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# Improving Wound Dressing Techniques and Infection Control through Support from International Non-Governmental Organizations in Sub-Sahara Africa

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***Author's contribution***

*The sole author designed, analyzed and interpreted and prepared the manuscript.*

***Article Information***

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## ABSTRACT

The script is a first-hand report and reviews of activities that ensures high and standard quality wound care in resource limited health facility by intervention from medical projects of International Non-Governmental such as ICRC (International committee of red cross). The acquired knowledge and hand-on skills acquired by health personnel were from Technical Workshops provided through the support and partnership of International Organizations such as ICRC (International Committee of Red Cross) in insurgency prone regions of a Developing Country.

The workshop highlights low quality and deficit in medical practices and the changes that can address deficit in skills required to perform standard wound dressing, control of cross infection and or reduction in hospital acquired nosocomial infections. The training including updates and reintroduction of new materials and solutions such as Hexanios and Surfanios ,as well assert correct method or techniques in wound dressing, proper techniques in vaginal examinations during manual intrapartum monitoring , handling of swabs and instruments used to ensure clean

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procedure and practice. Such deficits were noticeable due to long distance of this centers to main cities and town which usually host symposium, workshops and trainings, and also low morale of worker to continuous academic activities, non-evaluation of practice in remote health centres, allocation of the duties or clinical procedure to untrained health assistants and shortfall of adequate doctors and nursing staff as well as loss of interest of doctors to supervisory roles. These extrinsic factors pose as challenges in good wound healing in many sub-Saharan African countries and most often promotes, consequently antibiotic resistant microbes ,poor wound healing and also long stay in hospitals, increased morbidities and mortalities, loss of confidence in orthodox medicine, increased reliance to unsafe tradomedical care and additional economic burden to patients.

The Effects of organized workshops on attitude and practice of untrained health and qualified health worker were discussed in this article and observable post-training changes to unskilled or non-qualified health assistants working in mainstream of health care services in remote care setting were reported. The results from post training shows that Health mission of international Non-Governmental Organization are invaluable to effect required changes in improving quality of health care services in the areas of sterile wound dressing and medical instrumentation handling in sub-Saharan Africa as well as regions prone to insurgency or militancy with trained or skilled health workers and resources are scarce.

*Keywords: ICRC; infection control; sterile wound dressing; Non-Governmental Organization (NGOs).*

## 1. INTRODUCTION

Wound dressing has been an ancient practice for the sick as far back as time immemorial. The history of wound care spans from prehistory to modern medicine. Records show some of the basic principles of wound healing have been known since 2000 BC [1]. Wound dressing were initially started by hunters using herbs [2] on wounds who believe that herbs aids rapid wound healing, followed by the realization of the necessity of hygiene and halting of bleeding, thereafter standardization of wound dressing techniques and development of surgical techniques, Eventually the germ theory of disease also assisted in improving wound care. Wound dressing materials have evolved drastically, the current covering used for wound is the transparent low-adherent polyurethane which support inspection for Inspections without opening and less frequent dressings, some levels of debridement, [3] However through the support of NGOs materials were supplied ,which are easily adopted and line of supply can be maintained such as Gauze, Plaster, Bandages, Chlorhexidine and Iodine solutions .Infection control and the principles still remains the same world-wide and cannot be undermined by the developmental level of the infrastructure or the social problems of that particular country or community because the biochemical and cellular processes for would dressing remains the same [4].

The Training and workshops provided by NGO's reinforced the facts that high quality and proper wound dressing depend on the technique, the quality of skills possessed by the personnel handling the wound, the type and condition of the material used [5], the condition of the patient, the condition of the instrument. All these work together hand in hand to eventually reduce the bed stay of the patient and eventually influence patient health outcome and quality of life.

The Main and first objective of wound dressing is to achieve a relatively clean wound and not a sterile wound.

However this objective cannot be achieved if the necessary conditions highlighted above are not put into consideration. In Places where they are not considered ,results such as wound cross-infection are enormous, wound sepsis, wound dehiscence, wound breakdown, incisional wound sepsis and burst abdomen and fistulae ultimately, leading to long hospital stay, septicemia, shock, amputations, gangrene and worst case scenario death. This health facility (Biu General Hospital) was the model for the change message brought by International Committee of Red Cross (an International Non-Government organization of the hospital) to North-Eastern Nigeria where insurgency had ravage the surrounding communities. Other health centres in sub-Sahara Africa could copy this form of partnership to improve the quality of service in their facilities. The partnership and support should entails supply of standard medical materials and logistics support, but most importantly, technical capacity building, which creates independence and continuity when these international partners are not available after their projects have ended.

