

Educational disparity and medical school entrance examination

A report of International Symposium on

“Medical school entrance examinations: challenges and reforms.”

Junji Otaki^{1,2)}, Shizuko Nagata-Kobayashi²⁾, Miki Izumi²⁾, Takayuki Komoda²⁾, Kiyoshi Kitamura³⁾

1) Hokkaido University, 2) Tokyo Medical University, 3) The University of Tokyo, Japan

Background

- As societal stratification continues to develop into a major problem in Japan, educational disparities are also becoming serious.
- Presently, entrance exams of medical schools in Japan are extremely difficult to pass unless a student is ranked among the top at his or her high school and can learn how to prepare for the exam at a preparatory school.
- In the meantime, it is crucially important for medical education to admit many regional applicants from areas with a shortage of physicians to medical schools.

Purpose

- To consider the current state and challenges of entrance exams in Japan from multiple angles with an international perspective, and with the aim of helping to shape the direction of reforms.

Methods

- We held an International Symposium on “Medical school entrance examinations: challenges and reforms” with invited relevant individuals with expertise on entrance exams.

Conclusion

- A wide range of information was shared.
- Few studies have confirmed the validity of the assessment methods and acceptance criteria for entrance exams.
- Efforts are being made to develop entrance examination systems that correct for educational disparities and assessments that emphasize other indicators in addition to academic performance.
- Analysis has shown that certain groups of students seem to face disadvantage in entering medical schools, and it has raised concern about fairness and equal opportunity.

A Global Perspective and an International Agenda for Medical School Admission Testing

Clarence D. Kreiter

Clarence Dennis Kreiter, Ph.D.
Professor
Department of Family Medicine & Office of Consultation and Research in Medical Education,
University of Iowa College of Medicine, USA



- This presentation provides an international perspective on admission testing for selection in medical education. The prevalence and reason for using selection tests, the variation in testing formats, and the social, educational and medical impact of using test scores for selection are discussed.
- While admission testing for medical education is widely employed around the world, there is large variation in testing formats, medical education programs, and applicant pools. Despite this variability, it is still possible to generate a validity argument that roughly applies to virtually all medical school admission testing internationally.
- Validity evidence related to admission testing within medical education is not as highly developed as in other selection contexts. There has been an over-reliance on anecdotal evidence and the existing validity research has not been interpreted using methods designed to correct for unreliable outcome measures.
- When faced with uneven research, sophisticated meta-analytic techniques can yield key insights that are highly generalizable and internationally relevant. Although virtually all medical schools endorse the importance of selecting intelligent applicants, few can formally quantify the impact of using admission testing to promote the universal goals of medical education.
- While both aptitude and achievement admission tests predict important outcomes, however an emphasis on aptitude over achievement can narrow score difference related to educational experience and social background.
- While it is important to acknowledge the uniqueness of each selection context, there is strong reason to believe that a highly generalizable and internationally relevant validity argument, similar to what has been used in organizational psychology, applies to medical school admission testing.
- All admission tests are highly correlated with general mental ability, and a large body of existing research evidence convincingly demonstrates that measures of general mental ability strongly predict performance across a wide range of professional outcomes.



