NAMP Experienced Pathway to Certification

ALEX USER GUIDE

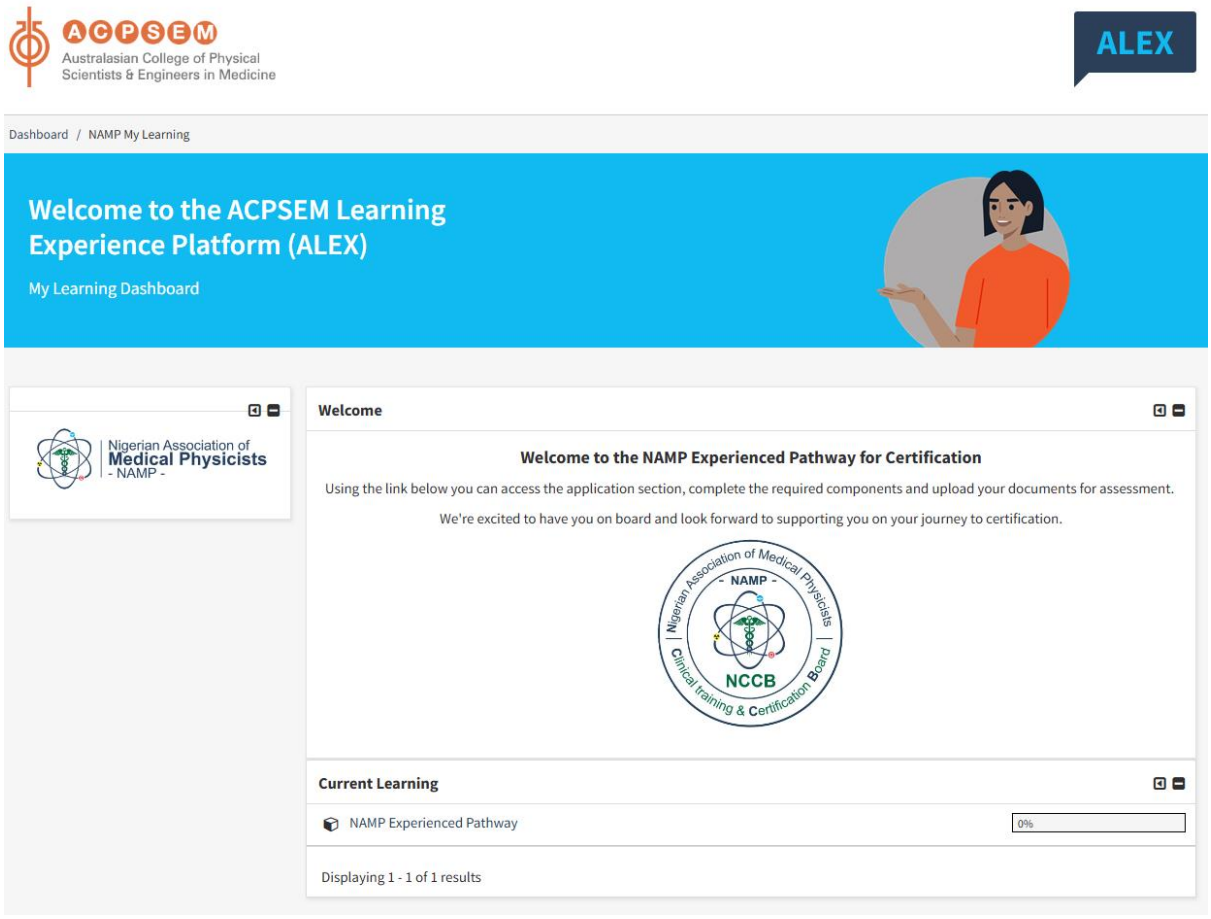
Contents


Nigerian Association of Medical Physicists
NAMP
NCCB
Clinical training & Certification Board

Accessing ALEX

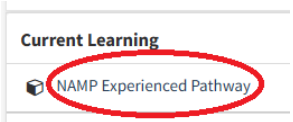
Once you have been enrolled in the online system (ALEX) you will receive an email with your login details (including password). Go to https://alex.acpsem.org.au/login/index.php and login using the details you were given.

You will arrive on the main page, which is your **Learning Dashboard**.

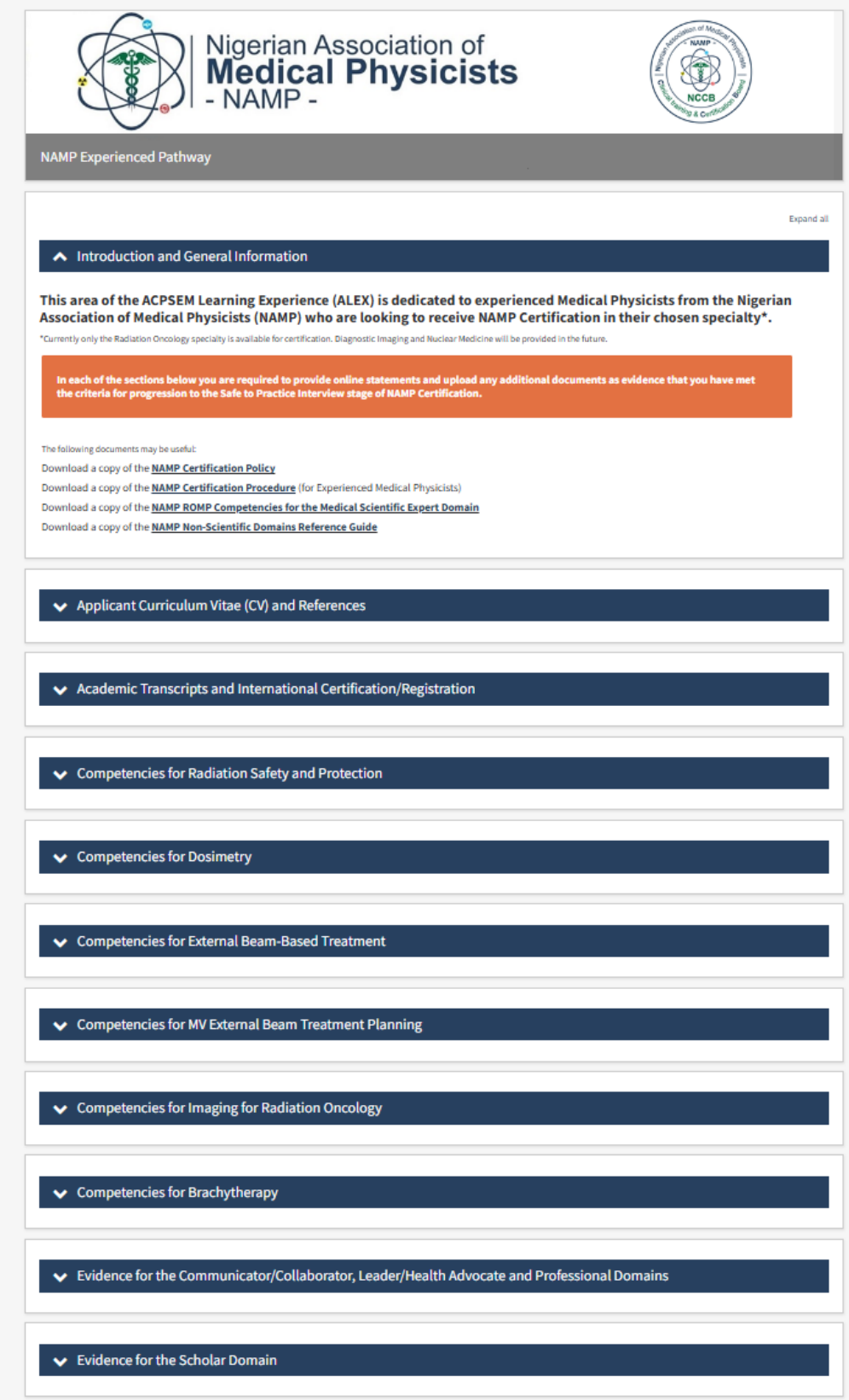


Here you will see your current enrollments. The NAMP Experienced Pathway should be visible. This item will show as 0% complete until such time as an external assessor starts evaluating your submissions and grading them.

To enter the NAMP Experienced Pathway area, click on the link.

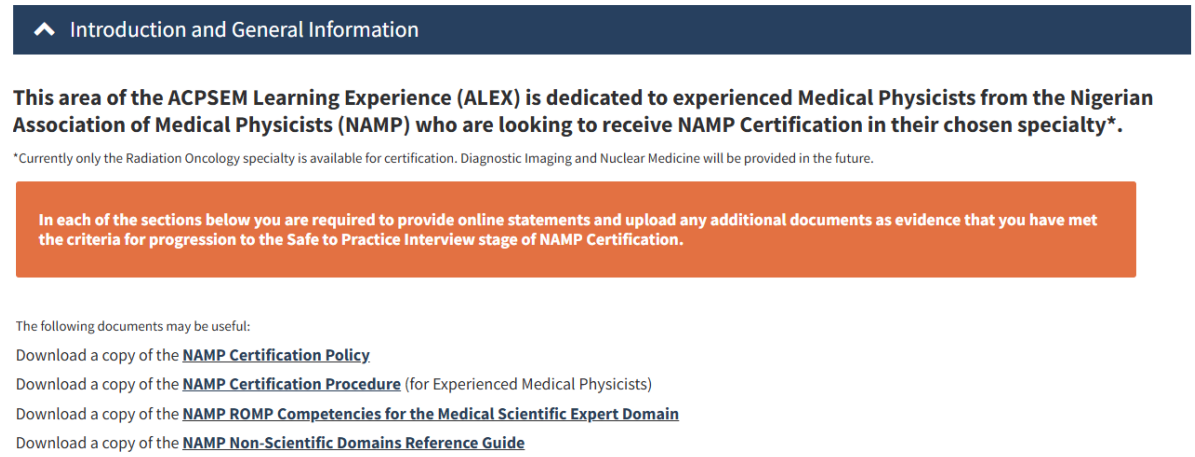


You will then come to the Home Page for the NAMP Experienced Pathway application process. Here you will find all of the documents related to NAMP certification and the different categories that you will be required to address and provide evidence for.



