REVIEW

PERSPECTIVES IN MEDICAL EDUCATION
6. Reflections on the State of Clinical Training for Residents in Japan

R. Harsha Rao

Professor of Medicine, University of Pittsburgh School of Medicine

(Received for publication on May 4, 2007)
(Accepted for publication on November 15, 2007)

Abstract: The Muribushi Project in Okinawa, Japan, is breaking new ground for residency training in Japan by explicitly emphasizing clinical skills training and primary care. The core philosophy of the Project is defined by seven "concepts" that commit to (i) establishing cooperation between several hospitals to educate good clinicians; (ii) providing the best learning environment at multiple training sites; (iii) following global standards of practice; (iv) focusing on primary and emergency care of common diseases; (v) emphasizing faculty development through international exchange; (vi) providing residents with opportunities to obtain training abroad; and (vii) improving the quality of medical care through residents.

Observations by the author during two week-long visits, one year apart, reveal that the Muribushi Project is fulfilling conceptual goals (iv), (v) and (vi) by emphasizing primary care and encouraging international exchange for faculty and students. The opportunity exists to fulfill goals (i) and (ii), but it is not being exploited because programs at member hospitals are not integrated, so that residents spend the duration of their residency at one location, and there is no formal system of rotations that would broaden their clinical experience. The Project is failing to meet a sixth goal of following global standards of care (goal #iii) and it is too early to say if it's pioneering approach to residency training is having an impact on healthcare in Japan (goal #vii). On balance, the Project's success in implementing elements of its core philosophy for residency training in the tradition-bound environment of Japan is particularly laudable. (Keio J Med 56 (4) : 111 – 123, December 2007)

Key words: Muribushi Project for Residents, residency training in Japan, clinical training in Japan, primary care training in Japan

Introduction

In four earlier papers, I have presented my views on what ails medical education in Japan,[1] how to reform it,[2] why it so important to reform it[3] and how much progress has been made to reform medical education at Keio University School of Medicine in Tokyo.[4] Those views are based on my observations over 3 consecutive annual visits (2003-2005) to Keio University Hospital, during which my primary focus was on medical education, and my main mission was to round with and assess the skills of medical *students* at Keio. I did have contact with *residents* on the wards during those visits, but my exposure to the residency training program at Keio University Hospital occurred only in the context of case presentations on ward rounds. My very limited assessment of the Keio residency program, based on this circumscribed interaction, has been recorded in an earlier paper.[1] Those assessments came with the very important caveat that I did not have unfettered access to the residents outside of the ward setting and so was unable engage them in a free discussion of the strengths and drawbacks of their training. Most importantly, I did not have the opportunity, on any of my multiple visits to Keio, to meet one-on-one with the individuals responsible for overseeing residency training at Keio. Thus, I could not ascertain for myself the goals or programmatic themes of the residency training provided there. In essence, therefore, my visits to

Corresponding Author: R. Harsha Rao, MD, FRCP. Room 580, Falk Medical Building, 3601, Fifth Avenue, Pittsburgh, PA 15213 U.S.A., e-mail: rao@dom.pitt.edu Tel: 412-586-9701 Fax: 412-383-9586

Keio left me with no little or no real insight into the next step in the ladder of medical education after graduation from medical school in Japan.

I had the unique opportunity to address this large lacuna in my still developing understanding of medical training in Japan when I was invited in February 2006, and again in February 2007, to visit the Muribushi Project for Okinawa Residency Programs in Okinawa, Japan. The visits took place in the context of my ongoing efforts to observe and critique medical education and training in Japan on behalf of the Pittsburgh-Japan Program at the University of Pittsburgh, School of Medicine. The purpose was to evaluate the nature and quality of the training given to residents at one of the foremost residency programs among non-academic teaching institutions in Japan.

This paper combines the reports describing my experiences and observations during my trips that I submitted to the Muribushi Project. In that sense, this paper is much like earlier papers in this series.[1–4] However, it combines the core subject matter of all four, in being observational and descriptive in its content, forthrightly critical in its analysis, and reflective in its conclusions. As such, most of the literature that forms the background and basis for the arguments and proposals I have put forward in earlier papers remains valid for this paper, too, and I will not reiterate it here. Readers who are interested in the basis for my conclusions regarding the state of medical education and healthcare in Japan are referred to those earlier papers for a full list of references in support of those conclusions.[1–4]

My trips to Okinawa were unique experiences for me, even in the context of the utterly fascinating introduction I have received to Japan, its people and its medical education system. Not only did I get an opportunity to observe and evaluate the clinical skills of medical residents in Japan, first-hand and with no strings attached, my visits also allowed me to compare and contrast the quality of teaching at non-academic teaching hospitals with what I had already observed in an academic setting.

Notwithstanding the thematic and geographic differences between my experiences in Tokyo and Okinawa, they were very similar in many respects. Nowhere was this similarity more apparent than in the treatment I received. I was welcomed to Okinawa with a fanfare and excitement that left me humbled by its exuberance and not a little embarrassed, just like the hospitality bestowed upon me at Keio. And just like Keio, the enthusiasm on display on the part of the trainees was as boundless as it was gratifying. It validated, yet again, my core belief in the hunger of Japanese medical graduates for clinical teaching. It is a sad commentary on the state of medical education in Japan that students and residents who hunger for it must look to foreign visitors to give them what is rightfully theirs to expect from their own teachers-with a few rare exceptions!

The Muribushi Project

A Brief Introduction

The Muribushi Project for Okinawa Residency Programs is underwritten by a consortium of "non-academic teaching hospitals" in Okinawa Prefecture in Japan. For those (like me) who are not familiar with the nomenclature, the term refers to hospitals that have active residency programs and maintain a teaching faculty on their staffs, but are not affiliated to a medical school, setting them apart from "University hospitals", which are part of a medical school.

There are seven hospitals that provide residency training in the Project. They are:

1. Urasoe General Hospital (24 residents)
2. Okinawa Kyoudou Hospital (20 residents)
3. Nakagami Hospital (16 residents)
4. Tomishiro Hospital (12 residents)
5. Nanbu Tokushukai Hospital (8 residents)
6. Chubu Tokushukai Hospital (8 residents)
7. Onaha Hospital (4 residents)

The vision that went into the foundation of the Project is captured in the form of seven core "concepts" that are published on the Project's website,[5] and read much like a Charter of Aims. Translated from the original Japanese version, they read as follows:

1) Establish cooperation between several hospitals in Okinawa to educate good clinicians for the future of Okinawa and Japan;
2) Set up an outstanding training program that provides the best learning environment at a multiplicity of hospitals;
3) Follow global standards of medical practice;
4) Focus on training in primary care and emergency management of common diseases;
5) Emphasize faculty development through clinical exchange programs with institutions in the US;
6) Provide residents with opportunities to obtain training in the US and Europe;
7) Improve the quality of medical care in Japan through residents.