## 2. METHODOLOGY

As a guide to current international practices [5,6], these steps were introduced to guide participants during the interactive hand-on sessions. Participants included health assistants, ward cleaners and fatigue nurses. Wound dressing practical and interactive discussions were the highlights of the event. Unacceptable techniques and practice were noted and discourage. Some participants were given opportunity to perform what was practice before and after training. These challenges may be faced by many sub-Saharan secondary and primary health centres. The presence of one of these pitfalls may be indicative of the presence of other unacceptable practice wound dressing observed during the session.

### 2.1 Unacceptable Practices: Pitfalls and Recognized Challenges in Wound Dressing Observed and Discussed in the Workshop

- Use of bare hands to organize wound dressing materials.
- Lack of preparation or cleaning/ Decontamination of bed side-trolley for wound dressing.
- Allocating wound dressing to untrained or unskilled health assistant.
- Lack of Supervision of Health assistant.
- Use of wrong antiseptic solution or wound dressing solution e.g Normal saline alone, High concentrated iodine on freash wound.
- Incorrect dressing material e.g Use of unsterile cotton wool in wound which leaves cotton particles in wound.
- Incorrect technique for the environment: Leaving cleaned wounds open to flies, dust and dehydration Fig. 3.
- Lack of motivation and interest for standards.
- Poor hand gloving and degloving techniques.
- Non Administration of analgesic before wound dressing.
- Allowance of relative to remain at site of procedure.
- Lack of Proper oral consent before procedure.
- Improper preparing and packaging of instrumentation for wound dressing, poor retrieval of used medical instrument for sterilization as well as poor decontamination and sterilization process which involve soaking in Hypochlorite.

### 2.2 Acceptable and Lessons Learned

- Obtaining consent from patient and administration of analgesics before wound dressing.
- Preparation of trolley for wound dressing by cleaning with surfanious solution(ICRC 2014) Fig. 2.
- Use of sterile pack (Double Paper covered) of dressing instruments for dressing
- Use of nose mask and sterile gloves to handle packs of instruments on Trolleys and gentle opening without contamination Fig. 2.
- Lay all proper and indicative dressing solutions for wound dressing before opening the inner layer of the two papers coverings of the dressing packs.
- Change of glove which had been used to get ready trolley and putting together of dressing instruments, materials and solutions.
- Administration of analgesics before preparing for wound dressing should be anticipated, to allow for pharmacodynamics and kinetic effect of the drugs prior to commencement of wound dressing.
- In the shortfall of skilled staff, prepare for one man team so as to reduce risk of contamination. It's ill-advisable to start gathering material for wound dressing or pouring dressing solutions from containers while procedure has begun to prevent contamination of your gloves and the wound.
- Proper Gloving and degloving techniques to ensure the contact area is not torched while hands must be washed and dried with clean towel.
- Use of two instrument technique, to reduce hand contact on the wound Fig. 5.
- Keep all solutions and receiver of containers in the lower shelves of your trolley to prevent contamination of the top of your trolley containing your dressing instruments.
- Cover all wound after dressing in most ward environment of health facilities in Sub-Sahara Africa due to lack of infection controlled environment Fig. 1.
- Better for the senior officer who has skill or knowledge in proper wound dressing than an un-skilled or health assistant or support

staff to perform the duty of wound dressing.

- Surgeons or doctors who practice surgery or have patient with wound should be interested about how the wound is been dressed especially when patient are not getting better due to the poor healing of the wound.
- Standardization of medical Instrument decontamination (Cleaning), Packaging, (Autoclavng) sterilization and storage [5].
- Cleaning of contaminated instrument with Hexanios [5] and washing with soap solution.

These were the list of some of the changes that were made after the training; however sustainability of these standards needs follow-up sessions and also supervision. Sometimes staff of some International NGOs involve in interventional and hospital support medical care may occasionally visit the facilities for follow-up or give stipends to encourage a local focal persons to supervise the health facility and reinforce the expected standards and protocol.

## 3. RESULTS

Changes can be enormous and tasking for the health worker who has little or no knowledge in health care especially when learning new techniques that requires enormous discipline and details, with the view that such new changes must be introduced immediately and prioritized. However, in the studied facility, some staff tried to change immediately while others change gradually as reflection to reason in ensuring High quality service. This is one of the challenges supporting organizations should expect in these kinds of scenarios, therefore they would need to add follow-up visits, in-facility supervision and observations as part of the plan toward Health Missions and projects. Where , possible give some financial gratification or welfare support to health personnel who show signs of change in practice so as to encourage positive attitude in the provision of quality healthcare such as sterile wound dressing Practice.

## 4. DISCUSSION

Wound dressing in surgery is an invaluable procedure carried out to ensure wound healing and reducing microbial loads and biofilms from wound surfaces, [7] despite its importance, there is still lack of sterile wound dressing techniques or availability of skilled and trained staff in resource limited health facilities in sub-Sahara Africa.

