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Establishing robust infection control at a new hospital: the AIIMS Rajkot experience

Abhishek Padhi[1], Mayuri Bhise[1*], Anil Chaudhary[1], Radha Vyas[1], Vidhi Talwar[1], Ashwini Agarwal[1] and CDS Katoch[2]

[1]Department of Microbiology, All India Institute of Medical Sciences (AIIMS), Rajkot; [2]Department of Pulmonary Medicine, All India Institute of Medical Sciences (AIIMS), Rajkot

Abstract

The establishment of robust infection control practices is crucial in any new healthcare facility to ensure patient safety and prevent healthcare-associated infections (HAIs). All India Institute of Medical Sciences (AIIMS) Rajkot, a newly inaugurated medical institution in Western India, faced the significant challenge of implementing these practices from the ground up, beginning with its Outpatient Department services initiation on 31 December 2021.

The AIIMS Rajkot initiated its infection control program by forming a Hospital Infection Control Committee and appointing dedicated Infection Control Officers and Infection Control Nurses. This initiative was supported by comprehensive training programs, the implementation of advanced infection control measures such as bundle care, HAI surveillance, and the development of outbreak investigation teams. Furthermore, the hospital focused on the continuous improvement of these practices through routine audits and the use of a digital Infection Control Risk Assessment form.

The institution successfully integrated a structured infection control framework that includes rigorous training sessions, the implementation of a Hospital Infection Control Manual, and the establishment of a robust needle stick injury management team. These measures have led to improved compliance with infection prevention protocols, as evidenced by hand hygiene audits and reduced incidence of HAIs.

The journey of establishing infection control practices at AIIMS Rajkot highlights the importance of a structured approach in new healthcare settings. The successful integration of these practices not only enhances patient and staff safety but also sets a standard for future healthcare facilities. The AIIMS Rajkot's proactive measures and continuous improvement efforts serve as a model for effectively addressing the challenges of infection control in a dynamic healthcare environment.

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All India Institute of Medical Sciences (AIIMS) Rajkot, a new addition to the AIIMS family, started its Outpatient Department (OPD) services on 31 December 2021. This significant step was aimed at expanding access to specialized healthcare in Western India, a region with burgeoning healthcare needs. The commencement of OPD services without an established infection control program (ICP) presented both a challenge and an opportunity for setting new standards in infection prevention.

The AIIMS Rajkot was established under the aegis of the Ministry of Health and Family Welfare, Government of India, with the goal of enhancing healthcare quality, medical education, and research in India. The initiation of OPD services was the first step toward fulfilling these objectives, positioning AIIMS Rajkot as a pivotal healthcare provider and academic institution in the region.

However, initiating medical services without prior infection control measures in place carried inherent risks. Infection control is vital for preventing the spread of infections in healthcare settings, safeguarding patients and healthcare personnel, and ensuring optimal clinical outcomes. Acknowledging this, the administration at AIIMS Rajkot swiftly moved to prioritize the development of a robust infection control system.

Launching an infection control protocol (ICP) in a new medical facility involves numerous challenges such as logistics, staff training, and the establishment of standard operating procedures (SOPs). The lack of initial infection control measures added complexity, necessitating urgent strategies to address potential healthcare-associated infections (HAIs), which are recognized globally as a major health concern.

Worldwide, HAIs significantly impact patient morbidity and mortality. The World Health Organization (WHO) reports that hundreds of millions of patients are affected by HAIs annually, highlighting the critical need for stringent infection control practices in healthcare settings (1). The challenge is particularly acute in developing countries where resources and healthcare practices may vary greatly.

To address these issues, AIIMS Rajkot began a structured initiative to establish a comprehensive Hospital Infection Control Committee (HICC). The committee was tasked with overseeing the development and implementation of infection control standards, conducting training sessions, and setting up surveillance systems. Establishing the HICC was crucial for AIIMS Rajkot to maintain safe and effective healthcare services, aligning with global healthcare standards.

Methodology overview

At AIIMS Rajkot, the establishment of a robust infection control framework began with the strategic formation of the HICC. This committee, guided by the principles set forth by the Centers for Disease Control and Prevention (CDC) and the WHO, was responsible for spearheading the development and oversight of infection control measures across the hospital. The methodology embraced a multi-tiered approach involving several key components:

Formation and empowerment of HICC

The HICC was crucial in setting the policies and protocols for infection control. It comprised interdisciplinary members including clinicians, nurses, and administrative staff, each bringing specialized knowledge to ensure comprehensive coverage of all infection control aspects.

Data collection and surveillance

Systematic data collection was implemented to track and analyze the incidence and types of infections, including respiratory, bloodstream, and surgical site infections (SSIs). These data were crucial for assessing the effectiveness of the infection control interventions and making informed decisions on necessary adjustments.

