



T Level Technical Qualification in Healthcare Science

Occupational specialism assessment (OSA)

Assisting with Healthcare Science

Assignment 3 - Distinction

Guide standard exemplification materials

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Guide standard exemplification materials

Assisting with Healthcare Science

Assignment 3

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Introduction

The material within this document relates to the Assisting with Healthcare Science occupational specialism sample assessment. These exemplification materials are designed to give providers and students an indication of what would be expected for the lowest level of attainment required to achieve a pass or distinction grade.

The examiner commentary is provided to detail the judgements examiners will undertake when examining the student work. This is not intended to replace the information within the qualification specification and providers must refer to this for the content.

In assignment 3, the student must carry out sample analysis.

After each live assessment series, authentic student evidence will be published with examiner commentary across the range of achievement.

Task 1: microscopy - Gram stain

Brief

Location: microbiology laboratory

You are working as a healthcare science assistant in the microbiology department. The biomedical scientist has requested that you prepare positive and negative quality control slides for Gram stains. Control cultures are available in the department. You are required to prepare the slides using the standard operating procedure (SOP) provided and check that they are fit for purpose before passing back to the biomedical scientist for checking.

Task

Prepare the control Gram stain slides using the appropriate control cultures.

- 1(a): prepare your work area and self for Gram staining
- 1(b): prepare slides for Gram staining
- 1(c): carry out Gram staining on the prepared slides following the SOP provided and record the results
- 1(d): dispose of materials and clean equipment and work area

(40 marks)

Student Instructions

Following the quality control (QC) confirmation of your Gram stain using the microscope as part of task 1(c), you must notify the biomedical scientist and explain how you have completed the control Gram stain prior to commencing task 1(d).

Conditions of the assessment

- task 1 must be completed in supervised conditions
- you will only have access to materials permitted by your tutor and available in the designated assessment area
- you will have a maximum of 1 hour to complete this task

Task 2: specimen analysis - blood

Brief

Location: pathology department

You are working in pathology as a healthcare science assistant in the virology department of a hospital supporting a biomedical scientist (BMS).

Your team receives 2 samples for hepatitis B antibody detection.

Task

The biomedical scientist has asked you to check 2 blood samples to confirm suitability for testing for a hepatitis B antibody screen.

2(a): prepare the work area and self for carrying out a hepatitis B enzyme-linked immunosorbent assay (ELISA) on a blood sample.

2(b): check sample suitability and prepare sample for the ELISA.

2(c): prepare reagents and quality control (QC) material for ELISA, including:

- following the SOP
- confirming the specimen is ready for analysis
- discussing the process you went through with the biomedical scientist

2(d): carry out post-analysis activities including:

- sample storage
- equipment cleaning
- waste disposal
- decontamination of work area

(54 marks)

Student instructions

You must log the samples and ELISA results into the laboratory information management system (LIMS).

Conditions of the assessment

- task 2 must be completed in supervised conditions
- you will only have access to materials permitted by your tutor and available in the designated assessment area

you will have a maximum of 1 hour 30 minutes to complete this task

Student evidence

Observation record form

Descriptive information and evidence of student's skills during the practical assignment. Even though evidence of the quality of skills demonstrated should support decisions against the mark scheme, the notes should follow the flow of the tasks and how students are expected to complete them, rather than attempting to assign evidence against the criteria at this stage.

To be completed by the provider appointed assessor:

Task 1: microscopy - Gram stain

<p>Area/objective - the following areas/objectives can cover a broad range of skills or actions which should be considered when adding notes. The text below each area/objective is an example of what should be observed and is not exhaustive.</p>	<p>Comments - identifying students' areas of strengths and weaknesses through the use of thorough and precise notes that differentiate between a range of students' practical skills is required. This will be used to support accurate and consistent allocation of marks once all evidence had been generated.</p>
<p>Preparation: For example, describe how the student collects and applies correct PPE, prepares work area to ensure it is safe, tidy and clean.</p>	<p>The student entered the lab and thoroughly washed their hands (20 seconds +) with water and soap provided and dried hands with paper towel provided.</p> <p>The student put on a lab coat (buttoned it up completely to the neck), selected safety glasses and put on correct sized gloves.</p> <p>The student selected a work bench with a Bunsen burner (and sink if applicable) to allow them to carry out the Gram stain procedure and prepared the area so that it was clutter free and clean.</p> <p>The student collected Gram stain reagents (Grams iodine, crystal violet, ethanol/acetone and counterstain - safranin), microscope slides, labels and pen to label the slides and brought them to workspace - the workspace is tidy and organised.</p> <p>The student selected the correct Escherichia coli (Gram-negative) and staphylococcus aureus (Gram-positive) cultures from the incubator.</p>
<p>Quality control (QC) checking: For example, describe how the student checks and selects the control cultures before starting the slide preparation.</p>	<p>The student confirmed that the control cultures had been quality control checked, were in date, and were ready for use.</p> <p>In addition, the student checked that the control cultures had been stored in the correct conditions, confidently carrying out all relevant checks.</p>