Several International NGOs have been involved in infection control in hospital setting, influencing policies and practice, they include Society of Healthcare Epidemiology of America (SHEA), Association of Professionals in Infection Control (APIC), Institute for Healthcare Improvement (IHI), Hospital Infections Society (HIS) [8], International Committee of Red Cross (ICRC) and Médecins Sans Frontières (Doctors without Boarders).

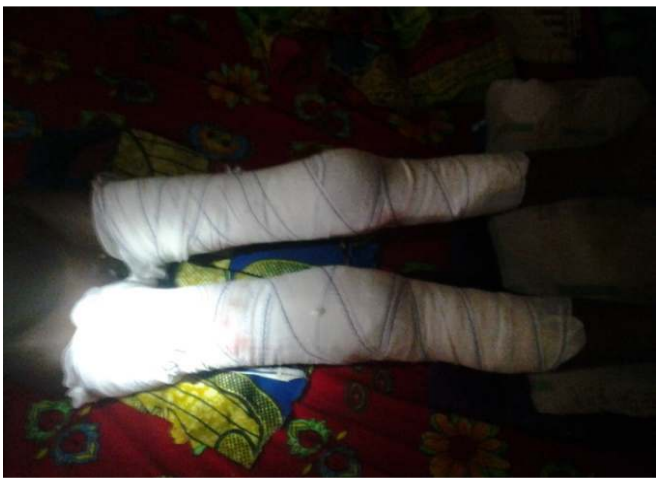

**Fig. 1. Dressing after training and re-training of personnel, Wound covered with all layers of dressing and appropriate antiseptic solution. Post-training**

**Fig. 2. A medical doctor after the training preparing His trolley) with antiseptic solution before wound dressing Procedure in facility with acute shortage of staff**

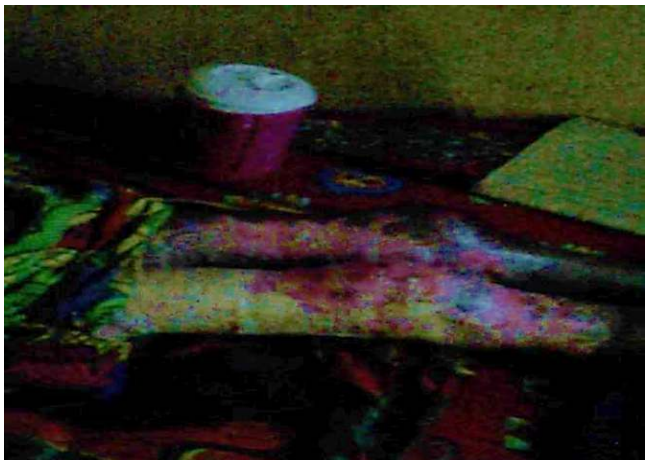

**Fig. 3. Partially dressed wound with only gauze covered in sulfasalazine cream only and flies were perching on the wound, the hand fan made from raffia (UP-RIGHT) to drive flies. An ill-advisable method for sub-Saharan African remote health facilities to use for wound dressing (Before training)**

**Fig. 4. Proper placement of sterile instrument and on sterile paper sheet for wound dressing (After training)**

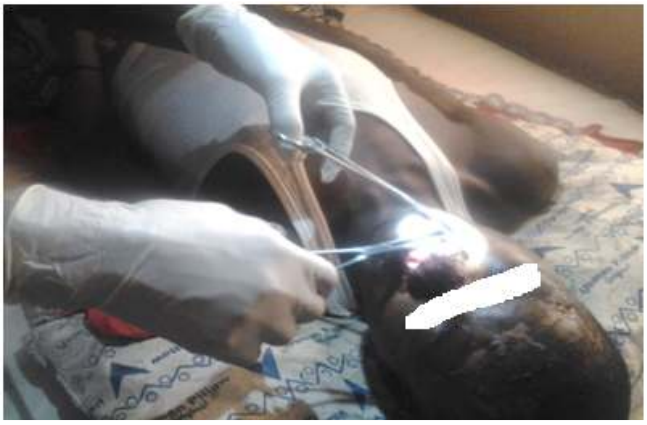

**Fig. 5. Two instrument handling techniques (minimum finger contact method) used in wound dressing. (After training)**

**Fig. 6. Wound dressing performed by a non-professional health care assistant under supervision for aseptic technique steps and standard trolley setting behind (After training)**

