In this four-lecture series we will examine the challenges to our current models of teaching and assessment at the medical student and resident level. We will critically appraise current approaches and the reasons for a need to change. Using examples from Canada we will look at new models, innovative curricula, novel approaches to assessment, and methods to evaluate effectiveness.

“I hope that, taken together, these four lectures will stimulate a positive change in medical education in Japan”
**New Models of Medical Education: Outline**

A. Are there problems with our current education models?
B. Do we need to change?
C. Are there newer models of medical education?
D. Will competency-based medical education (CBME) be able to address the challenges?
E. Are there global CBME models and innovations?
F. Can this apply to the Japanese context?

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**‘Traditional’ models of medical education**

- 4 year ‘graduate entry’ or 5-7 year ‘direct entry’
- Pre-clinical → Clinical

- Preclinical – classroom and laboratory
  - Large classes, didactic, written exams
- Clinical
  - In large academic teaching hospitals
  - Role: observer
  - Written exams, knowledge-based

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**Flexner, Harden ... and beyond**

A. Flexner – 1911
   - Teacher-centered
   - Knowledge transmission
   - Discipline-based
   - Hospital oriented
   - Standard program
   - Core + electives
   - Opportunistic (apprenticeship)

B. Harden – 1984 (SPICES)
   - Student-centered
   - Problem-based
   - Integrated
   - Community oriented
   - Systematic

C. GPEP report AAMC - 1990s
Current models used in *undergraduate* education

- Preclinical
  - Problem-based learning
  - Case-based learning
  - Peer learning
  - Team-based learning
  - Active learning, groups
  - Integrated curricula
  - Spiral curricula
  - Early clinical exposure

- Clinical
  - Clerkship involves ‘doing’
  - Outpatient & community
  - Interprofessional education
  - Electives
  - Simulation
  - OSCE

Current models of *postgraduate* education

- Apprenticeship – ‘work-based learning’
- Assigned to a ‘rotation’ for a period of time
- Supervised care of patients with ‘graduated responsibility’
- +/- a formal curriculum
- ‘Core competencies’
- Assessment and advancement based on performance and time spent
- Exit examination: written, clinical

B. Do we need to change?

“I went through the current system, and I turned out all right.”

But still ...

The medical curriculum should be designed so as to provide adequate opportunities to acquire *independent learning skills*, while developing *clinical competence* to a level appropriate to a new pre-registration house officer. Experiential learning arising from extensive periods of *direct patient contact* is an essential component of the course, which may be supported by *contributions made by skills laboratories and learning activities using simulated patients*. Adequate numbers of patients in *primary, secondary and tertiary care* settings need to be available for *face-to-face student contact.*
Challenges and problems with current models

- Rapidly evolving knowledge & technology
- Concern about patient safety & medical error
- Quality care
  - Poor care coordination
  - Inappropriate use of tests
  - Dysfunctional collaboration
- Heterogeneous exposure and patient ‘mix’ result in gaps in training
- Transitions not addressed
- Patient concerns about
  - Compassion
  - Communication skills
  - Professionalism & ethics
- Uneven ‘product’: too many graduates with deficiencies
- Inflexible training models

The practice outcome of our current model: Competence drops over time

Competency Gaps

Office-based Practice Competencies: skills in...

- Working in inter-professional teams
- Clinical IT
- Population management
- Reflective practice
- CQI
- Care Coordination
- Continuity of Care
- Leadership & management
- Systems thinking
- Procedural Skills

We need doctors who...

- Are optimally prepared for today’s practice
- Can safely provide complex care
- Can work in and lead health care teams
- Maintain / improve their competence in changing contexts
- Possess skills and abilities beyond knowledge
In summary: Why we need to consider a change

- Public concerns about accountability
- Concern over an increasing gap between graduate’s performance and the requirement for graduates to meet the needs of society and possess abilities for complex practice
- Desire to improve educational and clinical outcomes

C. Are there newer models of medical education to address these challenges?

“What’s new? We have seen this before.”

Addressing the challenges: New(er) Models of Medical Education

- Longitudinal models e.g.
  - Longitudinal integrated clerkships
  - Longitudinal resident clinics
- Technology enhanced
- Social media and learning
- Competency-based medical education (CBME)
“Digital connection to the cooperative world of EM. We strive to reshape medical education and academia in their evolution beyond the traditional classroom.”

