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Managing Conspiracy Theories in Public Health:
Ensuring that Voice does not lead to Exit

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Abstract

Conspiracy theories within target populations in the developing world have the potential to threaten or even halt disease eradication programmes. Management of such beliefs is therefore essential. Populations who develop conspiracy beliefs against government or international agencies are frequently responding to perceived injustices from past experiences or to inequalities and dissonances in current experience. By addressing historical reasons for distrust, communicating openly, facilitating people-centered approaches, strengthening primary health care systems alongside vertical programmes, building accountability, and weighing the costs of a more coercive approach, these programmes will increase the likelihood that they will achieve, unhindered, their laudable goals.

INTRODUCTION

Around the world, hard-won health initiatives have been threatened amongst some of the poorest and most disease-prone populations. In an era when increased financial support exists to combat major diseases, stalemates have occurred in several major health initiatives due to factors apart from budget size or institutional support. Initiatives against polio, HIV, malaria, and a host of vaccine-preventable diseases, for which both the means and the will already exist have been compromised due to the target population's strong belief in conspiracy theories. Though such beliefs have traditionally been viewed as the result of ignorance, other perspectives emphasize the internal consistency of such beliefs, particularly in light of target populations' historical experiences of discrimination and violence. This paper will show that in such circumstances, policies that pragmatically address the reservations of target populations have a much greater likelihood of success. It is crucial to 'manage' conspiracy beliefs properly: by recognizing and acknowledging the historical roots of mistrust between target populations and public health authorities, and by examining the geopolitical and socio-economic factors which lead populations to doubt that public health interventions have their best interests at stake. In this way public health authorities have a chance to move beyond the stalemates that have threatened global health initiatives around the world.

After a detailed literature review designed to distinguish between two dominant theories concerning conspiracy beliefs, this paper will explore the usefulness of 'exit' and 'voice' as analytical tools to highlight the consequences of improper management of conspiracy beliefs. The argument section will then explore the particular impact of conspiracy beliefs on public health initiatives and document the historical reasons for distrust among marginalized people around the world. A detailed case study of the 2003 polio boycott in northern Nigeria will highlight the complex interplay of factors that can lead to resistance or rejection of disease interventions. Finally, the discussion section will highlight the sorts of pragmatic interventions that might address these factors, and lead to better population compliance in future health initiatives.

RESEARCH METHODS

Research for this paper used book, academic journal, and online sources, as well as a small number of personal interviews with public health officials over electronic correspondence.

LITERATURE REVIEW

The Symbolist Approach to Conspiracy Theories

Interpretations of conspiracy theorists range from delusional pathology to logical resistance. Fenster (1999) proposes using a 'symbolist'-to-'realist' gamut to distinguish conventional approaches to conspiracies from revisionist alternatives. At the symbolist end of the spectrum, theories tend to centre on the pathological nature of conspiracy beliefs, emphasizing the paranoia, delusion, and anti-social qualities of those who hold them. Hofstadter (1965) suggests that conspiracy theories are the products of "uncommonly angry minds" whose views are "distorted" (Hofstadter 1965:2-3). This view blames the cognitive and social inadequacies of conspiracy-believers for their subsequent adherence to conspiracy theories. Inglehart (1987) and Edelman (1985) both point to an 'inability to attain goals' as a major stimulus to belief in conspiracy. Young (1990) highlights the self-esteem benefits of conspiracy theories, in that "adherence to a conspiracy theory allows a person to see himself or herself as perfect and infallible in comparison to others who are seen as evil and defective" (Young 1990:156). Goertzel (1994) found that conspiracy beliefs were related to low levels of trust and high levels of anomie, while Robins and Post (1997) suggest that conspiracy theories act as "solace for a wounded ego" (Robins and Post 1997:15).

Waters (1997) summarizes this school of interpretation by highlighting three common themes: a) the psychological and micro-sociological factors of the adherents, b) the incorrectness of conspiracy theories themselves, and c) the low chance for effective political action on the part of those who hold such theories.

The Limitations of Symbolist Interpretations of Conspiracy Theories

Two main criticisms have emerged in subsequent examination of the symbolist approach to conspiracy beliefs. The first is that the profiles of conspiracy theorists today frequently diverge significantly from those proposed by conventional scholars. Though the role of "ignorance" is highlighted in traditional theory, there is considerable debate within current political psychology and public health research about the effect of education on endorsement of conspiracy theories. While Bogart and Thorburn (2006) have shown a correlation between lower levels of education and higher subscription to conspiracy beliefs, Klonoff and Landrine (1999) found that college-educated African-Americans in the United States were more likely than their less educated peers to endorse conspiracy beliefs. It has been speculated that those with higher levels of education may be more aware of historical examples of discrimination and persecution towards the African-American community, so that they find conspiracy theories more plausible than others. Similarly, Hooper (2000) relates how it was the most politically active group of Congolese who developed articulate and compelling suspicions related to the motives of vaccinations by Belgian doctors (Hooper 2000: 534). The most infamous challenge to the correlation between ignorance and conspiracy beliefs was when Wangari Maathai, the 2005 Nobel-Prize-winning ecologist, suggested publicly that western scientists deliberately created HIV for use as a bio-weapon against Africans (Bogart and Thorburn 2006: 1144).

There is, thus, no consensus about the 'ignorance' of conspiracy-believers. The categorization of conspiracy-believers as 'politically passive' is also questioned. A recent questionnaire asked African-Americans if they felt a Black mayor could make a difference to how Blacks are treated in New York City. Believers in conspiracy theories were more inclined to take the minority view that having a Black mayor could make a difference. Waters (1997) notes that these results directly contradict the view that conspiracy theorists are paralyzed by powerlessness, as it confirms "the idea that believers in conspiracy theory have faith that elected officials can effect their own intentions" (Waters 1997:120).

The second major challenge to the symbolist interpretation of conspiracy theories as products of delusional, anti-social, uneducated, and politically passive minds is that it does not allow for remedial policy prescriptions. Pathologizing adherents to conspiracy theories, as conventional

interpretations do, limits the extent to which target communities are seen as susceptible to external sources of information and influence. As a result, many policy makers believe it is pointless to try to change the behavior of target communities. The rhetoric of many public health officials reflects both their sense of the futility of staging interventions within these communities and of the inferior importance of examining the cause and consequence of conspiracy beliefs. Diagnosing subscribers to conspiracy theories as delusional, paranoid, and politically paralyzed clearly places them beyond the reach of education campaigns. This has serious implications for any policy initiative designed to bring these individuals or communities onside in public health programmes.

