



IBM Watson Imaging Clinical Review

AI-enabled review tool
for imaging data







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The radiologists' challenge: Do more with less

Imaging professionals across the UK and Ireland are stretched thin. With vacancy rates among consultant radiologists at 9% in 2018 for the UK¹ and various challenges to recruitment for these positions, radiology teams are under tremendous pressure to read an ever-increasing number of images with fewer resources.

This pressure is causing burnout for radiologists across the UK, with 1 in 3 consultant clinical radiologists reporting work-related stress that negatively affected their work in 2018.¹

This lack of resources forces organisations to make tough choices. Often, self-audits and secondary reads are reserved for the most urgent and complex cases. Healthcare systems are decreasing the priority of in-depth quality reviews and turning to outsourcing as a temporary solution. In 2018, radiology departments spent approximately £165 million on outsourcing to teleradiology companies, almost triple the amount spent in 2014.¹

Unfortunately, giving imaging professionals a lot to do and little time to do it sets the stage for errors. Healthcare providers are constantly striving to improve the care they provide patients, but humans make mistakes — and the likelihood of errors only grows when people are under pressure. Research indicates that the rates for errors and discrepancies in imaging studies are still uncomfortably high.²

As radiology departments face these challenges, it's worth asking....

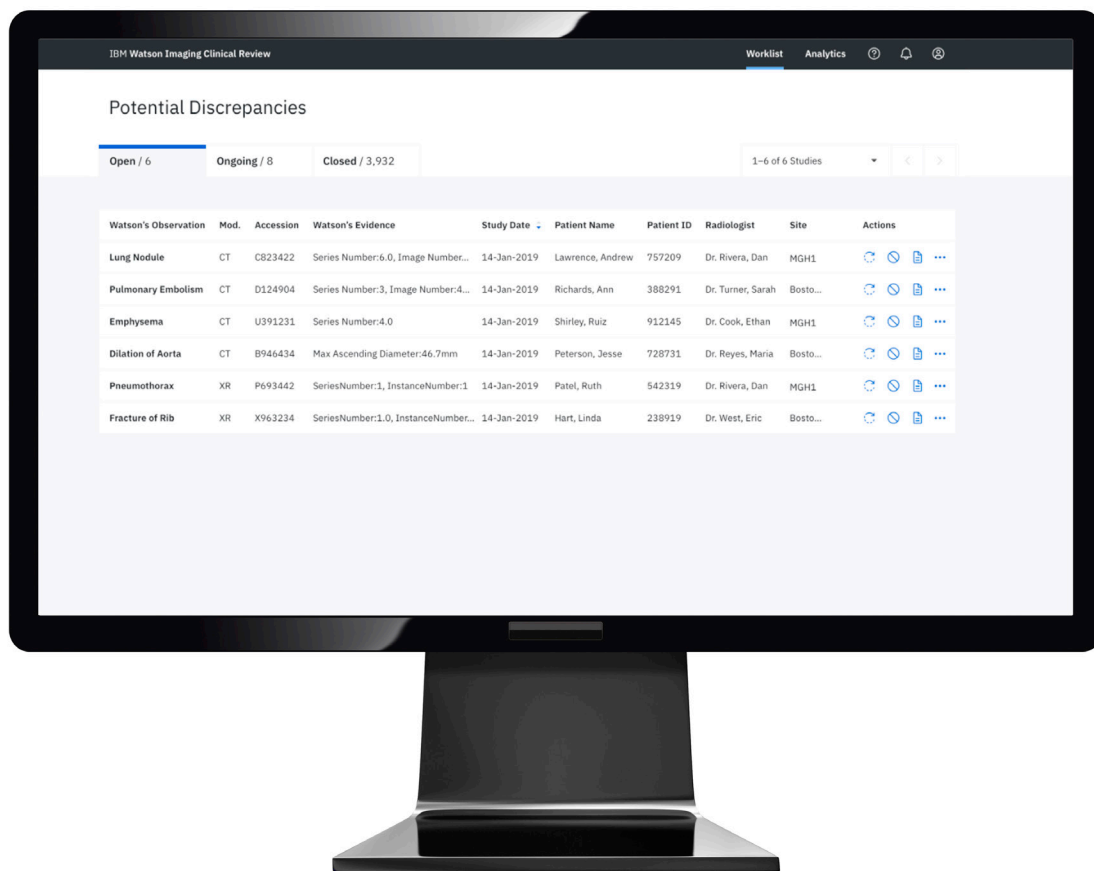
- What if the right solution could help your organisation drive comprehensive reporting?
- What if the right tool could help your clinical team make more accurate and informed care decisions?
- What if your organisation could use analytics to help improve department quality?

