This set of slides should be read in conjunction with the worked examples of the station design documents that you should have received along with this talk.

The workshop will build on this foundation of knowledge – allow you to try out your ideas on designing a station – then test it out.
I’m assuming there’s a lot of experience of OSCEs – but just to ensure we’ve all got the same ideas in our minds here are some pictures of an OSCE in Malawi illustrating an OSCE set-up and an OCE plan with 10 candidates going around 10 stations.

Usually a carousel of 5-10min stations with perhaps some rest stations to accommodate more candidates per carousel, and sometimes including double stations linking two tasks – and in which case there needs to be 2 of that double station.
Here is a list of fairly typical interactive stations

<table>
<thead>
<tr>
<th>Typical INTERACTIVE OSCE Stations</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>History taking</td>
<td>Explanation and advice</td>
</tr>
<tr>
<td>Physical examination</td>
<td>Reassurance and support</td>
</tr>
<tr>
<td>Reporting findings</td>
<td>Prescribing</td>
</tr>
<tr>
<td>Clinical decisions e.g. diagnosis or next steps in</td>
<td>Coping with demonstrable emotions e.g. anxious patient</td>
</tr>
<tr>
<td>management</td>
<td></td>
</tr>
<tr>
<td>Coping with psychological / social aspects</td>
<td>Ethical aspects e.g. gaining consent</td>
</tr>
<tr>
<td>Consulting with a carer, by telephone, or by interpreter</td>
<td>Procedures with mannequins</td>
</tr>
</tbody>
</table>
The development of the OSCE was triggered by the arguments of reliability and validity.

The rest of this slide is for ‘further reading’ for those who are interested.

Away back in 1947 the GMC raised concerns about intermarker variation in clinical exams

and John Stokes in 1967 after examining across the US wrote a report to the NBME making recommendations to address the lack of correlation.

GM Wilson (Professor of Medicine in Glasgow) and Ron Harden built on these findings – to create the OSCE in 1975
So to summarise the development – it was all about moving from the long case where different problems, patients and examiners all confounded the reliability of the decisions about the students’ competence – to the OSCE which focused on standardised conditions with structured questions and objective marking.

### History of the OSCE

<table>
<thead>
<tr>
<th>traditional ‘long case’</th>
<th>structured &amp; objective clinical exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>• different students</td>
<td>• different students</td>
</tr>
<tr>
<td>• different patient problems</td>
<td>• <em>same</em> patient problems</td>
</tr>
<tr>
<td>• different examiner standards</td>
<td>• <em>same</em> examiner standards</td>
</tr>
<tr>
<td>• 3 variables</td>
<td>• 1 variable</td>
</tr>
</tbody>
</table>
If I were to ask you to define a high quality OSCE you would probably say it’s about the characteristics described on this slide.
And an important part of passing and failing the correct students is to measure the right thing. We can’t assess everything so we want to sample carefully so we get an accurate idea of the big picture.
So we may start off with a simple matrix like this showing a range of skills e.g. history taking that are to be assessed in a range of contexts e.g. renal patients ……..
And develop the matrix with layers of complexity as appropriate.

<table>
<thead>
<tr>
<th></th>
<th>Renal</th>
<th>Cardio-vascular</th>
<th>Respiratory</th>
<th>Gastro-intestinal</th>
</tr>
</thead>
<tbody>
<tr>
<td>History with anxious patient</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Physical examination &amp; reporting</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investigation &amp; diagnosis</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Consent &amp; procedure</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Explanation &amp; advice</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Then the next step is to carefully write and TRIAL the stations, keeping all the information about each station together – so that changes to the mark-scheme trigger corresponding changes to the others.
Once it has been decided what a station should address (according to the Learning Outcomes Matrix) this slide above gives an overview of the steps to take in designing and running an OSCE station.
When designing a station keep all the paperwork together so you can change all relevant documents at the same time. There are worked examples of these documents available and should have been sent out with this document. To design your own station you will be given a set of documents that are blank other than some guidance notes.
Much of the remainder of this presentation is about designing the markscheme since this is what most tutors struggle with.

The document ‘OSCE Guidance and Worked Examples’ that has been sent to you with this presentation will guide you through writing the other sheets.

However it is worth noting here that when writing the Candidate Instructions we need to keep in mind issues of accessibility and disability. It is uncommon for students with learning disabilities to be given extra time – so the instructions should be limited to 4-5 sentences without complex clauses or unnecessary information. Allow plenty of reading time, approximately double that required by the average student.

Therefore it would be ideal if there was 1 minute or so reading time between stations so that all students have the same time to perform the task itself. (If this minute can be afforded, examiners might be able to use it to write brief narrative notes of the outgoing student.)
It is best to write the mark sheet first since this clarifies the content of the station and then instructions to the simulated patients and students follow on more easily.

OSCE mark sheets look something like this with lines of text describing the expected actions by candidates and a range of available scores for each action, at the right hand side.

Note this station has been given a title – you may or may not want the candidates to see this .......
Creating the OSCE Mark Sheets
GENERAL SUGGESTIONS

The Mark Sheet is often the most difficult part of the task and determines what is written for candidates and examiners.

