# Shining a Light on Scottish Excellence

Scottish Council

Society of Radiographers

Study Day 26th October 2024

SoR THE SOCIETY OF RADIOGRAPHERS

## Programme

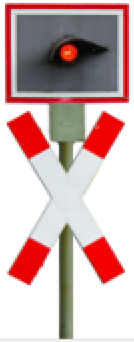
| Morning | | |
|---|---|---|
| [illegible] | Welcome and summary of Scottish Council | Claire Currie |
| [illegible] | President's Address | Tom Walker |
| [illegible] | Radiographers and human trafficking | Claire Currie on behalf of Carina Maciver |
| [illegible] | Human factors | Kelsey Normand |
| [illegible] | IP survey | Louise Mifsud |
| Questions followed by lunch | | |

| Afternoon | | |
|---|---|---|
| [illegible] | PhD student experience | Joanne Mitchell |
| [illegible] | Dementia awareness for AHPs | Prof Elaine Hunter |
| [illegible] | Philips - refreshing the roots | Marc Turner & Jacob Morgan |
| [illegible] | Philips delivering innovation that matters to you - Artificial Intelligence | Louise Jones |
| [illegible] | Radiation to education | Eva Starkey |
| [illegible] | Imaging saves lives | Shaun Buchanan & Karen McGinniss |
| Coffee Tea & networking, followed by raffle and AGM | | |

SoR

## RADIOGRAPHERS & HUMAN TRAFFICKING VICTIMS IN THE IMAGING DEPARTMENT

Carina MacIver (carina.maciver@nhs.scot)
SoR Scottish Study Day - 26 October 2024



## Signal Passed at Danger

Human Factors & Radiation Safety

Kelsey Normand
Advanced Practitioner in Education
Ninewells Radiotherapy Department, Dundee
kelsey.normand2@nhs.scot

## UPDATE ON INCLUSIVE PREGNANCY SURVEY ADC MOTION

Louise Mifsud

SoR Scottish Annual Study Day
26th October 2024

l.mifsud@rgu.ac.uk

Edinburgh Cancer Centre

THE UNIVERSITY of EDINBURGH

Research Training

- **PhD Student University of Edinburgh**
  - Institute of Genetics and Cancer (Edinburgh Cancer Research Centre) (PhD) - 6 Years (Part-time)
  - College of Medicine and Veterinary Medicine
- **July 2020 UoE**
  - Professor Val Brunton , Chair of Cancer Therapeutics
  - Professor Mark Arends, Head of Edinburgh Pathology
- **Supervision Team**
  - Professor Bill Nailon
  - Professor Duncan McLaren
  - Professor Farhat Din
- **Review Team**
  - Dr Barry Laird
  - Dr Rachel Harris
    - 1st Year Review (Feb 2022)
    - 2nd Year Review (Feb 2023)
    - 3rd Year Review (Feb 2024)

Alzheimer Scotland Action on Dementia | Prevent. Care. Cure.

## Dementia. Everybody's Story.

Elaine Hunter, National AHP Consultant, Alzheimer Scotland
@elaineahpmh ehunter@alzscot.org

## PHILIPS

### Refreshing the roots

Basic parameters in digital X-ray introduction

## PHILIPS

Delivering innovation that matters to you

Louise Jones
26th October 2024

## Radiation to Education:

Being a part of Scotland's Success in Radiography

Eva Starkey
Lecturer in Diagnostic Radiography
Specialist Radiographer

## Imaging Saves Lives

Karen McGinniss
Shaun Buchanan
Institute of Neurological Sciences, Glasgow

## AGM – 26th October 2024

- Chairs Welcome
- Chair's Report
- Treasurer's Report
- Professional Officer's Report
- National Officer's Report
- Motion to AGM – Review of Scottish Council Terms of Reference and temporary change to Council Elections
- Council Elections

Close

SoR

## Survey

Thank you for attending. Please complete this survey

SoR THE SOCIETY OF RADIOGRAPHERS

Scottish Council of the Society of Radiographers Study day and Annual General Meeting 2024

# Programme

| Morning | | |
|---|---|---|
| 10:30 - 10:35 | Welcome and summary of Scottish Council | Claire Currie |
| 10:35 - 10:45 | President's Address | Tom Welton |
| 10:45 -11:00 | Radiographers and human trafficking | Claire Currie on behalf of Carina MacIver |
| 11:00 - 11:50 | Human factors | Kelsey Normand |
| 11:50 – 12:05 | IP survey | Louise Mifsud |
| Questions followed by lunch | | |

| Afternoon | | |
|---|---|---|
| 13:15 – 13:35 | PhD student experience | Joanne Mitchell |
| 13:35 – 14:00 | Dementia awareness for AHPs | Prof Elaine Hunter |
| 14:00 – 14:20 | Philips - refreshing the roots | Marc Turner & Jacob Morgan |
| 14:20 – 14:40 | Philips delivering innovation that matters to you - Artificial Intelligence | Louise Jones |
| 14:40 – 15:00 | Radiation to education | Eva Starkey |
| 15:00 15:20 | Imaging saves lives | Shaun Buchanan & Karen McGinniss |
| Coffee Tea & networking, followed by raffle and AGM | | |

SoR
THE SOCIETY OF RADIOGRAPHERS

# The Society of Radiographers Scottish Council Strategy 2024 -2027

SoR
THE SOCIETY OF RADIOGRAPHERS

**Communication . Sustainability of Council . Influence . Profile**

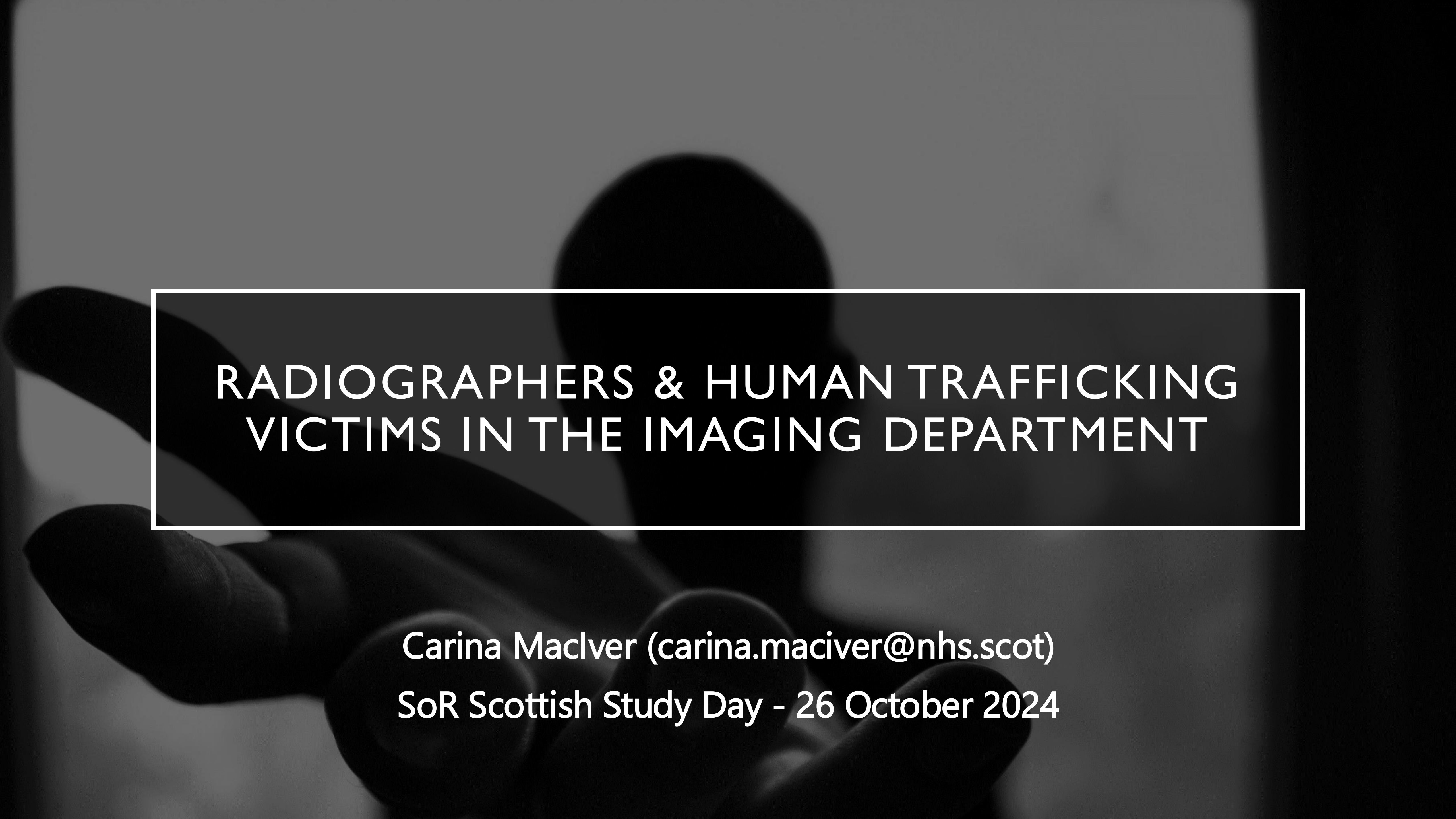
**Empowering radiographers in Scotland through excellent communication, sustainable practices, influential leadership and practice to advance the profession to a brighter future**

## Communicating with members

## Creating a sustainable council

## Influencing on behalf of Scottish members

## Raising the profile of the profession



# RADIOGRAPHERS & HUMAN TRAFFICKING VICTIMS IN THE IMAGING DEPARTMENT

Carina MacIver (carina.maciver@nhs.scot)

SoR Scottish Study Day - 26 October 2024

# AIMS

1. Human trafficking: setting the scene for radiographers
2. Dissertation project
3. Take home points

# HUMAN TRAFFICKING

"**Human Trafficking** is the recruitment, transportation, transfer, harbouring or receipt of **people** through force, fraud or deception, with **the aim of exploiting them for profit**."

*- United Nations Office on Drugs & Crime, 2023 -*

1. Labour
2. Sexual
3. Criminal activity
4. Sham marriage
5. Organ harvesting

# HUMAN TRAFFICKING: CONTEXT

One of the biggest criminal industries.

**+$30 billion per year generated**

(Byrne et al., 2019)

UK has an estimated **136,000 human trafficking victims**

(sohtis.org, 2024)

Reported **up to 88%** of human trafficking **victims have an interaction with healthcare** during captivity

(Lamb-Susca et al., 2018)

# HUMAN TRAFFICKING & IMAGING

Characteristics of the imaging environment make it **advantageous** for victim identification or disclosure (Prakash et al. 2023; Raker & Hromadik, 2021)

one-to-one radiographer / patient

radiation safety

Magnetic resonance safety

Speed of relationship building

A&E attendance > medical imaging use

# Exploring Diagnostic Radiographer's perceptions of recognising human trafficking victims within the imaging department

# RESULTS: 3 PRIMARY THEMES

1. Limited Confidence
2. Awareness of Opportunity
3. Increasing Confidence

1

## Limited Confidence

“I don’t think I’m very confident in my own ability, to be honest…‘cause I don’t have that much knowledge on like A what it is, but B what to look out for even.”

**- Lucy -**

2

## Awareness of Opportunity

"It's a golden opportunity as radiographer to figure out, because you can get rid of everyone else out of the room. *'There's radiation in here, you can't come in with your friend/relative...'* whoever it is...and you can have that conversation in a safe space."

- Chris -

3

## Increasing Confidence

“...general signs of human trafficking and I think that it could tie in with looking at other abuses as well because I guess a lot of it is similar, so even if it was linked into us...yeah, feeling equipped in both of them...”

- Hayley -

# KEY FINDINGS

## Reasons for lack of confidence

1. Poor knowledge
2. No training
3. Time pressures
4. Competing priorities
5. Patient confidentiality
6. Lack of protocols

# KEY FINDINGS


Available from Unsplash: https://unsplash.com/photos/man-in-black-jacket-holding-black-and-white-quote-board-0Uw43gNMwbQ?utm_content=creditShareLink&utm_medium=referral&utm_source=unsplash

- ✓ Patient-centred care
- ✓ Public Health Crisis

- **Professional responsibilities** : HCPC standard of proficiency 2.3

*“understand the importance of safeguarding by actively looking for signs of abuse, demonstrating understanding of relevant safeguarding processes and engaging in these processes where necessary”*

# KEY FINDINGS

Reasons to be more confident

1. Inquiry skills
2. Inherent characteristics of imaging environment
3. Adapting and expanding existing training

## DOWNLOAD AND READ

**Human Trafficking and Exploitation: what health workers need to know**

Complete associated Human Trafficking Turas eLearning module

# FAMILIARISE YOURSELF WITH COMMON SIGNS & INDICATORS

- Physical, psychological, situational and radiological
- No definitive sign – critical thinking

# INITIATE AWARENESS

- Chat with colleagues
- *Have you thought about human trafficking victims as potential patients?*
- Signpost to resources
- Get it on the radar of your students

SOHTIS

Survivors of Human Trafficking in Scotland

HOME ABOUT US SERVICES AWARENESS GET INVOLVED BLOG CONTACT

# ENDING HUMAN TRAFFICKING IS EVERYONE'S BUSINESS AND NO-ONE'S CONTRIBUTION IS INSIGNIFICANT

# Signal Passed at Danger

## Human Factors & Radiation Safety

Kelsey Normand
Advanced Practitioner in Education
Ninewells Radiotherapy Department, Dundee
kelsey.normand2@nhs.scot

# The human factor is that humans make mistakes

People make mistakes.

ROAR! +

= RUN!

ROAR! +

= RUN!

Error Rate for Data Entry= 4%

&

# Basketballs

- Maintaining radiation controlled area
- Image appraisal
- Contrast pump injection
- Safety questionnaires in MRI
- Patient positioning
- Undertaking an MRI scan
- Reading or checking MRI safety questionnaire
- ID checks
- IR(me)R requirements like ID, dose to patient etc
- Patient condition within scan room
- Onserving a non communiating patient respiratory movement prior to exposure
- Clothing artefact
- Contrast in a CT scan
- selecting the correct detector
- Telephone ringing Patient fall Power cut
- Lmp consideration
- Keeping to time
- Watching for extravasation when administering contrast
- Satisfaction of search
- Selecting the correct examination
- X-ray image quality
- Dose to patient
- Staff coming and going IN and OUT in OR
- Patient comfort

# Gorillas

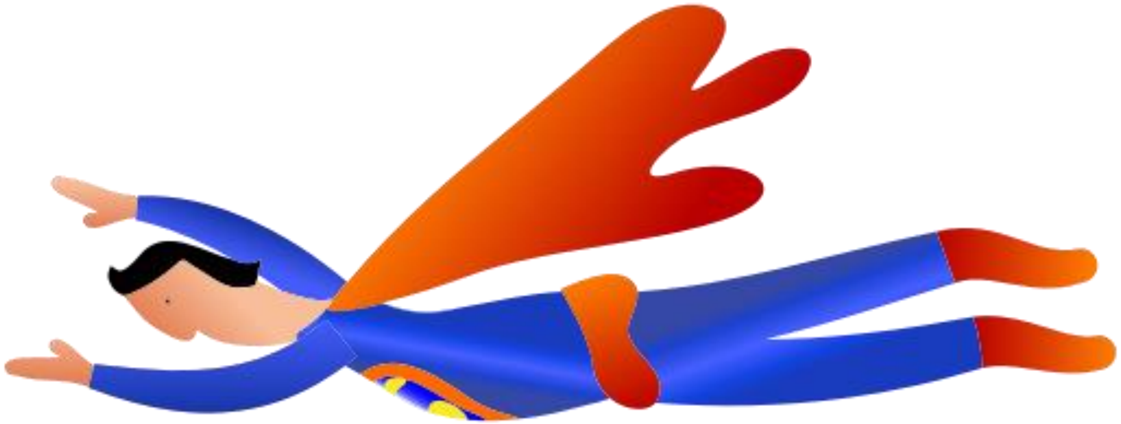
- Human trafficking!
- A second pathology
- Patient artefacts
- Patient movement
- Forgetting to tell patient to breathe when looking at the xray
- Artefact on imaging
- Anatomical markers
- A lonely elderly patient
- Individual student struggles if you are focussing on an entire class
- Wrong examination
- Incomplete pregnancy check
- Colleagues needing support
- Human traficking!
- Colleagues
- Patient moves position
- Placing physical markers
- Unrelated pathology
- Staff not feeling well
- patient moving out of position while you have your back turned
- Somone with no lead apron on in a controlled area
- Dose
- On a specific area on the image, possibly missing something in the outer image due to clinical question
- Patient in general
- Staff entering and exiting theatre room without lead

Show less

Human imperfection is often ignored in

- Protocols
- Work instructions
- Risk Assessments

"Exceptional human performance is often relied upon in healthcare"



If people just took care…

“While it’s reasonable to expect people to pay attention and take care at work, relying on this is not enough to control risk.”

-Health and Safety Executive

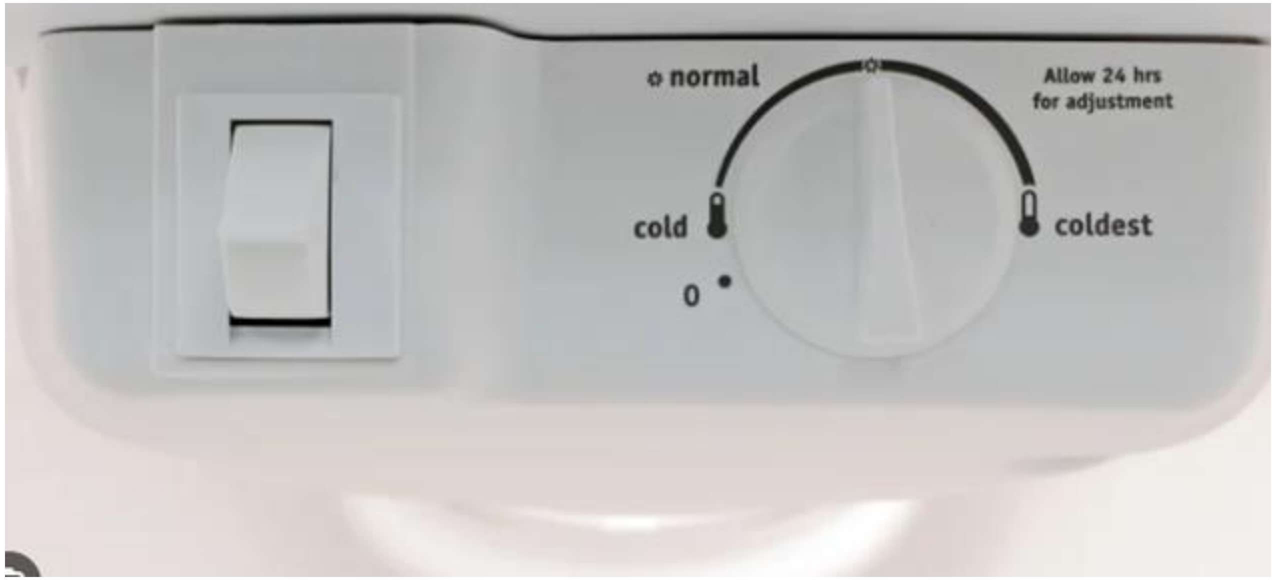
# Human Factors

is a science that considers-

How can systems be designed to support the right outcome even in spite of the fact that humans make mistakes?


cash
cash
free balance enquiries


TEMP REG
5
4
6
3
7
2
0
1


normal
Allow 24 hrs
for adjustment
cold
coldest
0

# Other examples?

## Non-Work

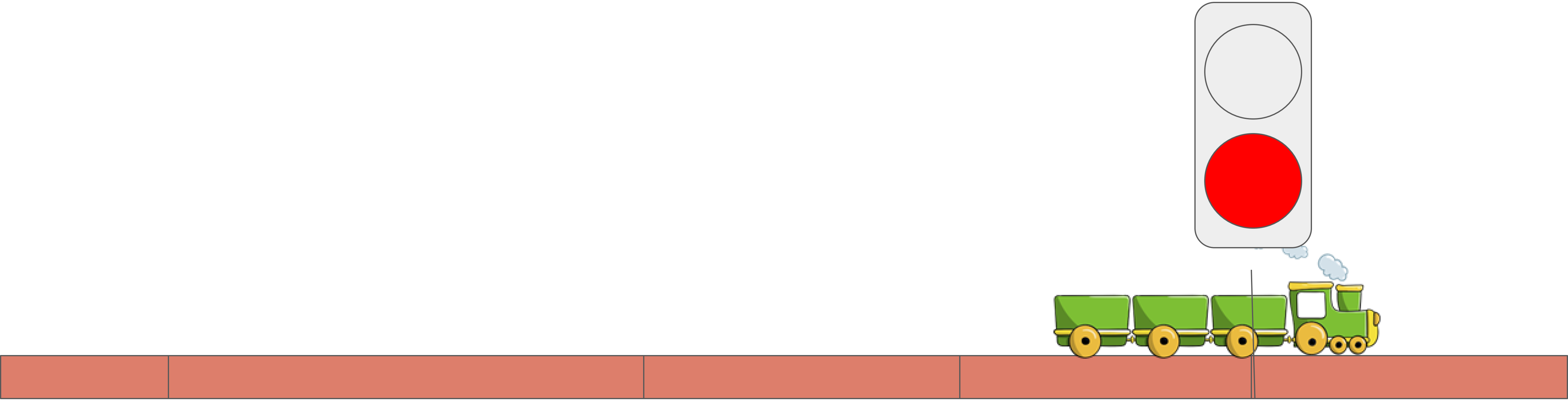
- Speed limiter in car
- Inputting a new password twice. In case you mistyped it once
- Stand behind the line at station
- Lines across lanes when approaching a roundabout
- Car will beep until you put your seatbelt on
- Petrol and diesel different size nozzle
- Email- "you forgot to send attachment" message
- 'Contains nuts' on a pack of peanuts
- Symbol showing where filler cap on car is
- Car reminding you to pick up mobile phone
- Autocorrect
- Seatbelt alarm in car if not plugged in
- Cant start the washing machine without it being locked
- Diesel stamp on furl ca
- Bus stop announcements
- MRI safety notices

## Work

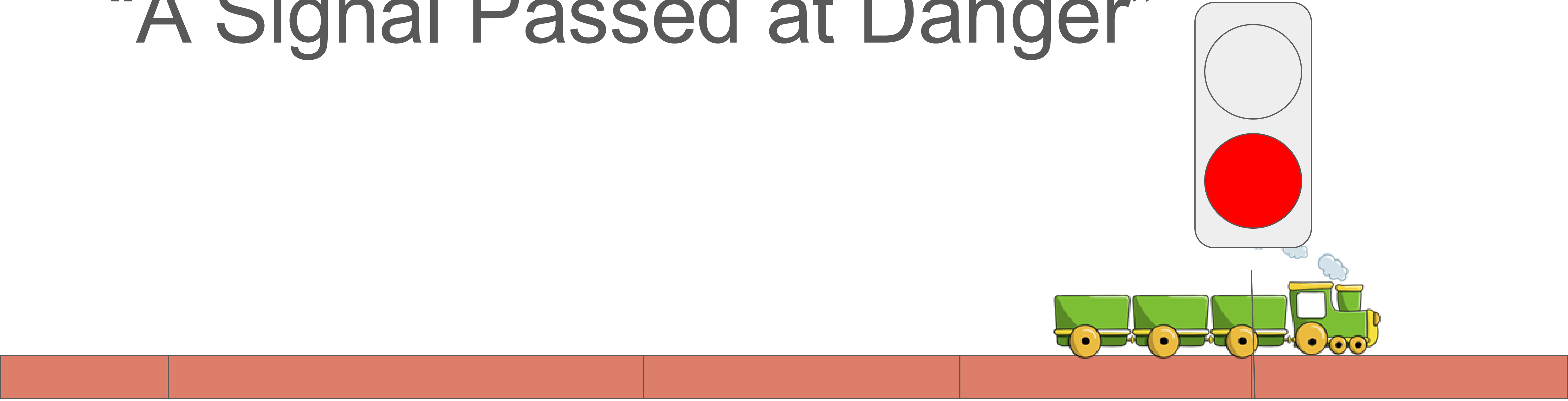
- AECs
- Radiation safety lights
- Reminder that a grid is in/out
- Pause and check before exposure
- Not letting you expose if you haven't placed detector properly in Bucky tray
- Limited access doors for MRI
- Bucky detection
- X-ray table covers by the table
- Tube refusing to move when it senses something closer
- Colour coded corridors to allow patients to know what area they are in
- PAUSE AND CHECK
- SAR limits on MRI
- Protocols
- UI prompts
- Automatic positioning
- Adequate appointment times for the patient
- detectors having different lights to warn you about which one you use for each procedure
- Checking PACS
- MRI won't scan with scan room door open

# Human Factors & Accident Investigation

# How is this possible?



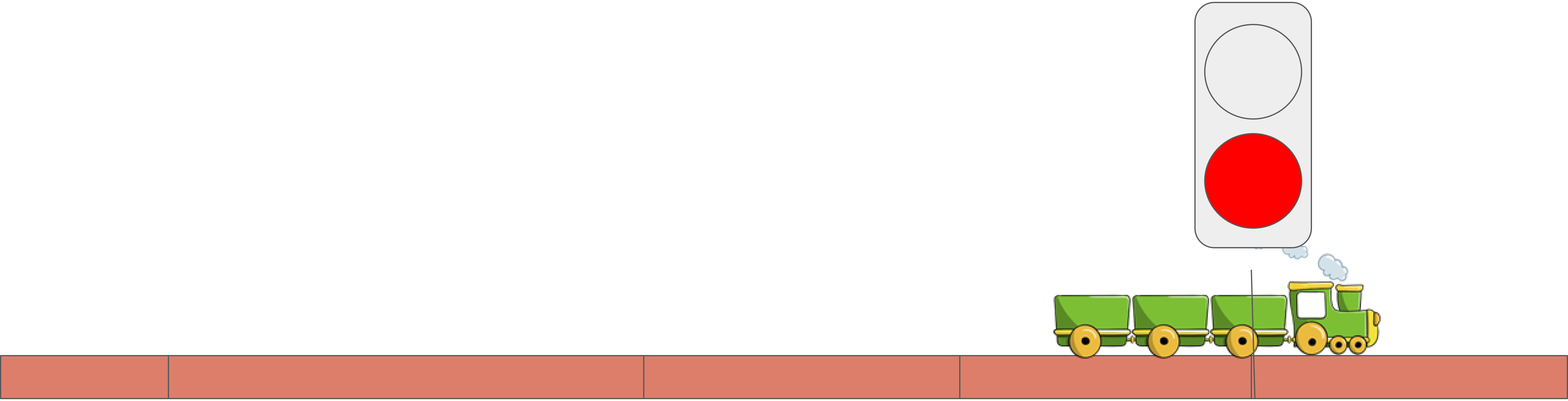
# “A Signal Passed at Danger”



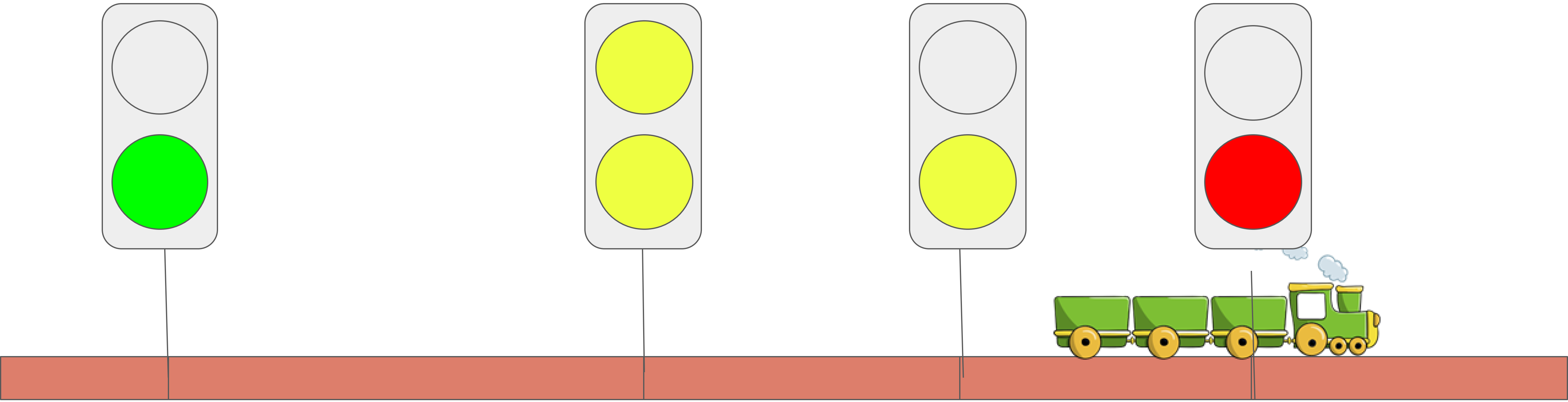
# Look to the system…

# How is this possible?

1. It takes approximately two miles for a train to stop.



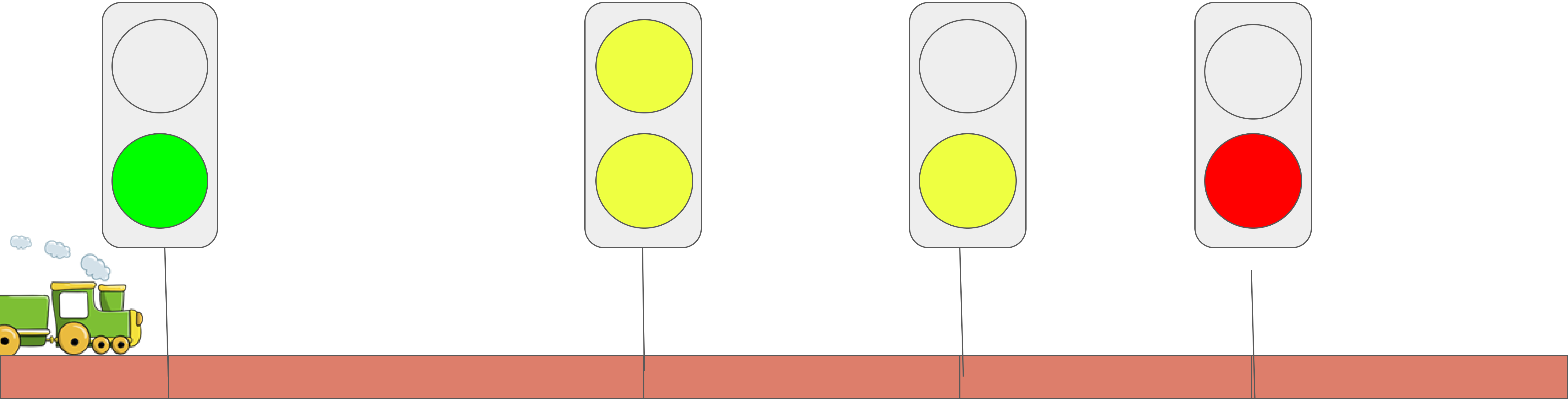
“Put simply, because drivers have to prepare to stop for up to two miles, and several signals in advance, the problem becomes less to do with signals being passed at danger and more to do with other events, principally the succession of previous signals passed at caution.”



Green=Clear

Proceed Normally

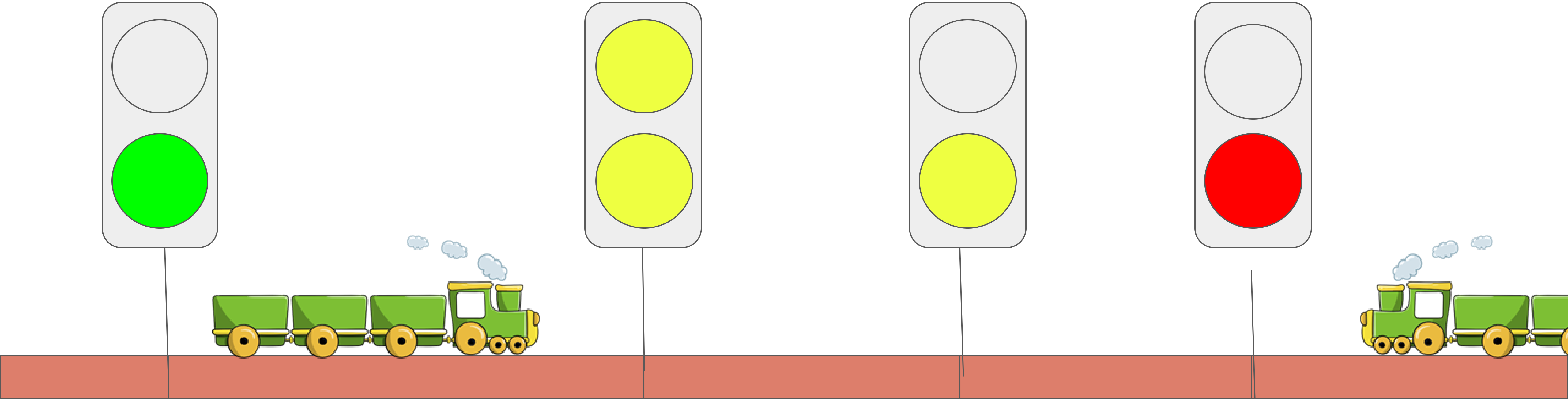
All three sections of track ahead of you are clear



Double Yellow: Preliminary Caution

Proceed expecting to slow down at next signal.

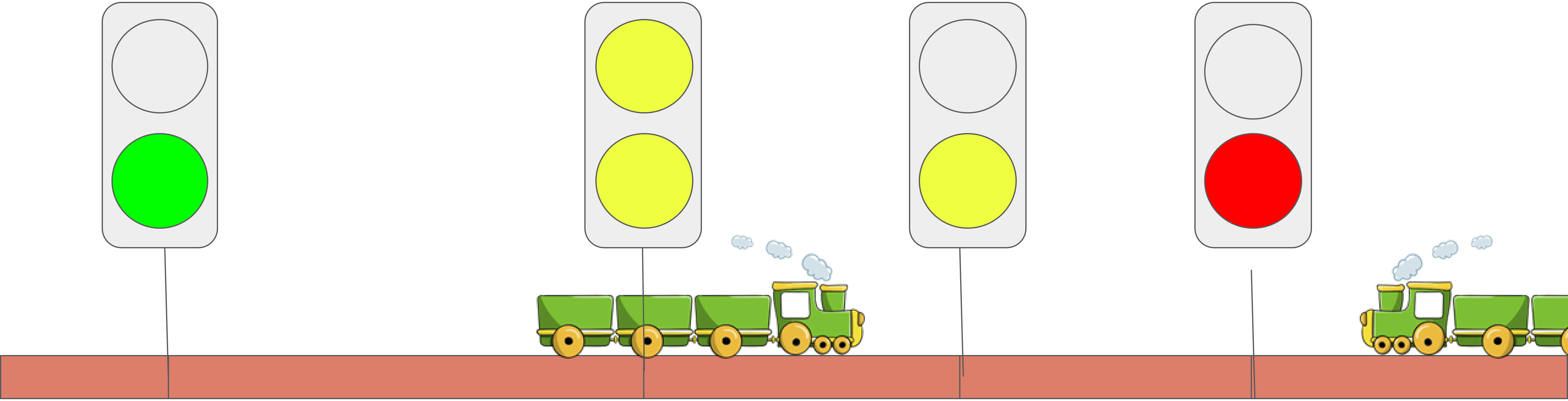
Two sections ahead are clear, third is not.



## Single Yellow: Caution

Proceed expecting to stop at next signal.

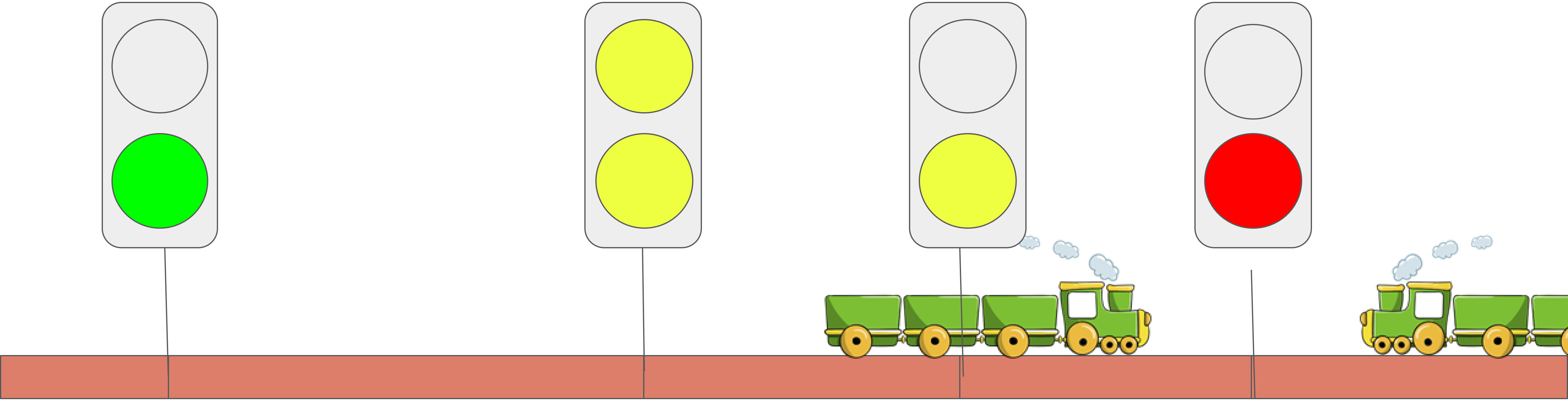
The section ahead is clear, the next one isn’t.

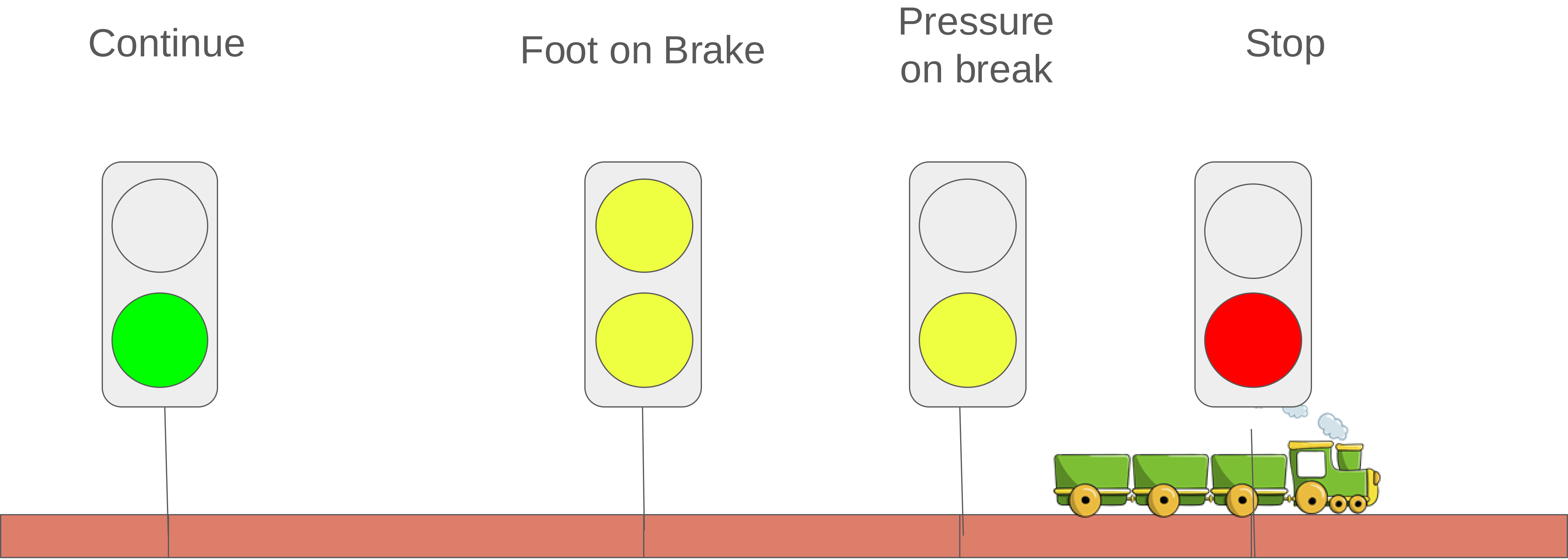


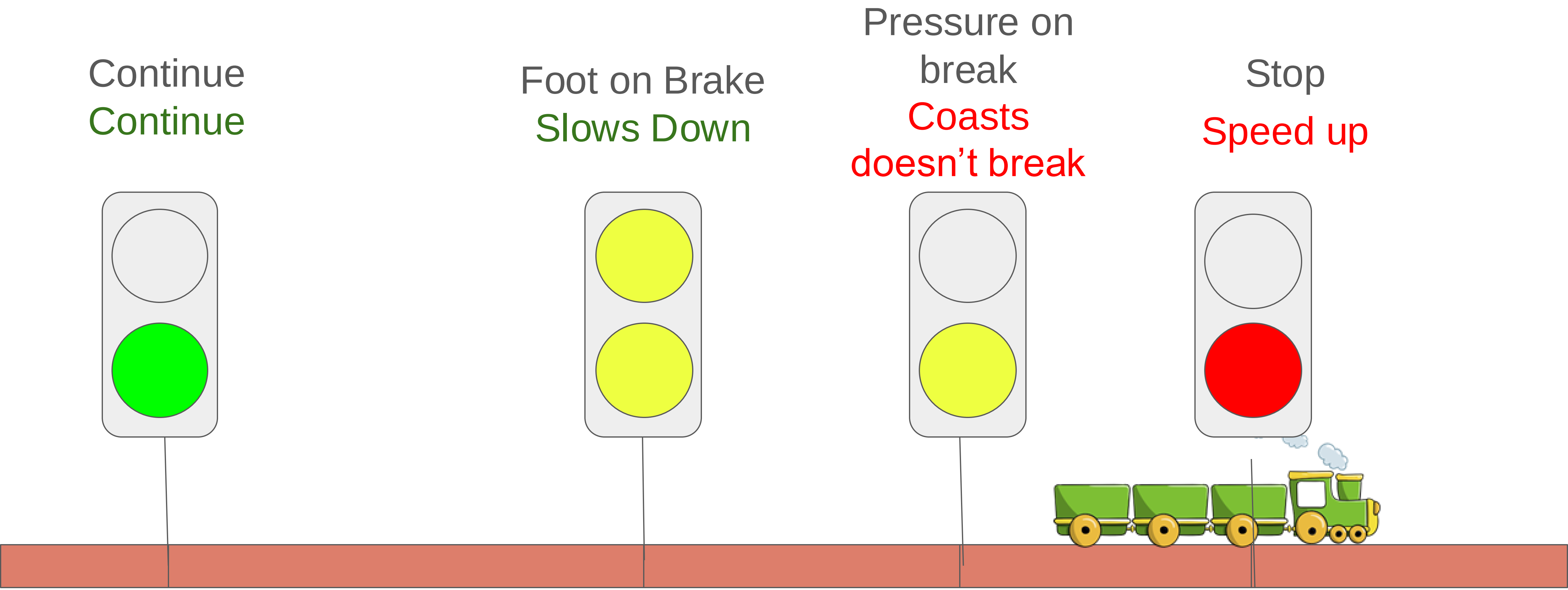
Red: Danger

Stop.

The next section of track is not clear.



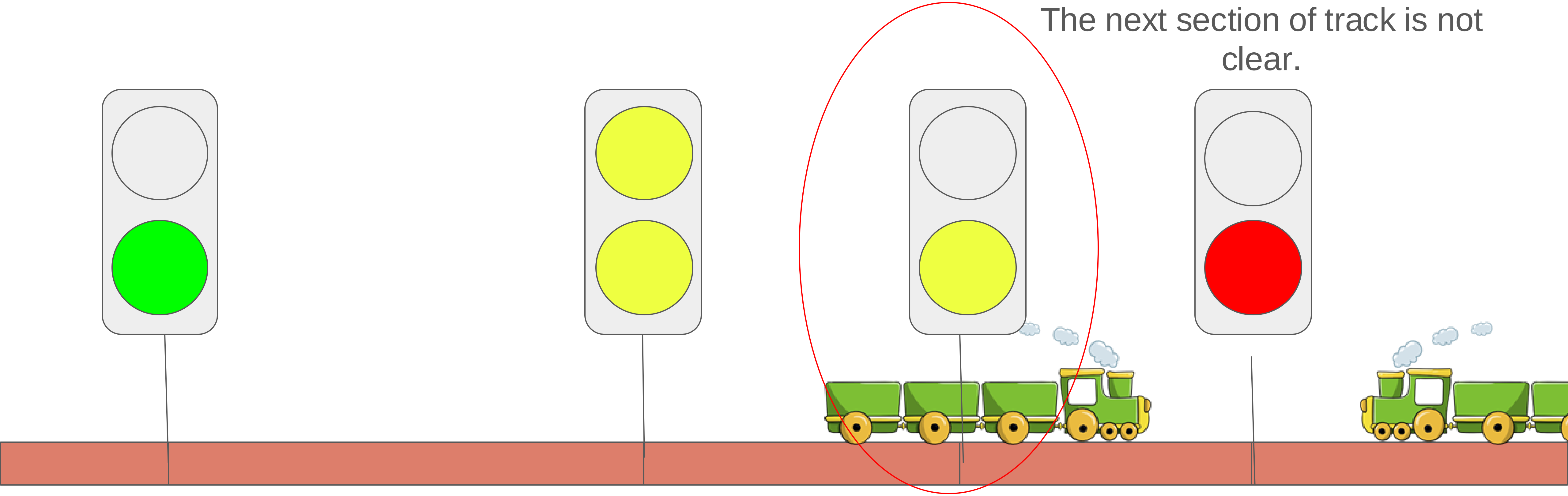

Continue
Foot on Brake
Pressure on break
Stop


Continue
Continue
Foot on Brake
Slows Down
Pressure on break
Coasts doesn’t break
Stop
Speed up

Red: Danger

Stop.

The next section of track is not clear.

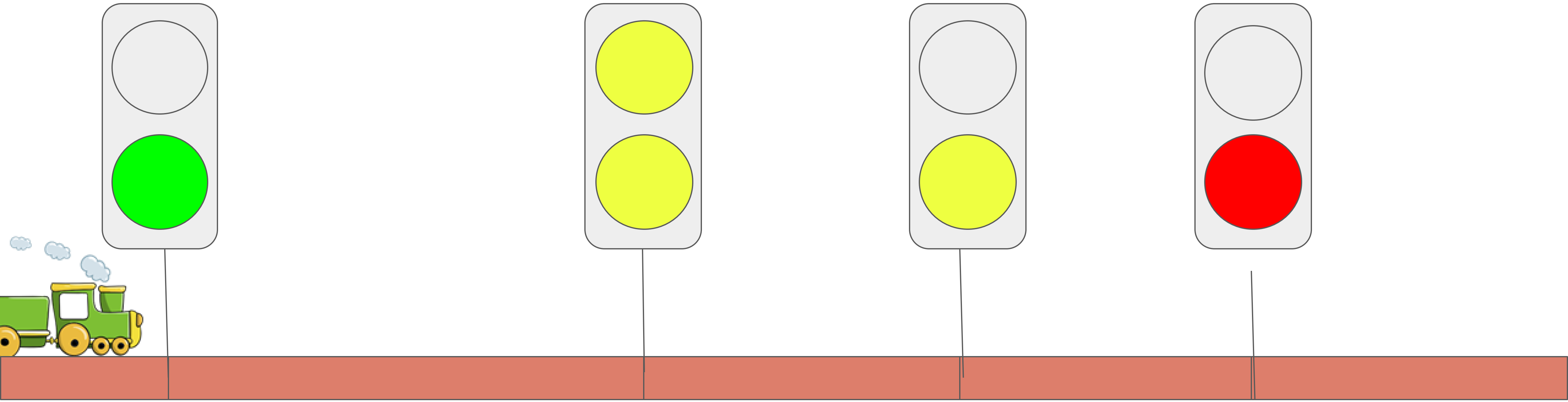


Human Factor= visibility of the signals

Human Factor= automatic response to the warning buzzer.

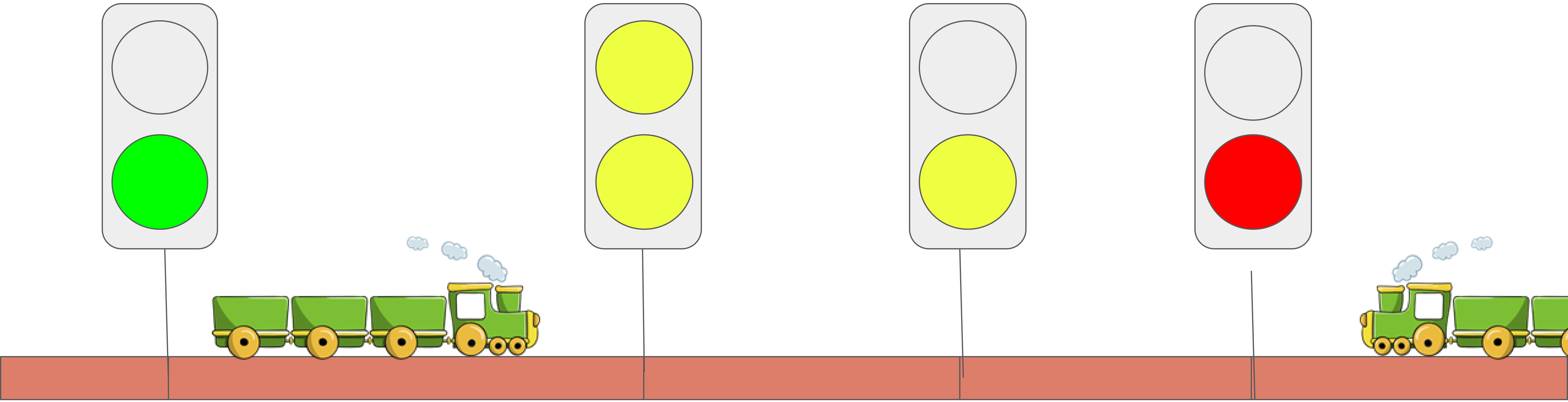
# Automatic Warning System

Chime!