These seven "concepts" reflect the pioneering vision and revolutionary intent (for Japan, that is) of the Project's founders. It is evident that the original motivation for setting up the Muribushi Project was to provide comprehensive training for residents across several hospitals in a relatively narrow geographic area that were previously in competition with each other. The opportunity existed to create a truly integrated program that allowed the individual hospitals to play to each other's strengths, by combining resources not available at every member hospital. If that were achieved, the Project could, in fact, provide its residents with a broad range of opportunities

to gain truly comprehensive training. In practice, however, the residencies at the individual member hospitals do not function as a united program in either the spirit or the letter of the term. They do share thematic goals, and the Project is blessed with a unifying spirit and teaching philosophy, in the form of the Director (as will be described below), but in all other respects they function as individual and separate programs. The fact that they belong to a "consortium" is somewhat diluted by the fact that its only purpose seems to be to enhance trainee recruitment. In other words, several hospitals in a relatively narrow geographic area that were previously in competition with each other, have come together simply to expand the pool of residents available to staff all the member programs.

In practice, therefore, the seven "concepts" underlying the founding of the Muribushi Project have evolved into the single goal of becoming a "magnet" for the best and brightest graduates seeking clinical training after graduating from medical school in Japan. There can be no doubt that the Project has been a resounding success in this regard, based on its success in recruiting candidates from many of the best and most competitive medical schools in the country. At last count, there were over forty medical schools represented among the residents in the Project.

Administrative Structure

Translating any vision into tangible success requires the drive to implement the vision and the force of will to convert intention into action. A good example of this phenomenon is the gradual evolution of change that I have witnessed over the course of three visits to Keio University.[4] There, the visionary leadership of Dean Kitajima and the motivation and dedication of Professor Amano are the twin forces that are enabling the transformation in medical education at that institution.

The good news for all those interested in the durability of reform of Japanese medical education is that the same evolution is already under way in the Muribushi Project, except that it seems to have occurred spontaneously. Here lie the seeds of a renaissance for Japanese medical education and training that could blossom into something well worth cultivating and cherishing.

The Muribushi Project is overseen by a Director who has supervisory authority over both the training program as a whole and the residents at the member hospitals in the consortium. The Director's office maintains oversight over the Project through an administrative staff whose job it is to monitor program performance, ensure compliance with training standards, and oversee resident training at the member hospitals. At each member hospital, there is, in addition, a Clinical Program Director and an administrator in charge of running the residency training program at that site.

The Director of the Muribushi Project is Dr Seishirou Miyagi, and he is the reason for the success of the Project. He is to the Project what the combined talents and personas of Dean Kitajima and Professor Amano are to the reform of medical education at Keio, serving all the multiple roles that both of them share of inspirational leader, motivational guide, and forceful executor of the vision for change. He is a man who is unique in my limited experience of Japanese medical education, truly unlike anyone else I know in Japan-and this is meant as no disrespect towards the few incredibly dedicated teachers I have met at Keio. I say that because Dr Miyagi has dedicated his whole life to teaching, forsaking the more assured path to glory and financial security that research offers to most Japanese physicians. He has followed his chosen path with a single-minded dedication that would be incredible to behold if it were shown by a researcher seeking the glory of recognition. That it should be so in a teacher in Japan, where teaching not only goes unrecognized, but is treated with disdain by any self-respecting academic, is nothing short of miraculous.

After a thirty year career as an academic who charted his own course, Dr Miyagi took over the running of the Muribushi Project in Okinawa, and promptly set about re-fashioning it into a platform for his iconoclastic views (for Japan!) regarding teaching and patient care. Under his dynamic leadership, the Project has been resuscitated from its former moribund state and is not only thriving now, but has undergone a major expansion in the number of residents it accepts. His focus on clinical medicine and patient care is beginning to reap dividends, and I was able to see for myself the tangible progress that is being made in Okinawa towards improving residency training.

Dr Miyagi attended every one of my teaching sessions, not just to fulfill a pro forma role as my host, but as an active and involved member of my audience. He functioned as a kind of "super-interpreter", translating back and forth between Japanese and English, occasionally adding his own editorial insights to the clinical subject under discussion. I sensed that his clarifications and footnotes of my comments in English clearly amplified their weight and import for the audience. That was a reflection of his stature among the faculty and resident bodies alike. On a personal level, too, I found his footnotes to be particularly helpful, because they provided me with invaluable insights into local clinical practice that would otherwise have been unavailable to me.

Here I must also make special mention of his ebullient, energetic and enthusiastic presence at each of my teaching sessions. I discovered in him a shared passion for teaching and clinical practice, and a shared philosophy that these were interconnected and inseparable components of our respective academic lives. That evolved quickly into a bond of friendship and mutual respect that

allowed me to interact with him in front of the residents and faculty in a relaxed and jocular manner that was completely alien to the normal tradition of deferential respect bordering on reverence that characterizes all public interactions between teachers, and between teachers and residents. This set a lighthearted and jovial tone for every teaching session, transforming the learning experience for the residents into an entertaining, non-threatening and enjoyable exercise. This last observation was not mine, but based on repeated endorsement, individually and collectively, by successive batches of residents on both my trips.

My Target Audience

That brings me to the best part of my trip: the residents!

The enthusiasm of the residents I had the privilege of teaching in Okinawa was boundless. The fact that it far exceeded their clinical skills was a minor drawback, of little note in the face of their relentless thirst for acquiring those skills. For me, as their teacher, it was the most gratifying aspect of introducing them to the wonders of clinical discovery, regardless of their skills.

A close second to that was seeing them get hooked on it!

I also met each successive batch of residents outside the ward setting the same evening over dinner. The relaxed, social atmosphere allowed them the freedom to voice their opinions regarding their personal experiences with teaching and learning in Japan. They were vocal in expressing their appreciation of how much "fun" it had been to learn without feeling afraid of asking a question or of laughing out loud.

I must add a couple of editorial asides here, because the residents' comments have contextual relevance to my previous experiences in Japan. My first editorial observation is that the individual statements of almost one hundred and fifty residents I met over two trips to Okinawa are almost verbatim copies of those made to me by medical students at Keio University Hospital. Coming as they did from a group of residents who graduated from medical schools extending to virtually every corner of Japan, they have particular significance for me.

