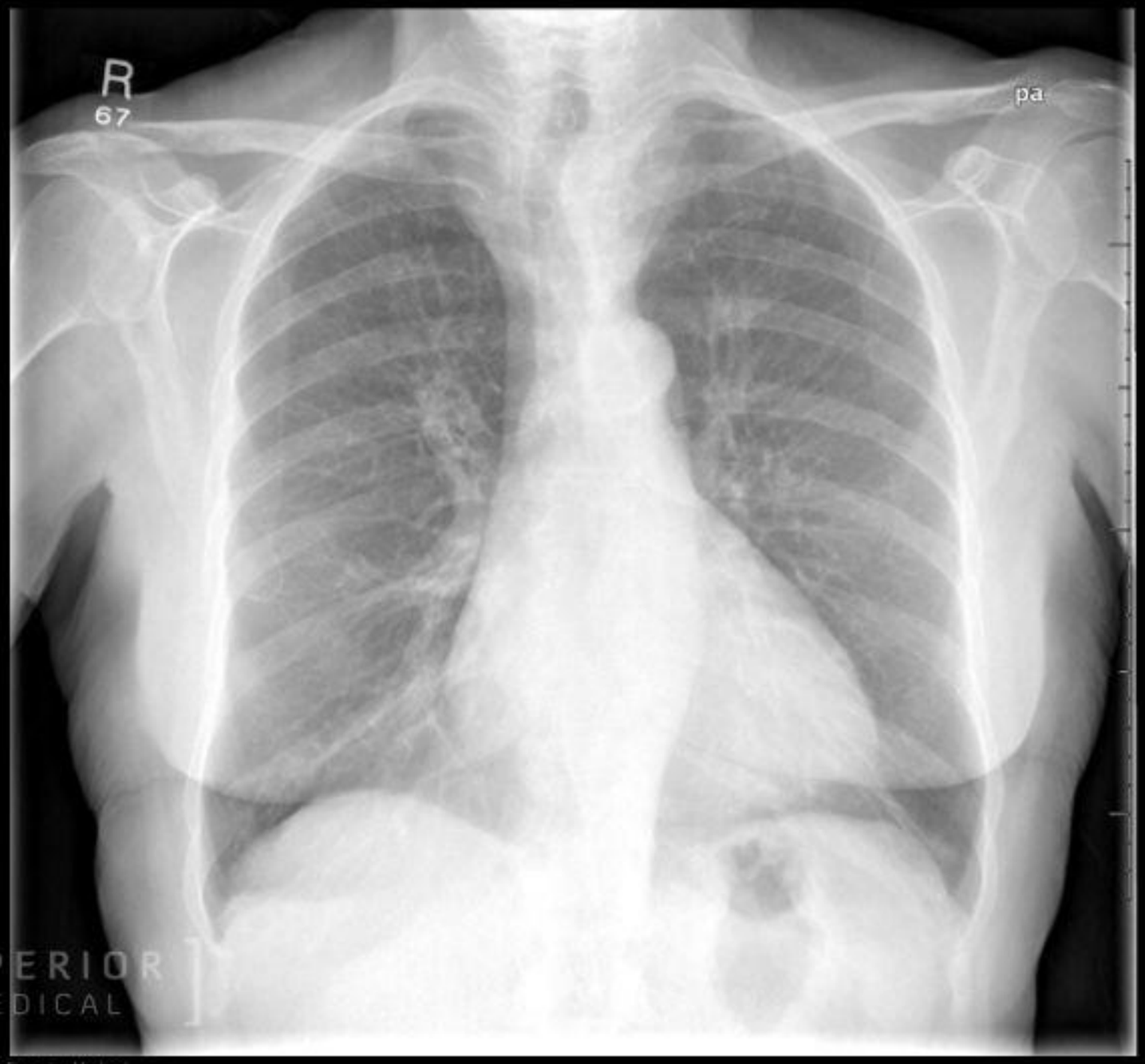
EXPERIOR MEDICAL

Making Technology Work for Health

Tom Lynch

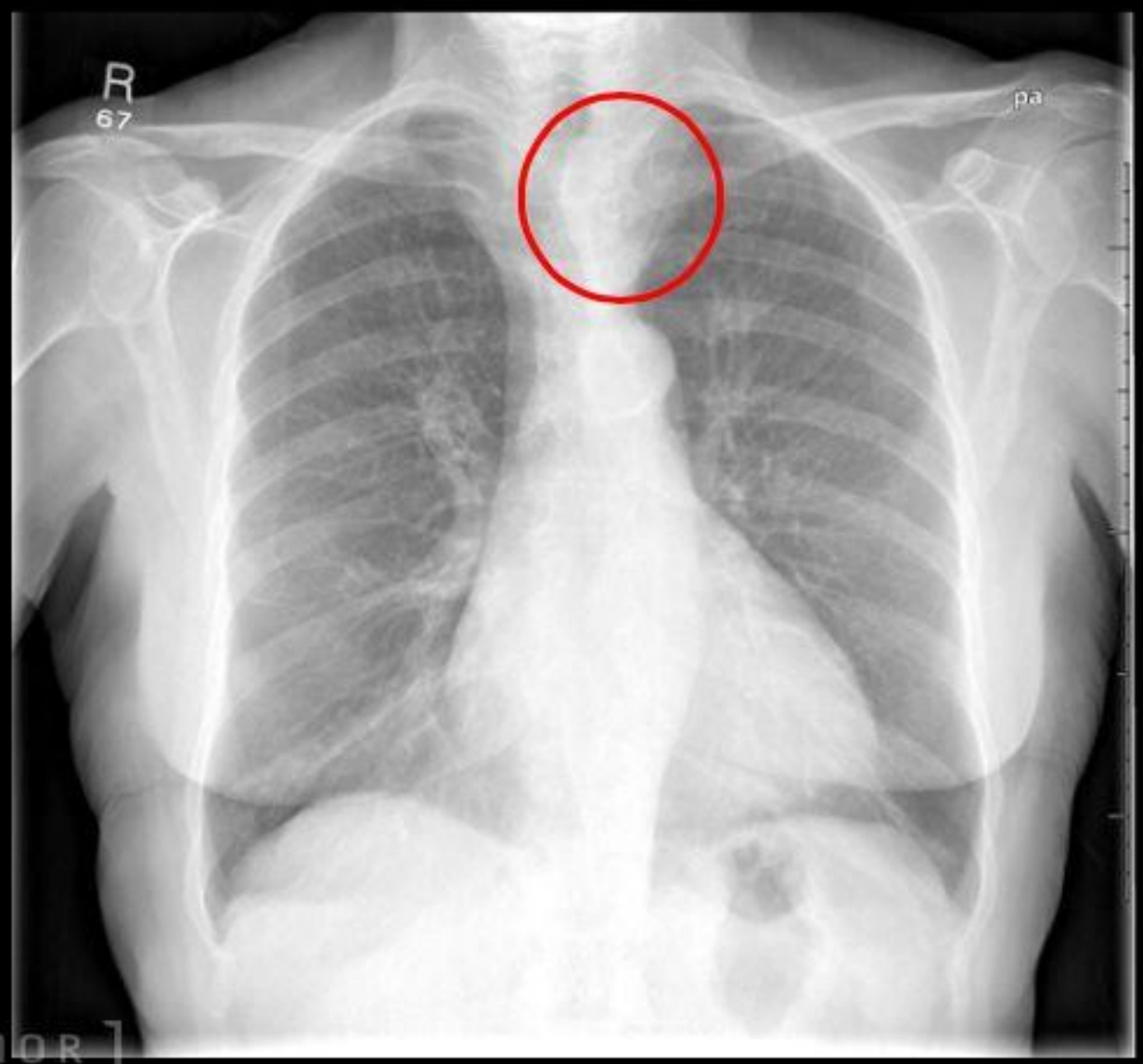
Are you competent?

Can you prove it?



NORMAL

ABNORMAL



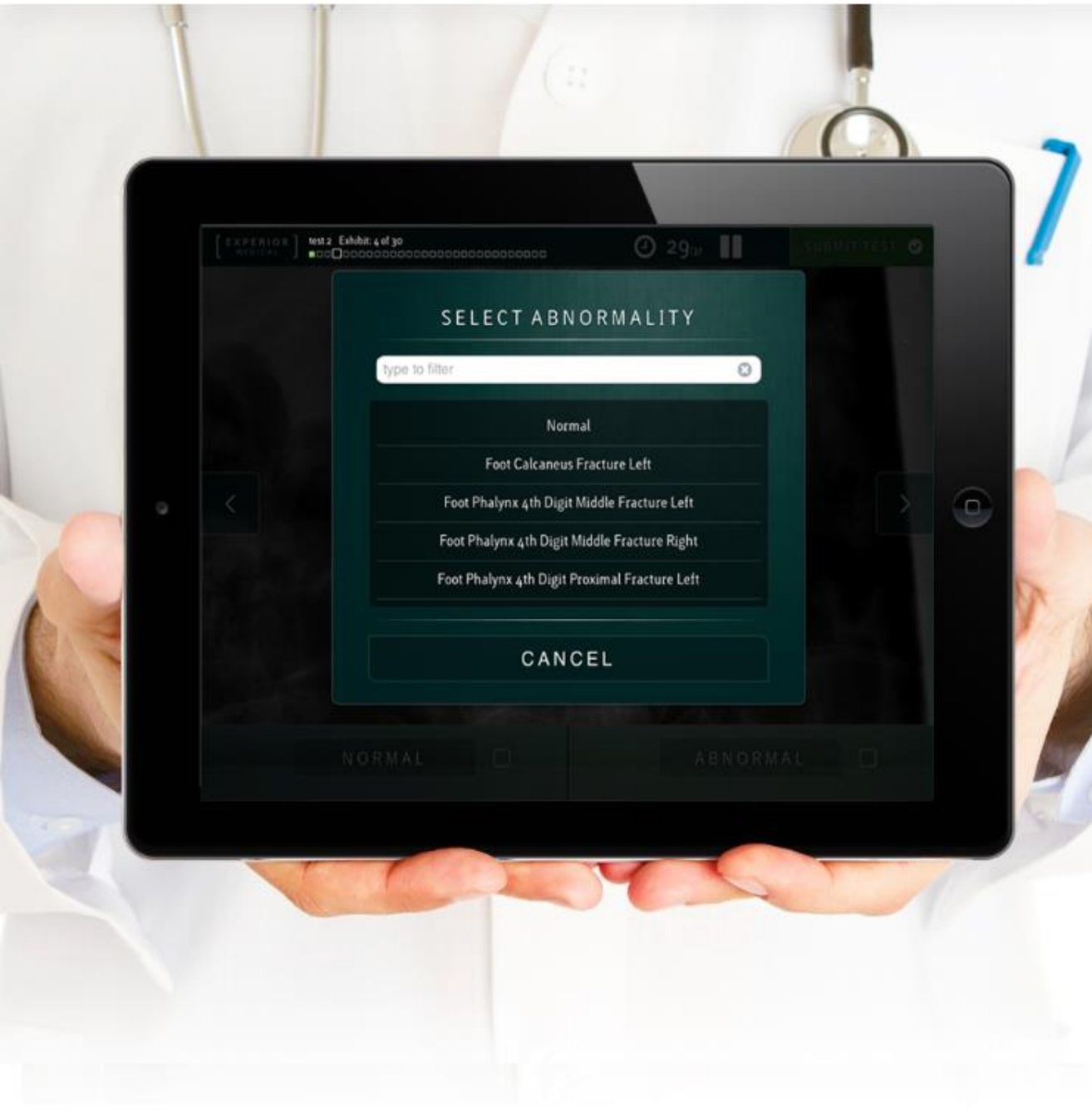
thyroid goitre displacing trachea to the right

