

# Lesotho Medical Association Journal

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# Lesotho Medical Association Journal

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# A Clarion Call

**M MOKETE, MD**

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Dr HALFDAN MAHLER Former Director General of W.H.O., in one of his reports to World Health Assembly said that “Manpower is the cornerstone of any Health System and, unless manpower development patterns are appropriate to people’s health needs and social circumstances, countries will never be able to achieve a level of health that will allow their people to lead socially and economically productive lives.”

Goals we should heed the clarion call and act timeously to save humanity.

A clarion call was blasted at the time. It should ring ever louder today for some countries if not for all countries in the world.

Cuba has a ratio of 1 doctor to 170 people and they still continue to train. European countries on the average have 1:300; whereas U.K has 1:440 and U.S has 1:390. Developing countries are in a worse of situation with ratios of 1:20 000 for Lesotho; 1:2 500 in Botswana; 1:3 300 Namibia 1:1 300 in South Africa 1:6 300 in Zimbabwe; 1:50 000 in Tanzania, to site but a few illustrative examples of how we are coping.

The burden of disease, which has been increasing with HIV and AIDS pandemic and a rise in P.T.B infections including the resistant strains, maternal deaths and childhood deaths not to mention the non infectious diseases, seems to be far ahead of the pace of manpower and infrastructure development.

There is need for redoubled efforts and investment in increasing facilities (Medical Schools), training and retention and creating equity. Rather than shift the Goals as was done in year 2000 to 2015 of the Millennium Development

# From the President's Pen

**Dr. Hoedoafia**

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Dear colleagues,

I greet you in the name of God Almighty - By whose power, grace and mercy we stood the test of time. We had a chance yet again to celebrate a festive season that crowded another set of twelve months of our journeys though life. Yes, the year 2011 came and passed. It had its ups and downs, its joys and sorrows and indeed its trials and tribulations. In all these He sustained and blessed us and here we are today, winners of a past. Colleagues, I beseech you to keep the faith and remain steadfast in His love. Happy New Year! It will be well.

Our Association has made significant strides in its efforts to live by the objective of bringing health to the door steps of the people of our dear nation. Thanks to our new executives, for their standing together through our moments of thick and thin and the sacrifices they made and continue to make in lieu of financial remunerations of their services, we would not have been able to achieve anything worth recounting. I equally note with gratitude and also thank Leboha (Lesotho Boston Health Alliance), the SPAARC Committee, the European Union, the American Ambassador and of course the Ministry of Health for their tremendous support for our programmed activities for the year 2011. Without the support of these organizations and individuals our achievements will not be anything to write home about.

As I have already indicated, the Lesotho Medical Association (LMA) has been blessed this past year. Sponsored by the European Union, the SPAARC programme is firmly on course. I can say without hesitation that there is unity

and a harmonious working relationship within the professional bodies in health. Thanks to the successful implementation of the SPAARC programme. The Lesotho Medical Association, the Lesotho Medical Pharmacy and Dental Council, the Lesotho Nursing Council and the Lesotho Nurses Association and other health professional bodies within the health sector, now work hand in hand for the first time ever in attempts to find solutions to problems hampering health delivery in our country.

The human resource for health is one of the major challenges needed in addressing the health agendas in our country. It is a known fact that there is paucity of doctors and other health workers all over the world, but it is particularly alarming in Lesotho where doctor to patient ration is at 1:20 000. In this aspect the LMA in collaboration with other professional bodies, has started serious interactions with the Lesotho Medical Student Association (LEMSA) in an attempt to create the awareness among our medical students of the importance of their returning home to serve motherland after the completion of their programmes. We have made them to remember that everything we have is actually, only being borrowed from God. And whatever we are doing now is giving back what we have received from his generous hands. We have every hope in inculcating this moral doctrine into our young doctors and encourage them to return home to serve the society that has given them so much by way of their education. At this point let me say a big bravo to our Government!!! It is laudable, really laudable to note that finally the great initiative is taken to establish a medical school for the nation. This indeed is long overdue as it is a necessary means of

addressing the gross shortage of medical doctors in our hospitals and clinics. This is a positive step in a positive direction undoubtedly.

As a final word, colleagues, let me remind each and every one of us that we are better placed to influence and map out the health of this nation. It is important that our presence is both felt and seen in managing all challenges in the health sector of our nation. Even though we are diverse as individuals in areas of practice and specialties, we have to be united in order to be in position to advance our goals as enshrined in our constitution. A house divided against itself cannot stand. I plead with you to become more participatory in the affairs of the association. The association needs action from you members because without action it will be as good as dead.

We take credit to have organized successfully the first ever symposium held at Queen Mamo-hato Referral Hospital towards the close of last year. All sectors of the medical profession were in good attendance. It was a fruitful symposium at which a topic of no less importance than medical ethics was discussed. This is just the beginning of the best yet to come. Let's stay focused and remain blessed.

Thank you  
Dr C.K. Hoedoafia (President-LMA)

January 31, 2012

# Case Report - Conjoined Twins

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## Background

Twins are a variant of multiple pregnancy; they may arise from the fertilization of two zygotes, in which case they are dizygotic or non-identical twins; or from the fertilization of one zygote, when they are termed monozygotic or identical twins.

Twins occur about once in 80-90 pregnancies; of these 67% are dizygotic. The incidence of dizygotic twins is affected by several factors, including family history of twins, race, and maternal age, among others. For this case report, however, the discussion will focus on monozygotic twins.

## Monozygotic Twins

These result from the fertilization of one ovum, and are therefore of the same sex, and are genetically identical. Any physical differences apparent between them are due to uterine environmental factors e.g. anastomoses of placental vessels<sup>1</sup>.

## Conjoined Twins

These are monozygotic, monoamniotic and monochorionic. They are twins who are born physically connected to each other, most often at the chest, abdomen, pelvis, spine or head.

## Causes

The exact cause of conjoined twinning is not known, but two theories have been proposed:

- Fission Theory: Soon after the blastula stage of development (13-15 days post fertilization), to form normal monozygotic twins the inner cell mass should split into two halves, each capable of forming a normal foetus. According to this theory, some aberration of separation occurs, and the expected complete separation does not occur. The non-separated parts remain fused throughout subsequent development, leading to conjoined twins<sup>2</sup>.
- The Fusion Theory: According to this theory, propounded by Dr. Rowena Spencer, the fertilized ovum splits into monozygotic twins completely initially, but while lying in close proximity in the uterine wall, the cells of the embryonic discs fuse secondarily into conjoined twins. This is proposed to be due to "mixed signals" from identical cell layers which seek out cells of the same type and bond together to form individual organs, but they attach to cells belonging to the other twin<sup>7</sup>.

In almost all types of conjoined twins, there are other organ abnormalities to be dealt with other than the sites of attachment.

## Incidence and Epidemiology of Conjoined Twins

Conjoined twins are rare, and the true incidence is difficult to ascertain as the majority abort or are stillborn. However, it is estimated they occur roughly 1 in every 200 twin pregnancies, or from 1 in 50,000 to 1 in 100,000 pregnancies<sup>4</sup>. 40-60% are stillborn; about 35% survive for 24 hours. Overall survival rate is between 5-25%<sup>8</sup>.

Female conjoined twins are more common and account for 70-90% of cases<sup>2</sup>. There is a reported racial predilection, with increased incidence in Africa and South-East Asia<sup>2</sup>. There is no significant relationship with maternal age, parity or the taking of fertility drugs. Some authors do report that families with conjoined twins have a family history of twinning<sup>4</sup>.

### **Types of Conjoined Twins**

Conjoined twins are typically classified by the point at which their bodies are joined, with the suffix "pagus", which is Greek for "that which is fixed". The commonest types are:

1. Thoracopagus – 40% of cases. In this condition the two bodies are fused from the upper thorax to the lower abdomen. The heart is always involved.
2. Omphalopagus – 33% of cases. These are fused at the lower chest. The heart is not usually involved. They share the liver, other parts of the g.i. tract and diaphragm.
3. Thoraco-omphalopagus – Fused from the upper chest to the abdomen. They share a heart and various parts of the g.i. tract (a combination of 1 and 2 to varying degrees).
4. Pyopagus – 17% of cases. Fused at the spine, rectum, genito-urinary tract.
5. Craniopagus – 2% of cases. Fused skulls, but separate bodies. They can be conjoined at the back of the head, side of the head, but not on the face or base of the skull.



6. Heteropagus or parasitic twins – This is a type of classification indicating that the twins are asymmetrically conjoined, resulting in one twin being small, less formed and depending on the larger twin for survival.

With this background, we report on a pair of conjoined twins admitted to Queen 'Mamohato Memorial Hospital in December 2011.

### **History**

Mrs. AB was admitted to this hospital on the 20th December 2011, as a referral from one of the district hospitals in the south of Lesotho. She had been admitted there in labour on the 19th of December. After what she stated was "prolonged" labour – there was no note from the hospital as to the progress of her labour. She delivered vaginally a set of conjoined twins in the morning.

