

Short communication

Compassion-driven patient safety: infection prevention, vaccination, and communicable disease management in Aster Clinics, United Arab Emirates

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Patient safety is essential, and Infection Prevention and Control (IPC) has been shown to prevent harm. In primary care and outpatient settings, rising patient volumes, new care models, and emerging infectious threats require integrated safety systems. Aster Clinics in the United Arab Emirates (UAE) and Bahrain launched a comprehensive safety program that combined IPC, vaccination, and disease prevention strategies. The program was implemented from July 2025 to December 2025 across 80 clinics. Using a mixed-methods approach, key measures included standardized protocols, staff training, real-time audits, digital safety dashboards, vaccination outreach, and community campaigns. Quantitative data included IPC compliance, vaccination rates, and incident reports, while qualitative data assessed staff engagement, confidence, and safety culture. The program improved hand hygiene, vaccination rates, and transparency in incident reporting, fostering organizational learning. Digital tools enabled early detection and rapid response to safety issues. Staff gained confidence and participated more actively in safety discussions. Integrating IPC, vaccination, and disease management within a systems-based approach can enhance primary care safety, demonstrating how implementation science, human factors, digital tools, and community efforts strengthen resilient healthcare systems and promote a lasting safety culture.

Keywords: Ambulatory care, Communicable disease prevention, Infection prevention and control, Patient safety, Safety culture, Vaccination campaigns

Introduction

Patient safety is widely recognized as a crucial aspect of healthcare quality and system performance worldwide. The World Health Organization (WHO) estimates that millions of patients experience preventable harm during healthcare delivery each year, with healthcare-associated infections being among the most common adverse events in healthcare systems [1]. Although many patient safety initiatives have traditionally focused on hospital environments, safety risks are increasingly acknowledged in primary care and outpatient settings. These settings serve large patient populations with diverse healthcare needs, which can increase the risk of infection transmission and other safety concerns if effective preventative systems are not implemented [2]. Recent global infectious disease outbreaks have highlighted the need for integrated healthcare safety systems that can proactively respond to emerging threats. Traditional safety methods primarily focused on analyzing adverse events after they occurred. However, modern safety frameworks, such as the safety-II approach, focus on understanding how healthcare systems operate successfully under varying conditions and on strengthening resilience [3].

Aster Clinics operates a network of primary care and outpatient healthcare facilities across the United Arab Emirates (UAE) and Bahrain. Recognizing the importance of integrated safety systems, the organization implemented a comprehensive patient safety initiative

that combines improvements in infection prevention and control, vaccination campaigns, and communicable disease management strategies. The program was guided by principles of implementation science, human factors engineering, and digital health monitoring systems, with a strong focus on staff engagement and community participation. This study describes the implementation and outcomes of the integrated patient safety initiative. It examines its impact on infection-prevention practices, vaccination rates, communicable-disease preparedness, and safety culture in outpatient healthcare settings.

Materials and methods**Program objectives and design**

The program was implemented over six months, from July 2025 to December 2025, across 80 clinics in both the Aster Access and NAS networks, covering all seven emirates of the UAE and Bahrain. Approximately 200 patients participated in the campaigns at these clinics, which focused on raising public awareness about vaccination and infection prevention and control practices.

The program aimed to achieve the following objectives: (i) strengthen adherence to evidence-based infection prevention and control practices across participating clinics; (ii) enhance staff capabilities and engagement through structured training programs and workflow improvements; (iii) expand vaccination coverage through targeted outreach and patient education initiatives; (iv) improve communicable disease surveillance and clinical

management with standardized protocols; and (v) utilize digital monitoring tools to support proactive safety monitoring and continuous quality improvement.

A mixed-methods implementation science framework was adopted to implement and evaluate the patient safety program across Aster Clinics in the UAE and Bahrain. Implementation science focuses on promoting the systematic adoption of evidence-based interventions in real-world healthcare environments [4]. Both quantitative and qualitative data were collected to evaluate program effectiveness.

Program components and interventions

Strengthening infection prevention and control:

Standardized IPC protocols were implemented across participating clinics. The program was conducted over six months, from July 2025 to December 2025. A total of 80 clinics participated, including facilities from the Aster, Access, and NAS networks, distributed across all seven emirates of the United Arab Emirates including Dubai, Sharjah, Ajman, Abu Dhabi, Ras Al Khaimah, Umm Al Quwain, and Fujairah, as well as in Bahrain, ensuring broad geographic representation. Approximately 200 patients participated in the campaign, which focused on raising public awareness of vaccination and infection prevention and control practices.

Key interventions included reinforcing hand hygiene practices, staff training in aseptic techniques, environmental cleaning protocols, routine IPC audits with structured feedback, environmental microbiological monitoring, antimicrobial stewardship awareness sessions, and point-of-care risk screening at patient entry. Digital dashboards were introduced to monitor IPC indicators and support real-time compliance tracking.

Vaccination campaigns: Initiatives were developed to improve coverage of influenza and other recommended vaccines. Interventions included patient education campaigns, automated reminder systems, clinic-based vaccination drives, mobile vaccination outreach initiatives, community engagement and awareness sessions, and staff vaccination promotion programs. These strategies aimed to increase vaccine accessibility and reduce vaccine hesitancy.