More Info

Exhibit: 1
Your Answer: thyroid goitre or neck mass
Correct Assessment: thyroid goitre or neck mass

CORRECT

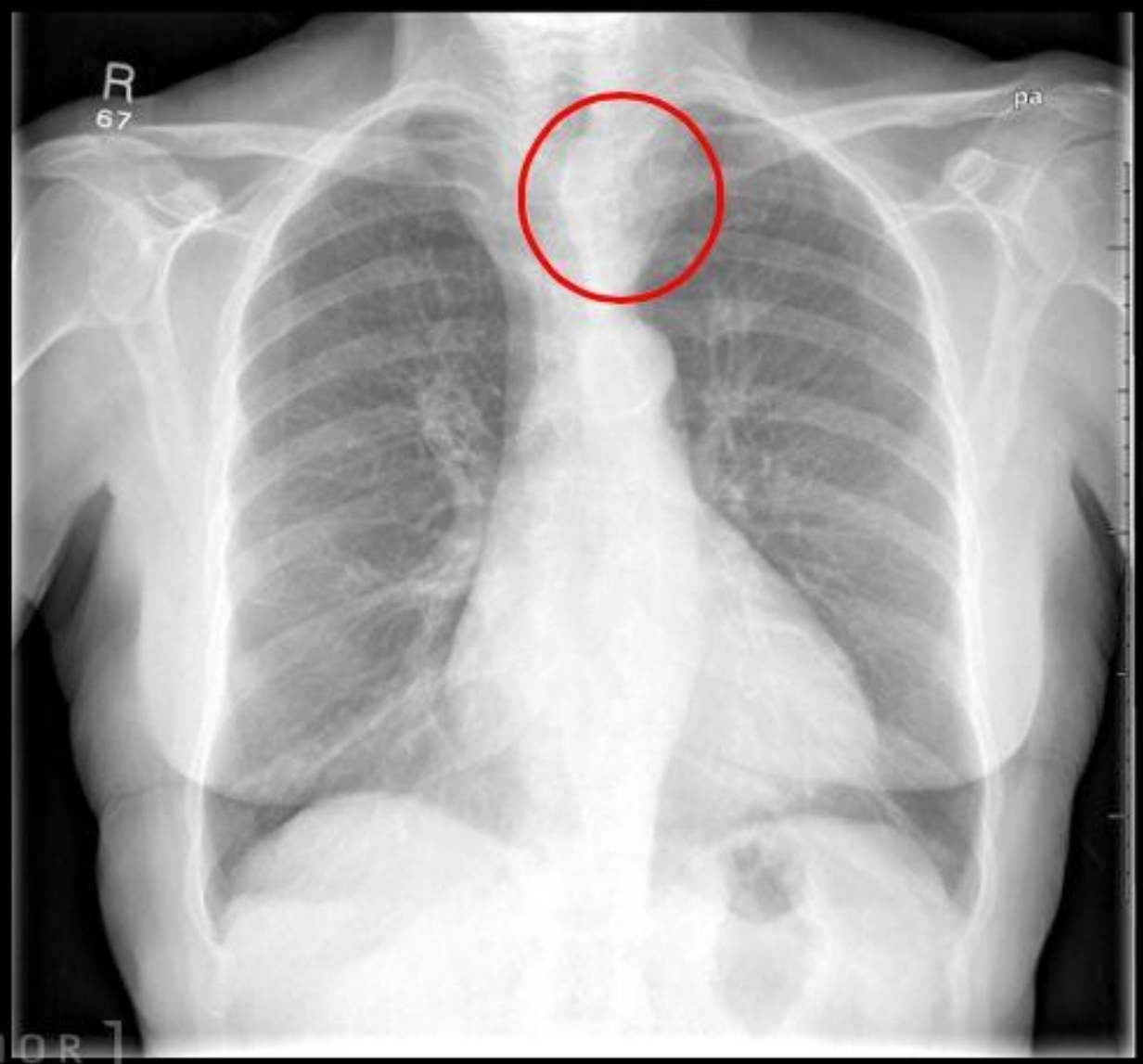
DONE



The **Rapid Radiology Test** for Training Professionals

Experior Medical is an iPad app designed to **test skills** and **improve the knowledge of medical students and professionals**. Individuals can assess their abilities and **compare peer ratings** with ongoing assessment in **radiology** and **anatomy**.

Available on the App Store



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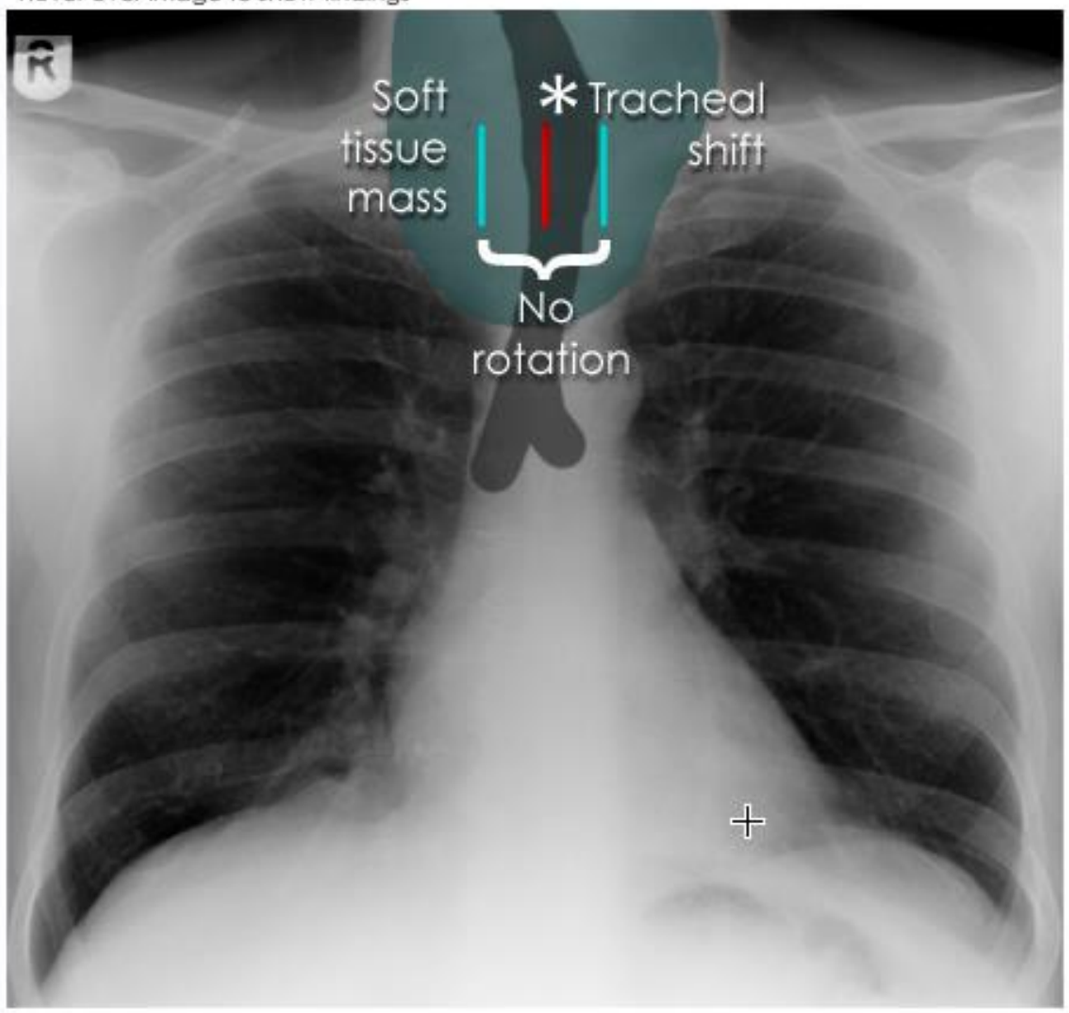
Tracheal displacement

Hover over image to show findings



Click image to align with the top of the page

Tracheal displacement

- No patient rotation - the spinous processes (red line) are central between the medial clavicles (blue lines)
- Trachea (*) shifted to the left of the midline
- Soft tissue mass mainly to the right of the trachea

Diagnosis

- Mediastinal thyroid enlargement
- The patient had a CT scan - see below

Tracheal deviation - seen on CT

Hover over image to show findings

Tracheal displacement - seen on CT

- Trachea (*) shifted to the left of the midline (red line)
- Soft tissue mass (blue) to the right of the trachea
- The CT findings correlate well with the x-ray

Diagnosis

- Mediastinal thyroid enlargement

Chest x-ray anatomy

Trachea and major bronchi

The large airways are visible on most good quality chest x-rays. They contain air and so are of lower density (blacker) than the surrounding soft tissues. The trachea branches at the carina, into the left and right main bronchi, and these can often be followed as they branch beyond the hila and into the lungs.

