




Helping medical students become excellent clinicians, teachers, and scientists--
How can Japanese medical educators plan and manage educational change

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Japanese Society of Medical Education
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A Medical Student's Question
February, 2002
医学生の質問 2000年2月
May I ask you a question? What do you think of Japanese medical education compared to the United States?
質問してもいいですか？ 米国と比較して、日本の医学教育をどう思いますか？




北海道大学 上級学生 2002年2月
Senior students--University of Hokkaido--February, 2002

What do you think of Japanese Medical Education Compared to the United States?
米国と比較して、日本の医学教育をどう思いますか？



New Interns--Otowa Hospital--April, 2005
音羽病院 研修医 2005年4月

Observations of Japanese Medical Students and Residents
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

Observations of Japanese Medical Students and Residents
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 have much less clinical experience--

- 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

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

Observations of Japanese Senior Medical Students

日本の医学部上級生を観察すると

- Limited independent history-taking experience
病歴聴取を自分で行った経験がない
- Limited experience performing physical examination of major systems
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 are the goals of a medical school education?



- Are the students who will become the best physicians being admitted?
良い医師になれる学生が入学しているか?
- Does the curriculum teach the basic science and clinical knowledge relevant to medical practice?
カリキュラムでは、医療行為に関わる基礎・臨床の知識が教えられているか?
- Are the best teaching methods used in the basic science and clinical courses?
基礎・臨床の課程では、最良の教育方式が使われているか?
- Is there a national consensus on the goals of medical education?
医学教育の目標について、国家的な総意があるか?

Goals for a Graduating Medical Student—1

卒業しようとする医学生の目標 --1

Graduating students should have the qualities of a good physician
患者のもつ多様性に敏感で、寛容であること

- compassion, respect, altruism, integrity
思いやり、尊敬、利他心、正直さ
- sensitivity and tolerance of diversity
患者のもつ多様性に敏感で、寛容であること
- communication and interpersonal skills
コミュニケーション、対人能力

Humanism

Goals for a Graduating Medical Student—2

卒業しようとする医学生の目標 --2

Graduating students should have a broad familiarity with basic biological sciences relevant to medical practice

卒業しようとする学生は、医療行為と関連のある基礎的な生物科学に広く通じているべきである

Goals for a Graduating Medical Student—3

卒業しようとする医学生の目標 --3

Graduating students should have excellent clinical reasoning skills

卒業しようとする学生は、臨床判断の方法に熟達しているべきである

- acquisition of information--ability to gather and organize clinical data
情報の獲得—臨床データを集めて整理する能力
- synthesis--ability to present and write organized histories, physical examinations, case summaries
統合—病歴、身体所見、症例要約を整理して提示し記載する能力
- analysis--ability to prepare and discuss differential diagnosis and formulate a management plan
分析—鑑別診断を挙げて検討し、診療計画を立案する能力

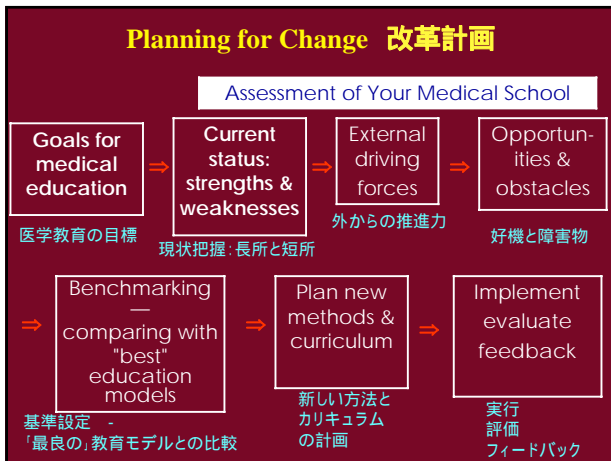
Goals for a Graduating Medical Student—4

卒業しようとする医学生の目標 --4

Graduating students should have basic patient management skills

卒業しようとする学生は、基本的な患者管理の技能を持っているべきである

- diagnosis--understand the performance of the most common tests
診断—よく用いられる検査について理解する
- treatment--understand the most common drugs and procedures
治療—よく用いられる薬剤と手技について理解する
- communication--be able to present patients and explanations clearly verbally and in writing
コミュニケーション—患者について症例提示し、口頭や書面で明確に説明できる



