

What are the limits?



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Forums, at least in this journal, have a life of their own. The contributors interpret the posed questions in ways which catch the forum organizer by surprise, thus producing a different, if no less valuable, contribution to knowledge, than had been envisaged. This certainly happened on this occasion, although the underlying demand, that researchers in the health transition and public health fields should remain vigilantly introspective, was met.

The organizer had in mind the following kinds of question which will be illustrated by examples from four areas: physical fitness; AIDS, especially in sub-Saharan Africa; smoking; and female circumcision. The central issue is the balance of individual rights against those of the larger community. To what extent should health researchers support the community or governments in coercing individuals or placing emotional pressure on individuals, especially if most of the risk is to be taken by the individual? There is also the issue as to whether health researchers have always proved their conclusions, or whether some become enthusiastic advocates at a time when the research base is still insecure.

In terms of physical fitness, there can be little doubt that the public health movement has gone beyond offering alternatives in lifestyles and eating habits and has associated fatness with foolishness at one extreme and sinfulness at the other. There has also been a reluctance to discuss the hereditary component, and whether periodic bouts of dieting really do lower mortality.

The AIDS epidemic raises a whole raft of issues. In sub-Saharan Africa most governments have made surprisingly little effort to change the sexual behaviour of their populations (cf. Caldwell, Orubuloye and Caldwell 1992), at least as judged by the international community. It is a reasonable assumption that many government leaders believe that the existing patterns of sexual behaviour are deeply culturally embedded, that they are the choice of the people, and that massive informational interventions would change little in behaviour while increasing the sum total of human unhappiness. Few foreigners feel that this is a responsible position, but we may be shaped by a kind of protestantizing of the global community. On the other hand many Africans regard it as irresponsible for a doctor not to tell the partner of a seropositive person the situation, especially in a region where research has shown that the infected person is most unlikely to divulge the information. They feel that international public health principles have been forged in different societies, especially ones where homosexual communities of significant size have been justifiably attempting to retain gains made against stigmatization.

Health researchers have generally supported governments not only in stigmatizing smokers and greatly restricting the areas where they can indulge their habit, but also in raising taxes or excises on cigarettes, often at the cost of impoverishing further many of the poorest families in the community. There are issues here which desperately need not only introspection but adequate social research.

Most of us support efforts to eliminate female circumcision, but advocates in this area are not pleased by research that shows that one product of the campaigns has been to return the operation from trained health workers to unhygienic and often dangerous traditional circumcisers (cf. Caldwell, Orubuloye and Caldwell 1997:1188ff.).

These issues are touched upon by the contributors to the forum, especially Adeokun. He raises a question of growing importance, whether health authorities in Africa should withhold from individual capable seropositive mothers the information that refusing to breastfeed a child will reduce the chances of the vertical transmission of HIV, because of the belief that, should the whole community act in this way, infant mortality would increase. A similar situation may be developing with regard to male circumcision, where the information that it probably offers some protection against HIV infection may be withheld because of the perhaps mistaken fear of aggravating inter-ethnic friction.

The major issue raised by the contributors (Cohen, Farmer and Kleinman; Findley et al.; Renne) is the restriction placed upon health interventions by the health providers failing to take into account the circumstances of their potential patients and hence failing to provide a service easily accessible to all. Thus the contributors surprised the organizer by arguing that public health workers should primarily be introspective not about how far they go but about not going far enough. In all their examples they were no doubt right, but the choice of examples may show the predilection of professionals in their own specialty. Kunitz implies that the health field must bear some responsibility for not providing better communications between researchers and policy-makers. Renne draws our attention to professionals beyond the health field by questioning whether economic rationalists urging the 'user pays' principle in the health field really understand the human implications in countries like Nigeria, and whether they have a moral obligation to understand those implications before recommending economic policy.

Kunitz raises the interesting point that the anti-alcohol campaign in America's Indian population argued that the aim was to restore traditional behaviour. It is unclear whether this was mostly a stratagem, or whether the health workers themselves valued this justification. It parallels the attempt, based on much weaker historical evidence, of some advocates in the 1960s and 1970s of Third World family planning programs to argue that pre-Western contact peoples had always intentionally controlled their numbers. It also raises the question whether First World populations, apart from the political enthusiasts for the traditional family, believe that their societies should return to past ways.

Finally, there is a question as to the extent to which the research justifies the intervention. Sköld justifies compulsory smallpox vaccination in Sweden on the grounds that it kept smallpox mortality low thereafter, but another interpretation of his Table 2 is that voluntary inoculation had proved sufficient, and compulsory vaccination added little during the subsequent half-century.

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Offer and request: preventive measures against smallpox in Sweden 1750-1900.

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Smallpox was a feared and dreadful killer all over the world during the eighteenth century. In Sweden the disease was a dominating cause of death and parents had to accept that their children were likely to be infected by the disease at least at the age of ten. These circumstances created a fatalistic attitude since the great number of deaths seemed to demonstrate the impossibility of control by man or medicine. Before 1750 Swedish physicians did not know of any efficient measure to prevent the raging smallpox epidemics. In the following decade the Medical Board started to discuss the possibility of carrying out experiments with inoculation (variolation), a method that had been practised in Britain for almost thirty years (Miller 1957). Putting pus from a smallpox crust into the arm of a susceptible child was intended to give a slight infection which would not cause death but which would give immunity. However, the method involved risks and the medical authorities were posed a delicate problem; how should inoculation be organized and which strategy should lead them through the process?

Judging the risks of inoculation

Razzell (1977:20-22) estimates that about one per cent of the inoculated children in Britain between 1721 and 1740 died as a result of the immunization. This was mainly due to the depth of the incision employed. Another factor that discredited inoculation was the risk of infection for those persons who had not been previously immunized. Moreover, mid-eighteenth-century physicians were not sure of eventual complications that could follow. In this situation medical authorities in both Britain and Sweden found it best to try inoculation on defenceless persons. In Britain an experiment was carried out on prisoners in Newgate. All of them, three women and three men, were sentenced to the death penalty and had to choose between execution and inoculation. In 1743 the method was made compulsory for children at the Foundling Hospital in London (Silverstein 1989:24-35). The Swedish medical authorities followed the same strategy and started with the inoculation of children at the Orphanage in Stockholm (Sköld 1996a:259-262). We can see that the mercantile ideology allowed experiments where the lives of humans were risked. However, the initial inoculations were successful and no children died.

The official view, held by both the physicians and the Medical Board, was that inoculation was too dangerous for other than skilled doctors to practise. Money was one of the motives behind this decision, but inoculation was also important for physicians when they strove for a better social position. Risse (1992:191) states that in accordance with humoralism, physicians quickly transformed the rather simple folk method into a complex medical procedure. In Britain the physician Buchan described how several colleagues tried to make people believe that they had knowledge which made it possible only for them to be successful with inoculation. Buchan considered this to be humbug, since commonsense and carefulness were enough. His vision was that inoculation should become universal and accessible for everyone; he even imagined that parents would inoculate their own children (King 1958:323).

The public considered inoculation a risk, associated with both pain and cost. Owing to the fatalistic attitude and to the limited possibilities of the monopoly system the method was

rarely practised in Sweden throughout the eighteenth century (Sköld 1996b:249-253). The Swedish Parliament and the medical authorities rejected all proposals to use the force of law to extend the practice. Instead they believed in a strategy by which prominent persons should act as good examples by having their children inoculated. The children of the rich certainly dominated inoculation in Sweden; however their example was seldom followed by others. This opposition had many causes, some of them rooted in prejudice and fatalism while others were expressions of true fear of the method. Parents explained to the medical officers that they could never agree to take a decision which involved any risk for their children, since this would make them actively responsible for the outcome. This often resulted in reports from the physicians stating that the public was stupid and stubborn in its attitude. The dominating fact that convinced most people that it was destiny that ruled, was that many, despite miserable food and care and without being inoculated, nevertheless survived an attack of smallpox.

Sköld (1996a:292-294) has concluded that approximately 0.36 per cent of the inoculated children in Sweden between 1756 and 1801 died. Nevertheless, numerous rumours made the public sceptical, one of the most frequently quoted being that no one who was inoculated would live for more than forty years. We must also remember that physicians and medicine were often not trusted by the public, who relied on folk medicine cures instead. Many parents refused to hand their children over for those two weeks the physicians claimed were necessary for preparation and care-taking. Instead they wished inoculation to be carried out in their homes, something the medical authorities did not approve since they were afraid of spreading smallpox.

Request and reluctance

An interesting change occurred during the last decade of the eighteenth century. In many Swedish regions physicians started to report increased inoculation and apparently the method became more and more accepted amongst the public. The medical authorities still believed informative pamphlets to be the best strategy to implement inoculation, but it is likely that seeing their neighbours have their children successfully inoculated persuaded most previously sceptical parents. From 1795 it seemed that immunization against smallpox had reached a turning-point, but suddenly physicians became reluctant to perform inoculation.

Hudson (1983:183-184) concluded that it was difficult to establish whether inoculation started epidemics or not, since the physicians often waited for an epidemic before they started. This was only partly true for Sweden, since many physicians were afraid of being blamed for starting the smallpox epidemics. Smallpox has been considered to be a very contagious disease, which explains the Swedish name *smittkoppor*: contagious pox. This apprehension has been challenged in later research on infectious disease. Such an approach is present in the following where Baxby concludes that epidemics were a problem in Britain and the judgement he makes is probably even more true for Sweden:

From that time until variolation was made illegal in 1840 the fear that it might transmit smallpox to susceptible contacts was one of the main problems which prevented its unrestricted use. As natural smallpox is not very communicable, and inoculated smallpox might be expected to be less so, the fear was possibly misplaced but very real nevertheless (Baxby 1981:30).