Key points

- The large airways contain air and are therefore less dense (blacker) than surrounding tissue
- The trachea should be central

Normal chest x-ray

Hover over image to show findings

Normal chest x-ray

- The trachea and bronchi are visible - branching at the carina
- The trachea passes to the right of the aorta and so may be slightly off mid-line to the right
- Highlight these structures by hovering the mouse over the image

Chest x-ray anatomy

Trachea and major bronchi

The large airways are visible on most good quality chest x-rays. They contain air and so are of lower density (blacker) than the surrounding soft tissues. The trachea branches at the carina, into the left and right main bronchi, and these can often be followed as they branch beyond the hila and into the lungs.

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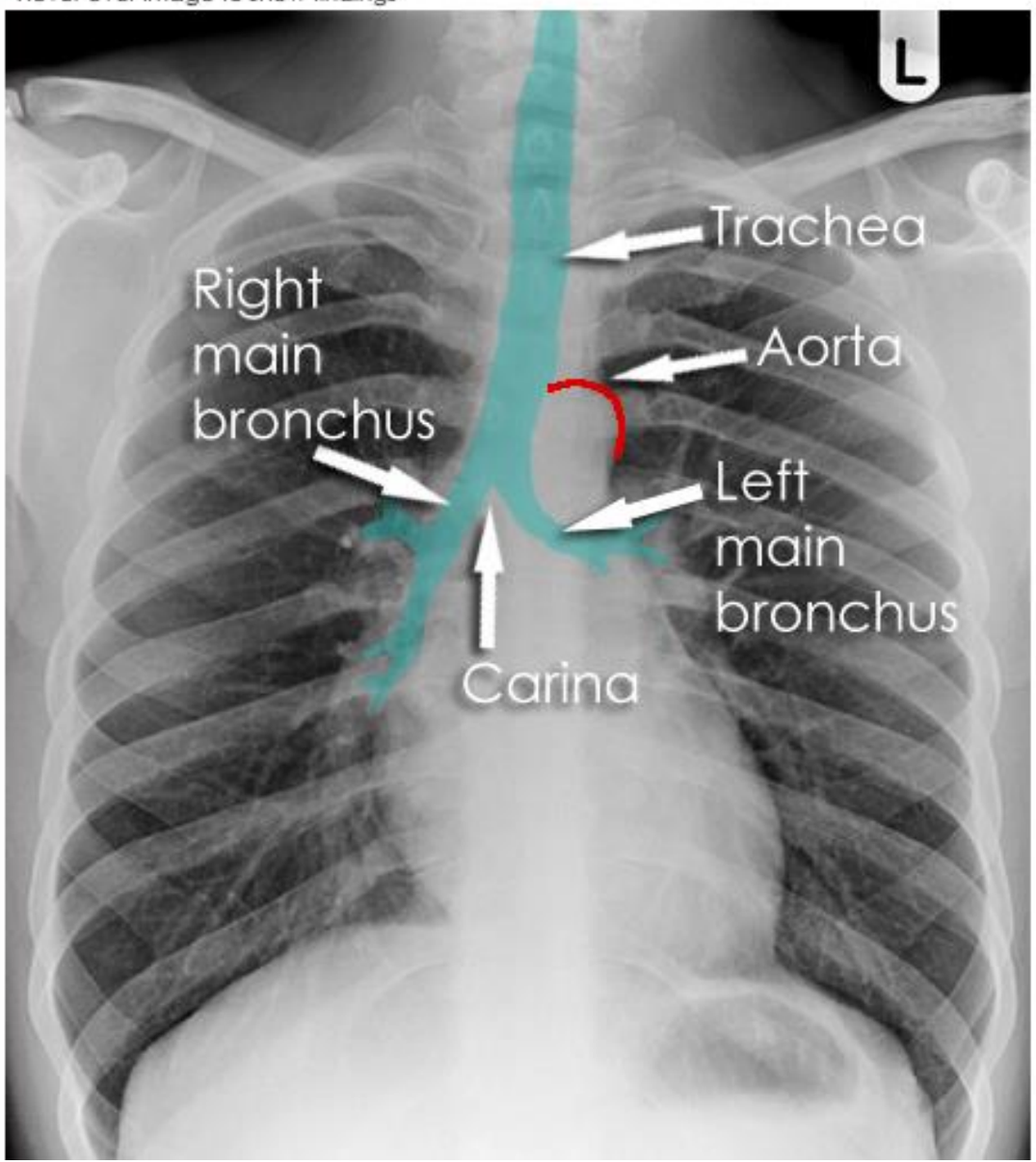

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EXPERIOR MEDICAL

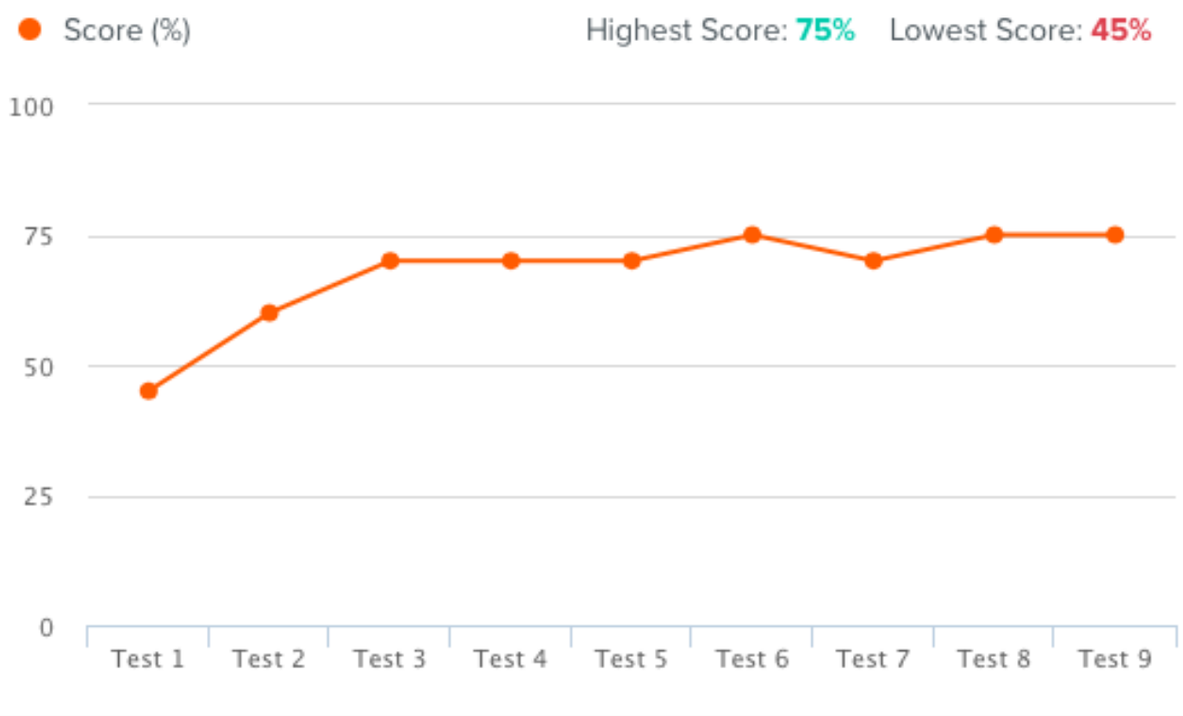
TRIALS:
Quality 2020 funded
Started November 2014

Specialities Tested

- RADIOLOGY
- EMERGENCY MEDICINE
- OBSTETRICS AND MIDWIFERY
- **QUB FINAL YEAR MEDICAL STUDENTS**

Improvement over time

68% Average Score



Tests Taken
9 /9

Overall Average Score
67.78%

Avg. First 3 Tests vs. Remaining
58.33% vs. 72.50%

Average Time Taken
20:07

The more tests completed, the better the score

Test 8 purely paediatrics

Sample feedback performance chart for each area tested

EXPERIOR MEDICAL

Reports

Back

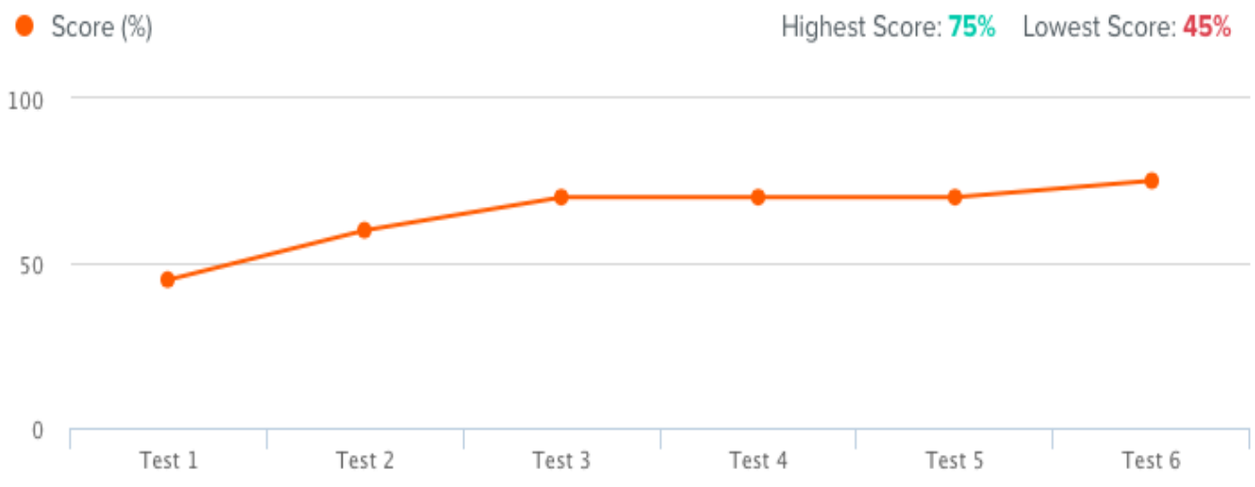
Highest Score(s) this Week

Grade	Region	Score
Staff Grade	Northern Ireland	100%

Group Performance

Group Name	Highest Score	Lowest Score	Average Score
Medical Student Group	85%	10%	47.84%
Lower Training Level	85%	25%	60.93%
Consultant Group	85%	40%	73.25%
Higher Training Level	100%	45%	73.75%

