East African Scholars Journal of Medicine and Surgery
Abbreviated Key Title: EAS J Med Surg
ISSN: 2663-1857 (Print) & ISSN: 2663-7332 (Online) |
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-1 | Issue-3 | May -Jun-2019 |

Research Article

Knowledge, Attitudes and Practices in the Treatment of Reusable Material in Operating Blocks in Rural Environments: Experience of the Kara Region (TOGO)

Akila Bassowa[1], Edem Logbo-Akey[3], Palakiyem Panassa[1], Koffi Akpadza[1], Kodjo Fiagnon[1], Baguilane Douaguibe[2], Dede Ajavon[3], Samadou Aboubakari[4]

[1]Departement of Gynecology and Obstetrique, Sylvanus Olympio Teatching Hospital, University of Lomé, Togo
[2]Departement of Gynecology and Obstetrique, Campus Teatching Hospital, University of Lomé, Lomé Togo
[3]Departement of Gynecology and Obstetrique, Hospital Center of Kara, University of Kara, Kara Togo
[4]Departement of Gynecology and Obstetrique, Kara Teatching Hospital, University of kara, Kara Togo

*Corresponding Author
Akila Bassowa

Abstract: The objective of this study was to evaluate and contribute to the improvement of the knowledge, attitude and practice of the treatment of reusable material (T.M.R.) in operating theaters in the Kara region. It was a descriptive multicenter study of the descriptive type of attitudes, knowledge and knowledge practice of CHU blocks; CHR; SOS Children's Hospital of Kara, Bassar and Pagouda in the area of TMR The survey targeted officers operating in operating theaters and was conducted from March to June 2018. Interview, questionnaire and observation of staff in the exercise of the TMR were the methods used. The survey involved a total of 54 service providers in all operating rooms. At the end of this study we noted the following points: - The nurses were the majority in 26.66% of cases followed by the nurses 10.66%. - In the study sample 43, 33% of the agents had 5 to 10 years of seniority experience in the blocks, and 87.03% of these agents had never received training in T.M.R. - Lack of knowledge or lack of mastery of the stages of material processing had reached 72.22%. - Decontamination solutions were known in 88.88% by providers with a predominant use of bleach 94.41% in the blocks audited. - Protective barriers were known in 87.03 of cases and we noted a negligence of the wearing of protective glasses in 14.81% of daily practices. - The material was decontaminated to 92.59% of cases in a period of between 5 and 10 minutes: - In 90.74% of the cases the maintenance of the linen was done in the machine except in the block of Pagouda where it was realized manually: - The disinfection of the equipment was made at 96.89% and the high level disinfection was reserved for thermosensitive material and was practiced with compressed formalin for 24 hours. The heat-resistant material was sterilized in a puppet at 160 ° C for 120 minutes in 53.70% of cases and autoclaved 29.62% of cases at 120 ° C for 30 minutes. In all the audited blocks a high risk of nosocomial contamination was noted during the care or reconditioning procedures of T.M.R. both for the staff and for the users of these hospitals. Reducing this risk will involve training, periodic staff retraining, and implementation of good practice guidelines in all health centers in the region.

Keywords: (T.M.R.), study was to evaluate and contribute to the improvement of the knowledge, operating theaters in the Kara region.

1. INTRODUCTION

Today, administering quality care is the major concern of all health professionals. Patient safety is an essential requirement of the World Health Organization (1989). Thus, both in developing countries and in developed countries nosocomial infection is a constant concern in surgical practice. In France, regardless of pathology, the average frequency of nosocomial infections is estimated at eight percent (2002-2003). In the countries of Black Africa and particularly in Togo, there are no national data. But several hospital studies have shown that this infection is the leading cause of mortality and the third leading cause of maternal mortality (Pr MICOUD M. *et al.*, 2010; MONVOISIN, M. 1997; NIANGB. 2015). These nosocomial infections are the result of poor hygiene, and are transmitted by dirty and poorly treated surgical equipment. This involves the safety of the patient.