It is not likely that inoculation was responsible for starting smallpox epidemics in Sweden. Nevertheless, several rumours blamed the preventive method for doing so. Physicians denied that any great risks were involved in the practice, but since they were afraid of being blamed for spreading smallpox most of them did not want to inoculate during an epidemic. On the other hand parents were most willing to inoculate their children when

smallpox infections and deaths had occurred in their village or town. We can see that the situation involved some difficulties for the practice of inoculation in Sweden: the relationship between offer and request was not characterized by interplay but by contradiction.

Introduction of vaccination

In 1796 Edward Jenner carried out his first experiments with vaccination in Britain. By using cowpox lymph instead of smallpox matter he excluded the previous risks that had been involved in immunization against smallpox. The first vaccination in Sweden was carried out in 1801 and the new method more or less eliminated the practice of inoculation. Physicians and most people found great advantages in the new method. Apart from medical, financial, organizational and technical factors there were also emotional reasons for this change of attitude. When vaccination had been introduced it was soon apparent in the district physicians' annual reports that they had seen great risks in the practice of inoculation. The district physician of Halland, J. L. Westerberg, expressed his views in the annual report of 1802:

I carried out inoculation on two children of the upper class, on the insistent request from the parents, in the beginning of April, with matter from natural smallpox, inoculation resulted quite properly. But this is for sure the last time I will carry out inoculation subjected to human smallpox; because the anxiety I have been put through, I cannot express, before the disease to my and the children's favour went through, when I knew the credit vaccination already had acquired, the security whereby it was carried out (Westerberg 1803:6).

The introduction of vaccination was met with little resistance in Sweden and the method was soon accepted by the majority of the population. Nevertheless, many physicians and vaccinators complained that several children in their parishes remained unvaccinated. It was soon obvious that the idea of a compulsory law was seen by many as the only way to make vaccination general, which would lead to the possibility of eradicating smallpox. The Medical Board had tried to stimulate vaccination using different measures, but a compulsory law had not been discussed during the first years of its practice. However, complaints reached them which said that not even the church, county governor and king urging people to vaccinate their children had helped. It was often said that '... it is not compulsion, well, but if it will be nobody can resist it'. When the vaccinator exhorted people to follow the instructions from the Medical Board people answered that '... infringing of these instructions could not be especially dangerous, since they were not punishable by any fine' (Sköld 1996a:442).

The compulsory law

In 1816 Sweden was one of the first countries in the world to introduce a compulsory law for vaccination.¹ In the Parliament debate the estate of the Clergy differed from the others. A majority of its members rejected the proposal, realizing that it was the clergy in the parishes that would have to confront the inhabitants with compulsion and they were not interested in

¹Early compulsory vaccination laws were introduced in Bavaria in 1807, Denmark in 1810 and Norway in 1811. These did actually state indirect obligation. In Denmark for example, people needed a vaccination certificate in order to get confirmed or married. The Swedish law had no such links, it simply stated that a fee was required for those parents who had not vaccinated their children before the age of two years (Stein 1987; Völker 1990).

carrying out this duty. Opposition to compulsory vaccination in Europe was mainly the result of individualism and civil disobedience. Protests were also heard from physicians, displeased with state intervention in medical health care (Beck 1960:310-312; Lambert 1962:6-7; MacLeod 1967:211-212). Vaccination was practised under compulsion in Sweden without any discussion until the late 1850s. Then arguments were put forward explaining that the method involved dangers and lacked any permanent effect. The debate was intensified in the 1870s and 1880s; nevertheless organized anti-vaccination activity did not take place until the early twentieth century.

The first petition for the abolition of compulsory vaccination was presented to the Swedish Parliament in 1856-58. It was argued that it was not the privilege of the State to force mothers to inoculate a substance into the bodies of their children, which they believed was more dangerous than useful. The same arguments were used in the Parliaments in 1859-60 and 1862-63 when it was also stated that other diseases could be transmitted and compulsion was against the will of the individual. 'In other cases of sickness, even when death stands in the door, man has a freedom of choice to accept or reject the medicines, which are given to him', the critics argued. It was even claimed that vaccination could be the cause of the increase in several other diseases in Sweden and the explanation of the deteriorating physical status of Swedish recruits over the last 20-30 years (Sköld 1996a:451-452).

Revaccination and an alternative strategy

Most arguments that were used against vaccination, such as medical, economic and statistical, have been falsified by later research. The risks were not great, even if it occasionally happened that vaccine pocks were infected and severe complications occurred. Most vaccinators who complained about prejudice against vaccination did not consider too deeply the reasons for this. However, a recurrent reason was the care of the child. Many parents did not want to vaccinate their children before their birthday because they believed it was too dangerous. The eighteenth-century attitude was preserved insofar as some parents rejected vaccination explaining that they could never forgive themselves if anything happened. It was better to let matters take their own course.

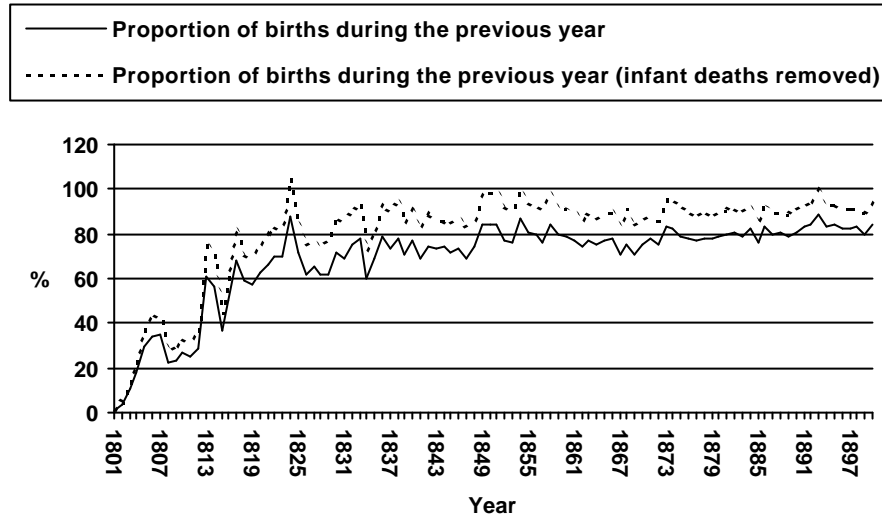
Nevertheless, most parents were willing to have their children vaccinated and when it was discovered that the method had only a limited duration of protection several adults requested re-vaccination for themselves, especially when reports of smallpox infections in the neighbourhood reached them. Revaccination of the whole population was, however, never discussed by the medical authorities. Instead they would rely on an organizational approach which during the eradication campaign in Asia and Africa of the 1970s was called containment vaccination. This meant that the practice was intensified in areas where smallpox occurred, in order to quickly limit the transmission of the disease (Sencer 1975:18-21). There was a clear link between smallpox outbreaks and revaccination in Sweden during the latter half of the nineteenth century. In other areas, however, revaccination was seldom practised. Over time the capacity for effective revaccination helped to avert the outbreak of large-scale smallpox epidemics (Sköld 1996a:479-496).

Conclusion

Eighteenth-century physicians held a monopoly of inoculation which mainly explains why the method was rarely practised in Sweden. The medical authorities meant that the risks involved were too great for making inoculation compulsory. Smallpox epidemics were not hindered by preventive immunization and the disease was a dominating cause of death throughout the century. Vaccination on the other hand was not dangerous and a compulsory law was introduced soon after its introduction. By keeping the vaccination rates higher than 90 per

cent from the 1830s it was possible for Sweden to register a low smallpox mortality during the nineteenth century and finally to eliminate the disease as a cause of death in the early twentieth century.

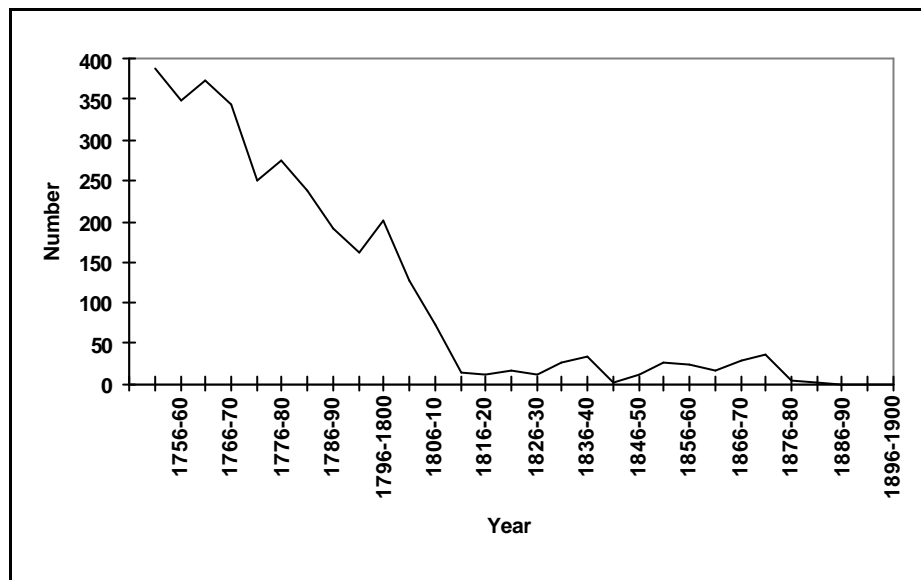
Figure 1
Vaccination rates in Sweden 1804-1900 calculated after two different methods



Source: Population records, Sweden 1795-1855. The older archive of the Table commission. BIIa:3-12. National archives. *BiSOS* serie K. 1860-1900. *Historisk Statistik* 1969:90-96.

Figure 2
Smallpox mortality rates per 100,000, Sweden 1751-1900

(five years averages)



Source: Bidrag till Sveriges officiella statistik (BiSOS), serie K, 1860-1900. Sundbärg 1906:109-160. Compiled population records. The older Table commission Archive, National Archives.

