



Catalan Clinical Audit
Network for Quality Improvement
in Radiotherapy

Audit methodology: checklists, standardized forms, observations & interviews

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Objectives of the lecture

Presentation of tools for conducting clinical audit:

Checklists

Standardized forms

Observations

Interviews

- Discussion on their general features
- Discussion on their use in a self-assessment and during the audit





Checklists

From the Checklist Manifesto (Atul Gawande):

"List of items, tasks or behaviors arranged in a coherent way, allowing the user to record the presence (or absence) of individual items."

- Item checked = completed / verified / identified / answered

From Wikipedia:

"A type of job aid used in repetitive tasks to reduce failure by compensating for potential limits of human memory and attention."

- Checklists are used:
 - to ensure that safety-critical system preparations are carried out completely and in the correct order.
- They help **to ensure consistency and completeness** in carrying out a task.





Checklists

- Guide the audit
- Ensure no major point is forgotten
- Serve as tool for self-assessment

CHECKLIST 1. Patient Assessment

Items to be reviewed by the auditor	YES	In progress	NO	N/A
Does the hospital possess an electronic medical record (EMR) system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If yes, is the radiotherapy department integrated within this system?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no, does the radiotherapy department have access to all relevant clinical data/records?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there an ease of access to patient imaging data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the pathology report included in all patients' files?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are patients staged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall Score	Compliant	Partially compliant	Non-compliant
Are the department's premises adequate in the context of the department's objectives and operations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commendations/Recommendations			





Checklists

FEATURES & BENEFITS

- Are prepared prior to their use
- Aim to be comprehensive for the field and scope
- Gives support “what do we do next?”
- Limit choice for answers
 - Standardization
 - Can populate data base
 - Allows comparison
- Provide a standardized report
- Make process more efficient, saves auditors and auditees time
- Ensure nothing is forgotten
- Can be shared

speed up process





Checklists

STRUCTURE

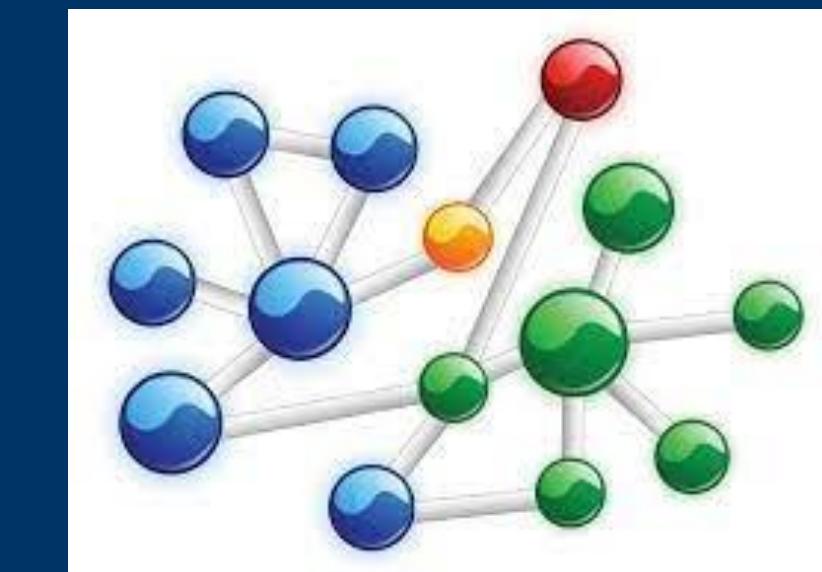
- Follow a logical flow
- Answers can built on each other = can be hierarchical

Only if a question is answered in a certain way other questions need to be addressed

Does this make sense?

If not: Some questions may not be applicable in a particular facility

They can be skipped





Checklists

HOW TO COMPLETE THEM?

