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Housemanship programme in Malaysia:

Availability of positions and quality of training

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21 July 2017

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ABSTRACT:

The housemanship programme is a fundamental training process that every aspiring medical graduate has to go through in order to obtain the full registration licence to practise medicine in Malaysia. In recent years, there have been signs of problems with regard to the housemanship programme: among them, longer waiting periods for houseman postings, complaints of mental stress and fatigue when performing houseman duties, and cases of housemanship extension and dropouts due to incompetency. In this study, we explore and examine the government's policies in medical education provision and accreditation as well as the strategic planning for the housemanship training programme in Malaysia. Our findings indicate that there is an oversupply of medical graduates from both local and foreign institutions contributing to the shortage of housemanship positions. The rapid proliferation of local private medical institutions in Malaysia is the primary cause of the housemen 'glut' in the system. In addition, we also scrutinize the medical programme recognition and accreditation process undertaken by the Malaysian Medical Council. The turnover of housemanship positions has declined over the years, with only 58.8% housemen from the 2014 batch successfully completing their training within 2 years. We also argue that the competency issue of some housemen, which commonly leads to extension of programmes, is likely derived from some poorer performers from foreign medical institutions; approximately 60% of housemen dropouts are medical graduates from foreign institutions. Finally, the study serves as a timely policy review and a call for the government not just to provide short-term remedies but more importantly, to carry out prudent strategic long term planning for medical human resources in Malaysia.

Contents

1. Introduction

1.1 Journey of an aspiring medical doctor

What do *Grey's Anatomy*, *House*, and *E.R.* have in common? They are commercially successful, long running American TV drama series centred around the medical profession. Similar drama series have been produced around the world. Those who are familiar with Hong Kong drama series would likely have heard of *Healing Hands* ('妙手仁心', Miào shǒu rén xīn). The immersion of the medical practice into popular culture likely sparked interest from many East and Southeast Asian parents who dream of the day when their child would don the white doctor's coat or the green surgeon's scrubs. In any society, medical doctors are highly respected professionals. In accordance with high level of prestige attached to their job, medical doctors usually command a high level of public trust and social standing. Malaysia is no exception, where many might have an unrealistically glamorous view of the medical profession.

In the past, students who were accepted into medical programmes were lauded as top performers, with an impeccable record of academic excellence. This perception was not inaccurate, given that during those times, the criteria for enrolment into medical programmes were very stringent, and not many positions were on offer. This made entry into medical field very competitive. On top of the very limited positions of medical courses in the public universities, pursuing an overseas education would be too costly for most students, unless they obtained scholarships or had wealthy parents.

Today, the situation has changed drastically. In Malaysia, there are plenty of opportunities for aspiring medical doctors. In the past decade, Malaysia has seen the mushrooming of private medical schools catering to the high demand for a medical education. Today, our youth have the luxury of picking from number of medical programmes offered by private higher education institutions. Parents typically invest a hefty sum of about RM60,000-RM100,000 per year for a child's medical education. Unsurprisingly, given that a typical course lasts five years, some even go to the extent of mortgaging their properties to pay for the course fees. Nevertheless, medical programmes are still in high demand, despite the sky-high costs and considerable duration length.

After graduation, the next step towards obtaining full registration and status of a medical officer (MO) is the housemanship training programme. From 2008 onwards, the duration of the housemanship programme was extended from one to two years. Housemen are required to cover six disciplines for their postings: the five core disciplines are Internal Medicine, Paediatrics, Surgery, Obstetrics and Gynaecology and Orthopaedics; for the sixth posting, students choose one out of four there is a choice of disciplines, namely Emergency Medicine, Anaesthesiology, Psychiatry and Primary Care. Each posting should take approximately four months.

The pathway to secure a place on a housemanship programme is not a straightforward one. Appendix I show a flow chart of steps that an aspiring doctor must pass through to obtain the housemanship

position. It is usually the third and fourth steps which are most time-consuming: waiting to be called for an interview by Suruhanjaya Perkhidmatan Awam (SPA) or the Public Service Commission (PSC), and then further waiting to be allocated a position in one of 44 housemanship training hospitals under the Ministry of Health (MOH). At end of 2016, MOH itself acknowledged that the waiting period for a housemanship position was typically between 6 to 9 months [1].

1.2 Issues at stake

In 2010, the concern over the oversupply of housemen prompted the government to place a 5-year moratorium on new medical programmes [2]. However, this has not prevented the glut of housemen in the current system. Today, many training hospitals cannot cope with the rising demand for housemanship positions. In the words of the former Malaysian Medical Association (MMA) president Datuk Dr N.K.S. Tharmaseelan, 'There are just too many doctors and too many medical institutions flooding the market' [3].

In 1971, when the Medical Act came into force, a list of recognised universities was inserted into the Act's Second Schedule. The Second Schedule lists out all recognised medical institutions both local and foreign.

More universities were added to this list after the Public Service Department (PSD) conducted site visits to these medical institutions. These visitations served two purposes: 1) To recruit doctors into the public health sector, Ministry of Education (MOE) and the Malaysian Medical Council (MMC) 2) To certify the standards of medical education in these institutions [4].

The MMC is the statutory body established under the Medical Act 1971, entrusted with the responsibility of recognising medical institutions to license their graduates to practice medicine in Malaysia. Using the World Federation for Medical Education (WFME) guidelines on International Standards as a reference, the MMC embarked on a process to develop and review guidelines on criteria, standards and procedures for medical education accreditation. A Joint Technical Committee was established in 1999, comprising members from MMC, Ministry of Health (MOH), Ministry of Education (MOE) (replaced by the Ministry of Higher Education (MOHE) after 2004), Malaysian Qualifications Agency (MQA) and PSD.

Since 2000, all public and private medical schools in Malaysia have been accredited and recognised by the MMC. Under the section 12(2) of the Medical Act, the MMC is the mandated consulting party for the Health Minister, when it comes to adding, deleting or amending the Second Schedule of the Act before it is officially published in the Gazette.

From the government's viewpoint, the reason for developing accreditation standards is also to ensure the provision of quality medical education locally. Prime Minister of Malaysia, Najib Razak once told the public in a speech,

"*Once the right students go into medical schools, they must get the right training. All medical schools and those offering allied health sciences must ensure they provide quality education. Adhering to the basic requirements for accreditation may not be enough. It would be far better to benchmark the quality of our medical education with the best medical schools in the world. Once we have achieved that, there may no longer be a necessity to send our students abroad as they can get equivalent or better medical education locally*". [5]

For good professional training and career development, medical schools must ensure that students have a strong grounding in fundamental skills and 'basic' knowledge. Lowering the entry requirements for medical programmes as a way of wooing prospective students not only creates a disservice to students; in the long run, it will bring down the standards of country's medical community at large. The proliferation of medical schools would also cause the available pool of medical teachers to be spread very thin.

In the short term, an oversupply of medical graduates will cause a systemic shock to the MOH training capacity, especially when poor performers extend their stay and 'clog up' the system. The total number and the turnover rate of house officer positions are important factors which determine a fresh houseman's chances of securing a place in one of the training hospitals. On the other hand, the number of experienced specialists who are willing and able to supervise the house officers will determine the quality of the housemanship programme.

2. Study Objectives

In this study, we investigate the supply and demand of medical graduates in Malaysia and the impact of current policies by MOH and MOHE on the numbers of medical graduates produced each year, the institutions involved in provision of medical courses, and quality of such medical training.

Secondly, we evaluate the capacity of public hospitals to train house officers, linking this to demand for housemanship positions from the medical graduates. Capacity here is defined in terms of physical and human resources i.e. the number of training hospitals and specialist trainers.

Finally, we examine the quality of housemanship training, especially the performance of our housemen and their ability to cope with increasingly lengthy housemanship waiting periods, and the typically overcrowded and stressful working environment, once they secure a place in a training hospital.

3. Methodology

A manual data extraction of a total of 24,500 doctors' details from the MMC Medical Register (http://www.mmc.gov.my/index.php/medical-register) was performed to analyse housemanship turnover from the provisional registration year 2008 to 2014. The data extraction period was from the 28th of February to the 17th of March 2017.

The Medical Register is the mandatory professional registration list regulated by the MMC for all practising medical practitioners in Malaysia, as stipulated under Section 14 of the Medical Act 1971. Students undergoing housemanship programme are required to register and obtain a provisional registration number. Upon completing the housemanship, (and on the condition of fulfilling all the requirements) they will be given a full registration status.

Information extracted from each doctor's profile includes: i) Date of provisional registration, ii) Date of full registration, iii) Provisional registration number, iv) Full registration number, v) Undergraduate Institution, vi) Year of Annual Practising Certificate (APC) and vii) Name of the medical practitioner.

In this study, 'housemanship duration' is defined as the period (in months) between the date of provisional registration and date of full registration. The former represents the beginning of the housemanship program and the latter represents the day the person is no longer a houseman but a new medical officer (MO).

Data from National Specialist Register (NSR), various MOH publications, academic literature and media reports were also used to support the analyses made in this report.

4. Results and Discussion

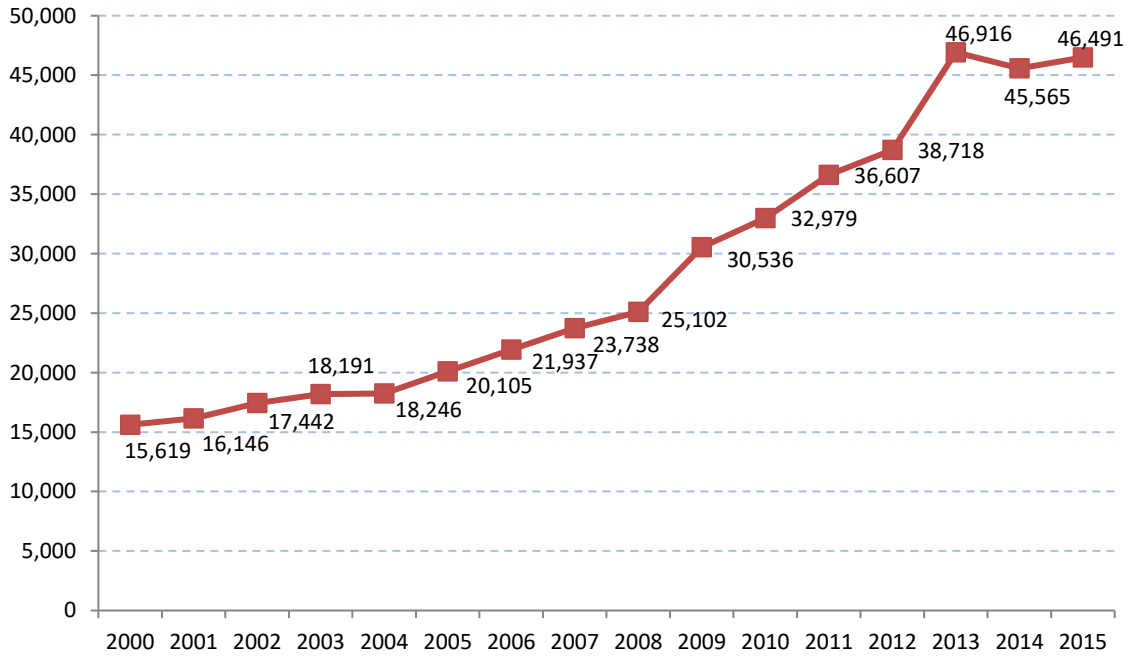
4.1 Unrealistic target number of medical doctors required in Malaysia

In Chapter 4 of the 11th Malaysia Plan, the Government has set a target to improve the doctor-to-population ratio to 1:400[1] by year 2020. The same document contains a promise to achieve universal access to quality healthcare by increasing capacity of both facilities and healthcare personnel.

The Department of Statistics Malaysia (DOSM) estimates that Malaysia's total population is projected to reach 33.8 million by 2020. If the government is determined to achieve the 11th Malaysia Plan target doctor-to-population ratio of 1:400, Malaysia will need to have 84,456 doctors by 2020. There were 46,491 doctors in 2015 (refer to

Figure ***1*** below), signalling a shortage of 37,965 doctors. This would translate into a requirement of an annual net increase of 7,593 doctors for the next 5 years. In 2015, the MMC registered 4,537 new doctors. In preceding years, the yearly number of newly registered doctors did not cross 4,000 Based on these trends, the government would have to at the very least double its efforts in order to reach the 1:400 target. We will demonstrate in later chapters how and why this target is unrealistic.

Figure 1: Number of qualified medical doctors in Malaysia, 2000-2015



Source: Health Indicators, Ministry of Health

[1] OECD members doctor to population ratio is 1:359 (2011) , High income countries is 1:342 (2011), according to the World Health Organization's Global Health Workforce Statistics

As discussed in Chapter 1.1, in order to increase the number of medical doctors, the authorities must plan to increase the number of medical students. Additionally, there should be provision of sufficient housemanship positions for training purposes so as to produce competent and qualified medical doctors.

Between 2000 and 2006, the number of provisionally registered medical graduates under the MMC were within the range of 1000-1200 (Figure 2 [ψ]). However, from 2007 onwards, the number of graduates climbed significantly, peaking at 5,146 graduates in 2015. The MOH has been trying to meet the demand for housemanship positions by creating more positions and 'clearing' current housemen through the process of graduation into medical officers: the former is indicated by the increase in number of housemanship positions (orange line in the graph and column (2) in the table in Figure 2), while the latter is shown in the number of housemanship positions released locally (grey line in the graph and column (3) in the table in Figure 2) . Since 2008, when the length of housemanship programme was increased from one to two years, the turnover of housemanship positions has not been favourable.

