

WORKING PAPER 262

The Social Dynamics of
Infant Immunisation in Africa:
Perspectives from the
Republic of Guinea

Dominique Millimouno, Alpha Amadou Diallo, James Fairhead
and Melissa Leach
April 2006

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Abstract

Infant immunisation is currently a focus of national and global policy attention in relation to Africa as a key means to address ill-health and contribute to the Millennium Development Goals. Yet vaccination coverage is stagnant or falling in many African countries. Redressing such declines, and ensuring the effectiveness and sustainability of proposed expansion of immunisation programmes, requires a sound understanding of the factors shaping vaccine delivery and acceptance in contemporary African health systems. This paper explores these issues through an anthropological approach. It considers how vaccine delivery is influenced by the wider context of the health care system; how vaccination demand is shaped by socially-differentiated knowledges and political identities, and how interactions with delivery institutions and their frontline health workers unfold. It focuses on urban and rural sites in the Republic of Guinea, where dominant policy perspectives often see increasing immunisation coverage as a matter of (a) improving demand through educational approaches that enhance people's biomedical understandings of the reasons for vaccination, and quell misguided 'anti-vaccination' rumours, and (b) redressing supply difficulties through improvements to vaccine delivery system infrastructure, financing and management. In contrast, our ethnographic findings suggest that high demand already exists, although underlain by socially-embedded forms of knowledge and reasoning that fail to match, and often contradict, biomedical views. Yet people frequently cannot realise effective access to vaccines, less because of inherent problems in vaccine delivery systems, but because of the ways these are embedded in the multiple, pluralised processes through which health services are now provided in the Guinean context. As health workers struggle to cope with provision dilemmas, interactions arise which mothers often experience as negative, and which can deter their future demand. Such an analysis, and its implications for policy, emerge only through detailed ethnography of what vaccination practices actually mean to Guinean parents in the context of everyday child care and social relations.

Keywords: immunisation, vaccination, Guinea.

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Preface and acknowledgements

The study on which this Working Paper draws was funded by the Committee on Social Science Research of the UK Department for International Development (DFID). We are grateful to these funders; however opinions and views represented here are those of the authors and not of DFID. Many thanks are also due to the Ministry of Public Health, Guinea and to the regional and prefectural health directorates of Faranah, Kissidougou and Dinguiraye for their support, and to the study's Guinean steering group. We are particularly indebted to the local health centre staff and the many parents in our study localities who gave generously of their time to discuss child health and vaccination issues with us.

1 Introduction

Immunisation is currently high on both national and international policy and aid agendas, especially in relation to Africa. Long-regarded as a highly effective, and cost-effective, public health intervention (WHO/UNICEF 1996), immunisation has recently received renewed international attention in the context of a variety of global discourses and policy approaches. On the one hand, it is seen to contribute to the control of communicable diseases as a global public good that benefits all regardless of national borders (Kaul and Faust 2001); an agenda of mutual north-south self-interest that has undoubtedly played a key role in pushing immunisation up international political agendas. On the other hand, it is also seen as a key route to tackling pervasive ill-health in Africa, contributing to achieving the Millennium Development Goals around reducing childhood mortality, and thus a moral imperative as part of poverty reduction efforts (Obaro and Palmer 2003; Smith and Woodward 2003). These discourses have underlain a variety of international initiatives to improve access to immunisation services, expand the use of existing vaccines and accelerate the development and introduction of new vaccines, of which the most notable and largest is the Global Alliance on Vaccines and Immunisation (GAVI) launched in 2000, together with its financing mechanism, the Vaccine Fund.

This renewed international attention comes at a time when routine immunisation rates are stagnant or falling in most sub-Saharan African countries, as indeed they have been for much of the last decade. Redressing such declines in vaccination coverage, and ensuring that proposed expansion of immunisation programmes is effective and sustainable, have thus become key issues of policy debate. To inform such debate, a sound understanding of the factors shaping immunisation delivery and acceptance in contemporary African health systems is essential. This Working Paper emerges from a project to explore the social dynamics of immunisation in a range of West African countries. This has taken an anthropological approach to consider how vaccine delivery is influenced by the wider context of the health care system; how vaccination demand is shaped by socially-differentiated knowledges and political identities, and how interactions with delivery institutions and their frontline health workers – what we term local supply-demand interactions – unfold.

The present paper explores these issues in the Republic of Guinea, where – as we show below – they have come to be of high national policy importance. Dominant policy perspectives there – as in many African settings – often see increasing immunisation coverage as a matter of (a) improving demand through educational approaches that enhance people's biomedical understandings of the reasons for vaccination, and quell misguided 'anti-vaccination' rumours, and (b) redressing supply difficulties through improvements to vaccine delivery system infrastructure, financing and management. In contrast, our approach reveals – to summarise the paper's argument – that high demand already exists, although underlain by socially-embedded forms of knowledge and reasoning that fail to match, and often contradict, biomedical views. Yet this demand often cannot be met, less because of inherent problems in vaccine delivery systems, we suggest, but because of the ways these are embedded in the multiple, pluralised processes through which health services are now provided in the Guinean context. As health workers struggle to cope with provision dilemmas, interactions arise which mothers often experience as negative, and which can deter their future demand. Such an analysis, and its implications for policy, emerge only through a detailed ethnographic approach to examining what immunisation practices actually mean to Guinean parents in the context of their everyday child-rearing practices.

Before turning to the Guinean context, we introduce the study's approach in greater detail, in relation to some of the main perspectives in literatures which attempt to explain patterns of immunisation coverage and reasons for them.

1.1 Perspectives on vaccination supply and demand

International, comparative analyses tend to attribute low immunisation coverage in developing countries largely to supply-side factors. Thus Gauri and Kaleghian (2002) point to the significance of the quality of a country's governance and health care institutions, and its relationships with international agencies, as key factors in explaining coverage, feeding through to shape specific problems in obtaining vaccines. In this vein, commentators point to the collapse of health systems in many African countries in the context of broader national economic, financial and governance difficulties (Simms *et al.* 2001). Problems in the infrastructure, financing, supplies, staffing and management of national immunisation programmes can be seen as a mirror of this more general collapse, although some argue that it has been hastened by donor and UN agency attempts at health sector reform. These have generally moved away from a focus on vertical programmes such as immunisation towards their integration into broad-based health sector approaches, to be implemented through decentralised approaches. There are concerns, and emerging evidence, that this might undermine the effectiveness and coverage of interventions such as immunisation (Brown *et al.* 2001) especially where integrated, decentralised programmes emphasise cost control and end up underfunded, with insufficient management capacity (Simms *et al.* 2001). The effectiveness and sustainability of large, rapidly-introduced international initiatives such as GAVI in such contexts have been questioned (Heaton and Keith 2002; Brugha *et al.* 2002; Muraskin 2004).

To understand the supply-side aspects of vaccination coverage, it is important to address how global and national imperatives, and the emergent dynamics identified in these literatures, are intersecting with place-specific health delivery settings. These need to be understood not just in terms of their systemic properties, but as embedded in particular geographical and social contexts, and political and economic histories. Importantly, too, such understanding needs to comprehend not just formal systems, but the informal practices that those involved with delivering immunisation services – and especially their frontline workers – deploy as they attempt to cope with changing conditions.

From a supply-side perspective, even less explored are the implications of ongoing pluralisation and marketisation of health systems for immunisation. In Africa as in many other developing countries, conventional distinctions between state and 'traditional' medicine are breaking down as an array of private, informal and hybrid providers (e.g. state employees dispensing privately) multiply, making available both biomedical and naturalistic treatments and services (Bloom and Standing 2001). The little available evidence suggests that such trends have most direct effect on the use of curative services. Even where people seek treatment from many different providers, the public sector remains the key provider of preventative services such as immunisation (e.g. IHSD 2004). There is little evidence of vaccines being sold by private providers or of their leakage into the commercial sector for resale. Both the need for strong, sustained efforts by government bodies to maintain immunisation as a public health intervention, and the nature of the vaccine supply chain, may contribute to this pattern. However, important questions arise about the indirect effects of pluralisation in other aspects of health-seeking and delivery on vaccination: for instance as alternative services influence parents' engagement with the state establishments that provide vaccination services, and as people receive advice about vaccination and child protection from private providers.

Despite the focus on supply-side factors in explaining (low) coverage, a more limited social science literature has also drawn attention to aspects of vaccination demand. Here, a large literature on health inequalities indicates how social, economic and geographical factors influence people's access to vaccination and other health services. However, evidence that some people do not necessarily want, or do not attend, for vaccination even when it is easily available suggests the need for a more nuanced approach. In exploring which parents attend for vaccination and why, many studies of vaccine demand, grounded in survey approaches, have focused on the characteristics – or dispositions – of parents as individuals. Some studies in this vein emphasise the influence of mothers' knowledge, attitudes and

beliefs, including both their general educational level (Bicego and Boerma 1993; Cleland and Van Ginneken 1988), and their perception and knowledge of vaccinations (Helman and Yogeswaran 2004; Onuoha 1981). Others link such factors with other social characteristics such as income, family size, ethnicity, social isolation and migrant status (Eng *et al.* 1991; Gage, Sommerfelt and Piani 1997; Hanlon *et al.* 1988; Heggenhougen and Clements 1990).

In contrast, an anthropological literature, founded largely on qualitative ethnographic study, shifts the focus from people's dispositions to the social and cultural relations that influence vaccination decisions (Streefland *et al.* 1999). Work in this vein identifies several different sorts of vaccination demand. Thus Nichter (1995) distinguishes between 'active demand' ('adherence to vaccination programs by an informed public which perceives the benefits of and need for specific vaccinations') and passive acceptance or compliance ('passive acceptance of vaccinations by a public which yields to the recommendations and social pressure, if not prodding, of health workers and community leaders'). Streefland *et al.* (1999) go further to distinguish between acceptance (which can be more or less active or passive), social demand (based on a perception of general benefits from vaccination, or general trust in biomedicine), and 'non-acceptance'. The latter includes refusal to go, resistance grounded in a questioning of the need for vaccination, and willingness but inability to go. In this paper, we find it necessary to modify Streefland's scheme in two ways. First, we show that parents may value and actively seek vaccination for reasons grounded in socially-embedded knowledge and concepts that depart from, or even contradict, biomedical ideas. This is neither the disease-specific knowledge of Streefland's active demand, nor the perception of general benefits seen to underlie social demand. We term this 'culturally-grounded active demand'. Second, we add to 'non-acceptance' the further category of significant lateness on the recommended immunisation schedule. We substitute the term 'default' for 'non-acceptance', since this allows, more neutrally, for mothers to be accepting in principle but unwilling or unable to complete the vaccination schedule in practice.

Looking at community processes as much as individual parents (Nichter 1995; Samuelsen 2001), this anthropological work finds the prevalence of these different sorts of demand to turn especially on (a) how vaccination engages with existing knowledges, aetiologies and perceptions of disease, and (b) specific socio-cultural contexts and experiences of interaction between people and health care providers. Together, these dimensions constitute 'local vaccination cultures' (Streefland *et al.* 1999: 1707).

