Applying medical anthropology in the control of infectious disease

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Summary

This paper focuses on two roles of anthropology in the control of infectious disease. The first is in identifying and describing concerns and understandings of disease, including local knowledge of cause and treatment relevant to disease control. The second is in translating these local concerns into appropriate health interventions, for example, by providing information to be incorporated in education and communication strategies for disease control. Problems arise in control programmes with competing knowledge and value systems. Anthropology’s role conventionally has been in the translation of local concepts of illness and treatment, and the adaptation of biomedical knowledge to fit local aetiologies. Medical anthropology plays an important role in examining the local context of disease diagnosis, treatment and prevention, and the structural as well as conceptual barriers to improved health status. National (and international) public health goals which respect local priorities are uncommon, and generic health goals rarely coincide with specific country and community needs. The success of interventions and control programmes is moderated by local priorities and conditions, and sustainable interventions need to acknowledge and address country-specific social, economic and political circumstances.

keywords anthropology, public health, infectious disease, sustainable intervention

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Introduction

Historically, anthropologists have always been interested in health and illness, diagnosis and healing and death and dying. This has been both as a consequence of the discipline’s wider concerns with the management of crises and the search for causality in everyday life, and due to the role of science, religion, magic and ritual in protecting community welfare and ensuring continuity through generations. While medical anthropology as a discrete subdiscipline has a briefer history, its genesis is tied to anthropology’s most fundamental questions of social and cultural life.

Anthropological interest in infectious disease control is, by contrast, relatively recent. The expanding range of specializations within medical anthropology has occurred partly due to continuing anthropological curiosity about the natural, biological and cultural worlds and their intersections. The focus on particular illnesses, including infectious diseases, has led to the exploration of various theoretical interests. The interest in infectious disease follows from anthropology’s professionalization as an applied science, the interest of other public health scholars in anthropological methods and theories, and the involvement of anthropologists in international health programmes of multilateral organizations and bilateral aid programmes. The increasing presence of anthropology within WHO programmes is an example here (Gove & Pelto 1994; Vlassoff & Manderson 1994).

Practically, the failure to contain various infections biologically or environmentally, and the continued lack of comprehensive and enduring technical programmes leave us with health education and related behavioural interventions as the primary means to limit disease and reduce mortality. This emphasizes the need to understand better the roles of human behaviour and social structure in the transmission of infections, and to analyse the difficulties in introducing and sustaining interventions for prevention or treatment.

Belief, anthropology and public health

In his critique of developments in medical anthropology, Byron Good (1994) problematized the role of medical anthropology in public health. In most intervention-driven
medical and public health programmes, he argued, scientific medical knowledge is positioned as superordinate to folk beliefs, constructing in the medical as in other domains a hierarchical relationship between cosmopolitan and indigenous knowledges, right and wrong, science and magic, myth and truth. This juxtaposition of knowledge/belief, truth/myth underpins various models of health behaviour and behavioural change. This includes the Health Belief Model, which remains the predominant conceptual framework determining health education and promotion and which takes as axiomatic the linear relationship of knowledge to behaviour. Accordingly, public health programmes aim to replace ‘false’ beliefs with ‘accurate’ knowledge, and by changing community knowledge, it is assumed, behaviour will also be changed. Consistent with this assumption, a major social science component of disease control has been to document knowledge, attitudes and beliefs, either through ethnographic interviews or surveys, with the aim to adapt national or multinational interventions to suit local settings.

Good acknowledges the tensions that exist for anthropologists. Institutions that are responsible for policies, resources and programmes to improve people’s health enjoy the power and authority that privileges their knowledge over those of their subjects. Public health institutions determine the means by which good health might be attained, and anthropological knowledge feeds into this process. For many anthropologists, however, there is considerable unease in documenting behaviour and beliefs assumed to contribute to disease and ill health, in isolation from the social, economic and political contexts. But pragmatic, humanistic and ethical considerations confuse the case. The applied anthropological involvement in public health and other public interest programmes is also motivated by a commitment to minimize suffering, and although various local remedies may be effective in preventing infection or reducing distress, the pragmatic position which most anthropologists adopt is to facilitate access to known, effective interventions – antibiotics for bacterial infection, multidrug therapy to treat leprosy, early diagnosis and appropriate treatment of malaria, and so on. As Wall (1995) argues, shamans’ songs cannot treat obstructed labour; neither, in the context of this paper, do they prevent pneumonia, malaria or dengue fever.

