Evidence Based Health Care

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Curricular change at **Albany Medical College**

- Systems themes
- Theme leaders
- Longitudinal courses
  - HCS (Health, Care, and Society)
  - LMI (LaGrange Medical Informatics)
  - Nutrition
  - Clinical Skills
- Initially called CCCS (Comprehensive Care Case Study), now called EBHC
  - **Teach to become life long learners**
  - **Teach how the health care system works**
- All are pass / fail

First year of the course: 1993 - 4

- Lectures on biostatistics and epidemiology
- Articles from the current medical literature
- Course lacked:
  - relevancy
  - well organized syllabus
  - core group of interested preceptors
- Formation of theme group
- Lecture by NYS Health Commissioner
- Introduction of ***Power Reading***

Basic mission of the course.

- What to teach our students to make them proficient in EBM? Where and how to do it!
- **Skills for a life long learner**
  - **Ability to frame a clinical question**
  - **Informatics skills (searching the literature)**
  - **Critical appraisal of the medical literature**
  - **Biostatistics and clinical epidemiology**
  - **Clinical decision making**
  - **Preventive medicine**
  - **Coordinate with basic science and clinical 'themes' (courses and clinical clerkships).**

Course overview

- 1st year
  - Anatomy of the Health Care System
  - Critical Appraisal of the Medical Literature
- 2nd year
  - Medical Decision Making
  - Evidence Based Medicine Exercise
  - Cases
- 3rd and 4th year
  - Clerkship specific EBM exercises

Educational process of first two years

- Series of lectures transmit core material
- Small group Journal Clubs use **Team Based Learning**
  - 22 students per group
  - Physician or basic science faculty preceptor
  - Present the clinical studies
    - Discuss problems with the studies
    - Decide how to use the study clinically
- Textbook: Mayer D, ***Essential Evidence Based Medicine*** (Cambridge University Press, 2004)

Critical Appraisal of the Medical Literature - Lectures

- Introduction to EBM, causation, anatomy of an article and study design
- Sources of bias (precision, accuracy, reliability, and validity)
- Type I errors (interpretation of results)
- Type II errors (interpretation of result
- Assessment of risk

1st year Journal Clubs

- Study design
- Sources of bias
- Type I and Type II errors (interpretation of results)
- Assessment of risk
- Randomized clinical trials
- Solving a real epidemic
- Medicine and the Media

Written work and presentations

- Papers of critical appraisal of studies
  - Medicine and the Media paper (1st year)
  - Alternative Medicine (2nd year)
- EBM Project (2nd year)
  - Small group exercise (5-6 students and a clinical preceptor) to validate an algorithm or clinical guideline
- **Case studies coordinate with themes**
  - Lymphohematopoietic (anemia)
  - Cardiovascular (angina)
  - Respiratory (pneumonia)
- Drug project and “disease trajectory” (3rd year)

Medical Decision Making- Lectures

- Introduction to medical decision making & diagnostic reasoning
- Diagnostic test characteristics
  - Likelihood ratios
  - Sensitivity and specificity
  - Predictive values
  - Incremental gain / threshold values
  - ROC curves
- **Practice guidelines and studies of survival, cost effectiveness, and meta-analysis**

2nd year Journal Clubs

- Problem set for diagnostic test characteristics
- Evaluation of screening tests (BRCA-1 & PSA)
- Studies of diagnostic tests (White blood cell count for occult bacteremia)
- Survival analysis (Cardiovascular studies)
- Cost effectiveness (GI studies)
- Meta analysis (GI studies)

Third year

- **Pediatrics** - medical decision making exercise
- **Medicine** - Find answers to six clinical queries and create one CAT
- **OB/GYN** - risk management and medical legal exercise (lectures and presentation)
- **Psychiatry** - diagnostic tests in psychiatry
- **Family Practice** - evaluate medical Internet site
- **Surgery** - pain management (annotated bibliography and presentation)

Fourth year

- **Acting Internship** - use evidence based medicine to reduce cost of care
- **Learning to Teach, Teaching to Learn** - Evidence Based Medicine on rounds
- **Neurology/Ophthalmology** - risk management & medical decision making exercise
- **Emergency Medicine** - EBM @ point of care
- **Critical Care** - survival analysis and rationing of care 'game'

Results of course.

- Quasi-experimental data from several sources suggest a beneficial effect of the course on improving knowledge and attitudes of medical students about EBM.
- **National Board of Medical Examiners exam – Step 1**
- Biostatistics and epidemiology subtests for 1999 - 2002 were above the national average and the scores on all other subtests.

AAMC graduation survey

Significant differences ($p<0.05$) in AMC student attitudes about EBM compared to graduates of other US medical schools.

- Agree or strongly agree
  - Statistics as pre-requisite for entry to medical school
- Excellent or good
  - Teaching of biostatistics and epidemiology
- Adequate or excessive
  - Time for EBM teaching
  - Time for literature review critiquing
- Disagree or strongly disagree
  - Expected to demonstrate EBM information in patient care
  - See resident demonstrate use of EBM in patient care
  - See attending demonstrate use of EBM in patient care.
- Were AMC students more able to recognize what is and is not actually evidence based care?

Questions?