It is apparent that the compulsory law was important and we can only speculate what would have happened if the compulsory strategy had been replaced by containment vaccination, that is, intensified campaigns in times and areas threatened by smallpox epidemics. Perhaps it was not necessary to force the population to immunize their children? It is, however, important to keep a wider perspective. Sweden belonged to an international regime of infectious epidemics and by the decrease in smallpox mortality neighbouring countries were helped as well. When smallpox was totally eradicated from the world in the 1970s it was the result of a long-term process which had started with initiatives in the developed countries and which was continued and intensified in underdeveloped countries during the 1960s (Fenner et al. 1988). One of the great killers had been defeated and with this outcome we might conclude that compulsory vaccination had been successful during the nineteenth century while voluntary inoculation during the eighteenth century had failed.

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Health-behaviour interventions: with whom?

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Almost invariably, health-behaviour interventions are directed at patients, clients, or populations without scrutinizing the systems — the institutions and professionals — that provide the health services to determine if care and treatment are of high quality and readily accessible to those most in need of services: the poor and destitute. Analyses documenting the constraints on patients' ability to respond to health-behaviour interventions are infrequent, and critical questions, for example what is the degree to which personal agency directs the effectiveness of care?, are left unposed. Too often, people are blamed for not taking advantage of treatments or making changes in their behaviour when the providers of care are the problem because of their reluctance to change established, but ineffective delivery systems or to consider the everyday needs of the patients. In this brief commentary, we argue, from our fieldwork in the Skid Row area of Los Angeles and in the central plateau of Haiti, as well as a study conducted in rural China, that the causal link between so-called behaviour problems of individuals and groups and deleterious health outcomes is not as apparent as is often assumed.

Paul Koegel (1987, 1992) has written that when examining the 'ecology of service areas', it is necessary to consider 'service-resistant service providers' and 'service-resistant service settings', as well as 'service-resistant clients'. Such a holistic perspective offers a better framework in which to evaluate the nature of health-related behaviour among individuals and providers and, thus, determine at whom interventions might most effectively be directed. In this instance, Koegel was citing ethnographic details about the lives of homeless mentally ill persons in the Skid Row area of Los Angeles, evidence that revealed that apparently inexplicable and evidently maladaptive behaviour was understandable, at least in the context of the Skid Row environment (see also Cohen 1993; Cohen and Koegel 1996). For example, Koegel notes that one could appreciate why some homeless mentally ill persons opted to sleep on the streets rather than in one of the hotels in the area because they were not so much 'havens from the elements' as

tiny rooms with a bare bed and a sink to urinate in, the bathroom down the hall being too disgusting to use. They are hot in the summer, cold in the winter, filthy, vermin-infested, and dangerous all year round (Koegel 1992:14).

More to the point in regard to this forum on the ethical issues involved in health behaviour interventions is the following example from Skid Row. By the best available estimate, there are, on any given night, about 5,000 homeless persons in the Skid Row area of Los Angeles (Koegel, Burnam and Morton 1993). Epidemiological work has demonstrated that about 25 per cent (1250) of these homeless persons suffer from severe mental disorders (Burnam and Koegel 1991; Koegel, Burnam and Farr 1988). There was, in the period 1987-1992 when fieldwork was conducted, only one community mental health clinic in Skid Row. This agency, which was functioning beyond maximal capacity, was serving, to varying degrees, the needs of approximately 400 people — meaning that about 850 severely mentally ill individuals were without continuing services and treatment. In fact, if all of the persons in need of the services of the community mental health clinic had requested treatment, the clinic would have been overwhelmed to the point of collapse. Who, then, was non-adherent? The homeless mentally ill denizens of Skid Row who did not always take their haldol or lithium, or the society that had failed to provide them with adequate shelter and care? Is a homeless mentally ill person 'non-compliant' if he or she does not seek treatment when treatment is not available?

Health behaviour is a source of great concern in the treatment of tuberculosis, because inconsistent or interrupted medication leads to poor outcome and increased numbers of new infections, and increases the likelihood of the emergence of drug-resistant strains which are vastly more difficult and expensive to treat than drug-susceptible strains, and exact high rates of mortality (Centers for Disease Control and Prevention 1990; Goble, Iseman and Madsen 1993; Iseman 1993). Yet is it valid to always blame patients or, as is often the case, their cultural beliefs, when treatment fails? Our work in Haiti makes us question this assumption. Farmer (1997) presents a case history of a young Haitian man who developed multi-drug-resistant tuberculosis although he made heroic efforts to keep appointments, and made every attempt to comply with his physician's orders, and whose family made great financial sacrifices to obtain the prescribed medications he required. Nevertheless, as a result of substandard care and the uncertain availability of medications due to the country's political instabilities, this young man died after nine years of strict compliance with a brutal regimen. We would maintain that in places like Haiti, the culturally shaped aetiological beliefs of poor patients do not predict compliance with chemotherapy for tuberculosis. Rather, rates of adherence to therapy in Haiti's central plateau were associated with free and convenient care in combination with access to supplemental food and income. In the end, we must conclude that although the poor are most 'at risk' of developing or acquiring multi-drug-resistant

tuberculosis, so-called 'problem behaviours' are not so much the cause of treatment failure as is the fact that the poor are those most 'at risk' of being unable to obtain adequate care for this or any other disorder.

We do not mean to suggest, however, that nothing short of the elimination of poverty and political strife will ensure effective treatment of tuberculosis among specific populations, although such developments would have enormous beneficial effects. The experience of tuberculosis control effects in the United States provides an example of how changes in the delivery of services can bring about dramatic changes in the rate at which patients follow treatment regimens. As reported by Francis J. Curry (1968; 1975), former head of the Division of Tuberculosis Control, San Francisco Health Department, the rate of non-adherence among patients at the Chest Clinic at San Francisco General Hospital was distressingly high. In 1961, research found that more than 26 per cent of the scheduled appointments at the clinic were not kept. It was also found that the rates of missed appointments were highest amongst three distinct social groups: Chinese (25%), African-Americans (50%), and the overwhelmingly White alcoholics of the city's Tenderloin district (65%). Interviews at the clinic revealed that both patients and staff recognized the problem of missed appointments but attributed the causes to entirely different factors. Whereas staff concentrated on characteristics of 'problem patients' (e.g. language barriers, advanced age and alcoholism), patients focused on problems with the clinic (e.g. inconvenient hours and location, lengthy waits in unpleasant conditions, and the punitive and judgemental attitudes of staff).

Recognizing that the degree to which a program is accepted and used depends on resolving 'patient problems' rather than demanding behavioural changes on the part of 'problem patients', the Division of Tuberculosis Control decided to decentralize treatment services and established three neighborhood clinics: one in Chinatown, another in the predominantly African-American Westside health district, and a third in St. Anthony's Dining Room in the Tenderloin district. These clinics opened in April, 1962; all provided, if necessary, home visits by public health nurses. Immediately, rates of missed appointments dropped precipitously. In the first year, patients at the three neighbourhood clinics missed only 5.4 per cent of their appointments. Nor was this success short-lived. In 1967, rates of missed appointments were 4.8 per cent at the Tenderloin clinic, 2.0 per cent at the clinic in Chinatown, and 3.9 per cent at the Westside clinic. It is difficult to imagine that any patient-directed health behaviour interventions, other than hospital confinement, would have been nearly as effective. Furthermore, the decentralization of services, with its development of well co-ordinated treatment plans and the recognition that the treatment of tuberculosis took place within the context of other medical problems, socio-economic realities, cultural beliefs and practices, and emotional needs, no doubt resulted in better overall health care for individuals and the communities in which they lived.

In selected low-income countries, such as Pakistan and the Philippines, more than half, and frequently as many as three-quarters of patients with epilepsy are not in treatment (Desjarlais et al. 1995). Many of these patients are children and young people who started treatment but dropped out. (Drug treatment for epilepsy if begun in the first year of seizures will control seizures for two-thirds of patients after five years, and many of them need not use medications after that time period). This treatment gap is often blamed on behavioural variables such as low levels of health education, stigma, inappropriate use of alternative services, and family overprotection of patients. In a study in two extremely poor regions of China, Arthur and Joan Kleinman and their Chinese colleagues (Kleinman et al. 1995) showed that stigma and overprotection were indeed significant. But by far the most important obstacles to entering and staying in care were poverty and the cost (including the opportunity cost) of care. Of the families surveyed, many spent one-fourth of their household income on

treatment services and related costs such as travel and missed farm work at critical periods. Yet local public health workers and physicians seemed to underestimate the significance of poverty and cost.

China's economic reforms have been associated with breakdown in rural health care in many areas, especially where populations are poorest and most remote. In such settings, structural changes that improve access to care and lower direct cost are among the most important public health responses to epilepsy, which in China affects more than four million people, three million of whom live in rural areas. These measures can be combined with health education programs aimed at reducing stigma, family education programs that seek to reduce overpopulation, and other health behaviour interventions. Indeed, it is the combination of health behaviour with structural changes (more clinics, lower cost of drugs, less waiting time, financial support for those in extreme poverty) that is likely to exert the greatest effect.

