



# An Exploratory Study on Adherence to Joint Commission International Standards on Facility Management and Safety at a Tertiary Care Hospital in Dubai, United Arab Emirates

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## Abstract

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**BACKGROUND:** According to the International Society for Quality in Healthcare, accreditation is a process in which “trained external peer reviewers evaluate a health-care organization’s compliance with pre-established performance standards. Unlike licensure, accreditation focuses on continuous improvement strategies and achievement of optimal quality standards, rather than adherence to minimal standards intended to assure public safety”.

**AIM:** This study aims to observe and identify gaps in adherence to Facility Management and Safety (FMS) Standards as prescribed by the Joint Commission International (JCI).

**METHODS:** A time-bound, single-center, and observational study was carried out using the JCI Accreditation Standards for Hospitals (Sixth Edition). Questionnaires were shared with 20 purposively and conveniently (based on consent) selected participants after obtaining signed informed consent. Following the questionnaire examination, one-on-one interviews with management were held to acquire the necessary data for the study, including the reasons for non-compliance with specific requirements. This research closely examined JCI-recommended policies (Chapter: FMS) and the hospital’s compliance with them.

**RESULTS AND CONCLUSION:** Based on the study, it can be concluded that the hospital has complied with most of the standards on FMS Standards of the Sixth Edition of JCI. However, the clauses FMS.2:ME.3, FMS.6:ME.4, FMS.9.2.1:ME.3, and FMS.9.2.1:ME.4 were not met.

## Introduction

In the last decade, health systems worldwide have focused on improving healthcare quality [1], [2], [3]. This is especially true in the context of Goal 3, Target 3.8 of the Sustainable Development Goals, which is to “achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality, and affordable essential medicines and vaccines for all” [4]. The hospitals and health-care organizations were under unprecedented pressure to provide high-quality care from the start of the COVID-19 pandemic [5].

One of the goals of health-care organizations is to provide a safe and functional space for patients, their families, and visitors. To achieve this, the leadership must manage the facilities through an

effective plan that abides by the local laws and international standards [6].

Accreditation is a voluntary and official evaluation procedure in which experienced external evaluators assess a health-care organization’s adherence to pre-determined standards [7]. These standards were first developed by the American College of Surgeons in 1917 in the United States [2]. Because of the growing need for high-quality health services, decision-makers have begun to employ internationally accepted criteria and processes to evaluate health-care organizations. Policies and actions are implemented to improve performance based on the evaluation results [8].

The Joint Commission International (JCI) has over 900 healthcare institutions that are currently accredited. The JCI’s gold stamp of approval signifies the institution’s excellent services and is highly sought after by administrators and top management. This trend

is particularly noticeable in the United Arab Emirates (UAE), which now ranks first among countries with the most JCI-accredited health-care organizations [9].

### Significance of the study

Hospitals have evolved into complex facilities over the previous decade, offering various services such as diagnostic and therapeutic facilities and advanced care. Since each system runs differently and is vital to the infrastructure, the health-care facilities risk becoming unstable to accommodate these services. Hospital infrastructure includes equipment such as boilers, uninterrupted power supplies, and system parts that often go undetected but are crucial to the hospital.

A safe and functional environment for patients, their families, and visitors is one of the goals of healthcare institutions. Creating a secure hospital necessitates a thorough assessment of the building's general condition and the resources available to assess problems and work toward their resolution.

The key to running a safe and profitable hospital is identifying problems before they have a detrimental impact. Failure of critical equipment can result in unanticipated expenses and the loss of revenue-generating services. It can substantially affect patient treatment and satisfaction and personnel safety while also increasing the risk of litigation and negative public perception, along with hostile public relations.

People go to hospitals during a natural disaster to find safety. However, problems may occur if the hospital's equipment and facilities are not in good condition. These issues exacerbate during power outages due to natural disasters.

Natural disasters can knock out power, water, and supply chain. Other issues include losing services and infrastructure, such as electronic records. In such cases, even relocation of care to an alternative location is not of enough help, as it will not be well-equipped to tackle the growing influx of patients.

