

BACKGROUND:

The Japan Bank for International Cooperation (JBIC) reached on a 5-year loan agreement with Vietnamese government to strengthen provincial hospitals in Vietnam. The agreement was signed between JBIC and Ministry of Health (MOH), Vietnam in Hanoi. MOH organized a special task force called Central Program Management Unit (CPMU) to implement this program for provincial hospitals. As a part of the agreement between JBIC and MOH, a Japanese consulting company, the System Science Consultants, Inc, (SSC), Tokyo, has been contracted with CPMU to assist their decision-making process and procedures. A local consulting firm has also been contracted with CPMU to work vis-à-vis SSC.

My roles as a medical service expert for SSC are to 1) assess the capability of three pilot hospitals, 2) make recommendations by prioritizing equipment requested by these hospitals, and 3) make outlines of training programs to enhance efficient and effective use of the equipment procured through this program.

ASSESSMENT & ANALYSIS:

I. Both provincial and central hospitals are totally overburdened.

The demand surpasses the inpatient capacity by more than 100%. Observed reasons of over-utilization of the provincial hospital are; 1) unreliable lower tier health facilities (e.g. district hospitals or health centers), and 2) longer length of stay (LOS).

When LOS is longer, a cross-sectional study clearly shows that the hospitals face high patients load at any given time. Longer LOS is a multi-factorial phenomenon which comes down to primarily two categories: misdiagnosis and mismanagement of patients. The disease cannot be diagnosed timely and properly without appropriate diagnostic modalities, which prolongs LOS. When patients' expectation for medical services is way higher than that of providers', patients are often reluctant to leave hospitals until their expectations are met. Furthermore, if there is no continuity of care from inpatient to outpatient follow-up or counter-referral to lower tier healthcare facilities, patients tend to stay in the hospital unnecessarily long time. Hence, the hospital has to provide care that is supposed to be given as outpatient services. In addition, patients often bounce back to the hospital immediately after discharge due to lack of communication between inpatient and outpatient services.

II. A strategy for patient management is missing.

One of the key factors that have cast a shadow over the crowded hospitals is a system issue, not even physical or technical resources. For example, the 'emergency department' is not set up for receiving multiple critical trauma cases; each department in the hospital has their own emergency room (literally, one room on the floor in each department is marked as emergency). There are several disadvantages for this 'mini-ER; approach: 1) It has forced a patient to seek out appropriate department by him/herself even when he/she needs immediate care, 2) The capability of this approach is totally dependent on the availability of physicians and nurses on that particular floor at the time

of patient's visit. In case of complicated cases with multiple problems, immediate mobilization of hospital resources is difficult, 3) It is hard to keep track of amount of coordination occurred among different departments.

In one of our field validation trip, we witnessed a young male patient with brain injury sustained by MVA was sent to the 'mini-ER' at the traumatology department through 'department of examination'. His condition deteriorated quickly after admission and he was intubated immediately after arrival to the floor. It was at least 3 hours after he came to the hospital. Unfortunately, it was too late to operate him.

What is clear from this case is that the patient died not because the equipment was unavailable but because there was no comprehensive management strategy in the provincial hospital level. It is safe to say that a simple procurement of equipment will NOT necessarily contribute to strengthen the hospital unless a system change focusing on a patient-centered approach will be implemented along with it.

III. The leadership in MOH to guide three provincial hospitals is lacking.

When going through the 'wish list' of equipment made by each department of each target hospital, it is difficult not to notice that every department has made up the list without any coordination among departments. It is unclear how to justify the procurement of certain equipment without knowing the overall goals and priorities in each hospital. So far, neither CPMU nor MoH has provided us with an overall goal for strengthening the provincial hospital. Without it, one would have to say that they have failed to prioritize the interventions that could make attainable package of interventions reflecting local realities and capacities of each hospital. The MoH has compiled a list of technical capacities for different levels of hospitals, central, provincial and district levels. However, this list simply shows an ideal level of service but does not instruct any strategies to achieve goals such as which intervention has a priority.

As a result, each hospital seems to have been operating by its own agenda based on whoever and whichever department is vocal to their needs and demands. It will be highly important that the hospital administration, provincial health authorities, and MoH discuss how to prioritize interventions in each facility and to design a roadmap to attain these goals. With limited human and economic resources, which would you like to give a highest priority, preventing peripartum mortality with emergency obstetric care, tackling high mortality in NICU, highly advanced microvascular surgical skills that are needed only sporadically and save only handful victims, or etc.?