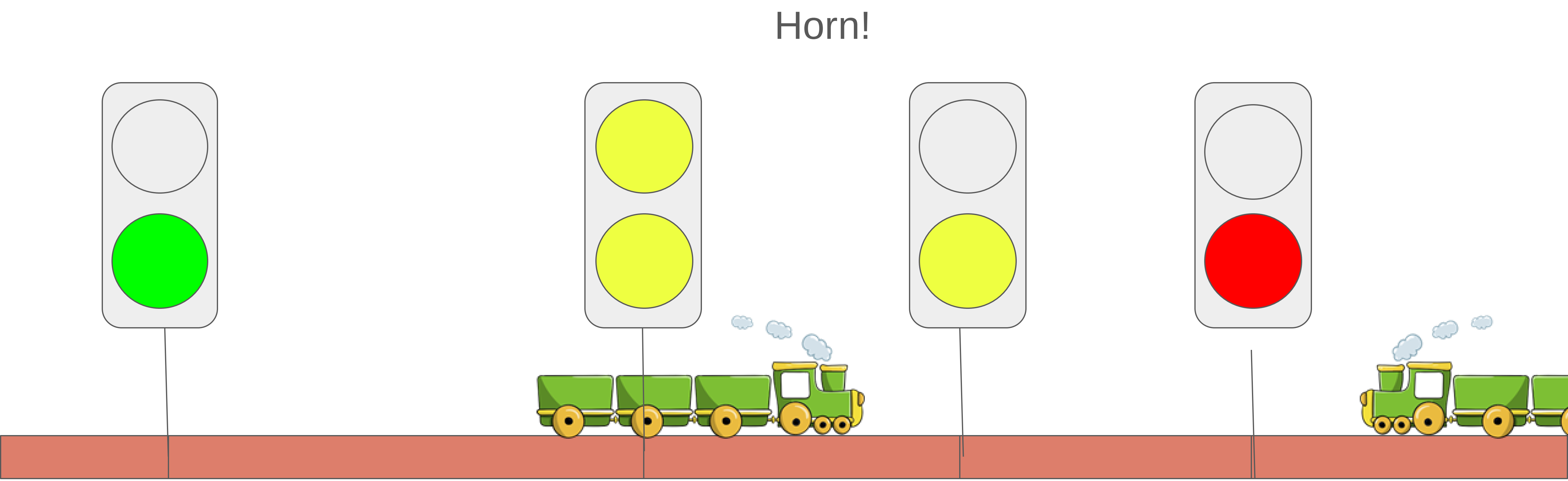


# Automatic Warning System

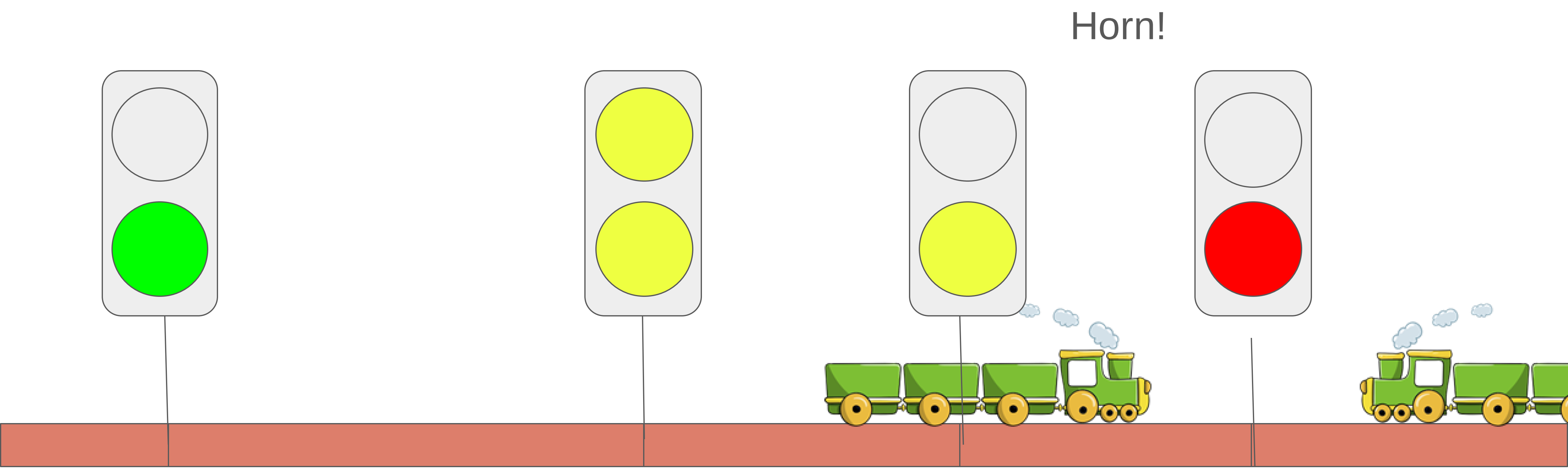
Horn!



# Automatic Warning System



# Automatic Warning System



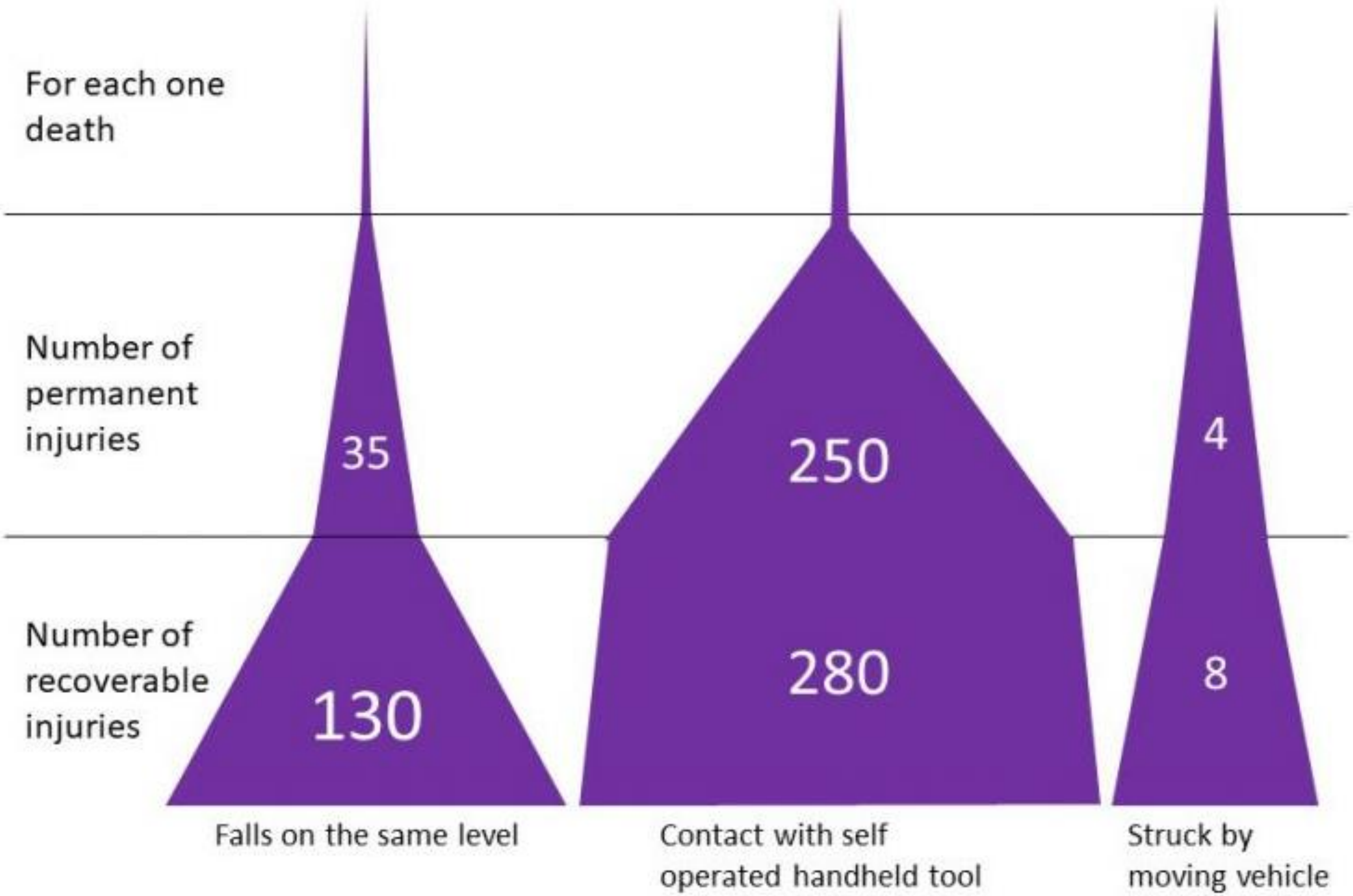
The **Automatic Warning System** installed on all passenger trains in the UK is an example of a system that was not designed with limitations of human attention in mind. It is a device fitted in the train cab, based on the now obsolete mechanical system of signalling that used to signal either STOP or PROCEED. It sounds a bell when a clear (green) signal is passed and a buzzer when caution or danger is signalled. If the buzzer is not acknowledged by the press of a button, then the train begins to stop automatically. In commuter traffic, most signals will be at the 'caution' aspect, and given the frequency of signals (spaced 1km apart), most drivers will face two signals per minute. Given the tendency for the attentional system to automate highly repetitive behaviour, many drivers lose focus on the reasons for carrying out this repetitive task, and act in reflex whenever the buzzer sounds. The end result is that drivers often hear the buzzer and press the button reflexively without actively thinking about train speed and location.

*Source: Davies, D. (2000): Automatic Train Protection for the Railway Network in Britain – A study. RA Eng., London.*

# Not reacting
# But pro-acting

Consider your workplace- do staff react or pro-act to safety barriers?

Heinrich’s Triangle


For each one death
Number of permanent injuries
Number of recoverable injuries
35
130
250
280
4
8
Falls on the same level
Contact with self operated handheld tool
Struck by moving vehicle

# “All models are wrong, but some are useful.”

- There are consistently greater numbers of less serious events than more serious ones.
- Many near misses could have become events with more serious consequences.
- All the events represent failures in control, so are potential learning opportunities.

Nuclear Power
Oil and Gas
Aviation
Construction
Rail
Military

## This seems a very broad topic area, where should I start?

Don't be discouraged by the breadth of issues that are covered by human factors. This guidance will provide you with practical information to help you start to manage human factors in your organisation. In particular it should help you to make progress in addressing human factors in four main areas:

- during risk assessments;
- when analysing incidents, accidents and near misses;
- in design and procurement; and
- in certain aspects of day-to-day health and safety management.

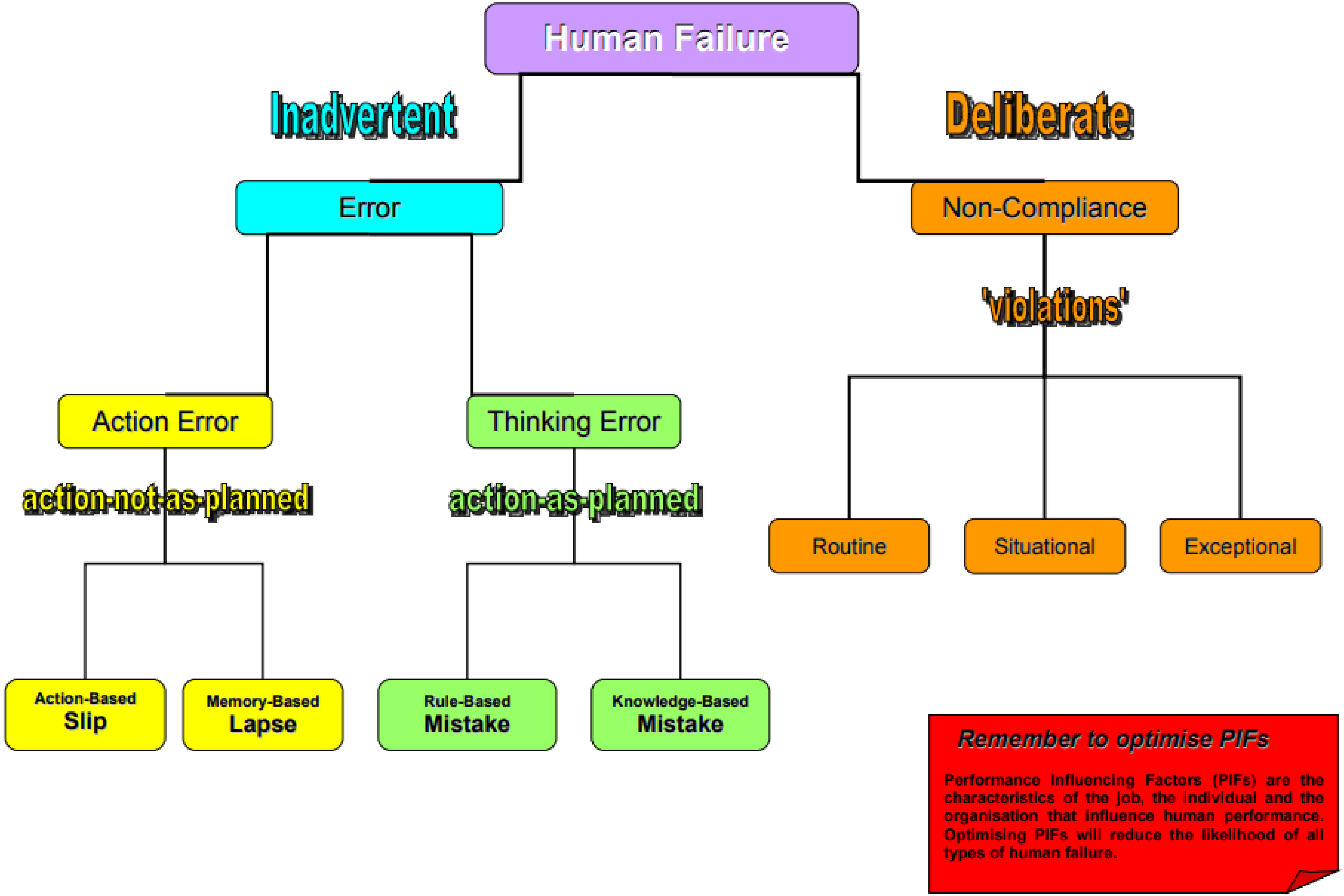
# Look at your risk assessments…

| Step 1(b) What are the hazards | Step 2- Who might be harmed & how | Step 3(a)- Current Controls | Step 3(b) Evaluate the risks |
|---|---|---|---|
| | | | |

How many of your 'controls' against risk are individual people?

Ask the question- what if someone makes a mistake?

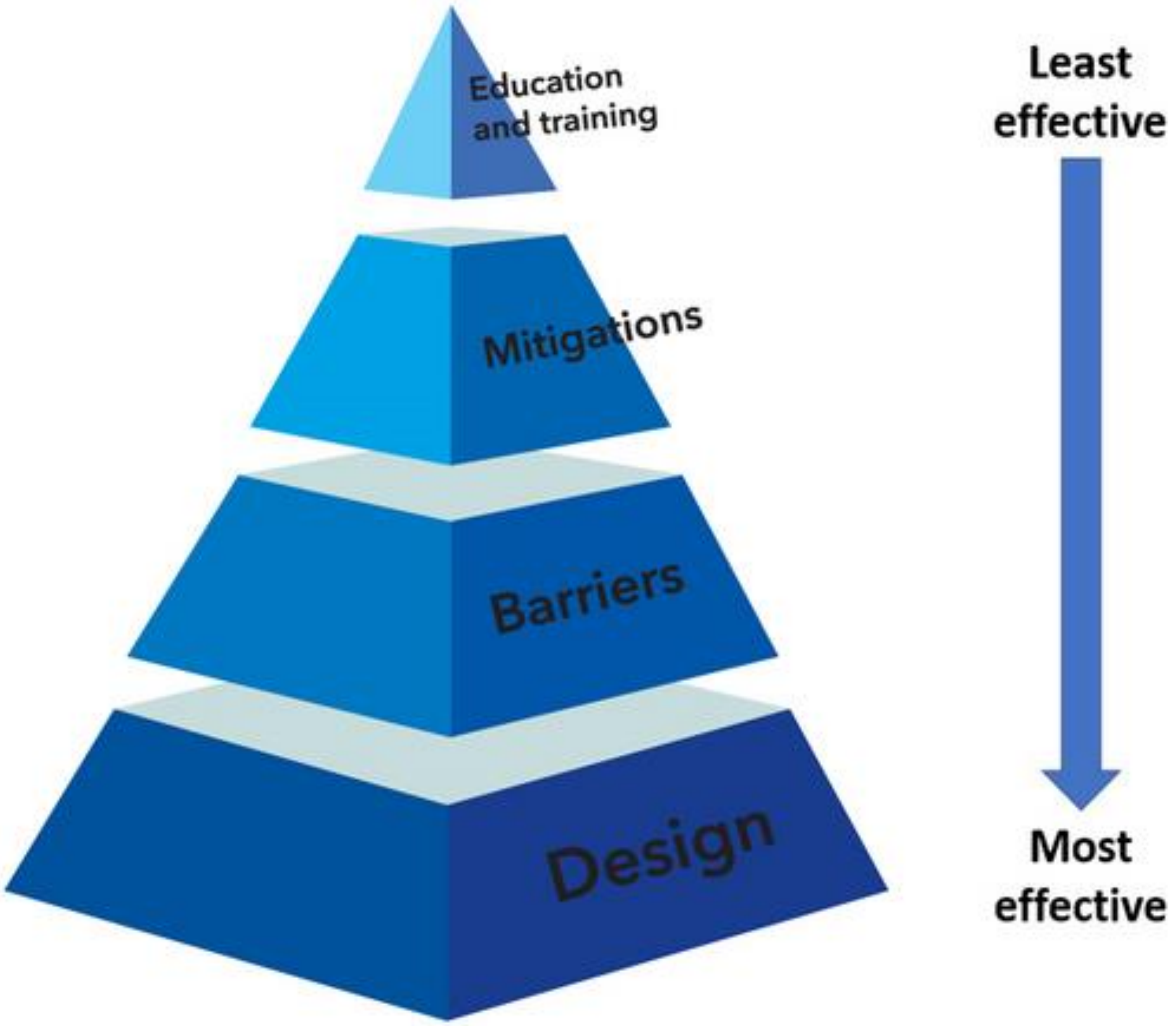
# Go beyond “human error”


Human Failure
Inadvertent
Deliberate
Error
Non-Compliance
'violations'
Action Error
Thinking Error
action-not-as-planned
action-as-planned
Routine
Situational
Exceptional
Action-Based Slip
Memory-Based Lapse
Rule-Based Mistake
Knowledge-Based Mistake
Remember to optimise PIFs
Performance Influencing Factors (PIFs) are the characteristics of the job, the individual and the organisation that influence human performance. Optimising PIFs will reduce the likelihood of all types of human failure.

# Human Failure Types

| | Characteristics | Failure Type | Examples | Typical Control Measures |
|---|---|---|---|---|
| Action Errors | Associated with familiar tasks that require little conscious attention. These 'skill-based' errors occur if attention is diverted, even momentarily.<br><br>Resulting action is not intended: *'not doing what you meant to do'*.<br><br>Common during maintenance and repair activities. | **Slip** (Commission) | A simple, frequently-performed physical action goes wrong:<br>• flash headlights instead of operating windscreen wash/wipe function<br>• move a switch up rather than down (wrong action on right object)<br>• take reading from wrong instrument (right action on wrong object)<br>• transpose digits during data input into a process control interface | • human-centred design (consistency e.g. up always means off; intuitive layout of controls and instrumentation; level of automation etc.)<br>• checklists and reminders; procedures with 'place markers' (tick off each step)<br>• independent cross-check of critical tasks (PTW)<br>• removal of distractions and interruptions<br>• sufficient time available to complete task<br>• warnings and alarms to help detect errors<br>• often made by experienced, highly-trained, well-motivated staff: additional training not valid |
| | | **Lapse** (Omission) | Short-term memory lapse; omit to perform a required action:<br>• forget to indicate at a road junction<br>• medical implement left in patient after surgery<br>• miss crucial step, or lose place, in a safety-critical procedure<br>• drive road tanker off before delivery complete (hose still connected) | |
| Thinking Errors | Decision-making failures; errors of judgement (involve mental processes linked to planning; info. gathering; communication etc.)<br><br>Action is carried out, as planned, using conscious thought processes, but wrong course of action is taken: *'do the wrong thing believing it to be right'* | Rule-Based **Mistake** | If behaviour is based on remembered rules and procedures, mistake occurs due to mis-application of a good rule or application of a bad rule:<br>• misjudge overtaking manoeuvre in unfamiliar, under-powered car<br>• assume £20 fuel will last a week but fail to account for rising prices<br>• ignore alarm in real emergency, following history of spurious alarms | • plan for all relevant 'what ifs' (procedures for upset, abnormal and emergency scenarios)<br>• regular drills/exercises for upsets/emergencies<br>• clear overview / mental model (clear displays; system feedback; effective shift handover etc.)<br>• diagnostic tools and decision-making aids (flow-charts; schematics; job-aids etc.)<br>• competence (knowledge and understanding of system; training in decision-making techniques)<br>• organisational learning (capture and share experience of unusual events) |
| | | Knowledge-Based **Mistake** | Individual has no rules or routines available to handle an unusual situation: resorts to first principles and experience to solve problem:<br>• rely on out-of-date map to plan unfamiliar route<br>• misdiagnose process upset and take inappropriate corrective action (due to lack of experience or insufficient / incorrect information etc.) | |
| Non-Compliance | Deliberate deviations from rules, procedures, regulations etc. Also known as 'violations'<br><br>Knowingly take short cuts, or fail to follow procedures, to save time or effort.<br><br>Usually well-meaning, but misguided (often exacerbated by unwitting encouragement from management for 'getting the job done'). | **Routine** | Non-compliance becomes the 'norm'; general consensus that rules no longer apply; characterised by a lack of meaningful enforcement:<br>• high proportion of motorists drive at 80mph on the motorway<br>• PTWs routinely authorised without physical, on-plant checks | • improve risk perception; promote understanding and raise awareness of 'whys' & consequences (e.g. warnings embedded within procedures)<br>• increase likelihood of getting caught<br>• effective supervision<br>• eliminate reasons to cut corners (poor job design; inconvenient requirements; unnecessary rules; unrealistic workload and targets; unrealistic procedures; adverse environmental factors)<br>• improve attitudes / organisational culture (active workforce involvement; encourage reporting of violations; make non-compliance 'socially' unacceptable e.g. drink-driving). |
| | | **Situational** | Non-compliance dictated by situation-specific factors (time pressure; workload; unsuitable tools & equipment; weather); non-compliance may be the only solution to an impossible task:<br>• van driver has no option but to speed to complete day's deliveries | |
| | | **Exceptional** | Person attempts to solve problem in highly unusual circumstances (often if something has gone wrong); takes a calculated risk in breaking rules:<br>• after a puncture, speed excessively to ensure not late for meeting<br>• delay ESD during emergency to prevent loss of production | |

| | Characteristics | Failure Type | Examples | Typical Control Measures |
|---|---|---|---|---|
| Action Errors | Associated with familiar tasks that require little conscious attention. These 'skill-based' errors occur if attention is diverted, even momentarily.<br><br>Resulting action is not intended: *'not doing what you meant to do'*.<br><br>Common during maintenance and repair activities. | **Slip** (Commission) | A simple, frequently-performed physical action goes wrong:<br>• flash headlights instead of operating windscreen wash/wipe function<br>• move a switch up rather than down (wrong action on right object)<br>• take reading from wrong instrument (right action on wrong object)<br>• transpose digits during data input into a process control interface | • human-centred design (consistency e.g. up always means off; intuitive layout of controls and instrumentation; level of automation etc.)<br>• checklists and reminders; procedures with 'place markers' (tick off each step)<br>• independent cross-check of critical tasks (PTW)<br>• removal of distractions and interruptions<br>• sufficient time available to complete task<br>• warnings and alarms to help detect errors<br>• often made by experienced, highly-trained, well-motivated staff: additional training not valid |
| | | **Lapse** (Omission) | Short-term memory lapse; omit to perform a required action:<br>• forget to indicate at a road junction<br>• medical implement left in patient after surgery<br>• miss crucial step, or lose place, in a safety-critical procedure<br>• drive road tanker off before delivery complete (hose still connected) | |

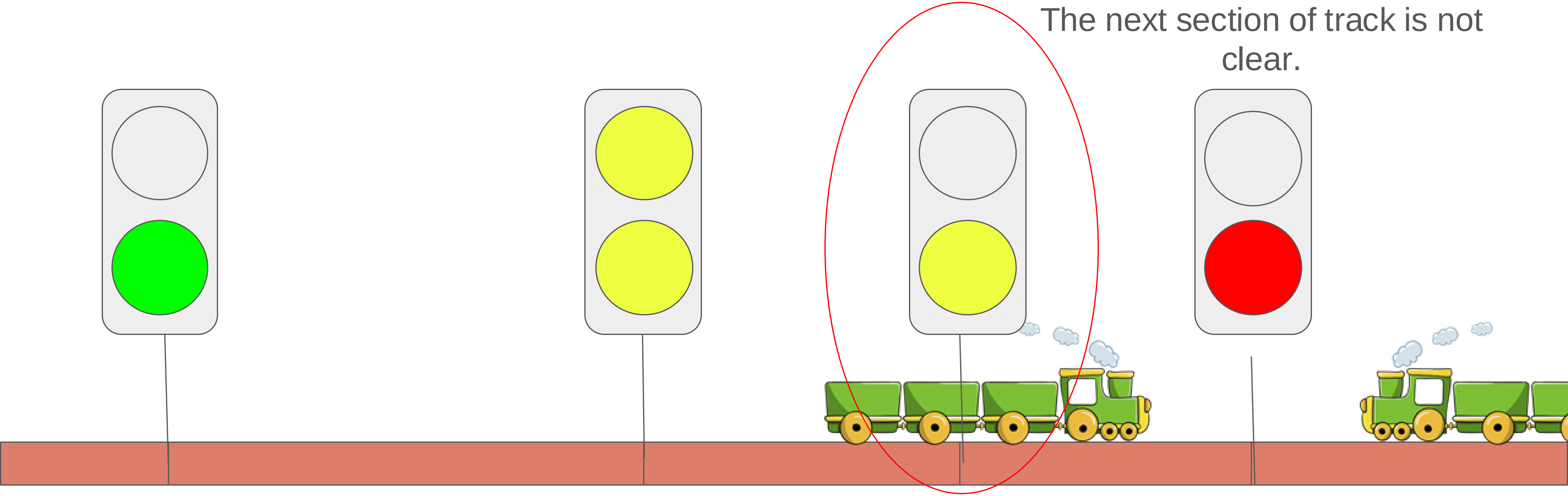



"The current UK healthcare system is more like the hierarchy of controls pyramid turned upside down."

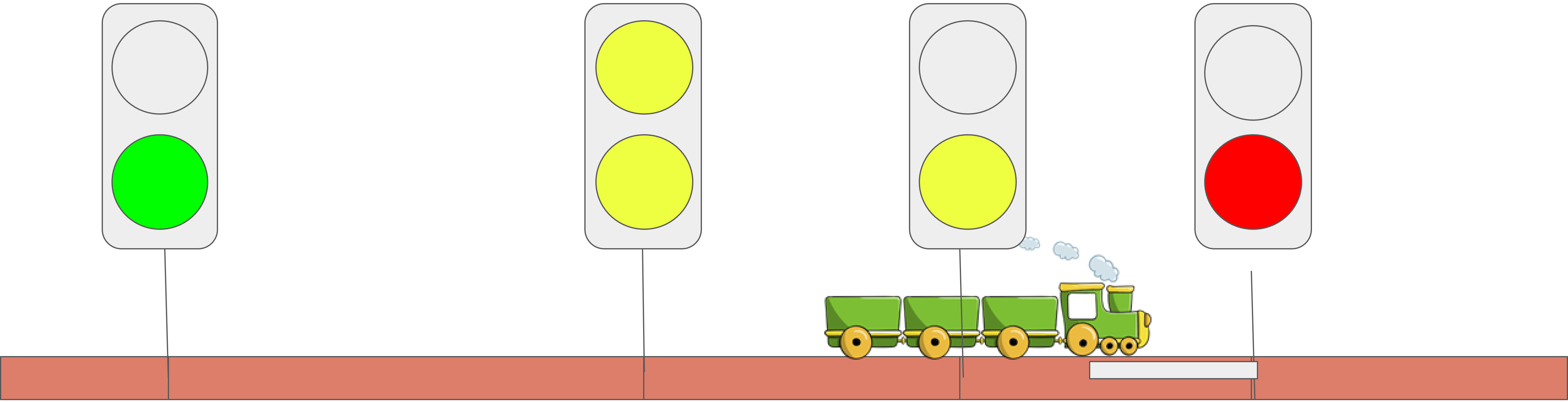
Red: Danger

Stop.

The next section of track is not clear.



# Nowadays…



Train Protection & Warning System

# In design and procurement…

When considering different options for equipment…which ones support you to do the right thing?

And when you are designing procedures or workflows, consider how you can make the right thing to do the easiest thing to do.

# In day to day operations…

Our jobs are hard! We have a lot of information to process.

Continually consider: how can we make this easier?

How can our systems of work become “error tolerant?” How can they support the right outcome even when people make mistakes?

- Risk Assessments
- Incident Investigations
- Procurement
- Day to day work

# Don’t forget the human factor!

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# UPDATE ON INCLUSIVE PREGNANCY SURVEY ADC MOTION

Louise Mifsud

SoR Scottish Annual Study Day

26th October 2024

l.mifsud@rgu.ac.uk


SCOTLAND
NORTH WEST
Welcome to ADC

# THE CONCEPT AND BACKGROUND

- Inclusive practice and pregnancy enquiries

- SoR guidance IPS
- IR(ME)R
- CQC 19/20 report – Example of CT abdomen of a trangender person where pregnancy checks were not completed
- The recommendation Imaging and radiotherapy departments should ensure that their procedures are inclusive of transgender and non-binary patients, including the procedure for making pregnancy enquiries. To respect the patient's privacy, they should be encouraged to disclose their gender history and status, without fear of it being recorded or shared without their consent. This may be achieved using posters with inclusive and accessible language around gender. Staff working in imaging and radiotherapy departments should also be trained in how to approach these matters through conversation while respecting the dignity and privacy of patients.

# WHY ME?

- Population diversity demographics, needs, care and support in the context of person centred care
- Impact of stereotyping, stigma and discrimination
- Values based practice
- PPCC module
- Research modules and projects

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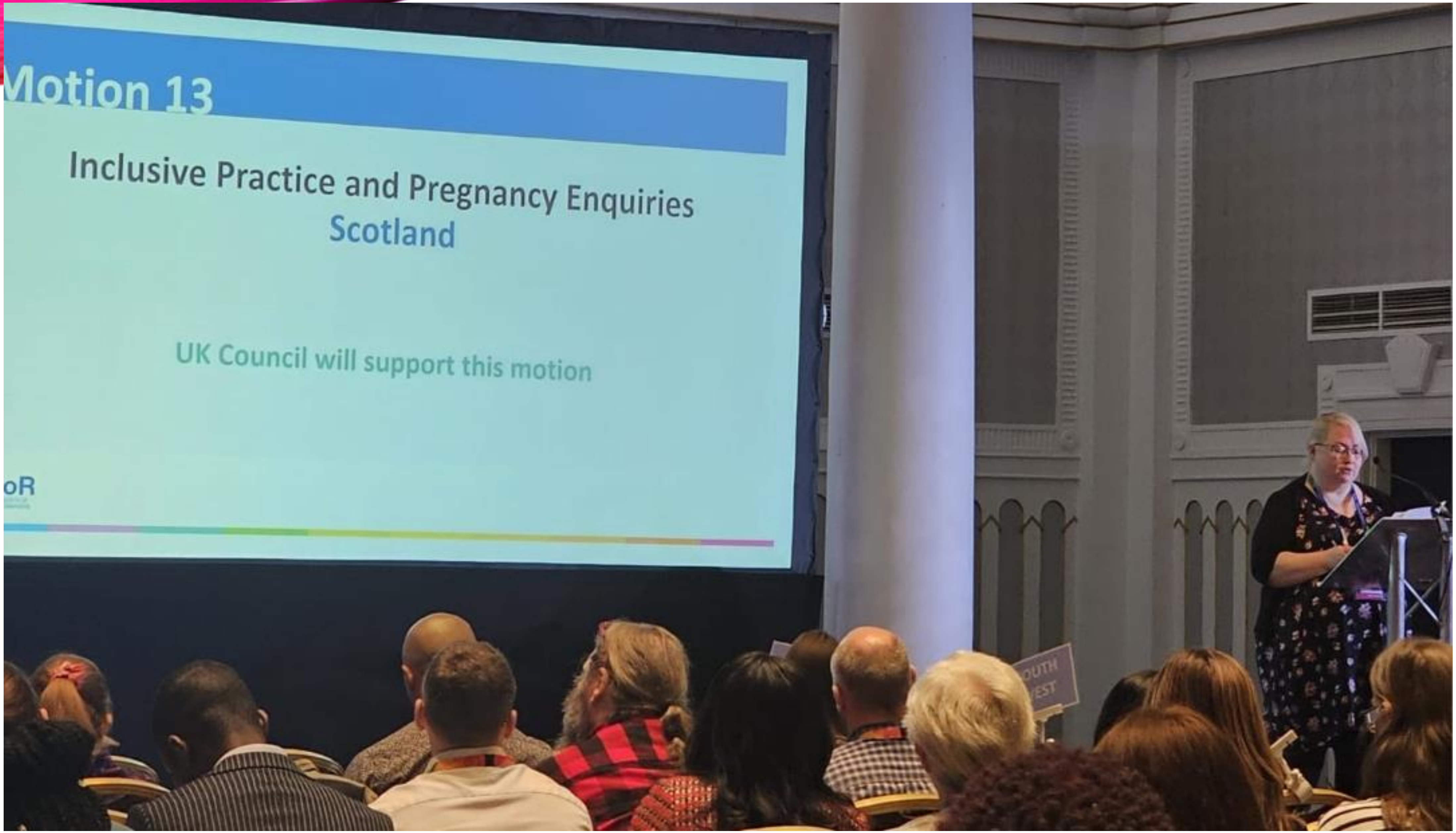
# THE MOTION

- **Inclusive practice and pregnancy enquiries**
- The SoR has published guidance to assist practitioners in understanding the needs of individuals with gender diversity and those with diversity in their sexual characteristics. The guidance introduces the Inclusive Pregnancy Status (IPS) form for diagnostic imaging and radiotherapy, a questionnaire enabling patients and healthcare professionals to work together to sensitively build a picture of an individual patient's needs, gain informed consent and keep appropriate documented records. They also have continued to train, holding regular webinars. Despite this, reports show a reluctance to change practice and adopt this guidance.
- Conference calls upon UK Council to survey member on the barriers and the challenges of adopting inclusive pregnancy status guidelines and report its findings to members.

# THE SPEECH


Motion 13
Inclusive Practice and Pregnancy Enquiries
Scotland
UK Council will support this motion

# PROGRESS SINCE ADC

- SoR has a list of approved motions in order to establish a remit
- May 2024 – Professional Officer for Clinical Imaging and Radiation Protection organising the IPS survey and sought involvement with myself. I joined the group.
- Formal approval received from UK council to commence the survey
- June – an expert group of radiographers with range of experiences of education/clinical implication challenges to develop questions

# PROGRESS SINCE ADC

- June/July 2024 – I received first draft
- August – pre launch checks
- September – Survey launch via mailing list

# SURVEY EMAIL

- We are conducting a survey to understand the barriers and challenges SoR members might face when implementing the inclusive pregnancy status guidelines and we invite you to share your views.
- Anonymised
- The survey link shared in this email is unique to you

# SURVEY EMAIL

**About the inclusive pregnancy guidelines**

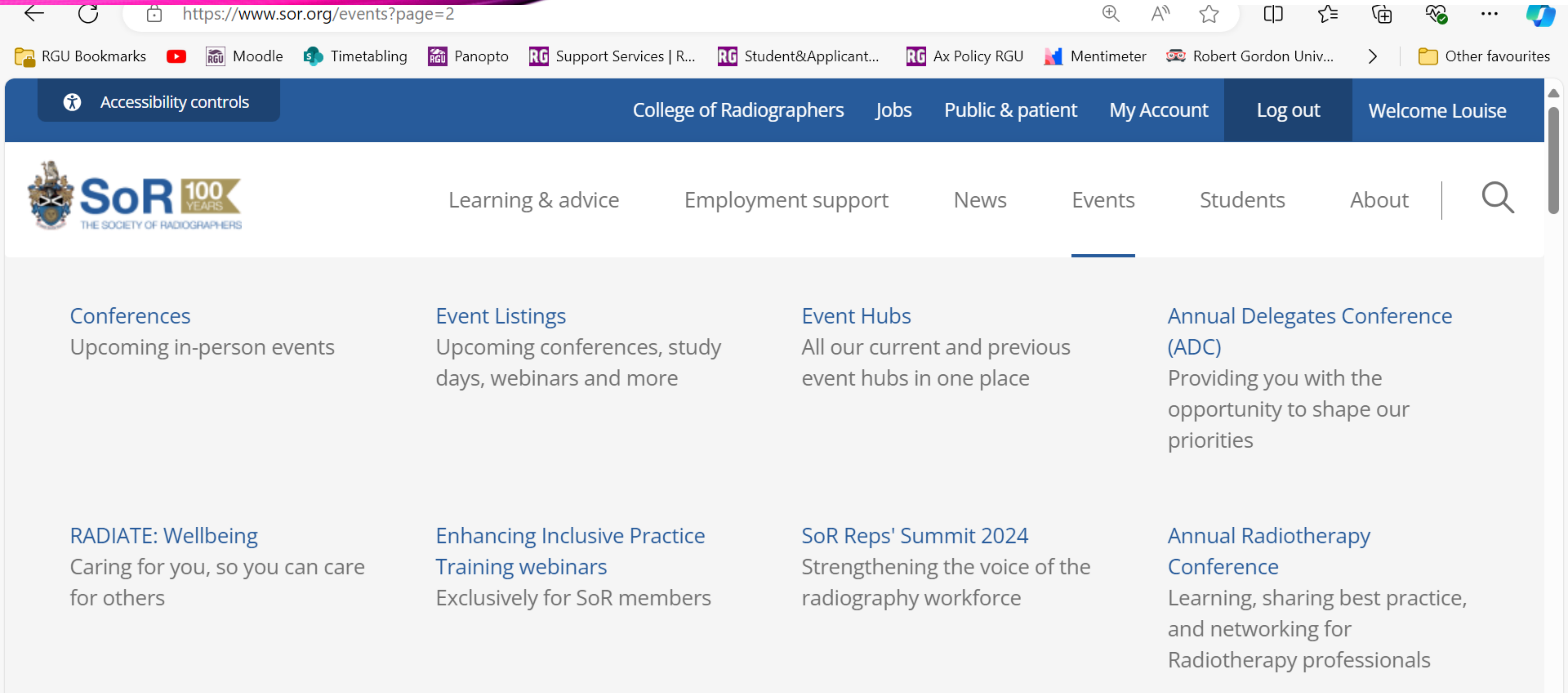
- Since 6th February 2018, Ionising Radiation Employers have been required to have a written procedure for making enquiries of individuals of childbearing potential to establish whether the individual is or may be pregnant or breastfeeding.

- We developed inclusive pregnancy status guidelines to assist members in fulfilling their professional and legal duties, whilst also delivering inclusive care that is in line with The Care Quality Commission recommendations.

- Following a motion carried out at this year's Annual Delegates Conference (ADC), the SoR is inviting members to share their experience of how their employer responded to the changes required of IR(ME)R 2017.

- Survey was open for 1 month with representation across the four nations of the UK

- Some initial headlines but figures will change once all checks finalised for the final report




- Or search engine ‘SoR inclusive pregnancy’

# Enhancing Inclusive Practice Training Webinars

Have you struggled to access relevant and good quality evidence-based inclusive practice training?

## Recorded Webinars

Reinforce what you have learnt or catch-up on what you missed by accessing all the recorded content from the Enhancing Inclusive Practice Webinars here.

Access recordings now

## Caring for trans and non-binary people: Practical tools for improving care

**25 March 2024**

This webinar considers diagnostic imaging and therapeutic modality-based scenarios. We look at examples of challenging situations that may arise when caring for gender diverse people, and discuss how to overcome our fears or lack of understanding to deliver person-centred care.

## Caring for trans and non-binary people: Understanding our patients

**13 March 2024**

This webinar covers the theory behind gender-inclusive practice, considerations of appropriate language and what not to say or do, and the health inequalities faced by gender diverse people. Attendees will gain an understanding of why the use of pronouns can be valuable, and be given an overview of current relevant research.

# RESOURCES

- https://www.sor.org/learning-advice/professional-body-guidance-and-publications/documents-and-publications/policy-guidance-document-library/inclusive-pregnancy-status-guidelines-for-ionising
- https://www.sor.org/events-programme/enhancing-inclusive-practice-training/recorded-sessions
- IR(ME)R annual report 2019/20: CQC's enforcement of the Ionising Radiation (Medical Exposure) Regulations 2017
- https://outpatients.org.uk/

OUTpatients
The UK's LGBTIQ+ Cancer Charity

l.mifsud@rgu.ac.uk

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# Research Training

- **PhD Student University of Edinburgh**
    - Institute of Genetics and Cancer (Edinburgh Cancer Research Centre) (PhD) - 6 Years (Part-time)
    - College of Medicine and Veterinary Medicine
- **July 2020 UoE**
    - Professor Val Brunton , Chair of Cancer Therapeutics
    - Professor Mark Arends, Head of Edinburgh Pathology
- **Supervision Team**
    - Professor Bill Nailon
    - Professor Duncan McLaren
    - Professor Faraht Din
- **Review Team**
    - Dr Barry Laird
    - Dr Rachel Harris
        - 1st Year Review (Feb 2022)
        - 2nd Year Review (Feb 2023)
        - 3rd Year Review (Feb 2024)

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# Background

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## Clinical

### Research Radiographer

- Predominantly Clinical background
- Pre- treatment AP Therapeutic Radiographer
  - Post graduate study Linked around my clinical role
  - Expertise in various imaging methods and modalities (MRI/CT/PET CT)

## Academic

### Student

- Undergraduate University of Liverpool
- MSc Queen Margaret University

  **Taught Component**
  - Image formation/pattern recognition/interpretation

  **Research Component**
  - Examining a focal lesion on the Prostate Gland with External beam Radiotherapy
    - ESTRO,SCORFF

### Lecturer

- Queen Margaret University
  - Undergraduate
  - Post Graduate

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**PRINToUT** (Using breath analysis to PRedIct Normal TissUe and Tumour response during prostate cancer SBRT– (NCT04081428)

- **Hypothesis:** Individual patient heterogeneity in normal tissue and tumour response to radiotherapy can be detected via volatile alkane release (VOC) during high dose per fraction stereotactic body radiotherapy (SBRT).

- **Primary objective** : Identify biomarkers of response
- **Secondary objective**: To compare any such biomarkers with free circulating tumour and normal tissue DNA in blood and urine

- **PRINToUT** is a single centre pilot radiotherapy trial
- Low and intermediate risk prostate cancer patients
- 36.25Gy delivered to the PTV and 40Gy to CTV over 5 treatment fractions,
- Samples of blood, urine and breath are collected from each patient
- RTOG toxicity scores.

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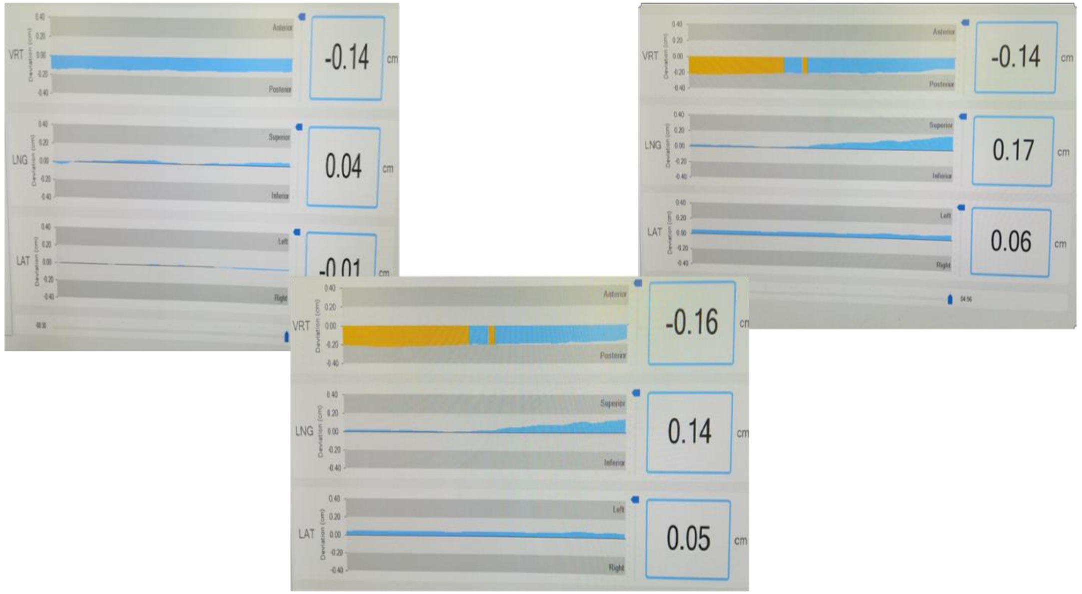
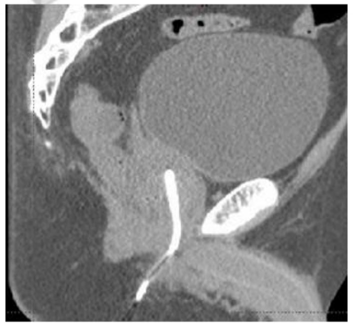
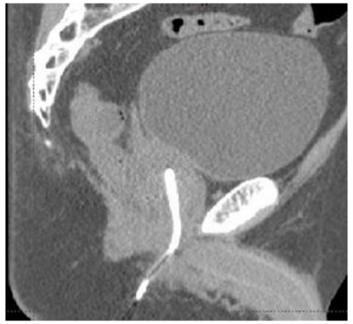
- Electro-magnetic transmitter inserted into the patient
- Sensor plate with 16 antennae placed on treatment couch
- Antennae can detect positional coordinates of the transmitter in real-time
- Algorithm calculates displacement vector against a reference position
- Visual representation of motion at treatment console
- Beam halted manually by treatment staff should motion exceed 2mm





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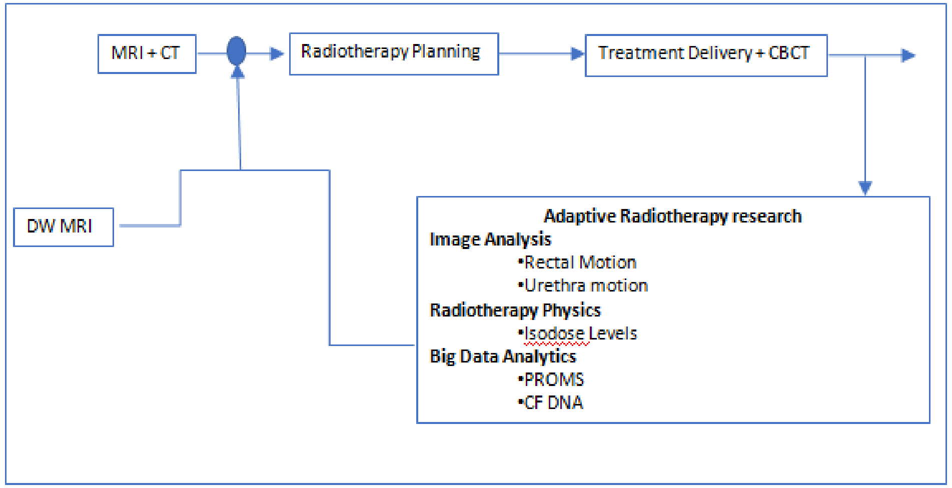
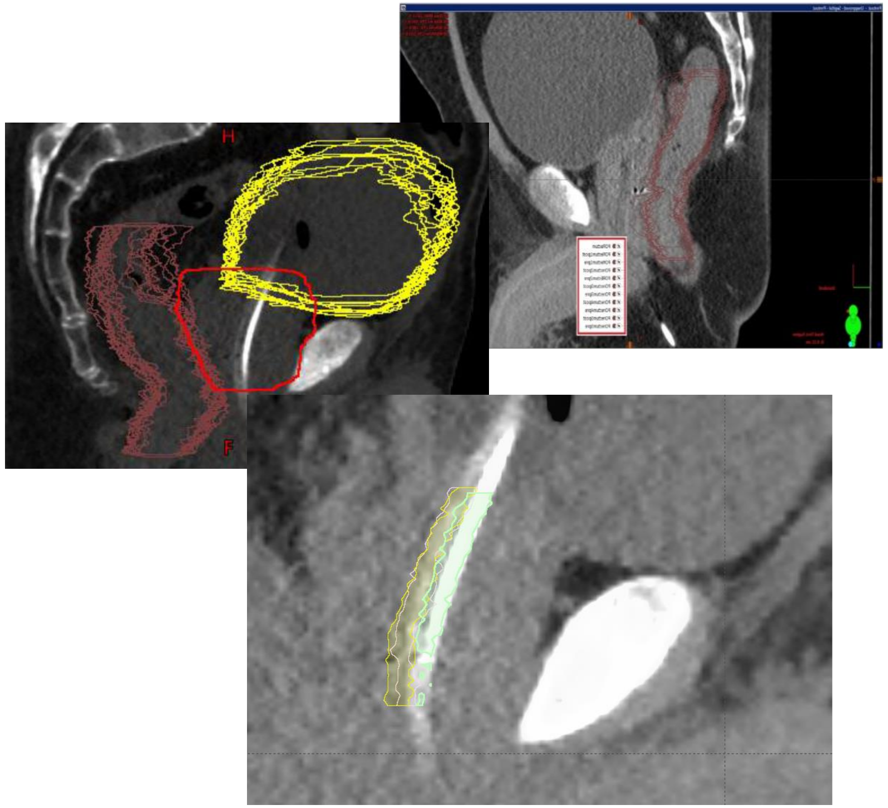
# Clinical Implementation of Adaptive Radiotherapy



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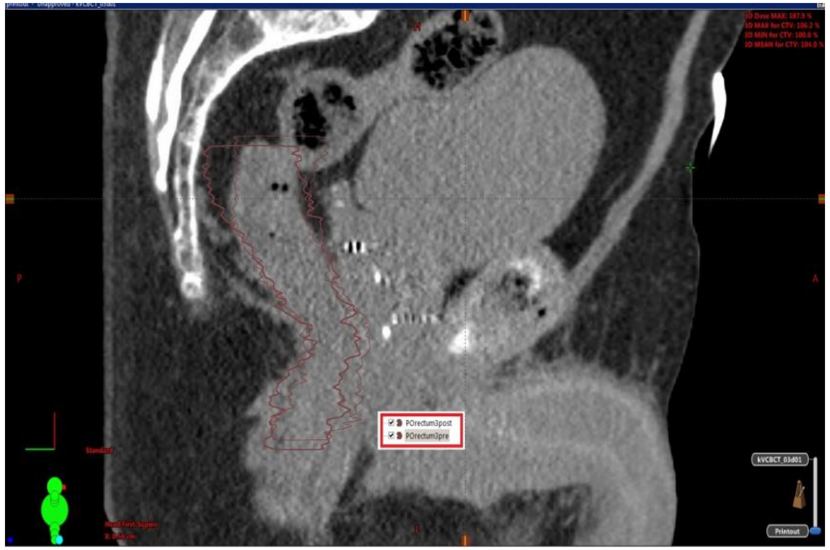
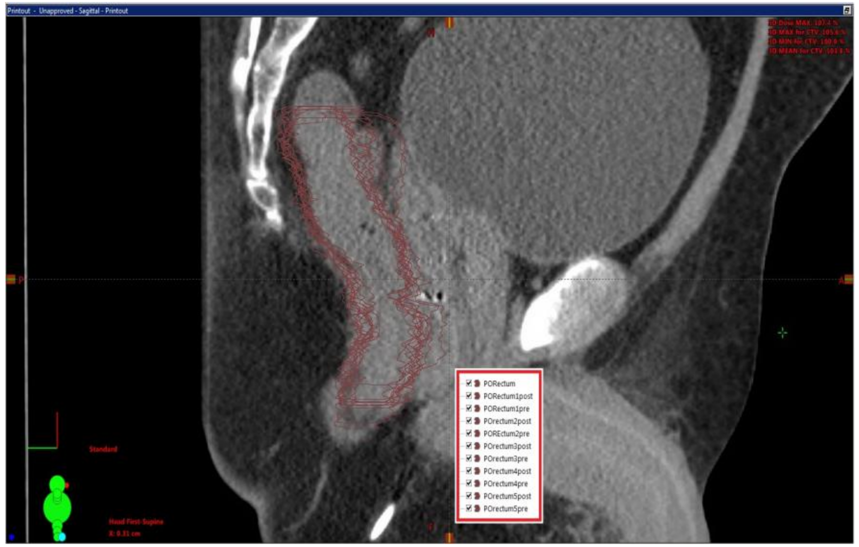
- **Year 1**
  - OARs
  - Impact of treatment delivery time on rectal volume and toxicity during SABR prostate radiotherapy



# Impact of treatment delivery time on rectal volume and toxicity during SABR prostate radiotherapy

Authors: Joanne Mitchell, Joella Wright, Susan Adamson, Donna Burns Pollock, Michael Trainer , Duncan McLaren, Bill Nailon . Western General Hospital, Edinburgh Cancer Centre, Department of Clinical Oncology, Edinburgh, EH4 2XU, UK

**Background:** The PRINToUT study (Using breath analysis to PRedIct Normal TissUe and Tumour response during prostate cancer SBRT) is currently being undertaken at the Edinburgh Cancer Centre . Eligible patients are treated following PACE B guidelines (36.25Gy 5#, 7 days) with the study comparing biomarkers of response for treatment adaptation/personalisation .Volatile organic compounds in the breath are being monitored and compared against circulating tumour and normal tissue DNA (cfDNA) in blood and urine samples . All patients undergo a pre-treatment planning MRI and CT scan with Pre and Post CBCTs acquired daily, prior to treatment delivery. PROMs are recorded prior to treatment delivery, on immediate completion of treatment and at regular follow up time points

**Aims and Objectives:** Using data collected as part of the Printout Study this project aimed to examine any relationship between treatment delivery time, rectal volume treated and reported toxicity during SABR prostate radiotherapy.

