

PROFESSIONAL ORIENTATION

Implementation of mSupply Pharmacy Department of St. Francis Hospital Nsambya



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niet gedefinieerd.

Preface

This report is written to inform about the last part of our professional orientation. A year ago, when we were thinking about this last internship, we decided we would like to go somewhere outside of Europe. We both did our research project outside The Netherlands, but in Europe, and now we wanted to go somewhere completely different, with a different culture, a different world of pharmacy and different healthcare problems.

Where better to go to than Africa. Because the project looked very interesting, St. Francis Hospital in Kampala, Uganda, was very attractive to us. We had contact with Mr. Rutten, the Dutch contact person, who has been involved in the project since the start. After the meeting we had with him in the beginning of January, we decided we really wanted to go to Kampala. We went to see Mr. Rutten again, about two months before we left for Uganda. He instructed us about the program we would use. He and his wife also gave us a lot of information about Uganda and Kampala in particular. We would like to thank Mr. and Mrs. Rutten for realising this last internship for us, and for giving us so much information about Uganda.

We would also like to thank Farmacie Mondiaal, a Dutch organisation which has been involved in the implementation of mSupply in St. Francis Hospital since the beginning, for the financial support.

At last we would like to thank Cheryl Pace and Nessa Quille, the British and Irish pharmacists in St. Francis Hospital, for all the help, instructions, tours in and around Kampala, and of course for letting us stay in their apartment.

1. Introduction

1.1 Ugandan healthcare

The major problem in Uganda is that the poor and disadvantaged continue to be plagued by preventable and communicable diseases while the quality of health service provision continues to be poor. The public are not organized or motivated to demand for quality health services from both the public and private sector.

1.1.1 General health status in Uganda

Uganda continues to have a lot of health challenges. Table 1 shows some of the current available statistics; table 2 shows the proportional morbidity for the 10 major causes of illness in outpatient departments.

Table 1: Statistics of health indicators ¹

Indicator	Value	Source
Average life expectancy	49 years	UDHS
People dying from malaria annually	320	UDHS
Mosquito net coverage	34.3%	UDHS
Population more than 5km from any health facility	51%	UDHS
Contraceptive use prevalence	23.7%	UDHS
Maternal mortality rate	880/100,000	WHO
Infant mortality	87/1,000	UDHS
Immunisation coverage at 12-23 months	46,2%	UDHS
Access to clean water	52%	UDHS
HIV prevalence	7%	UDHS
Deaths due to AIDS annually	91,000	WHO
Amount of doctors per 10,000 of the population	1	UDHS
Total health expenditure of gross domestic product	7.3%	WHO

(UDHS is the abbreviation for The Uganda Demographic and Health Survey 2006)

Table 2: Proportional morbidity for the 10 major causes of illness in outpatient departments (1997-2001) ¹

Diagnosis	1997	1998	1999	2000	2001
Malaria	28.5	32.2	31.6	33.9	39.1
Acute respiratory infection	14.1	13.8	13.4	13	16.3
Intestinal worms	9	8.4	8.5	8	8.1
Diarrhoea	7.1	6.3	6.4	6.5	4.9
Trauma	6.6	6.5.	5.8	5.6	4.8
Pneumonia	8.1	6.4	6.1	5.6	3

¹ Voluntary Service Overseas – Health Programme Area Plan – VSO Uganda Programme Area Plans

Skin diseases	4.7	4	3.9	3.5	3
Eye diseases	3.8	2.7	2.7	2.5	1.9
Aneamie	2.1	2.3	2.4	2.2	2
Ear Diseases	1.5	1.5	1.6	1.5	1
Other	14.5	15.9	17.6	17.8	15.9
Total	100	100	100	100	100

1.1.2 Government strategies

The Ugandan government has made a Health Sector Strategic Plan (HSSP) in 2000 which was implemented the years following. It was the first major challenge to the status quo since independence in 1963. Health indicators have improved slightly but not by much and Uganda is still challenged by ill health with most of the burden of disease continuing to come from malaria and other communicable diseases. HIV and AIDS continues to be a concern with the prevalence stagnating at around 7% and in some communities beginning to increase again. This will continue to be a concern to the health system and economy as a whole. The government has reviewed HSSP I and is implementing HSSP II now, learning from HSSP I and with some minor adjustments. HSSP II will focus more on getting the community on board to take more responsibility for their health and health system.

The government has put a lot of emphasis on infrastructure development including the development of health sub-districts within the district. In order to develop these health sub-districts the government is in the process of either constructing what they call health centre grade IV's or working with already existing government or mission hospitals to set up the systems to provide the services. The biggest challenge is to man these units and the Ministry of Health acknowledges that there is a mal-distribution of human resources with up to 54% of trained manpower concentrated in large hospitals or in the bigger towns. Therefore it is in the process of trying to build up the manpower for the health sub-districts. Strategies for this include training, prioritizing certain fields and in many cases upgrading staff in peripheral health units to serve their populations because when they are settled in the rural areas they are more likely to stay there after training.

HSSP I made major changes in the curriculum of medical training, but a lot of challenges remain. Although funding for the health sector is increasing and a substantial amount continues to be provided through donor funding, corruption continues to be a concern, with the health sector perceived by the population to be the most corrupt in Uganda in 2006. The population's utilization of health services has increased with the abolition of fees, but the quality of service has gone down with a lot of drug stocked out at least a month before the replenishments are supposed to take place. There are never enough health staff members to manage health services.²

² Voluntary Service Overseas – Health Programme Area Plan – VSO Uganda Programme Area Plans

1.1.3 *Uganda health policy*

The health policy has been reviewed and rewritten in 1999. The objective of the policy is to reduce mortality and morbidity and ensuring access to a minimum health care package.

HSSP I states the minimum health care package consists of the following components:

- Control of communicable disease including malaria; sexually transmitted infections; HIV and Tuberculosis
- Integrated management of childhood illnesses
- Sexual and reproductive health and rights including essential antenatal and obstetric care; family planning; adolescent reproductive health and violence against women
- Other public health interventions including immunization; environmental health; health education and promotion; school health; epidemic and disaster prevention, preparedness and response; improving nutrition; interventions against diseases targeted for eradication like poliomyelitis, onchocerciasis, guinea worm, neonatal tetanus and measles
- Strengthening mental health services
- Essential clinical care

The minimum health care package has been re-clustered into 4 clusters in HSSP II:

- Cluster 1 Health promotion, disease prevention and community health initiatives
- Cluster 2 Maternal and child health
- Cluster 3 Control of communicable diseases
- Cluster 4 Control of non-communicable diseases/conditions³

1.1.4 *Health system and services*

As part of the implementation of HSSP I and II, the government developed health sub-districts to decentralize health services. These health sub-districts are set in constituencies or counties that serve on average a population of 50,000 to 200,000 people in both curative and preventive health services.

The health centre grade IV or hospital within the health sub-district serves as the referral health unit for the county where surgical interventions can be carried out. Within the health sub-district are other peripheral health units, ranging from health centre grade II, which mainly carries out first aid, to health centre grade III, which carries out more health care activities. Uganda is divided into 80 districts. Each district is divided into counties or constituencies, which are further divided into sub-counties having parishes and villages.

³ Voluntary Service Overseas – Health Programme Area Plan – VSO Uganda Programme Area Plans

In order to develop these health sub-districts, the government is in the process of either constructing what they call health centre grade IV's or working with already existing government or mission hospitals to set up the systems to provide the services.⁴

1.1.5 HIV/AIDS

HIV and AIDS prevalence in Uganda was reduced from thirty percent in 1986 down to about six percent in 2004. Currently the prevalence is going up again and is seen to be disproportionately affecting women with a ratio of one new infection in males for three new infections in females. This is a worrying trend, particularly since women continue to be burdened by pregnancy related diseases and poverty much more than men.

The number of orphaned and vulnerable children due to AIDS is estimated at 1.7 million, and is expected to rise to 3.5 million by 2010. The *United Nations Development Programmes Uganda Human Development Report for 2002* states that households with people living with AIDS in some parts of the country are spending as much as 61 percent of their incomes on treatment, while more than half of the country's hospital beds have been taken up by people living with AIDS.

60% of Tuberculosis (TB) cases co-exist with HIV and AIDS is one of the five leading causes of infant mortality. Numbers of people infected by HIV and TB has overwhelmed the health system and structures. Health staff are also dying from the disease, which is affecting the health service since the numbers of qualified staff reduced by death are not easily replaced.⁴

The ministry has set up two different programmes for free HIV/AIDS treatment. These are called TREAT and Global Fund. Patients just pay handling fees for their medication, but the type of treatment is dependent on the available medicines at certain hospitals. There is also a program for free TB medication, which is supplied through HomeCare.

1.1.6 Malaria

Malaria has historically been a major health problem, and poses the most significant threat to the health of the population at the moment. The disease accounts for

- 25-40% of all outpatients' visits at the health facilities
- 20% of hospital admissions
- 9-14% of in-patients deaths
- Case-fatality rate of 3-5%
- 23.4% of total discounted life years lost
- 23% and 11% of deaths among children under the age of five years in high and medium transmission areas respectively⁵

⁴ Voluntary Service Overseas – Health Programme Area Plan – VSO Uganda Programme Area Plans

⁵ Ministry of Health – The republic of Uganda. The Burden of Malaria in Uganda. Why all should join hands in the fight against malaria. <http://www.health.go.ug/malaria.htm>. Visited on 08/07/08.

The government supplies free Co-Artem (artemether/lumefantine), but just like the HIV/AIDS medication, it depends on the availability of the medicines.

1.1.7 Non communicable diseases

Non communicable diseases contribute to some of the disabilities and morbidity in general. Medical rehabilitation of people with disabilities has not been adequately addressed in the past, as will be described in more detail in paragraph 1.2.8. A high prevalence of communicable diseases is seen in out-patient and in-patient departments of hospitals. The most prevalent non-communicable diseases include diabetes mellitus, cardiovascular diseases (e.g. systemic hypertension and stroke), epilepsy, bronchial asthma and sickle cell anaemia. The ministry of Health has made a report about those non-communicable diseases, and the way to treat and possibly prevent them.⁶

1.1.8 Disabilities

The government of Uganda is committed to uplifting the standards of living for persons with disabilities, since approximately seven percent of people in any community have moderate and severe disabilities which require medical, educational and social-economic rehabilitation, according to the World Health Organisation. Disabilities rates in Uganda are stated in table 3.

Table 3: Disability rates in Uganda.⁷

Disability	Number of Ugandans affected	Percentage of total population
Visual impairment	160,000	0.5-0.8%
Hearing impairment	200,000 – 400,000	1-2%
Loss of sensation because of leprosy	2,000	0.01-0.02%
Movement disability because of polio, amputation, birth injuries or cerebral palsy	500,000 of which 100,000 severe	1%
Learning difficulties	80,000	0.2-0.4%
Epilepsy	800,000	4%
Strange behaviour (mental illness)	40,000	0.1-0.2%

Ugandan government took up an approach initiated by Non Governmental Organisations, and is implementing this approach for medical rehabilitation (treatment and counselling), special

⁶ Ministry of Health - The Republic of Uganda. Guidelines for Non communicable diseases at district level 1998. http://www.health.go.ug/guide_ph.htm. Visited on 03/07/08

⁷ Ministry of Health – The Republic of Uganda. http://www.health.go.ug/action_disability.htm. Visited on 03/07/08.

or inclusive education, socio-economic rehabilitation such as provision of vocational training and income generating projects and psychological support for self acceptance and self realisation.

The ministry of Health has established a Rehabilitation Disability Section whose main mission is to address the medical rehabilitation needs of persons with disabilities.⁸

1.2 St. Francis Hospital Nsambya

St. Francis Hospital Nsambya is a private, non-profit hospital in Kampala. It was founded in 1903 as a Catholic mission hospital. It is owned by the Archdiocese of Kampala and managed by the Little Sisters of St. Francis of Assisi. The mission of the hospital is to provide quality care to all at minimum cost without compromising the economically disadvantaged.

The hospital has a bed capacity of 361 beds, with an average of 18,000 admissions annually and receives on average 200 out-patients every day. It has 5,500 deliveries each year. There are both general and private patients facilities.

St. Francis hospital has specialist services in Surgery, Internal Medicine, Paediatrics, Obstetrics and Gynaecology, AIDS/HIV, Eye care, Physiotherapy, Radiology and Pharmacy. There is also a training school for nurses, midwives and lab technicians.

The vision of St. Francis hospital is to develop a specialised teaching hospital for Ugandans with special attention to women and children, and to develop into a tertiary teaching hospital with training facilities for nurses and midwives up to State-registered level, laboratory assistants and technicians, Intern doctors, and postgraduate doctors in surgery.

The objectives are:

- To provide quality medical care to all people at an affordable cost
- To provide training for Ugandans and other nationalities in all fields of the medical profession
- To observe the highest ethical standards in health care delivery
- To direct resources in a way that ensures continuous improvement in accordance with the changing society's medical needs while taking advantage of the new trends in medical practice
- To uphold the Catholic Moral values
- To ensure transparency and accountability
- Commitment to the hospital mission, vision and objectives
- To cultivate a culture of mutual respect and teamwork
- Commitment to the advancement of medical knowledge⁹

⁸ Ministry of Health – The Republic of Uganda.

⁹ Website of St. Francis Hospital Nsambya <http://www.st-francis-nsambya.org>. Visited on 07/07/08.

More information about the hospital can be found on the website: <http://www.st-francis-nsambya.org>.

1.3 The pharmacy

Before receiving medicines, patients have to pay the costs of their medication at the cashier. The patient receives a note, after which they can collect their medicines at the dispensary. A member of the staff gives the medicines to the patients. The usage is written on the medicines, for example three times a day 5 ml is '3 x 5 ml'. It has to be kept in mind that a large part of the Ugandan population is still illiterate. The dose is (ideally) checked by the employee or pharmacist, other aspects like interactions, contraindications or best possible treatment are not checked.

Some patients have problems financing the prescribed drugs, and as a consequence he/she buys only a part of the prescribed drugs. Frequently the patient does not choose the most necessary drugs, but takes paracetamol and cough syrup instead of antibacterials. There is also an enormous mistrust in Indian medicines, patients believe it does not work as well as European or American brands. This is hard to deal with, since a large proportion of the drugs issued in the pharmacy are Indian or Ugandan (but Ugandan companies are owned by Indians).

1.4 mSupply

mSupply has been introduced in the hospital pharmacy in 2004. It is a pharmacy program which is built for pharmacies in developing countries. mSupply is used in national drug distribution projects, warehouses and pharmacies in more than 17 countries around the world. The program has many opportunities for managing stock, dispensing and reporting.

1.5 Joint Medical Store

St. Francis hospital obtains most its medicines and medical supplies from Joint Medical Store (JMS), the 'preferred' supplier. JMS is one of the largest wholesalers in Uganda. Once a week the hospital sends their order to JMS. The hospital has a credit of 50,000,000 Ugandan Shillings (€20,000) at JMS.

An accountant goes to JMS to collect the order weekly. At JMS the accountant will register at the desk. Before the order is ready it usually takes time, though the order has already been sent to JMS. The accountant has to wait until he/she is called for checking the order. It is not unusual to wait one or two hours before the order is ready. The accountant checks the complete order before taking it to the hospital. All the items are counted. At this stage there are still incorrect parts or missing items. After checking and adjusting, the order is taken to the hospital.