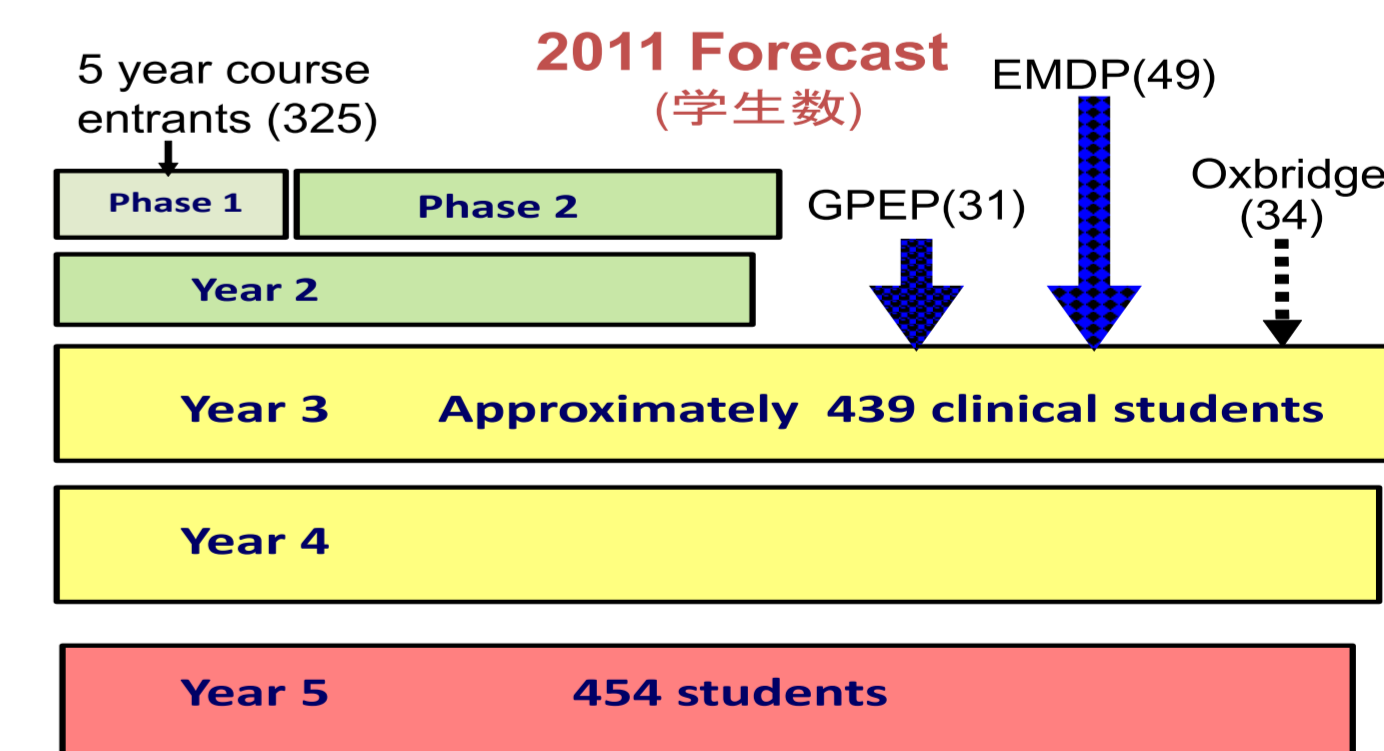
Unequal societies and medical school enrolment: Extended Medical Degree Programme (EMDP) at the King's College London

Yuko Takeda

Yuko Takeda, MD, PhD, FACP, MSc
Hinohara Fellow at Harvard Medical School
Fellowship in
General Medicine and Primary Care
Beth Israel Deaconess Medical Center, Boston
USA



- Medical schools are responsible for preparing not only clinically competent doctors but also professionals who are responsive to society needs. Diverse learning environments are essential to provide students an awareness of social issues, enhance reflective practice and benefit students regardless their background.
- Aims of this presentation are to illustrate how the health of people and communities are impacted by socioeconomic conditions, and to discuss how medical schools can respond to the health inequities. The initiatives to broaden access to medical school at King's College London in the UK are described as an example of one approach to address the evolving needs of patients.
- Social determinants of health such as unequal access to healthcare, poverty, unemployment and lack of education are underlying and contributing factors to health inequalities. Japan, like many other industrialised countries, has become increasingly diverse socioeconomically. In order to respond to current health challenges and practice medicine effectively, medical graduates must understand the complex relationships of individual behaviour and social factors. However, many medical students have relatively privileged backgrounds with limited personal exposure to social deprivation to understand the inequity.
- Although UK medical schools have become increasingly diverse in gender, ethnicity and age, they are less so in regard to socio-economic background. Analysis has shown that certain groups of students seem to face disadvantage in entering medical schools, and it has raised concern about fairness and equal opportunity. Social gradient of educational achievement becomes steeper, when income inequality is greater in the country. Income inequality in the UK is the highest among industrialised countries and social mobility, often indicating equality of opportunity, is low in fact in UK. Therefore, widening participation in higher education for all sections of society has become a central policy aim for the UK Governments.
- At the King's College London, the Extended Medical Degree Programme (EMDP) was established to widen access to include bright students who are disadvantaged due to attending non-selective state schools in inner city areas. In addition to academic score (A levels) and clinical aptitude test (UKCAT), the interview is an important part of selection process at King's and utilised to elucidate applicant's non-academic achievements, and multiple mini interviews are conducted. The EMDP takes 6 years compared to 5 years for the standard programme to allow the students to study at a slower pace for the first 3 years. The increased diversity provided by the EMDP students brings different cultural assets and preconceptions about medical education to the college.
- Long-lasting recession over last several decades has widened income inequality in many countries with negative consequences in health and education among vulnerable populations especially children. Japan is no exception. Is this time for medical school to consider change to respond to those unprecedented challenges? Could widening access to medical school be a part of that change?