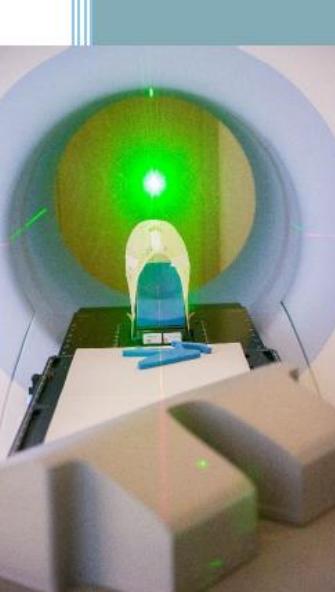
- Staff **interviews**
- A complete **tour** of the facility
- A review and **evaluation of** procedures and all relevant **documentation**, including a review of treatment records
- **Observation** of practical implementation of working procedures
- Practical **measurements** and other tests of the performance of local systems and procedures, where appropriate and relevant





Checklists IN BQUATRO

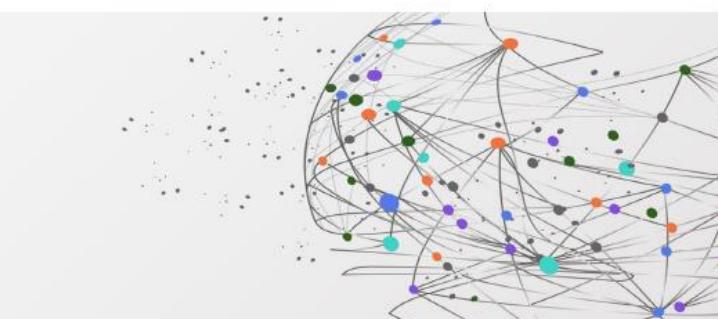
BQUATRO: Comprehensive Audits of Radiotherapy Practices: A Tool for Quality Improvement adapted to the Belgian context



Collège de Radiothérapie
Version 2 - updated in 2024



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LISTING OF CHECKLISTS

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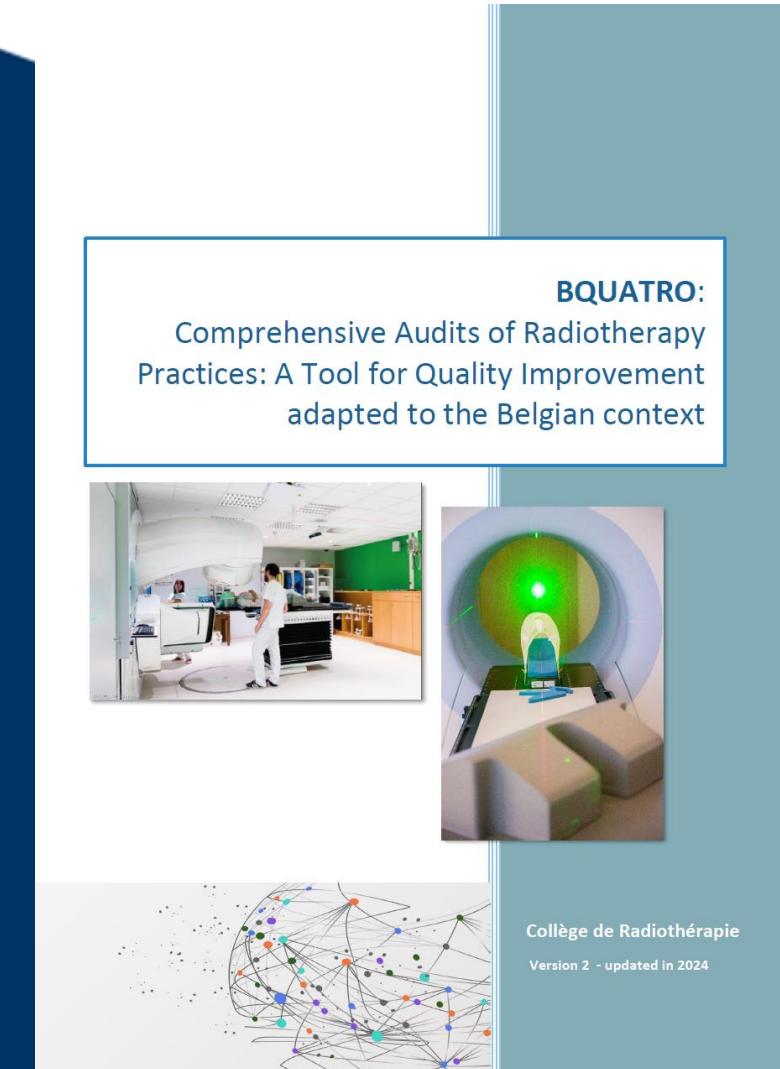


Checklists IN BQUATRO

Checklists 1 → 41

Chapter 3 to 9

- Chapter 3 = Infrastructure
open ended list of questions
- Chapters 5-9
 - = Equipment related procedures
 - QMS
 - Communication management
 - Radiation protection
 - Roles and responsibilities
tick box driven questions
- Chapter 4 = Patient related procedures
combined type questions





Checklists

Example of Open ended questions Example of tick box driven questions

Table 2 - Radiation therapy equipment overview

Equipment/system	Type	Commissioning date	Detail and comment on function and location
EBRT equipment			
Equipment 1			
Equipment 2			
Equipment 3			
....			
BT equipment			
Equipment 1			
....			



