

The Handling Of Sharp Objects In A Local Setting

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Citation

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Abstract

The risk of infection with sharp objects is abundant while providing healthcare services. There is absolute need for preventive measures to be in place and sharp boxes/containers have been designed to serve that purpose. However, in local health centers, the standard sharp boxes/containers are not available, and when available, are not adequate. Therefore, this article describes a newly designed container for handling sharps in local settings. The covers of locally available containers were drilled with screw-drivers to make a hole that could admit 21-23 gauge needles. The serrated edges were smoothed and then the cover of the container was sealed with adhesive tape. The body of the container was then labeled "keep out of reach of children and mentally unstable". The design was thus a plastic container with about 200ml in volume with a height of about 11cm, able to contain over 50 disposable needles with a size about 0.8 x 40 mm each. It provides a high resistance against being pieced by the needles and therefore can be handled by health staff without fear. The containers can be disposed by burning or burying. Finally, innovations such as this local-made safety container can be used to handle sharps with minimal risk of infection. The health-workers can boast of safety in the absence of advance designed sharp containers.

INTRODUCTION

Sharps are items that are capable of puncturing, cutting, or abrading the skin (glass and plastic pipettes, broken glass, test tubes, petri-dishes, razor blades, needles, syringes, etc.)¹. A number of injuries and life threatening infections have occurred in medical personnel attempting to recap^{2,3}, handling or disposal of used needles², despite available evidence of the dangers associated. This problem persists despite being trained on safety measures. Needle stick accidents in 1990 were reported in 27% of 474 healthcare workers². Blood borne infections have been recognized as an occupational hazard for nearly 50 years⁴ and the needle pricks in medical practice constitutes great health hazards. Needle stick injury transmits as many as twenty blood borne pathogens⁵ such as HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV) which are potentially life threatening⁶. Furthermore, a Study reported 11 % from disposal-related causes⁷. The same study also showed concealed sharps of 5% injuries while handling linens or trash containing improperly disposed needles.

As a result, attempts have been made to draw the attention of medical personnel to the grave dangers⁷ in various ways such as increased awareness, training and education of health care workers for reporting and prevention of needle stick injuries. The high frequency of percutaneous exposure to blood among health care workers (HCWs) in this Nigerian

hospital potentially could be reduced by simple interventions at modest cost¹ such as the studied model.

In Tanzania, however, much attention has been paid to secondary and tertiary healthcare facilities located in urban areas where financial and human resources are more readily available. Limited efforts were made to set-up sharps waste management plans for Low level health facility (LLHF). In particular, the management of sharps waste from mass and routine injection activities remains problematic as significant quantities of disposable or auto-disposable syringes and needles are generated⁸, the same could be said about Nigeria.

In advanced societies, well-made needle resistance containers Fig G are available. In addition, some machinery is also available to crush the needles.

But in some African societies, due to poverty, ignorance and lack of political will, these containers are not readily available even at the tertiary hospitals. Even when these containers are available, they are costly, and not within the reach of most hospitals. Therefore, sharps waste management in LLHFs is poor, which puts workers, the public and the environment at risk of exposure to blood-borne pathogens⁹.

The above locally fabricated container has been designed to serve the need of adequate needle disposal, which is

affordable, available, cheap and is locally fabricated. Every health worker can make one.

METHOD

The container was a locally fabricated design which was used as a needle disposal apparatus. It was used in all the wards, theater and in the clinics.

APPARATUS NEEDED

A scalp blade, screwdriver, adhesive tape, discarded milk or rubber container.

See diagram and pictures.