Rapid anthropological assessments

Anthropologists conventionally conduct extensive field research to contextualize human behaviour and specific beliefs and values. This has been modified over the past decade, as a result of changes in the careers and employment of anthropologists as consultants, in such areas as policy and programme development, monitoring and evaluation, health communications, and so on, where there are typically explicit demands for ‘deliverables’ and ‘products.’ Consultancy work – for private organizations, government contractors and nongovernment organizations working in development – in particular demand that anthropologists take short-cuts in their research, temporally and methodologically, while maintaining the methodological mix that has characterized conventional ethnography to allow maximum internal validity through triangulation (Brewer & Hunter 1989; Brannen 1992; Breitbart et al., 1993).

The adaption of anthropological techniques to fit contractual and logistic constraints (Manderson & Aaby 1992a, 1992b; Beebe 1995; Bennett 1995) is somewhat problematic. Anthropologists working in infectious disease control have been particularly exercised to clarify and adapt the methods and techniques of anthropology to allow ‘relevant’ data, however defined, to be collected, which might then provide the informational basis for the development of policy, programmes or specific interventions. Often, particularly in poor country settings and with respect to infectious disease control, this collection of data takes place in localities and under circumstances without trained anthropological or other social science expertise, hence the need for a simplified approach to collecting social information. The cost of this approach is the loss of contextual information, and the probable oversimplification of behaviour due to the brevity of fieldwork and the lack of participant observation which enhances, and indeed is the one means to ensure, validity of data.

Other public health researchers within epidemiology, health education and communication, demography, health economics and so on, however, have incorporated anthropological techniques such as in-depth interviews and focus groups, placing anthropologists in competition with other professionals and demanding that they exercise efficiency in their work. This has made it important for anthropologists to be explicit about their methods and techniques.

Over the past 15 years, manuals, handbooks and field research protocols have been developed to facilitate the application of anthropological techniques, interests and concepts to applied research. This paper draws substantially on my own experience in designing rapid assessment manuals and approaches in infectious disease and other health-related areas, including with respect to malaria (Agyepong et al., 1995), hygiene and sanitation (Almedom et al., 1996a), food safety (unpublished, in collaboration with P. Desmarchelier), reproductive health (Manderson et al., 1997a, b), STDs and HIV/AIDS (Aboagye-Kwarteng et al., 1997; Larson & Manderson 1997), and mental health (Larson et al., 1997). Many of these have been concerned with infectious disease, where the impetus has been to provide road maps to the collection of data that can be quickly fed into control
programmes or related interventions. The work undertaken in water and sanitation programmes, diarrhoeal disease
control and respiratory infections, malaria and other vector
borne diseases, as well as especially HIV/AIDS, are cases in
point (Scrimshaw and Gleason 1992; Manderson et al. 1996)
For manuals and articles pertaining to these fields, see inter
alia Scrimshaw and Hurtado (1987, 1988), Bentley et al.
(1988), Manderson and Aaby (1992a, b), Gove and Pelto
To date, there has been neither evaluation of rapid
assessment sampling procedures and the manuals, nor of
their role in collecting information for applied health
interventions or by control programmes. The exception is
Kate McIntyre’s study of fertility control and contraceptive
behaviour, which compares data collection by rapid
assessment sampling with hand-held computers, with
conventional sample survey procedures (Manderson 1997a;
McIntyre 1998).
The manuals often make explicit the need to describe and
analyse the broader social, economic and cultural context in
disease-based research, but there is no way that
anthropological sensibility – theories and concepts, analytic
approaches and anthropological imagination (Dimen-Schein
1977) – can be collapsed into this same format. Hence more
conventional anthropology remains important to generate
baseline information and to monitor changes in the
transmission, prevention and treatment of disease.
Ethnographic research within the context of rapid assessment
procedures is a valuable means to understand behaviour and
action.

