

Assessment Of Injection Safety Practices In Health Facilities In Bongo And Talensi Districts In The Upper East Region Of Ghana: Part 1– Injection Safety Practices

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Abstract: Injections are one of the most common health care procedures, and each year about 20 billion injections are administered world-wide [WHO, 2010]. Most injections (about 90 to 95%) are given for therapeutic purposes, and only 5 to 10% are given for immunization. In this study, a cross-sectional design was adopted in the two districts – Bongo and Talensi. Personnel giving injections in the prevention and curative sections as well as the heads of the facilities were observed and interviewed. The waste disposal systems and disposal sites of the facilities were also assessed. A total of thirty-one (31) staff were observed and interviewed in 8 health facilities. Twenty-one (21) were observed and interviewed in Bongo and ten (10) in Talensi districts. Twenty-two (78.6%) prepared injections on clean table and tray. Fourteen (50%) respondents reused mixing syringes for reconstitution and 4(17.9%). Eight (17.9%) had shortage of cotton wool. Community Health Nurses who experienced shortage of cotton wool used syringe wrappers in place of cotton wool after injection. Two hand recapping was observed in 3 (10.7%) respondents. Two (25%) of facilities had sharps scattered at the disposal site. Two facilities that have incinerators were not using them at the time of the visit. The challenges to injection practice were the use of improvised items, reuse of syringes for reconstitution, shortage of logistics and supplies, unattended, open and unrestricted disposal sites leading to sharps scattered around disposal site and non-use of incinerators. It has been recommended that the Regional EPI coordinator must conduct quarterly assessments on availability of EPI logistics and supplies in the districts and facilities.

Index Terms: Auto-disable Syringe, Antenatal Clinic, Child welfare Clinic, Safety Boxes, District Health Management Team, Community Health Nurse, Outpatient Department, Puncture-proof Container.

1 INTRODUCTION

INJECTIONS are health care practices worldwide and its overuse in many countries has caused a substantial proportion of infections with blood borne Pathogens (Kane *et. al*; 1999). At risk of infection are injection recipients and health care workers through contaminated needles and syringes and the community at large through exposure to contaminated sharps waste. are one of the most common health care procedures, with some (Kane *et. al*; 1999). Most injections (95%) are given for therapeutic purposes, 3% immunization injections, 1 % injectable contraception and 1 % for Blood and blood procedure [www.who.int/inj].

Some Injections are often unnecessary and unsafe. These unsafe injections are responsible for millions of cases of Hepatitis B and C, and an estimated one-quarter of a million cases of HIV annually. Re-use of injection equipment without sterilization is frequently a key problem. It is therefore important to assess these unsafe injection practices and come out with findings to inform policy decisions. Previous studies and reviews on injection safety are presented as follows:

Injection safety

A safe injection is an injection that does not harm the recipient, does not expose the health care worker to any avoidable risks and does not result in any waste that is dangerous to the people (WHO, 2010).

Injection safety policy for Ghana

“The Ghana health service pursues the policy that 100% of injections given in the public and private sectors for any purpose must be safe. This means that every injection must be given using a single sterile syringe and needle combination which is then safely disposed of after use.” (GHS EPI, 2003).

Diseases that unsafe injections and injection waste disposal can cause include:

Hepatitis B virus – Hepatitis B (HBV) is well-known as a highly infectious disease. Unsafe injections account for about one-third of new HBV infections in developing countries, equal to an estimated total of nearly 21 million people infected each year.

Hepatitis C virus - Unsafe injections are the most common cause of Hepatitis C (HCV) infection in the developing world, causing two million new infections each year, and over 40% of HCV cases. In some countries (e.g., Egypt and Pakistan), evidence suggests that HCV has reached high levels due to

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unsafe injection practices.

HIV/AIDS – The World Health Organization (WHO) estimates that unsafe injections cause an estimated 250,000 new HIV infections each year, about 5% of all new HIV infections. Research indicates that most of the HIV infections that are caused by unsafe injections occur in South Asia and Africa. Most vaccines currently available are given by injection and global concern about unsafe injections has compelled immunization managers and providers to address safety issues more seriously than ever (Hauri et al, 2003).

Safe Injection Policies

Governments have the primary responsibility for ensuring that injections are safe. Policies are needed to address the following key issues; reduction of the total number of unnecessary injections, promotion of safe injection practices, provision of sufficient quantities of appropriate injection equipment and infection control supplies and Management of sharp waste. Against the above comes with a budget that must meet Needles and syringes, Safety boxes, Training, Incinerator equipment and spare parts, Fuel for incinerators, Sterilizing equipment, spare parts and fuel in places where sterilizable injection equipment continues to be used (Immunization Essentials, 2003)

Injection Safety Assessment

Among other things, injection safety assessment includes: Competence of the staff on injection practice, the availability of injection equipment, logistics and supplies, Injection waste disposal system of the facilities, the availability of injection safety and waste disposal plans and systems.

Standards for achieving adequate injection safety measures in Ghana.

The highest standard of injection safety is achieved with a single use disposal syringe and needle (ideally an auto disposable type) which is, sterile prior to being packaged and sealed by the syringe manufacturer and opened immediately prior to injection, used to give one injection to an individual using the correct medication or vaccine, disposed of without being recapped in a designated safety box or sharps puncture-proof container after the injection is completed. When full, the safety box is burned (without content being emptied or dumped) either in a dug pit or incinerator, and the burned waste buried (GHS EPI, 2003). Ghana Health Care waste management policy prescribes the Storage and prevention of spillage or loss, Segregation, Label waste to identify source, Engagement of authorized persons in passing and receiving waste and Description of waste, (GHS, 2003).

