REVIEW

Perspectives in Medical Education
2. A blueprint for reform of medical education in Japan

R Harsha Rao

Professor of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA, U.S.A.

(Received for publication on September 15, 2005)
(Revised for publication on March 16, 2006)
(Accepted for publication on April 20, 2006)

Abstract. A blueprint for reform of medical education in Japan is presented, with the goal of training well rounded physicians who possess the ability to think critically and the clinical skill to function as generalists before they enter specialty training. Practical solutions are offered in three problem areas that lie at the heart of the shortcomings in Japanese medical education. They have to do with (i) the way Japanese students learn, (ii) the way Japanese teachers teach, and (iii) the material that students are taught. The inherently passive nature of Japanese students can be changed by emphasizing "active learning" and "critical thinking at the bedside" through a problem-oriented approach, both in the classroom and in the wards. Changing student learning, however, requires a commitment to teaching. At the present time, there is no incentive to teach at all, let alone teach in a constructive or interactive way. Teaching is widely perceived as a burden that takes time away from research, rather than as a credible and rewarding academic pursuit. Thus, promotion policies must be altered to reward teachers and accord teaching its rightful place as a primary function of the faculty. Finally, the introduction of active learning and interactive teaching depends on reducing the current emphasis on didactic instruction, which is passive and unidirectional. Thus, medical school curricula must be restructured to emphasize a problem-oriented, organ system-based approach throughout medical school, starting from the preclinical years. Reforms in all three areas must be implemented in concert for them to succeed. (Keio J Med 55 (3): 81–95, September 2006)

Key words: Japanese medical education, problem based learning, curriculum revision, active learning, teaching in Japan

Introduction

In an earlier paper, I was able to present my highly subjective insights into the problems that bedevil the training of physicians in Japan,[1] based on observations made during a first visit in 2003 to Keio University School of Medicine, one of Japan's premier institutions of medical education. Since then, over successive annual trips to Tokyo, I have had the opportunity to further refine and expand those initial observations on the quality of medical education at that institution.

In this paper, the second in a planned series of papers on the subject, I will present my personal blueprint for implementing far-reaching changes that I believe are essential to meet the challenges facing those who are attempting to reform Japanese medical education. That these changes are critically important should be self-evident to anyone familiar with the state of Japanese medical education in general, and at Keio University School of Medicine specifically. The solutions I propose are based on my own experiences at that institution, but their sum and substance are derived from exhaustive discussions with my hosts at the Department of Medical Education, and the very clear directives that I received from Dean Kitajima and his team of deputies at Keio University School of Medicine.

Reprint requests to: R. Harsha Rao, M.D., Room 580 Falk Medical Building, 3601 Fifth Avenue, Pittsburgh PA 15213, U.S.A., E-mail: rao@dom.pitt.edu

I must state at the outset how grateful I am to this visionary group of medical educators at Keio University for their genuine and wholehearted eagerness to embrace reform. I must confess that, after my first visit, I was quite dubious about the reception that my first report would receive, given the withering criticism it contained regarding the state of medical education at Keio University School of Medicine.[1] The fact that it was the truth could not have made it any the less hurtful! So I had actually doubted that I would even receive an invitation to return.

How wrong I was! Not only did they invite me back, but they did it with an openness and respect that defines the academician, in the loftiest sense of the word. I say that because the hallmark of the true academician, in my book, is something that I call "intellectual generosity": the ability to not just accept criticism, but to see past it, to actually appreciate it, and to then correct the root cause. Dean Kitajima and his trio of able deputies displayed these traits to an astonishing degree, praising the honesty and detail that went into that first report. Dean Kitajima went so far as to thank me for giving him such a powerful and important tool in his fight for reform, which was meeting unrelenting resistance!

Make no mistake about it; it is that enthusiasm, coming from the very top, that constitutes the force that drives this blueprint. Without such forceful and unstinting support, I doubt that I would have had the desire or the energy, to go through with this difficult and exhausting exercise. I can say with complete certainty that, without it I would not have been able to even think of the monumental problems facing them with a constructive mindset. Had I sensed the outlook was hopeless, it is entirely possible that I might have been demoralized and rendered incapable of anything other than repetitive and futile criticism.

If that had happened, I would never have put in the intellectual effort necessary to develop my vague and unformed ideas and turn them into something that was concrete. I know that I needed that sense of unstinting enthusiasm in order for those ideas to evolve from an unthinkable pipe-dream into something approaching reality. Even more importantly, I would not have been able to muster the will to write, edit and rewrite this lengthy blueprint into something that was both comprehensive and comprehensible. It is presented, therefore with all humility and with a deep sense of gratitude to the four individuals who have made it possible for my opinions and advice to be heard.

Attached to this paper are two appendices. The first is a point-by-point enumeration of the various components of the Blueprint, presented in concise form and without any descriptive expostulations so as to make them generally applicable anywhere in Japan. The other is a set of brief recommendations that are specifically applicable to KeioUniversity School of Medicine from my perspective.

Overall Objective: To improve the quality of medical education with the ultimate goal of producing well rounded physicians who possess the ability to think critically and the clinical skill to function as generalists before they enter specialty training.

Specific Problems That Must Be Addressed to Improve Medical Education at Keio University School of Medicine:

I have no intention of enumerating the reasons for my focus on these problems individually in this paper. I have detailed the observations underlying my reasoning at great length in the first paper in this series.[1] That paper must be considered an integral preamble to this one, and the reader who is interested in how I reached my conclusions is directed to that paper. The problems that I identify, based on those observations, can be grouped into three broad areas:

1. Problems in Learning (i.e. how students learn)
2. Problems with Teaching (i.e. how students are taught)
3. Problems with the Curriculum (i.e. what students are taught)

It is essential to address these problems on all three fronts simultaneously, for the reform effort to have any hope of succeeding, as will become clear.

Specific Goals Of The Blueprint For Reform:

A. To change the way students learn by emphasizing "active learning" and "critical thinking at the bedside" through a problem-oriented approach to clinical instruction.
B. To change the attitude towards teaching among faculty by establishing its value as a credible and rewarding academic pursuit
C. To change the medical school curriculum by restructuring it to emphasize a problem-oriented approach to learning and instruction at all levels in medical school, starting from the preclinical years.

Overview

The reforms I advocate are divided into three sections, each of which is directed towards one of the specific goals noted above. Those specific goals were, in turn, formulated by me after considerable introspection, based on requests I received from each individual member of Dean Kitajima's highly dedicated team. I am not sure that those requests used exactly the same phraseology that I employ; for taking that license, I beg their collective pardon. But the spirit of their requests is reflected in the recommendations I make. The specific content of each of the three sections is as follows:

Section A, Changing the Emphasis in Student Learning
Section B, Changing Attitudes towards Teaching among the Faculty
Section C, Changing the Medical School Curriculum

Thus, the division of the Blueprint into 3 sections is intended to satisfy an organizational need at Keio University School of Medicine, and the temptation to view them as individual solutions to separate problems must be resisted. They are heavily inter-dependent, and are integral and inseparable parts of a single whole.

I am humbled by the trust and confidence that went into the requests I received from all four visionaries. In that spirit of humility, I am compelled to admit that I am not under any illusion that my recommendations are the only way to achieve the same—or possibly even a better?—result. They merely constitute the honest, unbiased and apolitical views of one outsider regarding the critical initial steps that must be implemented in order to generate sufficient momentum for change that hopefully will then become self-sustaining.