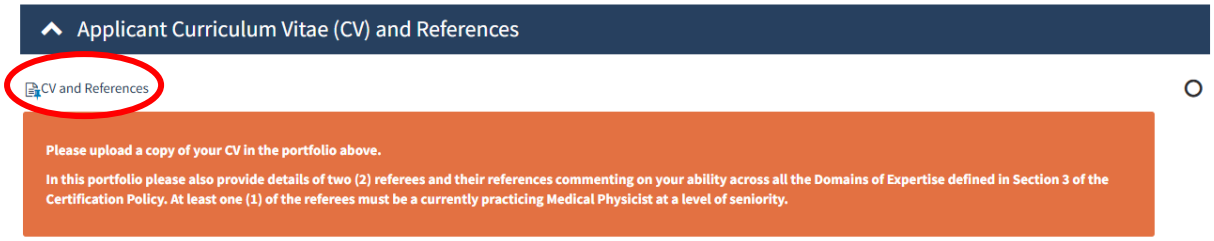
Introduction and General Information section

The first section is the Introduction and General Information section. This contains the NAMP Clinical Training and Certification Board (NCCB) certification policy and procedures documents as well as some useful information about the Scientific and Non-Scientific Domains of Expertise for certification in Medical Physics.

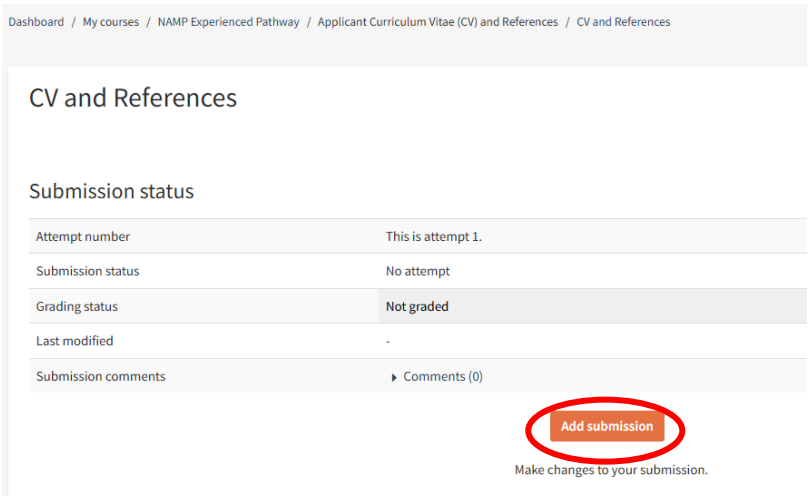


Applicant Curriculum Vitae (CV) and References section

The next section is for you to upload a copy of your Curriculum Vitae (CV) and details and letters from 2 referees who have provided statements on your abilities in all of the Domains of Expertise (this is where the documents from the first section will come in useful).

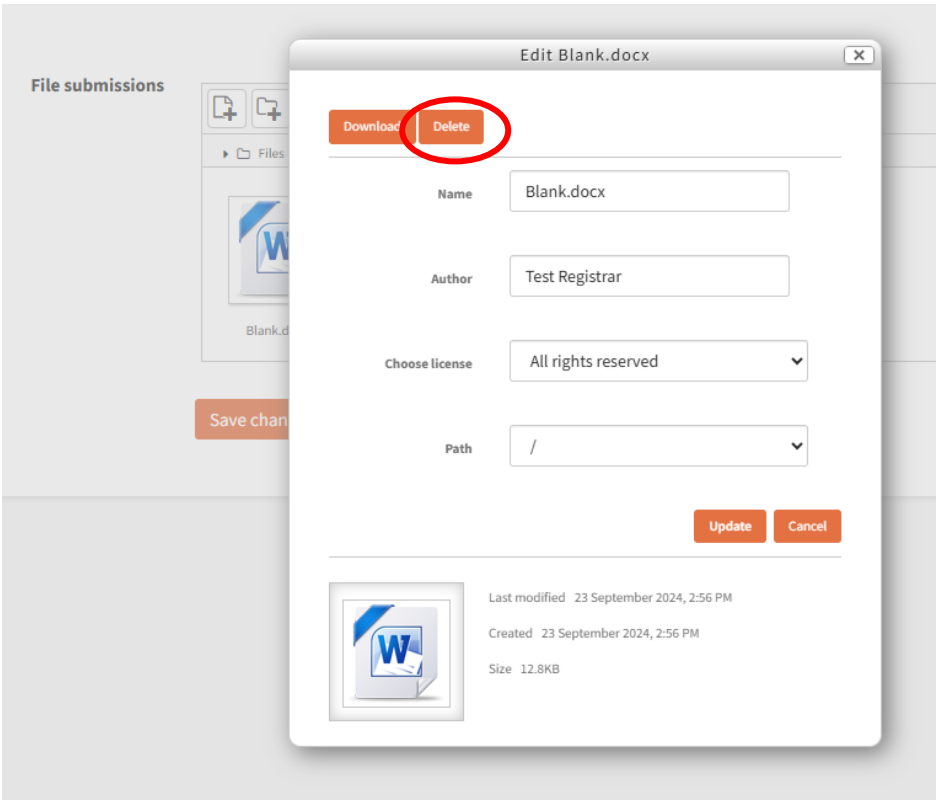


When you click on the “CV and References” link, you will come to a Submission status page. This indicates whether you have uploaded or provided any evidence for this section. Use the “Add submission” button to be taken to the area where you can upload your documents.

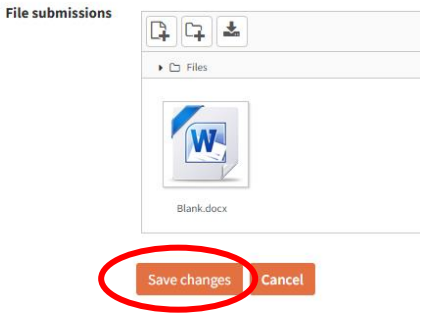


You can add your CV and references by using the Add File button or drag-and-dropping the files into the appropriate area.

If you have uploaded a file and then want to remove a file from your draft space, just click on the file and select Delete.



When you have finished adding files for the current session, select “Save changes”

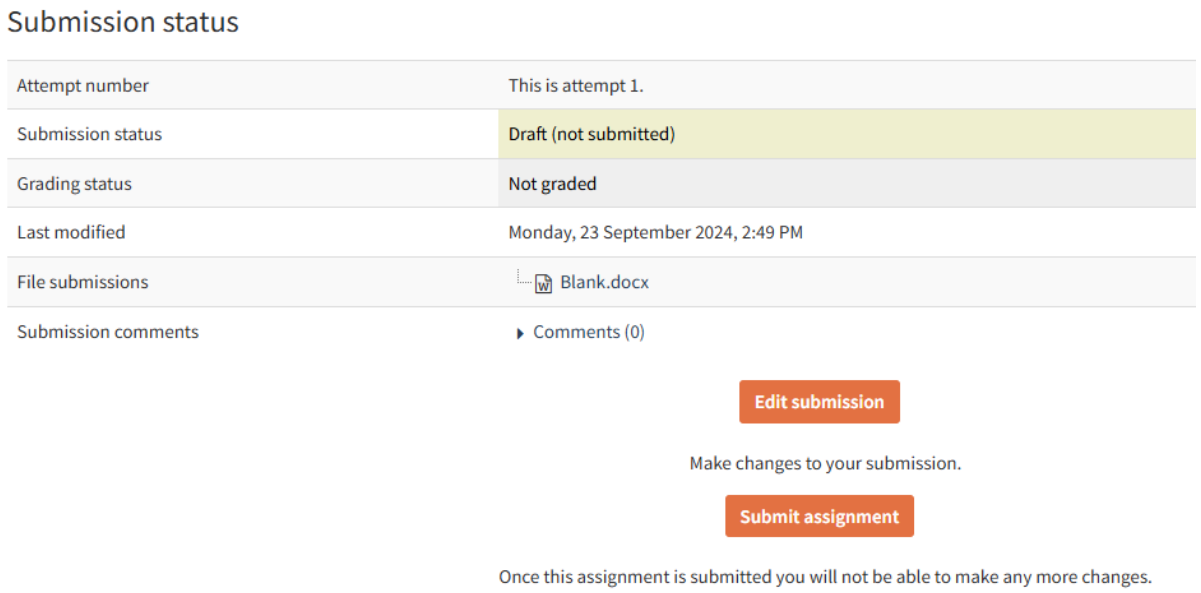


NOTE: The system will not allow you to have no files submitted if you have added files and then deleted all them. In this case, just upload a blank document and save changes.

Your submission status will then show that you have a “Draft” submission in progress. Keep the submission in Draft mode until you have uploaded **ALL** relevant files and are ready to submit your files for external assessment. Until that time, use the “Edit submission” button to add/remove files from your submission. You can leave a section in Draft mode for weeks/months until you are ready to submit.

When you have added **ALL** of the files required to complete this part of the application, select the Submit assignment button. This then changes your status to “Submitted” and the external assessor will be notified that it is ready to be evaluated.

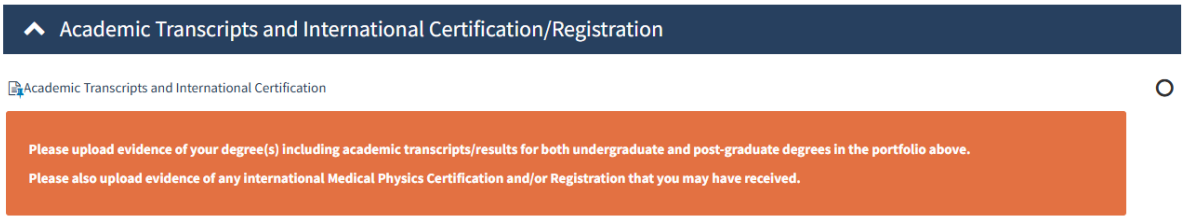
NOTE: Once you “Submit” the assignment to be assessed, you cannot make any further changes to the submission.



