Access to Health Care for Febrile Children in Uganda
Symptom recognition, care seeking practices and provider choice

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Kampala and Stockholm 2009
The cover photographs were taken in the Iganga-Mayuge Demographic Surveillance Site – the area where the studies were conducted. The lower photograph shows a drug shop, top left is a road and top right is a government health facility. They illustrate some of the determinants for access to health care for febrile children.

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ABSTRACT

Background: Febrile illnesses including malaria and pneumonia are leading causes of death among children under five in Uganda. The survival of a sick child depends on access to prompt and appropriate care. Despite government efforts to increase health care access by offering free services at government facilities, the majority of the sick children receive care after 24 hours, often with less efficacious drugs. One of the strategies suggested for increasing access is the distribution of antimalarials and antibiotics at community level. However, determinants on access to health care for febrile children are not sufficiently understood.

Main aim: The aim of this study was to assess the factors associated with access to treatment for febrile children under five in order to inform the implementation of child survival interventions at community level.

Methods: Four studies were conducted in the Iganga – Mayuge Demographic Surveillance Site in eastern Uganda (I – IV). Study I used key informant interviews (KIIs) with eight health workers and eight traditional healers and five focus group discussions (FGDs) with mothers of children under five. Study II was a cross sectional survey of 9,176 children under five. Study III was a survey of a random sample of 1078 households with children under five. Study IV used four FGDs with fathers and mothers of children under five and eight KIIs with health workers in government and Non-Governmental Organization facilities, community medicine distributors (CMDs), and attendants in drug shops and private clinics. Content analysis was used for qualitative data. Quantitative data was analysed at univariate, bivariate and multivariate levels to determine the independent predictors of delayed care or choice of provider.

Results: There is general lack of knowledge on antibiotics as first treatment for fever with pneumonia symptoms (I) and use of less efficacious drugs for malaria acquired from the open market (IV). Caretakers prefer health care providers with a variety of drugs and able to do diagnostic investigations (IV). Two thirds of the caretakers consult the private sector and 27% of them among other things because they can get treatment on credit (III). There are diverse perceptions on drug efficacy among caretakers (IV). Being of low socio-economic status (OR 1.45; 95% CI 1.06 – 1.97) and presenting with pallor (OR 1.58; 95% CI 1.10 – 2.25) are associated with delay in care seeking >24 hours after onset. Children seeking care outside the home <24 hours had fast breathing (OR 0.75; 95% CI 0.60 – 0.87), had tepid sponging (OR 0.43; 95% CI 0.27 – 0.68), had provider proximity (OR 0.72; 95% CI 0.60 – 0.87) and went to drug shops (OR 0.70; 95% CI 0.59 – 0.84) or CMDs (OR 0.33; 95% CI 0.15 – 0.74) (II). Caretakers more likely went to government facilities when children had vomiting (OR 2.07; 95% CI 1.10 – 3.89), or when expecting qualified (OR 10.32; 95% CI 5.84 – 18.26) or experienced workers (OR 1.93; 95% CI 1.07 – 3.48). Caretakers went to private providers when seeking treatment as “first aid” (OR 0.20; 95% CI 0.08 – 0.52) (III).

Discussion: Caretakers should be sensitized on recognition of symptoms for pneumonia, prompt care seeking and use of efficacious drugs. CMDs should be able to do some diagnostic investigations and have constant drug supply. Using drug shops and private clinics in community interventions could complement government efforts to deliver timely treatment.

Key words: fever, malaria, pneumonia, community health worker, drug shop, child
LIST OF PUBLICATIONS


The papers will be referred to by their Roman numerals I – IV.
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<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ARI</td>
<td>Acute Respiratory Infection</td>
</tr>
<tr>
<td>BASICS</td>
<td>Basic Support for Institutionalizing Child Survival</td>
</tr>
<tr>
<td>CHWs</td>
<td>Community Health Workers</td>
</tr>
<tr>
<td>CI</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td>CMD</td>
<td>Community Medicine Distributor</td>
</tr>
<tr>
<td>CMR</td>
<td>Child Mortality Rate</td>
</tr>
<tr>
<td>DSS</td>
<td>Demographic Surveillance Site</td>
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<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
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<td>HBMF</td>
<td>Home Based Management of Fever</td>
</tr>
<tr>
<td>HMM</td>
<td>Home Management of Malaria</td>
</tr>
<tr>
<td>HC</td>
<td>Health Centre</td>
</tr>
<tr>
<td>IMR</td>
<td>Infant Mortality Rate</td>
</tr>
<tr>
<td>KI</td>
<td>Key Informant</td>
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<tr>
<td>KII</td>
<td>Key Informant Interview</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal Mortality Ratio</td>
</tr>
<tr>
<td>NGO</td>
<td>Non Governmental Organization</td>
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<tr>
<td>OR</td>
<td>Odds Ratio</td>
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<tr>
<td>PCA</td>
<td>Principal Component Analysis</td>
</tr>
<tr>
<td>PNFP</td>
<td>Private-Not-For-Profit</td>
</tr>
<tr>
<td>RDT</td>
<td>Rapid Diagnostic Test</td>
</tr>
<tr>
<td>UCMB</td>
<td>Uganda Catholic Medical Bureau</td>
</tr>
<tr>
<td>UDHS</td>
<td>Uganda Demographic and Health Survey</td>
</tr>
<tr>
<td>UMMB</td>
<td>Uganda Muslim Medical Bureau</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>UPMB</td>
<td>Uganda Protestant Medical Bureau</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
OPERATIONAL DEFINITIONS

Acceptability: an attribute that is given to health services that respond positively to clients’ attitudes and culture (Obrist et al., 2007).

Access: the ‘fit’ between the patient’s needs and the system’s ability to meet those needs. It is a function of availability, accessibility, accommodation, affordability and acceptability (Penchansky and Thomas, 1981).

Accessibility: the geographical relationship between the providers and the users of health care (Ricketts and Goldsmith, 2005).

Accommodation: when a health care organization adjusts the service delivery to meet clients’ needs (Chuma et al., 2008).

Affordability: the ability of the client to pay for the cost of the health care services (Thiede et al., 2007).

Appropriate care: receiving the correct medicine in the correct dose for the correct period (Nshakira et al., 2002).

Availability: when the existing health services and goods meet clients’ needs (Obrist et al., 2007).

Prompt care: treatment for fever received within 24 hours from onset of symptoms in the child (WHO/CDS/RBM, 2000).
PREFACE

“Omwana anfaku, munambe, omwana anfaku,” (My child is dying, please help me, my child is dying), this was a cry which a mother of a two year old female child was making as she ran into the reception area of the paediatric ward at Kamuli Mission Hospital where I used to work as a medical officer in 2001. The hospital that started in 1913 as a health centre under Catholic missionaries is located in a rural district 150 km from the capital Kampala. She found me in the ward at 11.00 pm. I had just reviewed all the children admitted during the day and was finalizing the notes in the files. The nurses on night duty were preparing the emergency trays in case we received a patient at night. In her arms was a child wrapped in cloth, covered from head to toe. The child had spent a week with fever on and off and mild cough but was being treated at home with tablets from a nearby drug shop. That very day, the mother had got supposedly more powerful tablets from a private clinic on credit and given to the child, hoping that when the husband comes, he would pay the money.

Running behind her was a man, carrying what looked like packets of tablets in his left hand. There were three packets of tablets; one for paracetamol, another packet for septrin (cotrimoxazole) and the third with chloroquine. These were the tablets they had given the child during the day. The mother had received them from a private clinic. We later found out that this man was the husband and father to the child. He had been working away from home the whole day and when he reached home, he found the child seriously sick. As the child’s condition was getting worse, the parents decided to hire a motorcycle from the neighbourhood to take them and the child to the hospital, the only one in the district, 30 km away. The health centres along the way hardly had any drugs and the option at the time was to get to the hospital as quickly as they could. The motorcycle had just parked outside the ward.

I received the child from the mother, placed her on the examination couch and unwrapped her under the watchful eyes of the mother and the father. The child was not breathing. The child no longer had a pulse. There was no heart beat. On that innocent face, the eyes were closed. The body was cold. The child lay lifeless. I looked at the parents with eyes of despair. I did not say any word. They had come to the hospital running and crying for help with the hope of saving the life of their child. They found the doctor and nurses ready to receive sick children who arrive at night. The child arrived dead. The father was speechless. The mother started crying aloud; “Omwana afwire, omwana afwire”, (the child has died, the child has died).

A nurse who had been in the treatment room administering drugs to sick children came and asked, “What killed the child?” In my heart, I also asked myself the same question; “What killed the child?” I slowly and meditatively turned towards the entrance of the ward and looked through the door into the darkness outside. Another question came into my mind; “What can be done to enable these children survive childhood?” My humble effort to contribute answers to these questions is what constitutes the focus of this thesis.
1 INTRODUCTION

1.1 CHILD MORTALITY

Tremendous progress has been made in the reduction of child mortality in the world since 1960; however, there has not been remarkable progress in all the regions of the world. Reduction in under-five mortality has been lower in sub-Saharan Africa compared to other regions (Figure 1). In the past, most deaths occurred in Asia but today, about 50% occur in sub-Saharan Africa (UNICEF, 2007). Child mortality is higher among children living in the poorer households and in rural areas (Black et al., 2003).

![Figure 1: Trends in child mortality: under-five mortality rate (per 1000 live births) by region, 1960 – 2005. Source: UNICEF, 2007.](image)

1.2 CAUSES OF CHILD MORTALITY

Most of the deaths among children in low income countries are due to malaria, acute respiratory infection, diarrhoea, neonatal disorders, HIV/AIDS and measles (Black et al., 2003). Mortality due to malaria and pneumonia is high mostly in resource poor countries with limited access to clinical services (Pandey et al., 1991). Health centres lack drugs and most of the referred children do not reach the hospital (Peterson et al., 2004). Many of the sick children are treated at home or at the community with a very small proportion reaching the government health facilities (Tawfik et al., 2002). Child survival is affected by the accessibility to prompt and appropriate health care. This is an interplay of many factors including distance to health provider and cost of travel. These are in turn affected by socioeconomic status of the child’s household and the health care availability in the area (Schellenberg et al., 2003).

Recent statistics from WHO indicate that in Africa, febrile illnesses like malaria and pneumonia are responsible for the childhood mortality of about 20% each (World Health Organization, 2007). Other major causes include neonatal causes (25%) and diarrhoeal diseases (17%).
Both malaria and pneumonia are treatable. It is the access to health care that the children get when they fall sick that is neither adequate nor appropriate. Consequently, despite current knowledge available to avert so many deaths in children, child mortality is still very high (Black et al., 2003). The sub-Saharan region and East Africa in particular is not on course to reduce the mortality rate in children by two thirds of the 1990 levels by 2015 (Bryce et al., 2008). Strengthening health systems through community involvement and community partnerships provide the necessary linkage between the recognition of disease and treatment (UNICEF, 2008).

1.3 STRATEGIES TO REDUCE CHILD MORTALITY

One of the ways suggested to reduce malaria and pneumonia mortality is to provide effective treatment at community level using the home and community management of febrile illnesses (Winch et al., 2005, WHO/UNICEF, 2004). Data from a number of low income countries has demonstrated that mortality in under five children can be reduced through schedulable services provided through improved community based and outreach services (Bryce et al., 2008). Progress has been achieved addressing single diseases in the home based management of fever (Nsungwa-Sabiiti et al., 2007, Haines et al., 2007, Kidane and Morrow, 2000, Sirima et al., 2003). However, there are challenges of wrongly treating any fever as malaria as another disease like pneumonia has similar symptoms (Kallander et al., 2004, English et al., 1996, O'Dempsey et al.,

Figure 2: The main causes of death of children in Africa region
Furthermore, when children with respiratory symptoms are referred from community medicine distributors (CMDs) to health facilities, they take long to go to the health facilities and some children do not go there at all (Kallander et al., 2006b). Focus is now being turned onto expansion of integrated packages at community level for the prevention, treatment and control of malnutrition, pneumonia, diarrhoea and malaria (Loaiza et al., 2008, Haines et al., 2007).

