

# Compliance with the National Palestinian Infection Prevention and Control Protocol at Governmental Paediatric Hospitals in Gaza Governorates

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## الالتزام بالبروتوكول الوطني الفلسطيني لمنع ومكافحة العدوى في مستشفيات الأطفال الحكومية في محافظات غزة

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**ABSTRACT: Objectives:** Nosocomial infections are a significant burden for both patients and the healthcare system. For this reason, infection prevention and control (IPC) practices are extremely important. The Palestinian Ministry of Health adopted the national IPC Protocol in 2004. This study aimed to assess the compliance of healthcare providers (HCPs) with the Protocol in three governmental paediatric hospitals in Gaza governorates. **Methods:** This descriptive cross-sectional study was conducted from February to November 2010. Data were collected from a sample of doctors, nurses and physiotherapists (N = 334) using a self-administered questionnaire and observation checklists to record HCP practices and assess the hospital environment. **Results:** The response rate was 92%. The most important reasons for non-compliance with the IPC Protocol were the absence of an education programme (61.5%), lack of knowledge (52.4%) and the scarcity of required supplies (46.9%). Only 2.3% of respondents had a copy of the IPC Protocol, while 65.8% did not know of its existence. Only 16.9% had participated in training sessions regarding general IPC practices. The observation checklist regarding HCP practices revealed low levels of compliance in hand washing (45.9%), wearing gloves (40.7%) and using antiseptics/disinfectants (49.16%). The health facilities checklist indicated that there was a lack of certain essential equipment and materials, such as covered waste containers and heavy-duty gloves. **Conclusion:** Due to the lack of HPC knowledge, the authors recommend that the IPC Protocol be made available in all hospitals. In addition, a qualified team should implement intensive IPC education and training programmes and facilities should provide the required equipment and materials.

**Keywords:** Cross Infection; Infection, prevention and control; Protocol Compliance; Palestine.

**المخلص:** الهدف: تشكل عدوى المستشفيات عبئاً كبيراً على المريض وعلى نظام الرعاية الصحية. لهذا السبب تعتبر ممارسات منع ومكافحة العدوى ذات أهمية كبرى. وقد تبنت وزارة الصحة الفلسطينية بروتوكول منع ومكافحة العدوى عام 2004. تهدف هذه الدراسة إلى تقييم مدى التزام مقدمي الخدمات الصحية بالبروتوكول الفلسطيني لمنع ومكافحة العدوى في مستشفيات الأطفال الحكومية الثلاثة الموجودة بقطاع غزة. **الطريقة:** أجريت هذه الدراسة الوصفية المستعرضة خلال الفترة من فبراير إلى نوفمبر 2010. وقد تم جمع البيانات باستخدام استبانة لعينة من الأطباء والمرضى وأخصائيي العلاج الطبيعي بعدد إجمالي (334)، واستمارة ملاحظة أداء مقدمي الخدمات الصحية واستمارة تقييم بيئة العمل. **النتائج:** وصلت نسبة الاستجابة إلى 92%. وقد أظهرت الدراسة أن السبب الرئيسي لعدم التزام مقدمي الخدمات الصحية بالبروتوكول منع ومكافحة العدوى هو عدم وجود برامج تعليم أو تدريب (61.5%)، وقلة المعرفة (52.4%)، ونقص الأدوات والمواد اللازمة للعمل وفق البروتوكول (46.9%). وقد أظهرت الدراسة أنه يوجد نسخة من بروتوكول منع ومكافحة العدوى فقط مع 2.3% من عينة البحث، بينما 65.8% من المستطلعة آراؤهم لا يعرفون بوجود بروتوكول فلسطيني كما أن 16.9% فقط شاركوا بمحاضرة أو تدريب في منع ومكافحة العدوى. وقد عكست استمارة ملاحظة الأداء مستويات متدنية من الالتزام بغسيل الأيدي (45.9%)، وبارتداء القفازات (40.7%)، وباستخدام المطهرات (49.16%). وأظهر تقييم بيئة العمل وجود نقص في التجهيزات والأدوات اللازمة لتطبيق بروتوكول منع ومكافحة العدوى مثل عدم وجود قفازات ثقيلة، وعدم وجود حاويات مغطاة. الخلاصة: بسبب نقص المعلومات لدى مقدمي الخدمات الصحية في هذه الدراسة نوصى بتوفير نسخ من بروتوكول منع ومكافحة العدوى في كل مستشفى، وتنفيذ برامج تعليم وتدريب مكثفة في منع ومكافحة العدوى، مع ضرورة توفير الأدوات والمعدات اللازمة.