Her delivery was complicated by post – partum haemorrhage. This was her 2<sup>nd</sup> pregnancy; the first was an uneventful normal vaginal delivery. She was RVD negative. After the first pregnancy she had been on Melleril and Tryptanol for some time (it is a question whether it was related to her pregnancy).



**Examination on Admission**

General condition was fair; B.P. 114/60 mm Hg, Pulse 124/min. SPO2 98%. Uterus not fully involuted. Afebrile. WBC  $19.9 \times 10^9/L$ , Hgb 10.0 gm/dl, Platelet count  $235 \times 10^9/L$ .

**Management**

IV crystalloid resuscitation. Oxytocin 10 units. With this, the B.P. improved to 140/80 mmHg. And the pulse decreased to 100/min. She continued to improve; the bleeding slowed, and no blood transfusion was required in the ward.

**Examination of the Twins**

They were female twins joined on the sides of their heads, craniopagus type. (Apgar score at birth was not stated in the referral letter).



Their combined weight was 3.5kg. One twin (Twin B) was slightly smaller than the other (Twin A). Both twins had a good pink colour with SPO2 between 92 – 100%. Chest-clear. Normal heart sounds with no discernible murmurs. Both had normal abdominal findings, and had passed meconium. External genitalia appeared normal. C.N.S.: They were moving all limbs, with normal tone; sucking reflexes were normal. There was gross limitation in the

movement of the neck, but both upper and lower limbs ‘motor function seemed normal. Initially they were bottle fed (mother said she was not ready to feed them), but after the first day they were breast fed.

**Blood Investigations**

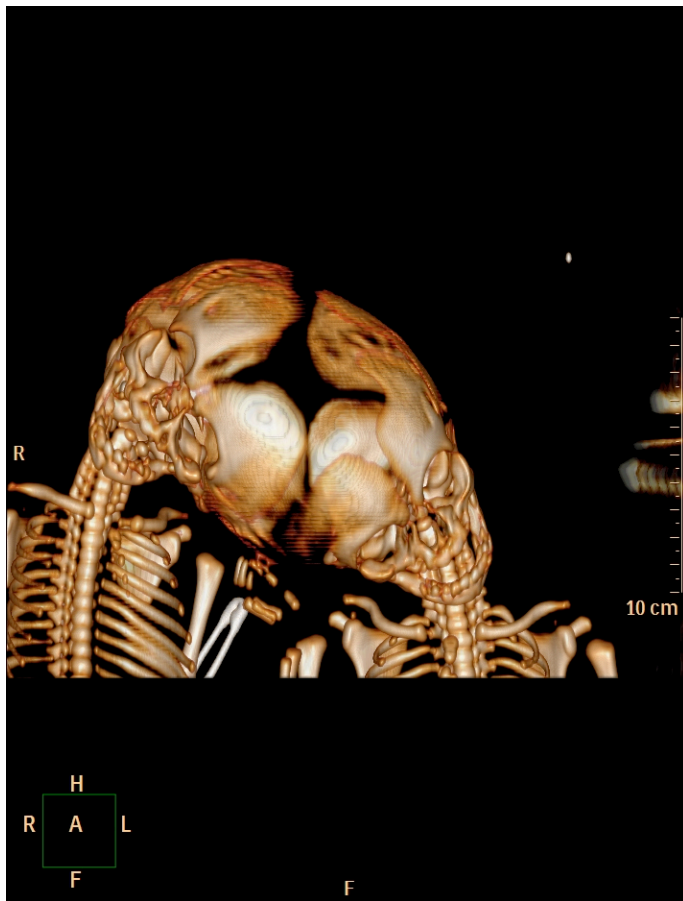
Indicator	Twin A	Twin B
Hgb	19.3gm/dl	18.9gm/dl
WBC	$12.2 \times 10^9/L$	$11.9 \times 10^9/L$
Plt	$215 \times 10^9/L$	$231 \times 10^9/L$
Na	144 mmol/L	142mmol/L
K	4.3	3.9
Cl	101	101
CO2	20	21
Anion gap	27	24
Urea	9.7	9.2
Creatinine	193micromol/L	172 micromol/L

**Radiological Investigations**

Head C.T. Scan report: Fusion of skull bones showing a single skull. The normal morphology of the cerebri and cerebelli seems lost. The brain has a single ventricular system; the orbits, facial bones and eye globes seem normal. The demarcation of the brain is marked partially by the meningeal fold.

**Conclusion**

Conjoined head with a single ventricular system.



### Progress

The twins were referred to the Neonatology Unit at Universitas Academic Hospital, Bloemfontein on the 22<sup>nd</sup> December 2011, for further assessment, investigation and any necessary management going forward. We later learnt that they died in January 2012 following pneumonia (unofficial communication).

### Discussion

The presentation of the twins described above illustrates some of the problems of conjoined twins, a rare condition in itself, in a country like Lesotho with limited obstetric and paediatric expertise.

First, the diagnosis was not made during Mrs. AB's pregnancy. Ideally, ultrasonography is indicated in all pregnancies where more than one foetus is suspected, among other things to rule

out precisely the possibility of conjoined twins. There are typical ultrasonographic findings after 20 weeks' gestation which are associated with conjoined twins<sup>2</sup>, the discussion of which is beyond the scope of this case report. In Lesotho probably not many pregnant women would routinely have ultrasonographic assessment of their pregnancy anyway, especially outside of an urban hospital setting. We know this family lives outside an urban setting and the mother only went to the hospital to deliver.

Secondly, and again related to obstetric management, the delivery of the conjoined twins was vaginal, with subsequent post-partum haemorrhage in the mother. If pre-natal diagnosis had been made, Caesarean section would have been the mode of delivery of choice, preferably in a setting like QMMH with paediatric cover. Conjoined twins often cause premature labour (though not in this case) and the presence of paediatricians' skills helps improve survival. The third feature illustrated here is that one twin was slightly smaller than the other; also the twins were female, which is more common as already mentioned.

In the case of our patients, it was felt that it was appropriate for them to be referred to Universitas Academic Hospital in Bloemfontein, for further assessment of their physical status, and discussions and decisions of what should be done regarding the welfare of the twins now and in their future lives.

### Separation Decisions

According to the American Paediatric Surgical Association, the usual separation decisions regarding the different types of conjoined twins is shown below, though each case is treated on its merits and family wishes:

Separation to Be Done	
Yes	No
Ischiopagus	Craniopagus
Pyopagus	Thoracopagus
Parasitic twins	Extensive fusions

Investigations carried out post-delivery to reach operation decisions are many and often staged; some can be done immediately, while others, especially if invasive, have to be done later. Investigations include radiologic examination of all systems<sup>2</sup> – plain x-rays, echocardiography, C.T. scans, cystourethrograms, upper and lower g.i. tract contrast studies, serial lung function studies, E.C.G. 3D M.R.A/ M.R.I. scans, nuclear hepato-biliary system scans, to mention some<sup>4</sup>.

**Timing of Separation**

In general, separation before the age of 6 months has a higher mortality than later separation, for example between 9-12 months. Sometimes the separation has to be performed early because of the deteriorating status of the twins.

Needless to say, the surgical management of these babies is a team effort of many specialties; multiple pre-operative and post-operative interdisciplinary conferences are held. Preliminary procedures may have to be carried out e.g. for soft tissue expansion. Subsequent extensive reconstructive surgery and rehabilitation will be needed. Depending on the particular type of conjoint twins<sup>4</sup>.

**Ethical Considerations**<sup>2,4</sup>

In deciding whether separations of the twins should be undertaken, the medical team and the family face daunting ethical issues, not least of which could be the question of truly in-

formed consent for the family(especially in countries like ours where medical knowledge in the community is not that extensive). The family’s understanding of the decisions made also has to fit with their religious beliefs, and their physical living conditions.

Examples of these questions are:

- Is separation possible with any chance of success?
- What will the quality of life be after the separation, even if they both survive?
- What if only one twin is expected reasonably to survive, as determined by their condition?
- What will the future be if they are left conjoined?

In light of subsequent events, for our patients these questions never had to be confronted, but given our socio-medical environment it is all too easy to imagine the problems of physical and psychological rehabilitation the family and the twins would have had, had they survived.

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# The Extent of Drug Abuse in Lesotho: The Case of Mapoteng Community

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## Abstract

The purpose of this study was to describe the extent of drug abuse in 15 villages in Mapoteng community. Out of a sample of 100 participants interviewed by trained data collectors using the modified DAST questionnaire, one questionnaire had missing information leaving 99 questionnaires available for analysis. The results of the study suggest that one in five participants had a low drug problem or had no drug problem at all while four in ten participants had moderate problems. Only one in ten had a substantial drug problem and no participant had a severe drug problem. Comparatively, males were twice as less likely to report that they had no drug problem compared to females. There was also a positive relationship between education and drug abuse. It is recommended that a similar study be duplicated at the national level in order to inform policies, in particular HIV and AIDS policy, since drug abuse has been identified as one of the drivers of HIV and AIDS (Lesotho Sentinel Survey 2004).

