

Restructuring the Medical Council of India

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Restructuring the Medical Council of India*

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Key Recommendations

- Excluding/Limiting the number of National Medical Commission representatives in the Medical Advisory Council in order to divide power, promote autonomy, and prevent corruption.
- Creation of Regional Medical Councils across regions of India, instead of having the Medical Assessment and Rating Board hire third party assessment agencies. This will promote competition amongst the regions to improve quality and process of assessment.
- Review section 7.2 of Indian Medical Council Professional Conduct, Etiquette, and Ethics Regulation, 2002 and clarify minimum medical procedures that both MBBS doctors and qualified nurses are permitted to conduct.
- Research has to be included as a fundamental component for accreditation of postgraduate medical colleges. Direct the PGMEB to only accredit postgraduate institutions that both adopt a research-based meritocratic hierarchy for faculty and incorporate research in the assessment of students.
- Introduce a mandatory three-year work period for all graduating students of medical institutions. For the first year the graduates should work in provincial hospitals, and for the second and third years, they must work in community or rural hospitals. This will both address the shortage of doctors in many communities and prevent rampant 'brain-drain'.
- Adopt WHO-WFMR guidelines for *Basic Medical Education* (BME) and *Postgraduate Medical Education* (PME). Set the base guideline for all standards created by the UGMEB and PGMEB to the BME and PME respectively. This will bring India in line with international standards.
- Create a fifth sub-board that will adopt the WHO-WFMR guideline for *Continuing Professional Development* (CPD). This sub-board will be responsible for the standards of individual medical professionals and medical professional affiliation. This will both bring India in line with international standards and apply constant quality checks on all medical practitioners within the country.

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1. Introduction

The National Medical Commission Bill would create a National Medical Commission (NMC) to replace the currently existing and extremely corrupt Medical Council of India. This new body would be responsible for the medical accreditation of all medical education institutions within the country as well as maintaining a national registrar of all certified allopathic medical practitioners within the country. The current draft should be lauded in its efforts to stem corruption by creating a system of accountability and a division of power, however the bill could both improve the structure of the NMC and the system of rules which it follows. This paper provides the details of these recommended changes, which are required to overhaul medical education in India.

After looking at various other countries and their accreditation systems, this paper recommends six changes: 1) Removing NMC members from the Medical Advisory Council; 2) Creating regional medical councils in the place of third party organisations; 3) Increasing the effective supply of doctors by both clarifying minimum permitted procedures for MBBS doctors and giving specialist status to diploma holders; 4) Adopting World Health Organization (WHO) guidelines as the basis of all standards set by the Under-Graduate Medical Education Board and the Post-Graduate Medical Education Board; 5) Ensuring that postgraduate schools receive accreditation only if they have a research-based meritocracy for students and staff; and 6) Mandating that all medical school graduates work in the country for a limited amount of time. We believe that these six changes can lead to significant improvements in the accreditation system of medical education in India. This is critical for the overall quality of healthcare services available in the country in the long run.

2. Background of Medical Council of India

The Medical Council of India (MCI) was established in 1934 under the Indian Medical Council (IMC) Act of 1933. At the time, its primary function was to standardise both training in medicine and the accreditation of medical and surgical proficiency. In 1956, the original IMC Act was repealed and redesigned. It has subsequently received face-lifts with amendments enacted in 1964, 1993, and 2001.

The Council is composed of one representative from each State (appointed by the Central Government), one medical faculty member from each University (appointed by the Senate of the public University), one representative of each State which maintains a Medical Register (elected by members on the register), seven members enrolled on any of the State Medical Registers (elected from amongst themselves) and eight Central Government representatives (appointed by the Central Government). The MCI elect its President and Vice-President.

Table 1: Composition of the Medical Council of India in 2016

Representing	State Government	Central Government	Union Territories	Universities	Registered Medical Graduates
Number of members	25	8	1	51	19
Appointed By	Central Government	Central Government	Central Government	Senate of University	State Medical Registers

The Medical Council's main objectives are:

1. Maintenance of uniform standards of medical education, both undergraduate and postgraduate.
2. Recommendation for recognition/de-recognition of medical qualifications of medical institutions of India or foreign countries.
3. Permanent registration/provisional registration of doctors with recognised medical qualifications.
4. Reciprocity with foreign countries in the matter of mutual recognition of medical qualifications.
5. Regulating professional conduct of Doctors registered under the Indian Medical Council Act, 1956.

In this section, we explore the fundamental role of MCI in accreditation, training and medical education in India. It is important to clarify beforehand that the IMC Act of 1956 defines “medicine” as “modern scientific medicine in all its branches and includes surgery and obstetrics.” This refers to allopathic medicine which incorporates the prescription of pharmaceutical drugs and surgical procedures to prevent or suppress illnesses.

2.1 Accreditation and Grievances

The Medical Council of India released the Establishment of Medical College Regulations in 1999. The process has been criticised by healthcare professionals for being cumbersome and overly-complicated. The following steps each have their own set of instructions and guidelines that vary depending on the number of seats (ranging from 50 – 250 seats) that the prospective institution will have.

- 1) Eligibility Criteria
- 2) Qualifying Criteria
- 3) Form & Procedure
- 4) Application Fee
- 5) Registration
- 6) Evaluation by Medical Council of India
- 7) Report of the Medical Council of India
- 8) Grant of Permission
- 9) Reconsideration

The Eligibility and Qualifying Criteria establish who is authorised to create medical institutions and what physical and human resources they must have to do so. The application fee for public colleges is ₹3.5 lakh and ₹7 lakh for private colleges (as of 2016). In a series of meetings held by NITI Aayog in 2016 and in our own interviews with health experts and officers, it was observed that private colleges feel discriminated by the MCI when they are charged higher accreditation prices.

Within the 2001 IMC Act, no proposal for a prospective school can be disapproved unless sufficient evidence for its dismissal is presented by the Central Government. Even if a proposal is dismissed, the prospective medical school can resubmit a revised proposal. The IMC Act states that if no communication is received from the MCI within one year of scheme submission, approval is automatically granted for the new college or course.² If a new college or course is disapproved, the prospective college can rectify the issues noted by the MCI and

² Clause 10.A, Sub-clause (5)
<https://old.mciindia.org/acts/Complete-Act-1.pdf>

resubmit a new proposal. If the Central Government sanctions the reconsideration, then the MCI will re-evaluate the updated scheme in the same manner as the initial application.

The Central Government, upon the recommendation of the MCI, makes the final decision. The Central Government will send a Letter of Intent to the prospective school granting permission for construction and instruction to begin. This letter of permission may also “define annual targets as may be fixed by the Council to be achieved” by the institution.³

2.2 Overview of Medical Education in India

In India, the two predominant types of medical practice are allopathic and AYUSH. AYUSH stands for Ayurveda (traditional Indian medicine), Yoga and Naturopathy, Unani (traditional Islamic-Indian medicine), Siddha (traditional Tamil medicine), and Homeopathy. The Ministry of AYUSH, formally known as the Department of Indian System of Medicine and Homeopathy, oversees both the education and accreditation of AYUSH healthcare professionals and institutions in India. While the Medical Council of India is respectively responsible for the education and registration of allopathic medical practitioners in the country.

Allopathic or modern medicine gained traction in India during the 20th century under British colonisation. In 1946, the first national health care policy completely excluded the traditional systems of medicine. Today, there are efforts to mainstream AYUSH education and research, but these efforts exist in the periphery of the national conversation of health reform. Further research should be done on the best practices in mainstreaming homeopathic medicine. There are examples of Hong Kong and China which have an integrated and regulated traditional Chinese medicine practice; and Canada and Germany for well regulated homeopathy practice. In this paper, we have limited the focus to allopathic medical training in India and the critical role of MCI in furthering it. The following description provides details of the requirements of allopathic medical training in India.

Students must complete a total of 12 years of education before attending medical college in India. In the last two years of high school, students choose one of the three streams: arts, commerce, or science. If students plan on applying to medical school, it is advised they select the science track so that they can have the proper prerequisite knowledge in mathematics,

³ <https://old.mciindia.org/for-colleges/Estt-of-New-Med-Coll-Regulations-1999.pdf>

biology, chemistry, and physics. Before the National Eligibility cum Entrance Test (NEET) was introduced in 2016, every medical college had their own entrance exam. The NEET is conducted by the Central Board of Secondary Education for admission into MBBS programmes in India.⁴ The MBBS programme requires candidates to undergo 4.5 years of schooling and a one-year internship before receiving certification. Before NEET, universities could have an entrance exam as part of their admission process, but there is no national exit exam. After a 12-month internship or residency, individuals can register as an official medical practitioner with their state medical council.

Some people, however, opt to pursue higher education with potentially better career options. There are two paths for postgraduate (PG) education. The first is getting accepted into an existing PG programme and then studying for three years. After which the individual will be awarded with an MD/MS degree. The second option for PG education is referred to as Diplomate of National Board (DNB), which takes two years to earn. Interviewed healthcare professionals expressed that DNB training is the option a lot of students are left with after the extremely limited seats in MD/MS programmes are filled. The DNB requires an additional two years of hospital training to become equivalent to the three-year MD/MS degree. Healthcare professionals also indicated that more MBBS students are choosing to dedicate most or all of their time to studying for PG entrance exams, instead of working part-time at a clinic or hospital. There is an obvious shortage of medical practitioners in India, but this is further aggravated by a significant number of qualified MBBS doctors that are not practicing until they have achieved higher qualifications.

MBBS doctors often do not practice until they achieve higher qualifications due to the vague regulations surrounding their ability to conduct basic procedures. Section 7.2 of the IMC Professional Conduct, Etiquette, and Ethics Regulation of 2002 states: “A physician shall not claim to be a specialist unless he has a special qualification in that branch”. If an MBBS performs a procedure which is normally expected to be performed by a person having a postgraduate qualification, it could reasonably be argued that he or she is claiming to be a specialist. Unfortunately, the MCI does not spell out minimal procedures that each recipient of a degree is permitted to perform. According to Shetty (2017), the vagueness of this regulation prevents MBBS doctors from treating the top 10 causes of death in India. This regulation puts excessive risk on both MBBS doctors performing caesarean section,

⁴ <http://cbseneet.nic.in/cbseneet/Welcome.aspx>

anesthetic procedures, ultrasound, X-rays, and other basic procedures and also nurses that apply anesthesia. Hospitals look at these risks as liabilities, and prevent their staff from administering procedures that could potentially get them involved in a regulatory tiff.

Table 2: Overall Capacity of Medical Education in India

	Public	Private	Total
Recognised medical colleges	209	173	382
Total number of Seats	40163	29858	70021
Seats per College	192.16	172.58	183.301

Source: July 2017 Medical Council of India College Course Search. Only included “recognized” colleges, excluding “permitted” and unrecognized.

MCI’s medical institution data analysed by Brookings India indicated a significant difference between private and public undergraduate to postgraduate seat ratio. The ratio is 3.35 compared to 1.52 for private and public schools respectively. In essence, private schools offer over twice the number of undergraduate seats as compared to postgraduate seats. This is undoubtedly contributing to the increased competition for postgraduate degrees.