CHECKLIST 1. Patient Assessment

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If no, does the radiotherapy department have access to all relevant clinical data/records?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there an ease of access to patient imaging data?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the pathology report included in all patients' files?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are patients staged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Checklists ADAPTATION

- Check lists cannot always be fully standardized in radiation oncology where practices and equipment vary
- Entries may need explanations
- Context may be important

- May need to be adapted:
 - For different resource settings
 - For different levels of practice (e.g. IMRT would require special consideration)
- The **comments sections** are useful for this (allow for space for free text)
- **Provide feedback!**





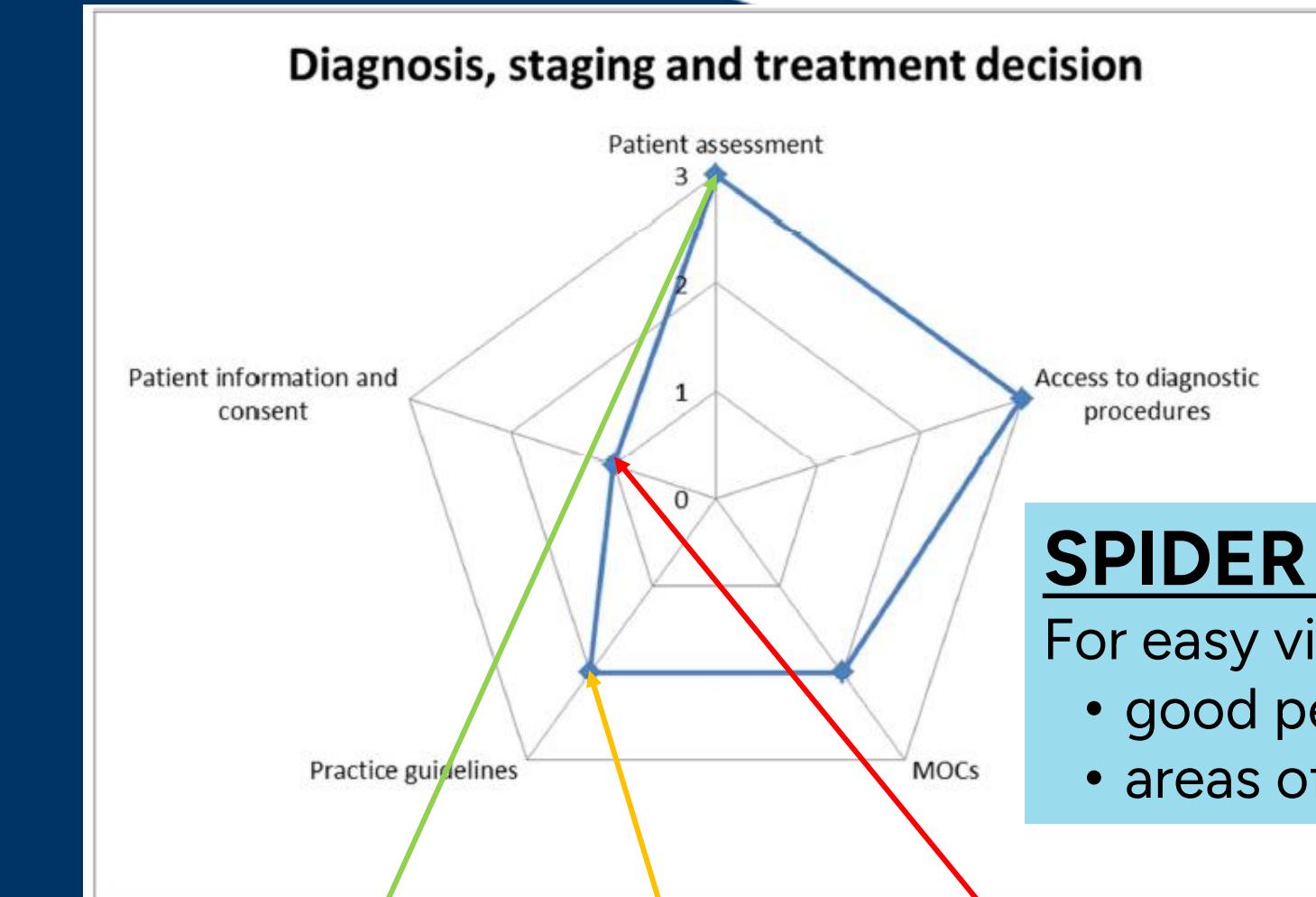
Checklists

OVERALL ASSESSMENT

- Allows for the auditors to provide an **overall appreciation** of the criteria that were evaluated in the checklist

Items to be reviewed by the auditor	YES	In progress	NO	N/A
