**Education**

**Doctors’ continuing education in Tanzania: distance learning**

S.S. Ndeki, Angela Towle, C.E. Engel, & E.H.O. Parry

A distance learning programme for medical officers and their assistants at the district level has produced some valuable lessons for future activities in continuing education. Besides correspondence and study materials, face-to-face contact between students and their tutors is a particularly important ingredient, as it provides the guidance, flexibility and motivation that are essential for an effective programme.

“Distance learning” is a method which enables health workers to continue learning without taking them away from where they are most needed. The success of this approach to continuing education depends on how acceptably, effectively and efficiently it gives health workers opportunities to extend their knowledge, understanding and skills where they live and work. In Tanzania, health workers in rural areas have a heavy workload and, with health technology changing fast, many of them fall behind in competence because they lack adequate formal education, as well as the stimulus to keep themselves competent.

At the same time there are inadequate resources to update such health workers in their homes or workplaces.

The country’s economic situation is difficult and the Ministry of Health has to devote about 60% of its budget to salaries. Clearly, a way to reach and maintain the highest level of competence possible without taking health workers away from their posts was needed. The Ministry of Health and the Wellcome Tropical Institute, when assessing the need for a distance learning programme, found that health workers in remote areas, including medical officers and assistant medical officers, lacked encouragement, appropriate knowledge and skills, and learning materials to cope with changes in health needs and technology. The Ministry of Health had previously tried to solve this problem with various continuing education activities, chiefly seminars and workshops related to free-standing vertical programmes funded by non-governmental organizations.

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After a period of consultation, the Ministry decentralized continuing education in order to run it more effectively. The country was divided into 20 regions with 120 districts grouped into six zones. The Wellcome Tropical Institute agreed to help establish the

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system in the northern zone by training key individuals selected by the Ministry. The training was to cover the basic educational principles, organization and conduct of a distance learning programme, and the technique and skills of writing and preparing materials for self-directed learning.

Study area and participants

The northern zone consists of four regions: Arusha (population 1 351 675), Kilimanjaro (1 108 699), Tanga (1 283 636) and Singida (791 814). The total area of the zone is 171 764 km². The Kilimanjaro Christian Medical Centre serves as the referral hospital in the zone, and the Centre for Educational Development in Health, Arusha (CEDHA) provides leadership in organizing continuing education for its health workers. Generally the communication system is far from satisfactory. The main health problems, as in the rest of the country, are malaria, acute respiratory infections, measles, diarrhoeal diseases and malnutrition, as well as problems related to pregnancy. The zone was selected for this initiative because of CEDHA's role as the centre for continuing education for the whole country. It was hoped that lessons learnt in this experience would help to extend distance learning to the rest of the country.

Between July 1989 and December 1990 a distance learning project was conducted in the zone, with 41 health workers, selected by the regional health authority, participating. One medical officer and one assistant medical officer were selected from each district because they provide leadership for the other health workers. Selection was also based on interest in continuing education. Separate groups of medical officers and assistant medical officers were formed in each region, so that it would be possible to evaluate the comparative acceptance and understanding of the modules. All together, the participants represented 27% (41/150) of the medical officers and assistant medical officers of the zone (see Table 1).

In each region coordinators were selected, who have overall management of the programme and its students, staff and resources. Tutors were also selected, to serve as student counsellors and technical advisers.

Course content

The Wellcome Tropical Institute developed learning modules on subjects which were known to be common local problems, and

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<thead>
<tr>
<th>Region</th>
<th>Number enrolled</th>
<th>Total number</th>
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<tbody>
<tr>
<td>Arusha</td>
<td>8 (11.4%)</td>
<td>70</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>15 (50%)</td>
<td>30</td>
</tr>
<tr>
<td>Tanga</td>
<td>7 (23.3%)</td>
<td>30</td>
</tr>
<tr>
<td>Singida</td>
<td>11 (55%)</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41 (27.3%)</strong></td>
<td><strong>150</strong></td>
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Table 1: Number of participants in the distance learning project, by region in the zone

60
which included essential basic knowledge. Thus modules on epidemiology, acute respiratory infections and obstructed labour were developed in a fashion which was in harmony with the educational approach of the system for continuing education. The acute respiratory infections and obstructed labour manuals included a study and answer booklet. The modules cover clinical, epidemiological, preventive, and managerial issues. Thus the obstructed labour module included the epidemiology of obstructed labour and its complications, prevention of the ill-effects, and the management of the clinical problems involved. The acute respiratory infections module included clinical case audit, hospital management, community management, epidemiology, and health care planning. The epidemiology module covered how to look at your community, planning an epidemiological study, collecting data, data analysis, and writing and reading an epidemiological report. Each module had a pre-study test and a post-study test: the pre-study test was designed to enable the students to locate their own areas of weakness (or strength) so that they could concentrate their study effort where it was most needed. The results were then discussed with the coordinator or the supervisor and the appropriate learning plan was developed. The post-study test helps the student and the coordinator to assess how much progress has been made.

