Chest X-ray Interpretation By Radiographers: Diagnostic Accuracy And Influence On Diagnostic Reasoning

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Why Radiographer CXR Reporting

- Chest X-rays one of the most frequent performed radiology investigations
- Used in high and low resource settings
- Key component of many diagnostic pathways
Why Radiographer CXR Reporting

- Radiographers increasingly providing clinical reports
- Reporting radiographers must be comparable to consultant radiologists
- Aim: to compare reporting radiographer and consultant radiologist chest X-ray reports
Diagnostic Accuracy – Adult Chest X-rays

- 10 consultant radiologists & 11 reporting radiographers
- 106 adult chest x-rays with robust reference standard diagnosis
- Normal reporting conditions
- Free response methodology, analysed using jack-knife approach (JAFROC)
Diagnostic Accuracy – Figure of Merit

Observer Performance

Radiologist average performance 0.79 (0.76 – 0.81)

Radiographer average performance 0.83 (0.81 – 0.85)

t = 11.585; p < 0.001
Diagnostic Impact: Chest X-ray Reports

- Clinico-radiological diagnosis obtained for all cases (n=106)
- 2,178 radiologist and 2,213 radiographer reports
- 18 clinicians provided pre and post-CXR most likely and most serious diagnoses
## Diagnostic Impact – Correct Diagnoses

<table>
<thead>
<tr>
<th>Clinician Experience</th>
<th>Correct Most Likely and/or Most Serious Consultant Radiologist</th>
<th>Correct Most Likely and/or Most Serious Reporting Radiographer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incorrect</td>
<td>Correct</td>
</tr>
<tr>
<td>Consultant</td>
<td>337</td>
<td>564 (63%)</td>
</tr>
<tr>
<td>Registrar</td>
<td>217</td>
<td>382 (64%)</td>
</tr>
<tr>
<td>Junior Medical Staff</td>
<td>256</td>
<td>422 (62%)</td>
</tr>
<tr>
<td>Total</td>
<td>810</td>
<td>1368 (63%)</td>
</tr>
</tbody>
</table>

Chi-square; *p=0.179; **p=0.018; *** p=0.524; **** p=0.103
Diagnostic Confidence – Uncorrected

One way t test for non-inferiority $t=23.81$, $p<0.0001$
Conclusions

- Diagnostic accuracy of reporting radiographers equivalent to consultant radiologists
- No apparent difference in influence of CXR reports on clinicians’ diagnostic decision-making
- With appropriate postgraduate education, reporting radiographers are able to interpret chest x-rays at a level comparable to consultant radiologists
Questions?

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