

UCD/BMUS

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Sonographer Reporting

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Overview

1. History of Sonographer Reporting (UK)
2. Theory of Reporting
3. Structured Reporting Styles
4. Common Reporting Errors
5. Questions to answer...





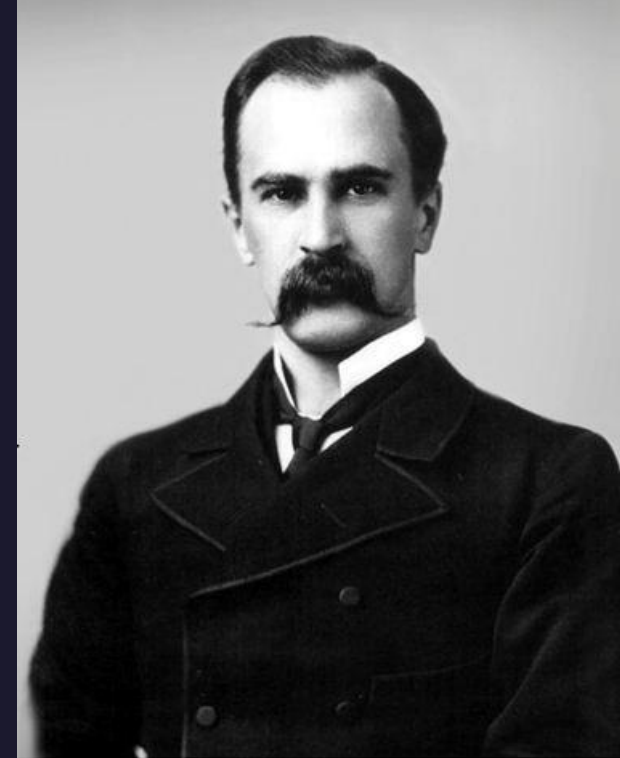
What do we mean when we talk about ‘a report’?

Introduction

“To give an account of the results of an investigation”

Collins Concise Dictionary

“There is no more difficult art to acquire the art of observation, and for some (*men*) it is quite as difficult to record an observation in brief and plain language”



Dr William Osler,

Boston Medical Surgical Journal

1903





History of Sonographer Reporting (UK)

History of Reporting Sonographers (UK)

- Sonographers
 - National shortage of radiologists (still ongoing issue)
 - Increase in demand of referrals for ultrasound (still ongoing issue – more now than in any other time!)
 - Further academic/vocational training for performing ultrasound examinations (*DMU*)
- Late 1990s, radiography is changed from vocational diploma (*DCR*) to an undergraduate BSc (Hons) degree

History of Reporting Sonographers (UK)

- Reporting Sonographers

- Permitted to report Obstetric examinations: dating/viability & anomaly screening
- Permitted to report normal gynaecological cases
- Permitted to report normal upper abdominal cases
- Expansion of reporting to common (and perceived low-risk) pathologies

- Post-graduate training begins (PgC, PgD & MSc)

- New focus on the need for reporting skills and professional clinical practice in addition to the technical aspect of the role.

A decorative arrangement of three 3D objects on the left side of the slide: a cone at the top, a small sphere in the middle, and a thick ring at the bottom. All objects are rendered with a dark blue-to-purple gradient and soft shadows.

Basic Reporting Theory

Reporting style

- Brief, relevant description.
- Conclusion: answer the queries, most important issues first
- Include pertinent negatives. (ovarian mass, but NO liver metastases or ascites)
- Don't be vague, equivocal or hedge: answer the question clearly
- Avoid: “sinister, concerning, worrying etc....” Imagine you are reading this about yourself/your loved ones
- If equivocal findings, indicate degree of uncertainty and advise how to resolve
- Beware the words: “significant” and “non-specific”

<http://www.ajronline.org/doi/full/10.2214/ajr.180.2.1800327>

Nine steps to producing a report

- Understand clinical information and aim of request and how the exam fits the clinical management of the patient
- Technical assessment of scan quality / limitations
- Observations : SSOTM. (size, shape, outline, texture and measurements)
 - normal,
 - unequivocally abnormal (expected/unexpected),
 - equivocal,
 - normal variants
- Analysis (observation & clinical reasoning) Clinical opinion and diagnostic implication
- Interpretation: wider implication of findings in whole patient context
- Advice: level of certainty and any further imaging/lx if needed
- Communication with referrer: adapt to different types of referring clinicians
- Take urgent action if necessary and document
- Communication with patient: if trained, appropriate knowledge to do so.