Key words: Drug Abuse, Mapoteng Community Lesotho

## Background

Lesotho is one of the smallest countries in Southern Africa and is completely surrounded by the Republic of South Africa. Most of the citizens of the country survive on small scale

farming produce which they also sell to fund the education of their children. Situated in the

mountainous area Lesotho is well endowed with water which they also sell to the Republic of South Africa. Most Basotho men used to work in the mines of South Africa as migrant labours; by so doing they brought much needed revenue to the country (Bureau of Statistics 2009).

## Health Care in Lesotho

Primary Health Care is a model of care in Lesotho. The system comprises a network of hospitals, clinics and health centres which provide differing levels of care in the country from the most basic to more advanced. The Christian Health Association of Lesotho (CHAL) and the Ministry of Health and Social Welfare share the burden of overseeing the smooth running of health services in the country (Lesotho Sentinel Survey 2004).

Health service delivery is organized into units called Health Service Areas. Each unit consists of a district hospital that supervises health centres, clinics and village posts. These facilities are manned by resident nurses, nurse clinicians and other medical practitioners. Various types of health services such as community-based health services manned by village health workers, traditional birth attendants, water minders and expert patients also exist. HIV services are in-



corporated in all health facilities in the country (Lesotho Sentinel survey 2004).

Established in 1952, Maluti Hospital is a 150-bed hospital that is located in Mapoteng in the Berea district of Lesotho. The hospital nestles in the front range of Maluti Mountain and is built on 25 acre property. The hospital is one of the eight hospitals that fall under CHAL management. Maluti Hospital is well known in the country for Primary health care and eye services (Maluti Hospital Annual Report 1992).

The mountains and some of the fields around Maluti Hospital have formed a conveniently hidden area for the cultivation of cannabis and make it more easily accessible for Students and herd boys that live around the area. Cannabis harvested dried and either exported to the Republic of South Africa or is rolled in a paper and smoked as a cigarette. This method of use makes it harder to catch the users (Maluti Hospital Annual report 2004).

## **Introduction**

The Sothern African region has a long history of substance abuse. The region's history of cannabis cultivation use and sale is well documented (Laniel 1994 - 2003, Gustov Undated). The criminalization of this drug however was made manifest by western countries. Cannabis is used for medicinal purposes by indigenous people living in the area. It is rumoured to be able to control blood pressure and other ailments. Scientific backing of these claims however is lacking. What have been evident are the ill-effects of the illicit drugs. Cannabis is also produced as a cash crop to raise money for children's school fees and other household necessities (Laniel 1994 - 2003)). Over the years through western influence cannabis sale has been declared illegal. Its cultivation and possession however has not received much attention and punishment. Cannabis is grown throughout southern Africa

but Lesotho, Swaziland and Kwazulu Natal in the Republic of South Africa are known as the main producers. Majority of people who abuse cannabis also abuse alcohol (Gustov Undated, Us Department of Health and Human Services 2004, US Department of State, Bureau for International Narcotics 2002).

Besides cannabis alcohol abuse is also a problem in the region. The local brews are mixed with all kinds of toxic substances to make them more intoxicating. Battery powder, cannabis, tobacco and other substances are added, making the mixture more than just ordinary alcohol. These other brews are given special names to differentiate them from the normal alcoholic drinks, such as "molomo oa ntja" (dogs' mouth) (Laniel 1994 - 2003).

Herd boys also gain their highs by sniffing benzene while they are looking after animals. Investigations have revealed that many of them are engaged in this practice and believe that it produces a good feeling. However it is reported that their quality of life seems to deteriorate over time and they tend to proceed to use more potent drugs later. Benzene is easily available from the local shops and its sale is not regulated (Lesotho Tmes, 2009).

Valium is also easily available in the country. It can be purchased over the counter without any prescription. It is also available from the beer houses from the brewers and the streets. It can be concluded therefore that drinking of alcohol is also associated with abuse of valium and other drugs (Laniel 1994 - 2003).

Drug abuse is one of the major problems in Lesotho today. The danger of illicit drug abuse is compounded by its dismissal and neglect by the authorities. In Lesotho drug abuse has attracted the attention of authorities hence the establishment of treatment programmes in Thaba Bosiu

and Morija. Unfortunately the numbers of people that require help are more than the institutional capacity of the present rehabilitation institutions (Bureau of Statistics 2009).

Although the use of drugs is commonly accepted for socialization, excessive use causes numerous health problems including cancer and chronic respiratory diseases. The chronic nature of these diseases makes them difficult and costly to treat. The increase in the use of drugs can therefore be expected to increase spending for health. Lesotho being one of the poor countries can ill afford to increase spending for chronic diseases. But more importantly studies have linked drug abuse with the escalating incidences of trauma and prevalence of HIV and AIDS through individuals engaging in unsafe sex practices while under the influence of drugs (Lesotho Sentinel Survey 2004).

Indeed, drug addiction is a growing problem worldwide, due to the direct effect of drugs on the health and economy of the countries as well as their relationship to other problems such as HIV and AIDS and sexually transmitted disease in general. Drug problems have impacted on all levels of society including the youth, who are the future of every society (Room 2001). With escalating numbers of the unemployed, there has been an increase in drug addiction (Leshner 2001) since people want to be intoxicated in order to forget their problems.

The most popular drugs that are abused in Lesotho are alcohol, tobacco and cannabis (Laniel 1994 - 2003). This is so because, for example, in the country, drinking is part of socialization, and hence events that bring happiness are celebrated by drinking. Alcoholic drinks are also easily accessible in the country (Laniel 1994 - 2003).

The physiological and social dangers of drugs; be it alcohol, cigarettes or marijuana, etc., are

well documented in the literature (Luckman & Sorensen 1987, Escandon & Galvez 2006 Rockerbie 1999, U.S. Department of Health and Human Services 2004, NIDA 2001, Laniel 1994 - 2003). Yet not much research has been done in this area of drug abuse in Lesotho. Furthermore, it was only in 2006 when drug related cases reported by the police department appeared in the official statistics (Lesotho Bureau of Statistics 2009), suggesting that drugs are really becoming a problem in Lesotho. The present study is therefore crucial and timely.

After identifying drug related issues in Mapoteng, a project was run by Maluti Hospital School of Nursing, and other than information based on community health visits and hospital records, nothing was available to inform health professionals in the area about the magnitude of drug abuse in the area, thus calling for such a study.

Presently, the Maluti hospital in the Mapoteng area has included drug abuse prevention in its activities and, for better strategic planning for fighting drug abuse in the area, the present study has come at an opportune time (Maluti Hospital Annual report 2004). Moreover, Mapoteng area might be the ideal area for the study, given that official statistics showed the district of Berea within which the study area is located, to have the highest cases of reported drug related offences in the country (Lesotho Bureau of Statistics 2009).

### **Methodology**

A research population of 100 was selected by random sampling from 15 villages of Mapoteng area within Maluti Hospital Health Service Area, using families as a unit of investigation. People who were present in the family were interviewed. One questionnaire was used for each interviewed person and the responses were re-

corded anonymously. The English version of DAST-20 Drug use questionnaire was used to collect data.

DAST is a 20-item general, standardised questionnaire that has been tested for reliability and validity. It has been designed to identify abuse of drugs like cannabis, tranquilizers, valium, barbiturates, cocaine, narcotics and hallucinogens. It is not meant to for use in alcoholism (Skinner 1982). For this study alcoholic beverages were included because most people who abuse cannabis also abuse alcohol. The effects of cannabis could therefore not be isolated from alcohol and other drugs. The questionnaire was modified by adding demographic data and changing item 18 to read "have you had medical problems as a result of drug use (e.g, memory loss, yellow eyes, seizures and bleeding". The change was made to make the question easy to understand for the Basotho nationals. Although it was not piloted two people were asked to go through the questions and pick up any that were unclear. (Please see attached copy of the questionnaire).

All the parts of this instrument were used in data collection and to calculate the total score. The instrument already had an established validity and reliability (Yudko, et. al. 2007). Data collectors were trained to administer the questionnaire in English but asked questions in Sesotho and to adhere strictly to ethical standards. Descriptive analysis was used in the study. The SPSS (6.1) software was used for analysis using frequency tables.

### **Calculation of the drug abuse score**

Based on the DAST-20 Drug use questionnaire the total score is determined by summing up the number of responses from the 20 drug abuse questions. A grading of one and above was given for a response that indicated a drug

problem and '0' was given to indicate lack of drug problem. Total score ranges between 0 and 20. The score of 0 indicates the situation of no drug problem while the score of one to five indicates low level of drug problem. The scores of 6 to 10, 11 to 15 and 16 to 20 respectively represent moderate level of drug problem, substantial level of drug problem and severe level of drug problem (Skinner 1982).

### **Ethical considerations**

Permission was sought from Maluti Hospital management, chiefs and participants in the respective villages. Participants were given a choice of either participating or abstaining. They were assured that they could pull out at any time they did not want to participate. It is noteworthy that, at the time of the study, there was no established ethics committee in the country through which the questionnaire and its administration could be cleared.

### **Results**

#### Characteristics of the sample

A total of 99 participants out of 100 selected from 15 villages of Maluti Hospital Health Service Area to participate in the study were available for analysis giving the study 99% response rate. Information from one participant was incomplete and has been excluded from the analysis.