The first indication lies in the widening supply gap between the demand and supply of housemanship positions, culminating in 2014 (the latest year of provided data) where 880 demanded positions went unmet.

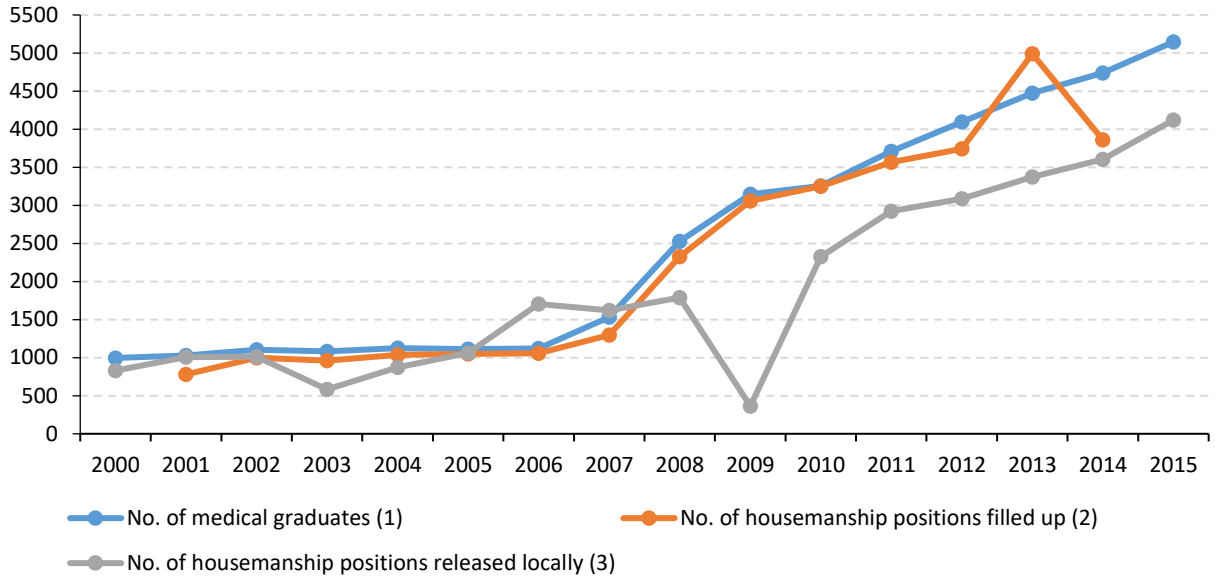
Another challenge lies in 'clearing' housemen to become fully graduated medical officers. Between 2012 and 2015 (the latest four years in the available records) the number of vacated positions has lagged behind the demand for new positions by over 1000 per year. Housemanship extension is usually the primary cause limiting the number of vacated positions and preventing additional medical graduates from securing a housemanship position.

Although housemen recruitment figures have increased tremendously, especially after 2008 (in 2013 alone, a record number close to 5,000 housemen were absorbed into workforce), it does not seem to be able to match the increasingly heavy demand for positions in the programme.

Figure 2 depicts the supply-demand and turnover issues of housemanship positions: demand for these positions greatly outpace the supply made available by the MOH. The shortage is aggravated by housemen extending their training periods and clogging up the MOH training hospital capacity. This phenomenon often results in long waiting periods for new houseman postings, and enlarged mentorship groups that negatively affect the quality of training.

[ψ] Due to data unavailability for the number of medical graduates and available housemanship positions, we used proxy data to estimate the supply gap and turnover of housemanship positions per year.
Assumption (1): Vast majority of the medical graduates who wish to enter the workforce would first apply for the MMC provisional registration, this should be closely matched to the 'total number of medical graduates' ('demand').
Assumption (2): Number of graduates who successfully obtained a housemanship position (ie. entering the workforce as a houseman), it could be interpreted as 'the number of housemanship positions filled up' or it should reflect the maximum capacity of housemanship position on offer ('supply').
Assumption (3): Number of full registration issued to those have completed/completing the housemanship training locally, whether they are Malaysians or foreigners. This indicates that they have completed the training, hence they vacated their positions for the newcomers.

Figure 2: Supply and demand of housemanship positions in terms of number of medical graduates, housemanship recruitment and vacated positions in Malaysia, 2000-2015



Year	No. of medical graduates (1)	No. of housemanship positions filled up (2)	Supply gap housemanship positions: Supply (2) – Demand (1)	No. of housemanship positions released locally (3)	Difference in the vacated and demand for positions: (3) - (1)
2000	996			829	-167
2001	1029	780	-249	1009	-20
2002	1104	997	-107	1011	-93
2003	1083	959	-124	583	-500
2004	1126	1036	-90	874	-252
2005	1112	1049	-63	1060	-52
2006	1122	1059	-63	1703	581
2007	1534	1298	-236	1622	88
2008	2530	2326	-204	1787	-743
2009	3147	3058	-89	364	-2783
2010	3256	3252	-4	2326	-930
2011	3708	3565	-143	2923	-785
2012	4094	3743	-351	3086	-1008
2013	4472	4991	519	3374	-1098
2014	4740	3860	-880	3602	-1138
2015	5146			4121	-1025

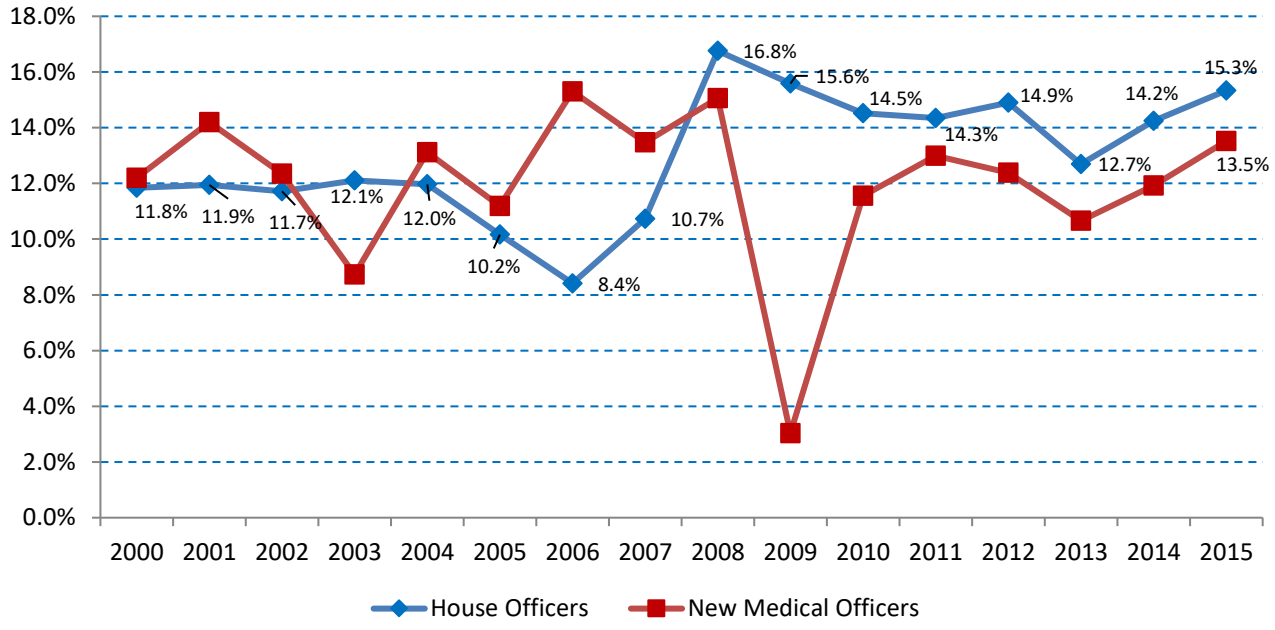
Source: MMC Annual Report, MOH Human Resources Division and own calculations

*note: Number of new medical officers dipped in 2009, it was because starting from 2008 the length of housemanship training programme has extended from 1 year to 2 years.

(1): Number of practitioners provisionally registered; (2) Number of medical house-officers entering the workforce; (3) Number of Full Registration certificates issued according to local housemanship training positions

MOH's target to increase the number of doctors has resulted in a greater proportion of the medical workforce in the public sector staffed by 'freshman' doctors (house officers and new medical doctors). In 2015, this group comprised 28.9% of total MOH doctor workforce (Figure 3). In other words, more than 1 in 4 doctors in the public hospitals are relatively inexperienced medical practitioners. Ensuring proper training of these 'freshman' doctors of utmost importance, to safeguard the quality medical services provided to the general public.

Figure 3: Percentage of House and New Medical Officers in the total workforce of MOH doctors, 2000-2015



% (House officers + New Medical Officers)/ Total MOH Workforce

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
24.0%	26.1%	24.1%	20.8%	25.1%	21.3%	23.7%	24.2%	31.8%	18.6%	26.1%	27.3%	27.3%	23.4%	26.2%	28.9%

Source: MMC Annual Report, Ministry of Health & own calculation

While Malaysia's aspiration to reach a doctor-to-population ratio that is on par with that of a developed nation is laudable, efforts to reach this target must include other improvements, such as increasing the number of public specialist hospitals and other doctor training facilities. It would be foolish to try to achieve this target at the expense of sacrificing the quality of housemanship training as this would ultimately leave a longer lasting and damaging effect upon the provision of medical care.

Managing the training of additional house officers is challenging because of supply side constraints e.g. the shortage of specialists and number of housemanship training hospitals. On top of this, roughly over the last decade, there has been tremendous pressure from the demand side, stemming from an increasing number of Malaysian medical graduates from local public and private universities as well as institutions abroad. What explains the driving up of numbers of medical graduates? For this, we turn to the next section of the report.

4.2 Sharp surge in the numbers of medical students entering the workforce

In the mid-1990's, the private higher education sector witnessed a significant expansion after liberalisation measures were introduced through the Private Higher Educational Institutions Act 1996. At that time, local public institutions were buckling under pressure to meet the public demand for degree programmes and professional courses. Medical courses such as Bachelors of Medicine, Bachelors of Surgery (MBBS) and Doctor of Medicine (MD) were especially prized, given the limited places in public universities and exorbitant costs of studying abroad. Given the huge market potential, local private institutions began offering these courses, even though the technical barriers of getting accredited were high.

The Penang Medical College was the pioneer in offering private medical degrees, having done so since 2001 after gaining recognition from the MMC. Over the next 13 years ten more private institutions joined these ranks, and these institutions today are supplying medical graduates to the workforce. The number of medical graduates is 26 times more than what it used to be in 2001 (Table 1). At its peak in 2013, local private institutions graduated 1,441 students. This was the first time the private sector produced more medical graduates compared to the public universities.

The influx of medical graduates seeking housemanship positions stems not only from national boundaries, but also from overseas graduate returnees. These are Malaysians who studied medicine abroad and return to Malaysia to seek housemanship positions as part of their qualification process. From 194 in 2007 (yellow line, Figure 4), their numbers increased to a whopping 2,403 in 2013, in the span of merely six years. 2008 registered a sharp increase of overseas returnees due to a large addition of Russian and Ukraine graduates, who took up 56.7% share of all overseas graduates (Figure 5). However, they were overtaken by the percentage share of medical graduates from Indonesia and Egypt in 2012. In 2014, Indonesian and Egyptian medical graduates took 59.1% (881 graduates) percentage share of all overseas graduates. Russia, Ukraine, Indonesia and Egypt collectively supplied over half the numbers of total foreign graduates (Figure 5).

The sharp surge in the numbers of medical graduates seeking housemanship positions has caused a glut in the public system. As illustrated in Chapter 4.1 and Figure 2, it is extremely challenging for the MOH to accommodate the huge demand for housemanship positions while making sure enough housemen have completed and vacated the positions in the same year. In following chapters, we will try to explain

the constraints faced on the supply side, in terms of number of MOH training facilities (Chapter 4.5) and number of specialists tasked with training housemen (Chapter 4.6).