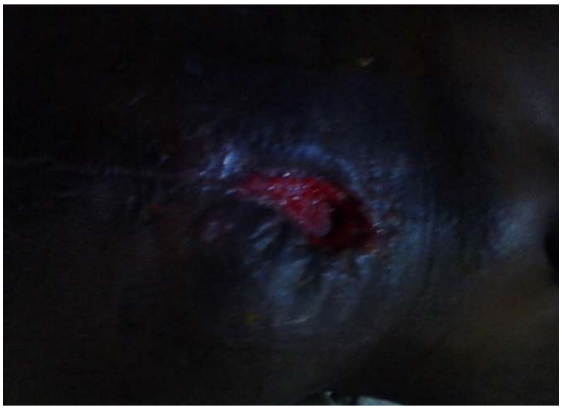

**Fig. 7. The result of proper and adequate training of Non-Professional health assistant Fig. 6 by international NGO (ICRC) and supervised by the Doctor who also attended the workshop. Picture of a cleaned entero-cutaneous fistulae that developed from a burst abdomen. (Post training)**

The health facility in our discussion represents common sceneriors of general hospitals of some sub-Sahara countries in including the Caribbean countries, Central America, Asean countries. The

facility of note was located in region ravaged by insurgency. The staffs of the facility were drawn from several levels of government which included local and state level of government organization. Most of these staffs were assistant health workers, community health worker or support staff with little or no formal health education. The few qualified nurses available were fatigue from work overload and understaffing. They haven't been having clinical updates nor re-training or rarely. Hindrances from updates also includes remoteness the hospital from headquarters, lack of motivation as well as the poor terrain of this part of the country in-terms of distance from main town, poor transportation and insecurity worsened by insurgency discourages seeking behavior for updates and re-training. Countries such as Syria, Iraq, Pakistan, Afghanistan, Congo, Liberia, South-Sudan, Nigeria [9], Libya, Nepal [10] which have been plague with insurgency are prone to these challenges of Poor health care services and poor infection control due to destruction of infrastructure and overload of the existing ones. The aforementioned factors affecting health workers indirectly contributes as challenges for standard wound dressing and eventually poor wound healing. Other challenges noted during the workshop in reported health facility located in a sub-Sahara African country includes lack of quality assurance assessment and Audits, lack of skilled personnel, shortfall in qualified staffing, lack of motivations and supervision, lack of adequate and proper dressing materials, which are notably extrinsic factors that causes poor wound dressing and delayed wound healing. In addition, a study reported [11] Intrinsic factors that contribute to delayed wound healing such as wound etiology, patient age and the presence of significant comorbidities such as diabetes or dysplastic changes.Inaddition wound size and depth, location of the wound, wound duration and the presence of a heavy bioburden [12] also contribute to delayed wound healing and economic consequences.

Through the help and continuous support of international organizations such as ICRC (International Committee of Red Cross), staffs were trained on sterilization technique of surgical and labor ward instruments as well training on skills to sustain aseptic practice of dressing instrument before and during wound dressing. In-order to achieve these ultimate set-goals and objectives at the patient bed-side ,a series of work -shops was done so as to equipped the staffs with adequate skills in wound dressing as a follow-up to sterilization techniques. The series of technical workshops are therefore to ensure that the instruments remain aseptic before and during wound dressing procedure and consequently leading to wounds becoming relatively clean without re-infection or cross-infected or involvement in nosocomial transmission with antibiotic resistant microbes.

The various pictures depict the various changes that can be seen after impaction of adequate skill and training to both qualified and unqualified staff and Fig. 7 is the consequence of proper and adequate training as well as essence of the technical support provided by International NGO while Fig. 3 shows result of when such support are absent from sub-Sahara health facility. The experience also showed that inaccessible Sub-Sahara African communities during crises that poses situation where indigenous health workers may not have access to costly training may be assisted by NGOs taking the training sessions and workshop to them in-line with international standards protocols for infection control such as hand washing, Hand rubbing with antiseptic wipes, Personal protective equipment (PPE) Environmental Hospital Sanitations, Hospital waste collection, segregation and disposal, Sharps management such as B. [13], Wound dressing and Hospital Instrumental hygiene and safety.

A team approach may be considered for wound care and infections control as well as supervisory role by specialist on health assistants.

All these reflections showed that capacity building is very important in places where International organization wants to carry out some medical activities or projects, rather than just supplying hospital needs, social amenities, or welfare package. It would be more beneficial and sustaining to train and make capacity building a big part of their activity and projects.

## 5. CONCLUSION

The role of international organizations in the development and capacity building in poor resource health setting cannot be over-emphasized [14] and undermined from lessons learned in regards to their technical support in addressing wound care management and infection control.

## CONSENT

It is not applicable.

## ETHICAL APPROVAL

It is not applicable.

## ACKNOWLEDGEMENT

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## COMPETING INTERESTS

Author has declared that no competing interests exist.

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