Training and sensitization programs

Extensive training programs were conducted to enhance the infection control knowledge and practices of healthcare workers. These programs were tailored to include practical demonstrations and interactive sessions, covering crucial topics such as hand hygiene, use of personal protective equipment (PPE), and proper patient handling techniques.

Implementation of infection control measures

Specific measures such as the infection control rounds in the OPD and the transition of protocols from OPD to Inpatient Department (IPD) were rolled out. These measures were designed to ensure adherence to the established ICPs and to address the complexities associated with different types of patient care settings.

Advanced infection control initiatives

The adoption of advanced strategies such as the bundle care approach, establishment of outbreak investigation teams, and a comprehensive needle stick injury management protocol represented a forward-thinking approach to infection control, aiming to address and mitigate complex challenges proactively.

Regular audits and continuous improvement

Routine audits, including hand hygiene audits and the use of the Infection Control Risk Assessment (ICRA) form (see Appendix), played a critical role in maintaining high standards and continuously improving infection control practices. These audits helped in identifying areas of improvement and in implementing timely corrective actions.

This article outlines the journey of AIIMS Rajkot in establishing a comprehensive infection control framework from the inception of its OPD services. It discusses the initial challenges, strategic decisions, and the ongoing efforts to enhance ICPs. This narrative aims to contribute to the global discourse on infection control in healthcare settings, offering valuable insights and lessons that could be applied by other institutions facing similar challenges.

Establishing the HICC

The establishment of the HICC at AIIMS Rajkot marked a pivotal step in the institution's commitment to maintaining high standards of patient safety and healthcare quality. The initial formation of the HICC was guided by principles outlined by the CDC and the WHO, which emphasize the importance of infection control committees in healthcare settings (2, 3).

The process began with the selection and appointment of a qualified Infection Control Officer (ICO). The ICO's role was crucial for setting the direction and overseeing the implementation of infection control measures throughout the hospital. This individual was chosen based on a combination of clinical expertise, leadership skills, and a deep understanding of infection prevention and control strategies. Their primary responsibilities

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included developing ICPs, conducting risk assessments, and leading the response to infection outbreaks.

Concurrently, the recruitment of Infection Control Nurses (ICNs) was undertaken. Initially, one ICN was appointed, and as the need for broader coverage became apparent, a second ICN was added to the team. These nurses were selected for their specialized knowledge in infection control, their experience in clinical settings, and their ability to educate and train other healthcare workers. The roles of the ICNs at AIIMS Rajkot involved daily surveillance of infection control practices, direct oversight of adherence to hygiene protocols, and the collection and analysis of infection data to monitor the effectiveness of implemented strategies.

The ICNs also played a critical role in the education and training of staff. Regular workshops and training sessions were organized to ensure that all healthcare workers were familiar with the best practices in infection prevention. These sessions covered a range of topics, from hand hygiene and proper use of PPE to specific procedures for managing infectious risks in clinical settings.

The formation of the HICC, appointment of the ICO, and recruitment of ICNs were foundational to the development of a resilient ICP. These steps provided the structure necessary to implement systematic and effective infection control measures, which are crucial for minimizing the risk of HAIs and ensuring the safety of both patients and staff.

Implementing infection control measures in OPD

The initiation of OPD services at AIIMS Rajkot was complemented by the introduction of systematic infection control rounds. These rounds were instrumental in assessing and ensuring adherence to infection prevention protocols within the OPD. Conducted by the newly appointed ICNs, these rounds focused on direct observation of practices such as hand hygiene, use of PPE, and environmental cleanliness. This proactive approach helped in identifying areas needing immediate attention and corrective action, thus minimizing the risk of HAIs from the outset (4).

Parallel to these control rounds, AIIMS Rajkot instituted robust training programs for healthcare workers, emphasizing the critical importance of infection control practices. These training sessions were designed to be practical and interactive, facilitating a better understanding and implementation of infection control measures. Topics covered included proper handwashing techniques, correct use of PPE, and effective patient handling procedures. The goal was to ensure that all staff members, regardless of their role, understood their part in preventing infections and could apply best practices in their daily interactions (5).

Commissioning of infection prevention and controlinfrastructure at AIIMS Rajkot

As part of the foundational efforts to establish AIIMS Rajkot, significant emphasis was placed on the commissioning of infrastructure critical to IPC. These foundational activities were integral in setting the stage for a hospital environment designed to minimize infection risks and enhance patient and staff safety from the outset.