65% Average Score



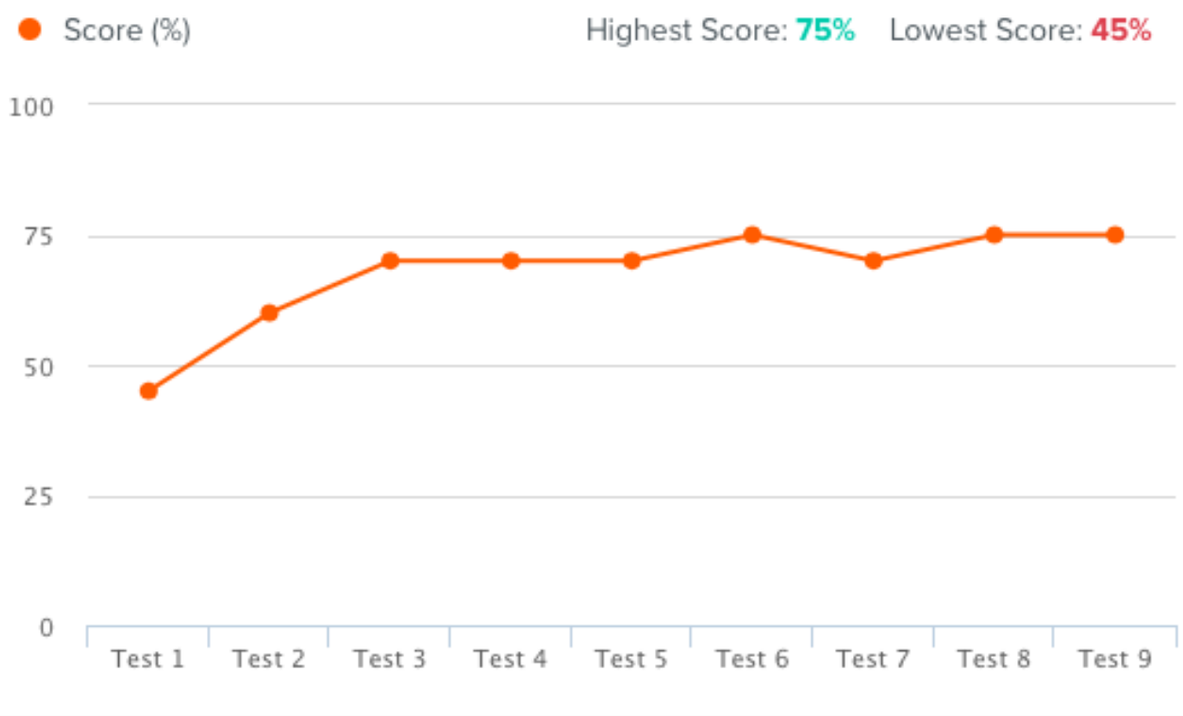
Tests Taken
6 /6

Overall Average Score
65.00%

Average Time Taken
19:58

Improvement over time

68% Average Score



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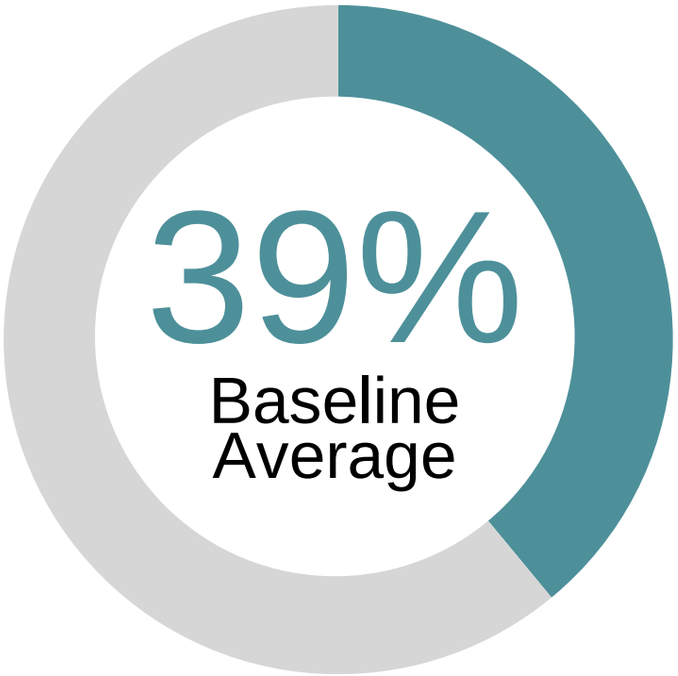
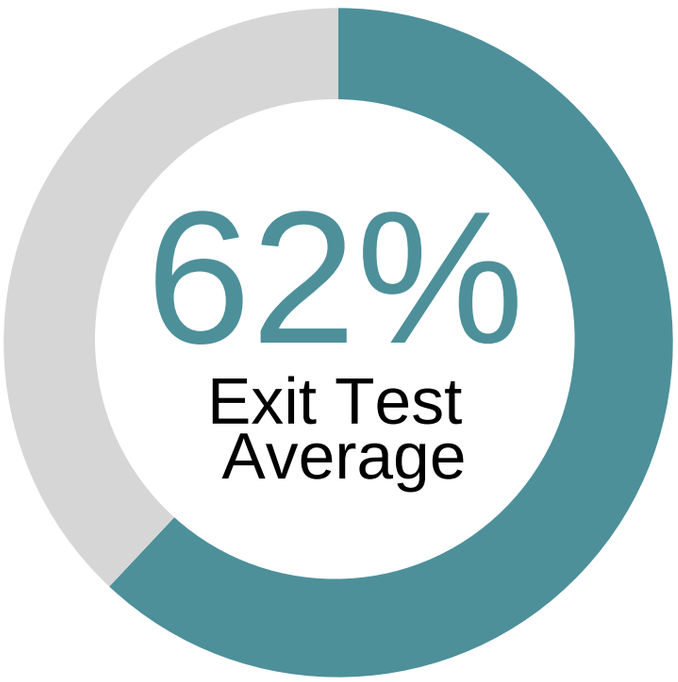
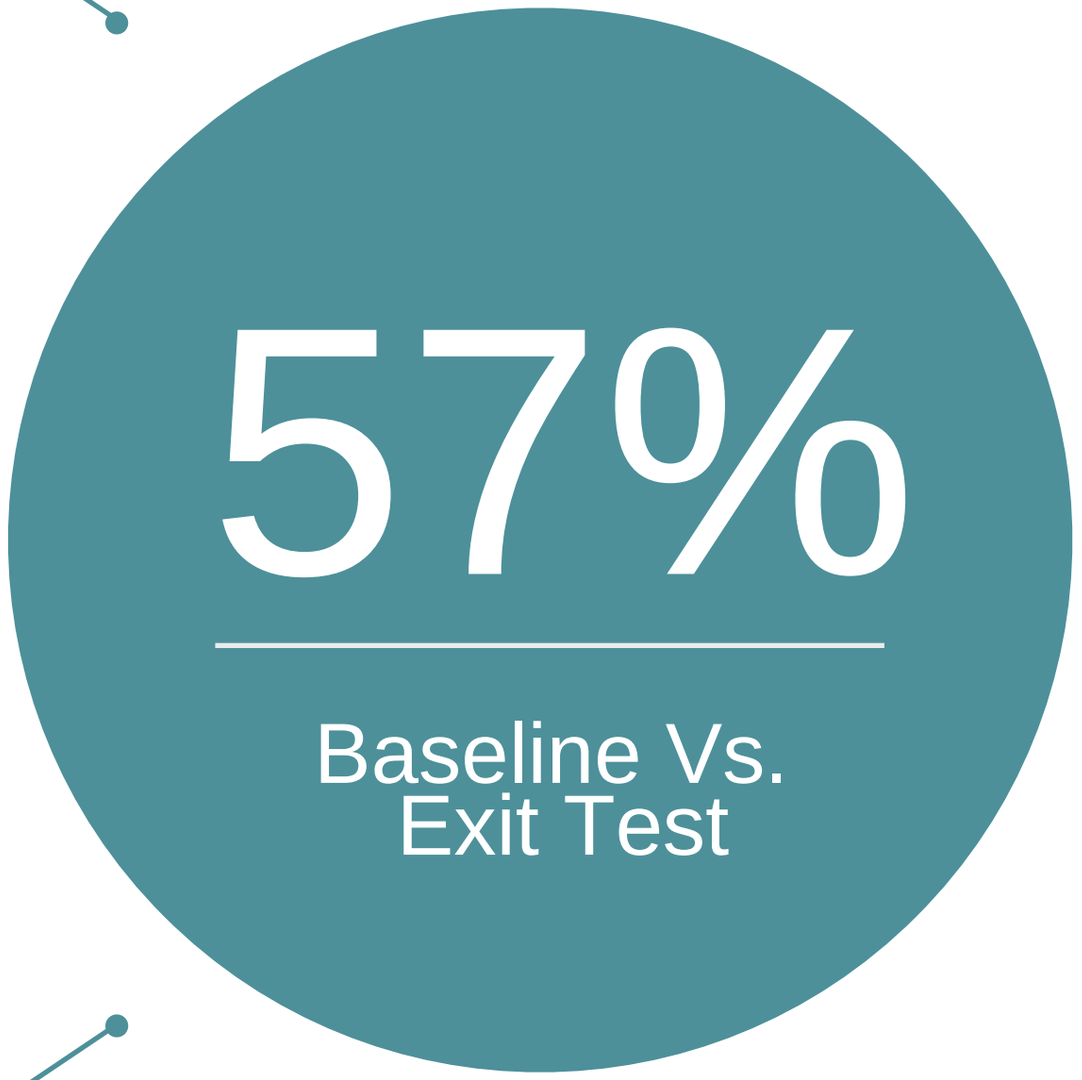
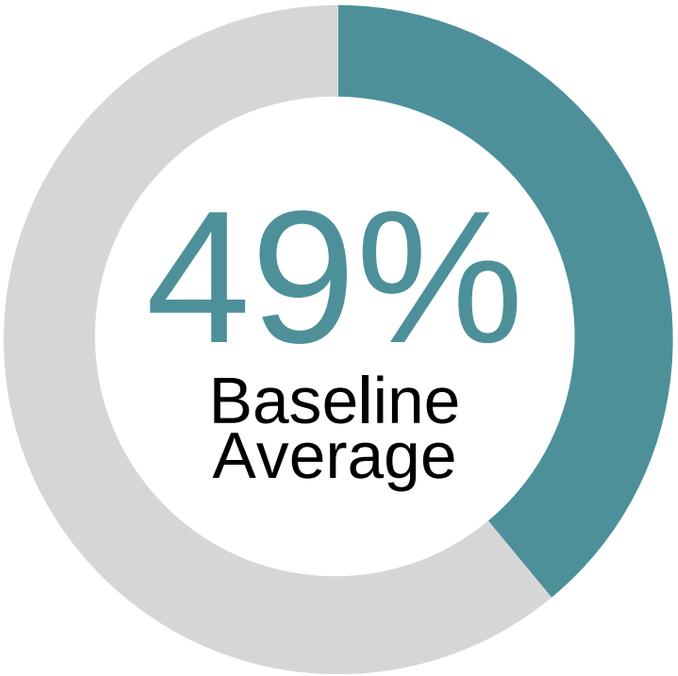
Improvement over time CYCLE 1