Integration of the patient's radiotherapy treatment information with the hospital electronic medical record (EMR) system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Is patient specific and relevant radiotherapy information easily accessible by the rest of the institution?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Does the radiotherapy department have access to all relevant patient clinical data/records?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Please comment				
Is there an ease of access to patient diagnostic imaging data ⁹ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the pathology report included in all patients' files?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall Score	Compliant	Partially compliant	Non-compliant
Is patient assessment properly carried out by the radiotherapy department?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commendations/Recommendations			



SPIDER WEB

For easy visualization of:

- good performance
- areas of improvement



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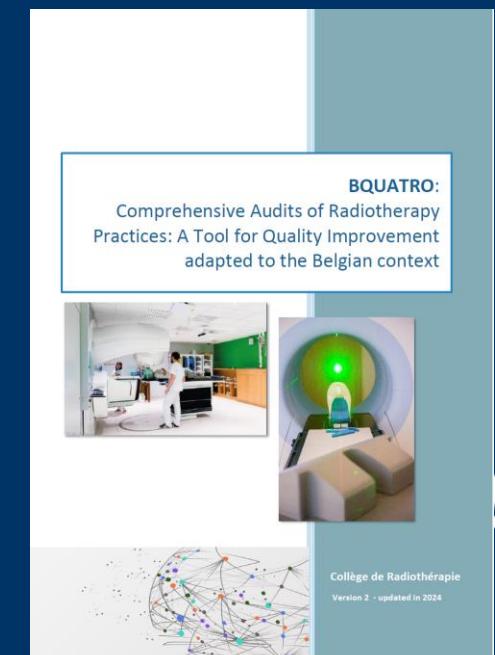
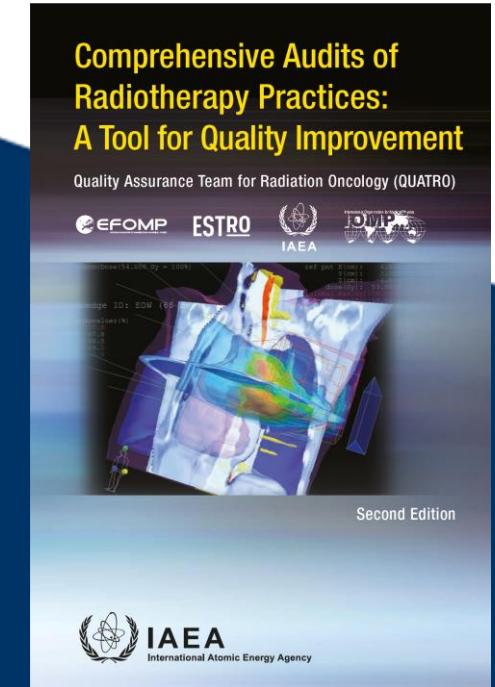
Checklists TERMINOLOGY

