Reform into competency-based curriculum in medical education in South Korea

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History
- 1899~ 醫學校 Eui-Hak Gyo: Korea’s first modern medical school
- 1946~ Seoul National University College of Medicine

Current Status
- 536 full time professors, 339 clinical professors
- 842 medical students (premed: 211, med: 631)
- 719 graduate students (M.S., Ph.D.)

Affiliated organization
- Seoul National University Hospital
- SNU Children’s Hospital
- SNU Cancer Hospital
- SNU Bundang Hospital
- SNU Boramae Hospital
- SNU Gangnam Center
Seoul National University College of Medicine

Research publication and grant

QS ranking by subject

<table>
<thead>
<tr>
<th>Subject (medicine)</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>56</td>
<td>48</td>
<td>48</td>
<td>40</td>
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</tbody>
</table>
Trend of medical education

- 1765 Apprentice-ship based model
- 1871 Discipline-based model
- 1910 Flexner Report
- 1951 Organ-system model
- 1971 Problem-based model
- 1991 Clinical-presentation based model

Teacher-centered → Outcomes, competency, task based → Student-centered
Flexner Model

- Define “Fundamental Knowledge”
- Teach the Fundamentals
- Test for Knowledge of Fundamentals
- Hope for the Best
Competency Based Model

1. Develop Learning Experiences
2. Design Measures and Standards of Performance
3. Define the Successful Graduate
4. Assessment
ACGME Core Competencies

- Systems-Based Practice
- Professionalism
- Interpersonal & Communication
- Practice-Based Learning & Improvement
- Patient Care
- Medical Knowledge
2014 Medical Doctors’ Competency in Korea
# Accreditation standards for medical education

<table>
<thead>
<tr>
<th>GMC</th>
<th>WFME</th>
<th>LCME</th>
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</thead>
<tbody>
<tr>
<td>1. Learning environment and culture</td>
<td>6. Educational resources</td>
<td>3. Academic and Learning Environments</td>
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<tr>
<td></td>
<td></td>
<td>5. Educational Resources and Infrastructure</td>
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<tr>
<td></td>
<td></td>
<td>9. Teaching, Supervision, Assessment, and Student and Patient Safety</td>
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<tr>
<td>2. Educational governance and leadership</td>
<td>1. Mission and outcomes</td>
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<td></td>
<td>2. Governance and administration</td>
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<tr>
<td></td>
<td>9. Continuous renewal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11. Medical Student Academic Support, Career Advising, and Educational Records</td>
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<tr>
<td></td>
<td></td>
<td>12. Medical Student Health Services, Personal Counseling, and Financial Aid Services</td>
</tr>
<tr>
<td>4. Supporting educators</td>
<td>5. Academic staff/faculty</td>
<td>4. Faculty Preparation, Productivity, Participation, and Policies</td>
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<tr>
<td>5. Developing and implementing curricula and assessments</td>
<td>2. Educational programme</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Assessment of students</td>
<td></td>
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<td></td>
<td>7. Programme evaluation</td>
<td></td>
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<tr>
<td></td>
<td>6. Competencies, Curricular Objectives, and Curricular Design</td>
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<td>7. Curricular Content</td>
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<td>8. Curricular Management, Evaluation, and Enhancement</td>
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</tbody>
</table>
Distribution of Established Year of Medical Schools in Korea (N=41)
Development of accreditation system in Korea

• Early 1990s  Need for quality assurance system
• 1992  Seminar on the confidential system of medical school sponsored by Korean Association of Medical College
• 1993  Voluntary, small scale self-evaluation
• 1996  Programmatic accreditation done by Korean Council for University Education
• 1998  Accreditation Board for Medical Education in Korea (ABMEK)
• 2003  Korean Institute of Medical Education and Evaluation (KIMEE)
## Standards in accreditation by KIMEE (2013)

<table>
<thead>
<tr>
<th>Areas (6)</th>
<th>Sub areas (20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>Foundation/administration/finance/developmental plan/improvement effort (5)</td>
</tr>
<tr>
<td>Basic medical education curriculum</td>
<td>framework/ development and support/structure and operation/outcome evaluation/assessment quality (5)</td>
</tr>
<tr>
<td>Student</td>
<td>Admission policy and selection/guidance system/welfare and security/career guidance (4)</td>
</tr>
<tr>
<td>Faculty</td>
<td>Full-time faculty/academic activity/faculty development (3)</td>
</tr>
<tr>
<td>Facilities and resources</td>
<td>Education equipment/research equipment (2)</td>
</tr>
<tr>
<td>Postgraduate education</td>
<td>Postgraduate curriculum (1)</td>
</tr>
</tbody>
</table>
Design Process for New Curriculum

