

Infection Prevention and Control Risk Assessment: Approach for Early Identification of Harmful Practices and Improving Quality and Safety of Healthcare Service Delivery in Acute Healthcare Settings

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Abstract

Background: Risk management is a process consisting of well-defined steps which, when taken in sequence, support better decision making by contributing to a greater insight into risks and their impacts. It is as much about identifying opportunity as is about avoiding losses. Effective prevention and control of infection must be part of everyday practice and be applied consistently by everyone.

Methods: The study was conducted at Tygerberg Hospital in 8 clinical areas/wards during a period of 3 weeks from 23 November 2013 to 9 October 2013. Risk Assessment IPC Inspection Checklist for healthcare institutions provided by the Unit for Infection Prevention and Control (UIPC) at Stellenbosch University was used for data collection. A feedback report was shared with the unit managers and ward in-charges, and the improvement plan was developed in collaboration with them. The follow-up was done to evaluate the implementation of the improvement plan. Data was analysed using Ms Excel.

Results: 6 out of 8 (75%) wards complied with ward design, hand hygiene facilities available in all wards, 5 out of 8 wards (62.5%) had inadequate and insufficient protective clothing, 7 out of 8 (87.5%) wards did not have suitable patient toilet facilities. 7 out of 8 wards (87.5%) had suitable sluice area, while 7 out of 8 wards (87.5%) had appropriate treatment area. Quality of maintenance of aseptic procedures improved from 64% (18/28) to 85% (22/26) in patients with indwelling urinary catheter. The similar improvement was noted in patients with peripheral IV lines, from 81% (57/70) to 86% (48/56) as well as in the patients with wound, from 92% (22/24) to 100% (21/21).

Conclusion: 6 out of 8 (75%) assessed wards complied against IPC standards. Conducting regular IPC assessment in clinical areas in collaboration with clinical staff (unit managers and in-charges) is essential to improve the quality and safety of healthcare service delivery. Significant improvement was noted in 7 wards during follow up assessment conducted one week after the initial risk assessment, whereby urinary catheter care improved from 64% to 85% (a 21% improvement) and peripheral IV line care improved from 81% to 86% (a 5% improvement). IPC and clinical teams (nurses, doctors, etc) should work hand in hand to improve the quality and safety of healthcare service delivery.

Keywords: HIPC risk assessment; Aseptic procedures; Infection prevention and control; Healthcare-associated infections; Clinical area/ward; IPC precautions; Bundles of care; Hand hygiene facilities

Introduction

Good infection prevention and control is essential to ensure that people who use healthcare facilities receive safe and effective care [1-7]. Effective prevention and control of infection must be part of everyday practice and be applied consistently by everyone [1-10]. Good management and organizational processes are crucial to make sure that high standards of infection prevention and control are set up and maintained [1].

Background

Risk management is a process consisting of well-defined steps which, when taken in sequence, support better decision making by contributing to a greater insight into risks and their impacts. Risk Management is about identifying opportunity and avoiding losses [2,3-9]. The health care facility should provide appropriate care in suitable facilities consistent with good practice to protect patients, staff and others from the risks of acquiring healthcare associated infection (HAI) [3,5-8].

Methods

The observational study was conducted at Tygerberg Hospital and it was part of the Risk Management module for Postgraduate Diploma

in Infection Prevention and Control. Tygerberg Hospital is a 1310 beds academic tertiary referral hospital, located in Parow, Cape Town. The hospital was officially opened in 1976 and is the largest hospital in the Western Cape and the second largest hospital in South Africa. This The IPC risk assessment was conducted in 8 clinical areas/wards during a period of 3 weeks from 23 November 2013 to 9 October 2013. Six wards were visited in the first week, one ward in the second week, and the last ward in the third week. Risk Assessment IPC Inspection Checklist for healthcare institutions provided by Unit for Infection Prevention and Control (UIPC) was used for data collection. Clinical units/wards such as A4 East, A5 East, A5 West Medical High care, C1A Emergency Trauma, C2A Gynaeco-obstetrics High care, G6 (Ortho-pediatrics), G5 ENT (Ear-Nose-Throat) and F1 Medical Emergency were assessed

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and followed-up one week later. After carrying out Risk assessment for the Ward, a feedback report was provided to Unit manager and/or Shift leader and it contained the strengths and the weaknesses found during inspection. The feedback report was then discussed by both investigator and ward managers and the improvement action plan short and long term established. The re-evaluation appointment for short term action plan was fixed one week later. The purpose of revisiting the units/wards was to evaluate how recommendations given earlier were being implemented. Before starting risk assessment activity, the criteria for critical risk prone procedures were established and were used to decide whether the procedure found during Ward visit was safe or not. All urinary catheters, peripheral IV lines, CVP, endotracheal tube, nasogastric tube and wounds that were present during Ward visit were evaluated based on the criteria listed below. The photographs for critical malpractices were captured and shared with ward staff during the feedback session. Risk-prone procedures were evaluated according to the pre-determined criteria. Data was analysed using Ms Excel. The scoring was dichotomous; answers were “yes” or “no”. The final score was obtained by adding the total number of “Yes” answers and divide by the total number of questions answered (including all “Yes” and “No” answers) excluding the “N/A” and then multiply by 100 to get the percentage. The compliance levels were calculated by using the compliance categories (compliant 85% or above, partial compliance 75 to 84%, minimal compliance 74% or below).⁴ Any procedure which has complied with criteria listed below, was classified as safe=low risk to acquiring Healthcare-associated infection (HAI), the ones which did not comply with any of the listed criteria, was classified as not safe or harmful (High risk to acquiring HAI) [4].