Quick Response Code

Journal homepage:
http://www.easpublisher.com/easms/

Article History
Received: 11.04.2019
Accepted: 25.04.2019
Published: 18.05.2019

DOI: 10.36349/easjms.2019.v01i03.003

Various investigations and observations have shown that the eviction of these infections acquired at the hospital passes by the knowledge, the practice and the mastery of the basic principles of the treatment of the reusable surgical material and the hospital hygiene (MAÏGAB. 2002-2003; LIBBEY E. J. 2000). Patient safety is defined as the set of measures taken by public and professional authorities to reduce the risks of infections. The equipment used during an operation is at least soiled or contaminated during its use and is accompanied by an infectious risk. As such, this material must therefore follow a rigorous process that will reuse safely without risk for the next patient, caregivers, carers, in short the entire community. In this regard, it should be emphasized that instruments that have been exposed to contamination in the operating room must also follow the entire treatment process even if the surgeon has not touched them.

The treatment consists of a set of operations performed on the material by chemical, physical or mechanical processes. Thus, there are two major processes of material processing: sterilization for heat resistant material and high level disinfection for heat sensitive material. Our commitment in this study is justified by the reasons that the performance of medical procedures in difficult conditions without complying with the standards of prevention of infections. The development and perpetuation of bad work habits of staff in the processing of equipment. The ultimate goal of this study is to contribute to improving the quality and safety of care offered in operating theaters in developing countries such as the Kara region in Togo.

2-Framework and Methodology

It is a multicenter and evaluative study that took place in five operating units of health facilities in the Kara region of Togo. It is: CHU Kara; CHR Kara; CHP Pagouda; CHP Bassar; MCH of SOS. The survey covered the period from March to June 2018. This survey was targeted at the operating room staff namely doctors, senior ENT technicians, health and ophthalmology, nurses and nurses. The data were collected from an individual questionnaire that included a series of questions. We have also used, among other things, the observation of staff attitudes and practices as part of their daily work in the processing of reusable materials. Individual interviews were held to clarify particular aspects and the laundry and storage rooms were visited in all the centers.

3-RESULTS

3-1 -Qualification of the Staff

During our study we surveyed a total of 54 agents of any qualification working in the five operating theaters in the Kara region. Among them, the most numerous nurses (31.48%) followed by nurses (18.51%) see table 1

Table I: Distribution of staff according to their professional qualifications

	(n)	(%)
Doctors	04	7,40
instrumentalists	07	12,96
Senior health technicians	08	14,81
Senior technicians stomatology	03	5,55
Senior ophthalmology technicians	03	5,55
ORL technicians *	02	3,70
Nursing	17	31,48
Sick guard	10	18,51
Total	54	100

3-2- Number of Years of Service in the Operating Room

In the sample the agents that made the block whose number of years is between [5-10 years [was in the majority with a frequency of 46.29%: (see Table II)

Table II: Breakdown of staff by number of years of service in the block

	(n)	(%)
[0-5 years [	16	29,62
[5-10 years [	25	46,29
[10ans-15 years [	10	18,51
[15ans-20 years	03	5,55
Total	54	100

3-3 Trained In Material Maintenance

We found 63% of agents who never had training in material processing (Figure 1)

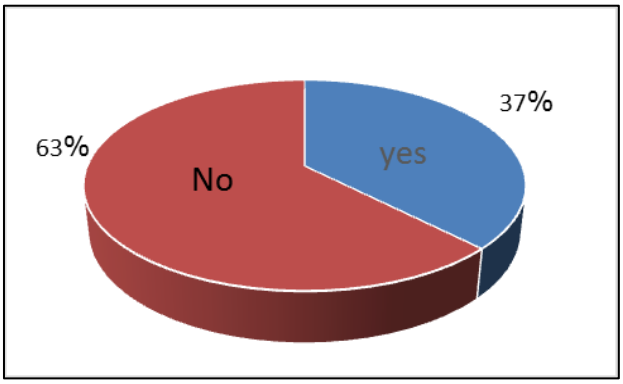

Figure 1: Distribution of agents according to whether they were once trained in material maintenance