❖ Outcome based curriculum

- Mission statement
- Exit Outcomes
- Phase Outcomes
- Course Outcomes
- Lesson Outcomes
Exit Outcomes in SNUCM

1. Clinical competency
   1. Understanding human body and diseases
   2. Collecting clinical data and diagnosis
   3. Utilization of medical resources and treatment
   4. Diseases prevention and health promotion

2. Research competency
   5. Critical, clinical thinking
   6. Ability for research performance

3. Leadership and International Perspectives
   7. Empathetic understanding and communication
   8. Understanding society and culture
   9. Understanding international health

4. Professionalism
   10. Observing ethics and law
   11. Continuous self development
   12. Social contribution
Five Design Principles for New Curriculum

- Horizontal/vertical Integration
- Expansion of selective course
- Reinforcement of self-directed learning
- Intensification of clinical clerkship
- Comprehensive and appropriate evaluation and feedback
Directions of curriculum reform

Graduates of SNUCM

- Clinical Competency
- Research
- Leadership
- Professionalism

Elective
Self-Directed Learning
Enhanced Clinical Clerkship
Integration
Evaluation and Feedback
# New Curriculum in SNUCM (2016~)

## 1st yr

- **Weeks 1-8:** Normal Human Body  
  - Human Anatomy / Introduction to Human Histology / Human Histology and Physiology / Human Biochemistry / Basic Neuroscience
  - Selective Course 1

- **Weeks 9-12:** Basics for Understanding Diseases  
  - Pathologic Basis of Disease / Infection Basics / Basic Immunology / Understanding of Pharmaceutical Drugs
  - Selective Course 2

- **Weeks 13-16:** Human System & Diseases I  
  - Reproduction, Growth and Development I

- **Weeks 17-20:** Medical Research I  
  - Progress test

## 2nd yr

- **Weeks 1-4:** Human System & Diseases II  
  - Blood and Tumor / Metabolism and Endocrine / Nerve and Behavior
  - ICM II – 1

- **Weeks 5-8:** Human System & Diseases III  
  - Respiratory / Circulatory / Gastrointestinal
  - ICM II – 1

- **Weeks 9-12:** Human System & Diseases IV  
  - Kidney and Urologic / Musculoskeletal, skin and sensory / Reproduction, Growth and Development II

- **Weeks 13-16:** Medical Research II  
  - Progress test

## 3rd yr

- **Weeks 1-4:** Clinical Clerkship for Medical Parts
  - Longitudinal Clerkship

- **Weeks 5-8:** Clinical Clerkship for Women & Children
  - Longitudinal Clerkship

- **Weeks 9-12:** Clinical Clerkship for Surgical Parts
  - Longitudinal Clerkship

## 4th yr

- **Weeks 1-4:** Advanced Selective Course
  - Human Society Medicine 7

- **Weeks 5-8:** Selective Clinical Clerkship
  - Human Society Medicine 8

- **Weeks 9-12:** Student Internship

- **Weeks 13-16:** Clinical Reasoning II
Exit Outcomes in SNUCM

1. **Clinical competency**
   1. Understanding human body and diseases
   2. Collecting clinical data and diagnosis
   3. Utilization of medical resources and treatment
   4. Diseases prevention and health promotion

2. **Research competency**
   5. Critical, clinical thinking
   6. Ability for research performance

3. **Leadership and International Perspectives**
   7. Empathetic understanding and communication
   8. Understanding society and culture
   9. Understanding international health

4. **Professionalism**
   10. Observing ethics and law
   11. Continuous self development
   12. Social contribution
4 phases in the curriculum

1. Normal human body
   - Anatomy, physiology, biochemistry, histology, neuroscience
2. Basics for understanding disease
   - Pathology, microbiology, pharmacology, parasitology
3. Human & diseases
   - Integrated courses between basic and clinical science
   - Team-based learning, case-based learning
4. Clinical clerkship
   - Core clerkship
   - Selective clerkship
   - Student internship
Integration

• Horizontal & Vertical Integration

• Integration among
  ▪ basic science
  ▪ clinical medicine
  ▪ professionalism
  ▪ leadership
Early exposure to clinical situation

• In 1\textsuperscript{st} and 2\textsuperscript{nd} year
  ▪ Patient interview
  ▪ Physical examination
  ▪ Hospital visit
  ▪ Clinical ethics
  ▪ Career development programs
Simulation Based Learning