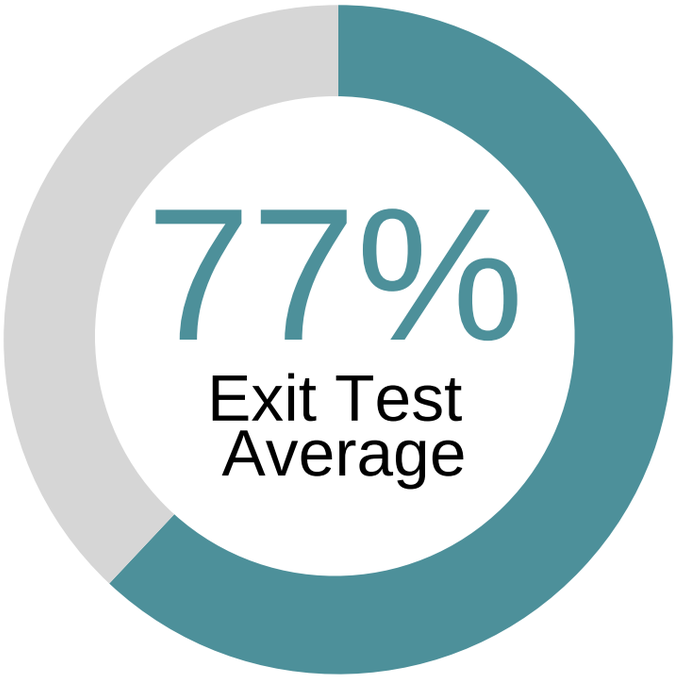


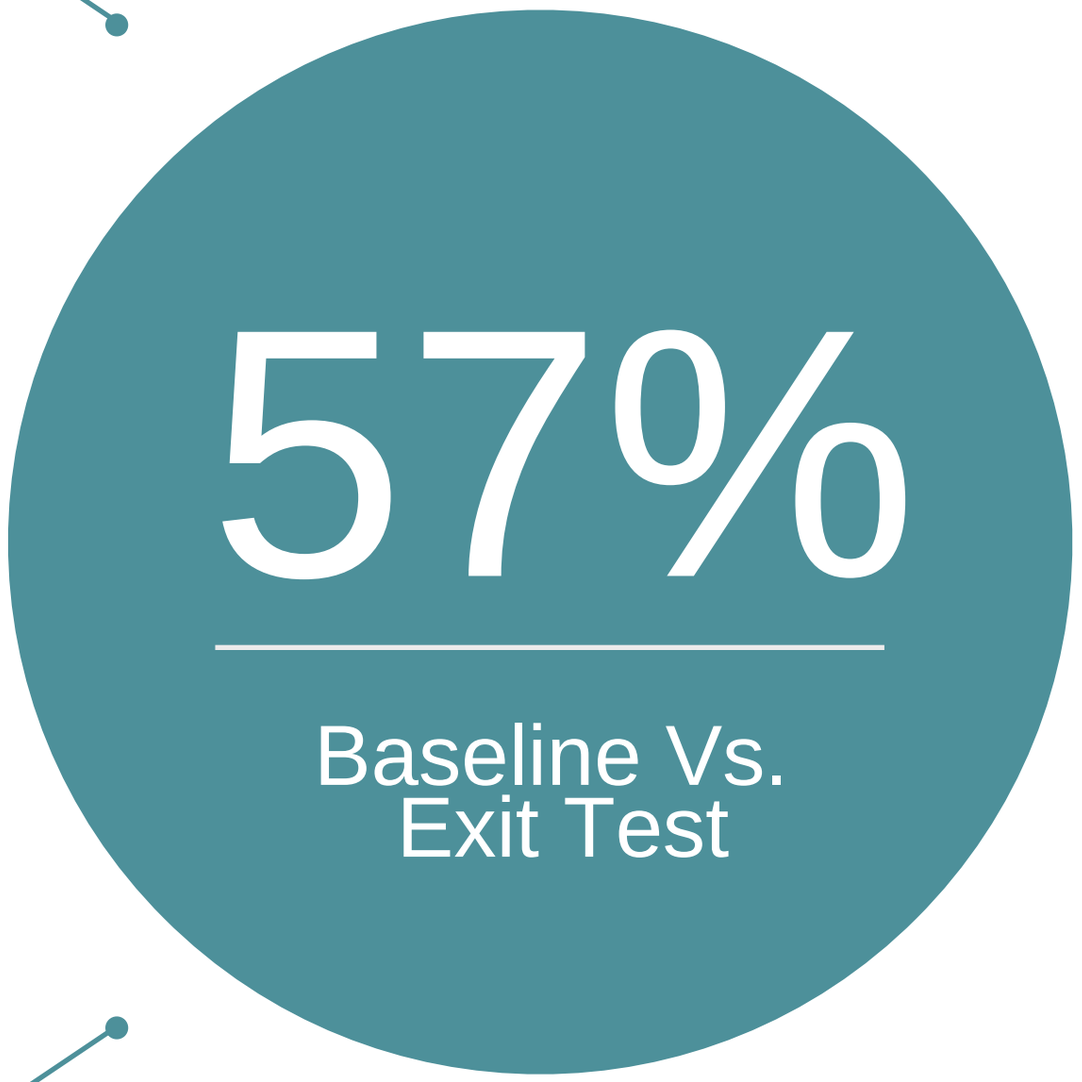


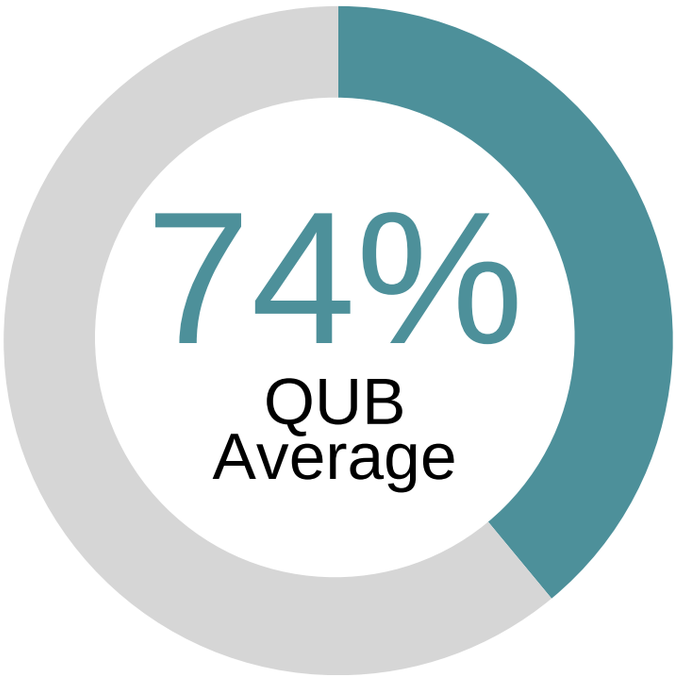


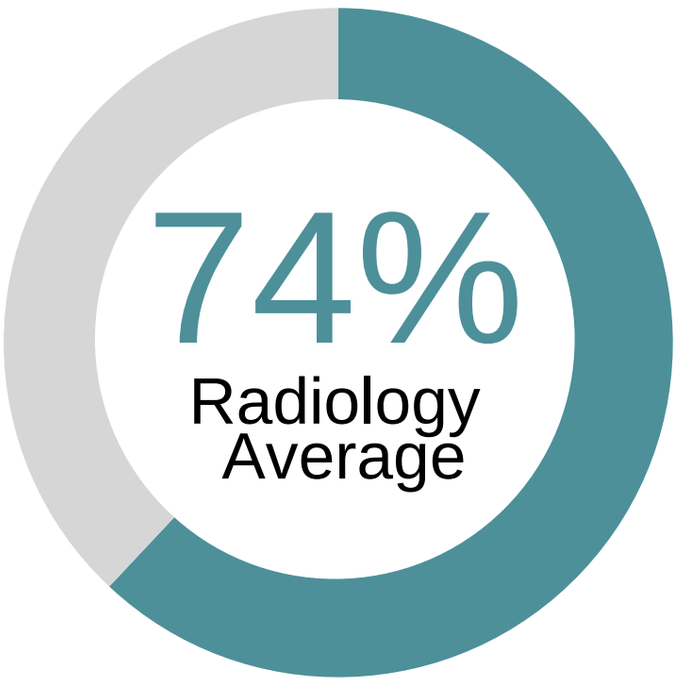
Improvement over time CYCLE 2







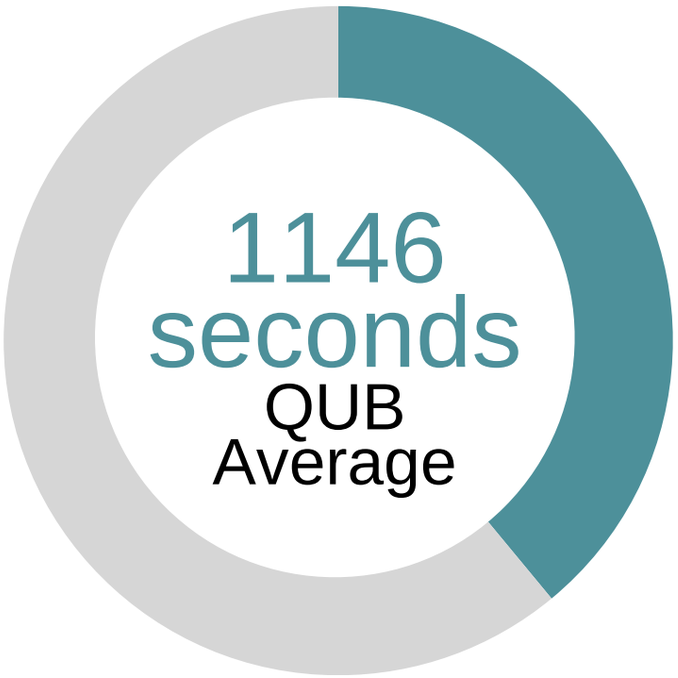


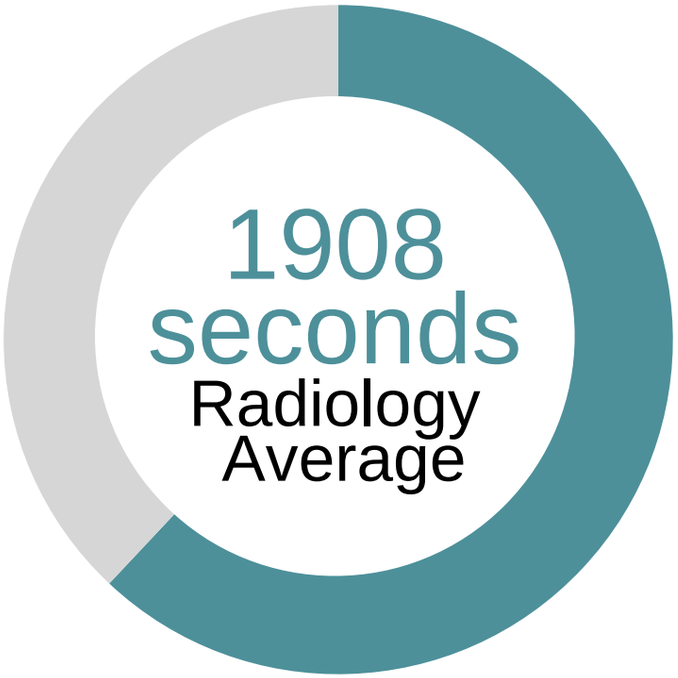