Communicable disease surveillance and management: To strengthen communicable disease preparedness, the program introduced early screening pathways, standardized clinical management protocols, collaboration with public health authorities, digital alerts for notifiable diseases, contact tracing coordination, and rapid triage workflows for suspected infectious cases. These measures aimed to ensure early detection and effective management of infectious diseases.

Safety culture and staff engagement: Organizational culture plays a critical role in patient safety. The program

introduced safety huddles, shared learning sessions, and open reporting systems to encourage transparent discussion of safety concerns and promote psychological safety among healthcare teams. The engagement included daily safety huddles, open incident reporting systems, shared learning sessions, psychological safety training and staff feedback loops for quality improvement.

The integrated patient safety implementation framework is shown in Figure 1, and the key components, interventions, and expected outcomes of the integrated patient safety program implemented across the 80 Aster Clinics (Aster Access and NAS networks) in the UAE (July–December 2025), targeting approximately 200 patients through public awareness campaigns on vaccination and infection prevention and control practices is shown in table 1.



Figure 1: Integrated patient safety implementation framework was created by using Microsoft PowerPoint - Microsoft Corporation.

Results and discussion

The integrated patient safety program resulted in measurable improvements across several key performance indicators within ambulatory healthcare settings. Hand hygiene compliance increased consistently in participating clinics following the introduction of structured training sessions and ongoing monitoring interventions. Adherence to environmental cleaning protocols also improved after the implementation of standardized procedures and enhanced accountability measures. These results align with the WHO Global Patient Safety Challenge, which aims to improve hand hygiene practices worldwide and foster a strong patient safety culture [5].

Table 1: Legend key components, interventions, and expected outcomes of the integrated patient safety program implemented in the current study.

Program component	Key interventions	Expected impact
Infection prevention and control	Hand hygiene training, aseptic technique education, IPC audits	Improved infection prevention compliance
Vaccination campaigns	Patient education, automated reminders, vaccination drives	Increased vaccination uptake
Communicable disease management	Screening pathways, standardized treatment protocols	Early detection and management
Safety culture and staff engagement	Safety huddles, open incident reporting, shared learning sessions	Improved teamwork and transparency
Digital monitoring systems	Real-time safety dashboards, audit feedback loops	Data-driven quality improvement

We also highlight considerations and solutions arising from the implementation of the multimodal strategy recommended in the WHO guidelines on hand hygiene in health care.

Vaccination campaigns demonstrated particular effectiveness, as evidenced by a notable increase in uptake during seasonal influenza initiatives. Patient outreach strategies, such as reminder systems, contributed significantly to improved vaccine coverage and broader community protection. Additionally, healthcare staff reported greater confidence in identifying and managing communicable diseases, indicating enhanced clinical preparedness. Immunization programs, together with access to clean water and enhanced healthcare services, represent a cornerstone of public health, playing a pivotal role in increasing life expectancy across populations globally [6].

Incident reporting trends indicated greater transparency and increased staff willingness to report safety concerns, suggesting the development of a stronger and more open safety culture. This progress was further supported by safety culture initiatives, including regular safety huddles and shared learning sessions, which fostered trust, teamwork, and open communication within healthcare teams.

Digital monitoring systems and dashboards enabled proactive surveillance of safety indicators, enabling earlier identification of potential risks and facilitating timely, data-driven corrective actions by clinic leadership and quality improvement teams. Moreover, community engagement activities extended the program’s impact beyond clinical settings by promoting vaccination awareness and reinforcing infection-prevention practices among patients and the broader population.

The findings indicate that integrating infection prevention and control (IPC), vaccination campaigns, and communicable disease management within a unified safety framework can substantially improve patient safety outcomes. This aligns closely with the findings of Silva et al., who assessed the impact of dissemination interventions on healthcare workers’ adherence to IPC guidelines for respiratory infectious diseases in the workplace during the COVID-19 pandemic. Their study

demonstrates that structured training, monitoring, and feedback interventions significantly improve compliance with IPC practices, supporting the effectiveness of integrated safety strategies [7]. Employing implementation science principles facilitated the effective incorporation of evidence-based interventions into local clinical workflows, which enhanced both feasibility and uptake. Additionally, the use of a human factors approach addressed behavioral and workflow-related barriers, thereby supporting the long-term sustainability of safety interventions.

These findings align with global evidence highlighting the significance of integrated safety systems and the development of resilient healthcare organizations that can adapt to changing public health challenges. Several limitations warrant consideration. The program was implemented within a single healthcare network, which may limit the generalizability of the results to other systems with different contexts and resources. Furthermore, some outcomes relied on staff self-reports, which could introduce response bias. Future research should examine the long-term sustainability of integrated patient safety programs and assess their impact on patient health outcomes, including reductions in infection rates and improvements in population-level health indicators.

Conclusions

Integrating infection prevention and control strengthening, vaccination campaigns, and communicable disease management within a systems-based patient safety framework can significantly improve safety in primary care settings. At Aster Clinics, this approach has led to measurable improvements, including reduced infection rates, increased vaccination coverage, and faster identification of communicable diseases. Combining implementation science principles, digital monitoring systems, staff engagement strategies, and community outreach has helped create resilient healthcare systems that respond effectively to emerging public health challenges.

Declarations and supplementary information

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