

Assessing the Implementation of the Infection Prevention Principles's in Maternity Wards from the Functional Health District Hospitals of the Region of Hauts Bassins, Burkina Faso.

Méda Ziemlé Clément^{1,2*}, Hien Hervé³, Poda Armel^{1,2}, Thiombiano Swanfani⁴, Ilboudo Bernard⁵, Hien Léonel⁵, Kpoda Hervé⁴, Konaté Issa⁵, Youl Yéri Sylvie⁵, Coulibaly Ouo Mireille⁵, Méda Ganamé Afséta Emmanuelle⁴, Savadogo Gueswené Blaise Léon^{1,2}, Sombié Issiaka^{2,6}

¹Centre hospitalier universitaire Souro Sanou, Bobo Dioulasso, Burkina Faso

²Institut supérieur des sciences de la santé, Université Nazi Boni, Bobo Dioulasso, Burkina Faso

³Centre Muraz, Bobo Dioulasso, Burkina Faso

⁴Ecole nationale de santé publique, Direction de Bobo Dioulasso, Burkina Faso

⁵Ministère de la santé, Burkina Faso

⁶Organisation Ouest Africaine de la santé, Bobo Dioulasso, Burkina Faso

*Corresponding Author: Ziemlé Clément Méda, Centre hospitalier universitaire Souro Sanou, Bobo Dioulasso, Burkina Faso.

E-Mail: medaclel@yahoo.fr

Received Date: October 17, 2019; Accepted Date: November 06, 2019; Published Date: November 11, 2019

Citation: Méda Z Clément ., Hervé H., Armel P., Swanfani T., Bernard I. et al. (2019) Assessing the Implementation of the Infection Prevention Principles's in Maternity Wards from the Functional Health District Hospitals of the Region of Hauts Bassins, Burkina Faso. J. Women Health Care Issues. 2(2); Doi:10.31579/2642-9756/012

Copyright: ©2019. Ziemlé Clément Méda. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Introduction: This study evaluated the application of infection prevention and control (ICP) measures by midwives in the delivery rooms and maternity suites at the five district hospitals in the Region of Hauts Bassins, Burkina Faso.

Methods: This was a cross-sectional study conducted from 02 August 2015 to 12 June 2016. The data collected were: socio-professional characteristics, knowledge of ICP, attitudes towards handwashing, ICP practices, and service organization.

Results: Of the 65 agents surveyed, 60.0% were untrained about ICP after basic training, and 78.5% with no supervision for at least four years.

The scores were : knowledge (64.7%), attitude (68.1%), domains of practice (<85%). None of the maternity hospitals had the four bins for instrument processing. The organization of services was insufficient.

Conclusion: The infection prevention and control is insufficiently implemented, requiring capacity building and reorganization of services in a spirit of quality assurance.

Keywords: infection prevention and control, quality of care, nosocomial infections, good practices, district hospitals.

Introduction

Care incidents, iatrogenic problems, incidence of complications and emergence of nosocomial infections are become unavoidable and universal concerns related to patient safety, one of criterion choice for analyzing health system performance [1]. Patient safety is considered by the World Health Organization (WHO) as a quality component for improving the overall quality of care [2]. From this perspective, all health workers, regardless of their role and work environment, must be involved in infection prevention and control (IPC) [3].

Infection prevention and control (IPC) is defined as all material and technical means intended to prevent the penetration and development of pathogens in the body [4]. To this end, healthcare associated to infections (HCAIs) and nosocomial infections (NIs) must be avoided. HCAIs are a major concern for health professionals [5].

The WHO estimated that 1.4 million people were sick worldwide as a result of infections contracted in hospitals. In developed countries, these infections affected 5 to 10% of patients [6]. The prevalence of nosocomial infections (INs) was 4.5% in the USA, 10.5% in Canada, 6.7% in France, and 6.2% in Belgium [6, 7]. In Africa, the prevalence of NIs varied between 10 and 60% and they represented the third cause of maternal mortality, the second cause of early neonatal mortality, and the first cause of post-operative morbidity. This prevalence was estimated at 10.9% in Senegal, 12% in Côte d'Ivoire, 10% in Benin, 14% in Mali, and 23.7% in Burkina Faso [8].