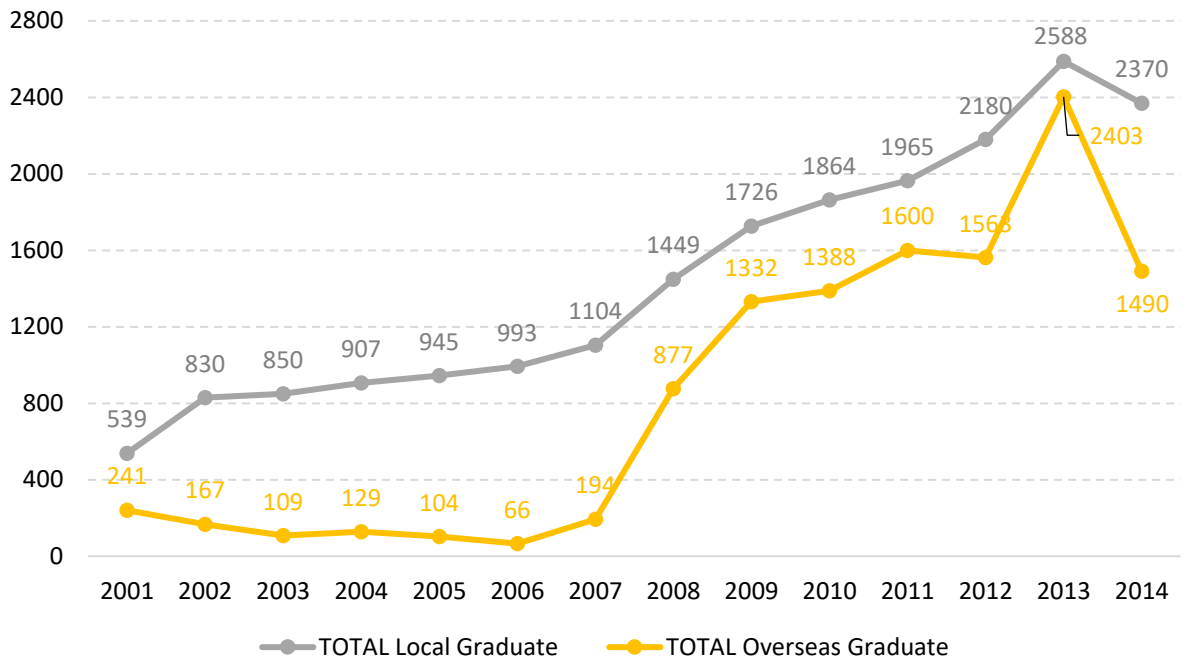
Table 1: Number of medical house officers entering the workforce from local public and private higher education institutions, 2001-2014

No.	University	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Local Public Universities														
1	University of Malaya (UM)	137	175	182	175	149	144	150	141	150	159	182	188	198	197
2	National University of Malaysia (UKM)	131	160	162	160	160	142	185	203	173	223	219	259	220	208
3	University of Science Malaysia (USM)	150	185	201	181	147	159	151	179	191	186	180	193	193	205
4	University of Malaysia Sarawak (UNIMAS)	38	38	22	33	47	13	76	68	53	79	64	74	39	92
5	University Putra Malaysia (UPM)	40	54	61	72	82	69	90	81	123	101	131	111	143	99
6	International Islamic University of Malaysia (IIUM)	46	55	59	74	82	88	88	95	105	121	108	96	128	-
7	University of Malaysia Sabah (UMS)	-	-	-	-	-	-	-	29	36	68	75	70	80	81
8	University of Technology Mara (UiTM)	-	-	-	-	-	-	-	19	54	91	116	148	178	182
9	Islamic Science University of Malaysia (USIM)	-	-	-	-	-	-	-	-	-	-	-	-	-	53
	Sub-total	496	658	683	680	659	609	740	808	875	1012	1088	1151	1147	1245

No.	University	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
	Local Private Universities/Colleges														
1	Penang Medical College (PMC)	43	59	23	31	19	132	64	105	97	131	100	97	150	115
2	International Medical University (IMU)	-	90	76	72	109	64	117	156	148	140	118	231	183	136
3	Royal College of Medicine Perak (RCMP)	-	23	-	-	4	10	53	57	82	63	23	19	136	119
4	Malacca-Manipal Medical College (MMMC)	-	-	68	124	154	178	130	222	405	271	254	249	258	117
5	Asian Institute of Medicine and Technology (AIMST)	-	-	-	-	-	-	-	101	119	134	113	108	205	14
6	Alliance College of Medical Science (AUCMS)	-	-	-	-	-	-	-	-	-	52	30	69	58	89
7	Monash University (SUNWAY)	-	-	-	-	-	-	-	-	-	29	27	10	71	76
8	University College Sedaya International (UCSI)	-	-	-	-	-	-	-	-	-	32	43	41	50	32
9	Cyberjaya University College of Medical Sciences (CUCMS)	-	-	-	-	-	-	-	-	-	-	140	133	126	143
10	Management & Science University (MSU)	-	-	-	-	-	-	-	-	-	-	29	38	62	186
11	MAHSA University	-	-	-	-	-	-	-	-	-	-	-	34	142	98
	Sub-total	43	172	167	227	286	384	364	641	851	852	877	1029	1441	1125

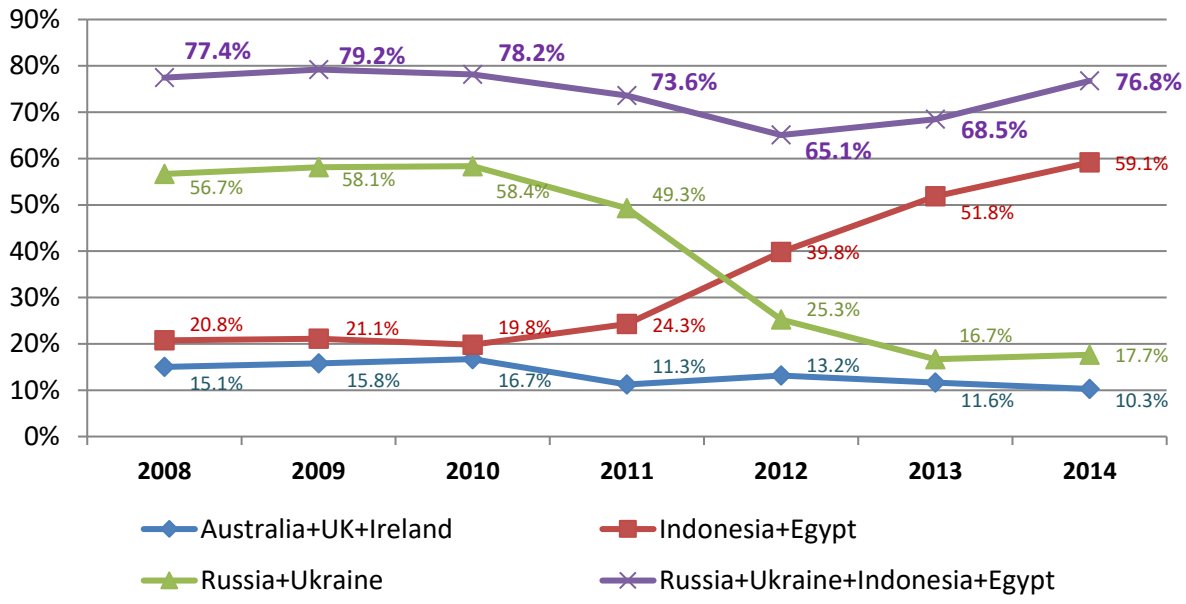
Source: Human Resources Division, Ministry of Health

Figure 4: Number of Medical House-Officers entering the workforce by graduate institution origin, 2001-2014



Source: Human Resources Division, Ministry of Health

Figure 5: Percentage share of foreign trained medical graduates by country, 2008-2014



Source: Human Resources Division, Ministry of Health and own calculation

In 2011, in view of surging numbers of medical graduates and the limited capacity of MOH to accommodate more housemen, the Ministry of Higher Education (MOHE) placed a moratorium on the number of new institutions licensed to offer medical degree programmes in Malaysia. The freeze on new medical courses in all local institutions has been extended for another 5 years until 30th April 2021 [6].

Inasmuch as the policy has plugged the proliferation of medical degree courses, it does not solve the problem of overseas graduates returning home and seeking housemanship positions.

> "The rationale behind the moratorium is to manage the number of students entering medical programmes locally and to address concerns such as a surplus of houseman (waiting time)."
>
> Director-General of MOHE Datuk Dr Asma Ismail, *The Sun Daily*, 17 March 2016 [7]

The MMC and MOH have both come out strongly on the issue of declining standards of graduates of some foreign medical institutions. Reasons cited are failure to meet the minimal entry requirements, questionable quality of medical education provided by these foreign institutions and a limited curriculum that does not provide sufficient exposure to clinical experience [8]. However, a scan done on the Second Schedule of the Medical Act from 2009 to 2017 showed that only 4 foreign medical institutions[2] were or are going to be de-registered. The most high profile case was the Ukraine's Crimea State Medical University (CSMU) [9]. Among the reasons cited for the withdrawal of MMC recognition for CSMU were the 'dubious' admission criteria of students, the difficulty experienced by its medical graduates in using specific medical terms in English and the possible strained and compromised teaching quality due to the sudden spike in student intake since 2001 [9].

In the May-June parliamentary session of 2015, Minister in the Prime Minister office Dr Shahidan bin Kassim informed parliament in a written reply that a total of 3,625 students was sent to universities abroad were scholars sponsored by JPA for medical degrees. Among the study destinations mentioned were Jordan, Egypt, United Kingdom, Australia, India, Indonesia, Ireland, New Zealand, Czech Republic and Russia. Taking the sum of a JPA scholarship for medicine (RM43,561 per year) in Egypt and (RM277,515 per year) in United Kingdom[3] as benchmarks for low and high cost estimation, the estimated JPA expenditure on overseas medical degrees scholars falls within a range of RM789.5 million to RM5.02 billion.

This is clearly a costly policy involving millions or perhaps billions of Ringgit of taxpayers' money. Furthermore, not all overseas medical institutions listed in the Second Schedule of the Medical Act 1971 are as good as some local private universities. Instead of spending excessively on sending medical students abroad, the government should consider converting JPA overseas scholarships to scholarships

[2] 4 medical institutions excluded from recognition: Sri Venkateswara University, Tirupati- after May 1993; Crimea State Medical University – after 29 March 2013; Charles University in Prague & Palacky University, Olomouc – after 31 December 2020

[3] Written Reply to the Parliamentary question (number 251) asked by Dr Ong Kian Ming (MP for Serdang P102) in the 2016 March Parliament session

for local private universities. This would create more opportunities for deserving applicants in pursuit of medical degrees to have their studies fully sponsored.

4.3 Proliferation of recognised medical institutions over the years

Prospective medical students who fail meet the entry requirements for medical programmes in local public or private universities may opt to study aboard in one of the 310 MMC-recognised foreign medical institutions. Another option for them is to enrol first in an unrecognized foreign institution and then sit for a Medical Qualifying Examination (MQE) organised by MMC after they graduate. These students have to first pass the MQE before they are eligible to start their housemanship program. This MQE policy has been in force since 2012 under the Medical (Setting of Examination for Provisional Registration) Regulations 2012.

Under the *Guidelines for the accreditation of Malaysian Undergraduate Medical Education Programmes 2015*, the MMC has defined the process of accreditation, outlining the various areas and domains of evaluation. According to the document, the same standards and procedures apply in the accreditation and recognition of foreign medical schools [10]. When particular foreign schools experience certain issues, for example, a change in ranking in their own country, or performance of graduates not meeting expected outcomes, they will be invited to apply for accreditation [10]. Steps in the accreditation process of a new local medical programme or school is summarised in Appendix II. A full accreditation is granted for a maximum period of 5 years only. The appointed Accreditation Team will typically continue to perform monitoring visits until the duration of accreditation has lapsed, then an entirely new Accreditation Team will be appointed for renewal of accreditation. Decorum recommendations for the Accreditation Team are also stated in the *Guidelines* to ensure impartiality, transparency and professionalism of the appointed members.

An updated list of recognised medical institutions (according to the Second Schedule of the Medical Act 1971) can be found on the MMC official website (http://www.mmc.gov.my/index.php/list-of-medical-institution). This list currently consists of 339 institutions across 36 countries, including 29 institutions from Malaysia. Table 2 shows the top 10 countries with most number of recognised medical institutions, though in recent years a sizeable number of Malaysians graduated from Russia, Ukraine, India, Indonesia and Egypt (Figure 5).

In 2014, 375 medical institutions in 34 countries were recognised by the MMC, in addition to the 29 local institutions [11]. We reviewed and compared three Second Schedule lists from 2011, 2012 and 2017, and found that the number of institutions declined from 375 in 2011 to 339 in 2017. However, we also noticed that it was only due to the change of counting method. Previously, the method involved counting individual colleges as a unit but in 2017 all associated colleges were consolidated under their parent universities as one unit. In other words, the institutions appearing in the lists throughout 2011 and 2017 are the same (other than slight modifications of the names).

Comparing the MMC list with the list in the Second Schedule of the Singapore's Medical Registration Act 2014 Ed., Singapore has only 158 medical institutions in their record (Appendix III). Both Malaysia and Singapore have recognised medical institutions from other countries. However, the former has more countries from the Middle East and Central Asia, while the latter has more countries from the Continental Europe (Appendix III). As illustrated in the Chapter 4.2, our major sources of overseas medical graduates are from Indonesia, Egypt, Russia and Ukraine. None of the institutions from these countries appeared in the Singapore's list.

Even the number of medical institutions from common countries differs. Malaysia has noticeably more recognized medical institutions from India than Singapore with 53 for Malaysia compared to 9 for Singapore (Appendix III).

While there are no grounds to argue that Singapore's medical institution recognition list is superior, it may be worthwhile for the MMC to explain and justify the discrepancy between Malaysia's and Singapore's list.