Based on the assessment I, II, III, it has to be concluded that the equipment list submitted by 3 hospitals lacks reasonable grounds to support the needs.

IV. Additional clinical training for health care professionals is indispensable.

It is difficult to grasp a clear picture of post-graduate medical education in Vietnam. This is due to several reasons: 1) there are two major distinctively different pathways, academic and clinical, but these are not mutually exclusive, 2) Many programs try to make a hybrid program combining these two elements, and 3) post-graduate training programs are not under the standardized national guidelines, but rather they are developed under institutional and donor initiatives.

The current post-graduate training still depends in some degree on apprenticeship, which is less structured and varies in the length of training. And even in the two pathways, academic or clinical, different levels of training are offered in various institutions. There are both masters and Ph.D. degrees in academic pathway and two different levels of training (level I and II) in clinical pathway. Like many other former communist countries, they value knowledge and degrees more than practical skills to treat patients. The training for thesis writing seems to be central to the post-graduate medical education. It is understandable in a society where no specialty board exists that the best way for people to rank themselves higher and get better positions is to obtain higher degrees. However, the demand for specialization and need for longer training for advanced skills in many fields are high, the reform for post-graduate medical education is underway and it should be reformed quickly.

There is also an absolute shortage of structured training positions. Among approximately 2000 medical graduates per year, only 200 or so would be admitted to structured residency training programs. The rest will be absorbed into several sectors including private, district, or provincial hospitals.

Even when someone gets to receive education, the teaching is mostly conducted by didactic lectures at classrooms with very few hands-on or workshop opportunities. Even though some programs claim their training as practical, the practical part is still based on an apprenticeship model. The trainees work as house officers to provide services, while they are not on the hospital's payroll.

The wish list contains both highly advanced and sophisticated equipment and basic supplies. Several highly advanced technologies require highly advanced training. The training is a critical part of hospital strengthening project. Not only that, the process of developing an innovative, practical, and short training program through discussions and data analysis with hospital staffs and the consulting team will bring great opportunities to implement a 'patient-centered' approach.

V. The meaning of "strengthening hospitals" has to be shared by all parties and a "patient-centered approach" is the key.

This is a project to improve hospitals and their patient care. The priority for the equipment wish list should be given in accordance with "comprehensive hospital strengthening strategy" which has to be shared by all stakeholders, CMPU, MoH, local consultants as well as the target hospitals. The equipment alone cannot strengthen the hospital to deliver care to the patients. The equipment will be effectively utilized with trained personnel. Training to update skills alone, however, cannot deliver appropriate care to patients either. It is a patient-centered approach that will integrate these elements and improve the quality of care and strengthen the hospital in terms of service delivery. This is the system to achieve the goals and projected outcomes of the project.

VI. Advanced equipment and skills are fully utilized with solid basic skills to support them.

Three target hospitals seem as if they are asking their “wishes” randomly. This is a phenomenon, which I named as “Iceberg phenomenon”. They can only see the tip of the iceberg above water and try to randomly grab such ‘iceberg’ e.g. cardiovascular surgery, stroke unit, hemodialysis center etc. They are missing the fact that these fancy icebergs, advanced skills, are only possible when they are competent to provide basic care to support high tech skills. For example, in order to open a ‘stroke unit’, you need a team of health care providers who are competent with basic life support, management in ventilator, IV fluid, and basic neurological assessment and management. Another example is a cardiovascular surgery. In order to successfully perform the surgery, you need health care providers who are competent with basic ABC, ACLS, ventilator management, heart monitor and EKG interpretation, skills in defibrillator and temporary pacing skills. As long as they are not fully capable of delivering these ‘under the water’ interventions and services, advanced ‘above water’ skills would not be sustained.

Iceberg phenomenon occurs due to several reasons:

- 1) Paucity of general guidance by MoH. It only states what to achieve rather than how to achieve. The administrative staff at the hospital does not have sufficient training in strategic planning.
- 2) No guidance for prioritizing interventions at the hospital.
- 3) Paucity of reliable statistical data and unfamiliarity to statistical indicators. That has hampered the development of “evidence-based” analysis.
- 4) A percolated myth on technology. It is easier to blame lack of technology rather than critically analyzing existing system for patient care.