Respondents comprised 33 (33.3%) females and 66 (66.7%) males. The age of the participants ranged from 16 to 80, with a mean of 38, median 33, mode 32 and a standard deviation of 15. 50% of the respondents were married, 23.2% were single while 13.2 were either divorced or separated.

The level of education of most participants was low, with 59% of the participants reporting to

have had no formal education, 23% had primary education and 18.1% had junior secondary education or better. 47% of the participants were not employed, 38% were employed on a part-time basis and 14% were employed on a full-time basis. Table 1 shows the characteristics of the study population.

Table 1. Characteristics of the Study Population

Characteristics		Respondent	Percentage
Sex	Female	33	33.3
	Male	66	66.7
Marital Status	Single	23	23.2
	Married	50	50.2
	Divorced/ Separated	13	13.2
	Widowed	13	13.1
Age	<20	4	4
	20-29	28	28.3
	30-39	30	30.3
	40-49	15	15.2
	50+	22	22.2
Level of Education	None	58	58.6
	Primary	23	23.2
	Secondary	14	14.1
	C.O.S.C	4	4
Employment Status	Not Employed	47	47.5
	Partly	38	38.4
	Full time	14	14.1

**The magnitude of Drug Abuse**

Based on the DAST-20 drug use questionnaire, Table 2 presents the drug abuse scores for the study population.

Table 2. Level of Drug Abuse by Characteristics of the Study Population

Characteristics	Level of Drug Abuse				N	
	None	Low	Moderate	Substantial		
Sex	Female	33.3	27.3	30.3	9.1	33
	Male	16.7	19.7	48.5	15.2	66
Marital Status	Divorced/ Separated	15	23	46	15	13
	Married	24	20	42	14	50
	Single	13	13	56.5	17.4	23
	Widowed	38.5	46.2	15.4	0	13
Age	<20	25	25	50	0	4
	20-29	10.7	21.4	46.4	21.4	28
	30-39	26.7	6.7	53.3	13.3	30
	40-49	6.7	40	46.7	6.7	15
	50+	40.9	31.8	18.2	9.1	22
Level of Education	None	32.8	29.3	32.8	5.2	58
	Primary	4.3	17.4	69.6	8.7	23
	Secondary or above	11	6	39	44	18
Employment	Not Employed	29.8	29.8	34	6.4	47
	Partly	18.4	13.2	52.6	15.8	38
	Full time	7.1	21.4	42.9	28.6	14
Total Sample		21.2	22.2	43.4	10.1	99

For the entire sample only one in five participants did not have a drug abuse problem, while four in five had a drug abuse problem ranging from low to substantial, with more than half of the participants experiencing moderate to substantial drug abuse problem. On a comparative basis using the characteristics of the study population, males were about two times more likely to score high on the drug abuse score compared to their female counterparts. In respect of marital status only 15% of widowed participants had moderate to substantial drug abuse problem relative to their single counterparts with 73% experiencing a moderate to substantial drug abuse problem. The corresponding percentages for divorced and separated and married respondents were 61.0% and 56.0% re-



spectively. An inverted u-shaped relationship is found between age and moderate to substantial drug abuse score. The score starts at 50 percent for participants aged less than 20 years and reaches a peak of 68% and 67% for participants aged 20-29 and 30-39 respectively. After age 30-39 there is a decline that reached 27.3% for participants aged 50 years and above.

For both education and employment status there was a positive relation between these two variables with the percentage of participants with drug abuse of moderate to substantial score. For educational status the percentage of participants with moderate to substantial drug abuse score increases from 38% for participants with no education to a high of 83% for participants with junior secondary education or better, while the corresponding figure for participants with primary education was 78.4%. The percentage of unemployed participants with a score for a moderate to substantial drug abuse problem was 40% compared to 72% for participants with full-time employment. The comparative figure for participants employed on a part-time basis was 68%.

## **Discussion**

One in five participants had a score of 0, indicating that they were experiencing no drug abuse problem, while another 22% of the participants had a score of between 1 and 5, suggesting a low level of drug abuse problem. However, more than half of the participants had a score of between six and 15, suggesting a moderate to substantial level of drug abuse.

Drug abuse differences by background characteristics of the participants suggested that female participants were twice as likely to experience no drug abuse problem as their male counterparts. This finding was according to expectation since males are more prone to drug abuse

that females (NIDA 2008). But more importantly Basotho men have always depended on South African mines for employment. The coming of majority rule in South Africa resulted in a lot of retrenchments and a decline in the recruitment of novices from Lesotho (Central Bank of Lesotho 1995). For most of these men, life has become difficult and frustrating, as finding themselves suddenly out of work has created a vacuum within them. The dignity and respect they wielded as providers for their families has become a lost dream. It has not been easy to balance their internal environment (ego/psyche) with that external environment that is, being providers of their families (Spott & Shouts 1980). Under these circumstances, many of the men think they are solving the problem they face by being intoxicated on a perpetual basis. Some would resort to massaging their egos in order to feel they are greater than what they are, and use marijuana and tobacco, because they want to feel like they are dominating the environment and feel in control of the situation (Spott & Shouts 1980).

The relationship between experiencing a drug abuse problem and employment status could be due to two factors. First, working participants have access to money that can be used to buy drugs. Secondly work related stress could be pushing working individuals to drugs as indicated in the introduction; namely, stressed individuals sometimes want to be under the influence of drugs in order to forget their problems.

With regard to age, the aged are experiencing zero or low levels of drug abuse while the opposite is the case for the young participants. While the aged could be abstaining from drugs due to ill health resulting from old age, access to financial resources could be a restraining factor for in using drugs.

Given the relationship between sex, age and employment status and drug abuse experience, the low level of drug abuse experience among widows could be a result of the fact that the majority of them were old and, were old and were not working. On the other hand participants who were divorced or separated or who hold other marriage problems were encouraging them to use drugs.

The relationship between education and experiencing drug abuse could be explained in terms of access to financial resources. People with education have a higher expectation from life. They want to do more with the knowledge they have. When they are deprived of this opportunity, they will likely resort to drug abuse as a way of escape from the unpleasant reality (Spott & Shouts 1980).

### **Conclusions and Recommendations**

The study indicates that the 15 villages of Mapoteng have a problem with drugs that needs to be addressed. Based on the results of the study the following recommendations are suggested:

The present study should be duplicated on a national representative sample in order to have a clear picture of areas that need immediate attention. In such a study drivers of drug abuse should be investigated thoroughly. The study should identify the drug which is more of a problem than others in order to inform care and treatment.

Since DAST-20 measures drug abuse generally a more specific instrument should be devised and used.

Lesotho has the third highest HIV prevalence in the world and the country is doing everything possible to curb the spread of HIV. Since drug abuse is one of the drivers of HIV and AIDS,

curbing drug abuse will go a long way in helping to reduce the spread of HIV in the country.

Since people resort to drugs on account of different kinds of problems, drug abuse and addiction need to be counteracted with information that different kinds of audiences can use. The resounding message is that drug abuse can be treated and different approaches should be used to reach different kinds of target groups.

Alcohol, tobacco and cannabis should be clearly labelled as habit forming drugs and their regulation should follow the pattern of such substances.

### **Limitations of the study**

The study was conducted in Mapoteng health service areas; it cannot therefore be generalized beyond the stipulated area.

The study was generalized and did not isolate any particular drug. It should therefore be interpreted in general terms.

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# Urbanisation “Fingerprinting” on Environment and Health

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## Abstract

This study presents clear tell-tale signs, called here “fingerprints”, that urbanisation, driving an intensification of anthropogenic or man-mediated activities- domestic, industrial and agricultural, leaves on the environment and public health. In fact, although the process of urbanisation has many positive outcomes, at present, mankind is faced with a dire environmental degradation and public health challenges arising from it. This is especially the case with developing countries, where the negative outcomes from urbanisation in established and emerging urban centres are hardly well managed.

Therefore, adverse environmental impacts like pollution-air, water and soil, and breakdown in sanitation, come to light, leading to a plethora of air-borne, water-borne / food-borne and contact diseases. Medical professionals and others are called upon to join the fight in promoting environmental stewardship, so that, in developing countries especially, a reversal of the negative environmental trends can see the light. This will go a long way to preventing and controlling many of the diseases known to man, whose cradle generally remains the environment.

## Introduction

As time progresses, many areas of the globe become more urbanised, but not without the negative tell-tale signs (Rowntree et al., 1991; Whitehead et al., 1999; Aiyuk, 2004), so-called “fingerprints”, on the environment, and consequently on human health, as is especially the

case with developing countries (Aiyuk et al., 2010). Therefore, urbanisation, that state of being or becoming more industrialized and more modern, means that the urban centres and emerging urban centres of a country will tend to attract an increased population through a rural exodus, as people, especially those of working age, move to the cities in search of jobs and better livelihoods. To buttress this view, it has been pointed out that in the 1950s, one third of the world’s population lived in cities, and today, two thirds of the world’s population lives in cities, while three fifths of the global population will live in cities by 2050 ([www.unescap.org/esid/hds](http://www.unescap.org/esid/hds)). This trend is supported by Cai (2006), and such a trend, progressively leaving cities with very high population densities, immediately points to an overcrowding in many cities in developing countries, and the generation of large quantities of wastes that can hardly be effectively managed by the responsible bodies, leaving litters of garbage and other solid wastes lying around indiscriminately. Under such conditions, wastewaters, also from human or anthropogenic activities (domestic, industrial and agricultural), are also generated in large quantities that can be hardly well managed, and bringing about an environmental degradation that immediately impinges on human health (Aiyuk, 2004; Aiyuk et al., 2004; Public Health Group, 1998).

