INJECTION USE AND PRACTICES
IN UGANDA

Action Programme on Essential Drugs

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Much research work, particularly in developing countries, at present goes unreported. The reasons for this include the intense competition to publish in the scientific press, and difficulties in matching the research resources of developed countries. The DAP research series was established to provide a forum for the rapid distribution of data and findings relevant to critical areas of drug policy and use. The Action Programme has a firm commitment to national operational research as part of its direct country support. It is also strongly committed to making the findings of such studies widely known and accessible. While every effort is made by the Programme to support studies of the highest possible quality, research skills and resources will vary from country to country. Documents in the DAP research series reflect this variation, and range from reports of very small scale studies, undertaken with minimal resources, to major global research involving substantive financial, scientific and editorial input.
Acknowledgements

I am grateful to many people who have helped us in the entire process of developing this study. In particular, I would like to thank Mrs Pascale Brudon-Jakobowicz from the Action Programme on Essential Drugs and Vaccines (DAP), World Health Organization, Dr Anita Hardon and Dr AnneLoes van Staa from the Medical Anthropology Unit, University of Amsterdam. I am also much indebted to my co-researcher Delius Asiamwe who wrote the original version of the report on the study in Ankole, Western Uganda.

I would also like to extend my appreciation to the research teams of both regions in Uganda who were very dedicated to their work. In Busoga special thanks go to Dr Andrew Balyeku who carried out the evaluation of hygienic measures; and to my research assistants: Andrew Kairu, Dan Kitakule, Ivan Kifana, and Lillian Mpabulungi. In Ankole I would like to thank Alex Twesigye who participated in the study as a medical doctor, David Tumuhaise, Evans Nahamya, and Hannington Mugasiira. I would also like to extend my appreciation to Jordan Rujuna, Chief Pharmacist of the Ministry of Health in Uganda who provided insight into policy issues.

I am grateful to all the injection providers and users who generously took their time to answer our questions in addition to letting us observe their encounter.

The Action Programme on Essential Drugs, World Health Organization provided financial and technical support.

Finally, I would like to thank Dr Susan Reynolds Whyte who was fully involved in developing the country research protocol and offered her dedicated support prior to and during the fieldwork stage. She has been also very instrumental in the final analysis and write up of this report.

Harriet Birungi
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1. INTRODUCTION

1.1 Problem statement

In many different cultures the belief that injections are the most powerful means of restoring and maintaining health is shared by both injection providers and users (WHO 1991; Reeler 1990; Wolffers and Bloem 1993; Whyte and van der Geest 1994). In Uganda, studies undertaken in the field of drug use invariably underline the popularity of injections among both users and providers (UEDMP 1990; Glenthaj 1991; Whyte 1991; Birungi and Whyte 1993). The studies also underline the high degree of misuse of drugs and injections; this includes under dosage as well as overuse or inappropriate use (Mburu 1984; Kalyesubula and Minde 1989; Glenthaj 1991; UEDMP 1990, 1992). Further, the studies show a high prevalence of administration of drugs in homes often without proper diagnosis, and emphasize the widespread use of certain drugs like Procaine Penicillin Fortified (PPF) and chloroquine (Christensen and Anokbongo 1991; Kinuka et al. 1985). In a country where the practice of medicine is not strongly controlled, a variety of untrained providers administer injections. For example, Whyte (1982, 1988) noted that in every neighbourhood in Bunyole, Eastern Uganda, there were curers who specialized in injections ('ab’episya') with no formal Western medical training. Similarly, in a study in one municipality Birungi (1994) noted the sale of Western pharmaceuticals, including injectables, needles and syringes, by peddlars, hawkers and vendors in the central market, open stalls on verandas and the taxi and bus park. She noted an increase in family administered injections and also described itinerant injectionists whose livelihood depended on the provision of injections.

The current research was initiated by the Action Programme on Essential Drugs (WHO) as part of an international comparative research project into injection practices in developing countries. The initiative was mainly prompted by the growing concern about the widespread misuse of injections in developing countries, both from a public health and economic point of view:

- Administration of injections without adequate medical knowledge or sterilization procedures would lead to increased risks of transmitting a range of potentially serious pathogens, including hepatitis B, Human Immunodeficiency Virus (HIV) and Streptococcus, the occurrence of abscesses and the provocation of poliomyelitis. Some of the drugs that are administered are not medically justified and hence potentially dangerous.

- Administration of injections is deemed undesirable especially if it causes poor families to spend scarce resources on injections when money could have been spent better (WHO 1991, 1992).

In order to improve the use of injections it is important to know: who is administering them; how often they give injections and for what purpose; why they are used; if they are used, is there a medical justification for their use; and what hygienic measures are being undertaken. It is on the basis of such findings that intervention strategies geared to injection misuse can be developed. A problem in this endeavour is that although many studies have identified and

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1 See the proceedings of the Informal Workshops on Injection Practices Research. These have been published by WHO for limited distribution: 1) WHO/DAP/91.8; 2) WHO/DAP/92.2; Combined in WHO/DAP/92.9.
described the misuse of injections, most are anecdotal without a systematic description and quantitative assessment of the problem. In the same respect, few studies have been analytical in nature - in attempting to understand why it happens. None seem to have been designed to develop appropriate interventions. The present study provides baseline and qualitative data both from providers and users of injections, to guide the design of intervention studies.

1.2 Objectives of the study

Main objectives of the Injection Practices Research are:  

1. To establish the extent to which injections are used as a route for the administration of medications.

2. To determine the type and degree of improper practices in the process of administration of injections.

3. To gain insight into why injections are so popular, and how their use can be improved.

4. To develop a simple, and rapid survey methodology for future assessment of the extent of inappropriate injection use.

Specific research questions are:

Concerning the types of health care providers administering injections:

1. Which health care facilities and which providers are administering injections in a certain region?

2. Which facilities or providers - both formal and informal - are most often consulted for injections?

Concerning the distribution of injections that are used:

1. Where do the health care providers obtain injections which they administer to patients? Do they obtain them from government sources or from the commercial private sector?

Concerning the indications for which injections are generally used:

1. What are the main indications for which health care providers are administering injections?

2. What are the disorders for which people seek injection treatment?

3. Why are injections chosen for these indications?

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Concerning the appropriateness of injection use:

1. To what extent do people use injections to treat:
   - cough and common cold
   - acute diarrhoea
   - fever (defined as perceived rise in body temperature)
   - vomiting
   - intestinal worms?

2. To what extent are injections administered in sub-standard hygienic conditions?

Concerning the reputed efficacy of injections:

1. What is the expected effect and/or experienced effect of the injection?

If appropriate:

1. Why did the provider choose an injection instead of oral medication?

2. Why did the user prefer an injection instead of oral medication?

3. Why are injections administered in an unhygienic manner? Do people lack training? Do they lack resources?

1.3 Background to the country situation

Uganda is a country badly hit by a deterioration of health services and the disastrous effects of the AIDS epidemic, which have both affected injection use and preference considerably. Here we present a brief description of Uganda's health care system, morbidity and mortality pattern, followed by a description of the channels of distribution of injectables, needles and syringes.

1.3.1 Health care in Uganda and injection use

In the 1960s, Uganda had one of the best health care systems in Africa. It had a comprehensive institutional referral system, from numerous rural dispensaries, through to health centres, maternity units, district and regional hospitals to a National referral hospital (Dodge and Wiebe 1989). These units were run by trained health workers, with medical doctors stationed at hospitals, while medical assistants and nurses managed the rural health units. Additionally, private medical services provided by missionaries and an insignificant number of private clinics run by licensed medical practitioners complemented government services. Medical services were free at government units and those provided in private units were relatively cheap. The Pharmacy and Drug Act of 1970 restricts the provision of injections to those officially recognized health services. It states: "...no person shall have in his possession, without lawful excuse, the proof wherein shall lie on him, any syringe designed for injection" (Pharmacy and Drug Act 1970: 1116).

During the 1970s and 1980s, a precipitous decline in the country's economy led to a decrease in government expenditure on health care delivery (see Table 1) and to a breakdown in the health
care system. Medicine supplies became irregular and many health professionals left the country.\(^3\) Immunization programmes broke down; only the mission health facilities continued functioning reasonably.

**Table 1:** Ministry of Health recurrent expenditure, 1971-1991 in millions of Ugandan Shillings (Source: Ministry of Health: Health Planning Unit 1992)

<table>
<thead>
<tr>
<th>Period</th>
<th>70/71</th>
<th>82/83</th>
<th>84/85</th>
<th>86/87</th>
<th>88/89</th>
<th>90/91</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money expenditure</td>
<td>1</td>
<td>21</td>
<td>66</td>
<td>180</td>
<td>2,629</td>
<td>3,514</td>
</tr>
<tr>
<td>Real expenditure (adjusted to inflation rates)</td>
<td>100</td>
<td>17.6</td>
<td>22.0</td>
<td>7.3</td>
<td>16.9</td>
<td>14.7</td>
</tr>
</tbody>
</table>

The scanty and nearly non-functional health care system gave rise to a number of new local solutions. There was a proliferation of private profit oriented health care providers, such as unlicensed private clinics, drug shops and home providers (Health Review Commission 1987; Whyte 1991). Injection technology also diffused from the established health care system to the informal system. Recently, this process has been accentuated by messages on AIDS education which have undermined confidence in injections from government facilities (Birungi and Whyte 1993; Birungi 1994). Presently, Uganda's health care system can best be described as having two sectors, the formal and informal, which are closely articulated, exhibiting symbiotic relationships in terms of drug supplies, equipment and human resources (Whyte 1991).

It is estimated that 72% of the country's population lives over 6 km from a government health centre (UNICEF 1989). Thus there is still a very large proportion of the population which exceeds the WHO recommended accessibility level of within five kilometres. In a household survey undertaken by the Child Health Development Centre in 1990, based on a representative sample of nine districts of Uganda, it is indicated that the government only provides 21% of all out-patient modern curative services, while the private sector accounts for 66% (NGO facilities, private clinics and others). There also exist regional disparities in the location of health facilities, with over 50% of the hospitals situated in urban areas, while the majority of health centres are situated near trading centres leaving rural areas with limited access. Meanwhile, the private clinics which have sprung up all over the country in the recent past have not substantially solved this problem. Since their location is determined by the law of supply and demand, they are strategically located in towns and rural trading centres. Health care personnel are also maldistributed geographically. The urban population which only constitutes 11% of the Ugandan population receives services by 76% of the medical doctors, 64% of the medical assistants, and 72% of the nurses (UEDMP 1992). Apart from the deficit in coverage, the content of health care is largely curative, and almost all forms of treatment involve the use of medicines (World Bank 1992).