- ### Recent Changes in Japanese Medical Education 日本の医学教育における最近の変化
- Problem-based learning in MS I-II curriculum
医学部1、2年のカリキュラムに問題基盤型学習を導入
 - Introduction to clinical medicine
臨床医学への導入
 - Clinical clerkship
臨床研修
 - Mandatory two-year post-graduate clinical rotation
2年間の卒後臨床研修の必修化
 - Residency matching program
研修マッチングプログラム

I. Graduating students should have the qualities of a good physician

1. 卒業しようとする学生は、良い医師の資質を備えているべきである

Medical schools should select students who are compassionate, ethical, motivated to learn, and committed to serving others
医学部は、思いやりがあり、道徳的で、学習の動機づけがあり、他者のために献身するつもりのある学生を選抜すべきである

The most important factor in educating outstanding physicians is admitting students who have the characteristics of a good physician.

優れた医師を教育するうえで最も重要なことは、良い医師になれる資質を持った学生を入学させることである。

- ### Selecting students who have the qualities of a good physician 良い医師の資質を持った学生を選抜する
- Many important characteristics of a good physician are hard to teach—
良い医師の特質を教えることは難しい
- Humanism—compassion, respect, altruism, integrity, ethical values
ヒューマニズム—思いやり、敬意、利他主義、誠実、道徳的価値観
 - Commitment to service 他者のための献身
 - Motivation to learn 学習の動機づけ
 - Communication and interpersonal skills
コミュニケーションと対人能力
 - Ability to work with people—“collegiality”
「仲間」と一緒に働く能力

Selecting students 学生の選抜

In Japan . . . 日本では . . .

- Admission to medical school occurs at a very young age 「早すぎる」医学部入学
- Very strong emphasis on test scores for medical school admission 医学部入試: テスト最重視
- How does an 18-year old high school student know that he or she will enjoy a career in medicine? 18歳の高校生が将来医学の道を楽しめるかどうかなぜ分かるだろうか
- How does the faculty know that an 18-year old will become a good physician?
教員は18歳の人物がよい医師になるかどうかどうやって見極められるだろうか

How are medical students chosen? 医学生はどのように選抜されるか

United States	Japan
医学部の入学試験 MCAT	大学入学試験
なぜ医師になりたいかの作文 Essay	?
推薦状・大学での成績 Recommendation, college grades	?
1~3名の医学部職員との面接 Interview	?
学外活動の経験 Experience outside of school	?

Select students who have the professional characteristics the faculty and patients want in a physician

学部と患者が望むような、職業にふさわしい特徴を持った学生を選ぶこと

- **Diversity** in talent and background--select students from a broad array of backgrounds, talents, and goals
多様性—社会的背景, 才能, 目標
- **Experience & maturity**--increase opportunities for admission of students who have finished college or have had other career experiences
経験と成熟—大卒や他の職業経験のある者にも入学機会を与える

Select students who have the professional characteristics the faculty and patients want in a physician

指導者と患者が望む医師にふさわしい特性を持った学生を選ぶこと

- Use college performance to assess suitability to be a physician
 - high academic threshold at end of college for entry to medical school
 - interview students at the end of the college years for suitability for medicine
- 卒業大学での成績を医師としての適性評価に使用する
 - 医学部入学のために大学卒業時に高い学問的ハードルを課す
 - 医学部への適性について大学最終学年で面接する

I. Graduating students should have the qualities of a good physician

卒業しようとする学生は、良い医師の資質を備えているべきである

Most medical students should have a broad education in humanities, social sciences, and the sciences before and during medical school

医学生は、ヒューマニティー、社会科学、自然科学について、医学部入学前と在学中に幅広い教養を身につけるべきである

It is easier for a student to learn how provide compassionate, sensitive care if he or she understands the experience of patients and the role of the physician in society

患者の経験と社会における医師の役割を理解していれば、学生は思いやりがありきめ細かいケアをどう提供するか、学びやすくなる

Training students to have the qualities of a good physician

良い医師になる資質を持てるよう、学生を教育する

- Some characteristics of a good physician can be taught. They should be included throughout the medical school and residency curricula
良い医師の資質のうち幾つかは教えることができる。それらは医学部と研修医のカリキュラムを通して教えられるべきである
- Understanding what it means to be a doctor
医師になるとはということなのか理解する
- Understanding the social context of medical practice
医療行為に関する社会的経緯を理解する

Curricula and methods that help to develop humanistic physicians

人間的な医師を育てるのに役立つカリキュラムと方法

- Broad college education during college with excellence in one area 幅広い大学教育の一分野に秀でる
 - Literature 文学
 - social sciences 社会科学
 - science or engineering 自然科学、工学
 - Art 芸術
 - non-medical sciences 医学以外の科学
 - Ethics 倫理学
 - medical history 医史学
- Clinical experience as a volunteer in community medicine in college years
大学時代に地域医療のボランティアとして臨床経験をもつ

Graduating students should have a broad familiarity with basic biological sciences relevant to medical practice

卒業しようとする学生は、医療行為と関連のある基礎的な生物科学に広く通じているべきである

Medical education is most effective and most efficient when it is fully integrated. Clinical medicine and science are taught together.