75 QUB v's
20 Radiology

Paul Rice
CXR Test

QUB VERSUS RADIOLOGY TIMES TO COMPLETE





75 QUB v's
20 Radiology

Paul Rice
CXR Test

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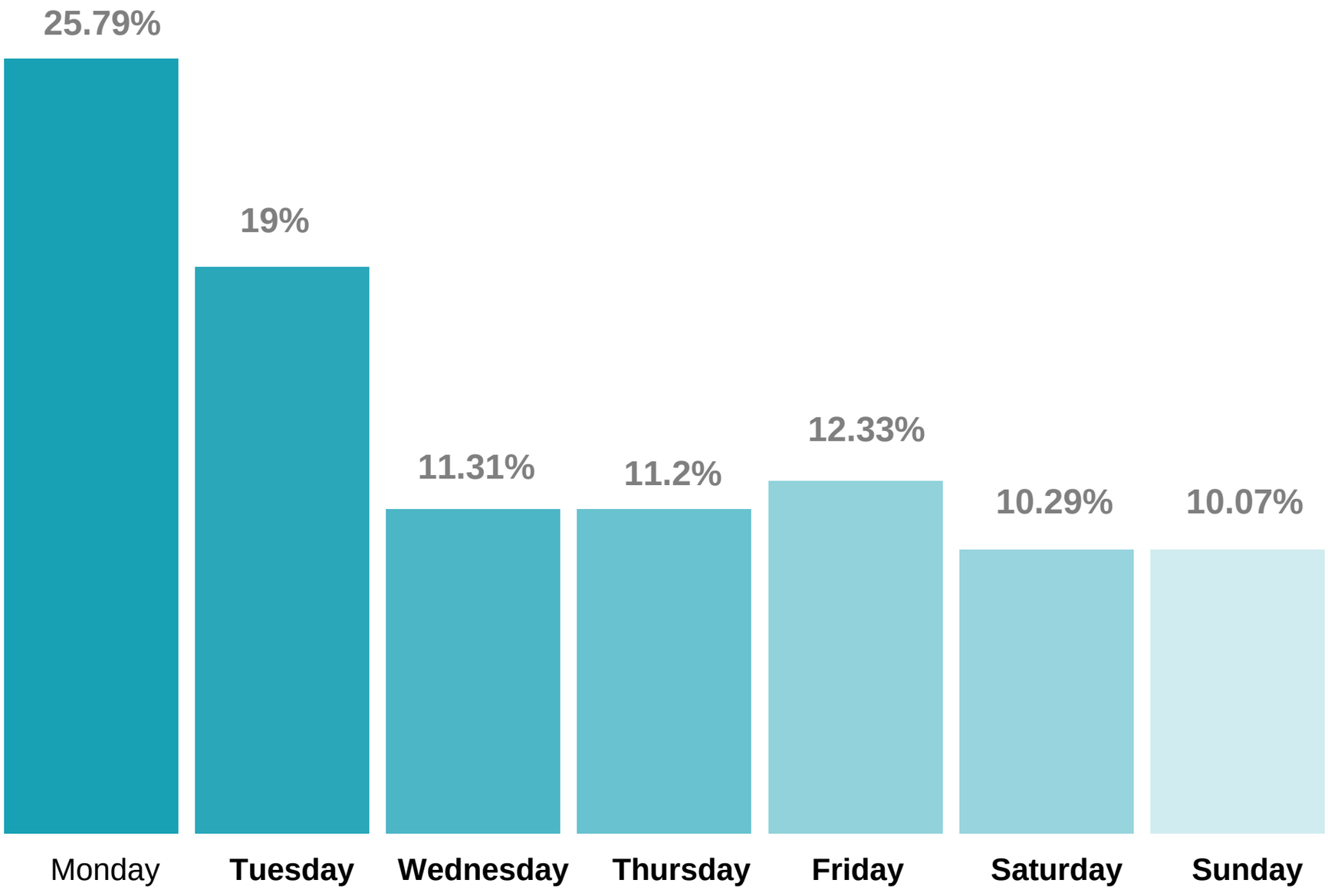
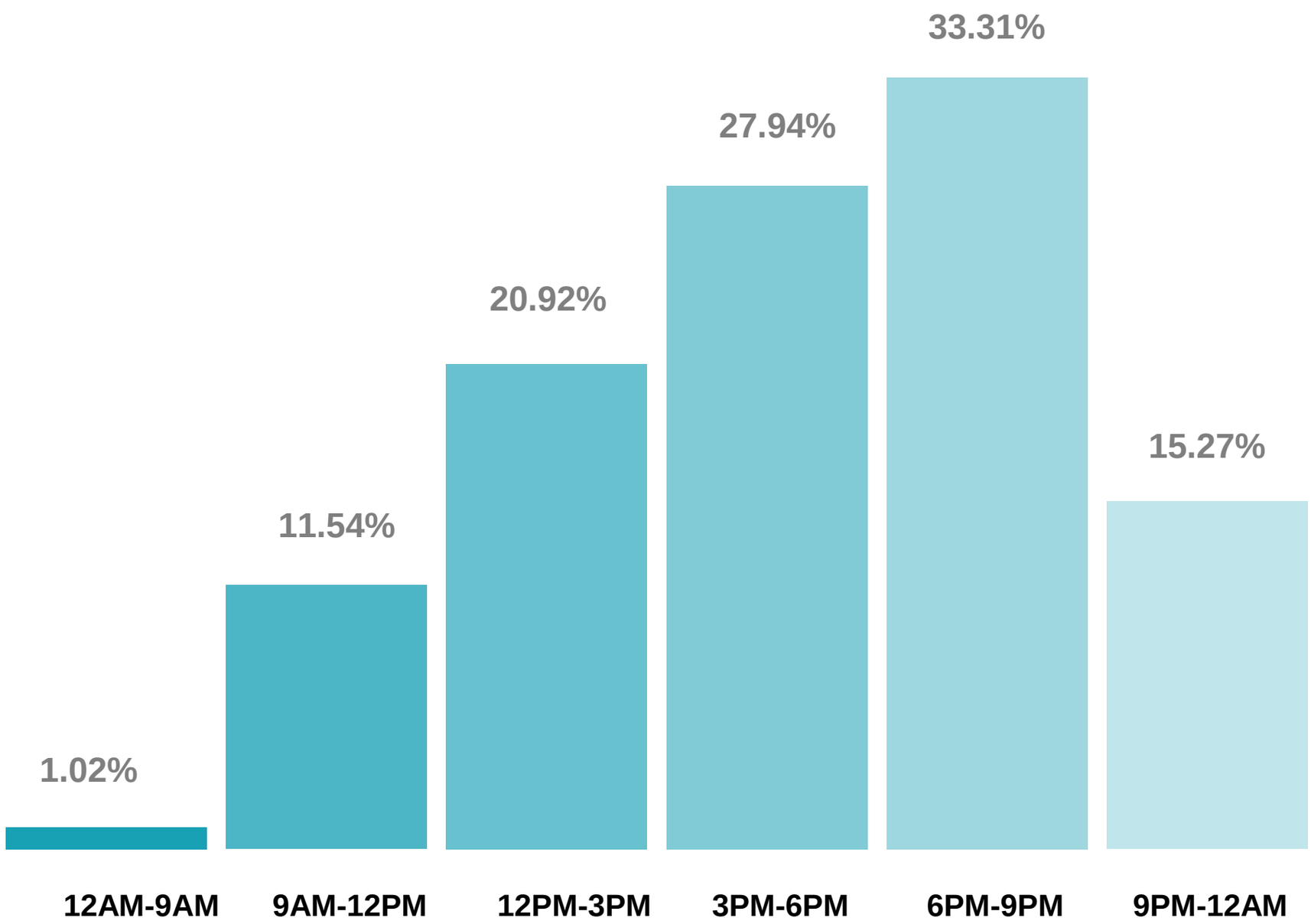
MEDICAL