VI. Four concepts explain the need for system reform.

There are 4 key concepts to understand the need for system reform in the hospital to implement patient-centered approach.

1) Chain of survival

In order to save a patient with brain injury, surgery is simply a part of the sequence of care. Several other elements should function in a coordinated way. That is, an emergency medical system responds to the patient in a timely manner, ER makes appropriate diagnosis and stabilizes the patient, and after surgery, the nurses and rehabilitation departments provide seamless care for restoration of function.

2) Continuum of care

The care should cover all phases of patients’ lifetime. Pregnant women need prenatal care before, care during delivery, OB care and postpartum care subsequently. At the same time, the newborn babies should be checked and need pediatric care afterwards. Unfortunately, it is a worldwide problem that the coverage of care for each phase has not been equally provided. The care should be coordinated in response to patients’ need, not

for donors' preference or convenience of care providers. In the same token, the care for inpatient and outpatient services needs to be coordinated based on the patients' need. This coordination and continuity of care will help shorten the length of stay in the hospital and avoid unnecessary readmission to the hospital.

3) Hierarchy of care

As I explained at the 'iceberg phenomenon' section, advanced technologies are supported by numerous basic levels of technologies and services. Without competency in basic skills, it is extremely difficult for anyone to perform advanced level of care. Therefore, review of essential basic skills at each hospital is relevant and indispensable to make sure new equipment will be utilized and to identify what educational support will be necessary for the newly equipped hospitals.

4) Prioritization

As an institution with limited human and financial resources, the prioritization of investment and intervention should take place before procurement procedures and training. Most importantly, the prioritization should be based on the true needs of patients. For the needs assessment, further discussions are needed to identify what information to be collected for making decisions.

RECOMMENDATIONS:

Pilot project:

- Obtain concrete reasoning for requested equipment.
- Identify specific needs for developing practical and clinical training programs for 3 pilot hospitals.
- Develop follow-up methodology and indicators to monitor improvement of quality of care after procurement of equipment.

Feasibility study:

- Develop the concept of "Comprehensive hospital management strategy" in collaboration with all parties participating feasibility study.
- Make sure each hospital to employ and follow the procedures stated in above strategy in drafting the list of equipment they request.
- Incorporate multi-dimensional assessment tool in the feasibility study to evaluate each provincial hospital.

- Conduct face-to-face discussions with the representatives of each target hospital in order to assist and provide guidance in setting their goals.

Training

- Focus on practical skills and conduct it at bedside.
- Provide it for 1-4 weeks in duration. If it has to be longer for understandable reasons, divide the training according to the skill levels and keep the duration of one set of training less than 4 weeks.
- Stay in touch with JICA/DOHA office and coordinate our training with other training programs so that similar initiatives will not be duplicated.
- Give HPMU team an authority and responsibility as a master trainer in planning to propagate the contents to other healthcare professionals in their hospital.

Other

- We need to advocate for reform and involve those who can take leadership in MoH to implement the principles of our strategy.
- It is appreciated if relocation of our office space to a better place is seriously considered. The current office is inappropriate for meaningful discussions and productive work due to high noise level and inconvenient location.
- An English-Vietnamese translator with sufficient clinical knowledge in medicine is urgently needed. The personnel recruited through MoH is WEAK in clinical knowledge and terminology. It is very obvious that the translator will play a vital role in the project.
- Information sharing and transparency in decision-making and financial matters to all members of the Japanese consulting team are greatly appreciated.

Please refer appendix for elaboration of several topics.

Appendix 1: Suggested implementation process of comprehensive hospital strengthening strategy

The procedure of implementing comprehensive strategy will be conducted through 6 steps described below. In step 1 & 2, we will employ ‘multi-dimensional assessment tool’ described in the next section.

Step 1: Data collection

“Data” here are not necessarily restricted to statistical indicators. Multi-dimensional evaluation includes narratives, list, diagram, overall conceptual master plans, etc.

Step 2: review of the data

Review process is not restricted to statistical analysis. The international and local consultant team will discuss closely to rank the hospital into several general categories of hospitals depending on the needs of guidance and leadership.

Step 3: Discussion with target hospitals

HPMU or equivalent task force team from target hospitals will be invited to Hanoi to guide them with organizational development methods so that they can identify their system problems, set their goals and prioritize interventions to achieve those goals. (Each invited hospital needs at least one full day of discussion with the team and we need to recruit organizational development specialist to facilitate the discussion.)