SECTION A
CHANGING THE EMPHASIS IN STUDENT LEARNING

Changing the paradigm of instruction for medical students (the core of medical education) from a passive to an active format of learning and teaching requires a commitment to reform on several fronts. Thus, changing the paradigm for learning will be virtually meaningless unless the paradigm for teaching is changed **simultaneously**. The degree to which this change is achieved is contingent upon reforms being implemented to recognize and reward good teachers (Section B), and change the curriculum to accommodate these reforms (Section C).

That having been said, I am aware that several medical schools in Japan have implemented the principles of active learning in their curricula, with good success.[2,3] It would be invaluable for those in charge of reforming medical education at Keio University School of Medicine to identify one or more of these and to draw on their experiences to guide them regarding how to implement similar changes in medical education at Keio University.

As I noted earlier, **the** major drawback in medical education that I have observed time and time again at Keio University is that student learning is passive and unidirectional.[1] Students remain trapped in a heavily paternalistic system that does not expect them to participate in their learning. More than that, it actually discourages student participation, and penalizes independent viewpoints that might challenge the teacher.

The result is that students are so accustomed to having everything spoon-fed to them, that they are almost like automatons. They stay mute and seem incapable of asking questions unless prodded almost painfully to do so.

What a terrible waste of such unlimited potential!

From my own experience, I know that they are anything but automatons. These gifted and truly exceptional young minds are just waiting to be released from the system that keeps them passive and mute. I will personally verify that, once they get a taste of active learning, they are among the most vigorous participants I have had the privilege to teach. And lest it be thought that this verification is an attempt by me to credit their participation to some personal dynamic that applies to only me, I will make it clear that I am taking no credit for it. I have seen the same dynamic at work with some of the more courageous members of the faculty at Keio University Hospital who I have previously identified (in my earlier report). Thus, the students are NOT the limiting factor. It is the system. And systems can be changed, given the will and the resources.

My experience shows that the authorities in charge of medical education at Keio University School of Medicine have the will and are willing to commit the resources to this monumental task. The only question in my mind is: Are the faculty willing to cooperate and follow-through with the equally monumental effort to change their own behavior, which is ingrained in them through several generations' worth of tradition? If they are, then the system can be changed to encourage, rather than discourage, active learning.

Active learning in medicine requires that the focus be placed on a problem-oriented approach to clinical instruction in BOTH the wards and the classroom. At Keio University School of Medicine, as I noted above, students are not given the opportunity to learn in an environment that encourages their participation. There is such a heavy emphasis on didactic learning in the classroom that passive learning is firmly established as the "desired" format! The direct consequence of this is a mindset that perpetuates passive learning even in the one place where, one would think, it is impossible to be passive: the wards! Changing that mindset will require curriculum reform, which is no easy task. But one place where this could be changed very quickly is on the wards.

***1. Change the focus in the wards from Passive to Active Learning*:**

a. *Students must be encouraged to vocalize opinions, and ask questions*. To achieve this, daily bedside teaching rounds must be introduced with the exclusive focus being on the students. In other words, student rounds must be held separately from ward rounds with residents. This is because students become overwhelmed when confronted by their own lack of knowledge in comparison to ward residents, and so remain mute during rounds. The result? Passive students who listen but do not say a word! If

however, they are taught in a forum of their own peers, they are less likely to fear that they will look foolish if they ask a question and be much more willing to supply the answer to a question from the teacher.

b. *Students must be made to think critically about clinical problems at the bedside*: Active learning in medicine requires that the student think critically on his or her own behalf about the patient. Integral to this process is the understanding that students must not have any preformed opinions regarding any aspect of the case when they see the patient. Without any such preconceived notions regarding diagnosis or management, bedside medicine becomes a process of *discovery* that is both exciting and challenging.

I define this approach as *"problem based learning at the bedside"*, to distinguish it from what is traditionally called PBL. But the purpose is the same: to engage students in active learning by forcing them to apply their minds in a way that views every case as an *"*unknown*"* even if it is *"*known*"* to the teacher! Only when problems are approached as "unknowns" does clinical instruction become "problem-oriented" and based at the bedside, where it belongs, instead of being "disease-oriented" and stuck inside a textbook or a classroom.

In other words, every patient admitted to the wards becomes another PBL, when viewed from the perspective of the patient's clinical problems and the need to solve (i.e. diagnose and manage) the problems. Obviously, these may be known to the ward attending and resident (the teachers), but is that not true of every PBL? And a PBL approach, as I have said time and again, can be extremely successful as a means of instruction at Keio University School of Medicine.

I would go so far as to argue that the classroom variant of PBL, which forms a key component of the reforms that I advocate (see below) are really meaningless unless paired with this kind of bedside clinical instruction. The PBL method in the classroom, after all, is nothing more than a way of introducing students to the kind of critical thinking that is vital to good clinical practice when it comes to patient care.

That kind of critical thinking does not come naturally: it must be acquired at the bedside through problem-oriented instruction. And that kind of critical thought process is the source of the excitement and challenge that is inherent in bedside clinical medicine.

At the present time, it is fair to say that the words "excitement" and "challenge" are nowhere in evidence in the medical education that students receive at Keio University School of Medicine. As a matter of fact, the approach that prevails at the present time is completely contrary to this philosophy. The focus is primarily on *disease based learning at the bedside*. That is because patients admitted to the wards at Keio University Hospital almost invariably have a diagnostic label already attached to them. From what I have observed, and from what my students tell me, it is apparent that student learning consists almost entirely of reading the patient's chart, ascertaining the diagnosis, and then reading a text book to learn all the details regarding the particular disease that the patient has.

Even on those occasions when students discuss the case with the ward resident or attending, the discussion is primarily related to management, with little or no emphasis on "discovery". After all, there is nothing to discover, as far as the residents and attendings are concerned! The diagnosis is well known to them. As a result, no attempt seems to be made to engage students in a discussion of differential diagnosis or any other component of critical clinical thinking.

Even more destructive to student participation is the absence of any appreciation of what constitutes evidence-based medicine. It seems almost universally accepted by students that they cannot question the anecdotal approach to medicine of their teachers, even when the evidence is to the contrary. Attempts to introduce evidence-based medicine in the curriculum[4] will succeed only if the value of evidence is accepted at all levels.

If this is to change, students must be compelled to engage in active learning at the bedside with teachers who understand the importance of teaching students a problem-oriented approach to diagnosis and management. It may come as a surprise that I say this, but I think it is relatively easy to change this—*provided that teachers can be found who have both the willingness to teach and the right attitude toward teaching*.