1.4 HEALTH SYSTEM: GOALS AND FUNCTIONS

Health systems link life saving interventions to the people who need them. WHO defines a health system as a system which “includes all activities whose primary purpose is to promote, restore or maintain health” (World Health Organization, 2000). The fundamental objectives of health systems are: improving health of the population they serve, responding to peoples’ expectations (responsiveness) and providing financial protection against the costs of ill health (fairness of financing) (Figure 3).

![Figure 3: Function / action – based view on health system](Source: Damme et al. 2004)

In order to achieve these, the health system provides services (of acceptable quality), generates resources (human resources, drugs, equipment and infrastructure), finances
the activities (through taxation, insurance and out-of-pocket expenditure), and provides stewardship (through policy formulation and supervisory regulation) (Damme et al., 2004).

Health systems have been identified as the bottlenecks in the improvement of child health (Freedman et al., 2005). Child mortality can be greatly decreased with the current level of technology and the available interventions (Bryce et al., 2003, Victora, 2008) if supported by an effective health care system. To be effective, the system needs to be adequately financed.

Financing of health care has been a challenge to low income countries. In a bid to improve on the finances available to the health sector, user fees were introduced as an additional source of funds for the health services. However, literature demonstrates that user fees do not promote equity (McPake, 1993). Not surprisingly, the removal of cost sharing increased uptake of health services (Burnham et al., 2004, Xu et al., 2006). But even government subsidies tend to favour the better off rather than the very poor (Castro-Leal et al., 2000). Removal of user fees may not necessarily make health services affordable to the poor as costs of transport and loss of working time constitute as much as 79% of the total cost of seeking treatment (Asenso-Okyere and Dzator, 1997).

Health systems provide services to their populations but the availability of good health care services varies inversely with the need for it and this applies more in systems where health care is exposed to market forces (Gwatkin et al., 2004, Hart, 1971, Tudor Hart, 2000). Needs of children and access are also poorly matched (Webb, 1998). Children from rural areas and poor households have a higher mortality rate than those in urban or richer households (Black et al., 2003).

Governments have put a lot of their efforts on the government health care system and little on the private sector which in most cases attends to more cases than the public sector (World Health Organization, 2000). The private sector could contribute a lot to improving access especially for common illnesses like malaria when they are trained, supervised, regulated and monitored (Goodman et al., 2007, Mills et al., 2002b, Marsh et al., 2004). Unfortunately, at the moment, the quality of their services is sometimes poor (Zwi et al., 2001).

With the weak health systems and low funding for child health services in countries with the highest child mortality (Powell-Jackson et al., 2006), community based initiatives have been identified as channels through which interventions could be delivered in areas where health services are hard to access (Bryce et al., 2003). These interventions would contribute to increasing access to care and adherence (Bryce et al., 2008, Mbonye et al., 2008a, Mbonye et al., 2008b).

1.5 THE HOME MANAGEMENT OF MALARIA

Community interventions using antimalarials distributed by community health workers (CHWs) have been implemented in Kenya (Spencer et al., 1987), The Gambia (Greenwood et al., 1988) the Democratic Republic of Congo (Delacollette et al., 1996),
Ethiopia (Kidane and Morrow, 2000), Mali (Winch et al., 2003), Burkina Faso (Sirima et al., 2003, Pagnoni et al., 1997), Madagascar (Blanchet, 2005), Ghana (Chinbuah et al., 2006), Uganda (Nsungwa-Sabiiti et al., 2007), Rwanda (Barat and Schubert, 2007) and Nigeria (Ajayi et al., 2008). Using this strategy, timely care seeking has increased (Barat and Schubert, 2007) and mortality and severe morbidity has been reduced in resource poor settings (Kidane and Morrow, 2000, Sirima et al., 2003). However, there have been challenges like non-comprehensiveness of the CHWs work and their ambiguous role in the health care system (Delacollette et al., 1996) and low utilization rates (Nsungwa-Sabiiti et al., 2007, Greenwood et al., 1988). The results are mixed with some interventions reducing overall child mortality and others having no significant effect (Hopkins et al., 2007).

The Home Management of Malaria (HMM) has been promoted as a strategy for improving accessibility to prompt and appropriate treatment for fever / malaria at community level (WHO/UNICEF, 2004, Winch et al., 2005, Kallander and Nsungwa-Sabiiti, 2009, Staedke et al., 2009). Causes of child mortality differ from country to country (Black et al., 2003). Contextual factors need to be taken into account when designing and implementing the HMM (WHO Special Programme for Research and Training in Tropical Diseases, 2004).

The community management of fever is getting more complex and is to be implemented in a complex system. It is complex because there will be distribution of not only antimalarials but also other drugs like antibiotics. It is to be implemented in a complex system because the CMDs will have to function in a pluralistic health system (Williams and Jones, 2004). The success of the community interventions will partly depend on how they are linked to the health system in the country (Haines et al., 2007).

1.6 UGANDA COUNTRY PROFILE

Uganda Health Indicators

Uganda belongs to the “high child, very high adult” mortality stratum according to WHO classification (World Health Organization, 2000). The infant mortality rate in Uganda stands at 76/1000 live births and child mortality rate at 137/1000 (Population Secretariat, 2007). Some of the child health indicators are given in table 1 below.

Table 1: Selected Health Indicators over the years 1991 - 2006

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<tbody>
<tr>
<td>Infant mortality rate (IMR) per 1000</td>
<td>122</td>
<td>81</td>
<td>88</td>
<td>76</td>
</tr>
<tr>
<td>Child mortality rate (CMR) per 1000</td>
<td>203</td>
<td>147</td>
<td>152</td>
<td>137</td>
</tr>
<tr>
<td>Maternal mortality ratio (MMR) per 100,000</td>
<td>527</td>
<td>506</td>
<td>505</td>
<td>435</td>
</tr>
<tr>
<td>Full immunization (%)</td>
<td>31</td>
<td>47</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Stunted children (%)</td>
<td>38</td>
<td>38</td>
<td>39</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: Population secretariat, 2007

In the Uganda Demographic and Health Survey of 2006, data was collected on the children under five who had presented with fever, symptoms of acute respiratory infections and diarrhoea in the previous two weeks. The percentage of children who
Presented with fever were 40.9%, with symptoms of acute respiratory infection were 14.5% and those with diarrhoea 25.8%. The prevalence was higher in rural than urban areas.

Uganda is far from achieving the Millennium Development Goal No 4 – to reduce child mortality to a third of the 1990 level by 2015. The biggest burden for children below five years is febrile illness. In 1998, 15% of the paediatric deaths in the National Referral hospital were due to pneumonia alone (Government of Uganda, 1998) and in 2001, 44.4% of children aged less than 5 years presenting in outpatient departments had malaria (Government of Uganda, 2001a). Though malaria could have been over diagnosed and it exists concurrently with other diseases like pneumonia (Kallander et al., 2004), this is a rough indicator of the burden of disease among children.

Many of the children who present with fever are treated at home and very few reach the health facilities (Twebaze, 2001). At community level, the first place of call is mostly the drugs shops and private clinics (Konde-Lule, 2006, Tawfik et al., 2006). However, findings from the Uganda Demographic and Health Survey in 2006 indicate that very few children received Coartem - the first line of treatment for malaria - within the same or the next day after fever onset. Yet many children had symptoms of fever (Table 2).

<table>
<thead>
<tr>
<th>Table 2: Child health indicators in Uganda in 2006</th>
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<tbody>
<tr>
<td><strong>Indicator</strong></td>
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<tr>
<td>Percentage of children who had fever in the previous two weeks</td>
</tr>
<tr>
<td>Among children under 5 with fever in the last two weeks preceding the survey, percentage who took antimalarial drugs</td>
</tr>
<tr>
<td>Among children under 5 with fever in the last two weeks preceding the survey, percentage who took antimalarial drugs the same/next day after developing fever</td>
</tr>
<tr>
<td>Among children under 5 with fever in the last two weeks preceding the survey, percentage who took Coartem the same/next day after developing fever</td>
</tr>
<tr>
<td>Percentage of children with symptoms of ARI in two weeks preceding the survey</td>
</tr>
<tr>
<td>Percentage of children with fever in two weeks preceding the survey</td>
</tr>
<tr>
<td>Percentage of children with ARI or fever in two weeks preceding the survey</td>
</tr>
<tr>
<td>Percentage of children with ARI or fever who sought treatment from a health facility / provider</td>
</tr>
</tbody>
</table>

**Source:** Uganda Bureau of Statistics and ORC Macro, 2007

**The Government Health System**

The government health system in Uganda is arranged in a hierarchical system starting with the Health Centre I (HC I) at the village level which acts as an outpost for outreach services going up to the National Referral Hospitals with advanced tertiary care. Each
level offers what is at the lower level plus additional services for its own level (Table 3). There has been an increase in the number of health facilities built over the country increasing the proportion of people within a 5 km radius to a health facility from 49% in 2000 to 74% in 2007 (Government of Uganda, 2000, Government of Uganda, 2007).

However, the government facilities are grossly under funded, lack qualified man power and frequently lack drugs. The approved posts in government health facilities filled by trained health workers stood at 68% in 2005 (Government of Uganda, 2005). Despite the decentralization efforts which were aimed at improving the monitoring and supervision of the health facilities, the performance of the districts is not effective due to political interference (Francis and James, 2003, Hanson et al., 2002).

In 2001, the government removed user fees from all the government health facilities except for the private wing in the district hospitals and there was a rapid increase in utilization of care (Burnham et al., 2004). Studies have demonstrated that even after removal of user fees quality of care was maintained (Nabyonga-Orem et al., 2008). However, the initial increase in health facility utilization following the abolition of user fees in Uganda in 2001 has levelled off since the 2004/05 financial year (Government of Uganda, 2007).

Table 3: The structure of the Uganda National Health system

<table>
<thead>
<tr>
<th>Health unit</th>
<th>Physical structure</th>
<th>Location</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Centre I</td>
<td>None</td>
<td>village</td>
<td>1,000</td>
</tr>
<tr>
<td>Health Centre II</td>
<td>Outpatient services only</td>
<td>Parish</td>
<td>5,000</td>
</tr>
<tr>
<td>Health Centre III</td>
<td>Outpatient services, Maternity, General Ward and laboratory</td>
<td>Sub-county</td>
<td>20,000</td>
</tr>
<tr>
<td>Health Centre IV</td>
<td>Outpatients, Wards, Theatre, Laboratory and blood transfusion</td>
<td>County</td>
<td>100,000</td>
</tr>
<tr>
<td>General Hospital</td>
<td>Hospital, laboratory and X-ray</td>
<td>District</td>
<td>100,000 – 1,000,000</td>
</tr>
<tr>
<td>Regional Referral Hospital</td>
<td>Specialists services (3 – 5 districts)</td>
<td>Region</td>
<td>1,000,000 – 2,000,000</td>
</tr>
<tr>
<td>National Referral Hospital</td>
<td>Advanced Tertiary Care</td>
<td>National</td>
<td>Over 20,000,000</td>
</tr>
</tbody>
</table>

Adapted from Government of Uganda, Health Sector Strategic Plan, 2000/01 – 2004/05

The Private Sector

Uganda had a very efficient and effective government system in the 1960s soon after independence in 1962. However, the collapse of the health care system in the 1970s and early 1980s due to political turmoil left a gap that was filled by the private sector. The liberalization of the economy has enabled many people to engage in the drug distribution (Adome et al., 1998). This is coupled with the low number of qualified health workers. Even those who are qualified prefer to work in urban areas. Consequently, there is a plurality of health care providers in the rural areas including
The private sector in the country comprises of the Private-Not-For-Profit (PNFP) also called the Non Governmental Organization (NGO) facilities and the Private Health Providers like the drug shops, private clinics, the variety shops, the traditional healers and the spiritualists (Government of Uganda, 2000). The PNFP are organized under the umbrellas of the Uganda Catholic Medical Bureau (UCMB), Uganda Protestant Medical Bureau (UPMB), and the Uganda Muslim Medical Bureau (UMMB).