In conclusion, we find it startling, though not surprising, that destitute patients with tuberculosis in Haiti, homeless mentally ill persons in Skid Row, Los Angeles, and epilepsy patients in rural China are held accountable for their failure to follow medical regimens even though optimal access to care may not exist. For example, an editorial in *Chest* once declared that 'patient compliance' was 'the most serious remaining problem in the control of tuberculosis in the United States' (Addington 1979:741); and a psychiatrist who worked in Skid Row told us, while echoing the sentiments of many in the field (Bachrach 1984; Lamb 1991; Opler et al. 1994), that non-compliance with psychotropic medication regimens was a primary cause of homelessness among mentally ill persons. But such views fail to appreciate that, throughout the world and for a wide range of medical and psychiatric conditions, extreme poverty, structural violence, disability, or all three constrain patients' agency and shape health behaviour. If one accepts that those patients who are least likely to comply are those least able to comply, then one must accept the fact that the debate over the ethics of health-behaviour interventions, in many cases, is premature. Before that debate can take place, we must address the systemic, extra-personal forces that create barriers to care. And, before we can assess with any validity to what extent the attributes of individuals are prime causes of poor health outcomes, we should ask the questions: are poverty and relative powerlessness significant contributors? And if so, is there a local *modus operandi* that would facilitate efforts to combine structural changes with health-behaviour interventions to bring about increased levels of health for everyone in a community?

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Research on alcohol use in native American populations

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The editor has asked an important question about the ethical issues raised by intervening in a way of life in order to benefit the health of all or part of a population. The ethical issue may be different if the public health problem being considered is perceived to be external to, rather than the result of the internal workings of, the culture itself. Clearly it is difficult to make absolute distinctions: most health problems are likely to be the result of forces both internal and external to a society. But to the degree that a condition is understood not to be integral to the culture and social structure of a community or society, dealing with it may be more or less problematic. For example, one usually does not encounter problems with immunization campaigns, for diseases like measles are likely to be viewed as conditions that happen to a society, not as conditions that are products of the very essence of the society. On the other

hand, interfering in the practice of female circumcision may raise a host of difficulties as it means disrupting established practices and power relations within a society.

Most of my field experience has been with Navajo Indians, much of it around problems of alcohol use and abuse. This is an ambiguous condition. Clearly alcohol as a substance was introduced to Navajos by Europeans, and there is no doubt it is foreign to the culture. On the other hand, the way Navajos incorporated it into their culture in the late nineteenth and early twentieth centuries reflected many of their values and patterns of social organization (Levy and Kunitz 1974).

Alcohol was used in several different ways, most importantly in domestic groups of both men and women, and by groups of men at social functions. In the latter setting, men often drank to intoxication and sometimes suffered untoward consequences as a result, especially accidental injuries, some of which resulted in death. But because cash was scarce and distances were great, access was limited and excessive use resulting in discernible and measurable consequences at the population level were rare.

This began to change in the 1930s with the destruction of the livestock economy and growing involvement in wage labour and the cash economy. Change accelerated during World War II and afterwards as people moved from rural areas to reservation and off-reservation towns to be closer to jobs, services, and other attractions of urban life.

In this changing context, access to alcohol became much easier, and patterns of drinking that had not been particularly problematic in the past began to have measurable consequences in respect of morbidity and mortality. And it was in this context, too, that definitions of alcohol use began to change. No longer was it simply something that men did to excess on an occasional basis. Increasingly it was defined as pathological (Kunitz and Levy 1974).

The process of redefinition was encouraged by the infusion of millions of federal dollars into alcohol prevention and treatment programs, and the employment and treatment of more and more people, all of whom began to be educated to understand the phenomenon of alcohol use in new ways. By 1990 contract funds for health programs, mainly alcohol abuse, were the single largest item in the Navajo tribal government's budget (Kunitz and Levy 1994). As among other indigenous peoples, in the 1970s issues related to substance abuse became caught up in concerns about cultural identity, sovereignty, and self-determination (Brady 1995). Prevention and treatment programs began to be seen as vehicles for preserving and/or rediscovering traditional culture (Kunitz and Levy 1994).

The effect on anyone working on such problems, then, is not that alcohol abuse is off-limits, or that it is not seen as worthy of study. On the contrary, there is an incessant demand that the research be put to programmatic purposes. This is attractive for the investigator who finds that people actually seem to be interested in the work. The joy is not unalloyed, however, for at least two reasons. First, investigators have no line authority in any of the organizations that provide services. Thus one can only make recommendations, not implement programs. This is not in itself a problem unless one is criticized for the fact that no programs have been based upon the investigator's research findings.

Second, despite expressed interest, no institutionalized means exist to transmit findings to the relevant providers of services. Job turnover is so rapid that the personal contacts made during the course of a study are often disrupted by the time the research is done and the findings are available to be considered in the policy process. In the meantime, however, critics score political points by castigating investigators who, they say, grow rich and famous off the misery and misfortune of the people whose stories they collect and publish.

Returning to the point with which I began, because the problem of alcohol abuse is now defined as one that is both foreign to and destructive of the traditional culture, the ethical issues raised by the editor are not especially salient. Addressing the problem of alcohol abuse can be understood as protective of the culture, not destructive. In this situation the ethical

issues are quite different: they involve not doing enough rather than doing too much, even as the institutional context makes it difficult to do much of anything.

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The limits to health intervention

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Health interventions are aimed at modifying a sequence of health-affecting events which will produce unsatisfactory outcomes for the individual or the community, in the absence of those interventions. Such interventions are often based on proven scientific theories of what constitutes the right solution to a given health problem. In addition, health interventions can take the form of technological innovations and tangible inputs such as testing kits, vaccines and drugs. They can also take the form of intangibles such as information and education for behaviour change. The dilemma in the introduction of interventions is that those who proffer solutions are often not the same as those who are most seriously affected by the health problems. The ethical issues also arise when, as is often the case, the expected benefits can only be obtained at some cost to the individual or communities.

What makes HIV/AIDS interventions so contentious?

In the case of HIV/AIDS interventions, it is to the extent to which 'ends and means' are jointly predetermined by intervention providers and recipients, or that decisions are in the best interests of all parties, that those limits are set or shifted. There are three constituencies involved in most public health interventions: the affected individual, the community, and third parties who are indirectly affected by decisions taken by individuals or communities. Consequently, it is desirable to make a continuous evaluation of whose consent is needed and whose 'pains and gains' are being assessed in the determination of those limits.

Prevention and control issues

Control of sexual contacts

Early in the AIDS epidemic, the proof of the sexual origin of the infection formed the basis of the Cuban program of isolation of HIV+ individuals as a means of regulating their sexual life, and preventing the transmission of the virus. That the isolation policy may have contributed to the slowing of the epidemic in Cuba can be seen as a benefit for the country obtained at a high cost to the individual (De La Concepcion 1993). While such a drastic measure may be practical in the island-nation of Cuba, it is hardly applicable in Uganda, with its porous territorial boundaries. It is an unfortunate coincidence that Cuba has a system of government that may have made the measure much more enforceable. Unfortunate, because it clouds the debate on the relevance of similar measures in other societies where the inescapable dynamics of the epidemic may have made limited isolation of infected individuals, or a tight control of undesirable sexual contacts, a viable early intervention. The ethical justification for such control measures is that the earlier they are effected, the fewer the individual liberties which are traded for the common good. An earlier attention to this logic should have informed an earlier control of sex-tourism in Sri Lanka, and some other Asian countries, than has been the case.

Mass screening, and test result notification

The ethical issues raised by blood testing and result notification policies arise from the fact that tested individuals are often responsible for the current or future serological status of third parties, such as their sexual partners or unborn children. Consequently, the case for the confidentiality of testing and notification of results is not as clear-cut as it may first appear (see Guidetti et al. 1993).

Mass screening has played a limited role in the control of the spread of HIV, and of vertical transmission in particular, because mass screening is considered inappropriate and unethical, given the inability of most health systems to cope with the social and medical implications of the information provided by such screening. When individuals are tested, there is a moral reluctance to share the test results with third parties who may have a stake in the knowledge. This is particularly true of discordant couples. The extension of that confidentiality to the test results of prostitutes also raises agonizing questions of the right of the patrons to know the particular risks they face in given sexual contacts.

Another ethical issue is raised by the timing of tests in females, if the chances of vertical transmission are to be significantly influenced. In developing countries, there are three critical points for such tests during the reproductive span: before marriage, at maternal clinic contacts, and at selective screening exercises. For a discerning few, the prospects of entry into marriage without knowledge of the HIV status of the partner is inconceivable. The number of couples who soon fall ill and die within a short period of their wedding in a country like Uganda is sending a strong signal of the need to know the serological status of marriage partners.

The next opportunity for HIV testing could be when and if people make contacts with the modern antenatal services. In Uganda such antenatal HIV testing is only available on request in government hospitals which serve large populations. In contrast, some of the private hospitals provide routine testing for antenatal clients as a precaution against management of subsequent complications. Given the key role that such testing plays in the prevention or management of vertical transmission in the West (Read et al. 1992; Scherphier et al. 1992), it appears negligent to deny the introduction, or avoid patronage of such screening programs.

The third test opportunity is at selective screening exercises such as pre-operative testing or blood donation related testing. This is the only option available to males in most developing countries, irrespective of the HIV prevalence levels. Given the greater chances of male-to-female than female-to-male transmission of infection, it is a pressing public health need to establish equal opportunities for the testing of the sexes. Even for women, antenatal

care coverage varies between and within countries from a quarter of all pregnant women in Morocco to nearly all pregnant women in Trinidad (Jacobson 1991).

In developed countries, the strategy for minimizing the chances of vertical transmission takes the form of administering tests at four points surrounding the initiation and carrying of a pregnancy: pre-pregnancy testing can form the basis of becoming or not becoming pregnant; testing during pregnancy helps to determine maternal HIV-status and the chances of intra-uterine transmission; perinatal testing allows estimation of the chances of the infant being infected; and postpartum testing helps to establish the serological status of an infant born to a known HIV+ mother (Miles 1992). This situation represents an ideal to which the developing countries can aspire. Poor health infrastructure prevents the attainment of this ideal and is, in effect, a circumstantial constraint on the ethical implementation of health interventions.