The emphasis in the vaccination cultures approach on people's interrelations with health care providers draws attention to the significance of interactions between supply-side and demand-side factors. Supply-side dynamics of health system governance, financing, and staffing meet parents' socio-culturally-embedded demand at particular interfaces (Long 2001) between health workers and parents. The nature of these interfaces – and parents' experiences at them – can in turn influence future demand in ways that impact on vaccine coverage. The significance of supply-demand interactions is, indeed, highlighted in many national reviews of immunisation programmes in Africa (e.g. PEV 2001; Dunn 2005). These repeatedly draw attention to how a range of interactive factors influence parents' attitudes to vaccination, including previous experiences around (a) secondary effects (fever, abscesses); (b) waiting times; (c) the attitudes of health agents (often underpaid and little motivated) and the opportunities for discussion that they offer, and (d) costs, perceived or real. However, such reviews rarely delve deeply into the socio-cultural and political dimensions of such interactions. In doing so in this paper, we find that key assumptions about these prevalent interactive factors often need to be rethought, or at least nuanced.

Recently, global and national policymakers have also highlighted the problem of 'anti-vaccination rumours' in lowering demand and coverage (e.g. UNICEF 2003). The high-profile case where three Northern Nigerian states refused oral polio vaccine in 2003 on the grounds that it contained sterilising agents (Yahya 2006) has renewed attention to actual and potential instances of community-wide 'active refusal' of vaccines on the grounds of a belief that they will damage children's health and reproductive potential, or change children's characters, rendering them more violent. Policy and media commentary on such

instances, and the limited social science work which has addressed them, vary in their interpretations. Some write them off as ill-founded rumours grounded in misinformation spread by a few with misguided intent, to be corrected through education. Others interpret them as collective resistance based on religion or the spread of conspiracy-type theories in (it is implied) a rather unreflective African society. They contrast these instances with vaccination refusal in northern industrial settings, which are seen to derive from parents' individual evaluation of risks to their own child, mediated through social networks and the media (Streefland 2001). Other commentators on vaccination 'rumours' in Africa do, however, address how they arise and become logical to individual parents, whether linked to past experiences with the state and science, or the prevailing dynamics of vaccination provision and the suspicions these arouse – e.g. where heavy-handed OPV or tetanus toxoid campaigns are pursued amidst collapsing routine services (UNICEF 2003; Yayha 2006). Anthropological and historical works have extended such interpretations to understand anti-vaccination rumours as an idiom crystallising valid commentary on broader political experience in colonial and post-colonial settings (Feldman-Savelsberg *et al.* 2000; White 2000). Interpreting 'rumours' around vaccination within a vaccination cultures approach, this paper is attuned to both dimensions of individual and broader socio-cultural and political experience in shaping if and when they emerge, among whom, and with what effects.

1.2 An anthropological approach in Guinea

This paper explores the interaction of vaccination supply and demand through an anthropological approach attuned to local vaccination cultures and their location within broader political and health system dynamics. It focuses on local settings in the Republic of Guinea. Guinea has a relatively low national vaccination coverage rate by West African standards, as Table 1.1 suggests – although it should be emphasised that these figures are only indicative since national vaccination statistics for the region are notoriously unreliable. Within Guinea, there is significant variation in coverage between regions, localities and social groups.

**Table 1.1 Indicative vaccination coverage in West African countries, 2003
(% of one-year-olds having received selected key antigens)**

Country	Measles	DTP3
Benin	83	88
Burkina Faso	76	84
Cameroon	61	73
Cote d'Ivoire	56	54
Gambia	90	90
Ghana	80	80
Guinea	52	45
Guinea-Bissau	61	77
Liberia	53	38
Mali	68	69
Niger	64	52
Nigeria	35	25
Senegal	60	73
Sierra Leone	73	70
Togo	58	64

Source: figures from WHO/UNICEF (2006).

In Guinea, strong political and policy commitment has led to the adoption and implementation of an expanded programme on immunisation (Programme Elargi de Vaccination, PEV). This has enabled improvements in vaccine provision and strategies for ensuring vaccination coverage. However, policy-makers are concerned that more recently, the level of vaccination coverage has stagnated, and in some areas has even begun to decline. Achieving greater and more sustainable vaccination coverage is now acknowledged to require improvements in both public demand for vaccines, and in the services that supply and deliver them. These challenges must be addressed in a broader context of national economic crisis and of declining trust, amongst many, in president Lansana Conte's political regime. Conceived and carried out in collaboration with the Guinean Ministry of Public Health and its Programme Sante Rurale et Lutte contre le SIDA, our study aims to contribute anthropological knowledge to current policy debates in ways that could help improve vaccination uptake, and relations between parents and service providers. It responds to a recognised need within PEV for socially-informed research and action-research into vaccination issues (Camara, n.d.).

After describing the study's sites and methods, the rest of this Working Paper unfolds through three sections. It first addresses levels of vaccination coverage in Guinea, nationally and locally. It then considers supply-side issues and supply-demand interactions as influenced by these, drawing attention to the evolution of programmes and mechanisms of management, monitoring and evaluation, financial aspects and cost-recovery, and the ways these shape relations between service providers and the public. In particular, Guinean parents are now faced with a proliferation of private, unofficial and traditional health service providers, with a range of indirect effects on vaccination services and their use. The paper goes on to address demand-side dimensions and how these shape the interface with vaccination providers. It explores the nature of vaccination demand in its socio-cultural context, showing how particular concepts and practices around the body, child care and protection lead to specific forms of culturally-grounded active demand. However despite this, social and gender relations, and interactions with the particular organisation of vaccination schedules and the informal practices of their providers often lead to default and lateness. This can in turn lead to negative interactions with clinic staff which deter future demand. While there are anti-vaccination rumours in Guinea, we find that these are largely confined to elite urban dwellers and are far less important in shaping vaccination uptake amongst the majority of mothers than these other dimensions of supply-demand interaction. Understanding these supply-demand interactions, we suggest, contributes to current policy debates in suggesting a number of hitherto little-appreciated ways in which vaccination provision, uptake and hence coverage could be enhanced.

2 Sites and methods

2.1 Study sites

The study focused on the local vaccination cultures in urban and rural settings in two of the country's prefectures, which contrast in their vaccination supply context.

Kissidougou prefecture, in the administrative region of Forest Guinea, is notable for the large number of donor agencies and non-governmental organisations working in various forms of partnership with the state to supply and deliver vaccines. These include Plan Guinee, UNICEF, WHO, GTZ, ACF and ARC. Several of these agencies have a remit shaped by the large numbers of refugees from Sierra Leone and Liberia living in the prefecture. Kissidougou was already well-known to members of the research team who had lived and conducted previous studies there. Research focused on the two rural sub-prefectures of Albadariah (predominantly Kuranko/Malinke-speaking) and Beindou (predominantly Kissi-speaking), and on Kissidougou town.

In contrast, in the prefecture of Dinguiraye, in the administrative region of Upper Guinea, state agencies receive little assistance from donors and NGOs, with the exception of the NGO Africare. The area was little known to the research team prior to this study. As in Kissidougou, the research covered both rural and urban areas, focusing on the rural sub-prefecture of Dialakoro (dominated by Malinke and Peuhl-speakers) and on Dinguiraye town.

In each sub-prefecture, a main study village was selected which provided the initial focus for ethnographic work. These were Yassadou (sub-prefecture Albadariah), Sangambadou (Beindou), and Sanola (Dialakoro). Study in the rural areas was subsequently extended to the 2–3 villages neighbouring each focal village, to capture differences of social/ethnic make-up and of distance from vaccination delivery points. In Dinguiraye prefecture, the study covered both the Malinke villages neighbouring Sanola, and a group of Peuhl-dominated villages more distantly-located from the sub-prefecture headquarters. In the urban areas, research focused on 2–3 selected residential quarters. In examining supply-demand interactions, the study focused on the health centres and health posts associated with these sites, as well as on the activities of mobile vaccination teams.

2.2 Methods

The study's anthropological approach made use of a variety of methods including participant observation, detailed narrative interviews and child health biographies, group discussions, interviews with health agents, and reviews of documentary sources.

Participant observation was central to the research, using everyday interactions with parents to generate informal discussions around the protection of infant health, and to understand the place of vaccination amidst prevailing concepts and practices. Participant observation was carried out to reflect the entire social spectrum, in order to understand social differences and relations around vaccination choices and financing. This spectrum was established through an initial social mapping exercise in each site. Living with the communities, taking an active part in all economic, social and cultural activities and having informal conversations while en route to the fields, the market, the health centre or local ceremonies helped this understanding, while reinforcing confidence and friendship between the researchers and the population.

Interviews with parents and other family members explored their understandings of child health and illnesses, immunity, vaccination and secondary effects, and their attitudes towards the suppliers of vaccination and health care. Focus groups were used to animate open discussions around the study's questions. Interviews with local political and cultural leaders (including politicians, teachers, village chiefs, Imams, and leaders of women and youth) explored their points of view around vaccination and its relation with child care.

A specific method of 'child health and vaccination biographies' was developed for the study. These consisted of narrative interviews with mothers structured around the history of the child's health since birth and of the vaccinations received (employing the child's health card if available) to explore the sources of information, and contextual and contingent factors, influencing the acceptance (or not) of each vaccination and the interactions with service-providers. These biographies enabled understanding of the individual experiences of each mother around the care of her child's health, and of how vaccination might have fitted into this. 750 such biographies in Kissidougou and 800 in Dinguiraye were collected, aiming at total coverage of all mothers of children under two years of age within the study villages and urban quarters. Notes were taken in French with local language documentation of key statements, and each biography was subsequently written up in full.

Observation and recording of interactions and moments of encounter between parents and health personnel were carried out to explore processes and types of interaction, and how knowledge and perspectives on vaccination are exchanged and negotiated. Interviews were

carried out with district and sub-prefecture administrators and health personnel, local NGO and UNICEF/WHO workers, private health practitioners and traditional healers to explore their activities and knowledge concerning vaccines, the institutional and socio-cultural factors shaping these, and how they perceive and treat parents' perspectives and concerns. These interviews contextualised the research within each prefecture's health system, and explored staff perspectives on the factors influencing vaccination supply and demand. Interviews and observations were also carried out around vaccination-related events, such as National Vaccination Days (Journées Nationales de Vaccination, JNV) and health education workshops, to explore the experiences and perceptions of both parents and health workers, and the institutional interactions involved.

Preliminary results were presented and discussed with local health and administrative authorities in each prefecture, at the regional health directorate in Faranah, and in Conakry, with the study's steering group and other researchers, donors and decision-makers. Their comments fed into further analysis of the findings.

Interview and biography notes for each locality were analysed by drawing out key themes, especially those relating to types of understanding of vaccination and factors shaping types of acceptance and refusal. Key data in the biographies regarding ethnicity, occupation, wealth status, and timing of receipt of different vaccinations was also coded and brought together in Excel tables, from which simple univariate statistical analyses were performed.

It should be emphasised that the study's findings, from particular localities, are not generalisable to the whole of Guinea. Instead, the envisaged mode of 'scaling-up' is that the insights and processes from these locality-specific studies can serve to inform action-research by local health personnel in other sites, to explore the local relevance there of the issues identified.