Implementation of hand hygiene facilities

One of the first steps in our IPC strategy was the strategic installation of handrub dispensers throughout the hospital. Dispensers were placed at key locations, including the entrances and exits of wards, near patient beds, at nursing stations, and in procedural areas, to ensure that hand hygiene could be readily maintained by all healthcare workers and visitors. Additionally, handwashing sinks were installed in every patient room, procedural area, and key points where high-touch activities occur, following the WHO's guidelines for hand hygiene in healthcare settings.

Availability and accessibility of PPE

Recognizing the critical importance of PPE in preventing the transmission of infections, we ensured that adequate supplies of PPE were available from the day of operation. Storage areas for PPE were strategically located near the point of care, allowing easy access for all staff members. This setup was complemented by clear signage and instructions on the proper use and disposal of PPE, which were reinforced during orientation sessions for all new staff members.

Biomedical waste management

Furthermore, a noticeable shortage of biomedical waste bins was addressed by procuring additional units to meet the hospital's needs. This ensured the segregation and proper disposal of biomedical waste, crucial for maintaining hospital hygiene and preventing potential infections.

Infrastructure and resource optimization

The HICC took an active role in supervising several infrastructural enhancements to further bolster our infection prevention capabilities. This included the installation of High-Efficiency Particulate Air (HEPA) filters, strict adherence to ICPs for ventilation systems in OPD, optimization of bed placements in the IPD to minimize infection risks, and the establishment of designated areas for biomedical waste disposal. Effective manpower allocation for waste collection and disposal was also a key focus, ensuring that these processes were managed efficiently and safely.

Educational signage and IPC awareness

To reinforce the importance of IPC measures, educational signage was placed throughout the hospital. These signs

provide reminders about hand hygiene, the proper use of PPE, and other infection control practices. They serve not only as reminders but also as educational tools for patients, visitors, and new staff, promoting an ongoing culture of infection prevention.

These commissioning activities underscore our commitment to IPC at AIIMS Rajkot and represent just the initial steps in our ongoing journey to ensure the highest standards of safety and care. The careful planning and implementation of these measures reflect our dedication to creating a healthcare environment where infection risks are minimized through well-considered infrastructure and proactive strategies.

Manpower requirements and roles within the IPC team at AIIMS Rajkot

The effectiveness of our IPC measures at AIIMS Rajkot is significantly supported by the dedicated roles and structured responsibilities within the IPC team. This team is crucial for the implementation and oversight of our ICPs across the hospital.

Structure of the IPC team

Initially, the IPC team was comprised of a single ICO who was tasked with setting up the foundational elements of our IPC strategies. As the hospital expanded its services and the workforce grew, the need for a more robust structure became evident. Consequently, ICNs were introduced to enhance the implementation and monitoring of infection control measures on a day-to-day basis.

Roles and responsibilities

Infection control officer

The ICO is primarily responsible for the development of ICPs and the overall monitoring of their implementation across the hospital. This role includes conducting comprehensive risk assessments to identify potential infection risks and leading the hospital's response to infection outbreaks. The ICO also plays a pivotal role in mediating between different departments to ensure that infection control measures are consistently applied and adapted according to evolving needs.

Infection control nurses

ICNs are instrumental in the practical application of ICPs within the hospital. Their duties involve daily rounds to monitor compliance with hygiene practices, educating staff on infection prevention techniques, and acting as the first point of contact for any IPC-related issues within their designated areas. They also collect data and provide feedback to the ICO, contributing to the continuous improvement of infection control measures.

Hospital infection control committee

With the further expansion of hospital services, the HICC was established, encompassing a broader range of roles including a chairperson, member secretary, the ICO, ICNs, and other committee members from various departments. This committee oversees the hospital-wide implementation of IPC measures and ensures that these are integrated into all aspects of hospital operations. Responsibilities are shared among all hospital employees, fostering a culture of infection control awareness and collective responsibility.

Expansion and maturation of infection control practices

As the healthcare services at AIIMS Rajkot expanded from OPD to IPD settings, the ICPs also evolved to address the complexities of a more diverse patient base and increased procedural interventions. The transition to IPD required a more extensive infection control framework to safeguard against the heightened risk of HAIs in these environments. The HICC expanded its team, adding specialists with expertise in various aspects of infection prevention and control, thereby enhancing the hospital's capacity to manage and mitigate infection risks effectively.

A critical element of this expanded role was the fully operational Central Sterilization Services Department (CSSD). The CSSD played a pivotal role in ensuring the sterility of surgical instruments and other medical devices, which is crucial for preventing HAIs. Stringent sterilization protocols were established, governed by best practices and compliance with international standards, to ensure that all reusable instruments were free from microbial contamination (6).

