

Diagnostic imaging in developing countries: considerations for improvement

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Introduction

Diagnostic imaging is a prerequisite for correct and successful medical treatment in at least one quarter of patients worldwide, and more than 90% of all imaging required can be performed with simple, basic X-ray and ultrasound equipment. For several reasons and despite the fact that for more than 20 years WHO's global health strategy has been based on the principle of equity and health for all, approximately two thirds of the world's population still has no access to the most basic diagnostic imaging services.

The present situation

The most obvious reasons for this situation are simply lack of equipment and insufficient funding. Diagnostic imaging equipment is relatively expensive, both to purchase and to run properly. Furthermore, the disease burden in a certain country or region may require other priorities for health care than resource-intensive treatment involving diagnostic imaging.

Realizing that non-governmental organizations and groups in industrialized countries have tried to improve conditions by providing equipment. Despite their good intentions, however, not every such donation is as successful as expected, and much diagnostic imaging equipment in developing countries, donated or not, is either out of function, or for other reasons, not properly used. In most such cases, operational problems and breakdowns are caused by inappropriate use, insufficient maintenance and difficulties in obtaining the necessary spare parts. For donated equipment, often old and in some cases out-dated, however, such problems often are more prominent and serious than what is seen with locally purchased installations. Both seriousness and frequency of breakdowns and malfunctioning of equipment, however, can in most cases be reduced significant-

ly by providing adequate training and education to staff involved.

Although available, the quality of diagnostic imaging services, especially in remote areas of developing countries, often is questionable. Insufficiently trained technical and medical staff not only performing, but also interpreting and reporting on X-ray and ultrasound examinations, often represents serious threats both to patients and to staff. For a patient, any false-positive or false-negative examination, often leading to incorrect therapeutic decisions, are in the best case dangerous, and in the worst case fatal. Similarly, inappropriate or eventually unnecessary exposure of a patient or a staff member to ionizing radiation due to insufficient knowledge of radiation protection measurements is hazardous, dangerous, and can be fatal.

WHO's efforts to improve the situation

The WHO is intensifying its efforts to improve quality, quantity, and equity of diagnostic imaging services as an integrated part of health care systems in its member states. A major issue of this work is to lobby for, and to stress the importance of, adequate and locally adapted diagnostic imaging services as part of every health care system. This becomes increasingly important as life expectancy improves worldwide thereby shifting the disease burden, especially in developing countries, from mainly communicable diseases toward an increased frequency of diseases normally seen in middle-aged and elderly people. Furthermore, conditions in many developing countries are rapidly changing towards an "industrialized" pattern, causing an increased number of patients with "lifestyle"-related diseases and health problems, including work-related accidents and road accidents, requiring a much more complex health care than needed previously.

Realizing the urgent need for education and training of both medical and technical staff as an absolute prerequisite for any improvement of diagnostic imaging

service, the Team of Diagnostic Imaging and Laboratory Technology in WHO has launched an ambitious programme to provide member states with adequate and "tailor-made" training programmes aimed at training trainers. The programmes which will be developed over a period of 5–6 years include training material for various levels of competence and need, workshops, seminars, and guidelines to help countries to improve all aspects and levels of diagnostic imaging services according to their needs and possibilities. A close collaboration between WHO and the relevant international and regional medical societies based on the newly established Global Steering Group for Education and Training in Diagnostic Imaging will ensure the scientific quality of the programmes. Collaboration with national and regional experts and local medical centres for diagnostic imaging will ensure the relevance and appropriateness of the programmes as to local needs and possibilities.

The training programmes now being developed cover both medical, technical and managerial aspects of diagnostic imaging. Realizing that far too many hospitals and medical institutions in developing countries are carrying out diagnostic imaging without qualified staff, i. e. radiologists and radiographers, the programmes also provide material for such unfortunate situations. In this context it is important to emphasize that no diagnostic imaging activity should be carried out without properly trained personnel, i. e. radiologists and radiographers in place. Having said that, it is also important to be aware of the wide gap too often seen between the ideal and the real world. Therefore, it is of the utmost importance also to provide assistance and help in such situations, however, without approving or accepting the conditions.

In addition, to improve medical, technical and managerial skills of hospital staff taking care of and operating an imaging department, it is important to address the

further development of diagnostic imaging services from a national and political point of view. A major reason for lack of specialists in many governmental hospitals and medical institutions is that salaries and working conditions often are inferior to what is offered by private medical institutions often located in the same city or geographical area. A political will to face such problems are of greatest importance when considering any general improvement of diagnostic imaging services. Also, to include appropriate and adequate diagnostic imaging in an overall, national health plan, is of major importance. Too often, large portions of national health budgets are used to purchase expensive and inappropriate technology and equipment not answering local needs and possibilities. Therefore, it remains a major responsibility for WHO to stress the necessity for co-ordinated, adequate and appropriate planning and eventual purchase of equipment. Manufacturer of medical equipment operating in developing countries might also contribute much to this by focusing more on assistance and help to potential buyers rather than looking mainly for short-term profit.

Conclusion

Despite the importance of adequate diagnostic imaging service as part of any health care system, it is not accessible for a major part of the world's population. The WHO has an obligation to help in improving this situation. Although the WHO is increasing its efforts in this field, it is of the utmost importance that all parties involved and dedicated to improved health care must join forces and work together. With this in mind, it might be possible to achieve the issue of the highest importance, namely good health care for all.