**Briefing workshops**

After the selection of participants and supervisors, briefing workshops were held for one or two days in each region, to explain the programme and its purpose. The coordinators led the workshops and the participants did the pre-study test for each module so that they could find out what they needed to learn, and plan their learning with their coordinator or supervisor. They also selected a common health or population problem as the topic for a small research project to carry out with the help of their supervisors, and adjusted their study protocols accordingly.

When this had been done the participants were given modules, texts with associated books and reports, calculators, and a diary. It was explained to them that the diary was to encourage them to plan and organize their studies, to record the length of time spent on their distance learning and the time spent with colleagues, coordinators and supervisors in connection with their studies, and to record any difficulties or problems that they might encounter. They then returned with their learning materials to their places of work.

**Distance learning in practice**

During the course, most participants started with the module which interested them most, and for the majority (75%) this was the one on obstructed labour, which seemed clear, precise and relevant to the needs of their communities. They continued with acute respiratory infections and ended with epidemiology, which was less familiar and therefore more difficult. The remainder did the first two modules in reverse order but also ended with epidemiology.

In planning their studies with their tutors they arranged times for face-to-face discussions with them. The tutors’ visits were planned to solve the students’ problems, provide guidance, monitor progress and, occasionally, provide additional materials.

Feedback from the visits showed that they motivated the learners and were very helpful.
to them. They were glad to see that both the programme and they themselves were considered important enough for tutors to travel considerable distances to discuss issues with them. Each participant worked at his or her own speed, and some completed the modules much more quickly than others. Each region organized a meeting during the programme, to give all the participants an opportunity to discuss their work and exchange ideas with their colleagues and tutors.

**Problems encountered**

**Competing demands.** While doing the learning programme, most participants were responsible for administrative tasks in the district in addition to their normal clinic duties. At times they had to abandon their learning to deal with a disease outbreak in their district, since they are the frontline workers in such cases.

**Unfamiliar material.** A number of participants found the epidemiology module difficult, as it did not seem to relate to the common every-day problems of work in the district. In particular, some of the assistant medical officers, who had had no previous exposure to epidemiology, found this module hard. However, at the debriefing meeting an epidemiology tutor was able to clear up some of the difficult points.

**Poor communications.** Communication by mail was often very slow, reliable telephone and telegram services are not available in some areas, and radio communication equipment is not widely distributed in the zone.

**Disruptive staff movements.** Two participants were moved from their station; one was transferred to another district and another went away for further studies.

**Costs**

Apart from the cost of material production and distribution, some local costs were incurred during the process of learning. These included paying the tutors for supervising, and the cost of the briefing and debriefing workshops (see Table 2).

**Evaluation**

During the debriefing workshops, which lasted three days, the participants handed in their diaries, which were checked by the coordinators. The participants then completed a questionnaire about their experience, and did a post-study test on each of the modules studied.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Cost (US $)</th>
<th>Cost per student (US $)</th>
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<tbody>
<tr>
<td>Administration</td>
<td>1 000</td>
<td>24.39</td>
</tr>
<tr>
<td>Briefing workshop</td>
<td>4 000</td>
<td>97.56</td>
</tr>
<tr>
<td>Regional meetings</td>
<td>2 000</td>
<td>48.78</td>
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<tr>
<td>Travel supervision</td>
<td>2 000</td>
<td>48.78</td>
</tr>
<tr>
<td>Research</td>
<td>2 000</td>
<td>48.78</td>
</tr>
<tr>
<td>Debriefing</td>
<td>3 000</td>
<td>73.17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>14 000</td>
<td>341.46</td>
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During the evaluation workshop, the participants formed two groups, one of medical officers and the other of assistant medical officers. Each group discussed the modules, their attempts to carry out a field research project, the problems they had encountered, and ways of improving the project work and the system as a whole. Lastly, the participants reported individually on their field research. Each presentation was followed by discussion and comments.

**Conclusions**

The inclusion of briefing and debriefing workshops and supportive visits to students in the field provided the kind of contact that is essential for isolated professional workers. It was useful not only for skills training but for solving current practical problems, and so it played an important part in helping the participants to provide better care. Also, the students were strongly motivated by the visits. While the travel of tutors adds to the cost of the course, it undoubtedly adds much more to its strength, and we recommend that such contact should be established in any programme.