**مفتاح الكلمات:** انتقال العدوى؛ العدوى؛ منع ومكافحة العدوى؛ الالتزام بالبروتوكول؛ فلسطين.

### ADVANCES IN KNOWLEDGE

- The results of this study will increase the recognition of the factors contributing to healthcare providers' non-compliance with the infection prevention and control (IPC) guidelines of the Palestinian Ministry of Health (MOH).
- In addition, this study expands the body of knowledge regarding appropriate methods to minimise nosocomial infections in paediatric hospitals in Gaza governorates.

- *The study highlights the importance of IPC guidelines in the prevention of nosocomial infections and the barriers that can arise during the application of these protocols and guidelines.*

#### **APPLICATION TO PATIENT CARE**

- *Decreasing the prevalence of nosocomial infections will directly improve patient outcomes. Specifically, the data from this study may help to minimise morbidity and mortality rates in governmental paediatric hospitals in the Gaza governorates.*
- *Based on the results of this study, it is recommended that the Palestinian MOH organise a highly qualified team to set up intensive education and training programmes promoting the application of the national IPC Protocol among healthcare providers.*
- *Ensuring the provision of the necessary equipment and facilities is crucial to establishing effective IPC practices.*

**C**HILDREN ARE MORE LIABLE TO CONTRACT infections than any other age group. Many paediatric morbidities are due to infections and infectious diseases.<sup>1</sup> According to a 2006 World Health Organization (WHO) report, birth asphyxia and infections are the two main causes of death among infants.<sup>2</sup> The Gaza Strip is located in the south of Palestine on the coast of the Mediterranean Sea. It is considered an overcrowded area, with approximately 1.8 million people living in 365 km<sup>2</sup> of land and an estimated population density of 4,000 people per km<sup>2</sup>. The Gaza Strip is characterised by its youthful population with 49% of the populace under 15 years of age.<sup>1</sup> Gaza has three paediatric hospitals and there are also paediatric departments in most of the other non-specialty hospitals. Nosocomial infections are a heavy burden for both the patients and healthcare providers (HCPs) of hospitals in the Gaza governorates. About 10% of paediatric hospitalisations are related to a nosocomial infection; in addition, about 16.4% of deaths in individuals between 1 and 4 years old are related to meningitis, pneumonia and other infectious diseases (1.3%, 10.9% and 4.2%, respectively).<sup>3</sup> It is therefore important that infection prevention and control (IPC) practices are implemented and adhered to within paediatric hospitals.

The Palestinian Ministry of Health (MOH) adopted the national IPC Protocol in 2004, aiming to combat infections among HCPs, clients and within the community. Each health institution is supposed to adopt and implement specific IPC activities or protocol. Employees working in paediatric hospitals are supposed to take precautions to protect their patients and staff from exposure to potentially infectious materials. A fundamental component of standard infection prevention measures are a system of barrier precautions to be used by all personnel while in contact with patients, regardless of a patient's specific diagnosis.<sup>4</sup> However, compliance with the national Palestinian IPC Protocol has not yet been assessed in paediatric hospitals in the Gaza Strip.

The aim of this study was to assess the compliance of HCPs with the national IPC Protocol in three governmental paediatric hospitals in Gaza

governorates thus helping to improve the infection control practices in this region and decrease the rates of childhood morbidity and mortality.

## **Methods**

This descriptive cross-sectional study was conducted in three paediatric hospitals in the Gaza governorates between February and November 2010. The three hospitals are directed and owned by the Palestinian MOH: Al-Nasser Pediatric Hospital, Al-Durrah Children's Hospital and Ranteesy Specialized Pediatric Hospital. Of the total participants (N = 363), all doctors (n = 112), nurses (n = 240) and physiotherapists (n = 11) working at the three paediatric hospitals at the time of this study had more than six months' experience. However, 18 subjects were excluded from the study as they were on an extended holiday, working under a temporary contract or working voluntarily. The final sample therefore included 334 HCPs, with 106 doctors, 220 nurses and 8 physiotherapists.

Three instruments were used to collect the data: a self-administered questionnaire, an observation checklist for the HCPs and an observation checklist of the three hospitals' physical environment.