Country morbidity and mortality figures for 1991, based on out-patient and in-patient records of 20 government and NGO hospitals, indicate that malaria is the number one cause of death, with AIDS coming second, followed by diarrhoea, pneumonia, and anemia (World Bank 1992). Children under five account for 54% of all hospital deaths with malaria, pneumonia, diarrhoea, and malnutrition causing 55% of the under-five mortality. AIDS is the primary cause of

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\(^3\) The ratio of physicians to population halved in the past 25 years from 1:11,000 in 1965 to 1:28,000 in 1991 (UEDMP 1992).
mortality among adults, accounting for 17% of all hospital deaths, followed by tuberculosis, malaria, meningitis, and diarrhoea.

1.3.2 Sources of equipment and injectables

Here, we examine the various sources of injectables, needles and syringes, as these are assumed to influence the prevailing injection practices. Uganda has the least developed pharmaceutical industry in the whole of East Africa. The country imports virtually all drugs and injecting equipment. The presence of government in the arena of medical services has mainly been maintained with the help of donors who directly distribute medical supplies through the Ministry of Health (MOH) and Ministry of Local Government (MOLG). At the national level, the procurement and distribution of drugs - including injectables, needles and syringes, is supported by the Danish Red Cross, through the Uganda Essential Drugs Management Programme (UEDMP), which was created by the MOH and MOLG with assistance from the donor community. By March 1992, the UEDMP was supplying pre-packed drug kits to 1153 health units, of which 1070 were rural health units (78% government and 22% NGO) and 83 hospital out-patient departments (60% government and 40% NGO). Each drug kit contains six injectables - chloroquine, epinephrine, ergometrine maleate, lidocaine, benzyl penicillin, procaine benzylpenicillin, and water for injections. The kits also include reusable needles and syringes.

The Uganda Expanded Programme of Immunization (UNEPI), supported by UNICEF, provides immunization services to over 2,000 sites throughout the country, and distributes needles, reusable syringes, sterilization equipment, vaccines, refrigerators and vehicles.

The Central Medical Stores (CMS) is charged with the handling and distribution of drugs to government hospitals, some schools and non-governmental organizations. CMS sometimes supplies to the Joint Medical Stores Bureau (JMS), a Catholic and Protestant organization which also imports medical supplies and receives donations of drugs, disposable syringes and needles from abroad. The JMS distributes to over 200 member units and during the period 1983-1987, their drug kits contained over 12 injectables. Additionally, some hospitals also receive direct donations of drugs, disposable syringes and needles especially through special AIDS-programmes. For example, the Aids Control Programme (ACP), which is a national programme for the prevention of AIDS, receives special donations of disposable needles and syringes which are then later distributed to every District Medical Office throughout the country.

Parastatal institutions, such as Uganda Pharmaceuticals Limited (UPL), also import and distribute drugs all over the country and undertake bulk purchasing for the private sector. UPL also obtains drugs through barter trade but drugs acquired in this way tend to be of low quality. In addition, private pharmacies in Uganda supply large quantities of unregistered drugs that circulate in the country (UEDMP 1992). In 1987, approximately 15-20 private pharmacies were importing and distributing drugs and disposable needles and syringes. It is presumed that UPL and private pharmacies are by far the largest importers and distributors of disposable equipment (UEDMP 1992). The procurement of drugs and equipment is determined by channels easily available, since there is no national acquisition policy. There is also an unknown amount of drugs smuggled into the country especially from Kenya (Chief Pharmacist MOH, Personal Communication).
The system of distributing pharmaceuticals and medical equipment from the UEDMP, CMS, and established importers does not permit access to equipment by informal health care providers, since a majority of them do not fulfill the requirements. Due to the low capital investment in this kind of business, the small injection providers furthermore lack the capacity to engage in substantial transactions with the major importers. Hence the general trend is characterized by dissemination of injection equipment and injectables from formal providers to informal providers. In Uganda, injectables, needles and syringes can be easily obtained without prescription or legal order, although the Pharmacy and Drug Act of 1970 limits this activity to licensed people. The present study reveals that injectionists and individual users buy their injectables and equipment at pharmacies.

Within the household, possession of injection equipment is common. This practice is encouraged and facilitated by some medical practitioners and informal providers. Some provider facilities give away used disposable needles and syringes to the patient for use until completion of treatment regimen or during subsequent illness as a means of attracting patients. Others sell equipment to patients at each visit. Indeed, our study indicates that over 60% of the patients presented with their own equipment on the first visit at the providers’ facility.

Evidently, the government has lost control over the flow of injectables, needles and syringes. A few measures have been taken to improve the situation such as the newly introduced district drug inspectors. Otherwise, up to the present day purchase of equipment is over the counter, without prescription and by any person.
2. METHODOLOGY

The methods applied in data collection for the present study were those specifically developed for Injection Practice Research in three countries - Indonesia, Senegal and Uganda. At two informal workshops organized by WHO, the research methodology was reviewed and standardized with respect to core data collection methods and data analysis to allow for comparison of research results and without compromising the need for country specific modifications in the conduct of research. Apart from following guidelines developed by WHO, our study covered questions that were relevant to the Uganda context. For example, in the household questionnaire, questions were included on the possession of injection equipment and injectables at home and users' experiences with injection complications.

2.1 Sampling frame

The sampling frame applied in the study was adapted from that proposed in the initial WHO research protocol. The study was carried out over a period of four months, covering two regions: Busoga (Jinja, Iganga, and Kamuli districts) in Eastern Uganda and Ankole (Mbarara and Bushenyi districts) in Western Uganda. In each of the two regions, three different settings were selected: urban, semi-rural, and remote. In each of the three settings, two communities selected at the parish level (Resistance Council II) were included in the study. These communities were selected in such a way that they allowed for comparison in terms of relative distance to medical facility, household structure, and level of urbanization. Particular attention was also extended to conditions which determine the level of vulnerability to disease, for example the availability of clean water and the general economic conditions of the people in the area. In each of the six communities selected for each region, 60 households with children below the age of five years were randomly selected using the cluster sampling technique. Only families with children below the age of five were selected because these families experience many illness episodes. A total of 360 households in each region were visited.

Figure 1: Sampling frame Uganda study injection practices

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The proceedings of the Informal Workshops on Injection Practices Research were published by WHO: 1) WHO/DAP/91.8; 2) WHO/DAP/92.2; combined in WHO/DAP/92.9.
2.2 User-oriented methods

2.2.1 Interviews with key informants

Initial interviews with a selective group of key informants in order to gain insight into local conditions and injection practices were conducted both at the national and regional levels. At the national level interviews were held with representatives of the Ministry of Health, the Ministry of Local Government, UEDMP, the AIDS Control Programme and the Uganda Red Cross. Local key informants were members of the Local Resistance Council, the District Medical Officer and hospital/provider facility administrators. The interviews at the national level added to the understanding of the system of distribution and/or source of injectables, needles and syringes. At the local level, interviews in Ankole raised some challenges to the research design, as informants questioned the limited scope of the study: - why did the study restrict itself to injection use rather than focusing on the wide range of drugs that have been misused over time? Other informants queried the generalization of the results of the study and laid specific emphasis on the sampling frame which excluded families who did not have children under the age of five. Respondents thus recognized the importance of the problems being investigated but saw them as part of more widespread problems.

In Busoga, the study formed part of a larger year long ethnographic study of the use of injections. As a result there is more qualitative contextual data from that area.

2.2.2 Structured household interviews

The quantitative data was collected through a users' survey carried out on the basis of a pre-coded questionnaire (see Appendix 1). The questionnaires were filled in on the basis of personal interviews conducted by the research assistants. The questionnaires were administered twice to 360 households in each region. Two weeks after the initial interview, households were visited again and the prevalence of injection use in the two week recall period was recorded. Data collected based on the two week recall period served as an accurate measure of the extent of injection use and also served to reduce memory bias in respondents since the interviewer could refer to a specific event: the last time the household was visited. There were no families lost to follow-up. Apart from establishing the prevalence of injections based on the two weeks recall, the questionnaire also covered questions about when was the last time that anyone in the household received an injection.

Hypothetical questions concerning five tracer conditions were posed\(^5\). Two were used in all the countries in the comparative study: a case of cough and common cold, and a case of acute diarrhoea of less than five stools a day in child under five. Three other country specific tracer conditions were used in the Ugandan study: intestinal worms, vomiting and fever (defined as perceived rise in body temperature). During the follow-up visit questions about illness episodes and treatment strategies were also posed. Symptoms were recorded and later classified using categories of tracer conditions and 'others'. This enabled us to compare the answers to hypothetical questions about illness with actual illness episodes experienced. When several

\(^5\) All tracer conditions selected did not refer to complicated and/or serious conditions which may warrant an injection. These were conditions considered by doctors to be self-limiting or treatable with oral therapy.
household members had been ill and treated each episode was recorded, specifying the symptoms. The limitations and methodological difficulties of this method will be discussed in 2.2.3.

The survey also aimed at establishing the various sources of injections, the possession of injection equipment and injectables in the home, and the magnitude and nature of injection complications experienced within the household.

2.2.3 Methodological problems encountered with the household survey

The WHO guidelines recommend that personal interviews at the household level should focus on mothers as the prospective respondents. In our case this presented a few problems. In Uganda the reality is that health seeking behaviour normally involves the entire family. With the diffusion of injections to the domestic sphere, there is a gender division of roles in the various activities that surround the use of injections. The husband is normally responsible for making the decision about the treatment form, purchase and storing of needles and syringes; the wife is responsible for either providing the injection or taking the child to a provider facility and therefore might have information related to source of injection, medicine injected and symptoms for which the injection was provided. Within the household, the wife and daughters might be responsible for boiling the equipment. Given such a context of injection use, it was left to the individual household to identify the prospective respondent. Additional information provided by any other member of the household was considered important and was recorded.

