Getting started: Working in resource limited settings in clinical radiology and oncology

Introduction

Irrespective of the type of global health project that is undertaken, be it long-term clinical service work, short-term teaching projects or research, in depth preparation is a key element of a successful outcome. This guidance aims to provide a starting point once a project has been identified. While this applies to working abroad anywhere in the world, the main focus of these pages is on work in low resource settings in low- and middle-income countries (LMIC).

General information

Direct communication with the overseas partners, well in advance of the start of a project, is the most valuable first step. Clarifying mutual expectations is extremely important, as well as agreeing on expected outcomes and how these will contribute to improved patient care and how they will be measured. It will also provide useful insights into available facilities, local requirements and the preparation required at both ends. Identifying any obstacles that have prevented others achieving these specific goals in the past can also be helpful. Frequently, achievements fall below initial expectations and allowing for this will avoid unnecessary disappointment on both sides. On the other hand, if a flexible and open-minded approach is chosen, unexpected benefits and outcomes will often enhance the experience.

Sustainability and a locally relevant contribution to capacity building are essential requirements for any meaningful project (see: the paragraph on First, do no harm below). For those who have not worked in a LMIC before, joining an existing collaboration is recommended, as support from other experienced volunteers will be available. Talking to others who have been to a similar setting/country can be very helpful to remain realistic about achievable goals and get a clear idea of challenges and opportunities.

Technical preparation, such as writing lectures, is the most obvious and easiest part, while less obvious topics are frequently more important for a successful outcome: understanding the general concepts of global health, as well as the local/national healthcare system and needs, developing an awareness of cultural differences in healthcare delivery and in society as a whole, understanding capacity building and potential harms of volunteering, dealing with ethical and moral dilemmas in situations where healthcare provision can be radically different from high-resource environments.

Taking full responsibility for personal health, insurance and security is essential, as the hosts will generally have very little time and resources to deal with any avoidable problems. Considering personal coping mechanisms in response to limited accommodation and transport facilities, risk of infectious diseases, stress at the workplace and how to manage expectations in the field will also help deal with these issues once they arise.

Frequently, a radiology/oncology project cannot stand alone and early input from allied professionals will be required, such as radiographers, engineers, physicists; both local and international. These too will need to have the necessary understanding of the context of the project and will need to be involved from the early stages.

First, do no harm

Frequently, and often unintentionally, more harm than good is done, in particular in individual short-term projects and with equipment donations. While developed for ophthalmology projects, the Unite for Sight educational Module: the significant harm of worst practices provides useful in-depth reading on potential harm, which applies equally to other specialties. Radiology and clinical oncology are extremely high-cost interventions and the potential effect of draining resources away from other services should be carefully considered and discussed.

Issues specific to clinical radiology and oncology will be covered below.
Resources/further reading

- The Tropical Health and Education Trust (THET) provides a wealth of information and many toolkits around international health partnerships and volunteering, for example:
  - Resources
  - Volunteer support
  - Equipment donation guidance

- The website of the G.A.S. partnership between a UK NHS trust and healthcare providers in northern Ghana provides an excellent insight into what is required for effective collaboration and volunteering, as well as many useful examples of resources for preparation and evaluation of volunteering.

- Over the past decade, guidance has been developed, specifically related to NHS/UK health workers engaging in international health, including principles for best practice. The British Medical Association (BMA) website includes a link to Health Education England’s guidance on global health work as part of continuing professional development (CPD). The governmental reports Engaging in Global Health (2014) and the UK’s contribution to health globally (All party parliamentary group on global health, 2015) provide a framework for voluntary engagement in global health by the UK health sector. As well as providing a useful overview of the current government position, these documents can inform discussions with NHS and deanery employers, when planning a project.

- Several other UK colleges have developed relevant guidance and toolkits, for example the Royal College of Obstetricians and Gynaecologists.

- To understand local and regional healthcare needs, it is helpful to review any available national health care strategy documents/plans. In addition, local partners will be able to provide the necessary information on disease epidemiology and available treatments.

- In addition to many well-known travel guide series, the CIA World Fact book and the Culture Shock Series provide country-specific information on general facts, culture and etiquette.

- Travel insurance companies, travel clinics and travel guides provide all necessary information on personal health, vaccinations and security. The Foreign Office issues advice on travel security.
Diagnostic radiology

Unlike in high-resource settings, complex imaging modalities in LMIC are generally available only in large (tertiary referral) government centers or private hospitals. For the majority of the population, ultrasound and plain-film radiography at district level are the only feasible and affordable modalities, if any. Radiologists are scarce and physicians, physician assistants/clinical officers or radiographers frequently interpret films and perform ultrasound.