During our internship we visited JMS to get an impression of a wholesaler in Uganda. JMS is a different world compared to a wholesaler in the Netherlands or elsewhere. It is a time consuming procedure to collect the order. The long wait can be frustrating. Even after the order picking there are still many inaccuracies, which have to be adjusted.

2. Aims

The pharmacy of St. Francis Hospital uses the computer program mSupply. At the moment the implementation of mSupply is not finished. This chapter describes the aims for our project.

2.1 Stockroom management

The stock flow is recorded on bin cards in the stockroom and on the computer. However the stock on the bin cards is not always similar to the stock on the computer. The administrative and physical stock should be matched. After stock taking of both medicines and medical supplies the actual stock can be adjusted in the computer.

mSupply has two separate databases, a stockroom and CSSD (dispensary) database. Both databases contain different medicines and medical supplies. Not all items are entered in the same way in both databases, since different names and codes exist for the same item. These differences in item names and codes complicate moving items from the stockroom database to the CSSD database. Both databases should be made similar.

2.2 Training staff

Most of the staff will enter data in the computer eventually. At the moment the staff have little or no computer skills. An important aim during this internship is to train the staff on using the computer and mSupply. The staff are divided into four different groups, according to their skills. In table 4 the goals are given for the different groups.

Table 4: Different training groups

Group 1	Group 2	Group 3	Group 4
Log-in	Log-in	Creating new items and quotations	Creating new items and quotations
Enter items supplied to wards	Enter items supplied from storeroom to wards	Enter items supplied from storeroom to dispensary	Enter items supplied from storeroom to dispensary
Enter supplied controlled drugs	Enter items supplied from storeroom to dispensary	Exporting and importing customer invoices from storeroom to dispensary	Exporting and importing customer invoices from storeroom to dispensary
Enter items supplied to in-patients and patients on discharge	Exporting and importing customer invoices from storeroom to dispensary	Inventory adjustments	Enter items supplied to in-patients and patients on discharge
	Creating new items and quotations	Creating new suppliers	Reports: suggestion order
		Reports: suggestion order	Backup on external hard disk
		Checking price of medicines	Updating procedure
			Email mSupply helpdesk
			Creating new users and new customers

2.3 Management information

After successful implementation of mSupply the program can produce useful information and statistics about the used medicines, finances, stock flow et cetera. The management information is very important for the pharmacy management and hospital Board.

2.4 Standard operating procedures (SOPs)

Data entrance on the computer has to be described in detail in an organized set of SOPs. The SOP's have to be short practical descriptions.

2.5 Pharmacy experience in Uganda

Our personal aim is to learn more about healthcare and pharmacy practice in developing countries, like Uganda.

3. Results

3.1 Stockroom management

During the first week the stock was counted. The physical stock has been adjusted on the bincards and in the computer. Both computer databases were compared and the differences in item names and codes have been corrected. The advantage of two similar databases is that importing and exporting between the databases now runs without errors. These errors have caused problems in the past, with staff not able to fix this problem.

All the items taken from the storeroom (from now on) will be entered in the computer, so the stock on the computer and bincards remain equal. The staff are trained on entering the data in the computer, so they will be able to continue to put data into the computer.

3.2 Training staff

All the staff were trained on using the computer. The staff were trained three times in a period of four weeks. Most of the staff learned very quick, even those without computer experience. During the training there were common problems with using mSupply, which are described next.

- The items are written different on ordering forms from wards and on the computer. This confuses the user. Examples are:
 - ❖ Frusemide – Furosemide
 - ❖ Electrodes – glucose strips
 - ❖ Envelopes small – medical envelopes
 - ❖ Panadol – paracetamol
- Due to less experience with computers, errors in the mSupply program are hard to interpret. For example if you click too fast while entering an item, the computer gives an error. This is not a big issue, but it confuses the staff due to less experiences.

Most of the staff were trained to:

- Enter items supplied to the wards
- Enter controlled drugs
- Enter drugs supplied to inpatients and patients on discharge.

Those three procedures are almost equal. So after three sessions the complete staff was able to put the data into mSupply. However it was important to point out the differences between the different procedures. The differences are stated in table 5.

Table 5: Procedures on entering data in mSupply

CSSD to wards	Controlled drugs	Inpatients and patients on discharge
Ward	Ward	Ward
Item + Quantity	Date	Date + Name
	Item + Quantity	Item + Quantity

The most difficult part of the training was the importing and exporting between the databases. Only five members were trained this procedure. After an introduction of the databases they learned how to import from the storeroom database and then import into the CSSD database.

The more experienced staff was trained on e-mailing, making back-ups, creating new suppliers and items. Because of their experience, during training no real problems were observed.

Apart from training staff on mSupply, some staff were very interested in acquiring basic computer skills, like using Microsoft Word, Excel and Internet. We have trained them in this as well.

3.3 Management information

When the stock data is entered into the computer, after two months useful management information can be generated. A useful tool is the generation of order information and usage of medicines and medical supplies by the different wards.

3.4 Standard operating procedures (SOPs)

Four new SOP's have been written, all describing different procedures in mSupply. The SOP's contain simple text and figures to clearly show how the program works. The new SOP's are:

- SOP Log-in
- SOP Writing an email to the mSupply helpdesk
- SOP Back up on external hard disk
- SOP Export and Import from 'Stockroom' to 'CSSD'

These SOPs can be found in the appendices. Although the SOPs give a good overview of the procedures in mSupply, shorter 'notes' were made. The staff can use those notes for a quick look on how to work.

3.5 Pharmacy experience in Uganda

Working in a pharmacy abroad is a great experience. During the internship we experienced lots of differences in pharmacy compared with the Netherlands or Europe. One of our personal aims was to get an idea of pharmacy in a developing country like Uganda. After six weeks working in a Ugandan Pharmacy we have a good idea of how the procedure are.

In this report (see introduction) we have described Ugandan healthcare, the hospital, the dispensary and procedures at wholesaler JMS as well.

4. Discussion/conclusion

For successful completion of the implementation of mSupply important aspects have to be discussed.

Working on a computer is not common routine for the staff in St. Francis Hospital pharmacy. Therefore it can not be expected that the full implementation of mSupply will be finished within a short period of time. Although we have trained all staff to work with mSupply (and we taught them other computer skills as well), continuation of training staff is important. Computer skills of the staff remain low, so proper training will be necessary to obtain and remain skills in the future, not in the least for new employees. Using mSupply frequently is another important factor, because they will forget the procedures on the computer easily. For the upcoming period a rota will be made to enter data, so the staff will continue using mSupply.

The second important aspect is keeping the stockroom up to date. To achieve this, it is very important that all staff are working conscientiously, because otherwise the stock quantities in mSupply will not remain equal to the physical stock. At the start of this internship we have counted the stock and entered the right quantities in the computer. Since then, we have been entering data in the computer ourselves to be sure the stock in mSupply stayed correct. To be able to have a correct database, during the first two months the data entry by the staff has to be checked to guarantee correct data entrance. After creating a new invoice the staff should print the invoice, so the invoice can be checked by the pharmacists.

At the moment mSupply has two databases, a Stockroom database and a CSSD (dispensary) database. This is done to make sure at least the Stockroom database is correct, which is important for making orders and reports. Because staff were not able to enter data before the training, data was not entered at all. The Irish pharmacist entered movement from stockroom to dispensary or departments, but not from dispensary to wards or outpatients. However, having two databases creates new disadvantages. The first, and major disadvantage is that stock which is moved from the stockroom to the dispensary has to be entered in the computer. This is a difficult job to do for the staff since it involves a complex procedure. Errors are easily made, although the staff is accurately trained. Most difficulties during training were experienced during importing and exporting between the databases, since the existence of two databases confuses the staff. Another disadvantage of the two databases is that new items have to be entered in the same way in both databases, otherwise exporting from the Stockroom database and importing to the CSSD database is impossible.

For these and more reasons, one database for the stockroom and dispensary will be favourable in the future.

Hopefully, after completing training and after usage of mSupply by the staff for a certain period of time, the system will be able to replace the bincards, which are used at the moment.

This will reduce the amount of physical handlings, which might encourage staff to enter data in the computer. This, however, can only take place when all staff are able to work with mSupply without facing problems.

After mSupply is being used for some months, data entrance of supplied items to wards, inpatients and patients on discharge and of controlled drugs (pethidine and morphine), as well as continuation of the data entrance that was already done before (from stockroom to CSSD and from stockroom to departments), mSupply can generate management reports. These reports can be helpful when ordering new stock, but can also show movement of stock from stockroom to dispensary, and the quantity of (specific) items sold within a certain period of time. The reports give an overview of the output of the pharmacy. To acquire accurate information, it is very important that the staff is trained adequately.

Our last concern about complete implementation and continuation of mSupply is management by a pharmacist from a developed country. This will certainly attribute to a successful introduction of mSupply in the pharmacy. The staff needs to be directed on using mSupply regularly. Apart from mSupply, in our opinion it is very helpful to have a Western pharmacist managing the pharmacy, together with a Ugandan pharmacist; the latter is not present at the pharmacy at the moment, which unfortunately makes it impossible to remark on the continuation of the mSupply project under Ugandan management.

In conclusion, we think the implementation of mSupply could successfully be finished in the foreseeable future. At the start of our training sessions, we were rather worried that all would fall apart when we would leave Uganda. But after finishing all training sessions, we believe all staff are capable of imputing data in mSupply independently, without making errors.

For us, this placement has been an incredible experience. We have learned much about what it means to be a pharmacist in a developing country, as well as about healthcare in Uganda. We have gained a lot of experience in training staff, which will be very helpful for our future in pharmacy. Furthermore it has been a real pleasure to work with all the Ugandan staff in the pharmacy, and to learn about their culture and way of life.

5. Appendices

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Appendix 1 Progress report

Implementation of mSupply

St. Francis Hospital Nsambya is a private hospital in Kampala. It was founded in 1903 as a Catholic missionary hospital and has grown ever since; now it has the capacity of 361 beds with 18,000 admissions and 5,500 births annually. The hospital has a broad range of specialities: Paediatrics, Internal Medicine, Gynaecology, Urology, Orthopaedics, Eye care, HIV/AIDS, Emergency Unit and it has a recently built pharmacy.

Ugandan healthcare has to deal with different diseases than healthcare in The Netherlands. Diseases responsible for the largest proportion of morbidity and mortality in Uganda are malaria, acute respiratory infections, HIV/AIDS, Tuberculosis (TB), malnutrition, maternal and perinatal conditions, cardiovascular conditions and trauma/accidents. The state provides some free medicine for malaria (Co-Artem), HIV/AIDS and TB.

In Kampala there are many different hospitals. Most are private hospitals, once started as missionary hospitals, and there is one big state hospital. As St Francis Hospital is a private, non-profit hospital, patients have to pay for their treatment themselves. Patients can choose to be in private wings, where they will pay more for their treatment, but get their own room and better treatment.

Medicines are supplied from the hospital pharmacy to wards, inpatients and outpatients. Outpatients have to pay for the medicines before they are supplied to them; inpatients normally receive medicines from the wards' storage, but occasionally receive them from the pharmacy as well.

Customer invoices, either from wards or inpatients, are registered in books. In order to have full registration and to be able to create management overviews a computer program, mSupply, has been implemented in the pharmacy some years ago. This program is developed for use in developing countries, mainly for registration of received and supplied goods. Although the program has been running for a few years, full registration of supplied medicines hardly takes place at the moment. The main reason for this is that only a few members of staff have been trained to use the program. To ensure implementation and continuity of the mSupply project it will be necessary to have more staff trained to use the program and enter data.

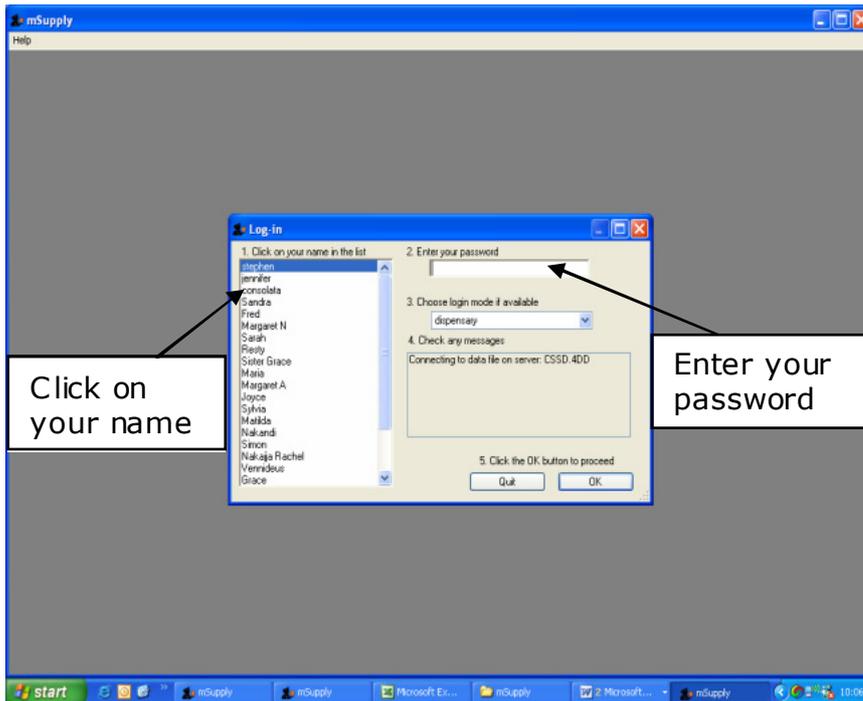
Before starting training staff, the stockroom had to be counted again in order to have correct data in the databases. Also Standard Operating Procedures concerning login, e-mailing the mSupply helpdesk and exporting and importing invoices had to be written, which are used during training sessions.