According to the WHO’s Global Health Observatory, India’s physician density was 6.49 per 10,000 people in 2009.⁵ In seven years, this ratio has only gotten worse. In 2016, IndiaSpend reported a shortage of 5 lakh doctors and a ratio of one physician per 1,674 people.⁶ Brookings India’s data finds that there are approximately 70,000 seats available, meaning that there are approximately 6.2 seats per 100,000 people. Considering India’s rapidly growing (albeit decelerating) population, unless capacity matches this growth, India will see a decline in its physician ratio. Furthermore, capacity will need to exceed growth in order to overcome the current shortage of doctors. Further research should look at graduation rates across Indian medical institutions, and the tendency for Indian doctors to emigrate.

2.3 Corruption

One of the first cases exposing the decaying and corrupted condition of the Medical Council of India was the *2009 Modern Dental College and Research Centre and Others v. State of Madhya Pradesh and Others*. The prosecution challenged the vague admissions process, the

⁵ <http://apps.who.int/gho/data/node.country.country-IND>

⁶ <http://www.hindustantimes.com/india-news/healthcare-crisis-short-of-5-lakh-doctors-india-has-just-1-for-1-674-people/story-SZepTyjJ78WgOVIo93tBVK.html>

unfixed tuition/entrance fees, the reservation of seats to Scheduled classes/tribes, and overall eligibility criteria at private medical institutions.⁷ The Council's largest scandal surfaced in 2010 when Dr. Ketan Desai, former MCI president, was accused of taking a bribe of ₹20 million (approximately \$450,000) from a private medical college. Supposedly, Dr. Desai gave assurances of fast-tracking the MCI approval process for both the school's proposed medical courses and increase in the number of available seats.

On September 23, 2015, the Standing Committee on Health and Family Welfare began its review of the Medical Council of India. After several meetings with health experts and officers, members of the MCI, and officers from State Governments, it became clear that the MCI had been failing to perform up to standards. The issues identified pointed to decades of gross mismanagement within the MCI. Some key failures expressed at meetings held by NITI Aayog include: failure to create a curriculum that produces doctors suited to meet the Indian context; failure to maintain uniform standards of medical education at the undergraduate and postgraduate levels; devaluation of merit in the admission process, particularly in private medical institutions; failure to create a transparent system of medical college inspections; and no substantial evaluation of the quality of teaching, training, and instructing of skills.⁸

Another issue concerns election as the mode selection for council seats. According to the IMC Act of 1956, "members of the Council shall be eligible for re-nomination or re-election." We interviewed several leading medical experts in industry and policymaking positions who shared that the MCI essentially acts as a revolving door for the same pool of officials. After serving in one position, an individual is eligible for the same or different position so long as he/she is nominated and elected according to the IMC Act of 1956 by-laws. If the MCI is as incompetent and corrupt as critics claim, then this clause only perpetuates the existing hegemony.

Additionally, we identified several flaws in the IMC Act of 1956 that were not brought up at the NITI Aayog review sessions. After several discussions with health care practitioners and administrators, we find that the regulation of ethics has fallen off the MCI's radar. Although the Code of Ethics Regulations, 2002 outlines the proper duties and responsibilities of physicians, our conversations revealed that these responsibilities are widely flouted. One seldom-mentioned issue is that AYUSH-trained professionals administer allopathic

⁷ <http://judis.nic.in/supremecourt/imgs1.aspx?filename=43584>

⁸ http://niti.gov.in/writereaddata/files/document_publication/MCI%20Report%20.pdf

treatments to patients even though the Code strictly states that “a person obtaining qualification in any other system of Medicine is not allowed to practice Modern system of Medicine in any form”.

3. Proposed National Medical Commission

In July 2014, the Parliamentary Standing Committee was formed to look into the inadequacies of the Medical Council of India. Over a two-year period, experts determined that the Medical Council of India needed more than reformation—it needed to be scrapped and completely replaced. The Proposed National Medical Commission Bill, 2016 was born out of months of tedious discussion and deliberation with multiple stakeholders. The NMC will fill the administrative and regulatory gaps of the MCI.

The objectives of the NMC is to create a medical education system that:

- Ensures adequate supply of high quality medical professionals at both undergraduate and postgraduate levels.
- Encourages medical professionals to incorporate the latest medical research in their work and to contribute to such research.
- Provides for objective periodic assessments of medical institutions.
- Facilitates the maintenance of a medical register for India and enforces high ethical standards in all aspects of medical services.
- Is flexible so as to adapt to the changing needs of a transforming nation.⁹

From the objectives alone, it is evident that the NMC Bill attempts to tackle new frontiers that the IMC Act did not. Not only is quality but quantity of medical professionals a priority. The incorporation and encouragement of research as an integral part of medical education is a goal which had no place in the IMC Act.

For several months, the NMC Draft Bill has been available to the public for feedback on its features. We understand that this is only a Draft Bill and our critique aims to further improve the document so that it is comprehensive and specific. We will briefly layout the organisation of the proposed NMC while highlighting both structural and institutional changes.

⁹ <http://www.prsindia.org/uploads/media/draft/Draft-National%20Medical%20Commission%20Bill,%202016.pdf>

3.1 Structure of the NMC

As opposed to the singular body with multiple committees that was the MCI, the NMC will have a division of powers. Three mostly independent boards are to operate with a good degree of autonomy from the others. This autonomy creates a division of power that makes practicing corruption more arduous. There are some structural defects to this autonomy that will be tackled in the recommendations section. These boards are the Search and Selection Committee (SSC), Medical Advisory Council, and the National Medical Commission. Each will be described briefly.

- a) The Search and Selection Committee is to be composed of five individuals of differing expertise. It includes the Cabinet Secretary, the CEO of Niti Aayog, a health expert from the Ministry of Health, an economist/management expert from the Ministry of Health, and the Secretary of Health. The Search and Selection Committee shall recommend names for every vacancy put forward by the NMC.

Having a separate committee to decide the members of the NMC ensures that a 'revolving door' is not created.

- b) The Medical Advisory Council is to be composed of state and union territory representatives along with all the members of the NMC. It is supposed to advise the NMC on their course of action.

The MAC is a watchful eye offering both expertise and integrity to the overall structure. Its largest flaw is the inclusion of all the members of the NMC. An autonomous structure cannot have a significant proportion of its members hail from the board that it is supposed to be independently advising.

- c) The National Medical Commission consists of 20 members: four presidents of sub-boards, four representatives of the Ministry of Health and Family Welfare, Department of Pharmaceuticals and Human Resources Development, and Director General of Health Services¹⁰, five Central Government representatives, five state and union territory representatives, one member secretary, and one chairman. The board will frame policies under which the four sub-boards are supposed to operate.

¹⁰ There is a flaw in section in 6(5) of the draft bill. There are four nominees and only three departments. This needs to be clarified.

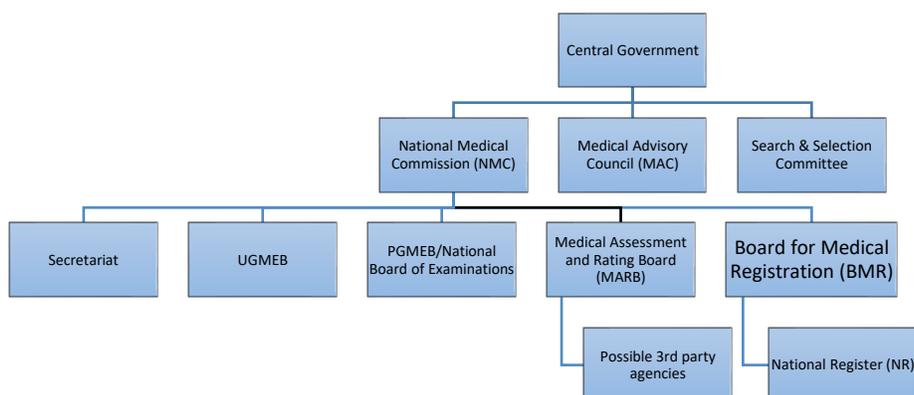
This structure is again supposed to maximise accountability. By having no control over the specific functions over the NMC apart from setting policy frameworks, the NMC will be a watchful, guiding eye for the four sub-boards. The NMC will also take the roles of handling any appeals against its four sub-boards. This contrasts to the system under the MCI in which appeals against the MCI would be brought to the MCI itself.

The four sub-boards are the Under-Graduate Medical Education Board (UGMEB), the Post-Graduate Medical Education Board (PGMEB), the Medical Assessment and Rating Board (MARB), and the Board for Medical Registration (BMR). Each will be described briefly.

- a) The Under-Graduate Medical Education Board is supposed to oversee all aspects of medical education at the undergraduate level. While the Post-Graduate Medical Education Board is supposed to oversee all aspects of medical education at the postgraduate level. They are supposed to:
- Develop a competency based curriculum.
 - Prescribe guidelines for setting up medical institutions.
 - Set Standards for courses and examinations.
 - Set Standards for facilities and faculty.
 - Facilitate research and exchange programmes.
 - Develop annual disclosure statements.

Research and publication standards are missing from this list. These should be included if research is to become an integral part of medical education in India, as it is in all leading global medical education institutions.

- b) The Medical Assessment and Rating Board is the compliance arm of the UGMEB and PGMEB.
- c) The Board for Medical Registration is supposed to:
- Maintain a national register.
 - Prescribe a Code of Ethics for medical practitioners.
 - Have appellate jurisdiction over orders passed by State Councils.

Figure 1: Structure of the National Medical Commission

The proposed NMC bill also contains a host of institutional changes. These changes are listed below.

- Introduction of a National Licentiate Examination (NLE) for all students graduating from Medical Institutions under the purview of the NMC.

Serves as an undergraduate exit exam so that student quality meets a minimum criterion.

Serves as an entrance exam for postgraduate education.

- NMC prescribes maximum tuition fee for private schools.

Prevents predatory education in the short run, however over time this will prevent innovations and improvements in quality of medical education which entails significant fixed costs.

- State Medical Councils are now accountable to the BMR.

State Medical Councils must maintain a digital registrar.

State Medical Councils are responsible for compliance of ethics guidelines set by the BMR.

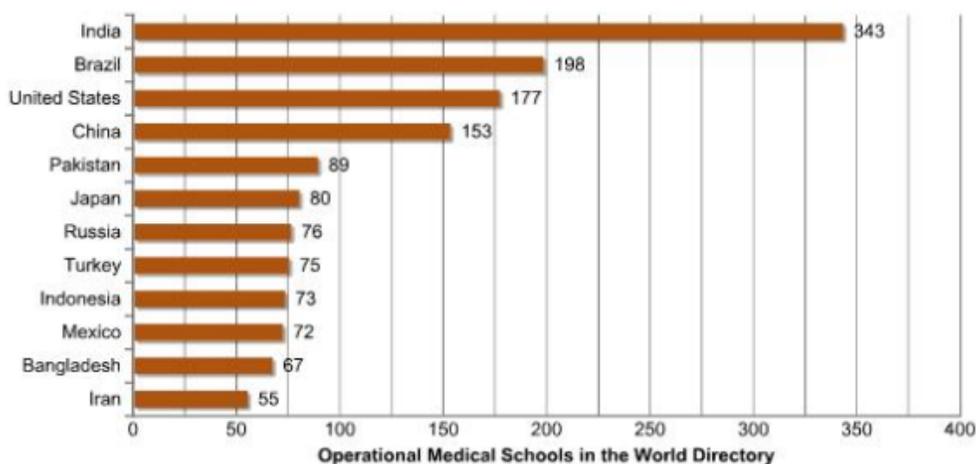
4. Global Best Practices

The purpose of this section is to assess the strengths of medical education systems globally and highlight these for potential inclusion in the NMC. The countries that we study are Australia, Canada, China, Thailand, and the United States for cross-comparison. These aforementioned countries become relevant to our analysis for different reasons. While some are renowned for their medical integrity, some have achieved low out-of-pocket (OOP) expenditure for healthcare services through smart policies, while some have achieved high quality in medical research.