As a result, the hospital and its equipment (including medical equipment) must be appropriately managed. Hospitals must also reduce and control dangers and risks, prevent accidents and injuries, and ensure safe environments. This study aims to see if the hospital under consideration can meet the JCI's requirements, and if not, to determine why, and offer possible solutions.

### Objectives

The objectives of the present study were to observe and identify gaps in Facility Management and Safety (FMS) Standards at a tertiary care hospital in Dubai, UAE, and to propose solutions to reduce non-adherence to these standards.

## Materials and Methods

This time-bound (January 2022—April 2022), single-center, and observational study was carried out in a tertiary-care hospital in Dubai, UAE following the Institutional Ethics Committee (IEC) approval on January 15, 2022 (IEC: 67/2021). The study considered the top-level and middle-level management, permanent employees who have worked for a minimum of 1 year in the Quality and Accreditation Department of the same hospital. Temporary/contractual employees, employees on deputation, part-time employees, employees on leave, and newly recruited employees (<1 year) were excluded from the study. After careful consideration of the inclusion/exclusion criteria and consent from the potential participants, 20 out of the 37 employees of the department enrolled on the study.

After obtaining signed informed consent from the subjects, the questionnaires were disseminated. Following the questionnaire examination, one-on-one interviews with management were held to acquire the necessary data for the study, including the reasons for non-compliance with specific requirements. This research closely examined JCI (Sixth Edition) recommended policies (Chapter: FMS) and the hospital's compliance with them.

As per JCI, the key components of the chapter on FMS include:

- Leadership and Planning
- Safety and Security
- Hazardous Materials
- Disaster Preparedness
- Fire Safety
- Medical Equipment
- Utility Systems
- FMS Program Monitoring
- Staff Education.

A 5-point Likert-scale ("Never," "Rarely," "Somewhat," "Often," and "Always") based questionnaire as per the JCI guidelines was used to understand the compliance to FMS aspects in the hospital (Table 1). The maximum length of the 5-point Likert scale is 5 and the minimum length is 1. Hence, the range is calculated by subtracting the lowest value from the highest value and then dividing by five as it is the largest value on the scale, i.e.  $\text{range} = (5-1)/5 = 4/5 = 0.80$ . After this, the number which is the least value in the scale was added to identify the maximum of this cell. The length is determined as follows:

**Table 1 : Scoring mechanism for compliance assessment**

Score range	Label
0.00–1.80	Never
1.81–2.60	Rarely
2.61–3.40	Somewhat
3.41–4.20	Often
4.21–5.00	Always

The mean score was taken from each of the standards and categorized as above. The mean percentage of compliance for each standard was then calculated along with the mean percentage for the overall FMS standards. Jamovi 2.3 (a free graphical user interface to R programming) was used to obtain descriptive statistics in terms of percentages and frequencies [10].

## Results

Table 2 presents the summary of the compliance status of the hospital as per the FMS Standards enlisted in the JCI (Sixth Edition).

Apart from the policy requirements above, there are a few areas where the standards were not met adequately.

**Table 2: Compliance with program/policy requirements prescribed by the joint commission international**

Serial number	Standard	Program/procedure	Compliance status
1	FMS.4	Safety Management Program	Compliant
2	FMS.4.1	Security Management Program	
3	FMS.5, 5.1	Hazardous Material and Waste Management Program	
4	FMS.7	Fire Safety Management Program	
5	FMS.7.2	No Smoking Policy	
6	FMS.8	Medical Equipment Management Program	
7	FMS.9	Utility Management Program	
8	FMS.6	Emergency Management Program	
9	FMS.4.2.1	Pre-construction Risk Assessment Procedure	Partially COMPLIANT

FMS: Facility management and safety .

### FMS.2: ME.3

*“The hospital has a process to review and update the program(s) when changes in the hospital’s environment occur or, at a minimum, on an annual basis.”* As per the study, the hospital programs are updated once every 2 years or when changes in the hospital’s environment occur.