The occurrence of HCAIs in hospitals is driven by many factors including patient-related factors, the exposures to invasive medical devices and deficiencies in the quality of care [9, 10], and the defects in cleaning, the disinfection and the sterilization [11-13]. The HCAIs lead to prolonged hospital stays [2-5], excess costs [4, 6], high resistance of microorganisms to antibacterial agents and high mortality rates [7-11]. For reducing these consequences, the present study accessed the implementation of the

infection prevention principles's in maternity wards from the functional health district hospitals of the Region of Hauts Bassins (RHBS), Burkina Faso.

Materials and methods

Study setting

Capital Bobo Dioulasso, the Region of Hauts Bassins (RHBS) is located in the West part of Burkina Faso. There are eight (8) health districts (HD) from the Health Region of Hauts Bassins (RHBS). As the referral structure of the health district, the district hospital therefore provides a complementary care package to those provided at the level of peripheral health centres [14]. The maternity wards of the five (5) functional HD were the setting of the present study : Orodara HD, Do HD, Dafra HD, Dandé HD and Houndé HD.

Type, period and method of the study

This was a cross-sectional study on the application of the infection prevention principles's in the study setting. The study took place from August 02, 2015 to June 12, 2016. The participants were midwives working in the delivery rooms and maternity suites of the HD, present during study period, and accepting to participate to the study.

The study method was the survey that used face-to-face individual interview and observation of practices as data collection techniques. The tools used were a semi-structured questionnaire and an observation grid.

Sample size and sampling method

Considering the total number of 99 midwives from the maternity wards of the HD in the RHBS (table I), the expected sample was 79 agents with a 5% margin of error, an assumed distribution of 50%, and a power β of 80 [15]. The sampling method was the simple random one, without handing over the 79 agents, and this, per maternity of each HD of the RHBS.

Maternity of Health district concerned	Midwives effective	Proportion (%)	Sample size expected
Dandé	16	16.2	12
Houndé	14	14.1	11
Do	29	29.3	22
Orodara	12	12.1	9
Dafra	28	28.3	22
Total	99	100.0	76

Table I : Number of midwives per functional health district in the Region of Hauts Bassins, and sample size expected

Variables and data collection

Five (5) interviewers (one by HD) were recruited and trained for data collection. Data collected were socio-professional characteristics of the midwives (table II), knowledge (table III), attitudes towards handwashing (table IV), practices about ICP (table V), and the organization of maternity services.

Data analysis

The data were recorded on a microcomputer using the SPSS software (version 23) with a double checking of the data before data analysis. To assess the level of knowledge, attitudes and practices of the agents surveyed, a score of 0 for « yes » and 1 for « no » corresponding to the answers was defined for each question. When the percentage of scores

calculated was equal or greater than to 85,0%, the item was considered having a good level. The level was considered medium when the percentage of scores ranged from 60,0% to 85,0%; and the level was considered low when the percentage of scores was less than 60,0%.

Ethical considerations

To carry out this study, the study authorization was obtained from the Health Regional Director of the Hauts Bassins and with the agreement from the Head medical Doctor of the health district teams concerned. The informed and written consent was filled out before the data collection. The confidentiality of the information collected was ensured by limiting access to the data to investigators only and to the need for the investigation.

Results

A total of 88 agents were present during data collection period and eligible for the study, of which 65 midwives were included in the study with participation rate of 74.0%.

Socio-professional characteristics

Of the 65 participants included, 63.1% were female (41), for a sex ratio of 1.7. The average age was 33.3 (95%CI: 31.1-35.5) years-old. The age group 30-34 ar-old accounted for 38.5% of respondents, followed by the age group 35-39 years-old with 29.2% (table II). The proportion of respondents with professional experience between 4 and 10 years was the most represented with 50.8% (table II). The respondents with a maximum of 3 years' seniority in the actual position represented 67.7% (table II). And 40.0% of the participants received training or retraining on IPC after their basic training (table II). The proportion of respondents who had not received supervision for at least four years was 78.5% (Table II).

Variables	Modalities	Effective	Proportion (%)
Sex	Male	41	63.1
	Female	24	36.9
Age group (years-old)	25 - 29	12	18.5
	30 - 34	25	38.5
	35 - 39	19	29.2
	40 - 44	6	9.2
	45 - 49	3	4.6
Number of years of service	≤3 years	23	35.4
	3-10 years	33	50.8
	>10 years	9	13.8
Seniority in current position (year)	≤3 years	44	67.7
	3-6 years	14	21.5
	> 6 ans	7	10.8
Having already received training about Infection prevention and control (IPC)	Yes	26	40.0
	No	39	60.0
Period of last supervision	≤3 years	14	21.5
	3-5 years	25	38.5
	> 5 ans	26	40.0

Table II: Socio-professional characteristics of the study participants

Knowledge of midwives about the IPC

The proportions of agents surveyed who were familiar with the definitions were: 80.0% for the IPC definition, 76.9% for the nosocomial infection definition, and 90.3% for the handwashing definition (table III). The hand hygiene was the most frequently cited precaution by 76.9% of the respondents (table III).

