The General Education of Western and Japanese Physicians

Teaching the skills of the
“good physician” to students
and residents

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Overview

In the education of physicians in the United States, Canada, and many western countries, every medical student is expected to learn skills which are not related to specific medical specialties.

These skills of the "good physician" are as important for an interventional cardiologist or surgeon as they are for a neurologist, obstetrician, or "primary care" physician.

I will discuss how communication and history-taking, physical examination, case presentation, clinical reasoning, and professionalism are taught to Western medical students from the first day of medical school, and how this general training continues during the early years of residency.

Questions

- ? How are clinical skills and professionalism taught in residencies in the United States and in Japan?
- ? How do we prepare faculty members to teach basic clinical skills?
- ? When should the “general education” of the physician begin?
- ? Are the changes in medical education successful in improving the clinical skills of Japanese residents?

Concepts of “General Education”

Every physician should have basic clinical skills no matter what field he or she will practice and teach

- Ability to speak with patients clearly and with empathy
- Ability to obtain a complete and accurate history
- Ability to analysis and organize clinical data
- Ability to write a comprehensive history and physical examination
- Ability to present a patient clearly and concisely
- Ability to prepare an effective, evidence-based diagnostic and therapeutic plan
- Ability to find, interpret and apply clinical evidence

Fundamental Assumptions

- Learners practice clinical skills under the continuous observation of more experienced physicians
- Calibration--both the learner and the teacher examine the patient
- By “presenting” or writing about the patient, the teacher knows what the learner needs to improve
- The patient is at the center of the learning experience and benefits from it

The primary goal of medical education is to prepare <u>clinicians</u> who will practice excellent medicine for a lifetime

Clinical education begins the first day of medical school

White coat ceremony

MS I & II Clinical Preceptorship

At OHSU

- Students begin one four-hour outpatient clinic a week from the beginning of medical school
- Primary care physician in first year
- Specialists (3) in second year
- History, examination, short presentation
- Discussion
- Diagnostic and therapeutic decision
- Progress note
- Follow-up care

Clinical Preceptorship

- The student is taught basic clinical skills
- The preceptor is a practicing physician who is trained to teach beginning students
- Students anxious and awkward at the beginning
- Student learn to talk with patients, to gather data, and to present data while they are studying basic sciences
- Emphasizes that the goal of medical school is to graduate good clinicians ready for residency responsibility

Introduction to Clinical Medicine

- Fours hours weekly in MS I & MS II years
  - Ethics
  - Sociology and culture
  - Organization of health care
  - Epidemiology
  - Medical History
  - Health beliefs
  - **History Taking and Physical Examination**

Introduction to Clinical Medicine

- Fours hours weekly in MS I & MS II years
  - Ethics
  - Sociology and culture
  - Organization of health care
  - Epidemiology
  - Medical History
  - Health beliefs

Fundamental Assumption

Understanding the effects of culture, history, patient beliefs, ethical and legal reasoning are essential elements of general education

Medical school is not just science education--it is *liberal* education. It includes exposure to the social sciences, humanities, the arts

Basic Science Curriculum

- First two years of basic science curriculum taught by organ system
  - Cardiovascular
  - Renal
  - Gastrointestinal
  - Metabolism & Diabetes
  - Each lecture includes a clinical case discussion

Basic sciences are learned better when the information can be put to use in a clinical context

A 69 year old man is admitted to the hospital because of 15 kg weight loss in six months, ataxic gait, and anemia.

History: abdominal pain; + family history of anemia
Physical examination: diminished proprioception and vibration in both legs
Laboratory: Hct 22%; MCV 106; Ferritin 379; weakly + stool test for blood

Student discussion:

⇒ What kind of anemia does he have?
⇒ How would you prove the cause of his anemia?
⇒ What are the required steps in the synthesis of hemoglobin?
⇒ Is the ataxia possibly related to his anemia? If so, how?
⇒ What is the role of Vitamin B12 in the function of nerves?

Basic Science Case Discussions

- One hour of discussion after 2-2.5 hours of lecture
- 10 students for each faculty member
- Usually 4-6 cases
- Students assigned to prepare cases in advance
  - Case discussions usually one day after related lecture
  - Student participation is graded
- Cases review clinical aspects of key basic science knowledge

Three PBL Concepts

- Lecturing presents the learner with information but does not prepare the learner to apply knowledge to complex problems

- To be effective, a case must have clear educational goals and provide the students with opportunities to think broadly, to use their knowledge, to ask questions, and to discover new information

- The development of a new approach to teaching requires several years to evaluate what works and what does not work, and to help teachers become successful with a new teaching method

