23.4: From research findings to public health action

4.1 Sharing and synthesizing findings

Major changes in public health policy are rarely based on the results of a single trial. It is important therefore for investigators to make themselves aware of any other trials that are being, or have been, conducted to answer similar questions to their own and to be open to the possibility of sharing their results, so they can be synthesized. If contact is made with those who are conducting other trials at an early stage, it may be possible to ensure that the data collected are comparable, which will greatly facilitate such synthesis and the formal meta-analysis of the results (see Chapter 3).

4.2 Researchers and policy

Final analyses and the dissemination of results are essential tasks that must be completed at the end of a trial, but an important further responsibility of researchers is to review the findings with the relevant government and non-governmental authorities and to explore implications for the overall health policy of the country and for the design of specific disease control strategies and programmes. From the beginning of the planning of a trial directed towards an important public health problem, the appropriate policy and planning (as well as implementation) arms of the MOH should be involved. Where the intervention involves other ministries, such as education, social services, agriculture, youth, women’s affairs, this applies equally to them. Even when the Ministry does not have direct responsibility for the actual conduct of the trial, formulation of conclusions from the analysis of trial results requires their input and participation, as they are usually responsible for changes to health programmes that may be necessary because of the results of the trial.

Sometimes, trials are conducted to establish a principle (for example, a particular way of constructing a vaccine results in some protection against the target disease), and they may be an intermediate step in developing an intervention that
might be of public health value. However, most field trials are of interventions that could be potentially used for specific public health actions. While the rigorous conduct of a trial is the primary responsibility of the researchers, the responsibility for ensuring that research findings are put to their proper use in public health programmes generally lies with policy makers, especially in the MOH. Unfortunately, in most countries, policy makers have a poor understanding, and sometimes appreciation, of health research, and frequently health researchers have a similarly poor understanding of the role and function of policy makers and of what they require from researchers to be able to do their job well. All too often in the past, researchers have considered that once they have conducted the trial and communicated the findings to the policy makers their job is done. As discussed in the next section of this chapter, it is not!

Furthermore, it is not sufficient for the research team to merely forward the main trial report or scientific article to the policy makers. Few will have the time to read such reports, and even fewer will have the inclination to do so. It is essential that the research team provides policy makers and programme managers with the results and their interpretation in a language and format that they will both understand and find easy to act upon. An example of how the abstract of a scientific article describing trial results was converted into a suitable summary for policy makers is given in Box 23.1.

Box 23.1 Example of how results in a technical journal article were rewritten for policy makers

*Document A is the abstract from a paper that presented the main results from two parallel trials that compared vitamin A supplementation of young children vs placebo in northern Ghana. Document B is an excerpt from the Policy Brief prepared for dissemination of the results of the trials within Ghana and internationally.*

A. The abstract from the scientific publication

Although most studies on the effect of vitamin A supplementation have reported reductions in child mortality, the effects on child morbidity are less clear. We have carried out two double-blind, randomized, placebo-controlled trials of vitamin A supplementation in adjacent populations in northern Ghana to assess the impact on childhood morbidity and mortality.

The Survival Study included 21 906 children aged 6–90 months in 185 geographical clusters, who were followed for up to 26 months. The Health Study included 1 455 children aged 6–59 months, who were monitored weekly for a year. Children were randomly assigned either 200 000 IU retinol equivalent (100 000 IU under 12 months) or placebo every 4 months; randomisation was by individual in the Health Study and by cluster in the Survival Study.

There were no significant differences in the Health Study between the vitamin A and placebo groups in the prevalence of diarrhoea or acute respiratory infections; of the symptoms and conditions specifically asked about, only vomiting and anorexia were significantly less frequent in the supplemented children. Vitamin A supplemented children had significantly fewer attendances at clinics (rate ratio 0.88 (95% CI 0.81–0.95), p = 0.001), hospital admissions (0.62 (0.42–0.93), p = 0.02), and deaths (0.81 (0.68–0.98), p = 0.03) than children who received placebo.

The extent of the effect on morbidity and mortality did not vary significantly with age or sex. However, the mortality rate due to acute gastroenteritis was lower in vitamin A supplemented than in placebo clusters (0.66 (0.47–0.92), p = 0.02); mortality rates for all other causes except acute lower respiratory infections and malaria were also lower in vitamin A clusters, but not significantly so.

Improving the vitamin A intake of young children in populations where xerophthalmia exists, even at relatively low
prevalence, should be a high priority for health and agricultural services in Africa and elsewhere.

B. The policy brief (excerpt)

Two randomised controlled trials were carried out in northern Ghana to evaluate the effect of 4-monthly vitamin supplements on child mortality and morbidity. They were conducted in neighbouring populations, where xerophthalmia, the eye disease caused by severe vitamin A deficiency, occurred but was not very common.

The mortality trial showed that vitamin A supplementation reduced child mortality by 19%, and this result was very unlikely to have occurred by chance. This result confirms the results of earlier trials in Asia, but is the first in Africa to show such an effect.

The morbidity trial results were intriguing in that they showed that vitamin A supplementation reduced indicators of severe illness—hospital admissions and clinic attendances—but did not reduce the overall frequency of illnesses. In other words, it appears that vitamin A supplementation may not reduce the number of illnesses that children will suffer from, but will reduce the number of those infections that go on to cause severe and life-threatening illness or death.