The Realist Approach to Conspiracy Theories

In response to the challenges to the symbolist approach, an alternative perspective has developed centering on the social and political experiences of adherents. Abalakina-Paap et al (1999) suggest that belief in conspiracy is related to feelings of alienation, powerlessness, hostility, and being disadvantaged. Zonis and Joseph (1994) suggest that conspiracy theories take root in people who have endured subjugation and domination, citing the experiences of peoples in the Middle East who have rarely been in charge of their own destinies, and as a result, have come to see the world as the product of the "sometimes overt, sometimes clandestine actions of more powerful others" (Zonis and Joseph 1994: 447).

Pratt (2003) suggests that while "conspiracy thinking was once a term of opprobrium – a way to disparage anyone who suggested secret forces were at work or responsible for a wide variety of inadequately explained historical events", it is now viewed by many as a form of populist discourse, the "last refuge of a besieged citizenry resorting to the most extreme form of political cynicism as an antidote to the sense of loss of control" (Pratt 2003: 255-7). Far from viewing conspiracy beliefs as silly or irrational reactions to "imaginary plots", Pratt (2003) argues they are a "reasoned response to the real-life experiences of real people – disadvantaged, discriminated against, lower-status groups, ethnic minorities, and women" (Pratt 2003:258). The crucial distinction between symbolist and realist approaches, therefore, is the latter's emphasis on the inherent rationality of many conspiracy beliefs. This approach does not reject the possibility of objective truth. , It merely recommends examining conspiracy theories as reflections of "real structural inequalities … which leave the political subject without an ability

to be recognized or to achieve representation in the public realm" (Fenster 1999: 67). Echoing this sentiment, Treichler (1989) proposes that

> we relinquish the compulsion to separate true representations of AIDS from false ones…To understand the ways AIDS comes to be articulated within particular cultural contexts, the major problem is not determining whether a given account is true or false but identifying the underlying rules and conventions that determine whether that account is received as true or false, by whom, and with what material consequences (Treichler 1989: 48 as cited in Farmer 1992: 229).

Conspiracy Theories as Ethno-Sociologies

Advancing this notion, Waters (1997) suggests viewing conspiracy theories as one class of *ethno-sociologies*, referring to the theories that ordinary people use to explain social phenomena (Waters 1997: 114). These ethno-sociologies attribute social misfortunes to deliberate, often secretly planned, actions by a particular group. Examining conspiracy theories through an ethno-sociological framework reveals "sources of mistrust, resistance, fear, and disempowerment" (Treichler 1999: 129). It is particularly important to examine how individuals may have been led by experiences of oppression or disempowerment to an alternative perception of world events. In short, the ethno-sociological approach offers a probable explanation of how cognitively competent and politically engaged individuals grow to believe wholeheartedly in the existence of plots threatening their health and security.

ANALYTICAL FRAMEWORK

'Exit' and 'Voice' as a Framework

This paper seeks to examine the impact of conspiracy beliefs on the implementation of government and international initiatives, particularly in public health programmes. When considering how conspiracy beliefs affect wider public health initiatives, Hirschman's conceptualization of 'exit' and 'voice' enables a richer understanding of the rational reasons that may underlie conspiracy beliefs. 'Exit' and 'voice' are terms that Hirschman (1970) made popular in his analysis of the strategies consumers use to cope with the problem of declining performance in the marketplace. Subsequent theorists have adapted these terms to refer to any relationship where reciprocity is ensured between service-provider and service-user by the mutual claims of each upon the other (Paul 2002). Thus, citizens can exercise 'voice' by participating in or protesting their government's policies, or exercise 'exit' by voting for an alternative party. As the government/market wants votes/purchases from the citizen/consumer,

they have significant incentives to maintain the services they offer at an acceptable standard. Thus, the reciprocity of these relationships is perpetuated.

'Exit' and 'Voice' with Conspiracy Theories

When adapted to an ethno-sociological approach to conspiracy theories, Hirschman's terms can be used to describe the actions of individuals who voice an alternative to the accepted scientific reality as an expression of political or social protest. Thus, an individual whose lived experience has left them dissatisfied with the 'services' of government or international authorities may disseminate conspiracy beliefs as an exercise in 'voice'. This conceptualization admittedly stretches Hirschman's terms beyond their originally intended scope; 'voice', for him, referred exclusively to protest deliberately and purposefully designed to reach the ears of those providing services, and thus, to exert leverage. In contrast, in many instances in the developing world, the dissemination of conspiracy theories remains isolated within families or communities. Furthermore, while some conspiracy beliefs have made international headlines, they are frequently not broadcast through the media in such a way as to alert government or international authorities to their existence. The question remains: can protest be categorized as 'voice' only when it is likely or intended to reach the ears of authorities? Or can the dissemination of conspiracy beliefs, regardless of their intended scope, be considered a marginalized community's response to their lack of access to true feedback mechanisms? Lacking viable channels through which effective 'voice' can be exercised, marginalized populations exercise their one remaining means of leverage: 'exit' from the relationship entirely, by refusing to comply with disease-control initiatives. Such leverage exists because target populations' compliance is something that organizations like the WHO very much need: without it, global health initiatives for the greater good, such as the Global Polio Eradication Initiative (GPEI), are more likely to fail. This paper will use the insights offered by Hirschman's terms to highlight the impact of poor management of conspiracy theories.

ARGUMENT:

The Impact of Theory on Policy

Whether an organization perceives conspiracy theories from a symbolist or realist perspective has important repercussions for how it responds to conspiracy theories within target populations. An organization that subscribes to the symbolist approach, with its heavy emphasis on the

pathological dimensions of conspiracy theories, will typically prescribe counselling and education campaigns to rectify erroneous and delusional perspectives. These methods have been used in a host of public health campaigns when suspicious target populations resisted compliance. Though education campaigns are not inherently problematic , they are frequently guided by a 'symbolist' interpretation of conspiracy beliefs, which centers on correcting "ill-founded rumors grounded in misinformation" (Yahya 2007: 186). The prevailing attitude is that it is the ignorance, unreflective nature, and suspiciousness of target populations which necessitate such campaigns (Streefland 2001). When confronted with a pervasive rumour linking disappearances with 'vampires' in former Rhodesia, one official dismissed the rumour as "a silly story which frightened only the ignorant and uneducated African" (Ellis 1993). Similarly, faced with a rumour that the British Armed Forces in Iraq had willingly distributed badgers to wreak havoc on the livestock of Iraqis, a British Foreign Office official countered, "Don't be silly", and newspaper coverage emphasized that "commanders have weightier matters to consider" (Farrell 2007). Though conspiracy beliefs can appear outlandish and bizarre to public health officials, stigmatizing them as such in public statements only reinforces the fears and suspicions of target populations. The symbolist approach tends to view the management of conspiracy theories as outside the realm of public health. Though the technical and medical aspects of a disease-control programme are undoubtedly crucial, the management of the fears and queries of target populations should also be viewed as fundamental.