Appendix 2 SOP Log-in

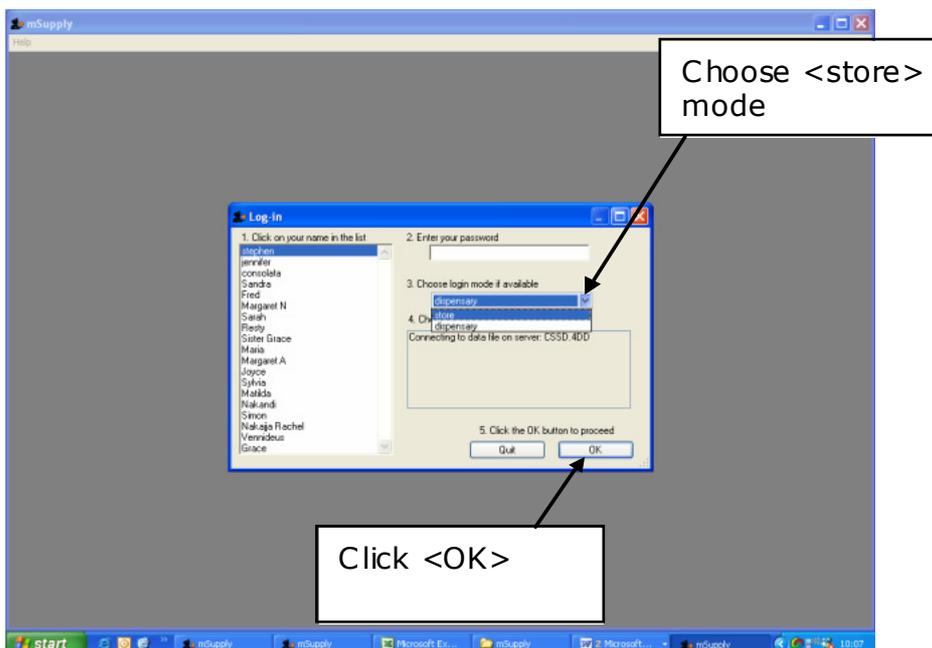
Log-in

Procedure

- Enter mSupply Client
- Click on your name in the list
- Enter your password. Make sure Caps Lock is off, and use capitals when necessary



- Choose store mode
- Click OK to log-in



Appendix 3 SOP Writing an email to the mSupply helpdesk

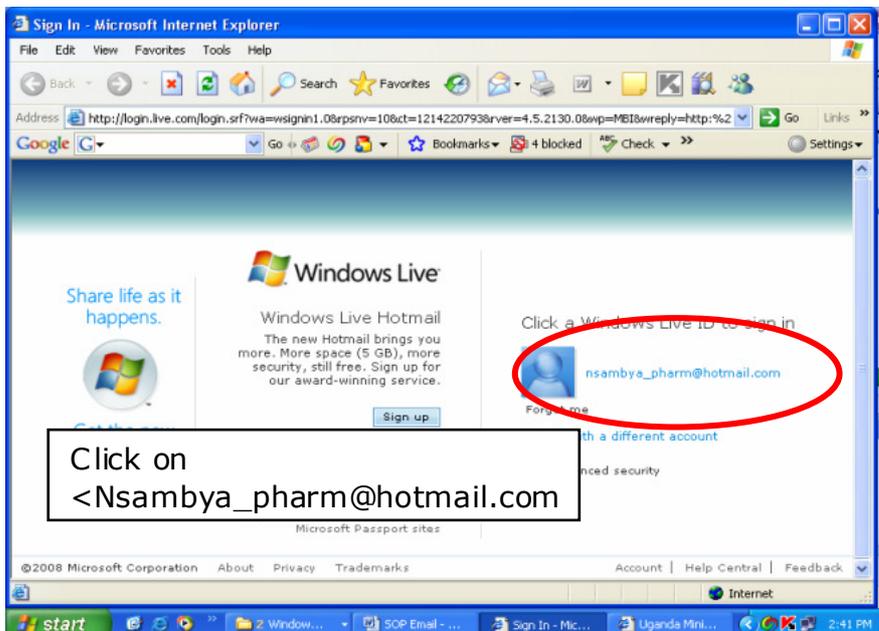
Writing an email to the mSupply helpdesk

Procedure

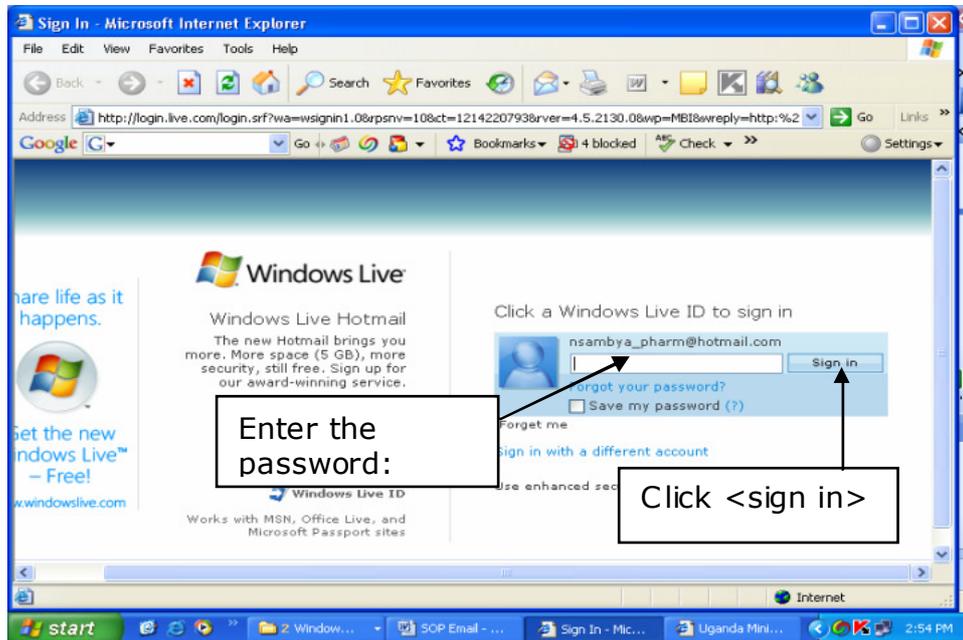
- Double Click on the <Internet Explorer> icon



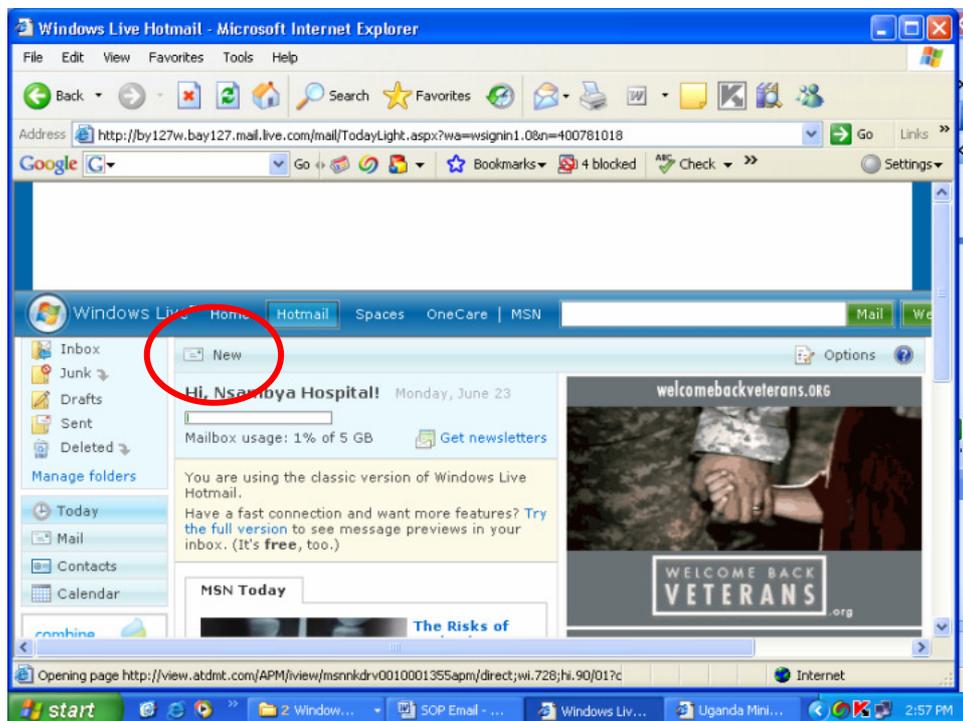
- Click on <Nsambya_pharm@hotmail.com> to start signing in



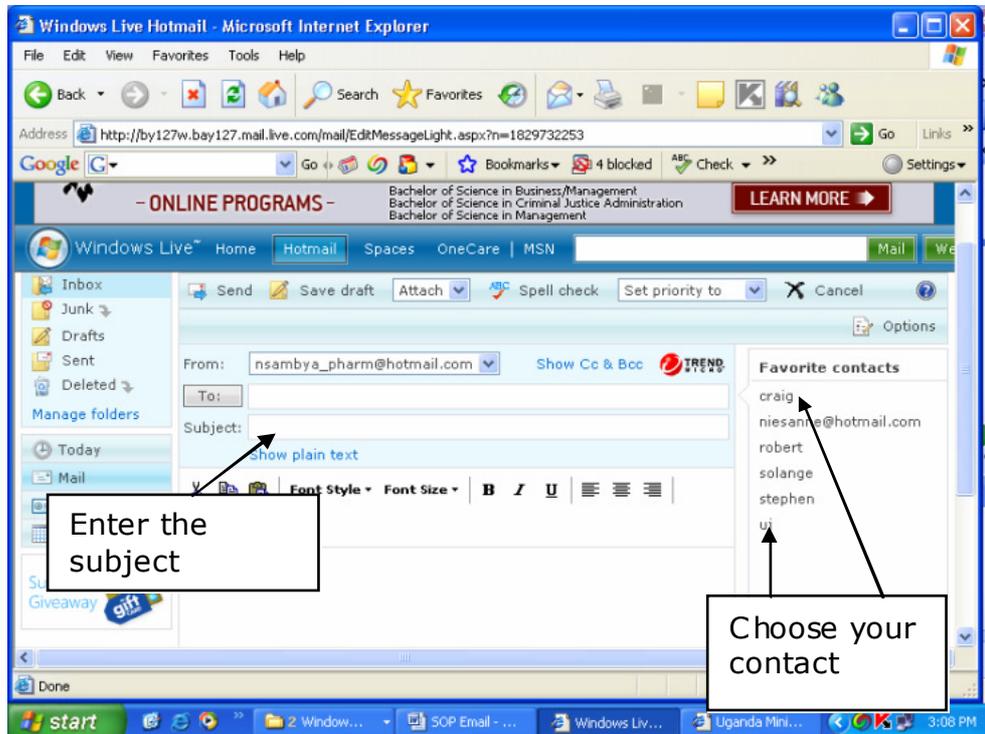
- Enter the password 'msupply'. Make sure Caps Lock is off
- Click on sign in



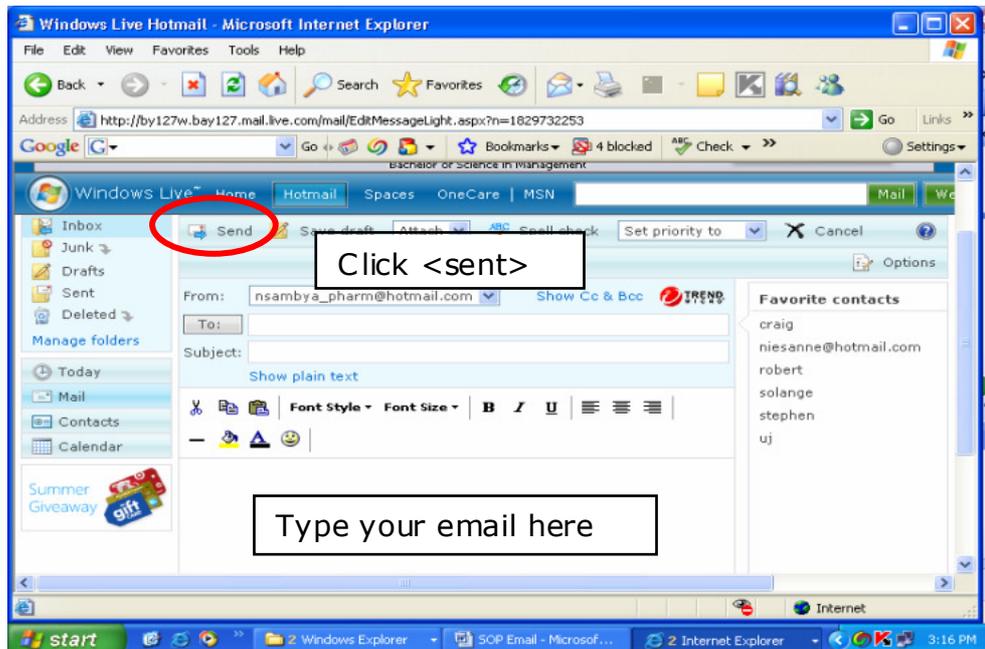
- Click on <New> to write a new email



- Choose <craig> and <uj> as contacts by clicking on the names in the 'favorite contacts' box
- Enter the subject of the email



- Click on the large blank box and type your question or email in the box.
- After you have finished the email, click <sent> to complete sending of the email

