Case Report

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Evaluating Hand Hygiene Practices at the New-born Unit of Moi Teaching and Referral Hospital, Eldoret, Kenya

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ABSTRACT

New-borns, especially preterm new-borns are at risk of developing bloodstream infections shortly after birth or later. This study aimed to evaluate the infection prevention & control measures through hand hygiene practices and determine the procedures associated with risk of infection to small and sick new-borns at the Newborn Unit of Moi Teaching and Referral Hospital.

This was a hospital-based cross-sectional study carried out at the neonatal unit of the largest tertiary hospital of western Kenya. It included quantitative data collection using a standardized checklist for each of the procedures observed during day and night shifts for a period of 6 weeks, which represented a sample unit. Data were analysed using Statistical Package for the Social Sciences version 20.0. Categorical data were described using frequency and percentage. The values less than 0.05 was judged statistically significant.

Out of the 553 observed contacts, the nurses did 52.4%. The intravenous cannula insertion was the most frequent procedure (11.2%), followed by newborn examination (10.7%) and medication administration (10.5%). About 69% of the procedures were classified as low risk procedures whereas high-risk procedures accounted for 31%. Most of the procedures were performed during daytime shifts. Poor hand hygiene procedures were statistically associated with risk of infection to small and sick new-borns. This risk were 2 times increased when the procedures were carried out by nurses (pv=<0.001, 95% confidence interval =1-2.9); and 6 times higher when the procedures were carried out by registrars (pv=0.008; 95% confidence interval =1.6-23). Newborn examination was statistically associated with reduced risk of infection, even after reduction of confounders (pv=0.001, odd ratio=0.0, 95% confidence interval=0.0). Hand hygiene compliance was scored at 42% and rated as poor compared to the standard (<75%) for all the service providers. However, newborn examination was the most independent risk factor. This study highlights the importance of hand hygiene compliance to prevent hospital-associated infections among small and sick newborns.

Keywords

Newborn, Hand hygiene, Infectious diseases.

Introduction

Infectious diseases are the major cause of neonatal deaths. Although the global neonatal deaths have declined, newborns in developing settings of sub-Saharan Africa face the greatest risk of death in their first 28 days [1,2]. Lack of quality of care and poor infrastructures contribute for the majority of new-borns' death [2]. Efforts over the past decade to reduce early and late neonatal deaths have been directed at improving skills of healthcare providers with intent to improve quality of care of vulnerable newborns [3]. In particular, context of resource limited settings of developing countries; hand-hygiene is a great way to prevent infections and death among small

and sick newborns admitted at newborn unit. This study was done to evaluate the infection prevention & control measures through hand hygiene practices and determine the procedures associated with risk of infection to small and sick newborns at the newborn unit of the largest tertiary hospital of western Kenya.

Materials and Methods

This cross-sectional study was carried out at Moi Teaching and Referral hospital for a 6-week period from April to May 2018. During the study period, all the service providers, the incubators and basinets were included in order to observe all the procedures. Sixty units, from the bed capacity in the newborn unit were involved in this study, i.e. 49 basinets and 11 incubators. The study was observing for adherence to infection prevention & control practices by the service providers on any procedure done on a neonate at a given time.

Data collection

In this study, effort was made to blind NBU service providers for the purpose of the observations. The infection prevention & control practices were observed by the observer under the guise of intern nursing students assigned to rotate in the NBU for clinical experience. The observers underwent a one-week training to become familiar with the NBU procedures and settings, how to use the data collection tool. The observation period lasted 6 weeks and covered day and night shifts. A four-hour observation was performed intermittently during the day or night shift at a 2:1 ratio. An incubator/basinet was chosen randomly by assigning each bed a number and picking out a number without replacement, before each observation period, which was to last one hour. All the procedures performed on the incubator/basinet were documented. Procedures that were observed included hand hygiene, positioning, medication preparation, IV fluid preparation, examination of the newborn and medication administration. Hand hygiene, was observed on each contact with the target patient and was recorded before and after the procedure. For interrupted care procedures, if the service provider contaminated his or her hands by contacting contaminated objects outside the incubator or basinets, a separate hand hygiene opportunity was expected. Failure to do so was recorded as non-compliance. When a service provider did a procedure incorrectly, and that it could pose a risk of transmitting infections, the observer prompted him/her.