The W.H.O strategy

The W.H.O strategy for achieving safe and appropriate use of injections worldwide have four objectives; they include:

- (1) Formulating national policies and plans for the safe and appropriate use of injections,
- (2) Ensuring quality and safety of injection equipment,
- (3) Facilitating equitable access to injection equipment and
- (4) Achieving appropriate, rational and cost effective use of injections.

Some injection practice problems in health facilities

Some other injection problems in health facilities include; use of unsterile injection equipment, Unsafe collection of Sharps, Unsafe management of waste, Unsafe injection practices,

Injection equipment

Injection equipment that can be used to administer injectable vaccines and other medicines include: auto-disable syringes, standard disposable syringes, pre-filled and single dose non-reusable devices.

Management of sharps waste

As the use of A-D syringes increased so has the need for all injection supplies to be disposed of properly. Used syringes and other injection waste are not to be dumped in open places where people might step on them or come in contact with them in any other way. Disposal of sharps could take the forms of Disposal of the whole syringe with needle attached - the whole syringe with needle attached is dropped in a safety box for onward incineration. Separation of needles from plastic syringes – the needles are removed from the syringe with a simple device with a receptacle that receives the needles. The needles are either encapsulated and buried in a protected burial in an onsite pit or disposed off in a sharp pit. The syringes are either shredded before burial in an onsite pit or they are treated with 0.5% chlorine solution for 30 minutes or boiled for 20 minutes and then offsite disposal or recycled. The need to manage contaminated sharps has prompted the development of tools to assist countries with planning and policy development. These tools include an assessment tool for health care waste management that examines current practices, level of awareness of risks and the country regulatory framework in order to provide essential information for designing an action plan.

Safety Boxes

Safety boxes or sharp containers are puncture-resistant containers into which A-D syringes and needles are placed immediately after use temporarily stored until they can be destroyed. They should be supplied in sufficient quantity such that they are always within reach of a vaccinator, even during outreach sessions.

Volume of safety boxes

Approximately 100 2ml syringes and needles fill a five liter safety box. 5ml and 10 ml syringes take up more space.

Waste disposal and destruction

Filled Safety boxes are supposed to be incinerated. If an incinerated is not available, a much less desirable but effective alternative is to use kerosene to burn them. In planning waste disposal in a health facility, managers should consult medical waste policies and environmental regulations for the national and local levels. The plans must include; Location of disposal facilities, Disposal of filled safety boxes, Schedule and budget for destruction of safety boxes, Logistics, Training and Incineration equipment (Immunization essentials, 2003).

What can be done to promote safe and appropriate use of injections?

National governments, WHO, and others working with the Safe Injection Global Network (SIGN) continue to collect compelling evidence of infections associated with medical

injections, and actively work to promote safe injection practices and policies. Introducing an injection safety component at the design phase of relevant projects is a useful way to initiate a national safe injection plan in a systematic way.

1.2 Conceptual framework

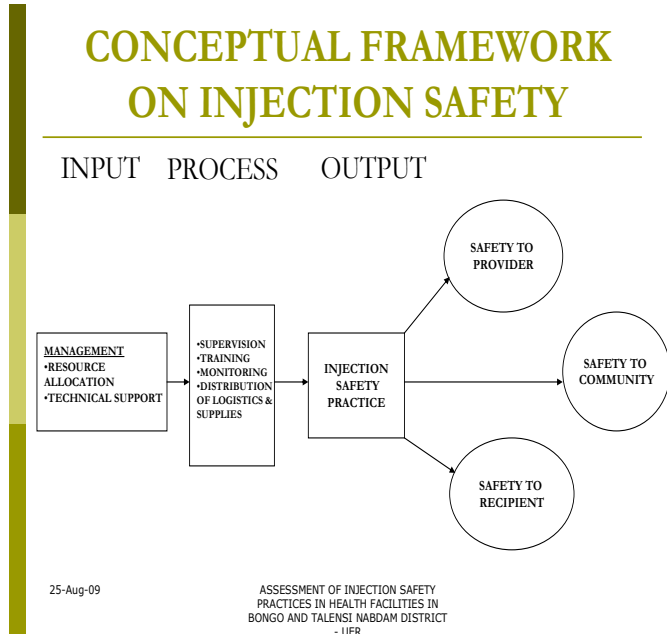


Figure 1: Conceptual Framework

The implementation of injection safety policy in every health facility is focused on the provision of quality and safe injections and safe disposal of the injection wastes [Figure 1]. The observance good injection safety practice guarantees safety and avoids risks to the provider, the recipient or client and the community. Risk to the recipient of an injection can occur through reuse of inadequately sterile syringes or needles, contamination of equipment or improper reconstitution/preparation during injection preparation, or exposure to used sharps within health care settings. Also in health care settings, injection providers and waste management personnel are the occupational categories with the highest risk for accidents with used sharps. For injection providers this risk can occur during the action of injection provision or later if used sharps are not adequately disposed of leading to needle sticks injuries. The community can be exposed to risk when used sharps waste is not disposed properly in the environment where waste pickers and other people can be pricked and infected. A good injection practice in health facilities is a reflection of adequate resource allocation, adequate supportive supervision and good technical support.

