

# Chapter 14

## Advancing Healthcare: Economic Implications of Immediate MRI in Suspected Scaphoid Fractures – A Comprehensive Exploration

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### **ABSTRACT**

*This study explores the economic implications of immediate magnetic resonance imaging (MRI) in treating suspected scaphoid fractures. Historically, conventional methods have been used, but recent advancements have introduced MRI into acute care settings, challenging established diagnostic paradigms. The study aims to close the empirical-economic evidence gap on the prompt use of MRI in cases with suspected scaphoid fractures, providing insight into cost-effectiveness, resource use, and overall healthcare efficiency. The literature study illuminates the evolution of diagnostic approaches for scaphoid fractures, highlighting the limitations of conventional methods. The findings underscore the pivotal role of MRI in scaphoid fracture management, demonstrating cost-effectiveness and enhanced healthcare outcomes, challenging traditional diagnostic pathways.*

### **1. INTRODUCTION**

Traditional diagnostic procedures, especially X-rays, have limitations that have long hampered the identification and treatment of suspected scaphoid fractures (Simon et al., 2020). Misdiagnosis, prolonged treatment, and consequences due to these shortcomings place heavy demands on healthcare budgets and delivery systems (Filip et al., 2022). Since scaphoid fractures are prevalent, particularly after trauma or falls, it is crucial to get a correct diagnosis as soon as possible to minimize long-term problems and lessen the burden on healthcare budgets (Mallee et al., 2020). In the realm of modern healthcare, the integration of cutting-edge technologies has reshaped diagnostic paradigms, challenging conventional

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methods and ushering in an era of unprecedented precision and efficiency. Magnetic resonance imaging (MRI) is one such development that has revolutionised medical practise, especially with regards to the detection of scaphoid fractures (Chunara et al., 2019). Although traditional methods have formed the backbone of fracture diagnoses for quite some time, advances in MRI technology have raised the bar, particularly in emergencies. This chapter delves into the transformative power of immediate MRI in suspected scaphoid fractures, exploring its economic implications from the perspective of healthcare payers. By delving into the historical evolution of diagnostic methods for scaphoid fractures, scrutinizing the limitations of conventional approaches, and highlighting the pivotal role of MRI in acute care, this study bridges the empirical-economic evidence gap. The purpose is to present a complete knowledge of the financial ramifications of fast MRI use, revealing problems of cost-effectiveness, resource utilization, and healthcare efficiency. The knowledge and information yielded by the research on the economic implications of immediate MRI in suspected scaphoid fractures can significantly benefit several key stakeholders, leading to positive changes and improvements in the present situation within the healthcare system and the broader medical field.

Here are some ways in which various people and organizations may put this new information to use: Orthopaedic surgeons, emergency room doctors, and radiologists in particular, might use the results in their daily work. They may make better judgments about diagnosing and treating suspected scaphoid fractures if they have a thorough understanding of the benefits of immediate MRI, including its lower cost and increased diagnostic accuracy. Better patient outcomes, fewer incorrect diagnoses, and more efficient treatment plans are all possible thanks to this insight. This research will aid in more efficient resource allocation by hospitals and their management and policymakers. They may invest in cutting-edge imaging technology, which guarantees patients get prompt and accurate diagnosis while reaping the financial advantages of instant MRI. These findings can help policymakers advocate for MRI scans whenever a scaphoid fracture is suspected, raising the bar for patient treatment. Statistics from this research on the cost-effectiveness of giving emergency MRIs for suspected scaphoid fractures may be utilized by healthcare providers and payers to make decisions about whether or not to cover the procedure. Understanding the long-term advantages of correct and early diagnoses may lead to the inclusion of MRI treatments in insurance coverage, thereby decreasing total healthcare expenditures by eliminating issues associated with misdiagnosis. Researchers and academics in radiology, orthopedics, and health economics may expand upon the study's results. Patient satisfaction, long-term health outcomes, and quality of life are all areas where further study is required, including how immediate MRI affects these factors. This continuing study has the potential to enhance current diagnostic procedures and healthcare standards. This information may help patients and their supporters understand why it is crucial to have an MRI right away when a scaphoid fracture is suspected. Patients who are well-informed may partner with their doctors in making treatment decisions, such as promoting MRI usage when it is warranted. Patients and their families will benefit from speedier and more accurate diagnoses due to this empowerment, as will the healthcare system. This research helps advance medicine and healthcare by shedding light on how to increase diagnostic precision, standardize care delivery, and make better use of scarce resources. The research lays the path for an improved, patient-centered, and cost-effective method of identifying and treating suspected scaphoid fractures by equipping multiple stakeholders with this important data. The study's findings on the financial benefits of doing an MRI on patients with suspected scaphoid fractures right away may contribute to numerous practice areas and applied research.

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