Academic Transcripts and International Certification/Registration section

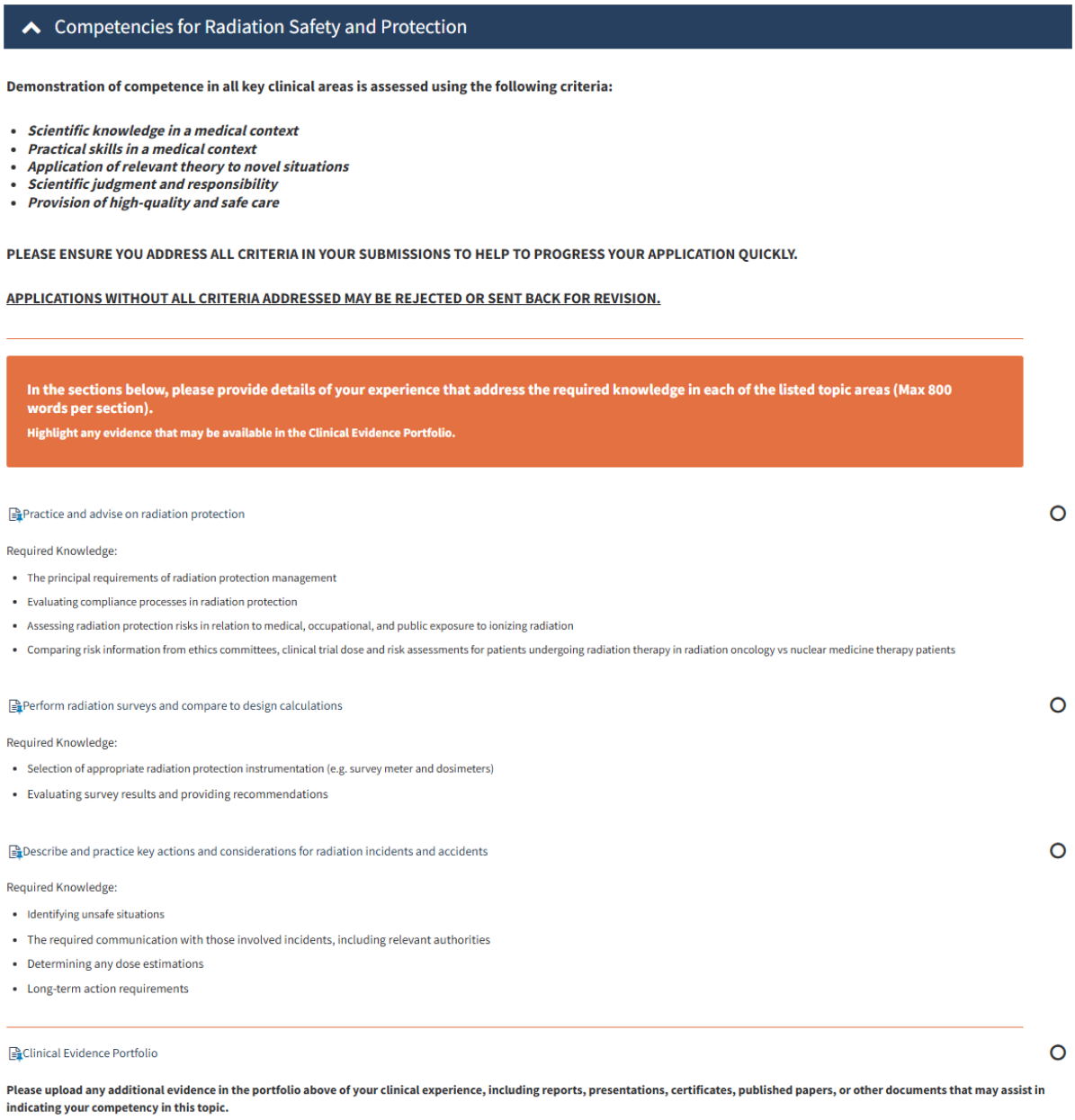
The next section is for you to upload copies of your Academic Transcripts (Undergraduate and Post-Graduate) and any International Certification/Registration that you may have. The process to do this is exactly the same as described in the Applicant Curriculum Vitae (CV) and References section.

NOTE: You may be required to provide certified hard-copy evidence of your academic transcripts if the documentation looks like it has been tampered or altered in any way.



Competencies for Radiation Safety and Protection

This is the start of the Medical Scientific Expert Domain categories. It consists of several different sections covering different aspects of the key clinical area of Radiation Safety and Protection.



Competencies for Radiation Safety and Protection

Demonstration of competence in all key clinical areas is assessed using the following criteria:

- ***Scientific knowledge in a medical context***
- ***Practical skills in a medical context***
- ***Application of relevant theory to novel situations***
- ***Scientific judgment and responsibility***
- ***Provision of high-quality and safe care***

PLEASE ENSURE YOU ADDRESS ALL CRITERIA IN YOUR SUBMISSIONS TO HELP TO PROGRESS YOUR APPLICATION QUICKLY.

APPLICATIONS WITHOUT ALL CRITERIA ADDRESSED MAY BE REJECTED OR SENT BACK FOR REVISION.

In the sections below, please provide details of your experience that address the required knowledge in each of the listed topic areas (Max 800 words per section).

Highlight any evidence that may be available in the Clinical Evidence Portfolio.

Practice and advise on radiation protection

Required Knowledge:

- The principal requirements of radiation protection management
- Evaluating compliance processes in radiation protection
- Assessing radiation protection risks in relation to medical, occupational, and public exposure to ionizing radiation
- Comparing risk information from ethics committees, clinical trial dose and risk assessments for patients undergoing radiation therapy in radiation oncology vs nuclear medicine therapy patients

Perform radiation surveys and compare to design calculations

Required Knowledge:

- Selection of appropriate radiation protection instrumentation (e.g. survey meter and dosimeters)
- Evaluating survey results and providing recommendations

Describe and practice key actions and considerations for radiation incidents and accidents

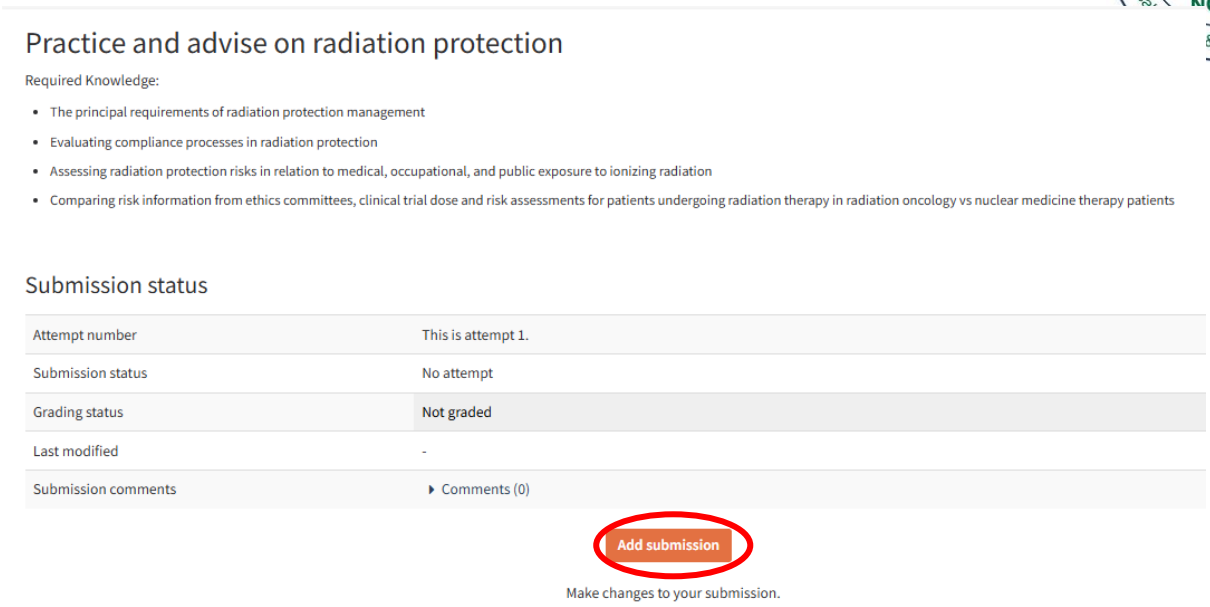
Required Knowledge:

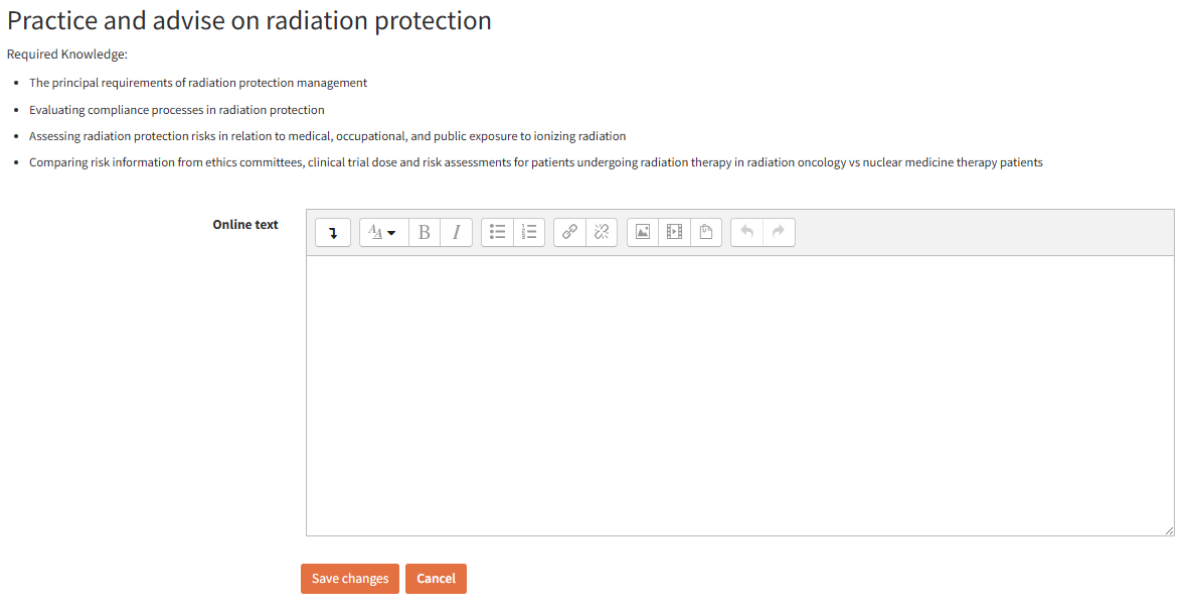
- Identifying unsafe situations
- The required communication with those involved incidents, including relevant authorities
- Determining any dose estimations
- Long-term action requirements

Clinical Evidence Portfolio

Please upload any additional evidence in the portfolio above of your clinical experience, including reports, presentations, certificates, published papers, or other documents that may assist in indicating your competency in this topic.