Symbolist Interventions

Symbolist approaches have little time for discussion of the validity of these beliefs for local populations. Despite emphasis on the importance of culturally-sensitive communication, officials tend to react in largely unsympathetic fashion when conspiracy theories threaten to disrupt carefully planned disease interventions. "We will not dwell on the misconceptions," said a leading academic at a recent public health care conference, "because we need to get on with the practical solutions" (Waters 1997:92). Such statements imply that while 'practical solutions' fall within the mandate of public health, the 'misconceptions' and those who hold them are considered distinctly trivial.

Realist Interventions

In contrast to the symbolist approach, interventions guided by a realist perspective characteristically emphasize the historical reasons for distrust between target populations and health officials. The realist perspective also highlights the importance of pragmatism in both the rhetoric and action of public health workers. In the discussion of their 2005 study on HIV conspiracy beliefs among African-Americans in the United States, Bogart and Thorburn (2005) pointed out that to be effective, public health messages need not only to acknowledge that conspiracy theories exist, but also to discuss their roots: "To obtain the trust of black communities, government and public health entities need to acknowledge the origin of conspiracy beliefs openly in the context of historical discrimination" (Bogart and Thorburn 2005: 218). Yahya (2007) echoed this recommendation, stating that "although the vehicles for the promotion and implementation of immunization programmes often view negative responses to their campaigns as 'ignorance' and 'misinformation', just beneath the surface lie viable and logical reasons as to why so-called anti-vaccination rumors are created" (Yahya 2007:202). Recognizing and validating these 'viable and logical' reasons needs to be considered a crucial part of public health campaigns.

Conspiracy Theories as a Threat to Public Health

In few cases are the consequences of non-compliance with any state or international programme more detrimental to wider society than with public health interventions. Such interventions, particularly when they deal with infectious diseases, require close to 100% compliance from all individuals. Germs and viruses can spread quickly through populations, and a single case of non-compliance can result in a public health emergency for wider society. Public health officials note that "even one unvaccinated child can allow a new pocket of the disease to bloom" (Dugger and McNeil 2006: 2). In such a context, rumours and conspiracy beliefs have the potential to seriously disrupt public health initiatives that require compliance from target populations. As Professor Robin Weiss notes in the UK's Foresight Project publication on HIV, "rumors and myth spread faster than viruses" (Weiss 2006: 13). Without adequate management, conspiracy theories can dominate public perceptions of international health initiatives and lead to their derailment.

Several recent examples have regrettably highlighted this point. In 2004, when a visiting anthropologist asked young people in Mozambique where AIDS came from, several respondents repeated a rumour that 'AIDS came from condoms'. One interviewee explained that "if one hangs a JeitO condom up to dry in the sunlight for a day, one can eventually see the HIV virus squirming inside" (Epstein 2007: 148). Epstein (2007) notes the potential for these beliefs to severely compromise AIDS-prevention activities: "After all, if you believe AIDS is caused by the CIA or witches, why would you use a condom or abstain?" (Epstein 2007: 149). An oft-cited study done in 2005 on 500 African-Americans yielded the disturbing conclusion that approximately 48% of respondents believed that "HIV is a man-made virus", while close to 53% believed that "there is a cure for AIDS and it is being withheld from the poor" (Bogart and Thorburn 2005: 215). The implications for these results were particularly alarming when correlated with safer-sex behavior. The authors noted that "individuals who mistrust government information about HIV may be similarly suspicious of public health information about condoms" (Ibid: 213), leading to lower recorded condom use among African-Americans, particularly males.

As conspiracy beliefs can cause severe disruption of public health initiatives through individuals who refuse to comply with government programmes, it is crucial to consider pragmatically how the state and international health organizations can address the conspiracy beliefs of target populations. Failure to do this can lead to the overall failure of a well-funded, well-intentioned programme. In short, the consequences of 'exit' among target populations can be severe, and factors which may lead to 'exit', such as conspiracy beliefs, require rigorous investigation and mitigation.

Historical Reasons for Distrust

In light of the detrimental consequences of poor conspiracy-theory management, it is crucial to note the approaches most likely to assuage the reservations of target populations. Most researchers guided by a realist approach highlight the importance of acknowledging historical reasons for distrust between target populations and health authorities (Bogart and Thorburn 2005). Individuals who refuse treatment frequently allude to a previous history of discrimination and mistreatment from either government or international agencies. In the case of the African-American population, the example of 'true' government conspiracy most frequently cited to support suspicion is the Tuskegee syphilis study, conducted by the US Public Health Service

from 1932-1972 in Alabama. Over these 40 years, 399 African-American men infected with syphilis were deliberately not informed of their status and withheld from treatment to enable study of the 'full' course of the disease (Jones 1981). The study was stopped in 1972 due to a leak to the Associated Press, and observers point out that even on the morning of the first news-breaking story, the study in Alabama was still going on. The fact that it was public outcry and not the sudden, albeit unforgivably delayed, attack of conscience by the scientists which stopped the study and led to restitution is a further reason cited for continued suspicion (Thomas and Quinn 1991: 1502). In light of such recent history, it has been convincingly argued that the suspicion and alienation that the African-American population feels towards public health authorities is rooted in a rational assessment of past evidence (Bogart and Thorburn 2005). Whether or not current conspiracy theories about HIV are in fact 'true' in an objective sense is inconsequential to this situation--"they do not have to be proven beyond their being talked about" (White 2000). As a result, interventions to prevent the further spread of HIV among the African-American population will have to involve public acknowledgement of the legacy of Tuskegee in order to prevent their *exit* from prevention initiatives (Thomas and Quinn 1991).

Conspiracies in Papua New Guinea

Another instance where conspiracy beliefs have influenced public perceptions of public health initiatives is among Papua New Guinea's Papuan population. Butt (2005) documents how many native Papuans have come to believe the Indonesian government is importing HIV-infected sex workers in order to gradually reduce their population numbers through HIV-related mortality. This has led many Papuans to distrust government services, particularly health services, claiming that they are more susceptible to STDs, and have more difficulty in receiving treatment from state-run clinics (Butt 2005: 424)." As in the African-Americans' case, perceptions of conspiracy are exacerbated by past history. Indonesian health policies within Papua New Guinea in the 1980's and 1990's were "widely regarded as genocidal" (Butt 2005: 419). In particular, the implementation of a "two is enough" family planning policy, which targeted Papuan families whose fertility rates were already at or below replacement levels, led many Papuans to believe that state-enforced birth control was a crude strategy to reduce absolute numbers of undesirable populations. (Butt 2005: 419) Far from expressing pathological delusion, Butt (2005) concludes that "rumors allow Indonesians to articulate their political experience of oppression and violence anonymously and collectively, through explicit reference to domains outside the mainstream"

(Butt 2005: 417) In such a context, how can government messages promoting safer sex behavior fail to evoke fears of institutionalized genocide?