Figure 1

Figures: showing stages of development of local safety container

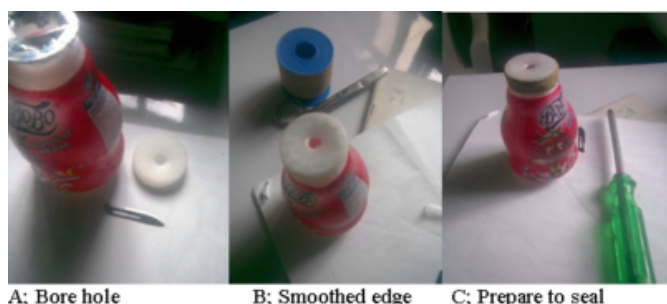


Figure 2

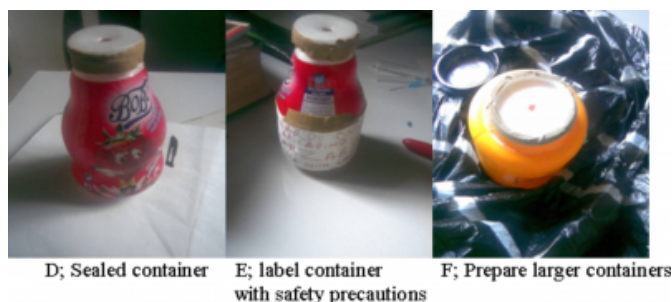


Figure 3

Fig G: Carton-made safety box and contemporary advanced safety box



The container is washed clean with water (not sterilized). With the aid of the screwdriver, a hole was drilled large enough ^{Fig A} to admit a 21-23 gauge needle. The serrated edges was trimmed with a surgical blade ^{Fig B}, and cut to size.

The cover was replaced ^{Fig C}, and using the adhesive tape ^{Fig D} to seal-off the cover.(ie, gum the cover to the container.)

Using a red biro ^{Fig E}, the following was inscribed on a paper and cello-taped \to the body of the container: "Danger, keep out of reach of children and mentally unstable". Thereafter, it was ready for use.

DISCUSSION

The design is a very useful way of discarding the needle without the person coming in contact with the needle or blood. In this way, no contact is made with the blood or needle then risk of accidental needle puncture is reduced. As a result the risk of transmission of disease is reduced; even risk of piece-through events will be reduced.

The necessity of disengaging a disposable sharp item from a re-usable holder has been noted to be frequent feature of sharp objects causing injuries¹⁰,but this design disallows such practice. In-fact, as soon as an injection is given it is pushed into the hole and the syringe is withdrawn. The needle falls into the container leaving the used syringe to be discarded. The filled container is discarded either by incineration, burying or crushing of the needle at a designated site.

Reports showed that sharp containers are associated with sharp injuries, and more than 90% of these injuries are related to container design¹¹.A needle resistant container is provided in this design. The container which is made of plastic cannot be pieced easily by sharps. A study concluded that a rigid, puncture resistant, needle disposal system can reduce disposal-related needle stick injuries¹². Puncture-resistant containers should be made available for disposal of sharp objects¹³. This was highlighted in this design. The size of the aperture restricts disposal of other items such as gloves, blood bags, or syringes, because the hole does not admit large size materials.

The impulse to recap sharps is significantly high with health workers. Becker and coworkers¹⁴ found that in four large hospitals that treat patients with AIDS had had an active in-service universal precautions training program, 25% to 50% of nurses and physicians still recapped used needles. The reasons given include inadequate knowledge, the perception

of low risk of infection, being too busy, forgetfulness and the misconception that recapping avoided needle-stick injury. Williams and associates¹⁵ found that the most common obstacles to compliance were lack of time, interference with technical skills and the perception that patients were unlikely to be infected. This model could be used to discourage the practice of recapping.

The cost of supplying advance material for use in sharp management to a health center is reported at 10.1 dollar each for BD sharp collector 5.4Qts¹⁶. With this innovation, which involve recycling already used plastic containers, the cost of providing is reduce greatly, in fact the cost of the above design^{fig E} far less than 31.25 cent, and serves as a channel to dispose waste containers.

It is locally fabricated, efficient, cheap, safe and easy to discard. It is also environment friendly and could be made easily. It could address the problem of distance to the nearest¹⁷ container point which is noticed as significant risk factor for injury.

It is recommended for use in local clinics and hospitals where the standard needle disposal containers are not available. In a wider perspective, it can serve as only available sharp disposable container in a poor resource setting, local health facilities in African communities, war zones, refugee camps or health missions, where healthcare involves handling of sharps.

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