Breastfeeding and vertical transmission

In spite of the link between breastmilk and vertical transmission of HIV, there is a program of popularization of breastfeeding in the developing countries. It is the considered opinion of international organizations that the benefits of prolonged breastfeeding far outweigh the risks of vertical transmission by HIV+ mothers. Such a position illustrates the complications which arise from the decision-making powers of such organizations, as well as from the time-lag between the establishment of new scientific facts and modification of preventive measures in developing countries.

The weight of the scientific evidence can be summarized in the following terms: the estimate of the transmission rate in studies of breastfeeding infants is currently between 14 and 27 per cent with the possibility of upward revision as the technology for the monitoring of viral artefacts in breastmilk improves (Hom et al. 1992; Thomas et al. 1992); weaning of infants of HIV+ mothers has been shown as an effective strategy for reducing perinatal transmission (Kuznetsova et al. 1992); and there is a high HIVDNA expression in breastmilk very soon after parturition (Ruff et al. 1992).

It is, therefore, alarming that the common good of prolonged breastfeeding is summarily imposed on whole populations. The fact that the populations may be unaware of the risks, or if aware, may be unable to make an informed assessment of the chances they are taking in breastfeeding, does not reduce the unease raised by these international decision-making processes. There is a case to be made that the scientific evidence is not compatible with an undifferentiated popularization of breast feeding. In any case, the ability of the care-givers to make a full explanation of the phenomenon to patients as a basis of informed consent, is often constrained by the inability of local languages to cope with the range of issues raised by the epidemic. The gap in communication is, however, compensated by the degree of 'trust' by the patient in the good judgement and infallibility of the care-giver. What has happened in the AIDS epidemic is that side-effects, toxicity, and failure of drugs to deliver on the promises of a cure, have eroded that trust.

Therapeutic measures

Vaccine and drug development

The absence of indigenous vaccine and drug development capacity in developing countries reduces the ability of such countries to influence the testing and costing policies (Bora et al. 1993; Costa et al. 1993). The objectives of immunotherapy are served in a number of ways. These include the inhibition of HIV replication (Calio et al. 1992); and the use of drugs that decrease the Tumour Necrosis Factor and which in addition decrease HIV replication (Dezube et al. 1992). Whatever the approach, one of the major concerns with immunotherapy is the

adverse side-effects of some of the drugs. Another emerging concern is that the trial of these technologies poses ethical, policy and other problems for programs in developing countries (Mugerwa 1992).

The high cost of drugs and therapies

The fact that most of the research and development and production capacities are in private hands limits the 'humanitarian' or 'philanthropic' inter-governmental rationale for the distribution of drugs and health techniques which have been so effective in the management of earlier world epidemics. The predominance of the profit motive, therefore, determines the cost of drugs. Current estimates of the average yearly cost of treatment for a person with AIDS in various countries and regions range from \$38,000 for the USA (Hellinger 1992) to between \$26,000 and \$32,000 in the OECD countries and to less than \$400 in Africa. The general rule that the annual in-patient and out-patient care cost for people with AIDS approximates the per capita GNP (Cameron and Tarantola 1992) also gives an indication of the magnitude of the direct costs of care to patients and their families.

Although patients in developing countries can rely on the extended family resources in an emergency, such reliance draws other persons into setting the priorities of the patient in complying with medical advice and directives. A husband has the final say in most reproductive health decisions in developing countries. The knowledge base of the husband, as well as his pride and personal interests, can often take precedence over the well-being of the wife and the child in deciding what items of scarce financial and other resources should be used. A further complication is that the rapid collapse of the family support system in the epidemic reduces the chances of the help given to AIDS sufferers ever being reciprocated.

Limited successes of HIV/AIDS interventions

Against the background of the discussion so far, the limited success which has been recorded in reducing the rate of infection in Uganda (BBC 1997), derives from information, education and communication (IEC) factors. In contrast the 12 per cent decline in AIDS deaths over the period of a year reported in the USA and 25 per cent in France were the outcome of better treatment of AIDS-related conditions and access to the most effective modern techniques for the control of the progress of HIV infection to the AIDS-related and AIDS stages.

Conclusion

If there is any one lesson from the difficulties in setting the limits of health interventions in developing countries, it is the need to pay attention to the power relations between the possessors of the truths of health transition (see Legge 1995) on which the medical interventions are based, and the hapless beneficiaries of those interventions. The AIDS epidemic at least brings to the fore some of the crude power and economic relationships underlying the application of ethical standards to developing countries. A caveat is that the blame is not only on one side: instances of limited effectiveness and loss of faith in Western medicine; the combination of modern and traditional treatment; and fundamental problems of beliefs about the causes of ill health, further complicate the determination of limits of interventions.

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The limits to health intervention

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Interventions intended to improve health are complicated by the ethical question of what to do when these interventions interfere with local cultural practices and beliefs. There are several possible approaches to the problems although they tend to presume interventions that counter practices and beliefs that individuals themselves can change (e.g. that pregnant women can stop smoking). The example that follows considers a slightly different aspect of this question, namely, what is the range of appropriate options for outside groups and concerned public health professionals when local health personnel are themselves the ones obstructing an

intervention? While this example is complicated by legal and political issues of national sovereignty, the question remains as to what ethically can be done to facilitate a health intervention when societal practices (e.g. forms of patron-clientage, private use of public funds) lead health workers to undermine this process. The example to be considered is that of the 1996 cerebrospinal meningitis (CSM) epidemic in northern Nigeria (Court 1996; Médecins sans frontières 1996; WHO 1996). In this case, there was no need to change individual patients' behaviour since people willingly went for immunization and treatment. Rather, it was individuals in the public health care sector who sometimes prevented timely and effective prophylaxis and treatment during the height of the epidemic. The question of intervention is relevant here both for public health professionals within Nigeria and for health organizations such as WHO and Médecins sans frontières (MSF), both of which had a role in providing and administering CSM vaccines as well as in monitoring the course of the epidemic during the period from January to May 1996 (MSF 1996:43; WHO 1996:80). The following incident, described by public health personnel from Ahmadu Bello University Teaching Hospital, Zaria, illustrates the particular ethical questions involved.

An outbreak of cerebrospinal meningitis in northern Kaduna State

On January 18, 1996, the head of one village in a rural area of northern Kaduna State sent word through a sociologist from Ahmadu Bello University (ABU), Zaria, who was working there, that assistance was needed in what appeared to be an outbreak of cerebrospinal meningitis, nine cases of which were reported. By the time a nurse and the registrar from the Department of Community Medicine, ABU-Zaria, arrived in the village three days later, four people had died and the other five had been treated and discharged from the local general hospital. In the following week, village heads from three other villages in the area came to the local health centre to report outbreaks of CSM in their villages.

During the last week of January 1996, the local government medical unit head was briefed by ABU Department of Community Medicine staff about the rising number of cases of cerebrospinal meningitis being reported in the local government area. He was informed of the need for the adequate provision of CSM vaccines and of the relevant drugs and other materials required to contain the outbreak. The man responded by saying that the local government had neither vaccines nor drugs. Instead, he advised them to give the villagers water injections in place of vaccines for 'psychological satisfaction'.

By 7 February 1996, nineteen villages reported cases, yet no drugs or vaccines were forthcoming from the local government. One village head approached the staff of the one local health centre, offering to purchase drugs and vaccines to treat cases in his village. Initially, the ABU medical officer in charge of the centre refused, saying that he did not want to get involved in local politics, that is, go over the authority of the local government medical unit head. Eventually the officer did purchase five vials of CSM vaccine at a cost of N2,500, paid for by the village head, which were subsequently administered by local health centre staff. By mid-February 1996, local government health centres had received allotments of CSM vaccines supplied by the Kaduna State Ministry of Health which were administered soon after.

Discussion

This incident raises the ethical question of how to put pressure on the local government medical unit head to intervene in a health crisis while at the same time not completely undermining the public health system, imperfect though it may be. In this case, a village head went over the authority of local health centre personnel by asking ABU Department of Community Health staffers to obtain CSM vaccine for his village. Apparently both he and the

Department of Community Medicine personnel concluded that the urgent need to vaccinate villagers justified going around slow-moving local government health officials. The ethical question here is to decide how outside interventions can be made which help to reactivate a public health system that has essentially been gutted through government spending cuts, infrastructural decay, and poorly paid staff. How does one balance the short- and long-term interests of Nigerian citizens?

These questions lead to more complex ethical questions concerning government health spending, development policies, and international aid. One also needs to consider these local cases in the context of broader economic reform programs. For example, the implementation of user fees as a method of medical cost recovery in public health care (World Bank 1994:155), along with concurrent demands for currency devaluation and unwieldy debt service payments (Cornia, Jolly and Steward 1987), have contributed to a situation where 'for many Nigerians private medicine is now the only source of Western biomedicine' (Alubo 1990:306). As an editorial in *The Lancet* (1990:886) has observed:

The evidence is far from conclusive about the feasibility of introducing charges for health and education without lowering utilisation of these services... Moreover, it is questionable, in the current African context of underpaid health workers, widespread corruption, and decline purchasing power, that such charges could generate sufficient revenue to finance social service improvements or expand access to the underserved people in Africa's rural periphery.

The Lancet's gloomy assessment of the future of public health care in Africa is seconded by Alubo (1990:320) who sees the private health care sector in Nigeria eventually 'eclipsing... the beleaguered public medical system'. However, the privatization of public health care in Nigeria raises two problems with respect to the prevention and treatment of cerebrospinal meningitis outbreaks. First, how will health care for the poor be provided? And second, how will epidemics be controlled and monitored without a public health care system? The example of the CSM epidemic in northern Kaduna State offers some insights, if not answers, in addressing these questions.