On my very first trip to Japan in 2003, my original observations regarding the abysmal state of medical education in Japan were based on a small group of English-speaking students at *one* institution, namely, Keio University School of Medicine.[1] Subsequent trips reinforced my original criticisms regarding the clinical training given to students (and, by extension, residents) at Keio.[2,3]

In this regard, I must note here that I have been politely but firmly told on multiple occasions during my many trips to Japan that the experiences and examples quoted in my papers to support my criticisms do not reflect the excellent teaching and clinical training that Japanese medical students (and residents) receive. Some of my initial critics at Keio insisted with equal conviction that the examples were not typical of Keio and, in any event, the "isolated" examples quoted by me were not a reflection of the quality of the teaching or the teachers, but the students' ability to learn!

My own experiences with Keio students, together with the whole-hearted endorsement of my critiques by such Keio luminaries as two successive Deans (Professors Kitajima and Ikeda), two Vice-Deans (Professors Aiso and Suematsu) , and the Head of Medical Education (Professor Amano) are proof enough that the dysfunction was neither the students' fault, nor isolated.

More telling was the criticism of many who were not on the faculty at Keio. They were emphatic in their conviction that the problems were isolated to Keio University, notwithstanding its stature as one of the premier institutions in Japan. Even though I took great care to warn against generalizing my observations to medical education elsewhere in Japan, at the back of my mind there still lurked a very strong suspicion that what I observed at Keio was not unique to that august institution. The reason for it was the knowledge that the greatest drawbacks and weaknesses in medical education I observed at Keio were outgrowths of traditional behaviors and practices that are ubiquitous in Japanese society.[1,2] Thus, it seemed reasonable to suspect that those same problems were almost certain to exist in all medical schools in Japan. With no proof to verify my suspicion, however, it would have been egregious for me to make such an extrapolation with certainty.

No longer! I can safely conclude after my visits to Okinawa that my observations with regard to the state of medical education at Keio University are applicable to the state of medical education in Japan as a whole. The unanimous opinion of a hundred and fifty residents from all over Japan resoundingly confirms that the situation I described at Keio was no different from that in most medical schools in Japan. Taken with the endorsement I received from Dr Miyagi, I can now state that the extrapolation I was careful not to make is warranted.

My second editorial comment with regard to the Japanese residents' appreciation of my teaching is that I experience a bittersweet reaction every time I hear the laudatory comments of these exceptional young people. It comes from the very poignant realization that the residents' appreciation of my teaching (like that of the students I have taught at Keio) is not so much a validation of my teaching skill as it is a reflection of their own hunger for teaching of any kind. Even more than that, it is a truly damning indictment of the intellectual starvation inflicted on them historically by their teachers in Japan, starting from their school days. That realization is all I need to dampen the euphoria that would otherwise over-

whelm me each time I visit Japan, Not only does it bring me back to earth with a thud, it also reinforces my determination to do whatever I can to support those who are toiling against all odds to change that untenable situation.

Revisiting the Experience

My experiences in Okinawa only continue my love affair with Japan in general and Japanese medical education in particular. During my two visits, I visited six of the seven hospitals in the consortium that underwrites the Muribushi Project for Okinawa Residency Programs. The schedule called, in each instance, for a two hour session that was devoted to a single case presented in a formal, classroom setting. In each instance, the audience consisted of a number of residents (ranging from as few as 8 to as many as 24) and attending faculty (from a low of 3 at one site to a high of 12 at another). I was given the seat of honor at the front, facing the audience, with an interpreter/translator next to me (a resident in most cases). Dr Miyagi, as mentioned earlier, was always present to provide his own "spot translation" and clinical insights.

At each of the hospitals I visited, the Clinical Program Director for that location was invariably present for the case presentation and discussion. Moreover, each one took great pains to ensure that the resident presentations were prepared in advance, that a printed copy of the H&P was available as a handout, and that the residents were in full attendance for the entire duration of the teaching session. Of particular note, every teaching session, nominally scheduled for 2 hours, lasted longer than its allotted time-in one instance for almost *five hours*!

That particular instance stands out in my memory, because not a single resident or faculty member left the room as the session wore on. Despite my repeated offers to end it, as the case discussion unfolded and its complexity became apparent to me, everyone, including Dr Miyagi (whose lead I followed in all such instances), insisted that they would keep going if I was willing to keep going! Later that same day I asked him to honestly tell me if the reason everyone stayed was out of politeness, but he was vehement in his denial of it. I know him well enough that I believe he would have told me if it was otherwise, notwithstanding the tradition in Japan of never insulting a guest with blunt honesty, no matter how well deserved it might be. All I can say is that I have never in my life been in a position where I got tired of teaching before my audience got tired of listening to me! That single example is all I will offer to support my claim that the enthusiasm for learning was truly boundless.

A summary of the teaching activities during one of the trips is presented here, to provide a glimpse of the kinds of cases that were presented and the free-wheeling discussion that followed. It is based on brief notes scribbled by me at the end of each day and is as imperfect as my memory. For any factual errors, I am to blame, as the memory does play tricks, and hindsight is *never* twenty-twenty when recalling details! The intent is not to dissemble, so I readily apologize in advance for any disagreements with other observers regarding the accuracy of the clinical talking points. In the final analysis, every session was videotaped as it occurred. Thus, anyone interested in proving me wrong is welcome to do so, but that would miss the point. The summary is not meant to represent either a comprehensive or an exact record of what transpired. Rather, it is a recounting of the day's journey based on my *perception* of what constituted the major signposts on the trail we explored that day. Perceptions being what they are, they will vary from observer to observer!

I must clarify too that it is impossible to recreate, or present a coherent reason for, the manner in which the discussions developed, and why, for instance, one case of dyspnea led to a discussion of the pathophysiology of heart failure and the other did not, even though it was associated with CHF! I have learned not to explore too deeply the dynamic that leads to such forks in the trail when I teach. It is intrinsic to my enjoyment of clinical teaching that I *not* know where the discussion will lead. It is because I place such a premium on that spontaneity that I insist that I *not* be told the diagnosis, and that the clinical discussion be completed without the benefit of the results of any but the basic lab tests. It is a paradigm for teaching at the bedside that allows me, most crucially, to be fallible-a trait that teachers all too often want to hide, to the detriment of their students. After all, clinical medicine is the ultimate exercise in being proven wrong! By failing to communicate that, clinical teachers make the process too intimidating for the learner. I believe to the contrary that acknowledging the uncertainty of clinical medicine actually enhances the excitement that it generates. And it allows me to learn as I teach.

