

Preliminary Clinical Evaluation by emergency department radiographers: Results from a pilot study benchmarking participation and diagnostic accuracy

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Introduction

- Jersey General Hospital is working towards implementation of a radiographer Preliminary Clinical Evaluation (PCE) system in line with *new* professional guidance from the Society of Radiographers¹.
- Radiographer PCE is an informed comment on imaging appearances, intended to assist the referrer in interim between image acquisition and a definitive report¹.
- The aim is to utilise the expertise and experience of radiographers in identifying normal and abnormal image findings on trauma radiographs to maximise diagnostic accuracy^{1,2,3}.

Pilot Project Objectives:

- Assess radiographer PCE participation.
- Compare PCE accuracy to a performance standard.

Method

Study Design & Setting: Prospective diagnostic performance study comparing PCE accuracy to a fixed standard.

Standard: 92% accuracy, derived from prior research^{2,3,4}.

Sample size calculation: 354 PCEs were required to adequately power the study. The calculation was based on published formulae⁵.

Ethics:

- Classified as a service evaluation study thus full ethical approval not required, in in accordance with local guidance.
- Participation was voluntary
- PCE comments were audit-only and not shared with referring clinicians during the pilot project; routine verbal communication systems remained active.

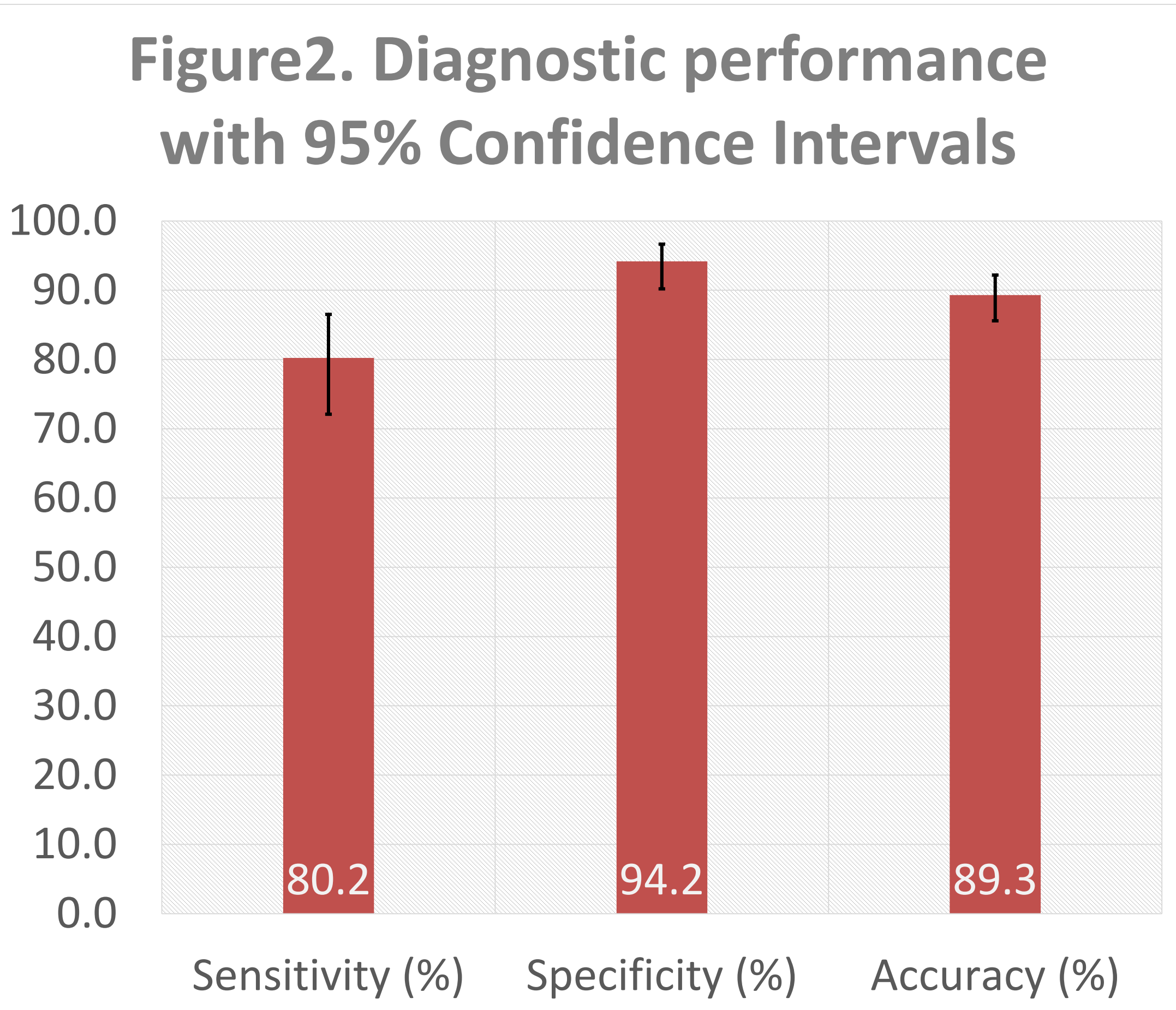
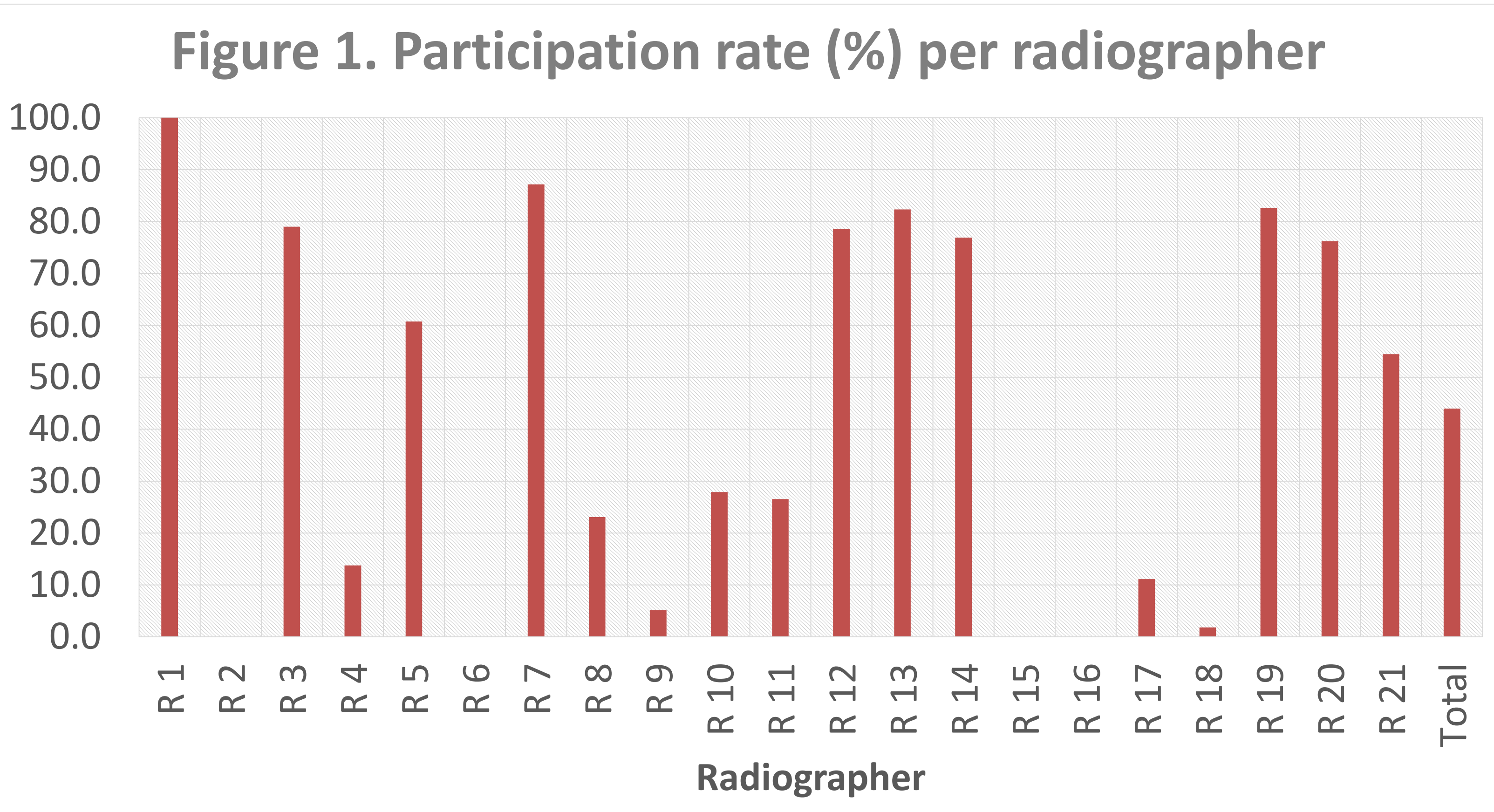
Method