The purpose of handwashing was known by 76.9% of respondents (table III). The different types of handwashing were known by only 38.5% of respondents. The indications for surgical washing were best known at 49.4%, followed by those for simple washing at 49.4% (table III). As well, 93.8% of respondents were aware about the different types of gloves used for IPC application.

With respect to the usefulness of the flaps, 86.2% of respondents used the flaps to protect health workers from splashes and 27.7% of respondents used them to protect the client from microorganisms emitted by the provider. The proportion of respondents who were familiar with the three

procedures for the maintenance and treatment of soiled instruments was 90.5% (table III). A proportion of 62.5% of respondents cited 10 minutes as the decontamination time. Among the respondents, 50.8% gave one hour as the duration of sterilization of the equipment with the poupinel at 170°C. For a standard of 20 to 30 minutes for sterilizing equipment in an autoclave, 47.7% of respondents cited 60 minutes as the duration of the equipment in an autoclave at 134°C (table III). Knowledge of high-risk areas in the maternity wards of the HD from the Region of Hauts Bassins was cited: 80.0% for the delivery room, 66.7% for the bed suite room, 53.9% for the pregnancy and infectious disease room, 23.8% for the consultation room, 9.5% for the guard room, and 1.2% for the pregnancy and non-infectious disease room. For the cleaning of the delivery room, the agents surveyed said that both disinfectant and detergent were required for 84.6% of cases, detergent alone for 7.7%, and disinfectant for 7.7%. The overall score for knowledge on IPC was 64.7%.

Variables	Modalities	Effective	Proportion (%)
Definition of Infection prevention and control (IPC) known	Yes	52	80.0
Definition nosocomial infection known	Yes	50	76.9
Knowledge on standard precautions about Infection prevention and control (IPC)	Yes for hand hygiene	50	76.90
	Yes for the wearing of protective equipment	45	69.20
	Yes for the management of contaminated equipment	36	55.40
	Yes for the maintenance of soiled surfaces	29	44.60
	Yes for the action to be taken in the event of exposure to biological fluids (EBF)	18	27.70
	Yes for the transport of biological samples, soiled linen and equipment	12	18.50
	Yes for isolation	07	10.80
Definition of handwashing known	Yes	56	90.3
Purpose of handwashing known	Yes	50	76.9
Indications of handwashing known	Yes for surgical washing	32	49.4
	Yes for simple washing	26	39.8
	Yes for hygienic washing	7	10.8
Types of handwashing unknown	Yes	25	38.5
Three procedures for the maintenance and treatment of contaminated instruments known	Yes	59	90.5
Decontamination time known (10 minutes)	Yes	40	62.5
Sterilization time of baby doll at 170° Celsius known (1 hour)	Yes	49	75.4
Autoclave sterilization time at 134°C (at least 18 minutes) known	Yes	60	92.3
For cleaning the delivery room, detergent disinfectant is required	Yes	55	84.6
High-risk areas in maternity wards (delivery room) known	Yes	52	80.0
Global score of knowledge about Infection prevention and control (IPC)	-	-	64.7

Table III : Results related to midwives knowledge on infection prevention and control (IPC)

Attitude of the midwives about the handwashing

For handwashing, 86.2% said that it is often and always necessary to wash hands for care between two patients (table IV). Also 47.7% of the 65 respondents stated that they were always and often influenced by their peers about their non-compliance with handwashing (table IV). And 86.2% of the respondents reported that they always and often washed their hands before and after removing gloves (table IV). From the 65 people surveyed, 52.3% of them said that they always and often reminded their colleagues to wash their hands before and after all actions (table IV). The overall score of the attitude towards handwashing was 68.1%. Finally and 73.8% of respondents said they used cans to supply themselves for water ; and 23.0% of them used kettles, as alternatives when haing water shortage.