3 Vaccination coverage

3.1 Vaccination statistics

Although immunisation coverage in Guinea increased during the 1980s, the period since the mid-1990s has seen a decline. A slight recovery since 1998 has applied to some antigens (notably BCG) but not all, while policy-makers consider this recovery too small and slow in relation to overall improvements in health infrastructure – especially the building of new health centres – during this period (PEV 2001). Table 3.1 indicates these trends at the national level.

**Table 3.1 Evolution of national vaccination coverage in Guinea, 1988–2000
(% one-year-olds having received key antigens)**

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BCG	5	31	50	57	60	76	78	86	66	69	69	76	82
DTP3	1	17	20	41	52	55	73	73	53	53	56	46	43
Measles		17	25	39	56	57	69	69	55	56	58	52	40

Source: Ministère de la Santé (2001: 1990–1998); Data from prefectural health authorities (1999); EDS (1999); PEV (2001).

Current vaccination coverage also varies considerably by region and locality. Table 3.2 shows the official figures for the study region in 2004.

Table 3.2 Vaccination coverage in 2004 in the region of Faranah and prefectures of Kissidougou and Dinguiraye: official figures (% one-year-olds having received key antigens)

	Kissidougou	Dinguiraye	Total Faranah
BCG	86	64	79
DTP3	70	46	71
Measles	78	52	75

Source: Ministère de la Santé Publique (2005), based on data collected from prefectural health authorities

It is also the case that vaccination coverage figures appear to vary according to the method of data collection. The figures in Table 3.2 are assembled by each prefectural health administration from the regular reports of vaccinations given which each health centre and health post is supposed to submit. In contrast, other studies have sought to determine vaccination coverage through direct observation of the health cards held by each child's mother, on which vaccinations given are recorded – or by interview if the card is unavailable. This was the case, for example, for the household survey conducted by project PRISM in 2003 in the regions of Faranah and Kankan (PRISM 2003). Table 3.3 shows its results for Faranah. The coverage figures are notably lower than the official figures of Table 3.2 for DTP3 and measles, although higher for BCG. The implication of such comparisons – that authorities might be falsely inflating their official figures – has, at times, been a major source of contention and sensitivity in Guinean policy circles.

Table 3.3 Vaccination coverage in 2003 in the region of Faranah: figures from PRISM (2003) (% one-year-olds)

	Urban	Rural	Total Faranah
With health card	39.5	44.4	43.4
BCG	89.7	87.4	87.9
DTP3	47.4	52.3	51.3
Measles	73.7	67.8	68.9
All vaccinations	35.9	40.1	39.3

3.2 Perspectives on coverage in the study localities

During our research, we estimated the vaccination coverage of infants less than two years of age in the study sites using a similar method to PRISM; that is, interview data from the child health and vaccination biographies, and observation of the child health card when available. These figures are not directly comparable with PRISM's, however. First, they did

not derive from a random sample but rather from the total relevant population of a village or urban quarter. Second, instead of addressing simple coverage, we divided vaccination uptake into 'on time' and 'late' (according to the recommended schedule) for each of the three antigens BCG, DTP3 and measles. Table 3.4 shows vaccination status, categorised in this way, for the study sites in Kissidougou prefecture.

Table 3.4 Vaccination status in study sites, Kissidougou prefecture (% children under two years of age)

	BCG on time (<7 days)	BCG 7–45 days	BCG late (>45 days)	No BCG	DTP3 on time (<8 mths)	DTP3 late (>8 mths)	No DTP3	Measles on time (<12 mths)	Measles late (>12 mths)	No measles	No card CV*	No card PV*	No card NV*
Urban Kissidou N=318	61	17	8	1	65	5	17	63	6	17	5	5	3
Albadaria N=209	9	38	18	14	22	29	33	56	9	15	9	8	3
Beindou N=197	13	39	22	9	61	6	16	70	5	9	10	4	3

N=724 *Completely vaccinated (CV), partially vaccinated (PV), non-vaccinated (NV)

The table is corrected to account for the proportion of children who are less than eight months (and for whom computation of DTP3 would not be relevant), and for the proportion of those less than 12 months (for whom computation of measles would not be relevant). The table shows percentages, and differentiates between those whose vaccination status is known from their card and those with no card, where status was asserted by the mother. The latter are differentiated into those children claimed to be completely vaccinated for their age, partially vaccinated, and entirely non-vaccinated. Given that some of the sample had no card, the percentages were calculated for the total population (i.e. those with and without cards). Given that some of those without cards would have been too young to need vaccination, their numbers were reduced in the calculation by the same proportion of card holders known to be too young for each particular vaccination.

Focusing on the statistics of those with cards, the table indicates several points. First, in Kissidougou town, a high proportion of children (61 per cent) receive BCG within 7 days of birth, as is recommended. In the rural villages, this proportion is very low. Instead, higher proportions receive BCG within the acceptable period between 7 and 45 days old, and late (i.e. after 45 days). Although late, the coverage of BCG in rural and urban areas is relatively high.

Second, completion of the DTP schedule in Kissidougou town is also relatively high. In contrast with BCG, however, it is also high in the rural area of Beindou. This seems to reinforce what our discussion of qualitative findings will show: that mothers in Beindou pro-actively take their children to clinic despite the breakdown in outreach vaccination services there. By contrast in the Albadaria sites, DTP3 coverage is very low (only 51 per cent, with only 22 per cent on time).

Third, coverage of measles differs less between the three sites. In Albadaria, at 65 per cent minimum, coverage is higher than for DTP 3. This may reflect that measles delivery has been less disrupted by the problems associated with delivery strategies in Albadaria that we discuss below, because the infrequent visits of the mobile vaccination post there are sufficient to ensure delivery of this one-off vaccination.

Table 3.5 indicates how vaccination status varies according to four categories of economic status. The latter was derived during biography interviews from the researcher's observation of compound appearance and assets. The table focuses only on Kissidougou town, since the study villages are too homogeneous economically (nearly uniformly 'poor') to make any meaningful intra-village comparison.

Table 3.5 Vaccination status and economic status, urban Kissidougou

	BCG <7 days	BCG 7–45 days	BCG >45 days	No BCG	DTP3 <8 mths	DTP3 >8 mths	No DTP3	Measles < 12 mths	Measles >12 mths	No measles	No card CV	No card PV	No card NV
Rich	–	–	–	–	–	–	–	–	–	–	–	–	–
Medium	65	16	9	2	64	8	20	69	4	20	3	7	0
Poor	61	12	6	0	65	2	16	65	3	16	7	7	3
Very poor	63	19	0	0	50	5	25	63	0	19	13	13	7

The table suggests that for those living in Kissidougou town, there is little difference in vaccination status according to economic status. Those categorised as very poor have slightly lower DTP3 coverage. Otherwise the main difference appears to be that the poorest mothers were less likely to have or be able to present a child health card.

The picture is a little different in the prefecture of Dinguiraye, as Table 3.6 shows.

Table 3.6 Vaccination status in study sites, Dinguiraye prefecture (% children under two years of age)

	BCG on time (<7 days)	BCG 7–45 days	BCG late (>45 days)	No BCG	DTP3 on time (<8 mths)	DTP3 late (>8 mths)	No DTP3	Measles on time (<12 mths)	Measles late (>12 mths)	No measles	No card CV*	No card PV*	No card NV*
Urban Dinguiraye N=490	46	15	3	7	42	4	23	40	4	26	15	13	2
Malinke villages N=121	10	41	10	9	31	13	26	35	10	25	18	12	0
Peuhl villages N=197	7	47	6	9	47	8	12	48	4	16	13	10	9

The table indicates that in general, vaccination uptake is lower than in Kissidougou prefecture. For BCG, urban-rural differences are marked, with many more infants in the urban than in the rural areas receiving BCG according to the recommended schedule, before 7 days of age. However most, even in the rural villages, receive it within 45 days of birth. For DTP3, coverage on time is higher in the Peuhl study villages than in the Malinke villages closer to the sub-prefecture headquarters of Dialakoro, and even in town. This is also the case for measles.

Table 3.7 relates vaccination status to economic status for the Dinguiraye study sites. In this area there is significant intra- and inter-village socio-economic variation, while people move more fluidly between town and countryside. For these reasons it is less relevant to disaggregate urban and rural than it is for Kissidougou, so the table below covers all urban and rural sites.

Table 3.7 Vaccination status and economic status, Dinguiraye prefecture

	BCG <7 days	BCG 7–45 days	BCG >45 days	No BCG	DTP3 <8 mths	DTP3 >8 mths	No DTP3	Measles < 12 mths	Measles >12 mths	No measles	No card CV	No card PV	No card NV
Rich	–	–	–	–	–	–	–	–	–	–	–	–	–
Medium	52	15	2	8	53	5	17	53	4	19	15	8	2
Poor	23	30	5	7	38	7	22	37	5	24	15	13	6
Very poor	–	–	–	–	–	–	–	–	–	–	–	–	–

By comparison with urban Kissidougou, the prefecture of Dinguiraye shows a notable relationship between poverty and vaccination status. Infants from poor households are much less likely to have received BCG, DTP3 and measles antigens on time.

To make sense of these figures, and to interpret the factors underlying the geographical and socio-economic differences in coverage that they suggest, ethnographic findings are helpful. Thus the paper now turns to these, addressing first issues of vaccination supply, and delivery, then of demand, and then some key aspects of local supply-demand interaction.

4 Vaccination supply and delivery

4.1 National policy and programme context

Our study's findings concerning the supply and delivery of immunisation in Kissidougou and Dinguiraye need to be placed in their national context. Both the overall structure of Guinea's health systems, and the aims and strategies of its immunisation programme, are important in this regard.

Health policy in Guinea is put into play through a pyramidal health system structure linked to the country's broader administrative system. This involves three levels. First, at the central level is the Ministry of Public Health, which sets and coordinates health policy and administers central funds. Second, at the intermediate level are the regional health inspections based at the headquarters of each major administrative region. These are responsible for coordinating and managing health activities within the region, managing human, material and financial resources, assuring necessary training, logistics and infra-structural conditions to maintain the delivery of health services, and providing technical assistance to the regional governor in health matters. Third, the peripheral level, equivalent to the WHO's 'health district', takes the form of the prefectural health administration (Direction Préfectorale de la Santé, DPS). Its roles, in sum, are to assure the planning, supervision, monitoring and evaluation of health activities within the prefecture, to assure the supply of drugs and vaccines, and to provide technical support to the system of health centres and outreach activities in the prefecture's towns and villages. In the city of Conakry, its equivalent is the Direction Communale de la Santé (DCS) in each of the city's five urban municipalities (communes).

In each prefecture, the health system is governed by a team comprising the prefectural director of health, the director of the prefectural hospital, the prefectural director of micro-projects under the Ministry of the Interior, and representatives of partner organisations (NGOs, international and donor agencies) operating in the prefecture.