Hand hygiene was required regardless of whether gloves were used or changed. Hand hygiene with alcohol-based hand rub was recorded separately. When hand washing is performed, there is no indication for use of alcohol-based hand rub. In addition, during a procedure the service provider could choose to use hand rub instead of hand washing when shifting to a different procedure on the same patient. Under steps of hand washing, in cases where there is no watch, bracelet, stone ring, ring, it will be not application (N/A).

The nature of contact was classified as low risk and high risk. High-risk contacts included invasive procedures: inserting intravenous catheter and drawing blood, handling wounds, mucous membrane, and body fluids, administration of intravenous medication, endotracheal suction, Prolonged patient contact, e.g. (bathing, changing linen, position changing). Low-risk contacts included; taking vital signs, administering oral medication, nasogastric tube feeding, and skin contact such as stimulation, padding, holding hands and touching.

The techniques of hand washing were recorded using a checklist on the essential steps of handwashing. Mothers who visited their newborn were also observed for hand washing or use of hand sanitizers.

Data analysis

All data collected was double checked and entered into the computer software, statistical package for social sciences (SPPS) version 20.0 for analysis (Armonk, NY: IBM Corp). Descriptive and inferential statistics was used to describe categorical variable in percentages and frequencies. P-values less than 0.05 was accepted as being statistically significant. The logistic regression was used to detect the most independent variables affecting the hand washing hygiene procedure.

Results

During the study, 553 contacts were observed. Nurses, followed by nurse students (15.7%), did clinical officers (14.6%) the majority (52.4%) of the contacts. The least were consultants and residents (postgraduate students), 1.3 and 2% respectively (table 1). The percentage distribution of observed patient contacts by work-shifts shows that most procedures were performed during the day (85.5%) vs (14.5%-night shift). Out of the observed contacts (n=553), (58.4%) were low risk procedures (defined as less probability of transmission of infections) vs 41.6% high-risk procedures (defined as increased probability of transmission of infections to the sick neonate during the procedure). The most frequent procedures were intravenous cannulation insertion (11.2%), sick newborn examination (10.7%), continuous positive airway pressure (CPAP) preparation and medication administration equal frequency of 10.5% each, nasogastric tube feeding insertion and suctioning 10.1% each (table 1). The least procedures observed was sick newborn bathing (2.7%) and positioning (3.8%).

Table 1: Distribution of the studied cases according to instructions.

Variables	No.	%
Practioner		
Nurse	290	52.4
Consultant	7	1.3
Registrar	11	2.0
Clinical Officer	81	14.6
Mother	21	3.8
Medical officer	56	10.1
Student nurse	87	15.7
Type of procedure		
New born examination	59	10.7
Nasogastric tube feeding	56	10.1
Positioning	21	3.8
CPAP preparation	58	10.5

Bathing	15	2.7
Suctioning	56	10.1
Medication administration	58	10.5
Taking of vital signs	57	10.3
Intravenous cannula	62	11.2
Intravenous fluid administration	57	10.3
Medication preparation	54	9.8
Procedure classification		
Low	379	68.5
Risk	174	31.5
Shift		
Day shift (7.30am-6.30pm)	473	85.5
Nightshift (6.30pm-7.30am	80	14.5

The table 2 shows that alcohol based hand rub was the most utilized (40.9%) for hand hygiene compliance, followed by hand washing (28.8%). Wear gloves and both (hand wash and hand rub) were the least practices of hand hygiene compliance, accounted for 8.5% and 6.7%, respectively. Most of hand hygiene practices where the use of hand rubs only or hand washing only were classified as not applicable if either was used in this study. Regarding the steps of hand washing, most were frequently equal. These included absence of watch (33.1%), bracelet (33.5%), stone ring (33.5%) and absence of ring (33.1%). Similarly, the following steps were equally observed: turn water and apply soap (33.5%), rubbing palm to palm (33.5%), rinse under running water (33.1%). The least steps observed in hand washing included wipe and dry with paper towel, and wipe hands from fingertips to wrist, accounted for 0.2% each.

Table 2: Distribution of the studied cases according to hand hygiene compliance.

