Perspectives on polio and immunization in Northern Nigeria

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Abstract

Through the efforts of the global campaign to eradicate polio, cases have declined worldwide, from 35,251 cases in 1988, to 1449 cases as of 28 October 2005. However, confirmed cases of wild polio virus continue to be reported from Northern Nigeria. This paper examines the reasons for the difficulties in eradicating polio in Northern Nigeria from the perspective of residents of one town, Zaria, in northern Kaduna State. Research methods included participant observation, open-ended interviews and the collection of polio-related documents. While some people believed that the vaccine was contaminated by anti-fertility substances, others questioned the focus on polio when measles and malaria were considered more harmful. Some also distrusted claims about the safety of Western biomedicine. These concerns relate to questions about the appropriateness of vertical health interventions, where levels of routine immunization are low. While the Polio Eradication Initiative was considered to be cost-effective by Western donors, from the perspective of some people in Zaria it was seen as undermining primary health care, suggesting that a collaborative, community-based framework for primary health care, which includes routine immunization, would be a more acceptable approach.

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Oh but we dreamed to mend whatever mischief seemed to afflict mankind…

—W.B. Yeats, “Nineteen Hundred and Nineteen”

Introduction

In 1988, the World Health Assembly voted to implement a campaign to eradicate polio worldwide, from 35,251 cases in 1988 to 1449 cases in 2005 (28 October; WHO, 2005), the goal remains elusive. Cases continue to be reported, mainly in India, Nigeria, Pakistan, and Afghanistan (Altman, 2006), although outbreaks in Burkina Faso, Central African Republic, Chad, Cote d’Ivoire, Mali, and Sudan in 2004 (CDC, 2005, p. 874), and in Indonesia and Yemen in 2005 (McNeil, 2005a, 2005c), which were formerly polio-free, have also been reported.

The difficulties in eradicating polio in Nigeria have been widely reported in the Nigerian (Imam, 2005; Kuye & Nwannekanma, 2005) and Western press (McNeil, 2005b). While the Western media has, with some exceptions (Wilson, 2005), tended to attribute resistance to the polio campaign in Nigeria to Muslim leaders (Altman, 2004), recent analyses
of the polio campaign in Northern Nigeria have discussed the problems of this intervention in a broader sociocultural and political context. Obadare (2005) examined the historical and political context of Northern Nigeria where many people were genuinely afraid to risk having their children vaccinated, in part because of the lack of trust in their government. Olusanya (2004) noted a lack of informed consent, particularly as some Northern Nigerians still remember the trial antibiotic, Trovan® (Trovafloxacin Mesylate, developed by Pfizer, Inc.), which was given free of charge during the 1996 cerebrospinal meningitis (CSM) epidemic.\(^1\)

The distribution of Trovan® in Kano is also discussed by Achebe (2004) who noted that people’s fears about Trovan® reinforced a distrust of Western pharmaceutical companies and Western biomedicine. This led some Northern Nigerians to question the government’s advocacy of the polio eradication initiative, which was compounded by north–south political dynamics associated with ethnicity and religion within Nigeria itself. Northern Nigerians’ sense that their interests were being ignored by President Olusegun Obasanjo (who is Yoruba, Christian, and from Southwestern Nigeria) contributed to their belief that Northern Hausa–Fulani politicians and Muslim religious leaders who criticized Western medicine were genuinely trying to protect them (Obadare, 2005, p. 279).\(^2\)

In this paper, the complexity of this situation in Northern Nigeria, where most of the remaining cases of wild polio virus have been reported in 2005, is presented through the perspectives of participants on the polio immunization campaign in Zaria, a town in northern Kaduna State (Fig. 1). The paper examines people’s perceptions of the polio campaign, including those who accepted the program and those who rejected it, specifically focusing on three aspects of the campaign. First, the implementation of the polio immunization campaign in Nigeria and the responses of recipients in Zaria are considered. Second, aside from the Trovan® trials in Kano, other ethical concerns affected local acceptance of the polio campaign in Zaria. Questions about the safety of vaccines in general (Fredrickson et al., 2004) and the safety of the OPV, in particular the problem of vaccine-derived polioviruses associated with the oral polio vaccine, have been discussed in medical journals (see e.g., Hull & Aylward, 2001, p. 4382; Kew et al., 2004) and on various websites, available to Nigerians with access to the internet.

This point leads to the third theme of the paper, namely the appropriateness of vertical health interventions, particularly specific disease eradication programs such as the polio immunization campaign in Nigeria, where levels of routine immunization are very low. While the history of public health may be characterized by different positions on horizontal vs. vertical interventions (Kunitz, 1987) and on top-down, technological approaches vs. health care equity (Hardon & Blume, 2005), these arguments were quite literally played out in Nigeria. The National Programme on Immunization, the Ministry of Health, and WHO/UNICEF/CDC officials and associated donors, including Rotary International, USAID, the EU, the World Bank, the Gates Foundation, and the United Nations Foundation, among others, supported the Polio Eradication Initiative. Some people in Zaria questioned the benefits of a focus on polio when primary health care (PHC) clinics were seen as underserviced.