Other methodological problems experienced were associated with the use of the hypothetical tracer condition method. In-depth interviews with a limited number of households in Busoga from both remote and urban settings indicated that it is rather intricate to use the idea of 'scale of illness' to evaluate the appropriateness of injection use. The medical construction of what constituted a mild and serious illness was not coherent with the lay people's perception. At the local level, most of the illnesses were regarded as mild or serious depending on the length of time the illness took to be cured, response to oral therapy and the role adopted by the sick person - getting admitted in hospital, taking to bed at home or failure to perform normal duties. Informants indicated that any illness which persists, with or without treatment, is serious enough to justify the use of injection therapy including cough and common cold. Although mild in nature, a common cold was never taken for granted, as it is believed to be a prelude to a more serious disease such as malaria. Other informants expressed the view that nearly every illness appeared mild at its onset, hence no illness should be ignored. The people therefore justified the use of injection as a preventive measure.

Lay people also perceived serious illnesses as those which could cause anemia and dehydration. They were also perceived to be those diseases that get to the bones, joints..."really deep into the body". These diseases might render the patient restless, lead to rise in body temperature, loss of strength, loss of appetite and general body weakness. Meanwhile all tracer conditions which were symptomatic of measles (there was an outbreak of measles in at least three communities in Busoga) - such as diarrhoea in children, vomiting, unproductive cough and fever (perceived rise in body temperature) - were also regarded as serious.
Our study treated various tracer conditions as single disease entities. However, during the two weeks recall period we discovered that often people complain of several symptoms. An injection is not always given to one isolated tracer condition, but sometimes to a patient with a combination of symptoms. This poses complexities in applying tracer conditions to evaluate the appropriateness of injection use. Perhaps in future household surveys it will be necessary to adjust tools to this reality.

2.3 Provider-oriented methods

Data were gathered through the use of open-ended questionnaires, a review of prescriptions and actual treatment received, and the observation of hygienic measures. The provider survey was mainly aimed at establishing the prevalence of injection use at provider facilities, evaluating the appropriateness of injection use, and determining the source and type of equipment used.

The provider study was strategically scheduled two months after the completion of the user survey to guide the identification of injection providers within the study communities. Based on the question in the household survey "Where was the last injection administered?" we were in a position to identify a variety of injection providers. In the urban communities it was common to identify more different categories than in the rural areas where health resources are restricted. In addition, not all providers identified were willing to participate in the study. Therefore, although it was originally our intention to select five different categories of providers in each community and 30 providers per region, this was not feasible. We finally managed to come up with 21 injection sources in Busoga and 16 in Ankole (see Table 2). The variety of injection providers included: government health units, private clinics, drugshops, itinerant injectionists, and home providers.

**Table 2: Overview of type of providers included in study in Busoga and Ankole Regions, Uganda**

<table>
<thead>
<tr>
<th>Health facility</th>
<th>Busoga (Eastern Uganda) n=21</th>
<th>Ankole (Western Uganda) n=16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Health centre</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>NGO health centre</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Private clinic</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Non-formal providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>drug shops</td>
<td>3</td>
<td>4*</td>
</tr>
<tr>
<td>Home providers</td>
<td>4</td>
<td>-</td>
</tr>
</tbody>
</table>

* At the time of the observation, two of these providers did not administer any injections.
Data were also collected through observational methods - this was done in collaboration with two professionally trained medical doctors. Through a combination of observational and informal discussions, the medical doctors evaluated hygienic measures undertaken before, during, and after administering injections. In Busoga, evaluation of hygienic measures was based on both WHO and country specific guidelines developed by the UEDMP and MOH for use of injections (see Appendix 2). In Ankole, evaluation of hygienic measures was strictly based on the WHO guidelines.

The researchers also reviewed the prescribing pattern; this was done on the basis of patient lists filled in by the provider in the presence of the medical doctors (see Appendix 3). Here, 30 consecutive cases visiting a provider facility were registered, specifying their age, sex, symptoms, forms of medication, and cost. Data gathered through this method was useful in establishing and understanding the nature of prescribing patterns at the various provider facilities.
3. EXTENT OF INJECTION USE

3.1 Prevalence of injection use

In almost all households visited in both regions, a history of injection use could be recorded. In Busoga 359 and in Ankole 358 of the 360 households visited in each region had ever received an injection. Injection prevalence during the past two weeks was recorded twice. During the first visit the households’ respondents were asked who in the household had last received an injection and when. If this was within the past two weeks the data was used to analyze the prevalence rate. The second follow-up visit was planned two weeks after the first. Respondents were asked if any member of the household had received an injection in this confined two week recall period. The figures for the initial visit - last time when an injection was given - indicate that 154 (42.8%) of 360 households in Busoga and 113 (31.4%) of 360 households in Ankole received an injection during the 'last' two weeks. In the confined two weeks recall period, one or more people in 93 (25.3%) households in Busoga and 108 (30%) households in Ankole received an injection (see Table 3). The figures show that the rates of injection use prevalence for both recordings differ; especially in Busoga, the two week recall period indicates lower rates, and presumably provides more valid rates.

Table 3: Percentage of households in which one or more injections were given in the past two weeks in Busoga and Ankole Regions

<table>
<thead>
<tr>
<th></th>
<th>Busoga (Eastern Uganda) n=360</th>
<th>Ankole (Western Uganda) n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial visit</td>
<td>42.8% (154)</td>
<td>31.4% (113)</td>
</tr>
<tr>
<td>(using last two week period)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Follow-up visit after two weeks</td>
<td>25.3% (93)</td>
<td>30.0% (108)</td>
</tr>
<tr>
<td>(confined two week recall)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall the results reveal a high rate of injection use prevalence and also show that the use of injections is highest in the semi-rural and urban areas and lowest in the remote areas (see Table 4).

Table 4: Percentage of households in which one or more injections were given in the last two weeks in urban, semi-rural and remote settings in Busoga and Ankole Regions

<table>
<thead>
<tr>
<th></th>
<th>Busoga (Eastern Uganda) n=360</th>
<th>Ankole (Western Uganda) n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban n=120</td>
<td>49.2% (59)</td>
<td>34.2% (41)</td>
</tr>
<tr>
<td>Semi-rural n=120</td>
<td>50.8% (61)</td>
<td>36.7% (44)</td>
</tr>
<tr>
<td>Remote n=120</td>
<td>28.3% (34)</td>
<td>23.3% (28)</td>
</tr>
</tbody>
</table>
3.2 Prevalence of specific types of injections

Data based on the confined two week recall period indicates that the great majority of injections were therapeutic injections (see Table 5). In Busoga, in the 93 households that received an injection during the two week recall period, 87 (93.5%) of them received therapeutic injections and six (6.5%) received immunizations. No infusions or contraceptive injections were recorded. A similar trend is reflected in findings for Ankole: in the 108 households that received injections, 84 (77.8%) of them received therapeutic injections and 24 (22.2%) immunizations. In Ankole also there were no infusions or contraceptive injections.

*Table 5: Percentage of households that received a specific type of injection in the confined two week recall period in Busoga and Ankole Regions*

<table>
<thead>
<tr>
<th></th>
<th>Busoga (Eastern Uganda)</th>
<th>Ankole (Western Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=93</td>
<td>n=108</td>
</tr>
<tr>
<td>Therapeutic injections</td>
<td>93.5% (87)</td>
<td>77.8% (84)</td>
</tr>
<tr>
<td>Immunizations</td>
<td>6.5% (6)</td>
<td>22.2% (24)</td>
</tr>
<tr>
<td>Infusions</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Contraceptive injections</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

These results are not surprising as immunizations and injections for contraception are taken for preventive purposes during confined periods by a specified age group. Therapeutic injections can be administered anytime anyone is sick. These injections are also more readily available. In Uganda, infusions and immunizations are not administered by informal providers. In Busoga, for instance, access to immunization and infusions was restricted to well-established medical facilities. In the remote areas, these are poorly equipped or non-existent. In one remote community, the refrigeration system at the local dispensary had broken down a year ago, while in another remote community there was simply no established health facility. Infusions are known to be administered to patients who are in a critical state, i.e. in cases of acute dehydration, anemia, after an operation and also for inducing birth. Therefore, to the local people this type of injection signifies pain and death. The majority of local informal injection providers indicated that they would never administer any form of injection to a person who was in a critical state. It is for these various reasons that infusions are not so popular. Contraceptive injections have different associations making them unappealing to local people: they are associated with infertility and irregular menstruation.

3.3 Sources of injections

In analyzing the source of injections, a distinction was made between formal and non-formal facilities. The formal health care system comprises public (government) facilities (including hospitals and health centres) and private ones (including NGO units and registered private
clinics. Non-formal facilities include drugshops and unregistered 'clinics'. Injections may also be given at home by a family member, neighbour or informal provider. Based on findings for the source of the last injection received, quantitative results for Busoga show that in the 359 households where an injection was ever received, 127 (35.4%) had received their last injection at a government facility, 130 (36.2%) at a private facility, 61 (17%) at home, and 41 (11.4%) at a non-formal facility. Data for Ankole reflects a slightly different pattern, indicating that less than a quarter of the last injections had been given in a public institution. In both regions non-formal providers had administered some 30% of the last injections. In 358 households in Ankole where an injection was ever received, 169 (47.2%) received their last injection at a private facility, 81 (22.6%) at a government facility, 56 (15.6%) at home, and 52 (14.5%) at a non-formal facility (see Table 6).