Variables	Yes		No		N/A	
	No.	%	No.	%	No.	%
Before contact with a patient Hand washing	159	28.8	9	1.6	385	69.6
Alcohol based hand rub	226	40.9	13	2.4	314	56.8
Wear gloves	47	8.5	13	2.4	493	89.2
Both	37	6.7	19	3.4	497	89.9
After contact with a patient						
Hand washing	76	13.7	75	13.6	402	72.7
Alcohol hand rub	238	43.0	79	14.3	236	42.7
Both	9	1.6	109	19.7	435	78.7
If hand washing were the following steps done? No watch	183	33.1	2	0.4	368	66.5
No bracelet	185	33.5	0	0.0	368	66.5
No stone ring	185	33.5	0	0.0	368	66.5
No ring	183	33.1	2	0.4	368	66.5
Turn water and apply soap	185	33.5	1	0.2	367	66.4
Rubbing palm to palm	185	33.5	0	0.0	368	66.5
Rubbing palm over dorsum	177	32.0	8	1.4	368	66.5
Rubbing fingers	152	27.5	33	6.0	368	66.5
Rubbing back of fingers	127	23.0	58	10.5	368	66.5
Rotational rubbing of thumbs	52	9.4	134	24.2	367	66.4
Rubbing wrist	121	21.9	64	11.6	368	66.5
Rubbing forearm	86	15.6	99	17.9	368	66.5
Rinse under running water	183	33.1	2	0.4	368	66.5
Keep hands lower than elbow	69	12.5	117	21.2	367	66.4
Turn water without contamination	113	20.4	76	13.7	364	65.8
Wipe and dry with paper towel	1	0.2	2	0.4	550	99.5
Wipe hands in fingertip to wrist	1	0.2	3	0.5	549	99.3

The table 3 is focused procedures and fluid administration to sick newborns. Of these, wearing gloves and disinfect the skin of the sick newborn before insertion of the cannula were almost equally observed (9.9% vs 10.5%, respectively). Similarly, gather material in clean place and label the bottle with patients' names and date were equally observed for fluid administration, 10.3% each. The least observed procedures for fluid administration included inspection of intravenous drug for expiry, disinfect the port of intravenous fluid, and carry the bottle in a clean tray to the patient with the frequency of 0%, 0.5%, and 0.2%, respectively.

Table 3: Distribution of the studied cases according to cannula insertion and fluid administration.

Variables	Yes		No		N/A	
	No.	%	No.	%	No.	%
IV– Cannula Insertion Wash hands aseptically	26	4.7	32	5.8	495	89.5
Wear gloves	55	9.9	2	0.4	496	89.7
Disinfect skin of the patient	58	10.5	0	0.0	495	89.5
Use no touch technique in disposal of syringe after use	36	6.5	21	3.8	496	89.7
IV– Fluid Administration Wash hands aseptically	23	4.2	35	6.3	495	89.5
Disinfect working place	49	8.9	9	1.6	495	89.5
Gather material in clean place	57	10.3	495	89.5	1	0.2
Inspect iv fluids for turbidity	14	2.5	44	8.0	495	89.5
Inspect iv fluids for expiry	0	0.0	58	10.5	495	89.5
Wear sterile gloves	28	5.1	30	5.4	495	89.5
Disinfect the port of iv fluid	3	0.5	55	9.9	495	89.5
Use sterile needle for each iv fluid bottle	55	9.9	3	0.5	495	89.5
Use no touch technique in disposal of syringe after use	46	8.3	12	2.2	495	89.5
Use of sterile base container for mixing fluids	27	4.9	1	0.2	525	94.9
Label the bottle with patients name, date	57	10.3	1	0.2	495	89.5
Carry the bottle in a clean tray to the patient	1	0.2	49	8.9	503	91.0

Hand washing practice during medication preparation was also observed during the study period. The most frequent observed practices included gather material in clean surface (10.3%), pierce septum with sterile needle (9.8%), use sterile needle for each vial/ampoule (9.2%), and disinfect working place (8.9%). These findings can be seen on table 4 below.

Table 4: Distribution of the studied cases according to medication preparation.

Variables	Yes		No		N/A	
	No.	%	No.	%	No.	%
Wash hands aseptically	45	4.5	32	5.8	496	89.7
Disinfect working place	49	8.9	8	1.4	496	89.7
Gather material clean surface	57	10.3	0	0.0	496	89.7
Inspect for turbidity	14	2.5	43	7.8	496	89.7
Inspect for expiry date	1	0.2	55	9.9	496	89.7
Inspect for any contamination	27	4.9	30	5.4	496	89.7
Wear sterile gloves	28	5.1	29	5.2	496	89.7
Pierce septum with sterile needle	54	9.8	3	0.5	496	89.7
Wipe with alcohol and cotton pad	2	0.4	55	9.9	496	89.7
Use sterile needle for each vial/ampoule	51	9.2	4	0.7	498	90.1
Kept any medication left in fridge	16	2.9	0	0.0	537	97.1