It starts with the recognition that ward-based learning for students must be an exercise in active discovery, not passive book learning. Then, students who are assigned to the wards must be told that they should not read the chart, but should interview the patient without any preformed ideas regarding the diagnosis. After taking a history and doing a physical, they should then present the case to the ward attending and he/she should engage them in a discussion of the case, with the focus being on discovery (clinical diagnosis and investigation). This will lead to problem based learning at the bedside instead of disease based learning, as is currently being followed.

c. *Students must be encouraged to participate in the learning process*: Active learning is a two-way interaction. Only if teachers are willing to be challenged, will students feel free to challenge them. Thus the primary onus is on the teachers to foster a climate of active learning. If teachers accept the need to change and if they encourage active student learning (both

are very big "Ifs"), that will go a very long way to encouraging students to ask questions.

d. *Students must be evaluated for participation*: The only way that participation by students can be effective is if they are subject to evaluation! It is vital that performance and participation at bedside clinical learning sessions become key components in the evaluation of students during clinical rotations. It is essential to change the present focus from "attendance", to "performance evaluation".

2. Changing the Focus in the Classroom from Passive to Active Learning:

This can be summed up with three letters: **PBL**. This is the key to changing the focus to active learning. Implementing the change requires two essential steps. The first step is to make a firm commitment to establish PBL as an integral component of the medical school curriculum: The second is to greatly reduce the number of didactic lectures to create room in the curriculum for the PBL exercises.

The PBL method is the classroom equivalent of the problem-oriented instruction at the bedside, and it shares all the same elements that go into active learning. It teaches students to think critically about the clinical "discovery" process even before they get to the wards. It should be incorporated into the medical school curriculum as early as possible, starting from the students' first exposure to the core medical school curriculum (subjects like Anatomy, Physiology etc lend themselves very well to the PBL format, as I proved with the Neuroanatomy PBL that I conducted). It is an extremely time efficient way of teaching and learning, because one PBL exercise can take the place of 6 or 8 utterly boring didactic lectures (that fewer than a third of students attend at Keio University, anyway!)

Under the PBL format, students become enthusiastic and excited partners in the learning process. My own experience leads me to believe that PBL may be the single most effective way of promoting active learning and participation by the students. Given the chance, the students will become outstanding at this form of active learning.

I will go so far as to guarantee, based on my own experience, that Keio students will attend PBL sessions with a degree of excitement and enthusiasm that none of the faculty have seen to date. Moreover, I am confident that they will retain the material far better than they do now, provided their teachers embrace the philosophy of the PBL and apply themselves to it with the proper spirit, and do not turn the PBL into yet another form of didactic teaching. I would even go so far as to challenge those doubters who oppose reform and argue against changing the system on the grounds that "it has worked well for all these years", and ask them if they have the confidence to provide the same guarantee that I do.

I am confident that they cannot! All you have to do is look at the attendance at the lectures at Keio University, and you know that such a guarantee by the doubters is impossible.

For my guarantee to work, though, it is essential to address four obvious limiting factors at Keio University that would negate the effectiveness of PBL as a tool for active learning if they are not resolved. One is the lack of a critical mass of teachers on the faculty who know how to use this format effectively. A second is the fact that few members of the faculty have any interest in learning about it. A third is the fact that there is no incentive for anyone (other than Prof Amano and his small but dedicated team) to invest the time and effort to develop the appropriate PBL material that can be used throughout the curriculum. Finally, the curriculum as it stands right now has such an incredible emphasis on didactic instruction (i.e. lectures that few students attend anyway!) that there is no time available in it to add the PBL sessions. The third and fourth factors (lack of incentive for teaching and lack of space in the curriculum to add PBL) can only be addressed through reform of teaching attitudes and reform of the curriculum respectively, and are covered below (Sections B and C). But the first two factors (a lack of familiarity and a lack of faculty interest among the faculty) do bear some examination here.

a. *Addressing the Lack of Familiarity with PBL Facilitation among Faculty*: There is an acute need to educate faculty in the appropriate method for conducting a PBL, as is witnessed by the disappointment encountered by the students I taught on my first visit, when they tried to perpetuate the excitement and enthusiasm they discovered with PBL. They started a PBL club to which they invited individual faculty members who expressed an interest/willingness to attend as moderators to create and conduct PBLs by turn. Even though there was no lack of interest, the so-called PBL sessions turned out to be nothing more than didactic lectures, where the teacher spoke continuously and the students sat mute, the only difference being that it happened around a table, instead of in a classroom.

This reflects an understandable lack of familiarity with the PBL method. It could have been easily corrected, if the faculty had cared enough to attend any one of the four PBLs I have conducted at Keio University. The importance of becoming familiar with the philosophy and conduct of PBL is underscored by the reaction of one of the faculty members who did attend this year. He came up to me after I was done and said, with obvious wonderment in his face, "I am amazed. There was a stretch of almost 15 minutes during which you did not say a word! And even when you spoke, it was only to ask a question that was really a hint to the students that they needed to think

about what they were saying. Now I understand!"

This is an unequivocal vindication of my belief that the lack of knowledge/experience among faculty is eminently correctable.

b. *Addressing the Lack of Interest in the PBL Format among Faculty*: The lack of real interest among the faculty presents a far more formidable obstacle to the successful implementation of Problem Based Learning in the curriculum, if my experience is anything to go by. I regret to say that I encountered a very distinct lack of enthusiasm among the faculty for this form of active learning. A total of four faculty members attended the PBL sessions that I have conducted on my trips, even though they were well publicized in advance.

I hesitate to make generalizations based on one interaction, but the reaction of one faculty member who attended the Introduction session to my first PBL may well be emblematic of the problem. After the session he quite openly questioned the need for any change in the curriculum, let alone going so far as to introduce anything as revolutionary as the PBL format. He felt quite strongly that the system in place had stood the test of time, having been good enough to train several previous generations of Japanese physicians, including him. That, to him, was proof that there was nothing wrong with the system, and no reason to change it! He went so far as to suggest that the reason I felt the students were so passive was because Japanese students were incapable of participating in any other form of instruction, and that PBL would be a failure in Japan. To him, it was the students' fault, not the teachers'.

It came as no surprise to me, then, that I never saw that particular faculty member again at any of the subsequent PBL sessions, but it still represented an opportunity missed by him. Had he only been present to see me actually conduct a PBL Resolution session, during which every word spoken was in Japanese, he may have had his eyes opened, and he would have seen how wrong he was about the so-called innate and inherent passivity of Japanese students. I do want to describe that session very briefly, because even I am staggered by the enormity of what was achieved then.

During the Presentation session for that PBL, I encountered a group of students who seemed to be completely disinterested in participating actively. After a very frustrating and difficult hour, during which I tried every trick I knew to get them to speak and discuss the case without prompting from me, I resigned myself to the fact that this was one of those times when one has to admit one's failure as a teacher. Then it dawned on me that the reason the students were saying little or nothing might be a result of a very poor working knowledge of spoken English. Could that be the constraint that was at work?

That was when I sensed that I was being presented with a priceless opportunity to drive home the whole point of a PBL to both the students and the faculty: that it was not meant for the teacher to teach, but for the students to learn by teaching themselves as they taught each other! What better way to show that to them than to make the facilitator redundant? So, I insisted that the students conduct the Resolution session entirely in Japanese.

Of course, the students first reaction was one of extreme dismay, because they thought they had failed me in some way, But I reassured them that I was serious, and would actually prefer them to do it that way, and so was able to override their reluctance.

I have interacted with these marvelously gifted students on enough occasions that I no longer have any doubts about their ability to rise to any challenge, if they are just given a chance and get the appropriate guidance.