医学教育は完全に統合されたときに最も効果的で最も能率的である。臨床医学と基礎科学はともに教えられる

Every lecture, every course, and every clinical rotation should accomplish the goal of producing a broadly informed and well-trained physician

すべての講義、課程、臨床実習は、幅広い知識を持ち、よく訓練された医師をつくるという目標を達成すべきである

**Senior resident in Internal Medicine
June, 2005** 内科上級研修医 2005年6月

"When I was admitted to medical school and read the 6-year syllabus the first time, I wondered, 'how many years do we have to spend to study subjects unrelated to real clinical practice?' Almost all of us entered medical school because we wanted to be clinical physicians . . ."

医学部に入学して6年分の講義概要を初めて読んだとき、「本当の診療と関係のないことがらを学ぶのに何年間かけなければいけないのか」と思いました。私たちのほとんどは臨床医になるために医学部に入学したのですから...

Teaching basic biological sciences relevant to medical practice

医療行為に関連した基礎生物化学を教える

- Curriculum
 - Some subjects are of interest to the faculty but not essential to understand clinical medicine
- カリキュラム
 - 教官にとっては関心があっても、臨床医学の理解のうえで必須ではないテーマもある

Teaching basic biological sciences relevant to medical practice

医療行為に関連した基礎生物化学を教える

- Methods--
 - Basic science faculty may be heavily dependent on lectures
 - Tests may measure memorization of disconnected facts and not understanding of concepts
 - Passive learning is less effective than active learning
- 方法--
 - 基礎科学の学部教育は講義中心
 - 試験は断片的な記憶を測れるかもしれないが、概念の理解を測るものではない
 - 受動的学習は能動的学習ほど効果的ではない

The changing focus of medical education

医学教育における変化の中心

From	To
comprehensive knowledge	knowing how to learn
包括的な知識	学び方を学ぶ
passive learning	active learning
受動型学習	能動型学習
transmission of information without context	case-based problem solving
脈絡のない情報伝達	症例に基づいた問題解決

"Changing face of medical curricula," Roger Jones et al, Lancet Vol. 357, March 3, 2001

From	To
uncoordinated, unprioritized lectures	integrated basic and clinical science lectures
専門家による, 順序よく整理されていない講義	基礎と臨床が統合された講義
teacher-centered education	student (and patient)-centered education
教師中心の教育	学生(患者)中心の教育
rigid separation of basic science from clinical education	clinical experiences in MS I, II; science teaching in MS III, IV
基礎と臨床の分離	医学部1, 2年での臨床体験; 医学部3, 4年での基礎科学教育

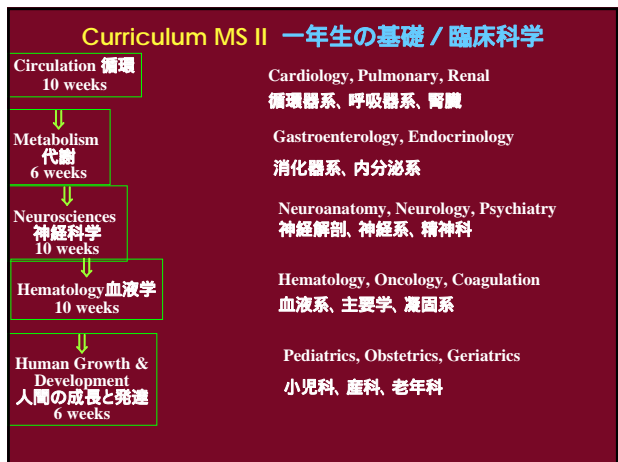
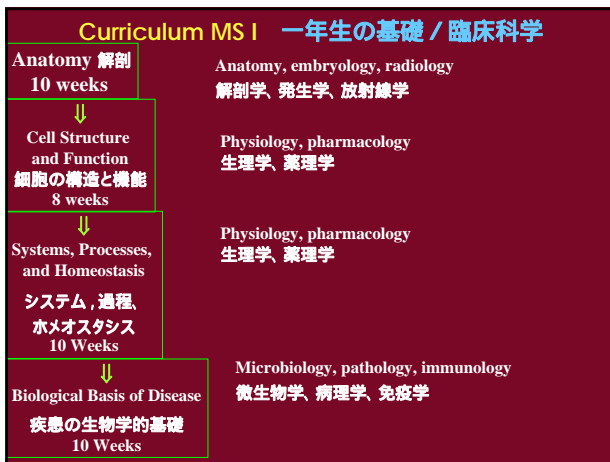
"Changing face of medical curricula," Roger Jones et al, Lancet Vol. 357, March 3, 2001