Table 6: Sources of last injection received at household level in Busoga and Ankole Region

<table>
<thead>
<tr>
<th>Source</th>
<th>Busoga (Eastern Uganda)</th>
<th>Ankole (Western Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=359</td>
<td>n=358</td>
</tr>
<tr>
<td>Government facility</td>
<td>35.4% (127)</td>
<td>22.6% (81)</td>
</tr>
<tr>
<td>Private facility</td>
<td>36.2% (130)</td>
<td>47.2% (169)</td>
</tr>
<tr>
<td>Non-formal facility</td>
<td>11.4% (41)</td>
<td>14.5% (52)</td>
</tr>
<tr>
<td>Homes</td>
<td>17.0% (61)</td>
<td>15.6% (56)</td>
</tr>
</tbody>
</table>

In-depth interviews carried out at the household level in the study communities reveal that households usually seek injection treatment from the accessible, affordable, but above all from the perceived safest injection providers. Preference for the safest perceived option has been largely influenced by the AIDS phobia, following the Uganda AIDS Control Programme (ACP) massive anti-AIDS campaigns which warned people about the dangers of Human Immunodeficiency Virus (HIV) infection through sharing and using unsterile needles and syringes. Through such messages lay people have acquired new ideas about injections, and consequently altered injection practices. In the study communities injections in some instances also had meaning in relation to source and/or system of provision. For example, injections from private and informal providers were considered personal and therefore safer, while those provided in government health facilities were perceived as impersonal and therefore regarded as unsafe. In order to reduce the risk of contracting AIDS through injections, the majority of households patronize personalized health care services: mission hospitals, private clinics, drugshops, and homes. Here, the providers are in most instances known to the user, users have personal control over the technology and can influence therapeutic transactions.

In many private facilities providers adjust their practice to lay people's expectations. For instance they facilitate and/or encourage patient's ownership of needles and syringes. In one

---

7 In Busoga there was one and in Ankole there were two households where an injection had never been administered.
urban private clinic visited by the principal researcher, disposable syringes were offered free, and needles were sold at each index visit to the patient. These various circumstances contributed to the popularity of the private and informal providers.

In government health units, the newly introduced cost sharing programme requires an average payment of Shs. 200 (US $ 0.20) for a full treatment course, with a slightly higher fee charged for injection treatment. Although almost free, according to our research findings these units are not the main source of injections. Generally, respondents expressed discontent with government health units, specifically with the unregulated practices of the sale of drugs and equipment, and more so the impersonal nature of provider - user relationship that prevailed in these units. There is also a general apprehension of government health facilities owing to the 'communal' sterilization procedures and the use of reusable needles and syringes. Many believe that such equipment 'has disease' and could be source of transmission of AIDS. Moreover, the organization of government health units does not allow for a personalized service: users have no control over the technology. Treatment is decided upon by the biomedical practitioner and users share equipment with others whom they do not know. Also, the providers are in most cases not related or personally known, so that users can establish trust and confidence in their injections. It is partly on this account that private and informal providers are considered safe and therefore patronized.

3.3.1 Home possession of injection equipment and injectables

As a consequence of the popular concern with the spread of HIV through communally shared needles and syringes in public health facilities, and the distribution of injection equipment to the users by private and non-formal providers, personal appropriation of needles and syringes is common (see Table 7). In Busoga, 63% of the 360 households visited kept needles and syringes at home. The figure for Ankole was much higher, showing that 82.5% of the 360 households owned needles and syringes. Only a limited number of households were in possession of injectables: in Busoga 77 (21.4%) and in Ankole 121 (33.6%).

Table 7: Possession of injection equipment and injectables at home in Busoga and Ankole Regions

<table>
<thead>
<tr>
<th></th>
<th>Busoga (Eastern Uganda) n=360</th>
<th>Ankole (Western Uganda) n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection equipment</td>
<td>63.0% (227)</td>
<td>82.5% (297)</td>
</tr>
<tr>
<td>Injectables</td>
<td>21.4% (77)</td>
<td>33.6% (121)</td>
</tr>
</tbody>
</table>

Presumably, a majority of homes which possessed injectables provided them to family members and neighbours. In a few cases, providers had asked patients to buy injectables or report with

---

8 Whyte and van der Geest (1991) indicate that since disposables are not disposed of in Uganda, UNEPI and UEDMP - the major suppliers of needles and syringes to government health units - decided to use reusables to decrease the amount of injection equipment in the country.
injectables on every casual visit to the facility; in some instances the household thought it necessary to keep injectables as a first aid medication.

3.3.2 Qualifications of provider who administered last injection

In Busoga, attention was also extended to the training of the person who administered the last injection, and results show that out of 359 injections administered, 178 (49.6%) were administered by persons with no formal training, 170 (47.4%) by trained staff, and 11 (3.0%) by physicians (see Table 8). The qualifications of the person actually administering the injection cannot be assumed on the basis of where the injection was given. People without formal training, commonly nursing aids, were found giving injections in government health units, while trained nurses or midwives sometimes gave injections to their neighbours in their homes.

**Table 8: Qualifications of provider who administered last injection in Busoga Region**

<table>
<thead>
<tr>
<th>Provider</th>
<th>Frequency n=359</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person without formal training</td>
<td>178</td>
<td>49.6%</td>
</tr>
<tr>
<td>Nurse, midwife, allied staff</td>
<td>170</td>
<td>47.4%</td>
</tr>
<tr>
<td>Physician</td>
<td>11</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

In the remote and semi-rural areas, non-biomedically trained providers are often relatives who offer a free service or persons within the locality who charge reasonably or offer credit services. It is most unlikely that a patient will travel a long distance to seek injection treatment, especially if in the neighbourhood there is some one who can provide the same service. Survey results show that various community members comprise one of the major sources of injection treatment. People obtain treatment from someone they already know or from someone recommended by family or friends. For example, of the 360 households visited in Busoga, 115 of them reported having received injections from a neighbour, relative, friend, parent, family doctor or locally recommended provider. Giving an injection is seen as a technical exercise. Rural lay people seem to assume that anybody who has adequate familiarity with the gadgets involved can provide an injection and cure the ill. In fact, some people mentioned that injections were substantively the same whether provided by biomedically trained or untrained persons.

3.4 Prevalence of injections at various medical facilities

To establish the percentage of patients receiving an injection when visiting a medical facility, a prescription analysis at the various established medical facilities was performed. Prescription analysis for the non-formal providers is not included here since many of these specialize in injections and their injection rates approach 100%. The researchers recorded the diagnosis and treatment of the first 30 patients that visited the provider. This method reveals a high prevalence of injections at all formal health facilities for both regions. In 14 formal health facilities visited in Busoga the average prevalence of injection prescription was 68.3% - this implies that for every 10 treatments given, almost 7 included an injection (see Table 9). In Ankole, injection
prevention prevalence in 12 provider facilities was 59.7% - showing that in every 10 treatments given approximately 6 of them included an injection. Although injection prescription prevalence for Ankole is lower than that of Busoga, overall the rates for both regions depict a high prevalence for injection prescription, especially in comparison with the 15% desired level for injection prescription stipulated by UEDMP.

**Table 9: Percentage of patients at various established health facilities who received at least one injection based on analysis of 30 prescriptions per facility in Busoga and Ankole Regions**

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Busoga (Eastern Uganda) facilities n=14</th>
<th>Ankole (Western Uganda) facilities n=12</th>
<th>Busoga (Eastern Uganda) prescript. n=420</th>
<th>Ankole (Western Uganda) prescript. n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government facilities:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital</td>
<td>1</td>
<td>2</td>
<td>90.0% (27/30)</td>
<td>38.3% (23/60)</td>
</tr>
<tr>
<td>Health centre</td>
<td>4</td>
<td>2</td>
<td>65.8% (79/120)</td>
<td>-</td>
</tr>
<tr>
<td>NGO health centre</td>
<td>3</td>
<td>-</td>
<td>63.3% (57/90)</td>
<td>-</td>
</tr>
<tr>
<td>Private facilities</td>
<td>6</td>
<td>10</td>
<td>68.9% (124/180)</td>
<td>64.0% (192/300)</td>
</tr>
<tr>
<td>Mean % of injection prescription in all health facilities</td>
<td></td>
<td></td>
<td>68.3% (287/420)</td>
<td>59.7% (215/360)</td>
</tr>
</tbody>
</table>

With respect to the treatment prescribed, it is noteworthy that in both regions over 95% of all injections prescribed were chloroquine, Procaine Penicillin Fortified (PPF) and Crystalline Penicillin. In Busoga, there are indications that providers prescribe more than one drug in injectable form especially for patients who presented with fever and cough. The combination given is invariably PPF and chloroquine. This phenomenon is basically the result of poor diagnostic capacity: fever is treated as malaria and cough as a bacterial infection without laboratory confirmation. Combined injection prescription constituted 20% of all injection prescriptions written in both remote and semi-rural communities while the proportion was only 11% in the urban areas. The lower prevalence of combined injection prescriptions in the urban communities may be explained by the use of laboratory tests to confirm the diagnosis of malaria. In the remote and semi-rural areas these services are absent.
3.5 Evaluation of the appropriateness of injection use

Our study adopted cough and common cold, diarrhoea of less than five watery stools per day, vomiting, intestinal worms and fever as tracer conditions which were to serve as a basis for the evaluation of the appropriateness of injection use. For these tracer conditions we did not consider the age of the person who was (hypothetically) ill with the exception of acute diarrhoea where we specified an illness case in a child under five. The tracer conditions were selected based on guidelines developed by WHO (WHO 1991, 1992) and the Uganda Essential Drugs Management Programme (UEDMP 1991). The WHO (1991, 1992) adopted cough and common cold, and acute diarrhoea of less than five stools a day in children under five years of age as tracer conditions that generally do not medically justify the use of injections, to be used in the countries participating in the study. Country specific guidelines drawn up by the UEDMP stipulate that injections should be used only when it is absolutely necessary. They should be used when life is threatened as in the case of a child with severe malaria, pneumonia, or meningitis; they should not be used to treat cough and common cold. The UEDMP also suggests that injectables should be avoided especially whenever there is a possibility for oral therapy.

The tracer conditions were used twice in the household surveys: during the initial interview the respondents in the household surveys were presented with hypothetical cases and during the follow-up interview, respondents were questioned about actual illness episodes which had occurred during the confined two week recall period. These illness episodes were then classified according to the identified tracer conditions.

