

## **Portfolio Requirements and Instructions 2024**

### **Introduction**

The purpose of the portfolio is to demonstrate your understanding and practical ability in bone densitometry across four sections. You will do this by providing evidence that shows safe and effective practice in quality assurance procedures, patient positioning, scan acquisition and scan analysis. Your portfolio should also demonstrate your depth of understanding of the information shown on scan print-outs, the interpretation and the application of bone densitometry results.

#### **Portfolios - online:**

All portfolios will be submitted online. Further details will be shared at the lecture course and throughout the programme. If you have any queries please contact [courses@theros.org.uk](mailto:courses@theros.org.uk)

#### **Introduction Portfolio Submission Instructions**

Each portfolio must contain *all* the following:

- 1) Section 1 – Quality Control
- 2) Section 2 – Scan Technique
- 3) Section 3 – The Scan Print-Out
- 4) Section 4 – In-depth Case Studies

When the portfolio is submitted electronically, you must also upload the below:

- Signed Candidate Declaration (form provided)
- Signed Supervisor Declaration (form provided)

## Portfolio Compilation

**IMPORTANT INFORMATION:** The majority of candidates who do not pass the *first* submission of the portfolio, do so because they do not follow the instructions given in this document. *Please read this section carefully.*

1. **Scan images** should be presented in such a way that the regions of interest and bone edges are clearly seen.
2. **Scan images** should be of the original area scanned. Hologic users need to include both the original image and image with vertebrae excluded, where these have been excluded.
3. **Photocopies** are not acceptable.
4. **Graphs** may be presented in colour.
5. **Your name** must not appear within your portfolio documents, with the exception of the signed declarations.
6. **Your initials**, either electronically at the time of the scan or physically if that is not possible, must be included on the scan print-out to verify that you have carried out the scan personally. For follow-up scans included, the previous scans need not have been carried out by you.
7. Patient and centre identifiable information **MUST** be electronically or physically removed from all of your print-outs.
  - DO NOT include patient names, addresses, or dates of birth.
  - DO NOT include any reference to your centre name or location, including NHS and Hospital number.
  - Age, weight, height and gender **must** be shown.
  - Include scan demographics (Scan and Analysis date and operator initials/or candidate number).

**ANY PATIENT OR CENTRE IDENTIFIABLE DATA WILL BE DESTROYED, AND YOU WILL BE REQUIRED TO PROVIDE NEW FULLY ANONYMISED INFORMATION. YOUR SUPERVISOR WILL BE NOTIFIED.**

10. **Written work** must be typed.



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- 11. The Portfolio** must be all your **own work** and described in your **own words**. Information that appears to be from departmental protocol, manufacturers or physicians may be excluded from marking by examiners.
  
- 12. Extenuating circumstances:** Extenuating circumstances are significant personal difficulties or circumstances which impact on your ability to complete, submit or attend a specific assessment, and are significantly disruptive matters outside of your control. If a candidate requires an extension past the deadline for submission, they must complete an Application for Extension form (available on request) and attach a letter from their designated supervisor and/or line manager supporting the extension. Application for Extension forms must be received at least one-month prior to the submission deadline. Final decisions on whether to grant an extension will be made by the ROS Professional Development Lead and Portfolio Panel and the ROS reserves the right to charge the candidate an additional fee for administration costs. Completion of the certification will need to be within 36 months of attending the 2 day course or candidate will need to attend the 2 day course again.

### **Further information and queries**

For further information, visit <https://theros.org.uk/healthcare-professionals/courses-and-cpd/national-training-scheme-for-bone-densitometry/> or refer to the Lecture Course pack.

All correspondence regarding the training course or portfolio should be made to: [courses@theros.org.uk](mailto:courses@theros.org.uk)

The ROS will respond to queries as quickly as possible.

## Portfolio Content

All four sections must be completed and successfully passed.

### SECTION 1 – Quality Control (QC)

*To evidence your understanding of QC procedures & processes and examine your technique.*

- 1.1 Provide a graph of QC **phantom** BMD values against time for 3 consecutive months. QC scans must not pre-date the lecture course. The graph must be sufficiently clear to demonstrate individual points, dates, variations and trends.
- 1.2 Provide a paper print-out of one of the QC scans of the phantom used, to include the image acquired and measurements.
- 1.3 In a total of approximately 500 words:
  - 1.3-1 Describe how the phantom is physically positioned, scanned and analysed.
  - 1.3-2 Comment on the results shown on your graph.
  - 1.3-3 Indicate how these results may monitor instrument performance.
  - 1.3-4 With reference to the QC graph, comment on the mean value, standard deviation and tolerance levels, trends over time and any sudden changes.
  - 1.3-5 Discuss the agreement between your measurements and the nominal mean value.
  - 1.3-6 Explain why there might be changes day-to-day or over time – even if they are not shown in your own data.
  - 1.3-7 Describe procedures following a failed QC scan.

GE LUNAR DXA users	HOLOGIC DXA users
<ul style="list-style-type: none"> <li>• Use data collected from the aluminium spine phantom during routine QC procedures</li> <li>• Your graph should be plotted in Excel or hand drawn</li> <li>• Include on your graph the mean values and tolerance values.</li> </ul> <p>NB. Even if this is not routine practice at your centre, please make and provide measurements.</p>	<ul style="list-style-type: none"> <li>• Use data collected from the anthropomorphic spine phantom during routine QC procedures</li> <li>• Your graph can be system generated or plotted in Excel or hand drawn</li> <li>• Include on your graph the mean values and tolerance values.</li> </ul>

If using another manufacturer, follow the guidelines above.

N.B. If your centre has more than one densitometer, this section only needs to relate to one individual device.