Vaccination Resistance in India

Similarly, vaccination programmes have faced resistance in India due to beliefs that such health initiatives are linked to population control (Nichter 1995). Members of the Muslim minority fear the Hindu majority "may be covertly introducing family planning through the vaccination program", and the Hindu majority fears "clandestine operations" from the central government (Nichter 1995: 618). As in the case with African-Americans and Papua New Guineans, there are valid historical reasons for Indians to fear forced sterilization.   Throughout the 1970's, the Indian Government sponsored 'emergency' population-control because it feared exceeding resource capacity (Ledbetter 1984; Nichter 1995). More recently, the 1990's has been marked by a resumption in violence between India's Hindu majority and Muslim minority (Karon 2002; Brass 2003). In this context, conspiracy beliefs about vaccination programs have "provided an opportunity for political commentary as well as the articulation of collective anxieties" (Nichter 1995: 618). If these anxieties are to be assuaged, and the populations' *exit* prevented, responses to anti-vaccination resistance will have to address the existing political obstacles.

In all of the above cases, a target population has resisted a health intervention due to fear and suspicion of health authorities or government. In every case, there is an existing historical experience which connects fears in the present with suspicions from the past. In such a context, attempts to relieve the fears of target populations that fail to address the historical reasons for distrust will not easily establish credibility. As Treichler (1999) notes, "Evidence, facts, the assertion of authority: none of these will function to discredit an alternative account of truth" (Treichler 1999: 247). To reestablish trust and build credibility, health authorities must be willing to address past discrimination and wrongs in the context of current health interventions. Only then will target populations perhaps begin to believe in the altruistic motives of health authorities.

CASE STUDY

Polio Boycott Case Study
In an attempt to highlight the complex interplay of factors that can lead to conspiracy beliefs, this paper will undertake a detailed case study of an 18-month-long vaccine boycott which occurred over in Northern Nigeria in 2003-4 and had a significantly detrimental effect on the Global Polio Eradication Initiative (GPEI). In light of the negative effects of conspiracy beliefs, this paper contends that six major steps are necessary to pragmatically "manage" conspiracy theories and prevent the *exit* of target populations: 1) health authorities must acknowledge in public messages the link between suspicions in the present and discrimination in the past, 2) messages must be conveyed in a culturally sensitive manner that eliminates ambiguities, 3) local people must be brought on side to deliver health messages and act as linking agents between foreign and local authorities, 4) vertical health programmes should endeavor to work in synergy with permanent primary health care systems, 5) independent monitoring bodies should be established whenever possible to provide additional accountability, and 6) the short-term benefits of coercive methods when faced with resistance should be measured against the potential for long-term damage to programme sustainability.

Background
At its outset, the Global Polio Eradication Initiative was called "a gift from the 20th century to the 21st" (Dugger and McNeil 2006: 1). When it was initiated in 1988 in the optimistic decade following the eradication of smallpox, hopes were high that polio would become the second infectious disease completely eradicated from mankind. The campaign was largely successful; over 17 years, the absolute numbers of smallpox cases went from 35,251 cases in 1988 to 1,449 cases in 2005 (Renne 2006: 1857). In 2003, the final drive was launched to immunize 15 million children in West and Central Africa. Of particular concern was Nigeria, which had 40% of the 677 new cases in 2002 (*Science in Africa*, March 2004).

In July 2003, the GPEI faced community-led opposition in several northern Nigerian states[1] to the free Oral Polio Virus (OPV) vaccine being administered by public health workers. Political and religious leaders began disseminating the belief that the polio vaccine was spiked with either HIV or sterilization drugs, and urged parents to refuse vaccination in order to protect their children (Fleck 2004). Although explanations for the boycott vary between analysts, most acknowledge that these widely publicized conspiracy beliefs were a major factor leading to public vaccination resistance (Renne 2006; Yayha 2007). During the boycott, Bruce Aylward, global coordinator of the Polio Eradication Initiative, commented that "of the 216 countries in the world, the whole eradication programme right now focuses on one state of Kano and surrounding areas" (Kapp 2003: 1631). The World Health Organization soon documented that strains of the virus from northern Nigeria began to be found across the country, as well as other western and central African countries (Fleck 2004: 485). Daniel Tarantola, Director of Vaccine Programmes at the World Health Organization during this time, stated the impact of the boycott succinctly: "Immunization against polio suffered considerably and the eradication of the disease did not happen, as it could have in the early 2000s" (Personal Correspondence, July 11, 2007). By 2004, Nigeria was labeled as the "number one reservoir and polio transmitting country in the entire world" (Vanguard Nigeria, January 2004). In the years following the boycott, 18 once-polio-free countries had outbreaks that were allegedly traceable to Nigeria (Dugger and McNeil 2006: 1), leading Kim Mulholland, an infectious disease expert at the London School of Hygiene and Tropical Medicine, to call the polio vaccine boycott "one of the single worst events in modern public health history" (Hughes 2006: 2). Phrased in Hirschman's terms, the consequences of *exit* were severe and threatened to undermine "15 years of work, US$3 billion of investment on vaccines and surveillance, and the efforts of 10-20 million volunteers" (Kapp 2003: 1631).

Causes of the Boycott

Much analysis has been written in both the mainstream and the academic press of the causes and consequences of this boycott. Some analysts focus on the religious politics of the boycott,

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[1] The northern Nigeria states which are said to have boycotted the vaccine programme were Kano, Kaduna, Bauchi, Niger, and Zamfara, although there is some discrepancy between researchers (Yahya 2007 notes Kano, Bauchi, Niger, and Zamfara, while Jegede 2007 notes only Kano, Kaduna, and Zamfara). Only Kano state continued the boycott for over a year (Yahya 2007: 188).

centering on the predominantly Muslim communities in Northern Nigeria who warned of a Western-led agenda to reduce the numbers of Muslim communities worldwide (Altman 2004; Pipes 2004). This suspicion was justified by the Supreme Council for Sharia in Nigeria (SCSN), which cited documents 'proving' the involvement of both UNICEF and the WHO in sterilization campaigns around the world, under the guise of the fight against tetanus toxoid (Duodu 2004). The US Government's invasion of Iraq, beginning a few months before the boycott, was also itedc as evidence for the West's hostility towards Muslims. Ali Guda Takai, a WHO doctor, stated the implications of the US War on Terror concisely: "If America is fighting people in the Middle East, the conclusion is that they are fighting Muslims" (Pipes 2004: 2).