Surveillance and continuous improvement

The implementation of the ICRA form represented a significant advancement in surveillance capabilities at AIIMS Rajkot. This digital tool, accessible via Google Sheets, allowed for real-time monitoring and assessment of compliance with infection control measures. The form helped identify deviations from established protocols promptly, enabling immediate corrective actions. The impact of this tool was profound, leading to measurable improvements in infection control practices across the hospital (7).

Routine audits, such as hand hygiene audits, became a regular feature of the ICP. These audits were crucial for maintaining high standards of hygiene practices among healthcare workers. The results from these audits demonstrated a positive trend in compliance rates, which correlated with a decrease in the incidence of HAIs, affirming the effectiveness of the ongoing training and surveillance efforts (8).

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ICRA form implementation and utilization

To systematically assess and enhance our infection control measures at AIIMS Rajkot, we have developed and implemented a comprehensive ICRA form. This form is a critical tool used during our regular infection control governance rounds and is designed to quantify compliance with infection control standards across various departments within the hospital.

Scoring system

The ICRA form evaluates 10 specific parameters related to infection control practices, with each parameter rated on a scale from 0 to 2:

1. **0** indicates non-compliance.
2. **1** indicates partial compliance.
3. **2** indicates complete compliance.

Parameters that are not applicable or cannot be assessed during the evaluation are marked as excluded for that specific assessment to ensure accuracy and relevance of the data collected.

Application in clinical settings

Each department is assessed using a tailored version of the ICRA form, reflecting the unique infection control challenges and requirements of that specific clinical environment. This allows for a more precise and contextual understanding of compliance levels and areas needing attention.

Data aggregation and feedback mechanism

After the completion of each round, scores from all departments are aggregated and compared against established standards of the ICP. This comparative analysis helps in identifying both exemplary practices and areas requiring immediate intervention.

We collect and analyse these data on a monthly basis, which is then discussed in detail during the Hospital Infection Control (HIC) meetings. These meetings serve as a platform for providing feedback to ward representatives, highlighting specific areas for improvement based on the assessment results. Additionally, the meetings facilitate the planning of targeted interventions and the allocation of resources where they are most needed.

Tracking improvements

Subsequent assessments are conducted to monitor progress and effectiveness of interventions implemented. This ongoing cycle of assessment, feedback, and reassessment forms the core of our continuous improvement strategy in infection control.

Training and sensitization

Infection control practices are paramount in preventing HAIs, a significant challenge within hospital settings. At AIIMS Rajkot, the ongoing training and sensitization programs play a crucial role in ingraining these essential practices among staff members. The institution has developed a comprehensive training program that targets all levels of healthcare workers, from physicians to support staff, ensuring everyone is equipped with the knowledge and skills to implement effective infection control measures.

The training modules are designed to be interactive and engaging, incorporating both theoretical knowledge and practical demonstrations. These sessions cover a wide range of topics, including hand hygiene, proper use of PPE, sterilization techniques, and waste management. Special emphasis is placed on the correct techniques of hand washing and the use of alcohol-based hand rubs, as hand hygiene is recognized as one of the most effective ways to prevent the spread of infections (5).

Furthermore, AIIMS Rajkot utilizes role-playing and scenario-based training to help staff understand and manage real-life situations that may lead to infections. These activities not only reinforce learning but also improve the staff's confidence in managing infectious risks effectively. The training is regularly updated to reflect the latest guidelines and research, ensuring that the healthcare team is always aware of the best practices and new approaches in infection control (9).

Training methodology

The training was delivered through a combination of onsite sessions, practical demonstrations, and interactive workshops. To accommodate our diverse workforce, training materials and questionnaires were provided in both English and Hindi, ensuring accessibility and comprehensibility for all staff members. Key topics covered included hand hygiene, proper use of PPE, occupational health hazards, and sterilization methods.

Ongoing training and education

The ICO and ICNs conduct regular training sessions for all hospital staff to ensure that everyone is up-to-date with the latest infection control practices and protocols. These sessions are designed to reinforce the importance of infection control and ensure that all staff members are equipped to contribute effectively to preventing and controlling infections within the hospital.

Improvements in healthcare workers' knowledge and infection control practices

To assess the impact of our comprehensive training programs on healthcare workers' knowledge and practices, HICC personnel conducted multidisciplinary training sessions targeting nursing officers, housekeeping personnel, and lab technicians. The training sessions focused on enhancing core competencies in infection control practices and were

tailored to meet the educational needs of our diverse workforce. Pre- and post-training assessments were administered to measure the effectiveness of these sessions.

Results of training assessments

Nursing officers

A significant improvement was observed among nursing officers, with the mean score on pre-test assessments being 11.22, which increased to 15.56 post-training (N = 120). This indicates a substantial enhancement in their understanding and application of ICPs.