A description of the required knowledge/skills for each section is provided. When you click on the link of a section you will be taken to a submission status page. Selecting the “Add submission” button will then take you to a page where you can add an Online text submission (of up to 800 words).





In the online text section, **a theoretical summary of your knowledge is not required**. In this section **you should be providing examples of some of the work you have lead and completed** in your previous years of clinical practice that **related directly to the item you are addressing**.

Here is an example of a good submission for the instance:

Practice and advise on radiation protection

As a medical physicist I routinely provide advice on radiation protection for patients and staff. Examples of these activities include, but are not limited to, advising on handling of pacemaker cases during simulation/treatment and providing advice on planning techniques and imaging practice to limit radiation doses to non-treatment regions. Additionally, I hold a full radiation

use licence by the Nigerian Government. Please see evidence of my licence in the Clinical Evidence Portfolio.

In 2021 I performed a radiation safety audit of my clinic to identify potential hazards and to assess compliance with our Radiation Safety and Protection Plan (RSPP) and Nigerian legislation. I also reviewed the RSPP document for relevancy within the department. Please see attached report containing the audit findings "Radiation Safety Audit and Report_2021 ", in the Clinical Evidence Portfolio.

In 2022, I reviewed our centre's protocol for the handling of patients with pacemaker devices undergoing radiation therapy. The review was to assess ease-of-use of the protocol, and to benchmark against current practice statements from the AAPM TG203 report and protocols from other centres. Please find a copy of the proposed new protocol "New protocol for Pacemakers" in the Clinical Evidence Portfolio.

In 2021 I completed a radiation safety officer training course through XXXXX. This training focused on roles and responsibilities of an RSO, departmental regulatory requirements including creating and maintaining an RSPP and incident reporting and management for example. Please see attached certificate of completion of RSO training, notes from training and RSO certification in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Perform radiation surveys and compare to design calculations

I have performed a radiation survey for one of our conventional linear accelerators. This included measurements of transmission through a primary and secondary barrier. Furthermore, measurements were compared to regulatory requirements to ensure compliance and consistency with design calculations. Please see the spreadsheet and summary report in the Clinical Evidence Portfolio.

As part of my continuous professional development as a medical physicist, I have reviewed and summarised IAEA Safety Report Series No. 47. Please see summary in the Clinical Evidence Portfolio.

In 2017 I assisted in a radiation survey of our CT scanner as part of a recommissioning process and to ensure compliance with international recommendations and local legislation/standards. This involved participating in acquiring readings at various points around the CT bunker with a survey meter, whilst imaging a water phantom with 120 kV and 135 kV x-ray beams at the maximum collimation for the system. Please see the CT commissioning report in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Describe and practice key actions and considerations for radiation incidents and accidents

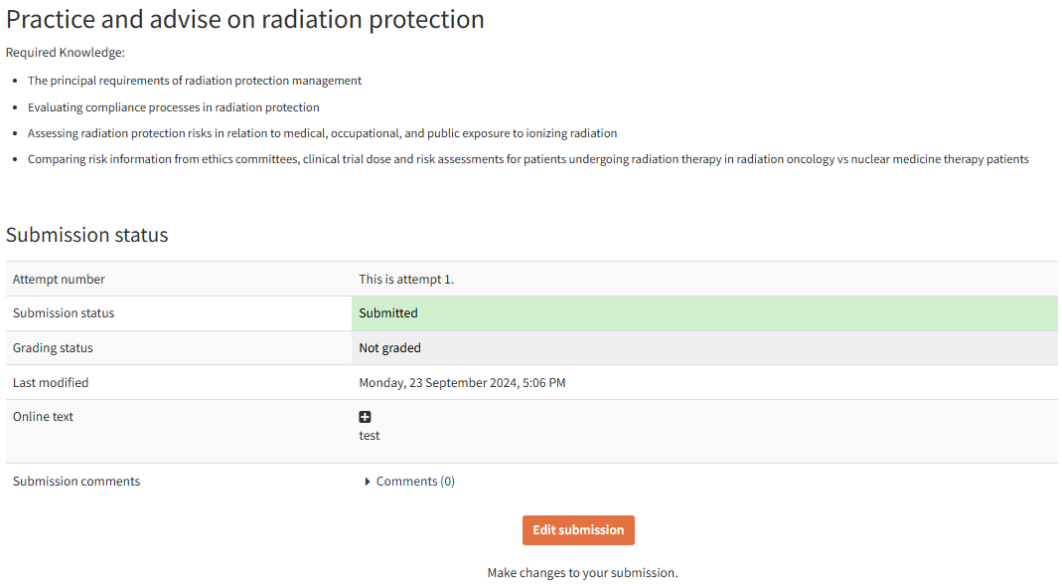
As part of my routine clinical activities, I perform QA on all aspects of the radiotherapy delivery, including plan checking and patient specific QA. Examples of unsafe situations discovered because of my measurements are provided (please see documents "Couch not assigned to the beam" and "Suboptimal beam arrangement" in the Clinical Evidence Portfolio). As a result of these specific works, department QA and planning practices were altered to prevent occurrence of similar incidents.

Please also refer to the radiation safety audit of my clinic completed in 2021 (highlighted in the "Practice and advise on radiation protection" section.

In 2021, I investigated an incident related to our TPS wherein there was an incorrect application of electron densities to high Z structures for patients with 3D plans. Long term preventative measures were discussed and implemented in our department following this investigation. Please see attached report from the investigation "Incident Investigation Report on the Incorrect Application of CT-ED curves" in the Clinical Evidence Portfolio.

In 2019, I investigated a minor radiation incident where a personal radiation monitoring device was accidentally left in the treatment room during patient irradiation. As part of the investigation, I calculated an estimate of dose received by the monitoring device to help find reasons for potential higher readings on the workers personal monitor dose assessment report from the manufacturer. Please see "Dose estimate from dropped personal dosimeter" report in the Clinical Evidence Portfolio.

When you have finished writing your online text submission in the section, please "Save changes". This will be automatically submitted for assessment; however, you are able to go back and edit your submission if you need to.



Practice and advise on radiation protection

Required Knowledge:

- The principal requirements of radiation protection management
- Evaluating compliance processes in radiation protection
- Assessing radiation protection risks in relation to medical, occupational, and public exposure to ionizing radiation
- Comparing risk information from ethics committees, clinical trial dose and risk assessments for patients undergoing radiation therapy in radiation oncology vs nuclear medicine therapy patients

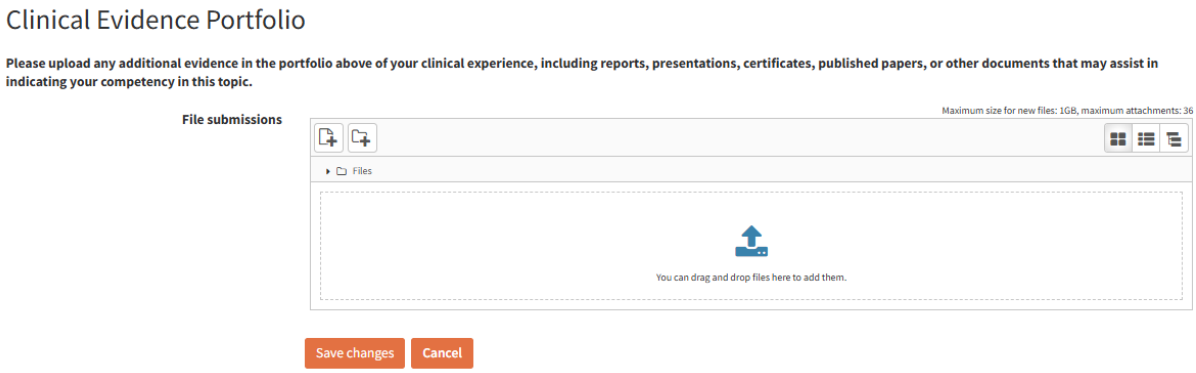
Submission status

Attempt number	This is attempt 1.
Submission status	Submitted
Grading status	Not graded
Last modified	Monday, 23 September 2024, 5:06 PM
Online text	test
Submission comments	Comments (0)

Edit submission

Make changes to your submission.

At the bottom of the section there is a Clinical Evidence Portfolio. Here is where you upload the reports and evidence that are highlighted in the online text boxes for this key clinical area.



The upload and submission process is the same as described in the Applicant Curriculum Vitae (CV) and References section.

Competencies for Dosimetry

This is another Medical Scientific Expert Domain category. It consists of several different sections covering different aspects of the key clinical area of Dosimetry.

Competencies for Dosimetry

Demonstration of competence in all key clinical areas is assessed using the following criteria:

- ***Scientific knowledge in a medical context***
- ***Practical skills in a medical context***
- ***Application of relevant theory to novel situations***
- ***Scientific judgment and responsibility***
- ***Provision of high-quality and safe care***

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APPLICATIONS WITHOUT ALL CRITERIA ADDRESSED MAY BE REJECTED OR SENT BACK FOR REVISION.

In the sections below, please provide details of your experience that address the required knowledge in each of the listed topic areas (Max 800 words per section).

Highlight any evidence that may be available in the Clinical Evidence Portfolio.