3.4 Knowledge of the Stages of Material Processing

The majority of the officers surveyed were 72, 22% had no knowledge of the treatment of equipment (Table III)

Table III: Frequency of knowledge about the stages of material processing

	(n)	(%)
Do you know the different stages of treatment of surgical equipment?		
Yes	15	29,41
No	39	72,22
Can you quote them?		
Pre-cleaning	31	57,40
Disinfection	30	55,55
Rinsing-drying	45	83,33
Inspection	12	22,22
Lubrication	10	18,51
Conditioning	19	35,18
Sterilization	31	57,40
Storage	13	24,07
When does the hardware start?		
Pre-operative	04	7,40
Peroperative	15	27,77
Postoperative	35	64,81
Total	54	100

3-5: Decontamination Solutions

To the question "Do you know the decontamination solutions?" 48 agents or 88.88% responded favorably. Bleach was mentioned more in 51 cases, ie 94.41% followed by formal 37.03% (Table IV).

Table IV: Knowledge and List of Contamination Solutions

	(n)	(%)
Do you know about decontamination solutions?		
Yes	48	88,88
No	06	11,11
Can you quote them?		
Bleach	51	94,41
Formol	20	37,03
Dakin	06	11,11
Alcohol 70^0	02	03, 70
hlorhexidine	03	05, 55
Cyteal	02	03, 70
Hexanios	12	22, 22
Cresyl	03	O5,55

3-6 Barriers of Protection

The high frequency of agents was 87.O3% knew the protective barriers. In 14.81% there was the negligence of wearing protective glasses (Table V).

Table V: Knowledge and wearing a protective barrier

	(n)	(%)
Do you know the protective barriers?		
Yes	47	87,03
No	07	12,96
What barriers to protection Do you wear when processing equipment?		
Coat	42	77,77
Pajama	22	40,74
Gloves	51	94,44
Apron	15	27,77
Boots	25	76,29
Glasses	08	14,81
Headgear / hat	39	76, 66
Mask	28	61,66

3-7 Decontamination

Ninety-one point fifty-nine percent of surveyed staff decontaminated equipment after use (Figure 2).

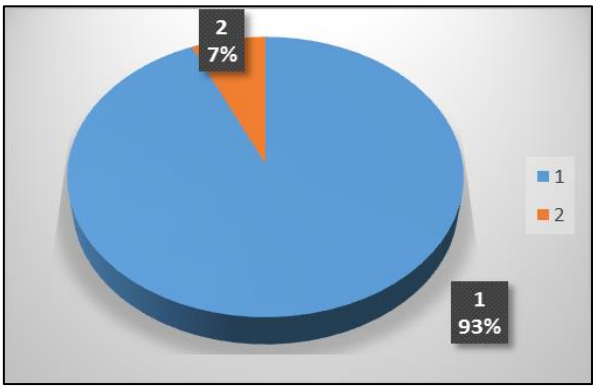

Figure 2: Frequency of decontamination

3-7-1 Attitude of agents to the practice of decontamination. The instruments were transported by hand from the treatment room to the laundry room to be soaked in a pre-prepared 05% chlorine solution and left in an uncovered bucket or bucket for 75.92% of the time. This solution, prepared at the beginning of the operative day, was kept and used during the whole day and replaced the next morning or at the end of the day 64.81% of the cases. (Table VI).

Table VI: Attitude, practice of respondents during decontamination

Attitude/Practice	(n)	(%)
Do you have a ferry?		
Yes	52	96,29
No	02	03,33
Attitude		
Is the bin covered?	41	75,92
Do you respect the duration	31	57,4O
Period of emptying the tank		
End of day	41	68,33
Between interventions	19	31,66
Transportation of equipment to the laundry room		
On the cart	22	40,74
By hand	26	48,14
Convenient		
Prepare the solution for decontamination?	52	96,29
Do you sort the material?	46	85,18
Do you immerse the material?	53	98,14

3-7-2 Duration of decontamination

In 33.33% of cases, the duration of the decontamination was 5 to 10 minutes (Table VII).