Table 2: Top 10 countries with most number of recognised medical institutions by the MMC

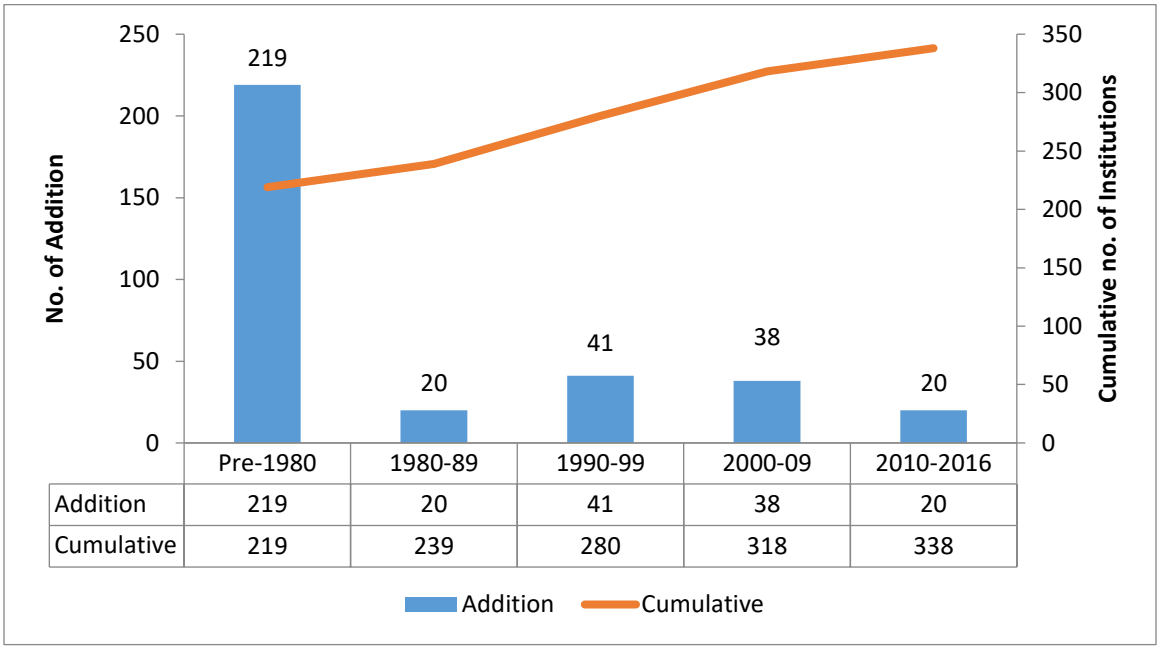
Rank No.	Country	No. of Institutions Recognised
1	UNITED STATES OF AMERICA	**89**
2	INDIA	**52**
3	UNITED KINGDOM	**33**
4	MALAYSIA	**29**
5	CANADA	**14**
6	AUSTRALIA	**13**
7	INDONESIA	**13**
8	JAPAN	**10**
9	TAIWAN	**8**
10	ARAB REPUBLIC OF EGYPT	**7**
	PAKISTAN	**7**

Source: Malaysian Medical Council (Second Schedule of Medical Act, updated 2017 Jan 17)

In the past, medical graduates used to be supplied pre-dominantly from overseas institutions. Out of all medical institutions recognised before 1980, only 2 out of 219 were from Malaysia (Figure 6 and Figure 7). Another additional 120 institutions were added to the list, up to 2016. Out of these, 27 institutions are from Malaysia and almost all were recognised in the past 16 years (Figure 7). Currently, 11 out of the 29 accredited Malaysian medical institutions are from the public sector, while the rest are private institutions. In just under two decades, the number of accredited local private institutions has shot up from 0 to 18 (see Appendix IV for the list of accredited institutions and their accredited year). Another 9 private and 1 public medical institutions were provisionally accredited as of 2015 (see Appendix V),

according to the Annual Report of MMC 2015. After 2011, the year when the government imposed a moratorium on new medical programmes, those existing provisionally accredited institutions should theoretically have been the last batch allowed to convene medical courses, yet four more institutions were given provisional accreditation even though they were established in 2012. According to media reports, the MMC only stopped accepting new applications for medical universities from the start of 2013 [11]. 1,319 students enrolled in the provisional accredited medical programmes in 2014, as shown in Appendix V.

Figure 6: Additional and cumulative number of recognised medical institutions by year period[4]

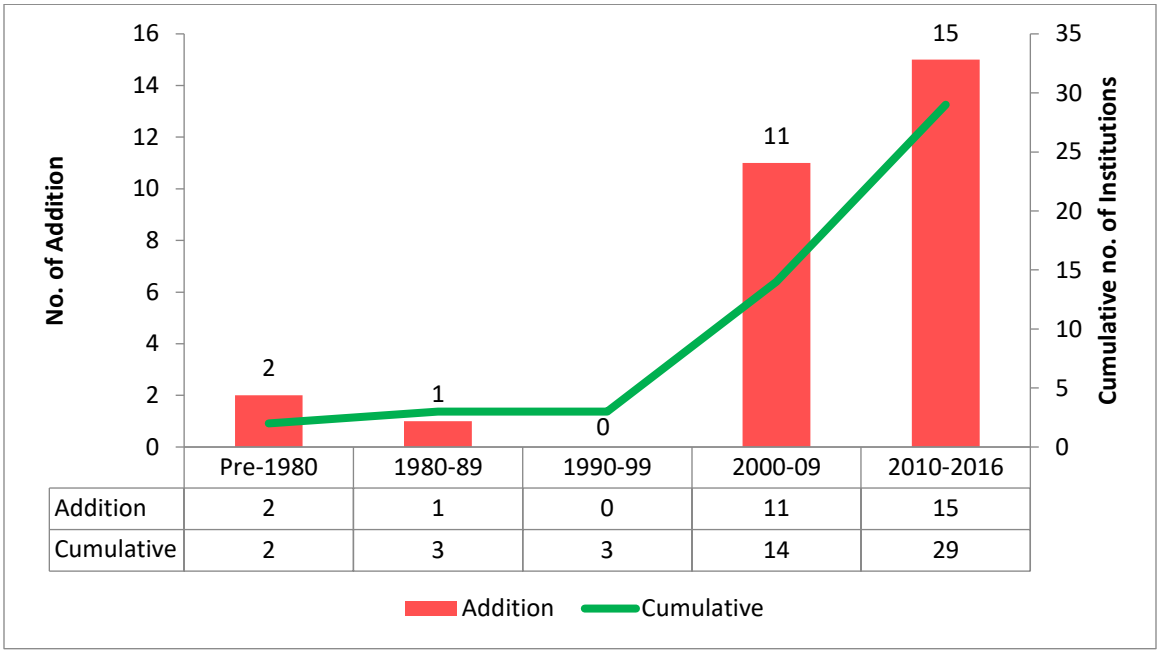


	Pre-1980	1980-89	1990-99	2000-09	2010-2016
Addition	219	20	41	38	20
Cumulative	219	239	280	318	338

Source: Malaysian Medical Council and own calculation

[4] One entry was omitted due to blank information on the recognised year

Figure 7: Additional and cumulative number of recognised medical institutions from Malaysia only by year period



	Pre-1980	1980-89	1990-99	2000-09	2010-2016
Addition	2	1	0	11	15
Cumulative	2	3	3	14	29

Source: Malaysian Medical Council and own calculation

In 2011, the Director General of Health, Dr Noor Hisham Abdullah said that the MMC faced 'a lack of trained accreditors to participate as panel members in evaluation visits and the current pool is sorely stretched with visits needing to be conducted almost every month' [12]. In the face of exponentially increased numbers of medical schools and programmes, he admitted it was challenging to keep track of the education quality, even as the Cabinet had issued a directive to review all recognised institutions.

Addressing the allegations of medical graduates from dubious foreign institutions who had enrolled with lesser than the minimal entry qualifications before returning to work in Malaysia, Dr Noor Hisham Abdullah explained:

The minimal entry qualifications for any undergraduate course including professional courses such as the medical course are determined by the Ministry of Higher Education (MOHE). The council gives its input to MOHE and have recently suggested a more stringent entry requirement for the medical course, but the final decision rests with MOHE as provided for under the law. The MMC is able to monitor whether local universities have taken students without minimal qualifications through the periodic accreditation visits to all the universities which it conducts on behalf of the Malaysian Qualification Agency (MQA), a government agency tasked with ensuring quality assurance of higher education. The MQA will take the necessary action if the accreditation panels from MMC find any issues with minimal entry qualifications.

MMC, however, does not have the authority to regulate entry into Medical courses in overseas universities. In the past, students who wish to pursue medical courses overseas were required to take a "No Objection Certificate" from the MOHE and the issuance of such certificates would be based on the

students having the same minimal entry qualifications as stipulated for entry to local universities. Many of the foreign universities have ignored the NOC and taken students with lesser qualifications or they have circumvented the requirement by conducting their own foundation courses. The foundation programmes, many of dubious standards, are supposed to prepare students with lesser qualifications to undertake the medical course. [8]

Apart from appraising the standards of medical education and submitting recommendations to MOHE and MQA, the MMC also has powers to suggest amendments to the Medical Act that may enhance the standard of medical practice in Malaysia. Given the abovementioned cases, the MMC proposed to make it compulsory for all foreign medical graduates to sit for a licensing examination before they are provisionally registered [8]. In this way both quality and quantity of foreign medical graduates may be subjected to better control.

It is not just foreign medical institutions that need monitoring. Local private institutions might be guilty of bad planning and management too. The case of Allianze University College of Medical Sciences (AUCMS) in Kepala Batas, Penang serves as a good reminder of how things could go wrong for local private medical schools. AUCMS was forced to close on October 15th 2014 due to financial difficulties. This affected 425 medical students who had to be relocated to six different local private institutions [13].

Another pertinent case study is the Perdana University Graduate School of Medicine (PUGSOM) which used to offer a four-year medical programme to the first batch of students, in collaboration with Johns Hopkins in 2011. This is a graduate medical degree program which means that students applying for this program must already have an undergraduate degree (All medical programs in the United States are graduate programs). In August 2014, news broke that Johns Hopkins had decided to terminate their contract with PUGSOM due to frequent late payments and non-payment for their services for more than a year [14]. Out of 79 students enrolled at PUGSOM at that point in time, 77 were sponsored by the JPA via the 2011, 2012 and 2013 intakes, and a total of RM32.69 million had been spent on these students [15]. Despite the fact that the programme was not fully accredited by the MMC, the government had committed these students under JPA scholarship. Since a majority of medical programmes in Malaysia follow the 5 Year British system, some of these students were forced to apply to universities in the US instead of switching to another local programme.

Incidents such as AUCMS and PUGSOM could have been prevented, had these universities gone through a more rigorous and thorough accreditation process. At the end of the day, any accreditation process worth its salt must be able to uphold a high standard of medical education (i.e. a sufficient number of highly qualified lecturers, proper infrastructure and facilities) as well as to ensure that the education providers under its purview is capable of staying financially sustainable.

4.4 The turnover of Housemanship positions

As stipulated in the official Guidebook of Housemanship Programme (2012) by the Ministry of Health [16], the duration of a single housemanship term is anywhere between a minimum of 20 months and 5 years. House officers are eligible for full registration after the 5th posting provided they have shown satisfactory performance, though it is still mandatory to serve the 6th posting. A typical posting lasts for four months if not extended.

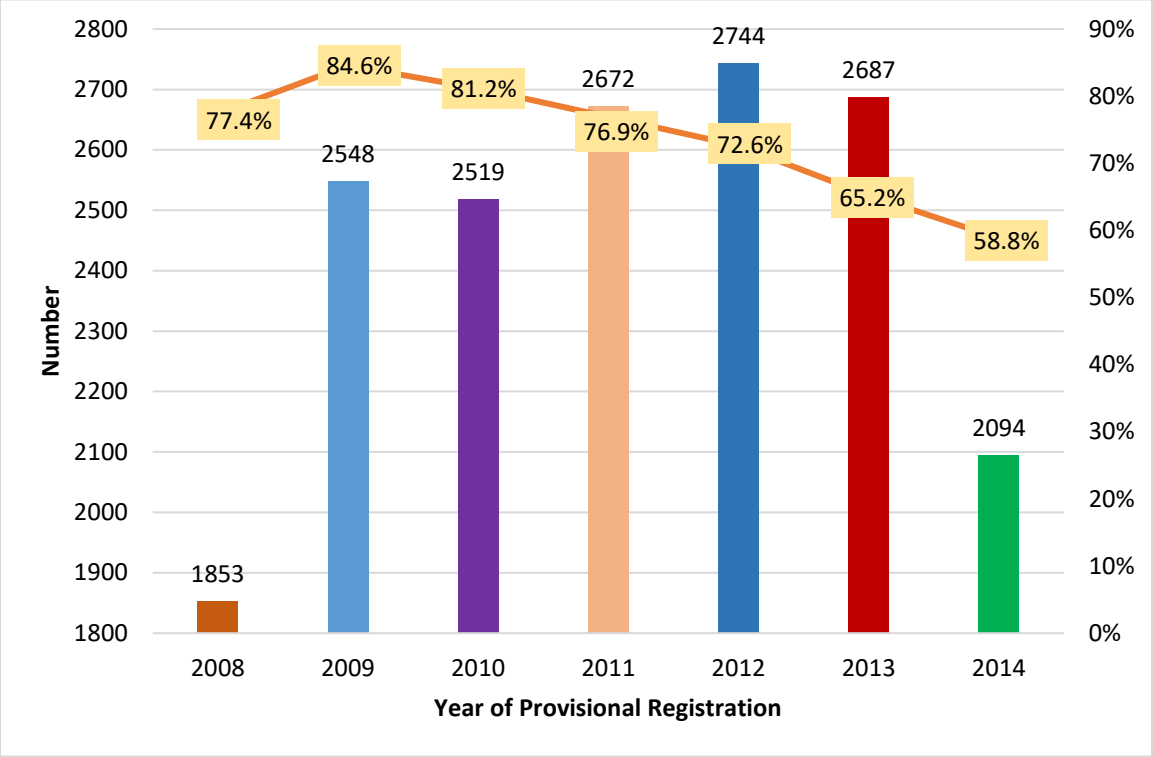
Previously, all housemen could apply for up to a year's extension of a posting. However, in a circular dated December 15th 2016, the MOH issued a directive requiring all new housemen to be appointed on a 3-year contract of services. Renewal of the contract would be considered on a case-by-case basis, provided the candidate fulfilled the criteria for reappointment. In other words, a housemanship contract could be terminated by the end of third year, if he or she is not deemed competent for the full registration within reason.

