The Role of Electronic Checklists
- Case Study on MRI Safety

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- Bachelor in Radiography
- Group of 4 students doing their Bachelor thesis

Motivation:
Experiences from practical studies:
- noncompliant use of MRI safety checklist?
Background: Why MRI safety checklist

**Purpose:**
To ensure patient safety

**Checkpoints:**
- Contraindications
- Information about the patient

**Routine:**
The checklist is
- Filled in during the referral process and reviewed prior to the MRI exam
### MRI Patient checklist - paper version

**Kontraindikasjoner**

<table>
<thead>
<tr>
<th>Pacemakerelektrode</th>
<th>JA</th>
<th>NEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevrostimulator</td>
<td></td>
<td></td>
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<tr>
<td>Intrakranielle vaskulære klips</td>
<td></td>
<td></td>
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<tr>
<td>Metall-fremmedlegeme i øyet</td>
<td></td>
<td></td>
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<tr>
<td>Cochlea (øre) implantat</td>
<td></td>
<td></td>
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<tr>
<td>Graviditet (relativ kontraindikasjon)</td>
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**Nødvendige opplysninger om pasienten**

<table>
<thead>
<tr>
<th>Klaustrofobi</th>
<th>JA</th>
<th>NEI</th>
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<tbody>
<tr>
<td>Kommunikasjonproblemer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ute av stand til å ligge på ryggen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metall etter tidligere kirurgi (klips, hjerteklaff, shunt, protese, plater, skruer, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metall som kan fjernes (gebiss, proteser, sminke)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intravenos kanyle av metall (må evt. skiftes til plast)</td>
<td></td>
<td></td>
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<tr>
<td>Insulin/morfin-pumpe</td>
<td></td>
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<tr>
<td>Tatovering</td>
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Dersom ja på ovenstående spørsmål, spesifiser (er f.eks. aneurysmeklips garantert umagnetiske eller nevrostimulatoren garantert MR kompatibel?):

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Dato: ____________________________

(sign. henvisende lege)
MRI Patient checklist - the electronic version: available through the radiological IS
Research aim:
Gain more insights into how checklists contribute to a safer health care

• How is the checklist used?
• How is checklist noncompliance handled?

Context:
Example case: Breast cancer diagnostic clinic offering a triple diagnostic model and one MRI centre (same hospital)

IT infrastructure:
• PACS/RIS (shared between multiple public hospitals within one specific health region)
• Electronic Patient Record (EPR), standalone with web-based PACS solution
Method: - 6 interviews of key healthcare personell
- 18 observations of pre-exam review of checklists, MRI centre

The principle information flow
Summary of main findings:
How is the MRI safety checklist used?

- General Practice: 18
- Hospital (External): 17
- Paper: 16
- Missing: 15
- Other: 14
- Hospital (Internal): 13
- Electronic: 12
- Complete: 11
- Genetic/Yearly: 10

Category: Referred from, Referral, Checklist, Control Type
Summary of main findings cont:

What checklist flaws occur?

- **Incomplete** information: e.g. notes about implant without type and location
- **Imprecise** information: e.g. «priority field» filled in with «no known»
- **Missing** information: e.g
  - bloodtest results due to lack of intra-hospital coordination
  - missing checklist for patients referred from external hospitals
Summary of main findings:

How do the actors deal with these flaws?

• Cancelling the MRI exam e.g. the checklist lacked info about pacemaker

• Performing the MRI exam anyway: even if lab values of importance were lacking

• Filling in the checklist anyway: even if the doctor haven’t seen the patient referred from external hospitals
While check lists offer different support for different roles: 
*Attention to this multiplicity of concerns is sometimes lost when going electronic*

This turn towards stop-control impedes potential dimensions of such as being an aid for trans-organizational learning and communication.

A balance between the check-list as memory aid and stop-control is necessary to unleash the potential of ICT as an *enabler* for improved patient (and provider) safety.
Thank you for your attention!

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