Attitudes	Modalities	Effective	Proportion (%)
Doing handwashing between two patients	Always	26	40.0
	Often	30	46.2
	Sometimes	3	4.6
	Rarely	2	3.1
	Never	4	6.2
Peer influence on your handwashing compliance	Always	6	9.2
	Often	25	38.5
	Sometimes	5	7.7
	Rarely	4	6.2
	Never	25	38.5
Handwashing habits after glove removal	Always	31	47.7
	Often	36	55.4
	Sometimes	20	30.8
	Rarely	6	9.2
	Never	1	1.5
Remind colleagues to wash their hands before and after all actions	Always	56	86.2
	Often	14	21.5
	Sometimes	20	30.8
	Rarely	7	10.8
	Never	11	16.9
Global score of midwives attitude on hanswashing	-	-	68.1

Table IV : Results of midwives attitude on hanswashing

Midwives practices and IPC

No domains of practice by midwives were at a satisfactory level (table V). The medium-level areas of practice were: glove wearing (69.2%) and instrument maintenance (72.7%). The areas of low-level practice were: clean service provider dress and use of personal protective equipment (53.1%), simple handwashing (56.9%), biomedical waste management (56.2%), behaviour change communication (49.5%). None of the maternity hospitals had the four (4) tanks for processing instruments.

The table V shows the summary of midwives' practices on the application "standard" precautions of about infection prevention and control (IPC) and aspects to be improved.

Variables	Effective	Proportion (%)	Key areas for improvement
Personal protective equipment	35	53.1	No apron, glasses and bibs to wear
Handwashing	37	56.9	-Hands and wrists not dabbed with a disposable hand towel or allowed to air dry;-Failure to perform simple handwashing or disinfects hands by friction between the care of two patients
Wearing gloves	45	69.2	Wear the same pair of gloves to examine at least two women
Biomedical waste management	37	56.2	Safety boxes used that do not comply according to the World Health Organization (WHO) standards; Garbage cans or garbage bags that do not comply according to the World Health Organization (WHO) colours or coding
Behaviour change communication	32	49.5	-No explanation given to parents on how to repair the bed; -No explanation given to the woman that it is necessary to change sheets and linencloths when those used are damp because humidity maintains the proliferation of germs; -Linges soiled with blood and/or body fluids that have not been decontaminated or soaked in disinfectant before being given to the woman's companions
Instrument maintenance	47	72.7	No use of the 4 tanks (1 for soaking, 1 for decontamination, 1 for cleaning, and 1 for rinsing)

Table V : Summary of midwives' practices on the application "standard" precautions of about infection prevention and control (IPC) and aspects to be improved

Organization of the services and IPC

When accessing the five (5) maternity hospitals, there was nowhere was there is a committee to fight nosocomial infections. The proportion of agents who reported the existence of an adequate water point in the service was 85.9%. Among the participants, 95.3% said that running water had been suspended in their service. Concerning the maintenance of soiled instruments, the availability of "bleach" (or chlorinated water) was reported by 98.4% of agents. Also, the sources of bleach supply were staffing and internal production at more or less equal proportions 47.6% and 52.4% respectively. The proportion of midwives who had never received a supervisory visit was 72.3%. The respondents who had been supervised were mainly supervised when they were in the health district in 50.0% of all supervised (n=18), by the regional level in 22.2% of cases, by their maternity managers in 16.7% of cases, and by the national level in 5.6% of cases. Also, the proportion of midwives who supervised at least once said that supervisions addressed PCI in 83.3% of cases. And 69.8%



of the agents surveyed said they had a distribution of workstations at their disposal.

When the job description existed (100%), the job description was only displayed in 2 of the 5 maternity units evaluated.

Of the existence of the various managers involved in the IPC, 98.4% appointed a manager of the maternity department, 20.0% appointed a IPC manager in the maternity department, 38.4% appointed a IPC manager of the HD, and 61.9% appointed a IPC manager of the health district. Of the 65 respondents, 92.3% of them said they had never had a manager for compliance with handwashing practices.

For the 65 respondents, it emerged that:

- 69.2% stated that protocols on handwashing procedures were never posted; upon observation, simple handwashing protocols, precautions to be observed in case of exposure to biological fluids (EBF) and those for the maintenance of reusable soiled instruments were not posted in any care rooms;
- 34.4% said that handwashing products were often accessible; and 41.9% said they still had access to handwashing facilities.