**Methods:**

- Retrospective Analysis of 1st 9 patients recruited to the PRINTOUT study
- All patients followed departmental bladder and rectal preparation protocol
- Rectum contoured on planning CT data set
- Pre and post CBCT acquired and contoured
- Treatment delivery time measured between the pre-treatment CBCT and the post treatment CBCT

## Results

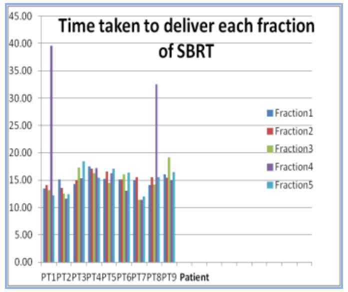



**Figure 1- Treatment delivery time**

- Actual treatment time 11.42-19.18mins
- Delivery time of 15-16mins most common occurring in 13/45 sessions examined
- 2 outliers , observed in both occasions on #4 with both patients reporting acute GU toxicity

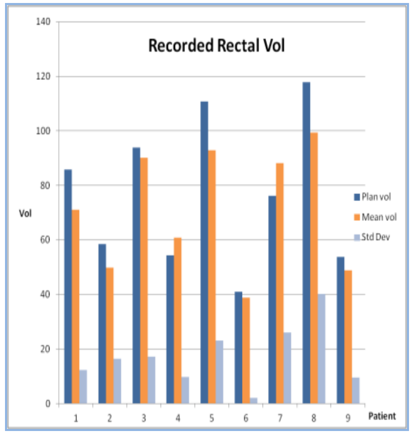



**Figure 2- Recorded Rectal Volume**

- 7 of the 9 patients examined had a planned rectal volume larger than the overall on treatment average volume
- Patient with the largest volume overall recorded the highest acute RTOG GI toxicity score (see Table 1)

| PT | B/L | 6 wk | 12 wk | 6m os | 12m os | 18m os | 24m os |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 1 | 1 | 0 | RIP | RIP | RIP |
| 4 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 5 | 0 | 1 | 1 | 0 | 0 | 0 | |
| 6 | 0 | 1 | 0 | 0 | 1 | 0 | |
| 7 | 0 | 0 | 1 | 0 | 0 | | |
| 8 | 1 | 1 | 3 | 1 | 0 | | |
| 9 | 0 | 0 | 1 | 0 | 0 | | |

**Table 1- Reported RTOG G.I. Toxicity Scores recorded to date**

- With the exception of one patient (pt 8) all patients in this cohort have reported minimal RTOG G.I. scores
- Scores indicate that any initial acute toxicity did subside (Pt 8) with late scores reported as more manageable

## Conclusion

In this cohort of patients observed, initial analysis does not highlight any association between increased treatment delivery times and overall higher patient reported toxicity scores. Although rectal volumes fluctuated throughout again this study has found no correlation between rectal volume change and overall treatment delivery time . It is hoped further dosimetric evaluation, using DVH analysis, will further evidence that on treatment time is independent of associated treatment toxicity and aid in the essential, clinical on treatment decision making process of the RTT.

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Year 2

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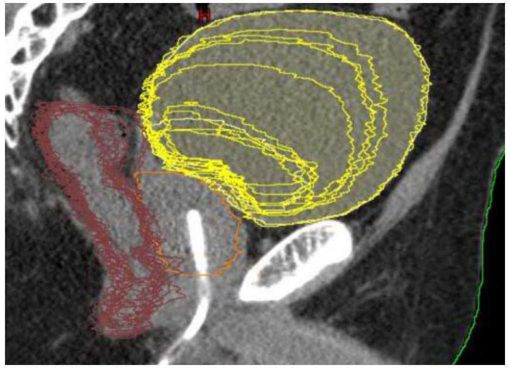
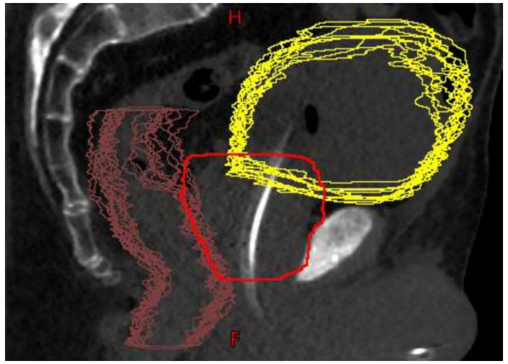
# Prostate Intrafraction Motion



| Lat | Lng | vrt |
|---|---|---|
| -0.3 | -1.08 | -1.71 |

| Lat | Lng | vrt |
|---|---|---|
| **29.34** | **30.88** | **34.88** |

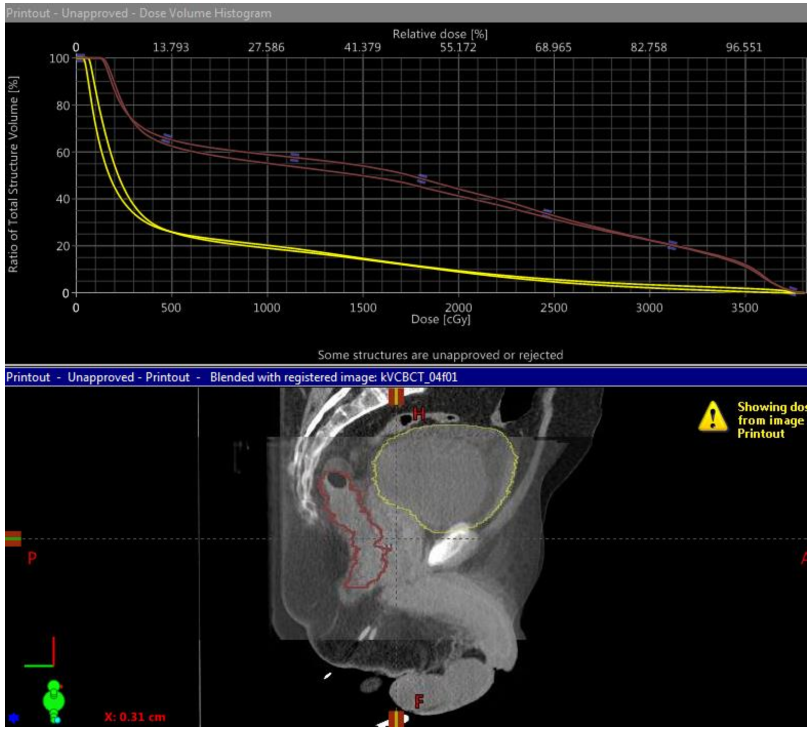
| B/L | CT | 6WK | 12WK |
|---|---|---|---|
| G1 GU | G2 GU | G2 GU | G1GU |
| G0 GI | G0 GI | G1 GI | G0 GI |

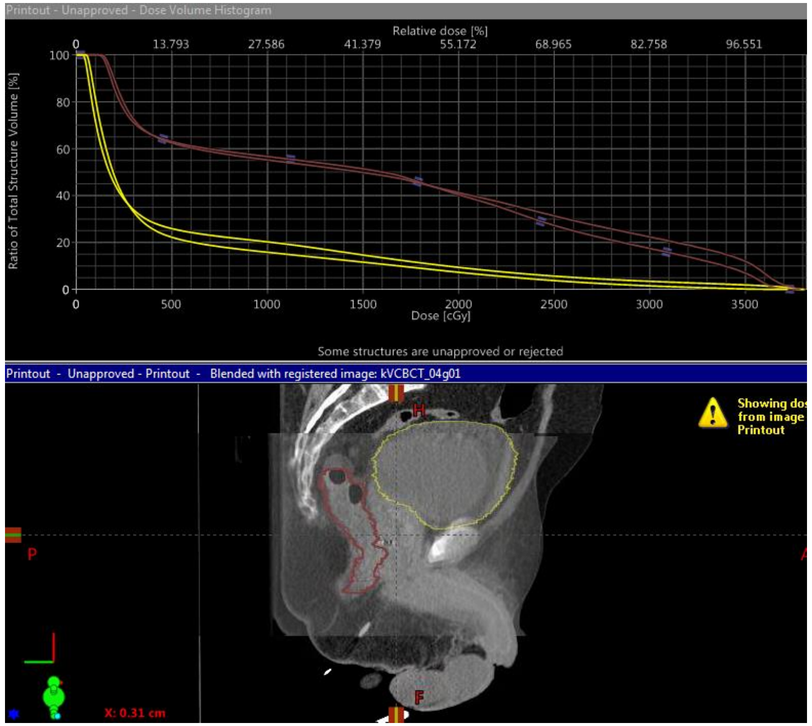


| Lat | Lng | vrt |
|---|---|---|
| 0.23 | -0.31 | -1.11 |

| Lat | Lng | vrt |
|---|---|---|
| **11.5** | **15.08** | **10.8** |

| B/L | CT | 6WK | 12WK |
|---|---|---|---|
| G0 GU | G2 GU | G1 GU | G0 GU |
| G0 GI | G0 GI | G1 GI | G1 GI |




4$^{th}$ # pre CBCT
•V36 4.2cc

4$^{th}$ # post CBCT
•V36 1.7cc

| Test Condition | P Value | Test Condition | P Value |
| --- | --- | --- | --- |
| G0GUTP3Long | 0.8469 | G1GULatTP3 | 0.1337 |
| G0GUTP3Lat | 0.152 | G1GULongTP3 | 1 |
| G0GUVRTTP3 | 0.3307 | G1GUVRTTP3 | 0.9718 |
| G1GULongTP1 | 0.9235 | **G2GULatTP1** | **0.0294** |
| G1GUVRTTP1 | 0.3962 | G2GULong | 0.4857 |
| G1GULatTP1 | 0.1039 | G2GUVrt | 0.9183 |
| G1GULatTP2 | 0.3278 | **G0G1LatTP3** | **0.01329** |
| G1GULongTP2 | 0.3278 | G0GILongTP3 | 0.9307 |
| G1GUVrtTP2 | 0.2996 | G0G1VrtTP3 | 0.7837 |

# SABR Prostate: A Review of Specialised Techniques for Motion Management

Edinburgh Cancer Centre
Western General Hospital

THE UNIVERSITY of EDINBURGH

**Authors: Joanne Mitchell, Duncan McLaren, Bill Nailon . Western General Hospital, Edinburgh Cancer Centre, Department of Clinical Oncology, Edinburgh, EH4 2XU, UK**

**Background:** The widespread adoption of hypo-fractionated stereotactic ablative radiotherapy (SABR) for treating prostate cancer has led to an increase in the use of specialised techniques for monitoring inter- and intra-fraction motion. The aim of this study was to critically review two such systems and to present initial findings on their use within a SABR prostate clinical trial reporting on measured displacements, and the impact this has on dose to the bladder and rectum, and acute patient reported toxicity.

**Methods:** 18 patients recruited to the PRINToUT clinical trial (UK-NCT04081428), Using breath analysis to PRedIct Normal TissUe and Tumour response during prostate cancer SBRT, study (IRAS 240335) were included in this critical review. 9 patients underwent transperineal implantation of the RayPilot (RP) transmitter and 9 patients were fitted with the urinary catheter system RayPilot Hypocath (HC). Real time positional information was recorded at 1 second intervals in x,y and z directions throughout treatment for both systems. A protocol was in place for manual intervention to halt beam delivery for motion exceeding 2 mm. All patients were treated with 36.25 Gy to the prostate gland in 5 fractions over 7 days. Gold markers were implanted for positional verification and cone beam computed tomography scans were acquired before and after each fraction of treatment. Acute RTOG PROMs were collected at baseline, end of treatment, 6 weeks and 12 weeks post treatment.

## Results

| | Lat | Lng | Vrt |
|---|---|---|---|
| RP 1 | -0.3 | -1.08 | -1.71 |
| RP 2 | 0.02 | -0.06 | -0.03 |
| RP 3 | -0.04 | -0.04 | -0.13 |
| RP 4 | 0 | 0 | 0.02 |
| RP 5 | -0.03 | -0.02 | 0.11 |
| RP 6 | 0 | 0.02 | -0.09 |
| RP 7 | -0.02 | -0.17 | -0.23 |
| RP 8 | -0.09 | -0.25 | -0.43 |
| RP9 | 0 | 0 | 0 |

| | Lat | Lng | Vrt |
|---|---|---|---|
| HC1 | 0.06 | -0.13 | -0.46 |
| HC 2 | -0.01 | -0.05 | -0.45 |
| HC 3 | 0.01 | -0.02 | 0.07 |
| HC 4 | 0.23 | -0.31 | -1.11 |
| HC 5 | 0.03 | 0.01 | 0.07 |
| HC 6 | 0.03 | 0.03 | -0.2 |
| HC 7 | 0.03 | 0.13 | -0.57 |
| HC 8 | 0.15 | -0.22 | -0.82 |
| HC9 | 0.01 | -0.08 | -0.11 |

**Fig 1-Ave on Treatment Displacements**

| Tox | TC | 6wk | 12WK |
|---|---|---|---|
| G0 GU | 1 | 0 | 3 |
| G1 GU | 4 | 7 | 6 |
| G2 GU | 4 | 2 | 0 |
| G0 GI | 3 | 1 | 5 |
| G1 GI | 4 | 7 | 4 |
| G2 GI | 2 | 0 | 0 |
| G3 GI | 0 | 1 | 0 |

**RP group**

| Tox | TC | 6wk | 12WK |
|---|---|---|---|
| G0 GU | 1 | 1 | 4 |
| G1 GU | 4 | 3 | 3 |
| G2 GU | 4 | 3 | 1 |
| G3 GU | 0 | 2 | 0 |
| G0 GI | 4 | 4 | 6 |
| G1 GI | 5 | 2 | 1 |
| G2 GI | 0 | 2 | 0 |
| G3 GI | 0 | 1 | 0 |

**HC group**

**Fig 3 -Acute RTOG Tox**

- The largest motion detected in both groups was in the anterior/posterior direction (-1.71mm , -1.11mm) (**Fig 1**)
- For all patients movement was less than 2 mm in all directions during treatment time (**Fig 1**)
- Accounting for displacements the average delivered dose to the bladder was 427.5cGy- 1575.5 cGy (RP group) and 520.01cGy- 1312.63 cGy (HC group) (**Fig 2**)
- Average delivered dose to the rectum 1337.5cGy-2053.cGy (RP group) and 1218.87 cGy- 1861.13cGy (HC group)(**Fig 2**)
- More occasions of grade 2 and above GU toxicity were reported in the HC group (**Fig3**)
- Grade 3 toxicity was not reported at the 12-week FU (**Fig 3**)

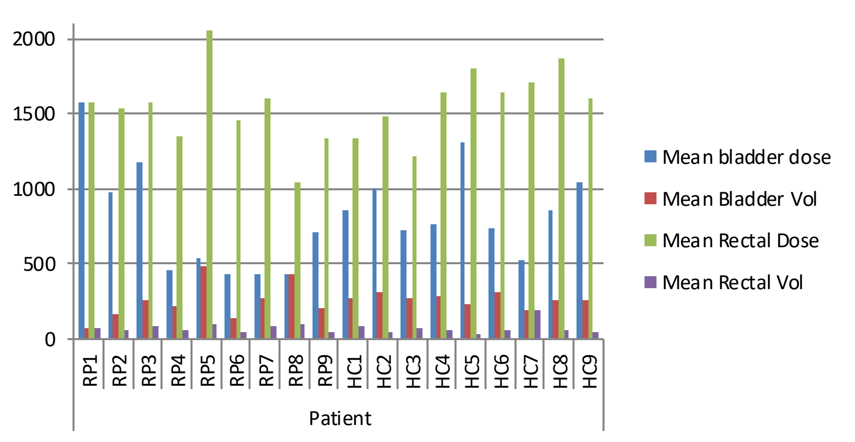



**Fig 2- CBCT Analysis**

**Conclusion:** From the preliminary data presented the urinary catheter-based HC device, which has been developed from the transperineally inserted RP system, has proven, in this small group, to be suitable system for real time motion monitoring during prostate SBRT. Furthermore the HC system is much less invasive for patients and having the ability to control bladder volume, at the time of treatment delivery , by way of the catheter, has helped with a more efficient workflow . The next logical step would be for full integration with the treatment linac to allow automatic halting of the beam for a given action level.

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joanne.mitchell@nhslothian.scot.nhs.uk

**Key Hypothesis**

New Adaptive Radiotherapy Strategies based on real-time positional data, time of treatment imaging and derived biological and imaging biomarkers result in a reduction in acute and late normal toxicity

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**Aims**

- Assess Impact of Rectal Wall and Bladder Toxicity from SBRT prostate treatments
- Assess the implications for ART when using a real time motion management system in combination with CBCT imaging
- Assess the motion of the prostate during treatment delivery and any impact to the delivered dose to the OARs and tumour.

**Objectives**

- To develop methodologies for use of real time motion tumour tracking and CBCT imaging data to inform radiotherapy treatment decisions
- Investigate correlations with linked factors and significant treatment related toxicity.
- Embed the findings to create a methodology and protocol on who, how and why you need to adapt that can rapidly be implemented into a radiographer led workflow

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- **Year 3**

**Publication**

Clinical Implementation of Adaptive Radiotherapy

- Submission to TipsRo

**Clinical**

Initial Investigation in to Urethral matching using CBCT

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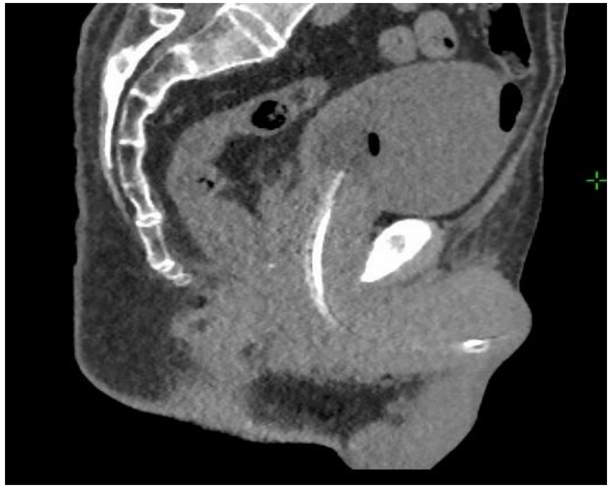

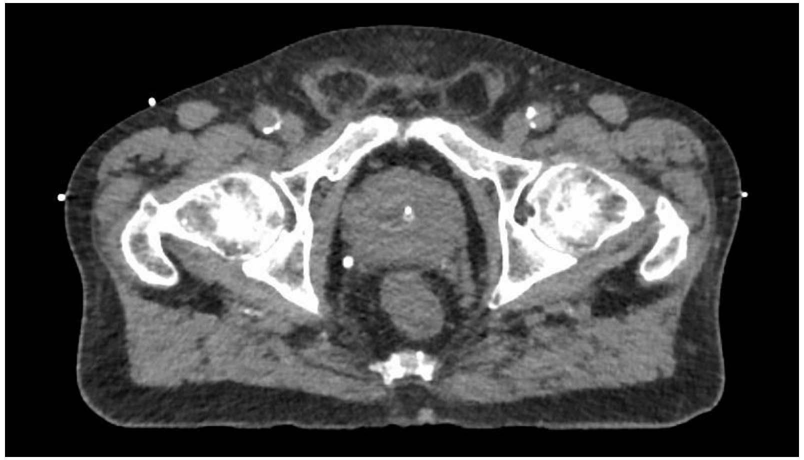

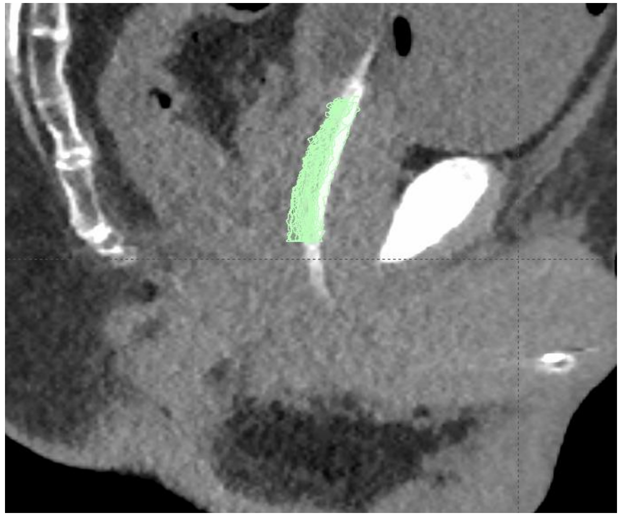

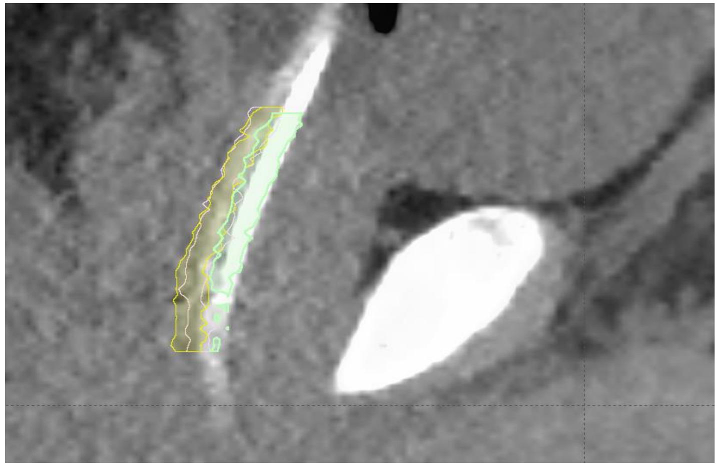

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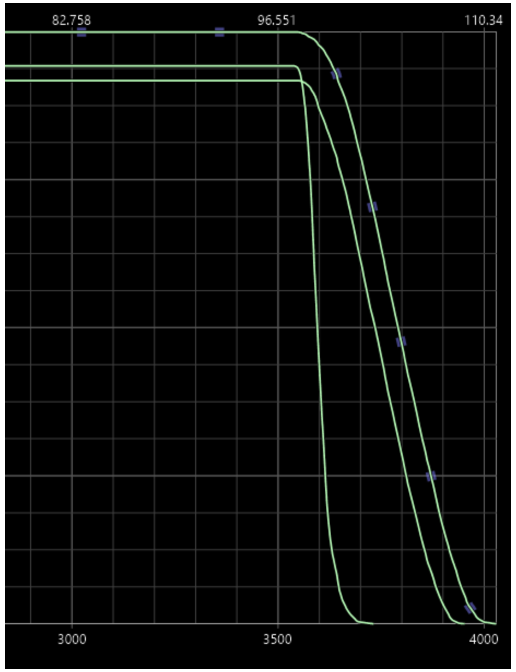
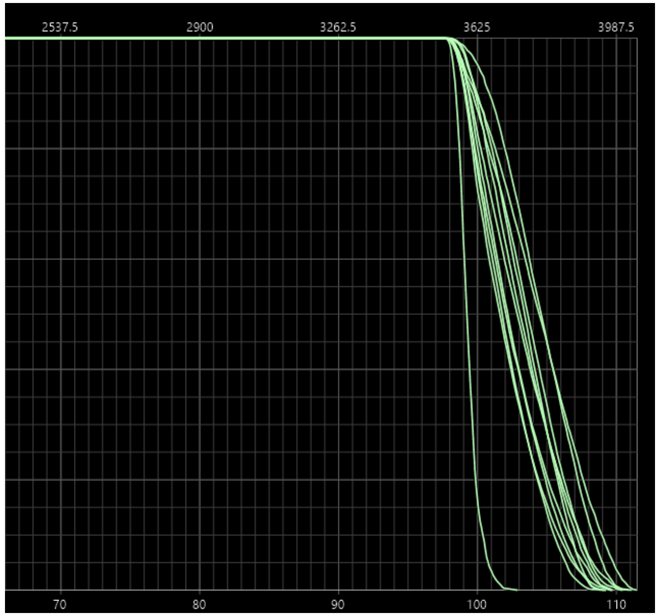
Session Timeline

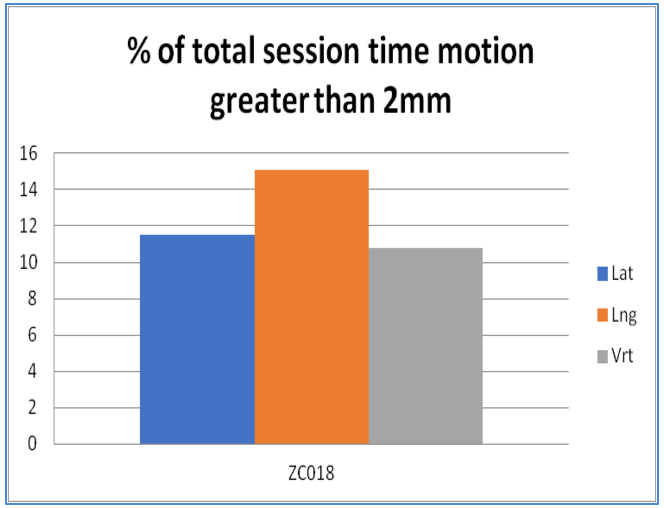
1. Patient Positioned on treatment Couch and transmitter registered
2. Kv Image
3. **CBCT**
4. Delivery of first Arc
5. Delivery of Second Arc
6. Delivery of Third Arc
7. **CBCT**

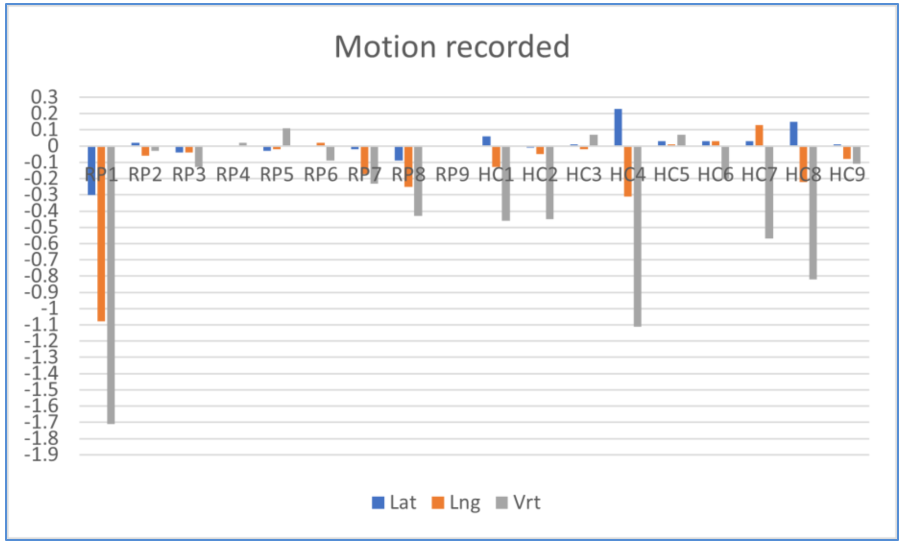



- Plan V36 Gy 0.35 cc
- 1st # pre CBCT V36 0.69cc
- 1st # post CBCT V36 0.78cc




DVH calculations representing all pre and post CBCTs over all 5 treatment sessions



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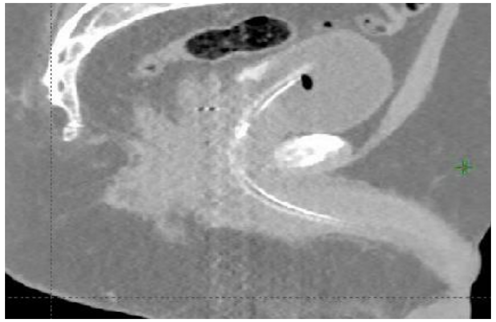
Year 4

## Investigation in to Urethra as an OAR in prostate SBRT

•Urethra – 'The New Kid on the Block ' [1]
•Correlation with GU toxicty [2]
•Positional Uncertainity on CBCT
•Urinary Catheter allows visualisation of urethra on CBCT




1. Zilli T, Achard V, Guevelou JL. Intraprostatic Urethra: The New Kid on the Block for Prostate Cancer Radiation Therapy? Int J Radiat Oncol Biol Phys. 2022;113(1):92-5
2. Leeman JE, Chen YH, Catalano P, Bredfeldt J, King M, Mouw KW, et al. Radiation Dose to the Intraprostatic Urethra Correlates Strongly With Urinary Toxicity After Prostate Stereotactic Body Radiation Therapy: A Combined Analysis of 23 Prospective Clinical Trials. Int J Radiat Oncol Biol Phys. 2022;112(1):75-82

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Technical Innovations & Patient Support in Radiation Oncology 31 (2024) 100267

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ELSEVIER

tipsRO

Research Article

# Clinical implementation of real time motion management for prostate SBRT: A radiation therapist's perspective

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A R T I C L E I N F O

*Keywords:*
Adaptive radiotherapy
Prostate cancer
Real-time tracking
SBRT prostate

A B S T R A C T

*Background and purpose:* The adoption of hypo-fractionated stereotactic body radiotherapy (SBRT) for treating prostate cancer has led to an increase in specialised techniques for monitoring prostate motion. The aim of this study was to comprehensively review a radiation therapist (RTT) led treatment process in which two such systems were utilised, and present initial findings on their use within a SBRT prostate clinical trial.

*Materials and Methods:* 18 patients were investigated, nine were fitted with the Micropos RayPilot™ (RP) system (Micropos Medical, Gothenburg, SE) and nine were fitted with the Micropos Raypilot Hypocath ™ (HC) system. 36.25 Gray (Gy) was delivered in 5 fractions over 7 days with daily pre- and post-treatment cone beam computed tomography (CBCT) images acquired. Acute toxicity was reported on completion of treatment at six- and 12-weeks post-treatment, using the Radiation Therapy Oncology Group (RTOG) grading system and vertical (Vrt), longitudinal (Lng) and lateral (Lat) transmitter displacements recorded.

*Results:* A significant difference was found in the Lat displacement between devices (P=0.003). A more consistent bladder volume was reported in the HC group (68.03 cc to 483.7 cc RP, 196.11 cc to 313.85 cc HC). No significant difference was observed in mean dose to the bladder, rectum and bladder dose maximum between the groups. Comparison of the rectal dose maximum between the groups reported a significant result (P=0.09). Comparing displacements with toxicity endpoints identified two significant correlations: Grade 2 Genitourinary (GU) at 6 weeks, P=0.029; and no toxicity, Gastrointestinal (GI) at 12 weeks P=0.013.

*Conclusion:* Both the directly implanted RP device and the urinary catheter-based HC device are capable of real time motion monitoring. Here, the HC system was advantageous in the SBRT prostate workflow.

## Introduction

Ultra hypofractionated SBRT, for the treatment of prostate cancer is not yet standard of care in the UK. However, there is growing evidence supporting its adoption because of the potential for therapeutic benefit and the convenience of fewer fractions of radiotherapy [1–4]. Acute toxicity reported by patients in the PACE-B trial showed no increase in gastrointestinal (GI) or genitourinary (GU) RTOG side effects in those treated with five fraction SBRT when compared to conventional fractionation schedules [5]. More recently long-term follow-up of these patients has reported similar results, with the study concluding that five fraction SBRT should now become the standard of care for patients with low or intermediate risk prostate cancer [6,7].

The increased dose per fraction, strict planning margins and steep dose gradients required for SBRT mean that any geographical errors in dose delivery can result in significant adverse toxicity to the bladder and rectum, the main organs at risk (OAR) in prostate radiotherapy [8–10]. Whilst advanced radiotherapy techniques, such as volumetric modulated arc therapy (VMAT) and image guided radiotherapy (IGRT), enable the accurate delivery of highly conformal radiotherapy [11–13] this level of precision comes with extra concerns and can still result in a geographical miss of the tumour [14]. More specifically, the position of

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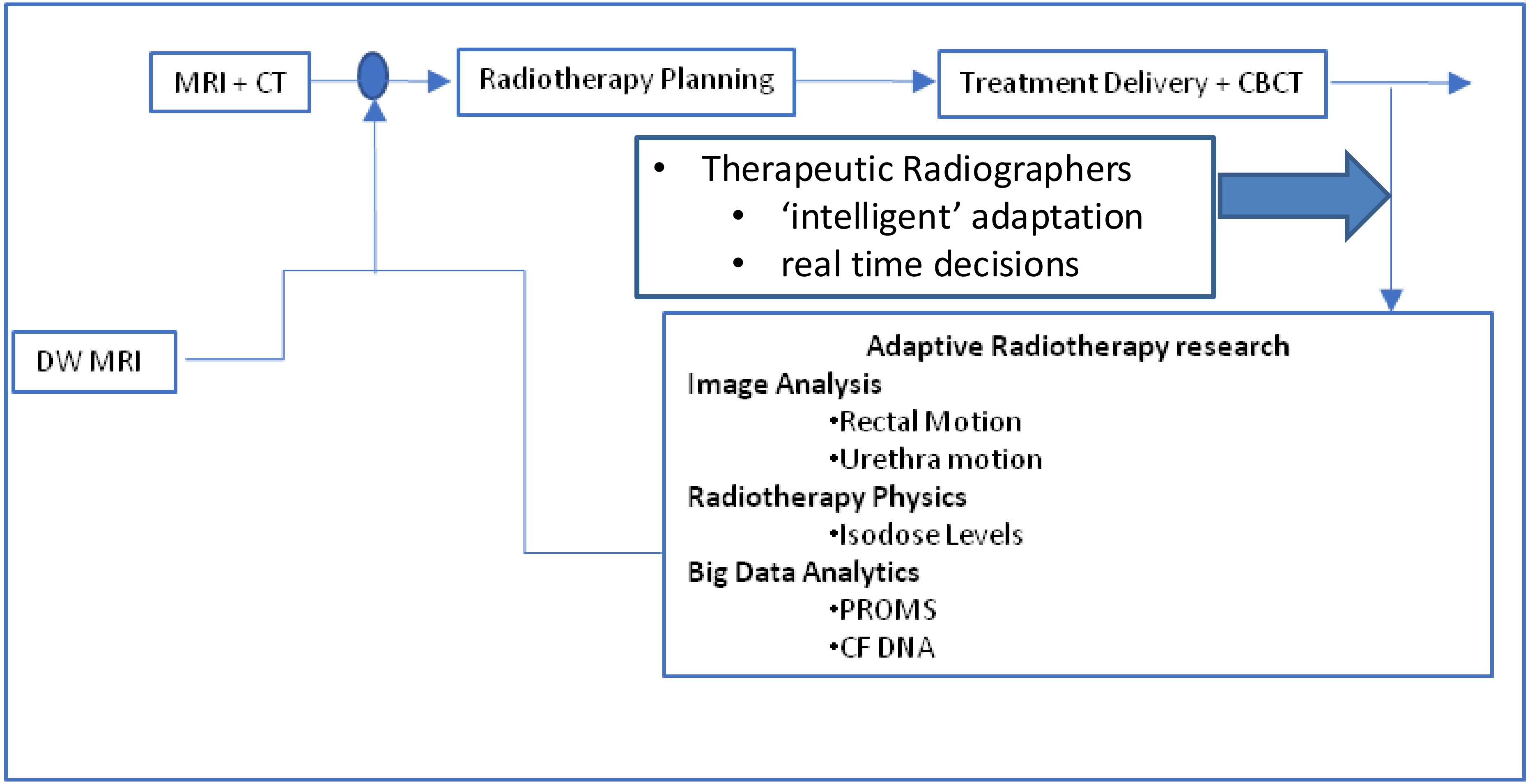
Year 4

- CT/CBCT match to Urethra
- 10 Patients fitted with Hypocath
- 4 TR

    - Assess the feasibility of undertaking this match online
    - Assess any difference in planned dose and delivered dose to urethra
    - Assess any difference in delivered dose to the PTV, bladder and rectum


MRI + CT
Radiotherapy Planning
Treatment Delivery + CBCT
Therapeutic Radiographers
'intelligent' adaptation
real time decisions
DW MRI
Adaptive Radiotherapy research
Image Analysis
•Rectal Motion
•Urethra motion
Radiotherapy Physics
•Isodose Levels
Big Data Analytics
•PROMS
•CF DNA

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Real-time motion during SABR treatment delivery; the impact on patient reported toxicity

1. **Introduction**
    1. Radiotherapy for Prostate Ca
    2. Prostate SABR treatment
    3. Adaptive Radiotherapy
    4. Role of the Radiographer in the adaptive cycle
2. **Motion in Radiotherapy**
    1. Overview
    2. Prostatic motion
    3. Motion Monitoring
3. **Motion in Prostate SABR**
    1. OARs
    2. Prostate Gland
    3. Urethra
4. **Patient Reported Toxicity**
    1. Acute
    2. Late

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Research → Clinical Trials → Service Development

- Rejection is part of the process
- Develop a thick(ish) skin
- Learn about yourself
- It is a journey

*'You Don't Start a PhD knowing what you know at the End of a PhD '*

Dr Rachel Harris (Doctoral Den, UKIO 2019)

# Dementia. Everybody's Story.

Elaine Hunter, National AHP Consultant, Alzheimer Scotland
@elaineahpmh ehunter@alzscot.org


# Deeper Purpose

"Please consider how you can uphold the rights of people with dementia in your working life by listening to carers who have a clear understanding and agreement of the 'wishes' or 'rights' of the person they support."

Thea

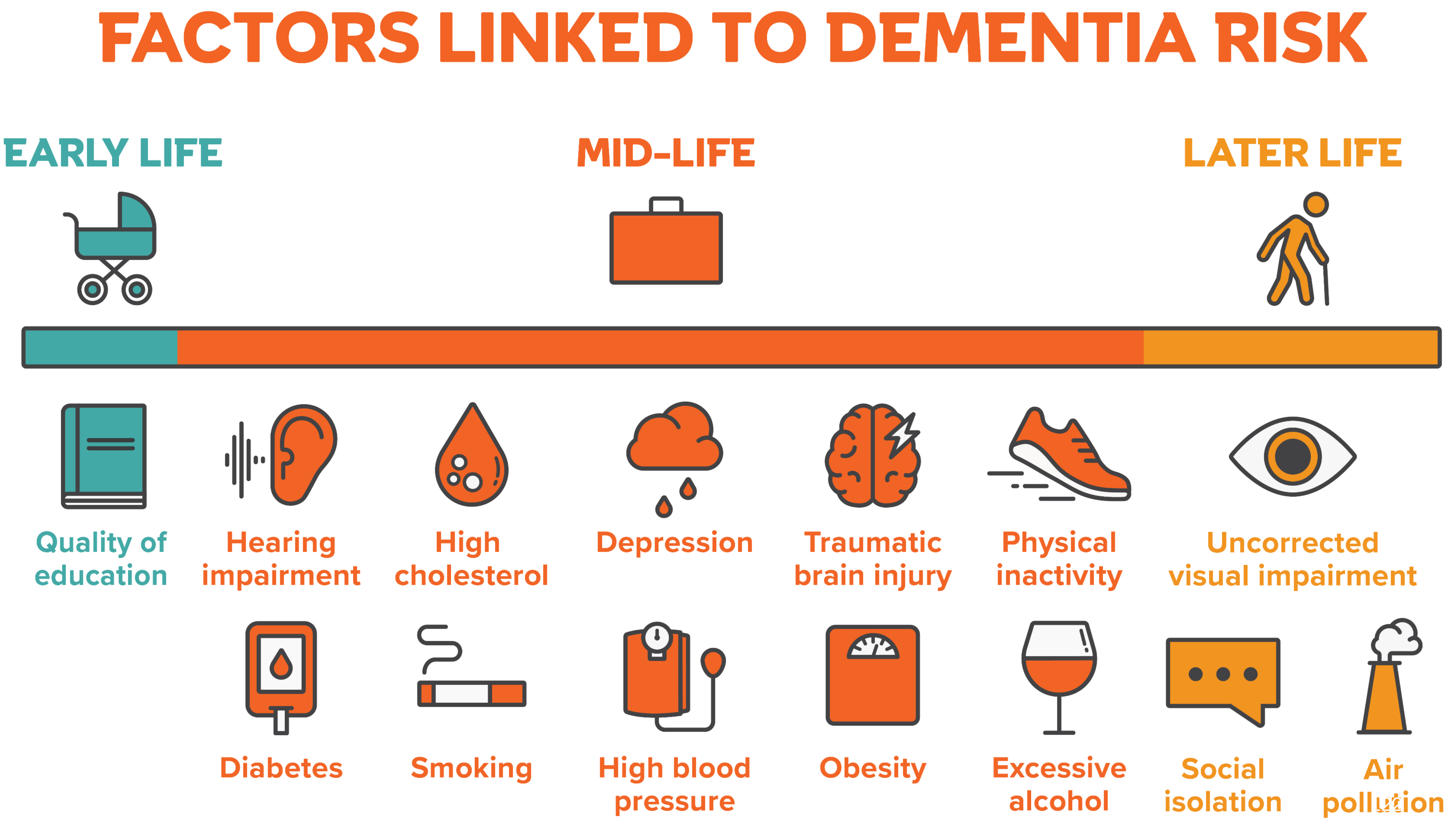
"I want to see systems & processes that recognise need, person centred public policy, and people treated with dignity."

Margaret

# Dementia.
# Every AHPs Business

Alzheimer Scotland
Action on Dementia
Prevent. Care. Cure.

- People with dementia are **frequently admitted to hospitals**, often with illnesses that could be managed at home. (SIGN 2023)
- People living with dementia who are over 65 years have on average **4 comorbidities**. (SIGN 2023)
- Projected estimates show a **50% increase** in the number of people with dementia over 65 over the next 20 years (Scottish Government 2023)
- Approximately a third of people with dementia in Scotland are in **residential care** and those residents make up about 65% at least of overall care home population. (Scottish Government 2023)
- The rate of mortality caused by Alzheimer's disease and other dementias was 125 deaths per 100,000 people in 2023. This makes these conditions one of the **leading causes of death** in Scotland. (National Records for Scotland 2024)


FACTORS LINKED TO DEMENTIA RISK
EARLY LIFE
MID-LIFE
LATER LIFE
Quality of education
Hearing impairment
High cholesterol
Depression
Traumatic brain injury
Physical inactivity
Uncorrected visual impairment
Diabetes
Smoking
High blood pressure
Obesity
Excessive alcohol
Social isolation
Air pollution


https://www.brainhealth.scot/

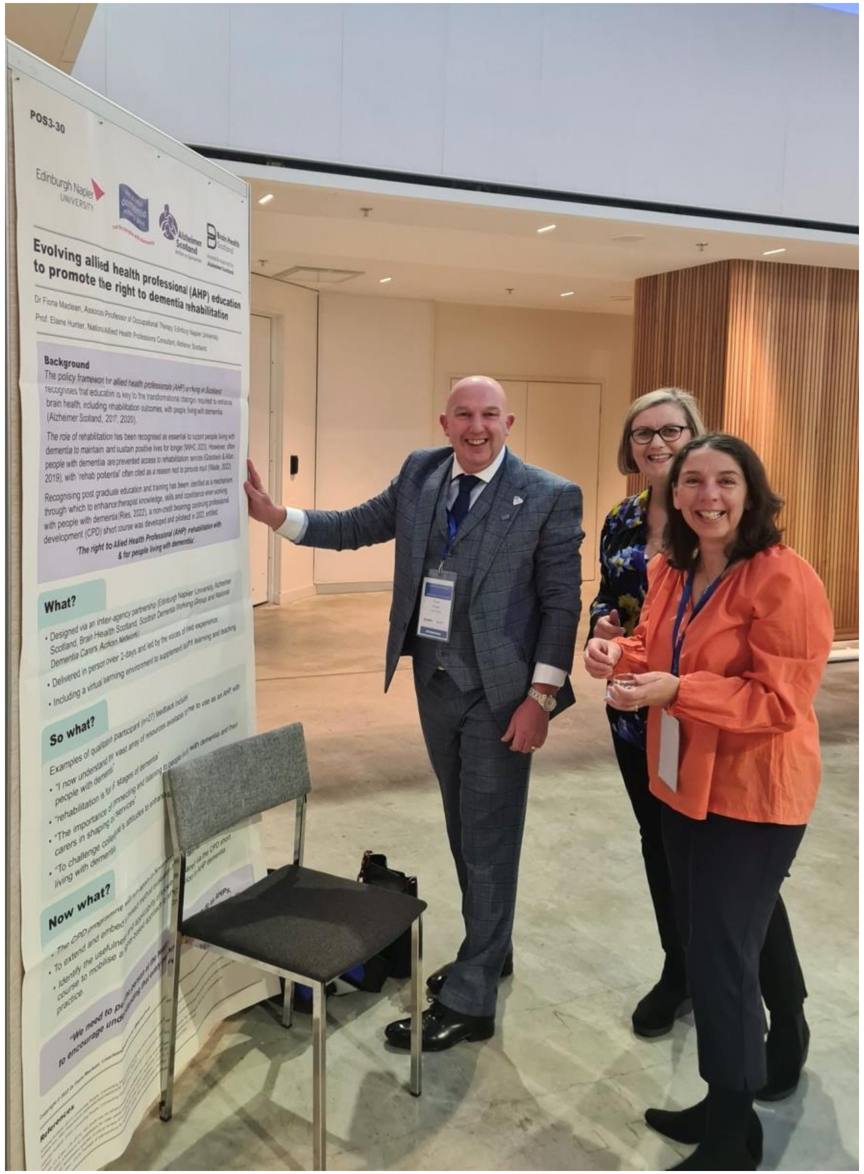
# How's your brain health?

Take this 5 minute quiz to find out some tips and advice to keep your brain healthy.

ent.


SCOTTISH AHP DEMENTIA FORUM · CONNECTING PEOPLE TO SUPPORT
Connecting you to support
Personalised access to the skills and expertise of Allied Health Professionals (AHPs) when living with dementia
Alzheimer Scotland
Action on Dementia
People living with dementia and their supporters
"I am accessing information and resources in a variety of formats to help me self-manage"
"I am accessing tailored consultations, support and education"
"AHPs are giving me personalised assessments, rehabilitation and reablement"
People living with dementia should be able to access each element when necessary
Universal
Evidence-based
AHP resources and information
Variety of formats
Accessible to all
Targeted
Self management
Support and advice
Collaborative working
Tailored consultations
Education
Individualised
Personalised and tailored AHP rehabilitation and reablement
AHP-led interventions
One-to-one support
People will move between universal, targeted and individualised as their needs change
Allied Health Professional
"I am sharing my knowledge and skills to enable people to make informed choices"
"I am supporting people to build the knowledge, skills and confidence to improve peoples experience of care"
"I am delivering personalised and tailored rehabilitation and reablement"
www.alzscot.org/ahpresources | www.cpcs.online


Alzheimer Scotland
Action on Dementia
Five
things you should know about dementia
1 Dementia is not a natural part of ageing
2 Dementia is caused by diseases of the brain
3 Dementia is not just about losing your memory
4 It's possible to live well with dementia
5 There's more to the person than the dementia


Evolving allied health professional (AHP) education to promote the right to dementia rehabilitation
Background
What?
So what?
Now what?