As should be made clear, urbanisation comes with many positive results, such as an upgrading of the environment and the development of impervious paved areas, and the already mentioned industrialization. Other positive outcomes include job creation, the erection of modern health facilities, electricity provision,

engineered water supply and sanitation, good roads and other infrastructure, and quality educational facilities.

However, as highlighted already above, urbanization can bring forth dire consequences, as is usually the case with developing countries. Some of the negative impacts, environmental, health and social, are discussed briefly below.

### **Environmental Impacts of Urbanisation (“Fingerprints” on the Environment)**

Recalling some impacts of various anthropogenic (man’s) activities that go with urbanisation, one must make recourse to industrial, domestic and agricultural activities. From the industrial sources arise heavy metals, heat, oestrogens, eutrophication, odour nuisance, dioxins and other toxins, etc. Domestic inputs also bring about health hazards (both for humans and other living organisms of the environment), ecological destabilization (Nelson et al., 2009), soil pollution and groundwater pollution (Rowntree et al., 1991). From agricultural sources also arise eutrophication that leads to loss of wetlands (some countries with up to 80% lost in the past 3 decades), oxygen deprivation in slow-moving and stagnant water bodies, and death of fish and other aerobic aquatic organisms, and also bringing about a general ecological imbalance and important flora and fauna disappearance, among other results. Also from agricultural activities arise groundwater pollution, a clear signal of possible health problems.

Again, in line with environmental degradation is the development of slums, as a result of urbanisation, leading to deplorable sanitation conditions. The slums develop from the fact that, as people move from the rural to the urban areas in search of better lives, they are hit

by the general high costs that prevail in the cities, and are unable to find places within the cities. The migrants are thus forced to settle around the peripheries of the cities, building much sub-standard dwellings with no water and sanitation facilities, and good grounds for disease spread. These are the well known peri-urban slums.

Urban centres in developing countries are also notorious for poor wastewater (sewage), solid waste, health care risk waste (e.g., Kingdom of Lesotho, 2010) and hazardous waste management. These have a direct link to environmental aesthetics and disease incidence (Aiyuk et al., 2004).

Floods are a common occurrence in urban areas, since, in every city, a large part of the ground surfaces have been paved, making them impermeable to rain water, and thus highly reducing infiltration and percolation, and impacting badly on the hydrological cycle. As a result, water from rain is almost all forced to become runoff, usually leading to the floods that are hazardous to life and property.

The issue of Global Warming and Climate Change, being accentuated by urbanisation, is also known to be linked to the plentiful discharge of Green House Gases (examples being methane, carbon dioxide, nitrous oxide and hydrofluorocarbons) into the atmosphere from industries and, as a consequence, the occurrence of other adverse conditions as drought.

Deforestation is a grave consequence of urbanisation, as the built up areas generally replace previously vegetated areas. Apart from the direct consequences as loss of habitat, the forest is known to be the main carbon sink that could take in most of the carbon dioxide produced (for photosynthesis). Also as a result of deforestation, various wind effects- hurricanes,



tornadoes, cyclones, etc, have become more intense and devastating. General devegetation also increases the incidence of erosion. Many developmental (urbanisation) efforts also destabilize slopes, leading to rockfalls and landslides, what are common in many developing countries.

### **Human Health Impacts of Urbanisation ("Fingerprints on Health")**

Also in connection with urbanization result many undesirable health impacts, causing pathogens to flourish in the environment and thus easily infecting humans. Urbanisation facilitates for the transmission of the pathogens include overcrowding, poor sanitation and general pollution of water, land and air. There is also noise pollution. Examples of diseases that result from conditions like overcrowding due to urbanisation are air-borne diseases like acute respiratory infections (ARIs) (e.g. pneumonia, influenza and measles), meningitis, tuberculosis, anthrax, chickenpox and smallpox and pneumonic plague. Cancer is also a disease that is linked to air transmission, through the inhalation of air-borne particles of asbestos, lead, etc. Again, as a result of urbanization, pathogens proliferate in water and food, due to the resulting pollution, causing diseases as cholera, dysentery, typhoid, encephalitis, etc. As the World Health Organisation estimates, each year, about one billion people worldwide are affected by diarrhoeal diseases, and the same number suffer from other diseases like schistosomiasis.

It is important to mention diseases that are linked to actual contact of one person and another, a condition that is easily satisfied also by overcrowding. These are, for example, scabies, ringworm, eczema, conjunctivitis and pediculosis.

Parasites also abound where pollution is rampant, leading to breakdown in sanitation and hygiene, and, in this case, one may cite the intestinal protozoa like Entamoeba and Giardia, and the worms, such as roundworm, hookworm, tapeworms and the blood flukes. Yellow fever is also a good disease example whose risk factors include rural to urban migration, overpopulation, poor water supply and sewage disposal. The sexually transmitted diseases, e.g., gonorrhoeal diseases and HIV/AIDS, can have their transmission aggravated by poor hygiene and sanitation.

In addition to diseases, urbanisation leaves many other impacts on health. An example is stress (cognitive overload) and other stress-related conditions, that tend to generally render people inefficient and unproductive in performing tasks.

Associated with construction (development of a built environment that is typical of urban places), occupational injuries (and diseases) are common, often linked to lack of appropriate health and safety measures at construction sites, especially in developing countries.

It is worth mentioning that, from the unbearable pressures mounted on health and other facilities in urban areas due to the high population densities (Cai, 2006), there is that likelihood for diseases to abound.

### **Social Impacts of Urbanisation ("Fingerprints on the Society")**

Although this work focuses on the negative environmental and health changes brought about by urbanisation, the picture presented will be inadequate, if the imprints that urbanisation makes also on the society are not mentioned, and a brief survey of these is here given.

The already mentioned population drifts from the rural to urban areas and their peripheries, the well known rural exodus, leave mainly the old and very young in rural areas. This leads to weakened communities, as these groups of people are hardly able to drive their local economies. Another social impact from urbanisation is an increase in crime, as, many of the people, especially the middle-aged, that migrate to the cities, do not find an easy life as they expected, and resort to other dubious means of living. Again, there is loss of cultural values, what can be termed social change.

Urbanization leads to the creation of a modern society that tends to break down societal cohesion and, as one author puts it, disintegrates a community into a "soup" of individuals. Another drawback is the incidence of accidents, e.g., road and construction accidents. Road accidents arise mainly from vehicular speeds on the paved roads, as everyone seems always to be in a rush, another sign of the previously mentioned stress condition.

### **Conclusion**

Urbanisation, despite its good outcomes, has numerous detrimental effects on the environment, and consequently on human health, as the environment remains the main seat of health problems. In fact, at present, man is faced with a dire environmental degradation and health challenges from urbanization, including also many negative social impacts. These call for an urgent drive towards environmental protection and sustainability. As such, the medical practitioners, usually mainly involved with curative measures, should also be active environmental advocates, in order to increase understanding of the part the environment plays within public health issues. Their role, apart from being curative, should

thus also be preventative, restorative and rehabilitative. Indeed, all of mankind is in a "spaceship" called the earth or general environment. There are no "passengers" in this ship, all are "crew", and must take charge, to reverse the dire environmental trends and thus protect public health.

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# Advanced Model of Preventing Cervical Cancer in Lesotho

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# Assessment of Recording and Basic Storage Condition of Pharmacy Drug Stores in Health Facilities in Lesotho

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## **Abstract**

The conditions of storage of pharmaceuticals in health facilities in Lesotho were assessed, with the objective to determine if they met basic ventilation and security requirements, and also record keeping standards. More than half of the health facilities do not meet the basic requirements for ventilation and security, very few keep records in digital form, while almost all use bin cards for the recording of pharmaceuticals. Such a situation indicates that a good number of health facilities do not meet basic pharmacy store requirements, pointing to serious health risks. There is need to improve security and prohibit free access into the pharmacy by just anyone, have temperature regulated storage of pharmaceuticals, and recording done daily in a manner that ensures easy access and retrieval, for example, in digital form, using computers that can also generate reports. Such a study can go a long way to addressing the issue of drug mishandling that is commonplace in Lesotho and other developing countries, and can be an important step towards informing policy in safe handling of pharmaceuticals.

Key words: Pharmaceuticals storage, security, ventilation, record keeping.

## **Introduction**

Health facilities in Lesotho, like in other countries, have pharmacy stores for storage of pharmaceuticals. A pharmacy store is a storage room for pharmaceuticals, normally found in every health facility. The requirements for

pharmaceuticals storage include a controlled temperature, away from humidity, direct sunlight and dust (Arshed et al., 2011). These conditions need to be met in order for the pharmaceuticals to remain in good condition for human consumption.