Table VII: Staff Distribution by Decontamination Duration

(in min *)	(n)	(%)
[0-5[	05	09,25
[5-10[	18	83,33
[10-15[	08	14,81
[15-20[	07	12,96
[20 et plus [	13	24,07
Ne sait pas	03	05,55
Total	54	100

******minute*

3-8 Cleaning

During this study we noted that the cleaning of instruments is done by hand with a brush in a detergent solution, after the prior wearing of non-sterile gloves and other protective barriers. The suction tubes and cannulas have been rubbed with a cloth.

3-9 Rinse-Drying and Conditioning

The cleaned equipment was rinsed manually under running water in 100% of the cases; Drying was done with a field or crumpled clean or air-dried on a clean table, Finally the instruments were packaged in 40cas (74.07%) in unlabeled boxes and in 12 cases or 22.22% wrapped in wrapping paper for sterilization.

3-10 Maintenance of Durgical Linen

The surgical linen after use was stored in large plastic buckets and transported to the trolley underwear by a cleaning agent; there it is decontaminated by the 0.5% chlorine solution and then it is washed in 46 cases or 85.18% by machine in the CHU-CHR blocks; SOS and Bassar, In 5 cases or 8.33% the washing of the laundry in the block of Pagouda was done by hand for lack of washing machine.

3-11 High Level Disinfection (HLD)

We noticed that 96.29% of agents disinfected the material and the question "By what method do you disinfect the equipment? The chemical method was cited in 64.81% and boiling 44.44%. (Table VIII).

Table VIII: Practical knowledge of HLD

Knowledge	Number (n)	(%)
Sterilize the material		
Yes	51	94,44
No	03	05,55
Quote the different means of sterilization that you know		
Poupinel (dry heat)	29	53.70
Autoclave (moist heat)	16	29.62
Stove (boiling)	06	11.11
UV ray	03	05,00
Attitude		
Absence of sterilization protocol displays	46	85.18
Non-use of sterilization tell-tales	52	96.29

3-12 Sterilization-Storage

3-12-1 Sterilization

In the majority of study blocks, we noted a lack of protocol or sterilization procedure displayed. This leaves a doubt about the effectiveness of the sterilization. The sterilization was done according to a choice of the techniques or means mentioned in the table IX. The sterilization of the instruments and the linen was carried out with the doll (dry heat at 170 degrees during 1 hour). Heat-sensitive material (tubes, suction cannula and other plastic material) was subjected to high level disinfection (HLD) with formalin tablets for 24 hours or 0.1% chlorine solution for 20 minutes in 100% cases. We also noted in our study that only one block had a functional autoclave in which instruments, textiles, plastic and rubber pipes were sterilized at 121 or 134 degrees Celsius over a period of 5 to 20 minutes. .

Table IX: Knowledge; attitude of sterilization

	(n)	(%)
Do you disinfect the equipment?		
Yes	52	96,29
No	02	03,70
How do you disinfect the equipment?		
Boiling (physical means)	24	44,44
Application of chemicals	35	64,81
Can you name the disinfectant solutions that you are using?		
Boiled water	06	11.11
Dilute sodium hypochlorite 0.5%	37	68.51
Formaldehyde 8%	19	35.18
Polyvidone iodine	01	1.85

3-12-2 Storage

The majority of the operating theaters surveyed had a clean sterile material storage room with cabinets or shelves and well-limited access. Only at CHR Kara block or we noted a storage room not clean, unventilated and unrestricted access.