Peripheral intravenous cannulation

1. Intact fluid bag.
2. Connection with administration set.
3. Closed system is maintained.
4. Insertion site clean and dry and there is no sign of inflammation.
5. Injection ports remain clean and dry.
6. Point of administration set connection with intravascular catheter remains clean and dry.
7. There is free flowing of fluid (vein not obstructed).
8. The infusion is hanged onto drip stand properly.

Central venous pressure catheters (CVP)

1. Site clean and dry and there is no sign of inflammation.
2. Closed system is maintained.
3. The line is anchored (not suturing=stretches).
4. There is no three way tap in use.
5. There are no many infusion lines in the same CVP.
6. Injection ports remain clean and dry.
7. Point of administration set connection with intravascular catheter remains clean and dry.
8. There is free flowing of fluid (vein not obstructed).
9. The infusion is hanged onto drip stand properly.

Urinary catheter (Indwelling urinary catheter)

1. Catheter is secured on the patient thigh or lower abdomen.
2. Closed urinary drainage system is maintained.
3. The urinary drainage bag is off the floor.
4. The urinary drainage bag is below the level of the pelvis.
5. The tap of urinary drainage bag is clean and dry.
6. There is no solution instilled into the urinary drainage bag.

Wound

1. The wound drain is clean and dry.
2. The wound dressing is clean and dry.
3. There is no visible leakage of blood on the dressing.

Results and Discussion

75% (6 out of 8) assessed wards complied against IPC standards, one ward was partial compliant and the last one scored minimal compliance (Figure 1). Looking at the components of IPC assessment checklist: 75% (6 out of 8) wards were compliant against the ward design; hand hygiene facilities were present in all eight wards (Figure 2). Inadequate and insufficient protective clothing were observed in 62.5% of the wards (5 out of 8 wards) whilst 87.5% of the wards (7 out of 8) had not suitable patient toilet facilities. The suitable sluice area was present in 87.5% (7 out of 8) of the wards. Most of the wards, 87.5% (7 out of 8) had an appropriated treatment area. Aseptic procedures were not adequately managed at the time the initial assessment conducted (Table 1). Remarkable improvement was noted during the follow-up time (Table 2). Tables 2 and 3 summarize the improvement gained after the implementation of the short-term action plan. The quality of maintenance of aseptic procedures improved from 64% (18/28) to 85% (22/26) in patients with indwelling urinary catheter. The similar improvement was noted in patients with peripheral IV lines, from 81% (57/70) to 86% (48/56) as well as in the patients with wound, from 92% (22/24) to 100% (21/21). Aseptic procedures were adequately maintained during both initial assessment and follow-up time for the patients with central venous pressure (CVP) commonly known as Central Line, endotracheal tube as well as the patients with nasogastric tube. Some malpractices have been observed, some of them were highlighted by some photographs captured during ward IPC assessment, such as inadequacy of some clinical care, like urinary catheter care (S Figure 1 and 2), peripheral IV line care (S Figure 3) and

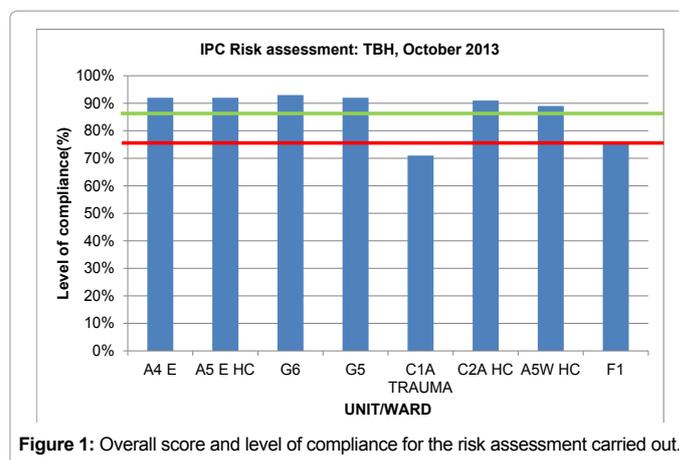
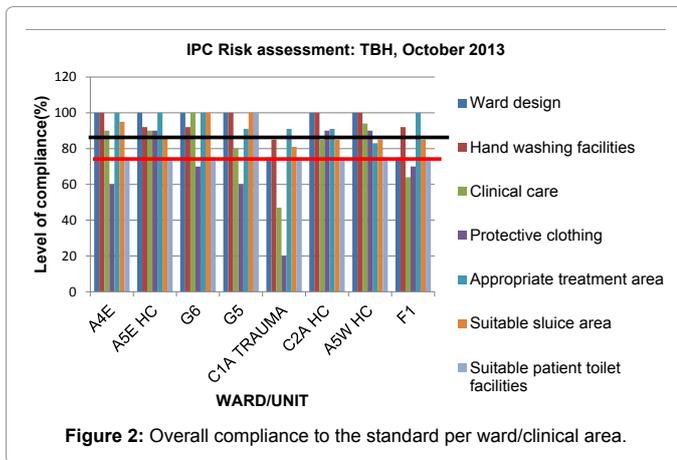