Given that housemanship positions are constrained by the number of training hospitals and trainers, the training period should be kept as close to the stipulated 2 years as possible to facilitate the efficient 'clearing' of graduates and entry of new housemen into the system

The Medical Register records taken from housemen provisionally registered from 2008 to 2014 shows that since 2009, the percentage of housemen who completed the housemanship programme within 24 months[5] dropped from 84.6% in 2009 to 58.8% in 2014 (Figure 8). This is despite the increase in the number of housemen registered in 2014 entering the workforce. The records show that only 2,094 housemen managed to finish in time, 593 fewer than the batch in the preceding year. This indicates that the turnover rate is declining. Even more worryingly, the number of housemen who 'overstayed' the programme (>24 months) is increasing from year-to-year (Figure 9), implying that if MOH does not create new positions fast enough, incoming housemen may have to endure longer waiting periods for posting due to unavailable vacant positions caused by a 'backlog' of lingering housemen.

[5] Housemanship duration = Date of Full Registration – Date of Provisional Registration (according to the records in the Medical Register)

Figure 8: Number of housemen obtained full registration within 24 months

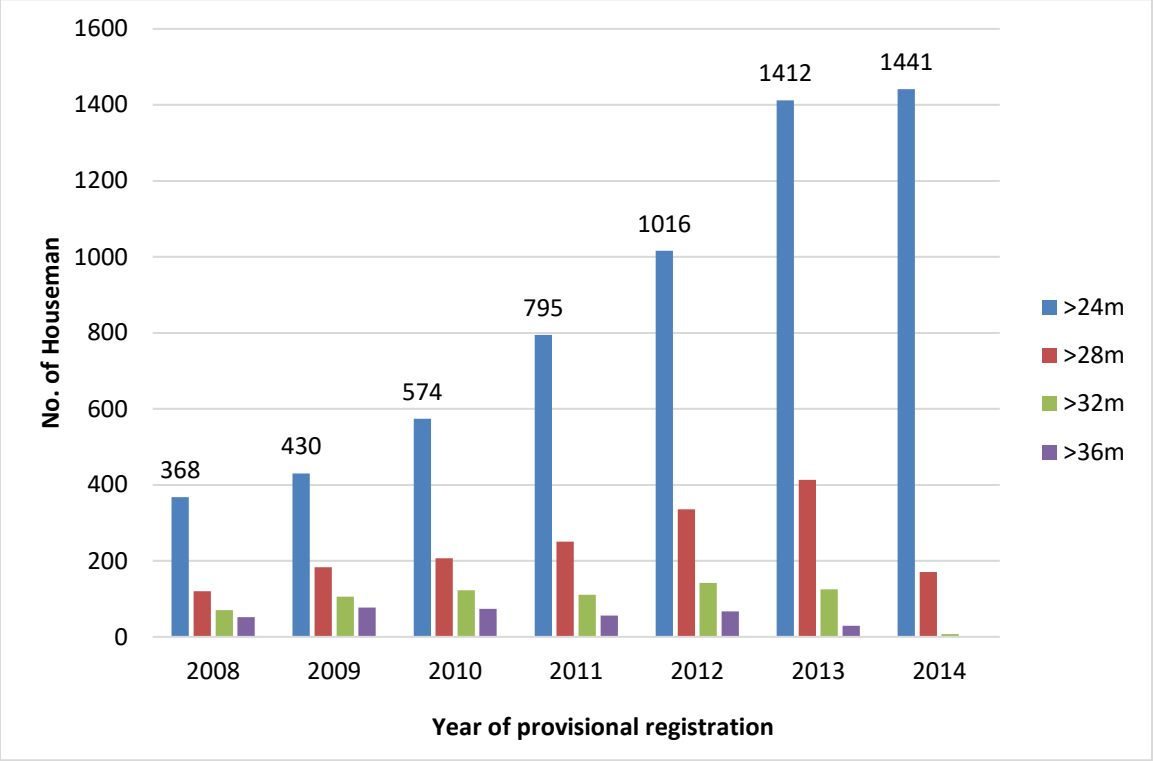


Source: MMC Medical Register, and own calculation

The housemanship dropout issue should not to be taken lightly, given the many reports on the challenges and mental stress endured by houseman. We define 'housemanship dropout' as one who has provisionally registered in the Medical Register but failed to obtain the full registration after the maximum period (i.e. 5 years). From our findings, between 2008 and 2011, the dropout rate for provisionally registered housemen was in the range of 3.7-4.8% per batch year. Though the dropout rate might not seem alarming, there has been an upward trend for housemen dropouts from batch year 2008 onwards (Figure 10). The housemen batches from years 2012 to 2014 were excluded from the analysis, as some are probably still in the process of obtaining full registration. However, it was officially reported that only 1.2% of housemen were either terminated or had quit in 2016 due to inability to cope with stress [17]. According to the Health Minister Dr S. Subramaniam, the number of housemen dropouts had decreased after the ministry launched counselling interventions for housemen.

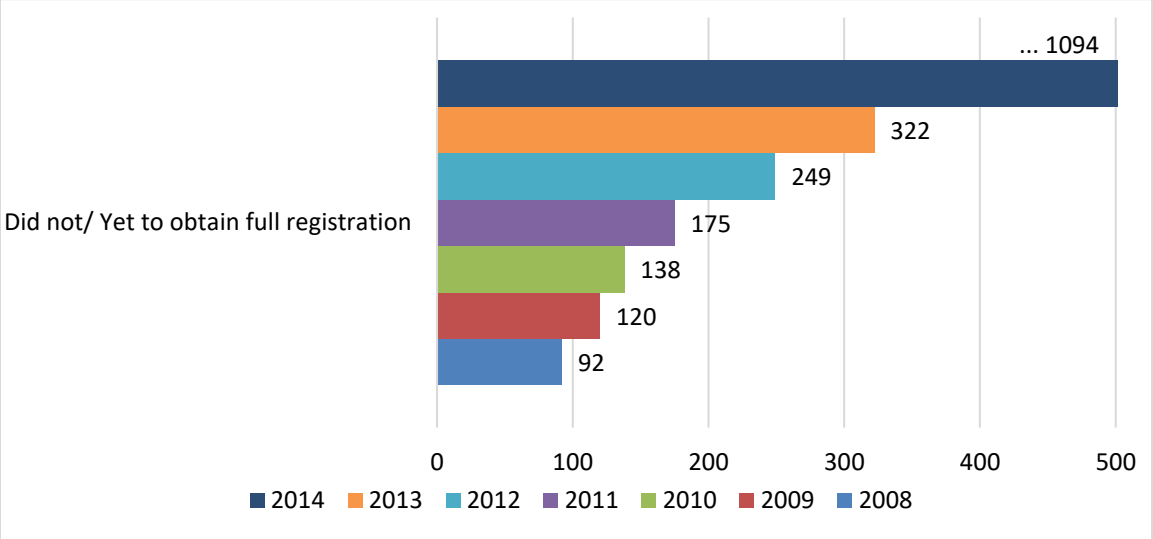
Drilling down to examine trends among housemen dropouts, 59.1% (2011) were graduates from foreign medical institutions (Figure 11). Meanwhile, graduates from local public and private institutions have fairly similar dropout rates (18.1% and 22.8%, respectively). This raises concerns with regards to overseas graduates, on whether they are competent enough to take up and overcome the challenges that await them during housemanship training.

Figure 9: Number of housemen who completed their training programme later than the required 24 months



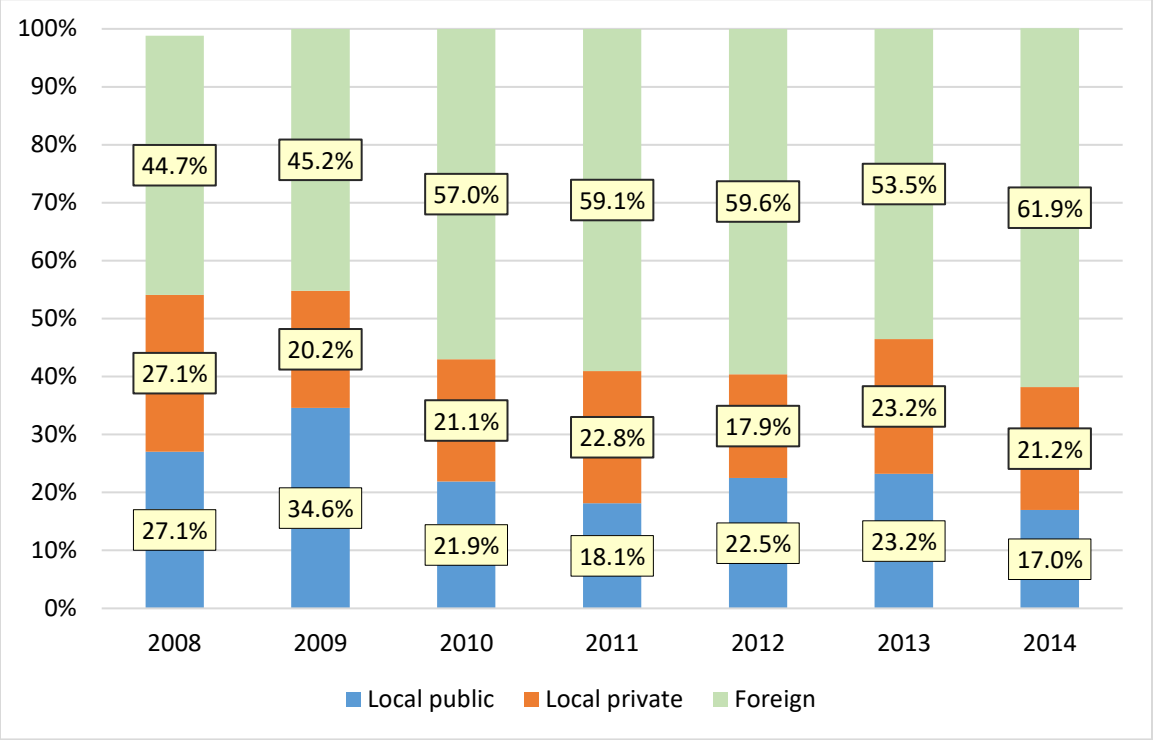
Source: MMC Medical Register, and own calculation

Figure 10: Number of housemen did not or had yet to obtain full registration



Source: MMC Medical Register, and own calculation

Figure 11: Medical education background of housemen who dropped out or did not obtain full registration



Source: MMC Medical Register, and own calculation

Table 3 further shows that a majority of overseas housemen dropouts were from medical institutions on the list of 339 MMC-recognised medical institutions. Ukraine's Crimea State Medical University contributed a high number of dropouts prior to 2011. In subsequent years, the number decreased, probably due to the de-listing of the university in 2013. However, looking at the statistics, there are certain overseas medical institutions which have churned out a relatively high number of dropouts, including Russia's I.M. Sechenov First Moscow State Medical University (previously named I.M. Sechenov Moscow Medical Academy) and Russian National Research Medical University (previously named Russian State Medical University); Indonesia's Universitas Padjadjaran, Bandung and Universitas Sumatera Utara (USU), Medan; Bangalore Campus of MSU-International Medical School in India; Egypt's University of Alexandria and University of Mansoura and lastly Czech Republic's Charles University in Prague (Table 3). It is time for the MOH to look into the issues faced by some of these overseas medical institutions, in order to understand the situation with regards to teaching quality and skills training, if they are serious about tackling the housemanship dropouts and extension issues. The situation is made even more critical when we consider that many of the students in these institutions might be on scholarships that are sponsored by government agencies using taxpayers' fund.

Table 3: Housemanship dropouts by medical graduates from overseas medical institutions of selected countries

Medical Institution(s)	2008	2009	2010	2011	2012*	2013*	2014*
	RUSSIA						
I.M. SECHENOV FIRST MOSCOW STATE MEDICAL UNIVERSITY					8	8	29
I.M. SECHENOV MOSCOW MEDICAL ACADEMY	3	1	3	8	2		
KURSK STATE MEDICAL UNIVERSITY	3	3	1	3	9	3	15
NIZHNY NOVGOROD STATE MEDICAL ACADEMY		1	4	4	3	1	11
RUSSIAN NATIONAL RESEARCH MEDICAL UNIVERSITY					9		60
RUSSIAN STATE MEDICAL UNIVERSITY	4	1	2	5	1	1	
ST. PETERSBURG STATE MEDICAL ACADEMY#							1
VOLGOGRAD STATE MEDICAL ACADEMY	3	3	2	4	5	5	13
Total RUSSIA	13	9	12	24	37	18	129
	UKRAINE						
CRIMEA STATE MEDICAL UNIVERSITY	12	15	23	23	6	4	
DNIPROPETROVSK STATE MEDICAL ACADEMY#							1
LUGANSK STATE MEDICAL UNIVERSITY#							1
LVIV NATIONAL MEDICAL UNIVERSITY#							1
TERNOPIL STATE MEDICAL ACADEMY#							3
UKRANIAN MEDICAL STOMATOLOGICAL ACADEMY#							1
Total UKRAINE	**12**	**15**	**23**	**23**	**6**	**4**	**7**
	INDONESIA						
AIRLANGGA UNIVERSITI, SURABAYA	1		4	2	1	5	2
UNIVERSITAS ANDALAS, PADANG				2	2		6
UNIVERSITAS BRAWIJAYA, MALANG, JAWA				2	3	2	4
UNIVERSITAS GADJAH MADA, JOGJAKARTA	4	4		4	1	3	5
UNIVERSITAS HASANUDDIN, SULAWESI SELATAN	1	2	6	1	2	5	14
UNIVERSITAS ISLAM SUMATERA UTARA							1
UNIVERSITAS KRISTEN KRIDA, WACANA (UKRIDA)				3	6	3	17
UNIVERSITAS METHODIST#						1	1
UNIVERSITAS PADJADJARAN, BANDUNG		3	2	8	10	9	26
UNIVERSITAS SRIWIJAYA PALEMBANG, SUMATERA			1	2	1	4	4
UNIVERSITAS SUMATERA UTARA, MEDAN (USU)	1	1	4	3	19	12	18
UNIVERSITAS TRISAKTI				1	6	6	10
UNIVERSITAS UDAYANA DENPASAR, BALI	1	1	1		1	4	2
Total INDONESIA	**8**	**11**	**18**	**28**	**52**	**54**	**110**