For the hypothetical cases, respondents were asked what form of medication they would use if any of the tracer conditions occurred in their households. Findings on the hypothetical cases are shown in Table 10. The findings reveal that, although these mild conditions do not medically justify the use of injections, a significant proportion of the respondents indicated that they would use injections and/or a combination of injection and oral therapy. In Busoga 38.3% of the respondents saw injections (either alone or combination with oral medication) as suitable treatment for cough and common cold. For the other tracer conditions injections were preferred by 52.2% for fever, by 28.6% for vomiting, by 30.6% for acute diarrhoea, and by 13.5% for intestinal worms. Likewise, in Ankole, 17.5% indicated preference for injection only or a combination of oral and injections as preferred treatment for cough and common cold, 78.1% for fever, 24.4% for vomiting, 16.7% for acute diarrhoea, and 5.3% for intestinal worms. Comparing the results for both regions, fever (defined as perceived rise in body temperature) was the condition for which injections were most commonly mentioned and they were least mentioned for intestinal worms.

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These tracers conditions were selected because they are: common health problems in Uganda for which injections appear to be used often, while they are generally not medically justified; conditions that can be described accurately in local illness terms, and conditions that have a well defined treatment norm.
Table 10: Percentage of preference for injections (either alone or in combination with oral therapy) in hypothetical tracer conditions, household survey in Busoga and Ankole Regions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Busoga (Eastern Uganda) n=360</th>
<th>Ankole (Western Uganda) n=360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>52.2% (188)</td>
<td>78.1% (281)</td>
</tr>
<tr>
<td>Cough and common cold</td>
<td>38.3% (138)</td>
<td>17.5% (63)</td>
</tr>
<tr>
<td>Acute diarrhoea</td>
<td>30.6% (110)</td>
<td>16.7% (60)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>28.6% (103)</td>
<td>24.4% (88)</td>
</tr>
<tr>
<td>Intestinal worms</td>
<td>13.3% (48)</td>
<td>5.3% (19)</td>
</tr>
</tbody>
</table>

During the follow-up visit cases of illness which had occurred in the household in the past two weeks were recorded. In Ankole, 252 (70.0%) households reported 397 illness episodes. In Busoga, 239 (66.6%) households reported a total of 358 illness episodes. It was discovered that in this two week confined period 103 (28.7%) illness cases in Busoga and 107 (27%) illness cases in Ankole had been treated with injections, in most cases in combination with oral therapy.10

Symptoms often appear in combination and illness episodes are seldom discrete, making the tracer condition method difficult to apply for the evaluation of the appropriateness of actual treatment provided. For instance, only 99 of the 358 illness episodes in Busoga (27.6%) presented with a single tracer condition, 57 presented with other symptoms (15.9%), and 202 (56.4%) had a combination of conditions (tracer and others).

Data for both regions show that fever was the commonest condition diagnosed and that, whenever fever was present (in combination with other conditions), it was most often treated with injections (see Tables 11 and 12).

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10 The rate of injections here is different from the injection prevalence calculated in Table 3. While in Table 3 the households are the denominator, here reported illness cases are taken as the denominator. In several households more than one illness case treated with injections was reported during the two week recall period.
### Table 11: Percentage of injection use (either alone or in combination with oral therapy) in episodes of illness in which tracer conditions were present in the confined two week recall period in Busoga Region

<table>
<thead>
<tr>
<th></th>
<th>Illness episodes (n=358)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever only</td>
<td>(12/39)</td>
<td>30.8%</td>
</tr>
<tr>
<td>Cough &amp; common cold only</td>
<td>(0/46)</td>
<td>-</td>
</tr>
<tr>
<td>Acute diarrhoea only</td>
<td>(0/8)</td>
<td>-</td>
</tr>
<tr>
<td>Vomiting only</td>
<td>(0/3)</td>
<td>-</td>
</tr>
<tr>
<td>Intestinal worms only</td>
<td>(1/3)</td>
<td>33.3%</td>
</tr>
<tr>
<td>Combination of cough &amp; fever</td>
<td>(7/28)</td>
<td>25.0%</td>
</tr>
<tr>
<td>Combination of diarrhoea &amp; fever</td>
<td>(7/12)</td>
<td>58.3%</td>
</tr>
<tr>
<td>Combination of vomiting &amp; fever</td>
<td>(10/13)</td>
<td>76.9%</td>
</tr>
<tr>
<td>Combination of diarrhoea &amp; vomiting</td>
<td>(5/12)</td>
<td>41.7%</td>
</tr>
<tr>
<td>Other combinations and other symptoms</td>
<td>(61/194)</td>
<td>31.4%</td>
</tr>
</tbody>
</table>

### Table 12: Percentage of injection use (either alone or in combination with oral therapy) in episodes of illness in which tracer conditions were present in the confined two week recall period in Ankole Region

<table>
<thead>
<tr>
<th></th>
<th>Illness episodes (n=397)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever only</td>
<td>(58/137)</td>
<td>42.3%</td>
</tr>
<tr>
<td>Cough &amp; common cold only</td>
<td>(5/89)</td>
<td>5.6%</td>
</tr>
<tr>
<td>Acute diarrhoea only</td>
<td>(0/5)</td>
<td>-</td>
</tr>
<tr>
<td>Vomiting only</td>
<td>(2/6)</td>
<td>33.3%</td>
</tr>
<tr>
<td>Intestinal worms only</td>
<td>(2/15)</td>
<td>13.3%</td>
</tr>
<tr>
<td>Combination of cough &amp; fever</td>
<td>(11/38)</td>
<td>28.9%</td>
</tr>
<tr>
<td>Combination of diarrhoea &amp; fever</td>
<td>(2/6)</td>
<td>33.3%</td>
</tr>
<tr>
<td>Combination of vomiting &amp; fever</td>
<td>(7/12)</td>
<td>58.3%</td>
</tr>
<tr>
<td>Combination of diarrhoea &amp; vomiting</td>
<td>(2/3)</td>
<td>66.7%</td>
</tr>
<tr>
<td>Other combinations and other symptoms</td>
<td>(18/86)</td>
<td>20.9%</td>
</tr>
</tbody>
</table>
4. HYGIENE OF INJECTION PRACTICE

In Busoga, WHO-simplified guidelines and country specific standards stipulated by UEDMP (1991) which correspond with MOH standards taught to in-service operational level workers, were applied to evaluate the hygiene of injection practices. In Ankole, the evaluation of hygiene was restricted to the guidelines set by WHO. It is for this reason that data from Busoga and Ankole cannot really be compared since different guidelines were applied (see Appendix 2). Therefore results for both regions will be presented separately.

4.1 Hygiene of injections in Ankole

In Ankole, out of the 14 provider facilities visited which administered injections at the time of the visit, 72% of them did not observe minimum hygienic conditions before injection administration, while 50% and 64% of them respectively did not observe minimum hygienic conditions during and after injection administration (see Table 13).

<table>
<thead>
<tr>
<th></th>
<th>Ankole (Western Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before administration</td>
<td>72% (10)</td>
</tr>
<tr>
<td>During administration</td>
<td>50% (7)</td>
</tr>
<tr>
<td>After administration</td>
<td>64% (9)</td>
</tr>
</tbody>
</table>

Table 13: Percentage of providers who did not observe minimal standards, before, during and after administration of an injection using the WHO standards (see Appendix 2) in Ankole Region

The poor hygienic practices include use of saucepans instead of sterilizers, handpicking the boiled needles and syringes, improper disposal of needles and syringes or giving the equipment to the patient to carry home. The providers who fall below standards in the category ‘before injecting’ are those who use saucepans as sterilizers and encourage patients to keep and sterilize their own equipment at home. Those who fall under the category ‘during injecting’ pick up the needles and syringes with their hands from the sterilizers/saucepans and/or use unsterilized swabbing material to clean the injection site. Those in the ‘after injecting’ category did not flush needles and syringes with water after use or took a long time before putting them back into the sterilizer/saucepan and/or reused disposable equipment.

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11 In Ankole, 16 providers were included in the provider study. Two did not administer injections at all during the visit of the researchers. Here, they are excluded because their hygienic practices could not be assessed. The remaining 14 provider facilities in Ankole were: 2 government hospitals, 10 private facilities, and 2 drugshops (informal providers).
An important observation made in Ankole was that many providers encourage users to carry and/or keep personal needles and syringes at home. Among the private practitioners this practice was encouraged so as to keep the cost of injection administration as low as possible, but also to avoid any blame that may arise regarding the unhygienic administration of injections. Fuelling this practice is the AIDS scourge which has brought an increasing demand from users to keep personal injecting equipment, which they either use at home or carry to provider facilities when seeking injection treatment.

4.2 Hygiene of injections in Busoga

In Busoga, the observations at 21 provider facilities\(^{12}\) show that 61.9% of the providers did not meet minimum hygienic standards before injecting, 47.6% did not meet minimum hygienic standards during injecting, while 81.0% did not meet minimum hygienic standards after injection (see Table 14).

\(\textbf{Table 14: Percentage of providers who did not observe minimal standards, before, during and after administration of an injection using the WHO and MOH standards (see Appendix 2) in Busoga Region}\)

<table>
<thead>
<tr>
<th></th>
<th>Busoga (Eastern Uganda)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n=21)</td>
</tr>
<tr>
<td>Before administration</td>
<td>61.9% (13)</td>
</tr>
<tr>
<td>During administration</td>
<td>47.6% (10)</td>
</tr>
<tr>
<td>After administration</td>
<td>81.0% (17)</td>
</tr>
</tbody>
</table>

4.2.1 Injecting equipment

Government recommends the use of reusable equipment only. With the co-sponsorship of big donors such as Danish Red Cross and UNICEF, the Ministry of Health now provides only reusable injection equipment to its units for both curative and immunization services. These are provided together with paraffin, sterilizers, training and logistics for supervision by higher health care managers. Private pharmacies and drugshops act as the significant sources of disposable injection equipment to providers and users.

\(^{12}\) In Bugosa, hygienic practices were assessed in 21 providers facilities, being 1 government hospital, 4 government health centres, 3 NGO health centres, 6 private clinics, 3 informal providers (drug shops) and 4 home providers of injections.
The reusable equipment observed was mainly plastic. A few glass syringes were also identified in provider facilities and in users' possession. However, the distinction between reusable and disposable equipment was not made by the majority of providers and users who treat all equipment as reusable. Some providers maintained that some disposable equipment, especially syringes, may outlive reusables. This removes the boundary of reusable and disposable.