<p>Slide preparation: For example, describe how the student prepares the slides for examination.</p>	<p>The student labelled slides (using a pen) with initials, date and Gram-positive or negative species name.</p> <p>The student used the Bunsen burner to sterilise the inoculating loop and added a drop of distilled water to the slide labelled Gram-positive.</p> <p>The student checked the loop was not too hot before collecting a very small sample of the Gram-positive control, ensuring they replaced the lid quickly and securely on both the agar plate and the culture container and spread onto centre of slide with loop, suspending it in the water droplet.</p> <p>The student selected the correct amount of material as the smear was thin and the student was precise with the smearing.</p> <p>The student demonstrated good aseptic technique by sterilising the loop after each use.</p> <p>The student was consistent in performance and repeated the above process with the Gram-negative culture.</p> <p>The student left the slides to dry for about 10 minutes, ensuring they were dry before moving to the next step.</p> <p>The student heat fixed the slides by passing them through the flame several times (approximately 1 second per pass).</p> <p>The student turned off the Bunsen burner and tidied up the workspace before moving to the next step.</p>
<p>Gram staining: For example, describe how the student carries out the Gram staining process.</p>	<p>The student selected the correct SOP for gram staining.</p> <p>The student placed the slides on a staining rack.</p> <p>The student stained the slides one at a time to ensure accuracy of technique - their technique was consistent on both staining attempts - they showed confidence in their technique showing refined skills.</p> <p>The student flooded the smears (covered the smear with a thick layer of reagent with crystal violet for 30 seconds then rinsed off with a squirry water bottle).</p> <p>The student flooded the smear with iodine for 30 seconds; this was then rinsed off with the slide tilted.</p> <p>The student tilted the slide to a 45 degree angle and ran the acetone/alcohol over the stain until the colour ran out of the smear.</p> <p>The student flooded with the counterstain for 60</p>

	<p>seconds and washed off with water.</p> <p>The student removed excess water by blotting dry.</p>
<p>Microscope use: For example, describe how the student uses a microscope to check the slide.</p>	<p>The student took the slides to microscope area.</p> <p>The student was able to focus the slide using a 100x objective lens using immersion oil.</p> <p>The student could identify the Gram-positive and Gram-negative bacteria and rate the quality of their slides.</p>
<p>Quality checks: For example, describe how the student carries out the quality checking process.</p>	<p>The Gram stain was of the appropriate thickness to view the individual cell - it was not smeared on too thick.</p> <p>The bacterial cells retained their original cell morphology after the fixation and staining – they were intact and not damaged by the staining process.</p>
<p>Reporting/recording results: For example, describe how the student carries out the handover of the QC slides to the biomedical scientist.</p>	<p>The student handed the slides over to the biomedical scientist.</p> <p>The student gave a clear and detailed explanation and review of their work processes to prepare the slides.</p> <p>The student correctly identified the Gram-positive and Gram-negative bacteria to the biomedical scientist.</p> <p>The student provided adequate details such as the culture strains used.</p>
<p>Clean down: For example, describe how the student cleans down the workstation and disposes of waste and PPE.</p>	<p>The student disposed of the used culture in the autoclave.</p> <p>The student cleared away all remaining items to the correct areas, including the Bunsen burner, the disposable inoculating loops in bin, drained away the reagents in the sink and placed sharps in the sharps bin.</p> <p>The student wiped down the area with alcohol wipes/spray with blue paper towel.</p> <p>The student removed gloves and put in clinical waste bin, returned their lab coat and glasses to the appropriate area.</p> <p>The student thoroughly washed hands before leaving the lab.</p>

Task 2 – specimen analysis – blood

<p>Area/objective - the following areas/objectives can cover a broad range of skills or actions which should</p>	<p>Comments - identifying students' areas of strengths and weaknesses through the use of thorough and</p>
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<p>be considered when adding notes. The text below each area/objective is an example of what should be observed and is not exhaustive.</p>	<p>precise notes that differentiate between a range of students' practical skills is required. This will be used to support accurate and consistent allocation of marks once all evidence has been generated.</p>
<p>Preparation: For example, describe how well the student collects and applies correct PPE and prepares the work area to ensure it is safe, tidy and clean.</p>	<p>The student entered the lab and thoroughly washed their hands (20 seconds +) with water and soap provided and dried their hands with the paper towel provided.</p> <p>The student was wearing appropriate clothing - trousers/clothing covering legs and no open-toed shoes.</p> <p>The student put on a lab coat (buttoned it up completely to the neck), selected safety glasses and put on correct sized gloves - the student wore all of the PPE for the course of the assignment.</p> <p>The student selected a work area which had been decontaminated and was clear of clutter.</p>
<p>Checking sample: For example, describe how well the student checks the sample before starting the processing procedure.</p>	<p>The student checked the samples provided and identified that one had an issue – it had leaked; they highlighted this to the biomedical scientist and asked for next steps.</p> <p>The student took the sample record/sheet over to the computer and correctly entered all required fields into the LIMS (patient name, number, required antibody test).</p>
<p>Centrifugation: For example, describe how well the student uses the centrifuge to separate blood into components.</p>	<p>The student correctly used the centrifuge (set to the specified speed and time) to separate out the sample - ensuring equal weighted tubes were used to balance the centrifuge.</p>
<p>Serum preparation: For example, describe how well the student prepares and stores the sample for the next stage of processing.</p>	<p>The student identified that serum would be required for the process - they used blood from the red top tube which contained a coagulant.</p> <p>The student inverted the tube several times to ensure it was mixed and coagulation had occurred.</p> <p>The student successfully used a Gilson pipette to aliquot the serum from the sample into a new tube and labelled it clearly - student was careful in the handling of the tube ensuring there was no mixing of the other layers to contaminate the sample.</p> <p>The student stored the remaining sample in the fridge in case further tests were required.</p> <p>Throughout the process the student showed good aseptic technique disposing of tips, using tube racks</p>