2.2 The Study Area

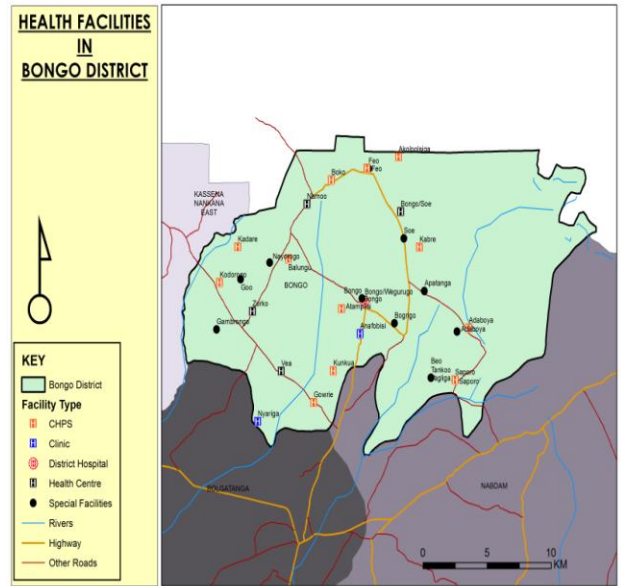


Figure 2: Map of Bongo District in the Upper East Region of Ghana

Table 1: Subdistricts, population, and some vital indices, Bongo

No	Sub-district	Total pop (2008)	WIFA	exp. pregnancy	CHN 0-11 mths
1	Central	19,900	4776	796	796
2	Bongo Soe	12,881	3091	515	515
3	Valley Zone	10,252	2460	410	410
4	Bongo Beo	15,093	3622	604	604
5	Zorko	16,220	3893	649	649
6	Namolo	10,663	2559	427	427
Total		85,009	20402	3401	3401

Bongo District profile

Bongo District is one of the 9 districts in the Upper East region with Bongo as the capital [Figure 2]. It lies between longitude 0.45° W and latitudes 10.50° N to 0.09° N within the onchocerciasis zone. It has a land area of 459.5 square kilometers and one of the most densely populated districts in the country with 185 inhabitants per square kilometre. The district was carved out of Bolgatanga district in 1998 and shares boundaries with Burkina Faso to the North and East, Kassena Nankana district to the west and Bolga district to the south. There are 132 communities in dispersed settlements. The land terrain is mostly rocky. The district is divided into 6 sub-districts (Table 1) with a total population of 85,009 and the common diseases Table 2.

Table 2: District Service data, Bongo

	2008	2007	2006
OPD attendance	28,197	20,027	
malaria	48.5%	34.5%	
Malaria admissions	2045 - 53.6%	1300 - 43.5%	
Under 5 OPD attendance	16,720	9,402	
Under 5 OPD attendance (Malaria)	9,361 (56%)	6,603 (70.2%)	
Under five admissions	1,154	703	
Under five admissions due to Malaria	972 (84.2%)	547 (77.8%)	
Tetanus vaccination for pregnant women (TT2+)	2774 (79%)	4328 (128.7%)	4221 (85.2%)
Family (injectables)			
Norigynon	(actual)45.6	2.5	28.5
Depo provera	(actual)1854.3	1695.2	1093.3
CWC vaccinations			
BCG	3,482 (102%)		
PENTA 3	3,137 (92.2%)		
Measles	3,240 (95.3%)		
Yellow Fever	3,024 (89%)		

Talensi [Nabdam] District Profile

Talensi Nabdam district [Figure 3] is a newly created district which was carved from Bolgatanga Municipality in 2004. It covers an area 918 sq km and is bordered to the North by Bolgatanga, south by West and East Mamprusi districts in the Northern region, Kassena Nankana to the west and Bawku west to the East. The occupation of the people is mainly peasant farming, small scale mining and petty trading. The 2008 projected population was 97,672 living in 105 communities. The topography of the district is dominated by relatively undulation lowlands and gentle slopes ranging from 1% to 5% gradient with some isolated rocks, hills and upland slopes at Tongo and Nangodi. They fall within the Birimian, Tarwaian and Voltarian rocks of Ghana. The district is drained by the red and white volta and their tributaries. The indicators are presented in Table 4.

Table 3: Health facilities, their locations and their status in Bongo District

SUB-DISTRICT	H/Centre	RCH centre	CHPS compound	District Hospital
Central	0	1	3	1
Bongo Soe	1	0	3	0
Vea Valley Zone	1	0	2	0
Bongo Beo	0	1	2	0
Zorko	1	0	2	0
Namoo	1	0	1	0
Total	4	2	13	1

Target populations

- WIFA 241019
- 0-11 - 40170
- 0-59 - 2008490
- Exp. Preg 40170

Health Infrastructure

- Sub districts 6
- Health facilities 17
- Health centres 3
- Clinics 5
- Proposed CHPS compounds 18
- Functional CHPS compounds 9
- Outreach clinics 6
- Nutrition Rehabilitation centre 1

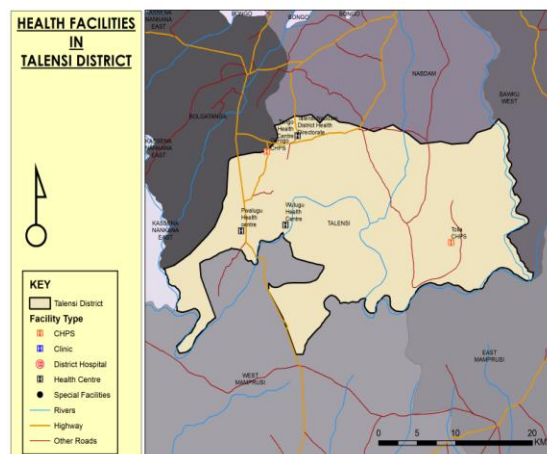
**Figure 3: Map of Talensi District in the Upper East Region of Ghana**