The majority of the private clinics and drug shops are located in towns and trading centres. They are the source of treatment for a great proportion of sick children (Konde-Lule, 2006). They are the first place of call for febrile illnesses especially the outpatient ones. However, in most of them, even if the owner is qualified, the one who attends to patients most of the time may not be qualified (Tawfik et al., 2006). Only about a third is registered with the district authorities. The largest proportion of owners is nurses/midwives while nurse aides are the largest proportion of private providers working as attendants (Kesande, 2002). Some studies have shown that the management of acute respiratory infections in drug shops and private pharmacies was poor as they did not pay attention to breathing symptoms (Tumwikirize et al., 2004).

In order to increase access to the population, the government has been subsidizing PNFP health facilities (mostly the faith based ones) since 1997. By 2003, subsidies were on average of about 25% of the running costs of these facilities. PNFP facilities constituted 25% of total health units in the country and 86% of the PNFP facilities were based in rural areas (Muhwezi, 2003). This enabled PNFP facilities to charge flat fees thus reducing financial barriers and increasing utilization (Amone et al., 2005).

**Barriers to child health care**

Removing user fees in government facilities and subsidizing PNFP facilities do not remove all access barriers (James et al., 2006, McIntyre et al., 2006). Since the 2004/05 financial year, the increase in health facility utilization levelled off (Government of Uganda, 2007). It has also been observed from studies in other countries that after removal of user fees, there is an initial increase in new clients utilizing health facilities but the numbers start falling after some time (Wilkinson et al., 2001). The increase in utilization of NGO facilities after government subsidies has also stagnated (Government of Uganda, 2007). Yet febrile illness still remains the commonest problem for children under five. The child survival community interventions are focussing on using community case management.

**Community interventions**

In Uganda, the Home Based Management of Fever (HBMF) was introduced in 2002 with the distribution of antimalarials (Chloroquine and Sulphadoxine/Pirimethamine also called HOMAPAK) by community medicine distributors (CMDs) free of charge at community level (Nsungwa-Sabiiti et al., 2004). Each village was having two CMDs trained by the health workers. They were under the supervision of the health workers from the health facilities in whose catchment area they worked. For the children with
severe illness or those who were not presenting with fever, they would have to refer to the health facilities. Despite the shortcomings at implementation like community health worker attrition, lack of supervision and a non constant supply of drugs (Fapohunda, 2004), the HBMF improved the proportion of children accessing prompt and appropriate treatment for malaria (Nsungwa-Sabiiti et al., 2007).

Challenges remain, however. Caretakers have not been using the CMDs because the CMDs only have one drug (HOMAPAK) and some of the caretakers perceived that the drugs used were weak or ineffective (Malimbo et al., 2006, Nsabagasani et al., 2007). Caretakers sometimes preferred using the drug shops and private clinics where they would pay in spite of the free treatment at CMDs citing the presence of only one drug from CMDs while children would be suffering from many other diseases (Nsabagasani et al., 2007). The HBMF has not been functional since the change of first line antimalarials from chloroquine and sulphadoxine / pyrimethamine (SP) to arthemether / lumefantrine (AL) in 2006. It has virtually come to a halt as the distribution of CQ/SP stopped.

**Drugs for children with fever**
The commonly used drugs against fever are analgæsics, antimalarials and antibiotics. The commonest analgæsic is paracetamol. Antimalarials include chloroquine, sulphadoxine / pyrimethamine (SP), arthemether / lumefantrine (AL) and quinine. Antibiotics include cotrimoxazole (septrine) and amoxycillin. Paracetamol, chloroquine and cotrimoxazole can be easily got from drug shops (Tawfik et al., 2006, Konde-Lule, 2006) and chloroquine and cotrimoxazole are the commonest drugs distributed in health facilities (Nabyonga-Orem et al., 2008). Despite the change of first treatment of malaria from CQ/SP to Coartem® (AL), the new drug is not yet available easily in the rural areas because it is expensive in private pharmacies and it is only distributed in government and NGO facilities free of charge (Medicines for Malaria Venture et al., 2008).
2 CARE-SEEKING PRACTICES

2.1 RECOGNITION OF SYMPTOMS, INTERPRETATION AND LABELING

Even in a well functioning health care system, the survival of the child is dependent upon the caretaker’s actions done in response to the child’s illness. Patients’ beliefs influence their health behaviour (Thomas and Penchansky, 1984). The care an under five child receives is influenced by the caregiver’s understanding of the illness (de Savigny et al., 2004, Mwenesi et al., 1995, Winch et al., 1996) and the naming of the illness. Common consequences of malaria like cerebral malaria in young children and severe anaemia have not been connected with malaria by many people (Winch et al., 1996). A study done in Ghana found that malaria and fever were used interchangeably and there were many misconceptions about malaria transmission and treatment (Ahorlu et al., 1997). Convulsions, a common complication of malaria was perceived as a supernatural ailment which should be treated using traditional medicine and not biomedical medicine (Nuwaha, 2002). A study that was done in Kasese in western Uganda indicated that local understanding of fever illness was complex. There were many classifications of fever and caretakers would take some of them for western medicine and others for traditional medicine (Nsungwa-Sabiiti et al., 2004).

2.2 PERCEPTIONS IN THE COMMUNITY

Caretaker perceptions influence the categorization of the illness and the treatment that is sought. In Burkina Faso, a study found that the local classification of an illness would determine what treatment the caretaker would look for and the provider to go to (Beiersmann et al., 2007). Sometimes the illness classifications do not consistently correspond to biomedical concepts. Studies from Uganda showed how the word for fever, ‘musujja’, covered a broad symptom complex that does not correspond to the definition of malaria (Kengeya-Kayondo et al., 1994). Similar findings were found in Malawi where the term for fever ‘malungo’ had multiple meanings referring to many types of feverish illnesses (Launiala and Kulmala, 2006). Some studies have shown that children with symptoms that could be clinically malaria were not treated as such and traditional remedies were instead preferred (Nsungwa-Sabiiti et al., 2004, Nuwaha, 2002). Interpretation of symptoms in a non biomedical way was also found in South Africa where mothers perceived that supernatural causes were responsible for respiratory symptoms and hence traditional remedies would be preferred (Kauchali et al., 2004). Caretakers’ interpretation of signs and symptoms do not always agree with that of physicians (Muhe, 1996, Mull et al., 1994, Ringsted et al., 2006). This demonstrates how the emic illness concepts – intrinsic cultural distinctions that are meaningful to members of a given society – often diverge from etic definitions – concepts that have meaning for scientific observers (Pike, 1954).

2.3 HOME TREATMENT

Home treatment practices affect how fast the child accesses treatment. The degree of home treatment varies between areas and at different times. There is also the use of home treatment in conjunction with other providers though up to approximately a half of the patients for malaria could solely depend on home treatment (McCombie, 1996). A study in Togo found that 83% of the fevers in children received only home treatment.
(Deming et al., 1989). In Uganda, home treatment constitutes about 80% of the care children receive when they present with a febrile illness (Twebaze, 2001). Once the caretaker labels an illness, the child is given an appropriate remedy according to the caretaker’s previous experience or the advice received from the significant others at home or from the neighbourhood (Igun, 1979). Caretakers would give drugs either left over from the previous illness or bought from the drug shops nearby depending on the perceptions as to the possible drugs that would cure the children (Tarimo et al., 2001, Williams et al., 1999, Mbonye et al., 2008c).

2.4 CHOICE OF HEALTH CARE PROVIDERS

Sometimes when sick children do not get better, the caretakers seek treatment from outside the home (Nyamongo, 2002). Caretakers have been shown to bypass certain providers in Tanzania depending on what they consider as quality of care provided, knowledge of staff, prescription practices and/or customer care (Leonard, 2002). Availability of drugs determines utilization by the caretakers (Massele, 1998). Caretakers’ choice of care provider is often an interplay of many factors (Williams and Jones, 2004). Affordable and available drugs (Amin et al., 2003, Williams and Jones, 2004), geographical accessibility (de Bartolome and Vosti, 1995) and appropriate opening hours (Goodman, 2004, Mills et al., 2002b) are important contributors to caretakers’ choice. Other factors include travel time, education, age, sex, quality of care (Asenso-Okyere et al., 1997, Mwangi et al., 2008) education and household size (Dzator and Asafu-Adjaye, 2004).

2.5 DRUG USE

Poly pharmacy has been documented in drug utilization in Africa partly because of the pill for every ill (Adome et al., 1996, Whyte, 1997). There has also been occasions of lack of compliance to approved guidelines on the part of providers and the caretakers (Nshakira et al., 2002). There has been increasing resistance to commonly used drugs in the first line treatment of malaria like chloroquine and sulphadoxine/pyrimethamine (Kamya et al., 2002, Sendagire et al., 2005). The new drugs that are being promoted as first line treatment for malaria in those areas with high resistance chloroquine and sulphadoxine/pyrimethamine are the arthemisinin combination therapies (Ajayi et al., 2008). Antibiotics like cotrimoxazole (septrine) have also been widely available in the community and now the resistance levels have been shown to be high (Joloba et al., 2001).

Cost and distance to health care provider, knowledge and duration of illness and the patient’s judgement of the intensity of sickness determine the choice of treatment (Dzator and Asafu-Adjaye, 2004, Nyamongo, 2002). The packaging of the drugs and the perceived efficacy influences the acceptability within communities (Kilian et al., 2003). Use of drugs is also affected by the endemicity pattern of malaria and gender. Lower female control over cash is often a limiting factor in the management of children. Utilization of health services is often due to their affordability, availability and acceptability by women (Tanner and Vlassoff, 1998).

The type of therapy to look for and the healers to consult are dependant partly on the perceived aetiology of the illness (Mwenesi et al., 1995). The most widely dispensed
medicines are antipyretics and analgesics (Amin et al., 2003). Studies show that caretakers use biomedical drugs as first treatment for febrile illnesses (de Savigny et al., 2004, Kallander et al., 2008).

2.6 HEALTH CARE SEEKING MODELS

In order to understand determinants for health care access for febrile children, a number of models were considered. Different models stress different aspects of health care seeking. Some of the models are explained below.

The Socio–behavioural model

This is the model originally proposed by Andersen (1995). In this model, three kinds of factors that influence health seeking behaviour are put in sequence. There are predisposing factors such as age, gender, education and social capital; enabling factors like availability of services, having health insurance and social network support; and need factors such as perception of severity and financial costs that are anticipated (Ricketts and Goldsmith, 2005). This model has a strong focus on the predisposing and enabling factors to health care seeking. The focus in this thesis has been on the immediate factors which interact enabling a febrile child to access care outside the home or not.

