

Training programmes for developing countries

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Summary Unprecedented gains have been made in the early detection and prevention of childhood metabolic diseases. Over the last 12 years under the International Atomic Energy Agency (IAEA) Technical Cooperation Programme there have been newborn screening (NBS) projects in all the key regions—Asia, Africa, Latin America and Europe. A total of 29 projects have been undertaken at an estimated total cost of US\$6.7 million, mainly focused on establishing and supporting NBS for congenital hypothyroidism. Under these projects professional training has been one of the key objectives. This short report provides a summary of the training efforts under these projects.

Abbreviations

IAEA International Atomic Energy Agency
NBS newborn screening
SV scientific visit

Introduction

Unprecedented gains have been made in the early detection and prevention of childhood metabolic diseases. Most of those whose metabolic disease is detected and treated at an early stage not only survive but have productive lives. They can make substantial contributions to their societies and economies, which is particularly important in developing countries. For all these reasons, a number of Members States of the IAEA have requested IAEA to assist with establishing newborn screening (NBS) programmes. Most of the pilot NBS projects make use of radioimmunoassay technologies for accurate measurements of thyroid hormones.

Under previous IAEA projects many countries had already received assistance in the setting up of radioimmunoassay services and therefore NBS activity was built on the success of this technology transfer. Over the last 12 years under the IAEA Technical Cooperation Programme there have been numerous NBS projects in all the key regions—Asia, Africa, Latin America and Europe (see Fig. 1). Training in all aspects of NBS activities was therefore essential for successful implementation of national NBS projects. Within this there are three subsections: professional education, parent education and education of the policy makers. This article will focus on the first; the latter two are beyond the scope of this article. However, the IAEA as a UN body with an international status does play a key role in education and in influencing policy makers.

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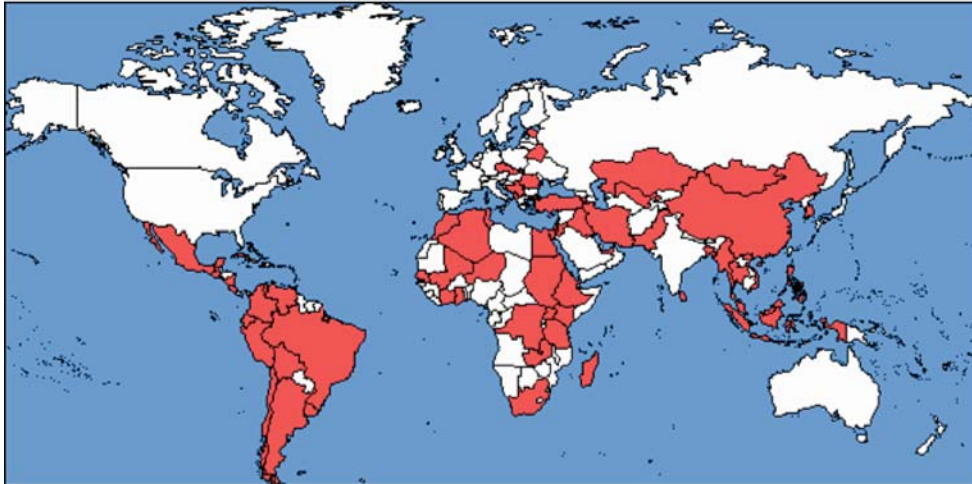
IAEA Technical Cooperation - Developing Newborn Screening.

Fig. 1 Red indicates countries that have received technical cooperation support which includes training

Methods

For most health care workers the benefits and importance of newborn screening as a preventive health care programme are well established; however, many developing countries are still far from having comprehensive programmes. Of the six key components (education, screening, early follow-up, diagnosis, management and evaluation) for the screening of newborns (American Academy of Pediatrics 2000; International Atomic Energy Agency 2005), education is the most fundamental to overall success of developing NBS projects.

Under the IAEA system, individuals from Member States can request training as scientific visits (SVs) or fellowship training for professional qualification under NBS projects. The former are designed to meet specific project requirements whereas the latter are for human resource capacity building, fundamental for developing countries. The SVs are normally reserved for senior professionals or operational heads. The maximum period of training is three weeks, during which key elements of NBS systems for ‘technology transfer’ are delivered.

The IAEA fellowship training ranges from 3 to 6 months and provides more practical based learning. Here the more developed countries with NBS systems, e.g. Japan, USA, Europe and Australia, have made major contributions and continue to do so. Training and education are essential elements of the NBS system and should exist in each of the three areas of screening activities (pre-analytical, analytical and post-analytical).

