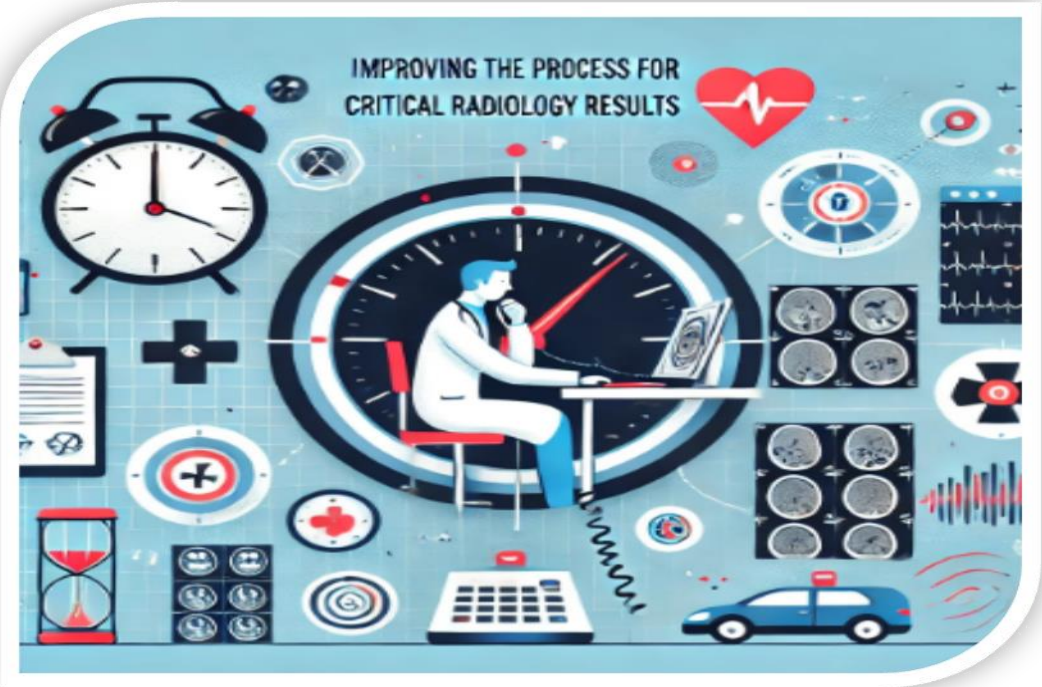
Chapter 7: Improving the Process for Timely Reporting of Critical Radiology Results



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Summary

Timely communication of critical radiology results is vital in oncology, where delays can severely impact patient outcomes and care quality. This initiative aimed to enhance the reporting process for critical radiology results at the Sultan Qaboos Comprehensive Cancer Care and Research Centre in Muscat, Oman. Utilizing the PDCA (Plan, Do, Check, Act) framework, the project identified inefficiencies, implemented improvements, and measured outcomes systematically. Results showed a significant improvement in compliance with reporting critical radiology results, increasing from 67% in June 2023 to over 90% consistently by April and May 2024. The sustained improvements highlight the effectiveness of the structured PDCA approach in enhancing critical result communication, ultimately improving patient care and hospital efficiency.

Key Points

- Timely communication of critical radiology results is crucial in oncology, where any delays can significantly affect patient outcomes and care quality.
- The initiative at Sultan Qaboos Comprehensive Cancer Care and Research Centre aimed to improve the reporting process for critical radiology results using the PDCA (Plan, Do, Check, Act) framework.
- The PDCA framework helped identify inefficiencies, implement targeted improvements, and systematically measure outcomes, leading to more effective communication practices.
- The project achieved a significant increase in compliance rates for reporting critical radiology results, improving from 67% in June 2023 to consistently over 90% by April and May 2024.