Nowhere are those components of my teaching paradigm better illustrated than in the case discussions that occurred during my visits to the Muribushi Project, as the sample schedule that follows will attest.

A Week of Discovery

Day 1

Location: Nakagami Hospital.

Approximate number of residents: Total of 10, combined from two smaller programs

Clinical Scenario: Progressive exertional dyspnea in a patient with hypertensive heart disease.

Clinical Diagnosis: Decompensation of CHF from profound macrocytic anemia.

Clinical talking points:
(i) Evaluation of dyspnea by history
(ii) Relevance of physical signs in the heart
(iii) Cardiac physiology in relation to physical signs.
Duration of session: Approximately 2.5 hours

Day 2
Location: Nanbu Tokushukai Hospital.
Approximate number of residents: Total of 12, combined from two smaller programs
Clinical Scenario: Acute dyspnea and chest pain in a patient with hypertension.
Clinical Diagnosis: Acute myocardial infarction
Clinical talking points:
(i) Differential diagnosis of chest pain
(ii) Pathophysiology of heart failure
(iii) Management of acute pulmonary edema.
Duration of session: Approximately 2.5 hours

Day 3
Location: Okinawa Kyoudou Hospital.
Approximate number of residents: 16
Clinical Scenario/Diagnoses: Acute chest pain syndrome in a patient with a past history of MI, Type 2 DM and hypertension. During the hospital stay, he developed a short-lived neurological deficit, followed by severe polyuria (treated as DI) and hyponatremia; eventually developed serratia septicemia.
Clinical talking points:
(i) Evaluation of pain as a general symptom
(ii) Evaluation of the EKG in a patient with LVH and MI
(iii) Coronary artery risk reduction in the patient at high risk for MI
(iv) Preventing the Complications of Diabetes Mellitus; the UKPDS Results
(v) Evaluation of polyuria and hyponatremia
(vi) Pathophysiology of Diabetes Insipidus
(vii) Differential diagnosis of SIADH
(viii) Diagnosis and management of nosocomial septicemia
Duration of session: Approximately 4.5 hours

Day 4
Location: Tomishiro Hospital.
Approximate number of residents: 20
Clinical Scenario: Subacute onset of dyspnea and dry cough in a diabetic patient with hyperlipidemia and a past history of 3-vessel coronary artery disease and a stroke.
Clinical Diagnosis: Congestive Heart Failure with Ischemic Heart Disease and Diabetes Mellitus
Clinical talking points:
(i) Clinical evaluation of dyspnea and cough
(ii) Signs and symptoms of CHF
(iii) Differential diagnosis of CHF
Duration of session: Approximately 3.0 hours

Day 5
Location: Urasoe General Hospital.
Approximate number of residents: 24
Clinical Scenario: Sudden onset of right upper quadrant pain with vomiting, high fever, chills and rigors, associated with jaundice and exquisitely tender hepatomegaly.
Clinical Diagnosis: Ascending Cholangitis
Clinical talking points:
(i) Evaluation of abdominal pain as a symptom
(ii) Differential diagnosis of jaundice
(iii) Metabolic physiology of bilirubin (synthesis, and excretion)
(iv) Investigative approach to the patient with jaundice
(v) Evaluation and management of acute ascending cholangitis
Duration of session: Approximately 3.0 hours

A Few Subjective Insights

***The Residents' Case Presentation and Physical Diagnosis Skills*:**

Positive Aspects: The first pleasant surprise that I received during my visit was that the residents' case presentations were generally acceptable, and a couple of them were even very good. That assessment is based on an absolute standard, not one based on a comparison with what I initially encountered on the wards at Keio University Hospital.[1]

The history and the physical examination in each case were reasonably comprehensive, when taken in the context of the level of training of the residents. I have commented elsewhere that medical graduates in Japan enter residency training with virtually no clinical skills, having experienced nothing that is even remotely comparable to the clinical exposure of the average third year student in the US.[1] Thus, a Japanese medical graduate's first real foray into hands-on clinical training occurs in the first year of residency. That means the average Japanese resident is really akin to the third year medical student in the US in terms of clinical experience. Viewed in that light, and in comparison with most residents at Keio on my initial trip, there is no question in my mind that what is being achieved in Okinawa is nothing short of amazing. Without exception, the case presentations from Japanese medical graduates were the first ones that were up to my standards in six visits to Japan, except for a handful of students at Keio who had prior experience outside Japan. For this achievement, the Muribushi project must take great credit. It is truly remarkable to see this happening

in Japan.

Another pleasant surprise on my first visit was that the residents seemed to be familiar with at least the basic components of the physical examination. It was particularly gratifying for me to observe this, given their lack of exposure in medical school to clinical or bedside problem solving. Physical diagnosis is not a valued skill in Japanese health care, so it comes as no surprise that the teaching of physical diagnosis is a lost art in Japan. Nor should it be unexpected, therefore, that the very concept of bedside learning is alien to Japanese students. Instruction in basic clinical skills is non-existent at Keio University Hospital, as I have affirmed elsewhere.[1,2] However, Keio is not alone in that regard; the same dismaying state of affairs has been confirmed to exist in medical schools across the country by other Japanese students, residents and attendings to whom I have spoken.

Knowing this, it was with some trepidation that I asked, at the first case presentation on my first visit, if I could examine the patient myself so that I might elicit and demonstrate physical signs. Much as I anticipated, the request generated some unease among the residents and in the presenting resident in particular. However, the enthusiastic endorsement of Dr Miyagi — who else!— turned the mood from unease to cautious acceptance.

At all subsequent sessions on that visit, and the second, with each of the remaining hospitals (and residents) forewarned, bedside learning and physical diagnosis became the norm on teaching rounds. In fact, after that first spurt of unease, those forays came to be a much anticipated and much appreciated adjunct to the learning process. Only on two of the twelve sessions, spread over both visits, did I fail to examine the patient myself: one, because the patient was discharged before the case was presented to me, and the other, because I myself declined to subject a patient who was obviously critically ill to the rigors of bedside physical diagnosis rounds with a group of twenty four eager trainees (the patient on Day 3 in the schedule above).