Present status and issues of medical school entrance examinations in Japan

Junji Otaki

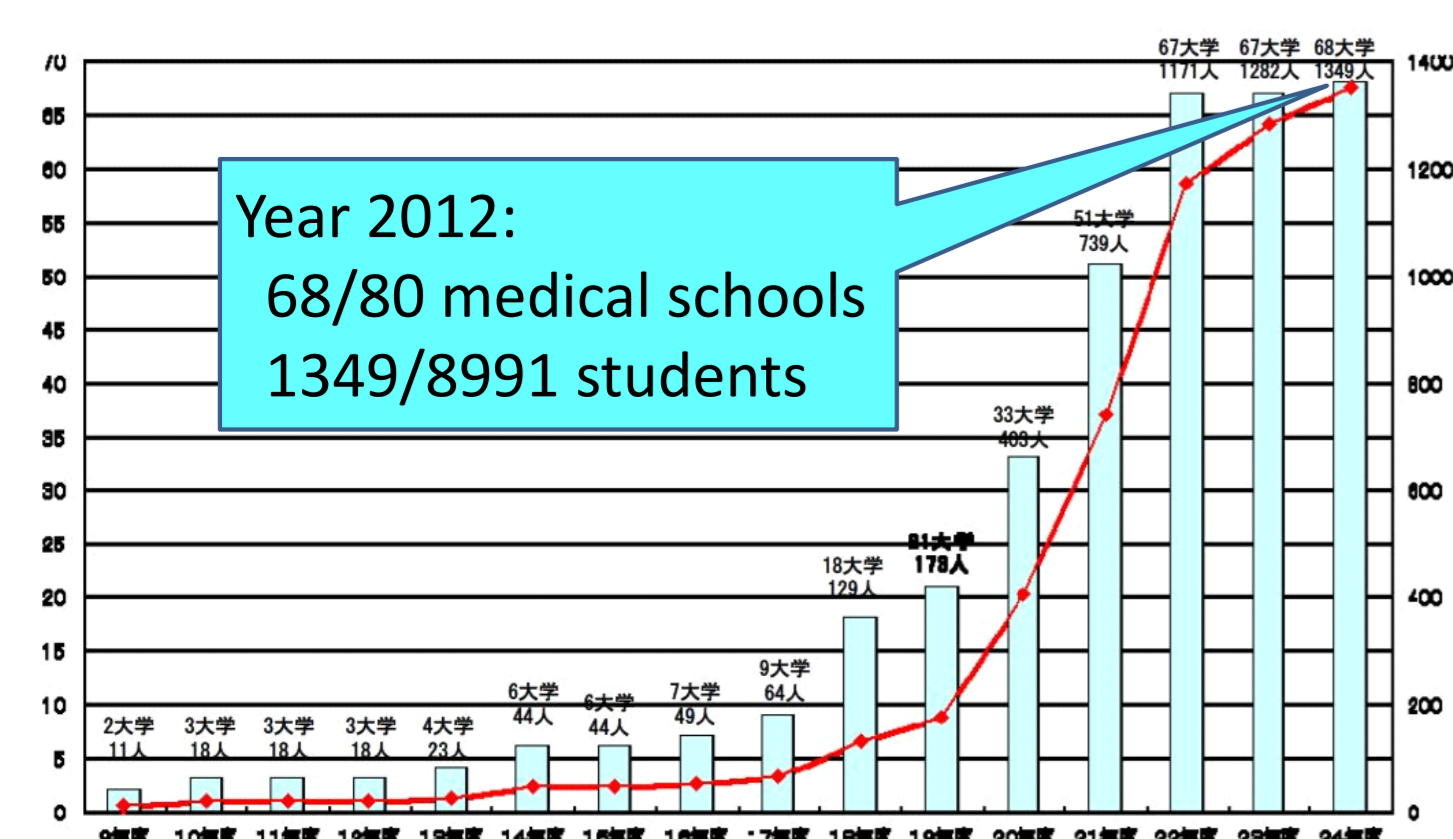
Dr. Junji Otaki, MD, DMSc
Professor
Center for Medical Education
Graduate School of Medicine
Hokkaido University, Japan