The univariate analysis (Table 5) shows a statistical significance among practitioners and the risk affecting the procedure of hand washing hygiene during management of vulnerable newborns. Among these, nurses' hand washing hygiene practice was found to be statistically significance to increase the risk of infection ($p<0.001$, OR=2.0%, 95% CI=1.4-2.9). Registrars' hand washing was also significantly associated with risk of infection to sick newborns ($p<0.008$, OR=6.0%, 95% CI=1.6-23.1), followed by clinical officers ($p<0.001$, OR=3.9%, 95% CI=2.5-6.5). In contrast, consultants' hand hygiene practice was not statistically associated with any risk of infection; however, their practice seems to decrease risk of infection to newborns (p=0.9, OR=0.0, 95% CI=0-0). Although there was statistically significance association between practitioners and risk of infection to newborns, the multivariate analysis shows no clinical significance.

Table 5: Univariate and multivariate logistic regression analysis for the parameters affecting procedure.

Variables	Univariate		#Multivariate	
	P	OR (95%C.I)	p	OR (95%C.I)
Practioner				
Nurse	**<0.001***	2.0 (1.4–2.9)	0.995	-
Consultant	**0.999**	0.0 (0.0)		
Registrar	**0.008***	6.0(1.6–23.1)	0.994	-
Clinical Officer	**<0.001***	3.9 (2.5–6.5)	0.995	-
Mother	**0.998**	0.0 (0.0)		
Medical officer	**0.001***	0.2(0.1–0.6)	0.996	-
Student nurse	-	-		
Type of procedure				
New born examination	**0.001***	0.03(0.0–0.2)	<0.001*	0.0(0.0–0.0)
Nasogastric tube feeding	-	-		
Positioning	-	-		
CPAP preparation	-	-		
Bathing	-	-		
Suctioning	-	-		
Medication administration	-	-		
Taking of vital signs	-	-		
Intravenous cannula	-	-		
Intravenous fluid administration	-	-		
Medication preparation	-	-		
Total number of Medication Preparation	**0.996**	133.744 (0.0)		
Wash hands aseptically	-	-		
Disinfect working place	-	-		
Gather material clean surface	-	-		
Inspect for turbidity	-	-		
Inspect for expiry date	-	-		
Inspect for any contamination	-	-		
Wear sterile gloves	-	-		
Pierce septum with sterile needle	-	-		
Wipe with alcohol and cotton pad	-	-		
Use sterile needle for each vial/ ampoule	-	-		
Kept any medication left in fridge	-	-		

Discussion

Healthcare associated infections, especially in the vulnerable populations such as newborns has been a concern globally. The risk factors vary, according to the practices and healthcare providers' awareness about control measures, experience, and available resources. To date, prevention and control practices are more than urgent. In this study, nurses were widely involved in procedures, followed by nurse students. This is not surprising because nurses represent a significant portion of the personnel at Newborn Unit (NBU), they are pillars of nursing procedures and care. This is supported by previous studies which have identified several types of nursing activities including monitoring and drug dose titration, biochemical and microbial examination, medications, patients' hygiene procedures, care of drains, mobilization and position, support and care of patients' relatives, administrative and managerial tasks among others [4-8]. In the Nursing Activity Score (NAS) developed by Miranda et al. [9], most are categorized as basics and essentials, specific for nurses at Moi Teaching and Referral Hospital. The seven nursing activity described in the score are not all allocated as nursing care due the diversity of the profession of healthcare providers in Kenya in large, and MTRH specifically. Some are allocated to medical officers, some others by clinical officers, etc. However, all work as team for the best interest of the patients. The study shows that the registrar (medical officers in postgraduate studies in medicine) and consultants respectively were the least to participate to procedures of small and sick newborns care at the unit. Their small number and tasks allocated to them explain their minimum contribution in small and sick newborns care. The MTRH newborn unit is one of the busiest newborn units in Kenya, but only with few general pediatricians, support by registrars. However, the quality care for high-risk newborns is provided by coordinated efforts of the consultants and registrars who are the primary care doctors at the unit. This role is recognized since decades by the American Academy of Pediatricians (AAP) and another organisation as well.