Based on observations at providers' facilities an estimated sixty percent of the patients presented with their personal equipment to the clinic. Nearly all the provider facilities sell equipment to patients with injection prescription or at index visit. In one of the urban private clinics, needles were sold to patients at each subsequent visit; these would then be applied to an old syringe which the patient carried along. The rationale was that the syringe offered little chance of transferring contamination as compared to the needles. This contrasted with the semi-rural and remote government health centres which offered only needles for sale to the patient while syringes were provided by the health centre. Government health centres are sometimes provided with more needles than syringes.

Provider facilities in urban areas attending to company patients are paid by the employers for providing treatment. These patients refused to carry along used equipment and requested a new sealed set of needle and syringe for each injection administered. This suggests that many patients would prefer new sterile equipment at each visit but cannot afford it. In contrast, company patients have their medical bills settled by their employers, so they can demand new equipment at each visit.

The mistrust in the effectiveness of 'communal sterilization' is evident in both patients and health providers. It is common practice especially among the semi-rural and remote communities for patients to contact the provider for the injectable and then arrange for the injection to be administered at home. In other cases patients present with used equipment on index visit to the provider.

**Sterilization/high level disinfection**

The methods of sterilization observed in the Busoga study were as follows:

**Table 15: Methods of sterilization observed at providers facilities in Busoga Region**

<table>
<thead>
<tr>
<th>Method of sterilization</th>
<th>% of providers n=21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling</td>
<td>100.0% (21)</td>
</tr>
<tr>
<td>Steam</td>
<td>28.6% (6)</td>
</tr>
<tr>
<td>Chemical</td>
<td>4.8% (1)</td>
</tr>
</tbody>
</table>

**Boiling**

Sterilization through boiling was used by all providers. No special skill or technology is required for it to be effective. In the semi-rural and remote provider facilities, and in
households, cooking pans were used for boiling the equipment. This has contributed to the easy personalization and domestication of the injection equipment. Providers instruct patients to boil the issued equipment prior to visiting their facilities. However, interviews with patients at the provider facilities indicate that boiling was not actually done by many patients. This fact was known to the providers but they continued using the equipment. One itinerant injectionist in a remote community did not even allow the equipment to stay boiling in water for more than one minute before he used it.

The major fuel for sterilization in the semi rural and remote communities is firewood and charcoal. In government and NGO provider facilities standard sterilizing equipment was utilized. The urban private clinics also possessed standard sterilization equipment, which are in most cases piped off from the government health units. This equipment is adaptable to charcoal, paraffin and electric stoves.

The frequency of boiling of equipment varies from facility to facility. However, the majority of established provider facilities boil their instruments once a day in the morning before patients start reporting. Some providers complained that the sterilization procedure was rather long, involving the washing of needles and syringes individually. The same equipment is therefore used on multiple patients, especially in the remote provider facilities. In the urban and semi-rural provider facilities where over 60% of the patients come with their syringes and needles, quite a lot of equipment remains unused. These are sterilized again for use the following day. The busy provider facilities such as the hospital, NGO facilities and urban private clinics keep their boilers on throughout the busy hours (10 am - 2 pm). The used needles and syringes are flushed and immersed in the boiling water. Here, it is difficult to distinguish the equipment that has just been immersed in the water from that which has been boiling for the last 20 minutes.

Steam sterilization
This is employed only in those provider facilities offering immunization services under the UNEPI. Portable steam sterilizers issued by UNICEF are utilized. The method is properly applied by the responsible units. From the users' point of view this sterilizing procedure is more acceptable than other methods employed in public health services - they witness the opening of the sterilizer.

Chemical sterilization/high level disinfection
This method was observed in one private clinic in an urban area. Hypochlorite 10% solution was used. The provider learnt from a medical review that it is effective against HIV and this was the major reason for applying it. The equipment is flushed with the solution before washing with water. This is done to patient owned equipment. The facility-owned equipment is immersed in the solution for hours before boiling. This double sterilization, he says, has not failed the unit in preventing injection abscesses.

With respect to sterilization, the Ugandan situation is rather unique. Sterilization of equipment is not confined to established biomedical institutions; instead the provider facilities normally require the users to sterilize their equipment at home before and after visiting the provider facility. In all communities visited it was clear that the lay person's standards of sterilization diverged from those stipulated by biomedical experts. For instance, disposable needles and syringes are in most cases handled like reusables, although there are instructions on the

12 According to the 1991 population census data, over 90% of Uganda's population depends on firewood and charcoal for cooking.
packaging for disposable needles and syringes that they are for single use, and that they are only sterile if package is not damaged. Some of the users interpreted single use to mean single illness episode, or that they are for individual use only and therefore not harmful. Accordingly, there was a problem of disposing equipment. Some people are of the view that things to be destroyed should be only those items which have no use or are beyond repair. Something dirty or contaminated still has value. Others believe that self contamination with personal equipment is not possible. People lack clear understanding about the dangers of unsterile needles and syringes. Besides the general lack of concepts of hygiene and sterilization, many households especially in the remote and semi-rural areas consider family control over the needles and syringes and personal knowledge of the users to be a more significant and determining factor in the safety of injection than actual sterilization procedures. In fact, it is understood that the locus of contamination is outside the household.

4.2.2 Before injecting

The prescriber is required to inquire from the patients whether they have ever had skin itching, eruptions, or breathing problems following an injection. But this was in most instances omitted by the prescriber, though epinephrine was kept at the established facilities for use in case of anaphylactic shock. All providers deny witnessing any serious allergic reaction during their practice. It is difficult, however, to validate this information since the patients are normally discharged immediately after the administration of an injection, allowing no time for observation of reactions which are in most cases delayed. Meanwhile patients who experience reactions never report back to the provider; instead they would prefer consulting another provider.

None of the providers wash hands with soap prior to injecting. It should be noted that water and more so, soap, are not readily available in the semi-rural and remote facilities. The providers are aware of the importance of washing hands before injection administration.

Drug reconstitution

Drug reconstitution often presents a problem in the semi-rural and remote provider facilities. Reconstitution would normally necessitate the use of sterile water to dissolve powder PPF or crystalline penicillin. Health units receiving drug kit supplies from UEDMP receive some limited supplies of injection water. Some of these supplies are illegally sold off to private and/or informal injection providers. In some informal units and private units water sterilized by boiling is utilized. But since this is mainly underground water, it contains many dissolved ions rendering it unsuitable for this purpose. Other, worse, practices which involve the use of chloroquine to reconstitute PPF or crystalline penicillin were also observed. Some patients request this mixture and indicate to the providers that their fever can only be cured by this kind of mixture. Some providers, especially the remote based facilities and home based ones, reconstitute drugs and kept them beyond the recommended duration because they injected too few patients to empty the vials within a day. The alteration in the chemical structures and solubility may precipitate some particles which form a nucleus for injection abscesses.

Dose measuring
Prescriptions in urban and semi-rural facilities are in weights (mg) and these are converted to volume (ml) by the injection providers. This can be easily done in situations where the provider is biomedically trained. In remote and some of the semi-rural facilities prescriptions are in
volume (ml); this allows for the non-biomedically trained providers to easily read off the calibrations on the syringes.

Cleaning of injection site
Cleaning of the injection site is done only at a few provider facilities. However, in some of the units, solutions used were not sterile - in most cases plain water is used, even in units provided with antiseptic solutions e.g. chlorhexidine by the UEDMP. This inappropriate cleaning of the injection site is especially problematic for rural children, who play outside, often naked, and who are likely to have dirt on their skins. Children form a considerable proportion of patients and are therefore at a high risk of contamination through the skin puncture.

Disinfection of drug vial neck
Disinfection of drug vial necks or rubber tops is not done at any of the provider facilities. In units using 500 ml bottles of injection water the bottles last for three to five weeks. Without disinfection this may serve as a source of contamination for many patients served from this bottle.

Some providers, especially the non-formal ones, are in the habit of moistening the needle before injection administration with the aid of a water soaked cotton wool. This provides a possibility of transferring germs from the unsterile water and fingers to the needle. Some of those providers who moisten needles before use claim that it assists to remove the dirt which the wrapping material from home may have imparted on the needle. A majority of providers, however, avoided touching the needle. While fixing the needle, they would touch the adapting receptacle of the syringe.

4.2.3 During injecting

Subcutaneous (S.C.), intramuscular (I.M.) and intravenous (I.V.) injections were observed. Intravenous infusions are only provided at hospitals and limited number of private clinics. S.C. and I.M. injections are given on the buttocks. The patient is allowed to choose which side to be injected. In repeated injections the buttocks are alternated at each injection. The prescriptions do not indicate route of administration; therefore the injection method is up to the provider's judgement. All nursing aids, informal providers and nurses inject intramuscular. They explain that this route is less prone to abscess formation than the subcutaneous route. The (rare) intravenous injections are mainly provided by nurses and physicians. This is mostly given in life threatening conditions, such as shock, asthmatic attacks, and post partum haemorrhage.

Prior to injecting, a majority of providers aspirate the syringe to ascertain that the needle tip is not lying in a blood vessel. Where the needle has pierced the vessel, blood would reach the syringe, thus potentially contaminating it with blood borne diseases like hepatitis and HIV.

Since most of the needles used are brought in by patients, providers could only discover that the equipment is blocked during injection or when adjusting the volume of drug prescribed. Providers indicate that old needles are rusty inside and almost fail to conduct thick drugs such as PPF unless they are diluted heavily. In fact, many of the providers are aware of the dangers of reused disposable needles, but only readjust their medicine to suit the anomalies of such dirty needles.
Biomedically trained providers do not apply their fingers to guide the needle into the skin, but this practice is very common among the non-biomedically trained providers who claim that many of the needles are blunt and could easily break if not guided with the assistance of their index finger. Others indicated that they had heard of cases where needles broke in the patient’s buttocks. Some patients avoid this potential source of contamination by presenting needles too short for sliding along the provider’s finger.