Internal Politics of Nigeria

Other journalists and academics point to the internal politics of Nigeria, particularly the tension between the Sharia-governed Hausa northern states and the predominantly Christian Yoruba federal government (Yahya 2007). A brief review of colonial and post-colonial Nigerian politics is instructive: while the south was colonized by the British, the north was colonized by the Islamic Jihadists. The different colonial experiences, compounded by ethnic and religious divisions, led to long-standing tensions between the two regions (Yahya 2007: 189). For more than 30 of the 46 years since independence, a northern-led military regime ruled the country. In 1999, however, power shifted to a southern-led democracy. At the time of the boycott, the northern states were part of a faction challenging the electoral results of President Olusegun Obasanjo, a move which cannot be seen as distinct from their opposition to federal government policies. Analysts have seen the boycott as a means of reestablishing sovereignty over northern territory and population, by compromising the success of a health initiative sponsored in part by the federal government (Jegede 2007: 0419). Thus, the boycott could be seen as a refusal, by Kano authorities, to comply with an initiative organized and sponsored by rival political, religious, and ethnic adversaries.

While both the religious and the political explanations for the boycott are valid points of analysis, there exists a third area of explanation that is an important, though under-documented, long-term cause of the boycott. Guided by an ethno-sociological approach, this explanation highlights the importance of individuals' lived experiences in shaping their perceptions and behavior. Interpretations of the boycott from this perspective try to understand how the

historical experiences of those subscribing to conspiracy beliefs might supply their underlying motivation. Ethno-sociological analysts have examined the experiences of northern Nigerian populations to see what kinds of recent experiences could have contributed to suspicions of health interventions. The following section will detail three underlying factors which have led to distrust of federally- and internationally-mandated programmes.

Tensions within Nigerian Society

As a result of the divisions and rivalries within Nigerian society, northern populations doubted the motives of federal government initiatives, particularly with regards to population control. Echoing the fears of many minority populations around the world (Butt 2005; Nichter 1995), the predominantly Muslim Hausa population feared that federal-government-sponsored polio vaccinations were actually a covert strategy for birth control (Yahya 2007). This is based on historical precedent, as the 1980's saw then-President Babangida's administration setting a four-child limit on the number of children each woman could have. This policy clearly broke with tradition and alarmed many communities, and as a result, it came to be seen as part of a more sinister plan. A young woman confided. "[S]ome people say that immunization is part of the methods used to check the number of children a woman can bear" (Jegede 2007: 0418). In light of past experience with federally-mandated population-control policies, it is neither surprising nor irrational that communities came to suspect the polio vaccine programme as concealing more sinister aims. As Greenough (1995), "the potential for resistance is always present, because encounters with government vaccinators are never about immunization alone" (Greenough 1995a: 633).

Pfizer in Northern Nigeria

Interactions with foreign agencies had a significant impact on the suspicions harbored by northern Nigerians. Yahya (2007) details the 1996 experience of northern Nigerian villagers as particularly significant in this regard. In this year, the US-based pharmaceutical company Pfizer conducted an experimental meningitis study on 200 children in Kano district, which allegedly resulted in the deaths of 11 children and the brain damage, partial paralysis or deafness of several more. Pfizer has defended its actions in the strongest terms, stating: "Pfizer is proud of the way the study was conducted in the midst of a deadly meningococcal meningitis epidemic in Nigeria. The study was well conceived, well executed and saved lives" (Kovac 2001: 592). The

company's press releases have centered on the altruistic motives of its involvement in Nigeria, emphasizing its donation of equipment and medicine to Kano State Hospital. Following the resumption of the civil suit filed by 30 Nigerian families against Pfizer, the company issued a statement in May 2007, saying, "it is indeed regrettable that, more than a decade after the meningitis epidemic in Kano, the Nigerian government has taken legal action against Pfizer and others for an effort that provided significant benefit to some of Nigeria's youngest citizens" (Pfizer press release 2007).

However, critics have been swift to point out that if altruism had truly underpinned Pfizer's motives, the research team would not have left Nigeria after the completion of their study, in light of the continuing epidemic which was still claiming lives. Much controversy surrounds the ethics of using experimental drugs in the midst of a serious epidemic, one in which total mortality figures are estimated as 12,000-15,000 people (Pfizer 2007). The ethical guidelines of the study itself are being challenged, as there is evidence that Pfizer's letter of approval was forged and backdated by a Nigerian doctor who oversaw the study approximately one year after its termination (Wise 2001: 194). In addition, Pfizer researchers did not take a child in the study off the experimental drug when it was clear that her condition was not improving, a decision which was against all official ethical guidelines set out by international ethics boards (Wise 2001: 194).

Both the experience of this event at the local level and the high-level publicity coverage that the civil suit received in the international press has made villagers in Kano district in northern Nigeria acutely sensitive to the potential dangers of complying with an international health initiative. Yahya (2005) documented in field interviews how Hausa villagers continued to recall their experience with Pfizer long after the drug trial. One farmer recounted: "We cannot trust the white man or our federal government because many years ago they were in partnership when they brought medicine to poison our people" (Yahya 2005: 38). Dr. Datti Ahmed, chairman of the Supreme Council for Sharia in Nigeria, stated, "[T]he Council harbours strong reservations on the safety of our population, not least because of our recent experience in the Pfizer scandal, when our people were used as guinea pigs with the approval of the federal ministry of health, and the approval of all the relevant UN agencies" (Yahya 2005: 38) In light of the legacy of this

lived experience, it cannot be considered irrational for local populations to remain suspicious of outsiders' involvement in local health.

Inadequacies of Primary Health Care

A further experience which impacts on local perceptions is the overall inadequate state of primary health care in Nigeria. Despite increased funding and assistance from such organizations as the WHO, UNICEF, and the Global Alliance for Vaccines and Immunization (GAVI), Nigeria still has 200,000 vaccine-preventable deaths among children every year (FBA 2005). People regularly walk miles to the nearest health clinic, uncertain whether they will even be able to purchase the medicine that they require (Yahya 2007: 198). Murphy (2004) highlights the dissonance that occurs when poor populations are faced with "free" drug interventions: "The aggressive door-to-door mass immunizations that have slashed polio infections around the world also raise suspicions. From a Nigerian's perspective, to be offered free medicine is about as unusual as a stranger's going door to door in America and handing out $100 bills" (Murphy 2004). A field interview with a northern Nigerian man echoed this sentiment:

> No, I don't allow my children to have the vaccine because I don't trust the vaccine. Because they said they are going to do it free of charge. And if we go to the hospital, we have to buy medicine and it is costly there. But this one is free of charge. In the hospital, your child can die or your brother can die if you don't have money (Renne 2006: 1862).