Since the early 1990s, the delivery of immunisation in Guinea has been linked with a broader strategy of primary health care to be implemented through this decentralised structure. As a result of this 'deverticalisation', vaccinations are administered by health centre staff as part of their normal training and duties, linked with routine mother and child health care. This integrated programme, the Programme Elargie de Vaccination intégré aux Soins de Sante Primaires et Medicaments Essentiels (PEV/SSP/ME) has as its overall aim to

provide preventative, curative and promotional health services to mothers and children, and to ensure the financial self-sufficiency of these services (Camara, n.d.). Vaccine procurement at the national level has a separate budget supported by various donors, through which vaccines themselves are supplied free of charge to health centres. However as we shall see later, the financing of vaccine delivery services (cold chain maintenance, transport etc) is integrated with other aspects of primary health care, especially through the expectation that user charges for curative services will be used to finance (free-to-consumer) preventative services.

The programme has a number of specific objectives, including ensuring the full availability of resources for immunisations, child health surveillance, and antenatal care; oral rehydration therapy, and treatment of acute respiratory infections, malaria, and other prevailing illnesses including HIV/AIDS and those associated with malnutrition. The programme aims for its interventions to be accessible to 90 per cent of the target population, for a level of utilisation of 90 per cent for vaccination, and 75 per cent for its other interventions. It also aims to have in place a system of epidemiological surveillance down to the sub-prefecture and district level. To achieve these objectives, in the context of broader imperatives to decentralisation, PEV/SSP/ME has adopted several strategic principles. These include the definition of a minimum 'packet' of activities, and associated essential drugs and vaccines, and cost-recovery and decentralisation to the prefectural and health centre levels in the delivery of these services. The programme also places strong emphasis on community responsibility for ensuring the effective functioning of services.

PEV relies on a range of strategies to deliver immunisation. First is the 'fixed strategy', where infants are brought to the health centre in accordance with an appointment scheduled at the previous visit or when the child is first registered and receives its health card. BCG is given at birth for infants born at a health centre. Second is the 'mobile strategy', where a mobile vaccination team delivers immunisations at a grouping-point, usually a large village, to which children from surrounding areas are brought, according to a calendar pre-established between the health workers and local administrative authorities. Third, on National Vaccination Days (usually two per year), vaccination agents – both government health staff and specially recruited assistants in this more vertical component of the programme – move from house to house to deliver oral polio vaccine and Vitamin A supplements. Fourth is the 'missed opportunity' strategy, in which curative consultations are used as an opportunity to check and if necessary rectify a child's vaccination status. Finally, health agents are supposed to consult health centre records and actively seek-out at home those children who have missed vaccinations, or who live in isolated communities.

Reviews of PEV during the last few years (e.g. Camara n.d.; PEV 2001) have repeatedly identified a set of general supply-side problems affecting vaccination delivery. These include the inadequacy and physical decay of health infrastructure, including vehicles and cold chain equipment; the geographical isolation of certain zones; difficulties in ensuring supply to the local level of vaccines and essential drugs; poor management of equipment and logistical arrangements; poor financial capacities at the health centre level, and a lack of qualified personnel. To address these, general solutions are proposed, turning on often rather generally-defined 'improvements' to systems of provisioning and supervision, and reiteration of the need for health centres to become autonomous and communities responsible.

To move towards more precisely defined and attuned measures, however, requires a fuller understanding of how these supply-side difficulties interact with each other and with strategies and practices of service delivery at the local level, given the particular dynamics of health systems in Guinea's local settings. Moreover, vaccine supply issues have been shaped by escalating economic crisis in Guinea as a whole. In the following sections, we shall see how economic crisis becomes manifest in the detailed dynamics of health delivery at the local level.

4.2 Vaccination supply and delivery in Kissidougou and Dinguiraye

Practices of vaccination supply and delivery vary a great deal across the different sites of the study. For instance, the rural areas of Kissidougou (study sites in sub-prefectures of Albadaria and Beindou) have been supported by assorted NGOs as well as by government health structures. Whilst in recent years these have led to an improvement in local vaccination coverage, bucking national trends, the sustainability of this improvement is now in question. This is largely for financial and logistical reasons which we shall explore. These problems are less important for urban Kissidougou. In Dinguiraye, the rural areas have received less support in recent years but their coverage now hardly falls short of that in Kissidougou. Nevertheless, there are some important commonalities in the dynamics of health care and vaccination delivery experienced throughout the study region, leading to a common set of problems. We first outline these, before going on to explore their varied specific manifestations in the different study localities.

In both prefectures, most health centres – including those we studied – underwent a major programme of construction and renovation during the 1990s, supported by GTZ's Rural Health programme (Programme Sante Rurale, PRS). Following renovation, these health centres received three years of free vaccine provision from PEV, and of essential medicines and equipment from PSR/GTZ. During this period of support, the centres were able to develop the package of basic activities defined by national health policy in a relatively successful way. Drugs and vaccines were fully supplied on time, without rupture.

During this period, in 1992, the prices of goods and services offered were fixed – and have remained fixed at the same level to the present. No service can be charged at more than 2,500 Guinean francs (FG), at least officially. Vaccination, at least formally, is free; mothers need pay only for their antenatal consultation card at 1,000 FG (to be exchanged at birth for the child's health card).

In this context, many clients attended the health centres for both preventative and curative services. But after the initial three years of support, the health centres were left to become financially autonomous. It was intended that they should use the funds generated from their service charges to finance their functioning.

To begin with, it appears that the newly-autonomous health centres worked relatively well. But from the late 1990s, a number of linked problems began to emerge. First, the service charges fixed in the early 1990s at first remained relatively well-balanced with the price of medicines. However for national political reasons, the fixed prices have not been updated to take account of many years of inflation and escalating procurement costs, including a series of devaluations of the Guinean franc, reaching 40 per cent by the late 1990s. With the price of essential drugs in the global and national market in some cases tripling, health centres could no longer afford to purchase their basic supplies.

Second, in this economic context the price of fuel and cooling agents essential to maintaining the cold chain and motorbikes for the immunisation programme also increased, again sometimes tripling. Spare parts for PEV motorbikes, which were feeling their age and regularly broke down, became unaffordable. Ruptures of fuel availability in local markets also became more frequent.

Third, health centre revenues also declined as local populations visited them far less for curative services. Discouraged by the lack of drugs at the centres, many people turned to the private sector for treatment, making use of the proliferating range of private pharmacies and table-sellers in local markets. Many of these parallel practices in health provision are supported by, even managed by government health agents, representing emergent hybrid forms of health provision. However their increasingly frequent use serves further to undermine the financial autonomy of the health centres.

These trends combined to undermine the capacity of health centres to maintain their vaccination programmes. While they received the actual antigens free, they were supposed

to organise and finance their own collection of supplies from the prefectural cold store, and to maintain the cold chain and vehicles. From the late 1990s all this became far more difficult. In particular, it became hard to maintain the mobile strategy, while the strategy of seeking-out children who had missed vaccinations, never much implemented, was largely abandoned. With so many fewer children seeking curative treatment at the health centres, the strategy of 'missed opportunities' was also undermined. Further, transport and logistical problems also led to frequent ruptures in vaccine supply to the health centres themselves. Wastage also became a more serious issue. The standard 20-dose vaccine vials used, once opened, must be used straightaway, yet a health centre would often have no more than ten babies visit on any particular day. Whereas once the leftover vaccines might have been used up in house-to-house visits to seek out unvaccinated children, this was now hardly undertaken.

In this context, health workers find it hard to continue to serve the population. Rather than provide services 'on the books', they either work in a private capacity themselves, or overcharge unofficially. Many charge over the fixed price for drugs, and instead of giving vaccinations for free, charge between 200 and 1000 FG per vaccination. Rarely, it seems, do such revenues work their way back into health centre funds, such as to assist their autonomy. The charges are similar to the cost of a dose of curative treatment. Although not considered very expensive in local terms, such charges have contributed to a further decline in health centre usage and, as we shall see later, to problems in vaccination affordability for the poorest families.

While these supply-delivery dynamics are common across the prefectures we studied, the experiences of particular localities have also differed, depending on the geographical and social characteristics of particular local health systems, including varied interactions between government, private and NGO/donor agency activities.

4.2.1 Rural Kissidougou

The main study village in the sub-prefecture of Beindou, Sanola, is sufficiently distant from the health centre in the sub-prefecture headquarters and from any smaller health post that children are supposed to receive vaccination at a regular mobile clinic, within the government's mobile strategy for immunisation. For treatment, several options are available beyond the health centre. The catholic pharmacy at Brouadou and a private clinic at Fermessadou are nearby, alongside, at greater distance, Kissidougou town's hospital, health centres and private pharmacies.

The health centre at Beindou received three years of project support from GTZ's PSR. When this was withdrawn, it initially continued to draw a clientele and to deliver services effectively. However, it has suffered from the general financing problems described above, compounded by particularly severe competition from the private clinics in the area. One is heavily subsidised by the church; the other, run by an ex-government health worker and well-supplied with medicines thanks to his contacts, provides health care on credit that can be reimbursed at harvest. Such competition has attracted the population away from the health centre (and its difficulties), meaning that in practice, the health centre is frequented only for pre-natal health care and vaccination. The cross-subsidisation from treatment to the logistical support necessary for vaccination cannot thus occur. During the period of field-work (2004), ruptures in vaccine supply were frequent and all six antigens were almost never in stock at the same time. At times the cold chain broke, although health workers were afraid to admit this. It was also impossible to maintain the mobile strategy.

In the mid 1990s the NGO Plan-Guinee began to provide support in the health sector in rural Kissidougou through hiring community health agents (ACS). They support all areas of health promotion in the districts they live and work in, and educate and mobilise the community around vaccination. For the mobile strategy, the health centre vaccinator establishes the calendar and a programme for the ACS who in turn mobilises the villages.

The focal study village, Sangambadou, was an assembly point for vaccination through the mobile strategy. Three km away, an ACS lived in the District centre. From June 2004 to February 2005, aside from the JNV, no mobile vaccination agent came to the village, although mothers said that 'they used to come more or less regularly until a year ago'. Given the failure of the mobile clinics, most mothers have returned to walking the 6km to the health centre at Beindou. That mothers are prepared to do this is evidence for the strong active demand that now exists for vaccination in this area.

The sub-prefectures to the north of Kissidougou town, including our study area of Albadaria, received the support of GTZ's PSR and NGOs later than Beindou. They also have fewer private health clinics. Here, it is small-scale medicine traders who dominate the private market, setting up their stalls either in the area's markets or in passing from village to village. In comparison with Beindou, people in this area seem to make greater use both of these privately-traded medicines and of traditional remedies before turning to the health centre.

ACS of Plan Guinee supported the mobile strategy from 2001. Initially this led to a major improvement in vaccination delivery. However during 2004 Albadaria faced the same problems in its health system as elsewhere and the mobile strategy all but collapsed. Mothers in five neighbouring villages were let down on three occasions, having been told that vaccination would occur when it did not. Since then they have not returned to the assembly point in Yassadou.

In contrast with Beindou, Yassadou mothers do not go to the health centre in Albadaria for vaccination. The centre is very distant, 19km away, so they continue to wait for the mobile strategy. Indeed parents in this village rarely go to the Albadaria health centre. Instead, they prefer to use the health post at Wossokoroma (9km away) if self-treatment, medicines from private drugs traders or traditional medicines have not worked. The Wossokoroma health post does not deliver vaccinations, so the 'missed opportunity' strategy in this area has even less purchase than in Beindou.