Of the five maternity hospitals surveyed, there were the following elements: supervision booklet (2/5), weekly or monthly equipment supply booklet (5/5), apron for maternity staff (5/5), individual glasses (2/5), individual boots (5/5), individual bibs (3/5), water in care rooms (5/5), soap and detergent (5/5), safety boxes (5/5), waste collection tools comply with WHO coding (0/5), signage to allow customers to distinguish waste collection tools (0/5), baby doll (5/5), autoclave (0/5), functional incinerator (3/5). The sterilization method used by all five maternity hospitals was the poupinel. Feedback on care-related infection rates was reported by 76.9% of respondents. Handwashing facilities were rated as rarely or never functional by 38.4% of respondents. Since basic training, 83.1% of respondents said they had never done any internships about handwashing practice. Also, 84.6% of respondents said they had never been evaluated on handwashing practice.

Discussion

The objective of this study accessed the implementation of the infection prevention principles in maternity wards from the functional health district hospitals. As main finding, the level of knowledge on IPC was 64.7%. Also, the attitude score on handwashing was 68.1%. In addition, no areas of practice by midwives were of a satisfactory level. Finally, the organisation of services remains insufficient.

The methodological limitations of this study are mainly based on its cross-sectional type of study and the single passage for observing practices. Indeed, it would have taken several passages to be sure to capture the real practices of the health professionals surveyed.

Socio-professional characteristics

In this study, the 30-39 age group was the most representative. Zabsonré et al showed that agents over 40 years of age were less likely to be involved in accidents involving exposure to biological fluids (EBF), which were more frequent among agents between 30 and 39 years-old. [16].

Knowledges on IPC

In this study, the level of knowledge was medium about the definition of nosocomial infection being the least known amongst the definitions. Already in 2008, Hien et al showed that only 30.04% of respondents were aware about the definition of a nosocomial infection [17]. And yet the healthcare associated infections (HAIs) were the consequences of the lack of IPC. In their study, Boni-Cissé et al showed that 25.7% of the

agents were unaware that carew could contract a nosocomial disease [18].

While the purpose of handwashing was known, the different types of handwashing were only known by 38.5% of respondents, such as the 48% results found in Senegal [8]. The results of this study showed that there is a need to improve knowledge about the indications for surgical and simple hand washing. The present results are similar to those observed in Senegal where 62% of respondents do not know the indications for handwashing [8]. As for the different types of gloves used for the application of the IPC, it is noted that this was quite well known in this study. With respect to the usefulness of the bibs, the respondents said that they protected the health worker from splashes and almost not to protect the client from emitted microorganisms. This would show that health workers did not take into account their client's other means of protection. Moreover, Benboubker et al in Morocco, the individual protection measures were poorly cited in several high-risk situations [19]. According to Hien et al, only 44.4% reported that the hand of caregivers when having absence of hygiene was the main mode of cross-transmission of germs between patients [17]. Therefore, it is important to remember that microorganism reservoirs are made up of long nails, fake nails, nail polish, jewellery and long-sleeved clothing ; their use should therefore be avoided during treatment [20].

Whilst the review studies did not address aspects related to instrument processing and risk areas, it was found that the times of decontamination, sterilization of the equipment with the 1700c nursery, and sterilization of the equipment in an autoclave were not well known. It is recommended to decontaminate in 10 minutes, to sterilize the equipment with the poupinel at 1700c in one hour, and to sterilize the equipment in an autoclave in at least 18 minutes [21, 22].

The Knowledge on high-risk areas was not well known. This is essential to be considered when circulating in the rooms of a hospital. Care rooms, intensive care, oxygen bottles, delivery rooms are classified in zones D or zone 3, having severe risks [21, 22]. As for cleaning the delivery room, three-quarters of the agents surveyed said that both disinfectant and detergent were required in 84.6% of cases. This is recommended depending on the nature and surface to be cleaned [22].

If the knowledge is generally fairly well mastered [23], been in medium level in this study, the knowledge does not lead to practical translation and there is a constant gap between words and deeds [24].

Midwives attitude and their pratiques about IPC

While at least three-quarters of the participants often and always said they wash their hands between the care of two patients, it is noted that almost half of them said they were always and often influenced by their peers about their non-compliance with handwashing and always and often reminded their colleagues to wash their hands before and after all actions in this study. Already in 2008, Hien et al showed that hospital hygiene practice by health professionals was low (36.9%) [17]. In the context of activities promoting peer experience, the data showed the need for more continuing training and supervision sessions, more consultation frames on IPC including compliance with standard precautions.