Integrated Basic/Clinical Science Curriculum

統合された基礎医学 / 臨床医学カリキュラム

- Only one course at a time, each lasting about 8-10 weeks
 - 一度にひとつのコースだけを学ぶ(8-10週)集中型
- Three hours of lecture daily
 - 講義は1日3時間
- Both basic science and clinical faculty members teach this course
 - 基礎の教員も臨床の教員も参加
- Each lecture is carefully planned to emphasize science critical to understanding medicine
 - 医学を理解する上で重要な科学を強調する内容になるよう計画

Academic Medicine 75: S306, 2000



Teaching methods emphasize active learning and clinical correlation

基礎統合教育

- Each lecture includes clinical examples
 - どの講義にも臨床の例が含まれる
- One hour of small group learning daily
 - 毎日1時間の小グループ学習
- Small group teaching relates basic science knowledge to clinical problems
 - 小グループで基礎科学を臨床の問題に関連付けて学ぶ
- Examinations emphasize problem solving, not memorized facts
 - 試験では記憶力ではなく問題解決を重視する

Key Concepts

- Basic sciences are taught by systems (normal biology) and clinical problems rather than by discipline
 - 基礎医学を学問分野の分野でなく生物学や臨床の側面から教える
- Science is taught as concepts more than as facts
 - 科学を事実としてでなく概念として教える
- Examinations test understanding and application
 - 試験では理解や応用力を問う

Key Concepts

- Clinician role-models teach basic biological sciences
臨床医が基礎医学を教える

Basic science courses are carefully planned to teach the science that physicians need to be well-educated physicians

基礎医学は十分に教育を受けた医師となるために必要な基礎医学を念頭におき、配慮して教育計画をたてる

Graduating students should have excellent clinical reasoning skills

卒業生は優れた臨床推論能力を有するべき

Clinical training should start at the beginning of medical school.
臨床トレーニングは医学教育開始時から

Medical students learn best when they have opportunities to apply basic science and clinical information to realistic problems-- no problem is more realistic than a patient

医学生は基礎医学や臨床情報を現実的な課題に適用できる機会を持っているときに最もよく学ぶ。そして、患者より現実的な課題はない

Japanese Resident

Q. What do you wish had been better in your medical school experience?

医学部での経験のうちもっと上手くやれたのではないかと考えているのは何ですか？

A. I wish I had been able to participate in clinical practice as early as possible in medical school. But it might be difficult because hospitals (even in a university hospital) do not have a system that accepts medical students or provides efficient medical education for them.

医学部のできるだけ早い段階で診療に参加することができたらと思います。しかし、病院(大学病院でさえ)は医学生を受け入れ、効率的な教育を提供するシステムを持っていないので、難しいのでしょう。

- 日本人研修医

Early clinical experiences enhance learning of basic sciences and clinical reasoning 早期臨床体験が基礎医学と臨床推論能力の学習を増強

- Clinical preceptorships
総合/専門診療、地域と病院の外來での個人的臨床指導
- Physical diagnosis for two years
診察と面接のスキル: 1年は正常者, 2年は患者で
- Clinical case discussions
医学部1-2年で基礎と臨床の統合カリキュラムで症例検討
- Volunteer clinical work
地域診療所で診療業務のボランティア

Early clinical experiences allow students to develop the behaviors and attitudes of a good physician

早期臨床経験がよい医師としての行動や態度の形成に有用

From the first minutes of medical school, the medical student should be treated like a physician. She/he should begin to think like a physician and to behave like a physician.

医学部の最初の時期から医師の行動や考え方を学ぶべき

Graduating students should have basic patient management skills

卒業生は基本的なマネジメントスキルを身に付けるべき

The most important curricular experiences of the clinical years are the clinical clerkships in which students participate directly in the daily care of patients.