**Section 1 Pass mark 68%. Marking scheme:**

- Appropriate time period for graph (10%)
- Graph design, content and labels (10%)
- Appropriate number of minimum data points plotted per week (10%)
- Description of phantom scan and analysis of that scan image (13%)
- Positioning and analysis of phantom scan (10%)
- Mean values discussion (10%)
- Calculation and presentation of tolerances/limits (12%)
- Comments on agreement/magnitude of difference (12%)
- Comments on outliers, trends and failure procedure. (13%)

**SECTION 2 – Scan Technique**

*To evidence the accuracy and consistency of your scan technique, to include patient positioning, scan acquisition and scan analysis.*

NB. This section is NOT about the interpretation of scan results, therefore there is no need to comment on T or Z scores except from a technical point of view e.g. where there is a much higher or lower measurement for adjacent vertebrae due to degenerative change.

2.1 Describe in a total of approximately 500 words per site, the standard technique for positioning and analysis of each anatomical site routinely examined at your centre.

2.2 Provide scan print outs for 20 cases with two clinically interpretable anatomical sites that you have performed and analysed yourself. Other images can be included (for example VFA) to provide further context but will not contribute to your marks.

2.2-1 Scans must not pre-date the lecture course.

2.2-2 Include a variety of age ranges and include some difficult cases to demonstrate the range of clinical and technical issues you may encounter in clinical practice e.g. degenerative diseases, scoliosis, obesity or artefacts.

2.2-3 Where you are presenting follow up cases you must provide a copy of the previous scans and trend graphs, regardless of the original operator.

2.2-4 **GE LUNAR USERS:** You must include the ancillary print-out for your spine images demonstrating the area measurements and BMD for individual vertebrae.

2.3 For each case presented in 2.2 supply a complete set of print-outs for each scan with one image per print-out. Composite print-outs that show both the spine and the hip on a single page will not be marked by examiners.

2.4 For each case presented in 2.2 provide a separate information sheet containing:

2.4-1 The reason for referral research exposures are not acceptable.

2.4-2 Discussion regarding choice of scan mode, difficulties with positioning, scanning and analysis.

2.4-3 Comment on any aspect of the examination which may cause doubt over the reliability of the results.



N.B. If follow-up/trend scans are obtained from different instruments, please ensure they are from the same manufacturer.

**Section 2 Pass mark 69%. Marking scheme:**

- Scan technique description (13%)
- Analysis technique description (13%)
- Mix of difficult and easier cases (9%)
- Referral reason given (13%)
- Number of scans positioned correctly and conforming to description given (13%)
- Number of scans analysed correctly and conforming to description given (13%)
- Discussion of scan parameters for individual patients (13%)
- Comments on reliability of each scan regarding artefacts or unusual features. (13%)

**SECTION 3 – The Scan Print-Out**

*To evidence your knowledge and understanding of all the information presented on a scan print-out.*

3.1 Provide a single scan print-out for one anatomical site you scan in routine clinical practice.

3.2 **Explain** in 1,000 – 1,500 words the relevance of and discuss ALL the information shown on the scan print-out including, but not, limited to:

- Patient demographics
- Scan demographics/software version
- Image
- BMD measurements
- Graph/mean/SD
- Scan parameters/mode/QC figures
- Dose
- T-scores
- Z-scores
- % of normal
- Choice of reference data

N.B. Do not include a system generated 'physician report'.

N.B. GE lunar users sending a spine scan, please also send an ancillary sheet.



**Section 3 Pass mark 50%. Marking scheme**

- Appropriate scan print-out included (10%)
- Explanation of all data shown on scan print-out (30%)
- Understanding of BMD measurements and their derivation, T-scores, Z-scores, % normal and WHO criteria for T-score interpretation (30%)
- Understanding the use of T-scores, Z-scores and % normal in managing the patient (30%)
- Discussion of reference data, including selection of appropriate data sets and their derivation. (10%)

**SECTION 4 – In Depth Case Studies**

*To evidence your deeper knowledge and understanding of bone densitometry in clinical practice, including how results are interpreted and applied.*

4.1 Provide three contrasting case studies, including one follow-up, and at least one difficult or challenging case with regard to positioning or acquisition and in approximately 400 words for each patient:

4.1-1 Discuss the reason for referral and provide a brief clinical history exploring all factors which may affect the individual's bone density.

4.1-2 Describe your scan technique as it applied to the individual patient. Discuss any problems with positioning or scanning of the patient.

4.1-3 Explain your choice of scan site and mode selection.

4.1-4 Describe your analysis technique as it applied to the individual patient.

4.1-5 Discuss the individual's BMD results and how they are interpreted using the WHO diagnostic categories where applicable.

4.1-6 Describe the clinical recommendations for the patient. If this is unknown, then please discuss what you think might be appropriate recommendations.

4.2 Discuss your results in terms of significant change in relation to the follow up scan.

N.B. For your follow-up case, please include all scan print-outs including trend graphs, regardless of the original operator.

**Section 4 Pass mark 50%. Marking scheme**

- Choice of case studies reflecting clinical practice (12%)
- Discussion of the reason for referral and relevant clinical history (19%)
- Explanation of choice of scan sites and mode (19%)
- Description of scan and analysis techniques (5%)
- Scan and analysis technique shown on print-out (5%)
- Discussion of problems with positioning and acquisition (10%)
- Discussion of results, T-scores, Z-scores and reference ranges (10%)
- Summary of clinical outcome. (10%)
- Discussion of rates of change (10%)

**All sections must pass in order to achieve certification. A 0 (zero) score in section 2 for positioning or analysis automatically refers the whole section and therefore the portfolio.**