The Pathways model

The model emphasizes the interaction between the household and the health facilities. It demonstrates the dynamism of health care seeking. The patient is tracked from the time of noticing the illness to the time the patient gets into contact with the health care provider. In some of the versions like for the Basic Support for Institutionalizing Child Survival (BASICS) project survival model (Murray John et al., 1997), the interaction between the household and the health care provider is shown as composed of a series of decisions and actions. The model traces the child from illness to improved health or survival. It looks at care seeking as a linear process involving decision making with the significant others (Igun, 1979). Health care seeking is usually an interplay of many factors and there are more factors involved than just the health provider and the care seeker.

Conceptual model for the study: The five A’s model

In this thesis I wanted a model that demonstrated an interaction of the factors that influence access to care from outside the home for a febrile child at a point and time the child is sick. I used the five A’s model (figure 4). The strength of this model is that it focuses on the immediate access factors that come into play when a person falls ill. It demonstrates the interaction between the different factors at a point in time as the immediate determinants of whether the child gets care or not. It demonstrates that the decision to take or not to take the child for care outside the home is by the caretaker in the context of that time and place. The model of five A’s will guide the inquiry into how the symptom recognition, care seeking practices and provider choice determine the care a febrile child receives.

This model groups the factors for health care seeking into five A’s (Obist et al., 2007, Ricketts and Goldsmith, 2005).
i) **Availability** which is the degree of fit between the existing resources like drugs and clients’ needs.

ii) **Accessibility** which expresses the extent to which the geographical location of the health services is related to the clients who seek for the services.

iii) **Affordability** which shows the degree to which the cost of the services are within reach of the clients ability to pay.

iv) **Accommodation** which shows the extent to which services meet the expectations of the clients like the opening hours matching the schedules of the clients work.

v) **Acceptability** which expresses the extent to which the clients are satisfied with the characteristics of the services like the quality of care.

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**Figure 4: Model demonstrating factors affecting utilization of health services**

Adapted from Penchansky’s model as presented by Ricketts & Goldsmith 2005 and Obrist et al 2007

Perceptions of pneumonia symptoms, preferences for treatment, choice of provider and promptness to health care determine the access the febrile children get to prompt and appropriate care. At a time, when the caretaker takes the child outside the home for care, all five dimensions: Availability, Accessibility, Affordability, Adequacy and Acceptability interact to determine the use of services (Penchansky and Thomas, 1981, Obrist et al., 2007, Ricketts and Goldsmith, 2005).
3 RATIONALE FOR THE STUDIES

There is a high under five mortality in Uganda especially in the rural areas (137/1000 live births) (Uganda Bureau of Statistics and ORC Macro, 2007). The major causes of mortality among the under five children are malaria and pneumonia which are treatable diseases.

Integrated community interventions involving not only the distribution of antimalarials but also other drugs like antibiotics are being promoted to answer the need of providing care for children who present with more than one illness (Bryce et al., 2003). Suggestions have also been fronted to incorporate the private providers in the distribution of antimalarials and antibiotics at community level (WHO Special Programme for Research and Training in Tropical Diseases, 2004, Winch et al., 2005).

Before the implementation of these child survival interventions at community level, access to health care from the caretakers perspective needs to be assessed.

First, local illness concepts affect disease categorization and treatment choice. Before the addition of antibiotics to antimalarials is done at the community level, caretaker concepts of pneumonia symptoms and their treatment, need to be explored. There is need to document the caretakers’ perception of pneumonia symptoms and their perceived treatment.

Second, effective drugs may be put at the community level and community medicine distributors trained but if the caretakers do not seek treatment promptly, the children may get severe illness. There is little information on what factors are associated with prompt care seeking.

Third, despite government efforts to offer ‘free’ health care, drug shops and private clinics still attend to large proportions of the febrile children. It is not only free care that drives caretakers to a provider. Reasons why caretakers utilise the drug shops and private clinics rather than the ‘free’ government facilities need to be identified.

Fourth, in previous interventions at community level, drugs that were distributed were considered “weak”. There is little information on the caretakers’ perceptions of efficacy of antimalarials and antibiotics and their preferences for providers. For the drugs distributed at community level and the expectations of CMDs to answer community concerns, caretakers’ perceptions on drug efficacy and preferred providers need to be elucidated.
4 AIM AND OBJECTIVES

4.1 GENERAL AIM

The aim of this study was to assess the factors associated with access to treatment for febrile children under five in order to inform the implementation of child survival interventions at community level.

4.2 SPECIFIC OBJECTIVES

(1) To explore local illness concepts involving childhood fevers, cough and difficult / fast breathing and how these concepts influence management of children with potential pneumonia. (Study I)
(2) To determine the factors associated with prompt care seeking for children with febrile illness. (Study II)
(3) To assess determinants for the utilization of public or private health providers by caretakers in treating febrile illness in children. (Study III)
(4) To explore the caretakers' perceptions regarding efficacy of treatments and preference for providers for febrile illness. (Study IV)
5 METHODS

This thesis is based on four studies and each of the studies explores at least one aspect of access. Acceptability of care is the focus of studies I and IV. Study I deals with community perceptions on symptoms of pneumonia and its treatment. Study IV focuses on the caretakers’ use of drugs, perceived drug efficacy and preferred providers. Availability of care is assessed in study III and IV. In study III, good infrastructure, good equipment, qualified and experienced health care workers are assessed. In study IV, the availability of drugs and capacity to conduct investigations are explored. Accessibility is discussed in studies II and III. In study II, proximity to providers is assessed. In study III, proximity is assessed. Accommodation comes up in study III and in study IV on why caretakers prefer certain providers. Affordability comes up in studies II, III and IV. In studies II and III, socio-economic status is assessed and in study IV, the issue of affordability comes up while exploring caretakers’ use of drugs.

5.1 STUDY AREA AND POPULATION

The studies were conducted in the Iganga – Mayuge Demographic Surveillance Site (DSS) which is located along the Iganga – Mayuge border in Eastern Uganda (Figures 5 and 6). It touches onto the Kampala – Nairobi highway and includes part of Iganga town council.

![Map of Uganda showing the location of Iganga and Mayuge Districts](image_url)

Figure 5: Map of Uganda showing the location of Iganga and Mayuge Districts
The DSS has been functional since 2004 and has a population of approximately 67,000 people of whom more than 50% are below 16 years of age and 11,000 (approx. 16%) are children below 5 years. About 90% of it is rural. It is predominantly an agricultural area.

![Map of the Demographic Surveillance Area](image)

**Figure 6: Map of the Demographic Surveillance Area**

There is a hospital, four HC IIIIs and five HC IIs and three NGO HC IIs within the DSS. There are also other informal health providers mostly drug shops and private clinics most often in small trading centres and Iganga main town (Figure 7). All government and NGO facilities have clinical officers and nurses for health care delivery apart from the hospital which in addition has doctors. Malaria is endemic and pneumonia is prevalent in the district. The DSS collects data every four months from every household on births, deaths and migration. Other data collected is on household assets and people’s education, marital status, age and sex.
5.2 DATA COLLECTION METHODS

The data was collected after the removal of user fees from government facilities and the implementation of the home based management of fever (HBMF). However the HBMF came to a halt due to a change of first line treatment for malaria from a combination of chloroquine and sulphadoxine / pyrimethamine (Fansidar) to a combination of artemether / lumefantrine (Coartem). When the treatment for malaria changed, the new drug (Coartem) was not distributed at community level. The data collection was therefore done when the community distribution of drugs was not at full scale. Despite the change in the first line of treatment, chloroquine and fansidar remained on the open market and some CMDs had some drugs left over. The time lines are illustrated in the figure below.
Both quantitative and qualitative methods were used. To elicit local illness concepts and caretakers’ perceptions on drug efficacy and preferred providers (I & IV), focus group discussions and key informant interviews were used. To determine factors associated with prompt care seeking and those for utilizing public or private health providers (II & III), cross sectional studies using household surveys were conducted. An explanation for the different methods is given below.

**Focus Group Discussions**

Focus group discussions (FGDs) describe perceptions, interpretations and beliefs of a particular select population. The researcher gains understanding of a particular issue from the perspective of the group’s participants (Khan and Manderson, 1992). The interaction between the participants is used to explore people’s views about the issue being discussed in a certain context (Dahlgren et al., 2004). FGDs are very useful when the researcher wishes to explore people’s knowledge and experiences. People feel more relaxed talking when they see others who have similar experiences. They also ‘give a voice’ to marginalized groups and researchers can ‘listen’ to people who have little chance of expressing their opinion (Rice and Ezzy, 1999). Disadvantages include suppression of minority opinions and the researcher’s misconceptions driving the group’s interaction (Hardon et al., 2001). FGDs also can generate in-depth information but may not explore the complex beliefs and practices of individuals (Rice and Ezzy, 1999).

In study I, FGDs were used to gather information from the community on mothers’ perceptions of childhood illness with focus on hot body, cough and difficult / fast breathing. Issues on treatment options which mothers give when children present with these symptoms were also explored. Five FGDs with mothers of children below five
years were conducted in separate villages in order to generate diverse information reflecting different areas of the DSS. Two of the FGDs were with mothers below 25 years and the other three were with mothers older than 25 years. It was assumed that the understanding on childhood illness would differ depending on the children a mother had and assuming all things constant, older women in the reproductive age usually have more children than those who are younger (about 25 years and below). The tools were first discussed by the investigating team. The moderator and note taker were taken through the background and objectives of the study and the tools. The FGDs were conducted in the local language Lusoga by an experienced social scientist who is Lusoga speaking and also fluent in English. There was also a note taker who was fluent in both languages – Lusoga and English. The FGDs were conducted in the specific villages where the women came from. The FGDs were attended by the investigators who took field notes.

In study IV, four FGDs were conducted. Two FGDs were conducted with the mothers and two with fathers of children under five. FGDs of fathers were conducted in addition to those of mothers because fathers have been shown to have a role to play in the decision making of where to go for the health care of their children. Two FGDs of each group were conducted to assess whether there would be variations between fathers among themselves or mothers among themselves. These participants were considered as ‘cases of special interest’ and ‘information rich cases’ (Patton, 2002). The FGDs explored information on drugs which caretakers give their children when children have fever or cough. Issues on which of the drugs caretakers take as “powerful” or “weak” were also discussed. Other issues discussed focussed on provider choice and reasons for preferring certain providers instead of others. A trained social scientist conducted the FGDs. The FGD guide was pre-tested and translated into the local language then translated again into English to verify the closeness of the translation in the local language – Lusoga.

Key Informant Interviews

Key informant interviews (KIIs) are used to discover the subjective meanings and interpretations that people give to their experiences. Peoples’ responses are less influenced by the presence of their peers (Rice and Ezzy, 1999). When the respondents are influential or well informed people, they provide an overall view of the community (Marshall and Rossman, 2006).

In study I, KIIs were conducted with the health workers and the traditional healers who were considered well informed about caretakers’ opinions on causes and treatment for fever, cough and difficulty in breathing. The health workers and the traditional healers as people who interact with the caretakers in health care were interviewed to gain their understanding as well as experience of the community perceptions of respiratory symptoms among children and how they are treated in the community and by the interviewee. The key informant interviews with the traditional healers were also conducted in the local language Lusoga by the social scientist in their places of work or where they felt comfortable. All the key informant interviews with the health workers were conducted in English.
In study IV, KIIs were conducted with attendants of drug shops, private clinics, community medicine distributors and the health workers at government and NGO facilities. In order to capture various views, at least two people from each category of health providers namely the health facility based, drug shops, private clinics and community medicine distributors were interviewed. The key informant interviews were conducted in English at the places of work. These respondents gave their experiences with the caretakers and contributed to the understanding on what the caretakers consider to be efficacious drugs and which health providers they prefer.