- The majority of students who enter Japanese medical school will become physicians in the future. Consequently, the impact of medical school entrance examinations (hereinafter entrance exams) on society is considerable. In the achievement test of entrance exam, we have to take the measure of academic achievement, of course.
- Japanese government and Japanese Society for Medical Education have been repeatedly recommended not to select enrollee only by the score of it. In order to meet them, interview, records of high school activities and other measurements and admission by recommendation have been introduced little by little in the selection process.
- On the other hand, some faculties of Japanese medical schools insist the need of the highest passing grade in achievement tests in order not to fall out of overcrowded curriculum after admission. After all, the achievement tests have been the center of the measure of the entrance exam in Japan.

- Firstly, the validity of measuring an advanced academic ability were addressed. For example, so-called “regional quotas” have been introduced in Japan as a policy measure to admit many regional applicants from areas with a shortage of physicians to medical schools. For the selection of these quotas, do we need set the same pass levels of the achievement tests with the candidates of the general frame?
- The second issue is the effect of education gap. As societal stratification continues to develop into a major problem in Japan, educational disparities are also becoming serious. We are concerned about the advantage of the candidates from a wealthy family, and from urban fame high school with special curriculum.

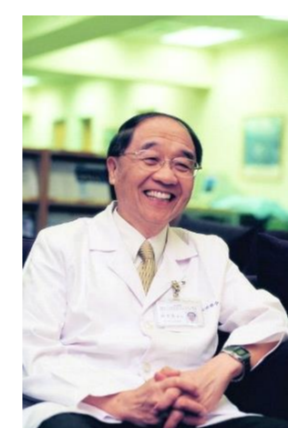
“Regional quotas”



Overview of the Selection of Medical Students in Taiwan

Chi-Wan Lai and Charity Tsai

Chi-Wan Lai, MD
Chairman, Taiwan Medical Accreditation Council (TMAC)
Chair Professor, Andrew T. Huang Medical Education Promotion Fund
Attending Neurologist, Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan



- The first medical school in Taiwan was established in 1897 while Taiwan was under Japanese governance, and since then, the medical profession has been recognized by the public as one of the best choices of career. Even though there are currently a total of 12 medical schools in Taiwan, entering medical schools continue to be a fierce competition.
- Medical educators in Taiwan are aware of the connection between outstanding academic capability as well as good personal character and experiences, and becoming a competent and compassionate physician, yet medical admissions remain solely based on a single written test, the Joint College Entrance Examination (JCEE), until the 1980s when interviews were added to the admission process of the graduate-entry medical programs (GMPs). At that time, the GMP was introduced in five medical schools besides the traditional “high school leaver” program. However, the interview method was not nationally adopted, and it soon faded with the abolishment of the GMP within 2 to 12 years, except for one medical school which continues to run the dual system and adopt the interview process in addition to the JCEE for their GMP.
- It was not until the 1990s when the Taiwanese Ministry of Education approved of interview-based examinations through the tracks of “School Recommendation (SR)” and “Self-Application (SA)”, whereby candidates have to pass the Step I, a national written exam, and the Step II, where they have to submit to schools they are applying to their personal profile (including personal statement, letters of recommendation, high school grades, prerequisite studies, portfolio, extra-curricular activities, volunteer experiences and awards, and other supplementary information forms) as well as go through an interview. The latter can be either traditional interviews (one-on-one, one-on-a panel, group interview, semi-structured interviews) or a series of one-on-one structured interview, i.e. the “multi-mini interview” (MMI).
- Although it varies from school to school, in the last few years, on average, up to 40% of all newly-enrolled medical students were selected through interview-based procedures, with the rest through a single written exam (JCEE). The performance of students through these different tracks has been monitored and compared, and so far, no consistent major differences have been shown.

