows:

- Make sure you are supervised appropriately for any clinical task you perform
- Recognize and work within your own personal and professional limits and seek help from colleagues and supervisors when necessary.
- Raise concerns about patient safety, or any aspect of the conduct of others which is inconsistent with good professional practice.
- Recognize your own personal health needs, and protect patients from any risk posed by your own health through seeking support via appropriate personnel
- Make sure you are clearly identifiable as students and ensure patients have consented to you being involved in any aspect of their care

All team members are involved in maintaining these standards. It is particularly important that undergraduates are clearly identifiable to staff, patients and relatives and we take even minor violations of our professionalism standards very seriously.

It is important to recognise that, despite all enthusiasm within the team, some patients will not want to participate in education. A leaflet for patients on MAU and their relatives states clearly that they can choose not to participate in teaching for any reason, and that they can do so at any point in time. We also expect our undergraduates to obtain verbal consent when approaching patients. As far as we can ascertain this code of practice is observed by all students and we have not received informal or formal complaints in this regard.

As for all of our Year 3 firms, we carry out regular focus group meetings with the students placed on MAU, usually at the end of the placement. Here, we obtain detailed and structured feedback, recommendations for improvement, and an overall score. These focus group meetings are supported by SurveyMonkey™ feedback in multiple categories. During the Academic Year 2012/2013 our new MAU firm achieved 85% positive student responses and an average overall score of 4.3 on a scale from 1 to 5, with 5 being excellent. Students liked the excellent induction and enjoyed the bedside teaching with a high percentage of consultant-delivered teaching. Students also praised peripheral learning opportunities, such as a clinics and RAU and also liked the involvement of Foundation Doctors.

Rewarding enthusiastic teachers and tutors is especially important in the context of an extremely busy clinical environment such as MAU. The firm lead's contribution will at some stage be recognised in appraisal and job plan, but the enthusiasm of all other team members also needs to be rewarded. To this end, we invite undergraduates to praise trainees of all grades and those trainees will receive a formal letter, which they can use for their portfolio. An awards scheme is also in operation, based chiefly on students' feedback scores. We have found this a simple but powerful tool to reward exceptional teachers and also to attract and recruit more teachers and tutors despite competition from other fields, such as research and postgraduate education.

## What to do next

### Work on learning objectives and include simulation

We have taken great care to ensure that clear learning objectives and rules are defined before undergraduates begin their firm placement. We have deliberately focussed on relatively basic skills such as history taking and clinical examination. Others have previously formulated a list of core competencies in acute care for undergraduates although these focus mainly on resuscitation and very much reflect the intensivist's point of view (Perkins et al. 2005). It may be worthwhile for Acute Medicine as a specialty to define such learning objectives and competencies from their point of view as well. Simulation may have a considerable role in this as well and we are currently planning to include a simulation session on acutely ill adults in our Year 3 curriculum.

### Evaluate ward rounds and develop their educational value

Ward rounds on MAU will be necessarily focussed on making clinical decisions in large numbers of patients. Tariq and co-workers have recently reported interesting insight into learners' perspective on internal medicine ward rounds. Their findings suggest that teaching of clinical skills and bedside examination are not being adequately addressed with the current state of clinical or "business" ward rounds (Tariq et al. 2010). Measures to enhance the educational value of ward rounds may include the introduction of a dedicated teaching ward round or a more detailed discussion of some cases after the actual "business" ward round. Storck and colleagues recently described web-based "virtual" ward rounds (Storck Stud Health 2011) as a safe and useful way to complement students learning experience on the wards. We would be interested in developing a virtual ward round with a collection of Multimedia-supported cases to supplement the learning experience of our students on MAU.

### Incorporate sessions on ethics

One unique advantage of MAU is that students are also introduced to a broad spectrum of interesting and challenging ethical scenarios around issues of capacity and consent, and deliberate self-harm. These issues often present themselves in the form of a "crisis". In our experience undergraduates find it interesting to observe how the team tackles these issues. In addition, for many of our students the MAU placement is their first encounter with death and dying, palliative care, and with end of life issues in general. Such topics will often be part, but not necessarily the focus, of the discussions with the undergraduate learners. We are therefore planning to enhance their experience by providing some sessions on ethical topics as well.

### Study how students learn diagnostic reasoning

Diagnostic reasoning is clearly an important skill for undergraduates in medicine but our understanding of how

students acquire this skill and of how best to teach it remains sparse. One of the reasons lies in the fact that experienced clinicians use their diagnostic reasoning skills almost automatically and without conscious reflection (Linn et al. 2012). It has been proposed that diagnostic reasoning is best learned by repeated, deliberate exposure to real cases, under supervision (Kassirer 2010). In this regard, MAU provides an ideal learning environment. Another advantage is that students will actually encounter different consultants' approaches to problem solving. The next step would be to develop a research project to study how diagnostic-reasoning naïve undergraduates learn this skill on MAU and what their perceptions are during the process.