India is situated in a unique position such that the course of its healthcare and medical education development will inevitably have global consequences. As noted in Figure 2, India has the most operational medical (allopathic and homeopathic) schools in the world as of 2016. India also remains malleable and stable enough to enact large policy changes without suffering from a complete shutdown. A universal comparison helps us to benchmark India's progress in medical education.

Figure 2: Cross-Country Comparison of Operational Medical Schools

Countries with the Most Operational Medical Schools Listed in the *World Directory*



Data current as of June 1, 2016.

Source: World Directory of Medical Schools

4.1 World Health Organization (WHO) Guidelines

Accreditation is widely considered to be the best means of preventing systemic breakdowns or corruption in new medical schools or programmes. Prior to the World Health Organization – World Federation for Medical Education (WHO-WFME)’s release of the three-part *Global Standards for Quality Improvement of Basic Medical Education, Postgraduate Education, and Continuing Professional Development in 2003* (and subsequent revision in 2012), there were discrepancies amongst nations’ accreditation practices. As a result, the quality and worth of international medical practitioners was greatly disputed. These disagreements countered the ultimate goal of accreditation, which is to improve global health practice and care.

The WHO-WFME International Task Force on Accreditation in Medical Education is regarded as the international board of medical education and practice. In hopes to develop regional standards of care, based off various socio-economic factors, the WHO-WFME published the medical education trifecta: *Global Standards for Basic Medical Education (BME)*, *Post-graduate Medical Education (PME)*, and *Continuing Professional Development (CPD)*. These three documents established the fundamental elements of accreditation upon which individual nations can build and tailor systems to best fit their specific health and education objectives. The WHO-WFME’s methods of accreditation are based on processes and best practices - *not outcomes*. Populations across multiple regions have different afflictions and health needs, so progress must be measured in quantitative *and* qualitative terms. Adopting these standards would give both the medical accreditation institutions and the medical schools greater legitimacy in the international arena.

The BME document corresponds to undergraduate education in India, while the PME corresponds to postgraduate education in India. Each document consists of nine sections: mission, educational programme, assessment of students, students, faculty, resources, evaluation, governance, and continuous renewal. There are two types of standards given for each section of the document – a basic standard and a standard for quality development. Basic standards must be met at all times, whereas standards for quality development are the international community’s consensus on the best practice for medical schools. Schools should be consistently working to meet these international best practices. Adopting these international standards would force Indian medical schools to incorporate ethics in medical school, conduct original research, and collaborate with other educational institutions. As

WHO standards are processes based, individual countries, such as India, can adopt quantities that best serve their needs.

The CPD is a professional guideline for all medical professionals individually and through professional affiliations. The document consists of nine sections: mission, educational programme, assessment and documentation, individual doctor, CPD provision, educational resources, evaluation, organisation, and continuous renewal. Similar to the BME and PME, the CPD contains basic standards and aspirational quality development standards. The trilogy of documents provides a thorough and rigorous set of standards for medical education institutions, medical professionals, and professional affiliations to meet and aspire to. India should follow China and Thailand, and incorporate these standards into its accreditation system.

The following bullet points will quickly summarise the basic standards of the BME and PME.

a) Mission

- Must be stated, known, and outline aims and educational strategy
- Must have institutional autonomy
- Must define intended educational outcomes
- Must be an inclusive process

b) Framework

- Define curriculum that stimulates, prepares, and supports students
- Teach the scientific method
- Incorporate biomedical and behavioural sciences
- Incorporate medical ethics and medical jurisprudence
- Incorporate the clinical and professional skills
- Ensure coordination between all subjects
- Ensure linkage between school and education after graduation
- (PME) Incorporate managerial disciplines, patient safety, doctor's self-care, complementary medicine, clinical decision-making, preventive medicine, public health, and communication skills

c) Assessment

- Must define, state, and publish the principles for assessment of students
- Assessment must be compatible with educational outcomes

- (PME) Evaluate and document fairness of assessment methods
- (PME) Use a system of appeals for assessment

d) Students

- Objective admission policy
- Facilitate admission of disabled students
- Facilitate transfer of other students
- Define size of student intake as it relates to capacity
- Maintain a system of confidential academic counselling and student support
- Students must have say in mission, design, management, and evaluation

e) Faculty

- Outline type and responsibilities of academic staff
- Address criterion for meritocratic research-based recruitment
- Monitor responsibilities of staff
- Formulate and implement a meritocratic staff activity and development policy which allows balance of teaching, research, and service

f) Facilities

- Sufficient physical facilities for students and staff
- Safety for staff, students, patients, and their relatives
- Sufficient clinical resources
 - i. Number and categories of patients
 - ii. Clinical training facilities
 - iii. Supervision of their clinical practice
- Ethical and effective IT usage
- Usage of medical research and scholarship as basis for educational curriculum
- Foster relationship between medical research and education
- Implement policy for national/international collaboration and transfer of educational credits

g) Programme Evaluation

- Must have routine curriculum monitoring
- Establish mechanism for evaluation that

- i. Addresses curriculum
 - ii. Addresses student progress
 - iii. Identifies and addresses concerns
 - iv. (PME) Evaluates methods of assessment
 - v. (PME) Evaluates Trainer qualifications
 - vi. (PME) Evaluates Relationship between recruitment and needs of health system
- Seek, analyse, and respond to teacher-student feedback
 - Analyse performance of students in relation to mission, curriculum, and resources
 - Include principal stakeholders in evaluation
 - (PME) Routinely monitor performance of qualified doctors
 - (PME) Seek feedback of graduated doctors from employers and utilise feedback in programme evaluation
- h) Governance
- Define governance structures
 - Describe responsibilities of academic leadership
 - Maintain a dedicated educational budget
 - Allocate resources necessary for the implementation of the curriculum
 - Maintain an administrative task that supports implementation of education programme and ensures good management
 - Interacts with the health sector of society and government
- i) Continuous Renewal
- Initiate procedures for regularly reviewing and updating the process, structure, content, outcome, assessment, and learning environment of the programme
 - Rectify deficiencies
 - Allocate resources for continuous renewal

4.2 International Cases: Accreditation, Training, and Initiatives

In this next section, we compare the accreditation processes in Australia, Canada, China, Thailand, and the United States. If India wants to create the best medical practitioners in the

world, it will need to create a sustainable and accountable accreditation system. This will require studying the cases of success and failure internationally. Given the varying amount of information available for the countries, each case will generally summarise the history of accreditation within the country, the composition of the apex accrediting body, the mechanics of accreditation, and any unique features particular to the country that holds relevance for India.

Table 3: Global Comparison of Accreditation Process

Countries	Accreditation	Accrediting Body	Accreditation Process	Validity of Accreditation	Medical Grievances
Australia	Mandatory	Australian Medical Council	Full status: 10 years	6-10 years	Health Ombudsman (8)
Canada	Voluntary	Committee on Accreditation of Canadian Medical Schools (CACMS)*, in cooperation with the Liaison Committee on Medical Education (LCME)*	8 years		Patient Representative or Patient Advocate Office within hospital or healthcare site -Inquiries, Complaints, and Reports Committees affiliated with most medical colleges
China	Voluntary Mandatory as of 2020	Working Committee for the Accreditation of Medical Education	3-8 years		Complaint Reception Office in hospitals Health Inspection Institute People's Court (Highest resolution level) Complaint Letters and Visits Office in Health Administrative Departments People's Mediation Committee for Medical Disputes
India	Mandatory	Medical Council of India National Assessment and Accreditation Council	Full status: 5 years Permitted status: 1 year		At Wellness centre level : Advisory Committee At city/zone level : Additional Director Public Grievance Redress and Monitoring System (CPGRAMS)
Thailand	Mandatory	Institute for Medical Education Accreditation Medical Council of Thailand Office of the Higher Education Commission	Full status: 5 years	5 years	The Office of The Consumer Protection Board Court under The Consumer Protection Law
United States*	Voluntary	Liaison Committee on Medical Education (LCME) Commission on Osteopathic College Accreditation (COCA)	8 years		*State Medical Licensing Boards (72)

*Includes Commonwealth of the Northern Mariana Islands, District of Columbia, Guam, Puerto Rico, Virgin Islands

Sources: AAMC

Table 4: Global Comparison of Training Process

Countries	Curriculum Duration	Average Tuition per Year (\$)	Total # of Students (per year) / # of Schools	Actual # of Graduates
Australia*	5-6 Undergraduate Bachelor degree (M.D.) Any Bachelor's degree + 4 year Master's degree (M.D.)	\$9,792	3777 (2015)/ 21 schools Average: 180 students per school	3,574 students
Canada	Any Bachelor's degree + 3-4 Graduate programme (M.D.)	\$15,352	2907 (2015-2016)/ 17 schools Average: 171 students per schools	2,853 students
China	5 year Bachelor's degree 6 year English-medium MBBS for international students 7 year Bachelors degree + Master's degree 8 year PhD degree	\$4,167	70,000 students 4,000 students 1,000 students	
India	4.5 year Bachelor of Medicine & Bachelor of Surgery (MBBS) MBBS + 3 year MD/MS degree [Postgraduate] MBBS + 2 year Diplomate of National Board (DNB) + 2 years hospital training [Postgraduate]	\$11,608		
Thailand	5 year programme (applicants must have Bachelor's degree) 6 year programme (applicants must be high school students)			
United States	Any Bachelor's degree + 4 Graduate programme (M.D.)	\$48,321	20,631 (2015-2016)/ 150 schools Average: 138 students per school	18,938 students
*numbers include New Zealand citizens				

Sources: AAMC

a) Australia

Accreditation

There are currently 22 accredited allopathic medical schools in Australia and New Zealand. The Australian Medical Council (AMC), in collaboration with the Medical Council of New Zealand, is the body responsible for setting the national standards and assessment procedures for medical education. The AMC also designs the accreditation policies and procedures for medical schools and programmes in Australia and New Zealand.¹¹

¹¹ <http://www.amc.org.au/about>

The AMC and the Medical Council of New Zealand conduct assessments under the following situations: proposal of new medical programmes, proposal for major change in established programme, reaccreditation of existing programmes, and extension of past accreditation.

The AMC accreditation process involves the following:

- 1) Initial contact
- 2) Documentation
- 3) Selection of the assessment team
- 4) The team's preliminary meeting
- 5) The AMC team's assessment visit
- 6) Preliminary findings
- 7) Preparation of team's draft report
- 8) Presentation of the Committee's report to the education provider
- 9) Formal consideration of the Committee's report
- 10) Decision on accreditation

Exactly as it sounds, initial contact is the first communication between the institution and the AMC. They discuss the process and set the timing of the assessment/(re)accreditation. Institutions looking to begin a new programme or course must receive approval from state/territory and national authorities regarding student place and clinical facilities. After the institution receives the go-ahead, they submit an outline of the mission and curriculum for the medical programme as well as the teaching resources at its disposal. The AMC must receive this at least six months before the on-site assessment.