Step 4: field validation

After the discussion, the consultant team consists of medical service, management, finance, procurement and infrastructure will visit the target hospital for field validation and further discussions to confirm the feasibility of the set targets of each hospital.

Step 5: make 3 separate list; management goal, equipment and training

Each hospital will create three lists on each area of the comprehensive management strategy, procurement, training and management and submit it to the CPMU or equivalent management unit.

Step 6: Completion of 3 lists from each hospital and proposal for approval

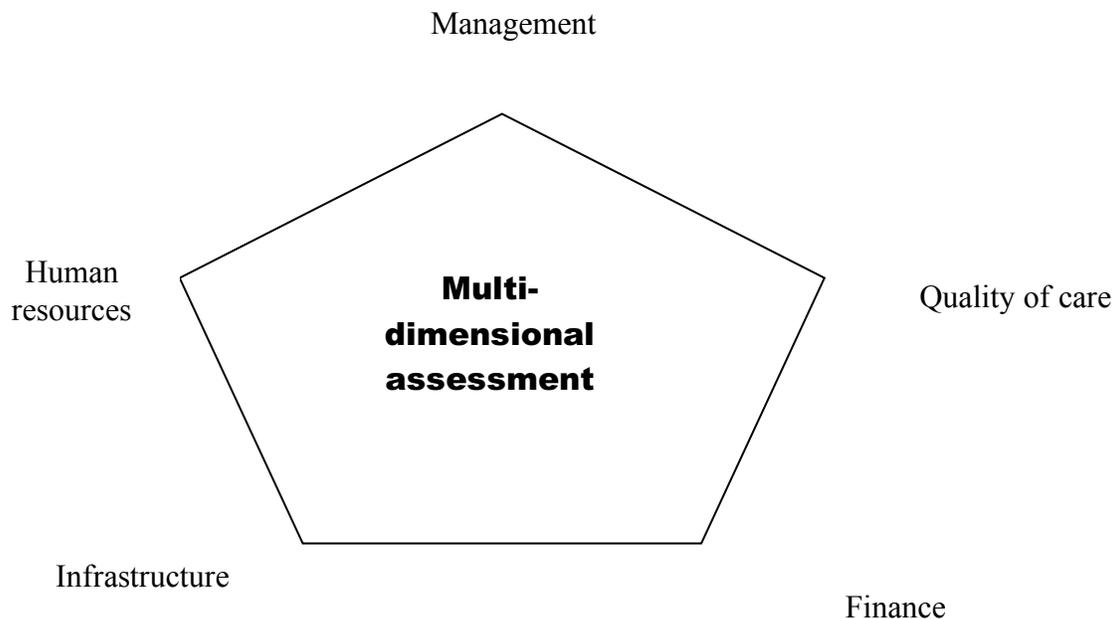
Final check and continue field validation. Proceed into the procurement process, implement training and system reform accordingly based on their goals.

Appendix 2: Practical hospital assessment framework: Multi-dimensional assessment tool

Conventional hospital QA measures based on statistical indicators are irrelevant in current Vietnam; hospital statistics are not reliable and often it does not make any sense. At provincial hospital level, the service is overburdened and the demand surpasses the capacity they can provide. This is a consequence of several reasons, poor level of care at the lower tier facilities, inappropriate treatment guidelines prolonging the length of stay beyond the appropriate length, lack of diagnostic modalities, question of competency of providers, and lack of continuity of care between inpatient and outpatient so that these two functions would complement each other.

The measurement we would use to evaluate the baseline capability of each provincial hospital should be simple and practical to measure multiple dimensions of health care activities in the hospital. The dimension should include quality of care, financial capability, management aspect, service component.

The multi-dimensional assessment tool will be developed to evaluate the hospital performance based on 5 factors of hospital function; quality of care, finance, infrastructure, human resources and management.