My own physical examination in each case confirmed that the residents' recorded physical exams were reasonably complete, if not always accurate. Most of the residents were not sure how exactly to elicit some of the abnormal physical signs that actually existed in the patient. Despite this drawback, I was quite astonished by the familiarity of the residents with all the elements that comprise a comprehensive physical exam. Most impressive of all was the fact that, in the last case on Day 5, the resident had actually performed a rectal exam. In contrast, on my first trip to Keio University Hospital, I was stunned to note that the students and residents were unable to perform even the most basic elements of a physical examination, and even on the GI unit, no resident or student had ever considered performing a rectal exam.[1]

Negative Aspects: The positive achievements noted above with regard to the clinical skills of the residents must not mask another reality. The residents know how to take a history, and perform a physical, it is true. But they seem to have little idea regarding the purpose of performing an H&P.

From the very first case presentation itself it became clear to me, upon closer questioning, that the presenter had no sense of how to analyze the salient features of the case, and to put those together in a manner that might help elucidate the potential causes of the presenting illness. In other words, the concept of "clinical discovery" was completely lost on the residents.

Thus, it soon became obvious that the residents' history was really a "by rote" recitation of positive and negative answers given by a patient in response to pro forma questions that were most likely taken verbatim from a textbook on clinical methods. That is why, after that first case, I forced myself to look past the apparent "completeness" of the recorded history and focus instead on eliciting and placing into clinical context the residents' textbook knowledge as it applied to the discussion at hand.

When I began to delve deeper into this aspect (on my second visit), it became apparent to me that the residents were really not convinced of the need to elicit a detailed history. After all, the diagnosis was clearly identified either by the attending who admitted the patient or was obvious after the first battery of tests had been performed; thus, the value of the history was never apparent. So, I began to ask each successive group if any among them had had ever witnessed one of their attendings taking a complete history or performing a comprehensive physical, either in Okinawa or during their time in medical school. They were unanimous in their denial of it, with the one-time exception of the experience during the physical diagnosis course in medical school! No wonder, then, they were utterly convinced that there was no utility in taking a history or performing a complete physical examination. Some were even frank enough to admit, in a social setting, that they only performed a full H&P because Dr Miyagi insisted on it. Much of my second visit, therefore, was devoted to explaining the concept of clinical discovery through interviewing and examining the patient.

Dr Miyagi, who attended and participated in each teaching session, was himself astonished by the fact that the residents were unable to appreciate the significance of the H&P. However, he explained the phenomenon perfectly when he said that the Japanese student is never taught to either ask or answer the question "Why?"

This simple analysis came as a revelation to me, particularly when he went on to explain that everything in Japan is learned as a matter of rote, and the reason for learning it is never explicitly stated. Thus, he said, the medical student or the resident is never compelled to ask

himself or herself, “Why do I need to take a history?”, or “Why is it important to examine the patient?” That seemed to be a revelation to Dr Miyagi, too, because he immediately chastised himself for never having thought of that himself! He drew the inevitable conclusion that the residents who were “learning” to do a history and physical in the Muribushi Project would promptly stop doing it the moment they left the program, and thus all the clinical training they had received would promptly come to naught. The outcome was that he set himself the task of correcting that deficiency from that point on.

It is truly commendable that the Muribushi Project is making such a determined effort to focus on developing clinical skills in its residents. It gives me great hope that the lost art of teaching bedside diagnosis can be resurrected in Japan. All it takes is a similar commitment in other residency programs to teaching clinical skills, and the grooming of teachers in the art of clinical instruction.

Herein lie the seeds of the renaissance in Japanese health care. And here again, I see the hand of Dr Miyagi, who the residents uniformly revere as the only teacher who teaches them clinical skills. But he is one man, and he admitted to me that he can, at the most, come to each of the seven hospitals to teach no more than once a month. More teachers are needed to follow the lead of Dr Miyagi, who seems to have the sole prerogative of being a real teacher in the Project. Even more broadly speaking, his is an example that more teachers in Japan need to follow if the seeds of the renaissance are to grow and bear fruit.

***The Residents' Knowledge Base*:**

Positive aspects: The knowledge base of most of the residents was about what I would expect from the average fourth year medical student in Pittsburgh. That is not a criticism, given the fact that these residents, for the most part, have had no clinical exposure in medical school. In a pleasant revelation, residents at a couple of the hospitals (Okinawa Kyoudou and Urasoe General Hospitals) displayed an above average to excellent level of knowledge. In particular, the atmosphere at these two hospitals tended to be more relaxed and the residents seemed to be more confident of expressing themselves. I am not sure what set those two hospitals apart in that regard, but I wonder if it has to do with the attitudes of the faculty to the residents. It is a point for Dr Miyagi to ponder, and investigate more deeply. If he can find the reason that underlies the greater confidence of the residents at those two hospitals, he might be able to transplant it to the other programs.

Negative aspects: Unfortunately, that knowledge seemed to exist in a vacuum, with no real understanding that book knowledge is subservient to a clinical purpose. That, to a large extent, stemmed from the lack of clinical training, so I am hopeful that it is correctable with a greater emphasis on developing clinical skills.

More troubling (and intractable), however, was a complete lack of understanding of the fundamentals of Evidence Based Medicine (EBM). I was shocked to discover, for example, that even the attending faculty had not heard of the UKPDS study in relation to glycemic control in type 2 diabetes (or the Kumamoto trial for that matter!) Even more dismaying was their complete unfamiliarity with the evidence regarding the use of beta blockers post MI for prevention of sudden death.

Then there was the not-so-small matter of appropriate antibiotic selection in a patient with ascending cholangitis. The knee jerk reaction was the same as the one that I encountered in Keio, which is to immediately reach for the most powerful antibiotic available and treat blindly (using carbipenem). Even after antibiotic sensitivities became available, showing that the organisms (*E coli*) isolated from the blood were sensitive to everything, no effort was made to tailor the therapy!

The above could be dismissed as being nothing more than “following usual practice” in Japan (the answer that I was given when I asked why). That fact actually exemplifies my point that there is a widespread lack of clinical reasoning or clinical judgment in medical decision making in Japan.[3] With clinical judgment and reasoning suspended, it comes as no surprise that the use of EBM is far removed from practice!

***The Residents' Learning Skills*:**

Positive Aspects: These are not difficult to identify: their enthusiasm and eagerness for learning, their obvious intelligence, their desperate desire to learn clinical medicine. In that sense, the residents in the Muribushi Project were no different from the students I have interacted with at Keio University. I was delighted to discover yet again that Japanese medical trainee, regardless of level, is avidly interested in learning physical diagnosis. Therein lies a message of tremendous hope for Japanese medical education and Japanese health care, and one that must be taken to heart by all teachers in Japan. If they take the trouble to teach, the students will learn with an enthusiasm that will stun them. I know that it has stunned me, time and again, each time I visit Japan!