Table 4: District indicators, Talensi

	2008	2007	2006
OPD attendance malaria	34,955	22,787	
Tetanus vaccination for pregnant women (TT2+)	3468	4151	3490
CWC vaccinations			
BCG	3958	4811	4479
PENTA 3	4049	4624	4077
Measles	3731	4383	3996
Yellow Fever	3725	4309	3943

2.3 Problem Statement

In the last National Injection safety assessment carried out in 2003 in Ghana only 14% of facilities across the country had wet swabs for skin preparation, 8.8 % had no sharps boxes in stock; there were two hand recapping in 8.7% and 16.67% among immunization and curative staff respectively. Only 11.2% of the facilities had safety boxes at the area where injections were given. Furthermore, 3.0% of the facilities had presence of overflowing, pierced or opened boxes and 10% of them had evidence of Health Care Waste (HCW) scattered around the health centres and or disposal site. The report further stated that Low temperature burning remains most frequent method of waste treatment and inappropriate treatment or disposal of sharps imposing threats to the community also existed. (Antwi-Agyei et al, 2003 - unpublished) In Bongo and Talensi Nabdam districts, facilities with incinerators are not using them to dispose of sharps while some other health facilities do not have a well managed disposal sites with evidence of partially burnt injection wastes and sharps around the sites. There have been increased Out Patients (OPD) attendants and admissions which poses a challenge to the facilities in maintaining good injection safety measures and waste disposal. For instance, Malaria OPD attendance and admissions in health facilities in Bongo district increased from 20,027 (34.7% of all OPD attendance) and admissions from 1, 3 00 (43.5% of all admissions) to 28,197 (48.5% of all OPD attendance) and 2,045 (53.6%) in 2012. Talensi Nabdam district recorded OPD attendance increased from 22,787 in 2011 to 34,955 in 2012. Increased injections posed risk of needle sticks injuries and also managerial challenge in the provision of adequate resources, supervision, training and management of injection wastes.

2.4 Research Question

To what extent is injection safety practice influenced by management system of planning, resource allocation, technical support and supportive supervision?

2.5 Justification

Injection safety practices in the health care institutions are a reflection of the quality of supervision, resource allocation and

provision of technical support. There is therefore the need to update the records on injection safety practices in the health care institutions in the district through periodic assessment. Findings from this study will be used to inform policy formulation and implementation for strengthening the capacity of facilities in ensuring good injection safety practice.

2.6 General Objective

The general objective of this study is to assess the injection safety practice and management system that promotes injection safety in health facilities in Bongo and Talensi districts in the Upper East region

2.7 Specific Objectives

The specific objectives of this study are to:

1. assess the injection safety practice among staff.
2. analyze the availability of injection logistics and supplies

3.0 METHODS

3.1 Study Design:

A cross sectional design was used for this study adopting a mixed- method study [qualitative and quantitative].

3.2 Study location

The study locations were Bongo [Figure 2] and Talensi [Figure 3] Districts, Upper East region of Ghana.

3.3 Sampling and Sample size

A convenient sampling was done to select the two districts and in each facility, two staff from preventive section, two from the curative section and the heads of the facilities were interviewed purposively. The study included the observation of injection processes and the immediate environment where injections are given, observation of waste disposal systems of the health facilities, observation of equipments, logistics and supplies and also interviewed injection providers and supervisors on the planning, resource allocation, technical support and supervision.

Facilities:

All health facilities and hospitals with full compliment of services were included in the study. Seven health centres and one hospital were finally selected in the two districts.

Outreach sites:

Since the maternal and child units conduct immunizations both on outreach and static basis, observations and provider interviews were extended to these places as the situation demanded.

Observations:

In each facility observations was done at the injection rooms of the out patients departments, the wards, maternal and child health unit, the stores and the waste disposal sites.

Interviews:

1. In the hospital, the Medical Superintendent, the administrator or the matron were purposively interviewed.
2. Also, a total of four staff, two from the maternal and child health unit and two from the wards/injection room.

3.4 Variables of Study:

Dependent variable: Injection Safety practices

Independent variables were:

1. Background characteristics of respondents
2. Characteristics of facilities
3. competence in injection safety practice
4. Availability of logistics and supplies
5. Availability of waste disposal facilities and system
6. existence of management system systems

3.5 Data collection tools and technique

The standardized WHO/SIGN tool (Tool C) for assessing injection practice was adapted and used to collect data. The tool was used to conduct structured observations and provider interviews:

3.6 Data processing

Data processing was done using EPIinfo version 3.4.1(July 2007). Check codes were used to avoid double entries. Pre-testing of the tools was done to eliminate inconsistencies and made the questions relate to the local settings. Data cleaning was done to account for missing values in a bid to ensure integrity and reliability.

3.7 Data Analysis

Frequencies cross tabulations and graphs were used to do the data analysis;

3.8 Results frame work

The final results are presented as follows:

1. Health care facilities included in the sample (Characteristics of the facilities)
2. Background of staff observed and interviewed
3. Risk to the health care provider
4. Risk to the patient
5. Risk to the community
6. Management issues

3.9 Limitations

1. Observation of practice may be biased through observer-induced changes in practice
2. Information was not readily available on the costs [amount of funds that are spent annually] of injection safety practice and waste disposal
3. However all these limitations did not affect the quality of the research findings.