The self-administered questionnaire consisted of five sections and took approximately 15 minutes to complete. The first part covered personal and professional information. The second part assessed each HCP's knowledge about the national IPC Protocol and included questions designed to assess the hospital's actions to improve infection control practices. The third part explored barriers that decreased a HCP's compliance with the IPC Protocol. The fourth part assessed each HCP's perception and attitude towards the IPC Protocol and its recommended practices. The last part explored whether the HCP's practices were congruent with the national IPC Protocol's recommendations.

A total of 334 questionnaires were distributed and 307 were returned, resulting in a response rate of 92%. The researchers distributed the questionnaires to HCPs and stayed in the hospital to receive the

completed questionnaires during the same shift, repeating this process three to four times in different shifts each week for 10 successive weeks.

An observation checklist was used by the researchers to assess HCP compliance with the six main practices recommended in the national Protocol: wearing a uniform; hand washing; using gloves; using antiseptics/disinfectants; proper use of disposable medical equipment, and following the correct disposal practices for sharp implements/objects.

A second observation checklist was used by the researchers to assess each hospital's physical environment and compliance with the national IPC Protocol. It also assessed the availability of equipment and supplies in each department of the three paediatric hospitals.

The researchers completed the observation checklists while waiting to receive completed questionnaires. As the researchers had worked with the HPCs previously, the researchers were familiar to most of the participants; thus, they behaved normally in the presence of the investigators as they were unaware of being under observation. This allowed the researchers to observe the HCPs' levels of compliance with the IPC Protocol.

The data were processed and analysed using the Statistical Package for the Social Sciences (SPSS), Version 18 (IBM Corp., Chicago, Illinois, USA). Frequencies, cross tabulation, Pearson's Chi-square test and analysis of variances (ANOVA) were used to analyse the data. A *P* value of  $\leq 0.05$  was considered statistically significant.

Ethical approval for the study was obtained from the MOH and the study was conducted according to the Declaration of Helsinki. Each participant was given an explanatory letter about the purpose of the study, ensuring the confidentiality of the information and the right to refuse participation or withdraw at any time. Consent was received from each participant.

## Results

Regarding the participant's knowledge and perceptions of infection control, the study found that 59.3% of the participants believed that they knew universal standard infection control precautions and that 34.2% knew of the existence of a set of national IPC guidelines for Palestine; however, only 2.3% of the study population actually had a copy of the Palestinian IPC Protocol in their departments. Of the participants, 62.9% stated that their hospitals conducted continuous surveillance programmes for nosocomial infections. A total of 21.5% of the study population had participated in a hospital education or training session about general

**Table 1:** Comparison between actual and perceived infection prevention and control practices among healthcare providers in three paediatric hospitals in the Gaza governorates

Practice	Perceived practices N = 307 n (%)	Observed practices N = 1,008 n (%)	<i>P</i> value
Hand washing immediately upon arrival at the unit	208 (67.6)	47 (4.7)	0.001*
Hand washing before touching patients	245 (79.8)	76 (7.5)	0.001*
Hand washing after working with patients	245 (79.8)	775 (76.9)	0.286
Hand washing before leaving the unit	255 (83.1)	493 (48.9)	0.001*
Hand washing after touching blood or body fluids	298 (97.1)	982 (97.4)	0.848
Removal of any jewelry, watches and/or rings while hand washing	217 (70.7)	319 (31.6)	0.001*
Hand washing for 15–30 seconds with soap and running water	244 (79.5)	564 (56.0)	0.001*
Wearing gloves when in contact with blood or other body fluids	271 (88.2)	854 (84.7)	0.127
Using clean gloves when handling contaminated instruments	276 (89.9)	839 (83.2)	0.003*
Disinfection of each patient unit/room after patient discharge	235 (76.5)	578 (57.3)	0.001*
Removal of used needles from syringes before disposal	223 (72.6)	277 (27.5)	0.001*
Bending or breaking used needles prior to disposal	226 (73.6)	770 (76.4)	0.295
Recapping used needles	192 (62.5)	414 (41.1)	0.001*
Disposal of all sharp items in puncture-resistant containers	270 (88.0)	705 (69.9)	0.001*

\**P* values were significant at  $< 0.05$ .