The assessment team is case-appointed by the AMC. These individuals ensure that accreditation is unbiased and holistic. They represent different regions of Australia and New Zealand, community interests, and medical/educational/administrative professions. The AMC team's assessment lasts approximately one week, but may take longer depending on location of the training sites. The team interviews the senior staff members and examines all teaching facilities.

Within five weeks, the institution will receive word from the assessment team regarding their evaluation. The institution can provide comments about the accuracy of the evaluation. This is then submitted to the Medical School Accreditation Committee. The Committee then

considers all accreditation material (interviews, information provided by institution, and documentation) and submits the penultimate report to the AMC and the Medical Council of New Zealand. These two bodies make individual decisions about accreditation and publicly announce their final decision.

Accreditation is mandatory for every new primary medical school. Institutions granted the full period accreditation must submit progress reports the year after their first assessment, third, fifth, seventh, and ninth year. Accreditation is achieved after 10 years, and the institution must be reviewed at least once every decade going forward. A school can receive partial accreditation in less than 10 years but must adhere to a set of rules and guidelines specified by the AMC and submit annual reports.¹²

Training

There is no universal entrance exam required for undergraduate programmes. The Australian Council for Education Research (ACER) created the UMAT to assist universities with the selection of students into competitive medical programmes.¹³ It is an aptitude test designed check to students' ability to think critically. Currently, seven out of the 19 registered medical schools in Australia require a UMAT score in the admission process.¹⁴ Programmes that do not require the UMAT heavily weigh a student's high school academic record, ATAR, and interview.

There are three types of medical seats available to students in Australia.

1. *Commonwealth supported seats* are largely subsidised by the Australian Government. The government funds an approved number of medical seats at public universities. Students are only obligated to pay a "student contribution" and need not worry about tuition. In 2016, the average out-of-pocket cost for students was \$10,440 per year. International students are not allowed to attend.
2. In 2016, through the *Bonded Medical Plan Scheme*, 28.5 per cent of all first-year commonwealth supported seats were bonded. This means that the government will set aside medical school seats for students who agree to fulfil certain duties within five years of completing their basic or specialist degree. The "return-of-service obligation"

¹² http://www.amc.org.au/files/a1c951a8cdfb29f3938b750aecfe5e600727fbd6_original.pdf

¹³ <https://umat.acer.edu.au/>

¹⁴ <https://ama.com.au/careers/becoming-a-doctor>

requires bonded graduates to work in “districts of workforce shortage” for at least one year. These districts tend to be rural areas that provide regional and indigenous medical services. Bonded students do not receive financial aid and must assume the full burden of debt for their degree. They are, however, guaranteed a spot in competitive medical programmes.

3. Full fee-paying seats are available to international students at public universities. Only private universities are permitted to offer full fee-paying seats to Australian students. The average cost of study in pursuance of Bachelor of Medicine and Bachelor of Surgery (M.B.B.S) can cost over \$60,000 for Australian citizens and \$70,000 for international students.

Once the type of seat/school is chosen, one of two equivalent degrees is available to the student: a five or six-year Undergraduate Bachelor degree or the equivalent four-year professional Master’s degree. This first path has just been explained. The second path or entry into a postgraduate medical programme requires the applicant to have completed a bachelor degree in any field. Familiarity with advanced math and science is recommended in order to perform well on the Graduate Australian Medical Schools Admissions Test (GAMSAT). The GAMSAT was also created and administered by ACER.¹⁵ Currently 11 Australian medical schools conduct a four-year Masters programmes.¹⁶

After students complete their medical degree, they receive provisional registration and begin working as an intern for 12 months (47 full weeks). The internship bridges the gap between textbook learning and clinical practice. In intervals of eight-19 weeks, interns complete rotations in a variety of medical specialties ranging from general practice, emergency medical care, surgery, aged care, etc.¹⁷ Upon completion of the internship, the individual will receive general medical registration through the Medical Board of Australia.

Initiatives

Health Workforce Australia (a subsidiary of the Department of Health) has identified several issues with the country’s healthcare system, workforce, and resource allocation. The first issue is the poor distribution of the medical workforce which most acutely affects rural

¹⁵ <https://gamsat.acer.org/files/MedicalDeansInherentRequirements.pdf>

¹⁶ <https://ama.com.au/careers/becoming-a-doctor>

¹⁷ <https://ama.com.au/careers/becoming-a-doctor>

communities. 25 per cent of total medical students come from rural areas, and 25 per cent of all graduates are required to work in rural areas. The HWA also identified a trend toward specialisation and sub-specialisation in popular concentrations that lead to better career prospects. If this tendency continues, then the country will remain highly reliant on international medical graduates for generalists and specialists in at-risk fields, like psychiatry and radiation oncology.¹⁸ These are two programmes that Australia has rolled out to solve these issues.

The Community Residency Programme for Junior Medical Officers: The Australian Medical Association developed this program because in 2014, the Prevocational General Practice Placements Program was dissolved. General practice is the only major specialty without a structured internship program. This new proposal will meet two objectives. First, it will expose students to the intricacies of general practice, allowing them to make a more informed decision when making career choices. Secondly, patients in rural areas benefit because the general practice rotations will primarily take place in regional and rural Australia.¹⁹

Expansion of the Specialist Training Program: The Specialist Training Program currently aims to provide medical specialist trainees with opportunities to learn outside of the public teaching hospitals located in urban centres and locales. This programme requires building new relationships with accredited health care establishments, such as private hospitals, clinics, and Aboriginal Community Controlled Health Service.²⁰

¹⁸ <http://pandora.nla.gov.au/pan/133228/20150419-0017/www.hwa.gov.au/sites/default/files/SummaryHW2025Vol1-3FINAL.pdf>

¹⁹ <https://www.nrhn.org.au/public/download.jsp?id=34625>

²⁰ [http://www.health.gov.au/internet/main/publishing.nsf/Content/D318A72E5BA254E5CA257ED1007F3CA1/\\$File/STP%20Discussion%20Paper.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/D318A72E5BA254E5CA257ED1007F3CA1/$File/STP%20Discussion%20Paper.pdf)

b. Thailand

Accreditation

In 1968, the Medical Council of Thailand (TMC) was established under the Ministry of Public Health. This body was focused more on the ethics, professional conduct, and licensing of doctors than standardising medical education.²¹ In 1972, the Ministry of University Affairs was established as a branch of the Ministry of Education. It had the power to standardise higher education and manage human resources at medical, law, and civil service schools. The Ministry was also responsible for accrediting, monitoring, and evaluating new and existing universities. In 1994, the Ministry of University Affairs was renamed the Office of the Higher Education Commission (OHEC).²²

In 2001, the OHEC, Ministry of Education, and TMC established the Consortium of Thai Medical Schools (COTMES) to specifically oversee the accreditation of Thai medical schools and their undergraduate curriculums. In 2016, the Institute for Medical Education Accreditation (IMEAc) was created as an autonomous body within the Consortium of Thai Medical School (COTMES). The IMEAc now shares the responsibility of accrediting medical schools and programmes with the OHEC and TMC.

Educators at Siriraj Medical School, Thailand's first medical school, explained that Thai accreditation has constantly changed throughout the years to adapt to shifts in the regime and the health needs of the country. We will only detail the most recent accreditation procedures as of 2011-present.

- 1) Medical schools are qualitatively accredited by COTMES according to EdPEX²³ criteria
- 2) They must meet Standard Criteria for Thai Medical School Establishment, OHEC²⁴
- 3) The IMEAc will review them using international standards set by WHO-WFME

COTMES, OHEC, and IMEAc each have specific guidelines for the establishment of new medical colleges or programmes. Together, they assess the infrastructure,

²¹ https://www.tmc.or.th/download/Act_pure_01052012.pdf

²² <http://www.mua.go.th/ohec/history.html>

²³ Educational Quality Improvement Project for Excellence

²⁴ https://www.tmc.or.th/en_standard_criteria_for_thai_medical_school.php

content/curriculum, academic staff/faculty, and mission and outcomes of the prospective medical college or programme.

EdPEX was launched in 2014 by the OHEC as a means of supporting higher education and providing criteria to evaluate the administrative effectiveness.²⁵ The programme has a total of 15 participating institutions, representing over 20 Thai colleges. Currently, seven out of 21 medical colleges are members.

According to the OHEC, every medical programme must have its own internal quality assurance process for teaching and learning. The programmes have authorities to choose their own metrics for evaluation but they need to report their findings to the OHEC each year. As far as we know, all medical schools use the WFME's criteria in internal quality assurance.

After a new medical school or programme is accredited, it is inspected every five years. According to the National Education Act, a third-party organisation accredits all universities within this period. The Office of the National Education Standards and Quality Assurance (ONESQA) was responsible for this until 2015 when the National Council for Peace and Order (NCPO) junta temporarily suspended the organisation due to conflict and controversy over its efficacy.

Training

There are two equivalent paths to becoming a doctor in Thailand, a five and six-year track. Applicants to the six-year programme must be high school students, while students in the five-year programme must have earned a Bachelor's degree. In 2003, the Medical Council of Thailand established three separate national examinations that every domestic or foreign medical graduate must take. These tests guarantee the quality and competency of medical graduates who plan to register and practice medicine in Thailand. The exams are administered by the Center for Assessment and Accreditation of Medical Practices (RTA).²⁶

The Examination for Basic Medical Sciences is taken by someone studying for a Doctor of Medicine degree in a Thai institution or who has a foreign medical certificate. This test is given in the first or second year of medical training to assess proficiency in preclinical studies (anatomy, biochemistry, epidemiology, pathology, etc.). After the third year of medical

²⁵ <http://www.edpex.org/2015/04/edpex-introduction-for-edpex.html>

²⁶ <http://cmathai.org/about/History>

training, students take the Examination for Clinical Sciences. Individuals should have studied clinical medicine science for at least two years. Clinical medicine includes internal medicine, pediatrics, general practice, surgery, etc. The last exam, the Objective Structured Clinical Examination, is taken by graduates who received their Doctor of Medicine degree in Thailand or at an international institution approved by the Medical Council of Thailand. This test determines the overall readiness of the individual to serve as a medical professional.

Initiatives

Thailand's medical education system is extremely ambitious and adaptive. Over 128 years, Thailand has established 21 operational medical colleges and nearly 50 residency training programmes (ranging from three-five years). With a population of 67,959,000, Thailand has one of the lowest out-of-pocket expenditures on health in the world at 11.92 per cent compared to India's 62.417 per cent.²⁷

While these numbers bode well for the country, there are still some major obstacles that need to be confronted. First, Thailand must stay abreast with latest developments in technology. Second, it must also continue to manage education programmes with scarce resources. Lastly, faculty retention at public medical school/teaching hospitals seems precarious as private sector positions are more profitable. Here are two ways that Thailand is trying to fix these issues.

Standardising Application/Enrolment Process: Half of the medical schools in Thailand have the same enrolment process. Previously, each medical school had their own criteria for recruitment. Students took multiple entrance exams and filed several applications. Now that Thai medical schools have a joint application process, students are selected according to identical standards.²⁸ A simple incentive to get students to apply to medical school is to make the application process easier. This simultaneously frees funds to put towards instruction rather than administration.