Whereas Plan Guinee's ACS have been effective in mobilising villagers, then, they have at the very same time established a dependency on mobile vaccination clinics which in Guinea's present economic and health system circumstances have largely ceased to operate.

4.2.2 Rural Dinguiraye

The same financial problems of medical supplies, profitability of health centres and financing of the mobile strategy also prevail in rural Dinguiraye, along with competition from many small-scale medicine sellers. Here, though, the problems are compounded by the large area of the prefecture, the dispersed population, poor roads and inadequate number of health centres and posts, meaning that reliance on the mobile strategy is even greater than in Kissidougou.

Nevertheless the example of the health centre in the sub-prefecture of Dialakoro, 60km from the town of Dinguiraye, shows how exceptionally, these problems can be partially overcome. Here, the health centre continues to be profitable due to the reputation of its doctor. Not only has he a reputation that extends well beyond the sub-prefecture, but he also openly creates prescriptions beyond the products that the health centre can provide, for medicines that people can then obtain from private traders. By creating a more integrated partnership with the private sector, he has thus retained a clientele. The health centre is thus often crowded. Nevertheless it has not been profitable in a way that supports the mobile vaccination strategy. In eight months (July 2004–February 2005), the mobile strategy visited vaccination assembly points only twice. Moreover here, women pay 1000 FG at each vaccination visit. Women from outside the sub-prefecture headquarters rarely visit the health centre for vaccination.

The focal study village, Sanola, was a vaccination assembly point. The NGO AFRICARE supports the provision of health advice, and has created district animators who provide back-up support to pre-natal clinics, weighing, vaccination, family planning and National Vaccination Days. It is partly through the encouragement of AFRICARE that mothers continue to turn out en masse to assembly points for vaccination, despite the cost and the frequent disappointment when agents do not turn up.

4.2.3 Urban areas

Urban areas face fewer problems of accessibility, yet accessibility concerns not only geographical distance, road infrastructure and transport to a locality (favourable to towns), but also socio-economic issues. Thus urban mothers often spend the breastfeeding period in their parental home which could be far from the town. Perhaps more significantly however, many mothers in Dinguiraye leave to visit the mines during the dry season to be with their husbands or to trade, while others spend time in rural villages to farm.

In urban areas, too, the competition from private health providers is also more intense. Thus in Kissidougou town, the health centre of Dar-Es-Salaam was created in 1994 with assistance in its renovation from GTZ. In its catchment area, in addition to the health centre, are several clinics, pharmacies, kiosks and table-sellers providing health services, reflecting its position in the urban centre. It is also less than a kilometre from the prefectural hospital, and the main prefecture market with its many medicine sellers. Many of these are in strong competition with each other. The health centre in Madina, created in 1992, is similarly situated amidst a plethora of private providers. Nevertheless it is the health centres that provide vaccinations. These urban health centres face similar problems of finance and functioning to those in rural areas. The mobile vaccination strategy notably does not function in either area, for similar logistical reasons to those described above, so mothers must visit the centre itself for vaccination. However this is in a context where they are less often seeking consultations and treatment there. Apart from ante-natal care and vaccinations, local populations now tend to frequent the health centres only for mild cases of malaria, parasites and childhood respiratory infections. Thus in the urban context, the 'missed opportunity' strategy for improving vaccination coverage is also highly constrained.

Overall, as this section has shown, the delivery of vaccination services in Guinea currently faces many supply-side problems. But these result less from inherent failures in vaccine supply and infrastructure per se, than from the ways the use – and thus financing – of government health services has declined in the context of a proliferation of health providers in Guinea. In the next section, we turn to examine vaccination from a demand-side perspective.

5 Vaccination demand

Vaccination coverage depends not just on supply and delivery dynamics, but also on how these interact with demand – or not – for these services. In this section, we explore how parents in Kissidougou and Dinguiraye understand and perceive vaccination and vaccination services in the context of their socially-embedded, culturally-grounded knowledge and practices around child care and protection.

As we shall see, today the majority of parents value vaccination highly, although for culturally-specific reasons that sometimes depart from biomedical views. However this has not always been the case. Health workers describe how even in the early 1990s many parents did not accept vaccination. They attribute this to parental worries about vaccine secondary effects, which were considered as sources of further illness; the distances to access vaccines, and people's lack of information about them. Local administrative

authorities and health personnel responded with a set of coercive measures. These included fines for non-vaccination, ranging from 1000 to 5000 FG according to the locality; the imposition of extra charges for treating non-vaccinated children, and negative treatment – shouting, embarrassing a mother in front of others – of those mothers seen to be neglectful of vaccination. In this context, people’s main reasons for having a child vaccinated came to be the avoidance of blame, over-charging and poor treatment should a child present with a serious health problem. Such a situation conforms to Nichter’s (1995) notion of passive acceptance or compliance.

During the last decade, however, there appears to have been a transformation in which – with a few rare exceptions – passive acceptance has ceded to more active forms of demand. As we shall see below, these combine both social demand – grounded in routinised attendance and community activity – with culturally-grounded active demand, based on mothers’ appreciation of vaccination for specific reasons linked to their understandings of injections, immunity and child health. There appear to be multiple reasons for this transformation. Overall trust and confidence in vaccination seems to have increased, linked to accumulated experience. People also emphasise the spectacular effects of vaccination in reducing child deaths.

Nevertheless, as we show below, there are a few rare exceptions where demand is passive or non-existent. Rumours about vaccination lead to resistance for some. At the same time, default and lateness on recommended schedules are pervasive problems, linked both to practical and socio-economic issues and contingencies, and to the ways mothers’ understandings of vaccination schedules interact with delivery systems such as to generate confusion.

We begin this section by exploring cultural conceptions of vaccines and how they work, focusing on the narratives of mothers who bear the most immediate responsibility for taking children for vaccination. We then consider the place of vaccination amidst broader practices for protecting infants’ health, and the ways in which mothers understand vaccine side-effects. In this context, we go on to explore how parents understand the vaccination schedule, and when it is complete. We then address why some resist vaccination, and the social and economic factors that sometimes prevent even those with strong, active demand from attending on time.

5.1 Mothers’ understandings of vaccines

Many views and commentaries concerning vaccination and vaccination services emerged from mothers’ narratives. Here, we attempt to draw out the key messages from their discourses; discourses which varied according to differences of custom, locality, and levels of education.

Most studies distinguish between those who understand the action of vaccines (correctly) as preventative, and those who believe that vaccines are curative. But according to many mothers in Kissidougou and Dinguiraye, vaccination can play these two roles at the same time. Many mothers speak of vaccinations ‘fighting’ or ‘chasing away’ illnesses that they find in the bodies of babies, and also of them protecting the child, and preventing illness.

Many believe that once a vaccine is in the body, it ‘cleans the blood’ (*a ye yeli le saniyala* in Malinke). This means that any illnesses in incubation leave the body, and those which might arrive are avoided. If they manage to infiltrate a vaccinated body, they will not have significant effects on the infant’s health. Furthermore many mothers claim that vaccines have attenuating effects should a disease manifest itself in the body. Thus once an epidemic begins, a vaccinated child has much lower risk of disastrous effects than a non-vaccinated child. For example, mothers in a group discussion in Beindou recounted how:

Vaccination allows the recovery of health. It fights against convulsions, tetanus and many other illnesses ... Vaccination makes a curative fight in the sense that it eliminates or attenuates the illnesses found in the body ... it makes the person more resistant. Without vaccination one becomes vulnerable to all the bad [symptoms].

In the general view of mothers in the study communities, vaccines equally contribute to the growth of the child, in the sense that it is illness that disadvantages growth. Thus good health contributes to good growth. Thus a mother from Sanola explained for instance that: 'it cures ill children, it strengthens the weak, and augments the health and the strength of those who are already healthy and strong'.

Although mothers do not distinguish heavily between the protection that vaccines bring, and the cures that they believe them to effect, it is important to understand further what vaccines are considered to protect against or to cure, and to what extent they differentiate between different illnesses in this respect.

5.1.1 Mothers' views of vaccine-preventable disease

Most mothers are of the view that vaccination protects against multiple illnesses. In exemplifying these, some mothers cite local terms for vaccine-preventable diseases targeted by PEV, such as measles, tetanus and pertussis. However, they also cite many others, including diarrhoea, malaria, meningitis, eye problems and other ailments. A review of PEV (PEV 2001) noted that:

The diseases targeted by PEV are little-known, whether by target groups or in the region in general. Mothers confuse the target diseases of PEV with other illnesses ... the PEV diseases most frequently evoked are polio, measles and tetanus. By contrast, diphtheria is much less well-known. Many people (20 per cent of the populations concerned) are not in a position to cite a single PEV target disease ... only two mothers out of ten can cite all the vaccines given to her children.¹

Our study's findings are broadly in line with these observations, as the following narratives from mothers indicate:

Each time we go to the health centre for vaccination, the agents tell us the name of the illness for which the vaccine is taken or must be taken. But me, I often forget. And sometimes, they show photos, how this illness manifests itself. For example, a convulsion crisis caused by malaria (87.ET4-F8).²

Mothers frequently claim that vaccination protects against ailments that are non-vaccinable from a biomedical perspective. For example:

Vaccination shelters the body from illnesses such as fever, leprosy and chronic malaria (193.BRS-F5).

The illnesses for which the vaccines are taken are malaria, paralysis, bronchitis and tetanus (80.ET3-F17).

1 Quotations from documents such as this review have been translated from the original French by the authors.

2 Quotations from child health and immunisation biographies have been translated into English from the French in which they were originally recorded, and referenced with their biography code number.

Vaccinations give him health. The vaccinations treat diarrhoea, neck ache. These illnesses do not persist in a vaccinated child (38.BRS-F4).

Vaccination treats the small illnesses of children. It cures spots, diarrhoea. Vaccination is very important for children (39.BRS-F5).

A vaccinated child is protected against the sun, and spots (87.BRV-F14).

The quite widespread view that vaccines are effective against eye problems could be a result of confusion generated during the National Vaccination Days, where Vitamin A supplements (to help prevent blindness) are given alongside polio vaccines.

Even those who name some 'correct' diseases often mix these with 'incorrect' ones, or mix around the order. For example one mother thought the first vaccination was against measles. One rural Kuranko mother said the first vaccination was against *kono*, a common Malinke term for malaria. In another case:

My first child received the first vaccination against malaria and certain child illnesses ... then she received three doses which treat cough and malaria. Then she received four doses of vaccine which were taken against malaria (106.YDF-11).

Notably in Dinguiraye, in the villages trained by AFRICARE agents, even illiterate mothers appear to know more about the illnesses targeted by vaccination than do mothers in the urban setting. More than 80 per cent of the 510 mothers we interviewed in three residential quarters of Dinguiraye town were unable to name more than three illnesses against which their babies could be vaccinated; the contrary prevailed in the villages. In short, it appears that the educational activities of this NGO, at least, are leading gradually towards a more disease-specific understanding of vaccination.