As Hardon and Blume (2005, p. 353) observe, “it is difficult to criticize a vaccine initiative.” However, without taking local interests into account and fostering community participation, immunization campaigns are not likely to succeed (Heggenhougen & Clements, 1990; Nichter, 1995). In the concluding section, health care concerns in Zaria—that include the possibility of “recipient fatigue”—are considered, suggesting that a collaborative framework for PHC, which would include strengthening routine immunization, would be a more acceptable approach.

**Research methods**

This study utilized three anthropological research methodologies including: (1) participant-observation; (2) open-ended interviews with individuals selected by a snow-ball sample based on type of

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\(^1\) A case was brought against Pfizer by the guardians of children who had participated in the drug trial (11 of whom subsequently died) on the grounds of lack of adequate informed consent (Obadare, 2005; Petryna, 2005). This case was dismissed in August 2005, as the judge ruled that the US District Court for the Southern District of New York was not the appropriate forum for the trial (Abdullahi vs. Pfizer, 2005).

\(^2\) People, nonetheless, realized that some individuals who spoke out against polio immunization had their own political agendas. One man, who had followed the advice of a local Muslim leader (and university lecturer), bitterly remarked, “He misled us,” after his child was paralyzed with polio (Po-3, Samaru, 12 July 2005).
participation in the immunization campaign; and (3) the collection of polio-related documents, including newspaper articles about polio immunization, WHO and UNICEF materials in Nigeria (including NID—National Immunization Day—information and promotional materials) and WHO online polio data.

Residence in a family house in Zaria City, in Kaduna State, for at least 2 weeks every year over the past 11 years facilitated the observation of neighborhood house markings indicating NID visits and inquiries about whether polio immunizations had been administered. This long-term community residence made possible snow-ball sampling of individuals associated with polio, including parents who did or did not have their children vaccinated for polio (n = 17, including 10 parents who had polio themselves), students (without children) who had polio (n = 2), immunization workers (n = 2), and local government health officials (n = 2), as well as with Ahmadu Bello University Teaching Hospital (ABUTH) public health professors (n = 2), pediatricians (n = 2), one pharmacologist, and one professor emeritus who specialized in polio research at the University of Ibadan. Two members of the WHO Polio Eradication Initiative team, and a staff member of the Kaduna State National Programme on Immunization were interviewed in Kaduna. A total of 32 open-ended interviews were conducted from July to September 2005, a year after immunization was resumed in Kano in July 2004, when hostility toward the PEI had somewhat diminished. In addition, during August 2004, articles on the polio campaign published in two Northern Nigerian newspapers, The Weekly Trust and The Daily Trust, for the period from May 2003 to July 2004, were collected. These articles, along with archival newspaper clippings and unpublished materials held in the ABU Department of Community Medicine library and the Nigerian National Archives—Kaduna, provided information on earlier immunization efforts in Nigeria.
Background on the expanded programme on immunization (EPI) and the national programme on immunization (NPI) in Nigeria

The EPI began in Nigeria in 1979, although immunization levels for the next 5 years were low, ranging from 5% to 10% (Federal Ministry of Health Nigeria, 1991, p. 3). This situation was partly due to political and economic instability during the period from 1979 to 1986, when Nigerians elected a civilian president and subsequently experienced two military coups. It was during the military regime of General Ibrahim Babangida, who appointed Professor Olikoye Ransome-Kuti as Minister of Health in 1986 that a program of PHC centers was established throughout the country and that vaccines were made widely available (Olatimehin, 1988, p. 3). In March 1988, the first phase of a National Immunization exercise was held at PHC centers, which included the distribution of free vaccines, although only 50% of children under 2 years nationwide were immunized. In 1989, Ransome-Kuti pledged to achieve 80% coverage by December 1990 (Orere, 1989, p. 20), in line with the UNICEF goal of Universal Childhood Immunization (UCI) for early childhood vaccine-preventable diseases. This goal was achieved for BCG (Bacille-Calmette-Guerin vaccine) coverage (National Planning Commission & UNICEF, 2001, p. 84).

The year 1990 is considered to be the high point in national immunization coverage in Nigeria. However, in June 30, 1990, responsibility for PHC services was transferred to the local governments—as part of a structural adjustment program which required the federal government to curtail spending on social services (Anonymous, 1990)—and in 1991, states were required to purchase their own EPI vaccines (Umar, 1989, p. 24). Overall immunization levels, as represented by DPT3 coverage, declined and by 1993, were reported to be around 30% based on government data (FBA, 2005, p. 3). This was another period of considerable political uncertainty due to the annulment of the national presidential election in June 1993, subsequent nation-wide strikes (in which health workers participated), President Babangida’s forced resignation in August and a 3-month interim presidency, followed by a bloodless coup, led by General Sani Abacha in November 1993.