As in this study, 87.7% of respondents reported handwashing between two patients according to Benboubker et al [19]. On the other hand, in practice, there is a systematic failure to carry out simple handwashing or hand friction with a hydroalcoholic solution for care between two patients by 56.9% of the respondents. The same observation was made in Côte d'Ivoire where 21.1% of respondents confirmed that they did not perform this procedure and any about midwives [18]. In Algeria, only 30% of respondents observed handwashing practice before the treatment [8]. As Boni-Cissé et al pointed out, despite the presence of washbasins confirmed by 87.5% of respondents, and liquid soap dispensers confirmed by 50.5% of respondents, the respondents rarely performed simple handwashing at the start of the shift about midwives [18]. According to the standards, staff must wash their hands as soon as they arrive at work,



before and after each client's examination; after touching any object likely to be contaminated; after handling samples; before putting on gloves for clinical procedures; after removing gloves; after using the toilet; before leaving work [3].

In this study, 69.2% of the agents observed had worn gloves as previously noted by Laraquib et al (65.6%) [25]. Among nurses, gloves are not systematically worn by many agents, as evidenced by glove wearing rates of 64% for samples and 65.5% for infusion sets [16]. And 75.7% recognized the need to change gloves between two patients [19].

The systematic wearing of personal protective equipment was unsatisfactory for Bambenongama et al [26]. Only 20% of caregivers reported regular use of personal protective equipment [27]. As noted by Zabsonré et al, where 52.3% of the participants had never worn protective glasses when performing acts at risk of blood spatter, and although the health workers were aware of the risk of exposure to biological fluids (EBF), and the rules governing the application of the IPC are not respected [16]. This would be due to the attitude of the agents or their access to protective equipment. In this study, there was no wearing of aprons, glasses or flaps. In addition, it is noted that the same pair of gloves is worn to examine at least two women, while it is recommended that gloves be changed between patients [21, 22]. Although recapping needles after care was a practice not found in this study, it was noted in 55% of cases according to Bambenongama et al [26], in 51.2 % about Laraquib et al [25], and 25.7% according to Aké-Tano [28].

The client or patient/sick person was not taken into account because they were not oriented for a change in behaviour conducive to their safety: no explanation given to parents on how to repair the bed; no explanation given to the woman on how to change sheets and cloths when those used are wet because humidity maintains the proliferation of germs; and cloths contaminated with blood and/or biological liquids not decontaminated or not soaked in disinfectant before being given to the woman's caregivers.

Finally, the present results showed that no area of practice by agents was of a satisfactory level. In his study, d'Alessandro pointed out that there are many dysfunctions in care practices and that carers largely neglect hygiene recommendations [24].

Service organization and IPC

Through the present results, the organization of services was unsatisfactory. As in this study, only 33.9% of the staff interviewed had received training in hospital hygiene according to Boni-Cissé et al [18], and 28.7% from Benboubker et al [19]. While the proportion midwives who disposed of each type of solid waste in the containers placed in the rooms for this purpose was 96.8%, the bins did not meet WHO standards. It is recommended to respect the sorting of biomedical waste through garbage bags of different colours (yellow, red and black) [21, 22]. In this study, it was found that there was no committee to control nosocomial infections. Although existing, the nosocomial infection control committee of the Centre hospitalier universitaire (CHU) de Yopougon did not really carry out its tasks ; moreover, 71.6% of the staff interviewed were unaware of the existence of this hygiene committee [18].

As already pointed out by Zida et al in Burkina Faso [8], the following facts were also observed in this study: poor compliance with handwashing instructions by health professionals; resistance to change despite training; lack of sewage systems for liquid waste in most hospitals; misuse of incinerators, frequent breaks in antiseptics; obsolescence and exiguity of rooms; lack of knowledge of basic hygiene rules; malfunction of laundries; failure to sterilize; and use of artisanal incinerators. And yet, according to the Basel Convention, medical waste produced in health care facilities must always follow an appropriate and clearly identified route from its production points to its final disposal. This route consists of

several steps that include: production, sorting, collection, on-site collection, transport and storage, off-site transport and storage, treatment and disposal [29]. For Hien et al, the determinants of these infectious risks associated with care in developing countries include lack of infrastructure, inadequate equipment, inadequate hygiene conditions, non-implementation of protocols, inappropriate use of antibiotics, lack of hygiene compliance and insufficient knowledge of health professionals that could be due to lack of initial training [17].