Project Charter

Project Charter	Details
Project Title	Improving Timely Reporting of Critical Radiology Results at Sultan Qaboos Comprehensive Cancer Care and Research Centre (SQCCCRC)
Project Sponsor	Sultan Qaboos Comprehensive Cancer Care and Research Centre (SQCCCRC), Muscat, Oman
Project Start Date	June 2023
Project End Date	May 2024
Project Purpose	To enhance the timely reporting of critical radiology results by achieving a consistent compliance rate of 90% or higher, thereby reducing delays, improving patient outcomes, and aligning with international best practices.
Problem Statement	The compliance rate for reporting critical radiology results at SQCCCRC was significantly below the target of 90%, standing at 67% in June 2023. This low compliance rate indicated inefficiencies in the reporting process, necessitating a structured approach to identify and address the underlying causes. Improving this process is vital to enhance patient safety, ensure rapid clinical decision-making, and meet regulatory requirements.
Project Goals and Objectives	1. Achieve and sustain a compliance rate of 90% or higher for reporting critical radiology results by May 2024. 2. Implement system modifications to the Radiology Information System (RIS) to support timely reporting. 3. Conduct comprehensive staff training to ensure adherence to updated reporting protocols. 4. Revise policies to define and prioritize critical radiology results.
Scope	Includes all processes related to the timely reporting of critical radiology results in the oncology department, focusing on system modifications, staff training, and policy updates. Excludes non-oncology radiology results and other unrelated processes.
Key Stakeholders	Radiologists, Nurses, Radiology Technicians, Quality Assurance Team, IT Specialists, Hospital Management
Resources Required	Budget for RIS modifications, staff training sessions, development of new policies; personnel from relevant departments; and data analysis tools.
Risks and Assumptions	**Risks:** Potential resistance to new protocols, technical challenges with RIS modifications, and limited resources for training. **Assumptions:** Full support from management, availability of necessary resources, and engagement of all stakeholders in the process.
Success Criteria	Achieving and sustaining the target compliance rate of 90% or higher, confirmed by data analysis; demonstrating improved patient safety and timely reporting through continuous monitoring and feedback mechanisms.

Introduction

In healthcare, particularly in critical care and oncology settings, timely communication of radiology results is essential for effective clinical management and patient safety. Delays in the reporting of critical findings can result in significant clinical repercussions, including delayed treatment, deterioration in patient condition, and potentially avoidable mortality (Anthony et al., 2011). In oncology, where rapid decision-making is crucial due to the aggressive nature of many cancers, any delay in relaying radiology results can severely compromise patient care. This is particularly true for conditions requiring immediate intervention, such as detecting metastatic disease or confirming complications that need urgent attention (Castillo et al., 2021).

The importance of efficient radiology reporting is underscored by the role that radiologists and imaging departments play in the diagnostic and treatment pathways. Radiology departments provide critical data that guide clinical decisions, from initial diagnosis to treatment planning and monitoring (Choksi et al., 2006). For radiology results to effectively contribute to patient management, they must be promptly and accurately communicated to the treating clinicians. However, various factors, such as workflow inefficiencies, inadequate use of information technology, and lack of standardized protocols, often hinder timely communication (Anthony et al., 2011).

Current standards and guidelines emphasize the need for structured processes to ensure critical results are reported without delay. The American College of Radiology (ACR) and the Joint Commission recommend clear protocols for the communication of critical findings, including defined timelines and mechanisms for reporting (Anthony et al., 2011). In many healthcare

settings, including SQCCCRC, efforts are ongoing to align with these guidelines by improving the speed and reliability of result communication. Studies have shown that implementing structured quality improvement methods, such as the PDCA cycle, can effectively address delays and enhance communication pathways (Choksi et al., 2006).

This initiative at the Sultan Qaboos Comprehensive Cancer Care and Research Centre aimed to improve the timely reporting of critical radiology results using the PDCA framework. The project focused on identifying existing inefficiencies in the reporting process, implementing targeted interventions, and monitoring compliance to ensure sustained improvements. By enhancing the reporting system, the initiative sought to prevent delays in critical decision-making, ultimately improving patient outcomes and overall hospital efficiency (Castillo et al., 2021).

The results of this initiative provide evidence that systematic approaches to quality improvement can lead to substantial gains in compliance rates for reporting critical results. The sustained improvements achieved through the PDCA cycle demonstrate the potential for these methods to be applied across different departments and settings to enhance communication and patient safety (Anthony et al., 2011).

Problem Statement

The timely reporting of critical radiology results is crucial in oncology due to the urgency associated with cancer care. Delays in communicating these results can lead to delayed treatment, increased patient anxiety, and potentially worse clinical outcomes. At the Sultan Qaboos Comprehensive Cancer Care and Research Centre, the compliance rate for reporting critical radiology results was significantly below the target of 90%, standing at 67% in June 2023. This low compliance rate

indicated inefficiencies in the reporting process, which necessitated a structured approach to identify and address the underlying causes.