The five factor and its specific questions and statistical indicators capturing critical information to assess the function of the hospitals are;

1. Management factor:

Assess the managerial capacity to provide leadership and ability to implement necessary changes to better function the hospital in 'patient-centered' way. Questions would include;

- 1) Length of current leadership (length of his/her tenure as the director, vice-director of the hospital.
- 2) What changes you made in the hospital during your tenure as the director?
- 3) You are consulting a patient in your diabetic clinic, one of the patients waiting in the waiting room seems to have syncopal episode while he was waiting to see you. Your clinic is busy and at least 50 more patients are waiting to see you. Where you send this patient? Whom you ask to see this patient?
- 4) In your busy pediatric clinic today, you noticed you saw 5 cases of measles in age between 5 to 7 years old. What would you do as the director of the hospital?
- 5) Address your 5-year plan of your hospital. What do you envision your hospital should be in 5 years?
- 6) List top 5 priorities as the director you would like to strengthen in your hospital.
- 7) In order to attain those 5 priority areas, what are the resources you are missing in your hospital?
- 8) Address your plans how to propagate the knowledge and skills from the nurses and physicians trained in outside institutions.
- 9) How many cases you referred to higher level hospitals in the past year? How many cases you counter-referred to lower level hospital and healthcare facilities in the past year? And provide description of all cases you refer/counter-refer.

2. Quality of care factor

QOC measures used in the industrialized countries are not applicable to many provincial hospitals. In order to estimate the quality of care and ensure there is no particular department lag behind the national standard.

- 1) Patient/nurse ratio based on the data in the previous year

- 2) Patient/physician ratio based on the data in the previous year
- 3) Number of major surgeries in the OR (under general anesthesia), pre/post-operative diagnosis, name of the procedures, and whether elective or emergency surgery.
- 4) Mortality rate in neonatal intensive care unit (NICU) of your hospital in the past 3 years.
- 5) Rate of caesarian section among deliveries in your hospital in the past 3 years.
- 6) The number of emergency craniotomies conducted for brain injuries during the past 3 years.
- 7) The number of patients visited emergency department in the past 3 years.
- 8) The number of EKG machine other than physical examination department
- 9) The number of defibrillators in your hospitals and log of incidents you used them in the past 3 years.

3. Financial factor

Financial strategic planning is pivotal part of hospital strengthening. Please refer Mr. Teshima's contributions to develop questions.

4. Infrastructure factor

Hospital physical structures can provide us some clues whether proposed interventions are feasible or not. If there is a huge gap between their want and current infrastructure, then the bigger investment would be required to meet the goals.

- 1) Number of ventilators for adult and children.
- 2) Number of hemodialysis machines in the ICU and HD center.
- 3) Number of CT scan in your hospital.
- 4) Number of EGD and colonoscope in your hospital.

5. Human resource factor

Estimate the distribution of personnel, their level of training, and explore the quality of on-going training programs.

- 1) The number of mortality & morbidity conference in the past 3 years in each department.
- 2) The number of nurses, auxiliary nurses, medical students, residents (level I &II), and attending physicians in your hospital.
- 3) What kinds of continuing medical education resources you have in your hospital?
- 4) The name, number of trainees and topic of outside training your healthcare personnel obtained in the past 3 years.
- 5) How do you evaluate your medical students and residents in your hospital?

Appendix 3: Response to the requested equipment list from 3 hospitals

General response

There is no national guideline for prioritizing interventions for certain conditions based on burden of diseases. The lists of equipment request from 3 hospitals are mixture of highly advanced technologies and very basic supplies. No reasons were provided why they gave the selected equipment a priority, nor are the goals of their intervention.

It is hard to accept these lists of equipment without further delineation of their goals and objectives. Without these discussions, we cannot help them to strengthen their hospital operation along their goals. We felt as if we are blindfolded and asked just to focus on procedures to procure requested equipment.

Procurement of equipment is NOT equal to hospital strengthening which is the goal of this project. Therefore, the procurement procedure should be coordinated with validation and discussion in the light of ‘comprehensive hospital strengthening strategy’ addressed in detail in my consulting report.

It is unclear how much guidance and leadership the Ministry of Health (MoH) has provided to each hospital in preparation of the equipment list. The paucity and the questionable quality of statistical data provided sporadically from each hospital raise questions regarding the validity of procurement procedures.

The prioritization of areas of intervention should be based on several factors including burden of diseases, feasibility of implementation, human and financial resources. There were no validations employing these multi-dimensional data.

In conclusion, the international consulting team raises serious concerns regarding the validity of entire procedures of procurement of equipment since there is not sufficient data and discussion to justify the procurement of listed equipment.

Narrative review of the individual list

Ha Tinh Hospital

Serial No. 471: Continuous flow hemodialysis system

I assume this apparatus will be used in the intensive care unit for critical care patient, but I don't know their previous experiences and I am concerned what's the actual indications would be. Where is the data regarding the actual need of this procedure?

