New and Innovative Curriculums in Medical School Training

International Association of Medical Science Educators

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Objectives

• Provide a description of the unique six year combined degree program at the University of Missouri-Kansas City School of Medicine.

• Discuss the curriculum and how integrating traditional classroom and clinical experiences together benefits student education.

• Compare objective performance information to national standards.
Background

• Former Chairman, Combined Group on Baccalaureate-MD programs
• Associate Dean of Student Affairs, University of Missouri-Kansas City School of Medicine
• Associate Professor, Internal Medicine/Pediatrics
• 1990 Graduate of University of Missouri-Kansas City School of Medicine
Why the interest in innovative education?

• US comments:
  – Shortage of physicians
  – Cost of attendance
  – Lack of medical school availability for those interested in pursuing career
The Traditional Medical School Path in the US

• Complete undergraduate education with a degree in any category, additional completion of medical school pre-requisite courses
• MCAT (Medical College Admissions Test)
• Apply/acceptance into Medical School
• Four year Medical School experience
Traditional four year curriculum

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall Semester</th>
<th>Winter Semester</th>
<th>Summer Semester</th>
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<tbody>
<tr>
<td>1</td>
<td>Basic Science coursework</td>
<td>Basic science coursework</td>
<td>Break</td>
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<tr>
<td>2</td>
<td>Basic science coursework</td>
<td>Basic science coursework</td>
<td>Break or begin clinical clerkships</td>
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<tr>
<td>3</td>
<td>Clinical clerkships (Internal Medicine/Pediatrics/Family Medicine/Obstetrics-Gynecology/General Surgery/Psychiatry)</td>
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<td>Elective clinical rotations</td>
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<td>4</td>
<td>Elective clinical rotations</td>
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Other Countries

• Some countries with medical school experiences less than eight years:
  – Canada
  – United Kingdom
  – India
  – Bulgaria (five year curriculum plus internship)
  – Poland
  – Czech Republic
• Entry exam following high school, with acceptance into medical school based on exam scores
  – Six or seven year programs
• Variety of curriculum plans
Alternative curriculum options in the US

• Combined Baccalaureate/MD programs in US
  – Shortened undergraduate degree program
  – Early entry into medical school programs
  – Shortened medical school curriculum (three year program)
Alternative curriculum options in the US

• Combined Baccalaureate/MD programs in US
  – Integration of clinical experiences into the undergraduate and basic science medical school years
  – Six or seven year combined programs
  – Three year medical school curriculum tied to residency program
    • Provisional residency position included due to concerns about prejudice towards these students
University of Missouri-Kansas City (UMKC) School of Medicine Program

- History
  - Created in 1970 as an innovative option to address projected physician shortage; goal to provide care to communities in Missouri

- Hallmarks of the medical education plan:
  - Combined baccalaureate/MD plan
  - Early exposure to clinical medicine
  - Small-group learning through the docent system
  - Continuing ambulatory care experience weekly for four years
UMKC-specific curriculum innovations