Communication

- Communication problems are a causative factor in up to 80% of medical malpractice cases.



What is the clinical question?

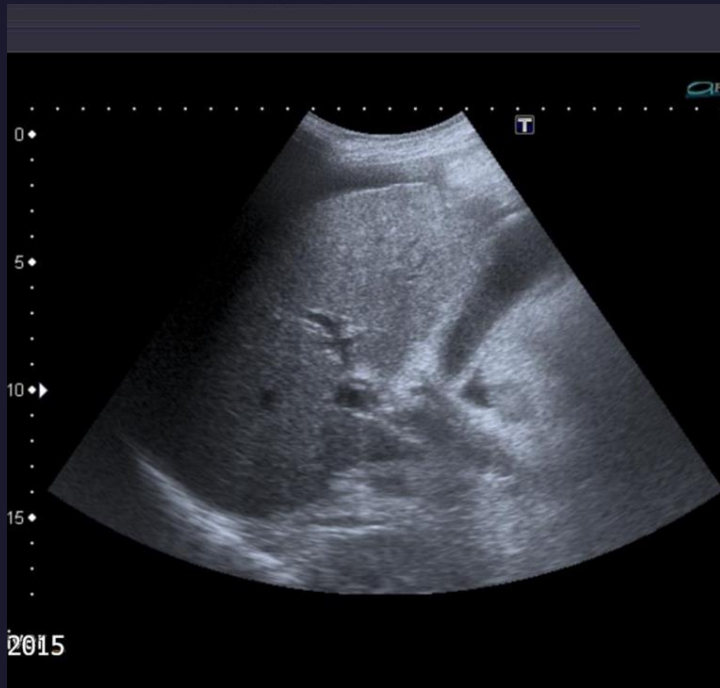
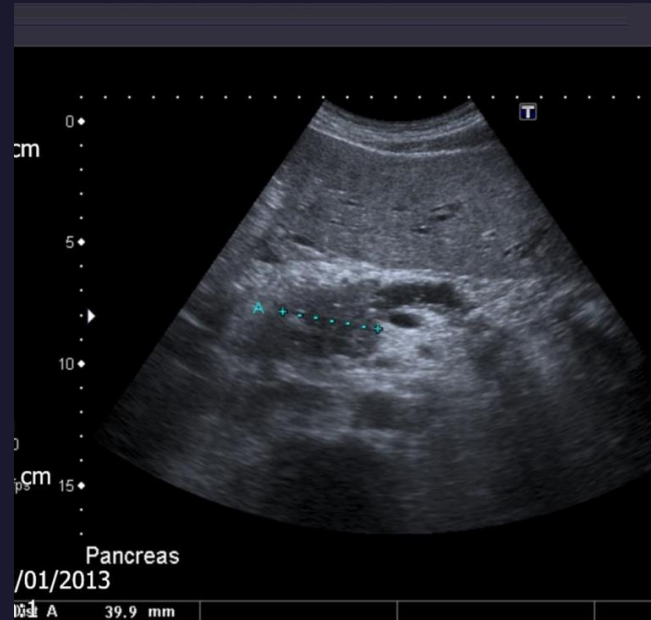
BEFORE THE EXAMINATION

- Why is the examination being undertaken?
 - Rule in/out an abnormality
- What is the clinical question?
 - Specific question or a vague impression

THE ULTRASOUND EXAMINATION

- During the examination
 - Specific observations
- After the examination
 - Judgement / conclusions / report