Figure 1: Overall score and level of compliance for the risk assessment carried out.



Clinical care	Total cases	Safe	Not safe	Compliance (%)	Risk stratification
Patients with urinary catheter	28	18	10	64%	High
Patients with peripheral IV lines	70	57	13	81%	High
Patients with CVP	2	2	0	100%	Low
patients with endotracheal tube	10	10	0	100%	Low
Patients with nasogastric tube	2	2	0	100%	Low
Patients with wound	24	22	2	92%	High
Total of patients = 167					

Table 1: The situational risk prone procedures at the time of the initial assessment.

Clinical care	Total cases	Safe	Not safe	Compliance (%)	Risk stratification
Patients with urinary catheter	26	22	4	85%	High
Patients with peripheral IV lines	56	48	8	86%	High
Patients with CVP	3	3	0	100%	Low
patients with endotracheal tube	7	7	0	100%	Low
Patients with nasogastric tube	1	1	0	100%	Low
Patients with wound	21	21	0	100%	High
Total of patients = 148					

Table 2: The situational risk prone procedures at the follow up time.

Clinical care	Compliance during risk assessment time	Compliance post assessment/ Follow-up time	Improvement done
Patients with urinary catheter	64%	85%	21%
Patients with peripheral IV lines	81%	86%	5%
Patients with CVP	100%	100%	Safe
patients with endotracheal tube	100%	100%	Safe
Patients with nasogastric tube	100%	100%	Safe
Patients with wound	91%	100%	9%

Table 3: Findings from the implementation of the short-term improvement plan.

wound care (S Figure 4). Loaded syringes were found in the wards for continuous bolus infusion. Some open ampoules were also observed in the medication area (S Figure 5). The multi-dose vials of lidocaine plunged with needles was also found in C1A Emergency Trauma (S Figure 6). Overfilled sharps containers were found in A5W H/C. Hand washing basins (HWB) were found dirty and drainage blocked, full of wastewater in some wards (S Figures 7 and 8). The open D-Germ bottles and the open liquid soap bottles were found in some wards (S Figure 9). Environmental cleaning had been also a challenge in some wards. Mops and buckets cleaning did not adhere to the environmental cleaning policy, whereby manual cleaning is applied by using cold water and normal liquid soap, which is different from the recommended hot water. In most of the wards, mops were found wet, dumped into bucket in the sluice or bed pan wash areas. Some mops were found hanged onto the sluice window. There was a colour coding policy for environmental cleaning whereby mops were identified, but in most of the wards, mops were hanged close together, therefore the risk of cross-contamination between mops was high (S Figures 10 and 11).

Conclusion

The findings from the IPC assessment conducted in the eight clinical wards showed that 75% (6 out of 8) the wards complied against IPC standards. Some malpractices which might expose patients to the risk of acquiring healthcare-associated infections were observed in most of all wards. Conducting regular IPC assessment in clinical areas in collaboration with clinical staff (unit managers and in-charges) is essential to improve the quality and safety of healthcare service delivery. Remarkable improvement was observed in 7 wards during follow-up done one week after the initial risk assessment visit, whereby urinary catheter care improved from 64% to 85% (21% improvement) and peripheral IV line care improved from 81% to 86% (5% improvement). Only one C1A Emergency Trauma did not improve. Working together IPC team and Unit/Ward managers might be very fruitful to improve infection prevention and control and healthcare service delivery. All patients with peripheral IV lines and or urinary catheter should be monitored closely IPC in-service training should be encouraged in all clinical wards. Implementation of bundles for peripheral IV line, urinary catheter care and TB containment should be the best way for improvement: as observed, central line catheters and endotracheal tubes were well managed, that was the result of CLABSI and VAP bundles implemented already. IPC Link nurse or ward manager should always supervise and evaluate how clinical care is delivered. Mops, buckets cleaning and drying methods in place should be re-evaluated by UIPC. Clinical staff (doctors and nurses) should be encouraged to consult available IPC documents (manual, SOPs, policies, etc.) and cross-check with IPC team to improve patient care.

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