Negative Aspects: The single biggest weakness in these otherwise stellar young individuals is their passivity. I have commented on this at length in an earlier paper,[1] but it is necessary for me to repeat my comments here, even though it may seem redundant. Since those were made with regard to medical students, they might be dismissed as being irrelevant once they achieve a greater degree of intellectual and clinical maturity as residents. That is not so. A verbatim quote taken from the first paper in this series,[1] regarding medical students at Keio University, will convey how I feel about the causes and effects of this monumental waste of intellectual capital

in Japan.

"It constantly drove me crazy to see these incredibly brilliant and knowledgeable young minds go into limbo because they were taught *not* to ask ANY questions. I came to realize that it was the Japanese way when I was told by them, in fact, that to ask a question was a sign of disrespect for their teacher! So much so that a couple of students even implied that they were afraid to ask because they would be ridiculed for being too dumb to figure it out for themselves!"

"What a travesty of the whole concept of teacher and student interaction! Even for me, as someone originally from another Asian culture with a similar tradition of reverential respect for the teacher, this was hard to swallow!

"This passivity of Japanese students is a failing that may be much harder to correct than their lack of clinical skills, because it appears to be culturally ingrained. It is inextricably linked to an extremely formal and didactic educational system, which is, from the very beginning (in grade school), one-way and passive, rather than two-way and interactive, and discourages non-conformity. Changing that, in a society that prides itself (and justifiably so) on its incredible record of achievement using its own traditional, home-grown approach, is a formidable undertaking. But if ever there was a society where such fundamental change might be possible, it is Japan, because the very desire to conform can be a powerful sustaining force for change, once reform is given institutional approval. That is my hope."

The quote above regarding Keio students is exactly applicable to the residents I met in Okinawa. There were, however, two additional nuances that are critical: the residents I met from the Muribushi Project displayed (a) a greater readiness to emerge from their cocoons under inducement, and (b) a greater willingness to engage in a two-way dialogue once brought out from those cocoons. These differences might, of course, be attributable to their greater maturity, compared to medical students, but I do not think so, since my limited contact with Keio residents, who would be of an equal maturity, did not reveal either of these two distinctions. The distinctions between the member hospitals themselves with regard to the level of confidence displayed by the residents (see above) further reinforces my belief that the reason has to do with their teachers!

The Teachers

Positive Aspects: One name stands out: Seishirou Miyagi. He has received the honor of being named the "Best Teacher in Japan", and I can see why. His commitment to clinical instruction is said to be legendary, and some of that has clearly rubbed off on the residents. The very fact that they know how to do a comprehensive H&P is evidence of that. His genial manner is also just the right touch for encouraging a two-way dialogue, if he should make that a priority. While it is clear that this has not occurred thus far, the resident body seems to be ready for it! All that is required is for Dr Miyagi to adopt the "interactive" approach, and I am convinced that this will happen. He has the ability to do so, and if he does, others will quickly follow his lead, such is his stature.

Negative Aspects: There is no doubt in my mind, after four trips to Japan, that the passivity of Japanese students has two sources. One is the deeply ingrained cultural imperative to never question a teacher. That is a message that is hammered into the Japanese student starting from grade school. But there is another cause for that passivity: the investiture of the teacher with a god-like infallibility that is intimidating and overwhelming to the student. It is equally the product of Japanese culture. It is no wonder the student is afraid to ask a question! Breaking a habit that is so deeply ingrained is no easy task.

The teachers I encountered in Okinawa were, almost without exception, well-intentioned and eager to follow in the footsteps of Dr Miyagi. However, they clearly knew that they lacked the skills to be like him, admitting as much, in different ways. One said that he did not have the patience to deal with residents who were "not willing to read themselves", another that he did not like "students who asked too many questions", a third that he felt Japanese residents were not willing to participate in their learning, which he found very irritating!

Those attitudes are not the exclusive purview of the teachers I met in the Muribushi Project. They are exact replicas of the attitudes I have witnessed among teachers at Keio. Except that the comments in Okinawa were always framed as part of a request for advice on how that could be changed! Thus, each of the three faculty members quoted above was highly receptive to the message that it was their duty to respectively (a) stimulate the students' interest so that they will want to read, (b) encourage questions from students as a way to teach and learn, and (c) invite participation through interaction rather than intimidation.

That willingness to change among the faculty is a major distinction, and it identifies the Muribushi Project as a beacon for hope for Japanese medical education. The recognition of a need for improvement is the greatest single step that any program can take to improve. And the Muribushi Project has shown me that it takes one role model—one Miyagi!—for that need to be recognized. Japan needs many more such role models.

Evaluating the Performance of the Muribushi Project

The deficiencies and problems associated with residency training in Japan are not unknown to me, even from the relatively brief contact I have had with the program at Keio University Hospital. However, this was my first

opportunity to spend a concentrated and dedicated period of time observing the operation of a residency training program in Japan. There is no doubt that some of the problems I have detailed at great length elsewhere regarding student and resident training in Keio extend to the Muribushi Project as well. These can be easily identified under the "negative aspects" I have highlighted above. However, the "positive aspects" far outweigh the negative, reflecting the success of the Muribushi Project in pioneering a more comprehensive and clinically focused training program for its residents.

The philosophy of the Muribushi Project, reflected in the "seven concepts" in its Charter, is revolutionary for medical training in Japan.[5] First and most striking is the Project's stated focus on primary care in the training of residents (concept #iv). It is a remarkable departure from the traditional focus on specialization and tertiary care that is so widely prevalent in residency training programs and healthcare practice in Japan.[6,7] The absence of general internists on the faculty of medical schools in Japan ensures that primary care training gets short shrift in the education of most medical graduates in the first place.[7,8] On top of that, all hope of exposure to primary care practice is lost for those who then elect to train at a University hospital for residency, as is the norm in Japan. The Muribushi Project, in making such an explicit commitment to primary care training, has changed the dynamic for recruitment of outstanding graduates seeking truly comprehensive residency training. In prior years, those graduates would have gravitated as a matter of course to training in their own medical schools upon graduation. Now, they are flocking to the Muribushi Project in record numbers.

The second revolutionary concept that the Muribushi Project is pioneering for residency training in Japan is its explicit commitment to adopting "global standards" of medical care in training (concept #iii). This concept is almost heretical, given the otherwise universal belief in Japan that the Japanese "way" with regard to any and all practices, whether in education or healthcare, is superior to international practices in these areas. The grievous errors that underlie that assumption are too many to recapitulate here, and readers interested in the substantiation of those errors are referred to the third paper in this series[3] and to three excellent papers on the subject by Japanese authors.[9–11] In this regard, the Muribushi Project is light years ahead of its counterparts in other areas of the country in recognizing this important failing in medical education in Japan.