# ReThink DeMEentia

## What CAN you do ?

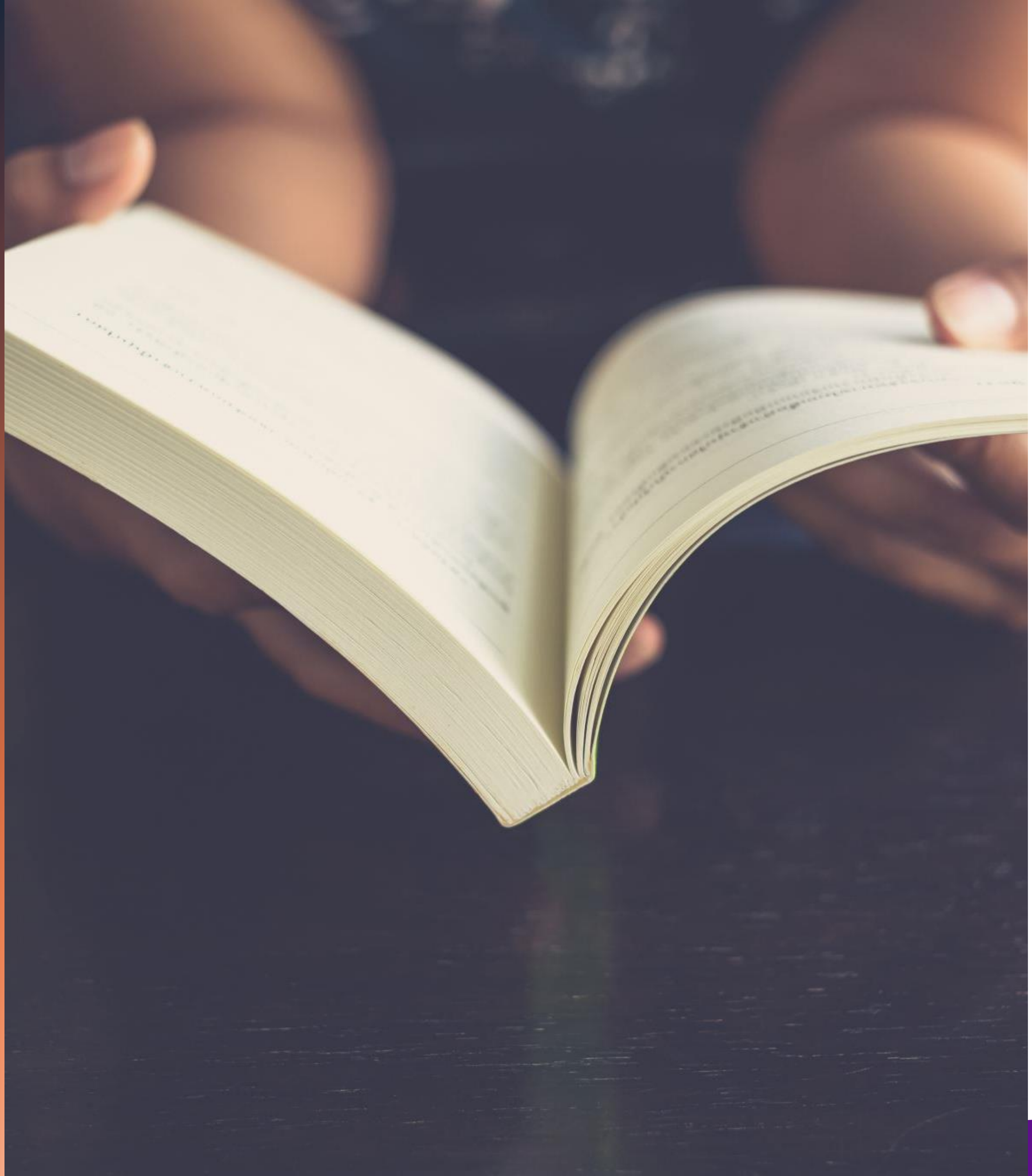
# Do you know if its dementia?

# Environment

- **Signage**
- **Flooring**
- **Quiet Space**
- **Navigate**
- **Lighting**
- **Seating**

- https://www.alzheimers.org.uk/sites/default/files/2024-09/dementia-friendly-environments-checklist.pdf

# Family and friends, your greatest asset



# Tips for talking.

- This booklet has some tips for talking.
- You may need help with some of the tips.
- You can use the tips that you like.
- There is advice at the end of the booklet for the people you talk to.

https://www.alzscot.org/sites/default/files/2024-08/Tips%20for%20Talking%202024%20updated%20August%202024.pdf

# Person centred care

# Signpost and support

- 24 hour free helpline
- www.alzscot.org/ahpresources
- www.cpcs.online

- National AHP dementia forum
- Dementia friends
- NHS Turas for skilled in dementia
- www.alzscot.org/ahpwebinars

**Be confident and curios**

ehunter@alzscot.org

@elaineahpmh

@AHPDementia

#AHPConnectingPeople

# Refreshing the roots

## Basic parameters in digital X-ray introduction

**Marc Turner & Jacob Morgan**
DXR UKI
01/10/24

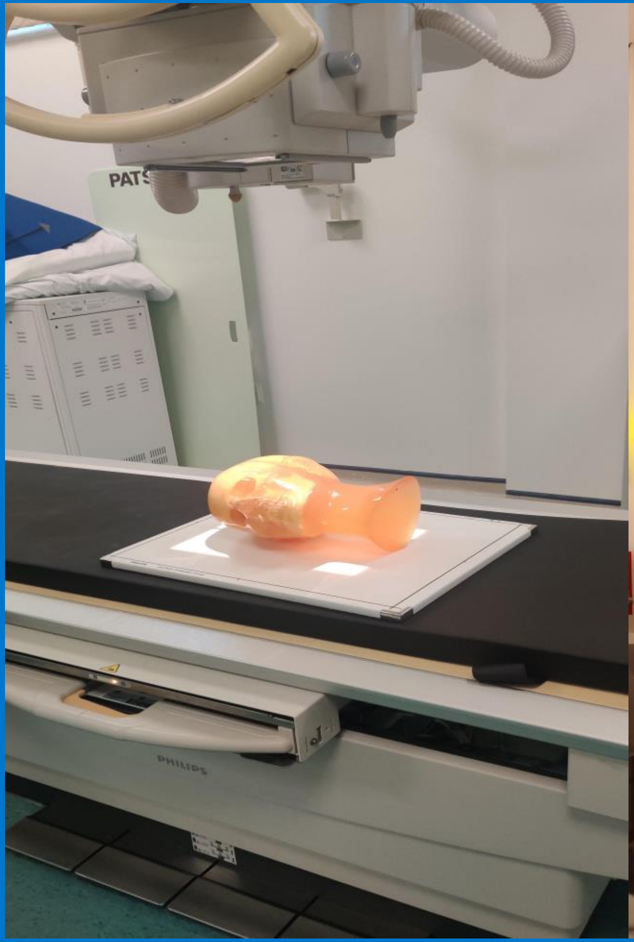
# What Is Refreshing The Roots ?

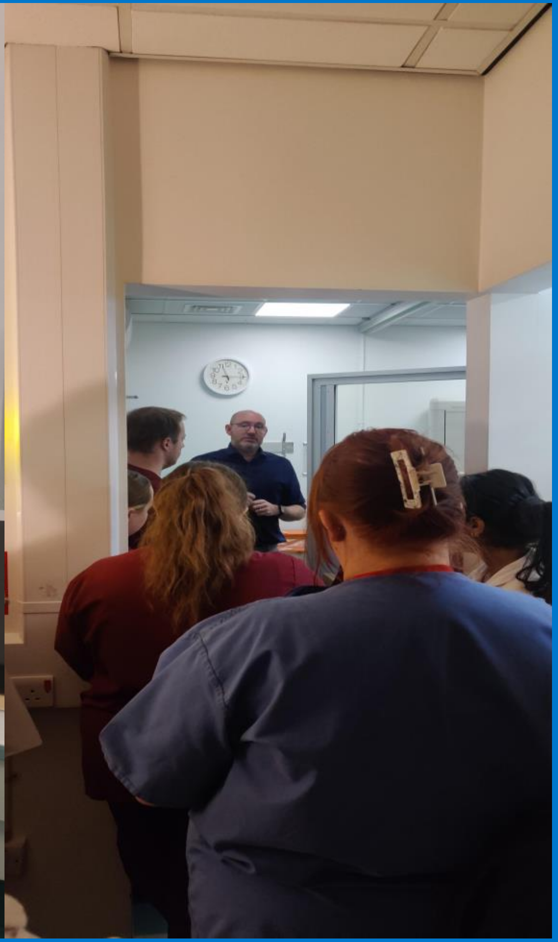
- DR, a dark art?
- Introduction  presentation
- On-site, hands-on workshop
- understanding of over- and underexposure, using the exposure index and ROI.

# The Story So Far

- Kicked off June 2024
- Delivered to 7 customers so far
- Great Feedback
- Continuous improvement supported By Philips

Endorsed
CPD Now





# Feedback

"Loved how you linked theory with real-world application. It made everything much more relatable."

"You really helped me understand how important balancing kV and mAs is for image quality. Great job!"

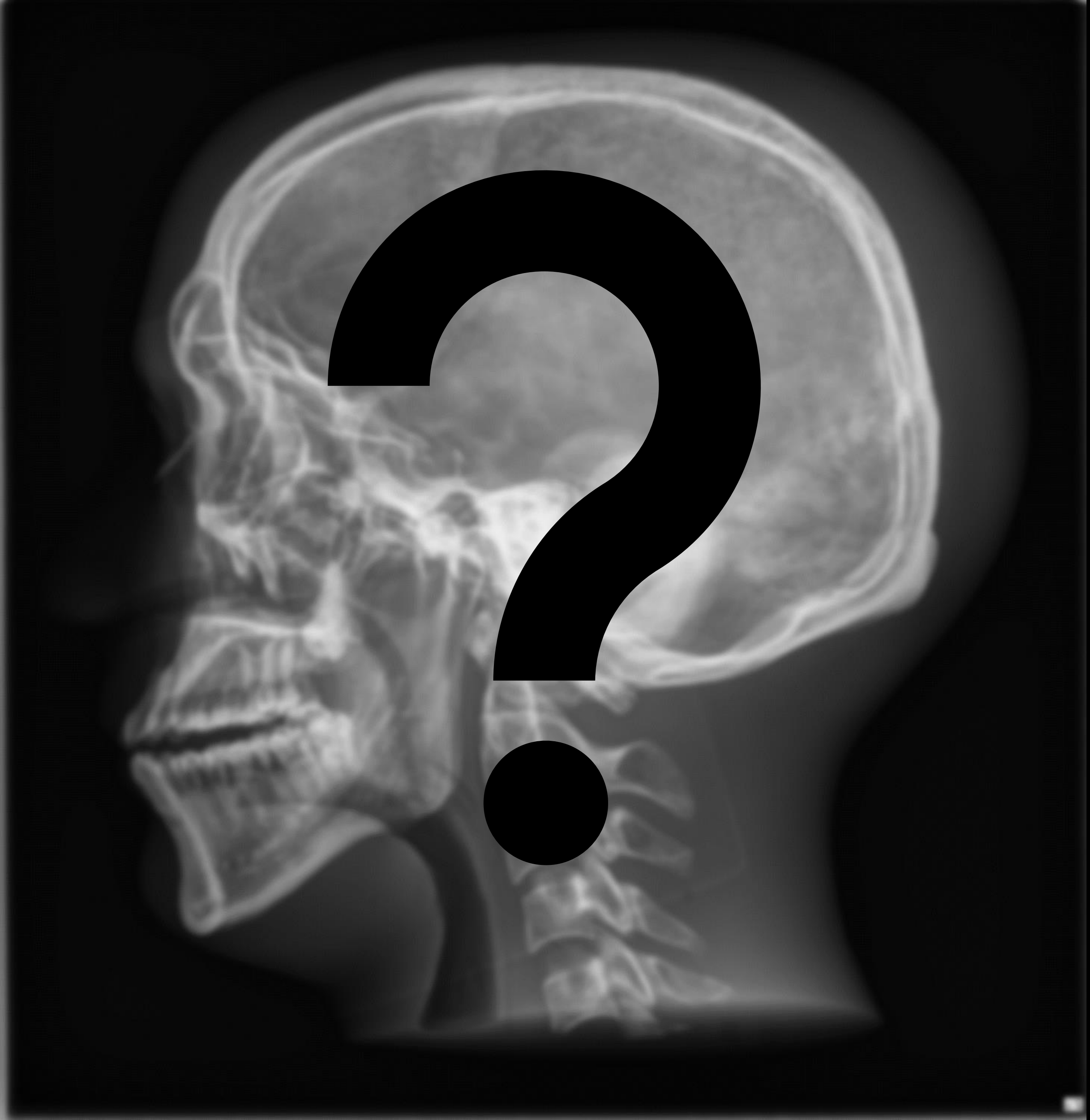
"I now feel more confident in using AEC and understanding its impact on image consistency. Great session!"

"The training was engaging and relevant to our daily work – I'm already thinking about changes to my technique.

"Your explanation of kV and mAs was clear and easy to understand – it made a real difference!"

# Setting The Scene

- Conducted in customers  x-ray room
- Philips DIDI4 , C90 or 7300C rooms
- Small groups sessions ran throughout the day
-  Skull phantom and base image using AEC
- Interactive session, Don't worry no quiz…..Yet!
- Adjusting exposure parameters (kV and mAs) and EI_T

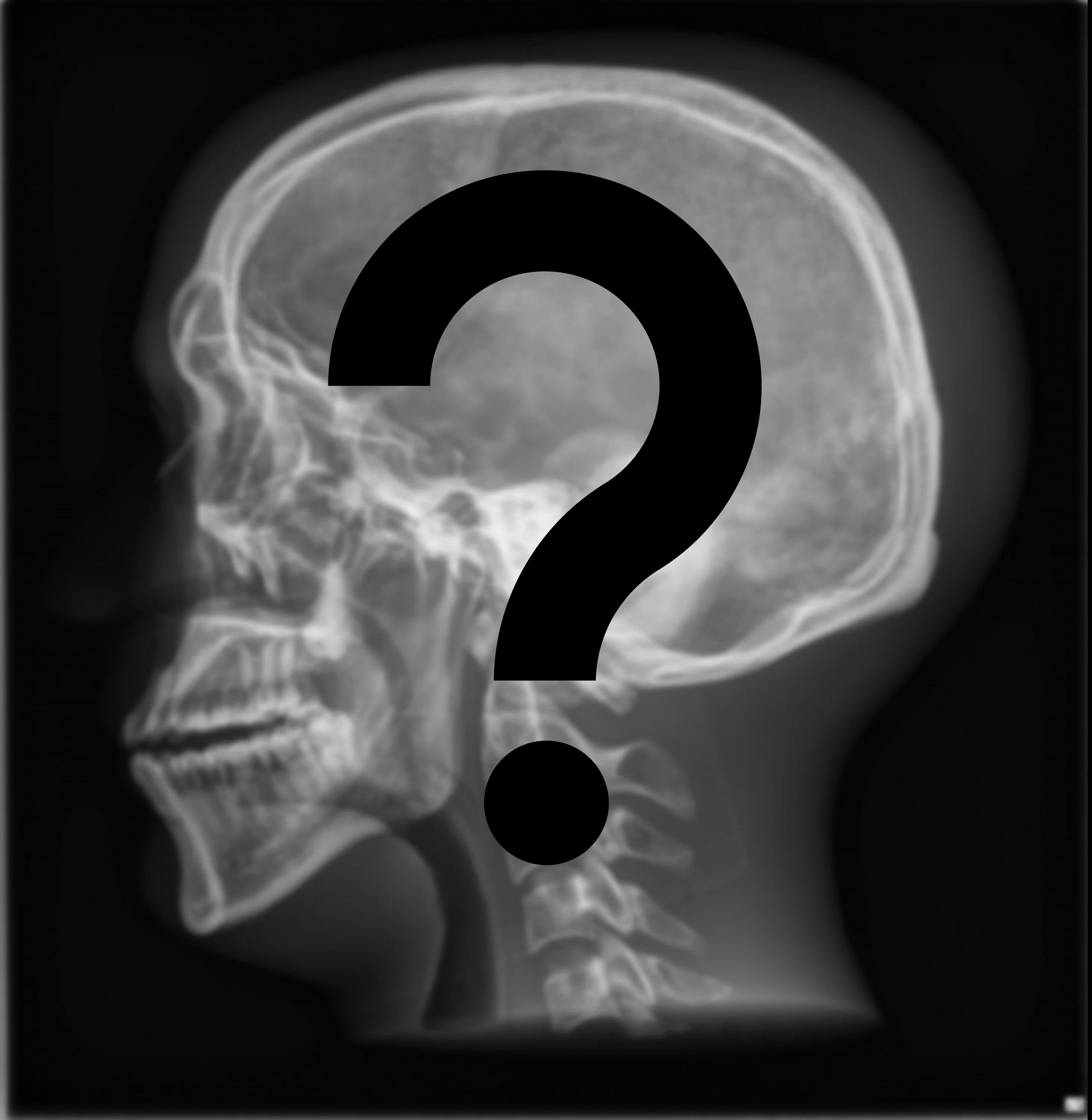


# Base image

This will be our reference image. For our next images we will try to predict the effects of parameter changes

All images for this presentation were taken with a Philips DigitalDiagnost C90 radiography system for the purpose of this workshop with the use of a skull phantom

Where comparisons are made, they will be in reference to the base image on slide [10] unless otherwise noted.



# Base image

This will be our reference image. For our next images we will try to predict the following

This image will be acquired with full AEC on $EI_T$ 250

- What kV would you expect to use?

We will use 70 kV for this exposure

- What would you expect on mAs?

We would expect around 10 – 12 mAs

What do we expect of the image coming out regarding:

1. Noise level

'Normal'

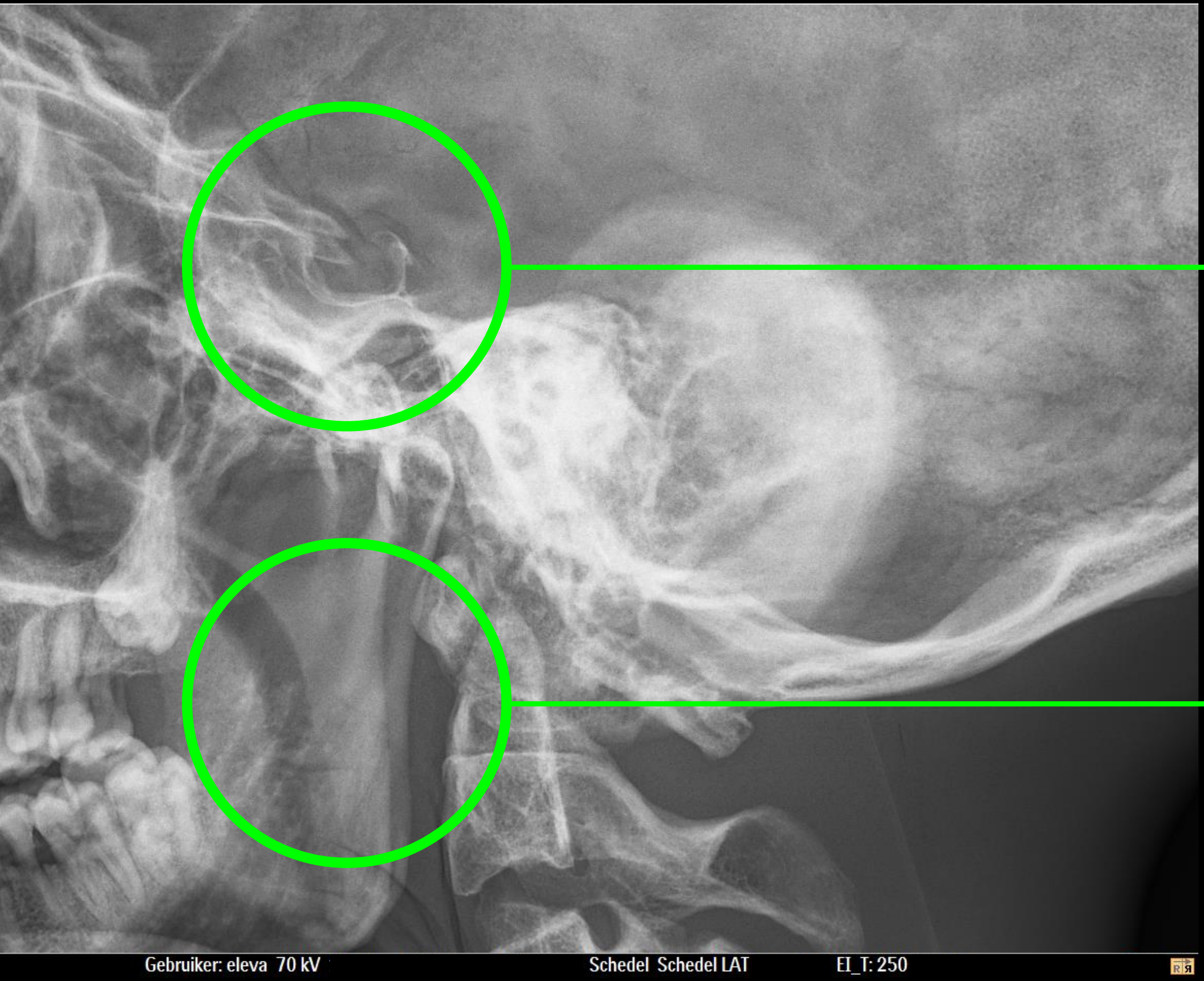
2. Contrast

'Normal'

3. Exposure Index

EI_s 200 - 300


L
LAT
Gebruiker: eleva 70 kV
Schedel Schedel LAT
EI_T: 250



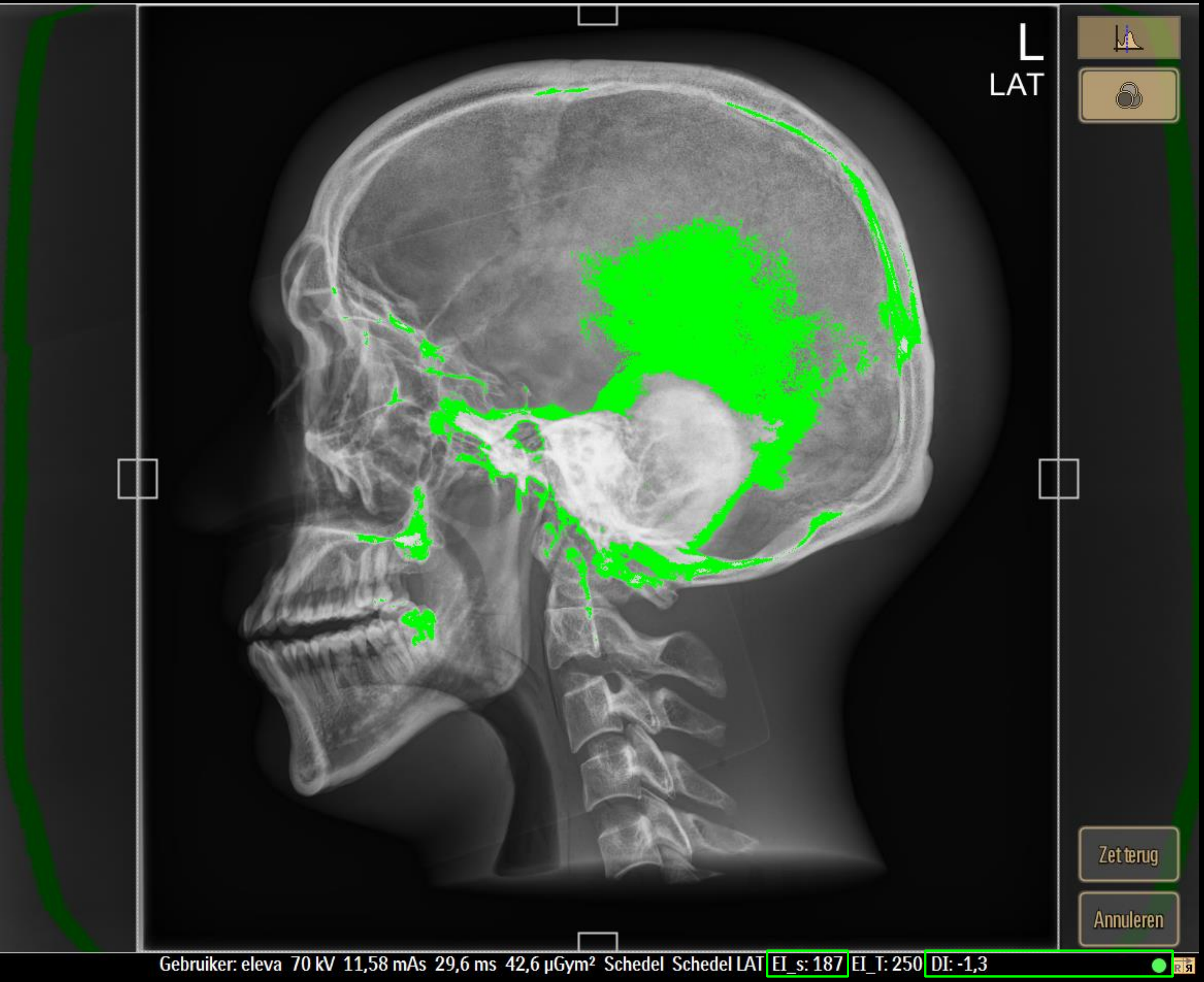

## Noise area

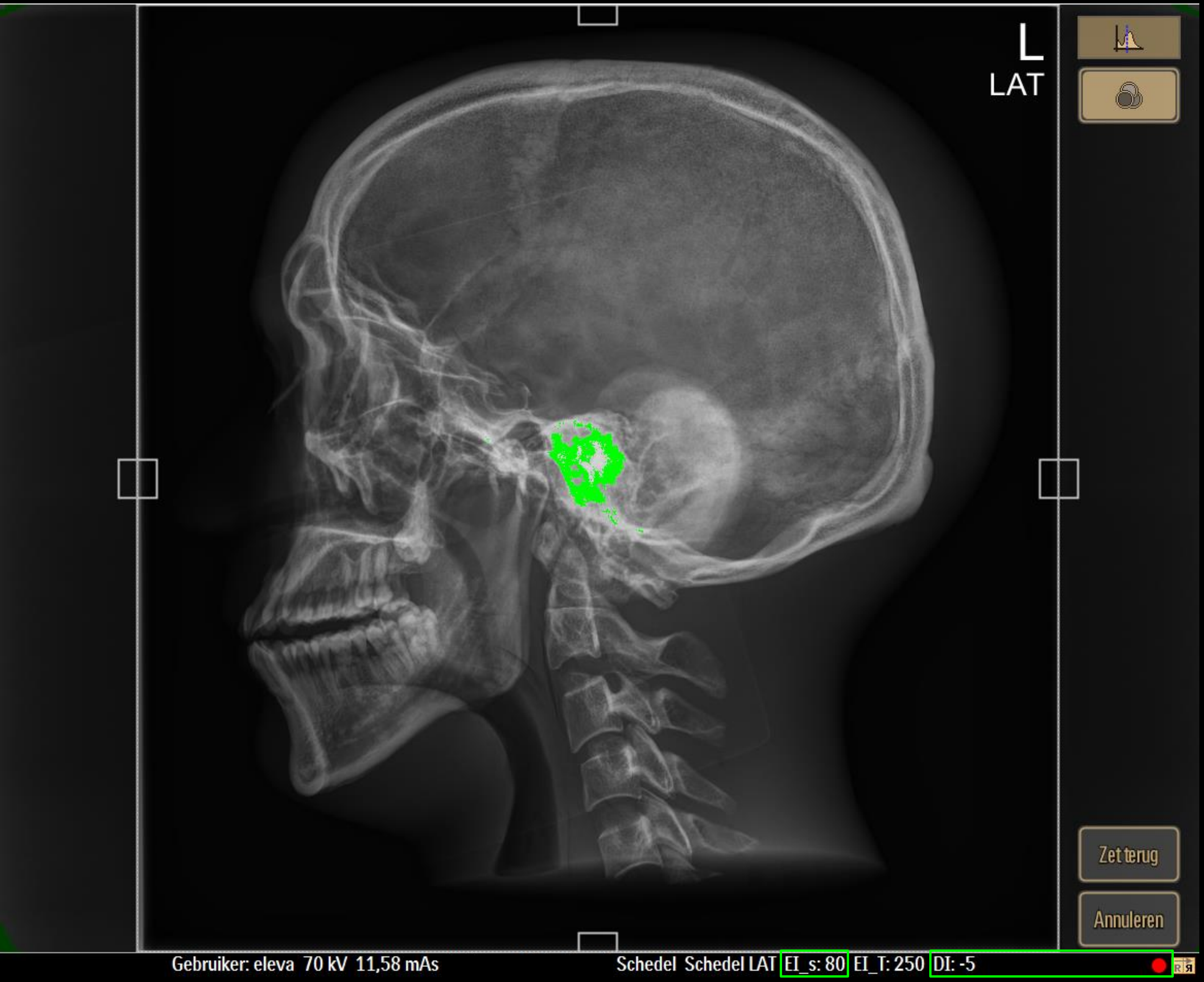
How clearly can the fine details be distinguished

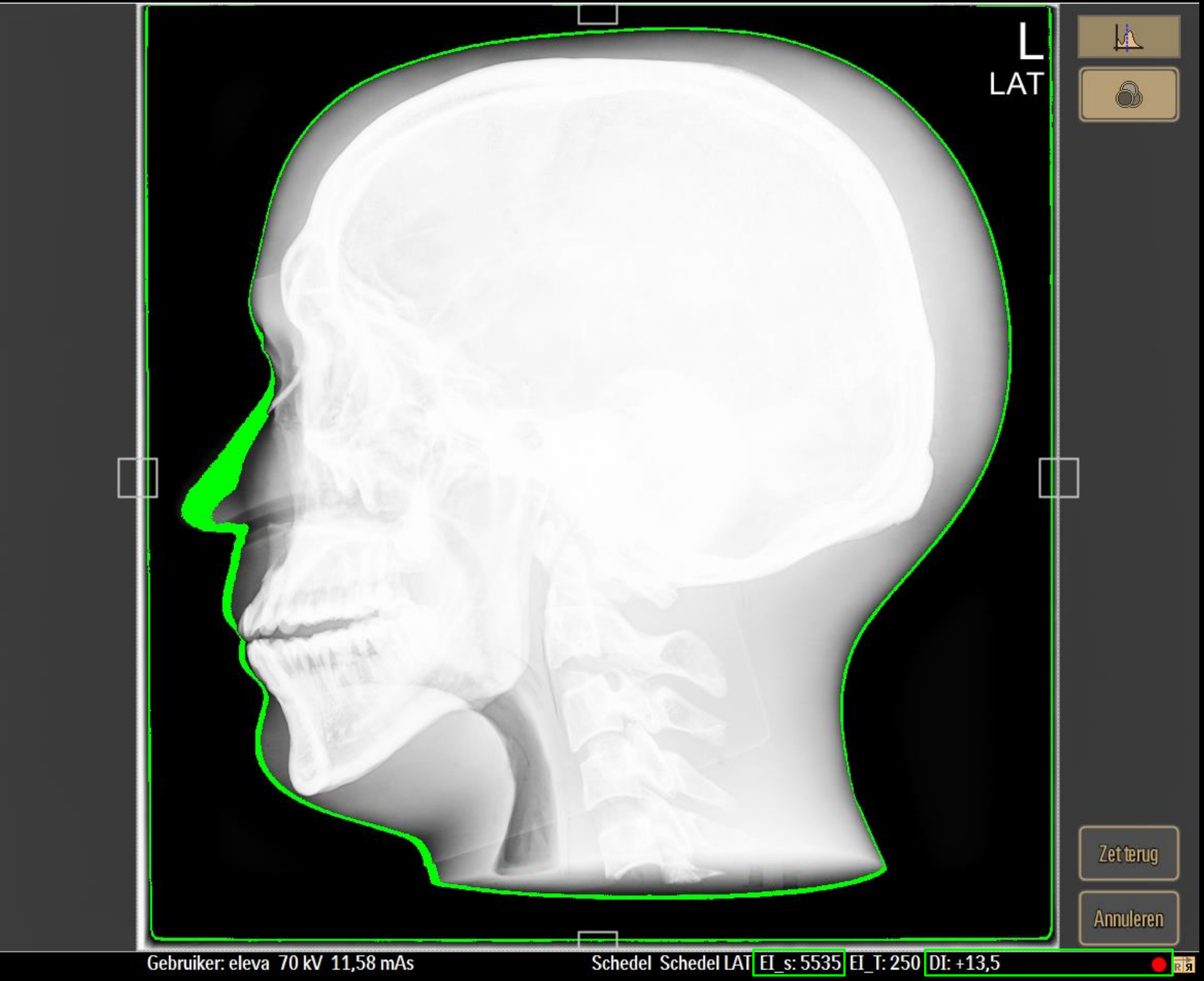
## Contrast area

How much difference in grey tones is seen


L
LAT
Gebruiker: eleva 70 kV 11,58 mAs
Schedel Schedel LAT EI_s: 187 EI_T: 250 DI: -1,3


L
LAT
Zet terug
Annuleren
Gebruiker: eleva 70 kV 11,58 mAs 29,6 ms 42,6 µGym² Schedel Schedel LAT EI_s: 187 EI_T: 250 DI: -1,3


L
LAT
Zet terug
Annuleren
Gebruiker: eleva 70 kV 11,58 mAs
Schedel Schedel LAT EI_s: 80 EI_T: 250 DI: -5



L
LAT
Zet terug
Annuleren
Gebruiker: eleva 70 kV 11,58 mAs
Schedel Schedel LAT
EI_s: 5535
EI_T: 250
DI: +13,5

# Base image

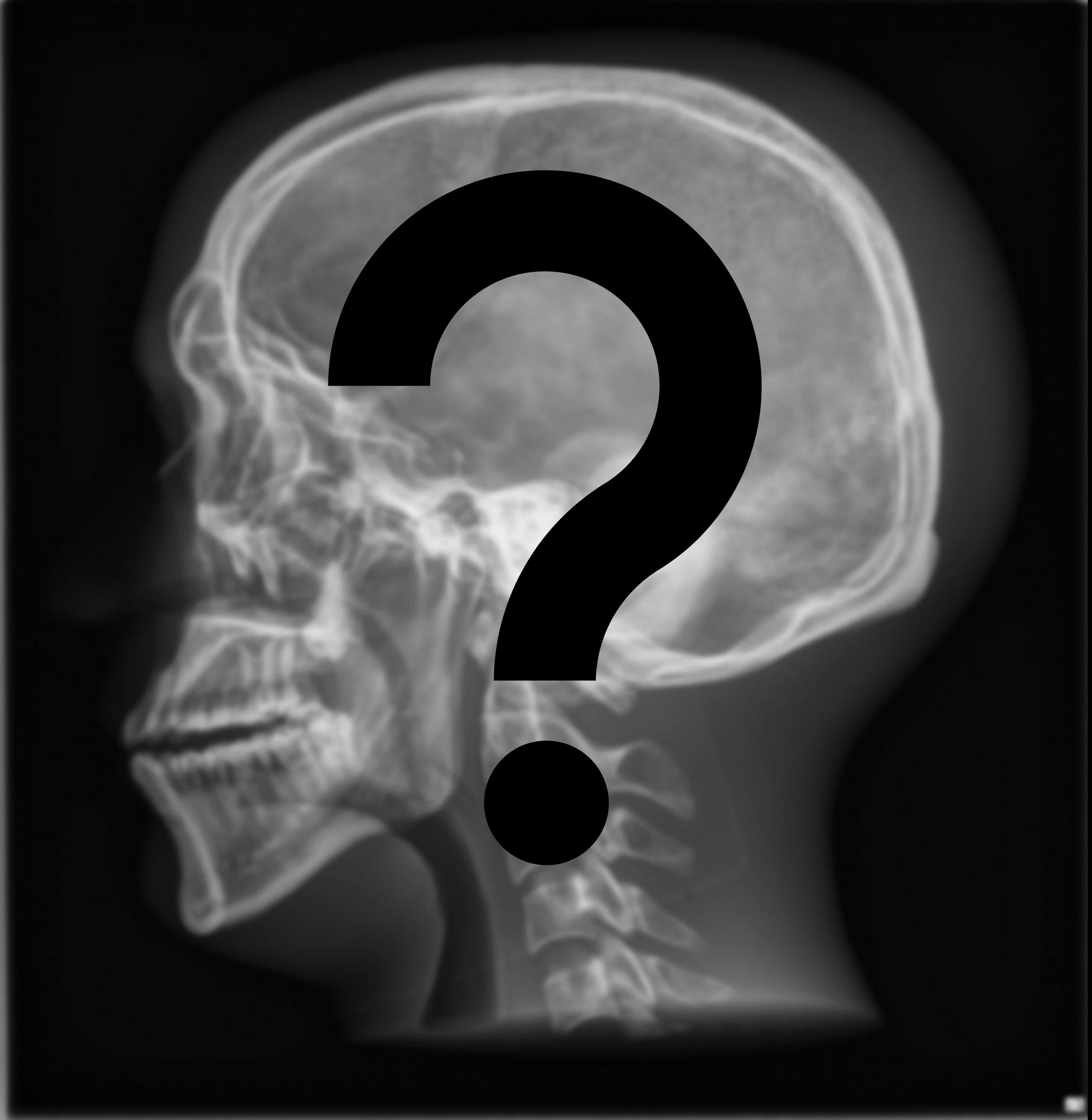
This will be our reference image. For our next images we will try to predict the following

This image will be acquired with full AEC on EI_T 250

- What kV was used?
  70 kV
- What mAs was used?
  ≈12 mAs

What do we see in the image regarding:

1. Noise level
   'Normal'
2. Contrast
   'Normal'
3. Exposure Index
   187



# Increased kV

First, we will look at the influence of kV

This image will be acquired with full AEC on EI_T 250 and a 20 kV increase to 90 kV

- What kV would you expect to use?

We will use 90 kV for this exposure

- What would you expect on mAs?

Lower, around 1/4th (10 kV rule). More photons penetrate the object, which will lead to less photons needed to achieve AEC dose

What do we expect of the image coming out regarding:

1. Noise level

The noise level would remain approximately constant since we are stopping the image at a fixed AEC dose

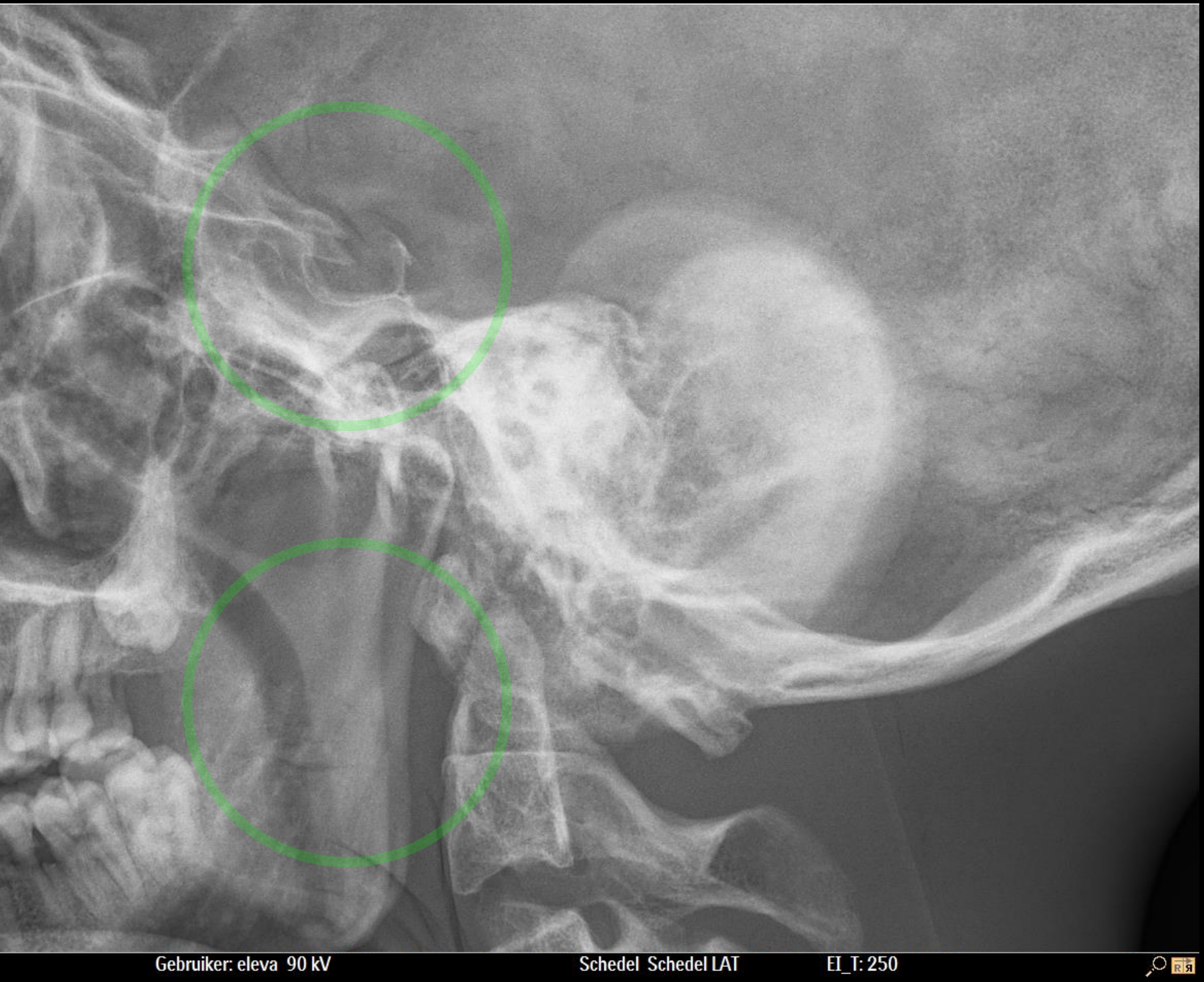
2. Contrast

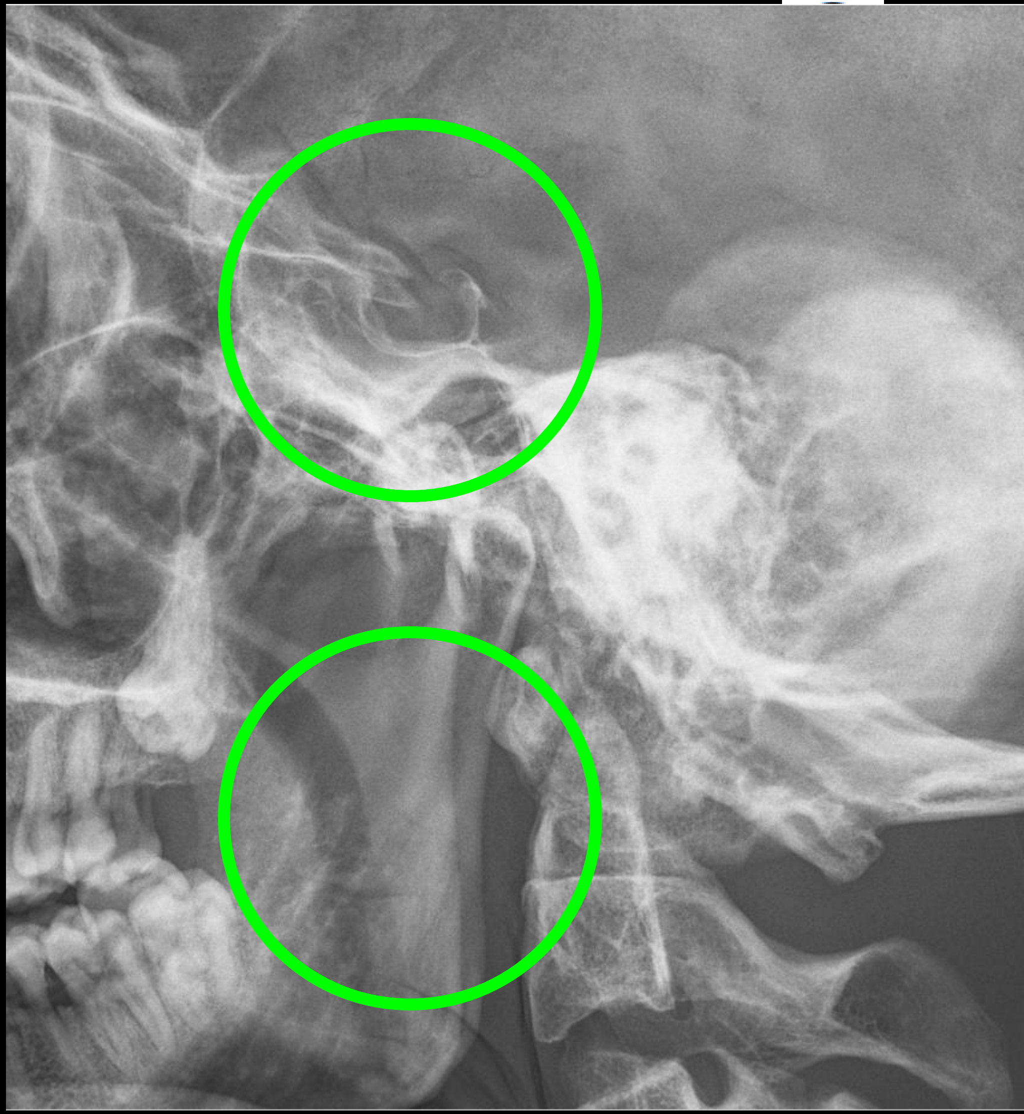
The image will have less contrast, the penetration of the beam is such that differences between structures are smaller

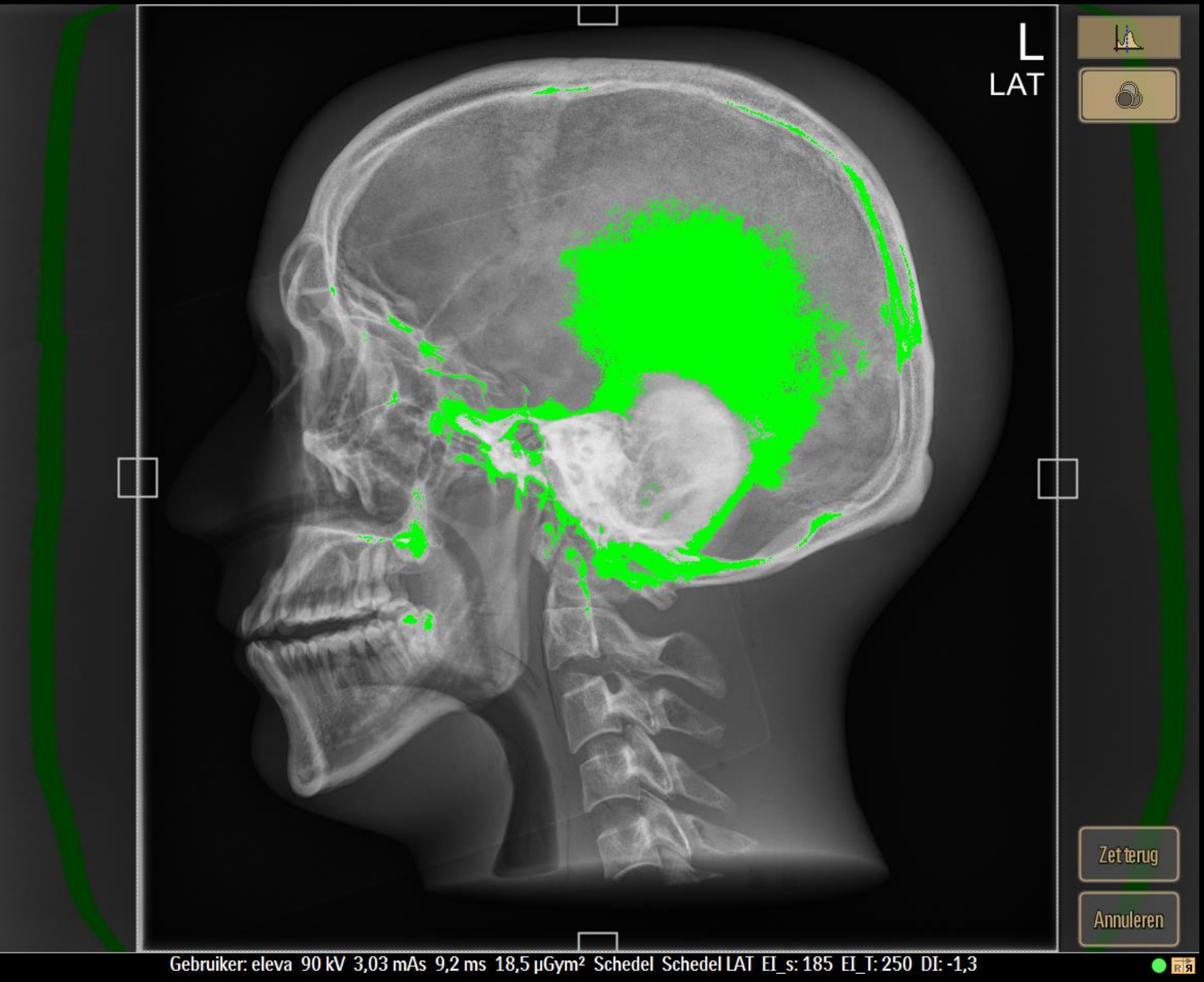
3. Exposure Index

The exposure index should still be around EI_s 187 since we did not chance the AEC dose. It’s allowed to vary a bit due to anatomy variations and system components delay


L
LAT
Gebruiker: eleva 90 kV
Schedel Schedel LAT
EI_T: 250


Gebruiker: eleva 90 kV
Schedel Schedel LAT
EI_T: 250




L
LAT
Zet terug
Annuleren
Gebruiker: eleva 90 kV 3,03 mAs 9,2 ms 18,5 µGym² Schedel Schedel LAT EI_s: 185 EI_T: 250 DI: -1,3



70 kV AEC EI_T 250

mAs ≈ 12 | EI_s 187 | DI -1,3 | Green

# Increased kV

First, we will look at the influence of kV

This image will be acquired with full AEC on EI_T 250 and a 20 kV increase to 90 kV

- What kV was used?

90 kV

- What mAs was used?

