

## A year in review Healthcare Science 2024-25

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*By fully realising and utilising the potential of healthcare science, we have that opportunity to be ambitious, and make meaningful change for the future.”— Jenni Minto MSP, Scottish Government [Healthcare science: strategic approach - gov.scot](https://www.gov.scot/publications/healthcare-science-strategic-approach/pages/12.aspx)*

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## Our Vision



"We lead education and workforce development in Healthcare Science across Scotland—supporting inclusive career pathways, widening access, attraction and retention through people-focused partnerships and performance-driven practice"

*We reach this vision by;*

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- *Developing sustainable and standardised education initiatives across HCS*

- *Quality assuring all HCS training and education*
  - *Promoting and raising the visibility of the HCS profession*
  - *Supporting Healthcare Scientists to progress their career through the provision of a range of resources*
  - *Commissioning Trainee Clinical Scientists*
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## Foreword



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*This reporting period (2024-2025) has been one of change. The HCS Team have said a fond farewell to Dr Rob Farley as he moved into retirement and have welcomed a new Associate Director, Sarah Smith. In addition, the team have also welcomed a new senior educator, Jenna Jenkinson, focussing on Genomics education. We have moved from the Dental Directorate within NES to the Medical Directorate bringing new opportunities to the team.*

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Our annual event, hosted for the first time in collaboration with Scottish Government between February and March, showcased a range of presentations on a variety of topics including the work surrounding the **HCS Strategic Approach**, alongside the education initiatives to support it. Leadership journeys and Innovation featured heavily over the four sessions generating thought provoking conversations and reflection by our **245** attendees. The event included a competition for scientists to showcase innovative practice within their profession, and we received many worthy entries. We pass on our congratulations to those

who won. Feedback shows that this event was positively received with many commenting on the positive change to partner with our colleagues from Scottish Government. We aim to continue to strengthen the partnership with Scottish Government to deliver more sessions over the coming year.



A series of consolidation online workshops were delivered throughout the reporting period including **Train-the-Trainer**, **Training-in-Difficulty** and **Early Years Leadership** with **95** attendees. These workshops are underpinned by e-learning modules. In addition to this, **6,600** learners accessed our CPD resources available on Turas Learn, with **4,978** e-learning modules completed. We also continued to run our spotlight sessions providing postgraduate scientists the opportunity to present on a topic of their choice to a wide range audience.



While financial pressures meant we couldn't support our in-service postgraduate scientists, we're proud to have been able to support others and remain committed to creating future opportunities.

In 2024, we supported the recruitment of **23** trainee clinical scientists from a demand of **47** covering a range of specialties: Biochemistry, Cardiac Science, Clinical Engineering, Clinical Perfusion, Genomics, Medical Physics, Microbiology, Reproductive Science and Vascular Science and we have also supported **35** individuals from Laboratory sciences to have their degrees mapped to the Institute of Biomedical Science requirements in preparation for health and care professions council registration.



At the end of March 25, **160** individuals who hold national training numbers were being tracked through quality assurance processes for their training progress and **70** training centres reviewed for accreditation purposes. We also continue to monitor and track the progress of the **14** clinical physiology trainees who commenced the 4-year work-based degree programme at Glasgow Caledonian University and the **17** trainee clinical scientists/physiologists who commenced the three-year Scientist training programme, all of whom complete their studies in 2025. In addition to this, we continue to track the progress of the Higher Specialist Scientist cohort, initially sponsored in 2020 by the Scottish Government.



The **Level 2-4** education, skills and competence framework published in 2024 has been further developed to include a range of resources including a set of webinars focussed on supporting in-service support worker staff in their career development. This framework will be augmented later in 2025 by the development of the Level 5-9 education, skills and competence framework.

**HCSW Education and Development Career Framework  
Levels 2- 4 – Healthcare Science**

**Using the career  
framework to support  
your learning and  
development**

30th August, 2024
 12:00 – 13:00

**Join Us!** Registration available at  
[www.hcstraining.nhs.scot/events](http://www.hcstraining.nhs.scot/events)

**MS Teams Webinar**

In September 2024, we welcomed a Senior Specialist Lead for Genomics Science into the NES HCS team on a 2-year secondment from NHS Lothian to provide professional leadership for education and training within genomic medicine in line with the **Genomic UK strategy** and in collaboration with the **Scottish Strategic Network for Genomic Medicine**. Work has included undertaking a scoping exercise to identify the available training and education resources for the genomics workforce including those from the NHS England education programme and working in collaboration across the UK in relation to **Genomics Training Academy**. We hope that this work will soon be published and be accessible to all those working within the genomic specialty.