Implications for public health

The purpose of this study is to contribute to a significant reduction in the risk of spreading infections among clients, providers and other staff. The responsibility for IPC lies with everyone working in sanitation facilities, regardless of their role, size or type of facility or facility. [21]. The Global Patient Safety Alliance advocates the use of systemic interventions and organizational culture changes to improve patient safety, rather than individual denunciation of health practitioners and administrators [1]. As a result, risk management is increasingly becoming a priority for governments [30]. Poorly managed risks result in significant costs related to complications, inappropriate use of services, adverse events and deaths [1]. Calling for action, the quality of care and patient safety approach must take into account the dimension of training and a change in the behaviour of health professionals [17].

Conclusion

This study accessed the application of infection prevention and control measures by midwives in delivery rooms and maternity suites at the district hospital level. Our findings indicate that infection prevention and control is not sufficiently implemented in these district hospitals, as several studies in developing countries have noted. It is therefore necessary to strengthen staff skills and reorganize maternity services in the field of IPC using quality assurance.

References

1. Pringle D. (2004) Dot : From the editor-in-chief. Quality goes beyond safety : shifting shifts . Nursing leadership, 17(3): 1-4
2. Secrétariat international des infirmières et infirmiers de l'espace francophone (SIDIIEF). La qualité des soins et la sécurité des patients: une priorité mondiale. SIDIIEF 2015 Juin; 1-60.
3. Bacou J, Bruneau C. (2012) Sécurité des patients: quels enseignements de l'international. Haut Conseil de la Santé Publique, 79 : 59-63.
4. EngenderHealth. Infection Prevention. A reference booklet for health care providers. EngenderHealth 2001 Mar; 1: 1-82
5. HYGIENES. Surveiller et prévenir les infections associées aux soins. HYGIENES 2010 Sep; XVIII (4): 1-180.
6. Durbin JD. (2010) Infections associées aux soins, un nouveau guide actualisé pour prévenir et surveiller. Inter bloc, 29(4): 233.
7. Haertig A, Shansen S, Richard F. (2005) La responsabilité chirurgicale dans le cadre de la Loi d'indemnisation des victimes d'accidents médicaux. e-mémoires de Académie Nationale de Chirurgie, 4(4): 10-14.
8. Hygis N. (2010) Les infections nosocomiales associées aux soins. In: Hygiène Hospitalière. Sauramps Medical, 3: 37-46.
9. La Documentation française. (2008) Rapport Flajolet: Peut-on réduire les disparités de santé ? Recommandations. La Documentation française
10. EngenderHealth. (2014) Prévention des infections. Un guide de référence pour les professionnels de la santé, 2ème édition. EngenderHealth, 2: 1-114.
11. World Health Organisation (WHO). WHO Guidelines on Hand Hygiene in Health Care: a Summary. First Global Patient Safety Challenge Clean Care is Safer Care. WHO 2009 Juil; 1-64.