3-13 Panels of problems encountered in all operating theaters

- Failure and insufficiency of equipment and solutions for decontamination or disinfestation; 37.03%
- Lack of enzymatic solutions for decontamination in 100% of cases
- De-ionization of reusable material treated with non-enzymatic decontamination solutions (chlorinated solution)
- Lack of procedure or guides to good treatment practice.
- Lack of washing machine for laundry that is done by hand. In the block of Pagouda (20%)
- Risk of injury, stinging, splashing or splashing of dirty liquids 12.96%
- Insufficient instrumentalists (on average one per block)
- No qualification or non-training of material handling staff 87.03%
- Frequent breakdowns of sterilization devices (autoclave, poupinel)
- obsolescence of sterilization devices 100%
- No maintenance and quality control in all blocks
- Lack of sterilization indicators 100%
- Untimely power cuts that do not allow the effectiveness of sterilization to be assessed
- Unavailability of sterilization protocols displayed for good sterilization practice. In all blocks

4-DISCUSSIONS AND COMMENTS

4-1 Professional qualification

Our study involved 54 agents from the five operating units of the health facilities in the Kara region namely Kara CHP Pagouda CHU, CHP Bassar and the SOS MCH. These agents are distributed according to

their specialty in Table I. From this distribution we noted that the nurses and the nurses were in majority in the respective proportions 29.62% and 18.52%. In addition, we noted that the instrumentalists who were the most appropriate agents for the maintenance of surgical equipment represented only 12.96%, ie 7 agents for the five health facilities, or 1 instrumentalist per block. This lack of instrumentalists in the blocks of the Kara region is filled by nurses and surface technicians who come to lighten the work of the instrumentalists

4-1-1 Professional Experience.

The number of years in a service where seniority is an indicator to judge the maturity and experience gained in the exercise of a function [7]. According to the theory of P.BENER quoted by ZOURE S. in Burkina-Faso, [19] speaking of the process of capacity development according to the time our study revealed that 25 agents or 46,29% had a seniority between 5 and 10 years and this seniority has allowed these agents to acquire more skills in the maintenance of equipment than those whose seniority is between 1 and 5 years and occupying a proportion of 29.62%. These different variations in the seniority of the agents can be explained by the mobility of staff from one service to another or from one health facility to another. Our results are similar to those of MOUSSA B of Burkina Faso [7] in his study conducted in Ouagadougou, where he found that 62.5% of the surveyed staff were 5 years old and over, and less than 25% had seniority of 3 to 4 years. Besides the seniority that gives the staff an experience in the processing of equipment, we also noted the professional training side. For this purpose to the question: ¬. "Have you received at least training in material maintenance? 63% agents said they had not been trained. This result is less compared to MOUSSA B. [7] who found 100% in his study .

From these results it follows that the lack of staff training remains a problem for the quality of the reusable material. This was emphasized by the Committee Against Nosocomial Infections (CLIN) [17,20] in these terms: "Continuing hygiene training is important for the control of infectious risk because agents evolve and involve adapting practices. >>

4-2 Knowledge of the stages of material processing

Of the 54 agents surveyed 39 agents or 72.22% said they did not know the different stages of processing equipment. Referring to Table III, we will see that the disinfection (55.55%), rinse-drying (83.33%) and sterilization steps were better known and more cited. Our results are consistent with those of MOUSSA, B. of Burkina [7] who found that 62.5% of nurses specialized in anesthesia resuscitation did not know the different stages of treatment of equipment. These results are also similar to those of K I N D A S.G. In Burkina [21] on the risks of exposure to blood related to the nursing profession. According to him 40% of nurses could not enumerate the different stages of disinfection. The consequence of this lack of knowledge is the poor quality of the material handled. 4-3 Knowledge and wearing of protective barriers.

47 agents surveyed out of 54 (87.03%) said they know the different types of protective barriers. 94.44% gloves, 77.77% gowns and 72.22% bonnets are better known and more worn by the agents. AGBANDA, E. in Togo, [14] also found that in 51.7% of cases the gloves were more worn. MAÏGA B. [2] in MALI proved that gloves and gowns were worn in the following proportions 93.33% and 53.33%. Neglect or ignorance goggles and aprons were very rarely worn. The wearing of protective equipment was considered by staff as a means of self-protection while also ignoring that the success of their work was through good hygiene practices.

4-4 Decontamination.

4-4-1 Materials Used For Decontamination.

