

IOMP President's Report for Medical Physics World (MPW)

Last year at the world congress in Seoul, Korea, I proposed to the IOMP that action was needed to stimulate and support the development of appropriate technology for improved health care in developing countries. Prof Joachim Nagel, then president of the IFMBE, was supportive of a joint initiative, and noted that IFMBE already had arrangements with the WHO to this effect. The concept was adopted by the IUPESM, and the Health Technology and Training Task group was formed, with myself as chair, and Prof Nagel as co-chair. Since then some 50 international experts from around the world have agreed to join the Task Group.

The health technology needs at the village and provincial level in developing countries require the design of an appropriate technology and training packages to satisfy those needs, so that the majority of people can receive improved health care.

The right mix of effective and efficient healthcare delivery depends on the available health care technology. Such technologies must be carefully defined to achieve the widest application to the largest population.

The appropriate healthcare technology packages are defined in accordance with WHO levels of health services of Primary level, First referral level, Second referral level and Last referral level.

- **Primary level** (first contact level) with a health centre (smaller health centres may be called dispensaries, health stations, health posts) serving a defined community or area - normally several villages (at a single village level, at best there might be some community or auxiliary health workers). A health centre carries out promotive, protective, preventive, simple diagnostic, curative and rehabilitative activities for ambulant patients, normally has no beds other than perhaps those needed for emergencies and maternity care. In most instances, it has no physician on the staff, but a physician assistant or nurse assisted by community or auxiliary health workers. The most sophisticated devices at a typical health centre would be syringes for immunization, phonendoscope, and weight scale for babies.

The provision of new generation, low technology equipment and training, to be defined, could lead to major enhancements at this level, building on the existing traditional medicine at the village level, and enhanced interaction with the secondary level.

- **First referral level** - normally a district hospital that is a recognized referral facility providing a 24-hour intramural medical care which represents a higher level of competence than the source of referral, e.g. health centre. It may be very small with just a few beds. In most instances, these facilities have a very limited human resource capacity and a very limited technology base with very basic laboratory services and, if any, imaging equipment, and simple surgery is often done under local anesthesia.

The technology needs to be defined, so as to enhance the quality of health delivery. A Tele-medicine facility would leverage the skill basis by drawing on secondary level expertise for consultation and training.

- **Secondary referral level** - a more sophisticated hospital (may be a provincial hospital) providing multi-specialist intra- and extramural care, and serving as a backstop for the first referral hospitals in the hierarchy of technical competence. It may also, on occasion, have special expertise in some particular medical diagnostic and treatment domain, which would qualify it as an institution of last referral for a specific subject.

The technology should allow tele-medicine to specialists at the tertiary level. More substantive technology targeted at specific diseases needs to be developed, such as palliative treatment for late presenting patients with advanced cancer, with lower cost therapeutic and imaging requirements compared with that for curative therapy.

Visiting biomedical physicists and engineers to maintain and calibrate equipment.

- **Last referral level** - a most sophisticated hospital located in a national or provincial capital or other big city, typically a University Teaching Hospital, providing the highest level of medical care available in the country or a region.

This level follows the western model of centralized expertise and high technology, and is a resource for education and training and consultation. Specialists in attendance can monitor and communicate with lower level centres by tele-medicine.

Technology needs are very country-specific, and are determined by the local disease burden, patient demographics, health service delivery models, clinical practice, etc. These may even vary from region to region in one country. WHO has developed a methodology and software-based tool called the Essential

Health Technology Package (EHTP). EHTP is designed to assist countries in identifying their individual technology requirements linking and integrating a wide variety of parameters to arrive at locally relevant lists of technology needed to address their specific disease and patient profiles within the existing health service delivery models and accepted clinical practices, and health system capacity and constraints for managing the acquired technology.

HTTTG wishes to assist countries in defining their health technology needs, and identifying and rectifying health system constraints for adequate management and utilization of health technology, particularly through training, capacity building and the development and application of appropriate technology.

I visit Vietnam in May, 2007 to discuss a proposal for the first HTTTG workshop to be held there later in the year. The objective of this workshop will be to formulate recommendations for action by HTTTG. The experience in Vietnam will provide valuable insights into how HTTTG should move forward.

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