Mandatory Post-Graduate Government Work: Recent medical school graduates are required to work for the government for three years. Graduates spend the first year in provincial hospitals working under the guidance of senior doctors. During the following two

²⁷ <http://www.who.int/countries/tha/en/>

²⁸ http://www.asiabiotech.com/publication/apbn/10/english/preserved-docs/1015/0815_0817.pdf

years, graduates must practice in either rural or community hospitals.²⁹ After this, the doctors are free from obligation. The idea is that young doctors who have positive work experiences in non-traditional, rural settings are more likely to continue working there after their obligatory three-year contract.

c. China

Accreditation

Out of all the countries selected for our cross-comparison, China is the last one to begin standardising its accrediting system. In 2003, the same year that the WFME released what would later become the blueprint for global standards in medical education, the Institute for International Medical Education (IIME) announced its Global Minimum Essential Requirements in Medical Education (GMER).³⁰ The IIME was operating on a grant from the China Medical Board of New York. The GMER failed in shaping standards primarily because the document focused on outcomes and did not explain how drastically different regions of the world should adopt policy to support and achieve these results.³¹

In the early 2000s, the Chinese realised the importance of accreditation to becoming a reputable source of medical practitioners. They looked towards distinguished accrediting bodies like the United States' Liaison Committee on Medical Education (LCME) and the United Kingdom's General Medical Council (GMC) as role models. *In 2000, the Chinese finally partnered with Australia, a fellow member-state of the Association for Medical Education in the Western Pacific Region. Chinese educators visit Australia and observe its accreditation system, Australian-lead accreditation training workshops are held in China, and some Australian assessors participate in the accreditation process of Chinese medical schools.*³² The Task Force on China Medical Education Quality Assurance System was created by the Ministry of Education, the Ministry of Health, and the Association of Medical Universities and Colleges in China. This task force drafted the "Standards for Basic Medical

²⁹ http://www.asiabiotech.com/publication/apbn/10/english/preserved-docs/1015/0815_0817.pdf
³⁰ Qing Wang (2014) Accreditation of Medical Education in China, *Chinese Education & Society*, 47(3), 48-55

³¹ http://webcache.googleusercontent.com/search?q=cache:http://168.100.10.20/sys/gmer_2002.pdf&gws_rd=cr&ei=6ZVsWdv3Lcib8QXrhp3gBA

³² Laurie Geffen, Boji Cheng, Michael Field, Shibin Zhao, Theanne Walters & Libin Yang (2014) Medical school accreditation in China: A Sino-Australian collaboration, *Medical Teacher*, 36:11, 973-977, DOI: 10.3109/0142159X.2014.917286

Education” and piloted these guidelines with the accreditation of the Tongji Medical College in 2008.³³

Later in 2008, the Chinese Ministry of Education established the Expert Committee and the Working Committee for the Accreditation of Medical Programs. The Expert Committee is composed of scholars, relevant government officials, and presidents/deans from top universities in China. It is responsible for overseeing the Working Committee’s activities, approving accreditation decisions, and providing an appeal process. The Working Committee is composed of medical educators and administrators from medical schools and clinicians from hospitals. It is charged with handling all of the conventional accreditation processes. These include periodic reviews of accreditation standards for medical and research programmes, the assignment and training of assessment teams, and maintenance of accreditation records and websites.³⁴

Currently, medical school accreditation is a voluntary process that takes three-eight years. It is broken down in four stages based on the WHO/WFME Guidelines for Quality Assurance of Medical Education:

- 1) Institutional self-evaluation
- 2) Site visit
- 3) Accreditation report
- 4) Decision-making stage

Up until 2007, when the Association of Medical Universities and Colleges of China (AMUCC) and the Australian Medical Council (AMC) officiated their relationship in a *Memorandum of Understanding*, most of the bi-national collaboration had been informal. Australia has benefitted from its partnership with China. *It is currently the only Western country “to have a unified national registration of Chinese medicine practitioners” who treat Australian patients.*³⁵

³³Qing Wang (2014) Accreditation of Medical Education in China, *Chinese Education & Society*, 47(3), 48-55

³⁴Qing Wang (2014) Accreditation of Medical Education in China, *Chinese Education & Society*, 47(3), 48-55

³⁵ https://www.westernsydney.edu.au/newscentre/news_centre/story_archive/2014/china_connection_to_build_bridge_to_better_health_in_australia

Training

The formalisation of Chinese medical education has only occurred in the last two decades. After several regional and world summits, China partnered with the Australian Medical Association to establish proper accrediting bodies and procedures. After medical education became a hot topic in the late 90s, China set out to establish its own medical education standards based on international best practices. Therefore, there aren't too many admission requirements for Chinese medical schools.

After high school, Chinese students are admitted into medical schools based on their National College Entrance Examination Admission Scores. Basic English language skills are recommended. In 2014, there were 137 medical programmes in China. There were 101 schools which offered a five-year programme leading to a Bachelor's degree. Each programme admits approximately 70,000 students per year. The seven-year programme, which leads to a Master's degree, has a yearly enrolment of 4,000 students, and is offered at 25 schools. Lastly, the eight-year programme, which leads to a PhD, is offered at 11 schools and admits 1,000 students per year.

d. United States and Canada

Accreditation

In North America, the two major accreditation councils are the Liaison Committee on Medical Education (LCME) and the Committee on Accreditation of Canadian Medical Schools (CACMS). The LCME is a non-profit organisation recognised by the U.S. Department of Education to accredit medical programmes in the United States and Canada. The LCME is sponsored by the Association of American Medical Colleges (AAMC, 1876) and the American Medical Association (AMA, 1846). The CACMS was founded in 1979 by the Association of Faculties of Medicine of Canada (AFMC-founded 1943) and the Canadian Medical Association (CMA, 1867).

Since 1942, Canadian medical colleges have been accredited by the LCME. From 1979 and onward, Canadian medical schools have been accredited by both the LCME and the CACMS using a joint process. While the United States and Canada have different national health concerns, they both acknowledge the strategic advantage to coordinating their medical

education accreditation systems. In 2013, a Memorandum of Understanding was signed by the sponsors of the LCME and the CACMS to make this partnership official.³⁶

In the United States the accrediting board is solely the LCME, while in Canada, both bodies oversee accreditation. The process for full accreditation can be divided into a series of seven sequential steps:

- 1) Planning of the Visit
- 2) Data Collection
- 3) Medical School Self-Study
- 4) Document Submission
- 5) Site Visit
- 6) Site Visit Report
- 7) Decisions and Actions

The first step consists of communication between the accreditation councils and the medical institution. Scheduling the visit date occurs about 18 months to two years before official accreditation. The CACMS/LCME requests the information and data about the new college, programme, or course 18 months prior to the visit. The data collection step also encompasses the Medical School Self Study. The self-study is crucial to accreditation because the medical school's students present the site-visit team with their first-hand evaluation of the school's course and service.

All of this information is then returned to CACMS/LCME prior to the visit so that the submitted information can be used by the appointed site-visit team which is sent to review the school. The report collected by the team is then reviewed by the CACMS/LCME to decide whether or not to accreditation will be granted. In total, the process takes about eight years to complete. There is a possibility that interim visits may occur after the initial Site Visit Report if noted errors have been corrected. Renewed accreditation is contingent upon review of the initial Site Report and new site visits.

³⁶ https://cacms-cafmc.ca/sites/default/files/documents/AFMC_CMA_AAMC_AMA_MOUonAccreditation.pdf

Training

The process of becoming a medical doctor in Canada and the United States is similar with a notable exception that almost all medical education is subsidised in Canada. Medical students in the United States are often left with the burden of debt if they do not receive financial aid and are unable to pay out-of-pocket.³⁷ The following description is applicable to both Canada and the United States.

At the end of high school, students apply to the various private and public institutions across the country. Students can earn any undergraduate or Bachelor's degree before they apply to a postgraduate medical school.³⁸ Undergraduate education lasts an average four years. During this time, the student may choose to follow a “pre-med” track which includes specific classes that will prepare him or her for postgraduate education. It is important for a student to maintain a high grade point average (GPA) to be considered for admission into medical school.

Taking the Medical College Admission Test (MCAT) is a requirement for all prospective applicants (in the United States). The MCAT, developed and administered by the Association of American Medical Colleges (AAMC), is a standardised test that all medical schools use to assess whether or not an applicant qualifies for a seat in their school.³⁹ Though the student can choose when to take the MCAT, it is traditionally taken the third year of undergraduate studies. The students will then send in the MCAT scores, resume, application, and application fee to all prospective medical schools during the fourth (senior) year of college.

Upon entering medical school, the student will then complete four years of graduate education. The first two years will be lecture style teaching where students will learn about the basic sciences (biochemistry, epidemiology, immunology, ethics, etc.) as well as the clinical sciences of organ systems. At the end of their second year, the students will take their Step 1 exam which is a cumulative final of all information instructed within the past two years. Passing this exam is necessary for all medical students to progress into their third year of training. Over the course of the third and fourth years of school, students will advance through various clinical rotations in which they will learn about the “next logical steps” in treatment beyond diagnosis. Step 2 and Step 3 exams will also be administered during these

³⁷ <https://www.aamc.org/data/tuitionandstudentfees/>

³⁸ <https://students-residents.aamc.org/choosing-medical-career/article/admission-requirements-medical-school/>

³⁹ <https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/about-mcat-exam/>

two years which similarly assess the cumulative knowledge of the student.⁴⁰ During the students' final and fourth year of medical school he/she will also apply to residency programmes at different teaching hospitals. The purpose of residency is to instruct the newly licensed doctor on the proper practice guidelines and to give them real-world experience.

After completion of the individual's residency programme, he or she is considered a practicing physician. The doctor is now free to practice anywhere he or she so pleases upon joining a domestic medical facility or passing international equivalency exams if they choose to work abroad.

5. Recommendations

In the following section, we shall outline a series of six potential reforms/additions to the bill. These recommendations are structural reforms to the Medical Advisory Council, introduction of regional medical councils, increasing the effective supply of doctors by both clarifying minimum permitted procedures for MBBS doctors and giving specialist status to diploma holders, adoption of WHO standards, incentivising research, and instituting a mandatory government work period for all medical school graduates.

5.1 Structural Reform to the MAC

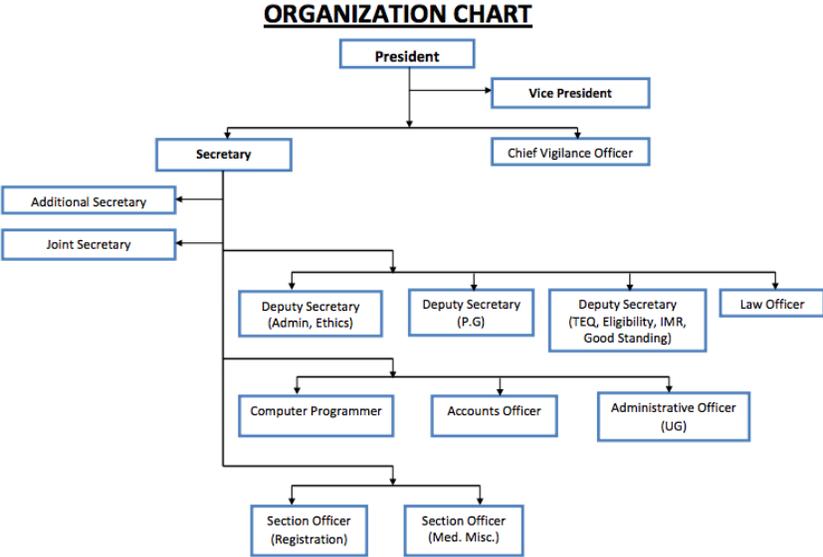
The goal of the MAC is to give a voice to the States and Union Territories which previously felt excluded from the regulation of medical education. In theory, the advisory commission should also be a deterrent towards any corruption. However, having all members of the NMC on the advisory board will defeat the purpose of having a separate advisory committee. If the advisors are not independent from the rest of NMC, they will not hold it accountable.