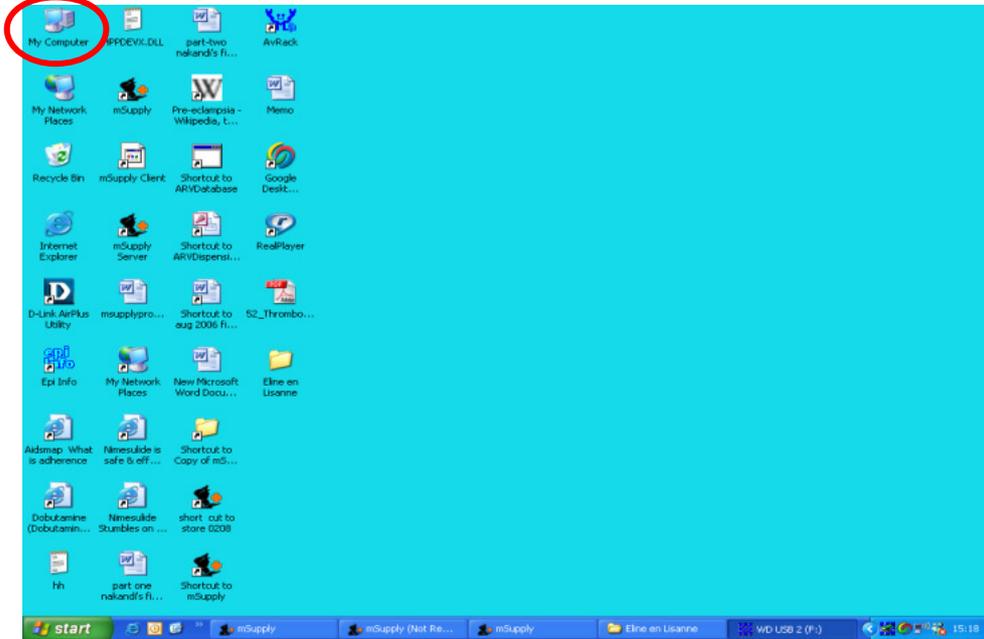


Appendix 4 SOP Backup on external hard disk

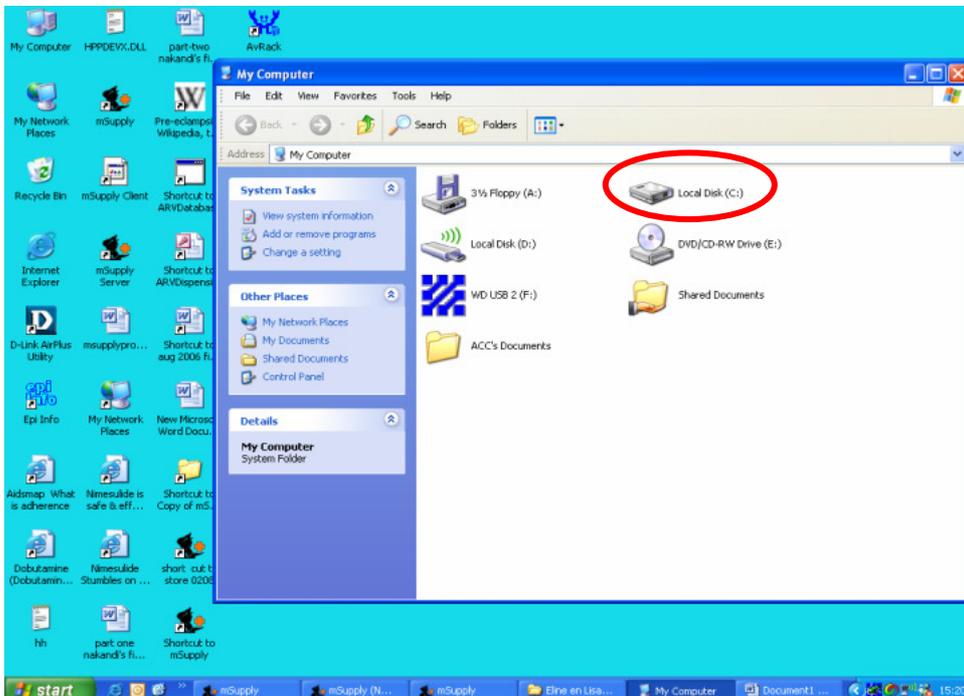
Backup on external hard disk

Procedure

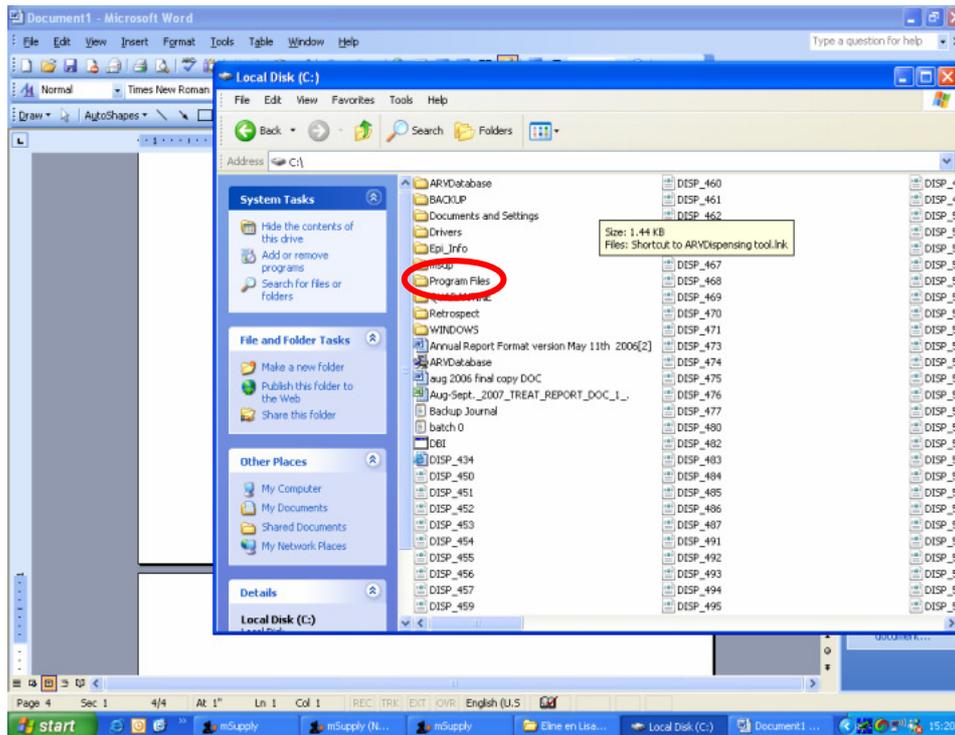
- Double click on <my computer>



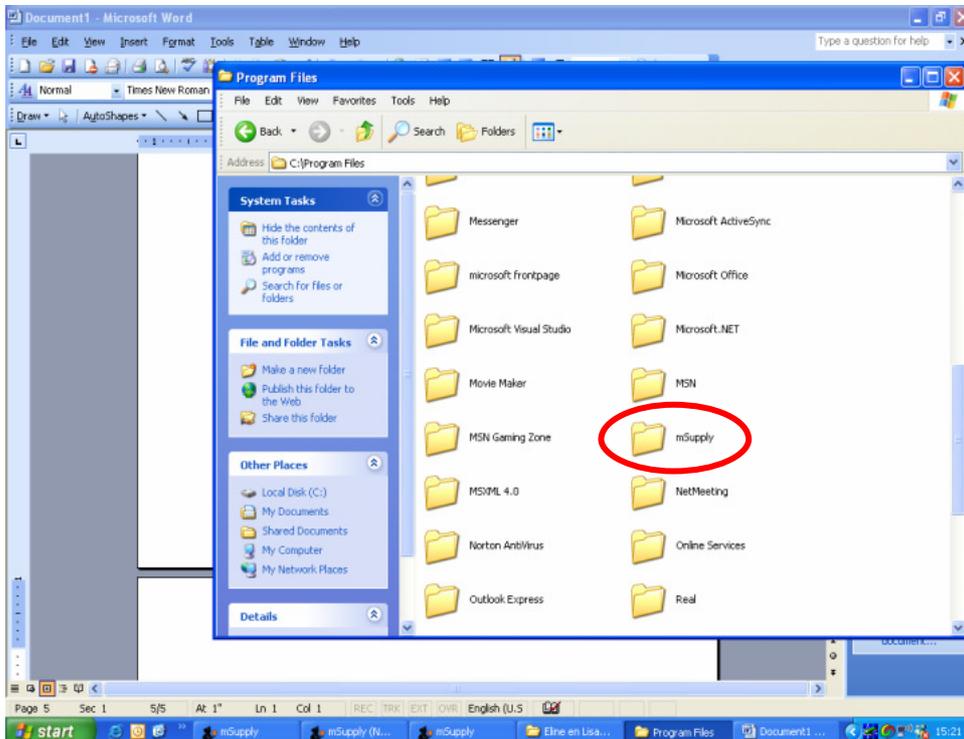
- Double click on <local disk (C:)>



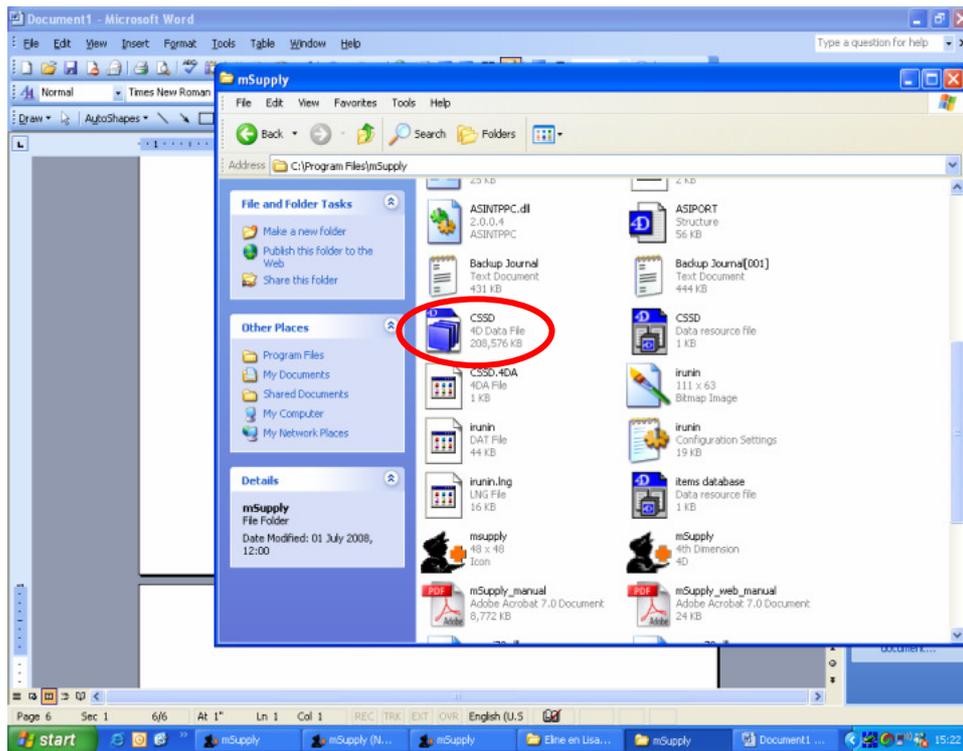
- Double click on the <program files> folder



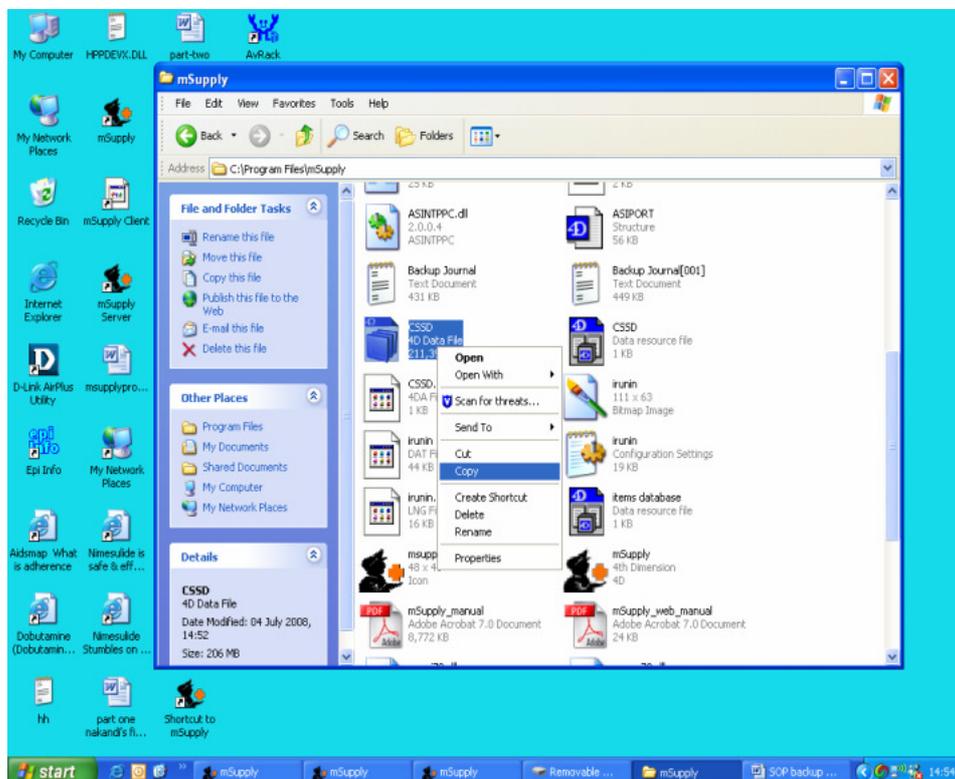
- Double click on the <mSupply> folder



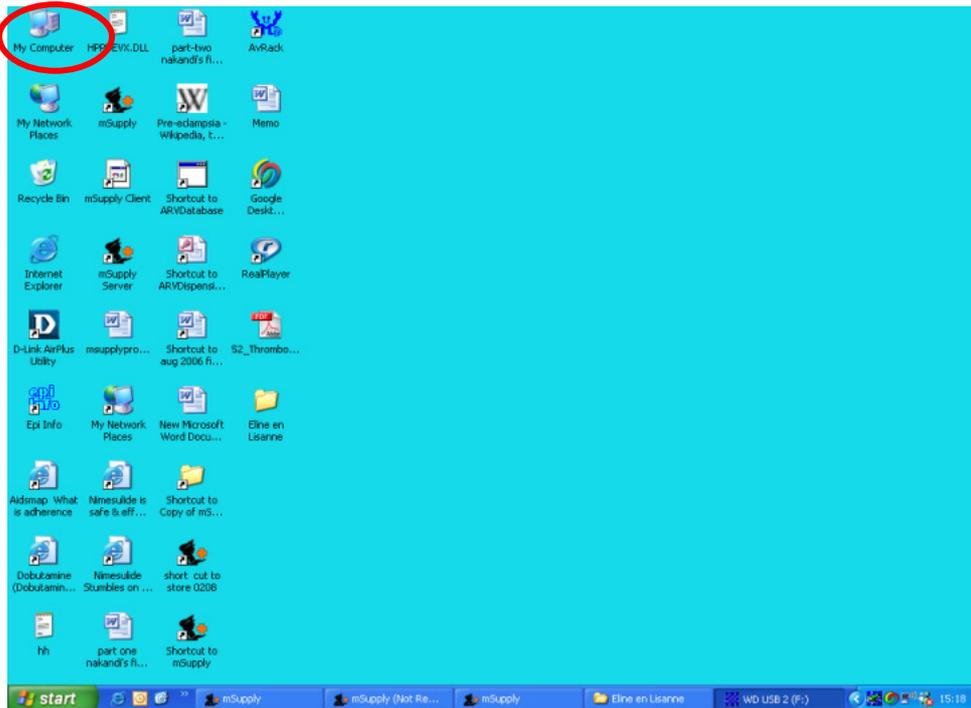
- Click right mouse button on the largest CSSD file 4D data file



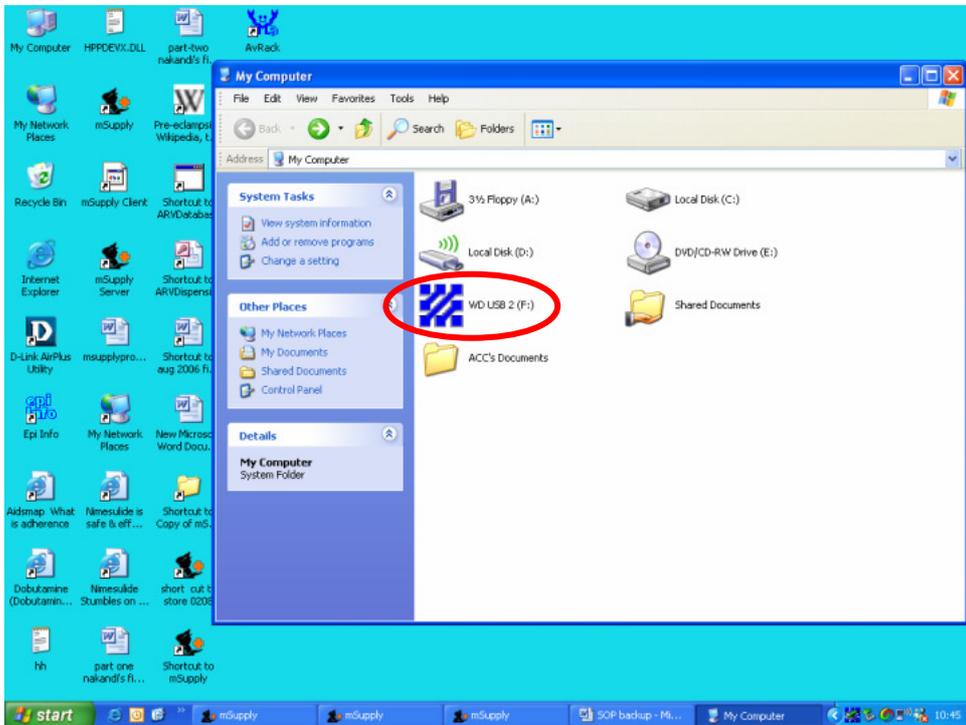
- Scroll down to <copy> and click on it to copy the file