3.10 Ethical considerations

1. Approval was sought from the Ethical review board/GHS.
2. Letter requesting for permission from RHMT/DHMT/Health facilities for the study
3. Consent forms were administered to respondents before interviews and observation
4. The confidentiality of the responses from the respondents was assured by explaining how the information shall be recorded and used.
5. The researcher exercised discretion by intervening to prevent potential harm to recipient in the event of an attempt to conduct an unsafe injection practice and also provided technical advice for instant correction. Eg. Re-use of syringes and/or use of injection equipment without sterilization.

6. The researcher where necessary provided to facilities technical support on injection safety policy and improvement of waste disposal system.
7. Immediate feedbacks were provided to management of facilities and the Health administrations on findings.

4.0 RESULTS

4.1 Background Characteristics

Facilities and staff in the Districts

A total of 31 staff were observed and interviewed in 8 health facilities. There were 5 (21 staff) facilities in Bongo and 3 (10 staff) in Talensi Nabdam districts. Bongo district therefore had twice the number of facilities and staff than Talensi Nabdam [Table 5].

Table 5: Distribution of facilities and number of staff by district

Districts	Facility Name	Number persons Interviewed/observed
Bongo	Bongo Hospital	4
	Namoo Health Centre	4
	Soe Health Centre	4
	Vea Health Centre	4
	Zorko Health Centre	5
Talensi	Tongo Health Centre	3
	Pwalugu Health Centre	3
	Nangodi Health centre	4
Total	8	31

Distribution of respondents by category and number of years of practice

Community Health Nurses (CHNs) were the largest number of staff interviewed. They formed 45.2% of the total staff. However, all of them have not been in active service for more than 5 years. The other categories (in the minority) were post for more than five years [Table 6].

Table 6: Distribution of respondents by category and number of years of practice

STAFF CATEGORY	NO. OF YEARS OF PRACTICE			Frequency	Percent (%)
	Less Than 1 year	Between 2 & 5 years	More than 5 years		
Community Health Nurse	7	7	0	14	45.2%
General Nurse	2	2	1	5	16.1%
Medical Assistant	2	1	2	5	16.1%
Midwife	0	2	2	4	12.9%
Other	0	1	2	3	9.7%
TOTAL	11	13	7	31	100.0%

Distribution of injection sessions by responses

There were 17(54.8%) of observations and interviews done for the curative sections of the facilities while 14(45.2%) were made up of 6 (19.4%) outreach and 8(25.8%) static vaccination centres [Table 7].

Table 7: Distribution of injection sessions by number of responses

Injection sessions	Frequency	Percent	Cum Percent
Curative	17	54.8%	54.8%
Outreach	6	19.4%	74.2%
Vaccination (static)	8	25.8%	100.0%
Total	31	100.0%	100.0%

2.2 ASSESSMENT OF INJECTION SAFETY PRACTICE AMONG STAFF WHO CONDUCT INJECTIONS

4.2.1 Information elements on practice reflecting risk to the recipient

The information gathered on practice of staff reflecting risk to recipient showed that 22(78.6%) of the staff observed prepared injections on clean table and tray. Twenty one (75.0%) used sterile syringes and needles for reconstitution. Fourteen (50%) of them reused mixing syringes for reconstitution and 4(17.9%) of them used gloves for injection procedure {Figure 4}.

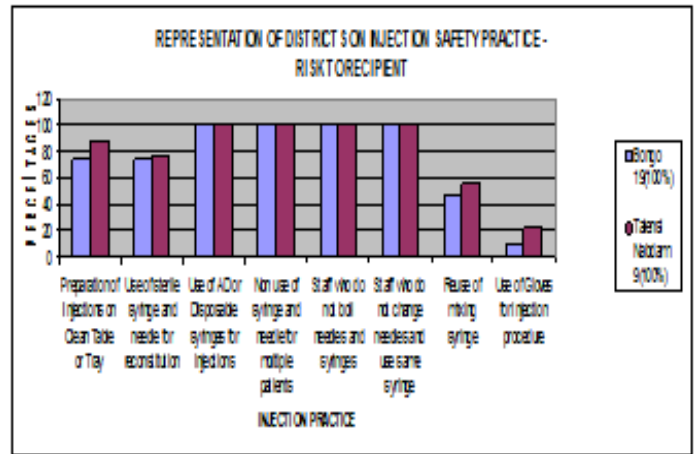


Figure 4: Graph showing the injection practices of staff that reflects the risk of the recipient

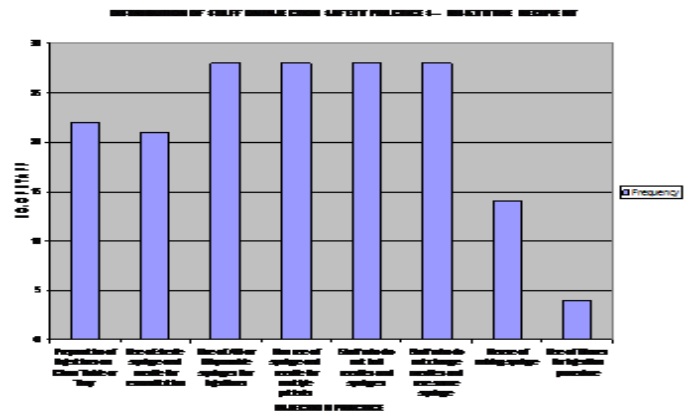


Figure 5: Graph showing the injection practice reflecting risk to the recipient by district

Table 8 shows the information on practice of staff reflecting risk to the recipient by district. Generally the staff from the two districts performed well with the exception of reuse of mixing syringe and use of gloves. In Bongo district, 9(47%) of the staff observed reused mixing syringe and only 2(10.5%) used gloves. In Talensi Nabdram, 5(55%) of the staff observed reused mixing syringes while 2(22%) used gloves [Figure 5].