臨床学年における最も重要なカリキュラムは、学生が直接患者ケアに参加できるクラークシップである

Medical students learn best when they are given responsibility for participating in the care of patients

医学生は患者ケアに参加する責任を与えられたときに最もよく学ぶ

In "bedside learning," we spent very little time with patients, and we spent very little time with faculty members.

Discussion with MS III students

Bedside Learningでは、患者との時間、指導医との時間はわずかである

医学部3年とのディスカッションで

Teaching basic patient management skills
基本的患者マネジメントの教育

- Short observational experiences to expose students to all specialties are unlikely to be effective in teaching basic clinical skills
全専門科での短期見学経験は、基本的臨床スキル教育に非効果的
- Clerkships should be coordinated to assure that students learn the diagnosis and treatment of common problems in the major medical and surgical fields
内科・外科のコア科でコモンな問題の診断と治療について学べるように系統立てるべき

Clinical Clerks



<p>Acquire & Report Data</p> <p>Take history Perform physical exam Write admission note</p>	<p>Communicate</p> <p>Present patient on rounds Present daily progress report Teach others about patient</p>
<p>Manage patients</p> <p>Examine patient daily Review tests daily Write progress notes, orders</p>	<p>Assess patients</p> <p>Formulate differential diagnosis and plan Weigh evidence</p>

Teaching basic patient management skills
基本的患者マネジメントスキルの教育

Students . . .

- Learn the responsibilities and behaviors of a good physician by caring for a small number of patients in the same way as interns
学生は、インターンと同じ方法で少人数の患者をケアすることで、良い医師としての責任や行動について学ぶ
- Learn by working directly with residents and staff physicians. The role of residents as teachers is critical to student learning
学生は、研修医や指導医と共に働く。研修医の指導者としての役割は学生の学習にとって非常に重要である

Responsibility

Clinical clerkships are the key to teaching clinical skills in preparation for residency
レジデンシーの準備に臨床スキルを教育するためクリクラが鍵

The evaluation of a student's knowledge, clinical skills, and professional behavior during clinical clerkships are critical in assessing the students' readiness for residency and for measuring the effectiveness of the curriculum

クラークシップ中の学生の知識、臨床スキル、プロフェッショナルとしての行動は、レジデンシーに対する学生のレディネスを評価し、カリキュラムの効果を測定するために重要である。

Medical educators are critical to the success of the medical school in producing outstanding graduates

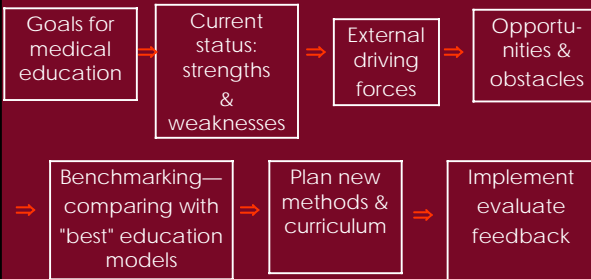
医学教育者は素晴らしい卒業生を生み出すためという
医学部の成功にとって重要である

The clinical faculty, through their treatment of both students and patients, are the primary role models of the outstanding physician. It is therefore essential to choose faculty members to teach medical students who have the characteristics that we want to see in our best physicians.

臨床教員は学生と患者の扱いを通じ、素晴らしい医師の第一のロールモデルである。よって、最も優れた医師が持っている特質を持つ医学生を教育する教員を選ぶことは非常に重要である

Planning for Change

Assessment of Your Medical School



Forces changing medical education

External Forces



⇒ Standards for training programs
⇒ Women in medicine

Standards for Training Program

Accreditation of residency programs プログラム認証

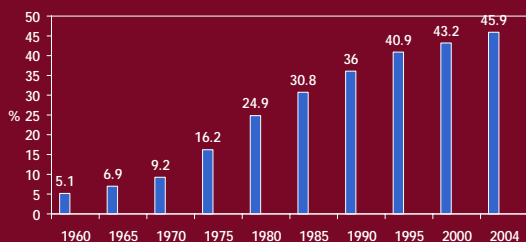
- Uniform length of training 研修期間
- Specific clinical experiences required 臨床経験
- High level of assessment and feedback 高いレベルの評価とフィードバック
- Duty hour management 拘束時間の管理

Certification of residents 認定制度

- Emphasis on clinical skills and competence 臨床スキル重視
- Knowledge assessment focuses on solving clinical problems 臨床問題解決に特化した評価