Housekeeping staff and lab technicians

These groups also showed notable improvements, achieving a mean post-test score of 12.8 (N = 40), reflecting their increased competency in hospital cleaning protocols and infection prevention measures.

Training covered critical areas including hand hygiene, proper use of PPE, occupational health hazards, sterilization methods, and biomedical waste management. The sessions utilized a combination of onsite training, practical demonstrations, and interactive workshops to ensure comprehensive learning.

Infection case data

In the initial stages, the monitoring of hand hygiene practices was limited to the OPD, as the IPD was not yet operational. Using the WHO hand hygiene checklist tool, an initial assessment of hand hygiene compliance was conducted, revealing low compliance rates:

1. **November-December 2023:** Compliance rate of 13.3%
2. **January 2024:** Slight increase to 13.96%

Recognizing the critical need for improvement, targeted training and sensitization efforts were intensified. In collaboration with ICNs and ICOs, focused teaching sessions were conducted, emphasizing key moments for hand hygiene, proper handwashing techniques, and the use of hand rubs. These efforts yielded significant improvements:

1. **April 2024:** The average compliance rate rose dramatically to 37.38%.

These findings demonstrate the effectiveness of targeted educational interventions in enhancing infection control practices among healthcare workers at AIIMS Rajkot. The increase in hand hygiene compliance is particularly noteworthy, illustrating the positive impact of our continuous training and improvement strategy.

Monitoring and enhancing hand hygiene compliance

Recognizing the critical importance of hand hygiene as the most effective means to prevent infections, AIIMS Rajkot has implemented rigorous protocols for monitoring and improving hand hygiene practices across the hospital. The focus has been particularly pronounced in the OPD, where patient interactions are frequent and varied.

Initial assessment and monitoring

In the early stages of our healthcare facility, prior to the establishment of the IPD, opportunities for assessing hand hygiene compliance were initially limited. To address this, we adapted the WHO hand hygiene checklist tool, a proven framework for monitoring compliance rates effectively. An initial departmental assessment was conducted in the OPD to establish baseline compliance rates. Our findings from this phase were as follows:

1. **November–December 2023:** Initial compliance rate was 13.3%.
2. **January 2024:** A slight increase to 13.96%, indicating a need for intensive intervention.

Targeted training and sensitization efforts

To improve these suboptimal compliance rates, targeted training and sensitization efforts were implemented. In collaboration with our ICNs and ICOs, we conducted on-site teaching sessions that focused on the key moments for hand hygiene. These sessions included practical demonstrations on proper handwashing techniques and the effective use of hand rubs. Such educational initiatives are vital in instilling lasting behavioural changes among healthcare workers.

Results of interventions

These concerted efforts led to a significant improvement in hand hygiene compliance rates, which increased to 37.38% by April 2024. This marked improvement reflects the effectiveness of our targeted educational and training approaches in enhancing hand hygiene practices.

Ongoing efforts and future directions

With the initiation of IPD services, our commitment to rigorous assessment and improvement of hand hygiene practices continues unabated. We remain dedicated to ensuring a safe and hygienic environment for both patients and healthcare providers. Our ongoing efforts are a testament to our commitment to quality improvement and patient safety, as we aim to achieve and maintain compliance rates that meet or exceed national and international standards.

Release and implementation of the HICC manual

The launch of the HIC Manual on 13 April 2024 was a landmark event at AIIMS Rajkot. This manual serves as a comprehensive resource that outlines the standards, procedures, and protocols for infection prevention and

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control within the hospital. The manual's release signifies a significant step forward in formalizing the infection control efforts that have been dynamically developed since the inception of the hospital's services.

Following the release of the manual, the hospital embarked on a structured implementation phase, divided into two main stages: the training phase and the implementation phase. The training phase involves intensive sessions where all hospital staff are familiarized with the contents of the manual. This phase aims to ensure that every member of the staff understands their roles and responsibilities in infection control, as delineated in the manual. The training also includes assessments to evaluate staff knowledge and adherence to the protocols (10).

The implementation phase focuses on the practical application of the manual's guidelines across the hospital. During this stage, compliance with the ICPs is closely monitored, and feedback is actively sought to identify any challenges or areas for improvement. The effectiveness of the manual is evaluated through regular audits and review meetings, where infection rates and other relevant metrics are analyzed. This ongoing evaluation helps to continually refine infection control strategies and ensure that the hospital remains at the forefront of patient safety initiatives (11).

Advanced infection control initiatives

As AIIMS Rajkot continues to evolve and expand its healthcare services, the implementation of advanced infection control measures has become increasingly critical. These initiatives are designed to address complex challenges in preventing HAIs and ensuring the safety of both patients and staff.