Serial No. 472: Hemodialysis (HD) apparatus

They requested 5 units for HD. I didn't have a chance to observe current HD unit. It is not clear what's the current practice and indications for HD. If this is for emergency

toxicology patient, one or two units would be justifiable. Since they requested 5 units, I assume they are planning on dealing with end-stage renal disease (ESRD) patients. If they have never managed HD unit in the past, I have a great concern whether this is feasible proposal or not: HD involves multiple level of interventions including water softening apparatus, infectious disease control, vascular surgery for shunt operation, and embolectomy for clot removal in the shunt etc. If they have been operating HD department, then the question is why they need this many, 5 apparatus and we have to ensure that there is a physical capacity to accommodate these machines.

Serial No. 475 & 476: Operating lamp and table

They requested 9 sets of tables and lamps, but I didn't have a chance to inspect current OR nor did I hear the planning of new hospital in detail. We have to ensure the physical capacity to accommodate these 9 tables and lamps. Yet, the number sounds too much since the number of operation they can conducted simultaneously is restricted by the number of gas anesthetic machines available and the number of anesthesiologist in the OR. Therefore, we need further justification for this high number request.

Serial No. 558: Vascular surgery set

I didn't observe the OR in this hospital; however, the need for vascular surgery in provincial hospitals is not among the highest. According to the earlier study conducted in Africa, more than 80% of surgical procedures conducted in any district/provincial hospitals are classified as group A or B, consisted of basic to very basic procedures with less complexity. Vascular surgery is categorized as group D, or highly advanced level and shouldn't have the highest priority, yet complex and expensive procedures. It's up to the decision of MOH and the hospital, whether they would procure more advanced equipment while they can supply numerous number of less expensive instruments in other areas to save lives.

Serial No. 561: Skull operation with air pressure drilling device

It depends on the skill level of trauma surgeons whether they would utilize the advanced technology for their patients or not. We should obtain data how many emergency craniotomies they conducted in the past year and what was the outcome of these patients before we allow them to procure the equipment.

Serial No. 481 and 426: Incubator & Infant ventilator

We should obtain data how many newborn babies were intubated last year and what was the 30-day mortality data. We need to clarify their strategies what conditions they try to improve by intubating newborn babies.

Serial No. 455, 456, 459: Bronchoscopy, EGD, Colonoscopy and endoscope cleaning system

It depends on how many cases they conduct endoscope per day, per year, but they might need more scopes, light sources and cleaning systems according to the annual number of procedures.

Serial No. 461: Defibrillator

They requested only 1 defibrillator, however they need at least one for ER, one for ICU and one for surgery and medicine floor. We have to obtain the data how many patients were defibrillated last year and their outcome.

Serial No. 535: Personal computer

They requested 20 PCs without clear reasons. The hospital doesn't have centralized patient information management system, nor they asked for library services. Therefore, these PCs will be most likely to end up in somebody's office for personal use. I don't believe this is justifiable.

Serial No. 462, 430, 431, 428 512: Exercise ECG, temporary pacemaker, treadmill exercise, Holter EKG, exerciser bicycle

During the hospital inspection, there were no evidences that they regularly use these advanced cardiac monitoring system. Especially, temporary pacemaker might not be ever used in this hospital before. We should ask documentation of cases they attempted pacing before and their outcome. We cannot allow procurement of this equipment without proper documentation about their competency.

Serial No. 453: Bone density tester

If this translation is right, they are requesting an apparatus for bone densitometry. I have a difficulty to justify this apparatus if there is no national screening campaign or protocol in place and the standard treatment for osteoporosis will be routinely provided.

Serial No. 493: Colposcope

Assuming there is no national screening for PAP smear, I don't know why they ask for colposcope. We would like to know what's the current diagnostic measures for cervical cancer of the uterus.

Serial No. 530, 531, 534: EGD, video unit, Colonoscopy

It seems like they are requesting EGD and colonoscopy twice (No. 455 and 530, 455 and 534).

Serial No. 473, 451: air compressor and air pressure drilling device.

Duplication of No. 561.

Thai Nguyen Hospital

Serial No. 067, 070: Operating instrument set for microvascular surgery and microscope

Please refer the discussion above. It's up to the hospital and decision of MoH whether they give priority to invest financial and human resources to limited number of rare diseases or rather give priority to tackle disease with higher prevalence.

