

## **WHY THE SCIENCE SHOP APPROACH COULD BE A GAME CHANGER FOR MEDICAL EDUCATION IN AFRICA**

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Professional medicine is good at treating disease but less good at understanding the people who suffer from them. This is important, because disease prevention is often a matter of people and communities acting in such a way that they minimise exposure to disease. For educational reasons, health professionals in Africa increasingly have an urban background. This is where the better schools are to be found. But this creates a barrier to understanding disease and how treatment works in rural areas. In an urban setting patients can quickly present themselves for diagnosis and treatment. The rural setting is different. Lack of money to pay for transportation is often a major problem. It takes time to mobilise resources and make the decision to move a patient over a considerable distance to a place where they can be tested and treated. Generally, the patient must be accompanied, and this poses problems of where the helpers will stay.

In the Ebola epidemic of 2014-15 fieldwork in typical rural communities established that typically, it took between one and three days for families to decide that a sick person needed medical help, and to prepare to move the patient (Richards 2016). A national ambulance helpline for suspected Ebola cases is useless if there is no road on which the ambulance can travel. The alternative is a hammock, but this is expensive. Typically, small livestock had to be sold, or loans arranged, to pay for the journey. These kinds of issues were determinative in whether a patient reached an Ebola treatment facility before becoming a 'wet' (and thus highly infectious) case. It took medical professionals a long time, and considerable prompting from social analysis, before the problem was fully grasped. In this case, the answer was to move testing, isolation, and treatment closer to the patient.

The above problem, however, is endemic in medical education. What in the training of a doctor or a nurse opens their eyes to the realities of daily life in the many small, impoverished and often isolated communities in which rural Africa abounds? Do they understand how a disease presents itself in such circumstances, and how the symptoms are interpreted by the patient, or the persons who will have to help the patient to seek help? The best treatment in the world will be ineffective unless some of the organizational, logistical, and interpretive problems inhibiting the decision making of rural patients and their helpers are solved. Some medical schools in Africa and Asia are now actively addressing this issue, with interventions ranging from lectures in medical anthropology to schemes to place students in rural families to help form a view of what medicine looks like from a user perspective.

A powerful tool, in these circumstances, is the (so-called) science shop (<https://livingknowledge.org/science-shops/>). The basic premise – and justification for the use of the word ‘shop’ – is that users of medicine have a good idea about what they need even if the technicalities escape them. So, the plan is to encourage patients to shop for what they need. A good shopkeeper anticipates these needs, and actively promotes new lines. This means devising activity which builds informed demand. Some kind of community experiment is implied, linked to an initial debate about what people think is their problem, and what they think they might need, and what is available from professional sources. The promoters of the science shop then work with potential ‘customers’ so that the customers can evaluate what approach works for them. The idea, of course, can be applied to any area of modern technology, but is well-suited to the supply of medical care.

Science shops have been used quite widely in Europe. Several European universities maintain portals – actual shops – where communities with a problem can ‘drop in’ to seek advice on how a problem might be solved with scientific input. But the approach also seems well suited to those African and Asian universities seeking to overcome the gap between a strong ‘rural’ demand for medicine and a largely ‘urban’ supply. A science shop works especially well when it is combined with staff training. It can act as an ‘internship’ or ‘field experimental’ arm of a school of medicine or technology, with much scope to deploy younger professionals in places and situations where they can develop a more general social perspective on their skills. Medical professionals are thereby forced to pay attention not only to the needs of users but to the ways users are organised and motivated. They begin to understand not only health and disease, but the ways patients maintain health and respond to disease, and how these ways might be beneficially changed.

The Pares project, in collaboration with the medical schools of Eastern Technical and Njala universities in Sierra Leone, is in the process of running a trial science shop focused on mosquitoes and malaria. Initial community consultations suggested that malaria ranked as the top public health hazard in a typical rural community (Jawei chiefdom, in eastern Sierra Leone) and that there was community demand for mosquito control to reduce malaria hazard. A village workshop was then run in Lalehun (Gaura chiefdom, eastern Sierra Leone) to explore local levels of knowledge about the malaria transmission cycle. It was established that the link between exposure to mosquito bites and malaria was well known, but that only a very few people could correctly identify the mosquito species (*Anopheles gambiae*) involved in malaria transmission or had the knowledge to identify breeding sites for this mosquito. Villagers and professionals undertook joint fieldwork to identify such sites. The infection cycle of the Plasmodium parasite was then explained. High levels of village attendance for this explanation, and the asking of many subsequent probing questions, especially by village young mothers, was taken as evidence confirming high levels of interest in and a willingness to engage

conceptually with the cause of the malaria problem. This was then linked to experiments with trapping mosquitoes in sleeping places and a demonstration of the effects of insecticide impregnated bed nets.

The current stage is to assess scope for community action (mapping and management of breeding sites for *Anopheles gambiae*, and better use of bed nets). This work will be led by a trained community nurse involved in nurse education at Njala, who also holds a PhD for work on malaria. Potentially, the field team will be staffed by medical students and trainee nurses, to assess if and how this reshapes their understanding of the malaria problem, as viewed from a community perspective. Assessment will pay attention to two aspects – is there any evidence that the approach reduces malaria cases, and does the intervention significantly reshape understandings of the malaria risk both at a community level and among student professionals. Evidence of potential success in either or (we hope) both of these areas will then be used to further embed the science shop approach in the medical curriculum, and expand it to other subject areas, such as (for example) agricultural engineering and social work.

**Further information:**

See *Living Knowledge: the international science shop network*,  
<https://livingknowledge.org/science-shops/>

**Reference:**

Richards, P. 2016. *Ebola: how a people's science helped end an epidemic*, London: Zed Books