Decontamination requires equipment such as a brush, plastic bin or container with lid, detergent and decontamination products. To the question: "Do you know the different decontamination solutions? "48 out of 54 agents or 88.28% said they know them. Among the decontamination products cited, bleach remained the most used in the five operating theaters in the Kara region, regardless of concentration and provenance. Our study revealed that bleach was cited in 94.41% of cases against 83% found by MAÏGA B. [2]. Despite the corrosive effect of bleach on the material, it is however the most used compared to enzymatic solutions that are non-corrosive. This preference for bleach is explained by its easy availability and low cost.

4-4-2 Knowledge, practice and attitude of agents during decontamination

The purpose and the methods of decontamination were poorly known, the ignorance was total among the agents in charge of cleaning. After the various procedures, the instruments used and the other soiled objects are decontaminated in a 0.5% chlorine solution. Operating tables, operating lights and other miscellaneous furniture are decontaminated with chlorine solution. The 50 agents (92.59%) who responded positively to the question "Do you decontaminate the equipment? Were most often unable to explain clearly the method of preparation of the 0.5% chlorine solution and to specify the standard immersion time recommended by DU MARTIN and BRÜCKER [22]. This standard time of ten to fifteen minutes was not strictly adhered to by the block agents of the Kara region.

AKAKPO, B. of Togo [23] confirmed it in 56% of the cases in the instrumentalists of the gynecological block of CHU TOKOIN Lomé. Non-

compliance with the duration of the decontamination reduces the effectiveness of this phase in the process of instrument processing. CISSE and Coll [24] in Senegal recognized that decontamination is an inexpensive and easy process. TIETJEN and Coll have been confirmed by showing in their study [11], how to prepare a decontamination solution at 0.5%, whatever the chlorine content of the bleach.

4-5 Cleaning

Instruments decontaminated for 10 minutes were transported in 48.14% of the cases by hand and cleaned under the tap spray by a surface technician with bare hands or wearing used gloves. [6]. The cleaning was manual and performed with a brush soaked in liquid soap. TIETJEN and Coll [11] recognized the effectiveness of cleaning which eliminates organisms on instruments up to 80%, and the use of liquid soap as a detergent was a good practice. Note also that it is only in the block of Pagouda that instruments and operating linen are washed by hand. This is explained by the lack of washing machine for the linen.

4-6 Rinse-Drying and Conditioning

After rinsing and drying performed manually by the agents, follow the conditioning. But it should be noted that an effort should be made for packaging so that the labeling of boxes and packaging is a habit.

4-7 High level disinfection

Reusable material can also be processed by other methods. This is the case of advanced disinfection, also known as high level disinfection (HLD). In our inquiry to the question asked to the agents: "Do you disinfect the material? "52 out of 54 agents, or 96.29%, responded positively. MAÏGA, B. in Mali [2] also found in his study that 8 out of 15 agents practiced disinfection with bleach. High level disinfection is recommended when it is impossible to perform sterilization [11] it can be done in two ways:

-Disinfection by boiling in which our study found 44.44% of cases of instruments, linen and pipes were boiled at 100 ° C for 20 minutes and dried this method destroys all microorganisms except endospores.

-The 64,81% chemical disinfection consisting in soaking the reusable material in a disinfectant solution. In our case, we noticed that solutions like formaldehyde at 8% are used in 35.18% of cases or 0.1% (64.81%) chlorine solution for 20 minutes.

4-8-Sterilization and storage

Decontamination and cleaning eliminated up to 90% of microorganisms. Only sterilization ensured the destruction of all microorganisms, including bacterial endospores, which are known to be difficult to kill [25]. In our study 94.44% of the interviewed agents estimated that they do the sterilization against 61.2% found by MAÏGA of Mali [2] and 60% at MOUSSA of Burkina [7].

However, in all the blocks surveyed, sterilization is subject to many sprains related to the conditions of health structures, lack of knowledge and non-compliance with standards. The insufficiency and obsolescence of the means of sterilization were notorious in the structures of the Kara region. For this purpose, among the sites surveyed, none had a functional autoclave. The sterilization of all the equipment (including the operative linen and compresses) was carried out with a 53.70% puppet whose operation was defective at CHR Kara, and CHR Pagouda (absence of hermetic closure, of the door, timer or non-use sterilization control). The indications of the means of sterilization were not clearly known by all the staff.