And how they vindicated that confidence! Even though my only role was to follow the material, which mercifully for me was in English, the quality of the discussion and the intensity of the students' participation was nothing short of exemplary at the Resolution session. That assessment was not just mine, which is obviously limited by my lack of knowledge of Japanese, but also that of Dr Amano. If ever there was total vindication of the PBL method, where success is measured by how little the facilitator speaks, this was it!

It was a roaring success, and the point was not lost on the students, all of whom were amazed how much they learned with virtually no input from me! But the opportunity seized was also an opportunity missed. I wish I had the forethought to ask that the session be videotaped so that it could be shown to other members of the faculty who doubt the utility of PBL. Seeing it would have opened the eyes of doubters, and debunked many of their misconceptions regarding the so-called passivity of their students, and the unsuitability of the PBL format for Japanese students.

That is something that I intend to address on my next visit, if I am invited back (Dean Kitajima assures me that I will be!) I fully intend to conduct at least one PBL exclusively in Japanese, and to make sure that it is videotaped so that it can be shown to the teaching faculty to observe. This may actually be preferable to inviting the faculty to attend my PBLs, for a couple of reasons. First, given the long standing tradition of respectful timidity of the students towards their teachers, the presence of large numbers of faculty at the PBL sessions will only make them less likely to participate actively. Second, the videotape can be shown to

groups of faculty at times that are convenient to them, so that they will have no excuse to fail to attend.

3. Inculcate in Students the Habit of Performing a Comprehensive History and Physical Examination.

This is another glaring inadequacy in medical student training at Keio University. It is a product of two factors. One is the complete absence of any General Internal Medicine presence at Keio University Hospital. The other is a complete disregard of the importance of performing a comprehensive H&P. This is, after all, a system that pays virtually no attention to clinical skills, and is focused on technological skills (which are of the highest order, let me hasten to add). So exclusionary is this focus that it even shuns elements of the physical that are particularly relevant to the specialty of interest in the management of a patient within that area of specialization. Thus it was that, as incredible as this may sound, no resident on the GI unit had ever performed a rectal examination! That startling discovery said it all to me.

However, there is hope!

I discovered, to my delight that there exists on the wards at Keio University Hospital a template for a complete H&P—in German, no less! It is a relic of a past era that was located by an enterprising resident on the Cardiology service in response to the realization that nothing less than that would satisfy me. That template was used by the resident to present one of the few comprehensive case histories that I was privileged to listen to at Keio University Hospital. This tells me, as nothing else could, that the onus is on the attending faculty to start expecting it of the students and they will respond.

The deficiency in the faculty, however, is much more intractable. I do not know if there are any generalists (outside the ER) who have the confidence in their clinical skills in General Internal Medicine to impart such training to the students. My observations are consistent with the belief (supported by Dr Amano) that all the members of the faculty are superlative sub-specialists who never have the need to practice general internal medicine! Thus, I think it is doubtful that they would be able to change such a lifelong habit to fulfill the need for teachers with the requisite clinical skill to make bedside clinical medicine exciting.

What is needed, therefore, is a core of dedicated teachers who are willing to make the commitment to act as instructors in General Internal Medicine. They exist at Keio University Hospital, I have met them, and Dr Amano knows who they are, but they need to get adequate recognition and compensation for their sacrifice. The introduction of the Observed Structured Clinical Examination in some schools[5] is a step in the right direction. But requiring it in the wards and requiring it to just pass an examination are two completely different things. Without the latter, the former is virtually meaningless. Similarly, I would strongly urge the use of standardized patients, both to teach interviewing skills and to grade students' skills. As things stand, studies suggest that Japanese schools lag behind those in other countries in the use of these vital tools for medical education[6]

In a related vein, it has also been brought to my attention that there is no textbook in Japanese on the Comprehensive H&P. Dr Amano has proposed a solution to this problem, in the form of an instructional video that demonstrates how to perform such an exam. Maybe it will come to pass at some time in the future.

4. Empower students to provide honest feedback:

This is an element that is so vital that, without it, everything else that I recommend is rendered meaningless. At the present time, the system that is in place is laughably ineffective in practice, if my own observations are anything to go by. Students do not provide *honest* feedback, only *pro forma* laudatory evaluations that give EVERY teacher the same grade. I heard from several students that they would refuse to give any teacher a failing grade, no matter how bad that teacher was, because that would amount to insulting the teacher! This came as a shock to me, even in the context of my own cultural origins in India, where students are also taught to hold teachers in an exalted position.

But not to this degree of reverence!

Students at Keio University seem unable or unwilling to grasp the concept that the bigger insult would be to, in effect, tell a really good teacher that his/her effort was worthless because it did not deserve to be differentiated from that of a bad teacher. What shocked me was their inability to see this contradiction even after I pointed it out to them!

This mind set will have to change for any progress to be made. Unless students provide honest and accurate feedback, there will be (a) no way of identifying and rewarding good teachers, which means that (b) there will be no reason for faculty to change their attitudes towards teaching, and that in turn means that (c) any attempt to reform the curriculum to provide greater emphasis on clinical instruction is doomed to failure!

The solution to this problem is comprised of three elements, all equally essential:

a. *Create an Effective Evaluation tool:* It is essential to develop a reliable method of ranking and rewarding teaching as an academic pursuit that is both credible and valued. It will be necessary to create one that is reflective of the unique approaches and attitudes towards teaching that are prevalent in Japan, but a start can be made from any one of several that can be found on the websites of accrediting bodies for Graduate Medical Education in the US and elsewhere. Of course, each student must provide an independent opinion; a collective/shared evaluation based on a

communal decision taken to provide a "unanimous" opinion is particularly counterproductive, because of the natural desire to conform (see below).

b. *Maintain Anonymity:* This is essential in order to avoid reprisals against students and preserve the integrity of the process. Therefore, students must submit anonymous evaluations that are collected, not by the teacher, but by the Office of Medical Education, at the end of each lecture/course.

c. *Insist on Honest Feedback:* While it is clear that students must provide honest feedback, it will not happen simply by wishing it or telling them to do so. Decades—centuries?—of a contrary tradition that is so deeply ingrained cannot be wiped away so easily. A second factor that may be of equal importance as a barrier to student honesty is a subtle but pervasive fear of reprisal against those who buck the system. I sense that there may be no greater outcast than a nonconformist in a society like Japan, where conformity is a treasured and respected tradition.

If that entrenched mindset is to be overcome, then students will have to be empowered by an explicit endorsement of the value of their opinion. My experience in talking to several students leads me to believe that it will take nothing short of the direct intervention of the Dean to reassure them that their opinion actually counts. He will have to *personally* convince the students that good and bad teachers MUST be identified, for the sake of everyone concerned. I do not think they really understand this.

5. Reforming Residency Training to Enhance Active Learning:

This is another daunting challenge, because I sense that resident life is personally controlled very tightly by attending faculty, with little input or direction from the administration. Even so, some changes are welcome, as part of the new format of rotating residency training[7]. The implementation of a year of training at a community teaching hospital gives residents experience in general internal medicine, the lack of which is a major drawback of the otherwise stellar subspecialty training found at Keio University Hospital. It is troubling that there is a move afoot to discontinue this very valuable part of the residency rotation. I see that as a major step backward, if it comes to pass, and all graduating students are compelled to spend their entire residency at Keio University Hospital with no opportunity to ever experience the value of general internal medicine training. The past bodes poorly for the future, if that comes to pass: residents coming out of such programs in Japan have been shown to fare poorly compared to residents at non-university hospitals, with regard to clinical skills and confidence in clinical decision making[8].