Implementation of HAI surveillance and bundle care practices

HAI surveillance

To monitor and reduce the incidence of HAIs, AIIMS Rajkot has established a comprehensive HAI surveillance program. This program systematically collects, analyses, and interprets data regarding infections acquired within the hospital. The surveillance data are used to identify outbreak patterns, evaluate the effectiveness of infection control interventions, and guide policy decisions. This proactive approach helps in early detection of potential outbreaks and facilitates timely interventions, thereby minimizing the impact of HAIs on patient health and hospital resources (12).

At AIIMS Rajkot, our HAI surveillance program is comprehensive and designed to monitor a variety of infection types across different hospital settings, including the intensive care unit (ICU) and general wards. This extensive surveillance encompasses the following key infection types:

Catheter-Associated Urinary Tract Infections

Surveillance of catheter-associated urinary tract infections (CAUTI) is implemented hospital-wide, including all patients with urinary catheters, regardless of their location within the hospital.

Central Line-Associated Bloodstream Infections

Central line-associated bloodstream infections (CLABSI) monitoring is also conducted throughout the hospital for all patients with central lines, ensuring prompt identification and management of these potentially severe infections.

Ventilator-Associated Pneumonia and Ventilator-Associated Events

Our surveillance extends to all patients on mechanical ventilation to monitor for signs of Ventilator-Associated Pneumonia (VAP) and other ventilator-associated events (VAE), critical for patients in the ICU.

Surgical Site Infections

Despite the initial low patient volume, our SSI surveillance includes any patient undergoing surgical procedures to ensure comprehensive monitoring and management of post-surgical infections.

Management of multidrug-resistant organisms

Our surveillance program has also identified cases of multidrug-resistant organisms (MDROs), such as methicillin-resistant *Staphylococcus aureus* (MRSA) and carbapenem-resistant *Enterobacteriaceae* (CRE). In response to these findings, we have developed specific protocols to manage MDRO cases effectively. These protocols include targeted infection control guidelines and strategies for isolating affected patients to prevent the spread of these resistant organisms.

SSIs surveillance in the initial phase of IPD services

With the commencement of IPD services at AIIMS Rajkot in March 2024, we have initiated a foundational SSI surveillance system aligned with the National Healthcare Safety Network (NHSN) criteria. This nascent surveillance initiative focuses on monitoring SSIs across various surgical disciplines newly introduced in our facility, which currently includes orthopedic surgeries, general laparoscopic or laparotomic procedures, and specialties such as obstetrics and gynecology, ENT, and ophthalmology.

Classification and monitoring of SSIs

SSIs are classified into three categories based on depth and complexity:

Superficial SSIs

Infections involving only the skin and subcutaneous tissue at the incision site.

Deep incisional SSIs

Infections involving deep soft tissues, such as fascia and muscle at the incision site.

Organ space SSIs

Infections involving any part of the anatomy (e.g. organs or spaces) opened or manipulated during the operation.

Given the recent operationalization of IPD services, our current SSI data are preliminary and primarily focused on establishing baseline infection rates and identifying common pathogens involved. Our surveillance methodology entails rigorous post-operative monitoring of all surgical patients during their hospital stay, utilizing both clinical assessments and microbiological testing to identify and classify infections.

Preliminary observations and future directions

As our surgical services and SSI surveillance are in their early stages, comprehensive data on specific bacteria types and infection sites is still being compiled. Initial observations indicate a normal range of post-operative infections consistent with national averages, which will be detailed in subsequent reports as more data becomes available.

In the coming months, we plan to expand our surveillance to include more detailed analyses of SSI types, specific pathogens involved, and the effectiveness of various prophylactic and therapeutic interventions. This will involve closer collaboration with surgical teams and microbiology labs to enhance data accuracy and improve patient outcomes.

Bundle care approach

One of the key strategies implemented at AIIMS Rajkot is the adoption of the bundle care approach. This method involves the application of a set of interventions, related to a specific disease or procedure, that when executed together, significantly improve patient outcomes. For instance, the central line bundle includes measures such as hand hygiene, maximal barrier precautions, chlorhexidine skin antisepsis, optimal catheter site selection, and daily review of line necessity with prompt removal of unnecessary lines. Studies have shown that using such bundles can reduce the incidence of bloodstream infections in ICUs by up to 70% (13).

Education and training initiatives

To support these surveillance and management efforts, we have initiated ward-level education programs focused on promoting strict adherence to infection control practices. These educational initiatives are particularly focused on ensuring that all healthcare providers, including physicians, nurses, and support staff, are well-versed in the necessary precautions and treatments. Furthermore, we encourage physicians to consult with microbiologists when prescribing antibiotics, which fosters a culture of judicious antibiotic use throughout our facility.