“It seems very complicated…”
**Competency-based medical education: What is it?**

An outcomes-based approach to the design, implementation, assessment, and evaluation of medical education programs, using an organizing framework of competencies*  

*derived from an analysis of societal and patient needs

**Define Competence:**

The array of abilities (knowledge, skills, and attitudes) across multiple domains or aspects of performance in a certain context.

- require descriptive qualifiers to define the relevant abilities, context, stage of training.
- multi-dimensional and dynamic
- changes with time, experience, and setting.

**Define Competency:**

An observable ability of a health professional related to a specific activity that integrates knowledge, skills, values, and attitudes.

- Since competencies are observable, they can be measured and assessed to ensure their acquisition.
- Competencies can be assembled like building blocks to facilitate progressive development.

**Fundamental principles of CBME**

- Education must be based on the health needs of the populations served
- Primary focus of education & training should be desired outcomes for learners rather than structure and process of the education system
- The formation of a physician should be integrated across the continuum – UGME → PGME → practice
History of CBME – it’s not new!

- 1950s-1960s: outcomes based education in industry
- 1970s: rationale for medical education based on acquisition of competencies
- 1990s: first iteration of a competency framework based on what patients expect from their doctors
- 2000s: national competency frameworks adopted (Canada, USA, UK, Australia, Netherlands,)
- 2010’s: implementation – postgraduate, medical school (Canada, USA, Netherlands, Australia, Singapore)


‘One World’… Competency Frameworks

Common competencies within frameworks: Can you name some?

- (Clinical) expertise
- Problem solving
- Health advocacy / prevention
- Communication skills
- Teamwork / collaboration
- Leadership and management
- Teaching skills
- Life-long learning
- Critical appraisal
- Professionalism
Characteristics of CBME (1)

- Graduate outcomes in the form of attainment of predefined desired competencies are the goal.
- Competencies are derived from the needs of patients, organized into a coherent guiding framework.
- Teaching and learning experiences are sequenced to facilitate a defined progression of ability in stages.
- Learning is tailored to the individual learner’s progression in some manner.

Characteristics of CBME (2)

- Time is a resource for learning, not the basis of progression of competence.
- Numerous direct observations and focused feedback contribute to effective learner development of expertise.
- Assessment is planned, systematic, systemic, and integrative (‘programmatic’)

E. Are there global CBME models and innovations?

“This seems very theoretical ... Is anyone actually doing it?”

Global Examples

- U Toronto Orthopedics
- USA: ACGME
- Netherlands
- Canada: CFPC Triple-C (Family Med)
- Canada: Specialist “Competence by Design” (RCPS)
- Canadian med school competencies
- Singapore
- Texas consortium
- Queens University ...others
The CBME model shifts the emphasis of training from one focused on time-based learning and measurement to one based on competency in the skills required. Instead of requiring learners to complete a pre-determined period of time at one level before moving on to the next, they will instead be promoted once they have demonstrated competency in a particular field. The CBME training model also calls for more frequent and meaningful assessments, ensuring that competent residents will move through training in a more individualized and efficient manner, saving valuable resources and promoting excellence in their paths to independent practice.

How CBME may help address challenges

- Is based on explicit outcomes needed by graduates
- Transparent to learners, teachers, assessors
- Focuses on individual learner needs
- Promotes life-long learning
- Provides time needed to learn
- Better prepared to progress to next level or for practice
- Provides public accountability

CBME - Where We Are...

- Competencies make what has been implicit in medical education explicit.
  - Shared understanding and mental models
- Competencies enable an examination of what it takes and means to be a proficient healthcare professional
- The ability to sequence learning of abilities helps operationalize the competencies in more practical terms

We believe that in the future, expertise rather than experience will underlie competency-based practice and...certification.
F. Can this apply to the Japanese context?

There is work to do!

Now: Sample Curriculum Map

- Develop a concise competency framework
  - National level if possible
  - Derived from abilities needed by graduates
- Sequence competencies across the continuum: UGME → PGME → practice
- Reconsider assessment methods and systems
  - Formative – assessment for learning
  - Summative – assessment of learning
- Start faculty development

What can be done (relatively) easily?
Key messages

- There are problems with our current education models;
- We need to change;
- Newer models of medical education have evolved;
- Competency-based medical education (CBME) be able to address the challenges;
- CBME models and innovations are being implemented globally;
- These concepts can be applied in Japanese context