• Docent system
• Year 1 and 2 experience
• Hospital team experience
• Weekly ambulatory clinic sessions
• Team-based approach to advising
• Senior/junior partner responsibilities
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| 1    | **MEDICINE:** Medical Terminology, Learning Basic Medical Sciences, Fundamentals of Medical Practice I  
**ARTS & SCIENCES:** Human Biology I (Anatomy) w/Lab, General Chemistry I w/Lab, General Psychology, two General Education Requirements* | **MEDICINE:** Fundamentals of Medical Practice II  
**ARTS & SCIENCES:** Human Biology II (Microbiology) w/Lab, General Chemistry II w/Lab, Sociology: An Introduction, General Education Requirement* | **MEDICINE:** Hospital Team Experience  
**ARTS & SCIENCES:** Organic Chemistry w/Lab, Cell Biology |
| 2    | **MEDICINE:** Fundamentals of Medical Practice III  
**ARTS & SCIENCES:** Human Biochemistry, Social and Psychological Development Through the Life Cycle, Genetics, General Education Requirement* | **MEDICINE:** Fundamentals of Medical Practice IV, Clinical Correlations  
**ARTS & SCIENCES:** Human Structure/Function I, II and III | **MEDICINE:** History of Medicine, Clinical Correlations  
**ARTS & SCIENCES:** Human Structure/Function IV |
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| 3    | **MEDICINE:** Clinical Practice of Medicine I, Intro to Pharmacology (Self-Paced), Continuing Care Clinic (half-day weekly)  
**ARTS & SCIENCES:** Medical Neurosciences, Pathology I (General/Clinical) | **MEDICINE:** Clinical Practice of Medicine II, Intro to Pharmacology (Self-Paced), Continuing Care Clinic (half-day weekly)  
**ARTS & SCIENCES:** Medical Microbiology, Pathology II (Anatomic/Systemic) | **MEDICINE:** Pharmacology, Behavioral Sciences in Medicine, Docent Rotation I, Family Medicine I, Ambulatory Care Pharmacology (Self-Paced), Continuing Care Clinic (half-day weekly), Patient-Physician-Society I and II  
**ARTS & SCIENCES:** Courses for B.A. degree* |
| 4    | **MEDICINE:** Pharmacology, Behavioral Sciences in Medicine, Docent Rotation I, Family Medicine I, Ambulatory Care Pharmacology (Self-Paced), Continuing Care Clinic (half-day weekly), Patient-Physician-Society I and II  
**ARTS & SCIENCES:** Courses for B.A. degree* | **MEDICINE:** Psychiatry, Prescribing for Special Populations (Self-Paced), Obstetrics/Gynecology, Pediatrics, Family Medicine II Rural Preceptorship, Surgery, Docent Rotation II, Continuing Care Clinic (half-day weekly), Electives  
**ARTS & SCIENCES:** Humanities/Social Science | |
| 5    | **MEDICINE:** Psychiatry, Prescribing for Special Populations (Self-Paced), Obstetrics/Gynecology, Pediatrics, Family Medicine II Rural Preceptorship, Surgery, Docent Rotation II, Continuing Care Clinic (half-day weekly), Electives  
**ARTS & SCIENCES:** Humanities/Social Science | **MEDICINE:** Docent Rotation III, Emergency Medicine, Rational and Safe Drug Prescribing (Independent Study), Continuing Care Clinic (half-day weekly), Electives**  
**ARTS & SCIENCES:** Humanities/Social Science | |
| 6    | **MEDICINE:** Docent Rotation III, Emergency Medicine, Rational and Safe Drug Prescribing (Independent Study), Continuing Care Clinic (half-day weekly), Electives**  
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The curriculum

• Administration:
  – Curriculum Associate Dean reports directly to Dean
  – Curriculum council recommendations reviewed by Coordinating Committee, approved by Dean
  – Student input as council members

• How change occurs:
  – Idea proposed
  – Council review
  – Recommendation to Coordinating Committee
Student Profile

• Over 3000 graduates since start of program in 1971
• BA/MD class size average of 110
• MD students
Student Profile

- Attrition rate from 1970-2005 was 20.6%; similar to pre-med attrition rate at average undergraduate program
- In past decade, attrition rate much lower due to combination of selection changes, curriculum revisions, retention endeavors
  - Majority of attrition occurs in year 1 and 2
Docent Team

• Team comprised of faculty physician, 12-14 students in years 3-6

• Same docent for a student during years 3-6
  – Team members change as students graduate and new students join team

• Interdisciplinary team developed during internal medicine hospital rotation, which includes a clinical medical librarian, pharmacist, students of pharmacy and/or nursing.

• Student partnerships
Standardized data

- USMLE tests – 2015
  - Step 1: 93% first time pass rate
  - Step 2 CK: 96% first time pass rate
  - Average Step 1 and Step 2 CK scores are at the national mean among first takers (per USMLE data)

- NRMP
  - Match rate at national average as compared to traditional US medical schools
  - Wide variety of specialty interests among students
Comparisons

• LCME:
  – Standards applied to traditional medical schools are applied to the UMKC program
  – Result of last review: full accreditation

• Graduation Questionnaire
  – Annual analysis for comparison data and student satisfaction

• Intern survey
  – Survey to program directors to compare UMKC graduate performance with intern peers
Criticisms of shortened curriculum

- Decreased opportunities for electives
- Limited clinical exposure so that students may select a career choice they later regret
- Immaturity of students
Conclusions

• Shortened curriculum can be successful in educating students to be excellent physicians
• Concerns about maturity do not necessarily correlate to chronologic age
• Team-based learning encourages continuation of working as a team following graduation from school
Conclusions

• Flexibility with schedule allows for additional opportunities
• UMKC program has 45 years of experience to attest to the success of an innovative curriculum
• Combined programs have existed throughout the US for over 25 years