**DVD presentation**

DVD / video presentations have been used in training health providers (Crawford et al., 2008, Miller and Beech, 2009). They have also been used to prepare patients for threatening medical treatments like chemotherapy for cancer patients (Schofield et al., 2008) and to convey information to pre-operative patients (Evord et al., 2005, Nozaki et al., 2007, Wilhelm et al., 2009). Other areas of use include giving medical information to enable caretakers to be aware of the choices available in the health facilities (Mostert et al., 2009) and as additional sources of information on treatment (van Straaten et al., 2009). However, this has been reported in clinical settings and in high income countries. Very little has been reported in published literature on the use of a DVD in research. One study in Mexico used a DVD to elicit information from caretakers on signs and symptoms of pneumonia (Ryan et al., 1996). A DVD presentation elicited more information than when participants only recalled symptoms. However, a video presentation focused the symptoms to only those which were visible in the child. It could not elicit non-visible signs like fever or lack of appetite. Another study in Uganda used a DVD to maximise credibility of data on ARI terminology and associated actions (Kallander et al., 2006a). In study I, a DVD showing children with respiratory symptoms was presented to FGDs of mothers in order to elicit a larger list of terms of locally used symptoms of pneumonia for which preferred treatment was explored. The first DVD showed a one month old child with an increased respiratory rate (75 breaths / min) and lower chest in-drawing showing signs of severe pneumonia. The second DVD was of a 7 month old child with intercostal chest in-drawing and respiratory rate of 35 breaths / min. This was a challenge as the children in the video were not black. They were of Asian origin. However, the moderator focussed the mothers’ attention to the signs displayed and this helped to elicit more terms of symptoms.

**Cross sectional surveys**

In cross sectional surveys, a representative sample of the population of interest is questioned at one point in time (Bowling, 2002). The relationship between a variable and a disease can be examined in terms of presence or absence of a variable in a population or presence or absence of a variable in the diseased versus the non-diseased (Last, 2001). The advantage is that when they are field studies, they are conducted in natural settings and random probability sampling is easier to conduct. This allows making statistical inferences from the sample to the broader population of interest. It increases the validity of the study (Bowling, 2002). One of the disadvantages with the field cross sectional surveys is that they cannot measure incidence because risk and rate calculations require a time period (Rothman, 2002). In studies II and III, cross sectional field surveys were conducted in households with children below five years.
In study II, all the 9,176 children below five years in Iganga–Mayuge Demographic Surveillance Site were enumerated between October and December 2006. The study focused on the children who had been taken outside the home when they fell sick in the previous two weeks. A pre-tested structured questionnaire was used. Caretakers of children who had been ill within the previous two weeks were asked about presenting symptoms, type of home treatment used, timing of seeking treatment and distance to provider.

In study III, the households were selected from the DSS household data set using simple random sampling. The focus of the study was on where the children who had had fever within the last two weeks had first gone to receive treatment outside the home. Only one child was being picked from a home since the household factors would be similar. The study population were caregivers of children below five years old. A minimum sample size of 384 subjects would have been needed when approximating 50% prevalence of fever in the study population and 5% absolute precision. Based on the assumption that 52% of the children would have had fever in the previous two weeks (Nsungwa-Sabiiti et al., 2005), that 60% would have sought care from informal and formal providers (Tawfik et al., 2002) and accounting for a 15% drop out, a total sample of 1415 children was needed.

The DSS household data was put in STATA 10 (STATA Corporation, College Station, TX, USA). Households with children under five were filtered out and they were 7,447. Using simple random sampling, 19% of the households were randomly selected using STATA software giving a sample of 1415 households. All the households have identification numbers. These identification numbers were used to indicate the sampled households and it was these households that were specifically used to collect the data on the utilization of health providers. Data was collected on whether a child below five years in the household had fallen sick in the previous two weeks, if the child had fallen sick, what were the symptoms, whether the child was taken outside the home for treatment, where the child was taken and why the child was taken there.

5.3 DATA MANAGEMENT

Tape recording:
Through tape recording, one is able to get details and the accuracy that we would not get from the field notes or from memory. Tape recording also allows more eye contact between the moderator and the respondent (Holstein and Gubrium, 1995). However, tape recording does not remove the onus of taking field notes in case the tapes fail and also to get the non-verbal communication which may not be on the tape (Ryan et al., 1996).

In study I, all the KIIs with the health workers were tape recorded and transcribed in English. All the FGDs with mothers of children under five and the KIIs conducted with the traditional healers were tape recorded, transcribed in Lusoga by the note taker. The moderator cross checked the transcription. Two independent Lusoga speakers translated the interviews and the FGDs into English leaving the medical terms in
Lusoga. In study IV, the FGDs and key informant interviews were tape recorded, transcribed and those conducted in the local language translated into English. The original versions were kept even after translation.

**Using demographic surveillance data:**
In study II and III, questionnaires were checked for completeness as they were collected. When questionnaires were incomplete, the field assistants would go back to the households to collect the information. Routine data collection is on births, deaths, migrations and pregnancies. It is along side this data collection that special data collection for studies is done. Data was entered in FoxPro using unique household numbers as identifiers and then linked up with the data about the demographic characteristics and the socio-economic data of the household to get the other variables that could have played a role in the health care seeking behaviour. It was then exported to STATA 10 (STATA Corporation, College Station, TX, USA).

### 5.4 DATA ANALYSIS

**Logistic regression:**
This method was used to regress a dichotomous variable on a set of independent variables. In study II, multivariable logistic regression was done to identify independent predictors on having delayed to seek care from outside the home while controlling for several confounding factors. Children who sought care latest after one night were compared with those who sought care later (delayed) at bivariate analysis. Those factors that were significant at p-value of less that 0.1 were put into the regression model for multivariable regression. Regression was done to get which of the access factors were independent predictors in going for care outside the home latest after more than one night.

In study III, multivariable logistic regression was used to determine independent predictors for having used government health facilities or drug shops / private clinics. Variables included socio-economic characteristics of the household like age, sex and education of the household head, age and sex of the child, type of symptom, and perceived quality from a provider from whom care was sought. The dependent variable was the type of provider from whom caregivers sought care for the treatment of the symptoms of malaria and / or pneumonia. Univariate, stratified and bivariate analysis were done to determine frequencies, proportions and odds of having used different providers. The independent predictors of having used government or private health care providers were determined using multivariate logistic regression.

**Principal Component Analysis (PCA):**
This was used in ascribing the socio-economic status of households based on ownership of household assets as proposed by Filmer and Pritchett (2001). The socio-economic status could have been assessed using household consumption, expenditure or income data but in a context where most of the community members live a subsistence life, there are no records that could give consumption or expenditure data (Vyas and Kumarananayake, 2006). Using the household assets gave a more long term wealth index but as has been used in other areas, it closely approximates differences in
care seeking practices (Filmer and Pritchett, 2001). The assets were those used in the Uganda Demographic and Health Survey (UDHS) 2001. They were tested in the context retaining those that improved a Cronbach’s Alpha co-efficient (Bernard, 1995). The first principal component was scored to create an asset index that was used to group all the households into quintiles. The socio-economic status of households was an independent variable in studies II and III.

Chi square for linear trend
This is used to get relationships in categorical data that is ordered (Kirkwood and Sterne, 2003). It was used in study II to find the significance of increasing levels of socio-economic status on delaying to seek treatment outside the home.

Content analysis
Content analysis was used in the analysis of study I and IV. It can be manifest or latent. Manifest content analysis refers to the analysis of the obvious visible components (Kondracki et al., 2002). Latent analysis refers to interpreting the underlying meaning of the text (Downe-Wamboldt, 1992, Ryan et al., 1996). However, there is no clear cut line dividing latent from manifest content analysis. Both deal with interpretation of findings. The variation is in depth and level of abstraction. It would be better to describe the analysis as being close to or not close to the text (Graneheim and Lundman, 2004).

In study I, analysis was by latent content analysis with the interviews and focus group discussions as units of analysis. Two of the investigators independently reviewed the FGDs and the interviews, coded them and created a matrix covering the symptoms, perceived causes and preferred treatment. The authors discussed the individual matrices until agreement was reached. In study IV, analysis was by manifest content analysis. The passages were analysed for meaning units, then coded, categories derived, and from these categories, themes that emerged were identified. NUD*IST version 6 computer package was used.

5.5 ETHICAL CLEARANCE
The studies were approved by the Makerere University School of Public Health Research and Ethics Committee and the Uganda National Council for Science and Technology (HS – 32 and HS - 72). Study I was also approved by the Regional Ethics Committee of Karolinska Institutet, Sweden (2005/99 – 31/1). We sought permission from the local authorities and informed consent from the respondents.

Since all these studies were conducted in the Demographic Surveillance Site (DSS), many of these participants would have been interviewed within the demographic surveillance site updates or earlier focus group discussions and they could have the fatigue of questioning. The importance of this study was highlighted. All efforts were made to explain the study objectives to the local leaders before FGD participants would be selected. Each focus group discussion was held within the village where the participants came from, at a time and place of their choice. For key informant interviews, each person was interviewed at a time and place of his or her convenience.
An ethical concern for the participants was the discomfort during the interviews or the focus group discussions especially with questions eliciting care seeking behaviour. All efforts were done to make them comfortable by using the field assistants who collect demographic data from them routinely and for focus group discussions, using experienced moderators who speak the local language Lusoga fluently. They were also assured of the freedom of not discussing issues they felt uncomfortable about.

Another ethical concern for the participants was confidentiality. Before an interview was undertaken or the focus discussion group was conducted, the participants were given a detailed explanation of the study, told that their participation was voluntary and that they were free to withdraw any time. They were specifically asked permission to have the session recorded and were informed that the records were for researchers only. They were informed that the names of the participants were not to be used in analysis.

### 5.6 SUMMARY OF METHODS

<table>
<thead>
<tr>
<th>Title of study</th>
<th>Methods</th>
<th>Study population and sample size</th>
<th>Year of field work</th>
</tr>
</thead>
</table>
| I. Local illness concepts                                | Focus Group Discussions (FGDs) including a DVD and Key Informant Interviews (KIIs) | - Mothers of children below 5 years (5 FGDs) 
- Health workers and traditional healers (16 KIIs) | 2006               |
| II. Determinants of delay                                | Cross sectional survey of all the households with children under five  | - Children under five and their caretakers (n=9,176)                                           | 2006               |
| III. Utilization of public or private health care providers by febrile children | Cross sectional survey of randomly selected households with children under five | - Children below five years old and their caretakers 
- Total number of households (n=1,078) | 2007               |
| IV. Use of drugs, perceived drug efficacy and preferred providers | Focus Group Discussions and Key Informant Interviews                  | - Mothers and Fathers of children < 5 years (4 FGDs) 
- Health workers in health facilities, attendants of drug shops and private clinics and CMDs (8 KIIs) | 2008               |
6 RESULTS
6.1 LOCAL ILLNESS CONCEPTS (I)

The care a child receives depends on the caretaker’s perception of the disease and its treatment. This was the focus of study I where local illness concepts on febrile diseases and their treatment were explored.

Various terminologies about febrile illnesses emerged:

*Omusudha* was used as a term for any condition involving increased body temperature (hot body). Health workers explained that it is used in the community for many different biomedical illnesses though most of them suspected malaria.

‘Unfortunately omusudha is a broad term that our people don’t understand well because somebody can say omusudha meaning malaria and somebody can say omusudha meaning cough.’ (KI, Clinical Officer)

By adding another word to *omusudha*, the condition could be specified.

