Health Technology

Technology assessment in developing countries
Tessa Tan-Torres

Although developing countries can ill afford to make the wrong choice of technology, they usually find it difficult if not impossible to support an adequate technology assessment programme. Much of the available information on the efficacy of various products is valid for other countries, but factors such as epidemiology, cost-effectiveness and acceptability also have to be taken into account, and these vary considerably from one setting to another. There is therefore a strong case for developing national programmes as quickly as possible.

Health technology has been defined as “the set of techniques, drugs, equipment and procedures used by health care professionals in delivering medical care to individuals and the systems within which such care is delivered” (1). The words make it sound like a static entity, but the dominant realities of health technology today are rapid change and swiftly increasing sophistication. As it becomes daily more difficult to choose from the range of options available, technology assessment becomes indispensable. This is especially the case in countries with very limited resources, where a wrong choice can lead directly to unnecessary deaths as well as the waste of precious resources or an increased debt burden.

Obstacles to the rational choice of technology

Technology assessment is understood to cover all issues of safety, efficacy, efficiency and acceptability, and therefore needs to include aspects of epidemiology, economics and the social sciences. Important though these fields obviously are for the choice of technologies, there are relatively few people in developing countries who are trained in them. The few that exist are usually in academic institutions and overloaded with teaching responsibilities. In addition, they face two main difficulties: very limited access to data, and lack of financial support for such work. Even for eager and gifted researchers, these are strong deterrents.

There is also a bias in the general public towards higher technology. “Good” medical care is viewed as synonymous with advanced and sophisticated. To most patients, medication is better from a syringe than from a bottle of tablets or syrup, and when they consult

Dr Tan-Torres is Assistant Professor in the Clinical Epidemiology Unit of the College of Medicine, University of the Philippines, Manila.
a doctor they would like to see him at least write a prescription or arrange a test. Such is the demand for complex technology that a doctor will often find it easier to meet the patient's expectations than to explain why a simpler solution is preferable.

This demand for technology has created a market that is serviced to some extent by doctors-turned-entrepreneurs. In countries where hospitals have only enough in their budget for their operating expenses, doctors pool their money to buy the equipment which they consider necessary for their work. Thus magnetic resonance imagers, computerized tomography scanners, X-ray machines, ultrasound machines, dialysis machines, lithotriptors, electrocardiographs, echocardiographs and laser equipment are owned by doctors who then have to make their investment pay for itself. This presents a potential conflict of interests which can easily lead to a gradual expansion in the use of such equipment beyond the boundaries within which they are necessary or effective. In the same way, obsolete equipment can also be kept in use more for financial reasons than for medical ones.

Unlike drugs, medical equipment has no regulatory agency to authorize its use on the basis of effectiveness. Often the main source of information for health professionals is the symposia organized by pharmaceutical and scientific equipment companies. Countries with professional medical associations which are active in continuing education can promote the use of clinical algorithms and guidelines, but these do not usually go beyond the traditional issues of efficacy and effectiveness or take overall costs and acceptability into account.

What can be done?

Some industrialized countries have offices to assess existing or emerging technologies. They are non-regulatory agencies, whose recommendations take effect through the dissemination and acceptance of their reports. It is difficult to measure their impact but they do appear to have had some influence on clinical practice. However, most of the information they produce comes from randomized controlled trials and consensus conferences, rather than analysis of cost-effectiveness or other values (2). To be more useful, such efforts need to include some detailed study of how technology gets introduced and adopted. Particularly important are the factors influencing the physician’s choice of technology, and the ways in which these can be modified (3). So far this is done to some extent through regulations and financial incentives, but more innovative approaches are needed.

Should developing countries set up their own offices for technology assessment, or rely on the reports made in countries better able to afford the costs involved? One disadvantage of the reports available currently is that they do not usually include enough detail to enable the reader to tell whether their conclusions are valid for a different society. In particular, cost-effectiveness can vary considerably from country to country, depending on the burden of illness, health-seeking behaviour and the prices of medical goods and services. The cost and effectiveness of a screening programme, for example, vary according to the prevalence of the disease, and a very sensitive diagnostic
test may be the most pressing need in one
country but not in another where patients
present late with already florid symptoms.

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In some cases, even the proof of efficacy
established in one country may not be valid
for another. To explain an apparently high
number of lithotripsy sessions in northern
Thailand, the hypothesis of a difference in the
Thai urinary stone has been put forward (W.
Kosuwon, personal communication). What-
ever the reason for the multiple sessions, they
have a direct impact on cost-effectiveness and
introduce new factors, such as the risks atten-
dant on intensive reuse of supplies designed
for single use. In many cases, the point at
which reusing certain items becomes less cost-
effective than buying new ones also needs to
be established.

Finally, the priorities for assessment reports
will vary from country to country. Oral
typhoid vaccine is not normally a public
health priority for assessment in industrial-
ized countries, whereas it is in many develop-
ing ones. Conversely, neonatal surfactants
would not usually be worth assessing in a
developing country because of their high cost
and limited availability. There can also be con-
siderable variations in the etiology and epi-
demiology of certain health problems shared
by most countries, such as stroke or back
pain, and thus the technologies needed for
dealing with them will vary as well.

For all these reasons, developing countries do
need to build up the expertise to carry out
their own technology assessments. However,
as this will take time, and many decisions
about technology cannot wait, any informa-
tion already available should be used and
adapted to local needs as fully as possible. A
serious attempt to study how technologies are
introduced and adopted in each society is also
needed, and such studies should include the
part played by culture and values in this pro-
cess. This will help to ensure that work on
technology assessment contributes directly to
meeting practical needs.

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