In considering the appropriateness of health interventions for local cultures and practices, one needs to consider the political economic context in which individuals, be they local health workers or villagers, behave. In the northern Kaduna State example, the recalcitrant (and cynical) local government medical unit head had his own interests which, given the current state of the Nigerian economy, are unlikely to be replaced by an altruistic vision of health care in the near future. The village head who was able to get vaccines for his village through ABU medical personnel did so by going over the heads of local health officials. Yet despite the different interests and opposing actions of these two men, the village intervention apparently helped put pressure on local health officials, who did take action, even if it was late and insufficient (Ejembi et al. n.d.). This situation suggests that an appropriate health intervention in this case might be one in which local village leaders work with university-based public health practitioners, state health officials, or international NGO personnel, both to address community health problems and to put pressure on local government health officials. This approach has the benefit of incorporating community-based concerns into health interventions as well as strengthening local health care monitoring. At the same time, such an approach would operate within the public health care system yet would correct some of its excesses. While it may be difficult to balance the desire to intervene in an effective manner with the need to improve local public health services, health interventions sponsored by international non-government organizations or spearheaded by national health practitioners need to take these twin concerns into account. Short-term interventions that undermine the workings of the public health system may ultimately be of questionable benefit. While the behaviour of local

government health care workers is unlikely to change under current economic conditions (see Van der Geest 1982), health intervention that both motivates community health care self-help and puts pressure on local health officials may be one means by which cerebrospinal meningitis outbreaks can be contained and other public health interventions ethically implemented.

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Stretching the limits of health interventions in Burkina Faso *

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Many health programs in developing countries share the common goals of reducing infant and child mortality. But there is no consensus on the most effective way to attain these goals.

After regarding the historical evidence, some contend that improvements in child survival are most strongly associated with a wide range of social and cultural changes, such as changes in attitudes to child rearing, in expectations regarding future support for parents from children, and in women's expectations for themselves and for their children, often stimulated as part of the literacy revolution (Ewbank and Preston 1990; Basu and Basu 1991; Caldwell 1979, 1986). Of all the social factors associated with child mortality reductions, maternal education, specifically literacy, has been singled out as one of the most important. In studies conducted in diverse locations such as Bangladesh, India, Mexico, Nigeria, and Zambia, strong correlations have been found between maternal education and child mortality (Lindenbaum 1990; Jain 1994; LeVine et al. 1994). From the findings of these researchers, public health practitioners have advocated child health programs that are implemented in combination with a range of developmental interventions that will stimulate the kinds of social and cultural change believed to be the key to facilitating changes in health attitudes and behaviour.

While not discounting the effect of social factors such as maternal education, others demonstrate the importance of access to health care services (Omorodion 1993; Caldwell 1994). In Nepal, a key factor associated with health status was the use of modern health services, which in turn was correlated with proximity to a road and knowledge of a health care worker (Niraula 1994). Recent debates about reversals of the health transition in the Soviet Union and newly independent states focus on the deleterious effect of the disintegration of the health system (Barr and Field 1996). Accordingly, some advocate strengthening the availability of primary health care in the areas of high child mortality.

Of course, it is very difficult to isolate the effect of health care interventions, independent of educational or public health interventions. Often it happens that improved primary health care programs are implemented in the context of significant economic and social changes, as in Pebley and Amin's (1991) study of Ludhiana district, India. Even if the program's effect on mortality is assessed separately for each category of villages (with different health and non-health components), overlaid on these changes are those of the broader societal development, which can additionally and differentially affect program implementation and assessments. Indeed in their study, they find that overall child mortality rates declined at an equal pace across all combinations of program implementation. However, they do note significant differences in gender-specific mortality. They attribute the narrowing of the sex differential in child mortality to the effect of health education on

*The authors gratefully acknowledge the contributions of the entire staff of Save the Children/Burkina to the development and success of the program described here. Without their efforts, we would have nothing to communicate. We also would like to acknowledge the support for the work from the US Agency for International Development, through its child survival grant to the Burkina program. Finally, we thank David Marsh and Save the Children/US, for their co-operation, enthusiastic support for the project and for the permission to publish the results in this journal.
the family's traditional system for allocating health and nutrition resources preferentially to males. Thus, the net effect of the program depends on the interaction with cultural and social values.

The other factor to consider is the sensitivity of health behaviour to socio-economic or community development inputs. When the behaviour is complex or requires the presence of several complementary factors (e.g. money with which to buy medications, visit of the vaccination team, retention of a sequence of instructions for health care), the more complex kinds of behaviour are likely to be adopted in the situations where the appropriate factors exist to facilitate adoption. Although the cultural orientation to the behaviour may be identical across all program zones, the health interventions will not work as well where there are factors which counteract or offset the possibilities generated by the health program. For example, bringing a child for vaccinations when the mobile team visits requires that the team comes on time, that parents are notified of the visit in advance, and that they can free themselves to bring children for the team visit. The more isolated neighbourhoods may not be informed in time, those with poor road access may find it impossible to get to the team on the specified day, or the parents may not be able to interrupt the critical sequence of harvesting activities. On the other hand, if parents can mix their own sugar-salt solution, they can treat their children's diarrhoea whenever it happens, regardless of their distant location, poor roads, or other constraints.

For this reason, when evaluating the effect of health and non-health interventions, it is important to include a range of program types and behavioural changes. If there are differences in the adoption of behaviour associated with specific contextual variations, this will suggest the need to consider how susceptible particular kinds of behaviour are to specific program features that vary at each site.

The program in Burkina Faso offers the possibility of controlling for different combinations of program activities. In this project, developed by Save the Children/US, an integrated child health program was implemented in all villages, and in about two-thirds of them a specified combination of other programs was implemented. Further, the child health promotion project targeted a variety of health behaviour and outcomes, giving the necessary opportunity to assess the sensitivity of particular kinds of behaviour to variations in the program and developmental context.

Study area

The project area on which this paper focuses is the Sapone district of Bazega province, 30 kilometres south of Ouagadougou, the capital of Burkina Faso. This area is typical of the savannah area which constitutes the settled area of the Sahel. The area is dominated by subsistence agriculture, with the major cash crop being cotton. During the rainy season, people raise millet, sorghum, peanuts, beans, and vegetables. People live in villages, which are characterized by several different neighbourhoods, with the cultivated area extending beyond the village clusters. Despite the proximity to Ouagadougou, the villages are not served by electricity, and few have modern deep wells.

Although a few non-governmental organizations are working with Sapone district villagers, this paper focuses on the project organized by Save the Children/US. The program works with villagers to implement small-scale, low-cost community development projects according to the village's priorities. In all projects, the program's major inputs are to facilitate a discussion of possible improvement activities that the village might undertake, and then, having established the priorities, to train the villagers in the skills needed in accomplishing the activities. Materials used are locally manufactured or purchased by the villagers. Many of the villages have chosen to develop their cotton production, the major cash crop of the area. Other community development activities include village well construction, group guaranteed lending and savings, vegetable gardens and irrigated cereal production, and literacy training in village schools.

Since 1988, health components have been added to the projects in all villages encompassed by the project. The first health component focused on raising child immunization coverage. In 1992 a major child survival program was implemented. More importantly for the present paper, the health components were extended to villages which had not yet undertaken any community development activities. By 1993, the program had been implemented in 26 villages, reaching a population of 25,670, with 5,693 women of childbearing age and 4,859 children under the age of five.

The project adheres to a self-help philosophy. The village, through its extant committee structure, discusses its priorities and undertakes the activities it chooses. Any activity depends on the labour and material contributions of the villagers. The key input of the FDC is training, to enable the villagers to carry out their chosen activities. In the health programs, the project relies on a team of local women who have been trained as health motivators. The motivators conduct educational sessions on a variety of health promotion activities, such as use of simple salt solutions, and cleaning underbrush to reduce mosquito breeding grounds. They extend their activities by training local health committees, local volunteer health workers, and midwives in health promotion activities.

The project also has a strong self-evaluation orientation. Before commencing any health promotion activities, the project started with a village census to establish the situation at the start of the project. This census is updated annually, with regular monthly updates to vital statistics. The monitoring system includes several of the project inputs, making it possible to monitor program activities and outcomes.

The health intervention

The child health promotion project of Sapone targeted several activities associated with improvements in child survival: administration of oral rehydration therapy, immunization of children and women, adoption of improved maternal and child nutritional practices, prenatal consultations and adoption of birth control for birth spacing, and control of malaria. The project provided no actual medical services, but emphasized the training of local health workers to educate, counsel and refer the villagers. While the local health workers were trained to distribute essential medications, this was a minor element of the program. The project's main contribution was training and supervision of newly trained residents.

The key to the project's success was recruitment and training of people from the district to work as village health motivators. They educate and motivate village health committee members and village health volunteers who in turn educate and mobilize village parents. The village health motivators each are assigned 3-4 villages where they go bi-weekly to conduct educational sessions for villagers, train and mobilize the volunteers, conduct growth monitoring, and distribute medications such as chloroquine to the person in charge of the village drug supply.

In two-thirds of the villages, the health training is complemented by the introduction of self-help development programs, including well construction, village-based credit and savings, gardening and other farming changes, and adult literacy. For each of these programs, the project outreach staff help create a village committee to determine the village needs, to develop a plan for addressing the needs, and then to build the necessary service structure. The village is responsible for all the inputs and labour required for any construction projects, such as digging a well or building a school.

As with the health activities the project staff concentrate on education and training. Because the non-health sector programs are implemented at the request of the village, each village may have a different combination of programs. Table 1 outlines the different combinations found among the 26 villages.