In addition, it is often not apparent to the intended beneficiaries why certain diseases that afflict them are treated with urgency and efficiency, while others are allowed to take their toll unchecked. A public health worker in Zaria[2] faced public scrutiny about mass vaccination programmes: "Why won't they go to the hospital and help people with diseases besides polio— why are they insisting only on polio?" (Renne 2006: 1866). Though the logic of vertical health programmes is coherent from a global health perspective, this sort of top-down global intervention appears lopsided and fickle when examined from the bottom-up. A neighbourhood security guard in Kano pointed out the absurdity of his situation: "If I go to the hospital, even simple panadol (paracetamol) for a headache I cannot buy, and these people are following us into our homes, forcing us to bring our children for free medicine for polio. What kind of humiliation is this?" (Yahya 2007: 202).

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[2] Zaria is a city in Northern Nigeria in Kaduna state.

Whereas those affected by polio are held in popular opinion to be healthy and active members of society, some who are sick with other diseases and in need of medicine remain untreated due to scarcity of resources. Malaria, which still kills more people worldwide than any other disease, does not receive free treatment in Nigeria (Renne 2006: 1866). In a recent report on routine immunization in Nigeria, researchers commented that polio, "both in public health terms and in popular perception, is relatively unimportant in Nigeria" (FBA 2005: v). Yahya (2007) cites a tragic example of this when between February and May 2001, an outbreak of 100,000 measles cases occurred in Nigeria. In this setting, polio vaccinators were seen as absurd and inappropriate as they entered houses "to administer polio vaccines as parents mourned the deaths of their children from measles" (Yahya 2007: 202). In this context, conspiracy beliefs gained credibility as an explanation for the disproportionate effort towards polio eradication in the face of more harmful diseases. These beliefs evolved through rational analysis of lived experience, and were compounded into sufficient frustration among target populations to lead them to *exit* from the programme.

Solutions

Faced with the potential for failure of the GPEI due to vaccine opposition, interventions were quickly initiated to limit the spread of polio and address people's fears. Medical experts highlighted the importance of 'cordoning off' the boycott states in order to interrupt the flow of infected individuals. Dr. David Heymann, the epidemiologist in charge of WHO's polio eradication campaign, stated, 'All we can do is seal the area around these states with mass vaccinations and keep the level of immunity there high" (Fleck 2004: 485). This was somewhat effective, although strains of the northern Nigeria virus were found as far away as Saudi Arabia and Indonesia, presumably spread by pilgrims to the Hajj in Mecca (Pipes 2004).

Other interventions centered on education campaigns to correct the erroneous beliefs of communities. Officials were confident in the efficacy of this approach, and Dr. Alphonsus Nwosu, the Nigerian Health Minister, asserted "by the end of December, polio will be out of Nigeria for good" (Raufu 2002: 1414). While he affirmed that "steps had already been taken to inform people that the vaccine was safe and effective, and free of complications and side effects" (Raufu 2002: 1414), such optimism was unfortunately not borne out by experience. A solely

education-focused approach to the polio boycott proved to have significant limitations. Most importantly, education-only interventions are largely informed by the notion that populations who believe in conspiracies are uneducated, illiterate, and ignorant. Yahya (2007) notes that "while an education-focused strategy to quell what is seen as ill-founded rumour is important, OPV [Oral Polio Virus] has acquired broader meanings, becoming an expression of wider issues of distrust and anxiety which must not be swept under the carpet" (Yahya 2007: 204). Furthermore, Treicher (1999) points out that "meanings that have been repeatedly discredited by the historical record and appear to retain little authority or demonstrable effect on policy do not simply stop existing" (Treichler 1999: 245) In short, education-only approaches are unlikely to address the complex interaction of factors which led to the boycott.

Some of the failures earlier in the boycott were due, in part, to the perspectives of public health and government officials, which were guided by a dominantly 'symbolist' approach. Those who subscribed to anti-vaccination conspiracy beliefs were termed "misguided elements" (Raufu 2002), "extremist clerics" (Pipes 2004), and "local radical Islamic clerics" (Kapp 2003), while Dr. Bruce Aylward, global coordinator for the Polio Eradication Initiative, categorized the rumours as "just mischief-making by a handful of officials intent on maximizing their hold over local people" (Kapp 2003: 1631). By emphasizing the political and social dysfunction of conspiracy believers, officials missed a vital opportunity to examine the underlying reasons for vaccine resistance. Such analysis would have shed light on the complex causes of the boycott, including the 1996 experience with Pfizer; the resentment that local people felt towards the vertical polio programme in the face of more pressing health concerns; and the suspicions of the minority Muslim population that the largely-Christian federal government might want to employ covert birth control for political purposes.

In contrast, interventions along more 'realist' lines emphasized the importance of validating historical experience. The strength of this approach was confirmed by the eventual resolution of the boycott: a vaccine produced by Biopharma, an Indonesian firm, and crucially, a company from a predominantly Muslim country, was substituted for the one manufactured in the US. Reassured by the religious affinity between northern Nigeria and Indonesia, officials in the boycott states agreed to a resumption of the vaccination programme. They subsequently

discovered that Biopharma was already an accepted contributor to the pool of vaccines supplied to the GPEI (Yahya 2007: 192), a finding that reinforced the trustworthiness of the global initiative. The approach taken by government and international officials in this matter acknowledged the crucial influence of religion, geopolitics, and past experience in aggravating the conspiracy beliefs, and opted for a pragmatic solution that validated historical concerns. Though the solution did not resolve local people's frustration with the diversion of resources from primary health care services, the steps required to address this problem fell outside the scope and mandate of the polio eradication initiative. The suspicions that were created by disproportionate spending on polio were linked into general suspicions of the federal government's and international organizations' motives, and were, as a result, assuaged by the substitution of a new vaccine supplier.

DISCUSSION

Public Health versus Human Rights
Those who organize international health initiatives frequently have to steer a difficult course between public health objectives and human rights, particularly when infectious disease eradication is on the line. Although the polio vaccine boycott came to an end due to the pragmatic interventions of officials on all sides, other vaccine controversies have been resolved in more heavy-handed ways. Some commentators on the polio vaccine boycott have suggested that polio eradication could have succeeded if officials had implemented a more coercive strategy. Wilson (2005) advocates the "need for WHO to have a stronger mandate when the actions of some Member States threaten the well-being of others" (Wilson 2005). Though officials publicly acknowledged the risk that the boycott in northern Nigeria would threaten overall global health objectives, they did not implement a coercive strategy to enforce compliance. This could be due, in part, to the aggressive reactions of target populations who in some cases, 'chased, threatened, and assaulted vaccinators" (Pipes 2004). Yahya (2007) notes "in many predominantly Muslim northern states where the immunization went ahead, it was not surprising to find that many families remained unreceptive and, at times, threatening towards health officials" (Yahya 2007: 189). While the aggressive resistance to vaccination could be seen as preventing the transition to more coercive methods, virulent opposition to vaccination in

other contexts has not led to the same conclusion. The smallpox eradication programme in India

makes an instructive comparison in this regard.