## Conclusion

Scott and co-workers characterised the MAU as a designated hospital ward specifically staffed and equipped to receive medical inpatient presenting with acute medical illness from emergency departments and/or the community for expedited multidisciplinary and medical specialist assessment care and treatment (Scott et al. 2009). MAUs were originally established to guarantee early treatment, bundle resources, and facilitate access to specialist input for an ever-increasing number of unplanned medical admissions (RCP 2000). The development of such units has also fostered the creation of Acute Medicine as a specialty in the UK although many still lack essential resources (Jayawarna et al. 2010).

According to widely held views in the medical community, acute care settings are not ideal or even unsuitable for undergraduate education. Some have even argued that educating medical undergraduates in acute care will merely perpetuate delivery of such care by unsupervised junior doctors (Frost & Wise 2006). Others, however, have described MAUs as a rich learning environment (RCP 2007, 2012) although such interest is often focussed on nursing (Fletcher 2007) or postgraduate teaching (RCP 2012). Little, if anything, is known about the role of MAUs in undergraduate education. Only a recent position paper by the Royal College of Physicians recommends that Acute Medicine be part of the curriculum (RCP 2007).

Our experience has been thoroughly positive despite initial scepticism by clinicians, educationalists, and managers. We believe that the MAU environment offers a variety of highly relevant and at times unique learning opportunities for undergraduates. Many findings on clinical examination, such as crackles on auscultation, neck stiffness, or rash, will be fresh and easy to observe and therefore memorable. MAUs are also excellent in teaching diagnostic reasoning, since many patients will not have a clear diagnosis. We emphasise the need for clearly defined learning objectives and a structured induction to ensure that ward-naïve year 3 undergraduates are not overwhelmed by this challenging environment. To make them welcome and part of the team is equally important.

In addition, MAU will provide exposure to clinical problems from all medical specialties. Further learning opportunities exist in the vicinity of MAUs, be it clinical investigations departments or procedures to be observed. We have made

good use of these peripheral opportunities and our students also enjoy the fact that once in a while they can escape from MAU to attend clinics or observe procedures. It also follows that multiple specialties are involved and undergraduates will often find it interesting to observe multi-disciplinary care.

We also wish to emphasise the importance of timely and detailed student feedback and evaluation. Feedback is also essential to reward excellent teaching. We were delighted that our new MAU firm attracted praise and excellent scores from the beginning and won our annual new firm award. This has helped considerably to further embed our firm on MAU, and also to recruit more new firm leads.

Others have emphasised that Acute Medicine is a specialty exposed to unremitting pressure and that the risk of “burn out” is high (RCP 2007). In this regards we propose that a role in undergraduate teaching could further enhance and complement the profile of acute physicians and add a new and enjoyable facet to their working lives. More generally, we think that a busy clinical environment does not necessarily preclude excellent teaching (Celebi et al. 2012). However, good planning is required and simply sending students to new teaching venues does not work (Dent 2005). The excellent feedback gives us further confidence in our approach and we would encourage others to include MAUs in their portfolio of undergraduate teaching.

## Notes on contributors

TAHIR NAZIR, MRCP, is a consultant physician and leads the acute medicine service at Lancashire Teaching Hospitals NHS Foundation Trust (LTHTR).

SIMON WALLIS, FRCP, is a consultant physician and endocrinologist and a former Hospital Dean at LTHTR.

JACKIE HIGHAM, is a Clinical Link Tutor in the Department of Undergraduate Medical Education at LTHTR.

KATE NEWTON, is the Quality Assurance and Projects Manager in the Department of Undergraduate Medical Education at LTHTR.

MARK PUGH, FRCA, is Consultant Anaesthetist and a Professor of Medical Education and serves as the current Hospital Dean at LTHTR.

ALEXANDER WOYWODT, FRCP, is Consultant Nephrologist and Honorary Clinical Professor in Medicine and an Associate Undergraduate Dean at LTHTR.

## Acknowledgements

We are indebted to all staff on the Medical Admissions Unit at Royal Preston Hospital, particularly to Dr Ellie McCann, Consultant Acute Physician, Dr Lee Helliwell, Consultant in Emergency Medicine, Dr Nadia Raza, Locum Consultant Acute Physician. We are also grateful to Mrs Tracy Hilton, ward manager, Andrew Higgins, Advanced Nurse Practitioner, Joanne Bingham, Nurse Practitioner, Alan Physick, pharmacist, and Darren Neville RGN, for all their help and support to make this work.

**Declaration of interest:** The authors declare no conflict of interest.

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