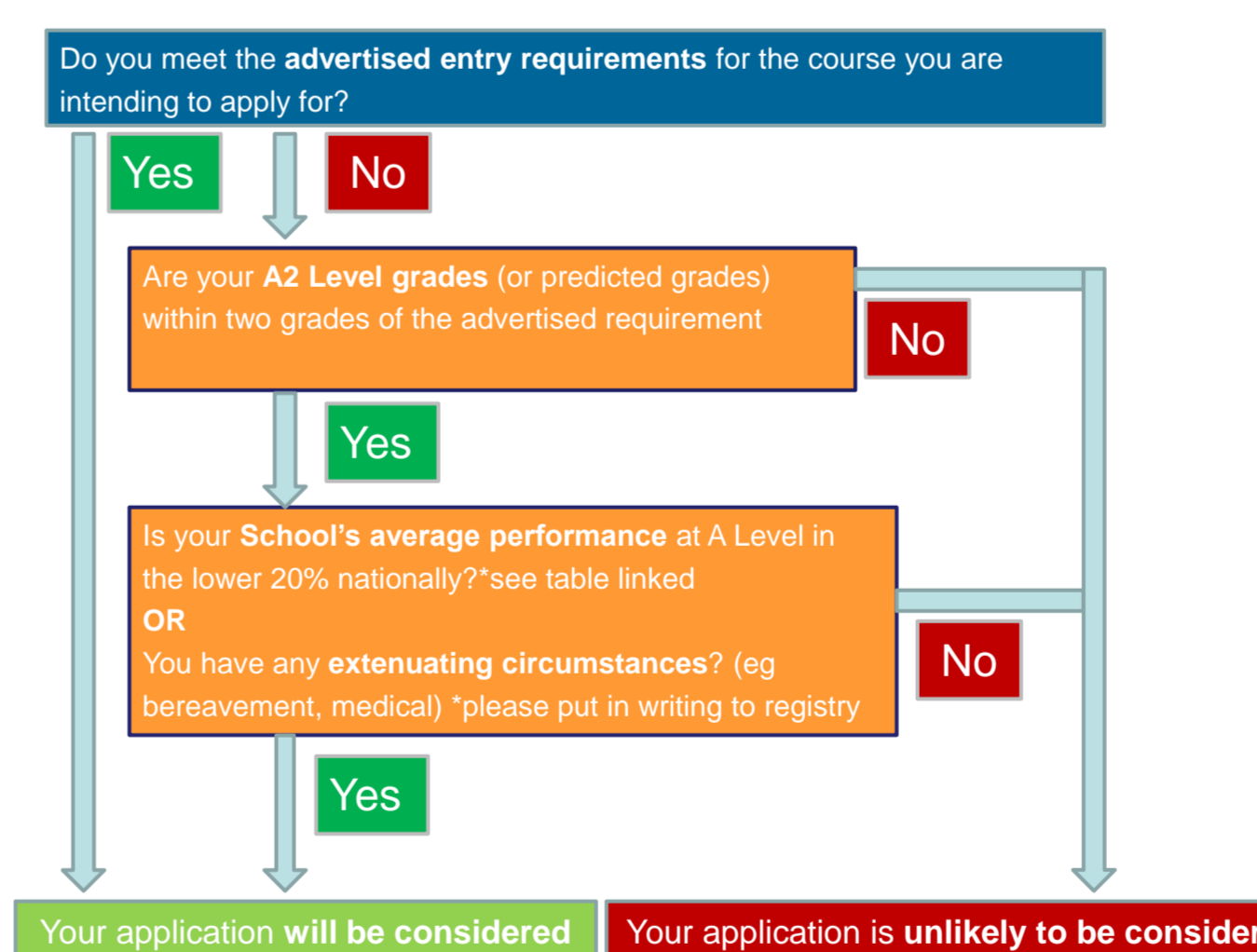
Overview of selection processes used by St George's and other UK Medical Schools