There are bound to be difficulties in such an undertaking, if only because there are so many calls on the time of a student who is a district medical officer with extra administrative duties. This group, in particular, found that they sometimes made very little progress solely because they had no spare time. When an emergency occurred in the district, such as an outbreak of cholera or a major traffic accident, they had to deal with it first, and both domestic and hospital activities often had to take precedence over training, especially when there was a shortage of staff. This meant that participants had to be dealt with as individuals and not collectively. In planning a programme, therefore, a regional core team should ideally be established to concentrate on supporting the efforts of individuals throughout the programme. However, if individuals become the sole focus, the programme loses coherence, and the value of group debriefing is lost. Thus a balance between individual and group work needs to be established.

Generally, the participants were more interested in hospital-based than community-based materials, partly as a result of their basic training, which emphasizes clinical work. This deficiency in their training can be made up for by emphasizing the epidemiology module and the community aspects of disease.

In this programme, no arrangement could be made for special training in practical skills. It is not easy to accommodate skills training in distance learning programmes if the tutors are short of time. Skills workshops are eminently practicable and can be motivating for the health team if the health workers themselves decide before the workshop what skills they need to acquire for their work. But for them too, there is the problem of time and, in a hard pressed health service, it is often just not available. In this programme, supervision, and thus support, were less than desirable, largely because transport in the regions was not always reliable. Also, we were at the mercy of heavy rains which caused a total communications breakdown in Singida from December 1989 to April 1990— but such difficulties are a fact of life in many countries.
Students were expected to do their research projects within their own districts, with limited support from the district. This was not easy because the projects were not centred on or supported by the district hospital. The study of common local health problems is essential if care is to be accurately administered, but such an activity demands new thinking and new approaches which are often hard to manage. Nevertheless we strongly recommend learning through rural research, as it is a powerful stimulus to independent and self-directed study which is essential in any distance learning programme.

This exercise cost US$ 341 per participant but the students were engaged in health care for 27% of the 3 million people in the region, that is about 900,000 people. Therefore, the cost works out about $ 0.38 per person in the zone. Even this modest cost is greatly reduced if we consider the knock-on effect: the benefit of the programme spreads to more health workers than those who received modules, and we believe that the quality of health care rises significantly as a result.

In planning future distance learning activities, it will be important to bear in mind the following points:

- A programme of distance learning should be flexible in its timing, as excessive clinical and administrative duties can cause serious delays in the progress of learning.
- The Ministry of Health should not transfer people who are engaged in any programme of distance learning, as continuity is important for supervisors and participants.
- Visits by supervisors and tutors should be coordinated with other visits (for example, on immunization or essential drugs) in order to cut down on vertical activities, which are more expensive and less meaningful than horizontal ones.
- Face-to-face contact seems to provide the best motivation and support for students. Therefore conventional distance learning programmes should strive to make this possible. As technology advances and becomes more widespread, substitutes such as video or telephone contact can also be tried.
- Modules should be based on the learners’ existing competence and knowledge. A module designed for one group of health professionals may therefore have to be modified before it can be used effectively by a different group. But whoever the target group is, modules which foster primary health care and work in the community, and challenge, motivate and redirect the students, should be made available.
- Any programme needs a range of modules so that continuing education through distance learning at district level can be conducted over a period of several years and with an adequate measure of choice for those who take part. These modules should be freely available in libraries, but the particular needs of potential students must be assessed. Just as studies elsewhere have shown how very acceptable and effective problem-based modules are, district medical staff have shown that they are able and glad to undertake small research projects, if they can obtain adequate support and can concentrate on subjects which interest them. The results of such studies should be used in the local health service, with the students’ involvement, thus demonstrating the value of field research.
Other categories of staff, who were not included in the project, have asked for distance learning opportunities of this kind, and the programme could usefully be extended to other peripheral health workers. Obvious target groups in Tanzania are health assistants, rural medical staff, nurses and maternal and child health aides. The African Medical and Research Foundation has been assisting the Ministry of Health in developing modules for these categories of workers, but a more solid system of organizing and conducting the distance learning is needed, in which a support system is developed.

Continuous evaluation of distance education for district level workers is needed. Only then will the necessary experience and data be available for differing target groups so that the most appropriate programme can be mounted, continued and changed when necessary.

Acknowledgement
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Realism in doctors' education

The problem-based learning approach can be used to make educational programmes more relevant to health needs if the selection of problems in a curriculum reflects the health care needs that graduates will face. It is also important that problem-based learning and other educational approaches should reflect the practice environment, in which the health professional must make decisions that take into account the resources of and the constraints facing individual patients and the community as a whole. Therefore it is critical that educational institutions should develop new links with the service system that will guide them in the design of educational programmes and other efforts to serve society.