

# Are King Edward Medical University Graduates Adequately Trained to Prescribe Medicine at the Point of Graduation? Views of House Officers

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## ABSTRACT

**Background:** Drugs are the major therapeutic intervention provided by most doctors throughout their careers. The Pakistan Medical & Dental Council expects all medical students to be competent to prescribe at the point of graduation.

**Aims:** The aim of this study was to assess the views of house officers and doctors who had recently graduated from the King Edward Medical University about their training and competence in relation to the use of drugs based on their early clinical experience.

**Method:** A questionnaire was constructed based on Tomorrow's Doctors 2002 and distributed to House Officers doctors who graduated in 2007.

**Results:** Responses were received from 103(67.8%) of the doctors who graduated in 2007. Only 19% respondents considered themselves competent to prescribe at the point of graduation. Less than 35% of respondents felt comfortable in providing information about possible treatment to allow patients to make informed decisions about their care. The majority of respondents complained about a lack of formal teaching and practice at basic clinical skills relating to drug therapy.

**Conclusion:** Many graduates feel under-prepared to take on prescribing responsibilities after graduation. These findings emphasize the need to ensure that all medical curricula are able to provide sufficient learning opportunities and robust assessment in this important area of clinical practice.

**Key words:** Trained personnel, views, prescribed medicine

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## INTRODUCTION

Prescribing is a key activity of a doctor. More than 5000 individual drug doses are administered each day in Mayo Hospital, more than 70% of which are prescribed by House Officers and post-graduate trainee even though they have little experience of undertaking these tasks prior to graduating. Currently, drugs make up approximately 27% of Mayo Hospital annual expenditure, which is predicted to grow progressively. Furthermore, medication error cost lost of life sometime<sup>2</sup>. Previous studies in UK have identified uncertainties in various aspects of medical practice among fresh medical graduates, including clinical pharmacology<sup>4,5</sup> suggesting that undergraduate training may be insufficient to meet subsequent work demands. Tomorrow's Doctors 2002 gave clear guidance on the expected outcomes in relation to drug therapy such as an understanding of side-effect, harmful interactions, antibiotic resistance etc<sup>6</sup>. However, the guidance arrived at a time when there was already widespread concern about the lack of pharmacology teaching after a progressive move towards integrated non-discipline based curricula, including concerns expressed by medical students themselves<sup>7</sup>. Postgraduate training is also in transition following the introduction of

Intermediate modules for their fellowship exam.

In accordance with the recommendations of Curriculum Committee the King Edward Medical University revised its undergraduate curriculum and exam pattern in 2005 following recommendation by Pakistan Medical and Dental Council. The aim of this study was to investigate the perceptions of recent graduate (House Officer) on their preparation and competency to prescribe shortly after graduation in order to inform the Curriculum Committee Coordinators of any improvements that might be made.

## METHODOLOGY

A structured questionnaire was designed, based on the learning outcomes in Tomorrow's Doctors 2002, published by GMC UK, specifically items 4, 16, 19, 26, 30, 43 and 52 (Table 1). This was divided into three main sections:

1. Undergraduate training experience,
2. Training in relation to current work activities
3. Continuing medical education.

For most questions, respondents were required to rate their perceptions based on a 5-point Likert scale, ranging from 'strongly agree' to 'strongly disagree'. Other questions assessed House Officers (Doctors)' perceptions on how often they had

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performed certain clinical skills in their undergraduate knowledge.  
years or used particular resources to update their

**Section-1 Your Undergraduate Training Experience:** In relation to the following kinds of undergraduate learning about drugs there was

Table- 1 Analysis of questionnaires

	Far too little (%)	Too little (%)	About right (%)	Too much (%)	Far too much (%)
Lecture on basic pharmacology of drug	16.0	53.0	29.0	2.0	0.0
Lecture on the use of drugs in clinical practice	33.0	54.0	13.0	0.0	0.0
Small group tutorials about drugs & prescription	54.0	41.0	5.0	0.0	0.0
Problem based learning on drugs	40.0	48.0	10.0	1.0	1.0
Workshops on prescribing issues	36.0	52.0	12.0	0.0	0.0
Electronic learning opportunities	12.0	47.0	36.0	4.0	1.0

How many time did you undertake the following clinical skills (with supervision or feedback) during your undergraduate training?

	Never (%)	1-5(%)	6-10 (%)	11-15(%)	>15 (%)
A teaching session on calculating drug doses	9.0	87.0	4.0	0.0	0.0
Set up a drug infusion pump	66.0	34.0	0.0	0.0	0.0
Prepare and give a parenteral drug injection	45.0	51.0	3.0	0.0	1.0
Set up and give a bag of intravenous fluid	11.0	72.0	12.0	4.0	1.0

How often did you use the following resources to aid your learning about drugs in your final year?

