Improving Patient Safety in Interventional Radiology: A Multi-centred Trainee-led Approach to Increasing Compliance of the Radiology WHO Checklist

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Objectives

- WHO Radiology check list
- Compliance rates
- Audit cycle – improving practice
- Practice implications & the next steps

Introduction- Errors are common

- More than 230 million operations every year
- 10% of hospitalized patients experience a patient safety incident
- 50% of these are preventable
- 971 deaths in the UK (Jan 2005 - Sept 2008)

A checklist is...

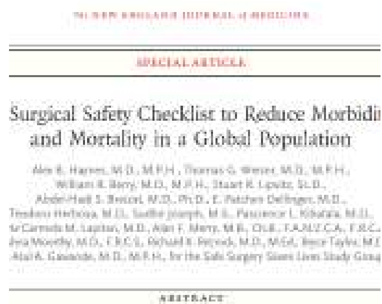
- A formal list used to identify, schedule, compare or verify a group of elements
- Used as visual or oral aid that enables the user to overcome limitations of short-term human memory

A simple checklist

- Simple checklists have significantly reduced morbidity and mortality in surgery
- National Patient Safety Agency (NPSA) between 2005 and 2008
- The WHO Radiology checklist introduced throughout England and Wales 2010

Evidence of impact in surgery

- Before
  - Death rate = 1.5%
  - Complications = 11.0%
- Afterward
  - Death rate = 0.8%
  - (P = 0.003)
  - Complication = 7.0% (P<0.001)



SPECIAL ARTICLE

Surgical Safety Checklist to Reduce Morbidi
and Mortality in a Global Population

ABSTRACT

Surgical Safety Checklist

World Health Organization | Patient Safety

Before induction of anaesthesia → **Before skin incision** → **Before patient leaves operating room**

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

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The reality...

- Jan 2009
  - NPSA, CMO, DH, Lord Darzi Guidelines
  - "All health organisations must do check list by Feb 2010"
- March 2009
  - Royal College Radiologists (RCR) Guidelines
  - "All diagnostic and Interventional Radiology procedures requiring local and general anaesthetics"

Royal College Radiologists (RCR) Guidelines

- Involve all staff in radiology department
- Find out existing local policies and develop protocol that complies
- Have an open discussion about merits & obstacles of using the checklist
- Take a step by step approach to creating an effective process
- Developed by those that use them and flexible enough to adapt to different procedure

Checklist Content

- Patient details
- Request form
- Consent

- Allergies
- Bloods reviewed
  - Hb, INR, Plt, eGFR/Cr
- Blood loss
  - Cross matched

- Site marked
- Prescribed
  - Sedation, analgesia, antiemetic

- BP/Pulse monitoring
- Essential imaging reviewed

- Post procedure - ward informed of after care

- ***Check list scanned into PACS***

WHO Surgical Safety Checklist:
for Radiological Interventions ONLY
(adapted from the WHO Surgical Safety Checklist)

National Patient Safety Agency
National Reporting and Learning Service

SIGN IN (To be read out loud)

Before giving anaesthetic (local or general)

ONLY IF GENERAL ANAESTHETIC IS GIVEN

TIME OUT (To be read out loud)

Before start of radiological intervention

SIGN OUT (To be read out loud)

Before any member of the team leaves the room

PATIENT DETAILS

Last name:
First name:
Date of birth:
NHS Number:
Date of Procedure:

The checklist is for Radiology Interventions ONLY

This modified checklist must not be used for other surgical procedures.

www.nrls.npsa.nhs.uk

Aim

- **The RCR recommends implementation of WHO checklist in all interventional procedures involving any form of anesthesia.**
- Standard : 100 % of all Interventional Procedures

Method

- Retrospective analysis
- Radiology information systems of two departments
  - Aintree University Hospital NHS Trust (hospital A)
  - Wirral University Teaching Hospital NHS Trust (hospital B)
- CT and Fluoroscopy guided interventional procedures
- One month period in 2010
- Trainee lead educational campaign
- Repeated study in 2011

WHO Proforma

- Checklist done
- Any significant findings
- Procedure cancelled
- Procedure modified
- Patient re-booked

WHO Proforma Audit

- Cris no
- Date of procedure
- Name of procedure
- WHO check done
  Yes No
- If WHO check done
  Any significant findings noted on WHO check
  Yes No
  If Yes what was noted ----------------------------
  If Yes any implication to the procedure planned
  Yes No
- If yes to above tick one of the below or fill the information.
  a) Procedure cancelled all together
  b) Procedure modified
  c) Patient rebooked
  d) Other ----------------------------------
- Follow-up of any equipment problems
  Yes No

Audit weakness

- Missed data - Checklist performed but not recorded e.g. during out of normal hours on call
- US guided procedures not included

Trainee led intervention

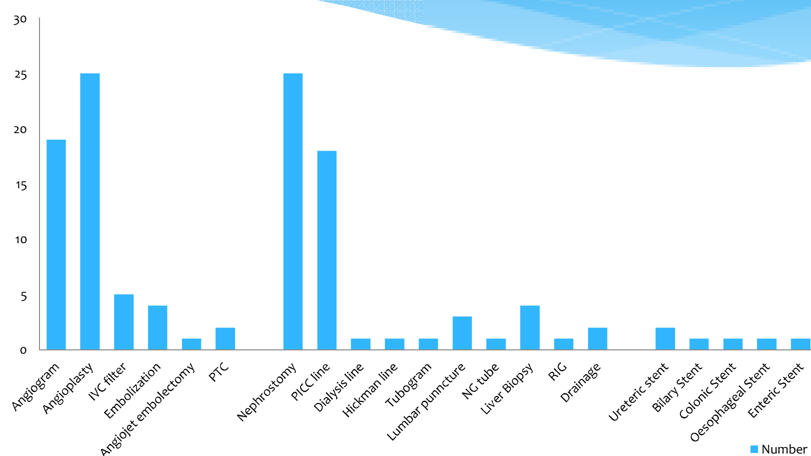
- Nominated Trainee for each Hospital
- A systematic review of the checklist process
- Active involvement of departments
  - Interventional Consultants
  - Key radiographers
- Informative Lectures and posters
- Regular Updates