Peter McCrorie

Peter McCrorie
Professor of Medical Education
St George's, University of London, UK
Dean for Medical Education
University of Nicosia Medical School, CYPRUS



- On-line research about UK selection processes was obtained by collating information from the websites of each of the 32+ medical schools in the UK. Each school uses its own selection process – no two are the same. An overview was presented which summarised the types of medical programmes available, their entrance requirements, aptitude tests in use, interview processes and other requirements such as work experience, personal statements, English language certificates, health and criminal record checks.
 - St George's, University of London, is strongly supportive of widening participation - the recruitment of potential medical students from less exclusive backgrounds – high achievers in schools with overall low academic success rates. How St George's generates interest in studying medicine and other healthcare professions was described, including the use of student ambassadors, highly interactive websites, Open Days and Summer Schools.
- References:
- <http://www.sgul.ac.uk/about-st-georges/widening-participation>
 - <http://www.tasteofmedicine.com/>
 - <http://www.roadshow.sgul.ac.uk/>
 - <http://www.summerschool.sgul.ac.uk/>
 - Hammond, JA, Lewis, K, White, H and Bowman, D (2012) Adjusting the academy: developing an adjusted entrance criteria scheme in a specialist healthcare and bioscience higher education institution. *Widening Participation and Lifelong Learning*, 13(3), pp. 45-59. ISSN (print) 1466-6529



Admissions at McGill University Faculty of Medicine

Joyce Pickering

Joyce Pickering, MD, FRCP, FACP
Interim Physician in Chief
Department of Medicine
McGill University Health Centre
Montreal, Canada
Invited Project Associate Professor
International Research Center for Medical Education
Graduate School of Medicine, The University of Tokyo



In the past admissions at McGill were based on:

- Cognitive abilities
 - Marks (Grade Point Average – GPA)
 - Medical College Admission Test (MCAT)
- Non-cognitive abilities
 - Personal letter about motivation for medicine
 - Letters of Reference
 - Interviews (2)

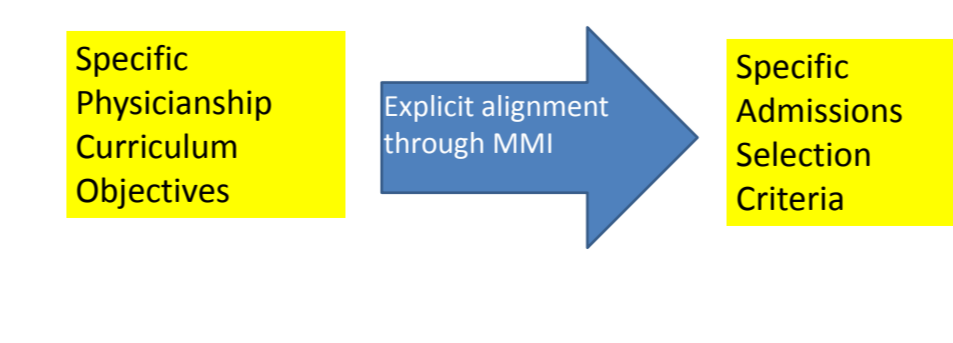
Based on initial work at McMaster University, Canada

- Multiple mini interviews (MMIs) 10 stations developed to test non cognitive skills – (very similar to an OSCE)
- 100 admission candidates in 2008 went through BOTH traditional interviews and MMI. – (admission decision was mostly (30% of the 40% for interviews) weighted to traditional interviews).
- Comparison of predictive value for clinical performance for each of these.

