Treatment of data in national clinical audits undertaken by the Clinical Radiology Audit Sub-Committee of the Royal College of Radiologists

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On behalf of the Clinical Radiology Audit Sub-Committee
Implementation of change

Patient care or outcomes before change

Percentage of events that comply with criterion

Patient care or outcomes after change

Percentage of events that comply with criterion

<table>
<thead>
<tr>
<th>Clinical issues should be addressed</th>
<th>Target</th>
<th>Observed %</th>
<th>95% CI for ‘true’ %</th>
<th>Standard met?</th>
<th>95% CI for ‘true’ % difference</th>
<th>% difference</th>
<th>Improvement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-audit</td>
<td>&gt;=95%</td>
<td>835/870=96%</td>
<td>95–97%</td>
<td>Yes</td>
<td>96–90=6%</td>
<td>4–8%</td>
<td>Yes</td>
</tr>
<tr>
<td>Audit</td>
<td>&gt;=95%</td>
<td>810/900=90%</td>
<td>88–92%</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Clinical issues should be addressed.

Observed % >=95%. Target 95% CI for ‘true’ % 95% CI for ‘true’ % difference % difference Improvement?
Percentage of reports in which all clinical issues were addressed
League tables

75th centile medical colleges to set standards at

Have been used by other UK Royal

Help individual departments to seek

Easy to compare performance

Easy to create

league tables
Statistical process control (SPC) charts

- **Common cause**
  - **Acceptable**
    - **No corrective action**
  - **Unacceptable**
    - **Re-design process**
    - **Learn from causes**
- **Special cause**
  - **Errors or failures**
    - **Remedy causes**

**Variation**
Type of study

Longitudinal
- Run chart

Cross-sectional
- Control chart
- Funnel plot

Continuous data
- Subgroup =1
  - ImR
- Subgroup <=10
  - Xbar & R
- Subgroup >10
  - Xbar & S

Discrete data

Classification
- Subgroup size constant
  - np-chart
- Subgroup size variable
  - p-chart

Count
- Subgroup size constant
  - c-chart
- Subgroup size variable
  - u-chart

National audit of sensitivity of double contrast barium enema in diagnosis of colo-rectal carcinoma

- **Standard**
  - Lesion demonstrated in at least 95% of cases

- **Special cause variation (errors/failures)**
  - 8/131 (6%) departments

- **Remedial actions**
  - Thorough colon cleansing regimens
  - Better adherence to technical protocols
  - Closer supervision of trainees
  - Repeats of films of poor quality
  - Adequate filming of all redundant areas of the colon
  - Double reading
  - Subspecialisation
National audit of provision of MRI services 2006/07

**Standard**
- Orthopaedic scans reported within 13 weeks in 50% of cases

**Special cause variation from (apparent good practice)**
- 18/60 (30%) departments

**Learning points**
- Better organisation
- Flexible practice
- Better utilisation of radiologists’ and radiographers’ time
- Investment in equipment and technology
- Alternative investigations
Conclusions

- League tables
  - Comparative rankings of performance
  - Ignore random variation

- SPC charts
  - Identify random variation
  - Guide to action

Royal College of Radiologists uses league tables and SPC charts
References