Workload related terminology

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Checklists

MULTIPLE USE

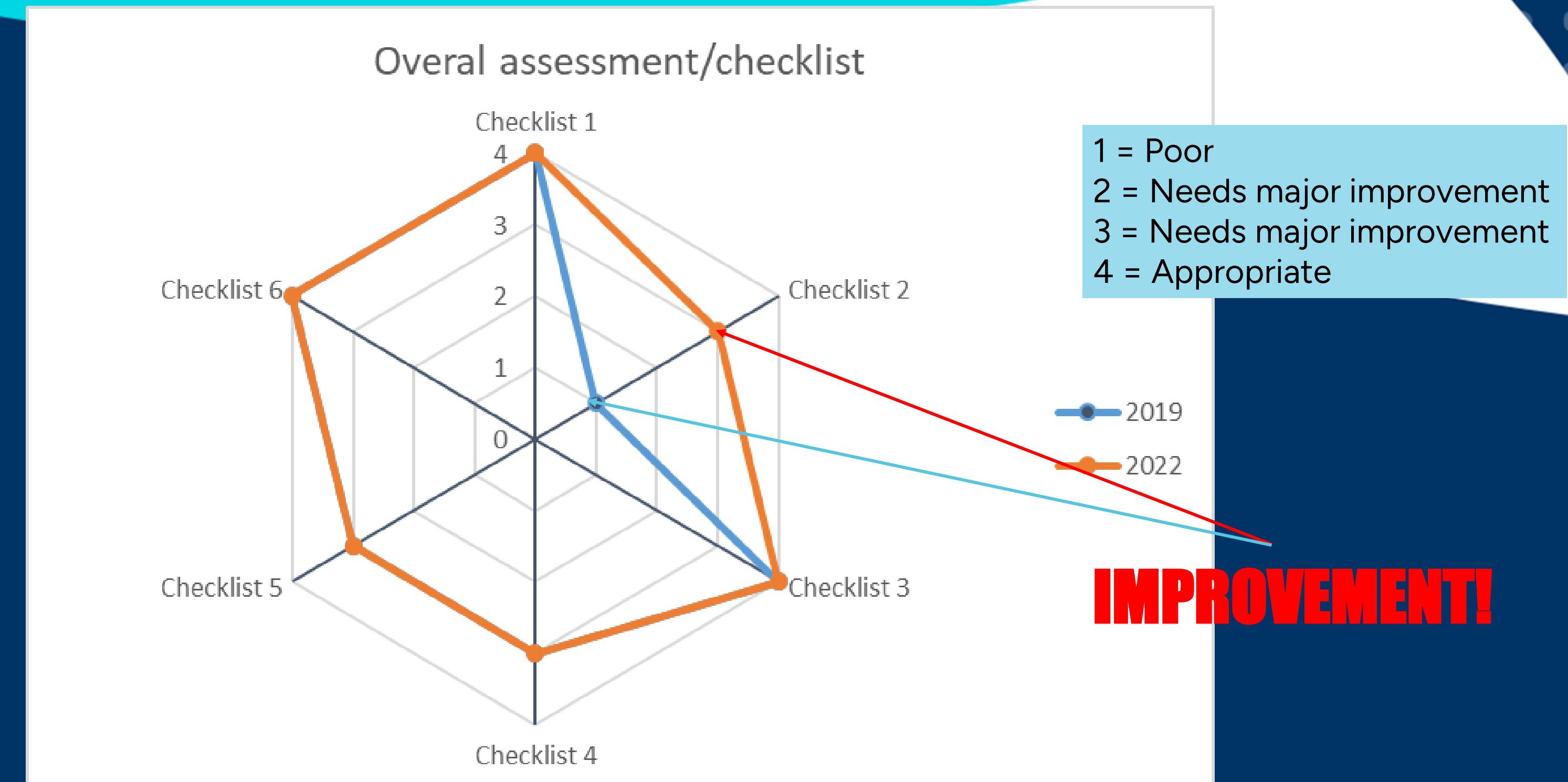
A checklist can be re-used:

- By different staff - strengthens data and can help to identify misunderstandings
- At different times:
 - Shows trends
 - Demonstrates improvements
 - Helps to enforce continuous quality improvement





Checklists MULTIPLE USE





Contact information & Patient demographic



Quality Assurance Team for Radiation Oncology (QUATRO)

Workload (patient throughput on radiotherapy equipment, statistics)

Contact information		
Name of the Hospital		
Name of the Department		
Hospital web page		
Address	Street	
	PO Box	
	City	
	ZIP	
County/State		
Country	...	
Main contact		
E-mail address		
Key staff:	Radiation Oncologist	
	Medical Physicist	
	Radiotherapy Technologist	
	Radiation Protection specialist	
Type of institution	Other	
Patient demographic		
1.1 New cancer cases		
1.2 New patients undergoing RT		
1.3 New courses of treatment in RT:		
1.4 Types of cancer (primary sites and number)		
Primary site	Number	Most frequent stage
1.5 Source of information, e.g. cancer registry		