Serial No. 064: X-ray angiography system:

Same as above. It is difficult to understand why they give priority in funding relatively rare and expensive procedures e.g. angiogram and embolization rather than other areas

with higher burden e.g. emergency room, intensive care for adults and newborn babies. The radiologist admitted that they never employed angiographic embolization to pelvic fractures. Therefore, they are aiming at using this elective procedures, e.g. hepatoma or uterine fibroid tumor. The angiographic embolization for uterine fibroid doesn't have any long-term comparison data against surgery. Therefore, the absolute indication is not established yet.

Serial No. 166: Ultrasound with color Doppler

If the entire area of vascular surgery is not established yet, the justification for color Doppler ultrasound is unclear. The only thing I can think of is to estimate the severity of valvular lesions to refer the patient to central hospital. But we don't know the prevalence and incidence of structural heart diseases. We should obtain the data before determining the appropriateness of this equipment.

Serial No. 150: Hemodialysis apparatus

There are currently five HD machines operating in the HD unit in the hospital. We have to obtain more detailed data, prevalence of ESRD, infection rate, medial survival and causes of ESRD in this population and clarify their strategies to operate HD unit in this hospital before they procure 5 more machines.

Serial No. 117, 167: EKG 3 ch vs 6 ch.

I am surprised to see the low use of EKG machine in this hospital even in the cardiology department. They should learn standard 6 channels EKG reading as a standard. They should have EKG machine at the ER, ICU, and at least at the cardiology department.

Lang Son Hospital

Serial No. 265: Infant incubator

On the pediatric floor, currently there were 2 incubators but not respirators. They requested two incubators, but we have to ensure that they have a physical space to accommodate these incubators.

There was no laryngoscope for newborns on the floor. They need newborn laryngoscope for intubate newborns.

Serial No. 344: Hemodialysis apparatus

They have never managed ESRD patients with HD in the past. This is a significant institutional commitment to initiate HD unit in the hospital. It depends on how much financial and human resources they can allocate: HD unit is high maintenance. As I discussed above, they need infectious disease control, vascular access management, and water quality management besides the maintenance of the HD machine per se. At least, we should obtain the causes of ESRD and discuss provincial health officials and MoH for strategies to implement primary preventions to prevent further epidemic of ESRD.

Serial No. 193, 207: Air compressor for ventilator and ventilator

Lang Son hospital currently doesn't have centralized intensive care unit except for 6 beds internal medicine emergency department. They have at least 4 ventilators in the storage. It is unclear why they need 3 more ventilators without knowing what they manage, how often they manage patients on ventilator as a hospital.

Serial No. 302: Whole body CT scanner

We should discuss the indication and number of cases they employ CT scan per year.

Appendix 4: Response to the requested training list submitted by 3 hospitals

Three hospitals submitted list of training in various fields depending on their interests. There are several similarities in their lists that highlight the very point of the problematic training system.

1. Their training program is 'department'-oriented, not task-oriented.

Each hospital tries to send their surgeon or nurses from particular department to the training. They failed to identify the key person based on the task and goals they are interested in. For example, they consider training only for surgeons for trauma care, but emergency room physicians should be included if we look at the 'chain of survival' of MVA patients in the hospital.

2. Specific topics to be included in the training were not identified.

By and large, every hospital only gave vague description of the contents, e.g. intestinal surgery, vascular surgery etc. We do not have luxury to send a surgeon to another residency training program. The training designed for narrowly focused topics, e.g. EKG reading for AMI, AV shunt operation for vascular access is more practical.

3. The length of training is too long.

The goal of our training program is to provide specifically designed practical training in shortest time as possible. Each training course should be 1-4 weeks in length. If the training would take much longer, then we should separate the steps, e.g. level I, and level II or we have to reevaluate the entire feasibility of the training in that subject.

4. A concept of training of trainers (TOT) needs to be incorporated.

They should propose how the training from outside would be propagated to entire hospital. The purpose of the training should be viewed as institutional asset, rather than individual asset. Therefore, 'monopolization' of knowledge and skills should be avoided since that would create the unnecessary competition or rivalry inside the hospital. The hospital administration should carefully select the personnel who truly have a potential to spread the skills in the hospital and become the leader of change in the hospital.