Challenges

The difference in disease epidemiology, presentation and available treatment options mean that indications to perform a particular imaging test, as well as interpretation of the findings can be very different. Misdiagnosis is a risk if differential diagnoses are not adapted to local disease epidemiology.

Using imaging tests to confirm a likely clinical diagnosis, rule out an unlikely clinical diagnosis or confirm a diagnosis for which there is no treatment wastes scarce resources and should be avoided where possible. High-resource imaging referral pathways often do not apply in a low-resource environment and care should be taken not to advocate inappropriate recommendations from a high-resource environment.

In the absence of many other additional investigations, such as biochemical/hematological tests, basic imaging often plays a greater role in decision-making. Referral or additional complex imaging may not be available or feasible. Reports and recommendations will need to reflect this: equivocal, descriptive or hedging reports provide little or no added value. On the other hand, providing a clear diagnosis or relevant differential can make a big difference in an environment where few other diagnostic options are available.

Equipment functionality, maintenance, quality assurance, workflow, documentation, dissemination of results, staff presence and training, as well as any other issues related to service delivery are important to consider when preparing for any project. Addressing just one or two of these components is unlikely to be beneficial to the service as a whole. For example, in a setting where film quality is poor, providing training in film interpretation may be of little effect, without supporting radiographic improvement in film quality.

Resources

The text book Radiology in Global Health (2014) provides an introduction to diagnostic radiology in LMIC.

The International Society of Radiology website has links to WHO diagnostic imaging manuals, educational materials/links, as well as to The Imaging of Tropical Diseases text book.
Clinical oncology

It is essential to understand country-specific cancer incidence and how cancer patients present and are managed in the local setting, including available facilities for surgery, radiotherapy, chemotherapy, palliative care and any specific challenges. The most common cancers in LMIC are cervical, head and neck, lung, breast and stomach. Globocan provides estimates of cancer incidence in many countries.

Challenges

Common challenges in oncology in LMIC include: lack of a site-specialised and multidisciplinary approaches; a lack of government funding and facilities; late diagnosis/advanced disease and rationalising palliative treatments; and the basic nature of available radiotherapy.

Lack of site-specialisation and multidisciplinary working practice

A broad knowledge of oncology is essential, as site specialisation is generally non-existent. Multidisciplinary working is often very limited or absent. Surgery may have been performed elsewhere and a patient may present with no more than a pathology report and a few computed tomography (CT) images. Reports may be insufficient for treatment decisions and the reporting radiologist or pathologist may not be available for discussion.

Lack of government funding/facilities

In many LMIC healthcare is self-funded. Treatment decisions are often primarily based on affordability. For example, achieving small improvements in survival using expensive drugs is often unjustified. If access to radiotherapy is limited, treatment decisions may be at variance with state of the art practice, for example, mastectomy rather than breast conserving surgery, or cystectomy rather than bladder preservation. A careful, locally relevant, cost–benefit analysis when making treatment recommendations is essential.

Late diagnosis, advanced disease and rationalising treatment

Approximately 80% of patients in LMIC present with advanced cancer and palliative radiotherapy is often the most appropriate option. The INCTR palliative care handbook is freely downloadable to support palliative care in low-resource settings.

Promoting the use of fewer fractions of radiotherapy, particularly in a palliative setting, can free up valuable treatment slots and reduce waiting times. The clinical oncology publications section of The Royal College of Radiologists’ website includes a useful document on dose fractionation in radiotherapy.

The basic nature of available radiotherapy

In many radiotherapy facilities in LMIC, treatment fields are still hand marked. A good knowledge of surface anatomy and gaining hand marking skills before starting a project is important. Even if a conventional simulator is present, there may be times when hand marking is necessary using diagnostic X-rays to check fields.

If 3D conformal radiotherapy is available, it is likely that a diagnostic CT will be used with image transfer to a treatment planning system. Poor immobilisation is one of the problems that may be encountered. Radiographers frequently have relatively little specific radiotherapy training and better diagnostic skills.

Cobalts are more widely used than linacs in LMIC as they are cheaper, more reliable and need less quality assurance/maintenance. The IAEA physics book (chapter 5) contains a summary of the main differences between cobalt 60 units and linacs. Educational information on Cobalt use can also be found on YouTube.

Seeking help from colleagues with relevant experience and older versions of radiotherapy books such as Practical Radiotherapy by Dobbs and Barrett are also useful as preparation.

Resources

The International Network For Cancer Treatment and Research (INCTR) has some useful resources to assist people working in low resource settings.

The International Atomic Energy (IAEA) Radiation Oncology component of Human Health website has many resources for those teaching and working in clinical oncology in LMIC.

The International Cancer Experts Corps (ICEC) has useful information addressing global challenges in providing radiation oncology services.

Authors: E Joekes, A Flavin, S Hargreaves and C Grierson. Date: July 2015