Describe and practice commissioning or QA for detectors ○

Required Knowledge:

- Commissioning or QA for an ion chamber
- Commissioning or QA for a dosimeter other than an ion chamber

Describe and practice commissioning or QA for dosimetry systems ○

Required Knowledge:

- Commissioning or QA for a water tank dosimetry system
- Commissioning or QA for other phantoms or ancillary components

Describe and practice absorbed dose measurement under reference conditions ○

Required Knowledge:

- The radiation quality for MV photons and electrons
- The cross calibration of ion chambers
- Reference dosimetry under reference conditions

Clinically apply measurements in conditions of disequilibrium ○

Required Knowledge:

- Perform measurements in conditions of disequilibrium

Describe and practice in-vivo dosimetry for the department** ○

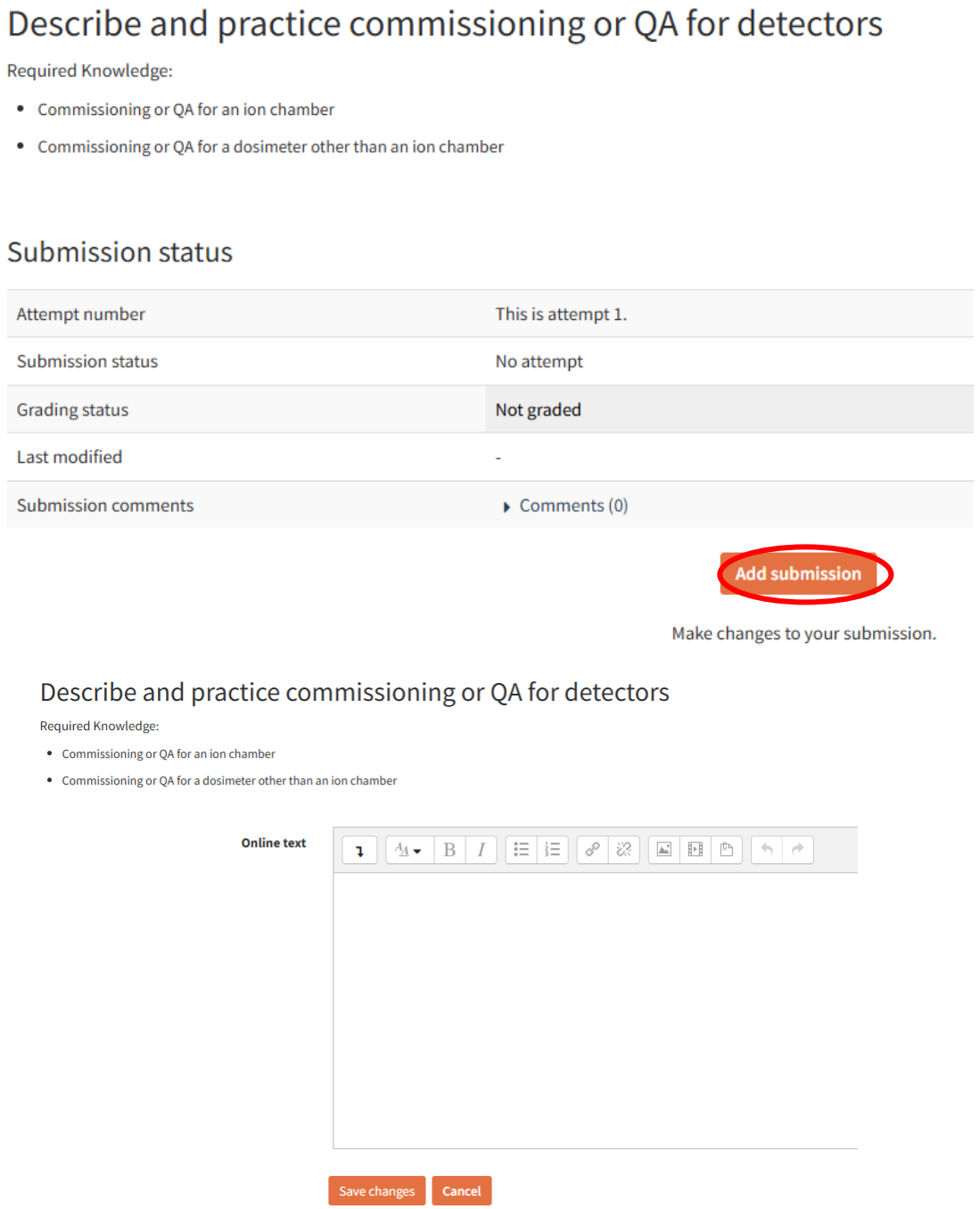
Required Knowledge:

- Principles of in-vivo dosimetry and physical properties of suitable in-vivo detectors
- The methods for performing in-vivo dosimetry measurements for the department
- Interpreting and making clinical recommendations based on in-vivo dosimetry measurements in the department

***Note: If clinical experience cannot be shown in this area, then you must provide a brief (1 page) report for each criteria, indicating your understanding of the key components of the topic. Please place these reports in the clinical evidence portfolio.*

Clinical Evidence Portfolio ○

A description of the required knowledge/skills for each section is provided. When you click on the link of a section you will be taken to a submission status page. Selecting the "Add submission" button will then take you to a page where you can add an Online text submission (of up to 800 words).



In the online text section, **a theoretical summary of your knowledge is not required**. In this section **you should be providing examples of some of the work you have lead and completed** in your previous years of clinical practice that **related directly to the item you are addressing**.

Here is an example of a good submission for the instance:

Describe and practice commissioning or QA for detectors

As part of my routine clinical duties as a medical physicist, I am required to perform QA on our ionisation chambers bi-monthly. This includes visual inspection for damage and chamber response against the check source (Sr-90 constancy). Please see evidence of examples of checks from 2015 and 2022 in the Clinical Evidence Portfolio.

I have also been required to perform continuous QA and checking after fault repairs on other dosimeters such as our patient-specific QA arrays. Please see evidence of reference and relative calibrations performed for an array in the Clinical Evidence Portfolio.

In 2019, I performed the commissioning of a new vented ionisation chamber array on our conventional linacs. Please see the commissioning report "RD5.REPORTS.64 Octavius 1500MR Array Commissioning Report" in the Clinical Evidence Portfolio.

I have performed calibration and QA for a variety of other dosimeters and am familiar with their functionality and uses. These include TLDs, OSLDs, Gafchromic EBT3, and RTQA2 film types, MOSFETs and photon/electron diodes. Please see files in the Clinical Evidence Portfolio.

I have performed commissioning of a PinPoint ionisation chamber. I performed this work on a linear accelerator in beam energies and modalities suitable for its intended clinical use. Tests included determination of chamber leakage, repeatability, dose and dose-rate linearity, extracameral signal and Sr-90 constancy baselines. Please see the "PinPoint Ion Chamber Commissioning Report" in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Describe and practice commissioning or QA for dosimetry systems

I have performed QA on scanning water tanks prior to each use. As part of this QA I confirm accuracy of the scanning mechanism (in accordance with TG106 recommendations), accuracy of scanning arm and detector positioning (with any automatic corrections for EPOM or detector orientation turned off) to name a few. Please see attached example records of water tank QA performed from 2017 and 2022 in the Clinical Evidence Portfolio.

In 2019 I commissioned the PTW MR-compatible 1D water tank for reference dosimetry and beam quality determination. It was my role to ensure accuracy of the positioning system and to oversee measurements pertaining to water equivalent thickness of the tank wall. Please see the commissioning report in the Clinical Evidence Portfolio.

I have had several tutorial sessions where, water tank QA and commissioning was discussed (i.e. Work instructions, staff training, accuracy of the scanning mechanism, compatibility with chambers/holders & equipment currently available to the clinic, stability of voltage, software and data corrections and consistency of coordinate system/s within the tank/software - to name a few). Please see brief summary notes in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Describe and practice absorbed dose measurement under reference conditions

Since 2016 I have performed linac annual QA. Part of this involves reference dosimetry measurements and beam quality determination for 6 and 10 MV photon beams, and 6, 8, 10, 12 and 15 MeV electron beams, following the TRS398 protocol. Included in this work was any necessary beam adjustments and updating/releasing documentation for changed values. Additionally, I perform such measurements after machine break downs (electron gun, magnetron and ion chamber replacements to name a few). Please see attached evidence for Photon and Electron beam quality and reference dosimetry measurements on conventional linear accelerators, including determination of influence quantities in the Clinical Evidence Portfolio.

It has also been required of me to cross calibrate a variety of our ion chambers in photon and electron beams, on the linacs. Please see attached evidence in the Clinical Evidence Portfolio.

I have undertaken several training sessions focused on reference dosimetry and determination of beam quality. Please see attached evidence of tutorials in the Clinical Evidence Portfolio.

As part of establishing and managing the QA program for a linac, I was required to develop alternate techniques to determine TPR20,10 and machine output due to machine and equipment restrictions Please see attached evidence in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Clinically apply measurements in conditions of disequilibrium

During commissioning on a linac (and as part of beam model verification) I had to measure small field output factors (with TRS483 corrections applied) using PTW microDiamond detector/s in the 1D water tank, for comparison with TPS data. Additionally, I was required to verify the TPS modelling of small fields using alternate methods such as film. Please see attached evidence of small field measurements in the Clinical Evidence Portfolio.

For electron treatments in my clinic, output factors for MU calculation are performed by medical physicists through interpolation of library data. Recently, I was required to handle a case where the output factor dimensions were small compared to the electron energy/practical range, and lateral disequilibrium was likely to affect the output factor determination. To verify our usual process, I performed point dose ionisation measurements (on CAX) in a solid water phantom, at multiple depths, with the cutout and an advanced Markus chamber. Using these measurements, I derived a measured OF against which an interpolated value could be compared. Please see attached records as evidence of work performed in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Describe and practice in-vivo dosimetry for the department**

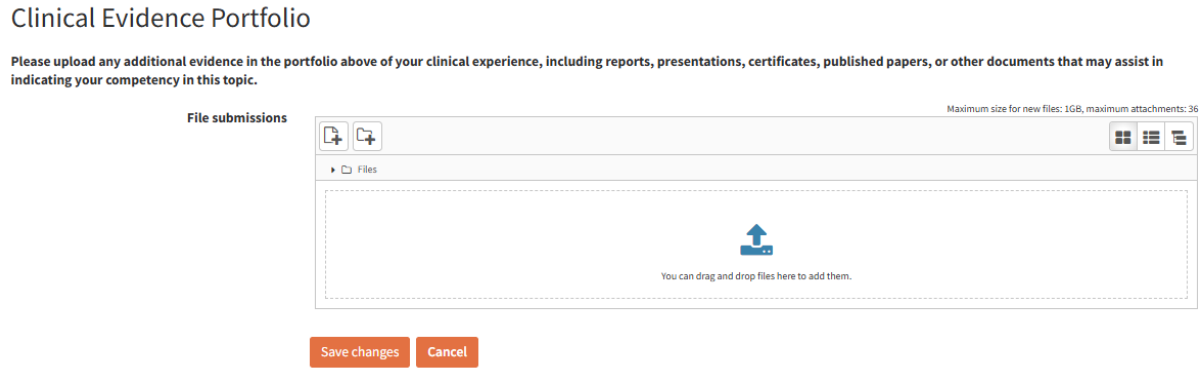
Part of my clinical duties is to perform in vivo dosimetry measurements for the department. Since 2015 I have routinely performed such measurements, critically analysed the results and provided clinical recommendations to improve patient treatments. This has been done for electrons, MV and kV photons on linacs, and a superficial treatment unit, using TLDs and more recently EBT3 film. Please see some examples of in vivo measurements I have performed in the Clinical Evidence Portfolio.

