



## Embedding Medical Students in the Emergency Department: The Teachable Moments

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### ABSTRACT

Emergency departments (EDs) are busy places with various processes and activities going on simultaneously. As a result of this, there is much interaction, communications and coordination at any point in time. EDs are also places where there are many good signs and symptoms for medical students to do their learning. They provide a very rich learning and teaching environment. Fourth year medical students doing their Emergency Medicine rotation, were embedded into small teams with residents and faculty for their experiential learning process, for the clinical part of the programme. This allowed them to have a lot of hands-on practice, a realistic picture of the acute presentations ED patients had, empowerment to perform procedures under appropriate supervision and a lot of informal interaction and communications with emergency physicians. The small teams provided the students with a low student-faculty ratio and lots of opportunities to learn and ask questions. This pilot programme has obtained very positive feedback from both students and faculty, and will thus be expanded and strengthened further in the new academic year. Embedding enables both students and faculty to seize the 'teachable moments' any opportunity they have, to make the best use and benefit from them.

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## **Introduction**

Emergency Departments (ED) are hectic and busy places where various processes and activities go on simultaneously. They are often crowded with a range of different personnel and patients, with varying degrees of severity of presentation. To the untrained eye, it may appear chaotic, but there really is order, in the midst of it all. Right from the point of entry, registration, consultation, going through investigations and right up to the management plan, there are various systematic thought processes, plans and decisions going on. There are also a multitude of personnel present or passing through the EDs daily, such as doctors, nurses, patients, relatives, paramedics, policemen, administrative staff and social workers among others. As a result of this, a lot of interaction, communications and coordination go on at any particular time.

For medical students, new interns and residents, it does take some time for them to adjust to the workings and pace in the EDs. The ED also represents one of the places whereby there are numerous acute signs and symptoms as well as medical management, for medical students to learn and practice from. To learn the practice of medicine, one must practice medicine. Embedding them into the teams in the EDs is a very useful and quick way for them to learn, feel part of the healthcare team and not get lost in a very busy department. Once they are familiar with the running of an ED, it is easier to get completely involved, immersed and focuses on their learning journey [1-4].

## **The Process of Embedding**

Fourth year medical students from the National University of Singapore (NUS) are posted to the EDs of various hospitals in Singapore for their 4 week Emergency Medicine rotation. The curriculum and programme for the 4 weeks include didactic, interactive lectures, clinical exposure, bedside tutorials and presentations, attachment to paramedics of the emergency ambulance services, skills training in trauma and airway management as well as a certification course in Basic Cardiac Life Support (BCLS).

The students are also required to log in the cases they see and manage, as well as complete a procedure log. They are given access to e-learning components on the departmental blackboard programme as well. One more component is a communications log they have to complete, based on their observations of certain communications process.

For the clinical component of their rotations at Singapore General Hospital (SGH), the students are embedded into the ED teams, working alongside nurses, residents, clinical associates and consultants. This means that they would follow the same roster, perform the same shifts and work together in the same allocated area as these personnel. They will work in assigned teams for the whole 4 weeks. The ED at SGH sees between 500-550 patients per day and is one of the busiest in the country. There is faculty or emergency physician coverage available 24 hours a day.

The medical students, when embedded in their small teams, will perform duties such as clerking patients, physical examination, performing venipuncture and intravenous cannulation as well as other relevant procedures, under close supervision by the senior residents or the faculty in charge. They are also involved in the communications process of talking to relatives and carrying out bedside presentations or tutorials to the faculty for discussion. These students work in all areas of the ED, namely the resuscitation room, critical care area as well as the ambulatory care areas, where minor injuries and emergencies are managed.

## **Benefits of Embedding**

The embedding process in the ED has brought on very positive feedback from both students as well as faculty. It gives the students a more realistic and practical exposure through experiential learning. The immersion gives hands-on practice with close supervision. This is also a scenario-based approach to patient management. The experience is not limited to a classroom or textbooks. The approach also

enables both active and passive learning to take place [1, 3].

During embedding the students are empowered to lead and take charge of patients with direct observation and instructions from senior residents and faculty. They learn about responsibility and also the clinical reasoning process as to how clinicians reach the definitive diagnosis. The students are taken through the systematic thought processes and algorithmic steps in decision making when treating the cases they encounter [2, 4-6]. They participate in the decision making processes and are also shown how to manage patients when no diagnostic labels can be applied.

In their interaction with residents, faculty and other staff, they are imparted with values of professionalism. The power of positive role modeling and mentorship is also deeper and stronger with small group embedding. These embedded students are somewhat also given a job-shadowing experience which is a valuable and effective learning tool, especially with the hands-on practice and small student to faculty ratio [7].

