



# The Importance of Providing Clinical History for Radiology Studies in the Urgent Care Setting

**Urgent Message:** Providing clinical history for radiology orders ensures that the correct exam is performed, an accurate ICD-10 code is assigned for billing, and radiologists are able to provide high-quality reports that contribute to timely and appropriate patient care in the urgent care setting.

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## Abstract

In urgent care, providing a concise clinical history for radiology exams is essential, as it may be the only source of clinical information available to the radiologist and can increase their diagnostic accuracy of interpretation. Furthermore, a complete clinical history enables the generation of an accurate International Classification of Diseases, Tenth Revision (ICD-10) code, which is crucial for successful billing. For these reasons, providing a comprehensive clinical history can ultimately improve patient care.

## Introduction

Radiology plays a pivotal role in the diagnosis and management of various conditions encountered in the urgent care setting. Between 5-11% of patients seen in urgent care have imaging performed.<sup>1,2</sup> Most urgent care centers have most or all of their radiology studies interpreted by a radiologist.<sup>3</sup> While these studies can provide valuable information, the radiologist's interpretation greatly relies upon the clinical history pro-



vided by the urgent care clinician.

Radiology technologists are healthcare professionals trained to operate different imaging modalities such as radiography (x-ray), ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) to aid in the diagnosis of pathology. In a study of pediatric urgent care centers, centers staffed with radiology technologists produced higher quality radiography exams compared to those that were not staffed with radiology technologists.<sup>4</sup>

Clinical history provides clinical context for radiology

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technologists to ensure that exams are appropriately triaged and that the correct study to answer the clinical question is performed.<sup>5,6</sup> Without this information, the incorrect body part or side may be imaged, or a study may be performed that does not answer the clinical question when another exam or even modality may be more appropriate. In a busy urgent care center, multiple imaging studies could be ordered nearly simultaneously. When provided with appropriate clinical indications, technologists can use this information to triage the order in which exams get performed.<sup>7</sup> For example, a patient in acute respiratory distress with low O<sub>2</sub> saturation would require a more urgent chest radiograph compared to the patient with exertional dyspnea for 2 weeks, but this determination could not be made if the indication provided for both was only “shortness of breath.”

*“Accurate clinical history can impact the interpretation of radiology studies by providing essential information to form a differential diagnosis or localize disease.”*

Once the exam has been performed, accurate clinical history allows radiologists to tailor their interpretation to the specific clinical question at hand, leading to more clinically relevant reports. Several meta-analyses have shown that clinical history improves diagnostic accuracy. However, some studies have indicated a potential increase in false positives when radiologic findings are consistent with the provided symptoms. Nonetheless, these findings should not overshadow the overall value of clinical history in improving diagnostic accuracy.<sup>8-10</sup>

In their recent meta-analysis, Yapp et al. found that clinical history improved diagnostic performance in all metrics in the majority of the analyzed studies, and only a single study demonstrated decreased diagnostic performance.<sup>10</sup> Clinical history does have the ability to adversely affect specificity, especially when it fosters an elevated anticipation of abnormality. Radiologists might exhibit lower confidence in categorizing a study as normal, a phenomenon that could be ascribed to cognitive bias theory.<sup>11</sup> In a study of 226 foot radiographs with 7

readers, Sarwar et al. found accuracy increased from 79% to 82%, sensitivity increased from 67% to 73%, degree of confidence increased from 8.1 to 8.4 (1-10 point scale), while specificity minimally increased from 93% to 94% for fracture detection when a graphic was used to indicate the site of pain, which serves as a visual form of clinical history.<sup>12</sup> Leslie et al. compared the effect of 3 radiologists interpreting 50 CTs with and without clinical history. Each CT was double read for a total of 100 reports. They found that 19% (19/100) of reports were changed after clinical history was provided with 11 major changes and 8 minor changes. However, the accuracy of the provided information is essential. When the provided clinical history was accurate, 83% (10/12) of those reports became more accurate and 17% (2/12) became less accurate. When the provided clinical history was inaccurate, 100% (3/3) of those changes resulted in less accurate reports.<sup>13</sup>

In the urgent care setting, where patients frequently present with acute symptoms and may have limited medical records available, providing thorough clinical history becomes even more crucial as it may be the only source of clinical information for the radiologist. Jo et al. found that 24% (47/199) of major discrepancies of after-hours radiology resident and fellow preliminary reports could have been avoided if better clinical history was provided.<sup>14</sup> Accurate clinical history can impact the interpretation of radiology studies by providing essential information to form a differential diagnosis or localize disease.<sup>15</sup> For instance, in an extremity radiograph of a pediatric patient with a suspected fracture, knowing the time and mechanism of injury and location of pain can allow the radiologist to more accurately differentiate between a normal variant and fracture.

### **Billing Documentation**

Accurate coding and billing for radiology studies rely on proper documentation of clinical information, specifically the clinical history provided by the urgent care clinician in the order. Since the conversion to International Classification of Diseases, Tenth Revision (ICD-10) in the United States, clinical history is even more important to generate an accurate ICD-10 code, which is required for billing. ICD-10 codes are typically generated based on findings made within the radiology report, but if a study is interpreted as normal or negative, codes that derive from the indication for the exam and patient’s symptoms are used instead.<sup>16</sup> As a result, incorrect ICD-10 codes may be assigned if clinical history is incomplete or inaccurate, leading to potential billing errors and reimbursement issues. Furthermore, when

**Table 1. Aspects of a Complete Clinical History Utilizing “What-When-Where”**

Element	Explanation	Example
What	Mechanism of injury and/or specific symptoms	Fall down stairs
When	How long ago injury happened and/or duration of symptoms	2 days ago
Where	Relevant location or injury and/or body part affected	Right shoulder pain

ordering an exam to “rule out” a condition, the signs and symptoms that prompted the order must also be included. For example, “rule out fracture” is not sufficient to produce an ICD-10 code, but “sharp lateral right ankle pain for 2 weeks, rule out fracture” is.

The provided clinical history does not need to be lengthy in order to be useful. The common generic indication of “pain” provides minimal to no actionable information and cannot generate a specific ICD-10 code. A useful mnemonic for what type of information to include in radiology orders is “what-when-where” to encompass what happened, when it happened, and where or to what body part it happened (Table 1).

An example of a complete history utilizing this method for a pediatric patient would be: “fell from monkey bars 2 weeks ago; pain along lateral wrist.”<sup>17</sup> This history would clue the radiologist that if a fracture is found, it should be showing signs of healing given that the injury should have had sufficient time to start to heal.<sup>18</sup>

Since radiologists in urgent care settings are rarely ever physically located at the same facility as the referring urgent care providers, they seldom have the opportunity to directly interact with the patients to obtain additional clinical information themselves. However, radiology technologists by necessity are physically present and can be utilized to obtain additional information directly from patients when the provided history is incomplete as this falls within their scope of practice.<sup>6</sup> Some institutions have implemented systems that provide this information directly to the radiologist.<sup>5,17,16</sup> However, without such mechanisms in place, the information must be provided by the urgent care clinician in the clinical information included with the study order.

## Conclusion

Providing succinct but comprehensive clinical history is crucial for appropriate acquisition and meaningful interpretation of radiology studies in the urgent care setting. Clinical history provides context for radiology technologists to triage and perform the correct and appropriate exam to answer the clinical question; it also allows radiologists to interpret imaging findings with higher accuracy and for coders to accurately generate ICD-10 codes for billing. ■

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