Table 1
Distribution of villages by program mix

Program mix	No. villages	Mid-project population	Crude death rate
Health only	5	5905	16.8
Health & literacy	3	2122	16.5
Health & non-education	3	3721	18.8
Health & literacy & 1	6	7731	17.9
Health & literacy & 2	6	4381	17.1
Health & 2 non Lit.	3	2261	17.7

Only five of the 26 villages had only health programs. In six villages health programs were complemented by only one other program. Establishment of literacy programs and village schools is the most common choice for a complementary program, both when only one additional activity is selected by the village and when more than one are selected. In 15 villages (over half of all villages) the program mix includes literacy programs. In most cases, the literacy programs are further complemented by other developmental activities, usually village wells and small-scale credit programs. In only three cases were two complementary programs implemented when literacy was not included.

Program evaluation

The health programs were implemented for four years (1992-1996), with good baseline data for 1993-1996. Some of the non-health programs pre-date the health interventions, while others do not. The project activities were monitored regularly with on-site supervision and the submission of quarterly reports by staff.

In addition, a locally introduced and managed health information system generated the data needed to evaluate changes in health outcomes. Before implementing any program, the project organizers conducted a complete census and identified all women of childbearing age in the 26 villages. In each village, a specially trained 'registrar' received information from co-villagers regarding all vital events: births, deaths, marriages, migrations and moves. These were recorded in a simple notebook and then verified by the village health motivator with a home visit at the time of her regular bi-weekly visit. Verified events were computerized at the program office in Sapone. Data from February 1994, 1995, and 1996 are used in this paper.

The project was evaluated in 1996 using several different methods. The first set of data was obtained from the project's own monitoring system. This system provided information on vital events, immunizations, pregnancies, and selected indicators for vitamin consumption. The second set of data was obtained from household surveys conducted in 1994 and again in 1996, of approximately 200 randomly selected women age 13-49 years with a child under two years. They were selected in batches of seven from each village, with two batches selected in the larger villages. The surveys were conducted by interviewers trained from among the group of village health motivators and village registrars. The surveys included questions about knowledge and adoption of the child health care practices promoted by the village health motivators.

The third set of data for the evaluation of the project came from qualitative interviews and focus groups conducted in 1996. The focus groups were conducted with the village health volunteers, local health committees, and with a group of village men. The focus group questions, developed with the entire staff of the project, solicited points of view on the most beneficial activities of the project, those most beneficial to family health and to their level of living, the difficulties they encountered in adopting the suggested behaviour, and their suggestions regarding actions or advice for further improvements of the program.

Because of the particular interest in determining the effect of the health interventions with and without the multisectoral complementary activities, the evaluation was structured to allow a comparison of findings in projects with only health programs versus those with multisectoral activities. Focus groups were conducted in villages with and without complementary activities (two sets of groups in each category of village). Focus groups were conducted by moderators trained from among the group of village health motivators. Discussions were held in the Moore² language and recorded in French by village health motivators serving as observers. No village health motivator conducted focus groups in any of the villages for which she was responsible.

Findings

As seen in Table 2 there were remarkable reductions in infant and child mortality during the three-year project period. For the baseline, figures refer to February 1994 for the original 18 'early starter' villages where the project was started. For villages added the following year (the late starters), the baseline refers to February 1995. Thus, it is possible to make comparisons between the groups for comparable program durations. For both early and late starters, the changes in infant and child mortality are reported by health and developmental program mix.

Table 2
Change in infant and child mortality, 1994-1996 by village program mix

Village category	IMR baseline	IMR final	CMR baseline	CMR final	% decline in IMR all villages
n=18 (1994)	139	70	54	35	50
n=8 (1995)	91	68	69	34	25
n=26	135	69	55	35	47
Villages with 2+ programs					
n=13 (1994)	136	52	50	25	62
n=2 (1995)	120	36	81	18	70
n=15	133	49	53	24	63
Villages with <2 programs					
n=5 (1994)	148	136	68	52	8
n=6 (1995)	49	107	53	40	+118
n=11	85	117	59	24	+37

Despite the short period for observing the effect of the program on mortality, it is clear that this was significant. Infant mortality declined from 139 to 70, a 50 per cent reduction. The child mortality rate (deaths to children under age 5) went from 54 to 35, a 35 per cent reduction. The second set of figures in Table 2 shows that the largest reductions in infant and child mortality occurred for the villages with two or more developmental interventions. In these villages, infant mortality declined from 136 to 49, a drop of 63 per cent. The two villages which were added to the program a year later actually had a slightly higher drop for the shorter observation period (a 70% decline). Child mortality rates also were halved, from 53 to 24. The child mortality decline was comparable in the early and later starting villages.

In contrast, the third set of figures in Table 2 highlights the much smaller reductions in infant and child mortality for the programs implemented in the villages with only one or no

²Mossi, Molé, Moshi.

developmental activity. In these eleven villages, infant mortality actually rose from 85 to 117. Part of the reason for the increase is the presence of two villages which reported no infant deaths for the baseline year. The absence of deaths was rechecked only in 1996, so it is possible that there might have been some missed deaths, but none were found unreported in 1996. The two villages with no reported deaths were both later starting villages, and if we look at the figures for the early starters only, we observe a drop of only eight per cent, from 148 to 136. In the eleven villages with only health interventions, child mortality dropped from 59 to 24, a decline of 59 per cent.

If we consider only the contrast for villages which had the full three years of interventions (1993-1996), we eliminate the difficulty of comparing results for varying periods of intervention. These figures are the first ones reported in each panel of Table 2. The infant and child mortality reductions for the 13 villages with multisectoral programs are significantly higher than those observed in the villages with one or no non-health programs. Infant mortality declined by 62 per cent from 136 to 52 in the former villages, a difference which is significant at the .000 level (Chi-Square = 41.4). It declined by only eight per cent in the group with only one or no complementary intervention. This change in infant mortality is not significant (Chi-Square = 0.59). The change in infant mortality was also significantly greater in the former than the latter group (Chi-Square = 28.8). Finally, the 52 per cent reduction in child mortality for the villages with two or more complementary interventions was significant (Chi-Square = 8.62), while the child mortality reduction of 25 per cent for the villages with no or only one developmental intervention was not significant (Chi-Square = 2.2).

While the results cover only a small time period when program effects on mortality are usually not expected to occur, there is nonetheless evidence of a significant reduction in the villages with multisectoral interventions. It would be nice to be able to further disaggregate the study findings by type of developmental intervention, but unfortunately the number of villages involved and the different durations of program implementation do not permit a more detailed breakdown. In the next section of the paper we explore the behavioural and attitudinal changes that accompanied these different mortality reductions.

Survey responses on changes in behaviour in all the villages

Behaviour and attitudinal surveys conducted in the second program year and at the end of the program covered key child health promotion practices, including those related to reduction in diarrhoea, feeding during weaning, participation in growth monitoring, behaviour to avoid high-risk births, and child vaccinations. The surveys show an increase in health promotion behaviour across the entire program area. The following table documents the increase observed in this behaviour, at the start of program implementation and then after three years of operation.

Table 3
Behavioural and knowledge changes, 1993-1996

Objectives	Achievements	Before program %	After program %
Reduction in diarrhoea			
	Knows to give fluids	20	73
	Knows to breastfeed more	15	60
	Knows to give more soft food	6	47
	Uses ORS or SSS	33	92
Supplemental feeding at weaning			
	Knows to start porridge at 4-6 months	60	80
	Knows to give simple porridge without fat	58	79
	Knows what weaning foods to give	7	96
Participation in growth monitoring			
	Has a growth chart	75	99
	Had child weighed	30	76
High-risk births and STDs			
	Knows need for 3+ prenatal consultations	65	88
	Knows to have first consult. in trimester 1	42	82
	Had no prenatal consult. for last pregnancy	72	6
	Women having two or more prenatal consultations	12	68
	Wants to space next birth	69	83
	Uses modern contraceptives	45	48
Vaccinations			
	Child completely vaccinated	69	89
	Proportion women with 2+ anti-tetanus vacc.	97	98
N		240	210

The surveys show substantial adoption of recommended behaviour. The health promotion practices became almost commonplace among the population served by the programs. The mothers also registered substantial improvements in their understanding of factors promoting child health.

Because of small sample sizes in each village, we were not able to report the change in behaviour separately for each group of villages. However, we did conduct focus groups in each group of villages, and these interviews clearly show a difference in attitudes and behaviour in the two groups of villages.

The mothers clearly knew much more about the appropriate treatment of diarrhoea than they had at the commencement of the program activities. As seen above, the proportions knowing to give fluids, to give soft food, and to breastfeed more increased by about 3-4 times for each practice. At the end of the program activities, over half of the mothers knew these treatments for diarrhoea, compared to less than one in ten at the beginning. The mothers' knowledge is matched by their behaviour. Before the implementation of the health programs, only 33 per cent of the mothers knew to give sugar-salt-solution (SSS) to a child; at the end of the program almost all mothers knew this (92%).

More modest improvements in knowledge were reported for use of supplemental feeding to be given while weaning a child. At the start of the program, only seven per cent knew what weaning foods to give. After three years of nutrition demonstrations and village nutrition education sessions 96 per cent of the women reported knowledge of at least one weaning food. The proportion knowing what type of porridge (without fat) and when to give the

porridge rose from 60 to 80 per cent. At the end of the program, 99 per cent of the mothers of two-year-olds reported having a growth chart and 76 per cent reported having their child weighed. This corresponds to program statistics which show a dramatic increase in the number of children weighed on regular village health motivator visits.

In both categories of villages where focus groups were conducted, the men and women were well aware of the changes in health of their children and the contribution from their own activities. Women said the following:

The health advice clarified much for us about how to raise and nourish children. Before we took care of children almost by chance. The educational sessions on diarrhoea have helped us better manage health problems.

Now I know what to do when my child is sick with diarrhoea.

The sessions on diarrhoea have helped us a lot. I had experience myself two times with diarrhoea, when using the packets stopped the diarrhoea.

We now know how to take care of our children with different porridges, because mother's milk is not enough.