PBL :3 つの基本的な概念

- 講義は学生に情報は与えるが、
学生がその情報を複雑な問題に応用するための訓練を与えない。

- 学習の効果をあげるために、症例は明確な学習目標をもたなければならない。症例は学生が広い範囲で考えること、その知識を活用すること、疑問を発すること、そして新しい情報を発見すること、などの機会を与えなければならない。

- 新しい教育方法の開発が効果的か否かを評価するために、また教師が新しい教育方法において成功するためには数年を要する。

Summary--PreClinical General Education

	MS 1 The first pre-clinical year	MS 2 The second pre-clinical year
Clinical preceptorship	Participation in a primary care practice	Participation in three specialty practices
Basic Science Courses	Discussion of clinical cases that require use of new basic science information to solve problems	Discussion of clinical cases that require use of new basic science information to solve problems
Introduction to Clinical Medicine MS I	History of medicine, health beliefs, religion, health systems	Economics, introductory clinical epidemiology, introductory evidence-based medicine
Introduction to Clinical Medicine II	Case-based learning: introductory science-medicine correlations	Case-based learning: science-medicine correlations integrated with Clinical Pathology
Interviewing and Physical Examination Course	Interviewing and the normal physical examination	Patient-based interviewing and physical examination

Competencies--*Preclinical general education*

Students . . .

- Practice the behavior of good physicians
- Develop ability to express respect and compassion in case discussions and their clinical preceptorship
- Apply basic science knowledge to clinical medicine in case discussions and clinical pathology courses
- Apply basic science knowledge through exposure to clinical practice in clinical preceptorships
- Learn and develop capacity for independent, critical thinking in case discussions
- Learn and practice communication skills in interviewing course and case discussions
- Develop understanding of cultural values and expectations through case discussions, clinical preceptorship, humanitarian volunteer work

General Education in MS III and MS IV years

The essence of the education of the student as a physician is to expect—*to require*—the student to accept the responsibilities of a physician. **

Caring for patients, being a member of the clinical team, learning everything about his or her patient, and a never-ending commitment to his or her own education are the essential curricular methods.

The student may not choose which aspects of a good doctor he or she wants to emulate--the faculty and the residents must expect the clinical student to accept them all. As a consequence, the faculty and the residents must demonstrate them all . . .

**See comments on “top down” education

Third Year Clerkships

At OHSU

Pediatrics	Ob-Gyn	Surgery	Surgery Subspecial-ties	Specialty Elective-- Eg Neurology Cardiology ID Anesthesiology
Family Medicine	Medicine	Medicine	Rural Health	Senior Subintern-ship

General Education--History and Physical Exam

- Learn to perform a comprehensive history and physical examination
- 病歴聴取と身体診察を包括的に実施できるようになる
  - Perform admission history and physical exam
  - Comprehensive review of the clinical record from previous admissions and outpatient care
  - Review laboratory data available at the time of admission
  - Write up admission history, record review, physical examination
  - Student and resident history and physical examination confirmed and corrected by faculty

General Education – Analysis and Synthesis

- Learn to analyze and synthesize clinical information
- 臨床情報を分析･統合する能力を学ぶ
  - Based on the history, physical examination, review of record, and initial laboratory tests, organize the patient's data into a problem list
  - Formulate a differential diagnosis for the problem(s) leading to the current admission
  - Based on the differential diagnosis, Bayesian reasoning, and the patient's data, choose the most likely diagnosis (hypothesis setting)
  - Formulate a diagnostic and therapeutic plan for the patient, using evidence-based guidelines and literature

General Education – Professional Communication

- Learn to present patient histories to clinical groups
- ケース・プレゼンテーションのしかたを学ぶ
  - Present the patient's history and physical examination and initial laboratory data on rounds
    - Present patients to consultants
    - Present current status of patients during daily rounds
    - Present patients at case-based teaching conferences
      - Morning report
      - Grand rounds

General Education – Procedural Skills

- Be able to perform basic procedures
- 基本的な臨床手技を実施できる
  - Start intravenous infusions
  - Perform paracentesis, thoracentesis, lumbar puncture
  - Basic surgical techniques
    - Suturing
    - Vascular access
  - Pelvic examination
  - Simple splinting and care of soft tissue injuries
  - Airway access

General Education – Teamwork

- Learn to work with other physicians and health care professionals as a member of a team
- 医療チームの中の一員として、他の医師・スタッフと働くことを学ぶ
  - Team learning and collaborative care with consultants
  - Nighttime admissions and “cross coverage”
  - Communicate daily plans to nurses, social workers, dieticians, physical therapists, etc (interdisciplinary collaboration
  - Insure health and learning of all members of the team