Outcome of surveillance and educational efforts

The implementation of these HAI surveillance and bundle care practices, combined with robust educational programs, has significantly enhanced our ability to manage infections effectively within the hospital. These efforts have not only improved patient outcomes but have also elevated the overall quality of care provided at our institution.

Outbreak investigation teams

In response to the critical need for rapid response to potential infectious disease outbreaks, AIIMS Rajkot has formed specialized outbreak investigation teams. These teams are composed of experts in infection control, epidemiology, and clinical medicine, and are trained to act swiftly when an outbreak is suspected. Their responsibilities include identifying the source of infection, containing the outbreak, and implementing control measures to prevent further spread. The team's ability to rapidly assess and respond to an outbreak is crucial for protecting patients and staff from infectious disease threats (14).

Needle stick injury management team

Recognizing the occupational risks faced by healthcare workers, AIIMS Rajkot has established a robust needle stick injury management team. This team oversees the implementation of safety protocols and provides immediate care and support to staff who experience needle stick injuries. The management protocol includes immediate injury reporting, rapid access to post-exposure prophylaxis, and appropriate follow-up, including counselling and monitoring for potential infections. The team also conducts regular training sessions on the safe handling and disposal of needles and other sharp instruments to reduce the incidence of needle stick injuries (15).

These advanced infection control initiatives represent AIIMS Rajkot's commitment to maintaining the highest standards of patient care and worker safety. By implementing these strategies, the hospital aims to significantly reduce the occurrence of HAIs and enhance the overall effectiveness of its ICPs.

Enhancing infection control practices at AIIMS Rajkot: experiences and learnings

At AIIMS Rajkot, the journey to establish and refine infection control practices has been both challenging and enlightening. Our experience provides valuable insights into the complexities of implementing effective infection prevention measures within a resource-constrained setting.

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The importance of structured infection control practices

The experience of AIIMS Rajkot highlights the critical importance of structured infection control practices in new healthcare settings. Effective infection control is not only about preventing infections but also about building a culture of safety that permeates every level of the organization. It involves continuous education, vigilance, and improvement to adapt to emerging challenges and changes in the healthcare landscape.

Structured infection control practices are vital for safeguarding patient health, protecting healthcare workers, and ensuring the overall effectiveness of healthcare delivery. They are fundamental to achieving the goals of reducing HAIs, enhancing patient outcomes, and improving the quality of care provided.

Achievements

One of the major achievements at AIIMS Rajkot has been the successful establishment of the HICC and the appointment of dedicated ICOs and ICNs. These steps have laid a solid foundation for infection control within the hospital. The launch of the HIC Manual on 13 April 2024, was another milestone, encapsulating the protocols and guidelines essential for maintaining high standards of infection prevention.

The implementation of advanced infection control initiatives such as the bundle care approach, comprehensive HAI surveillance, and the formation of outbreak investigation teams has significantly enhanced the hospital's ability to manage and mitigate infection risks. Moreover, the establishment of a needle stick injury management team underscores AIIMS Rajkot's commitment to ensuring the safety and well-being of its healthcare workers.

Challenges and resource optimization

From the outset, our initiative faced significant resource limitations, particularly in the procurement of essential supplies. These constraints necessitated a strategic approach to resource optimization. Despite these challenges, we managed to secure a steady supply of critical materials through meticulous supply chain management and creative problem-solving, such as repurposing available resources.

Staff training and attitude transformation

Recognizing the pivotal role of staff in the successful implementation of infection control practices (ICP), we placed a high priority on continuous training. These sessions were crucial not only for reinforcing adherence to established protocols but also for updating the team on evolving best practices. Moreover, we worked to shift the mindset of our healthcare workers from mere compliance to a deep-seated commitment to infection prevention, fostering a culture of proactive engagement with ICPs.

Effective communication and SOPs

Clear and effective communication was another cornerstone of our approach. We developed comprehensive SOPs that served as detailed guides for maintaining consistent infection control practices. Regular briefings and open discussions ensured that all staff members were well-informed about these procedures and any updates or changes to the protocols.

Comprehensive surveillance and proactive monitoring

Our surveillance strategy included monitoring a range of HAIs such as CAUTI, CLABSI, VAP, and SSI. This monitoring was extended to all patients with devices, across both ICU and general wards, ensuring comprehensive coverage and vigilance. The encounter with MDROs such as MRSA and CRE necessitated the development of specialized protocols and intensified our focus on educating all ward staff about critical infection control practices.