≈3 mAs

What do we see in the image regarding:

1. Noise level

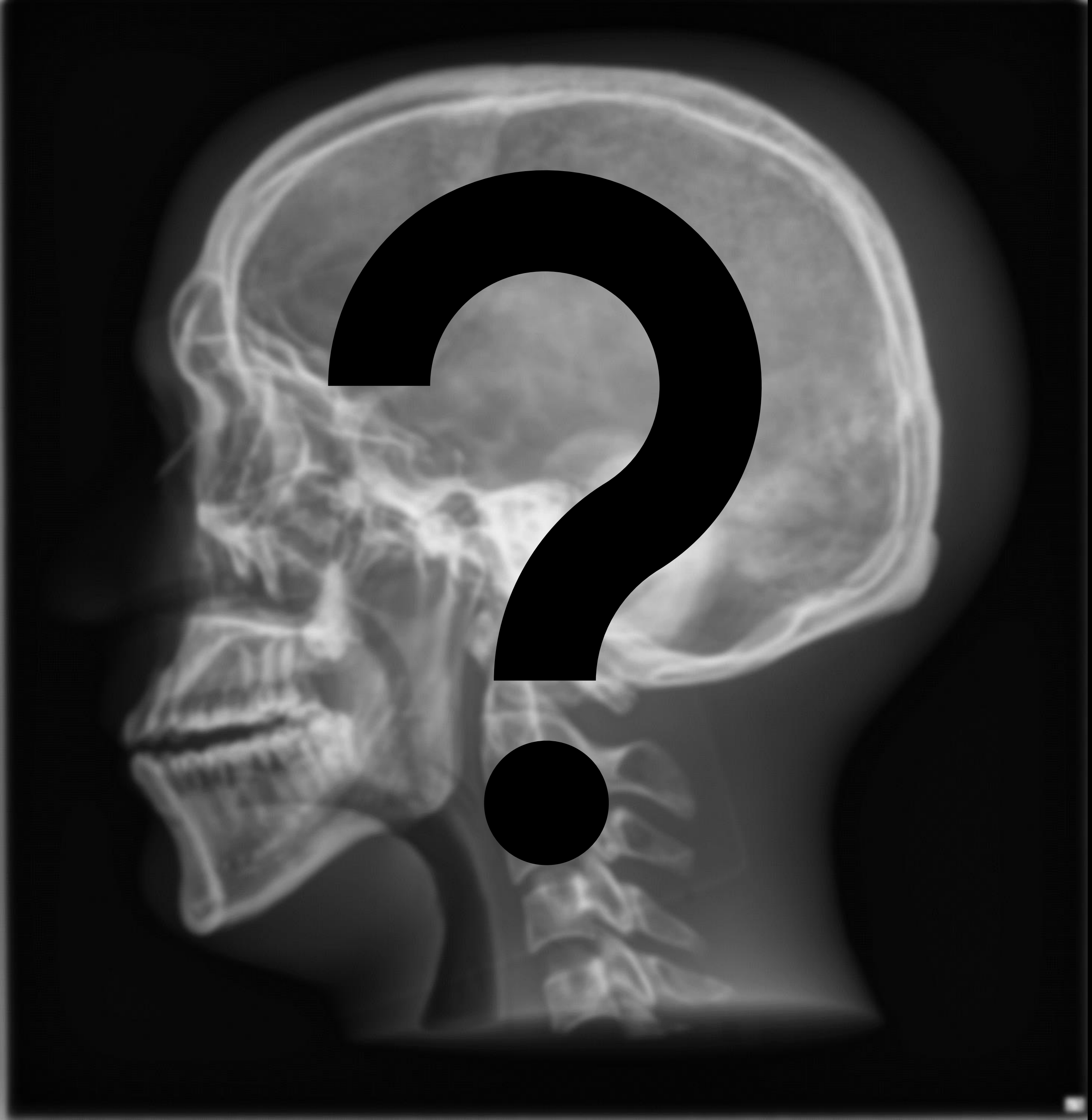
The noise level did indeed stay approximately equal to before. The image might appear different due to contrast influence on perception

2. Contrast

We see a decrease in contrast between neighboring structures. The image is less ‘black & white’ and more grey-ish

3. Exposure Index

EI_s = 185 (compared to EI_s 187)



# Decreased kV

Now we will look at the influence of kV

This image will be acquired with full AEC on $EI_T$ 250 and with a 14 kV decrease to 56 kV

- What kV would you expect to use?

We will use 56 kV for this exposure

- What would you expect on mAs?

Higher, around 4x (10% rule) since now the photons are less able to penetrate. Needing more photon input to reach AEC dose

What do we expect of the image coming out regarding:

1. Noise level

The noise level would remain approximately constant since we are stopping the image at a fixed AEC dose

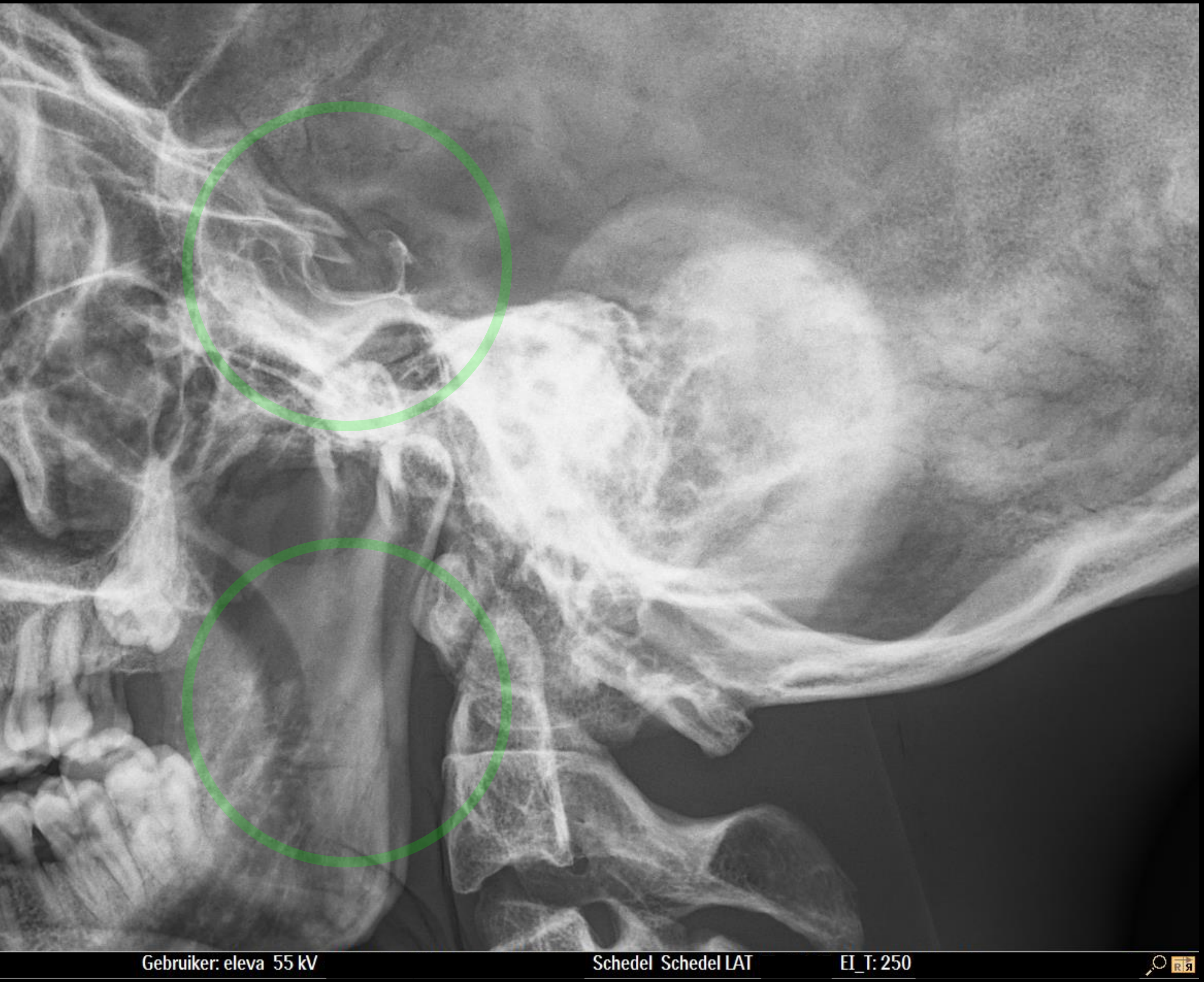
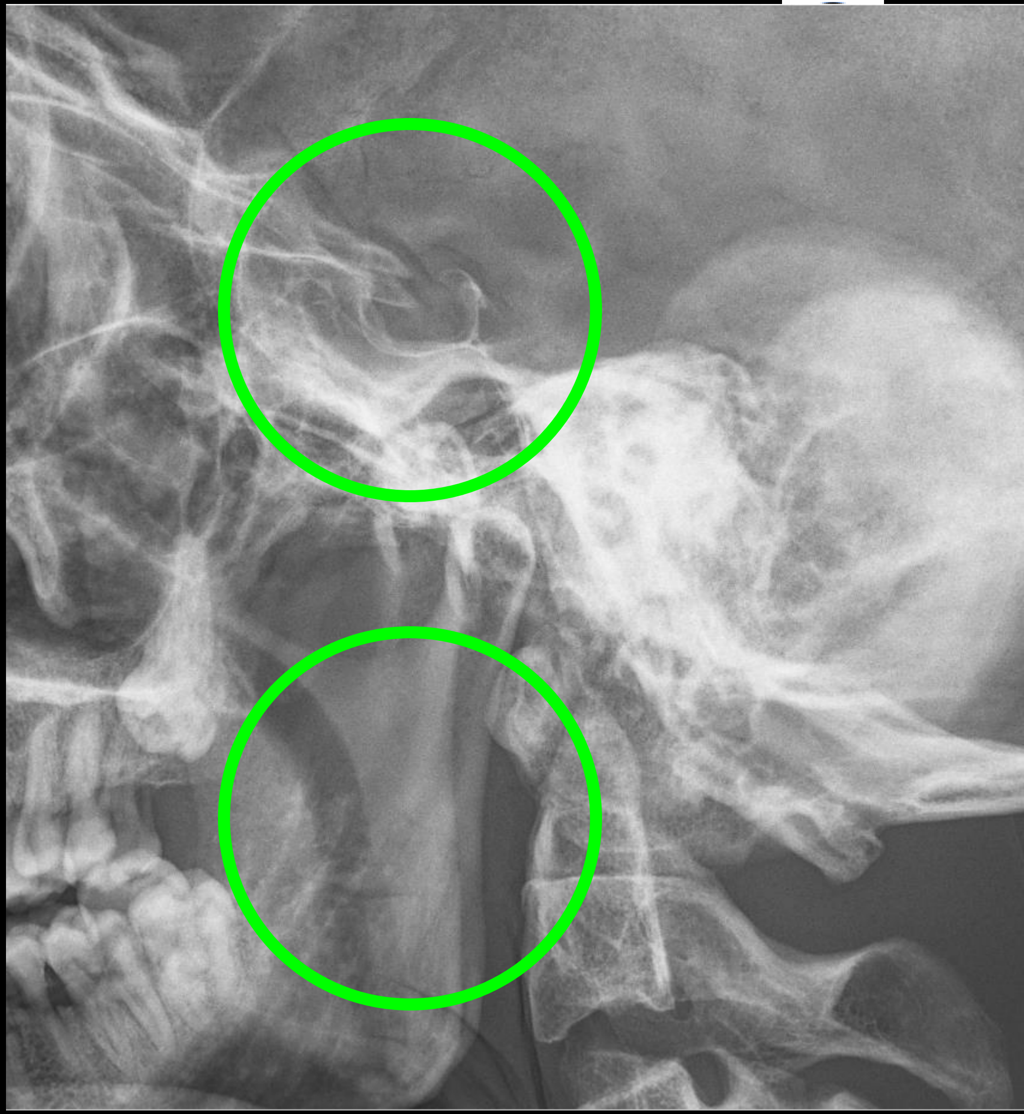
2. Contrast

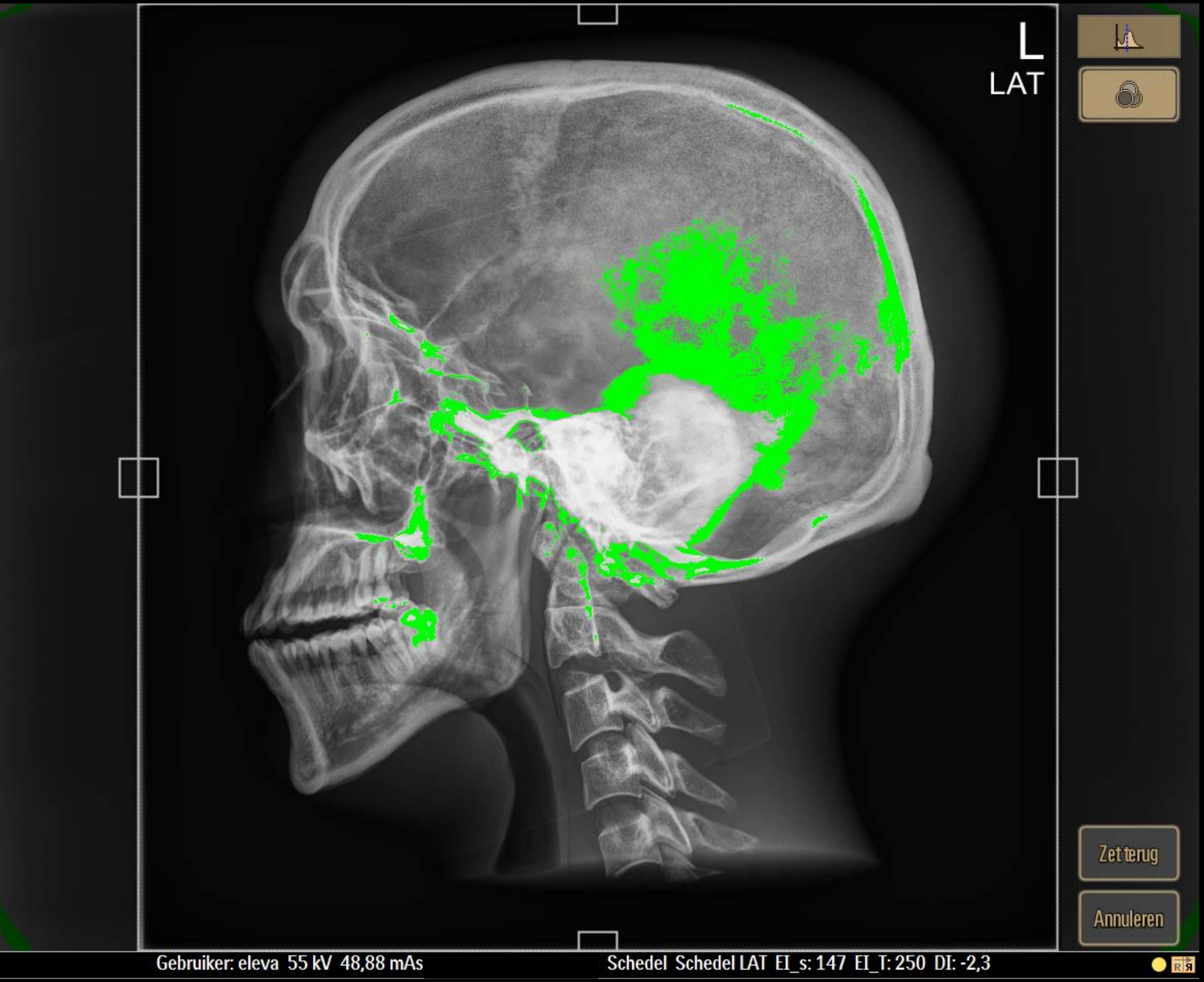
The image will have more contrast, since penetration is less. This enhances the differences between structures

3. Exposure Index

The exposure index should still be around EI_s 187 since we did not chance the AEC dose


L
LAT
Gebruiker: eleva 55 kV
Schedel Schedel LAT
EI_T: 250


Gebruiker: eleva 55 kV
Schedel Schedel LAT
EI_T: 250




L
LAT
Zet terug
Annuleren
Gebruiker: eleva 55 kV 48,88 mAs
Schedel Schedel LAT EI_s: 147 EI_T: 250 DI: -2,3



70 kV AEC EI_T 250

mAs ≈ 12 | EI_s 187 | DI -1,3 | Green

# Decreased kV

Now we will look at the influence of kV

This image will be acquired with full AEC on $EI\_T$ 250 and with a 14 kV decrease to 56 kV

- What kV was used?

56 kV

- What mAs was used?

≈50 mAs

What do we see in the image regarding:

1. Noise level

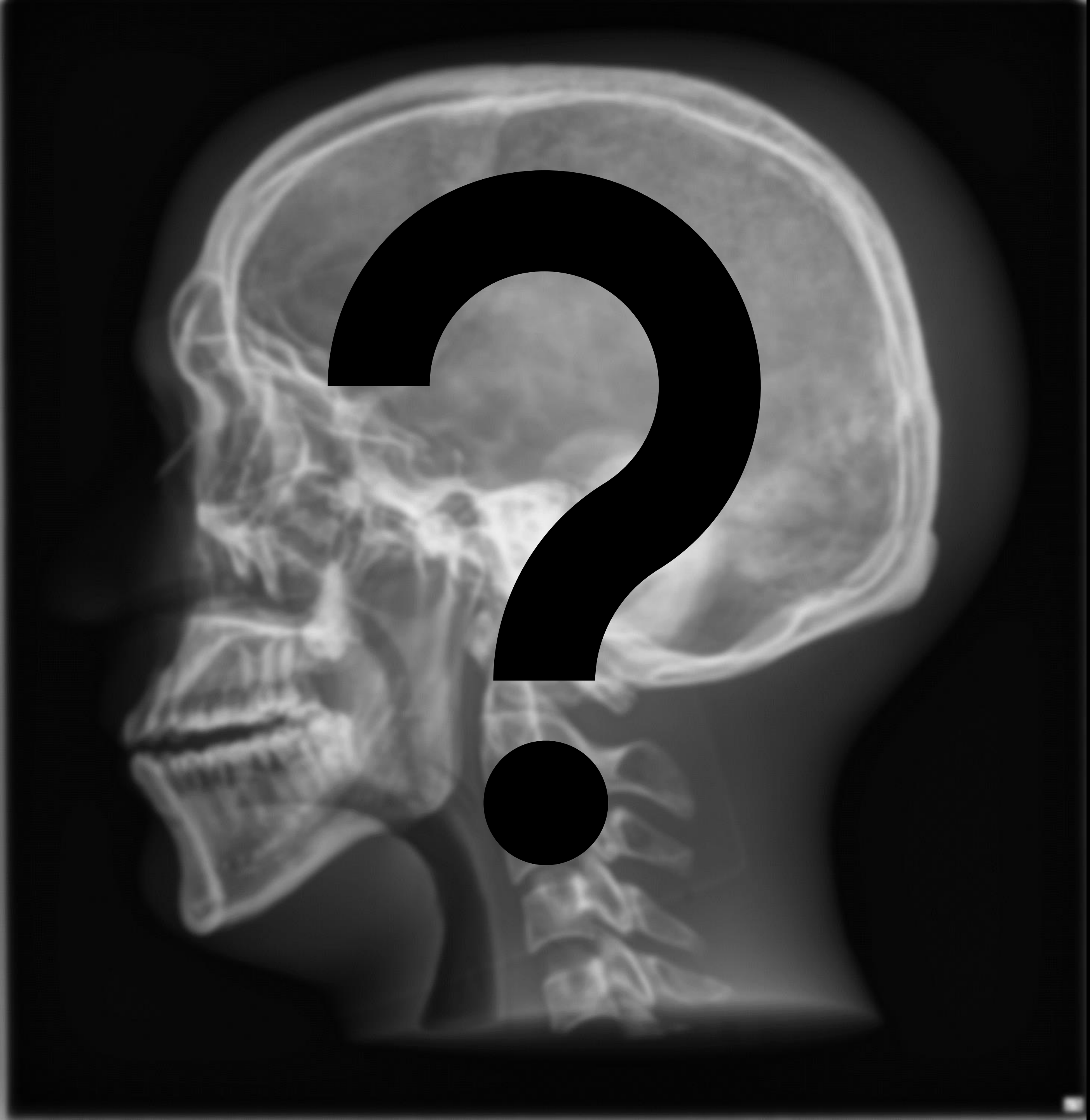
The noise level did indeed stay approximately equal to before. The image might appear different due to contrast influence on perception

2. Contrast

We see an increase in contrast between neighboring structures. The image is more ‘black & white’ and less grey-ish

3. Exposure Index

EI_s = 147 (compared to EI_s 187)



# Decrease AEC sensitivity

The next step will be to look at how our AEC sensitivity influences the image

This image will be acquired with full AEC on $EI_T$ 125

- What kV would you expect to use?

We will use 70 kV for this exposure

- What would you expect on mAs?

mAs should go down, by half. The sensitivity is directly proportional to the amount of mAs

What do we expect of the image coming out regarding:

1. Noise level

The image would appear more grainy, since we are now accepting about half of the photons

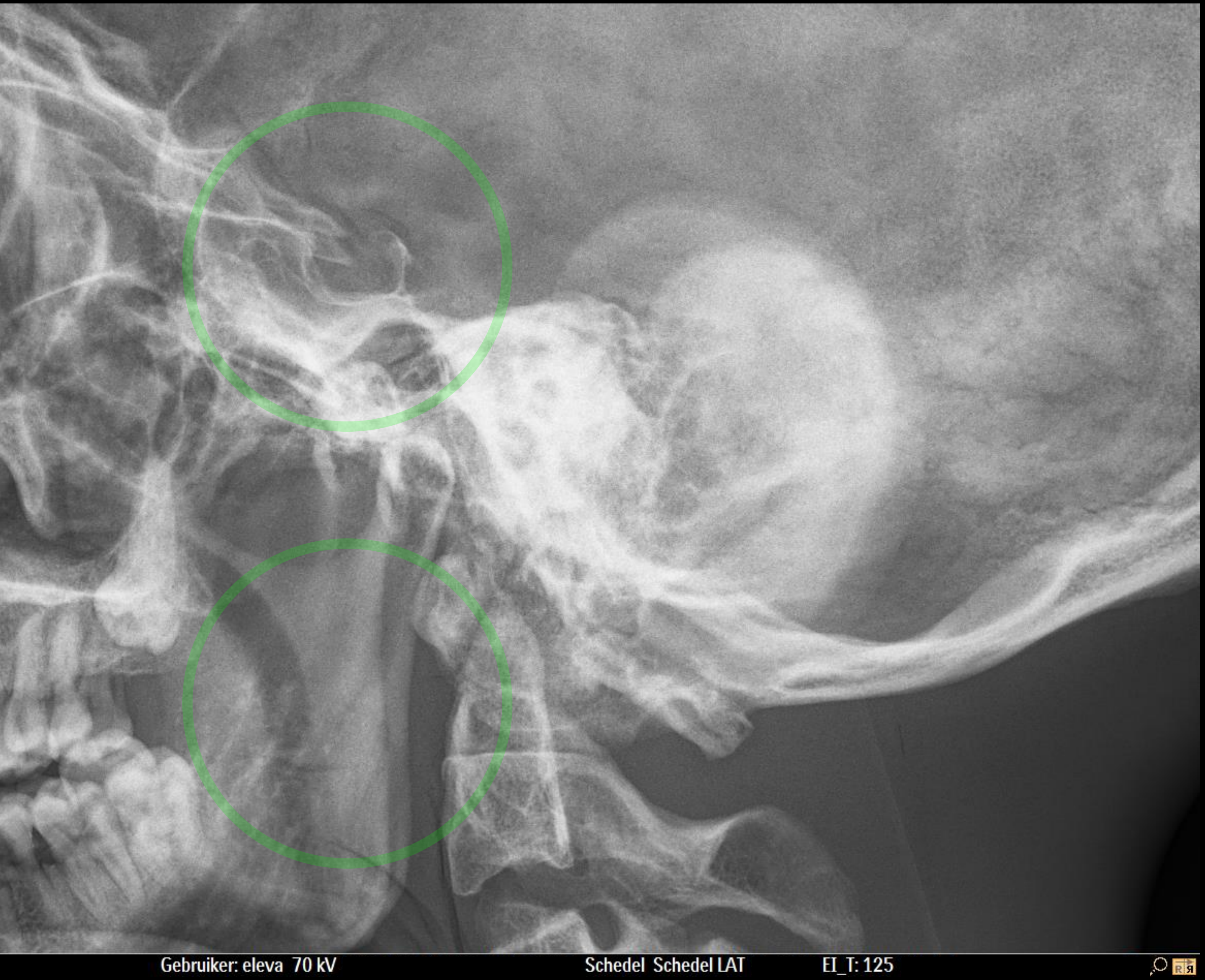
2. Contrast

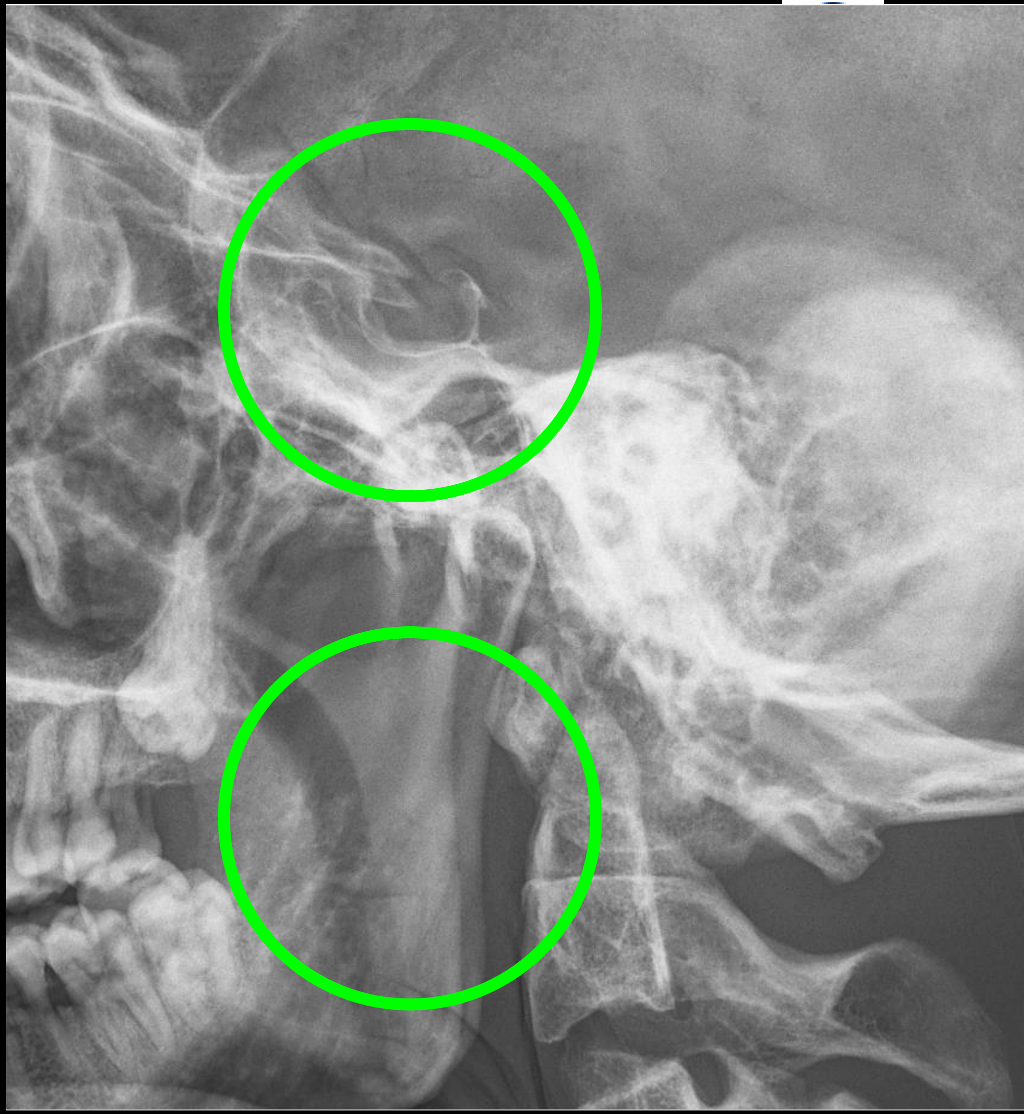
Since we did not change the penetration of the beam it should be somewhat equal to our base image

3. Exposure Index

$EI_T$ 125 corresponds to 1,25 µGy, it should be almost half of our base image EI_s 187


L
LAT
Gebruiker: eleva 70 kV
Schedel Schedel LAT
EI_T: 125



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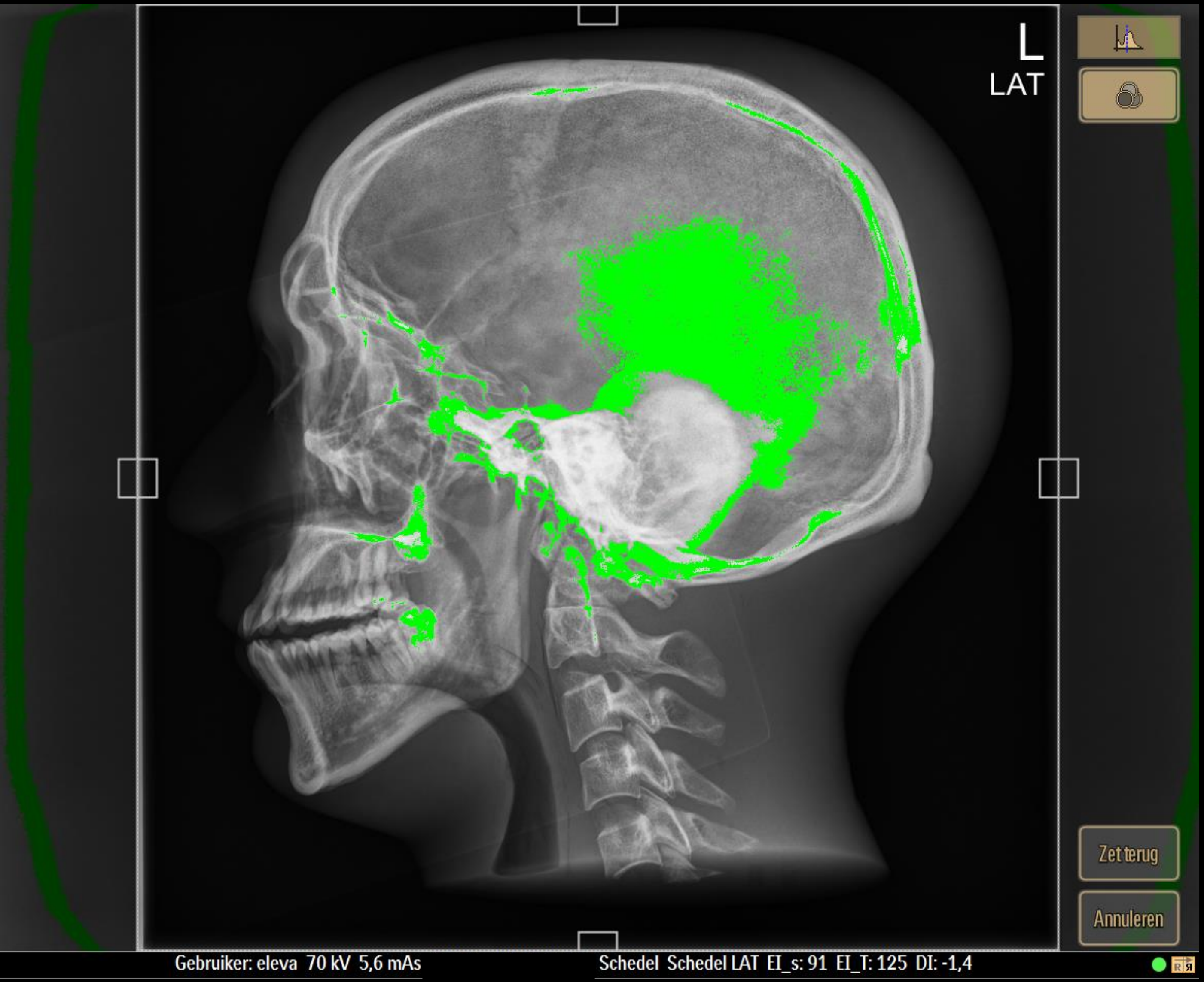
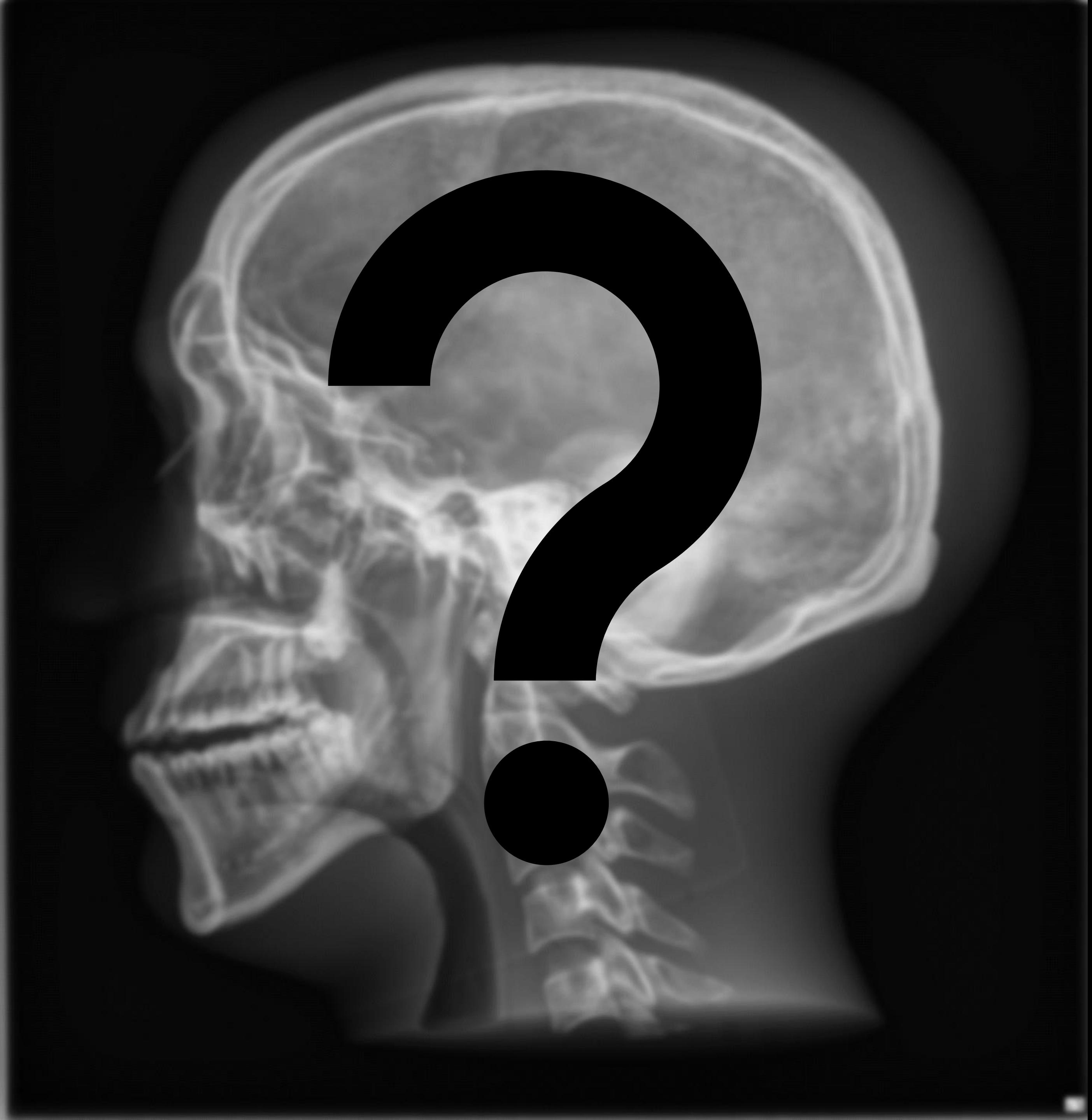

L
LAT
Zet terug
Annuleren
Gebruiker: eleva 70 kV 5,6 mAs
Schedel Schedel LAT EI_s: 91 EI_T: 125 DI: -1,4


Gebruiker: eleva 70 kV 5,6 mAs Schedel Schedel LAT EI_s: 91 EI_T: 125 DI: -1,4


70 kV AEC $EI_T$ 250

mAs ≈ 12 | EI_s 187 | DI -1,3 | Green



# Way too low kV

We will shortly step back to kV to do some dramatic changes there as well

This image will be acquired with full AEC on EI_T 250 and 40 kV

- What kV would you expect to use?

We will use 40 kV for this exposure

- What would you expect on mAs?

A very high mAs since our penetration is now so low that almost no photons reach the AEC

What do we expect of the image coming out regarding:

1. Noise level

The noise level would remain approximately constant since we are stopping the image at a fixed AEC dose, however we ARE pushing it

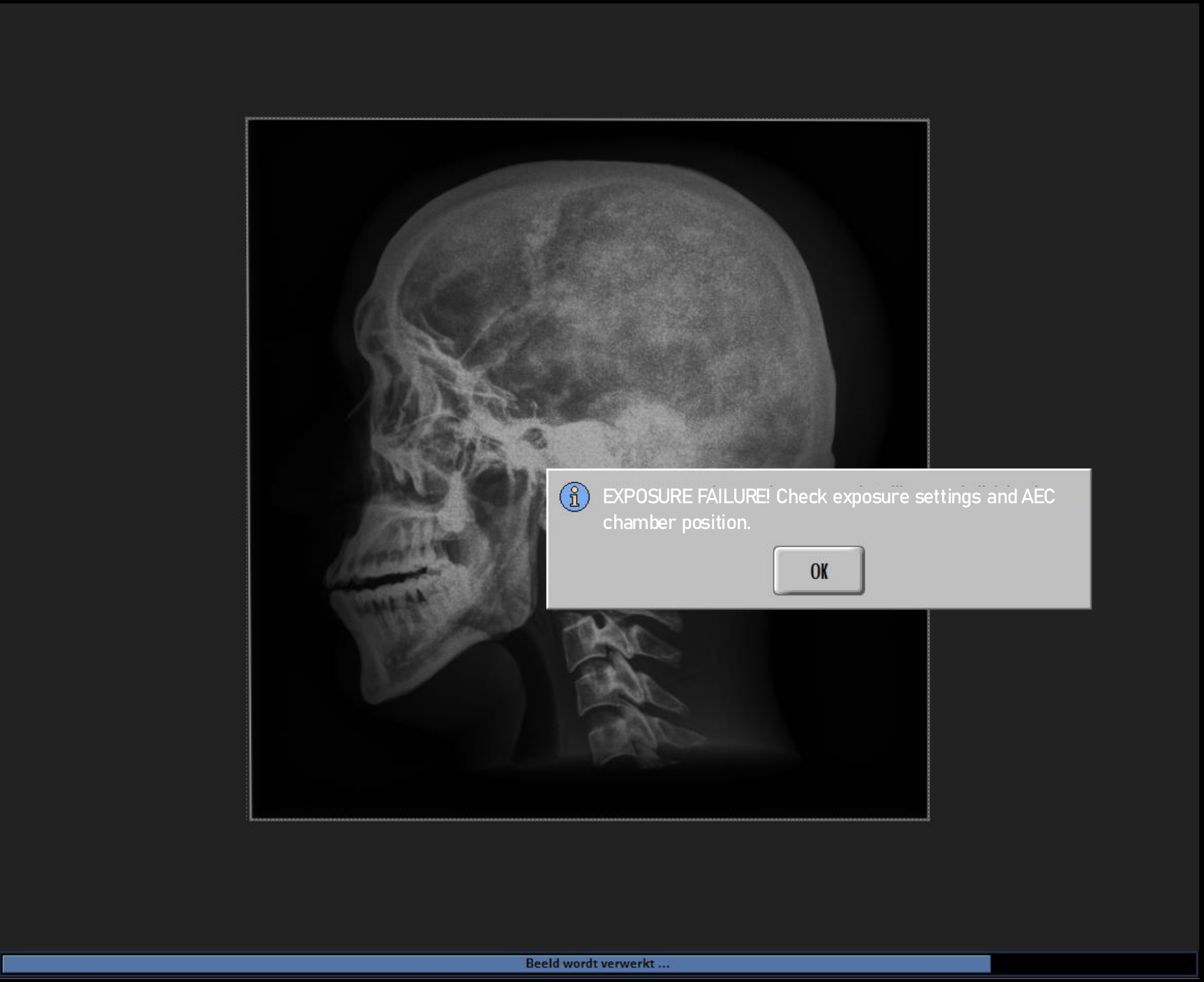
2. Contrast

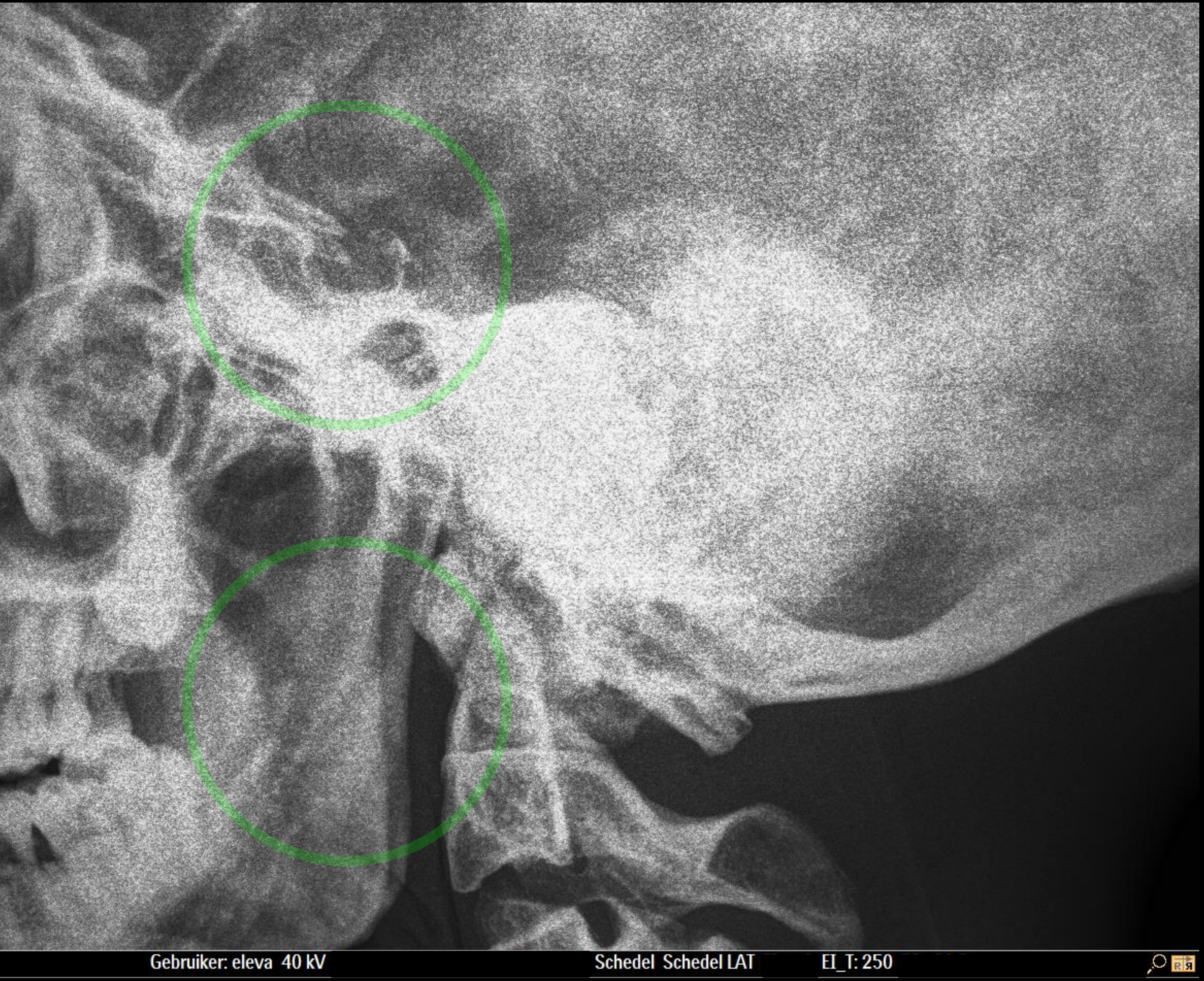
The contrast will be very strong, differences in softer/smaller structures are very exaggerated

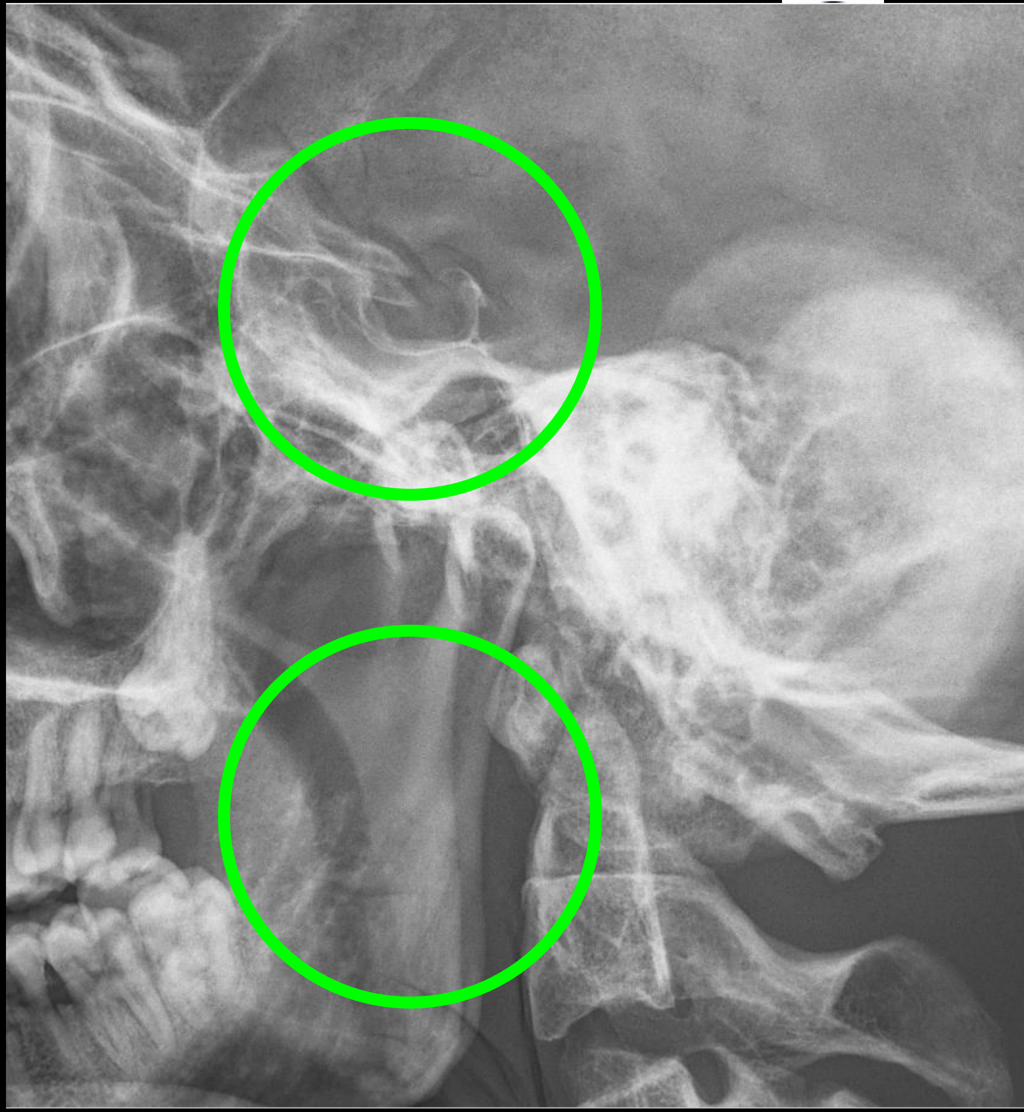
3. Exposure Index

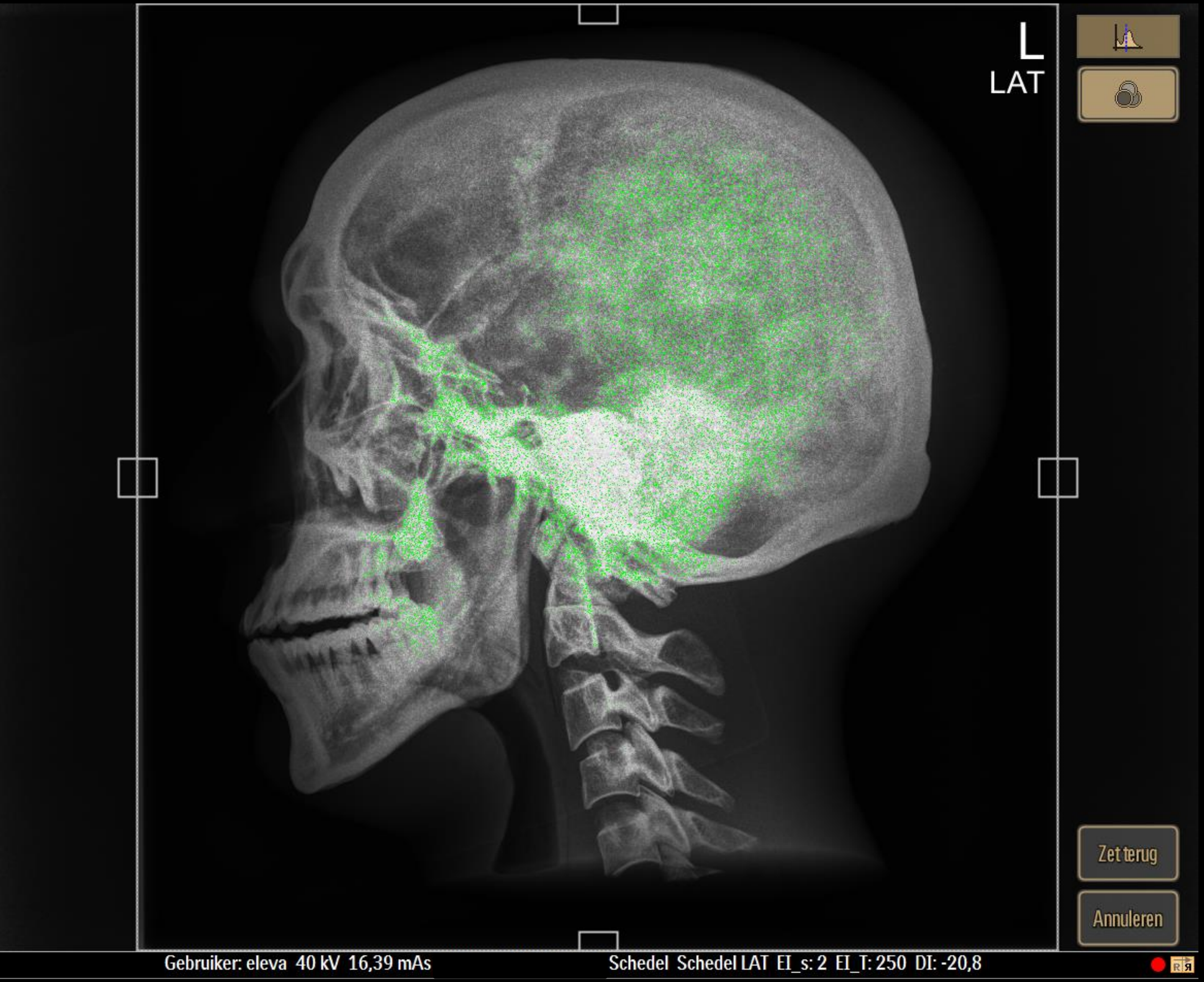
The exposure index should still be around EI_s 187 since we did not chance the AEC dose


L
LAT
Gebruiker: eleva 40 kV
Schedel Schedel LAT
EI_T: 250


EXPOSURE FAILURE! Check exposure settings and AEC chamber position.
OK
Beeld wordt verwerkt ...