Figure 3 displays MCI's hierarchy, while Figure 4 displays the proposed NMC's hierarchy. When the two are compared, the MCI's seems more convoluted and less accountable. The new structure has horizontal accountability and division of power as opposed to the old structure's sole vertical accountability and monopoly of power. The current recommendation that members of the NMC be granted positions within the MAC reduces horizontal

⁴⁰ <http://www.usmle.org/about/>

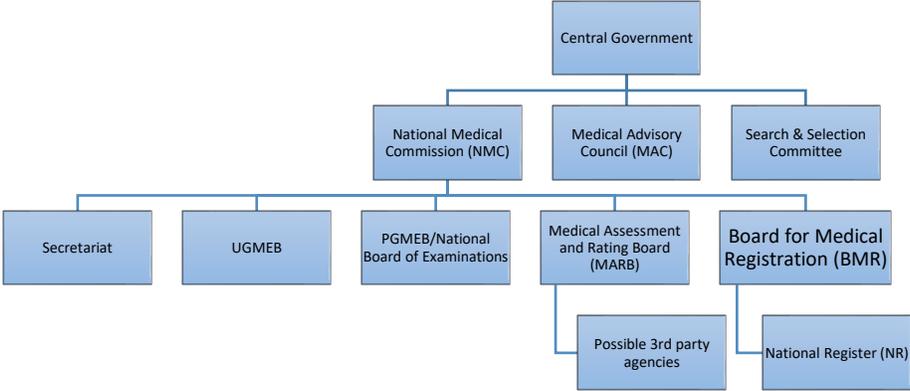
accountability, increases possibility of corruption, and should be reconsidered. Only a few, if any, members of the NMC should have a position within the MAC.

Figure 3: Structure of the Medical Council of India



Source: mciindia.org

Figure 4 (Same as Figure 1): Structure of the National Medical Commission



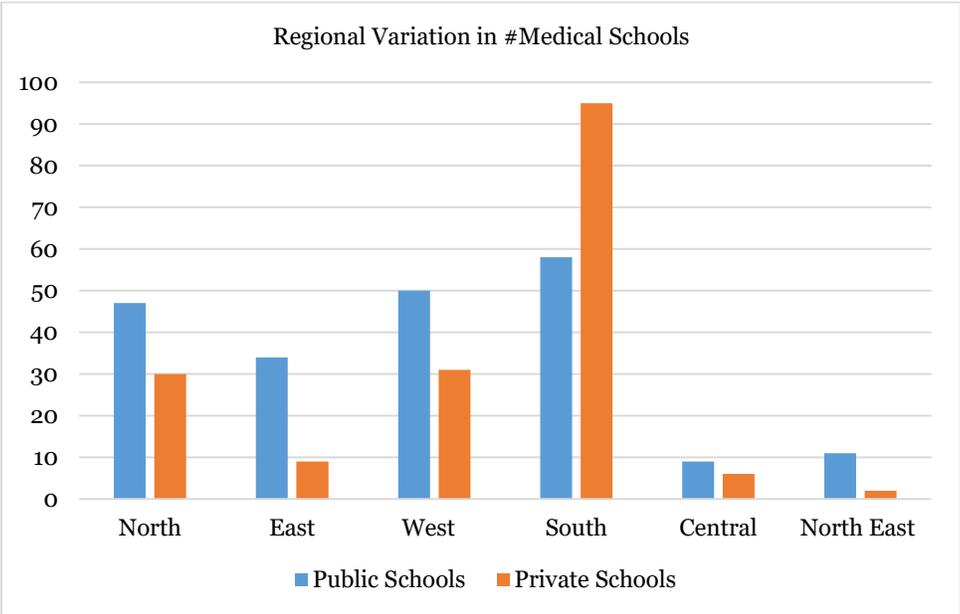
5.2 Regional Medical Councils

All monopolies lack the incentive to improve quantity and quality of services they provide due to lack of competition. This is also true for the business of accreditation services globally. For accreditation to signal quality of education services, accreditors must compete among each other. This is similar to all other businesses of rating services such as credit and management education. We, therefore, propose that NMC face local competition from Regional Medical Councils in India. We believe that the introduction of Regional Medical Councils (RMC) as the third party agencies would not only ensure an accountable agency, but also create competition amongst the six regions of India for improving the overall quality of accreditation within the country. Over time, this would lead to smoother and efficient processes of accrediting medical education.

Each region in India wants medical colleges as they bring opportunities and wealth to that region. By having these six different regions compete against each other, we expect to see innovation, cost reduction, and an increase in timeliness of accreditation services. The general fear of compromising on quality due to the competition is alleviated due to the structure of the NMC – quality minimums are set by PGMEB and the UGMEM, not the RMCs. Additionally, the RMC can even add to the standards set in place by the NMC meaning that this increased competition can only increase quality. The creation of RMCs need not strictly follow the six geographic divisions of regions specified by the Census of India. We provide disaggregated data for medical education capacity within each region. There are very large disparities. So one solution is to create four RMCs by combining the regions with lower capacity, for example north east and central regions.

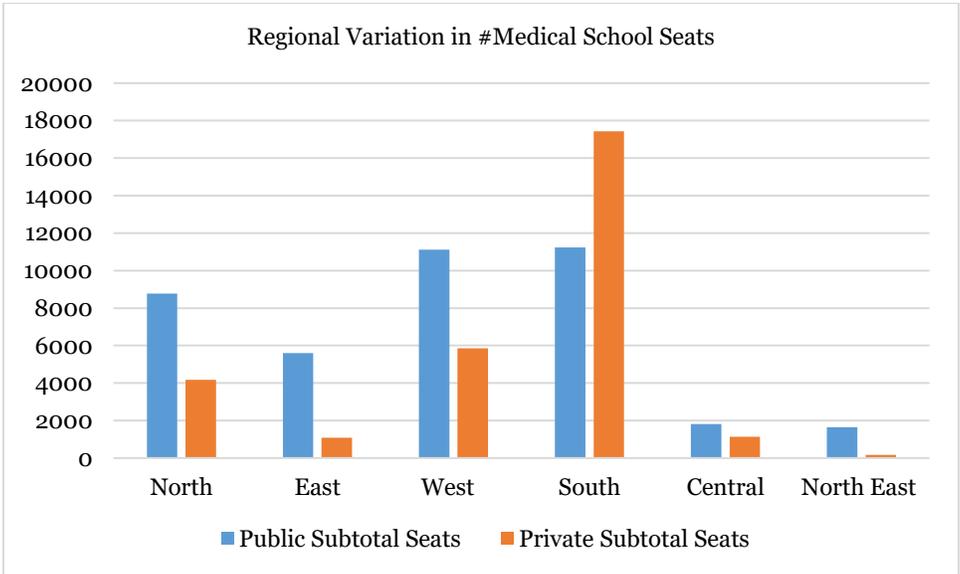
The following Figures show significant regional disparity amongst the traditional Indian geographic regions (North, East, West, South, Central, and North East). There are large variations in the capacity of medical education across regions as indicated by number of colleges (both private and public) and seats (graduate and postgraduate). The southern region stands out with significantly higher number of colleges than all other parts of India. The central region (Madhya Pradesh and Chhattisgarh) and north eastern regions of India stand out for significantly low number of medical colleges compared to other parts of the country.

Figure 5: Number of medical colleges across regions of India



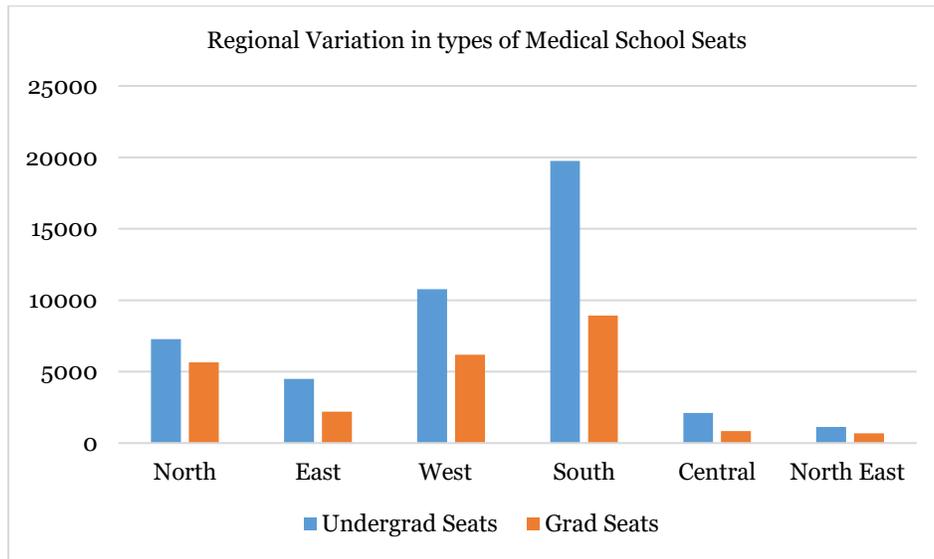
Source: 2017 MCI Search College Course

Figure 6: Number of medical seats across regions of India



Source: 2017 MCI Search College Course

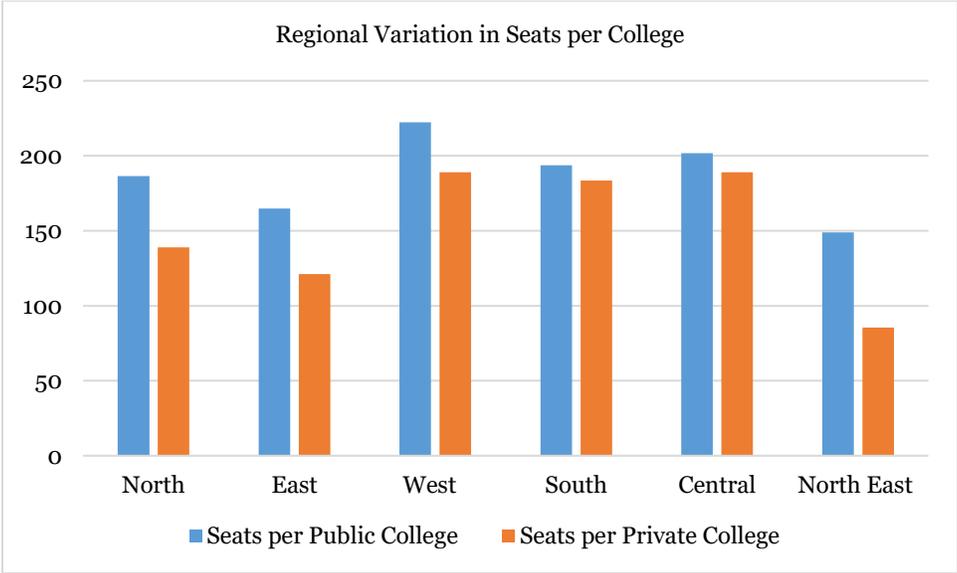
Figure 7: Undergraduate and Postgraduate seats across regions of India



Source: 2017 MCI Search College Course

Next, we explore the regional variations in number of seats per college (private and public) in India. Figure 8 shows that systematically, across all regions of the country, the public medical colleges are offering significantly more number of seats than the private ones. This raises questions regarding what prevents the growth of private medical colleges. Are these functions of the underlying fixed costs of setting up a medical college? And are these indicative of the quality of institutions and the accreditation processes?