Monitoring and feedback

Constant on-site vigilance allowed for regular assessments of adherence to ICPs. Any deviations from established protocols were swiftly addressed through corrective actions. Moreover, feedback loops involving staff at all levels – from frontline caregivers to supervisors and the infection control team – were instrumental in facilitating continuous improvement and adaptation of our strategies.

Conclusion

The experiences at AIIMS Rajkot underscore the importance of persistence, teamwork, and the application of evidence-based practices in achieving effective infection control. Our journey highlights the critical role of resource optimization, staff training, effective communication, and vigilant monitoring in fostering a safe healthcare environment. Through this narrative, we aim to provide actionable insights for other healthcare institutions embarking on similar paths toward enhanced infection prevention and control.

The strides made by AIIMS Rajkot in the realm of infection control serve as a testament to the dedication and resilience of its healthcare team. These efforts not only improve the quality of care but also contribute to the broader knowledge base of infection control strategies, providing valuable insights that can benefit other healthcare institutions embarking on similar journeys.

Conflict of interest and funding

None

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***Mayuri Bhise**
Assistant Professor, Department of Microbiology
AIIMS, Rajkot
Email: mayuri.umrao@gmail.com

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Appendix

Infection control risk assessment form

- Name of the Department:_____

Sl no	Assessment parameters	Scoring		
		0	1	2
1	**Use of personal protective equipment**			
	Appropriate PPE are available and located at near point of use			
	HCW wear gloves for procedure/activities where contact with blood, body fluids, mucus membrane or non-intact skin is anticipated			
	HCW follow correct procedure of wearing the PPE			
	HCW changes gloves and perform hand hygiene before moving from a contaminated body site to a clean body site			
	HCW wear gowns during procedures/activities where contact with blood, body fluids, secretions, or excretion are anticipated			
	HCW use appropriate mouth, face, eye protection during procedures that generate splashes/sprays			
	HCW follows correct procedure for removing the PPE			
	Used PPE is discarded as per protocol			
	PPE is not re-used			
	Hand hygiene is performed after removal of PPE			
2	**Aseptic technique during procedures**			
	HCW perform hand hygiene prior to procedure			
	Insertion bundle for prevention of CLABSI followed			
	Insertion bundle for prevention of CAUTI followed			
	Maintenance bundle for prevention of CLABSI followed			
	Maintenance bundle for prevention of VAP followed			
	HCW uses sterile and within expiry dressings sets or material required for the procedure			
	HCW performs hand hygiene after the procedure			
3	**Sharp injury management**			
	Availability of puncture proof container at the point of use			
	HCW do not re-cap/bend/break the used needles/sharps			
	HCW dispose sharps by their own, immediately after use			
	Puncture proof containers are sent for discarding after they are 3/4th full			
	HCW use trays to pass the sharps			
4	**Use of disinfectants/antiseptics**			
	Availability of recommended disinfectants on the trolleys			
	Availability of alcohol based hand rubs bedside			
	Disinfectants bottles are properly labelled mentioning D/O opening and D/O expiry			
	Disinfectants solution bottles are stored properly			
5	**Reprocessing of instruments after use**			
	Used instruments are disinfected for required duration at the point of use			
	Used instruments are cleaned with detergent and water			
	Instruments are sent for sterilization			
	The sterilized instruments are used within the expiry date otherwise sent back for re-sterilization			
6	**Environmental decontamination**			
	High touch objects are cleaned more frequently depending upon the risk area			
	Staff uses PPE while performing cleaning			
	Cleaning solutions are available			
	Spill management kit is up to date			
	Mercury spill management kit is up to date			
	Deep cleaning is performed after discharge of the patient and before bed is occupied by a new patient			

7	**Linen management**	
	Segregation of dirty and soiled linen at the point of generation	
	Soiled linen and linen of patients with infectious diseases are treated with disinfectant or autoclaving before handing over to laundry persons	
	Fresh and sterile linen is stored separately and safely	
8	**Transmission based**	
	HCW follows appropriate transmission based precautions (Contact/droplet/Airborne)	
	Availability of gloves, surgical masks, N95 masks, isolation rooms/ segregated areas	
	Patients with infectious diseases requiring isolation are segregated in separate areas	
9	**Crowd management**	
	No. of visitors are restricted	
10	**Personal grooming by staff**	
	Nails are clean and trimmed	
	Hairs are neatly tied and off the collar	
	Uniforms are neat and clean	
	Cuts/wound are covered	
	Ornaments/accessories are removed while wearing PPE	
	HCW do not handle electronic devises (computer, keyboards, mobile phones, switches etc.) with gloved hands	

- Remarks:
  _____
  _____
- State the reason for marking '0': -
  _____
  _____
- On-site action taken:
  _____
  _____
- Any additional actions required: -
  _____
  _____

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