5.1.2 Mothers' views of 'curative' actions of vaccines

The idea that vaccination is effective in treating illnesses such as measles, malaria and polio is quite widespread. Indeed certain mothers appear generally to confuse vaccination and curative injections, as in the following example:

The vaccines taken are not sufficient for the child because when he falls ill, the doctors give him injections. Each time, doctors give him vaccinations (24.BRM-F24).

A similar confusion between prevention and treatment is evident amongst those mothers who say that their child was vaccinated (with BCG) 'the day after birth, but the child was not ill' (e.g. 45.ET3-F15, and many others).

Confusion between prevention and treatment, and between vaccine-targeted diseases and others, could be partly a consequence of the 'missed opportunity' strategy pursued as a part of health policy, whereby infants are vaccinated at health centres when their parents take them there for other reasons (such as when they have malaria, eye problems or diarrhoea). This possibility is suggested by statements such as 'He was vaccinated for the first time when he had a problem with his eyes' (53.ET3-F9).

These examples confounding vaccine-preventable and non-preventable diseases, and protection and cure, could be taken to indicate mothers' pervasive ignorance, confusion or incorrect biomedical knowledge. However they also compatible with a view of vaccinations maintaining child health in a general, rather than disease-specific way. The ailments that mothers cite are, by and large, the common afflictions of childhood in the region,

sometimes identified by symptom rather than disease name (e.g. 'malaria' is a common term for 'fever' in general). It is thus logical that mothers would name these, and conflate preventative and curative actions to some degree, from within a perspective that sees vaccination as having generalised effects on child health.

In these generalised effects, vaccination forms part of a broader range of knowledge and practice concerned with keeping children well.

5.2 Vaccination amidst broader child protection practices

Many practices are employed in the study communities to prevent, fight against and reduce the effects of childhood diseases. Some, such as vaccination, draw on biomedical knowledge and practices. Others draw on naturalistic and plant-based therapies, everyday practical knowledge, Islamic healing repertoires, or the conformity to behavioural codes required to maintain proper balance in prevailing socio-ecological and spiritual orders (see Fairhead and Leach 1996; Gottlieb 2001).

Parents' concerns with maintaining child health begin in pregnancy. During a woman's pregnancy, female elders, her female relatives and friends will advise her on correct conduct and on the proper practices to observe at each stage: how to tie her clothing, types of work to avoid, and so on, to avoid damaging the foetus. It is said, for example, that to turn from side to side without rest during sleep risks the baby's neck becoming entangled in the umbilical cord. Wearing a skirt or pagne across the stomach can provoke abortion or a difficult labour, while washing oneself at night risks turning the baby into a djinn spirit.

To ensure that a baby grows well and becomes strong, mothers say it is important to breastfeed for two or three years, to observe good hygiene and to give good food. Many emphasise the need to abstain from all sexual intercourse during breastfeeding, to avoid male reproductive fluids 'polluting' the breastmilk and causing illness to the child – a strong possibility according to prevailing cultural understandings of the body.

Once the child is born, parents recognise several different stages of growth. Generally, these are marked by short illnesses: fever, diarrhoea and so on, as well as by bouts of crying. At each stage, there is appropriate conduct to maintain, and types of food to give, to ensure the child's good growth, strength and vitality. At the same time, most mothers emphasise the importance of having the child vaccinated and giving it vitamins.

Currently, these forms of knowledge and practice are strongly influenced by the modern techniques taught by health workers, not just in the realm of vaccination. For example the nutritional monitoring of the NGO AFRICARE in Dinguiraye gives mothers advice on how to wean successfully, and advises exclusive breastfeeding until six months.

5.3 Mothers' understandings of and reactions to vaccine secondary effects

Mothers' understandings of how vaccines work also underlie particular views of vaccine secondary effects. In other studies, the secondary effects of vaccination, and above all abscesses, are understood as an important factor that discourages parents from having their children vaccinated (e.g. Statview 1999; Cutts 1991). Thus a review of PEV states:

It must be stressed that the secondary effects of routine vaccination ... discourage many mothers ... Mothers claim that often, when one vaccinates their children, they have abscesses and fever. Sometimes these abscesses only disappear after lancing, they claim.

(PEV 2001)

However most mothers in our study communities view side effects such as fever, swelling, vomiting and even abscesses as signs of the effectiveness of the vaccines in the body. If there is a reaction following vaccination, it indicates that the child – even though it may seem well – was developing an illness from which it would have suffered sooner or later. It is the vaccine entering the body before the manifestation of the illness which fights against it and sends it out of the baby's body. As mothers in a group discussion in Beindou explained, for example:

The reactions felt by the infant after vaccination are normal. They show that this is eliminating the illnesses found in the body.

In a biography narrative, a mother stated that:

Certain children have fever, others don't. The child only falls ill after vaccination if there was an illness in the child's body. When a vaccine finds a disease inside a child's body, he can fall ill (KLD-F2).

And as one mother in Sanola explained: 'Once the abscess bursts and the wound heals, it is finished; the baby once more enjoys good health'.

Although in the past, during the first years of vaccination, such secondary effects – above all abscesses – do seem to have discouraged women from completing vaccination schedules for their children, it appears that with these new ways of understanding secondary effects, they are no longer so problematic. The conviction that vaccine secondary effects are not serious and are short-lived is also supported by NGO educational campaigns, as organised by AFRICARE in Dinguiraye and Plan-Guinee in Kissidougou.

Nevertheless, in a few cases, mothers perceived their infants as having as unusually severe secondary effects, linked to the particular constitution of the child. This worried the parents to the extent that it put them off taking either that child or future children for vaccination. For example:

I fear taking him for the other vaccinations. The first two exhausted him. After vaccination, the child was ill for a month. His arm swelled and pus entered. That is what is pushing me to no longer have him vaccinated (KLD-F20).

The child's father doesn't want him vaccinated. When I had my eldest vaccinated for the first time, he fell ill. The child had a high fever for a week. Pus entered the vaccinated part. Each time I washed him pus came out of his arm. Since that time, I did not take him for the other vaccinations. As soon as I gave birth this time, my husband opposed the vaccination of this child (KLD-F34).

My child is not completely vaccinated. He has received two vaccinations in all. I refused to continue because my son had serious complications after the first vaccinations. This is why each time the health agents come to vaccinate children, I leave (YDF-F81).

5.4 Parental understandings of the vaccination schedule

Given that their understandings of vaccination are largely not disease-specific, how do parents in Kissidougou and Dinguiraye evaluate whether and when their children are completely vaccinated or not?

Knowledge of the vaccination schedule varies greatly within communities and between regions. In Dinguiraye, many mothers understand that one is supposed to make five visits for

vaccination, and that the first is just after birth. In general, parents in Kissidougou town and in the sub-prefecture of Beindou understand that they should have their children vaccinated every month. Numerous women calculate this according to the lunar calendar. In rural Albadaria, dominated by Kuranko-speakers, the schedule is less well known, and parents depend much more on their child health cards, and those who are able to read the appointments written in them – or they simply await the arrival of the agents.

As we have seen, most women do not distinguish by disease between the vaccines given during the different appointments allocated by health agents. They understand simply that it takes five appointments for the baby to be completely vaccinated. Thus most parents judge their baby's vaccinations to be finished either according to their own calculation of having made five visits, or when the health agent records the fifth visit. In this context, it often occurs that parents consider their children to be completely vaccinated when in reality they are not: when, for instance, they 'count' injections given as part of treatment, or on National Vaccination Days.

Indeed our research, like the review of PEV, suggests that the aims of National Vaccination Days (Journées Nationales de Vaccination, JNV) are not well known by the majority of parents. As the PEV review explains:

Many mothers are confused about the reasons for vaccination during the JNV. They cite other illnesses such as malaria, bronchitis, diarrhoea, etc. The target group of the JNV is not well known... people tend to think that JNV take the place of routine vaccination.

(PEV 2001)

An evaluation of vaccination coverage in the commune of Matoto in Conakry (Statview 1999) showed similarly that:

People generally think that the JNV aim to prevent measles, malaria, tuberculosis, tetanus, wounds, cholera, whooping cough, polio ... these views are even more pronounced amongst women who have not completely vaccinated their children. For them, the JNV are organised to treat childrens' illnesses.

(Statview 1999: 35)

Although it is certain that both mothers and fathers link JNV and routine PEV, they distinguish them primarily by the fact that the JNV are free whereas one pays for PEV (in practice, if not in principle). For most, distinctions between JNV and PEV do not turn on the type of illness they vaccinate against. This becomes important when one takes account of how parents evaluate whether their children are completely vaccinated or not: some parents believe their children fully vaccinated after five vaccine events which include one or more JNV.

There are also some mothers who abandon vaccination at the health centre because their infant is doing so well. They consider that after two or three visits the vaccines have had beneficial effects on their child, and thus there would be no point in continuing the series. In contrast, there are (a few) mothers with sickly children who estimate that the number of vaccinations has not been sufficient, or that the vaccines have not produced beneficial effects, even if in reality the infant is completely vaccinated. In both cases, these mothers are judging completion within the notion of a direct relationship between vaccination and their child's state of health and growth.

5.5 Reasons for vaccination non-acceptance

There are many reasons why mothers do not bring their children for vaccination when they are supposed to. While most, as indicated above, value vaccination highly, some are more indifferent and do not give it priority amidst other demands on time. For some, non-vaccination is linked to losing the child's vaccination card, and hence having no record of future appointments (and possibly, feeling embarrassed to turn up at the health centre card-less). Parents sometimes question participation in the JNV for children who they feel have already completed their full series of vaccinations. Certain parents have also refused their children's participation in routine PEV or indeed the JNV following earlier bad experiences with secondary effects, as we have seen. Importantly, all these forms of apparent reticence – leading to non-acceptance (Streefland *et al.* 1999) are linked to the individual experiences of different households, and not to rumours.

The 'problem of anti-vaccination rumours' has been a point of policy discussion in Guinea. In particular, there is a reported view that vaccination is considered a means of limiting fertility in Middle and Upper Guinea (PEV 2001). Such rumours are especially seen to be linked with rural villages. As PEV put it, for example:

There are people who dissuade mothers from having their children vaccinated, notably in Middle and Upper Guinea. In effect, in these regions, vaccination is considered as a means of birth control: a vaccinated child will not bear children in adulthood, it is said in certain rural villages.

(PEV 2001)

Equally, the prevalence of rumours is frequently attributed to the power of traditional healers (which remains high, especially in Middle and Upper Guinea) and to bad experiences with vaccine secondary effects.

However our research found no case of such rumours, even though Dinguiraye is at the intersection of these two regions. Contradicting the association of rumour with the rural, uneducated and 'traditional', our research suggests a rather different set of contexts for the emergence of rumours, linked to changing types of demand. Rumours appear to be linked first, to the use of force and coercion when vaccination programmes first began – something that has now diminished. Second, they are linked to a confusion with family planning, which is delivered at the same health centres as those dispensing vaccinations. However, this linkage has also diminished in importance as a generation of vaccinated children has now come successfully to have its own children. Third, rumours reflected concerns that vaccination needles were transmitting HIV/AIDS – a real possibility during the 1980s and 1990s when re-use of needles was so strong. Again, this possibility has diminished along with the wholesale switch to disposable needles.