With the change in national leadership, there was political interest in revitalizing the EPI program. In July 1995 (Alabi, 1995; Interview: Po-16, Kaduna, 7 September 2005), EPI was renamed the National Programme on Immunization (NPI), which was formally launched in 1996 as part of the Family Support Programme, a project run by the First Lady, Miriam Abacha. In August 1997, the NPI’s legal mandate was set forth in Decree No. 12 of 1997, which created the NPI as a separate parastatal (Interview: Po-16, Kaduna, 7 September 2005; FBA, 2005), although in practice, it worked closely with the Federal Ministry of Health and with international NGOs such as WHO, UNICEF, and Rotary International. The NPI has continued as a separate entity, which is responsible for the importation and distribution of vaccines to cold-store centers throughout the country. It is also responsible for promoting immunization in Nigeria, including the polio immunization campaign which began in earnest in 1999.

The polio eradication campaign in Zaria

In Nigeria, the decline in immunization during the 1990s meant that the NPI needed to begin a program of mass immunization for polio through NIDs. It also established a system for monitoring the wild polio virus through identification of children with acute flaccid paralysis and through the collection and transport of stool specimens (CDC, 2005, p. 873). During the 2001 and 2002 NIDs, health workers went house-to-house in order to increase coverage. All children under the age of 5 were given oral polio vaccine, regardless of whether they had received earlier doses in order to insure universal coverage. However, not all parents allowed health workers to immunize their children.

It is against this backdrop of a decline in PHC, polio eradication efforts, and politics that the immunization of children in Zaria, in Kaduna State, took place. The town of Zaria is famous for its educational institutions, including several Islamic schools, and one of the oldest tertiary institutions in Northern Nigeria, Ahmadu Bello University (ABU), which has a well-established teaching hospital. In the case of medical treatment, both “modern” Western medical and “traditional” Hausa medications may be used in child health care. In cases of high fever—often associated with malaria—children may be taken to a local clinic or hospital, where they are given injections and Western pharmaceuticals for treatment. Alternately, sick children with high fevers may be given traditional
herbal medicines for treatment (Wall, 1988, p. 299). Indeed, the Hausa term for polio, *Shan Inna*, reflects traditional ideas about health, in which the spirit, *Inna*, of the spirit possession healing cult known as *bori*, was believed to cause paralysis (Besmer, 1983, pp. 70–71) by drinking (*shan*) the blood of the victim’s limbs, causing withering, paralysis, and sometimes, death. However, many now view the *bori* spirit cult as un-Islamic (Last, 2005, p. 560) and polio is attributed to biological factors. Thus, health therapy has become a more secular affair for which some Western medical treatments are considered appropriate (Etkin, Ross, & Muazzamu, 1990).

**Dynamics of acceptance and rejection of polio immunization**

Immunization, however, has had a mixed reception. When there is an imminent danger—such as a CSM epidemic, immunization is viewed as beneficial and in 1996, there was a high demand for CSM vaccines (Ejebi, Renne, & Adamu, 1998). However, routine immunization has been seen by some, but not all Zaria residents, as unnecessary or even possibly dangerous for infants and children who are not experiencing health problems. For example, “a Rotary Club” immunization project in Zaria City in March 1995 was abandoned after the second visit because parents refused to bring their children out. They complained of boils around the site of immunization and of a loss of hearing (Musah, p.c.)” (Renne, 1996, p. 135). In another example, one Zaria woman who had taken her children for vaccination stopped taking them after one daughter contracted measles:

> Yes, I did take my children for immunization—I even took one of my daughters until she was 5 years old. But at last I stopped taking them. For example, the measles immunization, I took my children but they had measles and it was very dangerous, more than those who hadn’t gotten immunized. Really, it changed my thinking. That was why I stopped taking the other children, the

immunization had no use (Po-15, Zaria City, August 2005).

In 1995, even before the implementation of the Polio Eradication Initiative, one ABUTH physician observed, that “A lot of people [in Zaria] don’t get the EPI vaccine now because they believe that family planning drugs, fertility control drugs, are incorporated in it” (Renne, 1996, p. 133).

These various ways of thinking about immunization resurfaced when the health workers associated with the NPI, WHO, and UNICEF attempted to meet the December 2004 deadline through house-to-house NID exercises. There was a genuine fear on the part of some people that the polio vaccine was possibly harmful, and they would not allow immunization teams into their houses, as one woman explained:

> …In Islamiyya school, they [teachers] would tell people not to give their children the vaccine because there is something bad in it. It is because of this, that here in Locus [her neighborhood], in one in every five houses, you will find people who refuse to immunize their children (Po-8, Zaria City, 9 August 2005).

However, it was not only Islamic school teachers who were advising people against using the polio vaccine. A controversy broke out among Ahmadu Bello University faculty that contributed to people’s uncertainty about the polio immunization campaign.