One of the most important conditions for this storage or handling is a well ventilated store room, which, in this regard, has windows for ventilation, which, according to good storage practice, can be opened, but should be high enough and having burglar proofing, to prohibit unauthorized entry into the store (MOHSW, 2007). Ventilation can also be in the form of fans, or air conditioning. Direct sunlight will affect mostly liquid medicines and change the colour of the medicine due to photochemical changes and this will affect the confidence of the patients on the medicine (Aulton, 1988). Hence the windows should not allow direct sunlight onto the pharmaceutical products, as some may lose potency because of the direct sunlight (Arshed et al 2011).

There are different temperature requirements for various drug formulations some formulations require refrigeration (2 to 8°C), and these products' temperature requirements are specified by the manufacturers (Winfield's et al, 2009). Room temperature requirements are at temperature of 25°C (range of 15-30°C) (Winfield's et al, 2009).

Any temperature above or below the required range may temper with the stabilities of formulations. Instability of a formulation leads to the

degrading of excipients that may affect dissolution rate and absorption of the drug (Richa et al., 2003). It may also involve the active ingredients, a more serious situation, as the instability will result in loss of efficacy, exposing consumers to less effective medicines, and patient will lose confidence on the medicine and also on the health system (Arshed et al 2011).

Another condition for the proper storage of pharmaceuticals is the security which will restrict entry, avoiding unauthorized entry into the pharmacy store, to ensure safe keeping of the medicines. The security can be in the form of bugler proofing on the door and windows. There are other storage security measures that will not be discussed here.

The recording of pharmaceutical in a pharmacy store is a very important procedure, and record should be kept in a continuous manner. Such record can be a paper based record, or, it can be a computerized (digital) record. The record shows the movement of the stock, expiry dates, and the strength of each pharmaceutical item. This recording is important for auditing, quantification, and it can give an indication of when to order new pharmaceuticals and when to move stock before the expiry is reached. As such, it is evident that a good computer system will be of great value for the proper and efficient storage and tracking of pharmaceuticals.

#### Statement of the problem

Manufacturers go into intensive research into the drug formulations, especially those that will be exported to countries around the world with climatic conditions. Drug formulations should withstand transportation until they eventually reach the patient. Manufacturers normally specify these conditions so that the drugs may maintain their integrity up to the point of use. That is why proper storage of these drugs is important, however, in Lesotho the storage conditions are

not appropriate, and drugs in the clinics are not in the hands of properly trained personnel, and this in turn, exposes patients to the risk of using drug with unknown quality. More so, for drugs to be available in a country, requires high expenditure, that could be turned into savings if there is a proper drug storage facility. (Brown et al., 1984) Therefore it is important to carry out this research in order to establish the storage conditions of the health facilities in Lesotho.

#### Objective

The objectives of the study were therefore to make an extensive evaluation of the state of handling of pharmaceuticals in Lesotho, in connection with the security of pharmacy stores, their ventilation, and the kind of recording systems used by the health facilities

#### Methodology

Pharmacy stores of 145 health facilities comprising 14 Hospitals and 131 Health Centres were included in the Health Facility survey. There are 22 health facilities in the urban areas of Lesotho, and 123 in the rural areas. This survey was carried out over a period of 21 days, after an approval from the ethics committee of the Ministry of Health and Social Welfare of the country.

Data collection for the pharmacy stores was done through interviews and making elaborate personal viewing of the facilities. Confidentiality forms (in English and Sesotho (the local language spoken in Lesotho)) were filled by the 12 researchers and the 145 interviewees.

Data collection quality control was carried out by filling and signing data quality control forms at the clinics before leaving by the researchers and supervisors. Data abstraction analysis was carried out by data abstractors using SPSS version 19, and data entry and data cleaning rules

were followed and quality control of data entry was carried out. Statistical tables were then generated and tables and figures were made and discussed.

**Limitations**

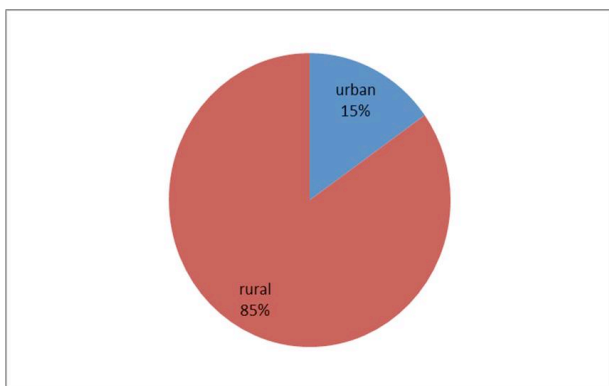
No Pharmacy store had a computer for stock control The majority of the health facilities in Lesotho are in the rural areas with no reliable supply of electricity, therefore electronic equipment such as computers could not be used The presence of bin cards was assessed, but not actually how they were filled.

**Results**

**1.1 Location of the health facilities**

Figure 1 shows the location of the health facilities and it can be seen that most health facilities of the study are situated in the rural area with a few in the urban area.

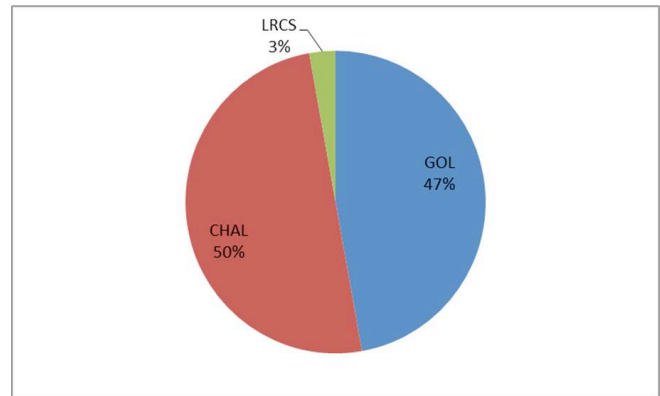
Figure 1. Health Facility Location in Urban and Rural Areas.



**1.2 The ownership of the health facilities**

From figure 2 it can be observed that in the study most health facilities were owned and run by CHAL, followed by those owned by government of Lesotho, and a few health facilities were run by Lesotho Red Cross Society.

Figure 2. Ownership of the Clinic



The results of the survey are presented in Table 1, where ventilation, security, and the form of store record keeping computer availability are shown.

**1.3 Ventilation, security and record keeping in the health facilities**

Table 1: Response from the health facilities showing for ventilation, security, record keeping and computer availability

Item	Response	Frequency	Percentage
Ventilation	Yes	65	44.8
	No	80	55.2
	Total	145	100
Security	Yes	60	41.4
	No	83	57.2
	Other	2	1.4
	Total	145	100
Store Record	Bin card	128	97.7
	Computer	2	1.5
	None	1	0.8
	Total	131	100
Working Computers	Yes	46	31.7
	No	99	68.3
	Total	145	100

From Table 1, ventilation is present in less than half of the health facilities, and this means that, for more health facilities, there is no form of ventilation. The absence of ventilation impacts on temperature regulation in a pharmacy store. More than half of the clinics do not have proper storage condition. Almost all health facilities use stock cards/bin cards for stock control. Only 32 per cent of the facilities have a working computer. Two per cent of the facilities use computers for stock control. There is one clinic that does not use any form of record for drugs in the store.

### **Discussion**

The results show that most health facilities are in the rural areas, and are mostly owned by CHAL and Government of Lesotho. Ventilation of the pharmacy stores is not what is classified as well ventilated (MOHSW, 2007: 16), because more than half of the health facilities do not have good ventilation, and this is a requirement for proper storage of pharmaceuticals. Ventilation helps to regulate the temperature inside the pharmacy store. Higher temperatures may cause damage to some of the pharmaceuticals, especially liquid formulations, injections, eye preparations and other thermo labile pharmaceuticals (Winfield et al 2009). This is why pharmaceutical manufacturers normally specify storage conditions for each drug, such as temperature and humidity (Arshad et al., 2011). These storage requirements must be met during transportation and storage of pharmaceuticals for the pharmaceuticals to keep their intended efficacy which is a parameter reflecting the limit of the dose-response relations and is clinically used to make decision where large response from the drug is required (Katzung 2007), and potency which refers to the concentration or dose of a drug required to produce 50 percent of that drugs maximal effect (Katzung 2007). Hence, patients may be exposed to pharmaceu-

ticals that may have lost their efficacy and potency resulting in reduced effects and lower strength that will not impart the desired effects. Aulton shows that an increase in temperature accelerates rate of chemical reaction for drugs and the storage conditions should not be greater than room temperature (Aulton, 1988). Humidity also accelerates the decomposition that results from hydrolysis (Aulton 1988). Humidity affects mostly tablets and capsules. When there is no air circulating in the pharmacy store this leads to increased humidity, and hard gelatin capsule shells may absorb the high water content from the atmosphere and the results will be degradation of the capsules. These hostile conditions may affect the shelf life of the medicines which will make them expire before their predicted expiry dates (Aulton, 1988).