Gebruiker: eleva 40 kV
Schedel Schedel LAT
EI_T: 250




L
LAT
Zet terug
Annuleren
Gebruiker: eleva 40 kV 16,39 mAs
Schedel Schedel LAT EI_s: 2 EI_T: 250 DI: -20,8



70 kV AEC $EI_T$ 250

mAs ≈ 12 | EI_s 187 | DI -1,3 | Green

# Way too low kV

We will shortly step back to kV to do some dramatic changes there as well

This image will be acquired with full AEC on EI_T 250 and 40 kV

- What kV was used?

40 kV

- What mAs was used?

≈16 mAs (would have been 2000 mAs if exposure was allowed to finish to AEC dose!)

What do we see in the image regarding:

1. Noise level

The noise level didn't stay constant. This was caused by the inability to penetrate the skull at 40 kV.

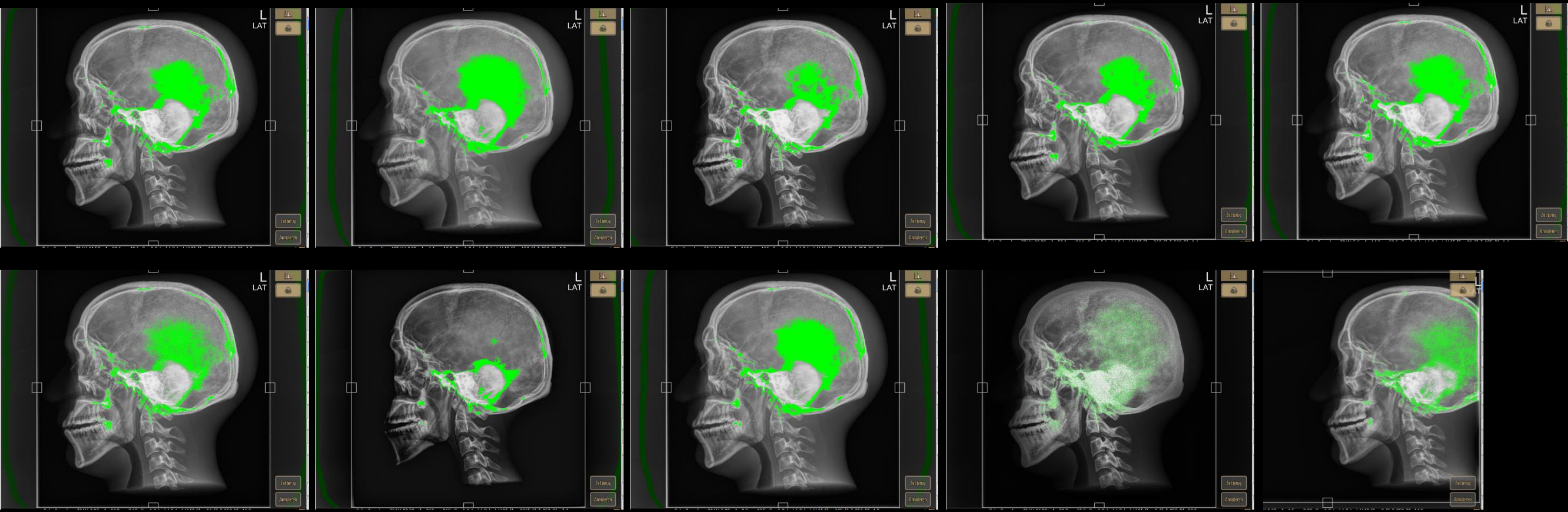
2. Contrast

Contrast has increased. But the amount of noise is making it very difficult to judge.

3. Exposure Index

EI_s = 2 (compared to EI_s 187)

Base | 90 kV | 56 kV | EI_T 125 | EI_T 500



1 mAs | 100 mAs | 120 kV | 40 kV | Off-center

# Conclusions

- Altering kV has most influence on the contrast in the image.
- Altering mAs has most influence on the noise level in the image.
- Altering Sensitivity is in essence the same as a mAs change.
- The Simple Ranger will in almost all circumstances find the relevant ROI.

- Digital radiography systems are very strong in Image Processing, but there are limitations:
  - If we alter parameters outside of normal boundaries, the resulting image will be of lower quality, sometimes even regardless of what EI_s is reported
  - Extreme parameters are not that easily recognized in the resulting image, leading to risk of misdiagnosis
  - The workflow should always be:
  1. Check image impression
  2. Check EI_s

- If something is amiss, ask yourself the following questions:
  - What could I have done wrong?
  - Where is the ROI located for this image?
  - What is the EI_s in the correct ROI? (in case of incorrect ROI placement)

Remember how our eyes tricked us?

# DXR Study Day, Leeds 2024

November 28, 2024
10:00am – 3:00pm

Register now

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# PHILIPS

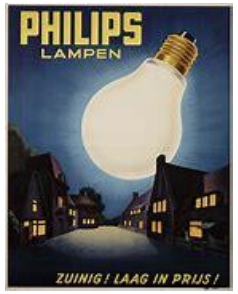
## Delivering innovation that matters to you

**Louise Jones**
Strategic Account Manager - Informatics
26th October 2024


# Overview

- Who are Philips
- Future Health Index
- Enterprise Informatics
  - AI Manager
  - ROCC – Radiology Operations Command Centre

# Philips, a born innovator since 1891




[About us | Philips]


**1905**
First patent granted


**1924**
**Introduction of Metalix X-ray tube**

**1927**
Acquisition of X-ray firm C.H.F. Müller


**1927**
First Philips radio with Miniwatt valve

**1939**
Introduction of rotary electric shaver


**1947**
First 100kV electron microscope


**1950**
First Philips TV


**1956**
First Philips image intensifier with TV


**1976**
Sono Diagnost B ultrasound


**1979**
Tomoscan whole-body CT scanner


**1983**
Gyroscan Nuclear Magnetic Resonance system


**1989**
Integris, Philips' first dedicated interventional system


**2003**
Philips Ambient Experience


**2013**
IQon Spectral CT computed tomography imaging system


**2015**
Philips Lumify portable ultrasound


**2017**
Azurion, Philips' next-generation image-guided


**2018**
Philips IntelliSpace Portal


**2019**
Philips IntelliSite Pathology Solution


**2020**
Radiology Operations Command Center


**2021**
Spectral CT 7500

## Health Tech Leader



PHILIPS

# Philips turn possibilities into great innovations

**9.6% of sales**
invested in **R&D** in 2023

Approximately
**1 out of 2 (50%)**
R&D personnel focused on software, data science and AI

**795 new patents**
filed in 2023
**607 MedTech**

**53,000**
patents
**31,500**
trade marks
**135,000**
design rights

Philips named
**Clarivate Top 100 Global Innovator™**
for 11$^{th}$ year in a row in 2024

**#2 largest applicant for medical technology patent applications**
with European Patent Office in 2023



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# Our vision

## Better care for more people

We want to give care providers **more time to focus on the patient**, while making it easier for more people to **take care of their own health and well-being**.

All through meaningful innovation. We will do this **responsibly** and **sustainably.**

With **patient safety and quality** at the heart of everything we do.



PHILIPS

## Engaging with healthcare professionals and key opinion leaders on what matters to you!

UK launch
2nd October
2024

The **Future Health Index** is a research-based platform designed to help **determine the readiness of countries to address global health challenges** and **build sustainable, fit-for-purpose national health systems.**

By **examining the role of technology in the health system,** the aim of the Future Health Index is to **provide actionable insights** to healthcare professionals, governments and patients.

[Future Health Index 2024](#)

# Philips Future Health Index UK 2024 : Better care for more people

**FHI largest survey of its kind globally**

Responses from **3,000 healthcare leaders**

...across **14 countries**

2024 UK edition **200 UK healthcare leaders**

The **Philips Future Health Index** is the largest **global survey** of its kind, now in its 9th edition, it analyses the priorities and perspectives of **+3,000 healthcare leaders**.

On 2nd October 2024, the first dedicated **UK edition** was launched, exploring how **over 200 UK healthcare leaders** view their organisation's ability to **deliver better care, to more people,** focusing on the gaps and examines ways of overcoming them.

Better care for more people – 2024 UK report | Philips

## 3 Key Gaps

**Staffing**
- Burnout
- Virtual Care & Automation

**Insights**
- Data Integration
- AI

**Sustainability**
- Environmental
- Economic





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1

## Bridging the staffing gap

With high levels of burnout, healthcare leaders are looking to virtual care and automation to ease the burden of staff shortages on healthcare workers and patients.

2

## Bridging the insights gap

While meaningful insights offer huge benefits for patient care, challenges around transforming disparate data into such insights remains top of mind.

3

## Bridging the sustainability gap

Acutely aware of the link between reducing environmental impact and financial stability, leadership teams in health systems are turning to more sustainable and cost-saving initiatives.

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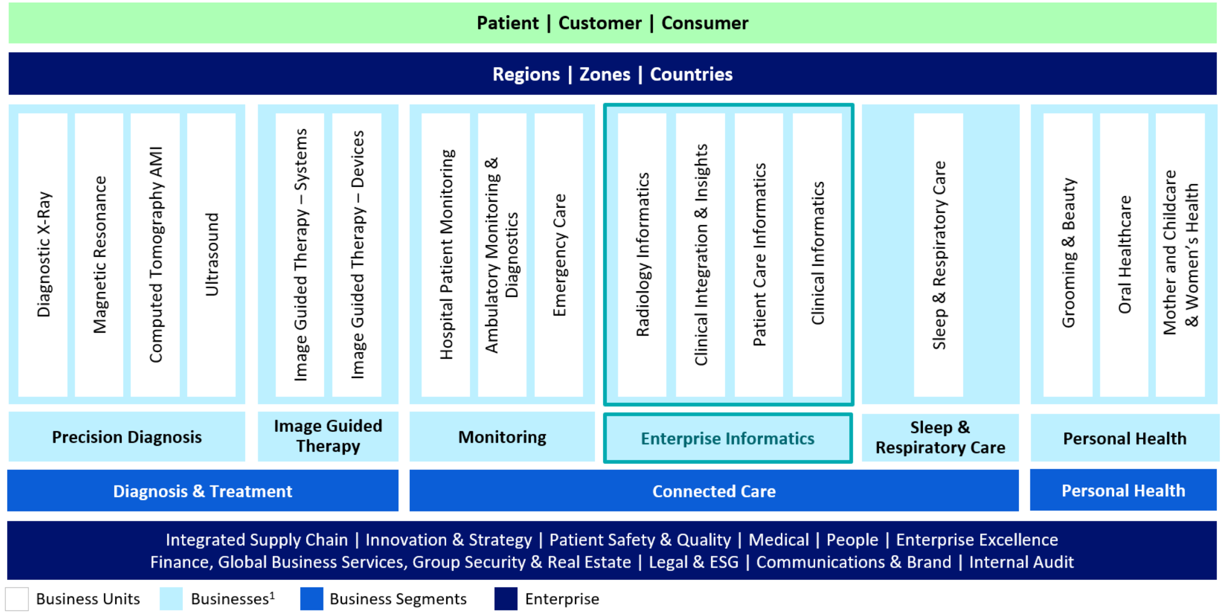
# Empowered to better serve patients, customers and consumers

## Enterprise Informatics est. 1st April 2023

A single, global software business to combined our informatics expertise.




Increasing the pace of **innovation**

Driving towards **integrated portfolio** to improve your experience

Converting **data into patient care insights** to help clinicians improve the quality of care



PHILIPS

# Solutions aligned to your therapeutic areas

- Radiology
- Cardiology
- Digital Pathology
- Urology

Diagnosing patients by reviewing images and advanced data analytics

- Acute Care

Integrating and analyzing data from >1,200 medical devices

- Virtual Care

Enabling remote care delivery





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# Philips Healthcare Informatics Solution Portfolio

## Radiology

**Enterprise Imaging:**

- Enterprise Viewer
- Enterprise Archiving (VNA)
- Workflow Information Management (RIS)

**Radiology Workspace:**

- Image Management (Vue PACS)
- HealthSuite Imaging (Vue PACS on Cloud)
- Advanced Visualization Workspace
- **AI Manager**

- DynaCAD Radiology

**Operations & Performance:**

- PerformanceBridge
- **Radiology Operations Command Center (ROCC)**

## Cardiology

- Cardiovascular Workspace (IntelliSpace Cardiovascular)
- Interventional Cardiovascular Workspace (XperIM)
- Ultrasound Workspace
- Advanced Visualization Workspace
- **AI Manager**
- PerformanceBridge

## Pathology

- Philips IntelliSite Pathology Solution (PIPS)

## Urology

- DynaCAD Radiology (Prostate)
- DynaCAD Urology
- UroNav

## Acute Care

- Capsule Medical Device Information Platform
- Capsule Surveillance
- Clinical Insights Manager
- IntelliBridge Enterprise
- IntelliSpace Critical Care and Anesthesia (ICCA)

## Virtual Care

- eCareManager
- Virtual Acute Care (EU only)
- **Radiology Operations Command Center (ROCC)**

Healthcare informatics | Philips Healthcare



Products are not available for sale in all countries. Please contact your sales representative to ascertain availability in your country.



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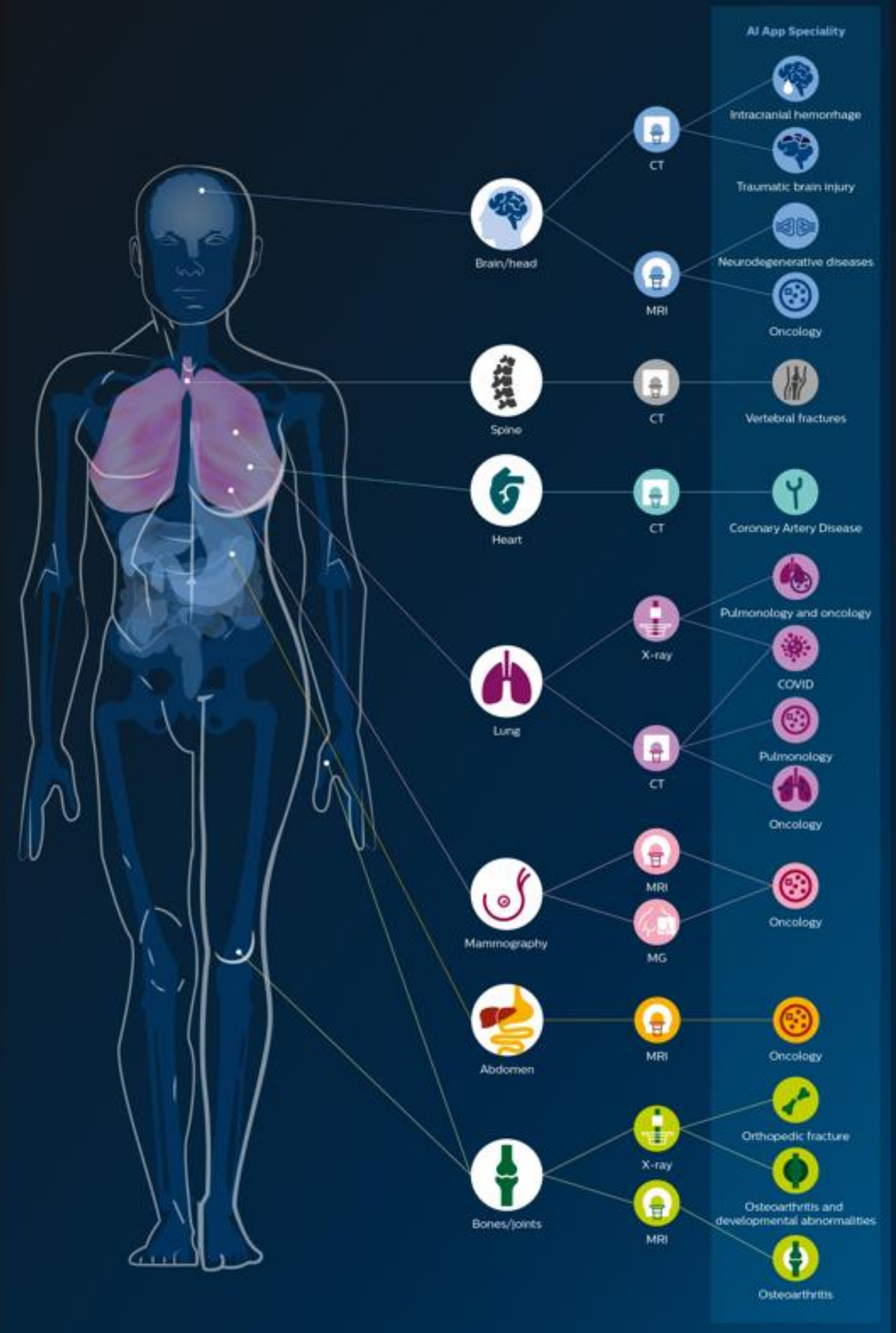
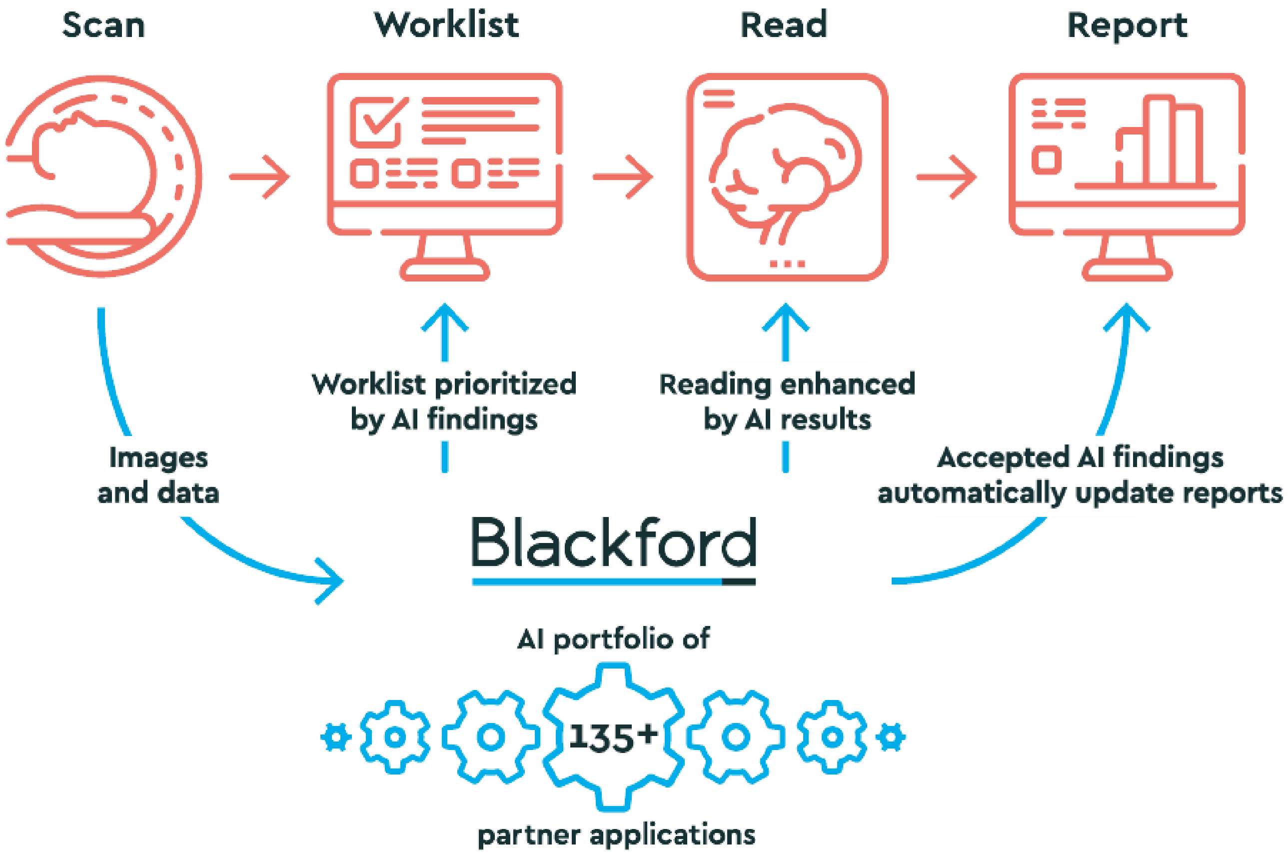



# Philips AI Manager

AI Manager | Philips

# Philips AI Manager in partnership with Blackford Analysis

## End-to-End AI Enablement Platform

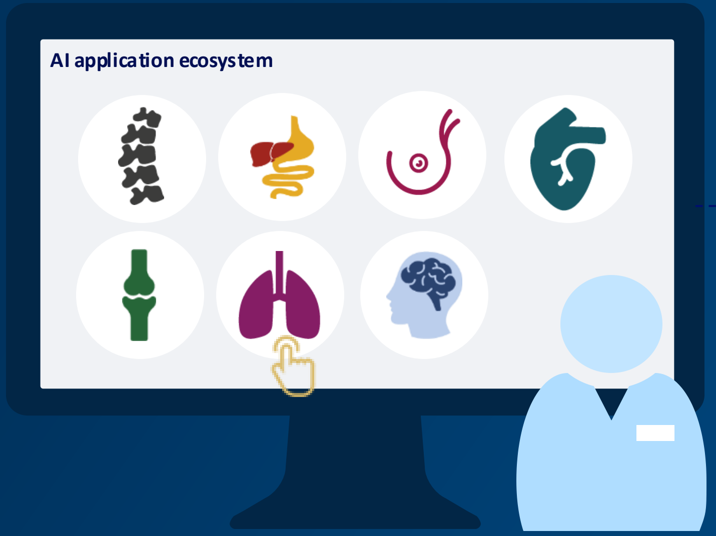



**Single, seamless integration point** for any PACS solution, to **host and execute multiple AI applications safely**. AIM standardizes AI consumption while bringing **efficiency and deeper clinical insights**.



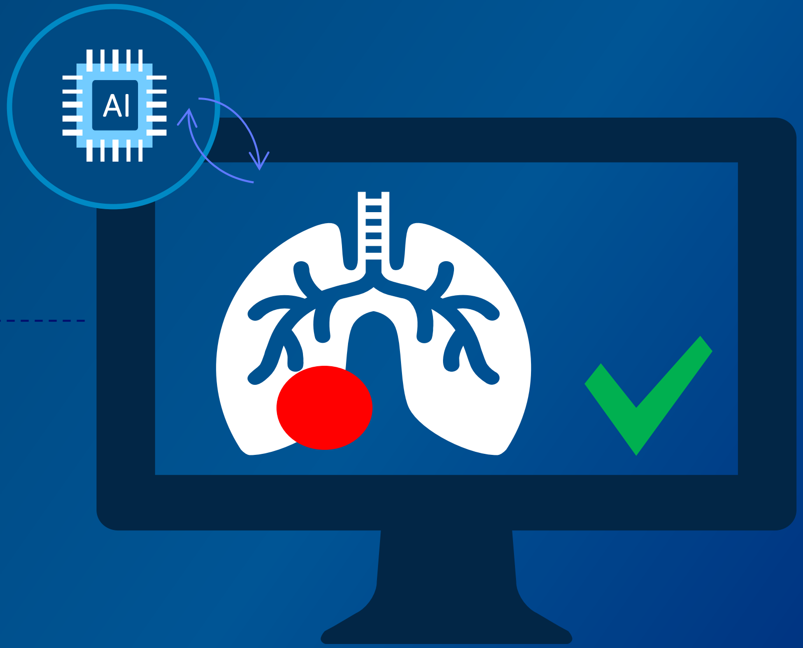
PHILIPS

# An **end-to-end AI enablement** solution




The user can select from a broad variety of available applications across **7 key clinical subspecialities** plus operational support

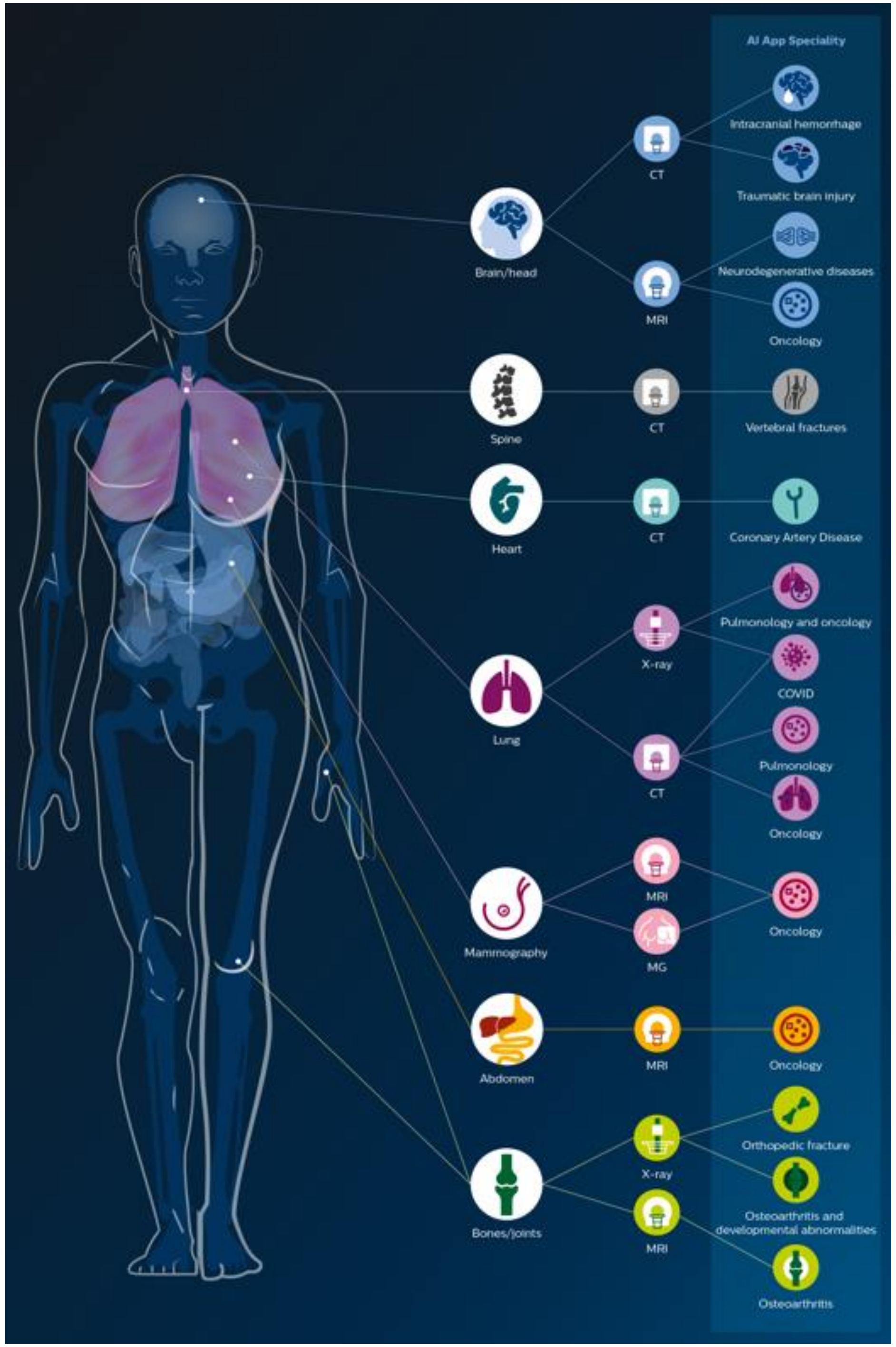
Once chosen and approved by the relevant stakeholders, the application is **activated and deployed to your clinical workflow.**




PACS begins **auto-routing** relevant data to the application. The data is analyzed, and **results are returned to PACS for the radiologist to review.**

Philips AI Manager is not intended for data interpretation or diagnosis. Availability of 3rd party algorithm may vary per market.
The functionalities and benefits of the solution depend on customer-specific configuration and use. Please contact your local Philips representative for market availability.

# The broadest AI portfolio on the market




## AI Portfolio

We currently have **135+ contracted AI applications across 50+ partner vendors** covering 8 clinical and operational service lines.

All | Body | Breast | Cardiology | MSK | Neurology | Operational | Pediatric | Thoracic

AI4MedImaging, AIQSolutions, AGAMON, annalise, Avicenna.AI, AXIAL3D,
AZmed, bialogics, BOT IMAGE, BRAINOMIX, b-rayZ, Cercare Medical,
ClariPi, CoLumbo, contextflow, core:line, Cortechs.ai, Cure Metrix,
deephealth, deeplook, DEEPTEK, densitas, ENLITIC, Gleamer,
HeartLung.AI, iCAD, icometrix, image biopsy lab, ImagingBiometrics, imbio,
InferVision, Ligence, Lucida Medical, Lunit, MedCognetics, MeVis,
MILVUE, NANOX AI, nurea, PIXYL, OXIPIT, qure.ai,
Radiobotics, QYNAPSE, Rad AI, RAYSCAPE, Riverain Technologies, transpara,
See-Mode, thirona, US2.AI

# 135+ AI Applications across 50+ Partners Managed by Blackford



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www.philips.com

# Radiology Operations Command Center (ROCC) – Virtual Care

## Multi-site, multi-vendor, multi-modality virtual imaging solution

Philips UKI

innovation + you

## Hub

Communication

## Spoke

# Radiology Operations Command Center (ROCC)

[Radiology Operations Command Center | Philips Healthcare]

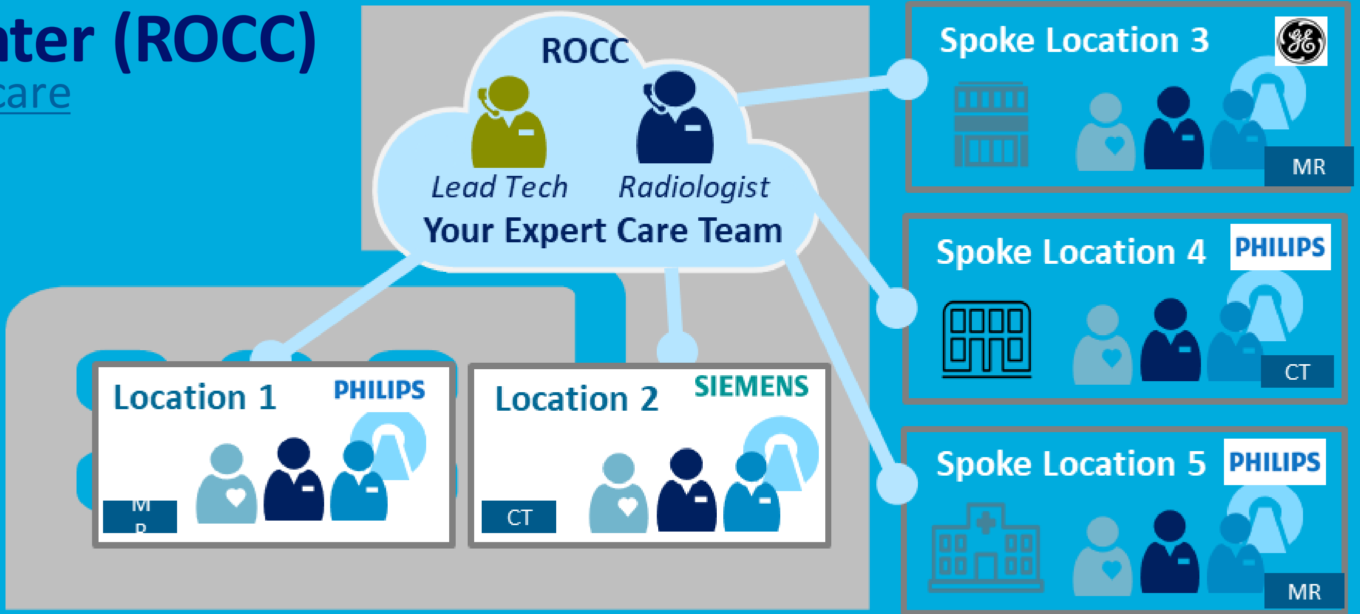
**Multi Modality (MR & CT)**

**Multi vendor**

**Scalable +100 spokes**

**Multi Site**

**Backward Compatible**



# Imperial College UHT ROCC Video

Find the story here!

# Benefits of ROCC

# 130 years of innovation

Products come and go ...
Technologies change ...

But Philips is still
about one thing:

Creating meaningful
innovation that improves
people's lives

PHILIPS

# Radiation to Education:

## Being a part of Scotland's Success in Radiography

Eva Starkey

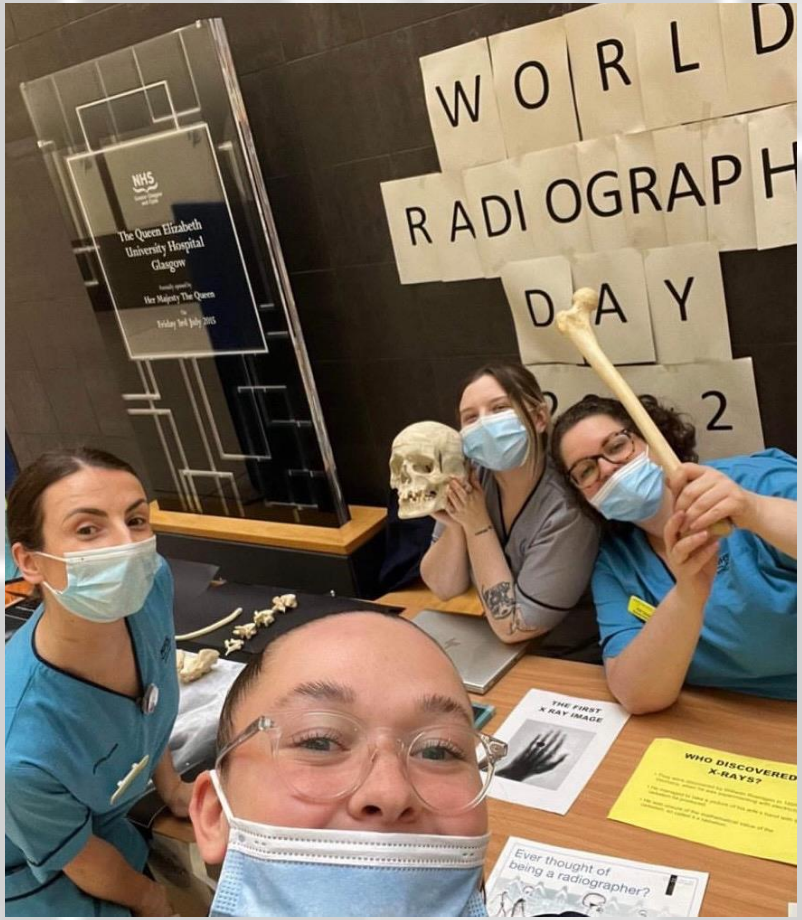
Lecturer in Diagnostic Radiography

Specialist Radiographer

# A bit about me…Where it All Began!

# From Patient to Professional

# Post Grads, Promotion and...PEAS!

# Award Winning & Plate Spinning



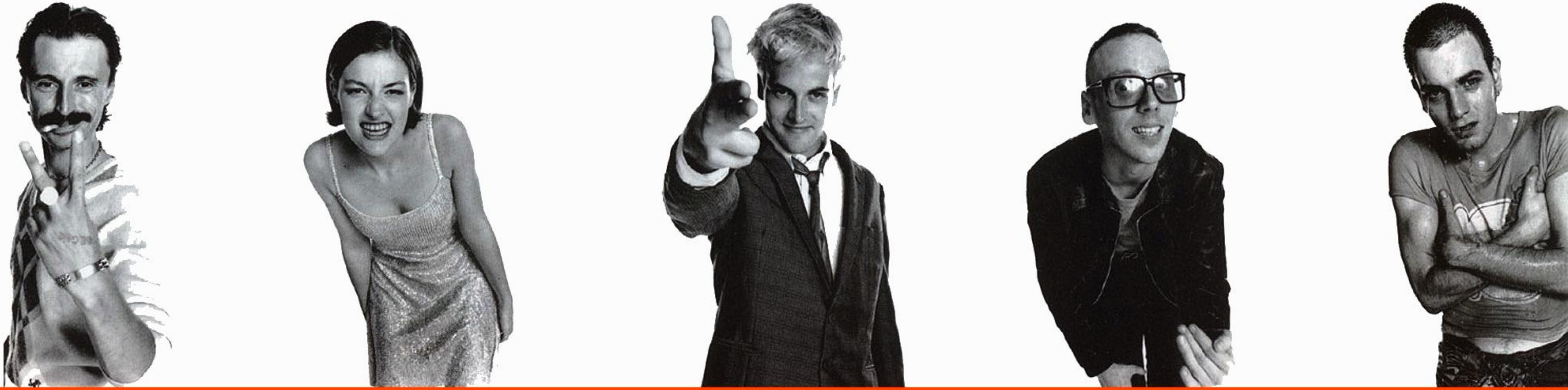
# A Lecturer…but still Learning

# Imaging Saves Lives

Karen McGinniss

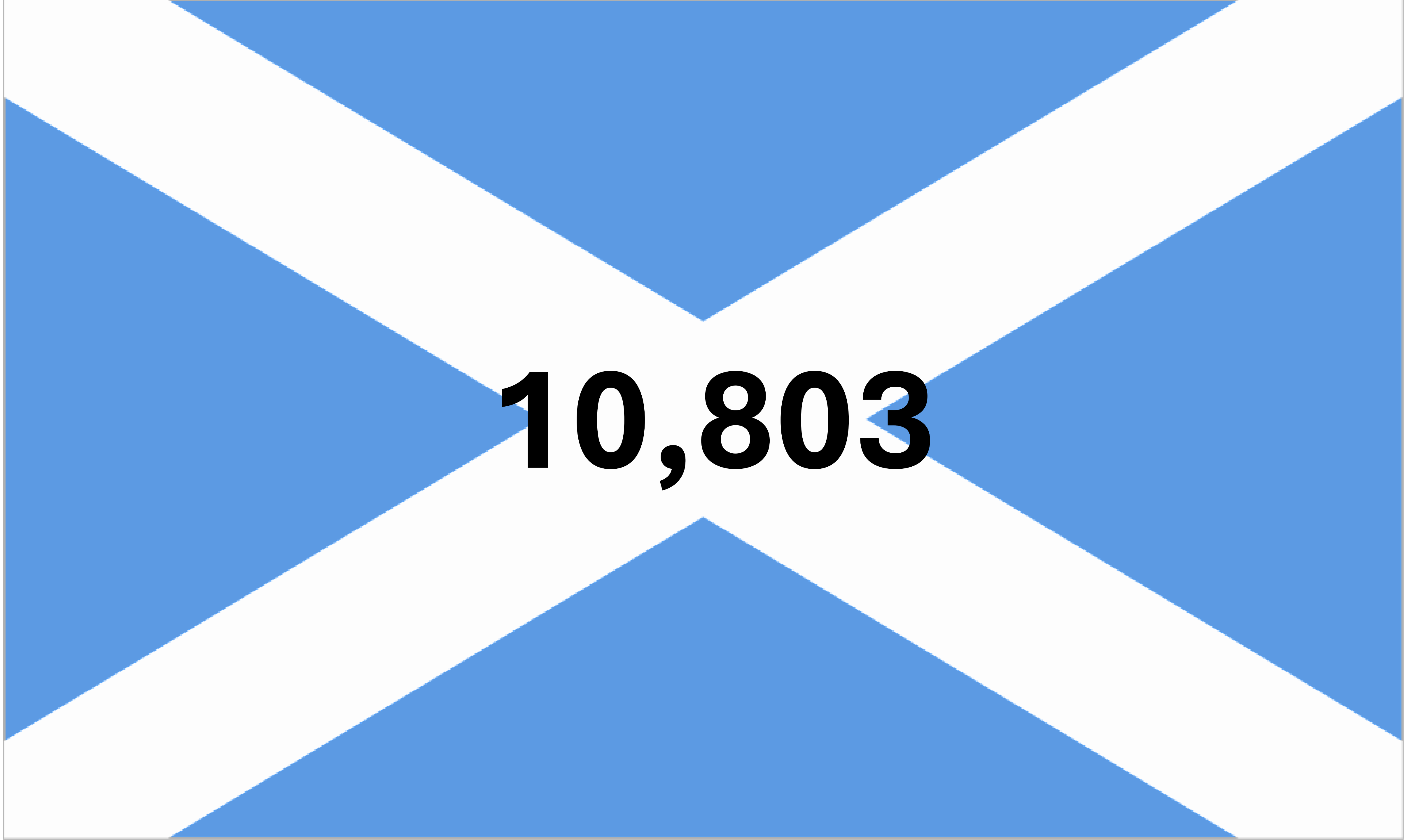
Shaun Buchanan

Institute of Neurological Sciences, Glasgow



# Choose Life, Choose Thrombectomy

# $2^{nd}$ leading cause of death in Scotland


10,803

85% Ischaemic

13% Haemorrhagic

2% Unknown

Damaged Brain

Blood Flow Compromised

Lack of oxygen

8% Scottish NHS Beds

5% Scottish NHS Budget

# £1.5 Billion per year

100 strokes

# 5% intact

# 20% die

# 75% disabled

# The Life of Brian

Right sided facial droop

Slurred speech

Right sided weakness


55
43
Fill B
Auto Load
Fill A
Prime
Arm
MEDRAD

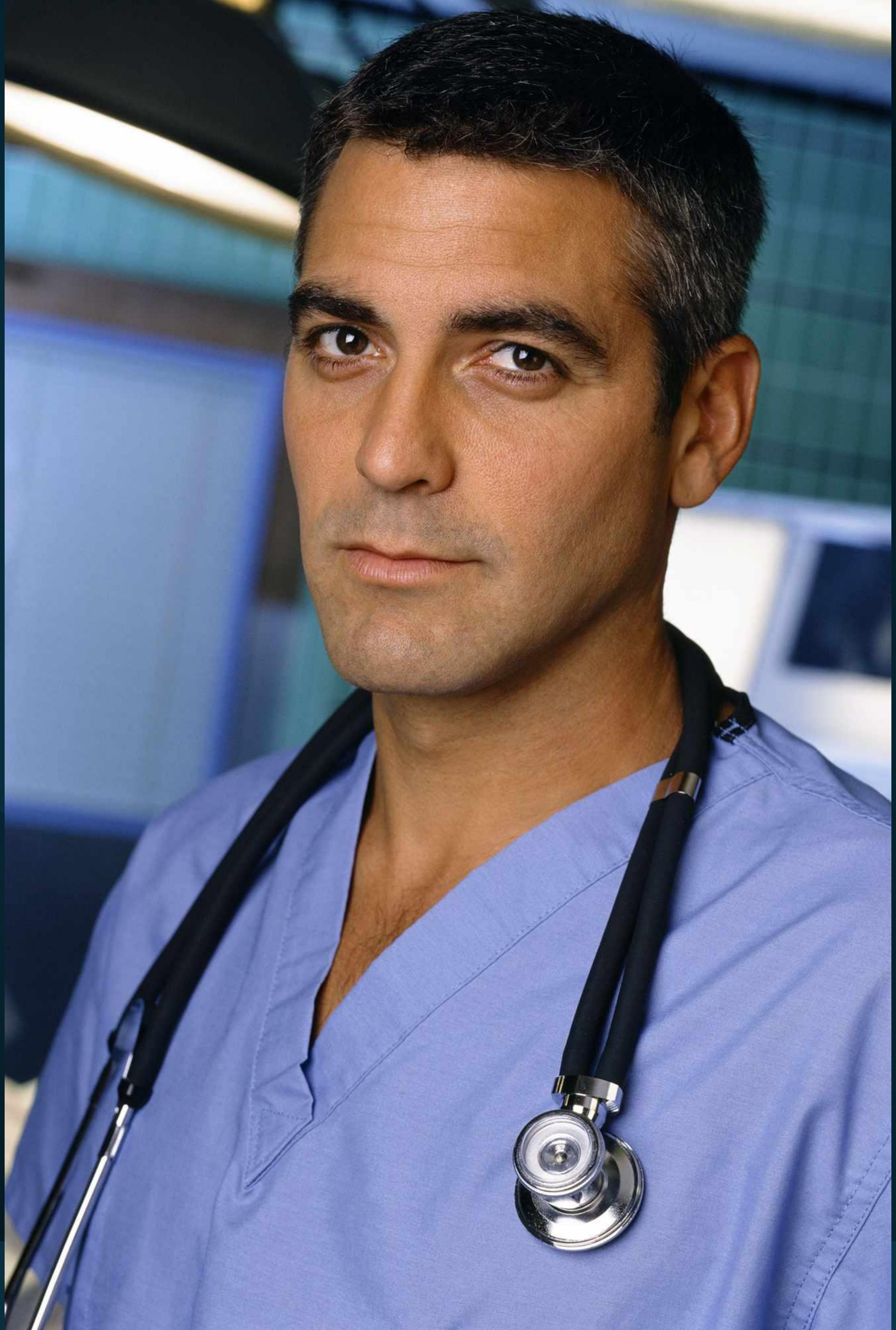

PATSLIDE

# KNOW THE SIGNS OF STROKE

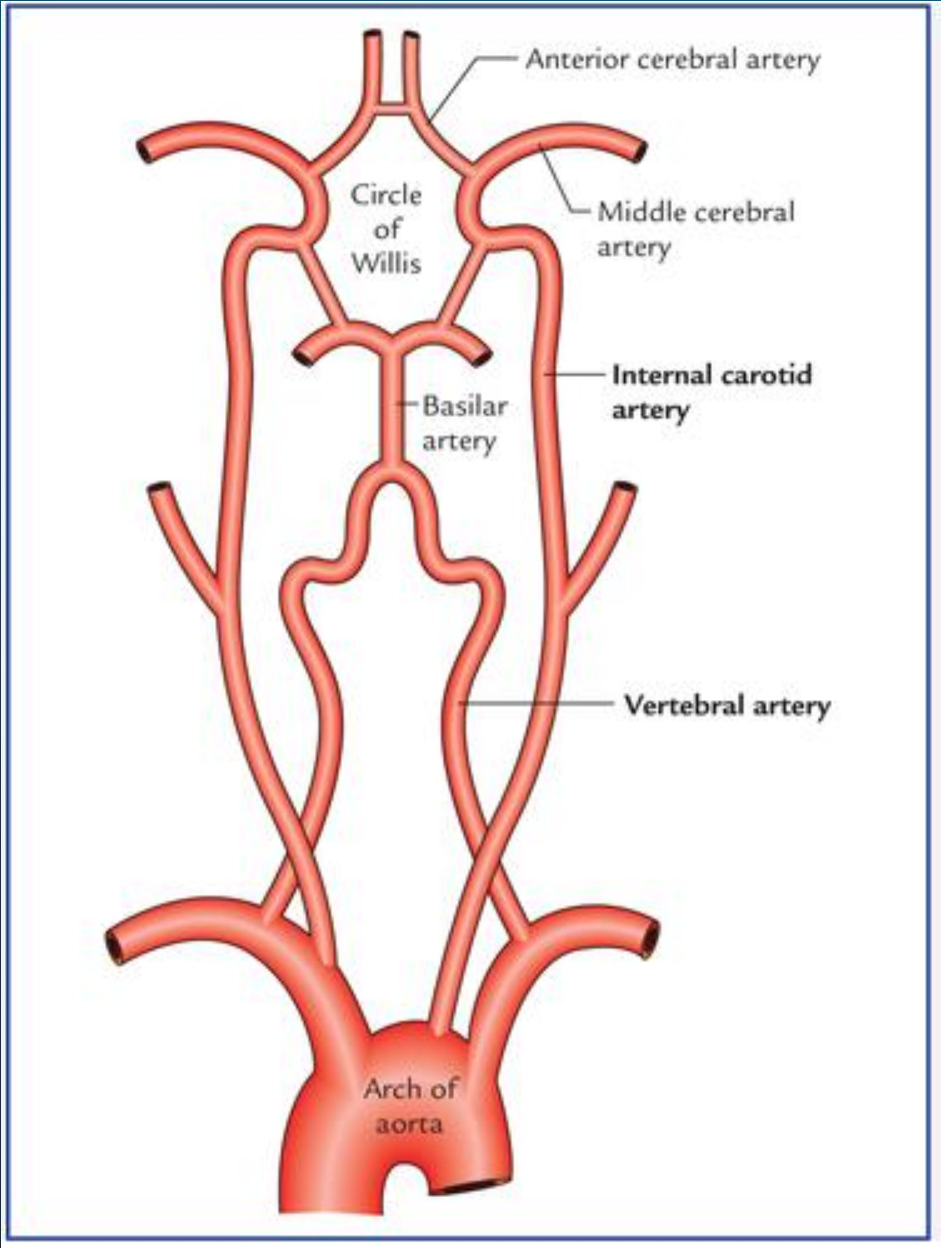
# F.A.S.T.