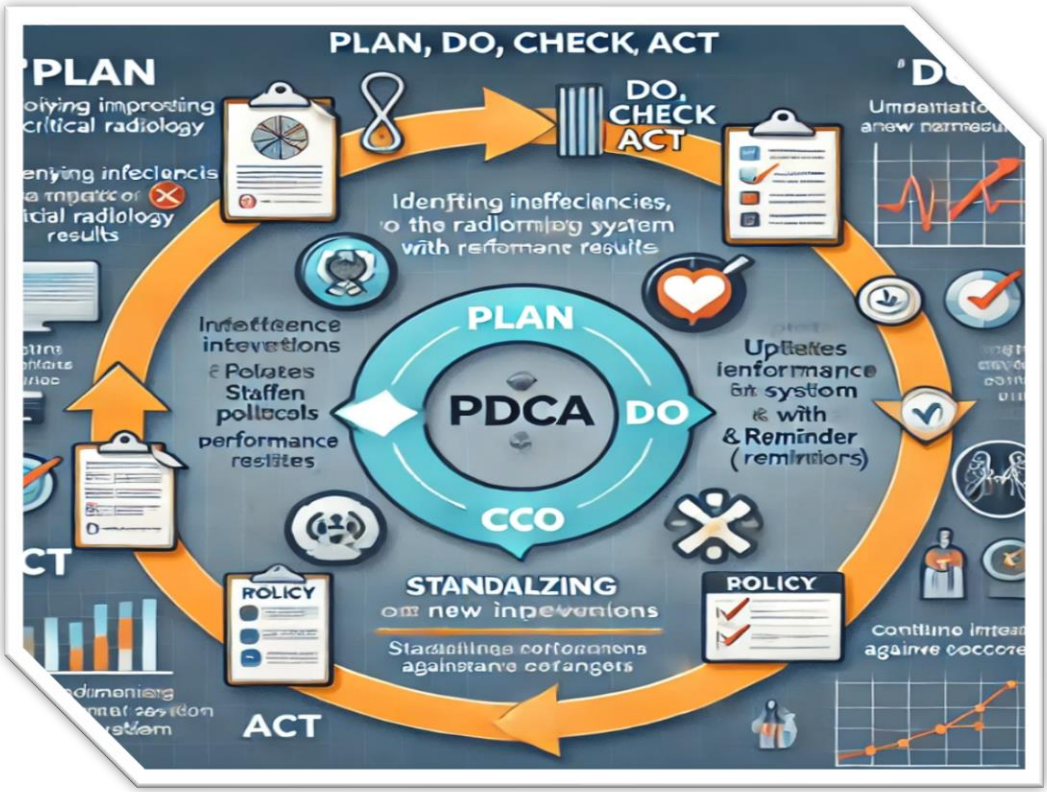
Improving this process was vital to enhance patient safety, ensure rapid clinical decision-making, and align with international best practices and regulatory requirements. The initiative aimed to achieve a consistent compliance rate of 90% or higher, thereby reducing delays in critical result communication and improving the quality of care provided to oncology patients.

Methods

Setting and Design

The project was conducted at the Sultan Qaboos Comprehensive Cancer Care and Research Centre in Muscat, Oman, using a one-group pretest-posttest quasi-experimental design. This approach involved evaluating the process of reporting critical radiology results before and after implementing targeted interventions, without a control group, to observe direct changes attributed to the project initiatives.

PDCA Approach:



The initiative followed the PDCA (Plan, Do, Check, Act) methodology to drive continuous quality improvement in the reporting process:

1. **Plan:**

   This phase involved identifying inefficiencies in the reporting process for critical radiology results, setting clear objectives, defining performance metrics, and outlining necessary changes. Issues identified included delays in result reporting, lack of standardized protocols, and inadequate staff training.

2. **Do:**

   During this phase, the planned interventions were implemented. This included staff training sessions to ensure thorough understanding and compliance with new protocols, updates to the Radiology Information System (RIS) to include reminder features, and policy revisions to clearly define critical results and their prioritization.