### FMS.6: ME.4

*“The entire program or at least critical elements c) through h) of the program is tested annually.”* However, as per the study, the hospital has not tested three critical elements of the program, which are listed below:

- Managing resources during events, including alternative sources: this element was not tested as the resources in the facility are outsourced; lack of coordination between the facility and the outsourced company during/before drills made it further challenging to do so
- Managing clinical activities during an event, including alternative care sites: Clinical activities were not halted during drills as it is

challenging to convince patients to withhold their treatment due to the drill, and

- Managing emergencies when personal responsibilities of staff conflict with the hospital’s responsibility for providing patient care: The hospital is unable to do so due to a shortage of staff. However, when possible, the hospital minimizes these conflicts, so that patient care is not compromised.

### FMS.9.2.1: ME.3

*“The hospital tests alternative sources of electricity at least quarterly or more frequently if required by local laws and regulations, manufacturer recommendations, or conditions of the course of electricity.”* The hospital must shut down all of its essential equipment for this standard to be followed. According to the hospital, it is not feasible to do so quarterly; hence, it is pursued biannually.

### FMS.9.2.1: ME.4

*“The hospital documents the results of such tests.”* Since the hospital does not follow the above standard, the documentation is partial.

Table 3 presents the summary statistics (mean values) and findings associated with the nine components of FMS as per JCI based on the responses of 20 participants to the questionnaire.

**Table 3: Average score for each of the sections under facility management and safety standards**

Serial number	Component	Mean	Result
A	Leadership and planning	4.71	Always
B	Safety and security	4.27	
C	Hazardous materials	4.60	Often
D	Disaster preparedness	4.00	
E	Fire safety	4.40	
F	Medical equipment	4.55	Always
G	Utility systems	4.50	
H	Facility management and safety program monitoring	4.25	Somewhat
I	Staff education	3.80	

FMS: Facility management and safety .

The overall average is  $4.34 \pm 0.29$ . The median score is 4.40 with an inter-quartile range of 0.45, all of which indicate complete adherence equivalent to the term “Always” except for staff education, which was scored at 3.8 (Somewhat) and disaster preparedness, which was scored at 4 (Often).

Table 4 presents the summary statistics (mean values) and findings associated with the overall scores obtained from the participants concerning the FMS aspects as per JCI.

The overall average is  $4.34 \pm 0.51$ . The median score is 4.30 with an inter-quartile range of 0.65, all indicating complete adherence equivalent to the term “Always”. In general, 60% of the respondents felt that the adherence requirements are met completely.

**Table 4: Overall score for FMS standards**

Participant	Average	Result
1	5.00	Always
2	5.00	Always
3	3.48	Often
4	3.08	Somewhat
5	3.99	Somewhat
6	4.63	Always
7	4.47	Always
8	4.07	Often
9	3.76	Often
10	4.82	Always
11	4.18	Often
12	4.25	Always
13	4.19	Often
14	4.14	Often
15	4.28	Always
16	4.39	Always
17	4.70	Always
18	5.00	Always
19	4.89	Always
20	4.48	Always

FMS: Facility management and safety .

## Discussion

The results show that most of the JCI Standards for FMS were met by the hospital, sparing a few. Process improvement, quality assurance, re-engineering, and participative management are all approaches for evaluating the quality of hospital work [11]. According to the findings, the hospital's compliance with standards in leadership and planning, safety and security, hazardous materials, fire safety, medical equipment, utility systems, facility management, and safety program monitoring management were completely compliant. However, disaster preparedness and staff education require more focus. The hospital can explore capacity-building possibilities to meet the compliance requirements.

Hospitals are expected to provide services (physical facilities, employees, medical equipment, and resources) at par with international standards, especially during an emergency. Emergency preparation plans for hospitals must be developed and implemented, both of which require an emergency preparation plan/disaster manual that covers all the necessary topics. This is valuable to employees and healthcare workers in an emergency [12], [13]. The findings show that hospitals must understand and follow established criteria for hospital structure and space to deliver better services.