Standardized forms

PART OF PRE-AUDIT ACTIVITIES

Structure of the RT department

Personnel & Premises

1.6 Ratio of radical treatment to moderately high dose palliative therapy to palliative treatment:			
Percentage of palliative treatments	Percentage	Fractions	
1.6.1 Moderately high dose palliative treatments			
1.6.2 Low dose palliative treatments			
1.6.3 Total % of palliative treatments	0.0		
1.6.4 % of curative treatment courses (25 or more fractions)		100.0	
1.6.5 Fraction of cancer patients (of the total number in the catchments area) who come for radiotherapy, where the statistical data are available			
Structure of the radiotherapy department			
Personnel			
2.1 Radiation oncologist			
2.1.1 Number of radiation oncologists	0.0		
2.1.2 Working days per week	0.0		
2.1.3 Working hours per day	0.0		
2.1.4 Weeks of vacation + holidays	0.0		
2.1.5 Number of radiation oncologists, adjusted for FTE	0.00		
2.1.6 Professional qualifications (degree, specialisation, accreditation, fellowships):			
2.1.7 Additional responsibilities	<input type="checkbox"/> chemotherapy	<input type="checkbox"/> nuclear medicine	<input type="checkbox"/> other
2.2 Medical Physicists			
2.2.1 Number of medical physicists in radiotherapy <small>including clinically qualified radiotherapy medical physicists</small>	0.0		
2.2.2 Working days per week	0.0		
2.2.3 Working hours per day	0.0		
2.2.4 Weeks of vacation + holidays	0.0		
2.2.5 Number of Medical Physicist, adjusted for FTE	0.00		
2.2.6 Professional qualifications (degree, specialisation, accreditation, fellowships):	specialist in medical physic		
2.2.7 Additional responsibilities	<input type="checkbox"/> diagnostics	<input type="checkbox"/> radiation protection	<input type="checkbox"/> other
2.3 Radiation therapists (RTT)			
2.3.1 Number of radiation therapists (RTT)	0.0		
2.3.2 Working days per week	0.0		
2.3.3 Working hours per day	0.0		
2.3.4 Weeks of vacation + holidays	0.0		
2.3.5 Number of radiation therapists, adjusted for FTE	0.00		
2.3.6 Professional qualifications (degree, specialisation, accreditation, fellowships):			
2.3.7 Number of personnel assisting RTTs, e.g. nurses:			
2.3.8 Number of mould room technicians			

2.4 Other specialities		
2.4.1 If there is no professional title in one or more of these professions, is there a local policy for education?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
2.4.2 Comments:		
2.4.3 Other members of staff (engineers, dosimetrists, nurses, social workers, psychologist, etc)		
2.4.4 Comments:		
2.4.5 Is there a programme for teaching junior medical staff (residents) and students?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
2.4.6 How many residents?		
2.4.7 How many medical students?		
2.4.8 Comments:		
2.4.9 Is teaching part of routine activity?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
2.4.10 Comments:		
2.4.11 Is research (basic, clinical) part of routine clinical activity?	<input checked="" type="radio"/> Yes	<input type="radio"/> No
2.4.12 Comments:	statiscal basis after 2 years.	
2.4.13 Are staff allocated to clinical research?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
2.4.14 Number		
2.4.15 Comments:		
2.4.16 General comments on personnel:		

Departmental operation

Premises				
2.5.1 Wards exist?	<input type="radio"/> Yes	<input checked="" type="radio"/> No		
2.5.2 Number of beds:				
male				
female				
paediatric				
total				
2.5.3 General comments on premises:				
Departmental operation				
2.6.1 Working hours (within the department) of the:				
radiation oncologists	From:	00:00	Until:	00:00
medical physicists	From:	00:00	Until:	00:00
RTTs	From:	00:00	Until:	00:00
2.6.2 Treatment hours of the department:	From:	00:00	Until:	00:00
2.6.3 Days per week of operation:				
2.6.4 Are emergency radiation services provided after hours?	<input checked="" type="radio"/> Yes	<input type="radio"/> No		
2.6.5 Comments:				
2.6.6 Minimum number of RTTs for each major item of equipment:				
2.6.7 Minimum number of radiation oncologists during treatment hours:				
2.6.8 Minimum number of physicists during treatment hours:				
2.6.9 General comments on department operation:				