General Education – Knowledge and Learning

- Expand clinical knowledge through reading and attending conferences
- 文献抄読、カンファレンスへの参加を通じて臨床知識を増やす
  - Learn to read quickly from expert sources
    - PubMed and other literature search engines
    - Evidence-based on-line textbooks, e.g “Up-to-Date”
  - Prepare teaching conferences on subjects related to patients
    - Short, on-rounds teaching
    - Formal conferences
  - Participate in active discussions where faculty, residents, and students all are expected to contribute

General Education--What Graduating Western Students Have Learned before Beginning Residency

- Independent history and complete physical examination
- Basic differential diagnosis and preparation of a plan for diagnosis and treatment
- Case presentation
- Basic inpatient and outpatient management skills
- Some procedural skills
- Literature searching and use of evidence-based sources

General Education Continues in Residency

- Advanced history and complete physical examination
- Comprehensive differential diagnosis with probabilistic reasoning
- Independent preparation of a plan for diagnosis and treatment
- Mastery of case presentation
- Comprehensive inpatient and outpatient management skills
- Advanced procedural skills
- Literature searching, application of evidence-based guidelines
- Population-based management: screening and prevention

Typical US Medicine Residents Spend More than 50% of Inpatient Training in General Medicine Wards

Average length of stay
< 4 days

- Doug is an R2 from Tulane Medical School, and Aaron is an R1 from Chicago Medical School
- In December our team admitted100 patients in 28 days
  - 20% acute MI and CHF
  - 15% respiratory failure
  - 15% advanced cancer and lymphoma
  - 15% liver failure, pancreatitis
  - 20% pneumonia, sepsis, abscess, SBE
  - 15% thrombophlebitis, PE, GI bleeding, cerebellar degeneration, delerium, renal failure

Outpatient Clinic Teaching

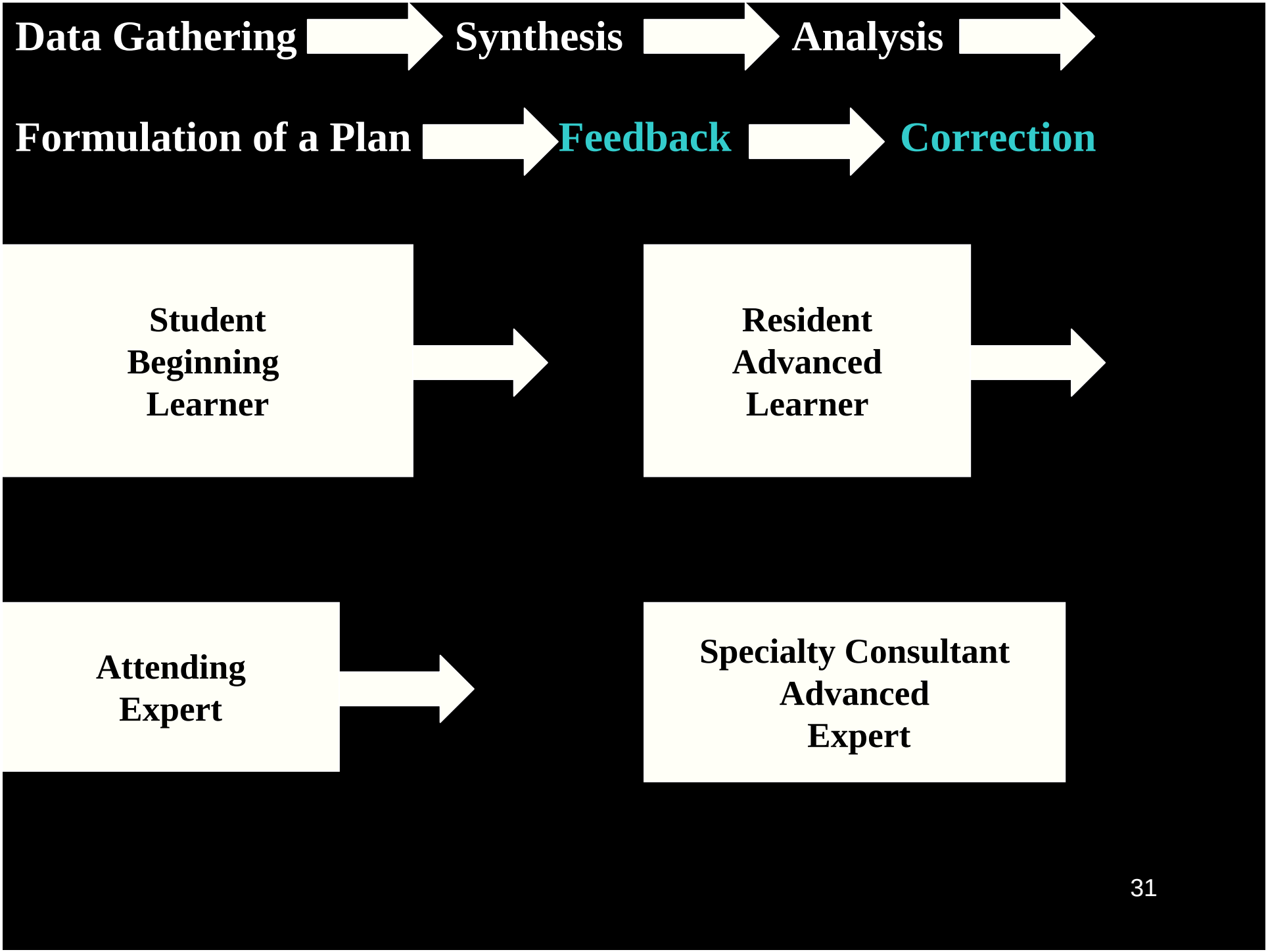
- Residents have two 4-hour clinics each week
- One attending physician/4 residents
- Every patient presented by resident to attending
  - Hx, PE, lab
  - Assessment and plan
  - Follow-up review
- “Graduated level of responsibility”