Local taxonomies and aetiology
For a number of infectious diseases including diarrhoea, ARI
(acute respiratory infections) and malaria, early diagnosis
and treatment is critical in reducing mortality, and social
science as well as applied clinical research has concentrated
on this (Gove & Pelto 1994). This research has had two
purposes: identifying the factors that influence people’s
ability to diagnose illness and/or to distinguish minor
ailments from life threatening disease, and the factors that
affect people’s preparedness to use biomedical services and
adhere to prescribed treatment. In this context,
anthropological research has documented different
modalities, therapies and folk aetiologies of illness,
recognition of signs and symptoms and their congruence
with biomedical categories and patterns of use of healers and
health services, as well as compliance with treatment and
disease prevention interventions (Helitzer-Allen et al. 1993).

Ethnographic research to reduce pneumonia deaths
provides a useful example. Cough is the entry point for WHO
treatment algorithms (Gove & Pelto 1994). The caretaker’s
knowledge of cough is her own starting point for response
which, to reduce severe morbidity and mortality requires a
mother to calibrate information about the cough with other
signs – particularly fast breathing and chest indrawing – to
ensure timely treatment of the sick child. Several studies have
now drawn attention to the importance of local
categorization of cough and the role that this plays in
determining treatment strategies by caretakers. In the
Philippines Nichter (1994) and others (McNee et al. 1994;
Simon et al. 1996; Tallo 1996) have described the particular
importance of folk categories in delaying biomedical
treatment. A child’s cough may be a sprain (i.e. piang) and
this demands that the mother take the child to a local healer
for confirmed diagnosis and treatment (by massage) before
alternative paths are pursued. This occurs although people
differentiate between numerous types of coughs and degrees
of severity on the basis of cough type and/or additional
symptoms, allow for a wide range of aetiological agents
(natural and supernatural), and follow highly individualistic
patterns of resort to care (McClelland et al. 1994; Tallo 1996).

Prevention of infectious disease and change of behaviour
The prevention of infectious disease is complex, and for only
a few diseases, such as smallpox and polio, is an effective
vaccine available and easily delivered. The complexity derives
from the mix of circumstances that affect transmission:
environmental, financial, structural, infrastructural, and
behavioural. For example, the prevention of water-borne
and water-wash diseases can be achieved with the introduction
of water safety, sanitation and hygiene procedures (Boot &
Cairncross 1993). Successfully introducing and sustaining
behavioural change is not so simple, however: the
interventions require substantial financial investment for
water and sanitation infrastructure, and major health
education campaigns to encourage people to use latrines at
time, to wash hands after the use of latrines, before
preparation of food and eating, and after handling material
that might be contaminated. Yet this is still too simple. In
poor communities, individual household latrines may not be
affordable, and communal latrines may cease to be used
because they are poorly maintained, smell and are
surrounded by flies; insufficient taps may be provided, taps
may be placed in inconvenient locations, or people may
maintain a strong preference for flowing river water over tap
water; notions of hand washing vary and the action is not
always sufficient to reduce bacteria; household animals and
children may continue to pollute the environment and
themselves; fuel may not be available in sufficient quantity for cooking or cleaning utensils and the safe preparation of foods; there may not be appropriate ways to store food to avoid contamination after preparation; householders may lack sufficient time to adhere to the wide range of actions required to ensure hygiene; and so on (see Almedom et al. 1996a, b). Cultural values related to pollution, hygiene and domestic duties shape these behaviours that are associated with infection.