Table 8: Information elements on practice reflecting risk to the recipient by district

OBSERVATIONS/	Bongo (19)	Talensi Nabdam (9)	Total (28)
Preparation of Injections on Clean Table or Tray	14(73.7%)	8(88.9%)	22
Use of sterile syringe and needle for reconstitution	14(73.7%)	7(77.8%)	21
Use of AD or Disposable syringes for injections	19(100%)	9(100%)	28
Non use of syringe and needle for multiple patients	19(100%)	9(100%)	28
Staff who do not boil needles and syringes	19(100%)	9(100%)	28
Staff who do not change needles and use same syringe	19(100%)	9(100%)	28
Reuse of mixing syringe	9(47.4%)	5(55.6%)	14
Use of Gloves for injection procedure	2(10.5%)	2(22.2%)	4

4.2.2 Information elements on practice reflecting risk to the provider

Information elements on practice reflecting risk to the provider in the districts

It came out that of those respondents who did two hand recapping, 2(22.2%) of them were in Talensi Nabdam district while 1(5.3%) of the respondents were in Bongo [Figure 6]

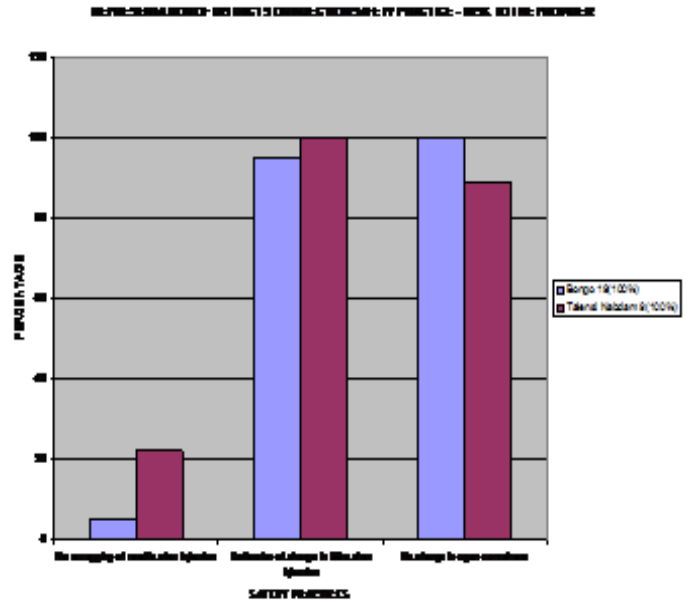


Figure 7: Information elements on practice reflecting risk to the provider in the districts

4.3 AVAILABILITY OF INJECTION LOGISTICS AND SUPPLIES

4.3.1 Information elements on logistics and supplies reflecting risk to the recipient by facility

Out of the 28 respondents, 3(10.6%) had swabs for skin preparations either, dirty, stained or bloody. 26(92.9%) of them from all facilities had one week supply of disposable or AD syringes. Five (17.9%) had occasional mismatch between vaccines/injectables and AD/disposable syringes and also had shortage of injection logistics (cotton wool and mixing syringes) [Figure 7].

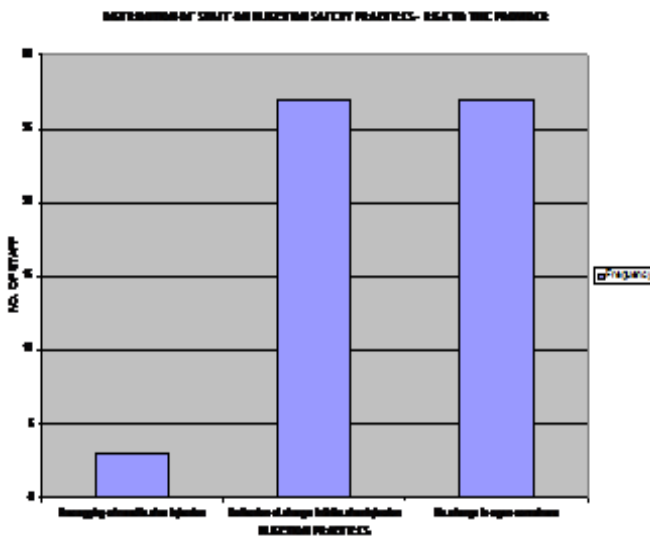


Figure 6: Graph showing information elements on practice reflecting risk to the Provider

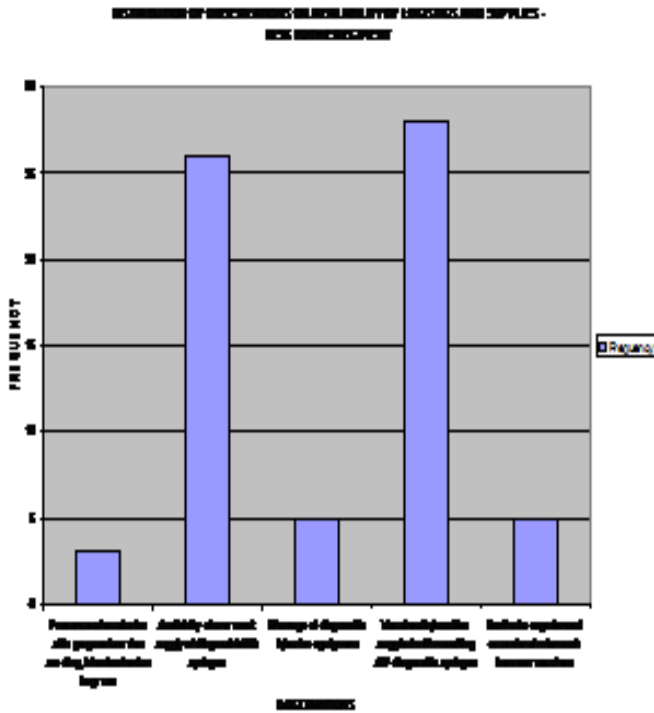


Figure 8: Availability of logistics and supplies reflecting risk to the recipient