Results and discussion

Over the last 12 years under the IAEA Technical Cooperation Programme there have been a total of 29 projects undertaken at an estimated total cost of US\$6.7 million, mainly focused on establishing and supporting NBS for congenital hypothyroidism. Under these projects professional training has focused mainly on the regional networking level. Primarily, ‘train the trainer’. Key national participants attend IAEA regional seminars or workshops in which international experts provide their specialist services. Over 300 individuals have participated in such activities. The national participants in turn disseminate this material at national or local level. In one case the outreach was to 18 health districts and over 300 individuals. This ‘train the trainer’ approach has proved to be very effective in the delivery of NBS systems to Member States.

In addition, over the last decade more than 200 individual fellows have been trained under the IAEA fellowship scheme; the list includes paediatric physicians, paediatric endocrinologists, consultant biochemists and numerous laboratory staff. The latter learn not only about the operations within the NBS system but also about aspects of radiation hygiene and the use of radioimmunoassay-based technologies, since most of these technologies are off-patent and can be indigenously produced at low cost. Cost becomes a very important consideration when scaling up NBS from pilot projects to a national service.

It is essential that the health professionals understand their role in the NBS system. Health professionals

including physicians, nurses, midwives, laboratory scientists and advocacy teams are responsible for implementing the NBS programme. Many of them are already well aware of the benefits and importance of newborn screening as a preventive health care programme. However, it is imperative that health workers are equipped with the relevant information to enable them to fulfil their obligation within the NBS system. Furthermore, they should be equipped to provide parents and guardians with substantial information about the significance of NBS.

Therefore, the national training has to be at various levels ranging from simple orientation courses to formal training courses on the management of congenital metabolic disorders. The objectives of orientation courses (half-day) are to provide basic information on NBS, early detection, management and follow-up. The primary aim is to elicit support for the NBS programme. The IAEA sends external experts to support training and motivation programmes.

For those involved as NBS coordinators (one day), the aim is to provide basic orientation and detailed information about NBS operations. In addition to standard operating procedures for sample collection, specimen handling, logistics, disseminations of results, follow-up, recall of cases and any fee collection, they need to understand the essentials of motivation for parents or guardians. Therefore, it covers not only what NBS is and its importance but the way it is carried out and the framework under which it is carried out.

In addition to a brief update, health practitioners, family physicians, obstetricians, paediatric physicians and midwives should have a clear understanding of the local NBS operations (one day). They should also know the standard operating procedures for sample collection, specimen handling, logistics, dissemination of results, follow-up, recall of cases, and any fee collection. They should be clear on expected rates and the clinical practice algorithm (Pass et al 2000) to follow. It is also useful for them to have contact details of some specialist practitioners who can provide additional information and guidance if required. All these aspects should bring a meaningful understanding of the processes and their roles. Many authorities require approved standardized training packages before individuals can meet the terms and conditions for NBS reimbursement.

The IAEA through its Technical division and Technical Cooperation programme continues to assist with continuing professional education (CPE) at different levels. For CPE the generation of professional

materials with the assistance of international expertise plays an important role. Materials such as booklets, audio/visual tapes and multimedia CD-ROM are meticulously edited and finalized by the professionals in the Technical division before wider international circulation. Official publications are circulated to each of the 142 IAEA Member States. In most cases this material is supplied free of charge. A network of national liaison officers then forwards these educational materials to the respective lead professionals at national level. Additional copies are made available on-line either free of charge or at a nominal charge based on the economic status. Recent publications include 'Screening of Newborns for Congenital Hypothyroidism—Guidance for Developing Programmes' (which is also available free on the web-site at <http://www-pub.iaea.org/MTCD/publications/PubDetails.asp?pubId=7205>).

In many instances the material is translated into French, Spanish, Chinese, Russian and Arabic. This provides better understanding and appreciation of the material by operational staff at regional level.

A longer-term and sustained approach to training needs of new national NBS systems is being developed through interactions with professional societies. This approach will hopefully streamline efforts at an international level.

Conclusion

Education is fundamental to overall success of developing programmes. Within this there are three sub-sections: professional education, parent education and education of the policy makers. This article presents details and outcomes of training and education provided under IAEA projects. It also highlights the role of the IAEA, as a UN body with an international status, in assisting with professional training. The paper presents the success of the 'train the trainer' approach. The IAEA also plays a key role in education and influencing policy makers.

There is still more that needs to be done; for example, of the 12 million babies born in Latin America each year only half receive NBS service. Every child has a right to be endorsed as free of preventable metabolic diseases like congenital hypothyroidism. It is hoped that the IAEA efforts will be especially useful to all Member State signatories of the United Nations Convention on the Rights of the Child in their determination to establish programmes for NBS.

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