12. Vrijens F, Gordt B, De Laet C et al. (2008) In: Les infections nosocomiales en Belgique : Volet I, Etude Nationale de Prévalence, KCE reports 92B. ealth Services Research (HSR) Bruxelles: Centre fédéral d'expertise des soins de santé (KCE), 1-120.
13. Conférence internationale sur la prévention et le contrôle de l'infection (ICPIC). Session spéciale sur la sécurité des patients et la lutte contre les infections dans les services de maternité en vue de l'atteinte des OMD liés au secteur de la santé en Afrique. Programme et livre des résumés. ICPIC 2011 Juil; 1-52.
14. Durocher A. (2005) L'infection nosocomiale comme indicateur de (non) qualité des soins : l'exemple de la réanimation. Sciences sociales et santé Sept; 23(3): 59-68.
15. Espinasse F, Page B, Cottard-Bouille B. (2010) Risques infectieux associés aux dispositifs médicaux invasifs. Revue francophone des laboratoires Aou, 40(426): 51-63.
16. Sydnor ER, Perl TM. (2011) Hospital Epidemiology and Infection Control in acute-care Settings. Clin Microbiol Rev, 24(1): 141-173.
17. Ghazi M, Khanbabae G, Fallah F. (2012) Emergence of *Pseudomonas aeruginosa* cross-infection in children with cystic fibrosis attending an Iranian referral pediatric center. Iran J Microbiol, 4(3): 124-129.
18. Abreu AC, Tavares RR, Borges A, Mergulhão F, Simões M. (2013) Current and emergent strategies for disinfection of hospital environments. J Antimicrob Chemother, 68(12) : 2718-2732.
19. Hamza R. (2010) Epidémiologie des infections associées aux soins. Revue Tunisienne d'Infectiologie 1(4): 1-4.
20. Organisation mondiale de la santé (OMS). Eléments essentiels du bon fonctionnement d'un système de santé OMS 2010; 1-3.
21. Bosch-Capblanch X, Liaqat S, Garner P. (2011) Managerial supervision to improve primary health care in low- and middle-income countries. Syst Rev, 7(9): CD006413.
22. Raosoft, Sample size calculator. Raosoft 2015. Disponible sur
23. Zabsonré I, Tranh MT. (2008) B-05 Prévention des risques d'exposition aux infections des praticiens de santé au Burkina Faso : étude à propos de 200 agents de santé. 9es Journées Nationales d'Infectiologie. Médecine et maladies infectieuses 38 (Suppl 2): S27-S202.
24. Hien H, Drabo M, Ouédraogo L (2013) Connaissances et pratiques des professionnels de santé sur le risque infectieux associé aux soins : étude dans un hôpital de district au Burkina Faso. Santé Publique, 2(Vol. 25): 219-226.
25. Boni-Cissé C, Faye-Kette H, Timite-Konon M, Meité S. (2007) Evaluation du niveau de connaissance et des attitudes pratiques concernant les infections nosocomiales au centre hospitalier universitaire de Yopougoun, au cours de l'année 2006. Revue Bio-Africa 2007; Numéro Spécial, (5): 52-56.
26. Bambenongama NM, Likwela J L. (2013) Connaissances, attitudes et pratiques des professionnels de santé face aux précautions standards en milieu hospitalier. Santé publique 5(Vol. 25): 663-673.
27. Ministère de la santé, de la famille et des personnes handicapées (MSFPH). Guide de bonnes pratiques pour la prévention des infections liées aux soins réalisés en dehors des établissements de santé. MSFPH 2006; 1-140. Disponible sur
28. Benboubker M, El Marnissi B, Nhili A, El Rhazi K. (2017) Connaissances, attitudes et pratiques vis-à-vis des précautions standard chez les soignants du Centre hospitalier universitaire Hassan II de Fès (Maroc). EMHJ 23(1): 1-8.
29. Organisation mondiale de la santé (OMS). Prévention des infections nosocomiales Guide pratique. OMS 2008; 2: 1-80.
30. Alessandro E, Soula G, Jafrré Y, Gourouza B, Adehossi E, Delmont J. (2012) Pandémie grippale A/H5N1 et niveau de préparation du Niger : une étude sur les connaissances des soignants et l'organisation générale des soins. Bulletin de la Société de Pathologies Exotiques Fev; 105(1): 68-75.
31. Alessandro E. (2012) Prévenir le risque infectieux à l'hôpital ? Réflexions anthropologiques autour des pratiques d'hygiène hospitalière dans un service de médecine au Niger. Anthropologie & Santé, 4: 1-17.
32. Laraquib O, Laraquid S, Tripodie D et al. (2008) Évaluation des connaissances, attitudes et pratiques sur les accidents d'exposition au sang en milieu de soins au Maroc. Médecine et Maladies Infectieuses 38(12): 658-666.
33. Azzouzi Y, El Baakli M, Khadmaoui A, Thami Ahami AO, Hamama S. (2014) Les accidents avec exposition au sang chez les soignants: connaissances, attitudes, pratiques et prévention dans la région de Gharb au Maroc. International Journal of Innovation and Applied Studies, 2: 557-570.
34. Aké-Tano O, Ekou FK, Tetchi EO et al. (2010) L'hygiène dans les infirmeries de quartier: cas de la commune de Soubré. Cah. Santé Publique 9(2): 27-35. Accessible sur
35. Programme des Nations Unis pour l'environnement (PNUE) et Convention de Bâle. Convention de Bâle sur le contrôle des mouvements transfrontaliers de déchets dangereux et de leur élimination. PNUE et Convention de Bâle 2014; 1-123. Disponible sur
36. Pittet D, Allegranzi B, Storr J. (2008) Infection control as a major World Health Organization priority for developing countries. J Hosp Infect, 68(4):285-292.