3. **Check:**

   The effectiveness of the interventions was evaluated by collecting data on compliance rates and analyzing the results against set objectives. Monthly compliance rates were monitored to assess the impact of the interventions on the timely reporting of critical radiology results.

4. **Act:**

   Based on the evaluation, adjustments were made to further refine the interventions. This phase focused on sustaining improvements, ensuring new processes became standard practice, and guiding future PDCA cycles for continuous enhancement of the reporting system.

Interventions:

- **System Modification:** Enhancements were made to the radiology information system-RIS, including reminder features to prompt timely reporting and document the process.
- **Staff Education and Training:** Multiple training sessions were conducted to ensure all staff members understood the new processes and their importance.

- **Policy Update:** The policy was revised to define and identify critical radiology results, ensuring consistent recognition and prioritization.

Results

The project demonstrated significant improvements in compliance with the reporting of critical radiology results between June 2023 and May 2024:

- **Initial Compliance Rate:** 67% in June 2023, which was below the target of 90%.
- **Improvements Observed:** Compliance rates increased to 86% in July and 83% in August 2023. However, a decline was noted in September and October 2023, with rates dropping to 63% and 20%, respectively.
- **Sustained Improvement:** From November 2023, the project achieved a 100% compliance rate, maintaining this level through February 2024. A temporary dip to 67% occurred in March 2024, but the rate quickly rebounded to 100% in April and May 2024.
- **Overall Trend:** The data indicated a positive trend towards achieving and sustaining the target compliance rate of 90%, culminating in perfect compliance in the final months of the period.

Table 1: ***Compliance Rates for Reporting Critical Radiology Results (June 2023 - May 2024)***

Month	Compliance Rate (%)
June 2023	67
July 2023	86
August 2023	83
September 2023	63
October 2023	60
November 2023	100
December 2023	100
January 2024	100
February 2024	100
March 2024	67
April 2024	100
May 2024	100

Discussion

The implementation of the PDCA framework led to substantial improvements in the timely reporting of critical radiology results at SQCCCRC. The initiative effectively addressed the inefficiencies in the reporting process, leading to a sustained increase in compliance rates from 67% to 100% over the project period. This outcome is consistent with findings from similar quality improvement projects that used structured methodologies to enhance communication pathways in healthcare settings (Anthony et al., 2011).

One of the key factors contributing to the success of this initiative was the modification of the Radiology Information System (RIS) to include reminder features. These modifications helped standardize the reporting process, ensuring that critical results were consistently flagged and communicated in a timely manner. Studies have shown that integrating such technological tools can significantly reduce errors and improve the speed of information transfer, contributing to better patient outcomes (Choksi et al., 2006).

The role of staff education and training was also crucial. By ensuring that all staff members were familiar with the updated policies and procedures, the initiative minimized misunderstandings and delays. Effective staff training is known to enhance compliance with new protocols and foster a culture of continuous improvement within healthcare organizations (Castillo et al., 2021). The positive trend in compliance rates following the training sessions underscores the importance of continuous professional development in achieving sustained quality improvements.

Additionally, revising the policy to clearly define critical radiology results and prioritize their reporting was instrumental in standardizing practices. Clear guidelines help reduce variability in interpretation and ensure that all staff members understand the importance of timely communication (Anthony et al., 2011). The consistent achievement of compliance rates at or near 100% after implementing these changes reflects the effectiveness of clear, well-defined policies in improving critical processes.

The temporary decline in compliance observed in March 2024 highlights the need for ongoing monitoring and adjustment of interventions. Even with significant improvements, continuous evaluation and feedback mechanisms are essential to maintaining gains and responding to new

challenges (Choksi et al., 2006). This iterative process ensures that quality improvements are sustained over time and that the organization remains responsive to changing circumstances.

Conclusion

The implementation of targeted interventions, including system modifications, staff training, and policy updates, significantly improved the timely reporting of critical radiology results at SQCCCRC. The sustained increase in compliance rates indicates that these changes effectively addressed previous inefficiencies, establishing a reliable reporting process. This initiative highlights the importance of continuous quality improvement in healthcare, demonstrating that structured methodologies like PDCA can lead to meaningful and lasting improvements in critical areas of patient care. Continued adherence to these processes will be essential for maintaining high standards in critical radiology result reporting.

References

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