SECTION B
CHANGING ATTITUDES TOWARDS TEACHING AMONG THE FACULTY

This may be the most difficult of all the reforms to implement, since it will require fundamental changes in human behavior—never an easy undertaking! But several steps can be taken to make the environment conducive to changing behavior.

1. Make the Faculty Accountable for Teaching: Unless faculty members are made accountable for teaching, nothing will change. Only the Dean can implement (and enforce!) the policy that will make it come to pass.

a. *Step one* is to get accurate and honest teaching evaluations from students (see above).

b. *Step two* is to then develop composite teaching evaluations of every member of the teaching faculty by adding all of those and averaging them.

c. *Step three* is to rank faculty according to their teaching evaluations and then let them know where they stand relative to the other members of their department. However, to preserve the integrity of the process, each faculty member in a department must only see his or her position on the list relative to the others, without knowing the names of those ranked above or below.

2. Encourage Faculty Members who Teach: The way to achieve this is for the Dean to sponsor a Best Teacher Award every year from each Grade. For this purpose, the Dean's office (or his surrogate in the Office of Medical Education, Prof Amano) must solicit nominations for the award from every student in each grade at the end of the academic year. The names of the three teachers who get the most nominations from a particular Grade must then be submitted to the students in that Grade for a vote to select the Best Teacher for that year. The importance of this being seen to emanate from the Dean's Office can not be overstated, because it must have the seal of academic authority for not only the students to participate in it, but also for the faculty to take it seriously.

3. Reform Promotions Policy to Raise the Status of Teaching: My discussions with the authorities at Keio University School of Medicine lead me to believe that there really may be an opportunity to enact the one reform that is the most crucial of all. If there is to be any hope of reforming medical education at Keio University, then teachers who teach well must be accorded the same status as researchers who publish well. That means that the current system of promotions cannot endure at Keio University.

The approach that I would take is to create a new paradigm for promoting teachers that will not alter or

compete with the way in which promotions are currently given to research-oriented faculty members. To my mind, this is absolutely vital, because promotions to teachers must not be seen as a threat to the advancement and status of current members of the faculty. If they see it as impinging on their own opportunities, or diminishing their own academic status, they will vehemently oppose and subvert any attempts at reform.

Notwithstanding the effort to avoid this, I anticipate that there will be fierce resistance to any attempt to change promotions policy. Therefore, the reforms will require the full force of the visionary zeal that the current administration has shown. If change is to be implemented, it must be now!

To understand the basis of my recommendations for reform in promotions policy, it is necessary to review the reasoning that I used to formulate them:

a. *Why are Faculty at Keio University Reluctant to Teach*?: Research is a vitally important mission of any academic institution, because seeking to understand the unknown is what constitutes "Higher Learning". Thus, medical schools that are not at the forefront of medical research should not expect recognition as Institutions of Higher Learning. But a medical ***school*** is, first and foremost, a revered place of "Higher Learning" ***where future doctors are trained, and learning is communicated to them***. This means that Teaching must be accorded a status that is at least equal to Research.

   The problem arises when Research takes preeminence over Teaching, and the latter is relegated to second class status, as it is almost universally in Japan.[6] Then, of course, nobody who aspires to academic success would waste their time pursuing excellence in teaching! The result is an institution where the majority of faculty members have no interest in teaching. After all, why would anyone waste their careers in such a fruitless and unrewarding pursuit as teaching, when it is not considered a credible academic achievement?

   The purpose of this introduction is to drive home the point that Teaching and Research are two equally strong pillars of academic achievement, neither one greater or more important than the other, both supporting the academic mission and image of a medical school. The corollary is that teachers, just as much as researchers, are an essential and integral part of the backbone of a Medical School. In Japan, however, faculty who teach are accorded no recognition and given no status, because promotions policy is based exclusively on research output.

   With research clearly defined as the only "truly academic pursuit", it becomes downright counterproductive to spend time in anything but research. That breeds the inevitable attitude, so prevalent in Japan, that teaching is not just unnecessary, but actually a wasteful "non-academic pursuit" that carries a heavy penalty, because it takes time away from research. No wonder, then, that teaching is relegated to the status of a menial task that falls on the shoulders of inexperienced or disinterested juniors, who are themselves under pressure to succeed as researchers![6] That teaching still occurs at Keio University Hospital, despite this terrible handicap, is a testament to the selflessness of the dedicated souls who soldier on without hope of recognition or reward.

b. *How can a Reluctance to Teach be overcome?:* The answer lies in a single word: *Recognition.*

   In academic circles, of course, recognition means promotion. And promotion is not something any teacher can aspire to when the system exalts only research. To resolve the impasse, it is necessary to create a new paradigm for promotions that recognizes two categories of academic achievement, akin to the two "streams" in many academic centers in the US.

   The first of these categories, which is equivalent to the tenure stream in the US, is the *Scientist-Researcher*. The primary goal of this kind of academician is to secure grants and to publish in high quality journals.

   The second category, which is equivalent to the "non-tenure" stream in the US, is the *Clinician-Educator*. The primary goal of this kind of academician is to see patients and to teach.

   I would submit that the only way to gain acceptance of this concept is to establish each stream as being independent of the other. What I mean by this is that there must be no competition for promotions between the two streams. That concept of independence should not, however, preclude or discourage crossover, so that Scientist-Researchers who want to teach must be allowed to do so, even if teaching is not the major criterion in their evaluations, and Clinician-Educators who want to participate in research must be encouraged to do so, even though research is not the major criterion for their advancement.

c. *What should be the Criteria for Promotion in the Clinician-Educator Stream?*: In the interest of fairness, criteria in the two streams should not be philosophically different. To meet the requirements of the fairness principle, it is necessary to apply two common criteria to academic achievement in both categories and evaluate fitness for promotion based on these in an objective and reasonably quantifiable manner. These two common criteria are (a) Impact and (b) Quality of output.

   i. In evaluating the academic achievements of a *Scientist-Researcher*, it is possible, then, to assess (a) Impact based on the number, value and stature of grants acquired and (b) Quality of output based on the number of publications and the impact factor of the journals in which they appear.

   ii. Identical principles can be used when evaluating

the academic achievements of a *Clinician Educator*. Then, (a) Impact can be assessed from the volume of clinical activity, and (b) Quality of output from the number of courses taught, teaching evaluations received, and awards.

iii. From this, it is obvious that research faculty can be left to do what they do best, without having to either see patients or teach, and teaching faculty can be left to do what they do best, without having to chase after grants.

iv. Provided the major criteria are fulfilled, achievements in cross-over areas (teaching by the Scientist-Researcher, and research by the Clinician-Educator) can be viewed as additional validation of academic excellence (minor criteria).

This brings up one touchy subject that might be a source of the greatest resistance to change: Who will be the Chairman if there are two Professors, one in each stream? That is easily resolved for the foreseeable future. To all intents and purposes, the only qualified candidates with sufficient seniority to be considered for such posts for several years will be Scientist-Researchers. It will become an issue only in the future, when Clinician-Educators ultimately achieve the requisite status to be even considered for such posts. Until that time comes, I believe most Clinician-Educators will be quite satisfied with the increased respect and recognition they will receive, even if they have to forego being Chairmen!