In fall 2003, with the increasing suspicions about the safety of the polio vaccine, the Kaduna State government set up a committee to test the polio vaccine for contaminants at ABUTH and at the National Hospital in Abuja. The Federal Ministry of Health (MOH) subsequently organized a team which went to test the vaccine in South Africa (Muhammad, 2003), while the Jama’atu Nasril Islam (JNI), the umbrella organization for Muslims in Nigeria, sent a team of their own experts to test the vaccine in Indian labs. On 23 December 2003, the Minister of Health, Professor Eyitayo Lambo, announced that the Oral Polio Vaccine (OPV) used in Nigeria for immunization, “...had been found to be safe and free of anti-fertility agents and HIV.”

3Some Muslim Northern Nigerians suspect Rotary of being a Zionist organization, hence resistance to the polio immunization campaign derived, in part, from the fact that Rotary was involved. For example, the phrase, “No More Rotary,” is painted on a wall along the main road to the Emir’s palace in Zaria City. However, the president of Rotary International in 2003, Jonathan Majiyagbe, who was from Kano, helped to negotiate a compromise importation of vaccines from Indonesia (Rosenberg, 2005).

4One problem with taking this stance was that traces of estradiol were confirmed to be found in the vaccine. One Muslim woman leader observed that the blanket assertion that there was no estradiol, rather than trying to explain why such traces were not harmful, was a mistaken strategy (personal communication).
One month later, the JNI team, which included two ABU professors, officially announced that they found the OPV vaccine to be contaminated (Babadoke & Kazaure, 2004). However, after additional tests were jointly carried out by MOH and JNI experts (Okpani, 2003), the Sultan of Sokoto, Alhaji Muhammadu Maccido, announced on 17 March 2004 that the “Oral Polio Vaccine is safe” (Anonymous, 2004a). The Governor of Kano State, who cancelled NIDs in Kano in October 2003, continued to refuse using WHO-procured vaccines (Kazaure, 2004), although this situation was subsequently remedied by the importation of polio vaccines from Indonesia in May 2004 (Anonymous, 2004b) and NIDs resumed in July 2004.

While the general public in Zaria might not have followed all the intricacies of these arguments, they nonetheless would have heard about these debates through radio programs, at social functions, at mosques, and in schools. For some, the reports of the tests and the approval given by the Sultan of Sokoto and the JNI settled the controversy, as one Zaria City woman explained:

The reason why I accepted the polio vaccine—it is said that prevention is better than cure. You say you would like to have it because you are afraid the disease will catch you. To avoid that you will take the vaccine. When you immunize [a child], even if the disease catches the child, it will not catch them very well. And another reason, I have seen parents taking their children for vaccination so it makes me accept it. Since they said they want to do away with the disease, in order to have good health, there is no fault in it, it has no effect. Because one likes everyone to have good health, I am supporting the program. I used to encourage my relatives about the vaccine...When you have seen it on TV and heard it on the radio all the time, even those who do not agree with it, later they will agree. Because they will see children given the vaccine, nothing happened to them (Po-1, Zaria City, 6 July 2005).

Yet for others, the controversy simply reinforced what they already feared about the polio vaccine, as one man observed:

No, I don’t allow the people to do polio vaccination for my children in the house because there is a problem in it, such as that European people want us to reduce our numbers, to stop us from giving birth. And we are looking for medicine in the hospital to give to our children and we can’t get it but this one, they are following us to our houses to give it. I don’t trust this polio vaccine (Po-17, Samaru, September 2005).

This man’s statement about not trusting the vaccine or the motivations of those giving polio vaccine to the exclusion of other medicines for children is expanded on in one farmer’s explanation:

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. My children have had measles vaccine, but this polio vaccine, I won’t allow it. I took them to the hospital to do the measles vaccine, they didn’t come to my house. And I never took my children for any immunization except this measles vaccine...

I never heard the Sultan [of Sokoto] explain this polio vaccine on the radio or anything. When they came to my house, I told them I don’t want them to do it for my children and the health worker, she just went out...

If I believe in polio or go to the hospital and have medicine free of charge, like this polio, I can accept the polio vaccine. But if I have to pay for medicine in the hospital, I will not accept this one (Po-18, Samaru, September 2005).

This man’s point differs from those who believed that the OPV was contaminated. Rather, he is opposed to the single focus of an eradication campaign which excludes the provision of affordable PHC for children. In other words, he does not approve of nor will he participate in a top-down approach to the health care of his children in which he has no say.