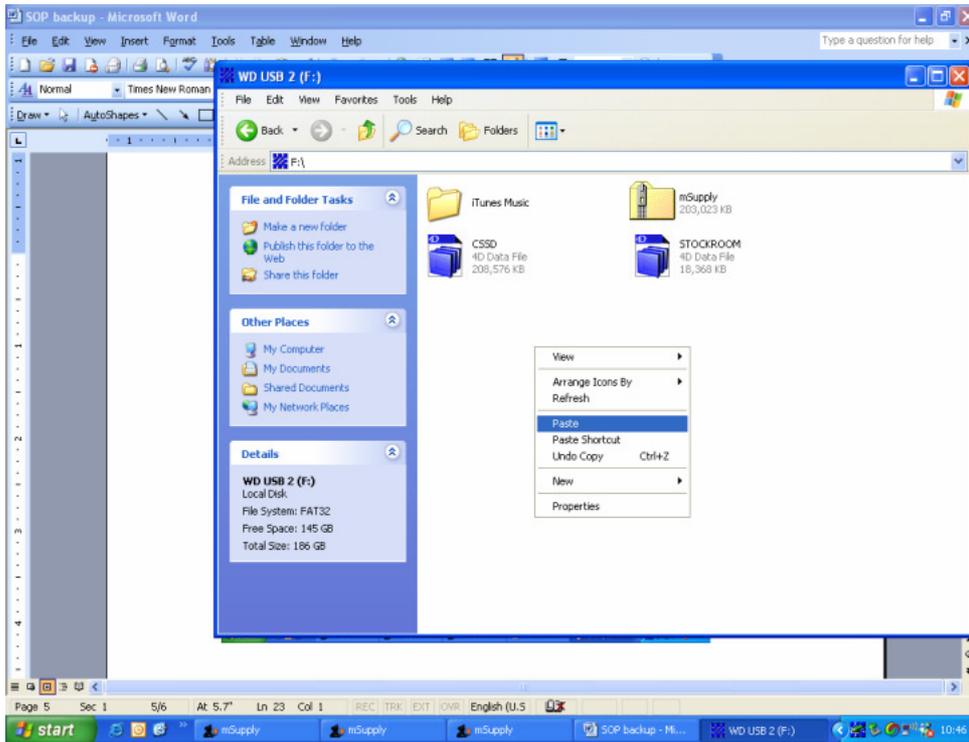
- Double click on the <my computer> icon



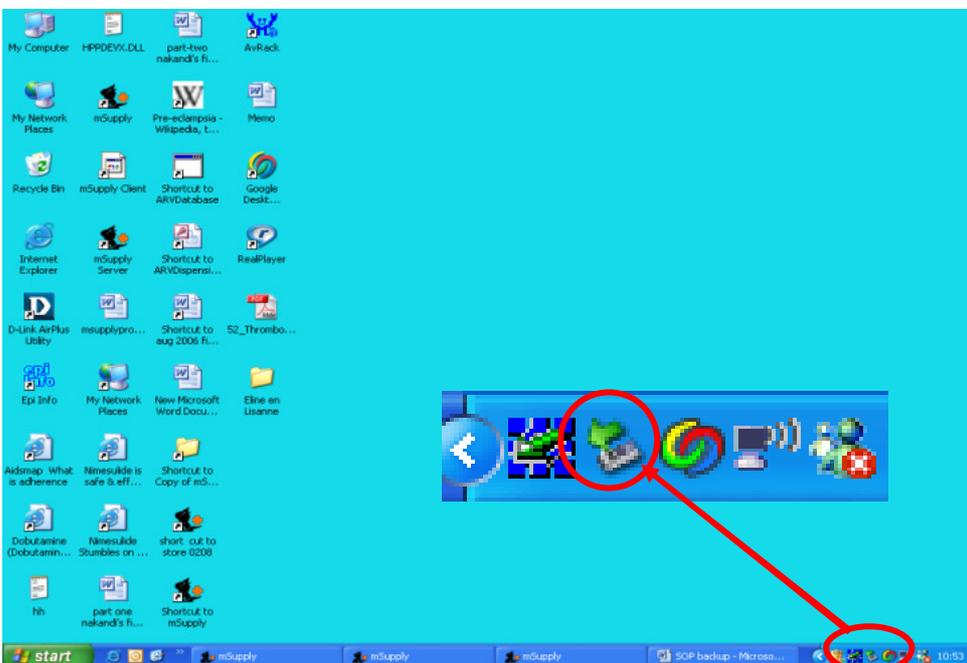
- Double click on <WD USB 2 (F:)>



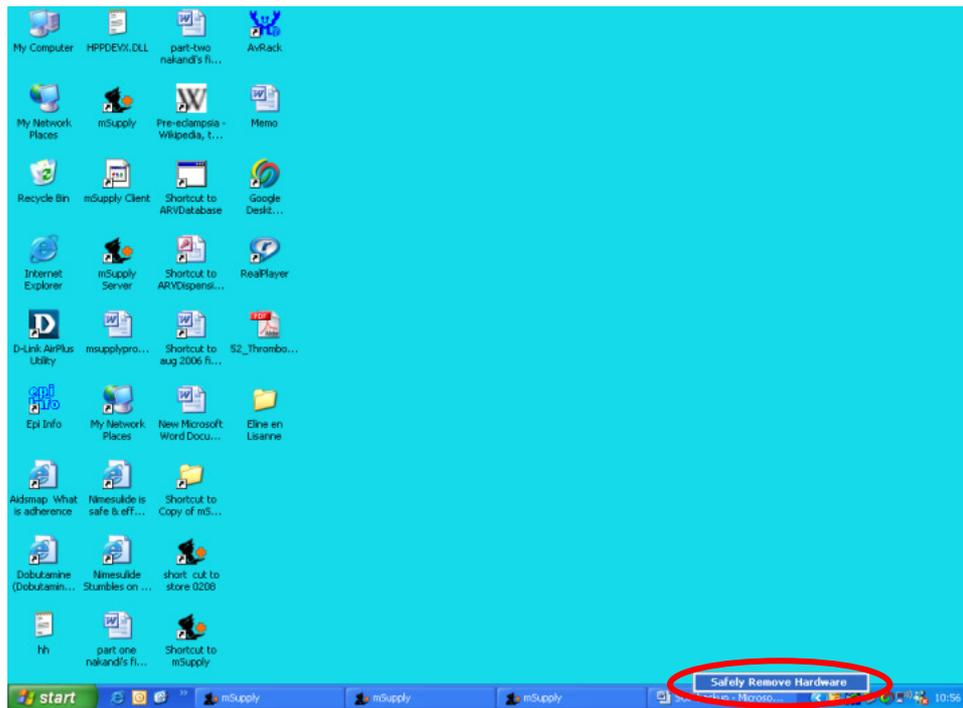
- Click right mouse button and scroll down to <Paste>
- Click on the red cross in the top right corner to close the window



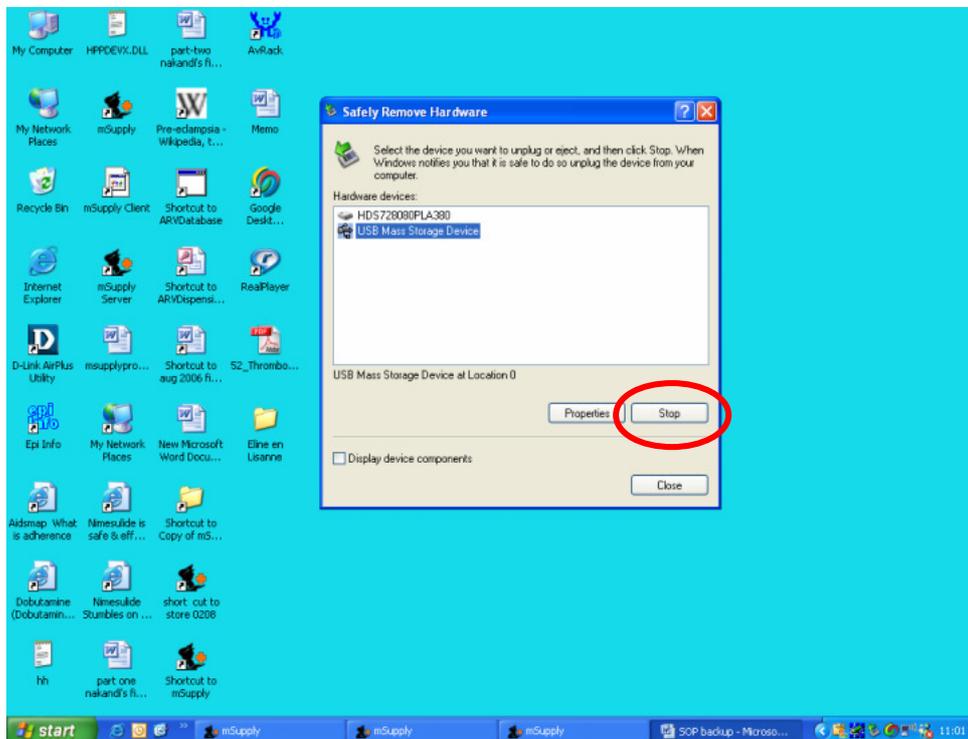
- Click right mouse button on the icon in the taskbar to safely remove the external hard disk



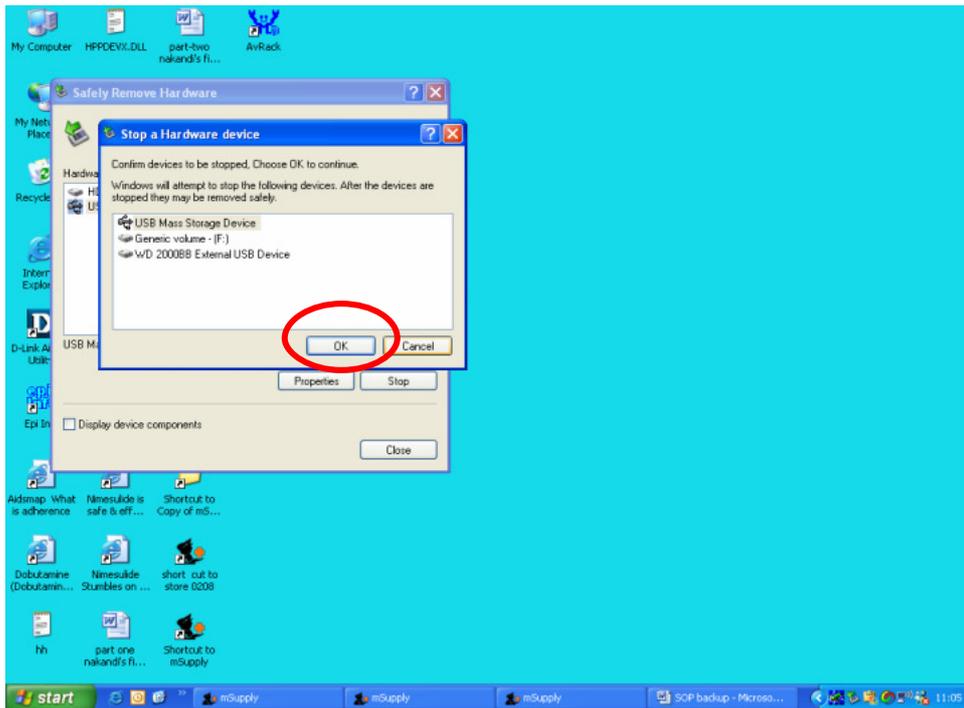
- Click on <Safely Remove Hardware>



- Select <USB Mass Storage Device> by clicking it once
- Click on <Stop>



- Click on <OK> and remove the hard disk from the computer



Appendix 5 SOP Export and Import

Export and Import from 'Stockroom' to 'CSSD'

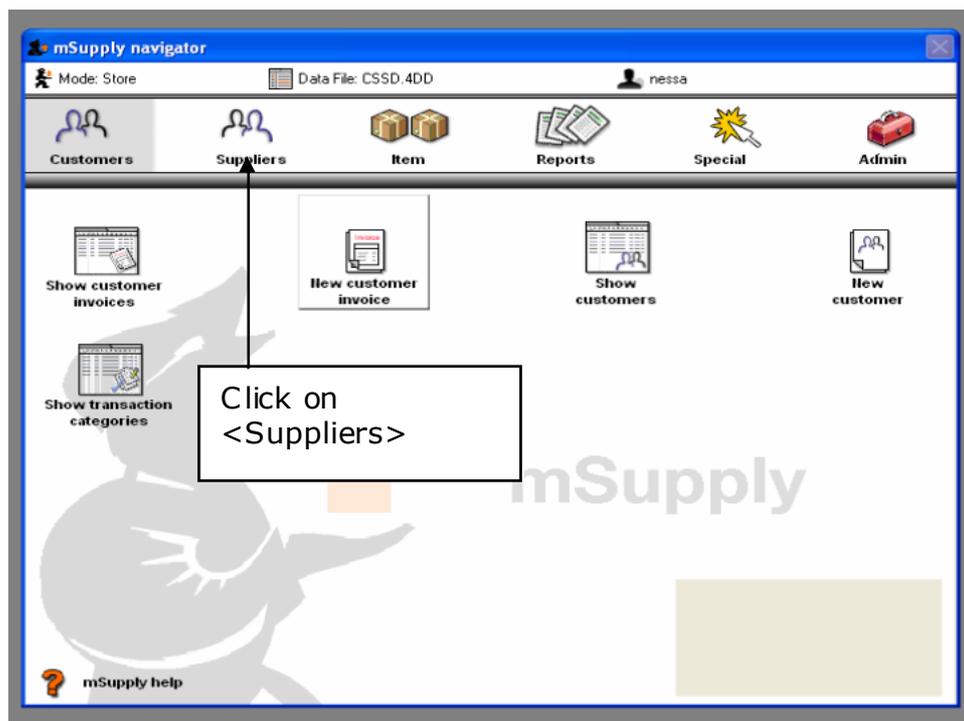
Background

There are two databases in Nsambya Hospital Pharmacy: Stockroom and CSSD. The stockroom is the 'supplier' of the customer named 'CSSD'. These two databases have to communicate between each other: stock that moves from the Stockroom into CSSD has to be recorded. Customer invoices for the dispensary that have been entered in the stockroom database have to be exported out of the stockroom database into the CSSD database.

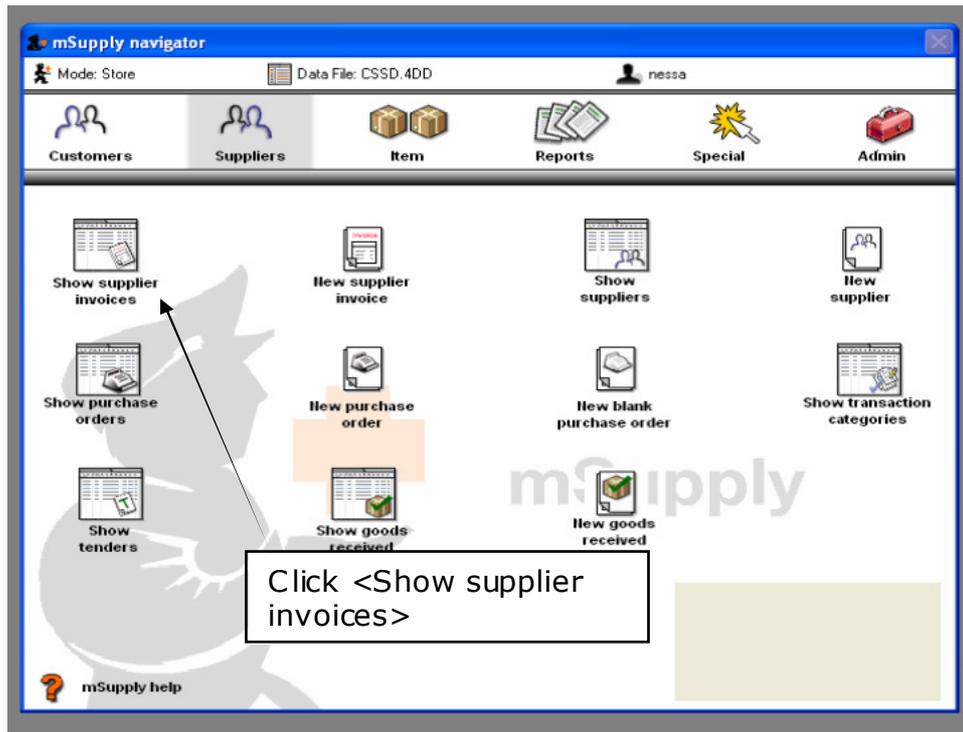
Please note that only the invoices which are going to 'Dispensary' have to be exported and imported.