Taken together, these two trials’ results may help to explain puzzling findings reported by previous morbidity trials which did not find any impact of vitamin A supplementation on the frequency of child morbidity, but only measured the overall frequency of illnesses rather than their severity.

The two trials show that improving the vitamin A status of young children should be given high priority by health and agricultural services in Africa and elsewhere in populations where xerophthalmia occurs, even when it is not very common.

Adapted from the *Lancet*, Volume 342, Issue 8862, Ghana VAST Study Team, Vitamin A supplementation in northern Ghana: effects on clinic attendances, hospital admissions, and child mortality, pp.7–12, Copyright © 1993, with permission from Elsevier, [http://www.sciencedirect.com/science/journal/01406736](http://www.sciencedirect.com/science/journal/01406736); and from Ghana VAST Study Team, *Results and policy implications of the Ghana Vitamin A Supplementation Trials*, Copyright © 1993. This box is not covered by the Creative Com- mons licence terms of this publication. For permission to reuse please contact the rights holders.

A variety of useful mechanisms that would assist in communication between decision makers and researchers are implemented in some countries. Health planning units may have responsibility for regularly reviewing, and even funding, health systems research. Other mechanisms include ad hoc, or regular, seminars at the Ministry level. A more comprehensive approach can be achieved through national health policy or epidemiology boards. These boards are composed of scientists, government policy makers, leaders in non-governmental organizations, and often lay people, and they have responsibility for reviewing and funding important public health research activities. Whether this mechanism or some other is used, it is of critical importance to have a way of effectively and speedily translating research results into public health action.

Many health systems in developing countries have partially devolved responsibility for health care to sub-national levels such as the district level. Thus, health intervention research should be mentioned in the district health plan, even if the research itself is not undertaken by the district health team but by a specialized research group. This will ensure regular review of the progress and implications of the research. Decentralization offers an excellent opportunity to link research
with local public health practice.

### 4.3 Introducing an intervention into public health programmes

The main results from a trial will state what the effects of the intervention were on the primary and secondary trial outcomes. However, for a policy maker to be able to decide whether a successful intervention should be introduced, they need additional information. This includes knowing what the intervention will cost, how the intervention can best be integrated into existing health and social systems and what the likely positive or negative secondary effects of introducing such interventions will be on other interventions or outcomes, and whether the intervention is likely to be equally effective in all contexts or will only be effective in some, such as among specific age, sex, and socio-economic groups, or in certain geographical areas. While collecting such information may well require additional research, sometimes through Phase IV studies (see Chapter 22), trial investigators should carefully think through whether it would be possible to collect some useful information on these areas during the original trial. For example, it is usually possible to collect data on the costs of the trial intervention (see Chapter 19), to document any implications for other health and social interventions, and to conduct appropriate analyses to provide some indications as to whether the effects of the intervention differed by subgroup. Further useful information on the likely reproducibility of the findings of the trial in other populations can also come from the synthesis of findings from different trials (see Chapter 3).

The costs of introducing a new intervention must also be analysed, and some of the key issues involved in collecting information of intervention costs have been covered in Chapter 19. Ideally, these costs should be assessed in relation to other uses of the resources, and the benefits (years of healthy life gained or loss of DALYs averted) per unit expenditure required for adding the intervention to the health system would be compared with benefits that could be gained by the same expenditure on another health programme. Issues related to such cost-effectiveness analyses have been discussed in Chapter 19. Even if cost-effectiveness analyses are not carried out, it is essential that the trial investigators are able to report what it costs to deliver the intervention within the trial. Such costs should exclude the costs of the evaluation of that intervention (see Chapter 19).

Before a newly proven intervention can be put into operation, the Ministry must consider how the new intervention should best be integrated with other existing interventions. For example, malaria vaccines, when developed, will have to be integrated into the existing vaccination programme for other diseases and will have to be added to whatever the existing malaria control strategy is, which may include vector control (for example, through insecticide spraying), vector–human biting reduction (for example, through the provision of insecticide-treated nets), and case detection and treatment measures. An overall integrated strategy for control will have to be developed, and this might require trials of various combinations of interventions to determine the optimal mix. Such studies are discussed in Chapter 22.

Another important issue that the Ministry must consider is that the efficacy of an intervention measured in the circumstances of a trial can rarely be attained when the intervention is implemented under routine circumstances. System-level or community effectiveness (coverage and efficacy as actually achieved by the routine health service), rather than trial efficacy, is the measure of relevance for the Ministry (Tanner et al., 1993). Demonstration of high levels of efficacy under field trial conditions is important but, by itself, is not necessarily sufficient to justify the widespread introduction of the intervention, without further studies directly relevant to its implementation. Practical examples of this approach are given in Chapter 22.
The importance of understanding the setting and circumstances in which the intervention will be used in a public health programme must be understood both by policy makers and researchers. When the public health importance of an intervention is being assessed, managerial constraints must be considered that may make it impossible to achieve useful levels of efficacy. The principles and methods of continuous quality improvement management, with its emphasis on making sure that the right things get done, in the right way, and at the right time, are proving to be a useful approach to the management of health systems in developing countries. Such approaches may help ensure that the efficacy, as demonstrated under trial conditions, can be approached under routine conditions. An example of the use of these methods applied to improving the primary health care system in rural Nigeria is given in Zeitz et al. (1993).