A specific example of the difficulties in prevention is from the public health work to prevent opisthorchiasis, a liver fluke (Opisthorcis viverrini) infection of approximately 7 million people in north-east Thailand and Laos. The life cycle involves snail and fish intermediate hosts with the adult liver fluke inhabiting the biliary system of the final host (human or other fish-eating mammal). People acquire the infection through the consumption of encysted metacercariae within the muscle tissue of raw or undercooked fish, which is eaten frequently in the form of fermented fish sauce (pla-ra) and raw fish (koi-pla) (Sornmani et al. 1986; Preuksaraj 1984; Harinasuta & Harinasuta 1984). Public health education programmes commenced in 1953 to discourage the consumption of raw or undercooked fish by drawing attention to the association between fish consumption and associated illnesses. These education programmes raised public awareness but have not greatly affected consumption of raw fish and fish sauces, and 40 years on, levels of infection and associated morbidity rates remain high. No systematic anthropological research with respect to the infection, but epidemiological and nutritional evidence suggest the importance of social and cultural factors (Doherty & Posanai 1990). Seasonal availability of foodstuffs and limited cash to purchase food, for example, influence the consumption of raw fish within the village. The production and distribution of pla-ra for home and commercial use increases particularly during the dry season when villagers are subject to food shortages and diet is often limited to sticky rice and pla-ra, insects and other gathered foods. Class differences in morbidity suggest also that poor people are more likely to consume local fish-sauce before fermentation is complete, i.e. when there are still viable encysted metacercariae in the sauce. The disproportionate number of infected adult men highlights the importance of the ritual and social consumption of raw fish (and other raw foods), in particular at drinking parties. Health education campaigns aimed at reducing the consumption of pla-ra ignore the poverty of people's diets, and underestimate people's resistance to what is seen to be the imposition of central Thai values over local traditions. In the short term, delayed diagnosis and treatment increases the risk of transmission of disease and its severity for the individual; in the long term, failure to follow the protocol of early diagnosis and treatment leads to continued transmission of infectious disease and increasing possibility of drug resistance. Malaria provides another illustration. Research in The Gambia and subsequent work elsewhere in Africa indicates the potential of insecticide-impregnated bednets in reducing infection, morbidity and mortality from malaria, especially in infants and young children (Greenwood & Baker 1993). The task of encouraging people to sleep under bednets to avoid mosquitoes is not unproblematic, however, since people do not necessarily accept that malaria is transmitted by mosquitoes, nor that mosquitoes are the sole cause of disease. People may not be able to afford nets, and may find sleeping under the nets too stuffy, smelly, claustrophobic or too hot. Variability in local understandings of disease and preventive practices, and variance in vector habitat and behaviour, endemicity, and so on, further make dependence on a particular intervention problematic.

To elaborate: research in eastern Ghana indicates that people vary net use inter- and intra-seasonally and among households (Gyapong et al. 1992). My collaborative research conducted in urban Accra and the Greater Accra district in Ghana highlights different uses of bednets according to perception of mosquitoes as a nuisance, unrelated to perceptions of their role in transmission of malaria, and according to householders' need for cash flow on an everyday basis (Agyepong & Manderson 1998). In Tanzania, again, people's use of nets varies according to season, temperature, and number of mosquitoes (Minja, personal communication).

Yet even where communities do not accept the association between mosquitoes and malaria, nor bed net use and prevention of disease, nets have been introduced for their other perceived advantages such as the reduction of bed bugs and nuisance mosquitoes (Aikins et al. 1993; Klein et al. 1993; Cham et al. 1996). This reinforces the often tenuous links between knowledge and practice, and the need instead for interventions to be easy to adopt, suitable to the local environment and affordable. The development of effective IEC (information, education and communication) material to support these behavioural interventions, in turn, requires good community-based data, as illustrated in Kenya where the community education programme was developed on the basis of extensive anthropological information and community surveys of knowledge and perceptions of the disease, ownership and use of nets, and sleeping patterns within households (Mwenesi et al. 1995a,b).