Most popular day of the week to take tests



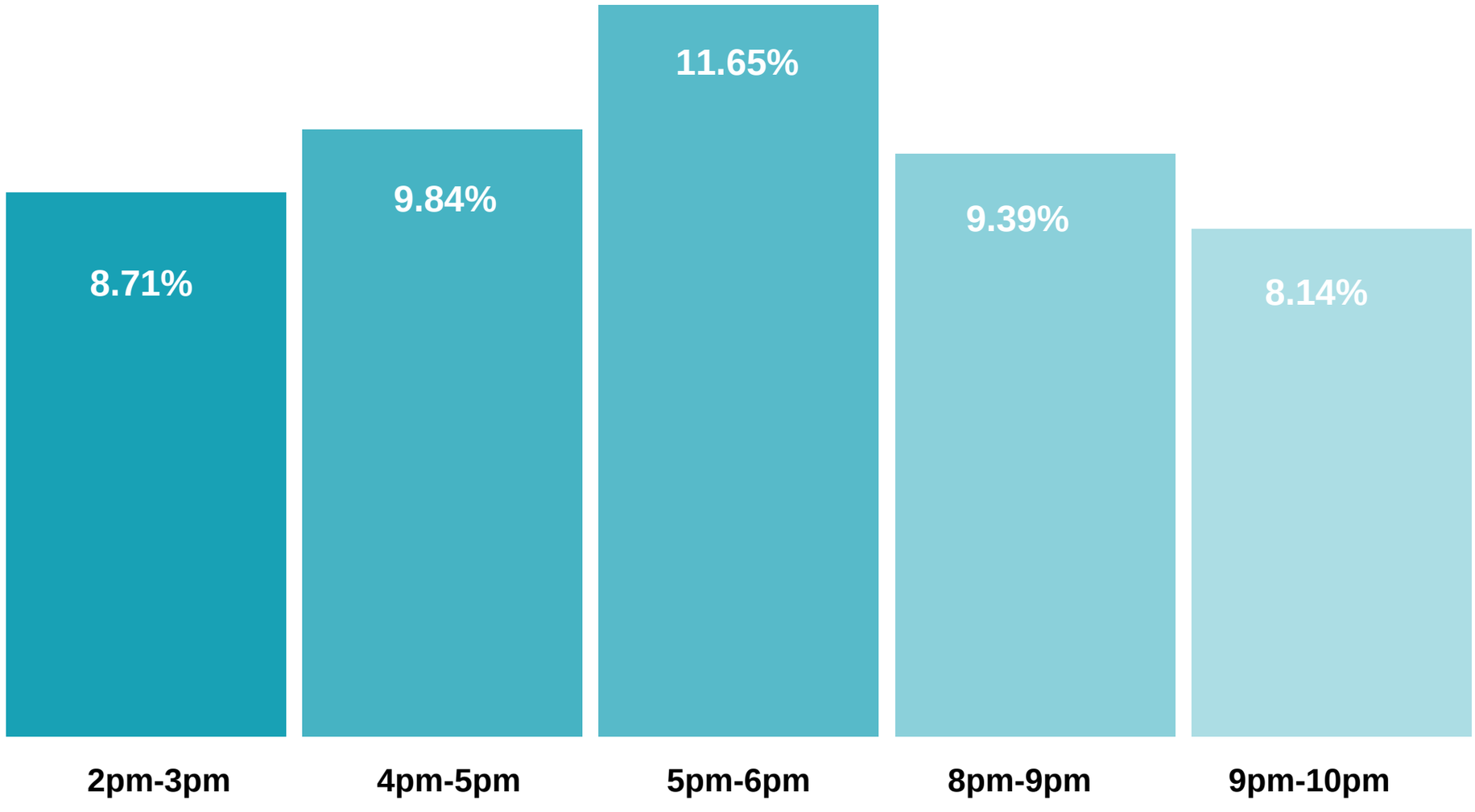
The most popular day of the week to take tests is **Monday** at **25.79%**

Most popular times of the day to take tests



The most popular time of the day to take tests was **between 6pm and 9pm** at **33.31%**

Top 5 most popular individual hours



The most popular individual hour was **between 5pm and 6pm** at **11.65%**

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Implementation board questions.

1. Are the results statistically significant?

2. Can it be independently verified that the tests are becoming serially more difficult?

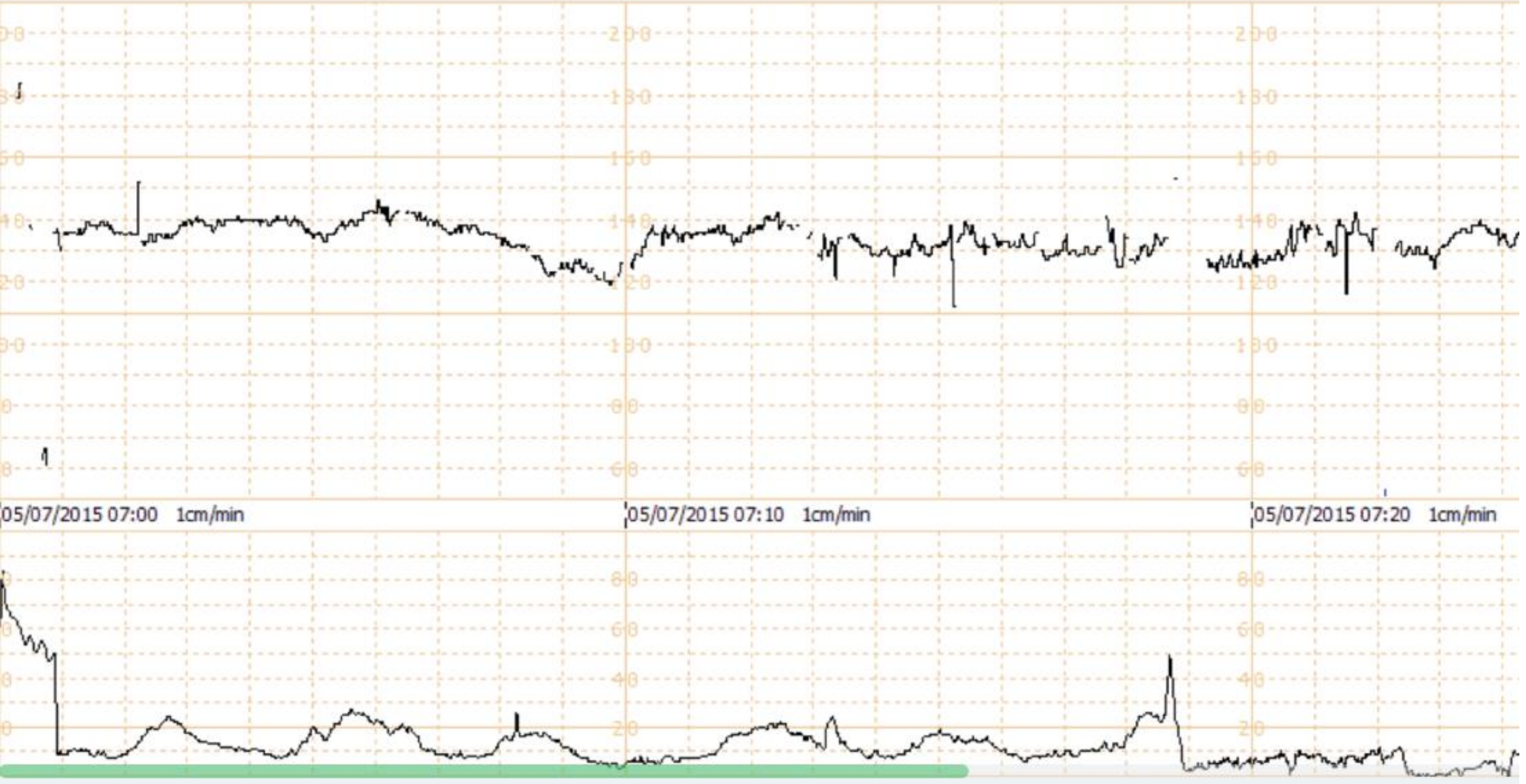
EXPERIOR MEDICAL

Tests validated by Royal College of Radiology Examiners (Including the ex-Chief Examiner)