Outpatient Clinic Teaching

- Residents have two 4-hour clinics each week
- One attending physician / 4 residents
- Every patient presented by resident to attending
  - Hx, PE, lab
  - Assessment and plan
  - Follow-up review
- “Graduated level of responsibility”

December 31 Clinic primary diagnoses

- Nephrolithiasis
- Hypertension (2 pts)
- Diabetes
- Abdominal pain & weight loss
- New shoulder pain
- Recurrent UTI
- New exertional chest pain
- Gout
- New anemia


Data Gathering
Synthesis
Analysis
Formulation of a Plan
Feedback
Correction
Student
Beginning
Learner
Resident
Advanced
Learner
Attending
Expert
Specialty Consultant
Advanced
Expert

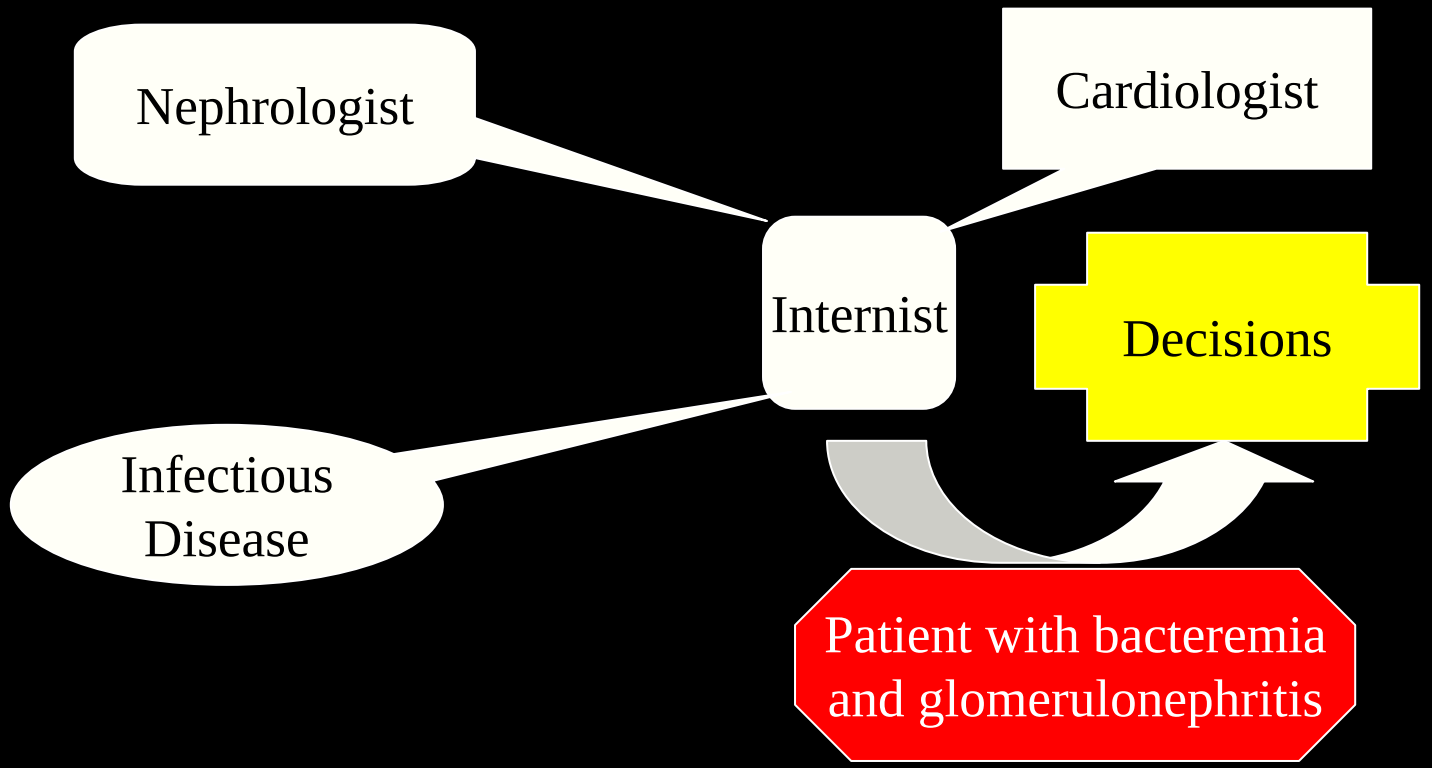
~1905

~2005

The most important tool in the clinical education of physicians is committed teachers who review and correct patient information and teach clinical reasoning and the use of evidence by direct supervision.

The general internist manages all aspects of the patient's medical care

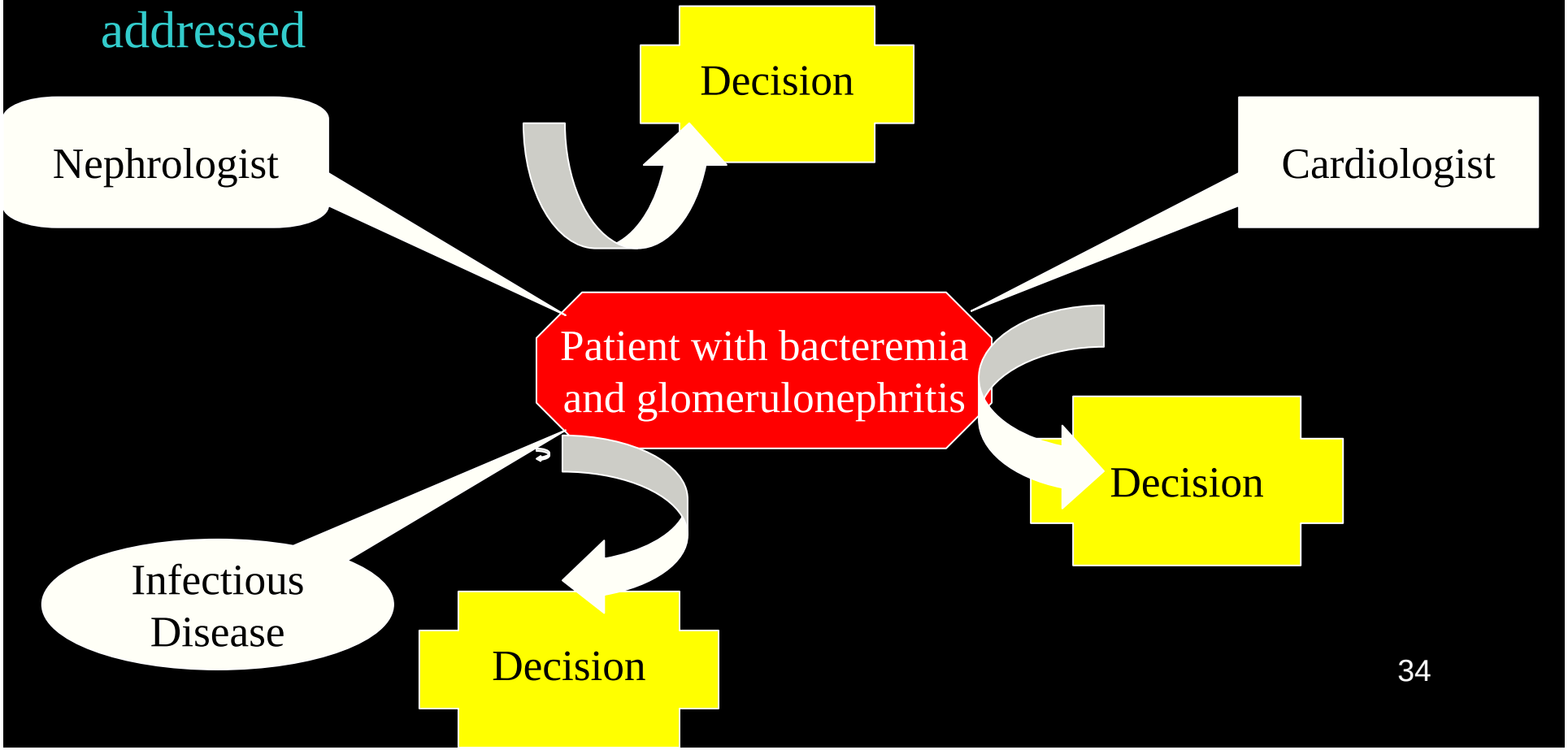
Consultants help guide the general internist's understanding, decisions, and recommendations