Finally, the combined intent of the first and seventh concepts is explicit. It is for the Project's graduates to evolve into good clinicians who will practice good medicine, not just for the benefit of the people of Okinawa, but for all of Japan. This goal may seem naively idealistic to those who are familiar with my scathing criticism of Japanese healthcare practice. In actual fact, that criticism is the very reason I find it nothing short of amazing that the Project's founders should have recognized that the need of the hour was for clinicians if the future of healthcare in Japan was to be assured, and that the way to achieve it was through *training residents*!

The seven concepts that make up the philosophy of the Project provide an excellent tool to evaluate the extent to which the Project is measuring up to the vision that went into its foundation. My experiences during my week-long visit provide some insight into how well the Muribushi Project is fulfilling the seven concepts listed in its Charter:

1. *Do the several hospitals in the Muribushi Project cooperate to train good clinicians?* My experiences at six separate hospitals in the program on two separate visits demonstrated that there was excellent communication between the Project administration and the member hospitals. However, there was no real coordination or cooperation between them, with each hospital functioning independently of the others. To my mind, this is very unfortunate, because it wastes the talents and resources that would be collectively available if the training programs at the different hospitals were not isolated from each other. An opportunity therefore exists to greatly expand the clinical base for training of residents and improve the quality of training by integrating the several sites into a single program.
2. *Does the Muribushi Project provide the best learning environment at multiple hospitals?* Yes, the multiplicity of hospitals provides residents with a variety of opportunities for learning in different environments. Thus, the three smaller hospitals I visited (Nanbu Tokushukai, Chubu Tokushukai, and Nakagami Hospitals) are far more intimate and have a "community hospital" atmosphere to them, and the focus on bread-and-butter medicine is evident in the cases presented there. In contrast, the larger and more sophisticated nature of the other three (Okinawa Kyoudou, Tomoshiro and Urasoe General Hospitals) comes through loud and clear in the relatively greater complexity of the cases presented at each of those. That variety and the breadth of the learning experience it provides would be a priceless asset for any training program. With such a tremendous opportunity available and waiting to be exploited, it is particularly dismaying that the Project should not organize a rotation schedule that allows residents to rotate through more than one hospital. At the very least, the residents could be allowed to split the two years so that they get experience at one of the smaller, community-style hospitals as well as one of the larger hospitals. It would improve the quality of the training

immeasurably.

3. *Does the Muribushi Project ensure that global standards of medical care are practiced?* As simple and direct as this concept is in the stating, it is the one that gives the greatest cause for concern. Residents (and, even more disappointingly, the attending faculty, as well) exhibited a dismaying ignorance of evidence-based medicine. They were unaware of global standards of practice with regard to diagnostic and therapeutic interventions. Most of their practice norms were based on empiric data and, no doubt, had their origins in established practices in Japan, rather than internationally established norms.
4. *Does the Muribushi Project focus on primary care for common diseases?* The bread-and-butter approach that is being followed is evident in each of the cases presented to me. Although the residents have developed neither the requisite clinical skills nor the critical thinking that is integral to clinical problem solving, I believe that they can develop these twin abilities if they are instructed in these important facets of training. There is no shortage of cases, the focus is correct, and the desire is there. The circle needs to be closed with the right kind of teachers and the right form of instruction.
5. *Does the Muribushi Project focus on faculty development through exchanges with programs in the US?* The Pittsburgh-Japan Program has sponsored a number of visits by faculty members from the Muribushi Project to its week-long Faculty Development Workshop conducted at the University of Pittsburgh. In addition, the Muribushi Project has invited several visitors to Okinawa to participate in and help improve the quality of teaching in the residency training program. Most innovative is the ongoing program with the University of Pittsburgh, whereby each year one Chief Medical resident, one Fellow in General Internal Medicine and one or more faculty members are hosted for a week at a time to participate in the education of residents on the wards. It has provided the faculty in the Project with the unique opportunity to observe American approaches to resident education at multiple levels of training.
6. *Does the Muribushi Project provide trainees with opportunities to experience residency training abroad?* Each year, one or two residents from the Muribushi Project are sponsored to attend the week-long Student Workshop conducted by the Pittsburgh-Japan program at the University of Pittsburgh. Space is limited, and the requirement of some degree of proficiency in English limits the number residents who can avail of this opportunity, but that is no fault of the Project's.
7. *Is the Muribushi Project improving the quality and nature of healthcare practice in Japan?* It is impossible to tell as yet if the pioneering approach to residency training that has been adopted in the Muribushi Project will pay off in terms of better healthcare practice in its graduating physicians. I have gone on record with my firmly held opinion with regard to the critical importance of changing healthcare practice in Japan through clinically focused primary care training for Japanese medical graduates.[3] To the extent that the training in the Muribushi Project is focused on clinical skills and primary care, it can only mean that its graduates will be much better suited than others to providing clinically appropriate and fiscally responsible patient care. That is the hope. Only when the number of graduates in practice reaches critical mass will it be possible to measure the success of the Project in impacting healthcare quality.

The Project appears to be on track to fulfill at least some of the goals that are laid out in its founding concepts. It is too early to be sure if its pioneering attempt to focus on clinical training for residents in Japan will succeed in full. At the present time, however, the performance can be said to be very encouraging, particularly given the extreme difficulty in introducing such a revolutionary paradigm for residency training in Japan.

Conclusions

My trip to Okinawa was an eye opener for me in many ways. First of all, I was able to observe and evaluate the workings of the residency system in a non-academic teaching hospital setting in Japan, something to which I had very little exposure previously. This enabled me to compare and contrast it with my previous experience of medical student education and of residency training (as limited as that was) in an academic setting in Japan. For one thing, I was able to verify that there is a fearful symmetry between the problems in medical student education and in residency training in Japan. For another, I was also able to verify that the enthusiasm of the Japanese medical trainee for active learning knows no boundaries of geography (Tokyo or Okinawa) or chronology (student or resident). However, I also verified that the same passivity that holds them back from participating in their learning as students also holds them back as residents, regardless of geography or chronology.

