Implementing a modified WHO surgical safety checklist in Interventional Radiology

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Background to audit

- The World Health Organisation (WHO) introduced the surgical checklist in 2008 (and revised in 2009) to reduce errors, morbidity and mortality involved in surgical procedures.¹
- The RCR and National Patient Safety Agency (NPSA) introduced a pilot checklist based on the WHO template in 2009 for Interventional radiology (IR). The final modified checklist was introduced in 2010 (Fig. 1.a).²
- There is growing interest in the use of checklists within IR internationally. CIRSE introduced its checklist (Fig. 1.b.) for Europe in 2011 and the SIR recommended the use of checklists in their recent ‘Quality Improvement in Interventional Radiology’ publication (2012).³

What is the evidence for safety checklists?

- Safety checklists have been standard practice for decades in many other industries and professions (e.g. aviation and the military). Use of surgical safety checklists in the operating theatre has been much slower.
- There are numerous publications and studies discussing the benefits of checklists and team briefings in the surgical theatre and clinical hospital environments.⁴⁻⁵
- Large multicentre studies have shown significant reductions in surgical mortality and morbidity when the WHO surgical checklist has been used.⁶⁻⁷
- Koetser et al. were able to demonstrate an improvement in the completion of standard peri-procedural checks and reduction in IR procedure postponements.⁸
- Kearns et al. reported improved communication in inter-professional staff communication and a positive response from patients aware of the WHO surgical checklist (conducted during elective caesarean section, hence applicable to IR as most patients are conscious).⁹

Aims and standards

- IR can result in significant morbidity and complications. The setup is comparable to that of the surgical operating theatre, with similar safety requirements, procedural and team work based practice.
- The aim of this audit was to assess the uptake of the NPSA IR checklist within our unit, the barriers faced during its introduction and implement changes to achieve 100% compliance (we used the published NPSA checklist without local modifications).

Methodology

- Retrospective data collection of 476 procedures during 3 separate audit periods from PACS: Period A (06/06/2010 to 06/07/2010), Period B (15/12/2010 to 04/02/2011) and Period C (01/04/2011 to 30/06/2011).
- Data collected for each individual IR case included: whether a checklist had been undertaken and if so whether this was fully completed.
- In addition the correct procedural site marking check was assessed for satisfactory completion.

Results of first round

- Total consecutive cases audited during first study period = 104.
- Checklist conducted for audited cases = 46 (44.2%).
- All checks fully completed = 1 (2.2%).
- Appropriately completed procedural site marking check = 35 (76.1%).

Action plan

Barriers to implementing the IR safety checklist

- A number of barriers were felt to have limited initial successful implementation. These included:
  1. Lack of awareness, understanding, learning materials and training - Many members of the IR team were unaware of the checklist’s introduction and when or how to use it.
  2. Attitudes towards the checklist and team work - Some members of the IR team felt it was irrelevant and an unnecessary introduction of further bureaucracy.
  3. Lack of leadership - Initially there was no nominated IR team member responsible for leading or documenting the checks.

Implementing the action plan

Following the initial study period we instigated a series of changes to address the cultural and practical barriers faced during implementation:

1. Local champions
   - The authors acted as local champions to promote and monitor checklist use.
   - Also acted as a source of information and gathered feedback.

2. Training and education
   - We undertook a series of educational sessions after the 1st and 2nd audit cycles:
     - Questionnaires to assess current staff knowledge.
     - Oral presentations at departmental meetings.
     - Small group session teaching to also allow the IR staff to discuss concerns.
     - Electronic presentations (designed to clarify all aspect of the checklist and its appropriate application).
     - Presenting the clinical evidence and the benefit of checklists (e.g. large multicentre studies and significant improvement to safety).

3. Teamwork and leadership
   - Following the 1st audit it was agreed the nurses would lead the checklist for each case (similar practice to surgical theatres and in line with NPSA recommendations).
   - All IR team members involved in the case should be present to complete the checklist.
   - These changes empowered the nurses and resulted in a greater sense of team work and collective responsibility.

4. Regular feedback and repeat audit
   - Repeat audit cycles and monitoring the uptake of the checklist highlighted issues relating to poor compliance.
   - Regular feedback sessions with the IR team, helped highlight a number of issues (e.g. IR team did not understand some of the specific terms used in the checks).
   - Allowed further guidance and additional training to be implemented.

Results of repeat audits

- There was a statistically significant (P<0.005) improvement in both the number of safety checklists conducted and the number of cases for which all checks were fully completed.

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<thead>
<tr>
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<th>Period A</th>
<th>Period B</th>
<th>Period C</th>
<th>P value</th>
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<tr>
<td>Total Cases</td>
<td>104</td>
<td>125</td>
<td>247</td>
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<td>Checklists</td>
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<td>Conducted</td>
<td>46 (44.2%)</td>
<td>106 (84.8%)</td>
<td>224 (90.7%)</td>
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<td>Checks fully</td>
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<tr>
<td>Completed</td>
<td>1 (2.2%)</td>
<td>47 (34.3%)</td>
<td>214 (85.5%)</td>
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<tr>
<td>Appropriately</td>
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<tr>
<td>Completed</td>
<td>35 (76.1%)</td>
<td>88 (66.5%)</td>
<td>221 (88.7%)</td>
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Conclusion

- Checklists have been shown to reduce morbidity and mortality in surgical and hospital practice. It is reasonable to assume that these benefits would translate to IR.
- Whilst IR safety checklists are a relatively new concept, the recently introduced CIRSE checklist in Europe and recommendations by the SIR, mean they will play a greater role in improving the safety of IR patients.¹⁰
- We have demonstrated a strategy and series of changes to practice which can lead to successful implementation and sustained use of such safety checklists within IR departments. We will continue to work towards 100% checklist completion.

References