Inter-disciplinary and multi-disciplinary interaction and communications are also observed at close quarters, as the students often get involved as well when the 'trauma team' or the 'stroke team' are activated for suitable cases. Elements of both verbal and non-verbal communications can also be imparted. Unique situations in the ED context such as informing sudden death, breaking bad news, informing serious and critical conditions as well as explaining proposed management plans. The Joint Commission International (JCI) has also highlighted the critical link between workplace rudeness and patient safety. The rudeness referred to included reluctance to answer patients' questions, use of condescending language and refusal to return phone calls where clarifications were required. These pointers are highlighted to the students proactively and also imparted through positive role-modeling [8].

The engagement of patients and their relatives represent a valuable experience for students. There are numerous such encounters for the students to engage in. Focus on bedside manners and etiquette is also highlighted where necessary. Factors which are often not discussed such as choice of words, phrases and understanding of certain cultural elements are also explained. This is relevant in multi-ethnic and cosmopolitan Singapore where the need for cultural competency is crucial. Faculty can help to raise awareness of the students pertaining to these areas, identify prejudices or biases and correct them. This way, they are exposed to a diversity of human experiences. At all times, a patient-centred approach is emphasized [3, 5, 7-10].

The embedding process allowed for feedback and evaluation to be carried out in greater depth. Faculty provides the students with more directed and targeted inputs towards their behavior or actions. Specific feedback is more helpful than a more generic one. It is also less intimidating when done in smaller groups or on an individual basis.. The faculty will know the students well due to the numerous sessions they share.. This provides the platform for less formal interaction as well, where they can communicate about life in medicine, choice of residency, work –life balance as a practitioner, coping with lifelong learning and communications which can generate elective rotation ideas or even research suggestions.

The faculty involved in the supervision also benefit in various aspects such as enhancement of their skills in facilitation, mentorship and organization of a clinical curriculum. How they organize the day to day interaction and learning process with the students and members of their teams will sharpen their management capabilities. They also have to be more conscious as role models, up close and personal [7-13]. The faculty being clinical teachers shares their clinical reasoning process with the students. This helps in the incremental development of the students' reasoning journey so they can gradually nurture their own understanding and expertise.12-14 Clinical teachers help the students think “ like an emergency physician”

and provide them sufficient opportunities to be exposed to a wide range of patients, enabling them to recognize the spectrum of presentation, both typical as well as non typical. They too have a significant impact to assist in the reduction of the cognitive load the students face, by showing them “the ropes”. It has also been shown that novice health professionals ( which include medical students) often approach problem solving with high cognitive load, but if supported by a teacher/ supervisor with guidance and close monitoring, this load can be significantly reduced [14-16].

### **Limitations**

This paper is a descriptive and observational one, based on a pilot programme started in 2012. It is only based on the experience of groups of students and faculty working in the ED and thus, represents focused and specialty-specific learning objectives and inputs. It may not be the same in other disciplines or specialties and embedding programmes will best have to be tailored or customized according to their individual needs. Singapore General Hospital is a large teaching and academic centre, with 35 different specialties.

Embedding requires students to be proactive, to get involved, participate and ask questions appropriately as they go through cases. It is easy to get “lost” in a very busy situation where multiple patients are being managed simultaneously. Thus, the quieter and weaker students may need special, dedicated attention from the faculty, especially when the pace is fast. They also require supervision on how to handle ‘reflection on the job’ in such circumstances. Thus, our small group size is beneficial for closer attention to be given to the students. The faculty too must take effort in engaging the students and checking on how they are coping especially with more complex cases and patients with multiple problems.

Recently, we also commenced several dedicated faculty teaching shifts. This has generated much positive feedback, as in the study by Cassidy-smith et al which showed that the addition of

selected teaching attending physician shifts had the greatest positive effect on medical students and faculty perception and satisfaction with improvement noted for residents training as well.

Certainly, from our pilot study, it is not possible to conclusively translate whether it will lead to better grades in Emergency Medicine yet, as it will require several cohorts and longitudinal follow up for this to be seen clearly.

### **Conclusion**

Embedding fourth year medical students in the ED gives them a realistic on the job training experience, with an opportunity to have many ‘teachable moments’ highlighted by the faculty and senior residents. The less formal setting tests the students’ ability to grasp these teachable moments and make full use of what is acquired, coupled with reflection and review. This pilot programme has shown positive response and impact on students and faculty. We hope to expand and strengthen the programme to develop independently sound thinking, confident, culturally competent medical students and young physicians with a positive aptitude for learning and teaching.

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