The temperature, duration and pressure standards of the autoclave and the poupinel were not taken into account. They were totally ignored by the sterilization agents who are almost always surface technicians (trained on the job).

The wet heat sterilization (autoclave) which was done at a temperature of 120 ° C for 30 minutes for non-wrapped items and 15 minutes for wrapped items is abandoned due to autoclaves that have failed and are out of use. Sterilization with dry heat (popinel) is made at a temperature of 170 ° for 1 hour or 160 ° for two hours. Sometimes the criteria used by the agent for sterilization are subjective and arbitrary like "I leave the material in place for 2 hours; I am waiting for the control lamp to be turned off. "In addition to these subjective criteria, we can mention the power cuts that put into question the effectiveness of sterilization. Chemical sterilization (2% glutaraldehyde solution and 8% formaldehyde solution is mainly reserved for thermosensitive material such as cannulas and suction tubes.) In the five blocks investigated, this thermosensitive material was permanently abandoned in a drum capacity. This system did not comply with the new procedures which stipulate that a concentration of one to two grams of formaldehyde (tablet) per cubic meter of confined space was required. exposure: depends on the piece [26] At the end of the sterilization the material was not labeled with respect to the maximum duration of conservation in all the structures surveyed Storage of the material after sterilization is well done in all the blocks except at CHR Kara where it was made in a place exposed to dust and too easy to access amination of the material.

CONCLUSION AND SUGGESTION

5-1-Conclusion

Our study showed us that there is a high risk for patients, healthcare staff or cleaners to contact a nosocomial infection in hospitals in the wake of the poor quality of the reusable material. Reusable material

requires, training, information and involvement of all staff working in the operating room that would also be responsible in the management of reusable equipment. The practice would be the respect of the steps, the application of the directives and norms with the exact aim to maintain the equipment suitable for the use. At the end of our study on the knowledge, attitude and practice of the treatment of reusable material in the five blocks of the Kara region we can conclude that the treatment of reusable material knows the strengths and weaknesses.

5-2-Suggestions

In view of all these shortcomings, we are convinced that much remains to be done to improve the quality of the treatment of reusable equipment in operating theaters in the Kara region. This leads us to formulate the recommendations that will be addressed to providers, service managers, health facility managers and health managers.

- Follow the material supply regularly.
- Service protocols and sterilization procedures.
- Multiply the nosocomial infection control committees (CLIN).
- Equip the operating theaters sufficiently with necessary materials and reusable materials.
- -Institute a system of motivation of a staff of the operating theater by granting risk premiums and encouragement.
- To provide sufficient services in single-use equipment.
- Make available to the services guides of good practices for the treatment of reusable material.
- Integrated sterilization of reusable material as quality of service in health facilities.
- Recruit in sufficient numbers the instrumental staff for operating theaters in the Kara region.