Injection section with swabs for skin preparations that are dirty, blood stained or wet

Table 9 shows that 3 (10.6%) of respondents who had presence of swabs for skin preparations that are dirty, blood stained or kept wet are from the curative section.

Table 9: Information on type of injection section that have swabs for skin preparations that are dirty, bloodstained or kept wet

TYPE OF INJECTION SESSION					
Presence of swabs for skin preparations that are dirty, bloodstained or kept wet	Dist rict	Cura tive	Outre ach	Vacci nation (static)	Total
Swabs are dirty, bloodstained or wet	Bon g Tale n	3 10.8	0 0.0	0 0.0	3 10.8
Swabs not dirty or wet	Bon g Tale n	11 44.0	6 24.0	8 32.0	25 89.3
TOTAL	Bon g Tale n	14 50.0	6 21.4	8 28.6	28 100.0

4.3.2 Logistics and supplies reflecting risk to the recipient by district

Out of the 19 respondents in Bongo and 9 in Talensi Nabdam districts 2(10.5%) and 1(11.1%) had presence of swabs for skin preparation that are dirty, bloodstained or kept wet respectively. Nineteen (100%) in Bongo and 7(77.8%) in Talensi Nabdam had one week supply of disposable/AD syringes. Four (21.1%) in Bongo and 1(11.1%) in Talensi Nabdam had shortage of disposable injection equipment. Nineteen (100%) in Bongo and 9(100%) in Talensi Nabdam had vaccines/injectables supplied with matching AD/disposable syringes. Two (9.5%) in Bongo and 3(30%) in Talensi Nabdam experienced occasional mismatch between vaccines/injectables and AD/disposables syringe [Figure 9]

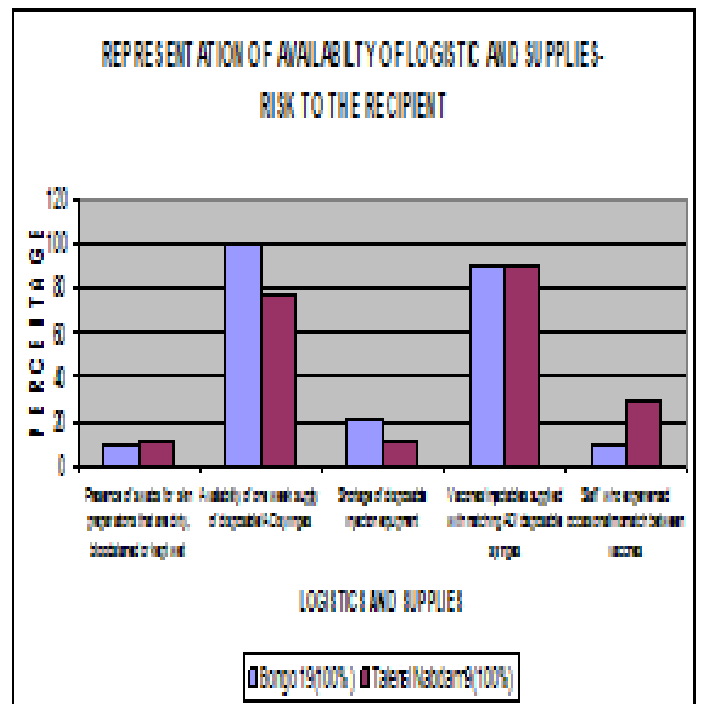


Figure 9: Availability of logistics and supplies by district

6.2 CONCLUSION AND RECOMMENDATIONS

Safe injection practice among staff that bothers on safety of the recipients is quite encouraging with both curative and preventive services using appropriate Disposable and AD syringes and Non use of syringe and needle for multiple patients, except for few reuse of mixing syringes, non use of cotton wool and preparation of injections in unclean settings. Safety practice that borders on safety to the providers is also very encouraging as all the places where injections are given have SBs and staff immediately drop used syringes in them. However two-hand recapping still exists among some of the staff.

General recommendations

1. There is the need for adequate logistics [e.g. cotton wool and syringes and needles] for reconstitution to improve upon the safety of both the recipient and providers.
2. Staff in the districts who are involved in injections need to be retrained on injection safety

3. Orientation for newly recruited Community Health Nurses and general nurses should include injection safety practices so as to minimize some of the risky behaviours
4. The districts must review the waste disposal system of the facilities
5. Districts could consider pulling of all sharp boxes to for incineration

Bongo Districts

1. Bongo hospital should initiate the use of incinerator
2. The hospital management should consider relocating the public waste collection bin and also ensure that sharps and other injection materials are not dumped into it.

Talensi

1. The management of the health centre must put a stop to the use of the abandoned septic tank in the hospital for the disposal of health care waste [including sharps].
2. They should also use the incinerator

Regional level

1. Regional EPI coordinator must conduct quarterly assessments on availability of EPI logistics and supplies in the districts and facilities.
2. Steps must be taken to check over stocking of AD syringes to the facilities.