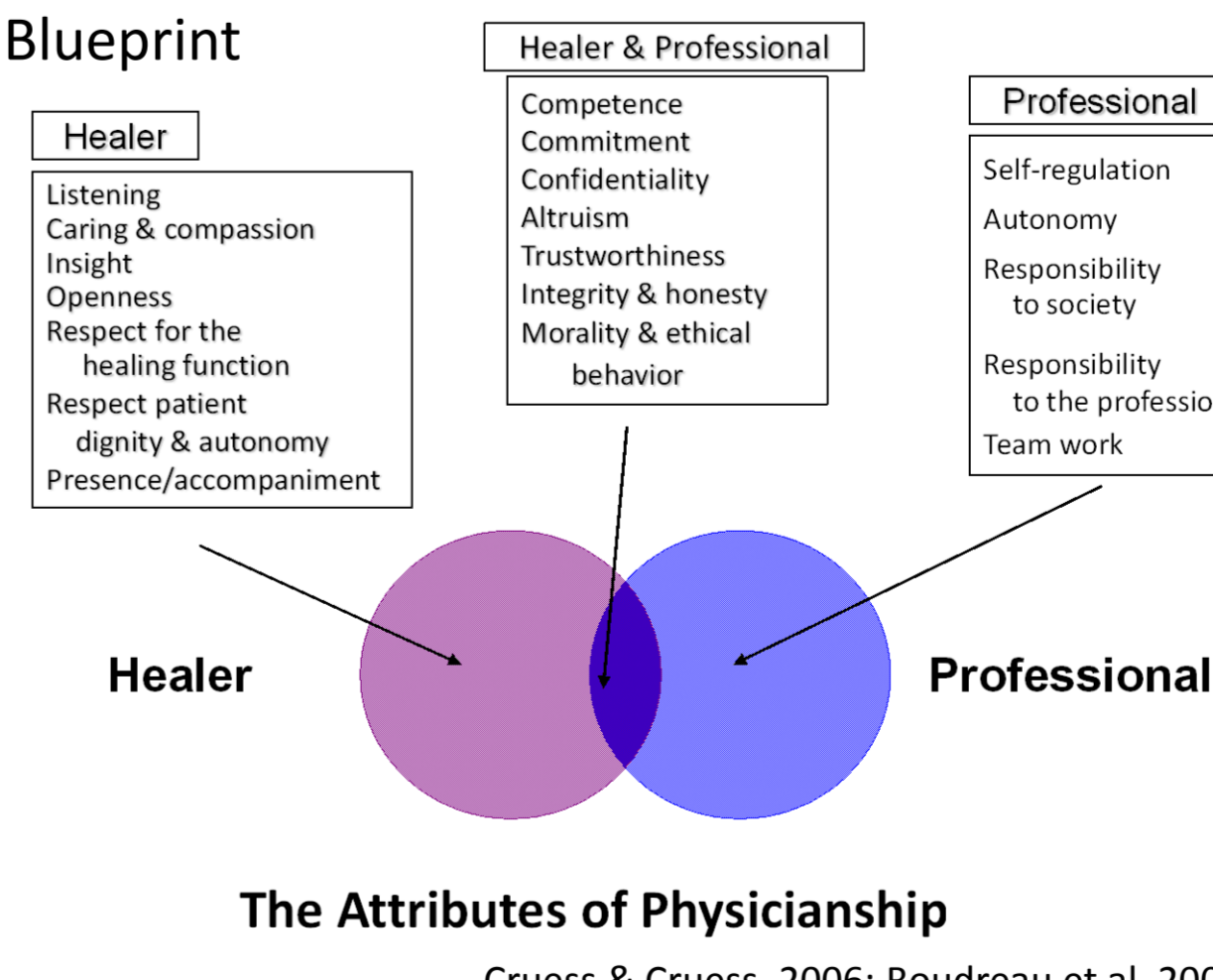
Problem:

- There is evidence that GPA and MCAT predict performance, especially in the basic science years.
- No evidence that interviews, letters of reference and personal letter predict clinical performance. – (Clinical performance assumed to also depend on non cognitive abilities)