4. Making it Possible for Clinicians to Teach:

Time is a major constraint in any clinician's life, and teaching calls for a major time commitment. I know that all too well from my own experience! I am also aware that this is particularly true also of all the clinicians at Keio University Hospital, who will be the ones on whom the teaching burden will fall. Even if they are given academic recognition for their teaching, where will they find the time to fulfill the demands of their academic careers? Certainly not if they are also expected to see 100 patients in clinic, five days a week!

This means that accommodations will have to be made in clinical schedules for them to find the time to fulfill their teaching obligations.

The easiest solution is to share the teaching and clinical burdens equally among a group of clinicians. Let us assume, for instance, that there are 5 clinicians in a given department (say Cardiology), who each see 100 patients, 5 days a week. Obviously, none of the five would have any time to devote to teaching on any of those five days.

But if, instead of all five clinicians seeing 100 patients five days a week, only four go to clinic on any given day, then one would be free by turns to devote his/her time to teach the students on the wards. That of course means that the four who are in clinic would have to see 120 patients, to make up for the absence of the fifth member of the group. But the pain of a 20% increase in clinical burden for 4 days a week will be more than offset by the luxury of one day of complete freedom from the burden for each member of the team by turns. Viewed in this way, teaching may actually become a sought after assignment—a welcome reprieve from the daily drudgery of clinical activity!

SECTION C
CHANGING THE MEDICAL SCHOOL CURRICULUM:

This aspect is the one that poses the greatest difficulty for me when it comes to making specific recommendations for reform. I am not an expert in this field, and will not pose as one. Also I have no knowledge of how much detail and what aspects of the curriculum are tested in the national examinations in Japan. Changes at the local level will have to take into account the overriding need of students to pass these exams. This limits the amount that the curriculum can be changed at the local level. Moreover, the Ministry of Health in Japan has developed a comprehensive document that outlines all the curricular changes that need to be made.[9] Thus, I do recognize that any changes at the local level must take into account those recommendations.

While acknowledging all these limitations, I will nonetheless attempt to make some specific suggestions because I was specifically requested to do so, regardless of those constraints. I want to make clear that these are only suggestions, and are not based on any claim of expertise in this area, or any presumption of knowledge regarding their feasibility. They are based on my own sense of what needs to be done to improve the quality of medical education at Keio University. It will be up to the Dean and his worthy team of deputies to determine what is feasible and what is not.

1. Shorten the Preclinical Curriculum from Three years to Two years

The detail in which these subjects are currently being taught is almost stupefying! In particular, the overwhelming use of the lecture format in these years makes it impossible to engage the students in any meaningful manner. No wonder that students retain almost nothing when they come to the wards (I will attest to that!) Yet the detail that they are asked to remember just to pass their exams is incomprehensible to me. For instance, has any physician ever actually needed to remember all the structures under the gluteus maximus muscle? I certainly have never had cause to do so, other than to pass the exam in Anatomy! My guess is that most surgeons could not care less, and would not be able to recount those if asked. And yet, that is what traditional courses in Anatomy expect from students! The same can be said of the

ridiculous detail in which Physiology and Pathology are taught.

I acknowledge that no effort to shorten the curriculum can succeed without the agreement of each pre-clinical Department Chairman to reduce their perceived "importance" in the curriculum. That is not a reason to resist change, however, because preclinical departments are heavily weighted towards research, and teaching takes an even lowlier place in the general scheme of things in those departments. This is true even in the US. Thus, shortening the curriculum can be presented as an attractive option because it will reduce teaching commitments and actually free up faculty members to pursue their research to a greater degree.

The Chairs will take some convincing, though. I suggest that a preliminary "demonstration project" be undertaken, in which one particular preclinical subject is shortened with the aim of eliminating unnecessary detail. The ideal one for such a demonstration project is Anatomy, as has been suggested elsewhere.[2] The Chairman of Anatomy at Keio University School of Medicine (Professor Aiso) informs me that he has already considered shortening the course to 6 months. At his request, I have put him in touch with individuals in Pittsburgh for advice on how to go about this task. It would be very helpful for him to tap into the experience at Pittsburgh, where the Anatomy curriculum has been completely restructured to incorporate PBL as an essential component of the change-over from a traditional subject-based curriculum to one based on organ systems.

2. Make the Curriculum Organ System-based, not Subject-based.

A traditional curriculum is "subject-based". By that I mean, each subject (e.g. Anatomy or Physiology or Pathology) is taught separately, and almost as though the knowledge is being provided in a vacuum, without any consideration being given to what else is being simultaneously taught in another subject. At any given point in time, therefore, the content that is covered in one (e.g. the Thorax in Anatomy) has no relevance to what is being taught elsewhere at that same point in time (e.g. Gastrointestinal Physiology). The result is that the student acquires knowledge in the form of disconnected bits-and-pieces that have no relevance to each other. It should come as no surprise, then, that the "knowledge" imparted is all but forgotten by the time that the student is suddenly confronted with the need to remember all the disparate elements as a single coherent whole on the wards.

That is the reason for the conversion of most modern curricula to an "organ system-based" format. The value of such a curriculum lies in the fact that all the relevant details of every organ system are taught together, so that learning is integrated across medical disciplines, specialties and subspecialties, to provide a comprehensive understanding of all aspects of individual systems and disease processes.

This means that courses are no longer taught as separate subjects. Instead segments of each subject are incorporated into a single organ system "block" and taught in an integrated fashion. Thus, for example, the Cardiovascular "block" may last for 8-12 weeks, during which all aspects relating to the heart and blood vessels, including cardiac anatomy, cardiovascular physiology and pathology, cardiac pharmacology and therapeutics, clinical cardiology, cardiac surgery etc etc, are taught as a single coherent entity. This may then be followed by a similar course in Pulmonology, and then in GI, then Endocrinology, and so on and so on.

Achieving this is a very complicated endeavor, because it calls for a top to bottom restructuring of the curriculum. It will require careful thought and considerable cooperation from all departments involved. Most of all, it will call for a major effort by the Dean, who will have to muster the collective will of the medical school to make this a reality. Obviously, a task force will have to be set up to study the experiences of other schools in Japan [10,11] that have gone through this restructuring. But it will be worth the effort, because it will have several tangible benefits for medical education:

(a) An organ system-based approach helps retention of material by students, since its clinical relevance is immediately apparent. Many of us, who have gone through a traditional subject-based curriculum in medical school, can remember wondering during our pre-clinical years, why on earth we had to learn something that seemed utterly trivial and useless at that time, only to find out, after starting clinical training, that it would have actually made sense to remember it.

(b) An organ system-based curriculum is amenable to integrating PBL instruction across the curriculum. Thus, for instance, one PBL on a case with COPD in the Pulmonology course is all it takes to teach students pulmonary physiology, pathophysiology, alveolar gas exchange, pharmacology, and acid base balance. How many boring didactic lectures would it take to cover all of that?