SNUCM Simulation center

Ji Seok-Young was the school’s first principal
Simulation Based Learning
Self-directed Learning

- Lecture halls without lecture
- Flipped learning
  - Team-based learning
  - Case-based learning
- Interactive learning
Active Learning: Flipped Classroom

**The Flipped Classroom**

**OUT OF CLASS**
- Students prepare to participate in class activities
- Students check their understanding and extend their learning

**IN CLASS**
- Students practice applying key concepts with feedback

**DURING**
- **GOAL**
- **BEFORE**
- **AFTER**
E-Learning: Medical Education 3.0
Team-based learning

Discussion in a group

Discussion between groups
Exit Outcomes in SNUCM

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Medical Research

- **1\textsuperscript{st} year (2 weeks)**
  - Course for orientation of medical research
  - Basic concept for medical research, ethics, basic methodology, statistics, etc.

- **2\textsuperscript{nd} year (10 weeks)**
  - Performance of medical research as a team with other student or individual with a supervisor in diverse laboratories

- **4\textsuperscript{th} year (6 weeks)**
  - Students can spend this period for completing their research
Integrative Biomedical Education Research Building

Develop a “21st Century R&D and talent development linked system” that will lead cutting-edge modern research

* Location  Multi-Disciplinary Laboratory, Research Building 2
* Gross floor area  17,700 m²
Medical Science Building

Total Cost 167 mil USD  Gross floor area 10,506 m²
Wide River Institute of Immunology

To make a healthy world by leading biomedical research based on creative and collective intelligence

**Location** Guneop-ri, Hwacheon-myeon, Gangwon, Korea

**Gross area** 93,691 m²  **Gross floor area** 8,340 m² (3 Building)
Exit Outcomes in SNUCM

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New Curriculum in SNUCM

1st yr
- **Normal Human Body**
  - Human Anatomy / Introduction to Human Histology / Human Histology and Physiology / Human Biochemistry / Basic Neuroscience
  - **Human System & Diseases**
    - Pathologic Basis of Disease / Infection Basics / Basic Immunology / Understanding of Pharmaceutical Drugs
  - Vacation

2nd yr
- **Human System & Diseases II**
  - Blood and Tumor / Metabolism and Endocrine / Nerve and Behavior
  - Human System & Diseases III
    - Respiratory / Circulatory / Gastrointestinal
  - ICM II – 1
    - Selective Course 1

3rd yr
- ICM II
  - Clinical Clerkship for Medical Parts
  - Clinical Clerkship for Women & Children
  - Clinical Clerkship for Surgical Parts
  - Clinical Clerkship for Mental / Nervous System & Image

4th yr
- Advanced Selective Course
  - Selective Clinical Clerkship
  - Student Internship
Diverse selective courses

• Selective course in 1st and 2nd years
  – 3-4 hours a week for 8 weeks during a half year
  – Students select one from 10-20 subjects according to their interest and ability

• Advanced elective course in 4th year
  – Research: basic science, clinical science or complementary-alternative medicine
  – Career search opportunity: internship in newspaper publishing company, pharmaceutical company...
  – Voluntary service: overseas, domestic

• Selective clerkships in 4th year
International Partner Institutions
Total 56 (America 13, Europe 3, Asia 35, Oceania 4, Middle East 1)
In the international community, especially in developing countries, JW LEE CGM at SNU supports health promotion activities based on its foundation of **sustainable medical knowledge** and **technology**.
SNUCM Students’ International Clerkship

Europe 28
Asia 48
Africa 1
Oceania 2
Oceania 7
North America 23
North America 17

Europe 4
Asia 8

Outbound
Inbound
Challenge of curricular reform

• Faculties’ resistance to curricular reform
  – Incomplete comprehension of intention of curricular reform
  – Unfamiliarity with new methods such as team-based learning
  – Adherence to previous curriculum and teaching systems

• Students’ resistance to curricular reform
  – Lack of patience to unavoidable trial-and-errors during the reforms

• Overloading work to the staffs leading the reform
  – Steadily demanding process of curricular reform
  – Needs for manpower and financial supports to the office of medical education
Competency-based curriculum in South Korea

- **Background**
  - Change of medical environment (self-directed learning, team-work, etc.)
  - 2003~ Korean Institute of Medical Education and Evaluation (KIMEE)
  - Global standard (WFME, LCME)

- **Introduction of competency-based curriculum**

- **Challenge of curricular reforms**
  - Faculties’ resistance and adherence to previous system
  - Exhaustion of the staffs working for curricular reform
Thank you