Figure 8: Seats per college across regions of India



Source: 2017 MCI Search College Course

Table 5: State capacity for medical education⁴¹

Region	State	Public Medical Colleges	Private Medical Colleges	Colleges Total	Undergrad Seats	Post grad Seats	Seats Total	Seats per College
North		47	30	77	7274	5662	12936	168.0
	Haryana	2	4	6	700	388	1088	181.3
	Himachal Pradesh	2	1	3	300	211	511	170.3
	Jammu and Kashmir	3	1	4	500	371	871	217.8
	Punjab	4	7	11	1225	598	1823	165.7
	Uttarakhand	2	2	4	500	186	686	171.5
	Uttar Pradesh	15	14	29	3049	1598	4647	160.2
	Chandigarh	2	0	2	100	411	511	255.5
	Delhi	17	1	18	900	1899	2799	155.5
East		34	9	43	4500	2198	6698	155.8
	Bihar	7	3	10	1050	501	1551	155.1
	Jharkhand	4	0	4	300	0	300	75.0
	Orissa	3	3	6	1050	502	1552	258.7
	West Bengal	20	3	23	2100	1195	3295	143.3
West		50	31	81	10775	6193	16968	209.5
	Gujarat	16	5	21	3030	1630	4660	221.9
	Goa	1	0	1	150	105	255	255.0
	Maharashtra	26	23	49	5845	3335	9180	187.3
	Rajasthan	7	3	10	1750	1123	2873	287.3
South		57	95	152	19645	9177	28822	189.6
	Andhra Pradesh	9	13	22	3350	1769	5119	232.7
	Karnataka	14	33	47	6695	3462	10157	216.1
	Kerala	7	17	24	2900	1093	3993	166.4
	Tamil Nadu	25	25	50	5300	2355	7655	153.1
	Puducherry	2	7	9	1400	498	1898	210.9
	Telangana	3	12	15	2250	1328	3578	238.5
Central		9	6	15	2100	850	2950	196.7
	Chhattisgarh	3		3	400	116	516	172.0
	Madhya Pradesh	6	6	12	1700	734	2434	202.8
North-East		11	2	13	1126	682	1808	577
	Arunachal Pradesh							
	Assam	7		7	626	473	1099	157.0
	Manipur	2		2	200	151	351	175.5

⁴¹ Data was extracted in July 2017 only concerns Recognised Medical Colleges and not Permitted/Not-Recognised Medical Colleges.

	Meghalaya	1		1	50	12	62	62.0
	Mizoram							
	Nagaland							
	Sikkim		1	1	50	19	69	69.0
	Tripura	1	1	2	200	27	227	113.5

Source:
2017 Medical Council of India College Course Search

5.3 Increasing the Effective Supply of Doctors

There are three steps that can be undertaken to increase the overall supply of effective doctors: states should bequeath specialist status on diploma holders, the NMC should revise/clarify section 7.2 of the Indian Medical Councils Professional Conduct, Etiquette, and Ethics Regulations, 2002, to allow MBBS doctors and nurses to perform basic medical procedures, and increase the number of post-graduate seats.

In 2007, Maharashtra’s maternal mortality rate (MMR) was 144 deaths per 100,000 live births. In order to address this problem, Maharashtra’s health ministry recognised diplomas from the College of Physicians and Surgeons, effectively converting nearly a thousand MBBS doctors into specialists. By 2013, the MMR had dramatically dropped to 68. It could be reasonably argued that the recognising of diplomas saved tens of thousands of lives. We recommend that the NMC recognize diploma holders as specialists so that we can replicate Maharashtra’s successful experiment.

Secondly, section 7.2 of regulations laid out by the MCI Ethics regulation state that “A physician shall not claim to be specialist unless he has a special qualification in that branch.” It could be reasonably argued that if an MBBS performs a procedure which is normally expected to be performed by a person with a postgraduate qualification, that person is claiming to be a specialist. Unfortunately, neither the obvious corollary nor the definition of “claim” is laid out in the regulation. This regulation and the vagueness that comes along with it, was upheld by the Supreme Court. Although the intention is good, the malignant side-effect is that doctors, nurses, and hospitals find conducting basic operations an unnecessary liability. Devi Shetty argues that “even a brilliant MBBS doctor cannot do anything more legally than what a housewife is permitted to do” (Shetty, 2017, p.1). We recommend that the NMC look into these regulations, and lay out what minimum procedures both MBBS doctors

and nurses are permitted to do. For doctors, this should include basic things like performing a caesarean section, an anesthetic procedure, an ultrasound, or interpreting X-rays, while nurses should be granted the ability to apply anesthesia.

Lastly, as evidence by table 5, there is a major shortage in postgraduate seats. New Medical Colleges should focus on filling the specialist gap. Data extracted and analysed of Permitted Medical Colleges from the MCI website indicate that the opposite trend is currently in play. In the next three years, the ratio of undergraduate seats to postgraduate seats in India is supposed to increase from 1.67 to 1.83. If we take out diploma courses from graduate seats, then the ratio is supposed to increase from 1.91 to 2.085. Table 6 indicates that we must focus new medical colleges on creating specialists, and ensure that diplomas grant specialist status.

Table 6. MBBS and Postgraduate Specialist Doctors

	Undergrad Seats	Postgrad Seats	PG Seats (excluding diplomas)	UG/PG Ratio	UG/PG Ratio (excluding diplomas)
Recognised	42540	25447	22231	1.67	1.91
Permitted	9150	2664	2557	3.43	3.58
Total	51690	28111	24788	1.84	2.09

Source: 2017 MCI Search College Course

5.4 Adopting WHO Guidelines

The WHO-WFME *Global Standards for Basic Medical Education (BME)*, *Global Standards for Postgraduate Medical Education*, and *Global Standards for Continuing Professional Development (CPD)* are rapidly becoming global standards for medical accreditation. Section 4.2 outlined how both China and Thailand, relative newcomers to medical accreditation, have both adopted these standards to the benefit of their country. As seen in section 4.1, the guidelines are thorough processes and can be adopted by any country. They contain minimum requirements for an institution to be accredited, and quality development standards that institutions should continuously strive for.

There are multiple benefits to adopting these WHO Guidelines. First and foremost, it produces international legitimacy for the NMC, the medical institutions it accredits, and the doctors that those institutions produce. Second, it provides significant guidelines for the

UGMEB and PGMEB to easily follow. Third, it ensures that the guidelines produced encourage research, collaboration, and ethics within medical schools. Fourth, by incorporating the CPD (potentially creating a new board), we create constant quality checks on the doctors operating within the country. Fifth, these are minimum standards, and any additional guidelines can be respectively adopted by the UGMEB and PGMEB. For all these reasons, India should follow China and Thailand and specifically mention in the bill that UGMEB and PGMEB should use the BME and PME as their base guideline respectively. Furthermore, the NMC should create a fifth sub-board dedicated the Continuing Professional Development with the CPD as its base guideline. Adopting WHO standards will be a major boost to medical education accreditation, and the quality of healthcare within India.

5.5 Research-based Meritocracy

The preamble of the proposed NMC Bill, 2016 lists five objectives of the new Indian medical education system. The second objective “Encourages medical professionals to incorporate the latest medical research in their work and to contribute to such research.” In the rest of the document, there is no other mention of research except in the “Powers and Function” sections of the Undergraduate Medical Education Board (UGMEB) and the Postgraduate Medical Education Board (PGMEB).

We immediately identified this as one of the weakest spots of the Bill. After discussions with health care professionals, it became evident that research standards need to be elevated. Medical and health research is important because it provides information about disease trends, new treatments, and patterns of health service and cost. Indian medical colleges have a poor record of publishing research.⁴²

A study led by Samiran Nundy, Dean of the Ganga Ram Institute for Postgraduate Medical Education and Research, New Delhi revealed that 57 per cent of India’s then 579 medical colleges did not publish any research in peer reviewed medical journals from 2005-14. Nearly 40 per cent of medical research came from 25 (4 per cent) medical schools.⁴³ The primary reason that schools are not publishing is because they have no incentive to do so. Promotions do not hinge on research output, so faculty members do not put time or energy into it.

⁴² <http://www.bmj.com/content/353/bmj.i2352>

⁴³ <http://www.bmj.com/content/353/bmj.i2352>

We recommend that the NMC Bill only tackle reforming research at the postgraduate level for now. This is due to the fact that research is already required by students at the postgraduate level. The WHO standards that were recommended in Section 5.4 include many aspects of balancing research with teaching. This is unfortunate because schools may decide that the best work-life balance exists in completely neglecting the research aspect of it. This can be remedied by adding the minimum criteria that postgraduate schools can only be accredited if they have a research-based meritocracy in both the hierarchy of their faculty and in the assessment of their students.

5.6 Mandatory Government Work Period

Many Indians aspire to leave India due its developing status, low quality institutions, infrastructure, overpopulation, and extreme weather. It is unfortunate because the people that leave are often the most capable of helping the country develop. This is also inefficient from the perspective of public investments into training of medical practitioners. The social cost of these investments remain significantly higher than the social benefits of having these doctors practice within the country. India has evolved into the largest supplier of trained doctors for rest of the world. For example, Indian-origin doctors are renowned throughout the world. Notably, Fitzhugh Mullan found that Indian Immigrants are the largest single group in the physician workforce in both the United States and the United Kingdom. They are also the second and third largest groups in Australia and Canada. Overall, India is the largest source of émigrés in the world.⁴⁴

Twelve states namely Assam, Arunachal Pradesh, Chhattisgarh, Gujrat, Karnataka, Kerala, Manipur, Meghalaya, Nagaland, Orissa, Tamil Nadu, and West Bengal have either incentive structure or a mandate to entice or force students into government service. Most of the states allow for the doctor to opt out by paying a penalty to the state. The bond value can range from 1 lakh (Chhattisgarh) to 10 lakhs (Tamil Nadu). Three states, namely Karnataka, Kerala, and Tamil Nadu, have adopted some version of compulsory rural service. Karnataka has made it compulsory for every MBBS graduate to work a year in rural districts. Kerala has made it compulsory for MBBS doctors to serve in rural health care districts for one year, and PG graduates to serve for two years.⁴⁵ In Tamil Nadu, specialists graduating from government

⁴⁴<http://www.nejm.org/doi/pdf/10.1056/NEJMsa050004>

⁴⁵ http://arogyakeralam.gov.in/docs/reports_reports/publns/innovations_%20latest.pdf

PG colleges have to work for five years, whereas PG graduates from private colleges have to work for 3 years.⁴⁶ These programs have not been independently tested, but the states have all self-reported them as successes.