(c) An organ system-based approach is characterized by parallel, rather than serial, acquisition of knowledge, because of the simultaneous instruction in all relevant clinical aspects of a problem. This reinforces the clinical relevance and applicability of the material. After all, when one sees a patient, all the physiologic, anatomic, pathologic, pharmacologic and clinical aspects of a disease entity are seen in cohesion. Why should the instruction that leads to understanding of that disease not be similarly cohesive?

(d) An organ system-based approach is particularly ap-

plicable in Keio University, because it draws upon the strengths of the faculty. They are highly skilled in their individual areas of specialization and thus will be able to provide a comprehensive understanding of the system that is being taught. Also, they would be suited to developing the PBL material that would be incorporated into each course.

(e) An organ system-based approach will also inculcate an appreciation of a comprehensive approach to the clinical application of knowledge. That mindset is essential if there is to be any fostering of the bread-and-butter approach to medicine that characterizes primary care. At present this aspect of clinical practice languishes as a neglected step-child of the Japanese health care system [11–14]. That is a direct result of the exaltation of specialty care, with its tunnel vision approach to clinical decision making. That will change only when primary care, the best exemplar of a comprehensive approach to clinical decision making, is accorded its rightful place as the crown jewel of any medical education system.

Appendix 1
Concise Summary of Recomemndations

A. Changing the emphasis from passive to active learning

1. ***Change from Passive to Active Learning on the Wards***

a. Create an environment that is conducive to student participation through *daily bedside teaching rounds* focused exclusively on students, (i.e. held separately from ward rounds with residents).
b. Encourage critical thinking about clinical problems through "problem based learning at the bedside".
c. Students attending bedside teaching rounds must not be allowed to read the chart beforehand; they must engage in "discovery" by interviewing and examining the patient without any preformed ideas.
d. The ward attending who takes bedside teaching rounds must maintain the focus on "discovery" (clinical diagnosis and investigation).
e. Teachers must be told to foster a climate of active learning by encouraging students to vocalize opinions, and ask questions on rounds.
f. Teachers must evaluate students fairly based on their participation in the discovery process on bedside teaching rounds.
g. The present focus on "attendance" must change to "performance evaluation".

2. ***Change from Passive to Active Learning in the Classroom*:**

a. Make a firm commitment to establish PBL as an integral and essential component of the medical school curriculum.
b. Reduce the number of didactic lectures to create room in the curriculum for PBL exercises.
c. Incorporate PBL into the medical school curriculum as early as possible, starting from first exposure to the core medical school curriculum.
d. Educate faculty in the appropriate method for facilitating a PBL, so they understand how little a facilitator needs to say at a successful PBL.
e. Videotape a session with the students speaking only in Japanese, and the facilitator who does not speak Japanese to bring home that point.
f. Make it mandatory for faculty who teach PBL to view the videotape, so that they become familiar with the technique of facilitating a PBL exercise and can see how interactive and engaged their students are when they are allowed to learn actively.

3. ***Inculcate the Habit of Performing a Comprehensive H&P*:**

a. Make all students follow the internationally accepted norms for a comprehensive H&P (akin to the one available on the wards at Keio University Hospital.)
b. Identify a core of dedicated teachers who are willing to make the commitment to act as instructors in General Internal Medicine.
c. Create an instructional video showing how to perform a comprehensive history and physical examination.
d. Mandate the use of standardized patients for teaching interviewing skills and introduce the observed standardized clinical examination (OSCE) for evaluation of clinical skills.

***4. Empower Students to Provide Honest Feedback*:**

a. The Dean must explicitly and publicly endorse the value of their opinions
b. Provide students with a reliable tool to evaluate teachers.
c. Anonymous evaluations must be collected and tabulated by the Office of Medical Education, at the end of each lecture/course.
d. Make students evaluations effective by using a composite of all teaching evaluations earned by teachers over a year to evaluate teaching activity both qualitatively and quantitatively.
e. Use the composites to rank and reward teaching as a credible and authentic academic pursuit.

5. ***Reform Residency Training to Enhance Active Learning***

a. Make it mandatory for all graduates to complete a year of training at a community teaching hospital so that they gain experience in general internal medicine.
b. Continue to maintain the emphasis on active learning through appropriate teaching rounds for residents during their ward rotations.
c. Ask all attendings, regardless of subspecialty, to

insist on a comprehensive H&P on the wards by residents.

B. Changing attitudes towards teaching among the faculty

1. ***Make Faculty Accountable for Teaching:***

a. Get accurate and honest teaching evaluations from students (see above).
b. Develop composite teaching evaluations of every member of the teaching faculty by adding all of their evaluations over the year and averaging them.
c. Rank faculty according to their teaching evaluations and let them know where they stand in the rank order, but not the ranks of other individual faculty members.

2. ***Encourage and Reward Faculty Members Who Teach:***

a. Dean must sponsor a Best Teacher Award every year from each Grade.
b. Office of Medical Education or the Dean himself must solicit nominations for the award from every student in each grade at the end of the academic year.
c. The names of the three teachers who get the most nominations from a particular Grade must then be submitted to the students in that Grade to vote on for the Best Teacher Award for that year.

3. ***Reform Promotions Policy to Raise the Status of Teacher*****:**

a. Create a new paradigm for promotions and recognition that recognizes two categories of academic achievement for career advancement, akin to the two "streams" found in many academic centers in the U.S.
   1. *The Scientist-Researcher*, whose primary goal is to get grants and publish research in high quality journals
   2. *The Clinician-Educator*, whose primary goal is to see patients and teach the students and residents.
b. Establish each stream as being independent of the other, so that there is no competition for promotions between the two streams.
c. Identify two objective criteria for assessing academic activity, and make them common to both streams in the interest of fairness, as follows: (i) Impact of activity and (ii) Quality of output.
d. Apply the two objective criteria consistently to evaluate academic activity equivalently in both streams and to determine fitness for promotion.
   1. In the case of the *Scientist-Researcher*, evaluate
      (i) Impact of activity, form the number and the value of grants acquired;
      (ii) Quality of output, from the number of publications and their quality (the impact factor of the journal).
   2. In the case of the *Clinician-Educator*, evaluate
      (i) Impact of activity, from clinical load (number of patients seen, both inpatient and outpatient);
      (ii) Quality of output, from the number of courses taught and the teaching evaluations received.
e. Provided the major criteria are fulfilled, achievements in cross-over areas (teaching for the Scientist-Researcher, and research for the Clinician-Educator) can be used as additional validation of academic excellence (minor criteria).
f. The Chairman's post in clinical departments will be filled from the Scientist-Researcher stream for the foreseeable future, until a Clinician-Educator ultimately reaches the requisite stature to be considered as a candidate for the Chairman's position.

4. ***Make it Possible for Clinicians to Teach:***

a. Make accommodations in clinical schedules so that the teaching and clinical burdens are shared equally among a group of clinicians.
b. Each clinician is assigned a "teaching day" in the week, on which he or she will have limited or no patient care responsibilities, and the only responsibility will be to teach students and residents.

C. Changing the medical school curriculum

1. ***Shorten the Pre-clinical Curriculum from Three to Two Years:***

a. Select one pre-clinical subject for a Demonstration Project to establish feasibility
b. Call on the experience developed in the US to help with the process of winnowing down the curriculum to the degree that is considered adequate to still meet the students' need to pass national exams.
c. Implement the new curriculum in the selected subject for a trial period and re-evaluate student performance at the end of that period.
d. Reduce the number of didactic lectures and use the time saved to introduce PBL exercises in pre-clinical courses, so that the material being taught is placed in a clinical perspective.