Standardized forms

Workload statistics

Workload

Teletherapy

3.1 Number of teletherapy machines in the department									
Machine number	Type of machine	Make & model	Sessions/fractions per year	Number of patients per teletherapy machine annually	Average number of fields per session	Average treatment time, min	Sessions per patient	Maximum number of fractions in any one day	Maximum number of fields in any one day
1	...		0	0	0.0	0.0	0	0.0	0.0
2	...				0.0			0	0.0
3	...				0.0			0	0.0
4	...				0.0			0	0.0
5	...				0.0			0	0.0
6	...				0.0			0	0.0
7	...				0.0			0	0.0
8	...				0.0			0	0.0
9	...				0.0			0	0.0
10	...				0.0			0	0.0

Quality Assurance Team for Radiation Oncology (QUATRO)

5



Brachytherapy

4.1 Number of brachytherapy machines in the department									
Machine number	Type of the unit	Make & model	Number of patients treated annually	Number of applications given annually	Maximum number of applications in any one day	1st most frequent application	2nd most frequent application	3rd most frequent application	Number of RTTs per shift
1	...								
2	...								
3	...								
4	...								
5	...								
6	...								
7	...								



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Imaging and planning

5.1 Annual number of CT scans performed for planning purposes	
5.2 Annual number of simulations performed	
5.3 Annual number of treatment plans generated by computer treatment planning	



Workload summary

6.1 Number of new cancer patients per radiation oncologist annually	Number	Number adjusted for FTE
6.2 Number of courses of treatment per radiation oncologist annually		
6.3 Number of courses of treatment per physicist annually		
6.4 Number of courses of treatment per RTT annually		
6.5 Number of TPS plans per physicist, RTT or dosimetrist annually		

Teletherapy

7.1 Number of patients on all machines per year	Number
7.2 Number of patients per teletherapy unit per year	
7.3 Number of sessions per year	
7.4 Number of treatment sessions per day	
7.5 Average number of fields per session	
7.6 Average number of fractions per course of treatment	
7.7 Average treatment time (min) per session	
7.8 Maximum number of fractions in any one day on treatment unit	
7.9 Maximum number of fields in any one day on treatment unit	
7.10 Maximum number of shifts per machine in the department	
7.11 Minimum number of RTTs per shift	
7.12 Average number of RTTs per machine	

Brachytherapy

8.1 Number of patients on all machines per year	Number
8.2 Number of patients per brachytherapy unit per year	
8.3 Number of applications per year	
8.4 Number of treatment applications per day	
8.5 Average applications per patient	
8.6 Maximum number of applications in any one day on treatment unit	
8.7 Maximum number of shifts per machine in the department	
8.8 Average number of RTTs per machine	
8.9 Minimum number of RTTs per shift	

Calculate Data



Checklists & Standardized forms

- Guides and structure the auditing process

ALSO:

- Are **known** to the participants prior to the site visit
- An attempt should have been made **to answer** the questions prior to the site visit

→ **Self assessment**

→ **Audit**



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Checklists & Standardized forms

SELF-ASSESSMENT

Different phases			
	Self-assessment	Internal clinical audit	External clinical audit
Level	Department	Hospital	Nationwide
Who carries out?	Personnel of the department	Auditors from other departments within the hospital/institution	Auditors from other hospitals/institutions
Result	Self-assessment report	Internal audit report	External audit report

Identify areas for improvement → Actions for improvement





Checklists & Standardized forms

SELF-ASSESSMENT

- Ideally to be done **BEFORE** the audit:

Focuses participants on the audit (team involvement)

Helps the preparation of the audit: e.g. to identify important documentation, what will be audited?...

Identify areas in need of improvement before the audit

Known to the participants before the audit - no surprises create a less threatening environment

Helps the auditor to familiarize him/herself with the department

- Should be filled in by all professions

- Head of the department must be aware of it and should check final version prior to sending it back to the agency





Observations



- Team approach
- Useful to start with a complete tour of the facility
- Typical methods:
Observation of practical implementation of working procedures