The study's findings cannot be generalized, as it is a single-center study that explores only one part (FMS) of the JCI Standards. Much of the survey results utilize the perceptions of the employees and the management at large; hence, while knowledge is a mandatory requirement, attitudes, practices, and perceptions change from time to time. Furthermore, there are minimal studies on hospital facility management and compliance with safety standards in the UAE, all of which make comparing and analyzing the study findings slightly tricky.

In line with the study, here are a few additional considerations regarding specific criteria (highlighted in italics) in FMS. According to the Department of Civil

Defence, hospitals in Dubai are required to conduct and practice a fire drill bi-annually, and these drills are to be conducted during non-visiting hours of the hospital. The drills and an evacuation drill (code green) will also be carried out unit-wise. The inspection standards for building and fire safety codes are to be followed as per the Dubai Health Authority (DHA). These inspections are held at random by the DHA (*Criteria FMS.1*). Written programs to manage risks for patients and visitors were checked. However, the programs were updated only once in 2 years instead of annually (*Criteria FMS.2*). To comply with *Criteria FMS.3*, the hospital determines the qualification and experience of the individual(s), including risk management, facility management, and hospital operations. Regular facility inspections are carried out promptly and efficiently to ensure a safe physical facility with minimized risks (*Criteria FMS.4*). Regular planning and implementation is carried out to provide a secure environment for patients, families, staff, and visitors (*Criteria FMS.4.1*). The hospital plans and budgets to replace systems and components needed to maintain smooth operations. Service Level Assessments are conducted as per the manufacturer's requirements (*Criteria FMS.4.2*).

Pre-Construction Risk Assessment (PCRA) is carried out before and during renovations. The Occupational Safety and Health Management System elements are used for PCRA. (*Criteria FMS.4.2.1*). Only half of the components for the emergency management program were tested. (*Criteria FMS.6*). The fire program is tested every 6 months according to regulatory requirements by the Department of Civil Defence, including staff members of all shifts. (*Criteria FMS.7.1*). The medical equipment is inspected and tested according to the manufacturer's recommendations (*Criteria FMS.8*). The emergency water and electricity systems must be tested quarterly. While the water testing is being done appropriately, the electricity testing is done only twice a year. (*Criteria FMS.9.2.1*). Potable water in the hospital needs to be tested quarterly. Non-potable water is to be tested every 6 months. Water for renal dialysis needs to be tested monthly for bacterial growth and endotoxins and annually for chemical contaminants. The testing is carried out by the clinical laboratory or the DHA. (*Criteria FMS.9.3*). Education and training for staff are to be done annually and documented regularly. However, a few employees miss out on the trainings due to a higher turnover rate of the hospital and unavailability of staff during the training programs. (*Criteria FMS.11.1 and 11.2*).

## Conclusion

The present study was carried out in a 100-bedded multi-specialty tertiary care hospital



in Dubai, UAE, to assess the adherence to FMS Standards as prescribed by the JCI (Sixth Edition). The study involved a comprehensive questionnaire-based survey on 20 of the 37 employees who were permanent employees with more than 1 year of experience in the top-level and middle-level managerial role in the Quality and Accreditation Department of the same hospital. Based on the study, the hospital has complied with most of the standards on FMS as per JCI (Sixth Edition). However, it was found that the hospital did not meet the *FMS.2:ME.3*, *FMS.6:ME.4*, *FMS.9.2.1:ME.3*, and *FMS.9.2.1:ME.4* criteria.

For disaster management, the hospital did not test three of the six elements annually, including managing resources during events, managing clinical activities during an event, and the management of emergencies when personal responsibilities of staff conflict with the hospital's responsibility for providing patient care. Managing clinical activities during an event were not tested as the hospital did not prefer to disrupt the daily functioning of the hospital's out-patient department. Management of emergencies regarding the personal responsibilities of staff was difficult to test due to the staff shortage.

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