The current study shows that the day shift work team (a group of employees, especially caregivers working during the day) performed most of procedures on small and sick newborns. Shift work is a standard method of professional practice and is

unavoidable because hospitals and nursing services run 24-hr/7. At Moi Teaching and referral hospital, this day shift starts from 7.30 am to 6.30 pm for nurses, and from 8.00 am for others. A significant portion of personnel and students work daytime hours, and several procedures on sick newborns take place as well. This clearly means that there is significant support during day shift compared to night shift. This is in congruence with the study done by Anjana Verma et al. [10] that night shift team get least support. Studies have also shown that because of shortage of staff during night shift, healthcare providers' performance and patients' outcomes are poor [11-13].

The study shows that most procedures on sick newborns were low risk procedures, defined in this study as procedures associated with low risk infection to the newborn managed for other conditions than infections. These included observation of vitals, administering oral medication, nasogastric tube feeding, and skin contact such as stimulation, padding, holding hands and touching or newborns examination. This is because most of the patients were at NBU for resuscitation and stabilization of preterm (≥1500 grams)/ or ill infants who were not severely sick. These included inserting intravenous catheter and drawing blood, handling wounds, mucous membrane, and body fluids, administration of intravenous medication, endotracheal suction, prolonged patient contact, e.g. (bathing, changing linen, position changing). In a particular context of resource-limited settings, authors acknowledge the vulnerability of ill newborns vis-à-vis to healthcare associated infection, previously known as nosocomial infection. Adherence to infection prevention and control in our context remains the gold standard of practices regardless of the susceptibility of procedure to increase the risk for infection. In addition, the high-risk procedures were less identified [14].

The procedures such as newborn examination, nasogastric tube feeding insertion, CPAP preparation, medication preparation and administration, intravenous cannula insertion and fluid administration were almost equally performed on sick newborns. This is because these procedures are routinely done several times a day. This is in congruence with the WHO guidelines for improving the quality of care for small and sick newborns in health facilities [15]. However, bathing and positioning were the least procedures to be performed. This is because bathing is done 24 hours after birth, and this is done differently for preterm babies to prevent adverse effects on the stability of the infant. This agrees of previous studies, which have shown the importance of correctly bathing within acceptable interval because newborns are unable to regulate and maintain their own body temperature without thermal protection [15-20]. As by previous studies, authors acknowledge that bathing is a significant factor affecting thermoregulation in newborns.

The practitioners predominantly used alcohol hand rub after contact with sick newborns during the study period. This is because the alcohol is easily carried by most of practitioners during ward rounds and review of patients, it dries quickly compared to water, and it is effective in reducing bacterial counts. This is in agreement with the study done by Daniela Pires, et al., in which alcohol hand rubbing led to significant reductions in bacterial counts [21].

For the steps of hand washing, the current study shows that there was no watch at the time of hand washing procedure nor bracelet, and stone ring or ring. However, the steps observed were almost equally apply, except for wipe and dry with paper or fingertip to wrist wiping which were the least steps of hand washing procedure. The importance of hand washing cannot be understated because hands are the primary carriers of dirt, viruses, and bacteria, as they can meet so many different surfaces throughout the day. However, the standard recognizes 7 steps, including wetting hands, rubbing Palms, rubbing the back of hands, interlink fingers, cupping fingers, cleaning the thumbs, and rubbing palms with fingers [22].

The current study also showed that for cannula insertion, disinfecting skin of the patient and wearing gloves were highly performed compared to wash hands aseptically and use no touch technique in disposal of syringe after use. This is because the disinfection of skin and wearing gloves before cannula insertion and medication administration are the standards procedures in clinical settings. This is in congruence with studies, which found that preparation of the skin before any procedure is very important to reduce the rate of healthcare associated infection [23,24].

For fluid administration, gather material in clean place, use of sterile needle for each intravenous fluid bottle, disinfect working place, and non-touch technique use of disposal of syringe after use were almost equally observed during the study period. This is in line with the general rules of standard care regarding infection prevention and control (IPC).