Given these changes, it is not surprising that in the rural villages, we did not hear talk of such rumours, nor was rumour linked to community-wide vaccination refusal. No rumours linked to religious or ethnic identity emerged; yet this is understandable given that vaccinations are known to be given to all women and children, across social, religious and political boundaries. Instead, the few cases of reticence linked to rumour that did emerge were among urban-based intellectuals and members of the elite. Amongst teachers and Islamic intellectuals, for instance, worries about the motivations of institutions delivering vaccines, and long-term vaccine effects do appear to circulate. These worries sometimes translate into individual vaccine refusal, but not into mass refusal: thus such individuals might not participate in the JNV, but neither do they discourage others. For example, one teacher represented what he saw as a general view in describing how:

Teachers notice a lowering in the levels of achievement of their pupils. Faced with this, some attribute it to parental disengagement with their proper roles in bringing

up their children; others to a proliferation of the stupid; and others, to certain types of vaccines. But the latter remain silent. Thus, at the time of JNV, certain teachers keep their children hidden.

(Interview, French teacher, Kissidougou)

Another Kissidougou teacher linked vaccination to a growing tendency to violence in children, arguing further that vaccination was being used as a means to maintain Africans in a general state of violence (Interview, Geography teacher, Kissidougou). Others link vaccines to the proliferation of health problems such as HIV/AIDS, Ebola fever, or sterility (Group discussion with elderly Muslim women). At JNV time, there are always a few worried parents who come and pose their questions discreetly to the vaccinators in order to know more about these possibilities. Others 'do not want to be tiresome, so we quietly withdraw our children' – as one urban Kissidougou mother put it.

5.6 Factors interplaying with active demand

Even those mothers with strong active demand for vaccination sometimes have difficulty in translating this into achieved access to vaccination services. In addition to practical questions of geography and transport – and the difficulties some mothers face in getting to health centres or assembly points due to workload or family demands – both economic and socio-cultural factors play a role.

5.6.1 Economic factors

Officially, as we have seen, vaccination is not paid for, whether it concerns the JNV or routine vaccination. However given the economic problems faced by health centres, in practice health workers ask women to pay for each vaccination. Although in each community there are a few women who have received vaccines for free, these are usually women who have kin or social relationships with the health agents. In the vast majority of cases, vaccination is paid for, although the cost varies from site to site as indicated in Table 5.1.

Table 5.1 Informal vaccination prices in different localities of Kissidougou and Dinguiraye

Site	Price of a vaccine
Dinguiraye rural – Dialakoro	1000 FG
Dinguiraye urban	500 FG
Kissidougou rural – Albadaria	200 FG
Kissidougou rural – Beindou	200–500 FG
Kissidougou urban	500–1000 FG

Mothers who have the ability to pay – the majority of cases – are not discouraged from vaccinating their children by these prices. This willingness to pay is itself an indication of the strength of active demand. Similarly, Statview (1999) found that:

The cost of vaccination does not have a significant effect on vaccination coverage according to statistical tests. On the contrary, mothers who spend more than the official tariff have a higher level of vaccination coverage of their children (49% compared with 41%). This can be explained by the willingness of mothers to have their children vaccinated despite the costs.

(Statview 1999: 13)

However, willingness aside, some parents cannot pay. Those who lack the financial means to pay these costs do not send their children to be vaccinated – partly accounting for the higher default rates amongst poor families in Kissidougou and Dinguiraye (Tables 3.5 and 3.7). For instance:

I did not have the means to follow vaccination for my child – for each vaccine one needs to hand over a sum of money (KLD-F1).

It is for lack of money that my child does not follow vaccination. Rice is very expensive and money is not forthcoming. It is not refusal (LN2-F16).

According to some mothers, many who are in this position prefer to say that they have lost their baby's health card or that their baby is already completely vaccinated, to hide their shame. In the light of such instances, the figures in Tables 3.5 and 3.7 should clearly be read with great caution. As one mother put it:

Others prefer to stay at home, lacking financial means, in order to avoid humiliation by the health agents (MD-F18).

Women who did not follow the recommended schedule of antenatal checks also fear bringing their children for vaccination, in case they are fined.

Economic factors interplay with intra-household decision-making about vaccination, and who should pay for it. According to PEV (2001):

In Guinean families, in general, the decision to have a child vaccinated rests with the man, more precisely the father. This is the case in all regions, in town as much as in the villages. It can be explained not only by cultural and traditional considerations, but also by the fact that generally it is the father who holds the household purse strings.

Our findings are somewhat different, suggesting that the responsibility for actually taking the child to be vaccinated usually rests with the mother. If she is unable to go, a father, brother, sister, aunt, mother or mother-in-law, or even a neighbour might step in. The decision to vaccinate might on occasion come from the father, but more often from the mother. Although in principle it is a father's role to cover the costs of vaccination, in practice these, like other health care costs, are usually met by a child's mother. Only in certain families, predominantly in urban areas, does the man take charge. This seems more often to be the case where the man has a professional occupation, but also applied to certain manual workers. In rural areas, by contrast, a husband man would help out only on occasion, if necessary. This reflects differences in prevailing negotiations of intra-household responsibility between rural settings, where women not only make central contributions to household revenue-generating activities but also earn their own income through fishing, gardening, rice fields, small-scale trade and so on, and urban households where a man is more often in formal employment and assumes responsibility – at least notionally – for supporting his wife.

In the urban setting, there are two principal economic activities that interrupt normal completion of the vaccination schedule: trade and agriculture. Concerning trade, most of the mothers who market foodstuffs travel very frequently to villages. In the course of these voyages it is easy to miss or forget vaccination appointment dates, especially if the child appears well. Especially in Dinguiraye, there are also mothers who live in urban areas but move to stay in rural villages for the 4–6 months of the main agricultural work season. These mothers, especially, seem to attach much more importance to the National Vaccination Days, rather than routine appointments, as the main means to have their children vaccinated.

5.6.2 Socio-cultural factors

A number of socio-cultural factors also interplay with mothers' demand for vaccination, shaping – whether positively or negatively – their ability to put their desires into practice.

There is evidence of several forms of community organisation which support vaccination attendance. Habitually, as we have seen, it is the mother who takes a child for vaccination. If she is unable to or forgets, the vaccination is missed or taken late. While it is possible for other relatives to step in and help, in most parts of the country the health centres have become feminised, taking on attributes of a women's social world. This is linked to the fact that they also dispense service such as family planning whose demand is dominated by women. This inhibits fathers, brothers or other male relatives from taking a child for vaccination even if the need arises.

Whether in urban or rural settings, a woman's female entourage of compound relatives and neighbours – led by the more entrepreneurial among them – will follow and assist her throughout her pregnancy until birth. These other women encourage the woman to have herself vaccinated against tetanus during pregnancy, and to have her baby vaccinated. Young breastfeeding mothers and young pregnant women are always accompanied. It was in this sense of social encouragement and support that a teacher in Dinguiraye confirmed that 'vaccination has now firmly become part of our customs'. This exemplifies what Streefland *et al.* (1999) refer to as social demand for vaccination.

Local authorities also help to mobilise women for infant vaccination, both for the JNV and for vaccinators' visits under the mobile strategy. Once informed by the health administration, village and town quarter chiefs work through local town criers to inform and encourage parents to attend. Opinion leaders and rural radio, in Kissidougou prefecture at least, also play a part in mobilisation for vaccination, especially for the JNV.

Aside from economic problems, there are sometimes socio-cultural issues which inhibit some mothers from going to the health centre, whether for treatment or vaccination. Particularly significant are circumstances where a child's state of health, on show to others in the public setting of the health centre, can provoke commentary on a mother's moral conduct.

Thus, for instance, communities in our study areas consider the period of breastfeeding as a 'clean' period during which a couple must abstain from sexual intercourse. This is to prevent the dirt, heat or odours that are released during sexual relations from affecting the baby's health, by causing what is referred to as 'premature weaning'. According to our informants, this would render the baby sickly and weak, holding back its growth and possibly causing paralysis of its lower limbs. Sexual intercourse during breastfeeding is thus badly frowned upon. Even today, in most cases where a mother carries a sickly baby, its parents will become the object of comment and discussion. They will be judged incapable of abstaining from sexual relations, which is humiliating for them. Thus such mothers strongly avoid taking their babies into public. During vaccination sessions, such mothers often wait until all the others have left with their babies before bringing theirs. Alternatively, they refuse to visit the clinic, turning instead to private drugs sellers or traditional medicines.

Furthermore, as indicated in Section 6.2, people consider certain child health problems to be linked to the comportment of the parents: whether to a mother's lack of bodily hygiene or attention to cleanliness in preparing food, or to inappropriate behaviour. Thus people speak of illnesses provoked by eating a clan's taboo animal or by having sexual relations in the bush. Such acts – which transgress boundaries between parts of the socio-ecological order (see Fairhead and Leach 1996) can provoke swelling or death of people, failed harvests, famine and epidemics, if nothing is done to purify land and society. Other illnesses have 'supernatural' origins in djinn spirits and 'devil birds'. These can be the cause of ailments such as idiocy (*komoya*), madness (*fatoya*), paralysis (*nambaraya*), and convulsions, such as those linked to malaria (*kono*). In this way, it is possible for the same ailment to have several possible causes: for example paralysis can be caused by 'premature weaning', djinn spirits, or meningitis. Given that some of these causes are seen to reflect a mother's comportment or morality, perhaps provoking comment and judgement from others, taking a sick child to clinic can be worrisome for mothers. Illness, so socio-culturally understood, can thus be a reason *not* to attend the health centre, rather than a reason to go.

Having considered both issues of vaccine supply and of demand, we now turn to consider some key aspects of the interactions between parents and vaccine service providers.

6 Understanding social dynamics at the interface between parents and service providers

The perspectives of vaccine providers and of parents that we have explored in earlier sections come to engage with each other in actual encounters with health workers. These interfaces (Long 2001) take place in a variety of settings, whether at health centres, vaccine outreach posts, NGO education events, or JNV. As we shall see, the nature of these engagements can shape parental experiences in ways which in turn feed back to shape future views of – and anxieties about – vaccination attendance.

6.1 Interactions linked to poor supplies

As discussed in Section 4, lack of roads and transport, the insufficient number of health agents, and (especially in Dinguiraye) their lack of material and financial motivation, means that in some places people are very poorly served by health services. In this context, ruptures in supplies of vaccines and medicines are frequent. As several health centre staff explained, such ruptures contribute to parents' frustrations and lack of confidence, leading them increasingly to turn to private providers. As we noted earlier, such reduced health centre attendance in turn has repercussions for vaccination. It further undermines health centres' abilities to finance, and thus provide, vaccination services, contributing to a vicious cycle. Reduced health centre attendance also reduces the opportunity for health centre staff to give advice about vaccination and to employ the 'missed opportunities' strategy.

At the same time, experiences of ruptures in vaccine supplies can put parents off future attendance. As the PEV agent in Albadaria explained:

Often in Kissidougou we lack vaccines for polio, DTP, BCG. The crisis of vaccines is making itself felt even at national level and progressively, because of this rupture in provisioning, mothers lose confidence and no longer refer their children.