ALTERNATIVELY

If you do not have clinical experience with in vivo dosimeters, you must provide a brief (1 page) report for each criteria listed as required knowledge, indicating your understanding of the key components of the topic. Please upload these reports in the Clinical Evidence Portfolio.

When you have finished writing your online text submission in the section, please "Save changes". This will be automatically submitted for assessment; however, you are able to go back and edit your submission if you need to.

At the bottom of the section there is a Clinical Evidence Portfolio. Here is where you upload the reports and evidence that are highlighted in the online text boxes for this key clinical area.



The upload and submission process is the same as described in the Applicant Curriculum Vitae (CV) and References section.

Competencies for External Beam-Based Treatment

This is another Medical Scientific Expert Domain category. It consists of several different sections covering different aspects of the key clinical area of External Beam-Based Treatment.

Competencies for External Beam-Based Treatment

Demonstration of competence in all key clinical areas is assessed using the following criteria:

- ***Scientific knowledge in a medical context***
- ***Practical skills in a medical context***
- ***Application of relevant theory to novel situations***
- ***Scientific judgment and responsibility***
- ***Provision of high-quality and safe care***

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In the sections below, please provide details of your experience that address the required knowledge in each of the listed topic areas (Max 800 words per section).

Highlight any evidence that may be available in the Clinical Evidence Portfolio.

Perform and evaluate measurements used for linac acceptance, commissioning, and routine QA

Required Knowledge:

- Procedures that are used for acceptance, commissioning, and ongoing QA for a linear accelerator
- Understanding linac parameters that influence tests used for acceptance, commissioning, ongoing QA and/or patient specific QAE
- The dosimetric features of photon and electron beams and the physical principles and metrics for how they are assessed
- Measurement equipment requirements, uncertainties and confounding variables for tests used for acceptance, commissioning, ongoing QA and/or patient specific QAE
- Connecting the observed measurement deviations for tests used with how they impact the choice of tolerances
- Comparing the differing roles of acceptance testing, commissioning and ongoing routine QA and their interrelationships

Manage a linear accelerator for clinical use

Required Knowledge:

- Recommending requirements for commissioning, ongoing QA programs and testing after fault repair
- Evaluating the role and function of quality systems in the linac context including periodic review, incident reporting and feedback

Perform quality assurance procedures for patient positioning, IGRT and motion management techniques and technologies

Required Knowledge:

- Acceptance, commissioning, and clinical implementation of patient positioning, IGRT and motion management devices
- QA tests for patient positioning, IGRT and monitoring systems and recognising the testing required after fault repair

Clinically apply patient positioning, IGRT and motion management strategies

Required Knowledge:

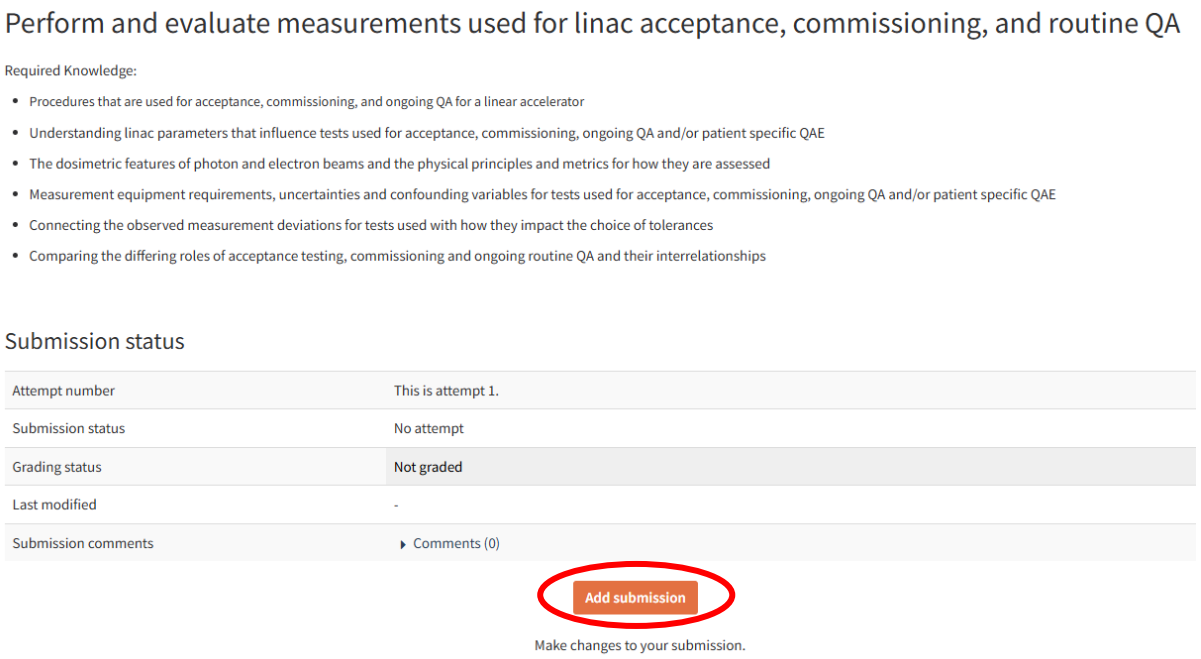
- Evaluating differences between systematic vs random errors for patient positioning and their relative effect on treatment delivery accuracy
- Connecting measurement deviations for QA tests with the tolerances used for patient position and monitoring systems
- Connecting IGRT and motion management strategies to the determination of clinical margins

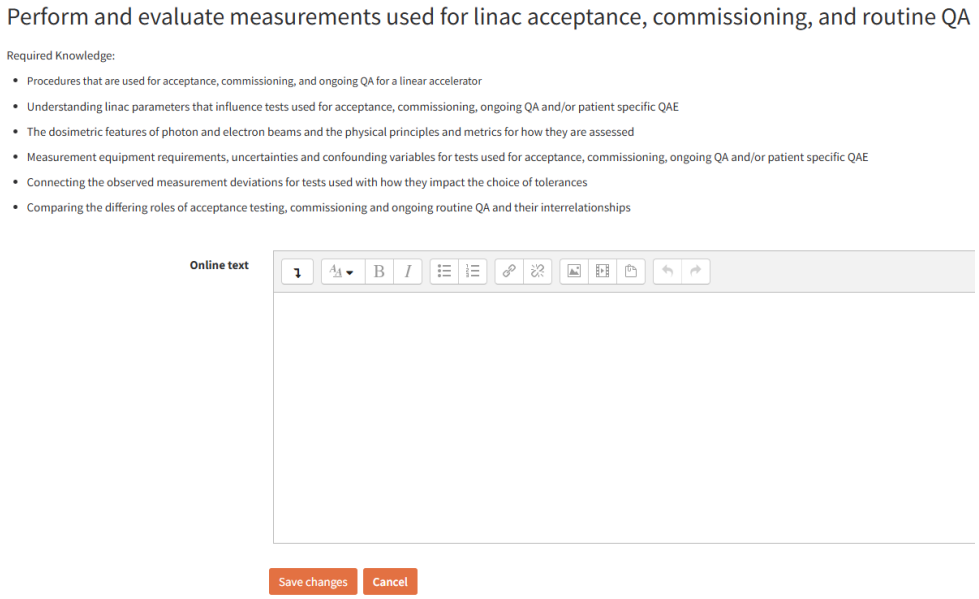
Explain the fundamental principles of kV external beam therapy **

Required Knowledge:

- The physical principles and dosimetric features of kV treatment beams
- Procedures that are used for acceptance, commissioning and ongoing QA for a kV treatment unit
- The effects of energy, field size, field shape, beam modifiers, source to surface distance, penumbra, and normalisation on kV dose distributions, including their impact on beam profile, depth dose and skin dose

A description of the required knowledge/skills for each section is provided. When you click on the link of a section you will be taken to a submission status page. Selecting the “Add submission” button will then take you to a page where you can add an Online text submission (of up to 800 words).





In the online text section, **a theoretical summary of your knowledge is not required**. In this section **you should be providing examples of some of the work you have lead and completed** in your previous years of clinical practice that **related directly to the item you are addressing**.

Here is an example of a good submission for the instance:

Perform and evaluate measurements used for linac acceptance, commissioning and routine QA

I have been performing routine monthly and fortnightly QA on linear accelerators since 2015. Additionally, I have performed annual QA on our linear accelerators since 2016. Please see some annual QA reports for each year inclusive of tests and results, as well as reports from a subset of routine QA I have performed in the Clinical Evidence Portfolio.

As part of a linac commissioning process, I was required to use commissioning data to develop the QA program for the machine. This included Daily, Monthly and Quarterly, Annual, pre-treatment and patient-specific QA procedures. Please see attached QA procedures and forms I have released for routine use in the Clinical Evidence Portfolio.

In 2018 I was part of a team that commissioned the VMAT technique for clinical use in my department. This involved performing testing as per vendor guidelines, extra commissioning work on the linac and assisting in modelling of MLC parameters in the TPS, based on measured data. Please see the "RD5.REPORTS.35 Volumetric-Modulated Arc Therapy Commissioning Report" in the Clinical Evidence Portfolio.