**FACE** **ARMS** **SPEECH** **TIME**

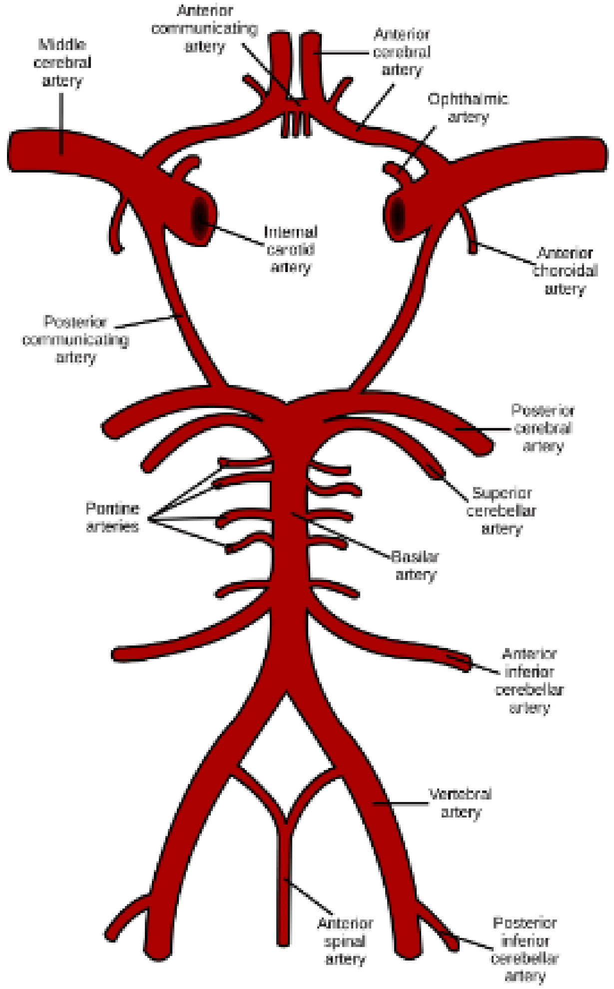

Fire
exit
NHS
20
YEARS IN SERVICE



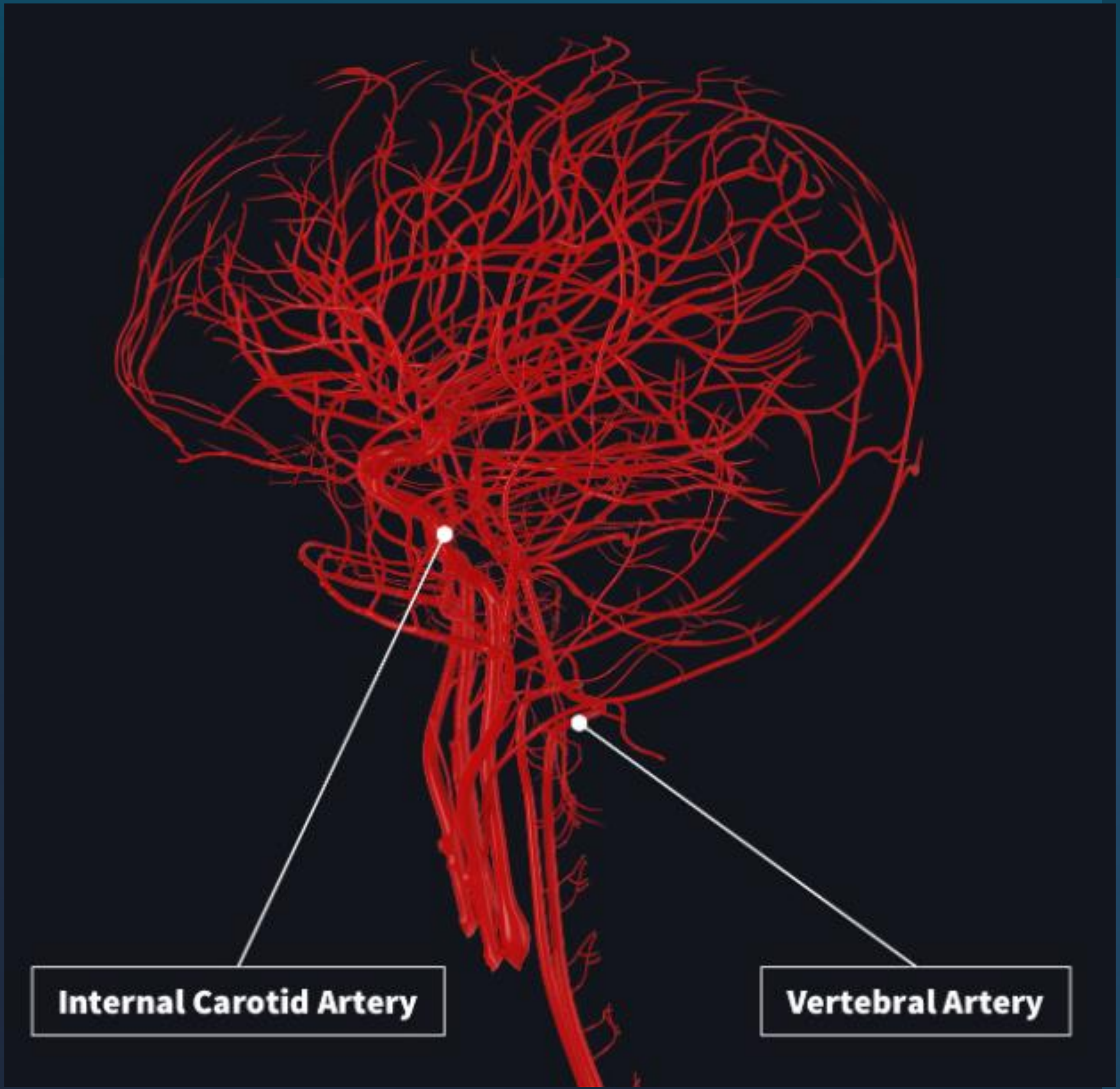
# Cranial Blood Supply

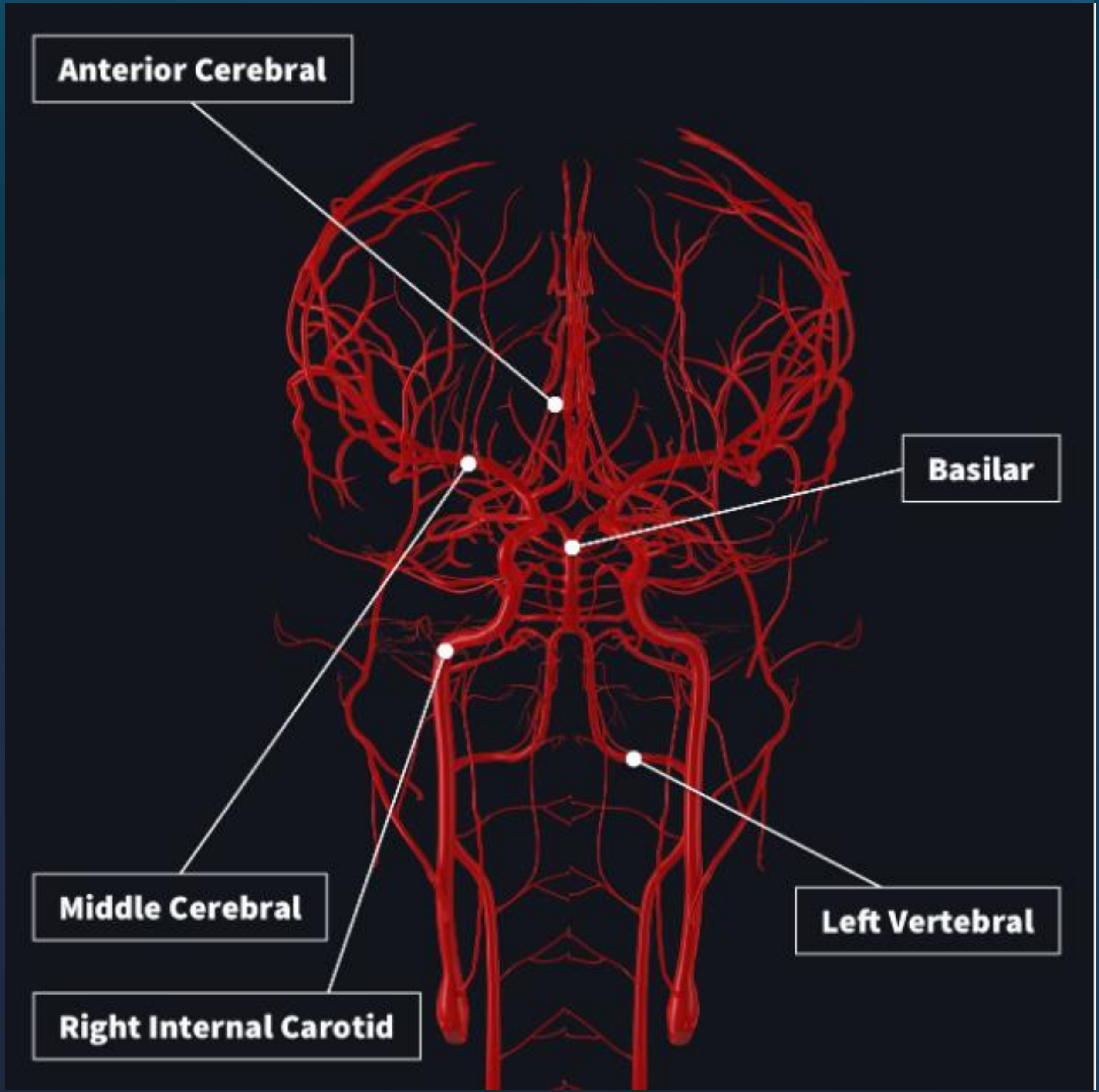


Anterior cerebral artery
Circle of Willis
Middle cerebral artery
Internal carotid artery
Basilar artery
Vertebral artery
Arch of aorta



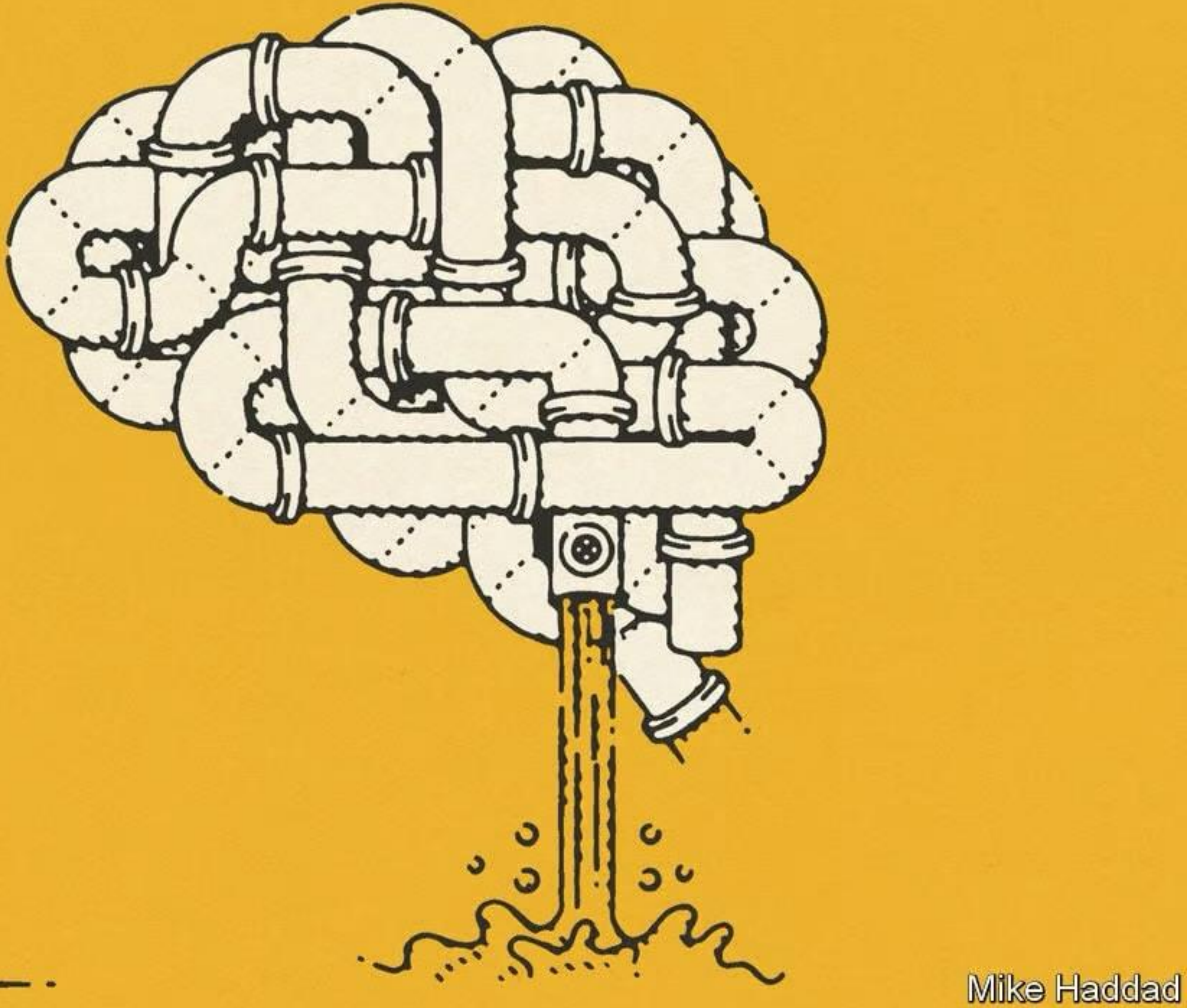
Anterior communicating artery
Middle cerebral artery
Anterior cerebral artery
Ophthalmic artery
Internal carotid artery
Anterior choroidal artery
Posterior communicating artery
Posterior cerebral artery
Superior cerebellar artery
Pontine arteries
Basilar artery
Anterior inferior cerebellar artery
Vertebral artery
Anterior spinal artery
Posterior inferior cerebellar artery


Internal Carotid Artery
Vertebral Artery

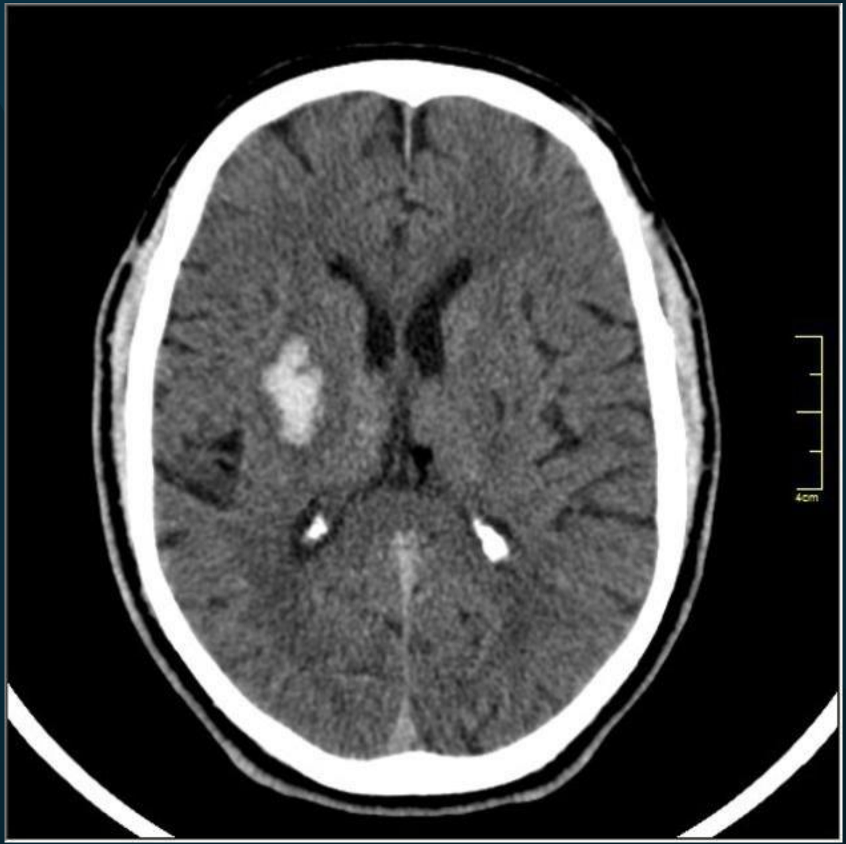


Anterior Cerebral
Basilar
Middle Cerebral
Left Vertebral
Right Internal Carotid

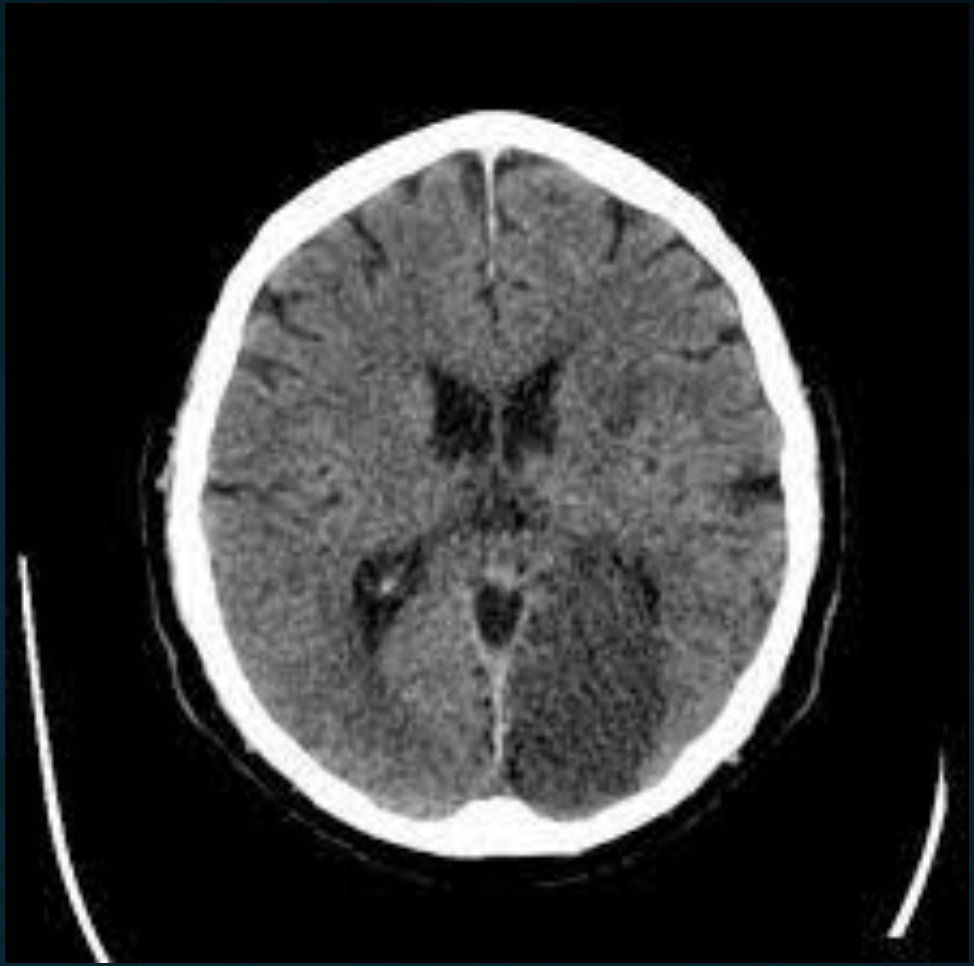
# Brain Plumbers



# Leak – Haemorrhagic Stroke


4cm

# Blockage – Ischaemic Stroke

# Intravenous Thrombolysis

Within 4.5hrs onset

Many contraindications

Only 20% receive IV thrombolysis

3% deteriorate

33% improve

64% no change

Mechanical Thrombectomy

Life Saving

No better treatment

Takes 1 hour

Makes a difference to 1 in 2

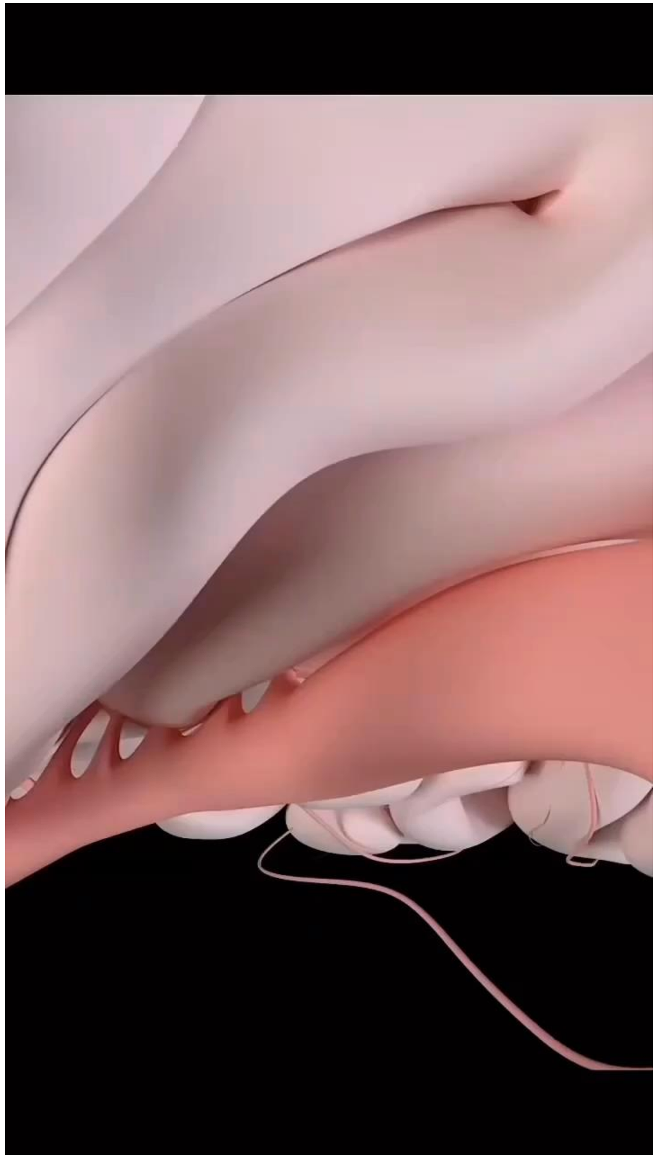
1 in 3 functionally independent

Thrombectomy £25,000

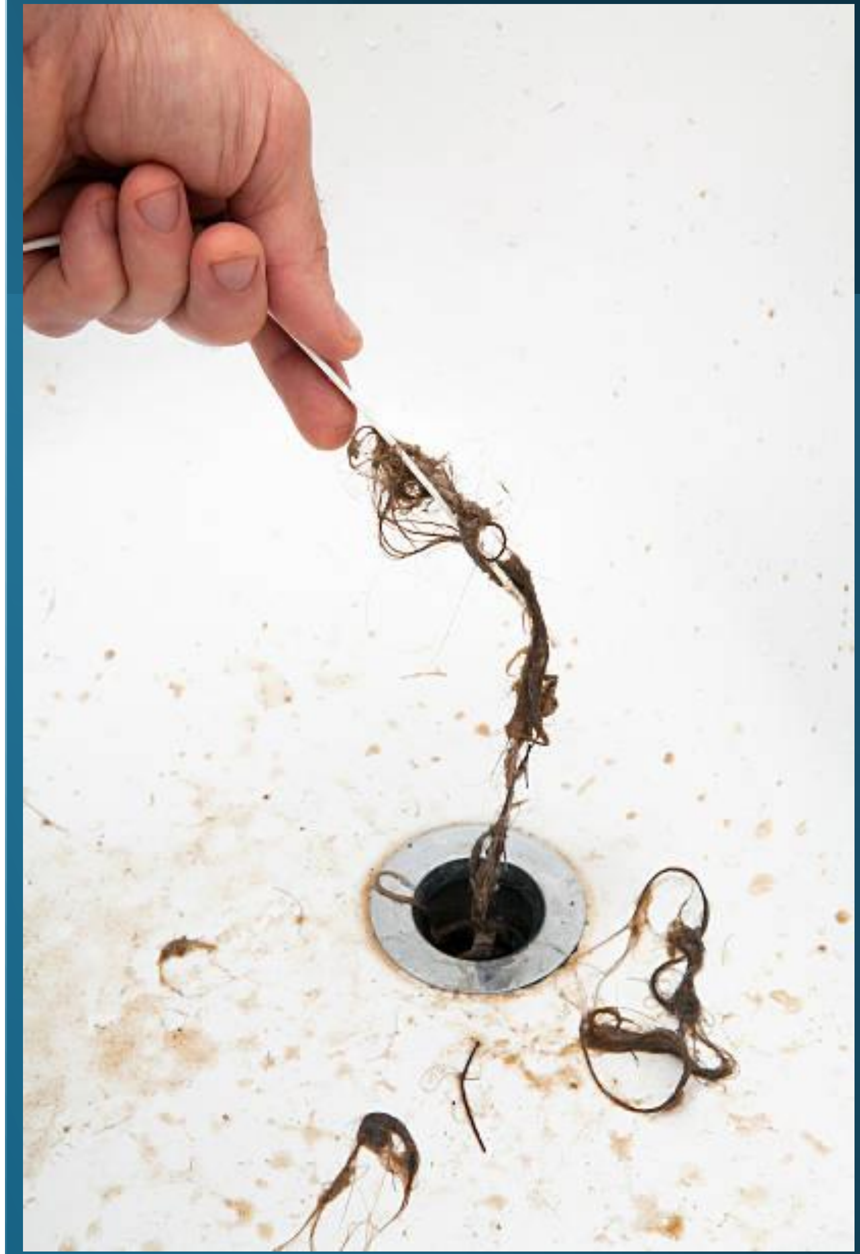
Stroke 1st year £45,000

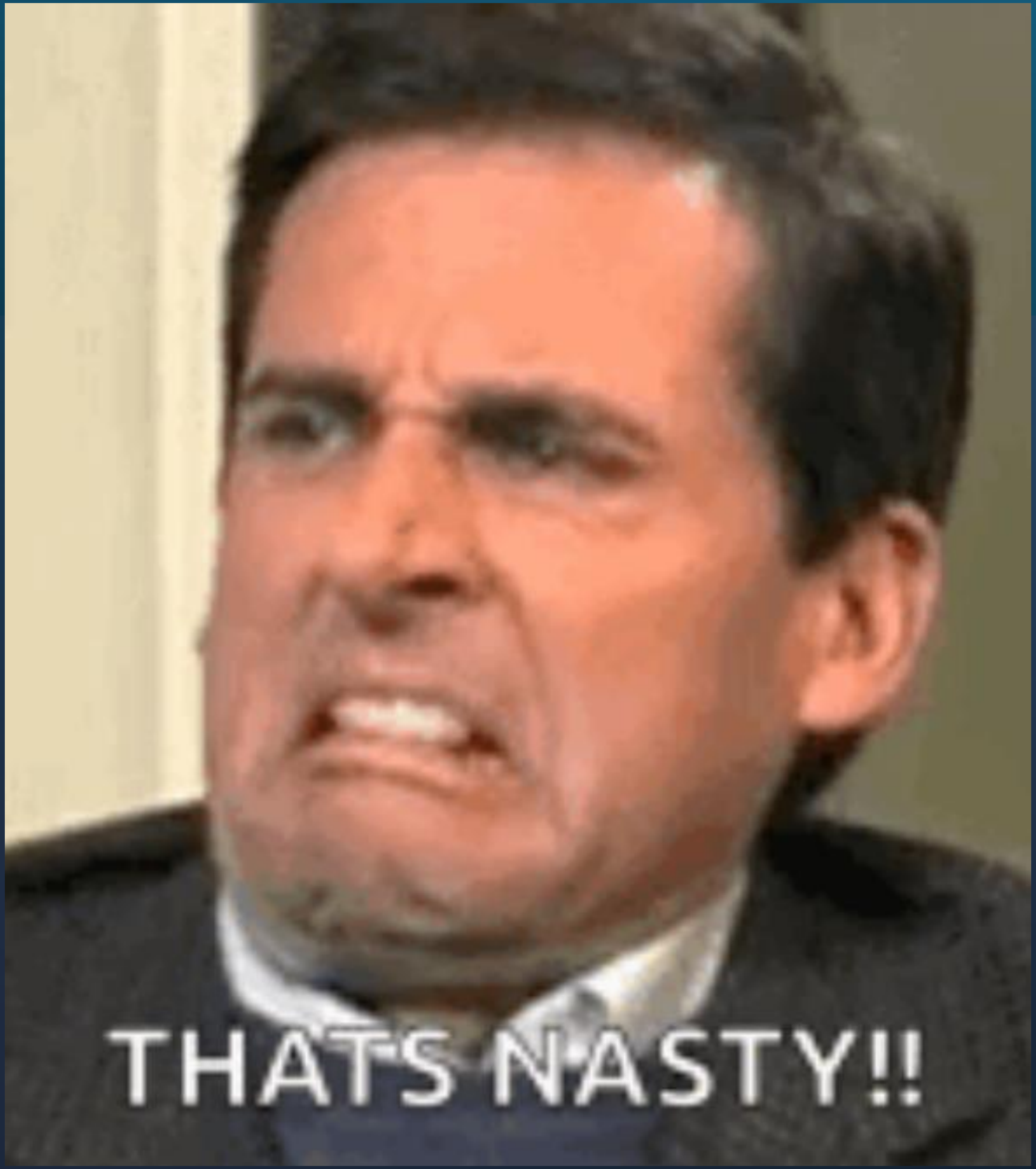
Each year after £35, 000

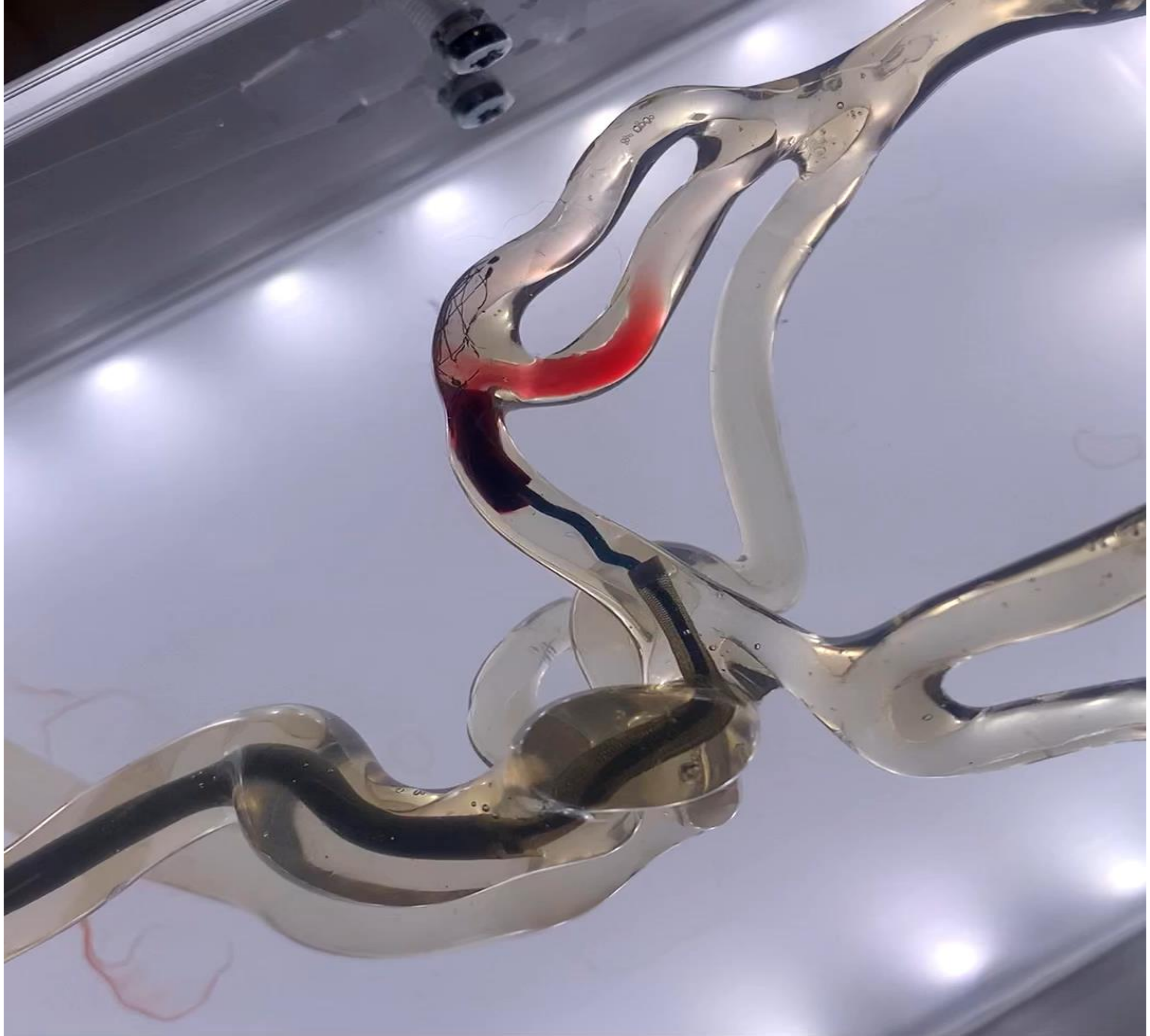
# Direct Aspiration (Suction)



# Stent Retrieval



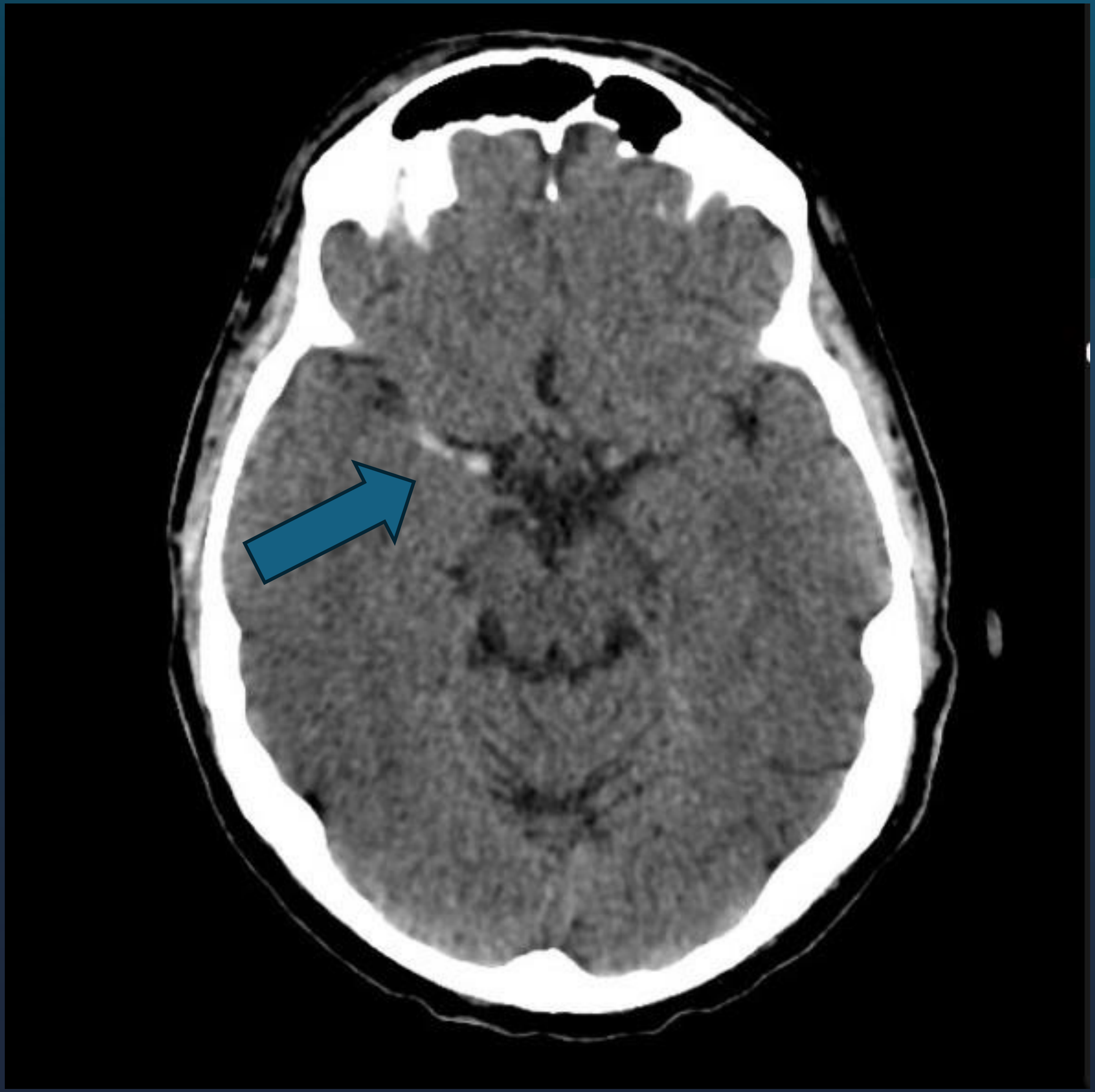

THATS NASTY!!




andrel
ctions for use.
4
5
6cm

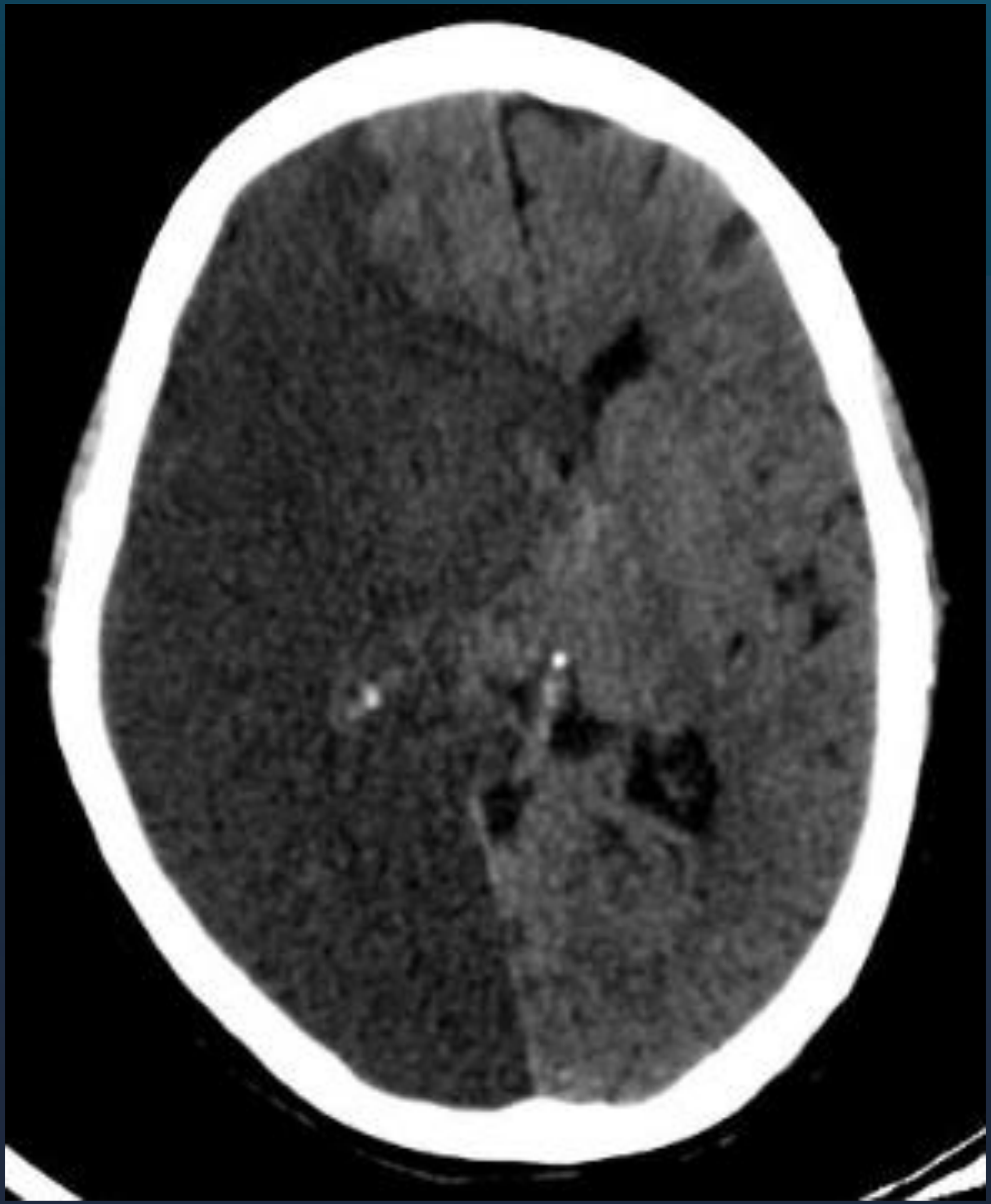

0
1
2
3
4
5

# What happens when we don’t use thrombectomy?



# Hyperdense M1 MCA

# A few hours later...dense MCA sign



# The next day…Extensive right MCA infarct

# Imaging Is Key

# CT unenhanced brain

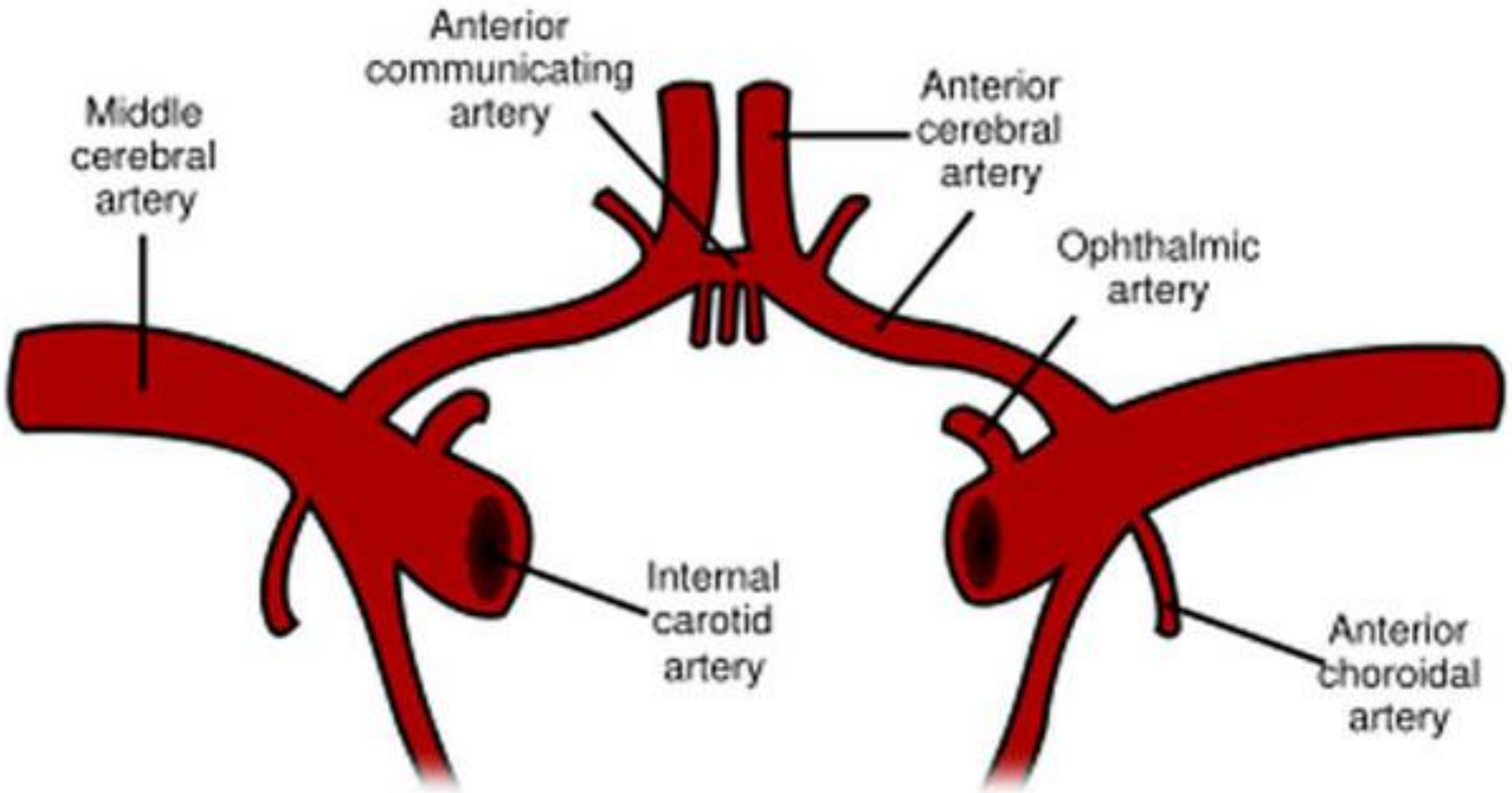
## Is there acute blood?