Women in Medicine

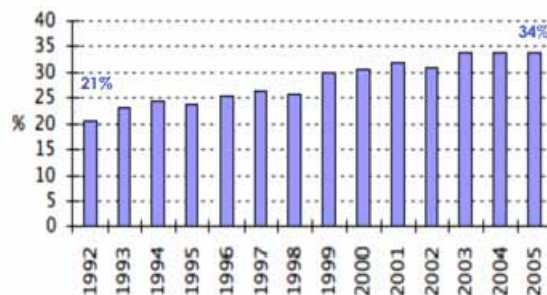
Women Graduates of US Medical Schools
1960-2004



AAMC Women in Medicine

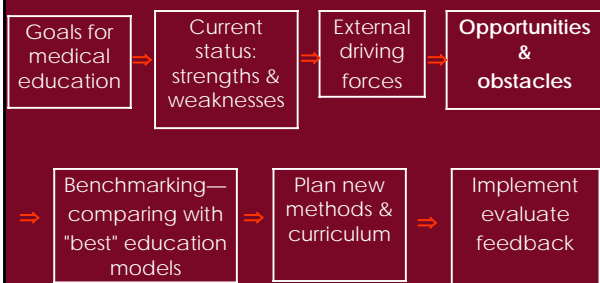
Japanese Women in Medicine

Female Physician Ratio



Planning for Change

Assessment of Your Medical School



Opportunities & Obstacles



- Providing clinical sites for students to learn clinical skills
学生に臨床スキルを学ぶための場を提供
- Developing a faculty devoted to medical education
医学教育に献身する教員の育成

In Japan, it is difficult to teach the medical students general clinical skills. There are two major reasons: the students rotate in various subspecialties, where they learn a little only about that field. And we have difficulty finding faculty members who have broad clinical training and good teaching skills.

It is hard to get the specialists organized to teach medicine in a systematic way--

A Japanese general Internist

日本では基本的臨床スキル教育は難しいです。理由は、様々な専門科を学生がローテートすること、広い臨床研修と良い指導スキルを持つ教員が見つげにくいことの二つです

日本のある総合内科医

The fundamental skills of clinicianship and the "art of medicine" are taught best by teachers who themselves have had broad training and who are committed to the teaching of students and residents

臨床医のあり方、医学の技能の基本能力は、自身が広い領域の研修を受け、卒前・卒後教育に献身してきた指導者こそが最も上手く教育する

Developing a faculty that can train excellent physicians

素晴らしい医師を育てられる教員の育成

- Relatively few faculty members pursue careers primarily as outstanding clinicians or teachers
 - 素晴らしい臨床や教育のキャリア志向を持つ教員は稀有
- At the research-intensive universities there may be little tangible support for faculty teaching activities
 - 研究指向の大学では教官の教育活動へのサポート寡少

Developing a faculty that can train excellent physicians

素晴らしい医師を育てられる教員の育成

- Create promotion tracks that encourage and reward good teaching
教育で昇進できる任用制度
- Recruit clinical faculty who have had training in general settings that emphasize medical education
医学教育を重視する市中現場の指導者の雇用促進
- Send Japanese faculty to other medical schools and hospitals and abroad for clinical training and experience in teaching
臨床教育や教育経験を積むための他の医学部、病院、海外での研修

~1905 ~2005

A good physician will improve the lives of thousands of patients.

A good teacher will improve the lives of thousands of doctors and millions of patients

What should be the goals for a student graduating from medical school in 2015?

2015年に医学部を卒業する学生にとっての目標は？

- Are the students who will become the best physicians being admitted? 優れた入学者
- Does the curriculum teach the basic science and clinical knowledge relevant to medical practice? 優れた基礎 / 臨床教育
- Are the best teaching methods used in the basic science and clinical courses? 最善の基礎医学, 臨床医学の教育方法
- Is there a national consensus on the goals of medical education? 目標の国家的コンセンサス

- Basic science teaching by discipline
- Primary teaching method is lectures
- Learning based on memorization
- Limited clinical experience
- Limited student assessment and feedback

The Old Paradigm

Departments Responsible

1895 1990 2005

- Problem-based learning in MS I-II curriculum
- Introduction to clinical medicine
- Clinical clerkship
- Mandatory two-year post-graduate clinical rotation
- Residency matching program

The New Paradigm

Integration Coordination

1895 1990 2005

- Students chosen for qualities of a good physician
- Broad education in college and medical school
- Integrated basic/clinical science curriculum
- Early involvement in patient care
- Clinical responsibility in MS III-IV years
- Integration of medical school and residency curricula

The New Paradigm

Goals Standards Curriculum management Clinician educators

1895 1990