‘Omusudha are of different types, there is *omusudha ogw’enhonhi* [hot body of bird] causing convulsions, the child runs a high temperature except the extremes, and there is omusudha when temperature is on and off, that is malaria in English and *omusudha ogw’okuwela* [hot body of breathing through the mouth and nose] is flu.’ (FGD, Young Mothers)

Many terminologies were also used to refer to symptoms of pneumonia.

Terminologies of cough included *okukolola* (plain cough) and *akalakilo* (persistent cough). They were perceived by mothers to be caused by cold weather and rain. Traditional healers said cough was a sign of measles or inappropriate care.

‘[Akalakilo] is a result of not giving proper care to the child leading to entry of cold air in the lungs and it also tightens the heart.’ (KI, Traditional Healer)

Cough was said to be an independent illness or part of another, more severe illness. Mothers would treat cough at home:

‘- You crush the maize cobs and mix with salt and give to the child
- I use local herbs; others use lemon juice and add salt
- Or you can burn sugarcane or even mango tree boiled with avocado leaves.’ (FGD, Older Mothers)

Health workers used *lubyamira* as a literal translation of pneumonia and explained *tawera bulundji* to be the Lusoga translation of “difficult breathing”, which could also involve fast breathing. Mothers understood this term but some probing was required until they linked it to lubyamira, a condition explained to cause a lot of difficulty in breathing and ‘tightness in the chest’.
‘It normally comes when the child has some cough; feels pain on breathing and cannot breathe well. It starts as a fever or [child] has a running nose and coughing and later it attacks the chest. The child begins getting difficult breathing.’ (FGD, Young Mothers)

Difficult/fast breathing was considered severe but was not presented among common childhood illnesses. There was also a lot of intersection between the various terminologies used for fast breathing and how severe the illness would be. This is illustrated in figure 9 below.

“Enhonhi” is translated literally as “bird”. It was used to describe an illness of children who presented with hot body with cold extremities. “Lubyamira” could be translated as “pneumonia”, “Kuziyila” as “blockage in breathing” and “Kinsimbye” as “sharp chest / trunk pain”.

Although mothers mentioned using drugs at home for pneumonia related symptoms, they gave examples of only antipyretics. Health workers said mothers would use antimalarials and sometimes antibiotics to treat breathing problems.

Local illness concepts highlight the importance of acceptability of health services as a significant factor in the access of care to febrile children. Febrile children with pneumonia may not access treatment because their mothers would not ascribe pneumonia to their symptoms. If the mothers perceive the disease as malaria, they would give the child antimalarials instead of antibiotics. The perception of the caretakers on the symptoms and their treatment would influence whether the sick child accesses a biomedical provider or appropriate drugs from the drug shops. The emic illness concepts – intrinsic cultural distinctions – often diverge from the etic definitions – concepts with meaning for scientific observers (Pike, 1954). It is not only the

Figure 9: Schematic presentation of emic illness concepts from FGDs, their relation to each other, perceived severity and preferred type of treatment

“Enhonhi” is translated literally as “bird”. It was used to describe an illness of children who presented with hot body with cold extremities. “Lubyamira” could be translated as “pneumonia”, “Kuziyila” as “blockage in breathing” and “Kinsimbye” as “sharp chest / trunk pain”.

Although mothers mentioned using drugs at home for pneumonia related symptoms, they gave examples of only antipyretics. Health workers said mothers would use antimalarials and sometimes antibiotics to treat breathing problems.
caretaker’s perceptions that affect access to care for the febrile child. Other factors including treatment given at home, perception of distance to the provider, the providers they seek care from and the household’s socio-economic status are associated with the promptness with which a child receives care. These were assessed in study II.

6.2 DETERMINANTS OF DELAY (II)

Delay to seek care for a febrile child is affected by perception of the caretaker on the illness and the treatment (acceptability) how much the caretakers pay or expect to pay for care (affordability), the geographical location of the provider in comparison to the caretaker (accessibility), or whether the health services are actually there for the caretaker (availability). These aspects of access were assessed in study II. Children who sought care within 24 hours were compared with those who sought care later than this. Comparison was made on type of provider visited by the child (availability), the perceived distance to the provider (accessibility), the socio-economic status of the household (affordability), the presenting symptoms and the treatment which was reported as having been given at home (acceptability). On bivariate analysis, those likely to have delayed were the poor (OR 1.41; 95% CI 1.05 – 1.91) and those who had presented with pallor (OR 1.45; 95% CI 1.03 – 2.04). Those likely not to delay had gone to community medicine distributors (OR 0.29; 95% CI 0.13 – 0.63) or drug shops (OR 0.68; 95% CI 0.57 – 0.80), perceived the distance to be less than a km (OR 0.72; 95% CI 0.60 – 0.87), had presented with fast breathing (OR 0.79; 95% CI 0.65 – 0.97) and the child had been given tepid sponging at home when the caretakers realized that the children were sick (OR 0.50; 95% CI 0.33 – 0.76).

Table 5: Determinants of seeking care for febrile children outside the home within 24 hours after onset of illness

<table>
<thead>
<tr>
<th>Variable</th>
<th>Children delayed §</th>
<th>Children not delayed</th>
<th>Adjusted OR (95% CI)</th>
<th>p-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMD</td>
<td>9 (0.7)</td>
<td>21 (2.0)</td>
<td>0.33 (0.15-0.74)</td>
<td>0.007†</td>
</tr>
<tr>
<td>Drug Shops</td>
<td>517 (39.4)</td>
<td>510 (48.4)</td>
<td>0.70 (0.59-0.84)</td>
<td>0.000†</td>
</tr>
<tr>
<td>Distance to the provider</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 1 km</td>
<td>493 (37.7)</td>
<td>478 (45.5)</td>
<td>0.77 (0.64-0.92)</td>
<td>0.003†</td>
</tr>
<tr>
<td>Socio – economic status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st quintile</td>
<td>221 (17.6)</td>
<td>131 (13.0)</td>
<td>1.45 (1.06-1.97)</td>
<td>0.019†</td>
</tr>
<tr>
<td>Type of symptom presenting‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fast breathing</td>
<td>277 (21.0)</td>
<td>269 (25.1)</td>
<td>0.75 (0.61-0.93)</td>
<td>0.007†</td>
</tr>
<tr>
<td>Pallor</td>
<td>103 (7.8)</td>
<td>59 (5.5)</td>
<td>1.58 (1.10-2.25)</td>
<td>0.012†</td>
</tr>
<tr>
<td>Treatment given at home ‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tepid sponging</td>
<td>38 (2.9)</td>
<td>60 (5.6)</td>
<td>0.43 (0.27-0.68)</td>
<td>0.000†</td>
</tr>
</tbody>
</table>

§ Children who delayed sought care outside the home more than 24 hours after fever onset
† Significant at p<0.05        ‡ Multiple answers allowed
Children who came from the lowest socioeconomic quintile (OR 1.45; 95% CI 1.06 – 1.97) or had presented with pallor (OR 1.58; 95% CI 1.10 – 2.25) were independently associated with delay to receive care from outside the home. Children less likely to delay had gone to drug shops (OR 0.70; 95% CI 0.59 – 0.84) or CMDs (OR 0.33; 95% CI 0.15 – 0.74), had presented with fast breathing (OR 0.75; 95% CI 0.60 – 0.87), used tepid sponging at home (OR 0.43; 95% CI 0.27 – 0.68), or perceived the distance to the provider to be short (OR 0.72; 95% CI 0.60 – 0.87). In study II, CMDs and drug shops were independently associated with promptness even when controlling for distance and other factors. Since use of a provider is an independent predictor of promptness, factors that are independently associated with public or private providers were assessed in study III.

6.3 CHOICE OF PROVIDER (III)

A random sample of 1,078 households was visited, of whom 793 (73.5%) had at least one sick child in the previous two weeks. Of these, 759 (95.7%) had presented with hot body out of whom 456 (60.1%) sought care from outside the home (Figure 10).

Figure 10: Number of children with febrile illness who received care from health care providers
The main providers of treatment for febrile children were drug shops/private clinics (62.7%; 286/456) and government health facilities (33.1%; 151/456). Very few had gone to Community Medicine Distributors (CMDs) (2.0%; 9/456), NGOs (1.5%; 7/456) or to neighbours and other categories (0.7%; 3/456). There were no significant differences between age, sex and education of the household head, age and sex of the children and socio-economic status of the households that had gone to the drug shops/private clinics and those who went to government facilities.

Having a running nose was the main additional symptom febrile children presented with in both the government facilities (69.5%; 105/151) and the drug shops/private clinics (71.7%; 205/286). The second major additional symptom to fever was cough for government facilities (55.0%; 83/151) as well as for drug shops / private clinics (48.3%; 138/286).

The caretakers who sought care from government facilities went there because they perceived the provider to be qualified (56.6%; 90/151), nearby (45.0%; 68/151), or experienced (43.3%; 65/151) (Figure 11).

The main reasons cited for caretakers seeking treatment from drug shops/private clinics were because the provider was nearby (71.9%; 205/286), treatment was considered cheap (30.9%; 88/286) or they could get treatment on credit (27%; 77/286) (Figure 12).
In the bivariate analysis, children who had been taken to government facilities were more likely to have presented with diarrhoea (OR 1.57; 95% CI 1.01 – 2.44) or with vomiting (OR 1.69; 95% CI 1.07 – 2.67). Caretakers also sought treatment from government facilities because these facilities were perceived to be more likely to have qualified (OR 14.10; 95% CI 7.67 – 25.92) and experienced (OR 3.59; 95% CI 2.26 – 5.71) health providers. Other reasons given were the presence of good equipment (OR 4.92; 95% CI 2.74 – 8.81) and good infrastructure (OR 2.96; 95% CI 1.43 – 6.09). Those who went to drug shops/private clinics for treatment were more likely to have gone there because the provider was near (OR 0.32; 95% CI 0.21 – 0.49) or the treatment was a form of first aid (OR 0.20; 95% CI 0.08 – 0.52) (Table 6).

In the multivariable analysis, child having presented with vomiting (OR 2.07; 95% CI 1.10 – 3.89) andprovider having good qualification (OR 10.32; 95% CI 5.84 – 18.26) or experience (OR 1.93; 95% CI 1.07 – 3.48) were the variables that remained significantly associated with having used government facilities. An independent predictor for using drug shops/private clinics was having gone there for first aid (OR 0.20; 95% CI 0.08 – 0.52) (Table 6).
Table 6: Symptoms children presented with and reasons caretakers gave for having used public or private providers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting symptom *</td>
<td>n= 151 (%)</td>
</tr>
<tr>
<td>Fast breathing</td>
<td>18 (11.9)</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>49 (32.5)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>44 (29.1)</td>
</tr>
</tbody>
</table>

| Perception of provider*   | n= 151 (%) | n= 286 (%) |
| Conduct of health provider| 51 (33.8)  | 53 (18.6)  |
| Qualification of health provider | 90 (56.6)  | 27 (9.5)  |
| Experience of health provider | 65 (43.3)  | 50 (17.5) |
| Good equipment            | 44 (29.1)  | 22 (7.7)   |
| Good infrastructure       | 20 (13.3)  | 14 (4.9)   |
| Provider is nearby        | 68 (45.0)  | 205 (71.9) |
| To get first aid          | 9 (6.0)    | 47 (16.5)  |

* Multiple answers given and reference category was the government facilities
‡ Significant at multivariate analysis

Issues of access are also affected by caretakers’ perception of drug efficacy or preferred providers. Drugs or providers need to be acceptable if the child is to get the particular drugs or is to be taken to the particular providers. In study IV, caretakers’ perceptions on drug efficacy and preferred providers were explored.