Ultrasound observations

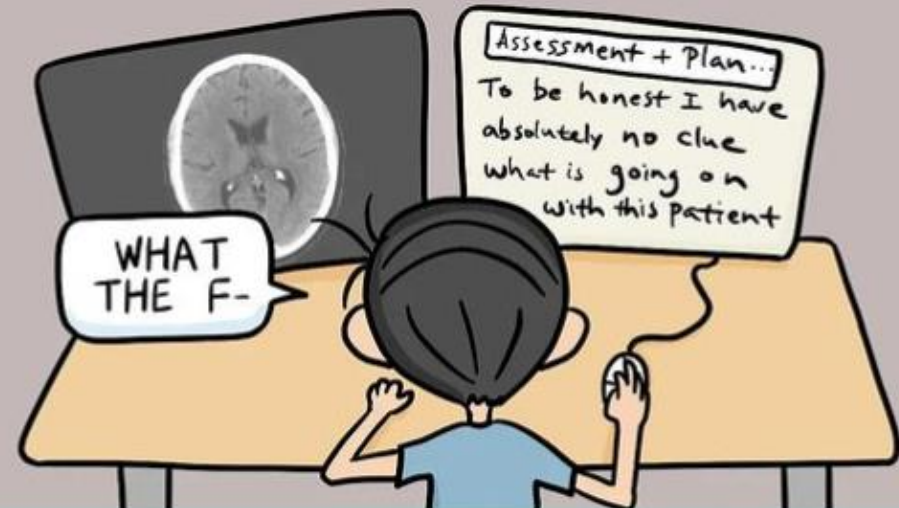
- Location and size
- Internal characteristics
- Borders / outline
- Attenuating properties
- other features

Always think...

WHO MIGHT
ACTUALLY READ
MY REPORT?



SOMEWHERE IN A DARK ROOM...



A dark blue background with three 3D-rendered decorative elements on the left side: a cone at the top, a small sphere in the middle, and a thick ring at the bottom. All elements have a subtle gradient and soft shadows.

Structured Reporting Styles

Structured Reporting

- Obstetric Reports
- Protocolled/Template reports
- Useful in many circumstances – but should not stop the ability to add free text reporting also



Structured Reports

- HCC surveillance

- Liver (outline, size, parenchymal appearances, focal lesions)
- Signs of Portal Hypertension (PV patency +/- velocities, spleen size, ascites, varicies)

- Reporting Systems (i.e. –RADS)

- O-RADS
- Li-RADS
- T-RADS
- B-RADS



A decorative graphic on the left side of the slide consists of three 3D-rendered objects: a cone at the top, a small sphere in the middle, and a thick ring at the bottom. All three objects are rendered with a dark blue-to-purple gradient and a slight glow.

Common Reporting Errors in Imaging

Common Types of reporting error

- There are multiple causes of reporting errors including:
 - Human error
 - Technical factors
 - System faults
- Different types of classifications used:
 - Renfrew Classification <https://doi.org/10.1148/radiology.183.1.1549661>
 - Brook Classification <https://doi.org/10.1148/rg.305105013>



Renfrew classification (1992)

- **Type 1: complacency**

- finding identified but attributed to wrong cause

- **Type 2: faulty reasoning**

- finding identified as abnormal but attributed to wrong cause

- **Type 3: lack of knowledge**

- finding identified but attributed to wrong cause due to lack of knowledge

- **Type 4: under-reading**

- missed abnormality that was appreciable in retrospect

- **Type 5: poor communication**

- finding identified as abnormal but poor communication to relevant clinician

- **Type 6: technique**

- abnormality was not identifiable (even in retrospect) secondary to poor technique

- **Type 7: prior examination**

- failure to review previous imaging results in missed finding

- **Type 8: history**

- finding missed due to incomplete clinical information

- **Type 9: location**

- finding missed because it was outside of region of interest

- **Type 10: satisfaction of search**

- failure to find a subsequent abnormality after the initial abnormality was detected

- **Type 11: complication**

- most often of interventional procedures

- **Type 12: satisfaction of report**

- over-reliance on the prior report

Brook classification (2010)

- **Latent errors**

- 'in-built' system or technical faults that predispose to errors

- **Active failures or human error**

- diagnostic errors and misinterpretation
- complications from procedures
- can involve more than one person or be secondary to latent errors

- **External causes**

- beyond the control of the reporter (e.g. power failures, quenches, etc.)

- **Customer causes**

- related to the patient and non-radiology staff (e.g. complying with instructions, unfamiliarity with procedure)

Cognitive biases

- **Alliterative bias**

- “Satisfaction of Report”
- Reporter is influenced by the prior interpretation made by another reporter.
- Formulating your own interpretation before reviewing any prior imaging reports may help reduce alliterative bias.

- **Anchoring bias**

- Initial impression is unduly influenced by the evaluation of subsequently collected information.
- Assessment of ALL imaging findings prior to formulating a diagnosis (including considering alternate diagnoses) is needed.

- **Automation bias**

- Common with reporters using CAD to over-rely on the software for the diagnosis, and to ignore their own opinions.
- Attempt to make your own assessment prior to reviewing CAD or second reporter findings
- Consider the limitations of the automated software!