Thus, there were several reasons why some parents did not bring their children to hospitals or clinics for polio immunization or allow health workers to administer the OPV in their houses. For some, it was distrust of the motivations of those promoting a Western health intervention or product, and the belief that “...Christian countries’

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5This distrust was expressed in terms of fears of infertility. In Northern Nigeria, this fear has been associated with Western products in 1994, including Panadol® and Maggi® bouillon.
concern to export biomedicine to all parts of Africa is... not as a charitable gesture but as self-interested and dangerous” (Last, 2005, p. 561). For others, it was distrust of the Federal Government, under President Olusegun Obasanjo, and the heads of both the Ministry of Health and the NPI, all of whom were southern Nigerians, who were held responsible for the deteriorating health conditions in Northern Nigeria (Obadare, 2005, p. 280). By focusing on polio eradication, which many people did not see as a primary health problem for their children, and not improving PHC—including provision of EPI vaccines (officially free when available, but in some cases, people were charged 20 naira7 for syringes or for each health card notation) or free treatment for malaria, health officials and their international partners were indirectly contributing to the deaths of their children. Yet for others, it was a genuine fear of the health-consequences of the OPV vaccine on their children. Some had heard that the attenuated live vaccine used in the OPV could actually cause polio and some knew that inactivated polio vaccine (IPV) was being used in the West.8 One woman, whose daughter was diagnosed as having polio, insisted that her daughter had received up to 10 doses of the vaccine. She assumes that her daughter’s illness was caused by the vaccine, although the results of the test verifying whether this was a vaccine-derived case or one caused by a local wild polio strain have not yet been released (Po-4, Zaria, 15 July 2005). As with some parents in the US, some Northern Nigerian parents “may prefer to make errors of omission...rather than errors of commission” (Fredrickson et al., 2004, p. 432), and on hearing about the possibility of contracting vaccine-derived polio viruses, may have decided not to have their children immunized.

In Zaria, the consequences of these different perspectives on the benefits and risks of the oral polio vaccine have been low rates for the complete course of polio immunization. In January 2002, Attah (2003, p. 49) found for 339 children under 5 years in the Zaria Local Government Area that only 15% had a full course of four doses of OPV, while 5% had had one dose, 14% had had two doses, and 59% had had three doses. Seven per cent of children had had no immunization. However, these figures actually compare favorably with the Nigerian Demographic and Health Survey 2003 data that found 40.5% of 356 children in northwestern Nigeria had no immunization prior to its survey (Table 1; NPC, 2004, p. 130)

These levels of immunization underscore the immense difficulties faced by health officials in implementing the polio eradication campaign. Problems included poor record-keeping, incomplete immunization coverage (Table 1), and low rates of routine vaccination—as evidenced by a lack of immunization cards and local government health department records. However, with multiple NIDs carried out during 2004 and 2005, the number of confirmed cases of polio caused by wild polio virus in Nigeria has been reduced (Table 2; Fig. 1).

A sense of who was and was not accepting in Zaria is indicated by one member of an immunization team:

Hausa people who are not accepting, ...it is the ones who are not educated who are refusing. Also, some... who have boko [Western education] and Islamiyya [Islamic education...], they say that God said we shouldn’t be doing immunization. They say, “There is nothing in Islam that says we should be doing this immunization.” But most of them who have had Western education, they are accepting this vaccine...we had the most problem with those illiterate [non-Western educated] people, especially in Zaria City. But almost 60% accepted in Zaria City...We entered at least 200 houses in the City and at least 120 houses accepted and 80 refused (Po-13, Zaria City, 31 Aug 2005).

With overall OPV immunization rates under 80%, it is not surprising that eight confirmed cases of polio caused by the wild polio virus were documented in Zaria Local Government Area for the period from January to July 2005 (WHO-Kaduna, 2005). Of these eight cases, four children had not been vaccinated, while one child received 2 doses, two children received 3 doses, and one child had all 4 doses. There are several possible

(footnote continued)

cubes (Renne, 1996). Such rumors of infertility have occurred in other parts of Africa, e.g., in a 1990 anti-tetanus vaccination campaign in Cameroon (Feldman-Savelsberg, Ndondo, & Schmidt-Ehry, 2000).

7One Kano journalist noted that a friend “took his infant daughter for DPT immunization more than 10 times,...no allocation” (Magashi, 2003), although there appears to be some variability in clinic services.

8The fact that the inactivated polio vaccine is used in the West, while the less costly and more easily administered OPV vaccine is used in Africa, has been discussed in the Nigerian press (Kazaure, 2005).
explanations for the three children who had received 3–4 OPV doses including that: (1) antibodies ingested through their mothers’ milk inactivated the vaccine in breast-fed infants under 6 months (Familusi & Adesina, 1977, p. 123), (2) children were suffering from other enteroviral infections, (3) vaccine had become ineffective due to heat or mishandling, or (4) mothers misrepresented, in the absence of card records, the number of doses of vaccine received. These aspects of oral polio

Table 1
Characteristics of children vaccinated, 12–23 months, according to vaccination card or mother’s report, Nigeria 2003 (NPC [Nigeria] and ORC Macro 2003, p. 130)