6.4 PERCEIVED DRUG EFFICACY AND PREFERRED PROVIDERS (IV)

Caretakers use some drugs for first aid though considered “weak” and when the sick child does not improve, they go for what they consider as “more powerful” drugs. Although caretakers refer to drugs like chloroquine as “weak” drugs, these drugs were still considered efficacious when the condition of the child did not look severe.

‘Chloroquine is considered a weak drug but if the child has slight malaria, chloroquine can be adequate and can help the person to get cured.’ (KI CMD)

Quinine was specifically considered to be powerful and often used as last resort. Perception of quinine as a powerful drug was unanimously agreed upon across all the respondents.

‘For us we know that we first begin with a weak drug and advance to powerful drugs as the sickness worsens, quinine is given last when the other drugs have failed. Me what I know as a strong drug against malaria is quinine. For us here in our community, adults are on quinine tabs and injection, and syrup is for the babies.’ (FGD Men)
Though there was general agreement that drugs needed to match with the body if they were to be efficacious, there were disagreements as to what happens when a person gets used to a certain drug. Some participants held the view that when a person gets used to the drug, the drug would no longer cure that particular person.

‘On my side I think its quinine that works but again even though you use it, the fever resumes after some time. … May be the child’s body has gotten used to that quinine and the child’s body is not responding hence quinine cannot treat the fever any more.’ (FGD women)

With respect to health care providers, caretakers preferred those who had capacity to conduct diagnostic investigations. Participants said that private clinics do not do laboratory investigations and hence they would treat the children basing on symptoms. To some of the participants, this was tantamount to guesswork.

‘Now here we have a problem when a child is sick, the drug shop attendants just start on treatment without checking the child’s blood to see what is in the blood to see the disease. When you take the child to the drug shop, they just put it on treatment.’ (FGD women)

They also preferred providers who had a variety of drugs that were in constant supply. Health workers in government facilities refer caretakers to get drugs from the drug shops and this made some caretakers perceive that drug shops were sources of efficacious drugs. Drug shops had a variety of drugs.

‘Of course (efficacious drugs are) in the drug shop because even though you go to the government health facility, they would still tell you to go and buy at the drug shop opposite.’ (FGD Men)

The care a febrile child gets depends on the caretaker’s perceptions of the symptoms, the treatment options, perceived drug efficacy and preferred providers. However, other factors come into play; the proximity and availability of resources at the different providers, the way providers handle clients’ needs, the socio-economic status of the household and the cost of drugs. Different providers offer different opportunities. If the child survival community interventions are to contribute to the reduction of child mortality, they need to take cognizance of each provider’s comparative advantage, utilize the available options and institute CMDs that synergize with other providers in the health care system.
7 DISCUSSION
7.1 MAIN FINDINGS

In this thesis, I highlight how socio-economic status, caretaker recognition and perceptions of symptoms, perceptions on drugs and preferences for providers, proximity to and choice of providers are associated with febrile children getting access to prompt health care for malaria and pneumonia. Two thirds of caretakers seek care from the private sector, which is geographically accessible and accommodates caretakers’ needs by offering treatment on credit, while caretakers seek care from the more distant health centres in search of qualified and experienced health workers.

The private sector complements the public sector

Drug shops and private clinics provide a majority of the care for febrile children (III) and are associated with prompt care seeking (II). Caretakers say they provide first treatment outside the home – also described as “first aid” (III), have a variety of drugs (IV) and accommodate the financial inadequacies by giving treatment on credit (III). Several studies have demonstrated that the private sector offers treatment to the majority of the febrile children (Amin et al., 2003, Konde-Lule, 2006, Marsh et al., 1999, Mills et al., 2002a, Tawfik et al., 2002). In this study, I go a step further to show that caretakers seek care from these drug shops more promptly than public health centers. The survival of the febrile children sometimes depends on the promptness with which the child receives treatment, where the Abuja declaration aims to get treatment within 24 hours of onset to febrile children (WHO/CDS/RBM, 2000). Getting prompt treatment depends on the geographical accessibility the child has to the provider as well as the affordability of care the provider offers. The private providers are near to the febrile children and this reduces on the costs incurred for transport (Amin et al., 2003, Tembon, 1996). Transport is part of the other costs apart from treatment, which make up a big proportion of the total costs (Asenso-Okyere and Dzator, 1997). Cost may partly explain why children from households with lower socio-economic status were more likely to delay to receive outside care than those of the least poor (II), similar to findings from the Uganda Demographic and Health Survey (Uganda Bureau of Statistics (UBOS) and ORC Macro, 2007). If drug shops and private clinics are incorporated into the community distribution of antimalarials and antibiotics, this could offer an opportunity of using a provider that can be reached promptly, thus giving appropriate access to the majority of febrile children who utilize the private sector.

In terms of the “five A” model, the private sector thus provides several “A’s”. Private providers are preferred because they are geographically Accessible (III), have better Availability of drugs (IV), are Affordable when costs of transport are considered (IV) and Accommodate clients needs (III). However, health care offered by private practitioners is sometimes considered to be of poor quality (Brugha and Zwi, 1998, Chalker et al., 2005). The private sector may need support (Bhat, 1999, World Health Organization, 2000) if child mortality is to be reduced. Multifaceted interventions may improve quality of care from private providers (Brugha and Zwi, 1998, Mills et al., 2002b). In India, Pakistan and Uganda, private practitioners were trained in care of sick children and the quality of their practices improved (Chakraborty et al., 2000, Luby et al., 2002, Tawfik et al., 2006). In Vietnam, quality of service delivery in private
pharmacies improved after a multi-component intervention (Chuc et al., 2002). In Kenya, training drug shop keepers has been shown to increase efficacious treatment of malaria (Marsh et al., 2004, Abuya et al., 2007). Future efforts in Uganda to increase the proportion of sick children need to include the private sector, which may serve as a complement to community medicine distributors (Nsabagasani, 2007). The modalities of that complementarity need to be assessed in practical trials.

Meanwhile government health facilities have diagnostic equipment and the new first line treatment of malaria – Coartem (IV). They are perceived to offer care to children with serious symptoms and to have qualified and experienced providers (III). Other studies have also demonstrated that children with symptoms of severe disease have been shown to use the government facilities (Konde-Lule, 2006, Nsabagasani et al., 2007). Government facilities remain the second resort of care when the children do not recover from treatment from drug shops (Abuya et al., 2007).

Caretakers’ perceptions of pneumonia symptoms
Caretakers’ perceptions about pneumonia and its treatment affect the care seeking process for children having signs and symptoms of pneumonia. Low awareness among mothers of correct treatment for pneumonia symptoms may lead the caretakers to seek treatment for their children with antimalarials instead of antibiotics (I). Many children dying from likely pneumonia had also started their treatment with antimalarials in a study from the same area (Kallander et al, 2008). Studies from South Africa have also demonstrated that mothers may ascribe supernatural causes to some of the symptoms of respiratory disease and instead of getting antibiotics, they sought traditional medicine (Kauchali et al., 2004). Convulsions in some studies from Uganda were also considered to be from some supernatural causes and hence given traditional medicine (Nuwaha, 2002). This highlights how the emic illness concepts – intrinsic cultural distinctions that are meaningful to members of a given society – often diverge from the etic definitions – concept that have meaning for scientific observers (Pike, 1954).

Interventions for the treatment of pneumonia at community level therefore need to take into consideration local caretaker perceptions of pneumonia symptoms. Cultural interpretations and caretakers attitudes influence how Acceptable the services are to the particular community, another “A” from the conceptual model. There are diverse findings on these perceptions from different communities. In this thesis, children who presented with difficulty in breathing were associated with prompt care seeking outside the home, although not associated with a suspicion of pneumonia (I&II). Some studies have observed similar responses where mothers seek prompt treatment when children present with symptoms of pneumonia (Kallander et al., 2006a), but not necessarily resulting in the child getting treated with an antibiotic (Kallander et al, 2008). However, other studies reported a delay to seek care for children with fast breathing (Denno et al., 1994). This strengthens the notion that intervention programs should pay attention to local contexts and socio-cultural dynamics that influence treatment seeking patterns (Kamat, 2006). This requires formative studies in each socio-cultural setting to be part of program preparation to consider aspects of acceptability of services. In this setting there seems to be need to increase caretakers’ awareness of symptoms and correct treatment of pneumonia.
Use of drugs
Most febrile illnesses in children are first treated at home in my studies. Drugs used include analgesics like panadol and diclofenac, antimalarials like chloroquine, fansidar, coartem and quinine (I and IV), antibiotics like cotrimoxazole, ampicillin and procaine penicillin and sometimes anti-convulsants like diazepam and steroids like dexamethasone (IV). Traditional herbs were also used, though to a less extent and these included “lubirizi” ( Vernonia amygdalina ), “aloevera” ( Aloe vera chinensis ), “akabombo akaganda” ( Cyphostemma adenocaule ), lemon leaves, (IV) avocado leaves, sugarcane, maize cobs mixed with salt (I). Caretakers give their children drugs which are acceptable to them. Home treatment is the commonest first response to febrile illnesses in several studies (Deming et al., 1989, Twebaze, 2001). Other studies also show how mothers switch from biomedical to herbal and vice versa (Nsungwa-Sabiiti et al., 2004), highlighting a syncretism between traditional perceptions and exterior influence of malaria treatment messages and experience (Muela et al., 2002).

Caretakers had diverse perceptions on drug “efficacy” with some considering side effects to depict a drug that is “strong” and others thinking side effects depict a drug that is “weak”. Some thought pre-packaged drugs were more efficacious and others thought that instead those were less efficacious (IV). The type of treatment given will depend on what the caretaker perceives the child to be suffering from. Some caretakers would give children “weak” drugs if they considered the child’s sickness not to be severe (IV). Caretakers likely based on past experience to consider taking “weak” drugs first and “strong” ones last. Programs that target communities should put acceptability of treatments in consideration so that the drugs they provide should be seen as appropriate for the perceived severity of illnesses and sensitize the communities to accept the drugs offered. This will likely imply that more than one condition is catered for providing more than one treatment, as demonstrated by Nsabagasani et al (2007). The move towards integrated community case management of malaria, pneumonia and diarrhoea will therefore likely be welcomed by the community as it entails aspects of both Acceptability and Accommodation.

Focus on poor households
Low socio-economic status of the household was associated with delay in seeking care more than 24 hours. Delay in care seeking increased as one moved from the least poor to the most poor (II). Other studies have shown that health care seeking among the poor is worse than that among the less poor. Studies from Tanzania (Schellenberg et al., 2003), Ethiopia (Deressa et al., 2007a, Deressa et al., 2007b) and Nigeria (Onwujeke et al., 2008) indicate that the most poor are less likely to receive antimalarials compared to others. Our study demonstrates that the poor are also disadvantaged in the timing of the care they receive. Despite efforts from government to offer “free” services, the poorest still receive care late compared to the less poor. The poor in Uganda have a higher burden of disease but less access to health care services (Kiwanuka et al., 2008). With the breakdown of the government health care system in the 1970’s and 1980’s in Uganda, the private sector emerged to fill the gap (Adome et al., 1998) and despite the removal of user fees in the public sector, the majority of caretakers still seek care from private providers. Making services free in public health centers does not make them affordable. The caretakers still incur other costs like transport. It is of importance that
the community interventions look at which service providers are geographically Accessible and financially Affordable to the people and see how to improve the quality those providers offer.