Interviews

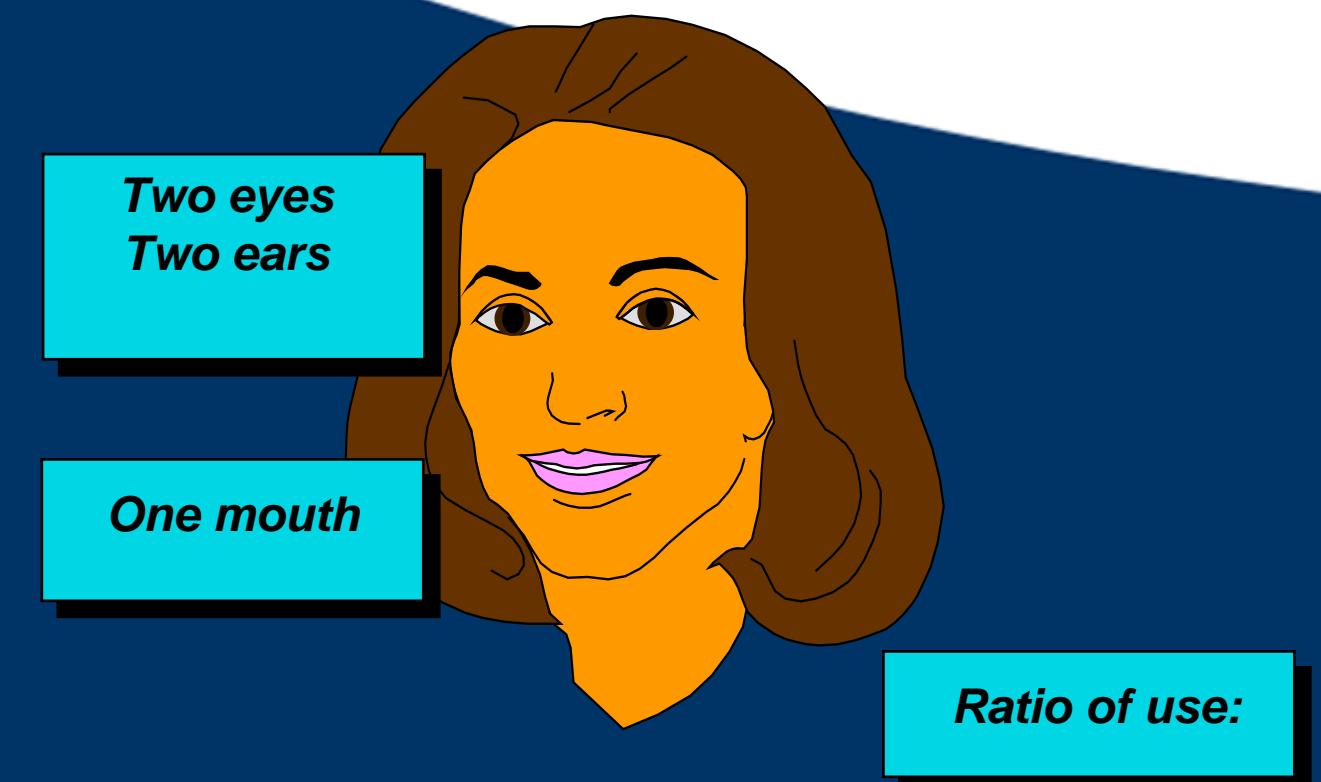
- Interview the right people
 - Those responsible
 - Those doing
 - Audit where the action is
- Non-formal communication!





Interviews

- Explain what you want to see
- Investigate to depth necessary
- **Checklist is a guide**
- Potential audit “trails” appear
- Decide
 - Disregard
 - Note for later
 - Follow-up now
- Ask about concerns
 - Can you help?
- Move on
- **Don't keep looking to find something wrong!**



Ratio of use:

**One speaking to
four receiving**





Observations & Interviews

Taking notes

- As objective evidence:
 - Admissible statements
 - Document numbers and revisions
 - Identifiers
 - Positions (and names if necessary)
- Must be legible





SUMMARY

QUATRO / comprehensive audit is:

- assessment
- an identification of a way for improvement

CHECKLISTS
STANDARDIZED FORMS
standardized & structured
comprehensive
effective use of time



- **COMPLETE TOUR OF THE FACILITY**
- **STAFF INTERVIEWS**
- **REVIEW AND EVALUATION OF PROCEDURES & DOCUMENTATION**
- **OBSERVATIONS OF PRACTICAL IMPLEMENTATION OF WORKING PROCEDURES**
- **PRACTICAL MEASUREMENTS OR OTHER TEST OF THE PERFORMANCE OF LOCAL SYSTEM/PROCEDURES**



To collect **objective evidence** to permit an **informed judgment** about:

- equipment
- staffing
- processes & activities
- status of the quality management system & radiation safety

to give **relevant recommendations** for improvement.





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