In the health facilities of Lesotho, it seems like all kinds of pharmaceuticals are stored under similar conditions, yet, there are different requirements for different pharmaceuticals, and this may impact more on some formulations than others

As noted earlier (see results), the majority of the pharmacy stores have no proper security measures, and security is maintained in less than half of them. While more than half of the facilities have no form of security for the pharmacy store. This means that security measures to restrict entry into the pharmacy store are not in place. Access to the pharmaceuticals by unauthorized persons that may not be directly involved in pharmaceutical services is not restricted, and the consequences of such ingress need not be elaborated on further. Pharmaceuticals do require proper security to ensure inventory control and proper use (Ministry of Health and Social Welfare, 2008). Pharmacy store access has to be restricted in order to promote accountability for staff managing the pharmaceutical stock.

Recording of pharmaceuticals is part of the good pharmaceutical storage practices (MOHSW, 2007: 20). The record includes all the items in the pharmacy store, comprising the strength and form of the medicine, quantity, how it has been received and distributed, together with the expiry date of the medicine. The record can be kept using a bin card or any pharmaceutical record keeping computer system.

According to the results, almost all the health facilities use the bin card system. Properly kept records will be used to generate monthly, quarterly and annual reports on consumption, expiry and stock outs, in order to improve pharmaceutical service delivery systems (MOHSW, 2007: 20).

Digital recording systems (mainly computers) are available in some facilities, and are not used for stock keeping of pharmaceuticals. The presence of the computers can help in keeping proper pharmacy store records, and to easily make backups that can be stored elsewhere. This can lead to efficient running of the pharmacy store, as it may highlight stock that is about to expire, to reduce wastage and cost associated with it, and also stock that is about to run out, in order to avoid stock outs. The computer system may generate quick and accurate reports for quantification purposes, forecasting for future consumption estimates, and also inform national pharmaceutical requirements, budgeting, and can save time for staff. Data that is present and retrievable accessible can be used for research purposes in order to inform health system of the areas that need improvement.

### **Conclusion**

Currently, the majority of health facilities in Lesotho do not store pharmaceuticals properly, as they lack basic requirements such as ventilation

and security. The records are kept manually with few facilities using digital systems like computers for record keeping. There are still facilities that do not keep records at all.

### **Recommendation**

Based on the study, the following recommendations are given:

1. Record temperatures in pharmacy stores daily, and make sure there is proper ventilation.
2. Ensure security in the pharmacy stores by putting bugler proofing on the windows and doors, or, install other forms of security and key be kept by the personnel in-charge of the pharmacy store.
3. Install digital systems like computers, in order to manage recording and reporting for pharmaceuticals, which will make it easy to store and generate required reports rapidly.
4. Do more research and use the findings to improve the storage of pharmaceuticals.

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# Assessment of Dispensing Records in the Pharmacies of the Health Facilities in Lesotho

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## Abstract

The dispensing record is a patient and drug based record that helps the facility retrieve information for various reasons including medicines, their quantities given to the patient, as well as quantification purposes. The aim of the study was to assess if the dispensing records were present in health facilities in Lesotho. The study was conducted in 145 health clinics using questionnaires and data was abstracted and analyzed using SPSS version 19. The findings of the study showed that most health facilities use tally sheets as the dispensing record which includes information about how many times the drug was dispensed. Fewer health facilities use another type of dispensing record that includes information about which medicines were given to the patient and in what quantities. There were health facilities that did not have any form of dispensing record. It can be concluded that dispensing records are not properly kept in the health facilities in Lesotho and even when kept it does not provide enough information for use in both patient related information and drug quantification purposes. Therefore it is recommended that the dispensing record be in an electronic form and include information about the patient and medicines as well as prescribing.

Key words: Dispensing record, patient information, drug information, tally sheet

## Introduction

The dispensing record is both a patient and drug record that informs the facility about the medicines dispensed, and the patients whom the medicines were given to in which quantities. The record has to have the name of the patient, gender, age, weight and each medicine given with its form, and quantity. This record is ideal as it gives a record about the patients and which medicines were given to them with their quantities, and it makes it easy to trace to see what a particular patient was given and also helps with quantification of medicines when average monthly consumption is calculated. From this information drug –drug interactions can be picked and addressed at this stage before any dispensing can happen. Any allergies can also be picked easily because the record is available. However, pharmacy staff considers the record cumbersome because of their workload.

Another type of dispensing record is a tally sheet, this record lists the medicines and shows the number of times the medicine was given that day, week or month. It shows who filled the tally sheet dispensing record, and it counts the total number of patients seen. It also shows the signature of the person who dispensed the medicines (MOHSW, 2007). This type of dispensing record does not include information about individual patient, and that is the key weakness of the record because it is important to keep the patient dispensing record which in-



cludes all the medicines given. Information from the tally sheet can be used for quantification in order to purchase enough medicines to avoid over stocking of some medicines and/or under stocking of others. An Electronic database from a computer system may be used where patient number and doctor who saw the patient can be recorded as well as all the medicines given to the patient and any kind of relevant information and information retrieval about the patient will be easy and quick.

### **Statement of the Problem**

Keeping a dispensing record for patients and the dispensed medicines allows for easy tracing in cases of harm that may be caused by wrongly dispensed medicine, adverse effect of the medicine, overdose, etc. When patients return to the health facility after being harmed by the given medicines, records can be accessed to establish which medicine was given, if not available, the pharmacy may deny having given such a medicine to the patient. This is against good dispensing practice and shows lack of accountability and tempers with the safety of the patient. That is why it is important to carry out this study to determine the type of dispensing record that is kept in the pharmacies in the health facilities across Lesotho.

### **Objective**

The objective of the study was to assess the type of dispensing record that is being utilized by pharmacies when dispensing medicine to the patient in order to establish good record keeping and enhance good dispensing practice.

### **Methodology**

Pharmacy stores of 145 health facilities comprising 14 Hospitals and 131 Health Centres were included in the Health Facility survey. There are

22 health facilities in the urban areas of Lesotho, and 123 in the rural areas. This survey was carried out over a period of 21 days, after an approval from the ethics committee of the Ministry of Health and Social Welfare of the country.

Data collection for the pharmacy stores was done through interviews and making elaborate personal viewing of the facilities. Confidentiality forms (in English and Sesotho (the local language spoken in Lesotho)) were filled by the 12 researchers and the 145 interviewees.

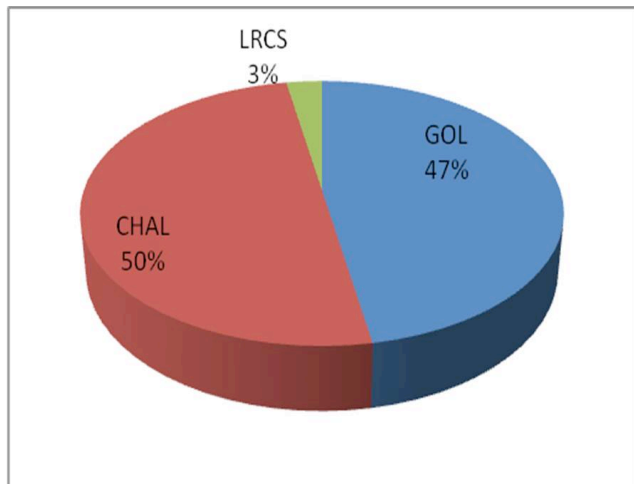
Data collection quality control was carried out by filling and signing data quality control forms at the clinics before leaving by the researchers and supervisors. Data abstraction analysis was carried out by data abstractors using SPSS version 19, and data entry and data cleaning rules were followed and quality control of data entry was carried out. Statistical tables were then generated and tables and figures were made and discussed.

### **Results**

#### **Ownership of the health facilities**

From figure 1 it can be observed that in the study most health facilities were owned and run by CHAL, followed by those owned by government of Lesotho, and a few health facilities were run by Lesotho Red Cross Society.

Figure 1. Ownership of the Health Facilities in the Study.



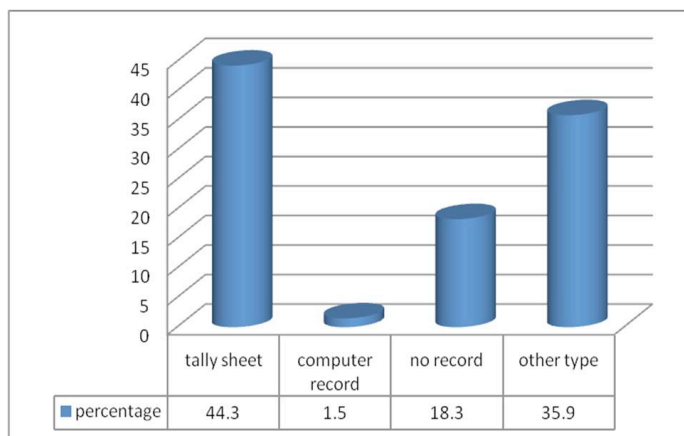
**Location of the health facilities**

The location of the health facilities is mostly in the rural area (85 %) while 15% of them are located in the urban area.