Procedure

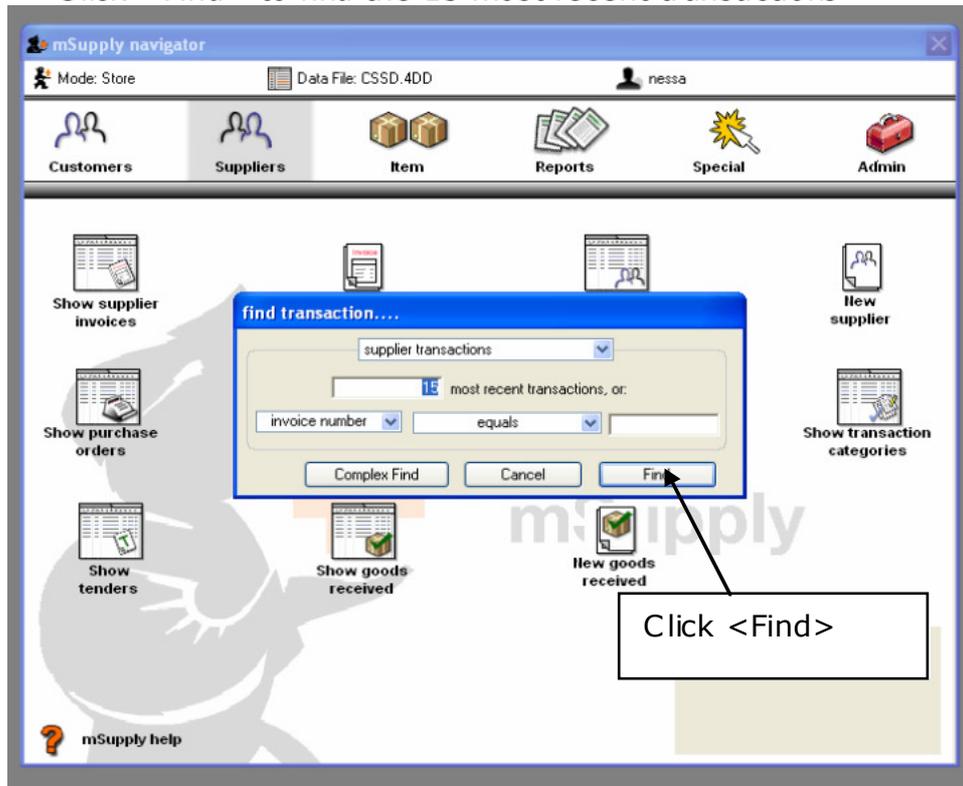
- Go to the CSSD database and log-in in the 'store' mode
- Go to <Suppliers>



- Click on <Show supplier invoices>



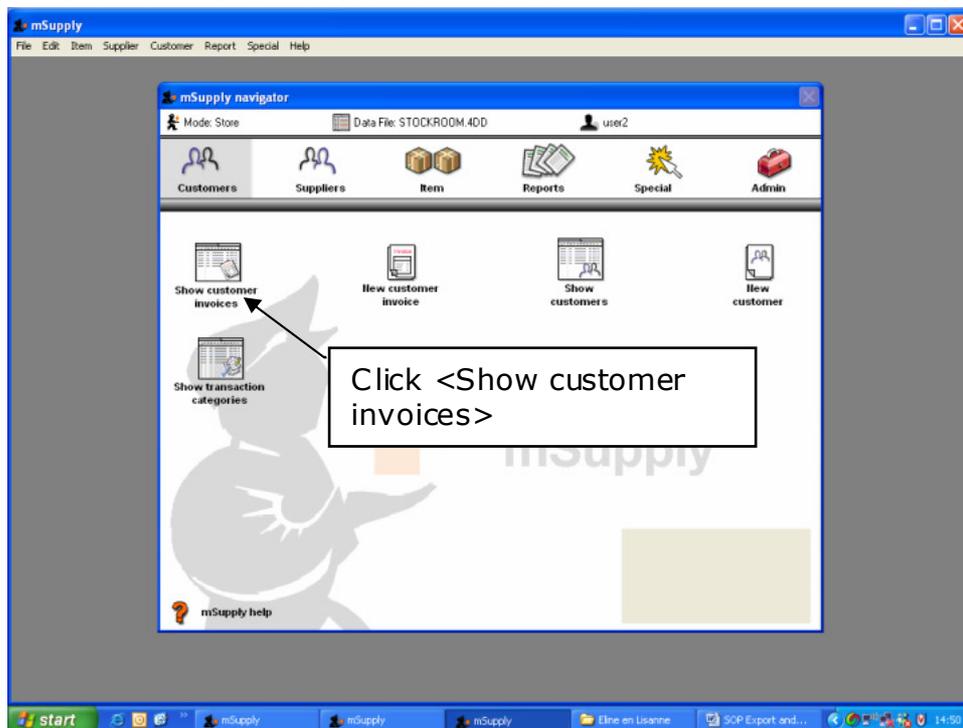
- Click <Find> to find the 15 most recent transactions



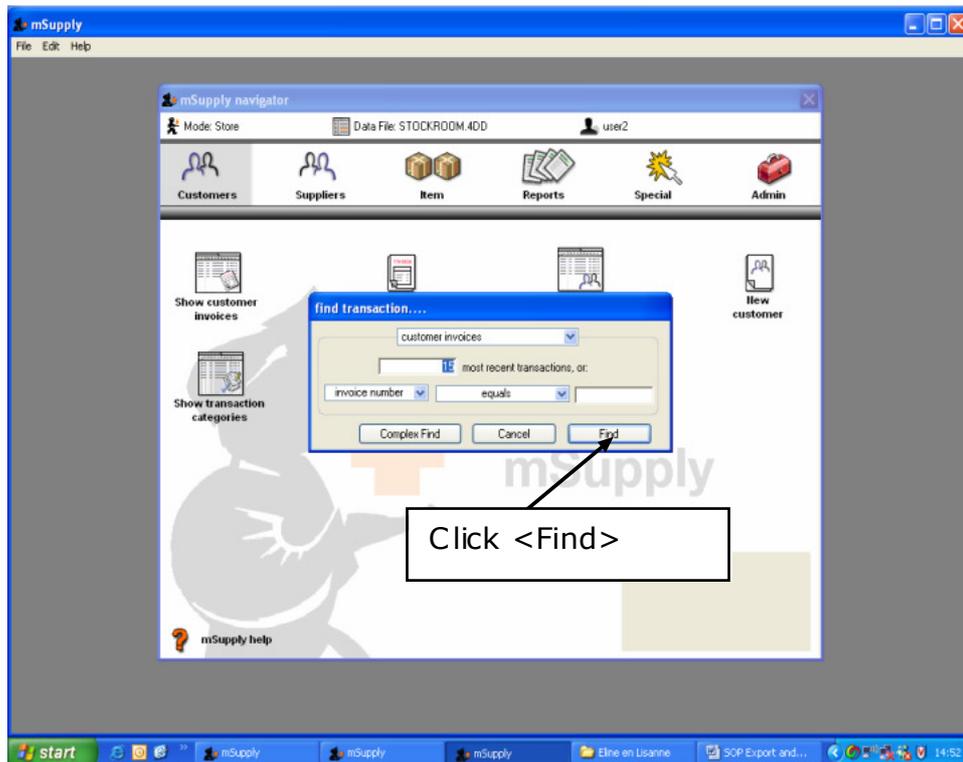
- Look at the last invoice and look up the reference number under <Their reference>

Name	Type	Stat	Entered	Confirmed	inv num	Total	Their ref	Pick slip print date	Invoice print date	Comment	Batch
stockroom	si	rw	12/06/2008	00/00/00	453	5,385,130.76	643	00/00/00	00/00/00		0
stockroom	si	rw	06/06/2008	00/00/00	464	220,003.00	670	00/00/00	00/00/00		0
stockroom	si	rw	06/06/2008	00/00/00	465	33,300.00	671	00/00/00	00/00/00		0
stockroom	si	rw	06/06/2008	00/00/00	469	82,500.00	672	00/00/00	00/00/00		0
stockroom	si	rw	06/06/2008	00/00/00	470	41,000.00	673	00/00/00	00/00/00		0
stockroom	si	rw	06/06/2008	00/00/00	471	150,000.00	676	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	476	1,216,300.00	678	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	477	439,500.00	679	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	478	709,300.00	680	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	479	1,495,262.00	681	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	480	2,896,404.08	682	00/00/00	00/00/00		0
stockroom	si	rw	12/06/2008	00/00/00	481	3,835,326.08	684	00/00/00	00/00/00		0
stockroom	si	rw	13/06/2008	00/00/00	482	5,881,458.40	685	00/00/00	00/00/00		0
stockroom	si	rw	13/06/2008	00/00/00	483	3,018,300.80	686	00/00/00	00/00/00		0
stockroom	si	rw	13/06/2008	00/00/00	484	2,176,550.00	687	00/00/00	00/00/00		0

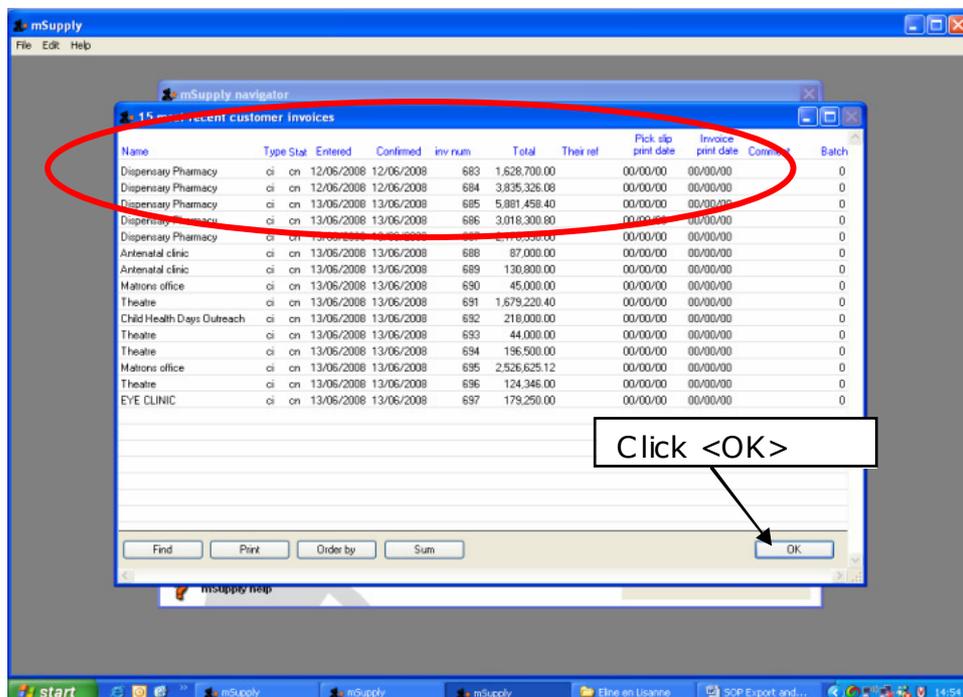
- Go to the Stockroom database and log-in in the store mode
- Click on <Show customer invoices>



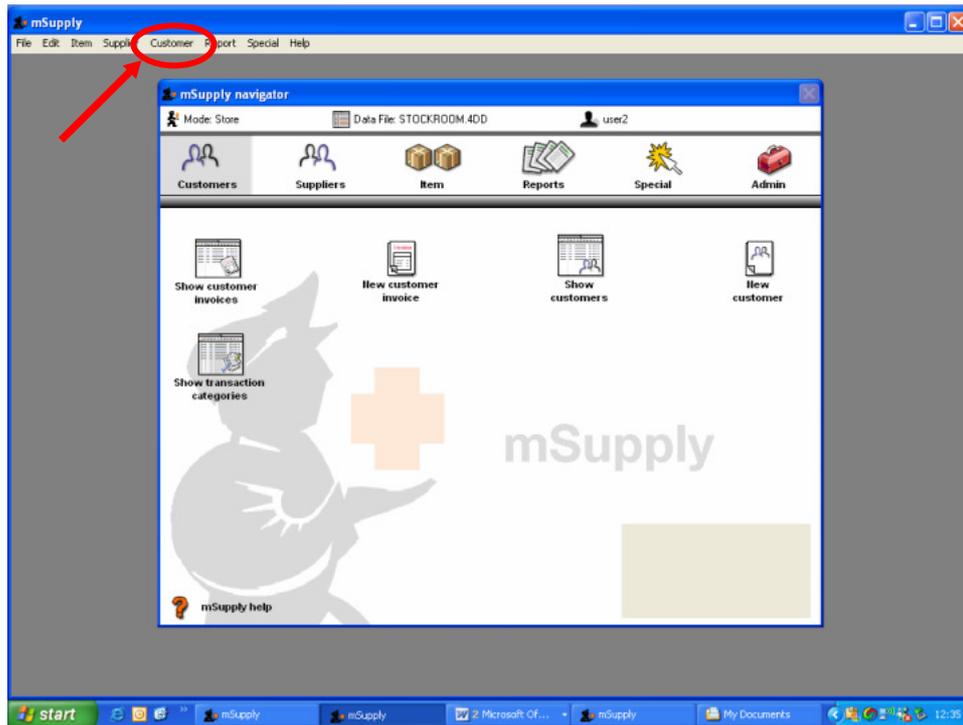
- Click on <Find> to see the 15 most recent transactions



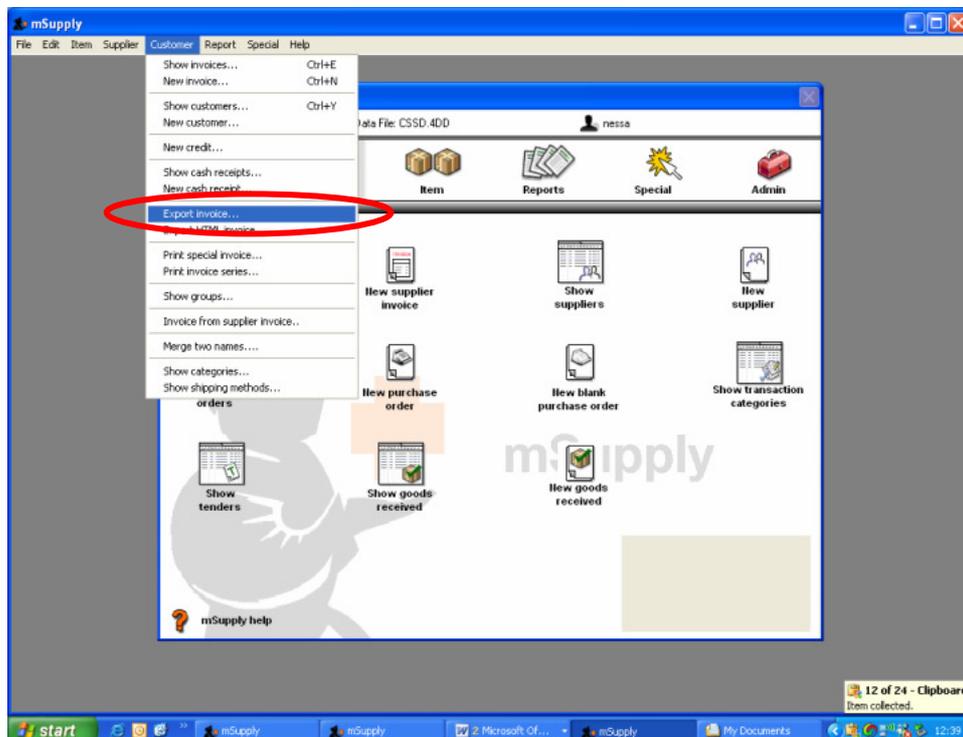
- Look up the last dispensary pharmacy invoice numbers, to see which invoice numbers have not yet been imported
- Click <OK>