REFERENCES

1. WHO, UNDP, Columbia University. (1989). Report 2nd identification mission for the reduction of maternal mortality in Senegal. Ref SEN / 86/007, Dakar, 99-102.
2. MAÏGAB. (2002-2003). Hygiene Practices in Hospital Facilities GABRIEL TOURE Hospital Regional Hospital of Sikasso CNOS, reference health areas center of commune IV of BAMAKO. Thesis, Mali.
3. Pr MICOUD M., Pr. MENARD J., & C0LL. (2010). Guide of good practices of disinfection of the medical devices. Higher Council of Public Health in France, section prophylaxis of communicable diseases. National Infection Technical Committee.
4. MONVOISIN, M. (1997). Sterilization, organize the controls. Review of A D P H SO, 22 3, 69, 74.Version of 30/08/20013 P. 3 -11.
5. NIANGB. (2015). Audit of Reusable Care Equipment Treatment Practices in DAKAR Hospitals: Recommendation for Better Prevention of Health-Associated Infections. Master thesis in health economics 7th edition page 1 -6.
6. LIBBEY E. J. (2000). Prevention of surgical infection in Senegal's hospitals. French Studies and Research Paper, 10, 3.
7. MOUSSA B.W. Factors limiting the treatment of reusable materials in anesthesia in the operating room of the medical center with Bogodogo OUAGADOUGOU surgical unit. Mémoire, 14-30, 50-87 National School of Public Health of Ouagadougou.
8. EMERAUX, S. (2013). The means of protection in the operating room and attitude of caregivers in case of exposure to blood. 29-42.
9. ARMAND, A., BENIGEN, B., LEVERIC, A., MAYER, D., OSLERTAG, J.L. SITTLER, M. TIPHINE, M., VALENTINI, E. & WAWRZYNIAK, C. (1998-1999). Approach, quality in sterilization. Collection of procedures. HEPHAISTOS Working Group.
10. NEY, H. (2012). Treatment of soiled material. Article written 13 / 02/2012. HUG (GE NEVES University Hospitals)
11. TIETJEN, L., CRONNIN, W., & M C INTOCH, N. (1997). Infection Control A practical guide for family planning programs. BALTIMORE USA J H PIEGO, 2043 P.
12. Seavey, R. (2013). High-level disinfection, sterilization, and antisepsis: current issues in reprocessing medical and surgical instruments. *American journal of infection control*, *41*(5), S111-S117.
13. CONTASTINFRAPP, F. (2007-2009). I.B.O.DE: Competence in the service of quality assurance in sterilization. Memory C H U MONPELIER Promotion.
14. AGBANDAE. (2007). Role of the instrumentalist in the prevention of nosocomial infections in the operating theater of CHR KARA Tomdè. Lomé Medical Assistant Brief 12 September 22-28 P; 34-37 P.
15. RED. S., & Sterilization. E. T. S. (2011). Sophie lerouge @ and Stsmtl. Co, Good practices of disinfection of medical devices. Treatment of medical devices in ophthalmology and contactology. Ministry of Health and Solidarity DHOS / DGS CTINILS November 2005. 14 Avenues Duquesne 75350 Paris 07 SP Tel: 01 40 56 60 00. http: // www health gouv.fr.
16. CLIN Southwest. (2001). recommendation for cutaneous preparation of the operation 2-23p.
17. Lome. (2006). Medical Assistant Brief 18 October, 12- 14 P infections
18. Faure, E. (2002). nosocomial infections. Specialized file March, 61P.
19. ZOURES. (2003) The problem of nursing practice at the University Hospital of Ouagadougou, Burkina-Faso ENFP 84P.

20. ZOURES. 2003 The problem of nursing practice at the University Hospital of Ouagadougou, Burkina-Fasso ENFP 84P.
21. CCLIN South-East Guide to good hygiene practices in anesthesia Zenéca Pharma 1996 P21 24.
22. KINDA S. G. 2004. Study of risk factors related to the nursing profession at the SSHU Burkina-Fasso, BoboDioulasso 101 P.
23. FROM MARTINC. BRÜKERG. Rules of decontamination and medical disinfection of the operating room. Ann chir. 1995, 49 Nr173 - 179.
24. AKAKPO B. Evaluation of the tasks of the instrumentalist in the management of 100 patients operated in emergency at the bar gynecology of Tokoin Teaching Hospital Togo Lomé medical assistant memory October 18, 2006. 12-14p 32-41p
25. OSE CHEICHK, T. FAYE, G. MAIGA F. N'DIAYE, A. SYNOGOM, M. GUEYE, J. M. ZNO, F. DIADHI M. WADE, K. SAKHO E. O. Prevention of infection in the surgical environment in regional hospitals in Senegal, health book 2000-10 1889-1994.
26. MARTY, MALARAND CHOUARD Epidemiology of nosocomial infections after contrast surgery and role of CLIN in prevention. Academic Bull Discussion Nth Med 186 (3) 635-648.