Compliance with treatment

The difficulty in reducing transmission of infectious diseases through behavioural interventions has reinforced the need to continue to reduce severity of infection and risk of transmission through early diagnosis and treatment. Poor
adherence to medical advice has complicated this issue, affecting the effectiveness of treatment at an individual level and, both in the short and long term, the public health benefits of the strategy. In the short term, delayed diagnosis and treatment increases the risk of transmission of disease and its severity for the individual; in the long term, failure to follow the protocol of early diagnosis and treatment leads to continued transmission of infectious disease and increasing possibility of drug resistance.

Compliance has been a long-standing concern in clinical research, and the need for anthropological input in different cultural settings has to a degree been predicated on the assumption that if people have adequate knowledge and understanding of the rationale for a particular treatment, consistent with the Health Belief Model (see above), then they will adhere to the prescribed regime. In this respect, there has been considerable ethnographic research on the appropriate use of medication for illness treatment and/or prophylaxis. Helitzer’s work in Malawi (Helitzer-Allen et al. 1993) is one practical example: women’s reluctance to take malaria chemoprophylaxis during pregnancy derived from their association of chloroquine, on the basis of its bitterness, with abortifacients, thus suggesting to women that compliance was to risk miscarriage. In this case the practical outcome was to sugar-coat the pills. Work on women’s poor adherence to treatment for leprosy, conducted in Maharashtra, India (Vlassoff et al. 1998) revealed that the blister packaging for multidrug therapy was sufficiently similar to contraceptive pill packages that the drugs were confiscated by unbelieving mothers-in-law.

Compliance appears particularly problematic where regimes are drawn out, where doses for medication are intermittent with long delays between administration (e.g. ivermectin for the treatment of onchocerciasis), where there are severe side-effects of the drugs causing confusion of their efficacy (e.g. with leprosy, Sirak 1997), and where there is rapid subsidence of symptoms well before the completion of a course of treatment, as is often the case with antibiotics and antimalarials. Caretakers in Bohol, The Philippines, for instance, tend to foreshorten courses of cotrimoxazole when illness signs subside (Simon et al. 1996; Tallo 1996). Cultural perceptions of medications may further influence compliance. For example, people may classify medications as ‘hot’ or ‘cold’ in accordance with humoral theory, whereby their acceptance of drugs is contingent on an appropriate fit of disease and drug classification (e.g. Logan & Morrill 1979; Manderson 1987; Craig 1997). While people may recognize the value of some western pharmaceuticals, this is not equivalent to rejecting alternative medications and other treatment regimes, and it is not unusual for people to combine various therapies to maximize their chances of healing. Medical pluralist practices are normal not exceptional regardless of culture, country, or social and economic context.

The political economy of disease control

The foregoing discussion suggests that anthropological input may clarify the cultural, social, cognitive and individual factors which influence people’s willingness to accept interventions to reduce transmission of illness and adhere to treatment regimes. But these factors alone are not sufficient, and research conducted in association with the development and assessment of interventions highlights the difficulty of introducing behavioural and household changes in contexts which lack the infrastructural, structural and political support to sustain them.

First, health care involves more than the immediate costs of a clinic fee and medication. The costs of drugs are a factor: for praziquantel for schistosomiasis treatment (Huang 1997), for antibiotics for pneumonia (Simon et al. 1996), for antimalarials (e.g. in Ghana (Ayegpong & Manderson 1994) the Philippines (Miguel et al. 1998a). But the indirect costs of seeking treatment (transport, time lost in wages, care of children, and so on) are all also mentioned frequently (e.g. Asenso-Okyere & Dzator 1997; Miguel et al. 1999b). The immediate costs of health care are inevitably weighed against other indirect, recurrent and capital costs. As is well documented, drug distribution is conducted internationally not nationally, and companies continue to operate to promote the use of brand-name prescriptions and to encourage over-medication despite official commitment to rational use of drugs and the promotion of generic drugs (Silverman 1976; Tomson & Sterky 1986; Kanji et al. 1992; Carpenter et al. 1996; Craig 1997). The distribution of health services continues to disadvantage poor people and is a major factor confounding accessibility of services. Allied to this are issues affecting the quality of services. Delays encountered in relation to diagnosis and prescription discouraging people’s use of clinical services (Espino, personal communication; Miguel et al. 1998a). The logistic issues implicated in this also affect the implementation of control programmes, where, for instance, supplies are unreliable (the delivery of insecticide for impregnation of bednets is a case in point).