(Interview, Albadaria, 23 June 2004)

It can be particularly frustrating for mothers who must walk long distances to reach the health centre, only to find that there are no vaccines. As the case of this mother from Beindou exemplifies, this can lead to future non-attendance:

The reasons for my child's insufficient number of vaccinations are the lack of vaccines in Beindou health centre. This has made me no longer go. The distance is more than 15 km and as a woman, I do not dare to go alone (SDk-F7).

Other problems at the interface between parents and health providers turn on instances where mothers are late for, or miss, vaccination appointments.

6.2 Interactions linked to missed and late vaccinations

Frequently, vaccination service providers blame the mothers of children who are late in relation to the prescribed vaccination schedule, claiming that the mother does not care about her child's health. This way of interpreting mothers' behaviour reflects the priorities of service providers, who are interested in securing and reporting high coverage rates. It also reflects established modes of discussion amongst health workers. Whether in the government or NGO sector, 'frontline' health workers tend to have passed through forms of education and cultural experience which encourage attitudes of superiority in relation to the populations they serve. Labelling mothers – especially illiterate rural mothers – as ignorant and with misplaced priorities is simultaneously a way of affirming their self-proclaimed identity as modern, responsible, scientifically-knowledgeable citizens.

However if we focus on parents' own perspectives, it is evident that this interpretation obscures a range of experiences that people have as they struggle to keep their children healthy amidst the many challenges that face them. Although as we have seen vaccines are sought by the majority of parents, there are instances where events or daily preoccupations intervene to make it impossible to take a child to a health centre or post. These include the death of an important family member, or certain marriage, baptism or initiation ceremonies. They also include the pressure of household work, or of agricultural work in certain places and seasons – especially where there are no grownup children to assist a woman with her tasks; seasonal migration for agriculture, trade or social reasons; long distances (up to 40km in some localities) from a health post, and lack of transport, and disagreement or political conflicts between certain localities and those targeted as assembly points for vaccination.

While it might appear that none of these factors could compare with the importance of a child's wellbeing, in lived reality they are all linked to family livelihoods and survival – and hence to the survival of a child within that family. As one mother put it:

The children are not completely vaccinated. The reasons: travel around different markets searching for something to eat. (E4-F14).

Furthermore, while the discourse of health workers may construct only formal health centre attendance as 'proper' child health care, as we have seen, mothers have a broader perspective, employing a vast array of practices to keep their children well. Thus even while other demands are keeping her away from formal clinics, a mother may be making use of herbal medicines and cheap, easily available products from private traders.

The clash between health workers', and mothers' own, perspectives on the reasons for default on the vaccination schedule is often manifested in problematic interactions. Thus many mothers made statements such as:

When these cases of difficulty arise, we fear for two things: the health of our babies, but above all the reactions of the health workers. They do not understand us; they reproach us, saying if it was yourself you would have come, you want to kill your baby, etc.

Because of lateness, certain mothers say, health workers reprimand them and also overcharge them, saying for instance 'you pay 500 FG the first time, the second time, one will demand 1000 FG from you'. When this happens, certain mothers prefer no longer to go to the health centre except in cases of serious illness. Those brave enough to go anyway are sometimes confronted by a further problem which causes anxiety or fear; that their child will be given accumulated doses of vaccine at the same time. This is worrying on two counts: the overdose of the vaccine medicine in the child's body, and the accentuation of secondary effects: fever, swelling and abscesses. Mothers faced with multiple doses are quick to point out these concerns to health agents. Those who believe their children to be particularly susceptible to vaccine secondary effects often demand at least a week's interval between vaccinations.

Thus these reproaches, overcharging and accumulation of vaccines can lead mothers to abandon visits to health centres with their babies. Instead, they turn towards traditional medicine and private drugs sellers, and thus sometimes away from vaccination altogether.

7 Conclusions

This paper has taken an anthropological approach to vaccination demand and supply issues, viewing them as interrelated and both culturally and politically embedded. This has framed a close-focus view of parents' and particularly mothers' engagements with immunisation services in Guinea, and the factors shaping these.

Our ethnographic approach has attempted to understand how mothers view and approach vaccination as one amongst many practices and forms of social relation that are significant to keeping their children well. This has put vaccination in its place: today most parents value it highly, but not as the all-important, overriding disease preventative measure – the silver bullet to achieving the MDGs for child mortality – that global policy discourses emphasise. And while most attempt to attend for vaccination, they must negotiate to do so amidst numerous everyday demands and social relations. It is these local, culturally-grounded, socially-embedded forms of vaccination demand and attendance that interact with vaccination supply and delivery to shape vaccination coverage. In emphasising the significance of local supply-demand interactions, this paper's analysis has implications for policy approaches, both at national and local levels – and for the international and donor approaches which support these. Attempts to improve vaccination coverage and its sustainability cannot, we suggest, easily rely on the common twin-recipe of biomedically-based information and education on the one hand, and supply-chain improvements on the other. Instead, our findings suggest a range of more specific policy implications.

As we have shown, most Guinean parents now value vaccination alongside and as complementing the everyday social, herbal, Islamic and nutritional practices that promote child strength and wellbeing. It is seen as a means to tackle childhood disease, but in terms that do not align neatly with biomedical ones. Many Guinean mothers value vaccination as both preventative and curative, as giving general as well as disease-specific benefits, and as tackling many diseases (such as malaria and diarrhoea) that in biomedical terms are non-vaccinable. Thus while, as we have argued, there is currently strong culturally-grounded, active demand for vaccination services amongst most mothers in Guinea, this is not necessarily for exactly the disease-specific, scheduled services that the EPI programme thinks it is providing. This creates a challenge for approaches to education and communication, which are unlikely to be effective if they simply deliver top-down disease

specific messages which ‘speak past’ local framings of vaccination. It might be more useful for health workers and NGOs to develop more dialogue-based approaches which work with and build on local concepts. Rather than assume that vaccination demand is best fostered if parents acquire ‘modern’ biomedical knowledge and turn away from traditional practices, approaches to health promotion could more sensitively appreciate and build on these complementarities in parental perspectives.

The ways in which mothers have absorbed vaccination into childcare practices also gives rise to particular understandings of the vaccination schedule, and of when a child is completely vaccinated, that lie at odds with biomedical views. The common parental practice of counting ‘five vaccination events’ can lead mothers to feel that their children are fully vaccinated when they are not, if late DTP3 overlaps with the scheduled timing of measles, or if they ‘count’ injections given for treatment or vaccinations given additionally as part of National Immunisation Days. Communication strategies to resolve these confusions and help mothers understand vaccination sequences and when the schedule is complete are therefore much needed.

A tendency to miss or be late for vaccinations does not appear to be generally linked with social variables such as mother’s education, wealth, ethnicity, or urban/rural location. Rather, default for all usually arises for more haphazard reasons linked to day-to-day problems (e.g. family events and illness, exceptionally high workload, travel) or social relations (e.g. intra-household and compound decision-making, gender relations). There is a need to improve communication between health personnel and communities, so that health agents better understand parents’ strong motivations for vaccination as well as the factors that can lead to non-attendance, often despite mothers’ strong vaccination demand. This could help to increase health agents’ tolerance of mothers’ occasional lateness and failure to keep appointments – thus reducing the instances of reproach which so often put mothers off future attendance.

Overall, the paper has shown that at least in our study areas, factors often cited as discouraging vaccination, such as secondary effects and rumours, do not appear to be highly significant. On the contrary, problems in vaccination coverage are linked less to demand than to issues concerning the organisation of services and their financing, in the pluralised, privatised settings in which people in Guinea now seek health care. These delivery problems lead in turn to problems in the interaction between mothers and vaccination service providers which can discourage even those with ongoing, active demand for vaccination.

As we have shown, in Guinea, general economic crisis has combined with the deverticalised organisation and financing of health care to create serious problems in maintaining vaccination services. In some respects, the situation exemplifies the fears expressed in global policy circles that under decentralisation and cost recovery, African governments will be unable to sustain vaccination services, let alone expand them. Yet the Guinean story is also a particular one, of unfolding supply-demand dynamics in a specific institutional context. Health centres should in theory, but cannot in practice, fund the fuel, transport and logistical aspects of their preventive services from the recovery of user fees linked to treatment. In the context of growing competition from private providers, reduced use for treatment and thus user fees is undermining routine vaccination service provision, and has more or less eliminated the important ‘mobile’ and ‘missed opportunities’ strategies. Local supply and delivery problems in turn impact negatively on demand, as mothers who make the effort to attend vaccination assembly points only to find no service or no vaccines are put off future attendance. Moreover to cope with funding difficulties, health centres and their employees impose informal charges for vaccination, which frequently exclude the poorest families. Such dilemmas facing local health centres and staff tend to remain invisible within hierarchical systems of monitoring and evaluation in the health sector. There is a need to develop more transparent and accountable governance mechanisms which enable those at the frontline of vaccine delivery to bring their difficulties to light, and participate in the design of strategies to address them. Overall, these supply-demand dynamics underline the need for a review of the way health centres and vaccination services are financed under

Guinea's current primary health care strategies, in order to bring expectations more closely in line with local-level realities.

In contrast with the (problematic) delivery of routine vaccinations through the primary health care system, Guinea has maintained a parallel vertical structure of vaccination delivery through National Vaccination Days. This dual structure corresponds, in many ways, with the somewhat contradictory emphases of international policy debates and funding. On the one hand, a move from vertical to integrated programmes is advocated for routine immunisation. Yet on the other, there is pressure for large scale eradication of particular diseases – such as polio – through intensive, top-down campaigns. The Guinean case exemplifies how maintenance of this double approach can create confusion and worry. As we have seen, most parents distinguish National Vaccination Days from routine immunisation not by the different antigens on offer, but by the fact that they are (genuinely) free, as well as accessible. Thus many parents claim to prefer them or see them as a substitute for all or part of the routine immunisation schedule. This sometimes leads to missed routine antigens. It compounds misunderstanding of routine vaccination schedules. And it is on Vaccination Day campaigns that people focus vaccination worries and rumours. For these diverse reasons, policy attention to improving the integration between these vertical and routine programmes, and enhancing public understanding of their interrelationship, is essential.

Finally, the Guinean case highlights the growing significance of the private sector to vaccination. This is an issue hardly addressed in policy debate at any level, given that vaccination has long been assumed a matter of public health provision. Yet private health providers (from private clinics, pharmacies and small-scale market sellers to the hybrid and clandestine activities of state health employees) are proliferating rapidly in Africa, Guinea included. As we have shown in this paper, while they may not provide vaccinations directly, their presence has a range of important, indirect effects on vaccination. By drawing clients away from government health centres for curative services, they further undermine their financing and hence capacity to maintain preventative services. If people do not attend state clinics for treatment, but private competitors, the strategy of using treatment visits to check and correct vaccination status ('missed opportunities') is undermined. Opportunities for communication about vaccination and for setting vaccination appointments are also missed. Given the trend towards a growing pluralisation and privatisation in the health sector across the region, policy dialogue about its implications for vaccination is urgently needed, along with debate over strategies for achieving more effective relationships – perhaps through forms of local public-private-community partnerships around vaccination.

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