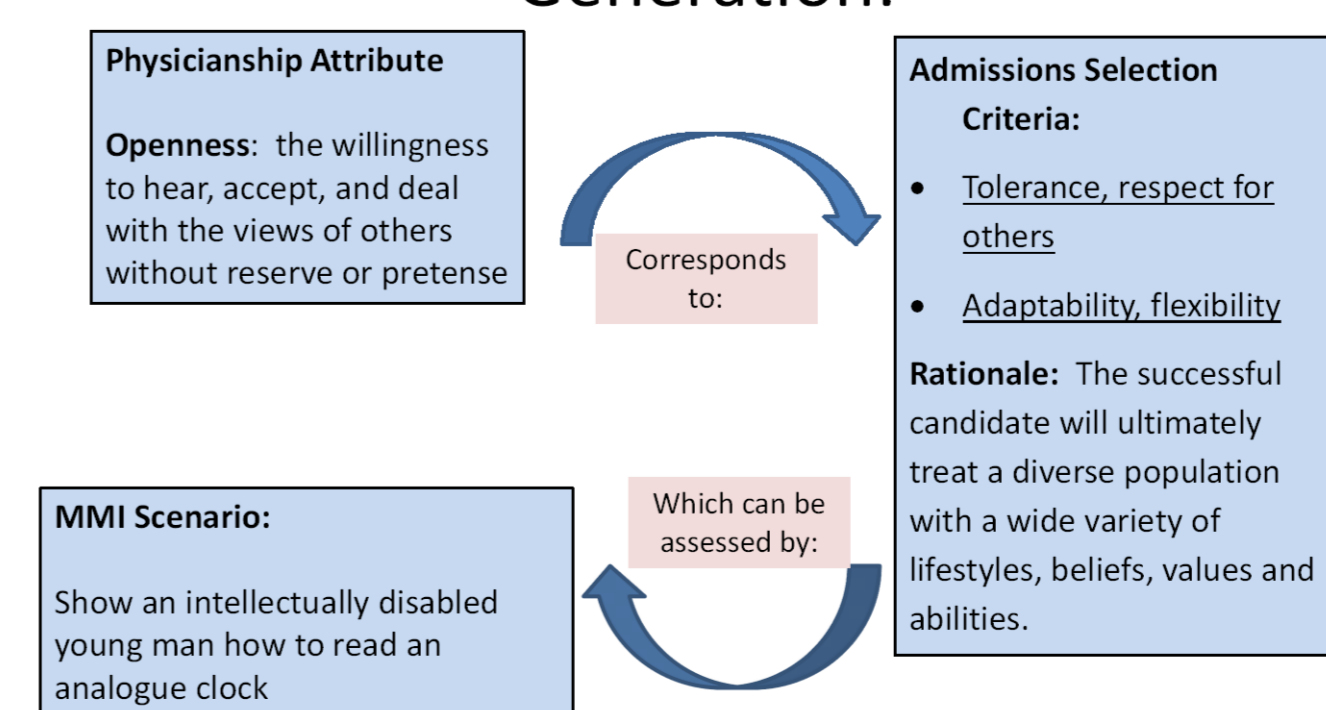
How did we develop our stations?



MMI Blueprint



From Explicit Linkage to Scenario Generation:



In the video

- Teaching an intellectually disabled person how to read an analogue clock links to “openness”
- Making quick decisions about packing for a trip to Vietnam links to “competence”
- Discussing what to do when your mother wants to buy an illegal object (copy of a famous brand name purse) links to “morality and ethical behaviour”.

Results

- Positive correlation of GPA prior to admission with marks in first and second year, and with 4 year average.
- No correlation of GPA with performance in third year clerkship.
- Negative correlation of traditional interview score with marks in third year clerkship.
- Positive correlation of MMI with marks in third year clerkship.
- Overall admissions formula which includes GPA and MMI shows a better correlation with 4 year average than does GPA alone.

Conclusions

- Our traditional semi structured interviews were useless (or worse than useless).
- Multiple mini interviews are predictive of performance on clinical clerkships.
- We have stopped traditional interviews and do only MMIs at present. – Thanks to Dr. Saleem Razack, Michel Dansereau and Dr. Meredith Young who did the analysis and sent me their presentation. * These results were presented at the Canadian Conference on Medical Education, 2013, and are submitted for publication.