I have attended multiple training courses focused on the various aspects of linacs which addressed acceptance and commissioning procedures, QA processes, and dosimetric characteristics of radiation beams among other things. Please see training certificates and supplementary material in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Manage a linear accelerator for clinical use

As part of my duties as lead physicist, I am required to manage the entire QA program for the system. This includes development and review of commissioning, routine QA (daily, monthly, quarterly and annual) and patient-specific test procedures (including frequencies and tolerances), continuous review of results from routine daily, monthly, quarterly, and Patient Specific QA, management of documentation (both initial release and updates) for policies, procedures (incl. tolerances and frequencies) and work instructions, to be consistent with recent literature and recommendations. Please see evidence of work performed in the Clinical Evidence Portfolio.

I am the point of contact for the vendor regarding fault repairs, routine PMI procedures and scheduling, affecting upgrades or field change orders (FCOs), as well as for acknowledgement of work performed (field service reports and work orders) on the linac. Please see attached evidence in the Clinical Evidence Portfolio.

I have also contributed to components of commissioning and QA for other linear accelerators. During VMAT commissioning I provided recommendations to the team for test methodology (including equipment) for output with gantry angle, beam uniformity with gantry angle and variable dose-rate tests, to name just a few. Please see the "RD5.REPORTS.35 Volumetric-Modulated Arc Therapy Commissioning Report" in the Clinical Evidence Portfolio.

I have also independently performed multiple QAs after fault repairs and upgrades on our conventional linear accelerators. This includes repairs/replacements/adjustments/upgrades of ion chambers, magnetrons, electron guns, mirrors, MLCs (motors and reflectors), lightfield (bulb and mylar), ODIs and treatment couch. For these works, I was required to discuss and decide on the necessary suite of tests to safely release the machine for clinical use following each fault repair. Please see evidence, including some examples of department communication that I have released following fault repairs in the Clinical Evidence Portfolio.

I have been responsible for updates to our patient-specific QA program, including procedures and documentation. This included improvements to documentation to remove the need for different forms based on QA or treatment technique, shifting from physical to electronic forms, and development of post treatment QA documentation. Please see example forms in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Perform quality assurance procedures for patient positioning, IGRT and motion management techniques and technologies

As part of my clinical duties, I am required to perform routine QA on our MV and kV IGRT system for linear accelerators, as well on the laser system for the linac. This includes 3D kV CBCT image registration accuracy, image quality tests such as low contrast visibility, MTF, uniformity and geometric accuracy, cone-beam dose index (CBDI) constancy, determination of MV isocentre size (through Winston-Lutz) and coincidence between MV and kV isocentres, as well as 2D kV and MV tests for low contrast visibility, MTF and scale accuracy, to name a few. As part of laser QA, I have performed coincidence of the laser system with the isocentre, the light field, and other ancillary systems such as the 6DoF Hexapod couch reference frame. Please see attached QA records as evidence (annual and monthly) in the Clinical Evidence Portfolio.

I have been required to perform acceptance and commissioning work on kV (XVI) and MV (iView) IGRT systems. Specifically, in 2022 linacs received panel and control system upgrades for these IGRT systems, and I was responsible for performing and approving the customer acceptance tests. Please see files "iView and XVI upgrade" and "New CBCT Protocols" in the Clinical Evidence Portfolio for evidence of acceptance, commissioning and QA tests.

Here is an example of a good submission for the instance:

Explain the fundamental principles of kV external beam therapy**

From September 2015 to present I have performed routine QA (monthly and annually) on a local SXRT unit. This includes measurement of HVL, reference dosimetry, profile uniformity on film, and applicator/cone factors. Following from annual QA is also the update of departmental documentation/record of reference values. Please see example monthly and annual QA records from 2018 in the Clinical Evidence Portfolio.

I am able to perform treatment time calculations for SXRT, benchmarked against the local checking software. I have performed this in a tutorial setting for a mock patient. Please see an example in the Clinical Evidence Portfolio.

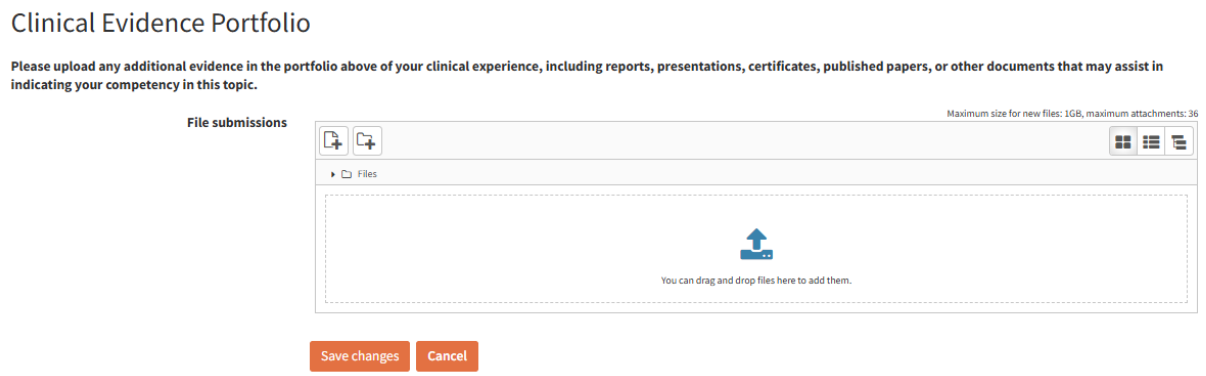
I participated in tutorials on kV therapy. Topics covered were design of a therapeutic kV unit and how it differs from a diagnostic unit, clinically significant aspects of the unit (such as the heel effect), Thoraeus filters, understanding links between output/energy to treatment unit parameters, troubleshooting issues, planning considerations (increase x-ray absorption in bone) and advantages and disadvantages of SXRT versus electrons. Please see tutorial notes in the Clinical Evidence Portfolio.

ALTERNATIVELY

If you do not have clinical experience with in kV therapy equipment, you must provide a brief (1 page) report for each criteria listed as required knowledge, indicating your understanding of the key components of the topic. Please upload these reports in the Clinical Evidence Portfolio.

When you have finished writing your online text submission in the section, please “Save changes”. This will be automatically submitted for assessment; however, you are able to go back and edit your submission if you need to.

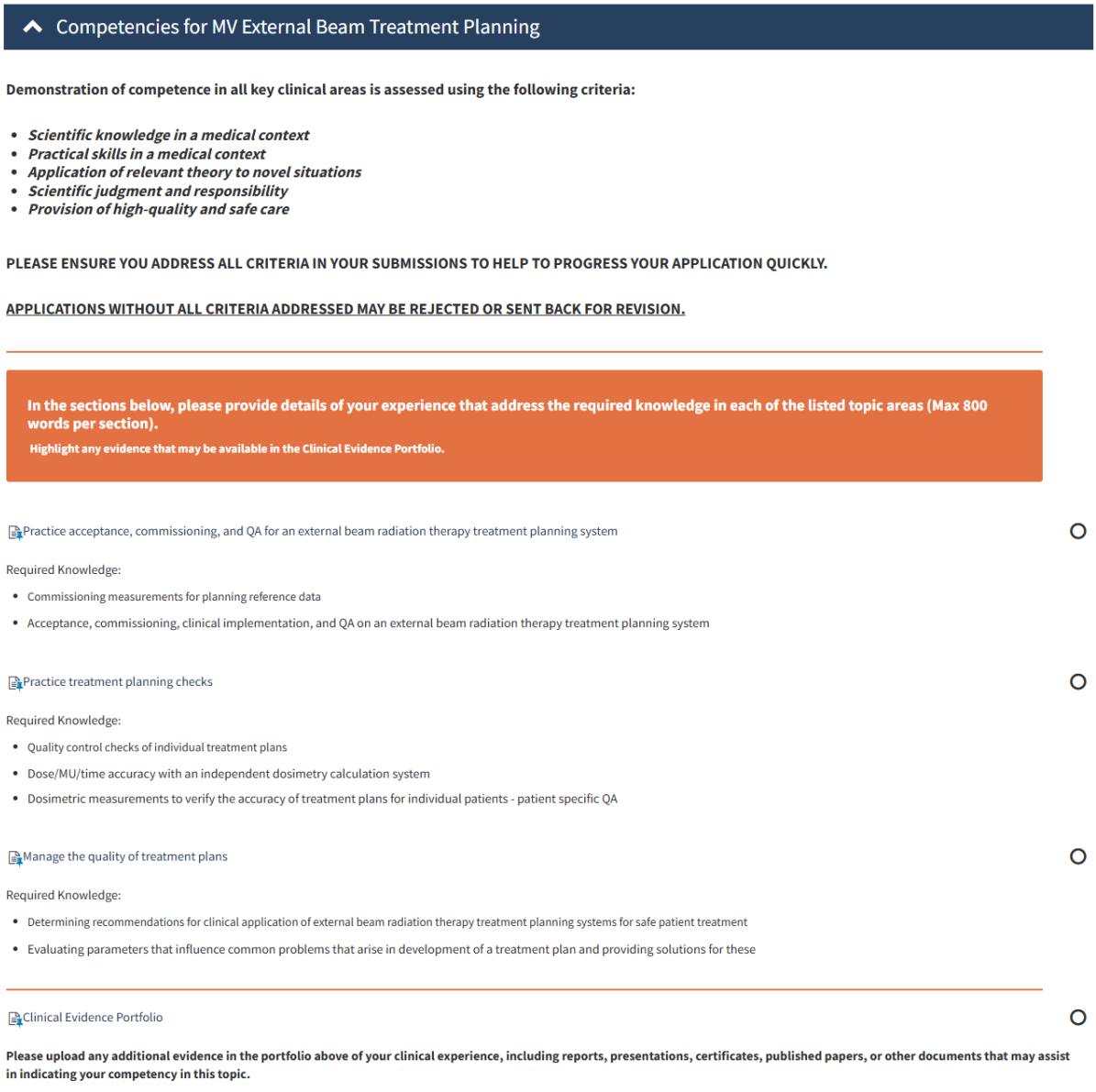
At the bottom of the section there is a Clinical Evidence Portfolio. Here is where you upload the reports and evidence that are highlighted in the online text boxes for this key clinical area.