# Positioning is Vital


RADIOLOGY
#hello my name is...
NHS


10kg


pearltec


Anterior communicating artery
Middle cerebral artery
Anterior cerebral artery
Ophthalmic artery
Internal carotid artery
Anterior choroidal artery

# CT Perfusion

Repeatedly scan

Contrast Enhanced

Important for Thrombectomy


Artery
Vein

Artery
Vein

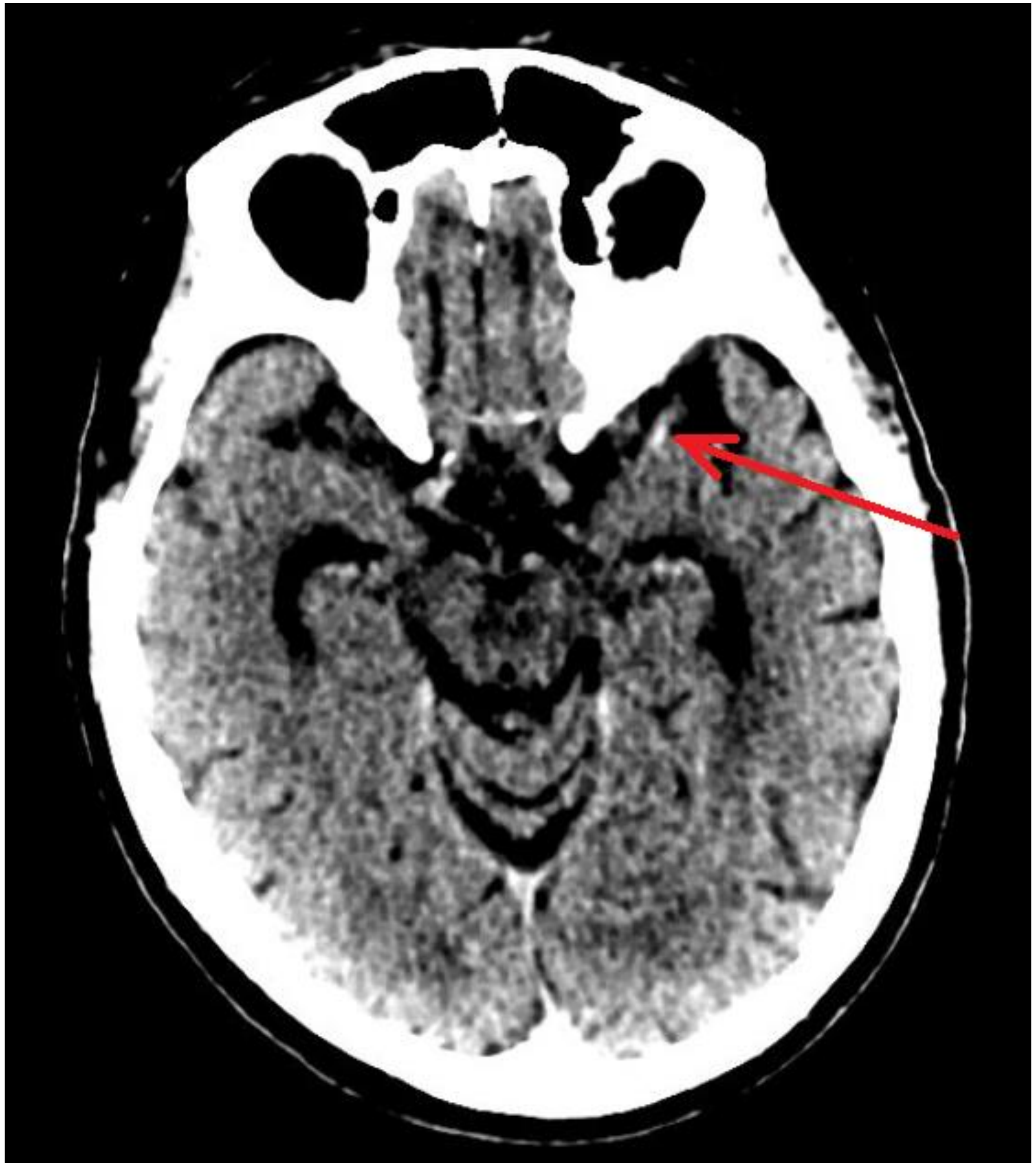

What my friends think I do

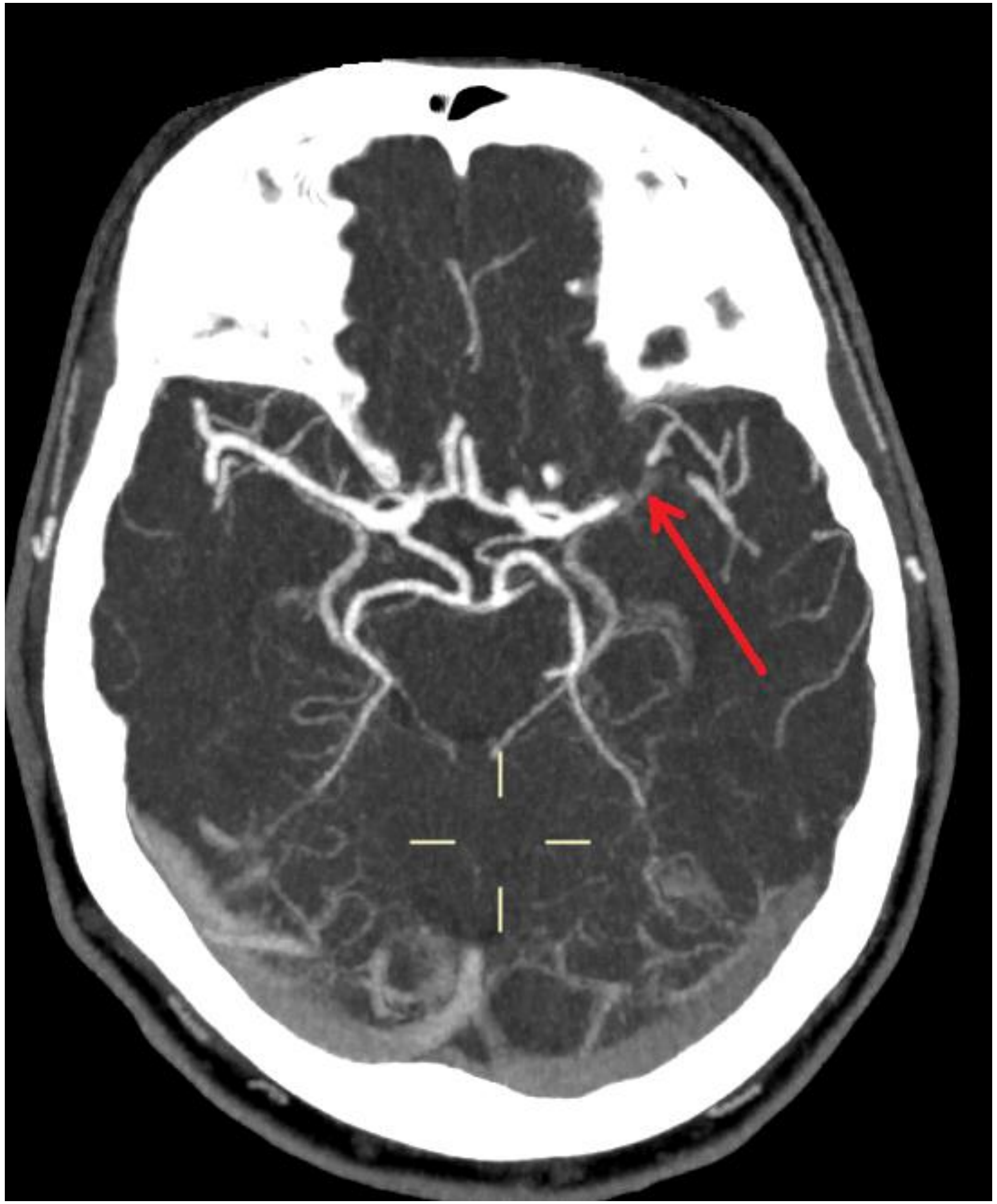
What my mum thinks I do

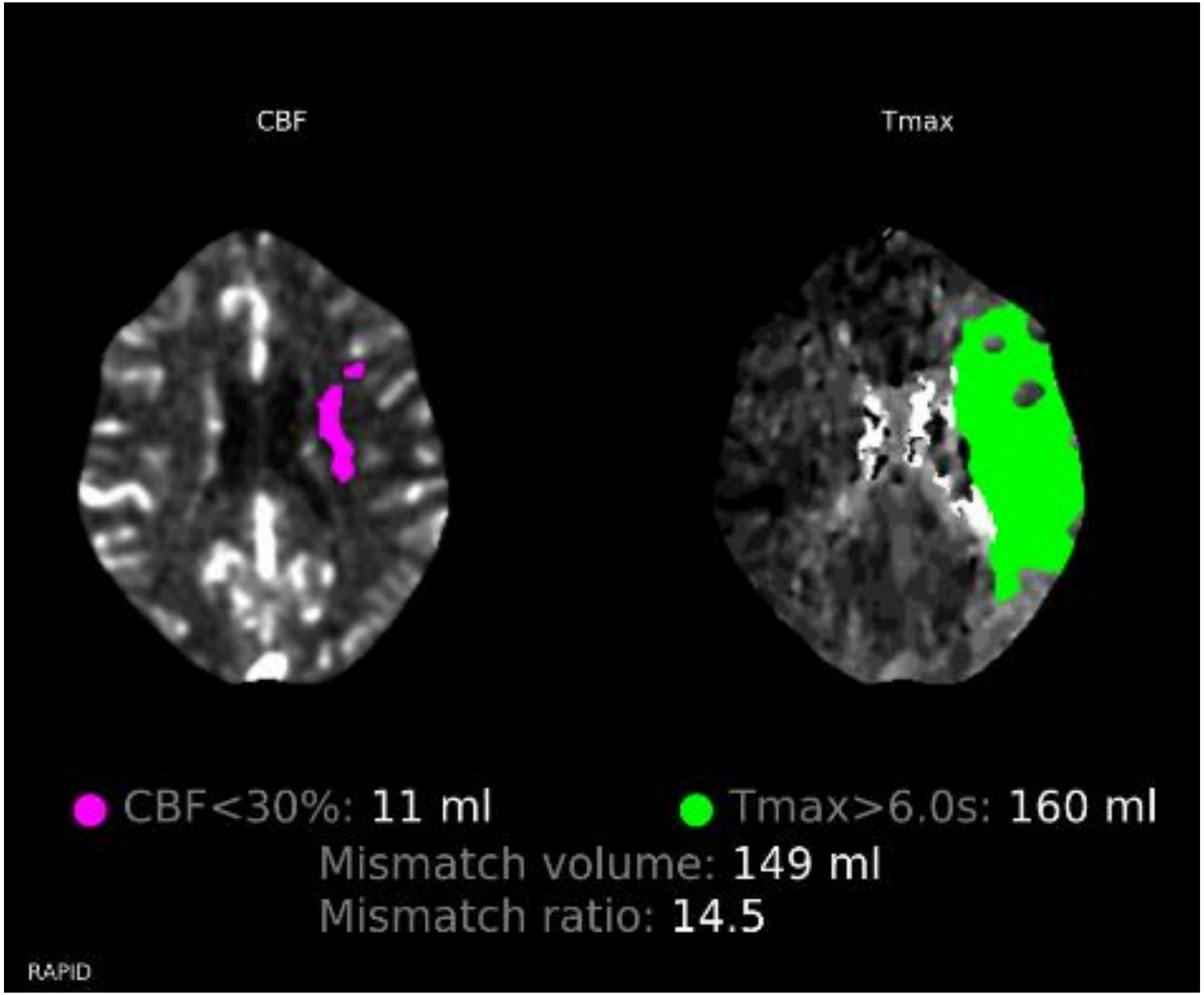
What my boss thinks I do

What I do

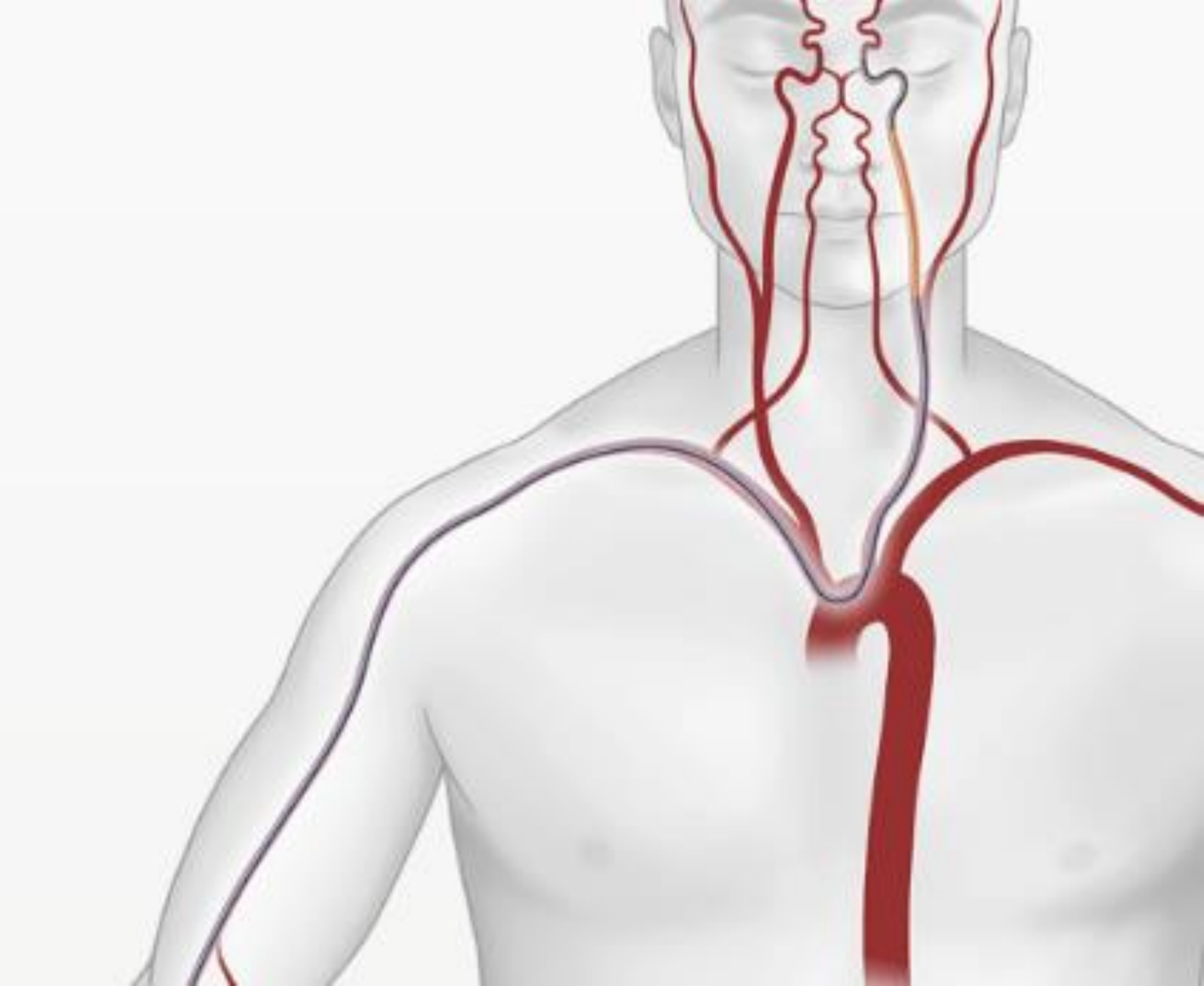
# Brian

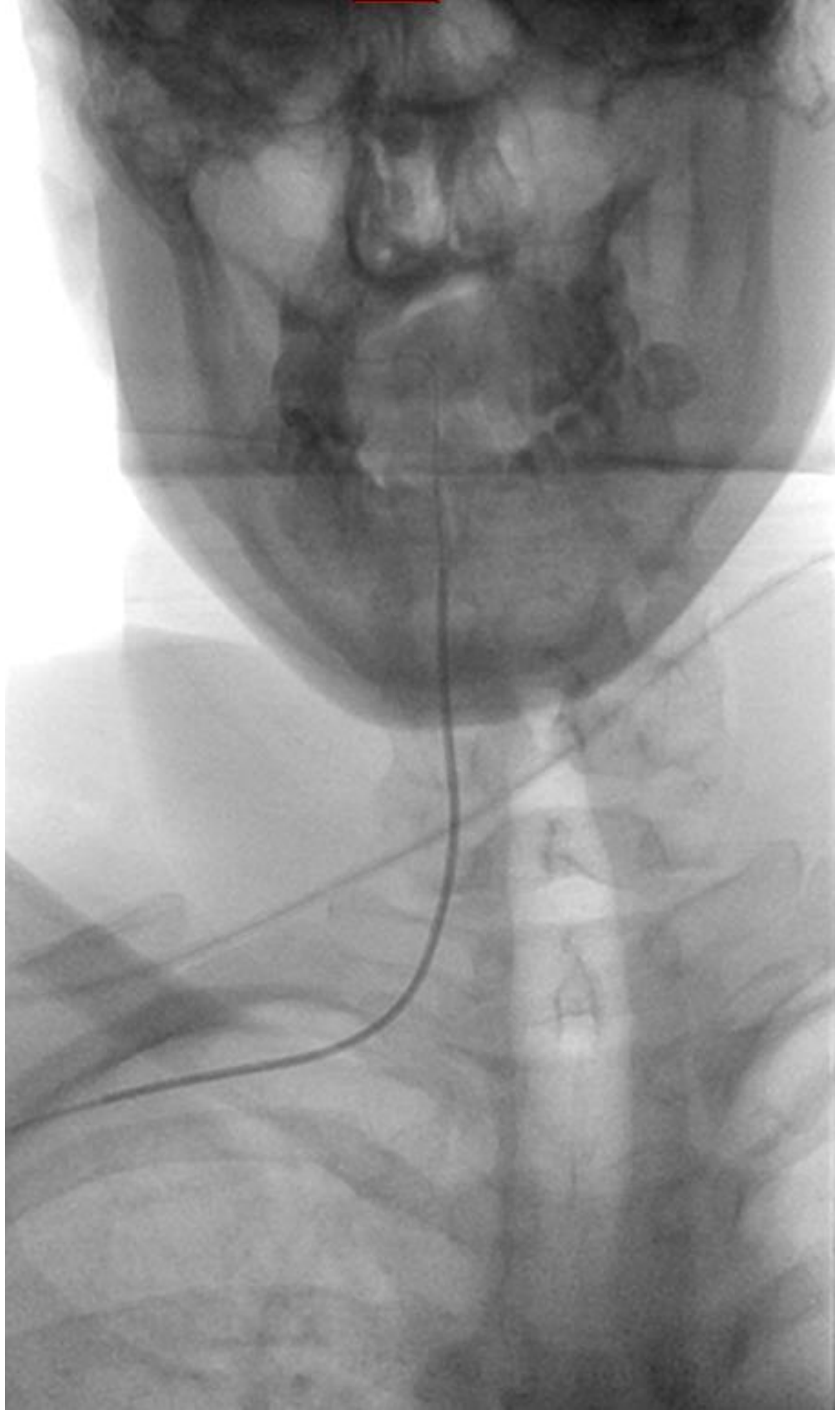


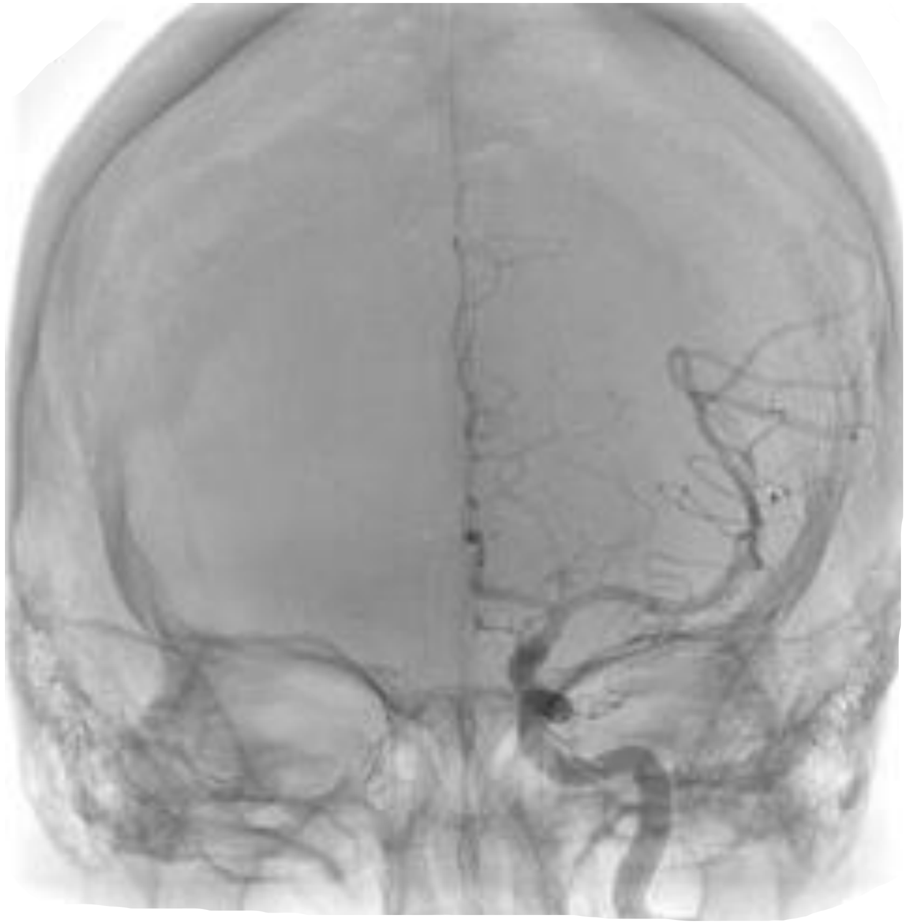
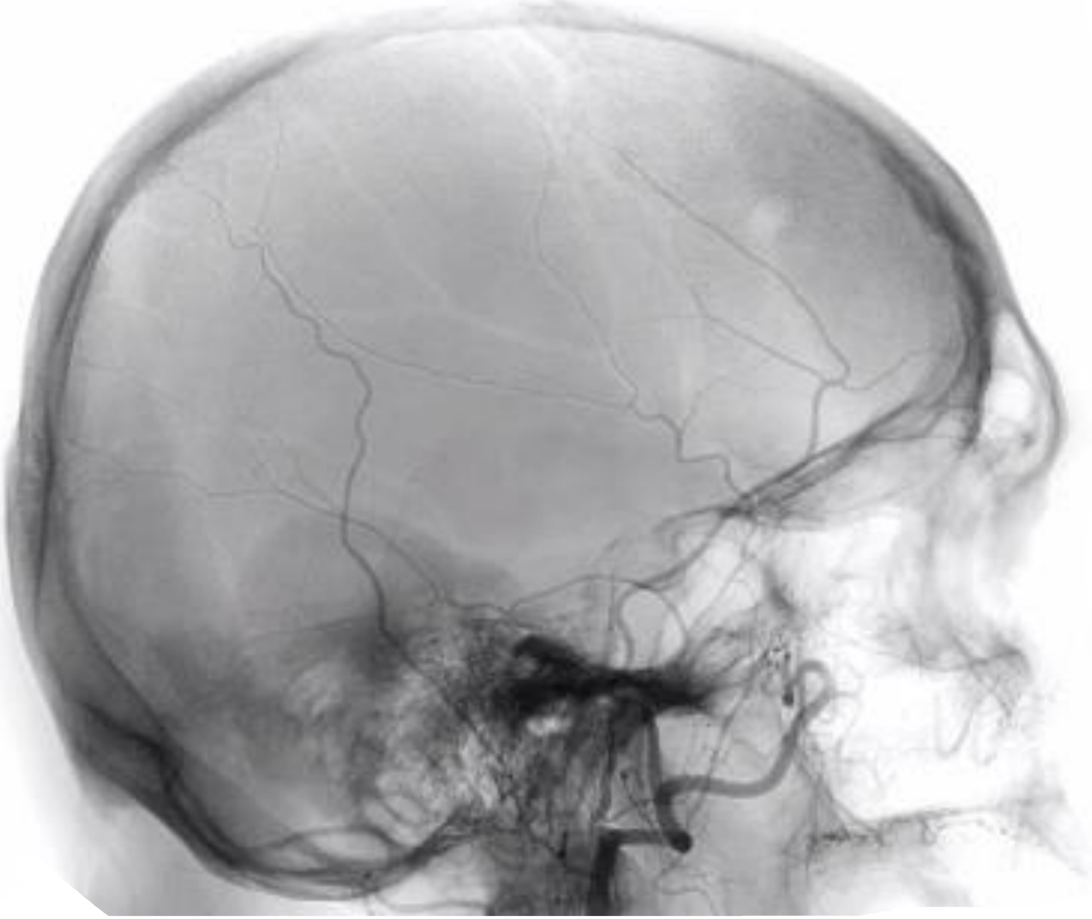


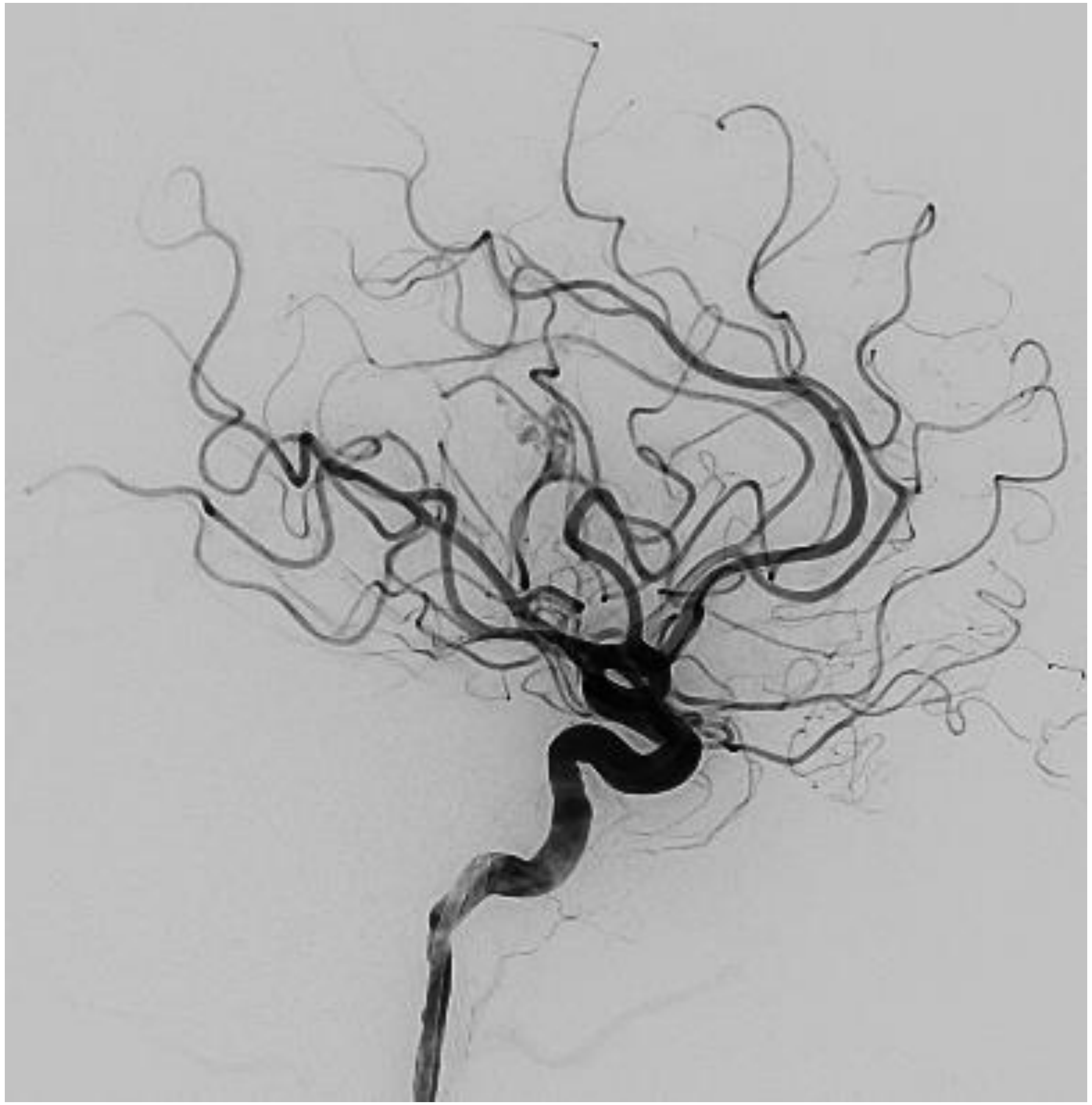

CBF
Tmax
CBF<30%: 11 ml
Tmax>6.0s: 160 ml
Mismatch volume: 149 ml
Mismatch ratio: 14.5
RAPID

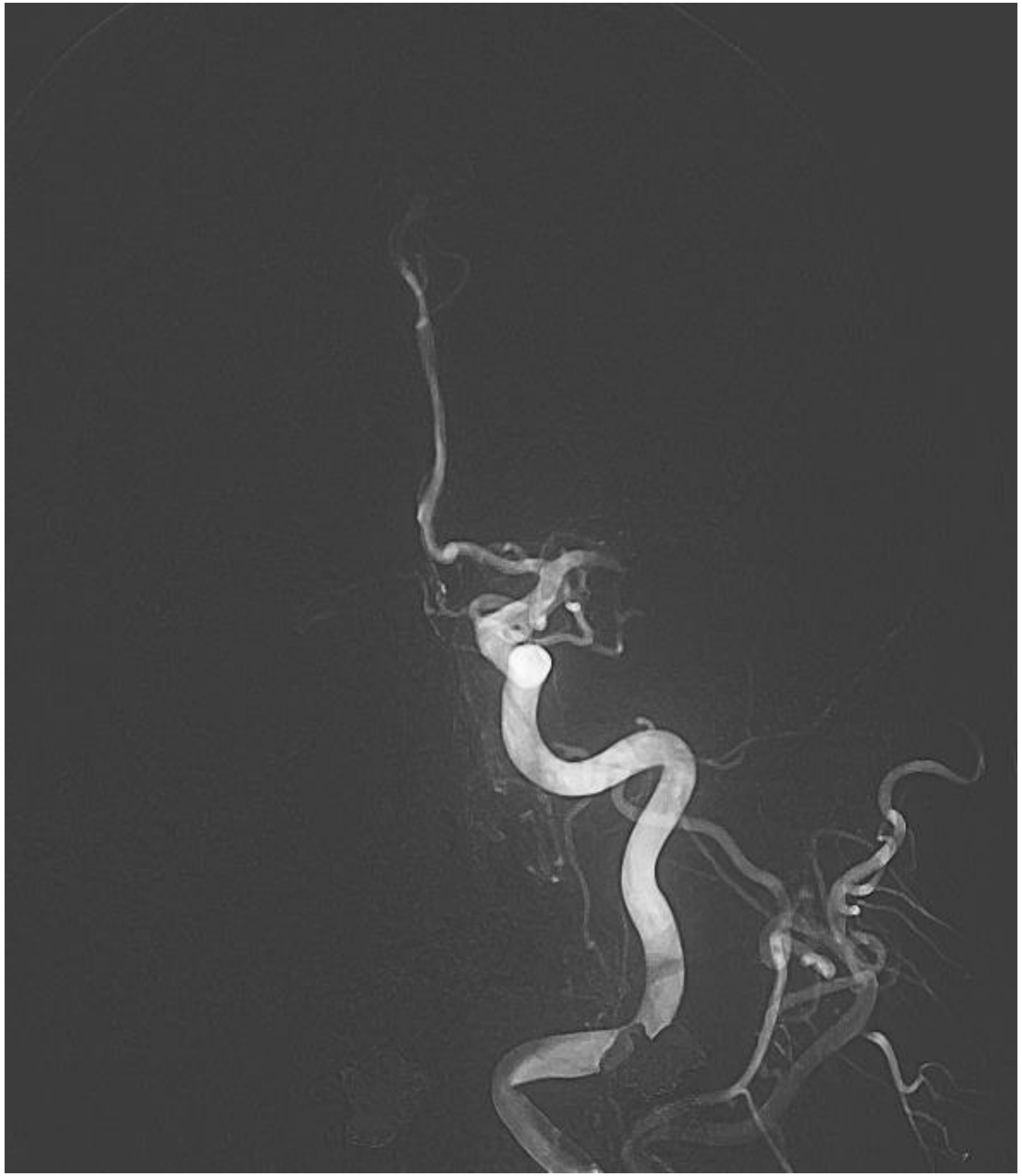
# Femoral / Radial Artery Access



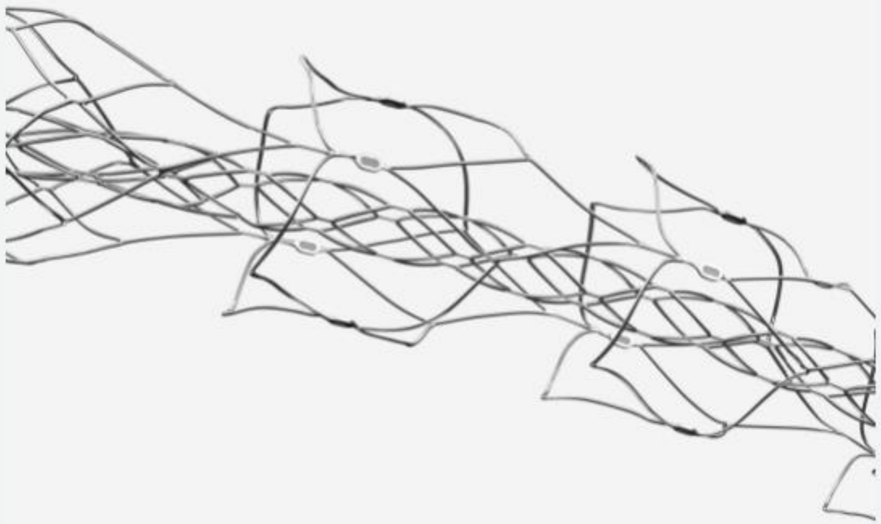








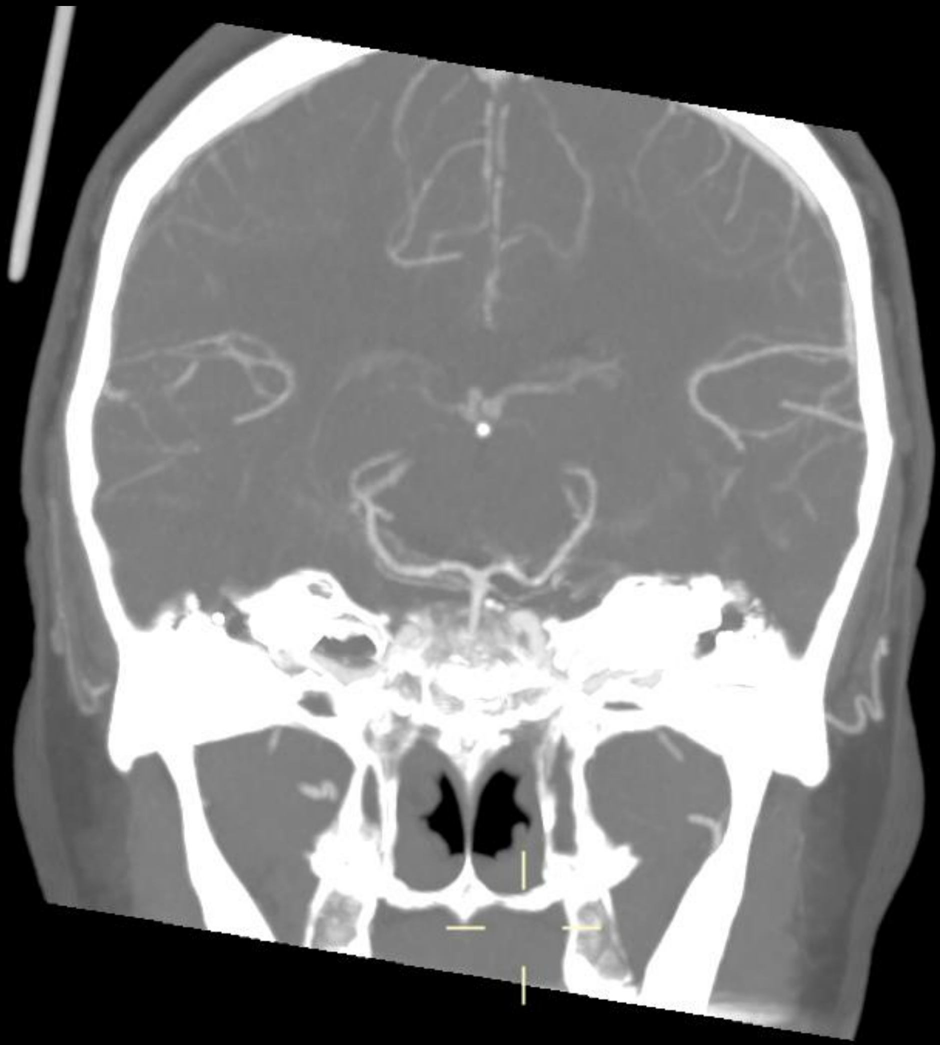


# New Imaging Technique

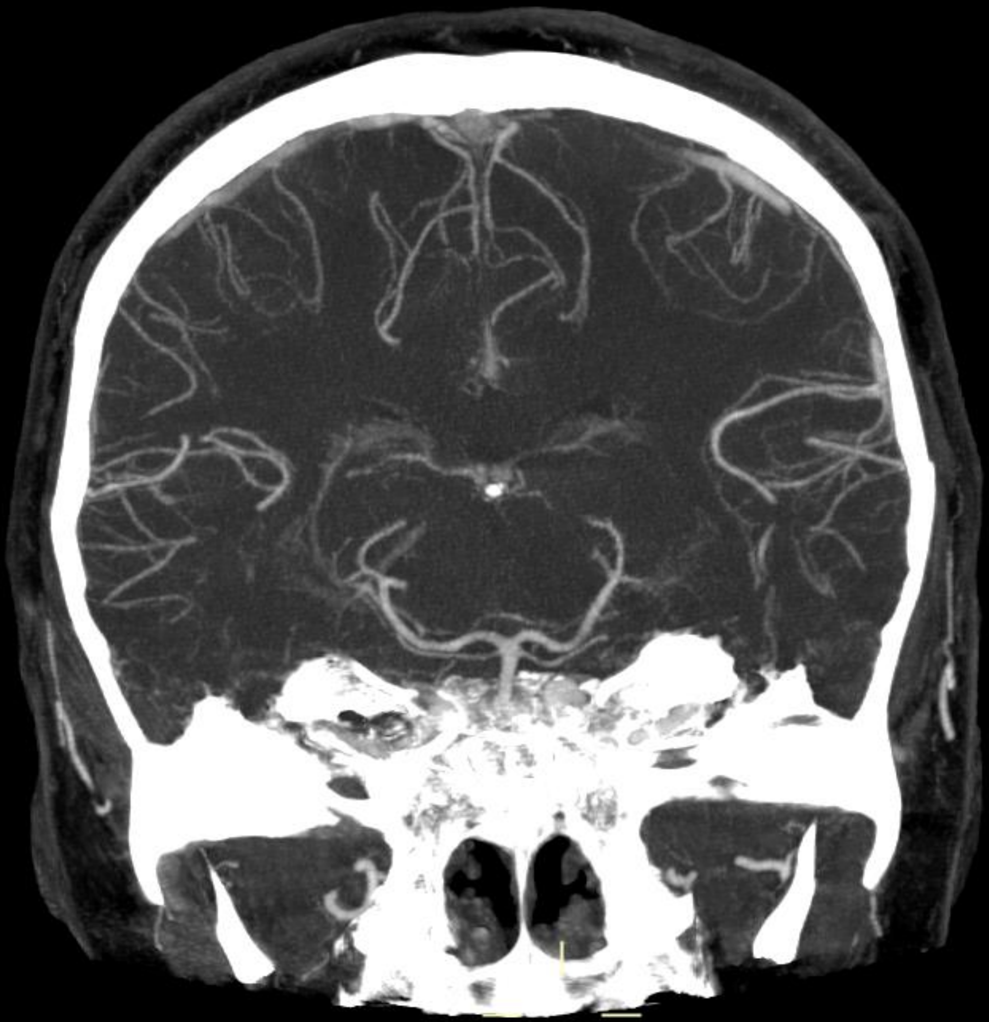
'Dyna CT Head' - Plain Brain

'IVDSA' - CT Carotid Angiography

CT Angiogram

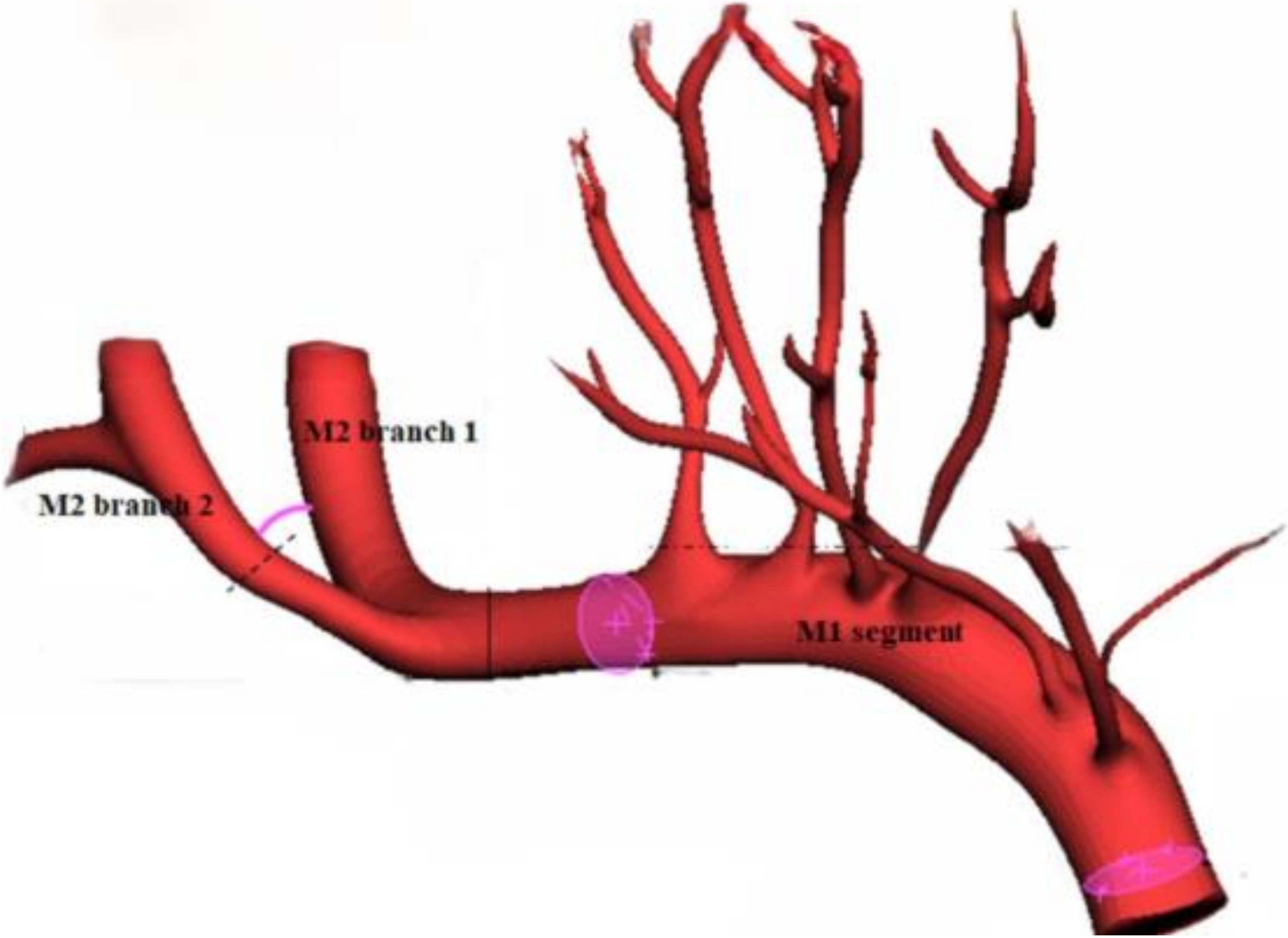


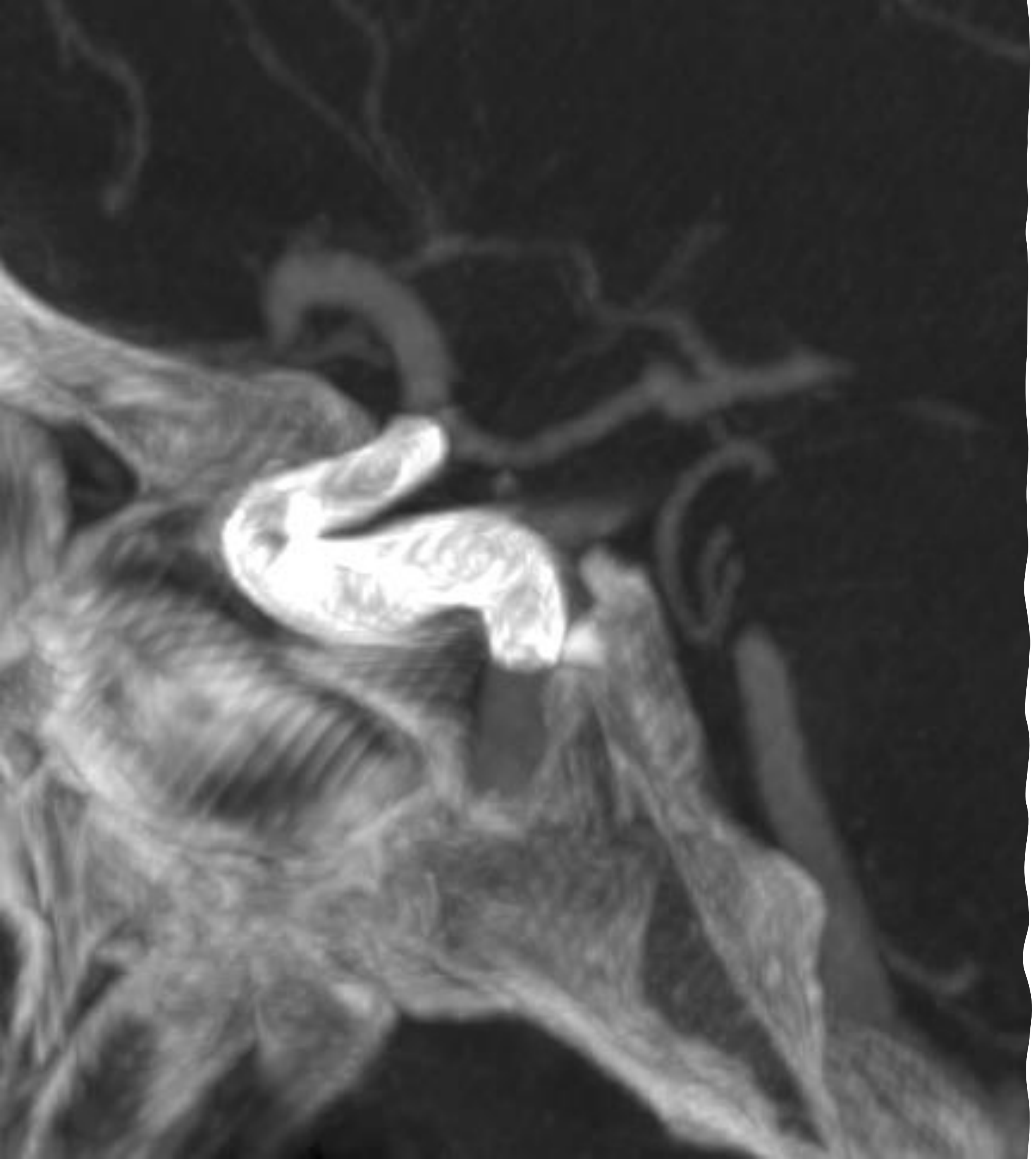
IV DSA



CT Angiogram

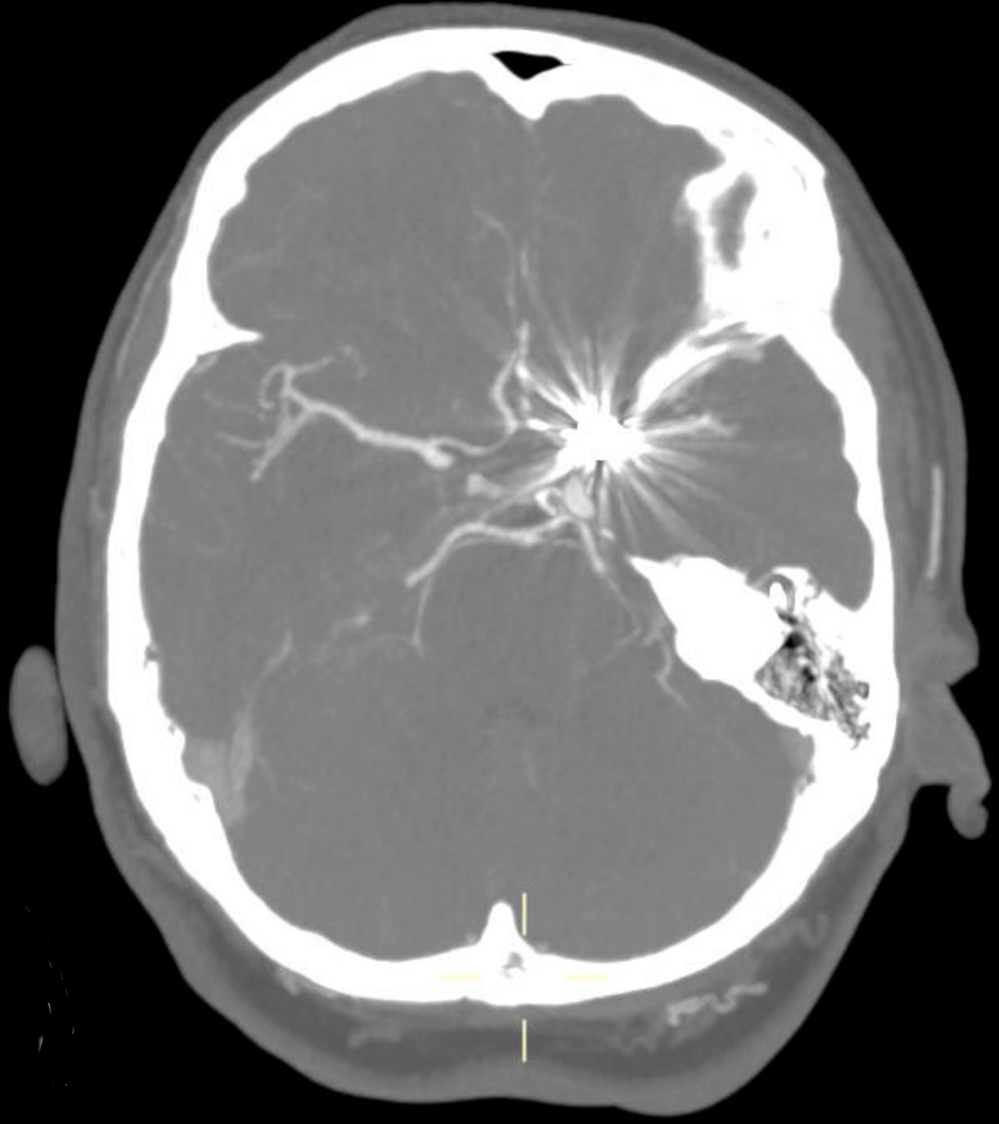
IV DSA


M2 branch 1
M2 branch 2
M1 segment

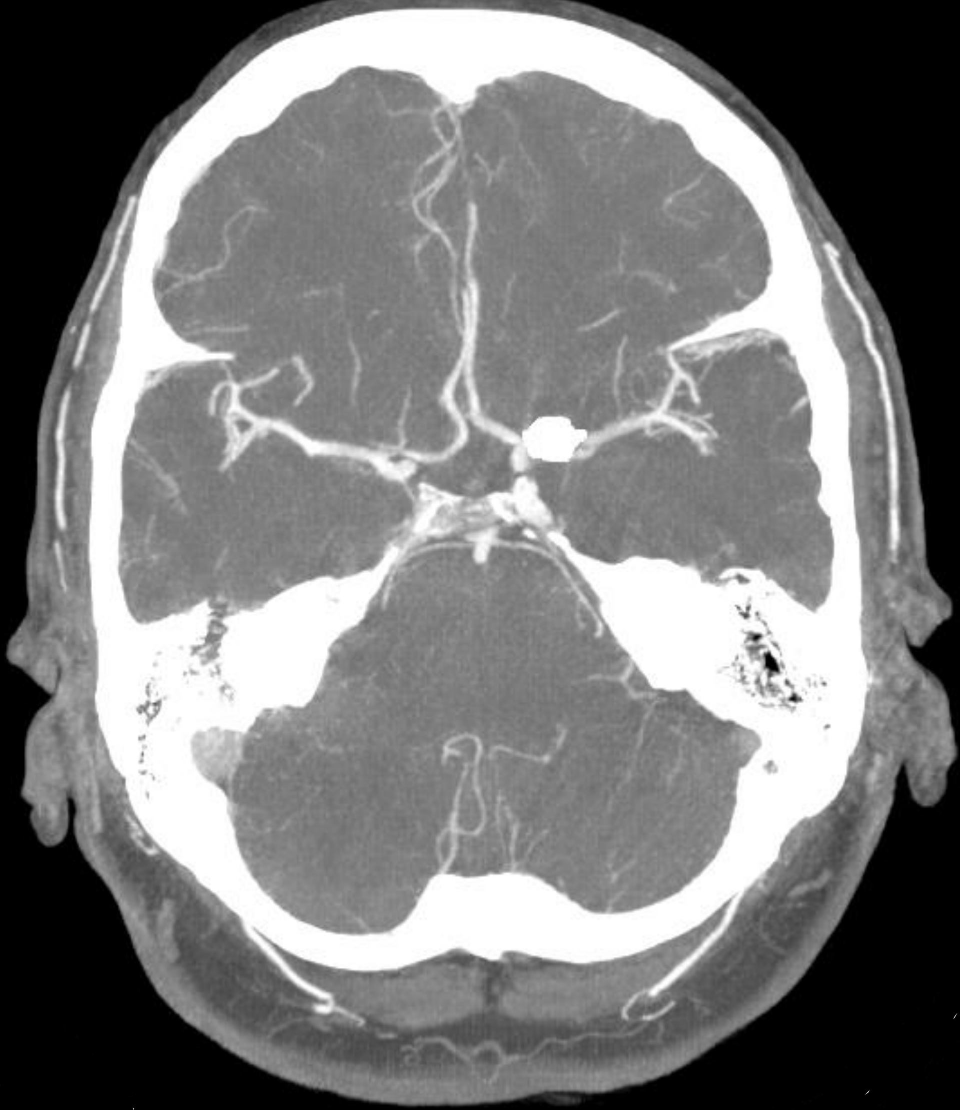


# Stent Patency

CT Angiogram



IV DSA No Artefact



# Applying Dyna CT to Mechanical Thrombectomy?

Dyna CT on INR Table Plain (without contrast) e.g Query Reperfusion Bleed

# Reduces

- Time
- Transfer of unstable or intubated patients
- Moving and Handling moments
- Infection control risks

IVDSA (With Contrast)

CTA: Clot

IVDSA on table : Rencanalised

# Avoid

- Spending extra time
- Undergoing a General Anaesthetic

  (Carries its own risks)
- Unnecessary Arterial Puncture

  (Risk of peritoneal hemorrhage or pseudo aneurysm)

# Another tool in the box

# Brian

PRE THROMBECTOMY

FRONTAL VIEW

LATERAL VIEW

# POST THROMBECTOMY

FRONTAL VIEW

LATERAL VIEW




# Time is Brain

## Every Second Counts

1s = 2.5h quality life lost

1min = 1 week

1 hour = 1 year

**10 hours (overnight) = 10 years**






# Thank you

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shaun.buchanan2@nhs.scot

# Tea, coffee & networking

# AGM – 26th October 2024

- Chairs Welcome
- Chair's Report
- Treasurer's Report
- Professional Officer's Report
- National Officer's Report
- Motion to AGM – Review of Scottish Council Terms of Reference and temporary change to Council Elections
- Council Elections

Close

SoR
THE SOCIETY OF RADIOGRAPHERS

# Reports

| | |
|---|---|
| **Chair's report** | Adobe Acrobat Document |
| **Treasurer's report** | Adobe Acrobat Document |
| **Professional Officer's Report** | Adobe Acrobat Document |
| **National Officer's Report** | Adobe Acrobat Document |
| **Motion to AGM – Review of Scottish Council Terms of Reference and temporary change to Council Elections** | Adobe Acrobat Document |

# Survey

Thank you for attending.

Please complete this survey

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EX UMBRIS ERUDITIO MDCCCCXX

Scottish Council of the Society of Radiographers Study day and Annual General Meeting 2024