Additionally, for medication preparation, this study showed that gather material clean surface, pierce septum with sterile needle, use of sterile needle for each vial/ampoule, and disinfect working place were almost equally observed during care to small and sick newborns. Authors acknowledge that the administration of medicines is one of the most common procedures nurses undertake and the process is often complex and time consuming. Although avoiding errors during medication administration is important, infection prevention is the gold standard in clinical settings and nursing care. In study by Júlian Katrin AO, et al., only 0.2% of drug administrations were preceded by hand hygiene and 1.3% by disinfection of the multidose vial, ampoule or injectors [25]. This is practically low compared to the findings from the current study. In their study, Julian Katrin and colleagues found that the low rate was due to the low adherence of professionals to the practice of hand hygiene and disinfection of materials. In contrast, MTRH as tertiary hospital, which adhere to standard practices, has robust protocol regarding hand hygiene, and infection prevention and control as well. Moreover, Smeulers M, et al., stated that evaluate and improve the quality and safety of the process, evidence-based quality indicators are recommended [26].

In univariate analysis of the current study, there was statistically association between nurses' hand washing hygiene procedures and the risk of infection to small and sick newborns. According to the study, nurses' hand washing hygiene increases 2 times the risk of infection to sick newborns. However, the odds were not statistically and clinically significant in multivariate analysis. This is in congruence with the study done by Mukta Tyagi, et al., who reported low overall compliance with hand hygiene during care procedures to newborns units [27]. In the current study, several reasons can explain that. a) the context of the study being conducted in public facility with high ratio patient/nurse which today is 1:9 (NICU) and 1:18 for stable patients at MTRH newborns care unit; b) The small bed capacity of 60 beds but it accommodates more than 90 small and sick newborns; c) different education level or sensitization on hand washing hygiene, infection prevention and control of nurses providing care at the unit; d) increased number of nurses with varies working experience or practices; e) lack of compliance to hospital protocols regarding hand hygiene, infection prevention and control; and f) workload for nurses dedicated to sick newborns' care. The findings from the 2 studies present similarity in the particular context of low and middle income countries.

The registrars' hand hygiene practice was statistically associated with increased risk of infection to sick newborns. This risk was 6 times higher compared to 2 and 3 times increased risk reported from nurses and clinical officers, respectively. Several reasons may explain that. First, registrars are medical officers who have joined postgraduate program in medicine to become specialists. Some of them are at the beginning of the program, though their level of hand hygiene practice may as low as other students in medical or para medical field. Second, the number of registrars in child health and pediatrics of Moi University School of medicine is insignificant and most of the times, there is only 1 or 2 registrars to examine, make decision in consultation (through phone) with their mentors. Third, these registrars (students) most of the times are not mentored sufficiently by the consultants of huge number of small and sick newborns. In one study conduct across medical students on hand hygiene in South Asia, the overall hand hygiene was moderate among medical students and improved with progression of training [28]. Similarly, another study conducted among medical students showed that poor compliance with hand hygiene practices among medical students poses a risk for cross-infection [29]. Therefore, authors from the current study acknowledge that good practices in medicine are life long process, which can only be achieved with appropriate mentorship. Self-learning is not sufficient to make a Practioner a good Practioner.

Newborns' examination was associated with a statistical significance of reduction of risk of infection, even after reducing confounders. This is due to frequent and easy use of alcohol hand rub for each patient during ward rounds. In addition, systematic physical examination is not done frequently, especially when ward rounds are done same physicians on daily basis. In recent Cochrane database of systematic reviews, hand hygiene described as inexpensive and cost effective preventing neonatal infections was recommended as a practicable intervention in low and middle-income settings [30]. It is also important for healthcare workers (HCWs) working at sick newborn unit to know the 5 steps of transmission of infections from person to person through their (HCWs) hands, as described by WHO in 2009. These steps include: a) organism being present in the skin of HCWs or object close to the patient; b) organisms transferred to the hands of HCWs; c) organisms survived in the hands of HCWs for several minutes; d) hand washing or hand antisepsis by HCWs inadequate or completely omitted or HCWs use inappropriate agents for hand hygiene; and e) contaminated hands of HCWs come in contact with baby or object that will come in contact with babies [30]. Knowing these steps will enhance rigorous and systematic hand hygiene practice. In several studies, different methods of infection prevention and control through hand hygiene practice in sick newborns unit, using a hand hygiene protocol with hand washing, hand rub and gloves significantly reduced the incidence of late onset sepsis in preterm newborns, and the results suggest that it may produce a sustained improvement in the infection rate [31-35].

Conclusion

Low compliance to hand hygiene practice among healthcare workers, especially nurses, registrars and clinical officers increases the risk of infections in small and sick newborns. Newborn examination was the most independent risk factor.

Mentorship approach is strongly recommended to overcome the risk associated with poor compliance to hand hygiene practice.

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