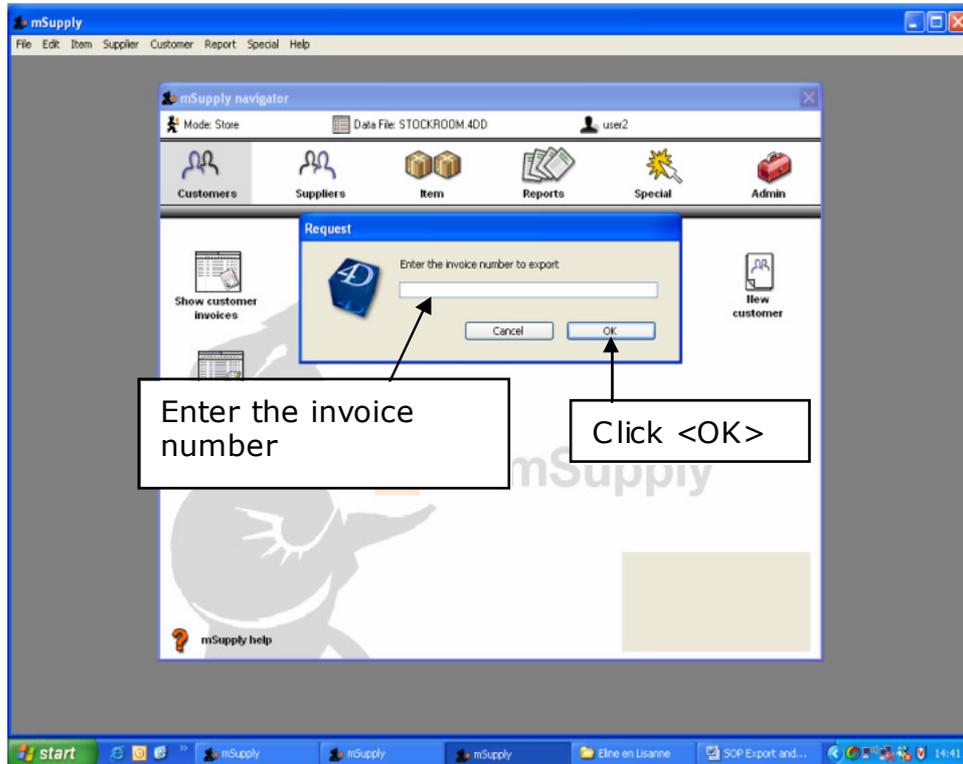
- Click on <Customer>



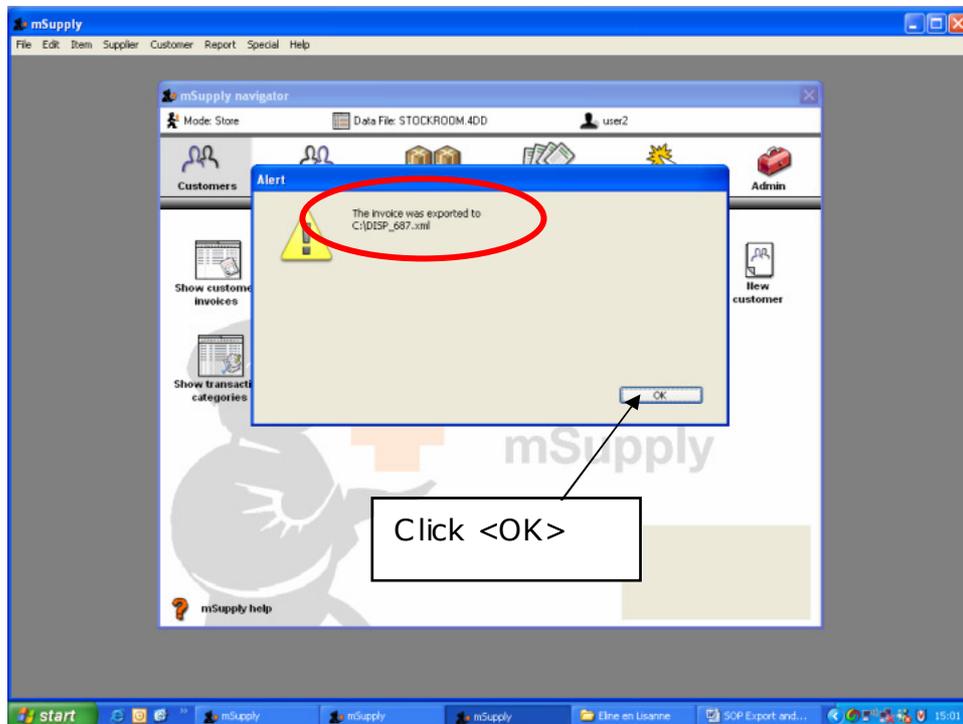
- A pop up screen will appear. Scroll down to <Export invoice> and click on it



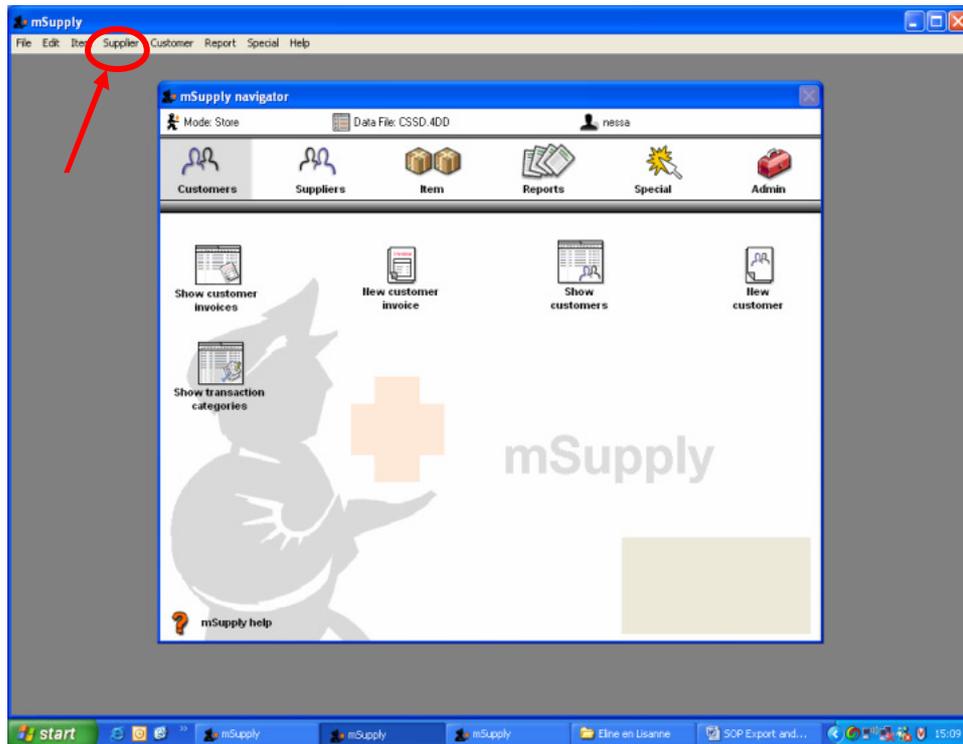
- Enter the invoice number you want to export and click <OK>



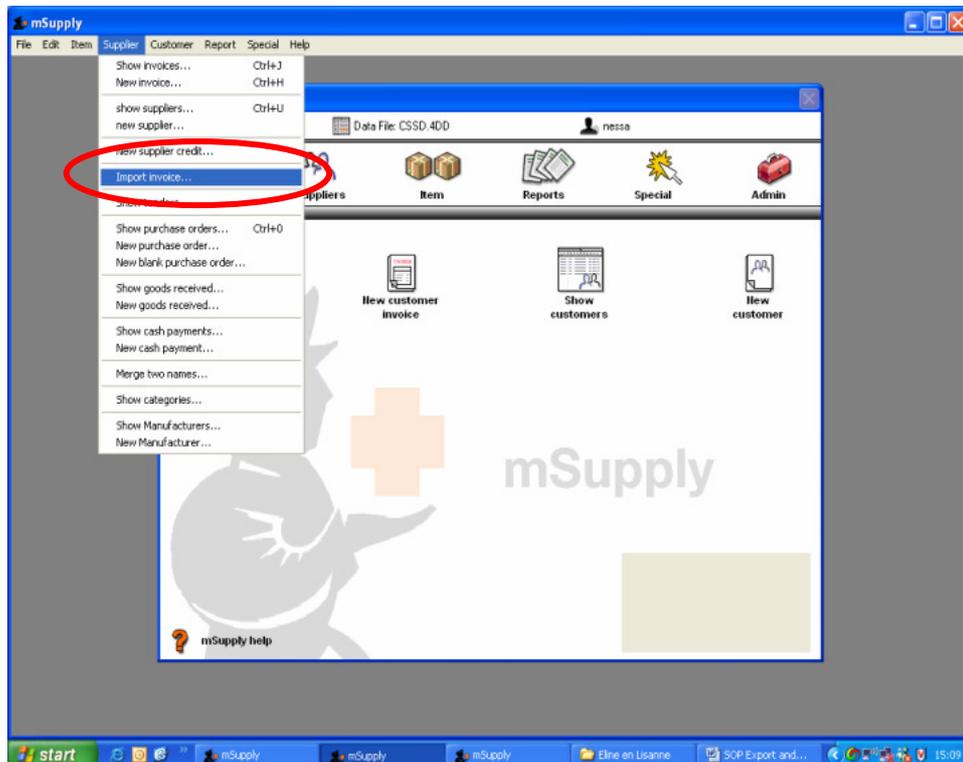
- When the following screen appears the invoice is exported (the number of the exported invoice is displayed). Click <OK> to finish



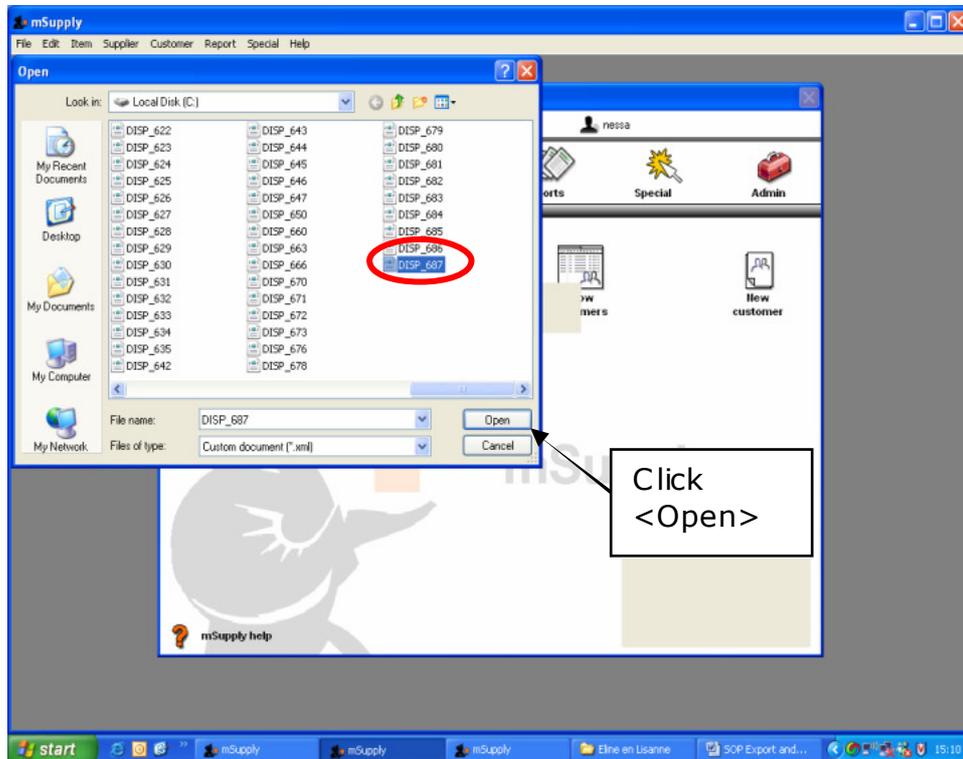
- Go back to the 'CSSD' database
- Click on <Supplier>



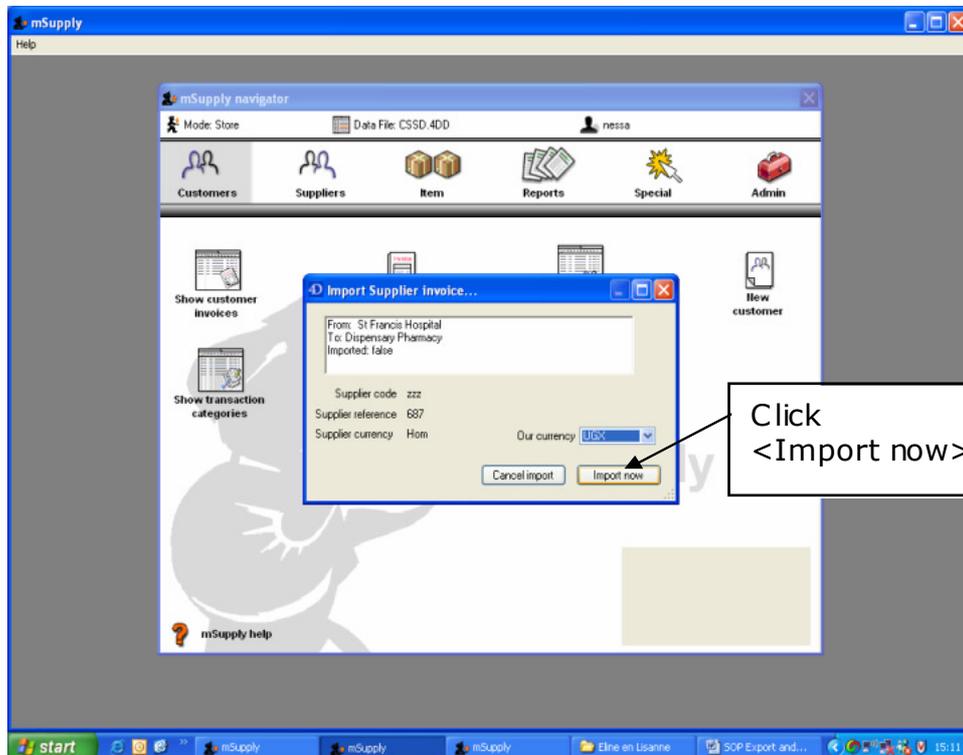
- A pop up screen will appear. Scroll down to <Import invoice> and click on it