	Never	Yearly (%)	Monthly(%)	Weekly(%)	Daily(%)
Web-based resources (PubMed/google etc)	63.0	17.0	12.0	7.0	1.0
Online medical school resources(lecture notes/CALs etc)	41.0	8.0	37	12.0	2.0
Your own text book	0.0	2.0	39.0	21.0	40.0
Your own medical Index	27.0	42.0	23.0	8.0	0.0
Library resources	49.0	15.0	31.0	2.0	3.0

**Section-2: your Training in Relation to Your Current Work :** In relation to my prescribing as a junior doctor I have adequate Knowledge of

	Strongly agree	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
Common adverse effects of the drugs I use regularly	0.0	50.0	29.0	16.0	5.0
Harmful interactions of the drugs I use regularly	0.0	41.0	30.0	24.0	5.0
Prescribing drugs to manage acute illness	4.0	64.0	23.0	7.0	2.0
Prescribing drugs to relieve pain and distress	10.0	62.0	19.0	8.0	1.0
Providing enough information about conditions and possible treatments to allow patients to make informed decisions about their care	2.0	28.0	41.0	28.0	1.0

In relation to my prescribing as a junior doctor I have had adequate training to be proficient at

	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
Writing safe prescriptions for different types of drugs	1.0	65.0	19.0	13.0	2.0
Calculating a drug dosage	0.0	42.0	30.0	28.0	0.0
Giving I/V, I/M and subcutaneous injections	0.0	28.0	29.0	35.0	8.0
Administering Oxygen therapy	16.0	67.0	14.0	3.0	0.0
Using a nebuliser correctly	2.0	24.0	41.0	26.0	7.0

In relation to my prescribing as a junior doctor I have adequate understanding of

	Strongly agree (%)	Agree(%)	Neutral(%)	Disagree strongly (%)	Disagree(%)
How errors can happen in practice	11.0	78.0	10.0	1.0	0.0
The principles of managing risks	62.0	23.0	8.0	0.0	
How to evaluate effectiveness of drugs based on published evidence	6.0	56.0	25.0	13.0	0.0
The principles of effective and safe use of medicines as a basis for prescribing	5.0	70.0	19.0	6.0	0.0

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In relation to my prescribing as a junior doctor

	Strongly agree(%)	Agree(%)	Neutral(%)	Disagree strongly(%)	Disagree(%)
I was adequately trained to prescribe at the point of graduation	2.0	30	24	29	15
Litigation over drugs is a concern for me	15	48	29	8	0

**Section-3: Continuing Medical Education (CME) on Drugs Usage:** In relation to maintaining good medical practice

	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree strongly (%)	Disagree (%)
I try to update myself regularly with drugs development	1.0	27.0	55.0	17.0	0.0
I tend to ask colleagues, if possible for advice (e.g. drug doses) before looking up primary references (Medical Index)	12.0	52.0	12.0	21.0	3.0
I have enough environment generally encourages CME	0.0	13.0	69.0	17.0	1.0
I have enough opportunities to attend workshops to update my knowledge about drugs	0.0	3.0	27.0	65.0	5.0

During work, how often do you use the following resources to upgrade your knowledge about drugs?

	Never	Yearly	Monthly	Weekly	Daily
Medical Index	31	4	24	38	3
Journals	73	21	4	2	0
Web-based resources (PubMed/Google etc)	89	2	6	3	0
Newspapers	48	4	24	20	4
Drugs Representatives	34	11	44	12	0
Teaching resources by KEMU Medical Education Department	56	13	19	10	0

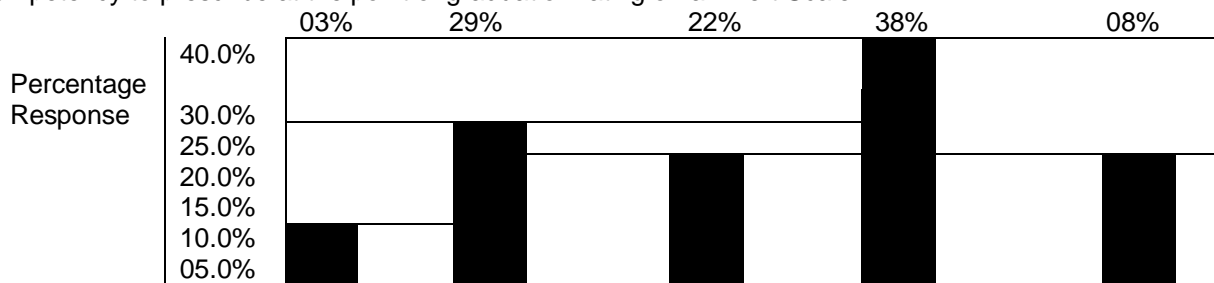
Questionnaires were delivered by hand to all House Officers graduated from King Edward Medical University in 2008. These were distributed in the first month after the graduates started their first placement in order to capture graduates' initial perception on their prescribing competency in relation to the demands placed upon them within their working environment.

All responses were analyzed and compared using Microsoft Excel 2002.

**RESULTS**

A total of 167 questionnaires were returned from which 105 were House Officers who graduated from King Edward Medical University (67.8% of those who graduated in 2008). The remaining questionnaires were either incomplete or completed by doctors who graduated in other years or from other medical institutions.