The second eye-opener for me was the success story that is the Muribushi Project. I had the privilege of seeing for myself the progress that can be made when the will and the resources are committed to reforming the system. In that sense, there is yet more symmetry-although the symmetry here is of the hopeful rather than fearful variety-with my previous experience in Keio Uni-

versity in the commitment of the authorities there to improving teaching for students.[4]

The tangible progress I have seen at the two institutions has not blinded me to the enormity of the task that still remains. Nor does the improvement remove the doubts that linger regarding the commitment of the faculty to teaching or regarding the lack of recognition of teaching as a worthwhile endeavor in the rest of Japan. But the fact that it is happening, against all odds, does give me great hope, because it means that it *can* be done, even in Japan.

The differences in geography, level of training, philosophy and type of training in the two programs are what make them so intriguing to contemplate together. This is because the two are complementary to each other, and together they form a complete solution to the problems that bedevil Japanese healthcare as a whole.[3]

Inherent in the complementary nature of those characteristics is also the reason I temper my enthusiasm with a note of caution. Instead of occurring in concert, the reforms in each program appear to exist in a vacuum, with little hope of any cross-over. Thus, reform of student teaching (as is occurring at Keio University) is foredoomed to failure if residency training remains mired in a super-specialty mindset. And reform of residency training (as is occurring in the Muribushi Project) is just as certainly foredoomed to failure if graduating residents are going to enter a healthcare marketplace that only rewards research and favors the development of super-specialists.

Notwithstanding this note of caution, I have hope that the progress being made in these two institutions will spread. It is through the power of the marketplace that the battle will be won or lost. And the message from the marketplace is one of great promise. I have been told that the Okinawa residency is fast becoming a preferred option for training in Internal Medicine amongst Japanese medical graduates. With time and the commitment of resources, this could evolve into a trend that would eventually transform the Japanese system into something that is more akin to systems of medical education and training that are seen in most other parts of the world.

Together, the twin reforms, one academic and one non-academic, one for students and one for residents, are a comprehensive recipe for renewal and hope in Japan. Separated from each other, they constitute a deadly recipe for failure of all reform efforts in the long-term, if the goal is to improve the quality of training in Japan and make it compatible with global imperatives. That is the perspective (and goal) of no-less a person than Dean-elect Ikeda of Keio University School of Medicine. It is also the vision of Dean Kitajima and Professor Amano.[4] It is a vision and perspective that is shared by Dr Miyagi. Taken together, they constitute a beacon for hope for transforming not just undergraduate and graduate medical education in Japan, but of the Japanese healthcare system itself.[3]

I feel honored to witness what could be the beginning of far-reaching changes in Japanese medical education at two levels, one for students at Keio University Hospital, and now for residents in the Muribushi Project. I am acutely aware that it is a time of great uncertainty and anxiety. But it is also a time of great excitement and hope. It is that which fuels my desire to return again and again, if those in charge will have me return! I am fully aware of the blunt and sometimes hurtful home truths that I am forced to tell. It makes me particularly uncomfortable to have to do that to a people and society as polite and courteous as Japan's, but I consider myself a true friend of the Japanese medical trainee, and I could not call myself that if I shortchanged that friendship by sugar coating the bitter pill of truth or, worse still, hiding it under a cover of dishonesty.

As always, the criticisms, the insights, and the conclusions are mine alone, and they are offered with all humility, in the hope that they will help the Muribushi Project improve. I know that they will not be misunderstood, because I have learned from my visits to Keio University Hospital that those truly interested in making things better in Japan are eager and anxious to learn what ails their system, and how to fix it. The Muribushi Project is ahead of the curve in that regard. The vision that was responsible for the attempt to reinvent it as a facsimile of an American-style residency program shows that Dr Miyagi "gets it", as they say in the US. That it has not yet met that goal is not the point. The point is that the vision exists and is being implemented, however imperfectly. In particular, it is unfair to expect dramatic change when both teachers and trainees are still shackled by centuries-old tradition. It is the desire to change that sets the Muribushi Project apart, reinforced as it is by the indomitable will of Dr Miyagi. Because of that, I am confident that improvements are inevitable as experience is gained and modifications are made to adapt the "American" style to Japanese conditions.

Just as important as the will to implement the vision for change, however, is Dr Miyagi's willingness to not only accept criticism, but to consider even deeper and broader change. Those traits define him, in my eyes, as a visionary in the mold of Dean Kitajima, or Dean-elect Ikeda, or Professor Amano of Keio University — exactly the kind of individual who can revolutionize Japanese medical education. He, like the authorities at Keio who I have the privilege of advising, is of the mindset that values honest criticism even above the traditional Japanese credo of courtesy at all costs. For that, the next generation of Japanese students and patients can be truly grateful.

Acknowledgements

The author wishes to acknowledge and thank Dr Haruko Akatsu-Kuffner, Director of the Pittsburgh-Japan Program, for opening the doors that made my visit possible. Her unflagging zeal and commitment to the cause of reforming Japanese medical education fuel my own determination to provide whatever insights I can to those in Japan who are genuinely interested in reform. I must also make special mention of my indebtedness to MrTatsuya Miyazato, Administrator-in-charge of the Muribushi Project, for his help and diligent attention to detail in organizing my visits to Okinawa.

References

1. Rao RH: Perspectives in medical education 1. Reflections on the state of medical education in Japan. Keio J Med 2006; 55: 45–55.
2. Rao RH: Perspectives in medical education 2. A blueprint for reform of medical education in Japan. Keio J Med 2006; 55: 81–95.
3. Rao RH: Perspectives in medical education. 3. Reforming medical education to change healthcare practice in Japan. Keio J Med 2006; 55: 141–148.
4. Rao RH: Perspectives in medical education. 4. A “global” dimension to reform at Keio University. Keio J Med 2007; 56:1–12.
5. The Muribushi Project for Okinawa Residency Programs at http://muribushi-okinawa.com.
6. Murai M, Kitamura K, Fetters MD. Lessons learned in developing family medicine residency training programs in Japan. BMC Med Educ. 2005; 5: 33.
7. Smith BW, Demers R, Garcia-Shelton L. Family Medicine in Japan. Arch Fam Med 1997; 6: 59–62.
8. Tierney LM. An experience in Japanese academic medicine. West J Med. 1994; 160: 139–45.
9. Hirose M, Imanaka Y, Ishizaki T, Evans E. How can we improve the quality of health care in Japan? Learning from JCQHC Hospital Accreditation. Health Policy 2003, 66: 29–49.
10. Kumasaka K. Mandatory postgraduate medical training in Japan--present state of Nihon University as a private medical school. Rinsho Byori. 2003; 5: 362–6.
11. Nomura H, Nakayama T. The Japanese healthcare system. The issue is to solve the “tragedy of the commons” without making another. Br Med J 2005; 331: 648–649.