Use of the same equipment on multiple patients was observed in over 50% of the health facilities, especially those of the semi-rural and remote communities. The practice is most common among providers in government health units, informal facilities and home providers. Here the number of patients sometimes overwhelms the available syringes, needles, and fuel for sterilization. One of the aid posts in a remote community had only three syringes to treat an average of 15 patients daily and sterilization was carried out once daily only. Use of the same needle is a common practice among the home based providers and for family administered injections, but is restricted to siblings. Here the mother presented with only one set of injection equipment to use on more than one of her children who could have contracted malaria.

4.2.4 After injecting

After withdrawal of the needle the injection site is always massaged. A cotton swab is used by the provider for a few seconds and later the attendant or patient is instructed to rub the site - this is normally done using bare fingers which might serve as a source for contamination. An insignificant number of providers apply adhesive plaster for a day to prevent contamination of the wound.

All providers flush the injection equipment using sterile or unsterile water. According to one informal provider, the principle aim behind flushing is to ensure that all drug residues are pushed out of the equipment to allow for further reuse.

In some of the established facilities (government hospital/health centres, private health units and clinics) the equipment is dismantled and placed in water in a kidney dish. In facilities where multidosing prevails, the piston and syringe are put in a separate container from that of the needles. The majority of needles presented by patients at provider facilities are uncapped. Only one provider facility (private clinic) recapped the needles before disposal. All provider facilities discharge patients immediately after the administration of an injection not allowing any time for observation.

Disposal

In all provider facilities visited used needles and syringes are left littered on the floors and tables of the injection rooms. Only a few health units have waste bins. The urban provider facilities dump this waste into communal skips where rubbish is scavenged by town destitutes. Since the needles are usually uncapped, they pose a potential health hazard. In the semi-rural and remote provider facilities, final dumping was in the banana garden or a placenta pit where available. But in most instances used needles and syringes are never disposed of; instead the providers give them to the users to carry home for use during subsequent illness.
4.2.5 Summary

In summary, we can state here that it is rather impossible to meet optimum hygienic standards in Uganda, owing mainly to the personalization of injection equipment. This process fundamentally breaks the sterile chain as patients often present their personal, reused, disposable sets of needles and syringes at the provider facilities. There are also indications of use of the same equipment on multiple patients, poor disposal and inadequate sterilization both at home and at provider facilities. Our results clearly indicate that a high percentage of provider facilities in both regions do not meet the required minimum standards of hygiene at each stage of injection administration. On the whole, NGO health facilities meet the highest hygienic standards. These units have cleaner environs than other provider facilities. Although drugs and other supply inputs are essentially the same for the NGO and government facilities, the equipment, including fuel for sterilization, is better managed at NGO facilities.

4.3 Injection complications

Quantitative results from the household survey in Busoga suggest that a significant proportion of users have experienced complications with injections. Of the 360 households visited 155 (43.1%) indicate that they experienced injection complications at some time. Of these, 133 households (36.9%) had experiences with injection abscesses, 14 (3.9%) reported cases of allergy, while 8 households (2.2%) reported lameness. Some of the popular ideas about cause of complications seem to diverge from the biomedical explanatory models which emphasize lack of hygiene or inappropriate injections. If complications occur, respondents relate these not to lack of hygiene or inappropriate injectable solutions, but to the personal qualities of the provider. Complications are thought to be the result of the 'bad hand' of a provider.

It is also important to mention here that the major fear about injection use is the contraction of AIDS. Most of the users are not scared or even bothered about infections arising out of poor methods of injection handling, storage or contraction of other diseases such as hepatitis.
5. POPULARITY OF INJECTIONS

In both regions it is evident that many providers, especially private ones, apart from providing a service, are strongly motivated by a desire to make money. In order to attract their clientele an injection has to be provided, because most patients feel they only get their money's worth if an injection is included in the treatment. The provider survey findings reveal that the provider's profit motive favours injections which yield more than oral therapy. For instance, comparing malaria treatment at the various health facilities in Busoga, the study findings indicate that 84% of the antimalarial prescriptions at the profit-oriented health facilities are injections as compared to 66% at the non-profit oriented facilities. At one of the private clinics in an urban area, a full treatment course of chloroquine tablets earns a profit of U. Shs. 240 as contrasted with U. Shs. 2000 from injection treatment; over 20% of the profits gained from injection treatment are obtained from the sale of needles and syringes.

In Busoga, some of the providers justify the prescription of injections in that it gives them greater control over the treatment and limits patient non-compliance. Unlike tablets or oral medications which are often administered by the patient, the injection is administered by a health specialist. Providers claim that the majority of patients do not observe times to take medicines and that many skip doses. According to them, there is also a danger of overdosage. This has become the justification of providers for injection prescription as a rule of medical practice in many communities.

Patients often demand injections. In Ankole, this practice is common at non-formal facilities and homes where diagnosis by the patient or patient's family determines the mode of treatment. In both regions, it is not unusual for patients to indicate to the providers that they had attempted self-medication with tablets prior to visiting the provider. Since tablets proved ineffective, they want an injection. The users also believe that medicine injected into the blood stream does not leave the body as quickly as that administered orally. Oral medicine is often compared to food which enters the digestive system and eventually leaves the body through defecation. For diseases that are transmitted through the blood system, the administration of the treatment into the blood stream is believed to attack the disease directly at the source. In the case of (suspected) malaria, injections are also preferred to chloroquine oral treatment because of the perceived side-effects of the latter form of medication. Chloroquine tablets are said to cause nausea and itching. The tablets are bitter and not palatable and therefore particularly difficult to administer to children. Other patients who had recurrent malarial attacks claimed that these do not respond to tablets. For some, preference for injection is guided by the idea that it cured or provided a source of relief during previous illness. Many patients are thus motivated by the erroneous belief that injectables have higher efficacy than tablets. They do not recognize that failure of tablets to work may be because of improper diagnosis, underdosage, resistance or expired drugs.
The situation can be summarized as follows:

- Patients usually first self medicate with oral therapy.
- Patients have been oriented towards injection use. It is common practice that patients carry a personal needle and syringe, even on index visit to a provider facility.
- Patients tend to solicit for injections from providers guided by local ideas and beliefs of illness and concepts of efficacy of various treatment options.
- The profit motive which tends to be overriding among private providers strengthens this set of preferences. Injections cost more and bring in more money.
- Patients are more than willing to pay for injections, but monetary constraints sometimes limit access to injections.
6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Overview of results including main findings

This study reveals that injections are widely used as a means of administering drugs. The household surveys in two regions in Uganda found a prevalence of respectively 25.3% and 30.0% of injection use at the household level during a confined two week recall period. Injections are popular with both providers and users. A highly receptive user population in combination with providers who try to rationalize the use of injections has gone a long way in making treatment by injection the most popular. To the providers, injections are popular because of economic gain, acceptance by society and patient's demand. Therefore, injection prescription is high and most treatments given include injections. Seventy-two percent of prescriptions in Busoga and fifty nine percent in Ankole contained injections - far above the desired national level of fifteen percent. This practice characterizes most providers, both biomedically trained and unqualified ones and both those practising in formal health care settings and informal ones.

From the users' point of view, the popularity of injections is influenced by local perceptions of illness and efficacy of treatment. The expectation of an injection at every visit to a health care setting has become part of the culture of health care in Uganda. Another factor supporting the popularity of injections is the easy access to injecting equipment. Government health facilities, private clinics, pharmacies, drugshops, and drug peddlers are the basic sources of needles and syringes, which are often kept at home by the patients and presented to providers at a subsequent visit. Personal appropriation and domestication of the injection technology is well established to the extent that 63% and 82.5% of the sampled households in Busoga and Ankole respectively, own needles and syringes. This process has been accepted, encouraged and facilitated by both users and providers.

The domestication of the injection of equipment is associated with the deterioration in the country's health services, and was largely reinforced by the fear of AIDS/HIV transmission. The massive AIDS health education campaigns warned people about the dangers of sharing and using unsterile needles and syringes. In a population of almost nil intravenous drug users, mistrust is directed at the health workers, government health facilities, reusable equipment and sterilization procedures which are regarded as 'communal'. The population has therefore resorted to disposables, 'single use equipment', and later to the acquisition of equipment. Personalization of the technology is seen as a means of avoiding AIDS. The phobia is also present among health workers who would seem to support this process by accepting the 'private' injection equipment brought in by the patients and who hand over disposables to them after use. The culture of 'personal injections' poses a growing threat as injection providers increase in numbers and as people develop more confidence in non-formal providers.

Providers fail to match these challenges with sufficient standard hygienic procedures. Patients bring their own equipment to health facilities, but home sterilization seldom meets minimum hygiene standards and sterilization of private equipment is not done at the facility. The sterile chain is interrupted as needles and syringes change hands and places. The study also indicates that even when communal equipment is used, hygienic procedures are rarely satisfactory. In Busoga and Ankole the majority of all providers do not meet the minimum hygienic standards to be observed before, during and after administration of an injection. It is therefore hardly
surprising that many households have experienced injection complications, mainly abscesses. In Busoga, over 40% of the households reported injection complications. However, these are usually not related to poor hygiene but thought to be the result of the 'bad hand' of a provider.

6.2 Recommendations

In Uganda, there is a great gap between policy and practice in the area of drugs in general. Many people are unaware of national laws and policies and these are not implemented. Since the completion of the research, a new National Drug Policy has been adopted, but it remains to be seen how it will be put into practice. It is recommended that a national system be strengthened to direct the importation, sale and use of injecting equipment to competent providers. It is unfortunate that at present injectables and equipment are sold by people with no training. There is also need to strengthen surveillance/supervision teams to validate the competence of the providers.

In order to achieve standard hygienic conditions the two aspects of domestication and personalization need to be addressed; it is simplistic to just condemn these practices. In Uganda these two processes are confined to only one type of injection - the therapeutic injection. Injections for immunization, infusion, and contraception are confined to established facilities, both private and public. And yet this has not been attained through law enforcement but basically as a result of people's perception towards various categories of injections. For example, injections for immunization which are also 'communally sterilized' and reused are generally accepted. Immunizations are believed to pose little threat in terms of transmitting AIDS; their safety is attributed to the users who are mainly the under fives (thought to be AIDS free) and the publicly advertised modern steam sterilization methods. It is thus recommended that users should be given a chance to witness, understand and subsequently accept the sterilization techniques for therapeutic injections at the provider facilities as is the case of immunization equipment.