Medical Institution(s)	2008	2009	2010	2011	2012*	2013*	2014*
	INDIA						
ALL-INDIA INSTITUTE OF MEDICAL SCIENCES NEW DELHI		1					
JSS UNIVERSITY, MYSORE, KARNATAKA							1
KARNATAKA UNIVERSITY, DHARWAD KARNATAKA					1		
KLE UNIVERSITY - JAWAHARLAL NEHRU MEDICAL COLLEGE, BELGAUM							5
L.N MITHILA UNIVERSITY-DARBHANGA MEDICAL COLLEGE, LAHERISARI			1	1			
MANAGEMENT & SCIENCE UNIVERSITY-INTERNATIONAL MEDICAL SCHOOL, BANGALORE CAMPUS				1	12	15	42
MANIPAL ACADEMY OF HIGHER EDUCATION-KASTURBA MEDICAL COLLEGE				2	2	1	3
NTR UNIVERSITY OF HEALTH SCIENCES- ANDHRA MEDICAL COLLEGE, VISAKHAPATNAM		1					
RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES (Various Campuses)				1			8
UNIVERSITY OF MYSORE							1
VINAYAKA MISSION'S UNIVERSITY-AARUPADAI VEEDU MEDICAL COLLEGE, PUDUCHERRY					1	1	1
Total INDIA	**0**	**2**	**0**	**5**	**14**	**17**	**61**
	EGYPT						
AL-AZHAR UNIVERSITY							1
UNIVERSITY OF AIN SHAMS							11
UNIVERSITY OF ALEXANDRIA						21	95
UNIVERSITY OF CAIRO						5	23
UNIVERSITY OF MANSOURA						8	26
UNIVERSITY OF TANTA						4	6
UNIVERSITY OF ZAGAZIG						3	1
Total EGYPT	**0**	**0**	**0**	**0**	**0**	**41**	**163**
	CZECH REPUBLIC						
PALACKY UNIVERSITY OLOMOUC							5
CHARLES UNIVERSITY IN PRAGUE					3	2	22
	JORDAN						
JORDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY			1	2	2	4	13

Medical Institution(s)	2008	2009	2010	2011	2012*	2013*	2014*
	RUSSIA+UKRAINE+INDONESIA						
R+U+ID	33	35	53	80	95	76	246
	86.8%	*74.5%*	*72.6%*	*79.2%*	*66.4%*	*47.8%*	*44.3%*
	RUSSIA+INDONESIA+INDIA+EGPYT						
R+ID+IN+E	21	22	30	57	109	130	463
	55.3%	*46.8%*	*41.1%*	*56.4%*	*76.2%*	*81.8%*	*83.4%*
	THE REST OF REGIONS						
The REST (non R+U+ID+IN+E)	5	10	19	21	34	28	85
	13.2%	*21.3%*	*26.0%*	*20.8%*	*23.8%*	*17.6%*	*15.3%*
	TOTAL FOREIGN INSTITUTIONS						
Total FOREIGN	38	47	73	101	143	159	555

Source: MMC Medical Register, and own calculation

*Note: For 2012-2014 batch of housemen, some may have not completed their housemanship therefore have not obtained their full registration licence. The data unfortunately could not separate this group from the dropouts, given the maximum period of housemanship training is 5 years.

Medical institutions *in italic* indicate that they are not one of the 310 MMC-recognised medical institutions.

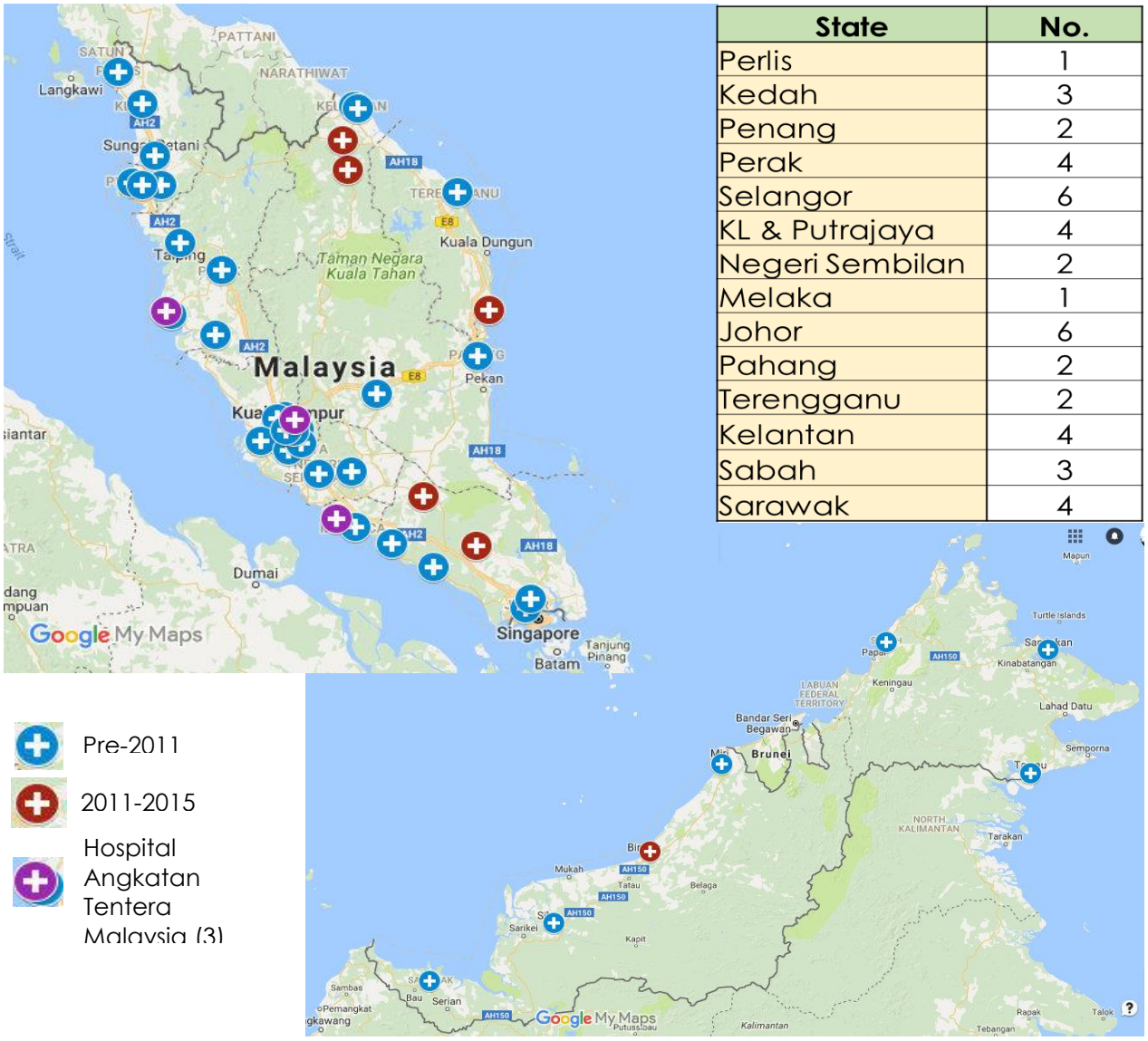
4.5 The capacity of MOH to accommodate more housemen

Housemanship training hospital (Facilities)

To understand the glut of housemen in the public system, one must figure out what is the current and future capacity of MOH and other public healthcare operators to absorb more housemen.

The Deputy Health Minister Dr Hilmi Yahaya, in a media interview on 15 March 2017, stated that a total of 10,835 housemen were placed in 44 teaching hospitals and Royal Military Hospitals [18]. The distribution of the 44 hospitals by state and location is depicted in Figure 12. The majority of the teaching hospitals can be found on the west coast of Peninsular Malaysia. Between 2011 and 2015, six more teaching hospitals were established: three on the east coast, two in Johor and one in Sarawak.

Figure 12: Number and distribution of housemanship training hospitals in Malaysia by state and location, 2017



State	No.
Perlis	1
Kedah	3
Penang	2
Perak	4
Selangor	6
KL & Putrajaya	4
Negeri Sembilan	2
Melaka	1
Johor	6
Pahang	2
Terengganu	2
Kelantan	4
Sabah	3
Sarawak	4

Source: Medical Development Department, Ministry of Health

According to the MOH annual report 2014, a total of 40 MOH hospitals are categorized as state hospitals and major specialist hospitals in Malaysia that should house no fewer than 20 resident specialists per hospital. All 40 hospitals[6] are housemanship teaching hospitals, in addition to the three university hospitals and two minor specialist hospitals. Therefore, if MOH plans to add more teaching hospitals to the list, they will either have to upgrade the existing minor specialist hospitals or build new specialist hospitals. Proper planning is needed to address this facilities 'constraint'.

[6] 40 specialist hospitals include Hospital Queen Elizabeth I and II, even though they count as one hospital in the list of housemanship training hospitals

The large number of housemen in the current system (10,835 in total) suggests that there is overcrowding in the housemanship teaching hospitals. Going by the total number of official beds in these 44 hospitals, the current ratio is about one houseman to 2.8 hospital beds. In the early 1980s, the ratio of housemen to patient beds was 1:20; by 2013, this ratio decreased drastically to 1:3 [19]. According to Dr Jeyaindran Sinnadurai, the Deputy Director General of Health (Medical), the original ministry quota was 1:14 [19]. Compared to other countries, Singapore and the United Kingdom have a ratio of 1:8 and 1:12, respectively. Taking the 1:2.8 as an average, one could argue that this overcongestion in some training hospitals is undesirable for affected housemen. Significantly, there may be a lack of medical cases for housemen to treat, when the number of admitted patients have to be spread so thinly. The ratio of facilities and number of trainees suggests a mismatch that would likely leave significant impacts on the quality of training. With the increasing number of provisional registrations, this 'mismatch' will likely worsen in coming years.

The problem of 'overcongestion' in the current training system may explain the slow take up rate by the Public Service Commission (PSC): out of 3,474 medical graduates interviewed in 2016 only 1,687 of them obtained a place in hospitals. This translates into an efficiency rate of 48.6%. According to a recent media report, the latest eHouseman intake list, released on April 27 2017, had a capacity of over 1,800 new positions [20]. However, only 1,400 medical graduates were granted access into the training system, while over 2,000 graduates were told to wait for the next opening.

There have been incidents where some housemen were forced to wait up to one year for their housemanship posting [21]. It appears that the waiting time is getting worse. According to news reports, the waiting period for postings had increased from two to three months between 2014 and 2015[22]. In August 2016, Health Minister Dr Subramaniam conceded that the waiting period had extended to an average of six to nine months [20]. He had promised improvements by cutting this down to four to five months by end of 2016. It remains to be seen if this promise has indeed been fulfilled.

The prolonged wait to receive posting confirmation has caused a great deal of anxiety and stress to medical graduates. Many are probably heavily indebted due to servicing study loans, yet unless they seek out part-time occupation, they are left with no means of income. In addition, the long waiting period does not help housemen be professionally and mentally prepared for the challenges that they are bound to face during training; they risk losing touch with the knowledge and skills acquired during their years of study. For these reasons, it seems wise for the Federation of Private Medical Practitioners' Associations Malaysia (FPMPAM) to urge the government to allow new medical graduates to work as clinic assistants in private clinics while waiting for their housemanship posting, as this would keep them immersed in an "active learning" medical environment.

Housemanship trainers (human resources)

Besides the limited number of facilities, human resources for housemanship trainers (or mentors) might be overstretched too. As stated in the *Guidebook of Housemanship Programme* (2012), specialists are appointed by department heads to serve either as a housemanship coordinator or supervisor or both.

Their function is to ensure housemen are exposed to optimal levels of clinical experience; this includes giving them opportunities to learn basic skills while performing department-related procedures as stated in the log book.

According to the Director General of Health's directive dated 30th November 2010, every specialist is required to be directly involved in providing training, guidance and teaching to housemen, during flexi-duty, routine ward patrols, grand round, and even during teaching rounds assisted by senior MOs [16].

As for mentor-mentee ratios, the *Guidebook* stipulates that, when it comes to housemanship placement in the sub-specialist wards, at least 2 specialists must be present, and the maximum ratio is 1 specialist: 5 housemen. Applying this criteria to the entire training system would be a good start in terms of setting the capacity as the basis for housemanship positions in each department and hospital. To date, the number of housemanship trainers is not public knowledge. Table 4 shows specific specialist strength for nine relevant training discipline areas in MOH hospitals. The first five discipline areas in Table 4 form the core mandatory training disciplines for housemen, whereas the rest are optional choices; housemen choose one out of four options. Assuming that the 10,835 housemen in the system (as March 2017) were equally divided by 6 postings, there would be 1,806 housemen, on average, engaging in a certain core discipline at any one point in time. Taking the 1:5 specialist: houseman ratio (and assuming all MOH specialists are involved in training housemen), Internal Medicine and General Paediatrics are the only core disciplines with sufficient trainers. The remaining three core discipline areas have less than 250 specialists each. Even if four specialists from a particular discipline were placed in each of the 44 teaching hospitals and enlisted as a mentor, each individual specialist would still have to supervise a group of 10 housemen on average, twice the maximum implied specialist: houseman ratio (Table 5). To achieve the 1:5 ratio, as many as 9 specialists from each core disciple would have to be drafted for one hospital. Comparing Table 4 and Table 5, out of the five core disciplines we found that only two disciplines, namely Internal Medicine (General) and General Paediatrics, have sufficient numbers of specialists, and this hinges on the assumption that all MOH specialists are active trainers. The question is this: are all MOH specialists actually involved in training housemen? How can MOH ensure that all disciplines under the housemanship training programme have sufficient specialists?