The village health committee observed the effect of this on mortality:

We rapidly treat the little illnesses of our children and then we avoid the bigger illnesses and the big expenditures for medications.

We know that diarrhoea is less now. The number of rehydration cases is down, and each diarrhoea lasts a shorter period.

In following their advice, we have changed our hygiene and diet. Now we know these things. Those who follow the advice change; those who do not want to follow them, they don't change.

We think that women have received advice, and this advice helps them improve our children's health. Thanks to the weighing of children and the food demonstrations our children are not so sick. They are better nourished and eat well. This advice has helped us improve our health, so that now certain illnesses do not get worse.

Although improvements in behaviour and reductions in mortality were observed in both categories of village, the view of these improvements differed in the two types of villages. In the villages without complementary developmental interventions, the focus group participants frequently noted the difficulties of participating in the health education sessions or in accomplishing the recommended changes, as the following comments of the village health volunteers illustrate:

Without a deep well in the village, women must leave to search for water instead of participating in an educational activity. Also, illiteracy is a brake on their participation, because many women prefer to take care of their own work rather than participate in meetings.

The focus groups highlighted the importance of the village well on women's participation in health promotion activities. In the villages without a well, this is what they said:

Our principal problem is lack of water. We are tired from going to fetch water. Sometimes we can't even find water. And even for washing it is difficult to find water.

In the villages with a village-dug well, men said the following:

The well has saved women hours of walking and waiting. During the dry season our wives sometimes spent the entire day getting water. Now they can get it here. And so they have time to go to the education sessions.

Vegetable gardening and soil conservation practices also were noted for their effect on health:

The gardening has helped us improve the health of our family. Part of the production we use to fortify sauces, and the rest is sold. Then we have money to purchase medicines when we need them.

There has been a change in everyone's behaviour. Now our eyes are opened. People are more involved in village activities. Thanks to the advice on anti-erosive embankments, there has even been an increase in agricultural production.

Literacy training, including for women, also was seen to be essential to the acceptance of new behaviour. According to the village health committee in one of the villages which did not have a literacy program:

Training given to the village health volunteers is good, because village health agents alone can't take care of all the health problems in the village. But for the village health volunteers to function well, they need to be literate and to have regular refresher courses.

Table 3 also shows the effect of the programs promoting prenatal care, anti-tetanus vaccination, and improved diet for pregnant women. At the start of the program, 65 per cent of the women knew that women need three or more prenatal consultations, and 42 per cent knew that the first consultation should occur in the first trimester. However, only 28 per cent had any prenatal consultations for their last pregnancy, and only 12 per cent of the women had two or more prenatal consultations. Both the knowledge and the actual visits increased significantly during the project period. At the end of the project, the majority of women surveyed (88%) knew that three or more consultations were needed, and 82 per cent knew that the first consultation should occur in the first trimester. For their last pregnancy, 94 per cent reported having made at least one prenatal consultation, and 68 per cent reported making two or more visits for their last pregnancy. At the end of the project 98 per cent of the eligible women had received two or more anti-tetanus vaccinations. Thanks to the information on the benefits of birth spacing from the village health motivators, at the end of the project 83 per cent of the mothers with a child under two wished to delay their next birth, and of these 48 per cent reported using modern contraceptive methods for this purpose.

Again, the health committees were knowledgeable about these changes:

The village health motivator helps us a lot in following our children. Thanks to her, we know about all pregnant women in the village. They accept taking chloroquine during their pregnancy (to avoid serious malarial episodes) and they take the iron recommended.

We have learned how to follow pregnancies, and the changes are due to the discussions. The training is good, because women now understand more, and it's due to the meetings.

The village midwife now is trained on the factors making for a risky pregnancy. We know when the woman must be evacuated.

District health officers corroborated the increase in referrals for care and delivery since the project commenced.

Women appreciate the information they have received about birth spacing. Among the project benefits articulated by the women were:

There are the benefits of birth spacing, which are numerous. Such as rest for women, better growth of children, and better for the first child to stay healthy.

Since the discussions we have learned. Now we space our births.

Summary of the focus-group commentaries

These comments highlight the different processes of acceptance of health messages and behaviour in the two program contexts. In the villages with only health program activities, the villagers wanted to make changes, but they clearly were less able to do so, and they failed to achieve the same kinds of mortality reduction that were obtained in the other villages. Women found it very difficult to find time to attend health education sessions or to carry out some of the simple recommendations. In contrast, in the villages with complementary programs facilitating the accomplishment of basic needs, women had time to go to the educational sessions and learn how to better feed and care for themselves and their children. In addition, some of the developmental interventions positively expanded the resources available for maintaining health: clean water, small amounts of cash to buy food or medicine, vitamin-rich foods to supplement the diet. In this way, the developmental activities were critical facilitators for the adoption of health practices.

The comments clearly reflect the synergism between the health and developmental activities. More importantly, they reflect the villagers' understanding of this synergism and their commitment to continue to promote it.

What we have learned

The program in Burkina Faso demonstrates the efficacy of village-based child survival programs. With fairly limited resources applied over a very short period of time, mothers throughout the project area demonstrated their ability to learn essential child-survival concepts and to apply them in their daily lives. As women and men observed in the focus groups, after learning the new skills, mothers felt competent to handle what were previously serious diarrhoeal incidents. They were glad to learn of steps they could take to protect their children's health, to improve their diet, to avoid malaria, and so on. And they found that they could actually accomplish these steps. Finally, they could see and appreciate the effect these behavioural changes had on their children's survival.

Equally importantly, the program shows the very important multiplier or facilitation effect of complementary non-health interventions. Developmental interventions significantly increase the effect of health interventions, mainly by giving the village women more time and resources to allocate to improving their children's health. In the villages where the health education sessions were not complemented by a variety of activities enabling the villagers to

better meet their basic needs, they were less able to attend to the health education messages received. Pressures of time and inadequate financial or food resources limited what these villagers could do for their children and for their own health. They fully understood the dilemma they faced and were eager to undertake well digging and other activities that would enhance their ability to make desired nutritional, behavioural, and health care changes.

This project illustrates the significance of time as a major constraint on behavioural change. Both men and women feel constrained by their heavy work responsibilities. When it comes to a choice between fetching water and listening to the village health motivator, they must choose water. The weaker health outcomes in the villages without complementary developmental activities show that these repeated choices do inhibit major reductions in child mortality. If planners of health programs want to increase their effectiveness, they should carefully plan their activities to minimize the amount of extra and 'prime' time demanded for participation in the activity.

Within the health intervention itself, it is important to consider the timing of activities from the villager point of view. Whenever possible, health education sessions or demonstrations should be scheduled off the 'prime' working time of the morning and early evening when women are preoccupied with household chores. Complementarities within the program should be fostered whenever possible, as in the Burkina program where the baby weighing became the occasion for food preparation demonstrations. Co-ordination also should be sought among the various providers of health services. In the Sapone district program, for example, immunization coverage increased less than expected because the program could not accurately inform villagers of forthcoming visits by the mobile immunization team and they were unable to co-ordinate these with other events for which the villagers would be gathered anyway.

Consideration also should be given to ways to help men and women restructure their obligations so that more time can be freed to attend sessions and develop new health promotion skills. In the villages with complementary well digging and gardening activities, the activities effectively shifted more work and responsibility to men. The men dug the wells, which in turn enabled their wives to attend health education sessions. Similarly, the men assisted in construction of the vegetable gardens and anti-erosion dikes, which relieved the women's work burden, which normally includes vegetable and peanut cultivation. With these gardens, the women were more certain of producing vegetables, making their time investments more efficient.

To be cost-effective, health programs need to work closely with those promoting economic and infrastructure development, so that the investments in health are not wasted. In an arid area like Burkina Faso, well digging was a high-priority complementary activity for freeing time. The villagers also craved literacy programs, as with these they felt they could better retain the educational messages of the village health motivators. But whatever the essential resource, it is important for the health programs to co-operate with those undertaking developmental interventions so that the basic needs are met and resources are made available for effective participation in the health program.

At a minimum, planners of health programs need to consider the complementary inputs that families require in order to adopt recommended changes. Our experience in Burkina Faso suggests that there is ample desire to improve health. The limits come from the situation that does not easily generate necessary resources. In addition to time, important ingredients for health promotion might include a stable, year-round water supply, expanded availability of vitamin-rich foods, lamps for conducting evening educational sessions, and literacy training for women and men, so they can write down and retain health education messages. Health program staff should co-operate with others so these things can be developed along with the health activities.

It may be that the utility of the developmental interventions goes far beyond their outcomes on time and financial resources. They also may be useful as educational tools. Each program requires the villagers to learn and apply new facts and skills. They have the opportunity to experience the efficacy of applying new ideas or approaches to solve their problems, reinforcing the already strong desire to learn. This experience is likely to be transferred to health interventions through greater receptivity to the interventions and understanding that application of the recommended changes will prove beneficial.

To achieve the maximum from a health intervention, it is important to stimulate and respond to the very positive attitudes towards health improvement, as was found in Burkina Faso. The health program activities did this with the participatory and empowering approach used. The health activities were introduced as steps that villagers could take to help their children to better lives. Fellow-villagers, with the full support of the village health committee, introduced each step; this made each element seem manageable, and hence more likely to be adopted. Further, the villagers put pressure on each other to adopt these activities. The village health volunteers worked hard to encourage women to attend health education sessions and to help them remember what to do.

Another element in the success of the Burkina program was the fact that villagers were accountable for their actions. Deaths, births, and other vital events were monitored regularly, and villagers gathered at least once a year to discuss their progress in achieving mortality reductions and other health improvements. This made improvements self-reinforcing, an achievement they could mutually applaud. In the villages without complementary developmental interventions, they were hungry for more improvements. In the villages where they had undertaken both health and developmental activities, they had much to applaud each year.

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