Cognitive biases

- **Availability bias**

- Own diagnostic judgements are influenced by information or experiences that are readily recalled in your mind.
- Use of information sources beyond one's own personal experience, such as publications or an opinion from colleagues, may help to minimise availability bias.

- **Bandwagon effect**

- "Diagnosis Momentum" refers to when a reporter acts or thinks as others do, simply because that's what others are doing, rather than applying your own judgement.
- Try not dismissing your own opinion!

- **Confirmation bias**

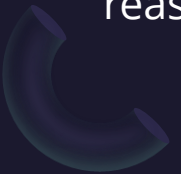
- Having a predetermined diagnosis in mind, then looking for evidence that supports this predetermined idea.
- Alliterative errors/satisfaction of report errors, are caused by the tendency to overvalue previous reports, and can be conceptualised as a type of confirmation bias.

Cognitive biases

- **Framing bias**

- Act of being unduly influenced by how a clinical question is asked or how the problem is presented, e.g. a request that presents a succinct history that perfectly matches a particular pathology, may influence your interpretation of the imaging.
- If possible/available, access to more detailed overall clinical information i.e. medical records, may help provide you with a more balanced assessment of the clinical situation.

- **Hindsight bias**

- Overestimate the prior predictability of a diagnosis after the event is known. In other words, the difficulty of making the correct diagnostic decision initially is retrospectively de-emphasised, after the diagnosis has already been proven.
 - It is important to be aware of this bias so that you are not overly-critical of yourself or others when quite reasonable errors are made (REAL/discrepancy meetings).
- 

Cognitive biases

- **Outcome bias**

- Favouring a less severe diagnosis based on empathy for a patient.

- **Representativeness bias**

- Making a judgement on an aspect of an image that is based on your own perception of what that represents.

- **Satisfaction of Search bias**

- Prematurely stop searching after early findings satisfy the reader that the diagnosis or symptoms can be explained.
- Have been reported to account for up to 25% of diagnostic errors.
- A systematic approach to image interpretation and review of check areas and not-to-miss diagnoses can help to reduce this bias.

- **Zebra retreat bias**

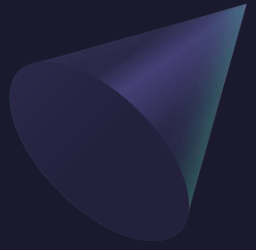
- A reader will not make a rare diagnosis, which is otherwise supported by the available evidence due to a lack of confidence.

ME AT WORK



ME WHEN I GET HOME





The Future...

What do you think?

HOPE?

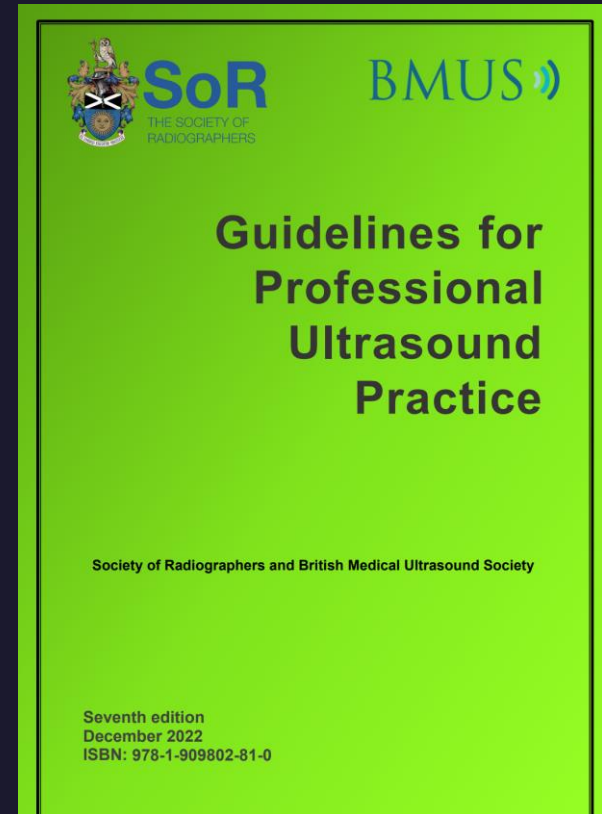


NO CHANCE!