Procedure:

- Radiographers (n=21) provided PCE comments during ED shifts, including out-of-hours.
- PCEs were entered following image acquisition into the RIS system.

Data Scoring:

- PCEs extracted from RIS and scored using file report as reference standard.
- Each PCE classified as a true positive/negative (TP/TN) or false positive/negative (FP/FN).
- Sensitivity, specificity and accuracy were calculated with 95% confidence intervals.



Results

Participation: 937 ED referrals were eligible for inclusion. 412 cases had a PCE comment recorded on RIS (44.0% participation rate).

Participation by Period: First half: 38.2% (177/463). Second half: 47.9% (227/474). Participation was significantly higher in the second half (z = -2.84; p = 0.0045).

Radiographer Participation: Ranged from 0% to 100%. Four radiographers provided no PCE comments during the audit period (see Fig. 1).

Diagnostic accuracy: 369 PCEs were eligible to compare against the reference standard report. Sensitivity: 80.2% (95% CI: 72.1–86.5). Specificity: 94.2% (95% CI: 90.2–96.7). Accuracy: 89.3% (95% CI: 85.6–92.2) (see Fig. 2).

Definitions: Sensitivity is the ability to correctly identify those with the pathology of interest. Specificity ability to correctly identify those without the pathology. Accuracy reflects the overall correctness.

Discussion and conclusion

In conclusion, while a recent pilot study reported a PCE participation rate of 66%, our study's overall rate was 44%, with a notable increase to 47.9% in the latter half, suggesting improved integration of PCE into routine practice. Additionally, our accuracy of 89.3% compares favourably against recommended benchmarks of 80% (minimal), 90% (optimal), and 95% (ideal) for interpreting musculoskeletal radiographs⁶, and results of recent literature^{2,3}.

References

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