Programmes targeting the poor may not necessarily lead to utilization of the service by the poor. The home based management of fever program that focused on the supply side with free distribution of antimalarials at community level, which was initially intended to be pro-poor found that the most poor used it less than the least poor (Nsungwa-Sabiiti et al., 2007). More financial resources are needed to have targeted programs as there are the extra costs of targeting the very poor, service needs and making services of acceptable quality to attract people (Waddington, 2005). However, shortfalls in health workforce, drug supply, health financing and information systems make it difficult for systems in low income countries to achieve targeted health outcomes (Travis et al., 2004). Instead aiming for a universal approach with high coverage may reach the poorest better (Victora et al., 2003). There could also be other programs that focus on the demand side. For the very poor, programs focusing on increasing income may first increase self care due to ability to make informed decisions (Ahmed et al., 2003). Increased income and awareness improves health by enhancing capacity of the poor to seek appropriate and timely care (Ahmed et al., 2006, World Bank, 1993).

Assessing time in communities that do not use watches
Prompt treatment is that treatment received within 24 hours from the time the child presents with symptoms. This is a key indicator for e.g. the Abuja declaration (WHO/CDS/RBM, 2000). In study II, counting a 24-hour period where the majority of the population does not use watches was a challenge. We used nights as indicators of time. The children who were reportedly taken for care on the same day of fever onset or the next day after only one night were considered to have received treatment within 24 hours. This definition had been used previously to assess prompt use of artesinin-based combination therapy (Ajayi et al., 2008). Others have used other definitions. Nsungwa-Sabiiti et al. used care seeking on the same day for the 24 hour definition (Nsungwa-Sabiiti et al., 2005). Other authors have used caretaker reported time of day and calculated treatment in 24 hours, 48 hours and 72 hours (Ahorlu et al., 2006, Amin et al., 2003). Others have operationalised delay as those seeking care after the median duration before outside care was sought, rather than the 24 hour period (Kallander et al., 2008).

Although “prompt” vs “delayed” care is an important indicator, it is a challenge to ascertain the ‘24 hours from the onset of symptoms’. The first difficulty is that the caretaker may not be watching the child all the time so that s/he can detect the exact time the child may have got the illness. There will always be a time lag between when the child presents with symptoms and when the caretaker notices the symptoms. Secondly, even if the caretaker was to notice the illness immediately, assessing 24 hours in two-week recall surveys is challenging in itself, and assessment methods are not yet standardized. There is need for further research to test reliability and validity of different methods to approximate time in retrospective surveys and suggest indicators and survey methods to measure progress towards provision of care within ‘24 hours from the onset of symptoms’.
7.2 METHODOLOGICAL CONSIDERATIONS

Triangulation
In study I, I used triangulation of methods (FGDs and KIIs) of informants (mothers, health workers and traditional healers), and of research professions. This brought about a more accurate estimate of the phenomena studied by testing the consistency in the results and diversity of perspectives on local illness concepts on pneumonia and its treatment (Rice and Ezzy, 1999, Denzin, 1978). In study IV, there was triangulation across different methods (FGDs and KIIs), categories of respondents (FGDs of men and others of women) and having caretakers of children under five and health providers from drug shops, private clinics and government and NGO health facilities. Using more methods permits a more accurate estimate of the unknown object (Berg, 2001, Flick, 1992). There is mutual confirmation of measures and validation of findings (Berg and Berg, 1993).

Reporting bias
Information collected in studies II and III was based on caretakers’ reports on a two week recall of the children’s illnesses and the care seeking practices that took place after noticing that the children were sick. This is “reported practice” rather than “actual practice” and this could have a bias. When face-to-face interviews are conducted, there is over reporting and under reporting of some conditions (Lilienfeld and Stolley, 1994). The caretakers could have reported what the research assistants would like to hear (Krause et al., 1998, Hildenwall et al., 2009, Bowling, 2005). This was minimized by using field assistants who routinely collect data in the DSS and have already established rapport with the respondents during the earlier data collection visits. By using non-medical personnel, there was less medical interpretation of the information received which could have led to less misclassification (Hardon et al., 2001). Self reported illness is sensitive to the cultural and socio-economic milieu (Segall et al., 2002, Sauerborn et al., 1996, Gao et al., 2001). We elicited the common terminologies used in febrile illnesses first (I) and used these in the subsequent studies, focussed on the fever which is the common illness among the children and limited the recall period to 14 days (II & III).

Recall bias
It is possible that some caretakers could not remember the details when illness recall of two weeks was used in study II and III. This could cause challenges in reliability and validity of the data as some respondents may not recall properly the symptoms the child presented with or the drugs the child was given (Kroeger, 1983, West et al., 1995, Van den Brandt et al., 1991, Paganini-Hill and Ross, 1982). This was mitigated by interviewing the caretaker who had attended to the child during the sickness and the child who was reported to have fallen sick was expected to be present to assist the caretaker in recalling the illness. Recall bias was also minimized by asking common symptoms which caretakers were knowledgeable about. A shorter recall could have captured mild and brief episodes. However, by focussing on the illnesses that were taken outside the home, these were illnesses that possibly looked severe and severe symptoms are remembered more (Linder, 1965).
Sampling bias
Choosing one sick child randomly from a family with more than one child as an index child on whom care seeking questions would be asked (Study III) could have led to an over representation of households with more than one child since those households have more chances of having sick children. However, since the sampling unit for the entire study III was the household done randomly, the respondent was the caretaker at household level, and care seeking practices tend to cluster at household level, this could have had a minimal impact on rationale given by those who went to government facilities or drug shops/private clinics.

Generalizability
This study was conducted in an area that is fairly well served with health facilities and a number of drug shops and private clinics (II and III). The availability of services might be more than is generally found in other areas of the country. This indicates that the challenges to access health care found in other areas may actually be more than these presented in the study. Context should be put into consideration when assessing access to health care (Kamat, 2006).

The use of qualitative methods (I and IV) with purposively selected participants makes the research findings not generalizable to the general population. However, the selection of the participants was done to get the information rich cases (Patton, 2002) able to give rich experiences of care seeking in febrile children. Different age groups were recruited (I) and both men and women participated (IV). Health providers as the people who interact with the caretakers were also interviewed to complement the information received from the caretakers (I & IV).

Use of traditional practitioners
Traditional healers were part of the study population of study I. They were considered resource persons on eliciting traditional terminologies and concepts. They made a contribution in elaborating on local illness concepts and how they are perceived by caretakers. However, they were not included in other studies because they are not the first place of call for care for febrile children outside the home (Kallander et al., 2008, Kesande, 2002, Konde-Lule, 2006). The decline in use of traditional medicine and increase in use of biomedical drugs as first treatment for febrile illness is also reported in the neighbouring countries of Tanzania (de Savigny et al., 2004) and Kenya (Amin et al., 2003).

The five A’s model
The five A’s model focuses on determinants of the health services a client utilizes. The model is a ‘fit’ between the patients’ needs and the system’s ability to meet these needs (Ricketts and Goldsmith, 2005). The thesis has found aspects of all five “A’s”, but also of other determinants of health service utilization like demographic characteristics of the clients, caretakers’ perceptions and socio-economic status of the households (I, II and IV). Conceptually, the model does not account for the role of social capital (like family relationships), physical capital (like means of transport) and financial capital (like cash) that depict the degree of vulnerability of the febrile child in determining access to health care (Obrist et al., 2007). In order to inform community child survival
interventions, the health access framework proposed by Obrist that combines pathway models, health services studies and livelihood approaches may be better able to capture the complexity of appropriate use of health services, since it depends on health care services and the broader policies, institutions, organizations and processes as well as livelihood assets people can mobilize (Obrist et al., 2007). However, although more comprehensive, there are likely challenges to operationalise such a complex framework in field studies, making the “five A’s” more practical.

Apart from informing studies of access to care, the five A’s model may have role in programming. Reducing under five mortality would entail addressing those diseases that contribute the biggest proportion to the mortality cases namely malaria and pneumonia (Black et al., 2003, WHO/UNICEF, 2004). What is needed is to address all the five dimensions of access. Acceptability could be addressed by sensitizing caretakers on recognition of pneumonia symptoms and appropriate drugs for malaria and pneumonia. Accessibility would increase when antimalarials and antibiotics are distributed through community distributors and drug shops. Affordability would improve through provision of free drugs through CMDs or subsidizing them in drug shops. Accommodation would be addressed by enabling private providers from whom caretakers can get treatment on credit to have efficacious drugs like Coartem. Availability would improve by equipping providers at community level like CMDs and private providers with diagnostic equipment, and conducting training and supervision in order to have the febrile children access prompt and appropriate care.
8 CONCLUSIONS

The key conclusions from this thesis are:

- There is a community knowledge gap on symptoms and biomedical treatment for pneumonia. (I)

- Even in the presence of ‘free services’, poverty is associated with delay to seek care. Drug shops and community medicine distributors are associated with prompt care in comparison with seeking care from government facilities. (II)

- A majority of febrile children were taken to drug shops and private clinics despite the abolition of user fees in government facilities. Drugs shops are perceived to offer “first aid” outside the home for sick children. (III)

- There are diverse perceptions on drug efficacy among caretakers. Some perceptions may lead to under utilization of bio medically efficacious drugs. (IV)

- Caretakers prefer providers who can conduct diagnostic investigations and have a constant supply of drugs. (IV)
9 POLICY IMPLICATIONS

To increase access of health care to febrile children below five years, all aspects of access need to be addressed. Health care should not be costly. Health providers should be accessible. Health providers should be able to offer services at times and under conditions that are favourable to the clients. Health providers, drugs and equipment should be available. The drugs distributed, the cadre of providers used and the illness symptoms to be addressed in the program should take into consideration the caretakers’ perceptions.

To achieve these, action is called for at both the community level and service delivery level:

At community level, caretakers need to be sensitized on recognition of symptoms; prompt care seeking and which drugs are currently first line drugs for the treatment of febrile illnesses. In particular there is need to increase the awareness of the appropriate biomedical treatment of pneumonia. Pneumonia and malaria need to be identified as two separate illnesses so that the children with pneumonia also receive prompt and appropriate care. The role of antibiotics in the management of fever in children must be emphasized.

At service delivery level, affordable drugs with high efficacy should be available with the CMDs, the private providers and the health facilities. Furthermore, equipping service providers with Rapid Diagnostic Tests for malaria and respiratory timers for pneumonia will not only satisfy caretaker preferences, but may also serve to increase quality of care. Incorporating the private sector into CMD programs may complement government efforts to deliver timely and adequate treatment since they see a large proportion of the sick children.

Further research should be conducted on methods to elucidate time in population-surveys in settings which do not use clocks. Community agents’ capacity to handle Rapid Diagnostic Tests and Respiratory Timers for integrated Community Case Management of Malaria and Pneumonia with antimalarials and antibiotics needs to be determined as it may be a promising tool both for attracting clients and to increase quality of care.

Reflections for the future

Efforts to avail drugs to the community are being pioneered with the Medicines for Malaria Venture program that subsidizes artemether / lumefantrine in the drug shops for children under five (Medicines for Malaria Venture et al., 2008). This however answers part of the problem. While it caters for the high cost of first line antimalarials, it leaves out treatment for another common cause of fever – pneumonia. Efforts are under way to study the integrated management of malaria and pneumonia at the home and community level using community medicine distributors who will distribute Coartem to children with fever and those with additional fast breathing will also get amoxycillin. This may be addressing the two main causes of fever at community level, but still leaves out one of the already major suppliers of first treatment outside the home.
– drug shops and private clinics. The feasibility of using community medicine distributors, drug shops and private clinics for the distribution of antimalarials and antibiotics needs to be explored. Such an intervention could provide accessible treatment to febrile children at a cost they can afford, with providers that are accessible and accommodate their needs.
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