¹ Clinical Radiology UK Workforce census 2018 report

² Error and discrepancy in radiology: inevitable or avoidable? SpringerLink.



Healthcare providers are constantly striving to improve the care they provide patients, but humans make mistakes — and the likelihood of errors only grows when people are under stress.



Clinical Review offers a way to catch potential missed findings

IBM Watson Imaging Clinical Review* is a solution that uniquely combines IBM's computer vision and text analytics capabilities to bring the power of AI to healthcare. It analyses medical imaging studies and their associated reports to identify potential missed findings, facilitating more comprehensive reports, which can lead to higher quality and better care for the patient.

Clinical Review can help your organisation:

- Identify potential missed findings and provide rapid feedback to the radiology team, driving more comprehensive reports
- Enable more accurate and informed care decisions through comprehensive reporting.
- Improve overall radiology department quality by providing consistency and targeted analytics

Benefits of Clinical Review

Clinical Review can empower your organisation to:



Drive comprehensive reporting

Clinical Review identifies studies with potential missed findings from chest/abdomen CT and chest x-ray images and provides rapid feedback to the radiology team. A discrepancy worklist is generated, from which a user can review the finding. If they think the discrepancy requires review, they can send it to the relevant radiologist, who can create a report addendum if needed. The additional findings contribute to a more comprehensive report.



Enable better patient care

Clinical Review can help improve communication to the clinical team by enabling your organisation to produce more comprehensive reports. A more complete picture of the patient can lead to a more complete diagnosis, which in turn enables more informed treatment paths sooner rather than later.