- Ensure **reading and task** can be done in allocated time
  - consider dyslexic students – ‘plenty’ of reading time - allow double
- Ensure station **total marks** fit with course guidance
- **Decide which sections** to include
- Divide marks into **sections** - depending on LOs & clinical importance
- Then list the **items** for each section
- Allocate a **range of marks** for each item
- **Weight items** according to importance / safety
- Consider **bonus marks** for defined behaviours e.g. fluency
- If using Borderline methods for standard-setting devise independent **global grade** also

This outlines the steps to take in designing the mark sheet.
When writing a history stations these are some possible sections to use.

**History Stations - possible sections**

- Introduction
- History of presenting complaint
- Other relevant history e.g. past medical history, social history, medication etc
- Communication skills – see later
- Bonus marks – see later
- Diagnosis or problem list if relevant
- Patient’s perspective

*Decide distribution of marks per section*
And possible sections for Explanation and Advice
Examination – possible sections

- Introduction/permission to examine/hand hygiene
- Rapport with patient – guiding patient
- Positioning patient
- Segments of exam involved
- Bonus points - fluency/technique/order
- Diagnosis or problem list if appropriate
- Patient’s perspective

Decide distribution of marks per section

And for physical examination.
Clinical Skills – possible sections

- Introduction
- Communication skills
- Preparation and checks
- Steps in the procedure
- Hygiene
- Safety-needles/clinical waste etc
- Patient’s perspective

Decide distribution of marks per section

And practical clinical skills
This slide gives some more information on the differences between itemised scoring and section/domain scoring. There are many variations on these approaches but there is not time to cover them all in this OSCE workshop. The following slide demonstrates these terms further in an exemplar mark sheet.
This example OSCE mark sheet can be used to consider itemised and section/domain scoring.

The designers have created some Sections: Introduction, Explanation of purpose, Explanation of stages of test, and Conducts test safely.

The first 3 sections are very short and have detailed marking instructions and the section on conducting the test has a list of clear steps - these types of instructions are referred to as ITEMS. Their detail makes it easy to mark in a standardised manner and may permit a non-specialist to mark the station. This approach is good for novice candidates who are learning to go through clinical tasks very systematically but may fail to recognise expertise since experienced practitioners may not follow such a predictable course in their practice.
An alternative layout is to use Section or Domain marking.

The Sections might relate to the steps in the clinical task e.g. 1. Introduction/Explanation and 2. Conducting the test.

Domains however often relate to a group of skills that are unlikely to follow-on sequentially but instead are woven throughout the task e.g. 1. Communication skills 2. Physical examination skills 3. Hygiene and patient safety.

Each section or domain may have guidance notes on how to mark each on the mark sheet, OR alternatively the markers may be given a separate set of anchor statements that describe the characteristics of candidates in each of the sections or domains and relates these to the score or grade to be awarded.

In the Edinburgh MBChB most of the OSCEs use a mainly itemised marking scheme but in Finals the ‘stations’ are standardised short cases (double) marked using anchor statements.
You may decide to have a communication section as part of a History station or an Explanation and Advice station – or have a section/domain within a very different station such as a Physical Examination station. The criteria listed above can be used to guide scoring – it is more difficult to standardise this type of marking.
It is common to include the patient’s (simulated patient’s) marks for OSCE stations where there is a patient, but currently in Edinburgh we don’t do this in the clinical practice Finals. The slide suggests the sorts of criteria that patients and SPs are usually happy to comment on.
Criteria for Bonus Marks (for any station – if used)

Bonus marks provide a means of differentiating between those students who mechanically go through the steps and those who appear to have practised and really know what they are doing. Some Schools do not use bonus marks.

What to give marks for?

• Fluency
• Rapport with patients
• Ability to be flexible according to clinical need
• Structure and fluency in any verbal answers

Bonus marks go some way to recognising the difference between a mechanical and a polished performance. The criteria should describe the components/behaviours that distinguish experts from novices.
This slide may be of interest to those who have dealt with standard-setting in other contexts.

Standard-setting is beyond the scope of this talk and workshop but it is important to understand that when designing an OSCE station there needs to be a method of setting the pass score. It cannot routinely be 40 or 50 or 60 but changes according to the difficulty of the exam. In Edinburgh we use both the Modified Angoff and the Borderline Regression Method to set pass scores.
DIFFICULT ISSUES

• Red flag items (landmine items)
• ‘Must pass’ stations

Schools have their own rules for passing and failing students in OSCEs that depend on their assessment philosophy and strategy. These two issues are particularly difficult. Every specialty has items that they think essential and would like to fail students in a station or in a whole exam if they miss them e.g. a pneumothorax on CXR. Decisions may depend on stage of training. Those who do not fail students for one ‘serious’ error argue that exams are not real life and prefer to improve practice through feedback on the item. ‘Must pass’ stations might be assessed before the OSCE as a prerequisite to sitting the large exam. Station designers need to be aware of School policy on these matters.

Taken to extremes you could be failing a student on a test of 1 sample of work i.e. the 1 item or 1 station the student fails yet the OSCE and most assessments rely on a good sample of work across the whole curriculum to determine the overall result reliably. The latter approach is justified by the fact that performance across different domains or activities is highly correlated. In addition exams are not real life and colleagues, information sources and cues present in the real situation may be lost in simulated exam settings. At a practical level there may be no end to the list of ‘crucially’ important separate pieces of knowledge or skills that students must grasp.
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