Competency to prescribe at the point of graduation rating on a Likert Scale



**Section-1 'Your Undergraduate Training Experience'**

Most respondents considered that they had too little provision of teaching about drugs across all learning styles including lectures on basic pharmacology, clinical pharmacology and therapeutics, small group tutorials, and problem-based learning, prescribing workshops or e-learning (Table 1). Undergraduate experience of relevant clinical skill was varied but the majority of respondents had written up 5 or less drug

prescription sheets and significant number had never set up a drug infusion pump or prepared and given a parenteral drug injection.

**Section-2 'Your Training in Relation to Your Current Work'**

Respondents considered that their knowledge was adequate in relation to current work in the areas of common adverse effects, harmful interactions,

prescribing to manage acute illness, and prescribing to relieve pain and distress (Table-1). However, there is less agreement that they could provide enough information about conditions and possible treatment to allow patients to make informed decisions about their care (55%). When asked about their proficiency to undertake clinical skills the majority of respondents agreed that they were proficient at writing safe prescriptions for different types of drugs (66%) and administering oxygen therapy (83%). However, there was less agreement about other area, e.g. using a nebuliser 26%) and giving intravenous, intramuscular and subcutaneous injections (28%). When asked about overall training to prescribe at the point of graduation. Only 32% of respondents agreed that this had been adequate (Fig-1). 84% do agreed that they have little knowledge about the litigation in relation to the use of drugs.

### Section-3 'Continuing Medical Education (CME) on Drugs Usage'

About less than 25% of respondents agreed that try to keep up-to-date with the latest drug developments while nearly two-thirds suggested that they would initially ask their colleagues for prescribing advice before looking up primary references such as the Medical Index. While less than 40% respondents thought their working environment generally encouraged continuing medical education (CME) only 19% agreed that they had enough opportunities to attend workshops to update knowledge about drugs

An overwhelming majority (84%) suggested that they take advice from their senior colleagues regarding prescribing drug doses about an illness and only 07% used the Medical Index on a daily basis. Perhaps surprisingly, about 35% of respondents used drug representatives for this purpose on a weekly basis.

## DISCUSSION

Revision and review of curriculum radically altered the structure of undergraduate medical education in KEMU as this happened in UK after adopting Tomorrow's Doctor's recommendations. (6) There was a move away from factual learning and traditional scientific disciplines to a more integrated and problem- based style of learning. However, this left some concerns that the teaching of pharmacology and therapeutics had been a casualty of the process. This brief study provided a number of important findings:

1. Less than a third of recent graduates thought that they felt adequately prepared to prescribe at the point of graduation.
2. Many felt uncertain that they could provide enough information about possible treatments to

allow patients to make informed decisions about their care.

3. Many students felt poorly prepared to undertake basic clinical skills at the point of graduation.

These finding are in accord with concern about preparation for practice and do not seem to be specific to King Edward Medical University<sup>7,9,10</sup>.

Our finding reflects a gap between the workplace demand upon House Officers to prescribe and administer drugs and the quantity of available learning opportunities during undergraduate training. The respondents to this survey all had a series of lectures in basic pharmacology in their beginning of 3<sup>rd</sup> year then have clinical pharmacology and therapeutics. Thereafter, learning within the 'vertical theme' took place within the various clinical modules in years three to five, which regularly included aspects of drug therapy. Assessment of competence in this area formed part of an integrated assessment that included all aspects of clinical practice.

The responses seem to indicate that in spite of this training, including the fact that 'Pharmacology and Therapeutics' was supposed to be a continuous theme within the curriculum, House Officers did not feel confident about knowledge and skills in this area of practice. This could be the consequence of a number of problems. First, as suggested by the respondents, the teaching time devoted to drugs may not have been sufficient to cover a very complex and demanding learning objective. Second, there may have been a failure to emphasis the relevance of that teaching to clinical practice or sufficient re-enforcement of that message through assessment structures.

Finally, although the students had access to clinical skills facilities, there may be a need to scrutinise more closely how often specific skills practice is undertaken. Need the limited resources just to write down medication record which is not written otherwise by KEMU students as students of UK used to write down drug 'kardex' to generate a skill that is might be expected to exhibit many time everyday during their first job. Not only such skill is important but also in reducing the toll of adverse drug reactions and medication error<sup>11</sup>.

There are two important caveats. First, these observations reflect the views of only 105 House Officers who graduated from a single Medical Institution and may not necessarily be indicative of the wider body of graduates in Pakistan. This awaits confirmation by other studies. Potential sources of bias were the fact that the respondents had the motivation to complete the questionnaire and that most were working in hospital in the region of graduation. Second, the self-rated competency and adequacy of training expressed in the response to

this study may not reflect the true capabilities of those individuals in clinical practice.

## CONCLUSION

The result of this study confirm that many students feel under-prepared to take on prescribing responsibilities the early weeks after graduation. These concerns require a reappraisal of how learning about drugs occurs and should prompt a re-examination of where in the curriculum experience of important practical skills can be gained. This process should be undertaken with some urgency given the increasing pressures faced by junior prescribers.

On the basis of this study I may suggest that the curriculum should be substantially strengthened with the inclusion of a final year MBBS class of problem-based learning 'Therapeutics Case Discussions' focusing on practical prescribing problems encountered in early clinical practice.

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