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<th>BCG</th>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>Measles</th>
<th>All</th>
<th>No vaccinations</th>
<th>No. of children</th>
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<td>Urban</td>
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<td>63.5</td>
<td>51.3</td>
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<td>75.3</td>
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<td>25.1</td>
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<td>23.8</td>
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<td>61.6</td>
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<td>80.7</td>
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<td>9.8</td>
<td>5.6</td>
<td>12.8</td>
<td>54.7</td>
<td>38.9</td>
<td>18.7</td>
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<td>48.5</td>
<td>37.6</td>
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<td>77.7</td>
<td>58.5</td>
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<td>13.0</td>
<td>18.6</td>
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<td>68.4</td>
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<td>52.5</td>
<td>80.4</td>
<td>70.9</td>
<td>46.8</td>
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<td>32.4</td>
<td>8.4</td>
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<tr>
<td>Higher</td>
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<td>(88.4)</td>
<td>(52.1)</td>
<td>(29.4)</td>
<td>(76.1)</td>
<td>(78.1)</td>
<td>(69.9)</td>
<td>(30.8)</td>
<td>(68.1)</td>
<td>(11.3)</td>
<td>(2.4)</td>
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<tr>
<td>Lowest</td>
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<td>21.9</td>
<td>15.3</td>
<td>7.1</td>
<td>12.6</td>
<td>61.5</td>
<td>43.9</td>
<td>20.0</td>
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<td>7.7</td>
<td>16.6</td>
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<td>41.3</td>
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<td>33.8</td>
<td>20.8</td>
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<td>86.7</td>
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<td>TOTAL</td>
<td>48.3</td>
<td>42.6</td>
<td>31.7</td>
<td>21.4</td>
<td>27.8</td>
<td>67.2</td>
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<td>29.4</td>
<td>35.9</td>
<td>12.9</td>
<td>26.5</td>
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</tbody>
</table>

Table 2
Cases of Acute Flaccid Paralysis (AFP), Nigeria, 1999–2005 (as of 28 October 05)

<table>
<thead>
<tr>
<th>Year</th>
<th>AFP cases reported</th>
<th>Non-polio AFP rate</th>
<th>AFP cases- w/ adequate specimens %</th>
<th>Total confirmed polio cases</th>
<th>Wild-virus confirmed polio cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>1242</td>
<td>0.5</td>
<td>26</td>
<td>981</td>
<td>98</td>
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<tr>
<td>2000</td>
<td>979</td>
<td>0.7</td>
<td>36</td>
<td>638</td>
<td>28</td>
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<tr>
<td>2001</td>
<td>1937</td>
<td>3.8</td>
<td>67</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>2002</td>
<td>3010</td>
<td>5.7</td>
<td>84</td>
<td>202</td>
<td>202</td>
</tr>
<tr>
<td>2003</td>
<td>3318</td>
<td>6.0</td>
<td>91</td>
<td>355</td>
<td>355</td>
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<tr>
<td>2004</td>
<td>4814</td>
<td>8.0</td>
<td>91</td>
<td>782</td>
<td>782</td>
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<tr>
<td>2005</td>
<td>3713</td>
<td>6.7</td>
<td>86</td>
<td>522</td>
<td>522</td>
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</table>

vaccination not only suggest the difficulties facing health officials during the polio campaign but also the difficulties of parents in weighing the benefits and possible risks of immunizing their children.

**Discussion: systemic problems**

The complexity of the problems confronting the polio eradication campaign in Northern Nigeria helps to explain the continuing diagnosis of wild polio virus cases there, even after massive NID and SNID (Sub-National Immunization Day) exercises aimed at meeting the goal set for worldwide eradication by December 2004. Three particular logistical problems confronted the polio eradication initiative, which were not the case for the earlier, successful smallpox eradication campaign. First, a single dose of smallpox vaccine was needed to confer immunity, rather than the four doses needed for polio. Second, some children who had polio but did not manifest symptoms of acute flaccid paralysis (AFP) were shedding polio virus undetected, thus necessitating continued widespread immunization. Third, an actual mark was left after smallpox vaccination, so that health teams did not need to duplicate efforts to ensure coverage but could easily identify children who had not been vaccinated. The system used in the polio vaccination campaign included marking house doorways and staining the thumbs of children who had received vaccines, since health cards were not given. These methods for tracking polio immunization were not always accurate. Furthermore, the visible symptom of polio infection—acute flaccid paralysis—needed laboratory confirmation. Tests, which rely on the collection of two stool samples, must be sent to labs in Ibadan and if required, to Ghana. Thus there was sometimes a considerable lag period between presentation of symptoms and confirmation of diagnoses.

Other problems mentioned by health officials included the difficulties of training members of health teams as well as encouraging a positive attitude under what were sometimes difficult conditions. Some refused to follow local practices, such as veiling, which would have increased their local acceptability (Po-13, Zaria City, 31 August 2005). Others were not well-trained (Po-19, Samaru, 3 September 2005) and did not have sufficient knowledge to answer parents’ questions, while some were opposed to the polio immunization program but needed a job (Po-7, Samaru, 8 August 2005).