National level

1. National EPI office should consider a national review of EPI logistics distribution and waste disposal system to help intensify logistic management and monitoring
2. National EPI office as a matter of urgency supply all regions, district and facilities copies of the National injection safety policy documents

7.0 REFERENCES

- [1]. Antwi Agyei et al, (2003). Injection safety and Healthcare waste assessment in Ghana - K.O 2003
- [2]. Children's Vaccine Program at PATH: www.childredivaccine.org/html/safe_injection.htm
- [3]. Dicko M, Oni AQ, Ganivet S, Kone S, Pierre L, Jacquet B. (2000). Safety of immunization injections in Africa: not simply a problem of logistics. Bulletin of the World Health Organization; 78:163-9.
- [4]. GAVI (2009). Achieving effective sharps waste management in GAVI host countries,
- [5]. Hauri, AM; Armstrong, GL; Hutin, YJ. (2004). The global burden of disease attributable to contaminated injections given in health care settings. Int J STD AIDS. 2004;15:7-16. doi: 10.1258/095646204322637182. [\[PubMed\]](http://www.worldbank.org/data/countrydata/aag/khm_aag.pdf) http://www.worldbank.org/data/countrydata/aag/khm_aag.pdf
- [6]. Hutin, Y; Hauri, A; Chiarello, L; Catlin, M; Stilwell, B; Ghebrehiwet, T; Garner, J. (2000). Injection Safety Best Practices Development Group. Best infection control practices for intradermal, subcutaneous, and intramuscular needle injections. Bull World Health Organ. 2003;81:491-500. [\[PubMed\]](#)
- [7]. Hutin, YJ; Hauri, AM; Armstrong, GL. (2000). Use of injections in healthcare settings worldwide, 2000: literature review and regional estimates. BMJ. 2003;327:1075. doi: 10.1136/bmj.327.7423.1075. [\[PubMed\]](#)
- [8]. Immunization Essentials (2003). A Practical field Guide. 2003
- [9]. Immunization Newsletter (2008). vol xxx, number 3, June
- [10]. Jagger J, Hunt EH, Brand-Elnaggar J, Pearson, R.D. (1988). Rates of needle-stick injury caused by various devices in a university hospital. N Engl J Med 1988; 319: 284-288. [\[Abstract\]](#)
- [11]. Kane A, Lloyd J, Zaffran M, Simonsen L, Kane M. (1999). Transmission of hepatitis B, hepatitis C and human immuno-deficiency viruses through unsafe injections in the developing world: Model-based regional estimates. Bulletin of the World Health Organization 1999, 77:801-807.
- [12]. Kenya (2005). Injection Safety and Immunization Waste Management Plan Of Action, 2001 - 2005.
- [13]. Lakshmi R. (2005). India's vaccines come with risk: dirty needles used for immunization can spread other diseases. The Washington Post. February 9, 2005:A18.
- [14]. Logez, S. (2001). the proceedings of the 3rd Annual International SIGN meeting: 30-31 August 2001. New Delhi, India. WHO; 2001. Increased access to injection equipment in Burkina Faso; pp. 35-35.
- [15]. Muller N, (2005). United States Agency for International Development (USAID). Evaluation of a Disposable Needle-Removal Device in Uganda. A HealthTech Report. Seattle: PATH; 2005.
- [16]. Nazareth S, Rathi MK; Poking; (1998). Danger: sharps handling and disposal [fact sheet]. New Delhi: Srishti.
- [17]. PATH Preventing needle sticks injuries, (Program for Appropriate Technology in Health),
- [18]. Prüss-Üstün A, Rapiti E, Hutin Y . (2003). Global Burden of Disease from Sharps Injuries to Health-care Workers. Geneva: WHO;. WHO Environmental Burden of Disease Series, No.3.
- [19]. Safe Injection Global Network (SIGN) www.injectionsafety.org

- [20]. WHO Strategy regarding injection safety.
http://www.who.int/injection_safety/about/strategy/en/
- [21]. WHO, (2001). Safe Injection Global Network. Injection Safety: First Do No Harm. WHO/BCT/DCT/01.3. Geneva: WHO;.
- [22]. WHO. Strategy regarding injection safety.
http://www.who.int/injection_safety/about/strategy/en/
- [23]. WHO. (2001). Tool for the Assessment of Injection Safety: Basics II. Geneva: WHO, 2001 (WHO/V&B/01.30).
- [24]. WHO. (2002) Injection Practices: rapid assessment guide..
http://www.who.int/injection_safety/toolbox/en/RARG.pdf
- [25]. WHO. (2005). Management of Solid Health-Care Waste at Primary Health Care Centers: A Decision-Making Guide. IVB/PHE/WSH. Geneva: WHO; 2005.
- [26]. WHO (2005). Safe Healthcare Waste Management: Policy Paper. Geneva: WHO; 2004. Available at: http://www.healthcarewaste.org/en/160_hcw_policy.html. Accessed November 11, 2005.
- [27]. WHO (2008), Working Paper No: 10
- [28]. WHO (2010). WHO Best Practices for injections and related procedures toolkit WHO/EHT/10.02
- [29]. WHO/V&B/0.2.26 "First, do no harm" Introducing auto-disable syringes and ensuring injection safety in immunization systems of developing countries <http://www.who.int/vaccines-documents/DocsPDF02/www704.pdf>
- [30]. [http:// www.sharpsinjury.com/hiv.htm](http://www.sharpsinjury.com/hiv.htm) Proposed Approach with Estimates of Costs, PATH, June 2009.