In both formal and informal facilities, non-biomedically trained injection providers form approximately 80% of injection dispensers. However, their injecting techniques do not vary much from those of the biomedically trained providers. Often the providers seem to practice according to their convenience with little regard to hygienic and safety. There is an urgent need for a clean injection programme which should encompass both users and providers.

6.2.1 Interventions

Dissemination of research results

The research results need to be disseminated to sensitize policy makers about the present situation in relation to injection use and practices. Action to be taken will include the following:

- A summary report will be developed to serve as a background for discussion of interventions.
- National level meetings with key policy makers will be held to discuss interventions.
- District level meetings (starting with a few selected districts) will be held with district health teams to plan interventions.
Training and education

Training and education should be undertaken at two levels: among providers and users. The providers' training and education programme should include the following components:

- There should be local training sessions for all levels of government health workers and for all workers in registered private facilities.
- Simple pamphlets on hygiene procedures and appropriate use of injections should be produced and distributed to all health workers.
- Supervision procedures should be developed at the district level and for each facility.
- Issues related to the personal ownership of needles and syringes and their sterilization should be formally discussed at the district level and guidelines should be developed.

A public training and education programme aimed at the injection users should focus on clean injections and the appropriate use of the most popular injections such as PPF and chloroquine.

Intervention strategy

Interventions for clean injection use are planned to start with a few health centres in one district in which research was undertaken. Those selected will be ones that are well functioning and where cost-sharing is benefiting the staff. Before implementation of the programme, we should insure that the health centre has an adequate supply of injecting equipment. For the proper implementation of the programme we intend to work hand in hand with the health management committees and the local resistance councils. The programme will be designed in such a manner that injection practices are ritualized at the provider facilities. Local people should be given a chance to witness the entire sterilization procedure and where possible participate. Here, we intend to work with women’s groups. The idea is that to attach people to institutional things, they should be personally involved. We also intend to involve women’s groups in plays developed under the theme 'clean injections'. These plays should portray the actual social interactions, emphasize the dangers involved and should carry a message on 'safe injections'.
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Uganda Government

UNICEF

World Bank

World Health Organization

Whyte, S.R.

Whyte, S.R. and S. van der Geest

Wollers, I. and M. Bloem
Questionnaire A: Household survey

PART I

District __________________________________________

RC 4 __________________________________________
RC 3 __________________________________________
RC 2 __________________________________________
RC 1 __________________________________________

Household number __________________________________

Respondent's name __________________________________

Sex  M / F Age _____

Education level ________________ Occupation ________________

Name of supervisor _______________________________________
Name of interviewer _______________________________________
Date of interview _________________________________________
Date of check back _______________________________________

1. Name of household head _______________________________________

2. What is his/her principal source of income?
   0. Unemployed
   1. Civil servant (employed by government)
   2. Employed by a private firm (bank, etc.)
   3. Self-employed/business
   4. Farming/fishing
   5. Others specify _______________________________________

3. Education level reached by household head (specify) ________________
4. Number of members in the household

5. Who was the last person to get an injection in this household?
(Which household member?)

a) Name

   Age:
   1. 0-4 years
   2. 5-14 years
   3. 15 and above

   Sex:
   1. Male
   2. Female

6. When (time) was this injection received?

7. For what reason was the injection given?
   1. Therapeutic
   2. Drip (infusion)
   3. Contraception
   4. Immunization

8. If it was therapy, what symptoms were being treated?
(Please note down the symptoms in local terms)

9. What medicine was injected? (use local term)

10. Where was the injection provided? (Use local categorization)

11. Who provided the injection?

12. Do you have any kind of relationship with the injection provider?
   1. Yes
   2. No

13. If yes, what is the nature of relationship?
   1. Parent
   2. Relative
   3. Friend
   4. Neighbour
   5. Other
### EQUIPMENT AT HOME

14. Do you keep needles and syringes in your home?
   1. Yes  2. No

15. If yes, where did you obtain them?

16. Do you keep injectables?
   1. Yes  2. No

17. If yes, what type of injectables do you have?
   1. Chloroquine
   2. PPF
   3. Others ____________________

18. Where did you obtain the injectables (1. Yes 2. No)
   1. Government facility
   2. Non-governmental facility
   3. Private clinic
   4. Pharmacy
   5. Drug shop
   6. Shop or market place
   7. Drug pedlar or hawker
   8. Friend, relative or neighbour
COMPLICATIONS

19. Has any member of family ever had any complications with injections?
   1. Yes
   2. No

20. If yes, what kind of injection complications (1. Yes 2. No)
   1. Abscess
   2. Allergy
   3. Lameness

21. From where was that injection obtained? (find out the local categorization of facilities)
   1. Governmental hospital
   2. Government HC
   3. Non-governmental HC
   4. Private clinic
   5. Non-formal facility
   6. At home
   7. Others (specify)

22. Who provided that injection?

23. What do you think was the cause of the complication?
   1. Provider
   2. Bad injectable
   3. Bad equipment
   4. I do not know
   5. Others specify
HYPOTHETICAL TRACER CONDITIONS

24. What treatment should be given for the following illnesses? Please fill in Table I.

Table I: Treatment form for tracer conditions based on hypothetical questions

<table>
<thead>
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<tbody>
<tr>
<td>Cough &amp; cold</td>
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<tr>
<td>Diarrhoea</td>
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<td>Intestinal worms</td>
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<td>Vomiting</td>
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<tr>
<td>Fever/rise in body temperature</td>
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</table>

1. Yes  2. No

PART II: TWO WEEK RECALL PERIOD
(PLEASE NOTE IF THERE IS CHANGE IN THE RESPONDENT)

1. Has anyone in this home been sick during the last two weeks?
   1. Yes  2. No

2. In the last two weeks has anyone in this home received any form of injection?
   (1. Yes  2. No)
   
   1. Therapeutic
   2. Immunization
   3. Drip (infusion)
   4. Contraception
   5. None

3. If it was a therapeutic injection then fill in Table II.

4. If it was an immunization then fill in Table III.
Table II:  Sickness and treatment in two week period

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Sex</th>
<th>Symptoms</th>
<th>Tracer condition</th>
<th>Treatment (form)</th>
<th>No. of inject.</th>
<th>Medicine (local term)</th>
<th>Source cost</th>
</tr>
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<tbody>
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</table>

Table III: Immunization record

<table>
<thead>
<tr>
<th>Name</th>
<th>Sex</th>
<th>Age</th>
<th>No. of injections</th>
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<tbody>
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</table>


# Appendix 2

## Overview of various standards and indicators used to assess hygienic practices in Busoga and Ankole Regions

<table>
<thead>
<tr>
<th>BEFORE ADMINISTRATION</th>
<th>Busoga (Eastern Uganda) (n=21)</th>
<th>Ankole (Western Uganda) (n=14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>* syringes and needles flushed with water after use and before sterilization</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>* both needles and syringes sterilized</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>* steam sterilization at correct temperature (121 °C) for 15 minutes</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>* equipment is boiled for 20 minutes after last contaminated piece of equipment is put in boiling water</td>
<td>+</td>
<td>+</td>
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<tr>
<td>* inject only sterile solutions</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>* wash hands with soap</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>* disinfect the rubber top of the ampoules/vials</td>
<td>+</td>
<td>-</td>
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</tbody>
</table>

## DURING ADMINISTRATION

| * can anything not in an aseptic condition contaminate the injection fluid            | -                               | +                              |
| * does the person injecting touch the needle with his finger                         | +                               | +                              |
| * does the needle come in contact with any other non aseptic surface                  | +                               | +                              |
| * are several patients injected with the same needle                                  | +                               | +                              |
| * are several patients treated with the same syringe                                 | +                               | +                              |

## AFTER ADMINISTRATION

| * are disposable syringes and needles placed into a final disposal container          | +                               | +                              |
| * are disposables recapped before disposal                                           | +                               | +                              |
| * are disposable syringes and needles disposed of and not reused                     | +                               | +                              |
| * observe patient for about 30 minutes after injection                               | +                               | -                              |
| * are sterilizable syringes and needles flushed with water after use                 | +                               | +                              |
Appendix 3

List of patients and their details
(to be filled in by the provider)

Provider
Nature of facility
Date checked
Date filled

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Patient name</th>
<th>Age</th>
<th>Relation</th>
<th>Symptoms</th>
<th>Inject. (tick)</th>
<th>Type &amp; amount</th>
<th>Other med. type &amp; amount</th>
<th>Cost</th>
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Other documents in the DAP Research Series

No. 1 Injection practices research

No. 2 How to investigate drug use in communities (available also in French)

No. 3 Operational research on the rational use of drugs

No. 4 Development of indicators for monitoring national drug policies

No. 5 People's perception and use of drugs in Zimbabwe

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No. 11 Injection practices: A case study in Thailand

No. 12 Stability of oral oxytocics in tropical climates

No. 13 Stability of essential drugs in tropical climates: Zimbabwe
In 1981 WHO's Action Programme on Essential Drugs was established to provide operational support to countries in the development of national drug policies based on essential drugs and to work towards the rational use of drugs.

The Programme seeks to ensure that all people, wherever they may be, are able to obtain the drugs they need at a price that they and their country can afford; that these drugs are safe, effective and of good quality; and that they are prescribed and used rationally.

Research analysing the impediments to developing and managing sound national drug policies and programmes is an important element of country support activities. The Programme undertakes and promotes operational research aimed at filling some of the many gaps in existing knowledge about the best means of selecting, procuring and distributing drugs, and their use by prescribers and consumers.

This document is part of a series reporting on Action Programme research activities and guidelines.

Research that leads to breakthroughs in pharmaceutical technology or in highly sophisticated and expensive techniques of biomedical practice may superficially appear to be more "glamorous". But the operational research that WHO's Action Programme on Essential Drugs undertakes has a direct bearing on the ways in which vital medicines can be made available and accessible to the greatest number of people.