**Table 2:** Differences between years of experience and infection prevention and control practices among healthcare providers in three paediatric hospitals in the Gaza governorates (N = 307)

Practice	Years of experience			P value
	1–5 (n = 137)	6–15 (n = 107)	16–36 (n = 63)	
	n (%)	n (%)	n (%)	
Wearing a uniform	125 (91.2)	97 (90.7)	52 (82.5)	0.002*
Hand washing	110 (80.2)	86 (80.4)	49 (77.8)	0.359
Wearing gloves	121 (88.3)	97 (90.7)	54 (85.7)	0.103
Using antiseptics	108 (78.8)	86 (80.4)	50 (79.4)	0.637
Proper use of disposable medical equipment	110 (80.2)	89 (83.2)	50 (79.4)	0.356
Safe handling of sharp medical instruments	107 (78.1)	86 (80.4)	52 (82.5)	0.250

\*P values were significant at <0.05.

IPC procedures, but only 16.9% felt that they had received sufficient information during that session.

In terms of the promotion of general IPC practices within the hospital setting, only 25% thought that no effort had been made to promote IPC practices. Although 84.7% of HCPs had received vaccinations for hepatitis B, only 63.2% had received all three of the doses recommended for protection. Of the

participants, 66% had been injured by needles or sharp medical instruments. Concerning perception of the importance of the practices described in the national IPC Protocol, almost all of the participants indicated high levels of understanding and recognition of the importance of most of the national IPC Protocol practices. All of the study participants demonstrated a high level of agreement with the importance of general IPC practices. The respondents strongly agreed with the following statements: IPC is important in paediatric units; hand washing is important in preventing infections; physical barriers decrease the rate of cross-infection; the proper handling of contaminated instruments inhibits the transmission of infections; the routine cleaning and disinfection of a patient's unit is important, and safe work practices and proper waste disposal management decrease infection hazards.

Regarding the perceptions of HCPs toward their own general IPC practices, 79.7% declared that they were compliant with all the hand washing guidelines. It was found that 84.7% of HCPs reported wearing gloves when in contact with blood or other body fluids, while 89.9% stated that they wore gloves when handling contaminated instruments. About 20% believed that they were sometimes committed to keeping instruments sterile. An average of 68.05% of the HCPs reported that they recapped, broked or bent used needles before disposal, while 72.6% reported that they discarded the used syringe after removing the needle [Table 1].

The researchers filled in the observation checklist of HCPs' practices so as to reflect the actual practices

**Table 3:** Relationship between healthcare profession and compliance with selected infection prevention and control practices among healthcare providers in three paediatric hospitals in the Gaza governorates (N = 307)

Practice	Specialist doctors (n = 48)	General physicians (n = 47)	BSN nurses (n = 124)	PRN nurses (n = 80)	Physio-therapists (n = 8)	P value
	n (%)					
Wearing a uniform	39 (81.3)	40 (85.1)	114 (91.9)	74 (92.5)	8 (100)	0.000*
Hand washing	38 (79.2)	36 (76.6)	98 (79.0)	65 (81.3)	6 (75.0)	0.430
Wearing gloves	43 (89.6)	42 (89.4)	109 (87.9)	70 (87.5)	7 (87.5)	0.921
Using antiseptics	37 (77.1)	36 (76.6)	101 (81.5)	62 (77.5)	6 (75.0)	0.534
Proper use of disposable medical equipment	39 (81.3)	37 (78.7)	102 (82.3)	64 (80.0)	5 (62.5)	0.197
Safe handling of sharp medical instruments	40 (83.3)	40 (85.1)	95 (76.6)	62 (77.5)	5 (62.5)	0.004*

BSN = registered nurse with a Bachelor of Science in nursing (four-year programme); PRN = licensed practical nurse (two-year associate degree programme).

\*P values were significant at <0.05.

of all HCPs in relation to the national IPC Protocol. Most of the observed actual practices differed from the perception of the HCPs regarding their practices ( $P < 0.0001$ ) [Table 1]. Under observation, less than half of the study population (48.9%) washed their hands before leaving the unit, while only a third of them (34.2%) washed their hands before performing an invasive or septic procedure. Approximately 28% of the study population did not remove the needles from used syringes before disposal and 41% did not recap used needles before disposal. The observed results of hand washing practices reflected that only 45.9% of the participants washed their hands properly compared with the 79.7% who had indicated otherwise in their questionnaire responses. Only 3.8% of the sample used an antiseptic solution during hand washing prior to a septic or invasive procedure and only 8% used sterile gowns, masks and gloves when making patient contact within a sterile field.