	and ensuring lids of tubes did not touch the workspace surface.
ELISA preparation: For example, describe how accurately the student carries out the appropriate steps when following the SOP for the ELISA test.	<p>The student selected the correct ELISA protocol for the hepatitis antibody screen.</p> <p>The student was able to follow all of the steps of the protocol methodically and accurately with little or no error.</p> <p>The student was able to set the Gilson pipette (by turning the thumbwheel or the push button until the desired volume is shown on the dials) ensuring the correct measurement of the reagents and sample.</p> <p>The student changed tips after every use to ensure aseptic technique was applied throughout.</p> <p>The student was able to interpret a positive or negative result from the patient sample.</p>
Pipette use: For example, describe how well the student uses a pipette throughout the process.	The student was able to set the Gilson pipette (by turning the thumbwheel or the push button until the desired volume was shown on the dials) ensuring the correct measurement of the reagents and sample.
Setting up a control: For example, describe how well the student sets up controls for the ELISA test experiment.	The student set up a positive and negative control for protocol - clearly marking this on the array and labelling well with patient sample.
Results reporting: For example, describe how well the student reports the ELISA preparation.	The student correctly matched the results to the patient sample and entered the correct results into the LIMS - they confirmed results with the biomedical scientist in the lab and asked about next steps.
Task completion: For example, describe how well the student finishes the task, such as storing, disposing sample and tidying work area.	<p>The student disposed of the used reagents, used tips and ELISA assay into the designated waste bag or container, leaving a clear work area.</p> <p>The student stored the remaining labelled serum sample in the fridge (without prompting) in case further tests are required - they were able to identify that the sample will be kept for 48 hours.</p> <p>The student cleaned down the work area with an appropriate alcohol based cleaner.</p> <p>The student removed gloves and disposed of them in a clinical waste bin and returned their glasses and coat to the specified area.</p> <p>Before leaving the lab the student thoroughly washed their hands with the soap provided.</p>

Examiner commentary

The student carried out lab techniques with good skill and minimal supervision.

The student took thorough precautions regarding health and safety ensuring all policies and procedures were adhered to at all stages of the task. They applied this to both personal safety and lab safety equally thoroughly.

They worked efficiently ensuring a clean, tidy workstation.

Their ability to collect the correct equipment showed a good knowledge of the task as well as an organised approach to their work. They also had a thorough understanding of the equipment they were using, shown by their understanding of how to use it correctly and safely to get accurate results, actions to take prior to use to ensure this, and after use to support the next user. They were equally competent with all items of equipment used today giving a good demonstration that they are proficient with a wide range of lab-based tasks.

Attention to detail was clear throughout preparation, performing the task and clean down after the task. They took full responsibility for all elements of the task and considered their colleagues by leaving the work area ready for the next user. They were aware of problems with the slides and samples and took correct action escalating this to a more senior colleague, showing a good knowledge of their role and how it relates to others in the team.

Overall grade descriptors

The performance outcomes form the basis of the overall grading descriptors for pass and distinction grades.

These grading descriptors have been developed to reflect the appropriate level of demand for students of other level 3 qualifications, the threshold competence requirements of the role and have been validated with employers within the sector to describe achievement appropriate to the role.

Occupational specialism overall grade descriptors:

Assisting with Healthcare Science occupational specialism grade descriptors

Grade

Demonstration of attainment

Pass

The student demonstrates good knowledge and understanding of the topics and the healthcare context in which it lies.

The student demonstrates professional practice whilst carrying out tasks/activities showing respect to safety, care and confidentiality for patients, colleagues and oneself.

The student has an appreciation of action to be taken when errors occur.

The student demonstrates a good understanding of their own development with some learning through reflective practice.

The student may not always connect learning to work in practice.

Distinction

The student demonstrates excellent knowledge and understanding of the topics and appreciation of the healthcare context in which it lies.

The student demonstrates excellent understanding of professional practice whilst carrying out tasks/activities applying them in the healthcare context.

The student shows respect for safety, care and confidentiality for patients, colleagues and oneself.

The student fully acknowledges when errors occur and the reporting process.

The student demonstrates a good insight to their own development, demonstrating significant learning through reflective practice.

The student draws on reflective practice and relates their development and learning to work in practice.

Document information

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Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Published final version.		June 2021
v1.1	NCFE rebrand		September 2021