**END USER FEEDBACK ASSESSMENT STUDY REPORT**

**CAMTech Accelerator Program (CAP)**

**PROJECT: i-DRAIN**

**ACTIVITY: END USER FEEDBACK ASSESMENT STUDY**

Idrain is a device intended for use in patients with pleural effusion. A pleural effusion (PE) is any collection of fluid in the pleural space. Parapneumonic exudative effusions occur in up to 50% of pneumonias([Dhital KR1, 2009](#_ENREF_1)). Empyema thoracis (ET) is the accumulation of pus in the pleural space. ET remains a very significant cause of childhood mortality and morbidity in the developing world. Poverty, ignorance, inappropriate antibiotic use, malnutrition, delay in seeking treatment and lack of supportive care are major impediments to adequate treatment([Light et al., 1972](#_ENREF_2)).

Idrain team intended to reach out to four major referral hospitals in Uganda to meet number of doctors with the following objectives([Light et al., 1972](#_ENREF_2)):

* To find out the current prevalence of pleural effusion cases at the selected hospitals.
* To find out the current methods used in managing these cases at those hospitals.
* To find out the devices and equipment used in managing these cases.
* To get feedback from the doctors about the design, feasibility and ease of operation of the MVP developed so far.
* To get input from the different doctors about the modifications needed on the MVP.

This study was to enable us gather information that we shall use in the product modification to suit its intended use.

**Visit to Mulago National Referral hospital**

The team on 29th Oct 2018 visited the offices of Lung institute Mulago National Referral hospital to request to interact with some of the doctors so as to contact the intended research. The team was asked to send an email to request to contact the research. The email was send but no reply was recieved from the office. We are yet waiting for their confirmation.

**Visit to China-Uganda Friendship hospital- Naguru**

On 29th October 2018 the team visited China-Uganda Friendship hospital- Naguru to start the process, The was to meet some of the senior doctors in the hospital.

**Dr. Shebambi Peterson**

**The senior doctor and in charge surgery department**

The on 29th October 2018 had interactions with Dr. Peterson, following are his responses to our objectives.

His response to the prevalence of pleural effusion cases at the hospital.

We receive number of patients who need drainage, ranging from 5-10 sometimes less for pleural effusion, but there are several cases that require drainage especially cases of accidents.

His response on the current methods they use

Currently we use syringes; they work for conditions where they are applicable, but for conditions like **pneumothorax** or fluid such as in the case of pleural effusion, blood, chyle, or pus when empyema occurs from the **intrathoracic** space we use improvise bottles. The bottle works, but for some conditions where sanction is required, it becomes challenging and we always use balloon to provide negative pressure.

His response on the areas of improvement

The device has almost addressed the challenges of the current solution this is a good improvement.

May be you need to improve on the labeling of the device, such that is easy for the users to interact with it.

If possible, you need to improve on the sanctioning currently it can only produce the same amount of pressure which is not the case for different patient groups with different conditions. May be if you can provide different sizes of the sanctioning bellow, depending on different age, groups can work.

If possible, provide additional handle for carrying the device and a stand not to allow the frame to sit on ground.

**Dr. Ruyonga Karlmarx**

The team also interacted with Dr. Karlmarx who was on duty that day, bellow are his responses;

There is a high demand for drainage in most of the departments epically surgery department. There are very many related technologies in the market like iDrain, but the only challenge we are facing right now is the accesses to standard medical devices.

Currently we are using syringes, they are working very well for us, and I have not had any challenge with them. For the cases where the patient has **pneumothorax** we use bottles, the type of bottles used depend on where you come from, hospitals use different types of bottles. These bottles only have a challenge suction and sometimes back flow of fluids.

The iDrain device is some good improvement. The only uniqueness is the suctioning introduced. For improvement, you need to define clear ways of sterilizing the device and the fluid content that will be used to sterilize the device.

**Visit to Kabarole Regional Referral Hospital (KRRH) – Buhinga**

One team member (Ssebaketta Julius) visited KRRH on 3/11/2018. He arrived at the facility at about 11am and most of the physicians were not on ward even those with whom appointments had been made.

Physicians from the pediatric ward on duty were interacted with for the study and these included; Dr Anena Diana Louis and Dr Bampabwire Godfrey Amooti.

I had a detailed interaction with them and these were the highlights of their feedback:

* The physicians seemed very comfortable with the current methods of using syringes to drain these fluids.
* They raised concerns on mechanisms to control amount of negative pressure generated, measuring amount of fluid collected and simplicity of operation of the device.
* Are the valves incorporated also in capacity to prevent air backflow, there is a challenge of air leaks during the procedure.
* However, they couldn’t provide figures on the cases of pleural effusion at the facility saying they can only be got through the records which we couldn’t do on a weekend.
* They found the innovation very hopeful since it avails the medical supplies they always lack and were willing to adopt to using the device once it gets onto market.

**CHALLENGES**

The delay in getting funds from Grants office caused many of the previously arranged appointments to be missed. It almost took three weeks from the time we had planned the activity for the money to be released. Most of the physicians we had planned to meet were caught up in other programs and couldn’t make it.

**LEARNINGS**

The feedback from the assessment is going to be compiled into a service description document that will be shared as the working requirements for the device to Gear box for developing a third and final prototype that shall be used for clinical studies at pilot hospitals.

DHITAL KR1, A. R., BHANDARI R1, KHAREL P1, GIRI KP2, TAMRAKAR R 2009. Clinical profile of patients with pleural effusion admitted to KMCTH. *Kathmandu University Medical Journal,* 7**,** 438-444.

LIGHT, R. W., MACGREGOR, M. I., LUCHSINGER, P. C. & BALL, W. C. 1972. Pleural effusions: the diagnostic separation of transudates and exudates. *Annals of internal medicine,* 77**,** 507-513.