Specialty Care Model

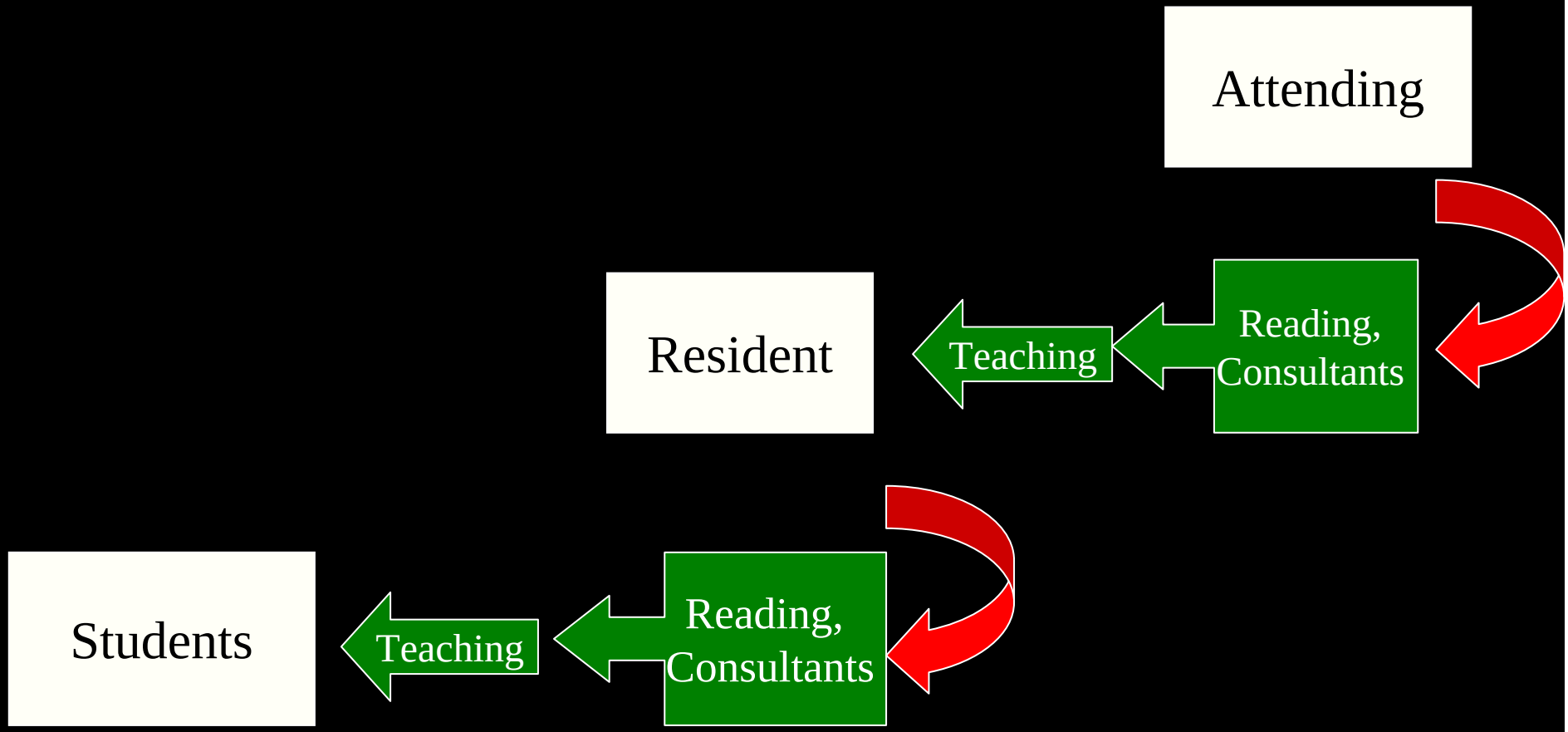
Each specialist manages an aspect of the patient's care

There is no physician coordinating care and insuring that all aspects of the patient's medical care are being addressed



General Education depends on recognizing incomplete knowledge

Because the internist is practicing in all fields of medicine, they must master a model of lifelong learning



Certifying Organizations Require Students and Residents to Have Broad General Training

- LCME (Medical School Certification) emphasizes direct patient responsibility for MS III and MS IV students,with exposure to both specialists and generalists
- Residency certifying organizations (ACGME) and professional boards require broad training