2. ***Make the Curriculum Organ System-based not Subject-based:***

This calls for a top-to-bottom restructuring of the curriculum and may need to be delayed until the Demonstration Project is implemented.

Appendix 2
Specific Recommendations for Transforming Medical Education at Keio University School of medicine

1. Establish a sense of urgency: The reality is that change has been forced upon the system, but there ap-

pears to be no sense of urgency in implementing the steps that are essential to make the changes work. Witness the introduction of a two year general medicine residency program, without any general internists in existence!

2. Form a Powerful Guiding Coalition at Keio University: Of the people I met, there are four who have the stature and the expressed desire to change things. They are Dean Katajima, Professor Amano, Professor Aiso, and Professor Suematsu. They will have to form the nucleus of a force for change. Without the clout of institutional backing, the effort will flounder and fail.

3. Create a vision: What will be the face of medical education at Keio University in 5 years? In 10 years? It seems trite to say that change does not occur overnight, but that does not make it any the less true! And yet, I did not hear articulated a comprehensive vision of how the changes will be implemented over the years. In particular, even though there is a very laudable aspiration for the American model, the vast cultural differences make it imperative to mold the model to local conditions in Japan. Only someone with a good understanding of what will work, given those local factors, and an insight into what in the American model will NOT work, can articulate that vision.

4. Communicate that vision: The heads of departments must be incorporated in any effort to change. Without their acquiescence, nothing is going to change!

5. Empower those who will be engines for change: The views of the students, residents, and teachers on the front lines of the struggle must be sought at every stage and their recommendations implemented when appropriate.

6. Develop clear strategies for Medical Student Education: To implement the vision, the changes, and the empowerment of those involved, it will be necessary, for example, to:

a. Officially recognize teaching as a legitimate academic activity
b. Encourage teaching as an essential ingredient of academic life
c. Reward excellent teachers (academically and financially)
d. Introduce a system for anonymous evaluation of teachers by students
e. Initiate teaching rounds for students and residents by the only physicians who possess a broad-based perspective of medicine in Japan: the ER physicians.
f. Introduce PBLs at all levels of clinical training, starting in the 3rd yr preclinical courses in medical school and proceeding through residency, as a way of inculcating an ethic of clinical decision making in patient care that is based on critical analysis.
g. Shorten the preclinical curriculum, starting with the Anatomy course to establish feasibility (mainly because of Dr. Aiiso's desire and willingness to shorten the Anatomy curriculum).
h. Implement the new curriculum in Anatomy for a trial period and re-evaluate student performance at the end of that period, in relation to their need to pass national exams.
i. Introduce core courses on physical diagnosis for students by faculty members who commit to participating in interactive instruction without the subliminal intimidation that appears to be omnipresent
j. Provide training in Bedside Clinical Instruction for existing faculty
k. Form a task force that will restructure the curriculum from top to bottom to make it organ system based.

7. Renew (and maintain) a focus on General Internal Medicine Training for Residents: At present, the two-year rotating internship program at Keio University Hospital consists of nothing more than a series of subspecialty experiences. Since each experience only strengthens even further the blinkered and myopic view of the subspecialist, the resident in training can never develop the broad-based perspective that is essential for the general internist. The move to allow residents to spend one of those years at a community teaching hospital (a non-academic center), where a form of general internal medicine exists, was a step in the right direction. The more recent decision to rescind that move is, in my opinion, is a terrible mistake.

8. Consolidate the changes in coming years: Although the first steps in transformation must of necessity be from the top down, real change will only occur when a generational transformation in thinking percolates upwards from below. So it becomes imperative to quickly induct the first few residents who have graduated from the new system of clinical instruction as clinical instructors of students. That will circumvent the inertia that impedes change in the existing set-up, and momentum for change will build from the ground up.

Acknowledgements: The author wishes to acknowledge and thank Dean Kitajima of Keio University School of Medicine, Professor Takahiro Amano, Head of the Department of Medical Education, Professor Suematsu and Professor Aiiso, Head of the Department of Anatomy, for their unstinting support and encouragement to "do the right thing" regardless of the consequences. Grateful thanks are also due to Dr Mark Zeidel, Chairman of Medicine, University of Pittsburgh School of Medicine, and to Dr Haruko Kuffner Director of the Pittsburgh-Japan Program for opening the doors that made this effort possible. Finally, the author wants to acknowledge his own limitations, so that he was unable to verify first-hand the contents of several of the references quoted in this paper, relying instead on statements made in authors' translations in abstract form. For any errors that result there from, he is truly sorry.

References

1. Rao RH. Perspectives in medical education. 1. The state of medical education in Japan. Keio J Med (in press).
2. Yamashina S. Changing anatomy education and introduction of self assessment of teacher performance in Japan. Kaibogaku Zasshi. 1999; 74: 491–3.
3. Yoshioka T, Uchida Y, Kozu T. Format of cases affects learning outcomes in first year medical students. Educ Health 2003; 16: 59–67.
4. Imura H. Introducing EBM for postgraduate training. Rinsho Byori. 2000; 48: 1143–8.
5. Qayumi AK, Kurihara Y, Imai M, Pachev G, Seo H, Hoshino Y, Cheifetz R, Matsuura K, Momoi M, Saleem M, Lara-Guerra H, Miki Y, Kariya Y. Comparison of computer-assisted instruction (CAI) versus traditional textbook methods for training in abdominal examination (Japanese experience). Med Educ. 2004; 38: 1080–8.
6. Fukushima T, Moriyama M, Lee CW, Harnisch DL. Improved interactive medical and public health education in Japan and Korea. Asia Pac J Public Health. 2001; 13 Suppl: S44–6
7. Kumasaka K. Mandatory postgraduate medical training in Japan--present state of Nihon University as a private medical school. Rinsho Byori. 2003; 51: 362–6.
8. Yano E, Yamaoka K, Sugita S, Kobayashi Y, Niino N, Fukui T, Yamakado M, Nishizaki O, Ogata T, Segami K. Comparing postgraduate medical education at university and non–university hospitals in Japan. Acad Med. 1992; 67: 54–8.
9. Report of the Coordinating Council on Medical Education: Measures for Reform of Medical and Dental Education–Toward Reconstruction of Departmental Education. Ministry of Health, Japan, March 27, 2001.
10. Onishi H, Yoshida I. Rapid change in Japanese medical education. Med Teach. 2004; 26: 403–8
11. Shimura T, Aramaki T, Shimizu K, Miyashita T, Adachi K, Teramoto A. Implementation of integrated medical curriculum in Japanese medical schools.J Nippon Med Sch. 2004; 71: 11–6.
12. Maezawa M. Roles of general medicine faculties in undergraduate medical education. Hokkaido Igaku Zasshi. 2000; 75: 151–6.
13. Kitai A. Primary health care. Jpn Hosp. 1986; 5: 35–8.
14. Matsuse T, Ozawa T, Orimo H, Fukuchi Y, Ouchi Y, Iriki M. The difference between Japan and other countries, in particular the United Kingdom, in views regarding the teaching of geriatrics to undergraduate medical students. Med Educ. 1999; 33: 140–4