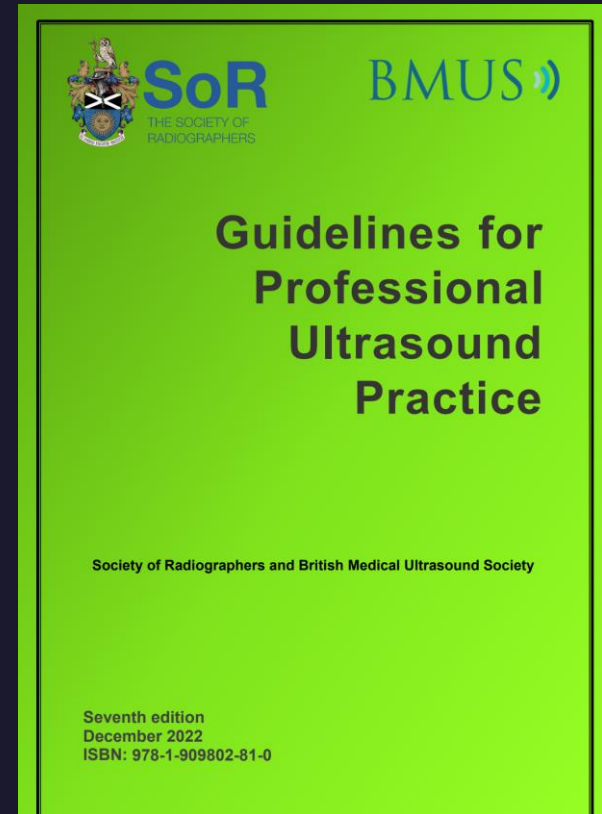
Professional Guidelines

- *‘An ultrasound report may be defined as the recording and interpretation of observations from an ultrasound examination’*
- The ultrasound report should be written by the person performing the ultrasound examination and should be viewed as an integral part of the whole examination.
- The person issuing the report should take responsibility for the accuracy of the report.



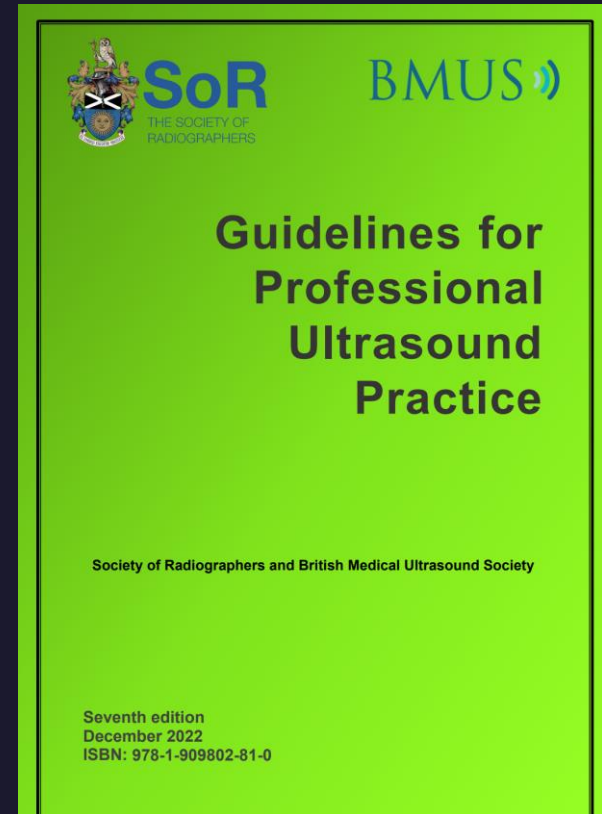
Professional Guidelines

- The practitioner should be aware of his/her limitations and consequently seek advice when necessary
- Any limitations should be stated and, if a relevant organ has not been fully examined, the reason(s) should be indicated
- The exclusion value and significance of the appearances should be stated where relevant.



Professional Guidelines

- The practitioner should be aware at all times of the implications for the client/patient of the contents of the report and act in accordance with local guidelines
- ***“Radiographers are legally accountable for their professional actions and for any negligence, whether by act or omission or injury” (SCoR, 1994)***





In Summary

- Most standards state that the person undertaking dynamic imaging tests, should be the person reporting it.
- It takes effort, commitment and a multidisciplinary effort to make create and effect change.
- Consider small changes that can be built upon to prove accuracy and ability.
- Lobby for support!

Thank you for listening

*Go raibh maith agaibh as
ag éisteacht*

Any Question?

Chéisteanna?