The researchers assessed the physical environment of the three hospitals in terms of their ability to support the national IPC Protocol. These observations indicated that copies of the IPC Protocol were not available in any department. In addition, no heavy-duty gloves were provided for the HCPs in any department (0%); these should be used by HCPs when dealing with medical waste disposal and contaminated instruments. There was good compliance with maintaining clean nursing rooms, suction tubes and bottles (81.2%); the availability of antiseptic and disinfectant solutions (85.5%) and other supplies for hand washing (87%) was satisfactory. However, puncture-resistant containers were only available in 26% of the departments.

The results also indicated that the more experienced the personnel were, the less compliant they were with IPC practices; however, the difference was significant only regarding the wearing of uniforms ( $F = 6.366$ ,  $P < 0.002$ ) [Table 2]. Regarding the compliance according to profession, the results showed that there was a statistically significant difference for only two of the six IPC Protocol practices: wearing a uniform ( $F = 6.305$ ,  $P < 0.001$ ) and using safe work practices ( $F = 3.880$ ,  $P < 0.004$ ) [Table 3]. Scheffé's test revealed that the nurses were more committed to wearing uniforms, hand washing, using antiseptics and proper use of disposable medical equipment than doctors.

## Discussion

This study found significant differences between actual HCP practices as observed by the researchers and perceived practices recorded in the HCPs' self-assessments. The greatest differences were observed in hand washing practices, both immediately on arrival

and before touching patients, and in dealing with sharp objects. Compliance with hand washing protocol is still a major challenge for achieving a good level of infection control in the Gaza Strip and strategies are needed to improve compliance among HCPs. This is consistent with the findings of many studies. Mahfouz *et al.*, Ataei *et al.* and Abdella *et al.* indicated that hand hygiene compliance among HCPs was found to be low, especially among doctors.<sup>5-7</sup> The problem exists even in intensive care units; for example, Panhotra *et al.* assessed hand washing compliance among healthcare workers in an intensive care unit (ICU) in Saudi Arabia.<sup>8</sup> Compliance was observed in 72.8% of all categories of staff. The highest compliance level (97.5%) was recorded among nurses. The compliance level among technicians was 47.7%, while the lowest level of compliance (37.6%) was observed among doctors (relative risk [RR]: 2.591,  $P < 0.0001$ ).<sup>8</sup> The disappointing level of hand washing compliance among doctors visiting and working in ICUs, despite their improved understanding of hospital-acquired infections, remains a cause for concern.<sup>8</sup> Another study evaluated adherence to hand washing and glove wearing practices among HCPs in five medical and five surgical wards of a 1,250-bed hospital in Riyadh, Saudi Arabia.<sup>9</sup> The overall frequency of hand washing was 6.7% before patient contact and 23.7% after patient contact. Adherence to hand washing was 18.8% among nurses, 12.5% among residents and 9.1% among consultants. The duration of hand washing was suboptimal for all HCPs (an average of 4.7 seconds).<sup>9</sup> This is consistent with a review by Pittet, who found that compliance with hand hygiene recommendations varied between hospital wards, among professional categories of healthcare workers and according to working conditions.<sup>10</sup> The estimated frequency of hand washing was  $< 50\%$ .<sup>10</sup>

The present study also indicated that most participants lacked knowledge of infection control strategies and that most of them did not know of the existence of the Palestinian IPC Protocol. Researcher observations indicated that there were no copies of the IPC Protocol in any department; this is a major obstacle to the application of the Protocol in the Gaza Strip hospitals. This supported the findings of Awad's study, which was conducted in the ICUs of hospitals in the Gaza Strip. Only 27% of HCPs in that study recognised the existence of the Palestinian IPC Protocol; of these, only 47% knew about the contents of the Protocol.<sup>11</sup>

Only 16.9% of this study's participants had received sufficient information about general IPC procedures. This is very low compared with the results obtained by Struelens *et al.* in a study of