Improve department quality

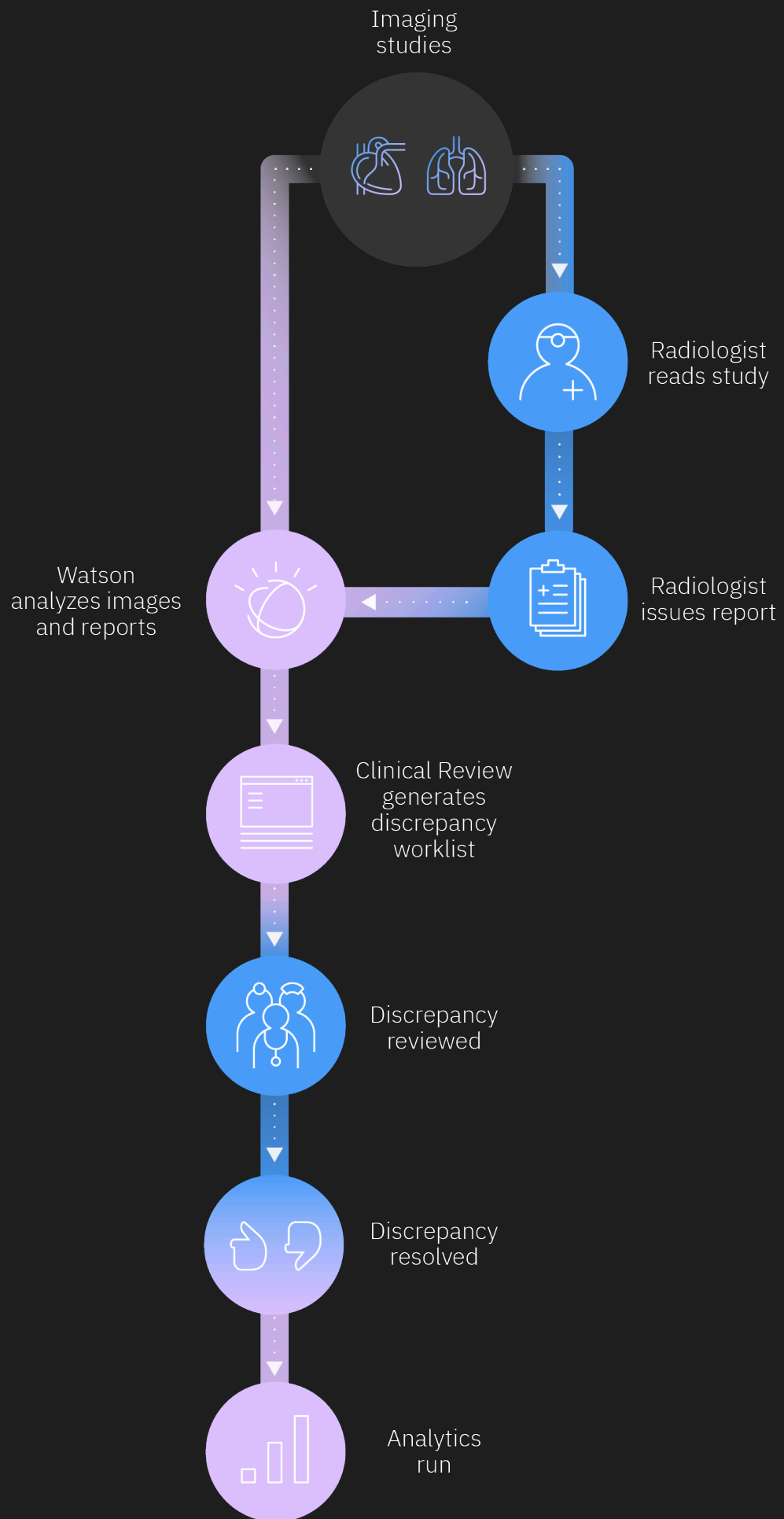
With a persistent, automated data-gathering process such as Clinical Review in place, healthcare organisations can also improve quality through analytics. Clinical Review can identify trends and areas of focus, which can guide focused education and training, driving continual improvement.

How Clinical Review works

Clinical Review is a retrospective imaging AI tool that seeks to identify potential missed findings for further radiologist review.

This is the workflow for Clinical Review:

- Imaging studies are acquired, sent to the radiology PACS and then are read following the standard diagnostic workflow, resulting in a completed radiology report.
- At the same time, imaging studies are sent to Clinical Review. Clinical Review analyses chest/abdomen CT and chest x-ray studies, searching for visual evidence of target findings. Once the radiology report is finalised, it is also sent to Clinical Review, which scans the report for mentions of these same findings.
- When a target finding is identified in the study and is not mentioned as a positive diagnosis in the report, Clinical Review identifies it as a discrepancy/potential missed finding, alerts the user, and adds the study to the discrepancy worklist.
- The Clinical Review user can then route that study to the appropriate radiologist for review. If the missed finding is verified, the radiologist can create a report addendum and the referring physician can be notified. If the radiologist does not agree with the identified finding, rationale is provided and the item is closed.
- Finally, Clinical Review compiles and provides analytics based on all clinical findings, broken down by discrepancy type or month. These analytics are provided to identify trends and/or facilitate targeted education and training programs.



Clinical Review targets high value findings

Clinical Review focuses on diagnoses that have significant impact on the patient, high likelihood of being missed, high prevalence and/or high likelihood of discovery by AI.

For chest/abdomen CT studies:

- Aortic dilatation
- Emphysema
- Focal liver lesions
- Lung nodules
- Pulmonary embolism

For chest x-ray studies:

- Pneumothorax
- Rib fracture

Example of a Clinical Review missed finding

Below is an example of a missed finding detected by Clinical Review from a chest x-ray and its associated radiology report. There is a pneumothorax highlighted in the image enlargement, but no mention of it in the final radiology report. Clinical Review detected this potentially life-threatening discrepancy.