Table 4: Number of specialists per relevant discipline area in MOH hospitals, Feb 2017

	Discipline Area (Core/*Elective*)	No. of MOH Specialists
1	Internal Medicine (General)	668
2	General Paediatrics	391
3	General Surgery	248
4	Obsterics and Gynaecology (O&G)	232
5	Orthopaedic Surgery	224
6	*Emergency Medicine*	*139*
7	*Anaesthesiology and Critical Care*	*397*
8	*Family Medicine*	*146*
9	*Psychiatry*	*108*

Source: National Specialist Register

Table 5: Ratio of specialist to housemen, on the assumption of increasing number of specialists per core discipline per hospital

Assumed no. of specialist(s) per core discipline per hospital	No. of housemanship training hospitals	Possible no. of housemanship trainers/mentors	No. of housemen allocated per core discipline (Assume equal distribution)	Ratio of Specialist: Housemen
1	44	44	1806	1:41
2	44	88	1806	1:21
3	44	132	1806	1:14
4	44	176	1806	1:10
5	44	220	1806	1:8.2
6	44	264	1806	1:6.8
7	44	308	1806	1:5.9
8	44	352	1806	1:5.1
9	44	396	1806	1:4.6

Can private hospitals be the solution?

In response to the glut of medical graduates and the prolonged waiting period for housemanship placement, the Ministry of Higher Education proposed to place housemen in private hospitals [6]. This seems to be a reasonable solution, given that private hospitals have a good supply of experienced specialists or consultants, and their facilities are distributed nationwide.

Deputy Director General of Health Dr S. Jeyaindran responded by expressing concern that housemen in private hospitals lacked sufficient patient caseloads of the mandated learning disciplines to fulfill the

learning requirements of housemen [7]. He also questioned the willingness of consultants in private hospitals to supervise housemen.

Echoing the Deputy Director's sentiments, Dr Jacob Thomas, president of the Association of Private Hospitals of Malaysia (APHM), said that it was unclear who would foot the bill of training expenses and who would train housemen if the private route was taken [7]. He also expressed doubts that full paying patients would agree to be examined and treated by housemen instead of specialists or consultants, even if the housemen were supervised. Lastly, he also asked if housemen working in the private sector would be afforded legal protection in the case of any mishaps or medico-legal issues [23].

The issues raised are largely administrative and technical in nature. In the final chapter, we propose that fostering public-private partnerships may be a feasible means of resolving the current bottlenecks for both facilities and human resources in the public system.

4.6 Housemanship extension and training quality

In the course of completing his training, if a houseman fails to meet the standards of basic competency within a specific professional discipline, he or she would usually be given an extension for the particular posting (a maximum of 8 months extension per posting). Out of the many possible reasons why housemen fail to complete their training within the set time period, common factors include a poor teaching environment and poor quality of training. A good training environment is linked to factors such as appropriate teaching resources in terms of human resources and facilities as well as a robust programme structure and a good working relationship between trainers and housemen. A compromise in any one of these factors would surely compromise the quality of training experience for housemen.

Consequences of poor planning & management

In a recent parliament session, Deputy Health Minister Dr Hilmi Yahaya said that 25-30% of housemen failed to finish their housemanship in time due to incompetency [24]. Indeed, 32.9% of housemen were reported to have extended their housemanship training at least once per year according to a study done by the Institute for Health Management (IHM). This study found that between 2009 and 2013 [25], 54.8% of extensions stemmed from incompetence or poor work performance and the remaining 45.2% were due to disciplinary issues. Fortunately, a majority (78.7%) applied for programme extensions just once throughout the two-year duration. Our finding that 40% of housemen (from the 2014 batch) did not complete within 24 months (Figure 8), is not significantly different from the figures provided by the government.

In an alarming disclosure, former MMA president Dr H. Krishna Kumar revealed about 20% of Malaysian medical students who had enrolled in foreign institutions since 2009 did not possess the minimum academic qualifications (i.e. three Principal Cs in STPM or equivalent) required by MOHE [26]. These

medical graduates had nevertheless been given clearance approval by the MOHE to secure places on the housemanship programme.

By right, it is mandatory for students intending to enroll in foreign medical courses to obtain a "No Objection Certificate (NOC)" from the MOHE. The purpose of this is to ensure that these students have met the minimal entry qualifications as per entry to local universities [8]. We have discussed in Chapter 4.3 how some foreign institutions bypass the NOC and admit students with lesser qualifications. Some even circumvent the requirement by conducting their own foundation programmes [8]. This is highly concerning, for the typical medical programme demands a high level of skills and knowledge learning. The minimum entry qualifications should still be enforced, as it serves to filter out those students with who are academically unfit to meet the steep learning curve. Without the minimum entry qualifications benchmark, a significant number of underqualified medical graduates would be allowed to pursue medical courses, and the quality of medical graduates and overall quality of housemen would be compromised.

Poor competency disproportionately plagued foreign graduates compared to local graduates. The aforementioned IHM study showed, out of the pool of housemen who had extended training due to competency issues, foreign graduates outnumbered local graduates by about two to one [25]. As shown in Figure 11, our findings also indicate that three out of five of housemen who dropped out or did not complete training are foreign medical graduates. Finally, the evidence shown in Table 3 suggests that certain foreign institutions may uphold questionable standards, reflected in an apparent deficit of medical knowledge and skills among their graduates. MOH should look into addressing this issue.

Training quality and mentorship

The constrained nature of human resources (particularly specialists) as shown in Table 4, is hardly conducive to good quality houseman training. As stipulated in the *Housemanship Programme Guidebook 2012*, the ideal mentor-mentee group, in terms of the ratio of specialist to housemen, should not be more than 1:5. However, a survey carried out by MOH in the same year, demonstrated that in 48.4% of all cases, one mentor had to take on 6 mentees and above [27]. There were even incidents of over 20 mentees to 1 mentor [27]!

Further communication with a number of currently practising housemen has revealed that certain hospitals have delegated supervising responsibilities to senior MOs instead of specialists. This practice goes against the guidelines stated in the *Housemanship Programme Guidebook 2012*. More worryingly, it also suggests that the significant increase in the number of housemen are overstretching human resources in these hospitals.

The ongoing 'brain drain' of specialists to the private sector and outwards to foreign countries, are also factors that exacerbate shortages in training hospitals. If this trend continues, the consequence is that more mentoring duties of specialists will gradually be taken over by less experienced and skilful MOs, which would surely affect the quality of housemanship training.

Mental health of houseman

Unhappiness experience or stress faced by housemen is often highlighted in the press. The mental health of housemen was scrutinised by a study published in *Medical Journal of Malaysia* on February 2016. Focusing on the perceived causes of stress rated by housemen [28], Gopalakrishnan Vivekanandan and his co-workers carried out a survey in a hospital in Northern Malaysia. Among the top 10 factors, 'poor work and social life balance', 'high patient load', 'frequent night duties' and 'work overload' were cited. On top of the survey choices, other causes of stress suggested by the housemen included 'unhealthy working environment', 'lack of appreciation/support from superior', 'lack of skills/knowledge', 'scolded in front of patients' and 'high expectations from family members'.

It is not difficult to see why many housemen fall into depression, anxiety or/and low esteem, if one imagines what it must be like to be in their shoes. After studying hard for many years to obtain a degree, a medical graduate is subjected to another agonizing wait that may potentially stretch to months before he or she is granted a housemanship position in an unfamiliar city. The transition into a highly demanding training programme, in terms of workload and lack of work-life balance, may be more than the graduate is able to cope with, especially if he or she face high family expectations to succeed. Additionally, housemen often face verbal and emotional abuse coming from superiors and colleagues. As reported in a letter sent to a media editorial, some housemen were abusively described as 'the lowest form of life, even lower than the amoeba', harassed, intimidated and humiliated by different levels of superiors [29].

Housemen who develop mental health problems may be crippled as they will not be able to develop their skills and knowledge optimally. At the same time, the overwhelming stress faced by these housemen may affect their passion to serve patients. An exaggerated fear of failure or making mistakes might cloud their judgment. In the worse scenario, some may just buckle under pressure and bow out of medical service entirely. The tragic death of Dr Danny Lee Chang Tat in 2012 is a good reminder for the MOH to prioritize the mental health of housemen and medical officers. Dr Danny Lee was found dead in the restroom of the paediatrics ward at the Kajang Hospital in the early morning of 11 April 2012. He was believed to have overdosed by injecting himself with high levels of an unknown drug [30]. His colleagues described to the press that he had looked 'rather stressed', 'little moody', 'quiet', and 'isolated' in the week prior to the incident [31] [32]. It was also reported that the late Dr Danny Lee had been working on call for five consecutive days [33]. Though it was uncertain if Dr Danny Lee had injected himself with the drug to fight fatigue or due to depression, the MOH had nevertheless declared that it would review the shift system for housemen in hospitals to check if housemen were still being overworked, bullied by seniors or/and suffering from depression [30].

MOH policies dictate that a houseman shall not work continuously for more than 16 hours per session, and that their working hours should average between 65-75 hours per week [34]. However, this is a relatively long period compared to housemen working in the United Kingdom (48 hours per week) and Australia (80 hours per fortnight) [35]. Work stress combined with sleep deprivation and exhaustion

might increase the risk of physicians getting involved in motor-vehicle accidents while travelling to and fro from their on-call duties. The tragic car accident involving a medical officer (MO) named Dr Nurul Huda Ahmad on May 9 2017 is a sombre example [36].

5. Policy recommendations

The quality of public healthcare delivery of the future is in the hands of today's housemen. It is for this reason that housemanship training should be treated as an integral component of skill and professional development for medical officers.

This study has raised doubts on the capacity of the MOH to offer sufficient positions to train increasing numbers of medical graduates per year in the near future. However, the issues plaguing the housemanship training programme are bigger than just the demand and supply of available positions offered in the public hospitals. Though it is a laudable benchmark comparable to the OECD and high income country standards, the doctor-to-population 1:400 target ratio should not be our government's first priority. Instead, quality control and efficient management of housemanship training should be prioritised. This study has also showed that a sluggish housemanship position turnover rate is having an undesirable effect on number of housemen being trained and the quality of training. Our government must ensure that medical graduates receive proper skills training and have an overall satisfying experience during their housemanship period.

We recommend the following policy measures to address the housemanship issues which have been raised in this study:

Firstly, in order to overcome the shortage of available specialists to train housemen, the MOH should plan to train significantly more specialists and retain them in the public sector, through strategic incentives and career advancement options. A healthy and effective housemanship training programme should keep the recommended specialist to housemen ratio to 1:5. This also implies that the government has to increase the number of hospital beds, and either build more specialist hospitals or upgrade the existing minor specialist hospitals to major ones. A greater population of experienced specialists in public hospitals would surely serve as a source of motivation and aspiration for junior doctors and even the younger generation of specialists. It is also a sign of a promising medical career in the public sector.

Secondly, the MOH should revise the structure of the housemanship programme to be more effective in supporting or incentivising specialist trainers. Given the significant role that specialists play in the housemanship training programme, the MOH should work to improve the ratio of specialist-mentor to housemen to under 1:5. This would improve the effectiveness of training in each posting and ensure that housemen are adequately prepared to face the realities of medical practice. Specialist trainers should spend a significant amount of time to supervise or teach the housemen *directly*, and minimum weekly hours should be stipulated in the guidelines. In situations where the specialist cannot perform this duty, senior MOs who are appointed as substitute trainers must be very familiar with the

programme and act accordingly. An independent tribunal or ombudsman should be established for housemen to address their grievances should they feel that they have been abused or unfairly treated. Presently, the Standing Committee for House Officers, Medical Officers and Specialists (SCHOMOS) established by the Malaysian Medical Association[7], enjoys a good working relationship with the MOH on the various issues concerning welfare of doctors. SCHOMOS would be ideal choice to act as the independent tribunal or ombudsman for dealing with housemen abuse cases. The SCHOMOS should further be granted powers to elect its own committee members and call for independent inquiry if the need arises.

Thirdly, the MOH should explore the possibility of forging partnerships with private hospitals to utilise their expertise and resources to train more housemen, through voluntary schemes. Attractive incentives should be given and the cost burden of training should be shared with willing participating hospitals and their consultants. This has been practised, for example, in Australia, under the Commonwealth Medical Internships (CMI) initiative[8]. In addition, the MOH, together with the MMC, could also work with certain foreign countries to accredit more medical institutions outside of the country. This would encourage more Malaysian graduates to undergo medical internship in these institutions after graduation (if they are teaching hospitals). The number of Malaysians completing housemanship overseas, while small, appears to have declined after 2013 [37].

Lastly, local private and overseas medical education institutions must be more tightly regulated, to ensure the medical graduates produced are of a high quality. More resources have to be poured into the MMC accreditation and review process, and the integrity and professional independence of the Joint Technical Committee must continue to be upheld. On top of this, there should be a formal mechanism established involving stakeholders from the MMC, MQA, PSD and MOHE to ensure:

i) Government agencies (e.g. PSD) will only sponsor students to the fully accredited medical institutions, regardless of whether these are local or overseas institutions.

ii) Students who fail to obtain the “No Objection Certificate” and go on to enrol at any foreign medical institution with academic qualifications lower than the MOHE’s minimal entry requirements, should be required to sit for the Medical Qualifying Exam. NOCs should not be issued too leniently to students, especially those who lack strong academic qualifications.

iii) All MMC-recognised foreign medical programmes, especially those universities which have churned out a high number of medical graduates who cannot finish or drop out from the housemanship training, must undergo a thorough review under the same procedures and conditions set for local medical institutions (as stipulated in *Guidelines for the accreditation of Malaysian Undergraduate Medical Education Programmes 2016* [10] and Appendix II).