**Breakdown in primary health care and routine immunization**

Aside from problems with immunization teams, another primary problem for the eradication campaign was the breakdown in the provision of routine immunization through PHC clinics and hospitals in local governments. The vaccines used in the effort to achieve 80% coverage during the EPI drive in 1990 were provided by UNICEF and other NGOs via the federal government without charge to local governments. However, when federal responsibility for PHC services was transferred to local governments, the availability of vaccines drastically declined, as one ABUTH professor explained:

> Now, when that happened there was now almost zero coverage, because the chairman, the local government did not take it seriously because they do not want to spend money there. And of course, the truth of the matter was that they were not awarding the contract or procurement. So there was no money forthcoming along that [road] and they didn’t want to spend their money. So, that brought the coverage to as low as 20% in some places. And the national average then in the early 90s was about 43% (Po-5, Zaria, 20 July 2005).

This decline in levels of complete polio immunization and EPI vaccinations may be seen in a comparison of data from the 1990 and 1999 Nigerian Demographic and Health Surveys (Bonu, Rani, & Razum, 2004, p. 333).

The difficulties of improving PHC in Nigeria, which would include routine vaccinations, are many. There have been recommendations for the reorganization of the NPI, which has retained the separate parastatal status which it received when it was created during the Abacha regime. These recommendations include placing the NPI under the authority of Ministry of Health, which would both streamline the implementation of PHC and strengthen accountability (National Planning Commission [Nigeria] & UNICEF, 2001, p. 84). From this perspective, a broadly based and functioning PHC system is the long-term answer to immunization, including the control and eventual eradication of polio in Nigeria. More recently, in July 2004, a major reorganization of the Federal Ministry of Health—incorporating immunization and child health under the Department of Community
Medicine and replacing the NPI’s separate parasitcal status—was proposed (FBA, 2005, p. 24). While this proposal has yet to be implemented, it has the support of many Nigerian medical personnel associated with the polio eradication campaign (Po-19, Samaru, 3 September 2005) and also concurs with the views of many parents whose children were being sought to be vaccinated.

*Vertical disease-eradication programs and primary health care*

Although some people refused to allow their children to be vaccinated because they believed that the polio vaccine was contaminated with anti-fertility substances as a plot to reduce Muslim populations, disputes over the safety of the polio vaccine and the appropriateness of the polio eradication campaign were more complex than this single explanation for people’s refusal to participate suggests. For these debates also raised the question of what sorts of public health programs should be implemented as well as about their underlying ideologies. Two aspects of this debate are captured in the response of one immunization team member to the question of why people in the Zaria City were refusing the polio vaccine:

They used it say it “killed the eggs of the woman” and “why don’t they go to the hospital and help people who are sick, not just focus on polio?” Or “why won’t they go to the hospital and help people with diseases besides polio—why are they insisting only on polio?” And they won’t accept it. If we try to convince them by saying it’s for their health and their children’s health, they will still refuse. Then we will just leave them (Po-13, Zaria City, 31 August 2005).

The belief about anti-fertility substances “killing the eggs of the woman” expressed here and the lack of trust that this belief represents—that OPV was a form of anti-Islamic population control—was a significant reason for some. However, there were also questions about “helping people who are sick [at] the hospital” and why “just focus on polio”? These questions suggest that people were questioning a top-down government decision to promote a public health initiative that came from outside, an initiative in which they had no input. What many people seemed to be questioning was the wisdom of an eradication program that appeared to them to reduce the resources and personnel available for PHC. While polio vaccines were given freely, medicines for malaria had to be paid for, while vaccines sometimes incurred “incidental” expenses. In their report on routine immunization in Nigeria, the research team for Feilden Battersby Analysts made a similar observation:

Polio “fatigue” has set in across much of the country, with widespread resentment at the quantity of human and financial resources being thrown at a single disease that, both in public health terms and in popular perception, is relatively unimportant in Nigeria. National Immunization Days (NIDs) take health staff away from their regular work. Some key staff spend up to 35 days on each NID, and there are five NIDs plus one sub-NID planned for 2005. Thus NIDs contribute to the continuing dysfunction of the primary health care system (FBA, 2005, p. v).

*Questions of health equity*

Another argument questioning the specific focus on polio eradication relates to the question of equitable distribution of health services, as described by one ABUTH professor:

Somebody asked me this question…and he’s a very enlightened person…, “Professor, do you believe in these causes we are talking about, child survival strategy and programs?”… I said, “Absolutely!” He said, “You’re talking about equity, equity.” I said, “Yes, I believe in equity.” And he said, “Alright. You must be misled by these Western blocks, Western powers. But in your own honest opinion, Professor, tell me, what kills most children here—is it malaria or polio?” I said, “Yes, it’s malaria. Malaria kills immediately. But that polio may not kill but [will] have a permanent damage, would affect the economic output of people…” He said, “No, as far as he’s concerned, if I agree malaria is the problem, why don’t they concentrate on malaria? And they are emphasizing polio. Is that your equity?” (Po-5, Zaria, 20 July 2005).