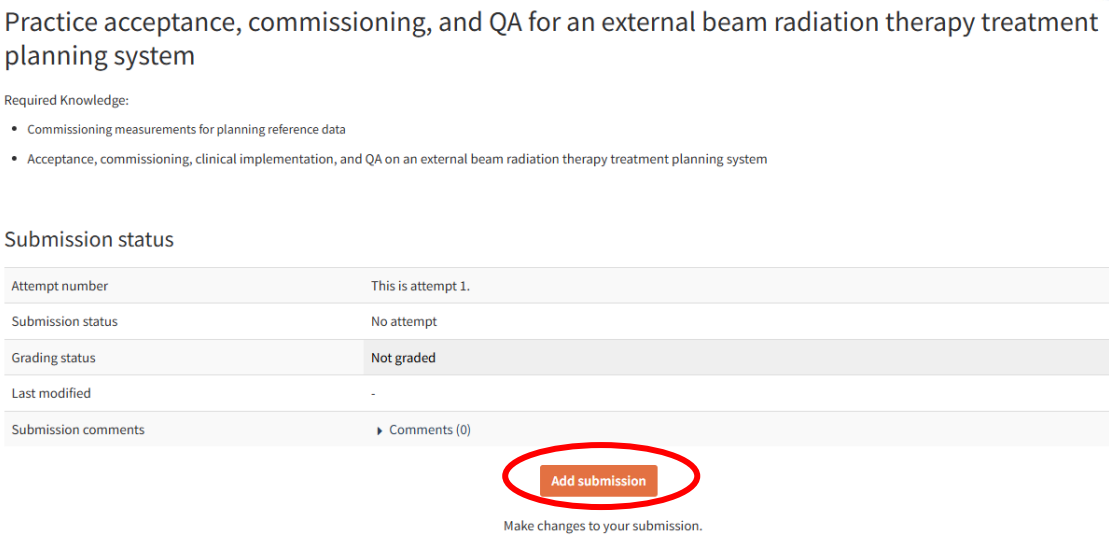
The upload and submission process is the same as described in the Applicant Curriculum Vitae (CV) and References section.

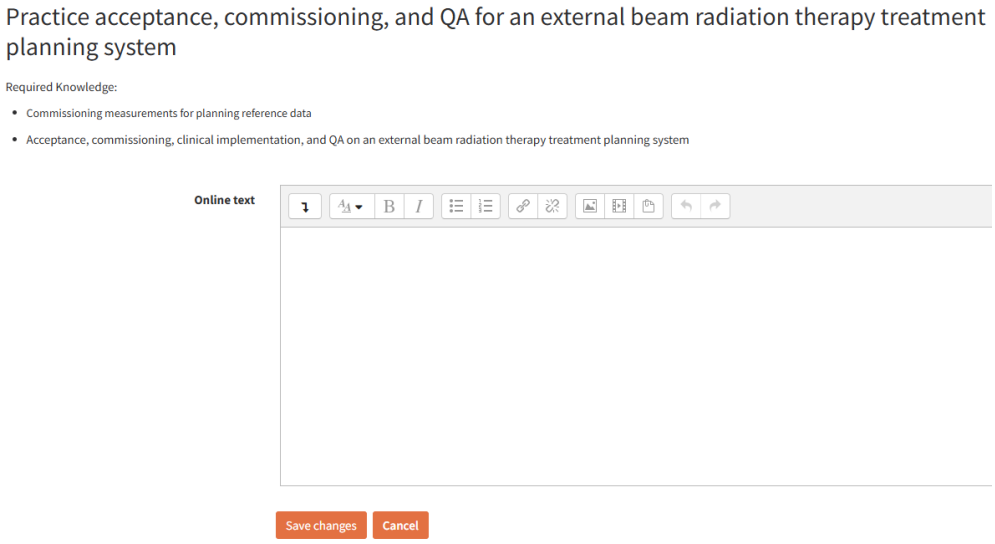
Competencies for MV External Beam Treatment Planning

This is another Medical Scientific Expert Domain category. It consists of several different sections covering different aspects of the key clinical area of MV External Beam Treatment Planning.



A description of the required knowledge/skills for each section is provided. When you click on the link of a section you will be taken to a submission status page. Selecting the “Add submission” button will then take you to a page where you can add an Online text submission (of up to 800 words).





In the online text section, **a theoretical summary of your knowledge is not required**. In this section **you should be providing examples of some of the work you have lead and completed** in your previous years of clinical practice that **related directly to the item you are addressing**.

Here is an example of a good submission for the instance:

Practice acceptance, commissioning and QA for an external beam radiation therapy treatment planning system

In 2018 I was part of a team that commissioned VMAT for clinical use. Part of my duties for this project were to acquire beam data that was used to verify the TPS model. This included data from mechanical, MLC leaf and Y jaw and dosimetric tests, as well as patient-specific plan verification. I also helped with re-modelling of the MLC parameters in the TPS. These involved

measurements of closed leaf gap transmission, MLC leaf and jaw transmission, tongue and groove effect, MLC offset and leaf tip modelling. The initial roll-out of this technique also included a site release process for prostate, prostate and nodes and chest wall treatments. Please see attached VMAT commissioning report in the Clinical Evidence Portfolio.

Since 2015 part of my clinical duties include performing routine bi-monthly QA on the TPS. This involves assessing integrity of files, calculation reproducibility, system up-time, image scale accuracy and CT-to-ED conversion accuracy. Other duties related to QA of our TPS include verification of patient plans through linac measurements, independent MU verification, in vivo dosimetry (to verify surface dose) and electron output factor comparisons. Annually, I perform measurements of photon and electron profiles, PDDs, applicator/output/wedge factors, sliding window output factors, and reference dosimetry in a 3D scanning water tank on our conventional linacs, for comparison with baseline data used in the TPS. Please see QA files in the Clinical Evidence Portfolio as examples.

I have been involved in several external dosimetry audits of our TPS and linacs. Recently, I led a Level II audit and was significantly involved in a Level III audit comparing measured doses to TPS calculations for an adaptive phantom. Please see file "ACDS audits" in the Clinical Evidence Portfolio.

I was involved in the commissioning process of a secondary MU check for treatment plans. This included measurement of output factors and variation of output with gantry angle, for comparison and point dose comparisons for patient plans. Please see attached commissioning report in the Clinical Evidence Portfolio.

Here is an example of a good submission for the instance:

Practice treatment planning checks

Part of my clinical duties involve the QA of patient treatment plans. Since 2015 I have performed a multitude of patient specific QA measurements ionisation chambers, films, arrays and phantoms. This QA was performed for conventional hyper-fractionated and stereotactic hypo-fractionated treatments. Please see samples of measurements completed in the Clinical Evidence Portfolio.

Also as part of my clinical duties, I am required to perform plan checks on all intensity modulated treatments. This includes checks on the treatment intents, patient setup, simulation and imaging, planning prescription consistency with protocols, contouring accuracy, planning parameters and geometry, dose distributions and plan quality, image guidance and chart checks. Please see attached plan check spreadsheets as evidence of work performed in the Clinical Evidence Portfolio.

Routinely, my duties involve the determination of electron output factors for linear accelerators, through direct measurement or interpolation from a library value. As part of this work, I am required to verify TPS MU accuracy against a manual MU calculation utilising the

aforementioned determined output factor. Please see file "Electron OFs" in the Clinical Evidence Portfolio for evidence of work performed.

Here is an example of a good submission for the instance:

Manage the quality of treatment plans

As part of the plan checks that I have performed, I have come across several issues for which I was required to provide recommendations to ensure safe treatments for patients. Some examples of these include couch templates missing from beam calculations, sub-optimal beam arrangements, contouring mismatch where dosimetry/DVH metrics were not representative for some OARs, incorrect PTV generation due to contour errors and mismatch in laterally for setup instructions, which could have resulted in excess dose to patient OARs. Please see examples of issue reports in the Clinical Evidence Portfolio.

I routinely provide suggestions to planners to improve the accuracy of treatment plans which are required to deviate from established department protocols. Such examples include appropriate choice of margins for target structures, beam arrangements and avoidance of some angles to ensure correct dose calculations. Please see examples of advice emailed to planners in the Clinical Evidence Portfolio.

In 2021 I was involved in establishing the plan check process for intensity modulated treatments. This included review of literature and current department protocols. Using this information I created, and assisted in implementing, the plan check process, including documentation development and release. Please the "Plan check procedure" file in the Clinical Evidence Portfolio.

When you have finished writing your online text submission in the section, please "Save changes". This will be automatically submitted for assessment; however, you are able to go back and edit your submission if you need to.

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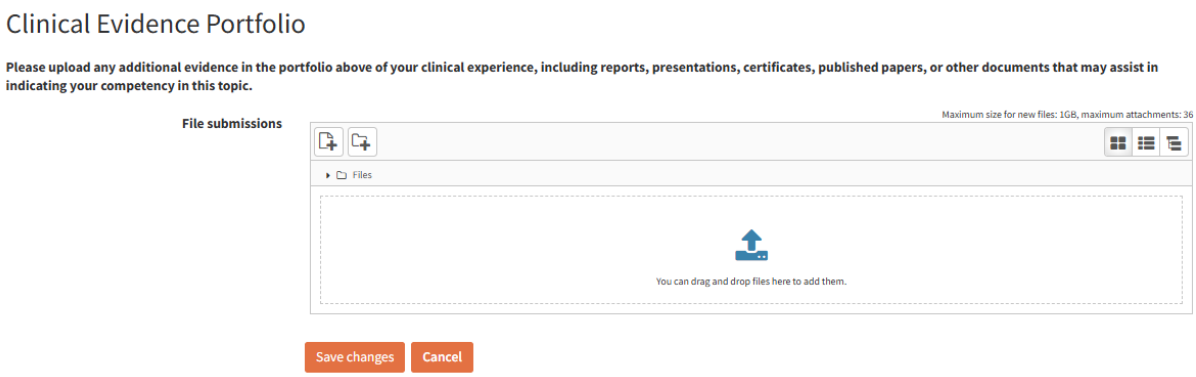

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