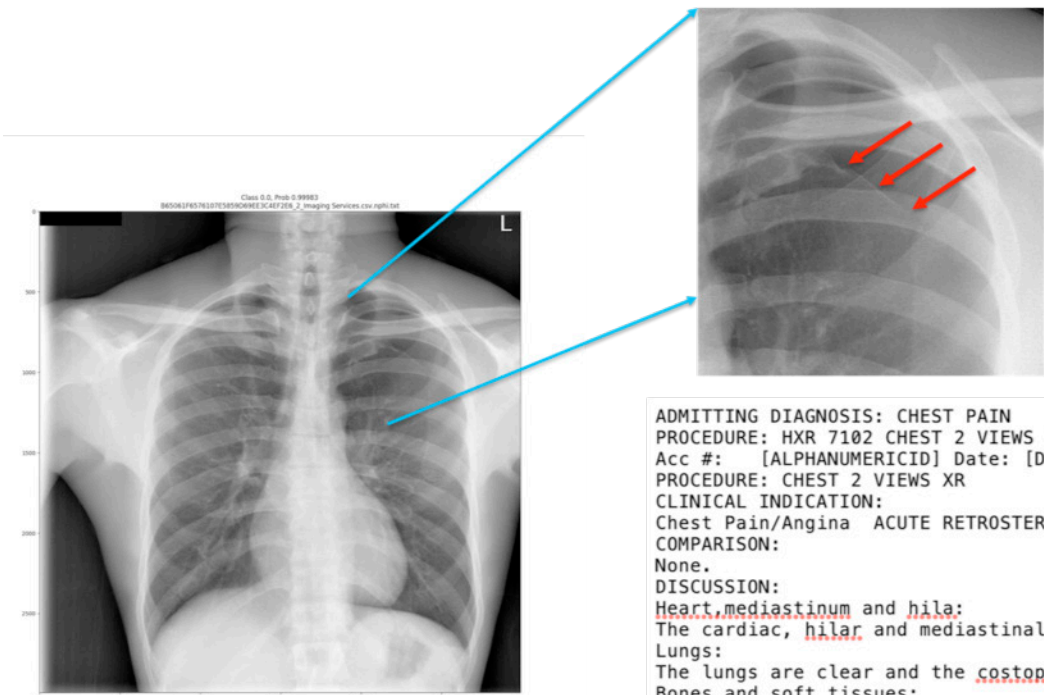


Image 1: This is an example illustration. Clinical Review does not outline or point to the potential finding in the image.

ADMITTING DIAGNOSIS: CHEST PAIN
PROCEDURE: HXR 7102 CHEST 2 VIEWS XR
Acc #: [ALPHANUMERICID] Date: [DATE] CPT: [ALPHANUMERICID]
PROCEDURE: CHEST 2 VIEWS XR
CLINICAL INDICATION:
Chest Pain/Angina ACUTE RETROSTERNAL CHEST PAIN. INITIAL ENCOUNTER.
COMPARISON:
None.
DISCUSSION:
Heart, mediastinum and hila:
The cardiac, hilar and mediastinal contours are within normal limits.
Lungs:
The lungs are clear and the costophrenic recesses are sharp.
Bones and soft tissues:
The skeletal structures are unremarkable.
IMPRESSION:
No active cardiopulmonary disease.



About Watson Health Imaging

Watson Health Imaging, a segment of IBM Watson Health, is a leading provider of innovative artificial intelligence, enterprise imaging and interoperability solutions that seek to advance healthcare. Its Merge branded enterprise imaging solutions facilitate the management, sharing and storage of billions of patient medical images.

With solutions that have been used by providers for more than 25 years, Watson Health Imaging is helping to reduce costs, improve efficiencies and enhance the quality of healthcare worldwide.

To speak with someone from the provider solutions team, visit [our site](#).

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