The General Education of Physicians—
Residency

The training of both subspecialists and generalists in the United States, England and “the Commonwealth” emphasizes strong general training

Subspecialties in pediatrics and medicine (e.g. cardiologists, gastroenterologists, etc) all have three years of general pediatrics or medical residency before their fellowships

Many surgical subspecialties have one or more years of training in general surgery. Thoracic and vascular surgery require the completion of a general surgery residency

The General Education of Physicians—*Residency*

General (mixed) inpatient experiences are required by the ACGME for the general training of residents in medicine, pediatrics, and surgery

General inpatient pediatrics must constitute at least 5 months of a resident's overall experience. It must be structured to provide the resident with a concentrated exposure and continuity of involvement to ensure a primary role in patient care. The inpatient care experience must be designed to develop resident competency in managing patients with diverse illnesses of such complexity and severity as to require in-hospital care but not care in a critical care unit.

The general surgery program must provide experience in preoperative, operative, and postoperative care for patients in all areas that constitute the principal components of general surgery: specifically, diseases of the head and neck, breast, skin and soft tissues, alimentary tract, abdomen, vascular system, endocrine system, the comprehensive management of trauma and emergency operations, and surgical critical care. Additional components are cardiothoracic surgery, pediatric surgery, plastic surgery, burn management, transplant surgery, endoscopy, urology, gynecology, neurosurgery, orthopedics, and anesthesiology.

Internal Medicine: it is desirable that 50% of the inpatient experience occur on general internal medicine services.

General Education
The Importance of Broadly Trained Clinical Faculty

- Who teaches physical examination, history-taking, case presentation, and clinical reasoning?
- In Western medical schools, all specialists have had broad general training before specialty training
  - As medical students
  - In General Surgery and General Internal Medicine residencies before specialty training

All Medicine, Family Medicine, Pediatric, Neurology, Psychiatry, and Some Surgery Specialists have ~3 years of general residency before specializing

Mark Deffebach, MD, PhD

- Medical student at OHSU, medicine resident and pulmonary fellow at University of Washington*
- Critical care attending
- 3 NIH grants
- Bronchoscopist, lung cancer specialist
- Three years of general medicine residency
- Outstanding teacher with broad knowledge and skills across internal medicine

The Generalist Physician

- In most Western medical schools, general pediatricians, general surgeons, family physicians and general internists provide a high percentage--often more than half--of all student education. They are the primary resident teachers in outpatient and inpatient training for the first three years of Medicine and Pediatric training

Who are the general education teachers?

Sarah Bass and
Jennifer Degraauw
OHSU Chief Residents

Our Residents and Fellows Become our Faculty

Sarah

- AOA graduate of University of Virginia Medical School
- Three years of Internal Medicine Residency
- Chief Resident & instructor this year
- Had her first child as an R3 (age 29)
- Will become a fulltime clinician-educator and assistant professor in July

Jennifer

- AOA graduate of Tulane Medical School
- Three years of Internal Medicine Residency
- Chief Resident & instructor this year
- Will become a Nephrology Fellow at University of Colorado in July--plans for an academic career

An Inpatient General Medicine Team

75% of the inpatient teaching is gone by general internists, half of them are women

Competencies—*Residents' general education*

Residents . . .

- Must demonstrate humanism—compassion, respect, altruism, integrity
- Learn sensitivity to and tolerance of human diversity
- Develop their capacity for analytic, critical, open-minded thinking
- Learn the social context of medical practice
- Develop communication and interpersonal skills
- Learn and practice the evaluation of their own and their peers' performance
- Develop their ability to work with people—"commitment to collegiality"
- Develop their teaching skills in a graduated fashion—interns demonstrate how to care for patients, residents teach clinical skills and knowledge
- Must demonstrate strong basic clinical skills ("generalism") before they begin subspecialty training

Questions about General Education in Japanese Residencies 2005-2008

Observations of Japanese Medical Students and Residents in 2005

日本の医学生と研修医を観察すると

Students and residents . . .

- Motivated to become excellent physicians
  よい医師になる動機づけがある
- Eager to learn　勉強熱心
- Willing to spend very long hours
  長時間働くことをいとわない
- Exceptionally flexible　順応性がある
- Supportive of each other　互いに助け合える

Evidence-Based Medicine at Otowa

Observations of Japanese Medical Students and Residents in 2005

日本の医学生と研修医を観察すると

In comparison with Western senior medical students, Japanese medical students had much less clinical experience--

欧米の医学部上級生と比較して，臨床経験がはるかに少ない

- less understanding of pathophysiology
  病態生理の理解が少ない
- less experience with clinical reasoning
  臨床判断の経験が乏しい
- more limited differential diagnosis
  挙げられる鑑別診断が少ない
- almost no experience with direct patient management
  直接の患者対応の経験がほとんどない

Observations of Japanese Senior Medical Students in 2005

日本の医学部上級生を観察すると

- Limited independent history-taking experience
- Limited experience performing physical examination of major systems

病歴聴取を自分で行った経験がない

身体所見を多臓器にわたって系統的にとった経験がない

  - heart 心臓
  - abdomen 腹部
  - breast 乳腺
  - rectal 直腸診
  - neurological 神経学的所見

What has been the effect of Medical Education Reform in Japan?