169 acute care hospitals in 32 European countries assessing the organisation, components and human resources of infection control programmes.<sup>12</sup> They found that educational sessions for healthcare workers concerning infection control practices existed in 77% of centres.<sup>12</sup> This finding reflects the real need for continuous training and education to enhance HCPs' knowledge, skills and practice of standard infection control precautions as recommended by the Palestinian IPC Protocol. This is consistent with the results of other studies demonstrating the importance of conducting educational programmes as an effective strategy to increase staff compliance with standard IPC practices.<sup>13–15</sup> There is a need to develop a system of continuous education for all categories of staff.<sup>13</sup>

The present study revealed that nurses were more committed to the most of IPC practices than all other groups. Askarian *et al.*'s study, of HCP compliance with personal hygiene and safety guidelines and its effect on nosocomial infections in Shiraz, Iran, reflected that compliance varied among healthcare workers; physicians (10%) and nurses (32.2%) were less compliant than cleaners (56.7%) in adhering to the personal hygiene and safety practices.<sup>16</sup> Studies by Gershon *et al.*, Panhotra *et al.*, Basurrah *et al.* and Askarian *et al.* when examining compliance with universal precautions among HCPs found different levels of compliance. Compliance was highest among nurses, moderate among technicians and lowest among doctors.<sup>8,9,17,18</sup>

In the present study, only 63.2% of the HCPs had received all three of the recommended doses of the hepatitis B vaccination; however, these results are much better than those from studies of the Gharbia Governorate in Egypt and dental clinics in Jordan, where the percentage of HCPs who had received a full vaccination course against hepatitis was 11.3%<sup>19</sup> and 36%,<sup>20</sup> respectively. The frequency of injuries received from used needles or sharp medical instruments in the present study was very high (66%) in comparison to the results of a study conducted in a university hospital in Germany, which indicated that only 31.4% of all healthcare workers had received needle stick injuries.<sup>21</sup> However, the frequency noted in this study was superior to that found in a study of health centres in Assiut City, Egypt, by Hassan *et al.*, which found that 97.2% of HCPs had been injured by used needles.<sup>22</sup>

The main barriers to IPC found in this study are congruent with the results of research performed in neonatal ICUs in Gaza.<sup>11</sup> The researcher found that the main obstacles to compliance with infection control regulations were the absence of training programmes, updates and feedback of performance from the administration; a lack of knowledge and

education; a heavy workload; insufficient supplies, and no accountability.<sup>11</sup> This is similar to the findings of Madani *et al.* in their study of the effect of audit on compliance; their findings indicated that the proper handling of clean and soiled linens improved to 60–70% after specific interventions.<sup>23</sup> This rate of improvement could be achieved in other hospitals by implementing recurrent audits and offering a sufficient quantity of disposable medical equipment. In order to improve infection control practices, it is important to encourage public awareness of this issue and to increase motivation within the hospital community. It is also necessary for the hospital to provide special containers for the safe disposal of syringe needles, arrange the necessary facilities for hand washing and administer hepatitis B vaccines to their staff.<sup>24</sup>

## Conclusion

This study is the first of its kind in the Gaza Strip evaluating the compliance of HCPs with the Palestinian IPC Protocol and assessing ways in which the implementation of the Protocol could be facilitated. The findings revealed that the most important reasons for non-compliance with the IPC Protocol were the absence of education or training programmes (61.5%), lack of knowledge (52.4%) and the scarcity of the required supplies (46.9%). Only 2.3% of respondents had a copy of the national IPC Protocol, while 65.8% did not know of its existence. Only 16.9% of respondents had participated in training sessions about general IPC procedures while 66.1% had been exposed to an injury from used needles. The observation checklist revealed a lower level of compliance in all infection control practices than was perceived by the HCPs in self-administered questionnaires. Nurses were more compliant to the most of IPC practices than other groups of HCPs. Observations of the health facility environment indicated a lack of certain essential equipment and materials, such as covered waste containers and heavy-duty gloves.

From the results of this study, it is recommended that the Palestinian IPC Protocol be made available in all departments of the Gaza hospitals. In addition, it is recommended that these hospitals be provided with the much-needed equipment and facilities required by the national Protocol guidelines. A highly qualified team should be assembled to intensify education and training programmes to promote the application of the precautions noted in the national IPC Protocol. Moreover, it is recommended that each hospital create an infection control committee responsible and accountable for standardising and developing

infection control policies. These committees should be observed and regulated by a macro-committee based in the MOH. Moreover, the results of regular hospital infection control audits and hospital surveillance programme should be reported on a regular basis, ideally leading to a significant improvement of infection control practices in the region.

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