This position interprets equity in a somewhat different way from those supporting eradication programs, who see universal coverage of polio vaccine as a means of providing equitable health care. For him, the emphasis on polio rather than on other, more lethal, childhood diseases such as malaria and measles, was an inequitable focus on
a relatively small number of children and an inequitable distribution of health resources. Thus while international agencies and donors may view the polio eradication campaign as an “economical as well as humane” (Kunitz, 1987, p. 396) health intervention, this approach has been questioned by those who argue for a broader PHC approach. Indeed, a Professor Emeritus who pioneered in polio research in Nigeria (Familusi, 1981) stated that:

My honest view is that the mass immunization program is not what we need. What we need is a program of effective child immunization conducted in infant/child clinics and hospitals, [freely and regularly available]… As a lecturer I tell my students—this pains the politicians, ‘If you get Rotary International to vote, six million or six billion, [it won’t make any difference]. This [polio problem] could have been taken care of by having an effective child immunization program.’ What happened in the North? There might have been some religious bias but that became possible because we weren’t doing the right thing in the first place (Po-6, Ibadan, 25 July 2005).

Conclusion

An enormous amount of time and resources have gone into the polio immunization campaign in Nigeria. These efforts have not been in vain as decreasing numbers of confirmed cases of poliomyelitis have been reported in Nigeria (CDC, 2005, p. 876; Fig. 1). The implementation of NIDs with house-to-house immunization has made free polio vaccination available to those who might not have been able to take their children to hospitals or clinics. There has also been significant improvement in surveillance of acute flaccid paralysis, evident from the increasing percentage of adequate stool samples sent to Ibadan for testing—from 26% in 1999 to 91% at the end of 2004 (Table 2; WHO, 2005)—with a better system established for the transport and testing of stool samples in order to identify specific viral strains.

However, health officials and donors associated with the polio eradication campaign are disappointed that, as of 2005, they have not been able to wipe out the wild polio virus in Nigeria. They are also fearful that its continuation there will lead to epidemic outbreaks in Nigeria and elsewhere in Africa (Achebe, 2004; Heymann & Aylward, 2004, p. 1274). Yet in a geographically vast and socio-culturally diverse country such as Nigeria, with the largest population in sub-Saharan Africa, the implementation of a massive eradication campaign was likely to face difficulties. These difficulties are compounded by the lack of sustained support for a national PHC system over the past 15 years—due to political and economic factors, including payments on an accumulated foreign debt of US$30 billion (Polgreen, 2005) and when responsibility for PHC was left to the budgets of local governments.

Hardon and Blume (2005, p. 348) have noted an ideological shift—from broad-based health projects, such as the Expanded Immunization Programme, to an emphasis on disease eradication and technological innovation, represented by the Polio Eradication Initiative—in the 1990s. This shift also reflected economic considerations, since vertical, time-bound interventions such as the polio eradication campaign, are seen as more cost-effective than open-ended disease control interventions (Barrett, 2004), and hence more attractive to donors. Indeed, one of the difficulties of maintaining broadly based programs such as the expanded immunization program through a system of PHC hospitals and clinics is long-term financial sustainability. One recent approach to vaccine provision is the Global Alliance for Vaccines and Immunization (GAVI) program, which provides support for vaccines and/or the strengthening of immunization delivery systems, depending on the circumstances of particular country applicants (GAVI, 2005). In Northern Nigeria, some people will benefit from this approach to public health care and immunization, particularly those with higher incomes and with more education since they are more likely obtain vaccinations (Table 1; NPC, 2004) through their better access to public and private health care.

For those without economic resources and with less education, who perceive malaria, measles, and typhoid as the biggest problems threatening the lives of their children, a broad-based PHC, particularly the availability of free or low-cost anti-malaria drugs and routine immunization, is the sort of public health initiative they would support. Resistance to programs such as the polio eradication campaign reflects the need for equity in the focus of international public health programs (Taylor, Cutts, & Taylor, 1997), with local people having some say, perhaps through community-based initiatives (Brieger, Salami, & Ogunlade, 2004; Israel, Eng, Schulz, & Parker, 2005), in order to clarify what health
problems should be addressed. A community-based approach may require considerable effort but it may also be more sustainable and in the long run, less expensive, than global vertical initiatives. The benefits of long-term community approach are suggested by the remarks of one young woman from Zaria City who participated as a member of a polio immunization team there:

I used to tell people that the polio vaccine is not a disease. If it is a disease, I would not give it to our people. If they say it kills eggs in the human body, I used to tell them there has been immunization since a long time ago and nothing happened.

...Before, when people were asked to come to school [boko] to be educated, they used to run away. Before, if they were asked to send their children to boko, they would hide their children. But now everyone wants to send their children to school for education. It’s the same thing with polio (Po-13, Zaria City, 31 August 2005).

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References