The Indian Smallpox Eradication Phase

The Smallpox Eradication Programme (SEP) was a global project of unprecedented proportions.

Launched on January 1, 1967, the goal was nothing short of full disease eradication in every

country in the world. By the early 1970's it was clear that India was still the largest reservoir of

smallpox, and that "the global eradication effort was hanging in the balance in South Asia"

(Greenough 1995a: 635). As a result of continued outbreaks and perceived government

vacillation, approximately 100 foreign epidemiologists were sent to locations around India and

Bangladesh to achieve the eradication goal. While many individuals were receptive to

vaccination, others resisted, particularly when the surveillance-containment strategy[3] was

simplified to mean that all members of a village where an infected individual was found would

be vaccinated, regardless of their prior status (Greenough 1995a: 635). The result of this change

in policy, in one observer's words, was "chaos":

> The initial stage in the evolution of a coherent containment policy was marked by
> an almost military style attack on infected villages…In the hit and run excitement
> of such a campaign, women and children were often pulled out from under beds,
> from behind doors, from within latrines, etc. When they ran, we chased. When
> they locked their doors, we broke down their doors and vaccinated. (Music 1976:
> 35)

Vaccinators were met with hostility, and in some cases, armed resistance. Brilliant (1978)

vividly narrates one particularly coercive episode:

> In the middle of the night an intruder burst through the door of the simple adobe
> hut. He was a government vaccinator, under orders to break resistance against
> smallpox vaccination. Lakshmi Singh awoke screaming and scrambled to hide
> herself. Her husband leaped out of bed, grabbed an axe, and chased the intruder
> into the courtyard. Outside, a squad of doctors and policemen quickly
> overpowered Mohan Singh. The instant he was pinned to the ground, a second
> vaccinator jabbed smallpox vaccine into his arm…Pausing only to suck out some
> vaccine, Mohan Singh pulled a bamboo pole from the roof and attacked the
> strangers holding his wife (Brilliant 1978 as quoted in Greenough 1995a: 637).

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[3] Surveillance-containment departed from the previously accepted strategy of mass vaccination.
Due to the lack of skilled interpreters and the time-consuming nature of interviews designed to
discover which individuals had been in contact with an infected person, this policy was redefined
to mean that all members of an 'infected village' were vaccinated, regardless of status
(Greenough 1995: 635).

Despite disturbing episodes such as these, the surveillance-containment strategy eventually triumphed, and smallpox was finally eradicated from the world in 1977.

As it remains the only infectious disease ever to be completely eradicated from mankind, much of the subsequent literature has examined the viability of SEP as a model for other disease eradication programmes (Brilliant 1978). In this regard, Greenough (1995b) usefully distinguishes between *coverage* of an immunization programme, and *sustainability* of the programme. While the former refers to the proportion of a population that is immunized, the latter deals with the continuity of coverage over time (Greenough 1995b: 605). In the case of the SEP in India, vaccinators resorted to coercive and forceful tactics in order to ensure 100% *coverage*. In the face of heavy resistance to vaccination initiatives, public health officials were forced to weigh the costs and benefits of a more coercive approach. While the effectiveness of the smallpox eradication campaign cannot be underestimated, there remains the concern of *sustainability*. Greenough (1995a) points to several disadvantages of coercion and intimidation as a strategy:

First, coercive policies undermine public trust in authority figures, and alienate the very people who need to be 'on side' to inform vaccinators whenever an outbreak is spotted. Shortly after smallpox was successfully eradicated in South Asia, the WHO's regional office published a report highlighting this limitation: "The vaccinator who rushed into the village, vaccinating by force, provoked and compounded the animosity and, although he obtained a short-term benefit, he encouraged concealment of any future cases for fear that he might return again" (Basu 1979: 113). Second, "coercion can leave behind a residue of resentment that sours public attitudes toward the next vaccination campaign" (Greenough 1995a: 643). Greenough (1995a) points out that particularly in cultures where low levels of literacy mean that collective memory is preserved in oral history and rumours, a highly unpleasant interaction with foreign public health workers is likely to remain prominent in public consciousness for some time. Third, there is a dearth of diseases that are truly suitable for an *eradication* campaign (Streefland 1989). Far more diseases offer possibilities for *control*, such as malaria, schistosomiasis, and HIV. Control programmes continue year after year and require continuous work to keep disease burden down. In light of this, it would be counterproductive for disease control programmes to systematically

alienate populations whose cooperation is needed. Greenough (1995) summarizes: "In short, unwonted aggressiveness in delivering immunization is unsuited to building sustainable vaccination programmes" (Greenough 1995a: 643).

Pragmatism as an Indispensable Strategy

In light of the limitations of coercive approaches, it is fair to conclude that when disease eradication programmes encounter resistance, the response should necessarily be pragmatic. A 'pragmatic approach' is defined in a variety of ways in the literature, but certain common themes are apparent. First, authorities must recognize the historical reasons for distrust, in order both to inform their own thinking, and to communicate this understanding to the public at large (Bogart and Thorburn 2005). Officials who acknowledge to themselves that conspiracy beliefs involve rational assessment of lived experience will be able to develop more actionable plans.

Second, community involvement is essential if disease eradication programmes are to receive social support. Particularly, involvement of local government will increase regional ownership of global health programmes and decrease the likelihood of alienating key local figures (Jegede 2007: 0421). Though a people-centered approach faces limitations due to budget constraints, research has conclusively demonstrated that without local support, health initiatives are much more likely to fail (Campbell 2003; Allen and Parker 2006). Streefland (1989) noted how the continuity of a vaccination programme depended on "its integration in the society and culture of the people whom it is meant to cover" (Streefland 1989: 1091). A Nigeria-based English man ventured his opinion of the value of community engagement to prevent conspiracy beliefs: "Perhaps if international bodies like WHO had followed the right procedures for involving communities and explaining things properly, then people won't [sic] be so suspicious. After all, democracy is all about participation and to participate one has to ask questions, no? (Yahya 2005: 17).