A far wider range of factors affect the potential impact of interventions to control disease. Development policies within countries are one example, whereby government, private local companies or international consortia are responsible for environmental changes that create new conditions for the spread of disease. This includes the disruption of the local environment and changing the local ecology of vectors, by encouraging immigration of workers from endemic areas who introduce infectious disease into the area and/or by
exposing immunologically naive immigrants to areas of disease, and by providing workers with housing which due to crowding and poor construction exacerbates disease (Briceno-Leon 1990).

As a result, sustainable interventions necessarily need to deal with systemic, structural, institutional and behavioural issues associated with disease transmission and control. The Agusan del Sur-Malaria Control and Prevention Programme (ADS-MCP), southern Philippines, provides one practical example of the way in which anthropological, parasitological and entomological research have been brought together in the context of community development, government malaria control activities and community interventions. Baseline social and cultural information, collected through the application of rapid anthropological assessment procedures, identified the potential and focus for a two-pronged strategy: the delivery of health education and active case detection through training barangay health workers, and community-wide health education interventions. Subsequently, anthropological data was used to develop a mass media approach built on community knowledge of malaria and its prevention, in order to increase awareness of the disease, increase the use of preventive strategies at a personal and household level, and increase prompt diagnosis and treatment.

The mass media campaign is one component of the project, however, and the overall aim is the development and implementation of a self-sustaining, community-based malaria control programme emphasising prompt diagnosis and treatment of malaria. A community health intervention programme will use strategies of community participation to motivate members of the community to become actively involved in installing, patronizing and sustaining malaria control mechanisms, and in ensuring accessible, locally organized and locally delivered services. A precondition to the success of the project has been institutional strengthening through capability-building exercises for local government and service units. This presentation focuses on the activities of community organizers in mobilizing the government and the community in the project districts.

A further arm of the project is the development of multimedia approaches to interventions for malaria control. There has been increasing appreciation of the importance of communication strategies in health interventions, and of the utility of strong links between health communication, public health approach, social marketing and diffusion theory. Ongoing research aims to develop a health education strategy to maximize community involvement. In particular, interpersonal approaches of barangay health workers to villages, advocating early diagnosis and treatment for malaria, have been supplemented by mass media and print, with radio programmes focusing on local personnel and health issues.

Here, the primary goal, informed by anthropological enquiry at the outset of the study, is to encourage community ownership by delivering messages of local interest, in a form that enables frequent access to the target population in order to create and maintain motivation, inform, and induce behaviour change.

Conclusion

Anthropological research in infectious disease has often focused on the specifics of illness: cultural perceptions of disease entities, understandings of aetiology, diagnostic categories and treatment-seeking. The ethnographic details of this work, rather than its use in interventions, are most widely published. In contrast, there is relatively little which demonstrates this use, partly because the interventions are frequently government or NGO initiatives, where programme reports are internal documents and accountability is to funding agencies rather than a scientific public (Manderson & Mark 1997). While anthropological input in terms of community perceptions of illness, including local taxonomies and aetiology, have value in developing health educational material to support interventions, a more sophisticated understanding of cultural and social dimensions of illness and disease draws attention to the structural barriers to change and to the difficulties of introducing and sustaining interventions. Anthropological involvement ensures that some account is taken of local knowledge, cultural influence on the patterns of disease, and structural barriers to good health. Although the social, cultural and political contexts in which people experience illness and seek to recover is a small section of a more complicated puzzle, interventions that overlook these components risk failure as the structures around it crumble.

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