Results

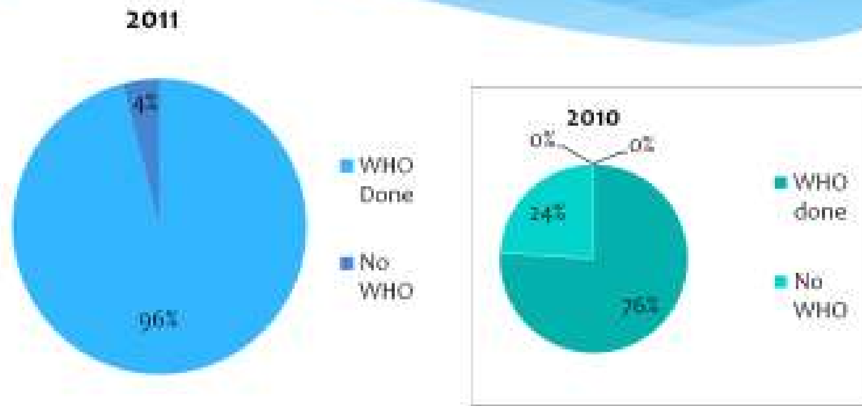
- One month (Nov – Dec) in 2010 and 2011 (Hospital B)

- Procedures 2010 = 123
- Procedures 2011 = 119
    - Vascular e.g. Angioplasty, embolization
    - Abdominal e.g. Stents, Tubograms

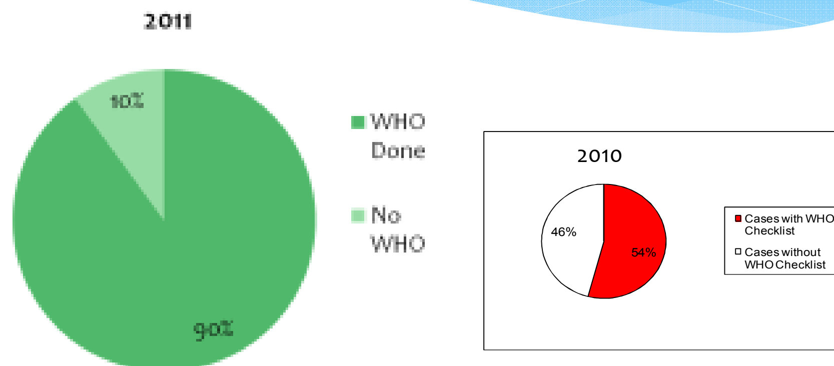
Results – Procedure mix



Compliance - Aintree (Hospital A)



Compliance - Arrow Park (Hospital B)



Summary

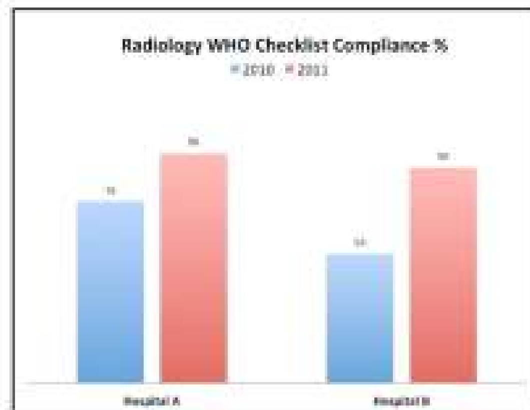


Chart Summarizing the percentage compliance of the Radiology WHO checklist in each hospital, pre (2010) and post (2011) trainee-led intervention.

Problems identified

- Findings
  - 42x Allergies e.g. medication and latex
  - High INR, no Bloods or Cross matching
- 2 x Abandoned procedure
- Equipment availability or failures
- Incomplete checklists
- No electronic Record of checklist performed

Conclusion

- Lower than expected Radiology WHO Checklist compliance rates in multiple institutes
- Coordinated trainee-led educational program improved compliance
- Significant improvement in Patient safety standards

Recommendations

- Verbal confirmation of checklist
  - Everyone in the room, including the patient, are encouraged to respond (e.g. confirmation of allergy status, antibiotic or VTE prophylaxis)
- Completed Checklist scanned into patient electronic radiology record

Recommendations

- WHO Check list - All invasive procedures
- Formal listed of exceptions – department policy
- Introduce a nominated “check list Officer”
- Active involvement of key stakeholders

Exclusions?

- Tubograms/Linograms
- PICC lines
- HSG

What's next locally

- Reminder and promotional posters in Interventional Radiology, CT and Ultrasound departments
- Introduce electronic recording of WHO checklist in all departments
- Re-audit in 12 months

The next steps:

- More Hospitals
  - Large Trauma centres
  - Smaller district departments
- Collaboration with Quality Improvement body
- National and International Presentations to raise awareness
- RCR national Audit

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Questions

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