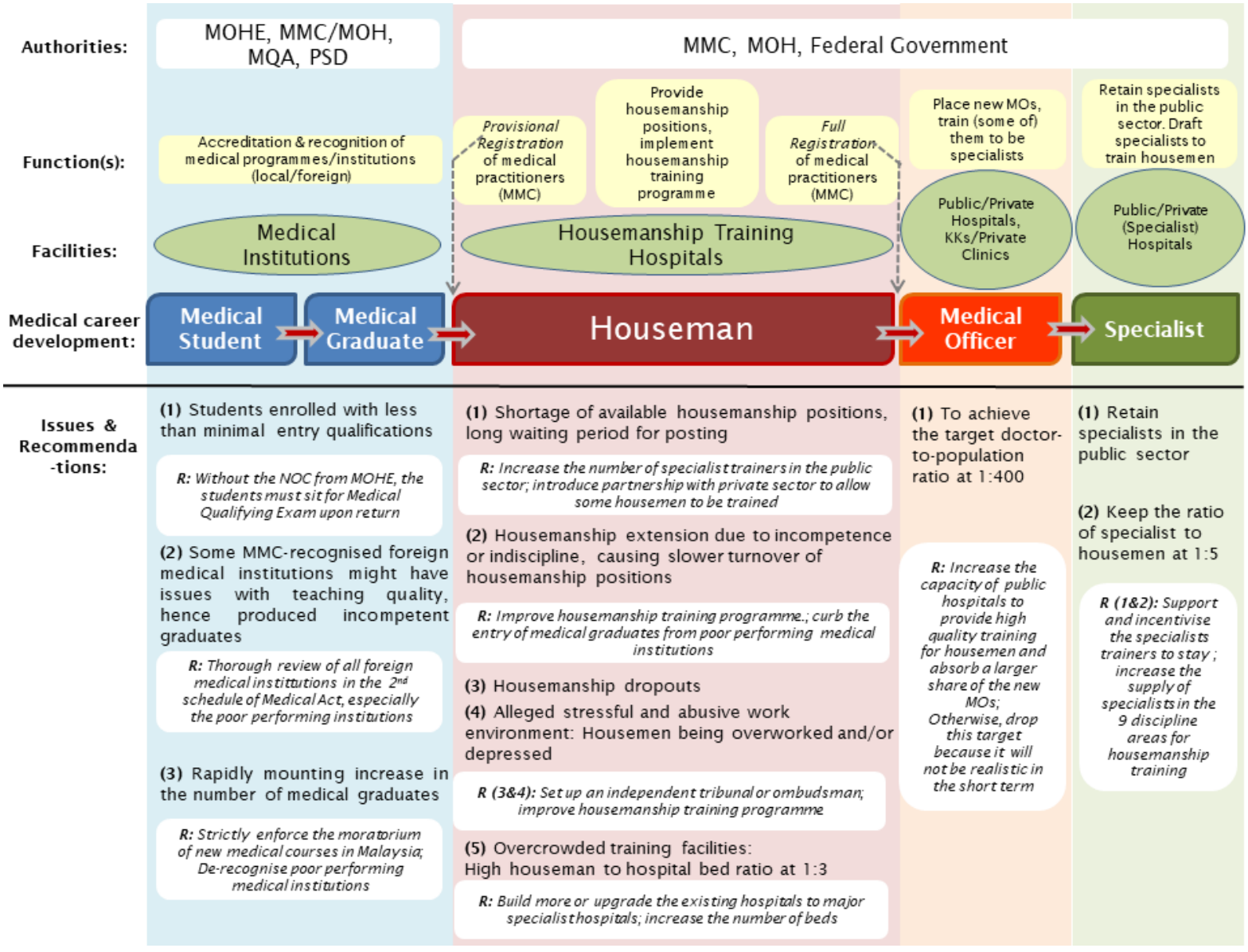
[7] Official webpage for SCHOMOS: https://www.mma.org.my/75-mma-pages/membership/556-schomos
[8] Commonwealth Medical Internships (CMI) initiative, by the Department of Health, Australia. Official website URL: http://www.health.gov.au/internet/main/publishing.nsf/content/work-commonwealth-medical-internships

There should not be a further increase in the number of local private and public universities offering medical programmes until the housemanship issue is resolved both in the short term (increasing the number of housemanship positions) as well as a long-term planning and strategic management perspective. On top of this, there should be a strictly enforced cap on the yearly medical student intake for existing local programmes.

The housemanship bottleneck and training quality are issues that cannot be solved effectively simply by imposing an extended moratorium on new medical courses in Malaysia. Policymakers must exercise more prudent planning to prevent the situation from worsening, as well as anticipate possible further complications that may arise.

The chart below summarizes the key players, factors and issues concerning housemanship training in Malaysia (Figure 13). The proposed recommendations are included in the same chart.

Figure 13: Summary of the issues concerning the housemanship training in Malaysia



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Appendix

Appendix I: Flow Chart showing the journey from Medical Student to Houseman

Key : Uni = University, MMC = Malaysian Medical Council, SPA = Public Service Commission /Suruhanjaya Perkhidmatan Awam, MOH = Ministry of Health, PTM = Program Transformasi Minda, JKN = State Health Department / Jabatan Kesihatan Negeri, Hosp = Hospital, Dept = Department

Adapted from SCHOMOS Guidebook 2016, Malaysian Medical Association

Appendix II

Steps in the accreditation process of a new local medical programme or school

Applications for setting up any medical schools are required to direct towards to the MMC and MOHE. The former would assess the quality and appropriateness of the proposed medical programme, while the latter would examine the capacity of the applicant to commence and sustain the proposed medical programme.

7 steps will be involved, according to the Guidelines [10] summarised as below:

Step 1

Application → MMC Accreditation Committee to select and appoint an Accreditation Team → Inform MQA (if it is a Malaysian medical school) OR JPA (foreign medical school)

Step 2

A **Board Room presentation** of the proposal by the applicant to the Accreditation Team
(e.g. details about the school, the programme, academic staff, financial projections, sustainability, and any other relevant information)

Step 3

Pre-enrolment Visit

The Accreditation Team makes a visit to the school to view the facilities, and make recommendations on (i) facilities, staff, curriculum, etc. , (ii) the number of students for the first batch enrolment to the Joint Technical Committee (JTC, refer to Chapter 1.2)

Step 4

Post-enrolment Visit (6-8 months after the enrolment of the first batch of students)
The Accreditation Team evaluates the programme and its progress, and matters concerning staff and students. The review will also include the recommendation on the student enrolment number for the second batch.

Step 5

Monitoring/ Review Visit (2nd year of the programme, before and maybe after the beginning of the clinical phase)

Step 6

Pre-Graduation Visit (6 months before the first batch of students take the Final Professional Exam)
The Accreditation Team will evaluate the entire programme through the first batch of students.

Step 7

Ad hoc Visits

Monitor specific areas of concern as directed by the MMC or JTC

Appendix III

Difference in the exclusive countries and the number of medical institutions from the common countries listed in the Second Schedule of Malaysia's Medical Act and Singapore's Medical Registration Act:

	MALAYSIA	SINGAPORE
Exclusive Countries	**Egypt**	Denmark
	Bangladesh	Finland
	Burma	France
	Czech Republic	Germany
	Indonesia	Israel
	Iran	Italy
	Iraq	Netherlands
	Jordan	Norway
	Malta	South Korea
	Poland	Spain
	Russia	Sweden
	Saudi Arabia	Switzerland
	South Africa	
	Sudan	
	Turkey	
	Uganda	
	Ukraine	
	United Arab Emirates	
	West Indies	

Difference in number of recognised institutions from the common countries	MALAYSIA	SINGAPORE
Australia	13	11
Austria	2	1
Belgium	4	1
Sri Lanka	2	1
China	2	8
Hong Kong	1	2
India	53	9
Japan	10	8
Malaysia	29	2
Pakistan	7	1
Taiwan	8	2
United Kingdom	33	22
United States of America	89	38
TOTAL	**339**	**158**

Appendix IV

List of accredited local medical institutions as of 17 January 2017

	University	College	Recognized Date
	Public		
1	Universiti Malaya (UM)		15/1/1971
2	Universiti Kebangsaan Malaysia (UKM)		22/6/1979
3	Universiti Sains Malaysia (USM)	School of Medical Sciences, Health Campus, Kubang Kerian, Kelantan	7/11/1986
4	Universiti Malaysia Sarawak (UNIMAS)		15/5/2000
5	Universiti Putra Malaysia (UPM)		6/5/2001
6	International Islamic University (IIUM)		14/5/2002
7	Universiti Teknologi MARA (UiTM)		4/10/2008
8	Universiti Malaysia Sabah (UMS)		26/5/2008
9	Universiti Sains Islam Malaysia (USIM)		1/11/2011
10	Universiti Sultan Zainal Abidin (UniSZA)		8/7/2014
11	Universiti Pertahanan Nasional Malaysia		6/2/2016
	Private		
1	Royal College of Surgeons of Ireland	Penang Medical College	1/6/2001
2	International Medical University (IMU)		19/2/2002
3	University of Sheffield[Ψ]	Perak Medical College	1/7/2002
4	Manipal University	Melaka-Manipal Medical College	7/9/2003
5	Royal College of Medicine Perak (MBBS-Malaya Programme)		19/1/2006
6	AIMST University		17/8/2007
7	UCSI University		26/3/2010
8	Monash University	Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Sunway Campus	26/3/2010
9	Cyberjaya University College Of Medical Sciences (CUCMS)		29/7/2010
10	Management & Science University (MSU)	International Medical School, (MSU-IMS) Bangalore	23/4/2011

[Ψ] Course discontinued after final batch of students graduated in December 2004

11	Universiti Kuala Lumpur-Royal College of Medicine Perak		6/10/2012
12	University of Newcastle-upon-Tyne	Newcastle University Medicine Malaysia	14/5/2014
13	MAHSA University		6/6/2014
14	Universiti Tunku Abdul Rahman (UTAR)		29/1/2015
15	Taylor's University		28/5/2015
16	SEGi University		30/7/2015
17	Royal College of Surgeons of Ireland	Perdana University	13/4/2016
18	Kolej Universiti Lincoln		10/6/2016

Source: Malaysian Medical Council (Second Schedule of Medical Act, updated Jan 2017)

Appendix V

List of provisionally accredited local undergraduate medical schools as of 31 December 2015

	Institution/Programme	**Year Established**	**Year Expected To Be Accredited**	**Number of Enrolment (2014)**
	Public			
1	Universiti Pertahanan Nasional Malaysia*	2010	2016	n/a
	Private			
1	ASIA Metropolitan University	2010	2015	20
2	Perdana University – Johns Hopkins Graduate School of Medicine	2010	**(discontinued)**	80
3	Perdana University – Royal College of Surgeons, Ireland*	2010	2015	203
4	UniKL Royal College of Medicine Perak – Vinayaka Mission's University, India	2009	(**discontinued)**	151
5	Kolej Universiti Insaniah	2011	2016	61
6	Quest International University Perak	2012	2017	115
7	University College Shahputra	2012	2017	149
8	Allianze University College of Medical Sciences (AUCMS-MD)	2012	(**discontinued)**	425
9	Lincoln University College*	2012	2017	115

Source: Malaysian Medical Council Annual Report 2015 and Profile of Private Higher Educational Institutions (PHEIs) 2014

* Already accredited in the updated Second Schedule of Medical Act, Jan 2017

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Abbreviations

APC	Annual Practising Certificate
APHM	Association of Private Hospitals of Malaysia
AUCMS	Allianze University College of Medical Sciences
CSMU	Crimea State Medical University
FPMPAM	Federation of Private Medical Practitioners' Associations Malaysia
HO	House officer (Houseman)
IHM	Institute for Health Management
JPA	*Jabatan Perkhidmatan Awam* or Public Service Department (PSD)
MBBS	Bachelor of Medicine, Bachelor of Surgery
MD	Doctor of Medicine
MMA	Malaysian Medical Association
MMC	Malaysian Medical Council
MO	Medical officer
MOE	Ministry of Education
MOH	Ministry of Health
MOHE	Ministry of Higher Education
MQA	Malaysian Qualifications Agency
MQE	Medical Qualifying Examinations
NOC	No Objection Certificate
NSR	National Specialist Register
OECD	Organization for Economic Co-operation and Development
PSC	Public Service Commission
PSD	Public Service Department
PUGSOM	Perdana University Graduate School of Medicine
SCHOMOS	Standing Committee for House Officers, Medical Officers and Specialists
SPA	*Suruhanjaya Perkhidmatan Awam* or Public Service Commission (PSC)

Acknowledgement

I would like to thank Dr Ong Kian Ming and Dr Lyana Khairuddin for the peer review of this report, I truly appreciate their valuable feedback and intellectual input. I also would like to record my gratitude to my fellow friend and colleague Lim Su Lin for editing the report meticulously. Appreciation must also be given to my friends currently serving as housemen, who provided valuable insight into the working experience of a house officer. I thank my colleagues in the Penang Institute who raised good suggestions during a preliminary presentation of my research findings. Last but not least, I would like to thank Dr Sem Xiao Hui and Dr Ooi Kee Beng for their unwavering support and understanding for the project.