**Type of dispensing record**

Dispensing records were in four types namely tally sheet, note book, none and computer. Most health facilities used a tally sheet followed by a notebook, there are health facilities that use no dispensing record at all, and a few use a computer to keep electronic dispensing records.

Figure 2. Type of Dispensing Record and Percentage of How Many Health Facilities Use Which Type of Record



The results show that tally sheet was the most frequently used type of dispensing record fol-

lowed by other type. There were health facilities that did not keep dispensing record at all. While very few health facilities used a computerized dispensing record.

**Discussion**

The results show that tally sheet dispensing record is the most commonly used record in the pharmacies, and this is the approved record of the Ministry of Health and Social Welfare. Tally sheet records are drug based and give indication of consumption of the drug, which can be used to calculate average monthly consumption. This information can be used to accurately order enough medicines for the health facility. The dispensing record includes description of the item, pack size, count of packs dispensed, total packs dispensed and total number of tablets or amount of liquid dispensed (MOHSW, 2007). It also shows outpatient count, and the total number of patients who visited the facility. However, this type of dispensing record does not show any patient information. Should the patient come back with drug reactions there is no record in the pharmacy to verify that the patient collected that medicine from that pharmacy. The record is unable to pick any dispensing errors, leading to failure in accountability for pharmacy staff on any errors that may have occurred. Therefore, tally sheet dispensing records are not sufficient for use in the pharmacy because if a certain drug was given to a patient there is no way to know what other drugs were given to the patient. This information is need to determine whether there can be any drug/ drug interactions. It does not show if there was any uniformity between what was prescribed and what was given to the patient. Senderovitz (1998) showed that discrepancies between medical and dispensing records have both clinical and legal consequences.

The other record was used in the pharmacy, and this other record is a notebook where they write the name of the patient and list all the drugs given to that patient with their quantities. In my opinion this is a better record because details of the individual patient are recorded and it is known which medicines were given to which patient and the record is retrievable should it be needed. However, it is tedious if it is done manually and retrieval also takes a long time, bearing in mind the patient population is seen daily at the clinic. In my opinion, it is better to serve the patient well and have proper record as opposed to serving many with work half done. This type of record is better computerized, this way, it will be faster to enter and retrieve the information and more patients can be served. The system can also be programmed to pick drug/drug interactions quickly. The dispensing record can easily be used for pharmacoepidemiological studies which are the studies of the use and effects of medications in a population, which will be useful in the improvement of the pharmaceutical sector, in general (Hennessy, 2006). The dispensing record can also be combined with the prescription information from the doctors, and also the information of drugs from the store, and make one complete record that can be used for stock replenishing, drug utilization reviews, and can be accessed by all the authorized parties to inform policy, to inform suppliers and the pharmaceutical service in general. Importantly, it can be a patient medication record that can be synchronized with the electronic medical record of the patients, which can be used for future prescribing and dispensing for the patient.

The worst case scenario is when there is no dispensing record at all. This means that there is no record for the patient, there is no indication that the patient came to the pharmacy that day, therefore his/her information cannot be retrieved, and there will be no accountability on

the side of pharmacy staff. On the consumption side, there will be nothing to use for average monthly consumption which is used for quantification of medicines to be ordered. This will result in under stocking of medication and forcing patients to go home without some of their medicines. This has serious consequences when the health facility is in the rural area and the patient has no alternative but, to go without the medicines. While in the urban areas it will be easy to source medicines in other health facilities or buy from the community pharmacy. Overstocking of medicines will result in medicines expiring on the shelf because they have not been used before their expiration date. The latter is costly to the state funds, while the former leaves the patient with no medicines, and leading them to lose confidence in the health system. It will also be difficult to correlate prescriptions with what was dispensed to the patient and many studies have shown that this is a problem, and that tempers on patient management and safety (Andersen & Fog 1998).

### **Conclusion**

It is concluded that manual dispensing records do not include all the required information about the patient and the drugs dispensed to them. The need for this type of dispensing record is enormous, that is why it should be done properly, and in a quick manner. Information should be retrievable for various reasons including research, quantification, toxicities and dispensing errors. Having no dispensing record at all that is kept in the pharmacy is considered a bad dispensing practice.

### **Recommendation**

From the results the following recommendation are made:

1. Orientate pharmacy staff about the importance of PMIS

2. Have a computerized information systems that will keep stock, capture prescription and allow for dispensing
3. Have data clerks to enter data into the computers
4. Supervision for pharmacies in all the facilities is crucial.

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# Felicitations to Dr. Sebaka Malope, An Academic Achiever of the Family Medicine Specialty Training Program

## 16 November 2011

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The Family Medicine Specialty Training Program (FMSTP) which started in Leribe, Lesotho has chalked yet another milestone when its first student passed his final exams. Dr. Malopi graduated from the University of Free State Medical School in 2004 and was recruited into the FMSTP in 2008. He passed all his practical and theory examination with flying colors. In recognition of his hard work the Lesotho Medical Association in partnership with the Lesotho Boston Health Alliance (LeBoHA) organized a felicitations program at Lehakoe recreation Centre on the 16<sup>th</sup> of November 2011. Dr Rudolf Schumacher, Director of the Family Medicine Specialty Program, presided over the program. Dr. Jack Brain of Boston University School of Medicine was the Guest of Honour. Dr. Rudolf briefed the audience about the FMSTP and read a citation for Dr Sebaka.

Mrs Elizabeth Nkholongo, LeBoHA Country Director, gave the welcome address. She was happy that at long last, "We are reaping the fruits of the seed that was planted some years back." She indicated that Sebaka's determination has proved skeptics of the program wrong. She was full of praises for all who supported the program especially the MoHSW. She thanked the Director of Health Services (Dr Moteete) and the President of the Lesotho Medical Dental and Pharmacy Council (Dr Musi Mokeete) who provided guidance and support for the accreditation process.

Dr Mokeete on behalf of the LMDPC and the MOHSW congratulated Dr Sebaka for his resilience, hard work and keeping faith with the program against all odds. He used the occasion to reiterate the commitment of the Government,

LMDPC, MOHSW and the Council on Higher Education to finalize the accreditation process which in his view is long over due.

In his address, Dr. C.K Hoedoafia, President of the Lesotho Medical Association indicated that "It is only fitting that a top academic achiever like Dr Sebaka be recognized by the Lesotho Medical Association. He further stated that. "Our members are inspired and motivated not only for Dr Malope to achieve exceptional academic accomplishments in the FMSTP, but also to make a positive impact on our world through the Association's commitment to service."

In his response, Dr Malopi was flabbergasted by the number of people who came to celebrate with him. He thanked the faculty, the MOHSW and the government of Lesotho for the faith they had in him and for the encouragement. He promised to bring the experience and all the investment made on him to bear on the health system of Lesotho. In his own words he promised that "I am not going anywhere for greener pastures, I will remain and serve the people of Basotho whose toil and taxes have made me what I am today, therefore, it is only fair that I return what they gave me."

The Learning and Sharing Forum is organized by the Lesotho Medical Association to provide a platform for medical personal in Lesotho to learn and share among each other on current medical research findings and technology. Again the platform is used to give academic recognition to top-performing medical graduates, as well as scholarships and awards, career and internship opportunities, networking, service and leadership development opportunities.

Membership into the Association is opened to all medical practitioners and has a place for honorary members. For more information on the LMA, please visit "<http://www.lma.org.ls/>" <http://www.lma.org.ls/>.

By Jerry Yahaya, MPH

# Recognition of Dr. Mpiko Ntšekhe, PhD

## December 2011

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Dr Mpiko Ntšekhe graduated with PhD in medicine in December 2011 at Cape Town University.

To my knowledge he is the first Mosotho doctor, to obtain a PhD in medicine, having presented a thesis on pericarditis. He is thus worthy of special congratulations.

Dr Mpiko Ntšekhe matriculated from Machabeng College in Maseru in 1985, and then proceeded to Columbia University in the U.S.A for his medicine degree, after which he was encouraged to do his internship at Medical Groote Schuur medical school in Cape Town, by Dr Solomon Benator, who at that time was Head of medicine there. He was also encouraged to train as a physician and cardiologist, which he completed in 2004.

As the saying goes “like father like son”-Dr Mpiko Ntšekhe is the son of the late Dr. R. Ntšekhe K.C.M.M.O.M (post humus), who was the first black psychiatrist in Southern Africa and who kick-started and established the Mohlomi Mental Hospital. He is in fact proposed the name Mohlomi after the famous sage, who was king Moshoeshoe’s mentor. Dr V.R Ntšekhe was also responsible for the drafting and subsequent enactment of the first Lesotho mental health act of 1964.

Likewise Dr Mpiko’s ,mother (Mrs Julia M. Ntšekhe-nee Nthethe) was the first Mosotho nurse to top final nursing examination of the High Commission Territories Nursing Council in 1964. The High Commission Territories then consisted of Botswana, Lesotho and Swaziland.

Currently Dr Mpiko Ntšekhe is employed in the training and teaching of the next generation of doctors and specialists throughout sub Sahara Africa as well as providing specialised cardiac care for such patients in the region.

By Dr S.T. Makenete