Clinical Epidemiology, Clinical Reasoning Curriculum and Research

Clinical epidemiology is the study of how clinical questions (such as diagnosis, prognosis, and treatment) are answered by scientific research involving populations and groups of patients. Clinical reasoning is used to make decisions under conditions of uncertainty with imperfect data.

Goals

Residents in Internal Medicine must be able to:

- Cope with a rapidly changing evidence base for medicine
- Cope with clinical controversy
- Cope with information overload
- Assess the validity of published evidence for themselves
- Understanding basic clinical research strategies, such as study design, measurement, and analysis, and the meaning of terms used to describe research results in journals
- Judge the credibility of colleagues (authors of review articles, editorials, teachers, and consultants) who synthesize scientific evidence for them
- Deal with uncertainty

Teaching Methods

- Conferences: Journal Clubs and special didactic conferences
- Teaching rounds
- Day to day management of patients
- Residents' work on their scholarly projects (required for graduation; special instructions provided)
- Literature assignment during the CORE rotation

Evaluation

Housestaff are monitored as to how well they use clinical reasoning in patient care on all rotations and during conferences.

Attached are clinical epidemiology skills followed by skills of clinical reasoning and some suggested readings. An appendix on research is included.

See also: Preventive Medicine, Informatics, Management of the Quality of Health Care.

Competencies for Clinical Epidemiology

Competency	Learn in a seminar or conference	Learn as part of a clinical rotation*
Understand how bias and change affect the accuracy of observations on individual patients	X	X
Assess the validity of original research concerning diagnosis, prognosis, treatment, and prevention	X	X
Know the strengths and weaknesses of randomized clinical trials, case-control studies, cohort studies (retrospective, prospective), and meta-analyses	X	X
Demonstrate a practical strategy for judging the validity of colleagues' synthesis of clinical evidence (for example, review articles, continuing medical education courses, or consultant advice	X	X
Uderstand the meaning, uses, and limitations of statistical power, P values and confidence intervals, relative risk, attibutable risk, and number needed to treat	X	X

Competencies for Clinical Reasoning

Competency	Learn in a seminar or conference	Learn as part of clinical rotations
Understand how to estimate the pretest probability of a disease andhow to use Bayes' theorem to estimate post-test probability	X	X
Define and use sensitivity, specificity, and likelihood ratios of diagnosticinformation	X	X
Know and be able to detect potential biases in estimates of sensitivity and specificity	X	X
Know how to measure patients' preferences	X	X
Understand and utilize sensitivity analysis and cost-effectiveness analysis	X	X

Illustrative Clinical Settings: Any clinical encounter is an occasion to learn these concepts. Settings particularly well suited are those that challenge residents to make evidence-based decisions in areas of greater or lesser uncertainty and in settings where faculty exemplify and emphasize theseconepts. *Specail didactic opportunities are provided in the CORE rotation, in the Journal Club, in Morning Report as well as the resident’s scholarly work project.