Third, public awareness campaigns that take cultural and political understandings into account are crucial. Yahya (2007) points out that because "information gaps will be filled by false information", clear, consistent messages are essential (Yahya 2007: 204). The nature of public messages in northern Nigeria was a crucial factor in prolonging the polio vaccine boycott, as officials originally denied that the vaccine contained any anti-fertility hormone. Subsequent

testing found that the vaccine actually contained traces of oestradiol, which acts as a contraceptive amongst reproductive-age women. While the amounts contained in the vaccine were negligible[4], the fact that they were not initially reported was seen as evidence of transgression. Dr. Haruna Kaita, a doctor on the Kano state technical team that was investigating the polio vaccine, concluded that the vaccine contained "undeclared contaminants" and harshly criticized the West, stating, "they have always taken us in the third world for granted, thinking we don't have the capacity, knowledge and equipment to conduct tests that would reveal such contaminants" (Hasslberger 2004 as quoted in Yahya 2005: 15). Such comments show how the removal of references to oestradiol from any original public statements exacerbated suspicions among investigators. Authorities in the boycott states clearly resented the implication that international organizations did not think they had a sufficient level of scientific literacy. Spokespeople from the boycott states are united in an overall rejection of any insinuation that lack of education played a major role in the vaccine boycott. A Muslim leader and elder in Minjibir[5] echoed this sentiment, arguing that the boycott was the result not of ignorance, but "of education that we ask questions as to what medicine is being brought into the country, what it contains and how it will affect us" (Yahya 2007: 195).

A further example of this is documented by Scott (2000), who details the impact of an unclear explanation for HIV on the credibility of HIV educators. A population faced with ambiguous messages regarding the origins of HIV is likely to conclude: a) that the educator is hiding the truth, thus leading to conspiracy theories, b) that the educator does not know, thus reducing overall credibility of health messages, or c) that science cannot explain HIV and as a result, it must be a punishment from God (Scott 2000: 13). The examples touched upon here highlight why a pragmatic approach requires a clear public education campaign. As to the means for delivering such an approach to far-flung populations, Jegede (2007) suggests using media sources particularly accessible to the community, such as radio, as well as particularly engaging and creative, such as theatre and music, in this regard (Jegede 2007: 0421).

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[4] Ostradiol is present in much higher concentrations in regularly ingested substances, such as breast milk (Yahya 2005: 13).

[5] Minjibir is a city in Kano state in northern Nigeria.

Fourth, accountability can be reinforced by having local research ethics committees which are outside of federal or international jurisdiction. This would prevent health research from being performed without proper consultation with relevant stakeholders, and ensure that the public was aware of all potential risks (Ibid: 0421). Fears over lack of accountability fuelled the Nigerian vaccine boycott: Dr. Datti Ahmed, head of the SCSN, stated, "We're worried the people they're asking to do the tests are interested parties like UNICEF, who have been bringing the vaccines into Nigeria" (Yahya 2005: 13). Clearly in such cases the existence of a independent disinterested panel would have sped up the process of validating the polio vaccine and led to a quicker resumption of the campaign.

Fifth, the goals of time-bound vertical health programmes should be aligned, as much as possible, with the long term goals of horizontal primary health care systems. The challenge that public health officials face is to combine these two types of systems synergistically, so that the resources of the latter are not disproportionately diverted to the former. As Oliveira-Cruz et al (2003) detail, "there is a tension between the temptation of seeking to reach the targets quickly, using a vertical approach, and the ideal of strengthening the overall health system, which should over time deliver the interventions needed" (Oliveira-Cruz et al 2003: 83). As the Nigerian case study demonstrated, communities that perceive that scarce resources are being diverted towards single-minded aims may react with resistance and hostility to such initiatives. This resistance has the potential to become intertwined with wider suspicions about the motives of the government or international agencies, and can serve to reinforce political or religious divisions, which can provoke conspiracy beliefs (Renne 2006). International health initiatives that seem coherent from a global perspective can appear at odds with local health priorities. The events in Nigeria demonstrate the dissonance that can occur when a disease is selected for global eradication not because of its mortality rate (which is far lower than other diseases, such as malaria), but because of its relatively straightforward epidemiology. In light of this, although it is outside of the mandate of vertical health programmes to improve primary health care services, Oliveira-Cruz et al (2003) suggest that there may be more synergies between the vertical and horizontal systems than are immediately apparent. Thus, vertical programmes that work to build capacity at the local level, facilitate community ownership and self-reliance, and educate the

public in constructive and helpful ways about health concerns can contribute to gradual strengthening a country's overall primary health care system (Oliveira-Cruz et al 2003 82-3).

Lastly, though the tensions between improving public health and respecting individual freedoms are not new (Lancet 2007: 235; Greenough 1995b: 606), they continue to confront policy makers with difficult decisions. In light of the success of the smallpox eradication programme, which did resort to coercive methods in the final stages (Greenough 1995a), there are some analysts who recommend similar tactics whenever non-compliance threatens a health initiative (Wilson 2005). Though each case must be judged separately, evidence suggests that coercion succeeds only in ensuring *coverage* of a programme, not *sustainability* (Greenough 1995b). Populations that experience extremely coercive vaccination interventions may display increased resistance to future initiatives and an increased propensity to *exit*. Thus, when long-term community support is needed to perpetuate programmes year after year, a non-coercive pragmatism is preferable. Though this is obviously easier said than done, one hopes that the recommendations contained throughout this paper are actionable to the extent that they provide logical pathways into communities where change may occur.

CONCLUSION

The implications of failed disease-control programmes become more damaging as the world becomes increasingly globalized (Wilson 2005; Streefland 1989). The costly effects of *exit* in both financial and human terms place conspiracy beliefs, and their potentially detrimental impact, squarely on the agenda of public health officials, policy makers, and academics. The 'Symbolists' and 'realists' take opposite approaches to this problem, the former attributing conspiracy beliefs to ignorant delusions, the latter as an expression of rational political distrust. While the former is limited both in its inaccurate stereotype of conspiracy-believers and in its lack of actionable policy prescriptions, the latter can lead to pragmatic interventions to assuage the reservations of target populations. As Treichler (1999) notes, "Conspiracy theories help us understand what is important to people and offer lessons about why, at some level, all meanings matter" (Treichler 1999: 118). As the goal of any vaccination programme is successful disease eradication, the use of the realist approach to guide interventions seems likely to be much more practical and effective. In this paper we have seen examples of the effects of conspiracy beliefs on target populations, and undertaken a detailed case study of the Nigerian polio-vaccine boycott

as a way of deepening our understanding of possible strategies to "manage" these beliefs more pragmatically. These examples suggest several approaches to conspiracy beliefs that are more likely to keep populations' on side and avert *exit*. These are characterized by an overriding pragmatism and include: acknowledging historical events that may influence suspicion or trust; facilitating a community-owned implementation of health initiatives, in which relevant stakeholders are brought on side; delivering clear and accurate public health messages to inform local populations about the motives and outcomes of vertical campaigns; endeavoring to work synergistically with primary health care systems so as not to divert scarce resources from long-term goals; working to create an independent monitoring body to ensure accountability to local people; and balancing the short-term benefits of coercion to enforce compliance with the potentially detrimental impact of the resulting resistance to this and future initiatives. If such approaches are taken more often in the future, it is our hope that communities' fears will be validated and assuaged and their *exit* averted, paving the way for disease eradication programmes to accomplish their laudable goals.

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