- Do new interns have improved clinical skills because of
  - Case-based learning?
  - Clinical clerkships?
- What has been the effect of the “Match?”
- What has been the effect of the mandatory rotating residency?
  - Is the curriculum correct?
  - Is there good teaching?
  - Are new R3’s better prepared for specialty residencies?

Do new interns have improved clinical skills because of case-based learning? Clinical clerkships?

- Substantial progress in physical examination among R1 new interns.
- The skill level seems to be about the same as US beginning MS III students
- While language continues to be an obstacle for the English speaking visiting teacher, both bedside and formal case presentations by R1's are more frequent and well organized. R2's quite skillful, especially with "PowerPoint" presentations
- Continued very strong interest in improving clinical skills by new R 1-2's
- Fukui data supports pre-to-post mandatory residency improved clinical skills

What has been the effect of the “Match?”

- Substantial searches for best R1-R2 programs
- Shift away from some university hospitals
- Residency programs have a greater mix of new R 1’s from diverse medical schools
- Greater awareness of how well medical schools have prepared graduating students--less internal comparison, more external comparison
- Evidence that some university hospitals are adapting by creating stronger R1-R2 program
- Effect on Ikyoku system and physician distribution

Mandatory Rotating Residency
Hishyu Rotation Kenshuu

What has been the effect of the mandatory residency? Is the curriculum correct?

- The residents I have interviewed at non-university hospitals enjoy the R 1-R 2 program
- Spending time on many services has changed specialty choice and opened up very diverse personal choices
- About half would like to have a third year of mandatory residency
- Others think two years is enough or would prefer the previous “direct to neurosurgery”
- Residents seem to enjoy the opportunity to consider a residency other than their own medical school

Is resident satisfaction being studied?

Mandatory Residency

"Having a month on a good pediatric service was a luxury"

"I began residency in the "old system." I had a very narrow Education. I think the new residents are very fortunate."

"I would like the rotating residency to be longer!"

What has been the effect of the mandatory residency? Is there good teaching?

- Teaching hospitals with general internal medicine residencies seem to have benefited from existing general curriculum
- Some university hospitals have succeed in creating stronger R1-R2 program over three years in response to loss of their own students
- Creating new general internal medicine services has been difficult in some places because of small patient base and economics
- Shortage of experienced generalist clinician educators

Is there good teaching?

- "In some departments the thinking is very different"
  - Did not know what to do with one-month residents
  - Teaching was "top down"--R1-R2 residents were observers
  - Faculty expected residents to do what they saw or were told without discussion
  - No tradition of evidence-based medicine or active discussion between departments
  - No organized teaching program

What has been the effect of the mandatory residency? Are new R3's better prepared for specialty residencies?

- Fukuhara study of clinical vignettes
- Evolution of professional groups beginning to discuss standards for training
- Is there a national medical education research agenda?

New R 1's, Otowa Hospital, 2005

The mandatory residency provides general education

In April 2007 only 2 R 2's chose internal medicine specialties

None chose GIM residencies

Specialty choices

- Surgery
- Pediatrics
- Pulmonary medicine
- Neurology
- Ob-Gyn

The General Education of Japanese Physicians

- Problem based learning
- Increased training in physical examination. OSCE
- Mandatory residency
- In some programs
  - EBM
  - Exposure to fully trained generalist physicians
  - Increased emphasis on faculty teaching skills
  - Improved evaluation and feedback methods

The General Education of Japanese Physicians

Questions

1. Where will the generalist teachers come from?
2. How to pay for increased time of experienced teachers with students and residents?
3. Are general medicine and family medicine viable in large teaching hospitals?
4. Will teachers be “valued” in promotion systems?
5. What will happen to the distribution of physicians in rural and poor areas?
6. How will demographic changes--e.g. older students, more women in medicine--affect career choices?

The General Education of Japanese Physicians

Questions

Will the changes in medical education improve physician skills and satisfaction, and improve patient outcomes?

The “paradigm” of medical education and practice in Japan is changing. As “chaos” gradually transforms into new models, what will the new paradigm look like?

Thank you very much