Results validated by Department of Medical Statistics QUB

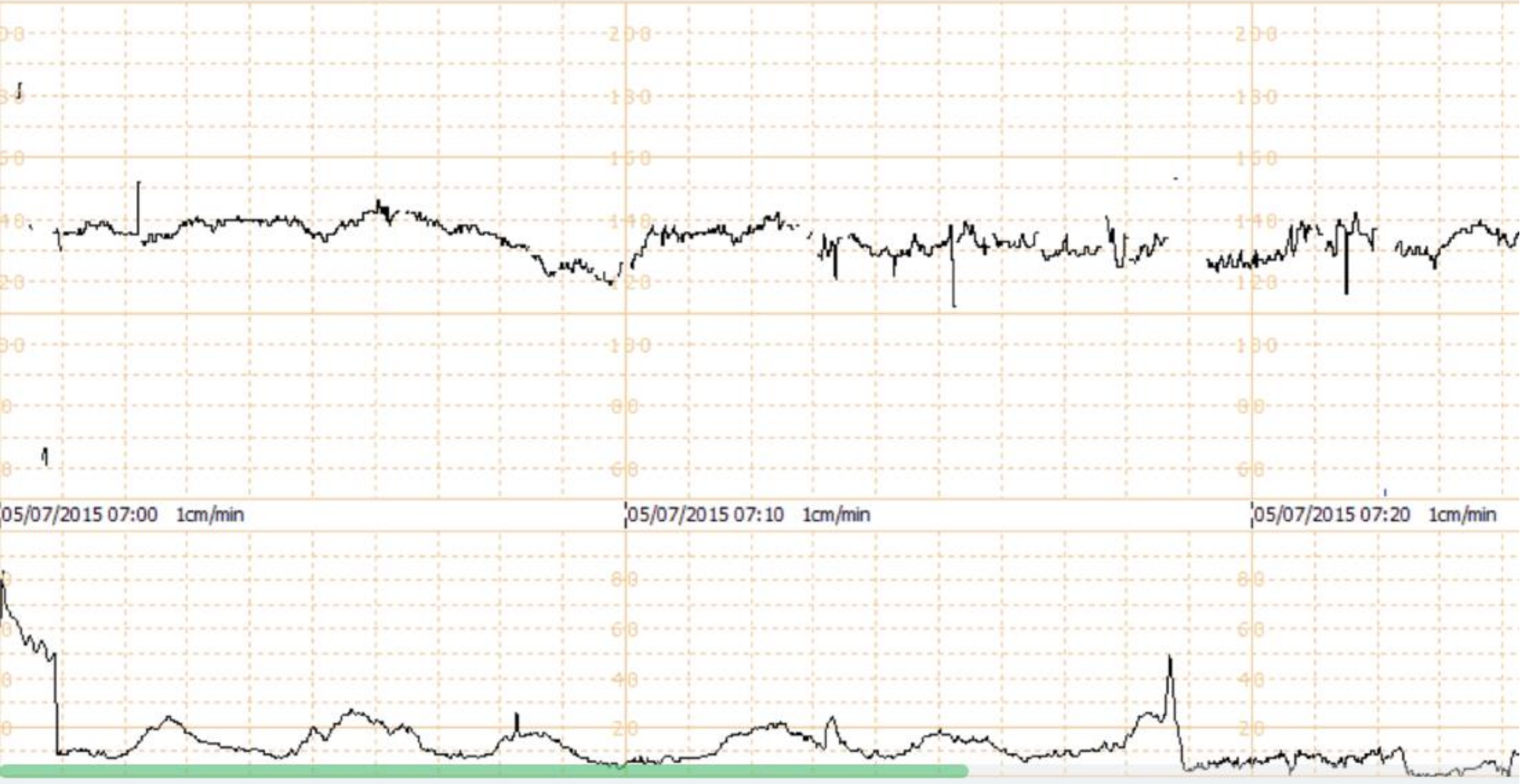
EXPERIOR MEDICAL

Obstetric/Midwife System


05/07/2015 07:00 1cm/min
05/07/2015 07:10 1cm/min
05/07/2015 07:20 1cm/min

EXPERIOR MEDICAL

Baseline
Variability
Decelerations


05/07/2015 07:00 1cm/min
05/07/2015 07:10 1cm/min
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EXPERIOR
MEDICAL

Normal

Non-reassuring

Abnormal

Answer Sheet

Case History

CTG Trace

Answer Sheet

What is the baseline rate?

< 90	90-99*	100-160	161-180	> 180	Sinusoidal pattern

Please describe the variability

≤ 5bpm	> 5bpm

Please describe the decelerations

None or Early	Variable decelerations	Late	Bradycardia or a single prolonged

Case History

CTG Trace

Answer Sheet

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Case History

CTG Trace

Answer Sheet

Normal

Based on the information provided, as you selected we class this CTG as normal. You Selected:

- 100-160 Baseline
- > 5bpm Variability
- None or Early Decelerations

EXPERIOR
MEDICAL

Baseline
Variability
Decelerations

Over 3,400 possible combinations

Case History

CTG Trace

Answer Sheet

What is the baseline rate?

< 90	90-99*	**100-160**	161-180	> 180	Sinusoidal pattern

Please describe the variability

≤ 5bpm	> 5bpm

How long has the variability been less than 5 beats per minute?

0-30 minutes	30-90 minutes	> 90 minutes

Case History

CTG Trace

Answer Sheet

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CTG Trace

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CTG Trace

Answer Sheet

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Please describe the variability

≤ 5bpm	**> 5bpm**

Please describe the decelerations

None or Early	**Variable decelerations**	Late	Bradycardia or a single prolonged

What is the drop from baseline?

Drop from baseline < 60 bpm	Drop from baseline > 60 bpm

Please describe the decelerations

None or Early | **Variable decelerations** | Late | Bradycardia or a single prolonged

What is the drop from baseline?

Drop from baseline < 60 bpm | **Drop from baseline > 60 bpm**

What percentage of decelerations are effected by this deceleration pattern?

≤ 50% | > 50%

Case History
CTG Trace
Answer Sheet

Please describe the decelerations

None or Early | **Variable decelerations** | Late | Bradycardia or a single prolonged

What is the drop from baseline?

Drop from baseline < 60 bpm | **Drop from baseline > 60 bpm**

Case History

CTG Trace

What percentage of decelerations are effected by this deceleration pattern?

≤ 50% | **> 50%**

Answer Sheet

How long has the deceleration pattern been present?

≤ 30 minutes | > 30 minutes

Please describe the decelerations

None or Early | **Variable decelerations** | Late | Bradycardia or a single prolonged

What is the drop from baseline?

Drop from baseline < 60 bpm | **Drop from baseline > 60 bpm**

Case History

CTG Trace

What percentage of decelerations are effected by this deceleration pattern?

≤ 50% | **> 50%**

Answer Sheet

How long has the deceleration pattern been present?

≤ 30 minutes | > 30 minutes

Please describe the decelerations

None or Early | **Variable decelerations** | Late | Bradycardia or a single prolonged

What is the drop from baseline?

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Case History

CTG Trace

What percentage of decelerations are effected by this deceleration pattern?

≤ 50% | **> 50%**

Answer Sheet

How long has the deceleration pattern been present?

≤ 30 minutes | **> 30 minutes**

EXPERIOR
MEDICAL

Normal

Non-reassuring

Abnormal

EXPERIOR MEDICAL

New guidelines released Dec 2014

Updated CTG sticker required for N.I.

EXPERIOR MEDICAL

New guidelines released Dec 2014
System has guidelines in-built
Why not have an electronic sticker??

Experior Medical

Disruptive Technology

Experior Medical

N.I. Built with Worldwide Application

Experior Medical

Independently validated by RCR

Independently validated by Medical Statistical Analysts

Experior Medical

Winner of Innovation in Quality and Efficiency Award 2016


Microsoft
BOC

An Intelligent, Adaptive e-Learning Platform

Experior *”Beyond”* Medical

Are you competent?

Can you prove it?

END

Baseline results

How to verify that tests become incrementally more difficult

Royal College of Radiology Examination Officers

Blinded to serial tests

Rated the tests in increasing order of difficulty

Correlated exactly with test order

Experior Medical

Patents in Europe and USA

Experior Medical

Disruptive Technology

EXPERIOR MEDICAL

NI Healthcare Technology Award 2016

QUB module in final year

New regional CTG sticker developed to mirror the Experior system

Midwife and obstetric leads developing the system as regional/national platform

Radiology and ED leads are contributing to expansion of the system through NIMDTA lead educators forum

Royal College interest for teaching/testing
Implementation Board decision on recurrent funding in April 2016 (possible revenue generation to NI)

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Other speciality applications?

IV fluid administration

Hyponatraemia

Cardiology

Endoscopy

Etc…..

EXPERIOR MEDICAL

Benefits:

Quantitative assessment of baseline ability of staff to interpret CTG

Each decision made is recorded and analysed

Easy formative feedback cycles

New guidelines embedded in the system

Can be used as a summative or formative module

CTG stakeholders:

Midwife and Obstetric leads from each trust

Together we have overcome obstacles with IT and staff apprehension

Answer Sheet

Case History

CTG Trace

Answer Sheet

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Case History

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CTG Trace

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