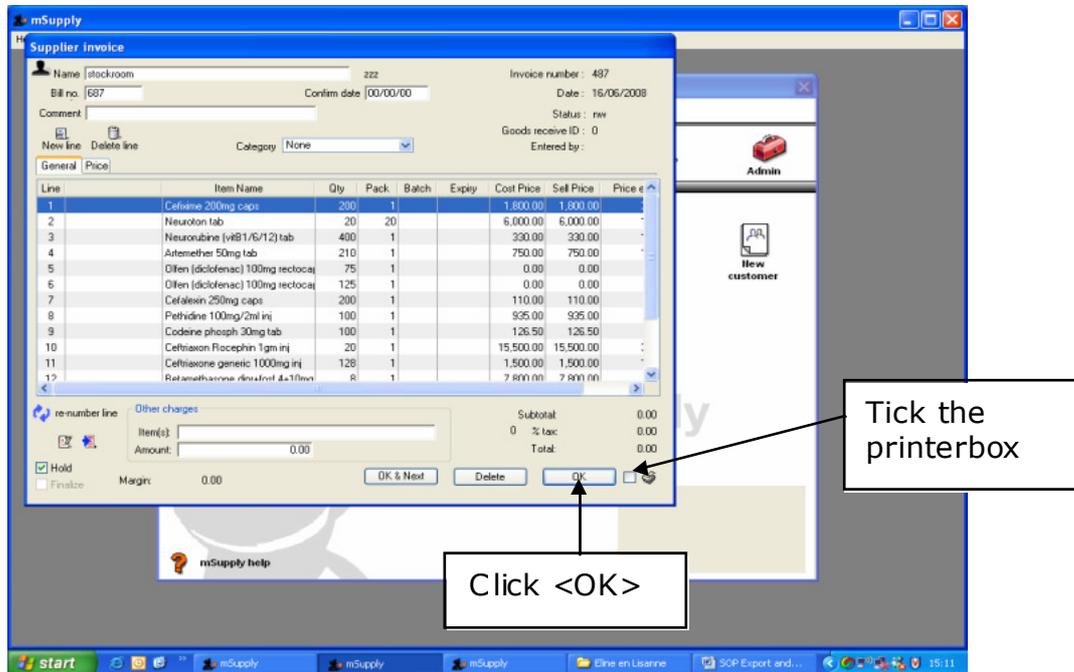
- Select the invoice number that has to be imported from the list by clicking on it once and click <Open>



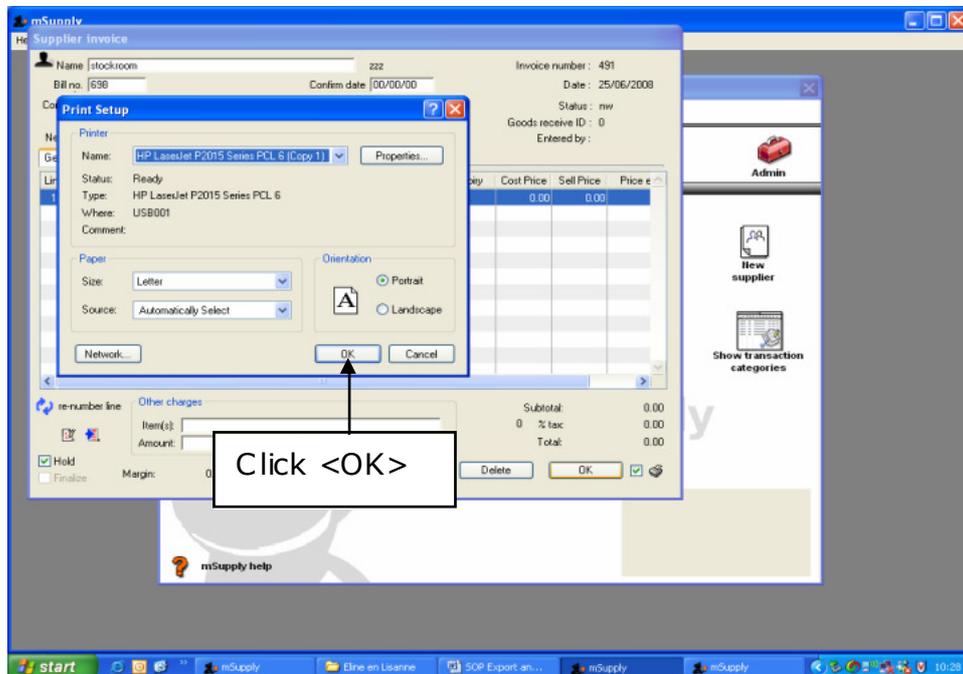
- Click on <Import now> to start importing the supplier invoice



- When importing has been finished, the supplier invoice will appear on the screen.
- Tick the Printer box to print the imported supplier invoice
- Click <OK>



- Click <OK> to finish



Appendix 6 Evaluation forms

6.4 Beoordeling keuzestage buitenland

Evaluation training professional orientation

Name of the trainee: Lianne Krens
 Name of the supervising pharmacist: Cheryl Pace
 Name of the institute ..St Francis Hospital Nsambya Hospital
 City: Kampala Country: Uganda
 Telephone: +256 414 501043 Fax:
 Email nsambya_pharm@hotmail.com
 Period: from 1 June 08 till 11 July 08

Would you please be so kind to give your opinion about the level achieved by the trainee considering the items mentioned below? We also ask you to explain your answer, even when it is **yes**, because students would highly appreciate that as we found out. Students will ask their supervisors to provide feedback during the whole period of their clerkship. This format can be used to evaluate the student's progress during their stay.

Report of training activities	Yes	No	COMMENT
1. Does the report give a correct overview of the procedures in the pharmacy/organisation?	Y		
2. Does the report give a good description of the activities performed during the training period?	Y		
3. Does the report give a good description of the levels achieved?	Y		
4. Does the report give an account of the trainee's own contribution and his/ her choices?	Y		She has explained why certain staff were trained in certain areas and others not.
5. Are specific features discussed well structured and with enough depth?	Y		

Professional behaviour	Yes	No	COMMENT
1. Is the trainee capable of working independently?	Y		She worked very independently throughout the whole of the period, which was an advantage for me as the department is very busy. However, if there were any problems, she also felt confident to ask for direction
2. Does the trainee show personal initiative and interest?	Y		She volunteered to hold extra training sessions with staff who were interested or who needed more time. She is interested in the outcome of the project beyond her stay.

3. Has the trainee adequate communication skills? towards: - the pharmacists - other employees	Y		Communication skills were very good and clear with both myself and other members of staff. Staff often find accents difficult to understand, however she spoke slowly and clearly and didn't encounter any problems – a huge achievement given English is not her first language.
4. Has the trainee a discerning mind towards his/her own performing during the training	Y		

<p>Final impression: The implementation of the computer system has progressed tremendously in the time the student has worked in the department. Due to the department being extremely busy, we may not have achieved the level of implementation that we have without her help. The training has been very successful and she has given me honest feedback on the capabilities of each staff. She has also drawn up a rota planning which staff will do which jobs for the next month – I feel this shows interest in the project beyond what the initial aims were and an interest to see the project succeed when she has gone.</p>	
<p>Specific remarks addressed to the student: Very professional attitude. Had a very flexible working style which is a huge advantage in this country. Built a good rapport with the pharmacy staff which I feel probably made the training even more successful. Feedback from the staff that were trained was all positive and she made lots of friends in the department, attending cultural events with the staff outside of work. Overall, a very welcome addition to the department, achieved a large amount in a little amount of time and I very much appreciate the hard work – thank you.</p>	
<p>Training period (including number of weeks): 1 June – 11 July 08 (6 weeks)</p>	
<p>Number of absent days: 1</p>	
<p>FINAL JUDGEMENT:</p>	<p>very good</p>

6.4 Beoordeling keuzestage buitenland

Evaluation training professional orientation

Name of the trainee: Eline Muilwijk
 Name of the supervising pharmacist: Cheryl Pace
 Name of the institute: St Francis Hospital Nsambya Hospital
 City: Kampala Country: Uganda
 Telephone: +256 414 501043 Fax:
 Email nsambya_pharm@hotmail.com
 Period: from 1 June 08 till 11 July 08

Would you please be so kind to give your opinion about the level achieved by the trainee considering the items mentioned below? We also ask you to explain your answer, even when it is **yes**, because students would highly appreciate that as we found out. Students will ask their supervisors to provide feedback during the whole period of their clerkship. This format can be used to evaluate the student's progress during their stay.

Report of training activities	Yes	No	COMMENT
1. Does the report give a correct overview of the procedures in the pharmacy/organisation?	Y		
2. Does the report give a good description of the activities performed during the training period?	Y		
3. Does the report give a good description of the levels achieved?	Y		
4. Does the report give an account of the trainee's own contribution and his/ her choices?	Y		She has explained why certain staff were trained in certain areas and others not.
5. Are specific features discussed well structured and with enough depth?	Y		

Professional behaviour	Yes	No	COMMENT
1. Is the trainee capable of working independently?	Y		She worked very independently throughout the whole of the period, which was an advantage for me as the department is very busy. However, if there were any problems, she also felt confident to ask for direction
2. Does the trainee show personal initiative and interest?	Y		She volunteered to hold extra training sessions with staff who were interested or who needed more time. She is interested in the outcome of the project beyond her stay.
3. Has the trainee adequate communication skill's towards: - the pharmacists - other employees	Y		Communication skills were very good and clear with both myself and other members of staff. Staff often find accents difficult to understand, however she spoke slowly and clearly and didn't encounter any problems – a huge achievement

			given English is not her first language.
4. Has the trainee a discerning mind towards his/her own performing during the training	Y		

<p>Final impression: The implementation of the computer system has progressed tremendously in the time the student has worked in the department. Due to the department being extremely busy, we may not have achieved the level of implementation that we have without her help. The training has been very successful and she has given me honest feedback on the capabilities of each staff. She has also drawn up a rota planning which staff will do which jobs for the next month – I feel this shows interest in the project beyond what the initial aims were and an interest to see the project succeed when she has gone.</p>	
<p>Specific remarks addressed to the student: Very professional attitude. Had a very flexible working style which is a huge advantage in this country. Built a good rapport with the pharmacy staff which I feel probably made the training even more successful. Feedback from the staff that were trained was all positive and she made lots of friends in the department, attending cultural events with the staff outside of work. Overall, a very welcome addition to the department, achieved a large amount in a little amount of time and I very much appreciate the hard work – thank you.</p>	
<p>Training period (including number of weeks): 1 June – 11 July 08 (6 weeks)</p>	
<p>Number of absent days: 1</p>	
<p>FINAL JUDGEMENT: very good</p>	

Appendix 7 Self reflection Lisanne

At the beginning of the internship, I started with counting the stock and making stock adjustments. This first part was unexciting, however, it was necessary. In the first week I learned how to work with mSupply and the SOP's were written. At first, I doubted the usefulness of these SOP's, since they are complex, with all those figures. However, during the training, the staff used them, was enthusiastic and deemed them useful.

The most important part of the internship was training the staff on the computer. In this self evaluation I will give my opinion about these training sessions.

Before this training I had little experience in training people in computer skills, and practically no experience in using mSupply. I had to work on my own training skills. Overall, the staff had little or no experience with mSupply, so I started with the basics, for example using a mouse or explaining the difference between 'delete' or 'backspace'.

I really enjoyed training the staff since they were so enthusiastic and cooperative. The training was fulfilling for me. The training was one of the best parts of this internship.

An important aspect of teaching I learned while training the staff, was to let the members of the staff think for themselves, before providing the answer. Sometimes I found this difficult, because they are slow on the computer and not confident about their abilities. Another important point to realize was that the members of the staff all had different skills and learning curves.

Training people can be very useful in my pharmacy career and I actually enjoyed the training, and developed my own skills on training.

In an African country, like Uganda waiting is not uncommon. Sometimes this was hard for me, since it took a lot of time to arrange anything. Also dealing with the absence of electricity was a whole new experience for me. Although in the end everything turns out to be all right.

Appendix 8 Self reflection Eline

This placement has been a great opportunity for me to go to Africa, which has been one of my dreams for a long time. Because this is the final part of my studies, I felt I could contribute something substantially to the people here. During my placement, I got convinced this was actually true.

When we started our placement we first sorted out the databases. It was rather essential to have identical databases, and to have the right quantity of stock in the database before we started training staff since had to use these databases. This was not the most exciting job to do, but I knew it was necessary to do to avoid any confusions while training staff.

After two weeks we started the training sessions. I had not realised before that there was a possibility that some of the staff had never worked with computers before. Now I think it was very naïve of me to not realise this, since it turned out that only a few of them actually had computer experience. So besides training staff on mSupply, it turned out to be a training of using computers in general. It was very nice to see the progression of most of the staff and to see interest in other possible options the computer has to offer. After a training session with one member of staff, I was asked to explain more about the computer, to explain the use of certain buttons on the keyboard, and in the end to explain Microsoft programmes like Word and Excel. During the last training session I had with this member of staff, she also asked me to explain Internet, and the use of e-mail. Because she liked this very much, we decided to offer this 'training' to other members of staff as well, and some of them were very keen on this.

The correct use of mSupply by the staff, however, was worrying us in the beginning. We had the feeling that all might fall apart after we would leave. But now, after finishing all the training sessions, I am confident that this will not be the case. We discussed everything with the English pharmacist, and we have made up a rota for the staff to put in data after we leave. The rota has been discussed with all staff; some of the staff were concerned at having to put data in unfortunately. This could be due to using the 'real' pharmacy computer now, instead of using the programme on our laptops. They knew it would do no harm if they made a mistake during the training, but they also realise it would do harm if they make mistakes in the real database. As we expected though, most of them were alright with it, and feeling confident. Some members of staff were even asking why they were just entering one kind of data, and not all. But since not all staff were trained on the same procedures, we had to make a distinction in the rota as well. In time hopefully, the staff will be trained on all procedures.

Training staff was quite a rewarding job to do, since all staff were very eager on getting their training and liked the training very much. I found out that I really do like to teach people new things. People needed training on differentiated levels, which made it necessary to have one

on one training sessions, which was very nice. Looking back, I noticed my training skills have improved a lot.

Being a pharmacist in St. Francis hospital is extremely different from being a pharmacist back home. The pharmacists here are managers, while they hardly do any medication surveillance. Since this is one of the aspects I like most about 'being' a pharmacist, I was quite disappointed. However, it is a lot more difficult to have good surveillance in this hospital pharmacy, since there is no good patient registration system in the pharmacy. Patients' names are often spelled in different ways, dates of birth are unknown (patients make them up, and this can change every time they visit the hospital) and there is no patient registration in the hospital. Therefore, patients' prescriptions can not be matched at all. Children's dosages are checked, but it is hard to make sure patients take the right amount of drugs, since a lot of them are illiterate or unable to understand English.

Another problem I encountered was the availability of drugs, especially the free state provided drugs. The HIV-programmes specifically, are dependant on the availability and delivery of free drugs. Since the pharmacy does not always receive the same medicines, patients have to switch their Antiretroviral therapy regularly. This could induce resistance of the virus to certain kinds of drugs.

Mistrust of patients in Indian- and Ugandan-made medicines highly surprised me as well. Ugandan patients believe these drugs will not work as well as European or American medicines, because these medicines would not contain the stated amount of drugs. This is quite a problem in the pharmacy, since most of the medication is manufactured in India.

In conclusion, I really enjoyed this internship. It was very nice to get in contact with local people, like the pharmacy staff. They have told and taught me a lot about their culture and their way of thinking, which was very nice. Also encountering different problems, like dealing with the absence of electricity, different priorities of staff, a different world of pharmacy and a whole different culture has been a good experience. It made me put a lot things into perspective.