We recommend that the Indian government follow these precedents and incorporate a mandatory government work period for graduating doctors. There are multiple options for doing so.

- Thai Model – Three-year mandatory government work period for all graduates. Graduates spend their first year in provincial hospitals, and their second and third year in rural or community hospitals.
- Three-year mandatory government work period for all public medical school graduates. Graduates spend their first year in provincial hospitals, and their second and third year in rural or community hospitals.
- All graduates cannot emigrate for three years after they graduate.

Infinite varieties of this policy can be designed. We recommend following the Thai Model as it seems to be the most effective in tackling two issues simultaneously. It maximises the number of graduates that have to stay within the country (by stating all graduate regardless of public or private), and implores them to work in communities that are suffering from shortages. We strongly recommend this to be added to the NMC bill.

6. Conclusion

Building a modern healthcare accreditation system is crucial for the future of any modernising economy. This is especially relevant considering the growing nature of India's population, and the immense amount of corruption associated with the Medical Council of India currently. A modern accreditation system not only improves the speed at which new institutions and courses are improved, but leads to an overall improvement in the quality of medical training and practice in a country. If research is given prominent weight within the medical accreditation system of a country, then it ensures that future generation of doctors

⁴⁶ <http://amity.edu/UserFiles/admaa/254Paper%205.pdf>

can also advance the frontiers of medical research. Given the massive potential of India (as reflected in the role of Indians furthering the medical field globally as researchers and practitioners), putting a robust system of accreditation can lead to exponential improvements in quality of healthcare practice and knowledge within the country.

The National Medical Commission Bill introduces much needed reform to the Indian accreditation system. However, it lacks in structural integrity, structural vision, and institutional vision. We recommend tackling structural integrity by removing/limiting the members of the National Medical Commission in the Medical Advisory Council. To improve structural vision, we recommend the creation of Regional Medical Councils as the compliance wing of the Medical Assessment and Rating Board, and creating a fifth sub-board to set standards for both individual medical professionals and professional medical affiliations. Lastly, to improve Indian healthcare as a whole, we recommend tying down all standards to the ones set by the WHO-WFMR, accrediting only schools that establish research-based meritocracies, and mandating government work for medical graduates. This bill has the ability to revolutionise Indian Healthcare, and we believe that with these recommendations, India can unlock its inner potential.

7. References:

- Arogyakeralam. (2008). *Innovations*. Retrieved August 29, 2017, from: http://arogyakeralam.gov.in/docs/reports_publns/innovations_%20latest.pdf
- Association of American Medical Colleges. (2017a). *Admission Requirements for Medical School*. Retrieved July 13, 2017, from: <https://students-residents.aamc.org/choosing-medical-career/article/admission-requirements-medical-school/>
- Association of American Medical Colleges. (2017b). *Applying to Medical School*. Retrieved July 13, 2017, from: <https://students-residents.aamc.org/applying-medical-school/taking-mcat-exam/about-mcat-exam/>
- Association of American Medical Colleges. (2017c). *Tuition and Student Fees*. Retrieved July 13, 2017, from: <https://www.aamc.org/data/tuitionandstudentfees/>
- Australian Council for Educational Research. (2017). *UMAT*. Retrieved July 10, 2017 from: <https://umat.acer.edu.au/>
- Australian Government's Department of Health. (2015). Discussion Paper: Review of the Specialist Training Programme. Retrieved July 15, 2017, from: [http://www.health.gov.au/internet/main/publishing.nsf/Content/D318A72E5BA254E5CA257ED1007F3CA1/\\$File/STP%20Discussion%20Paper.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/D318A72E5BA254E5CA257ED1007F3CA1/$File/STP%20Discussion%20Paper.pdf)
- Australian Government's Department of Health. (2016). Bonded Medical Schemes: Research Outcomes Report. Retrieved July 15, 2017, from National Rural Health Student Network: <https://www.nrhsn.org.au/public/download.jsp?id=34625>
- Australian Medical Association. (2017). *Becoming a Doctor*. Retrieved July 11, 2017 from: <https://ama.com.au/careers/becoming-a-doctor>
- Australian Medical Council. (2017a). *Australian Medical Council*. Australian Medical Council Limited. Retrieved July 15, 2017, from: <http://www.amc.org.au/about>
- Australian Medical Council. (2017b). *Procedures for Assessment and Accreditation of Medical Schools*. Australian Medical Council Limited. Retrieved August 1, 2017, from: http://www.amc.org.au/files/a1c951a8cdfb29f3938b750aecfe5e600727fbd6_original.pdf
- Bagcchi, S. (2016). *Nearly Six in 10 Medical Colleges in India Did Not Publish Any Research in Past 10 Years*. Retrieved July 14, 2017, from: <http://www.bmj.com/content/353/bmj.i2352>

CACMS. (2013). *Memorandum of Understanding on a Joint Commitment to Medical Education and Accreditation*. Retrieved July 16, 2017, from: https://cacms-cafmc.ca/sites/default/files/documents/AFMC_CMA_AAMC_AMA_MOUonAccreditation.pdf

Center for Medical Competency Assessment and Accreditation. (n.d.) *History: Center for Assessment and Accreditation of Medical Practices (RTA)*. Retrieved July 13, 2017, from: <http://www.cmathai.org/about/History>

Federation of State Medical Boards and National Board of Medical Examiners. (2017). *Who is USMLE?* Retrieved July 17, 2017, from: <http://www.usmle.org/about/>

Garg, S. & Anand, T. (2016). *Rural Training of Medical Interns or Post Graduates to Address Medical Manpower Deficiency in India: A dilemma*. Retrieved August 29th, 2017 from <http://amity.edu/UserFiles/admaa/254Paper%205.pdf>

Geffen, L., Cheng, B., Field, M., Zhao, S., Walters, T., Yang, L. (2014). *Medical School Accreditation in China: A Sino-Australian Collaboration*. Retrieved July 7, 2017, from: <http://www.tandfonline.com/doi/abs/10.3109/0142159X.2014.917286?journalCode=imte20>

Health Workforce Australia. (2016). *A Summary of Health Workforce 2025—Volumes 1 to 3*. Retrieved July 12, 2017, from: <http://pandora.nla.gov.au/pan/133228/20150419-0017/www.hwa.gov.au/sites/default/files/SummaryHW2025Vol1-3FINAL.pdf>

IndiaSpend. (2016). *Healthcare Crisis: Short of 5 lakh Doctors, India has just 1 for 1,674 people*. Retrieved August 3, 2017, from *Hindustan Times*: <http://www.hindustantimes.com/india-news/healthcare-crisis-short-of-5-lakh-doctors-india-has-just-1-for-1-674-people/story-SZepTyjJ78WgOVIo93tBVK.html>

Institute for International Medical Education. (2002). *Global Minimum Essential Requirements in Medical Education*. Retrieved July 16, 2017, from: http://168.100.10.20/sys/gmer_2002.pdf

Medical Deans Australia and New Zealand. (2015). *Inherent Requirements for Studying Medicine in Australia and New Zealand*. Retrieved July 11, 2017, from: <https://gamsat.acer.org/files/MedicalDeansInherentRequirements.pdf>

National Informatics Centre. (2017). *National Eligibility Cum Entrance Test (UG)*. Central Board of Secondary Education. Retrieved July 24, 2017, from: <http://cbseneet.nic.in/cbseneet/Welcome.aspx>

NITI Aayog. (2016a). Draft National Medical Commission Bill, 2016. Retrieved June 12, 2017, from: http://niti.gov.in/writereaddata/files/document_publication/MCI%20Bill%20Final.pdf

NITI Aayog. (2016b). *A Preliminary Report of the Committee on the Reform of the Indian Medical Council Act, 1956*. Retrieved July 16, 2017, from: http://niti.gov.in/writereaddata/files/document_publication/MCI%20Report%20.pdf

Office of the Higher Education Commission. (2015). *Seminar Project “Introduction for EdPEX”*. Retrieved July 14, 2017, from: <http://www.edpex.org/2015/04/edpex-introduction-for-edpex.html>

Office of the Higher Education Commission. (2017). *History of University Ministry*. Retrieved August 1, 2017, from: <http://www.mua.go.th/ohec/history.html>

Shetty, D. (2017). *Going to Gorakhpur’s root: Here are some simple steps that would turn around and restore vibrancy to government hospitals*. Retrieved August 8, 2017 from: <http://blogs.timesofindia.indiatimes.com/toi-edit-page/going-to-gorakhpurs-root-here-are-some-simple-steps-that-would-turn-around-and-restore-vibrancy-to-government-hospitals/>

Supreme Court of India. (2009). *Civil Appeal No. 4060 of 2009*. The Judgement Information System. Retrieved July 14, 2017, from: <http://judis.nic.in/supremecourt/imgs1.aspx?filename=43584>

The Medical Council of Thailand. (1996). *The Medical Profession Act*. Retrieved July 26, 2017, from: https://www.tmc.or.th/download/Act_pure_01052012.pdf

The Medical Council of Thailand. (2003). *Standard Criteria for Thai Medical School Establishment, The Commission of Higher Education*. The Ministry of Education. Retrieved July 27, 2017 from: https://www.tmc.or.th/en_standard_criteria_for_thai_medical_school.php

Universities Admissions Centre. (2016). *All About Your ATAR for 2016 NSW HSC Students*. Retrieved July 10, 2017, from: <http://www.uac.edu.au/documents/atar/AllAboutYourATAR.pdf>

U.S. Department of Health & Human Services. (2014). *Care Coordination Measure Atlas Update: Chapter 2. What is Care Coordination?* Retrieved July 21, 2017, from: <https://www.ahrq.gov/professionals/prevention-chronic-care/improve/coordination/atlas2014/chapter2.html>

- Wang, Q. (2014). Accreditation of Medical Education in China: Accomplishments and Challenges. *Chinese Education & Society*, 47 (3). Retrieved July 7, 2017, from: <http://www.tandfonline.com/doi/abs/10.2753/CED1061-1932470303?journalCode=mced20>
- Western Sydney University. (2014). *China Connection to Build Bridge to Better Health in Australia*. Retrieved July 16, 2017, from https://www.westernsydney.edu.au/newscentre/news_centre/story_archive/2014/china_connection_to_build_bridge_to_better_health_in_australia
- WFME. (2015). *WFME Global Standards for Quality Improvement: Basic Medical Education*. WFME Office. Retrieved July 17, 2017, from: <http://wfme.org/standards/bme/78-new-version-2012-quality-improvement-in-basic-medical-education-english/file>
- World Health Organization. (2017a). *India Statistics Summary (2002-present)*. Global Health Observatory. Retrieved August 3, 2017, from: <http://apps.who.int/gho/data/node.country.country-IND>
- World Health Organization. (2017b). *Thailand*. Global Health Observatory. Retrieved July 13, 2017, from: <http://www.who.int/countries/tha/en/>
- Yamwong, P. (2006). *The Medical Education System in Thailand*. Retrieved July 13, 2017, from: http://www.asiabiotech.com/publication/apbn/10/english/preserved-docs/1015/0815_0817.pdf

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