The HCS team continue to raise the profile of our profession and have strengthened the resources available to those who wish to consider a career in HCS with the development of new HCS profiles which have been published on the NHS Careers website. In addition, we have delivered a range of promotional events in partnership with HCS colleagues in the regional boards. This engagement has been extended to collaborating with external organisations such as **DYW Live; My world of work; Skills Development Scotland; Glasgow Science Centre and Scottish Universities Life Sciences Alliance (SULSA)** which will see future potential developments in this area.

We ended the reporting year with **HCS week 2025**. As always this was an opportunity to promote and raise the profile of the profession and this year was a great success with “Meet the expert” sessions hosted by our partners Developing the Young Workforce, Dundee Science Centre school engagement session in collaboration with NHS Tayside, Scottish Government colleagues and NES.





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*Our work would not be possible without the collaboration of our scientific workforce. I wish to thank everyone who has supported our work over the last year. We look forward to a further year's fruitful collaboration.*

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The annual event, hosted in collaboration with Scottish Government between February and March, has been positively received. There has been a clear appetite from our HCS workforce to hear more about the work surrounding the HCS Strategic Approach, alongside the education initiatives to support it and we aim to continue and strengthen this partner

The annual event, hosted in collaboration with Scottish Government between February and March, has been positively received. There has been a clear appetite from our HCS workforce to hear more about the work surrounding the HCS Strategic Approach, alongside the education initiatives to support it and we aim to continue and strengthen this partnership. It was appropriate that the last session was devoted to trainee presentations – explaining their role and the significant impact it has on patient outcomes.



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*As we move forward to 2025-26, our focus will be the development and implementation of a new vision for NES HCS team including the development of further resources for our already existing Level 2-4 Career Framework and the expansion of this to our various HCS specialties and the development of Level 5-9 Career Framework for HCS.*

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## Developing sustainable and standardised education initiatives across HCS



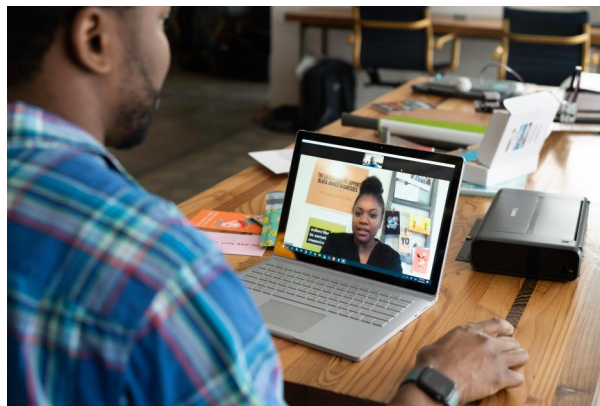
### Healthcare Science Support Worker Framework for Career Levels 2 -4

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*After the launch of our Healthcare Science Support Worker Framework for Career Levels 2 -4 on March 2024, we started work for Phase 4 of the Scottish Government Commission in August 2024 working closely with our NHMAP colleagues and the HCSW Stakeholder Group to work on the targeted objectives.*

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### HCSW Development Steering group collaborations



**Background:** In October 2021 the Chief Nursing Officer (CNO) commissioned NHS Education for Scotland (NES) to undertake a review of career pathways for Healthcare Support Workers (HCSWs) working at levels 2-4 of the NHS Career Framework for Health. The aim of the commission was to scope and recommend a nationally agreed framework to support definition of Healthcare Support Worker (HCSW) roles, career progression and development through education and training, with a focus on how HCSWs support registered staff. Phase 1 & 2 focused on NMAHP roles resulted in the development of the Development &

Education Framework for Level 2-4 NMAHP HCSWs and the Framework for the Administration of Medicines by Level 3 & 4 HCSWs in Scotland.

**Phase 3 2023-2024**, focussed on healthcare science HCSWs and resulted in the Development and Education Framework for Level 2-4 Healthcare Science HCSWs. This document is available on our website at

**Phase 4 2024-2025**, the focus continued for the healthcare science HCSWs and on Allied Health Profession HCSWs.

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*Objectives of the HCSW commission Phase 4 - Healthcare Science, in the financial year, 2024 -2025 were;*

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- *Promotion and Visibility of the Framework*
  - *Resources to support the Framework*
  - *Transition from Support worker to registered practitioner*
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*This report details NES Healthcare Science achieving the objectives for Phase 4 of the Commission, 2024-2025.*

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### Promotion and Visibility of the Framework

**3 Webinars were supported and recorded to raise awareness and understanding of the Career Framework;**

- 'Using the Career Framework to support your Learning and Development, August 2024,
- 'Pathways to Success: Career Development for HCSW, January 2025
- 4 Pillars of Practice - How they can support your Learning and Development, March 2025



**HCSW Education and Development Career Framework  
Levels 2- 4 – Healthcare Science**



**Using the career framework to support your learning and development**

30th August, 2024 12:00 - 13:00

**Join Us!** Registration available at [www.hcstraining.nhs.scot/events](http://www.hcstraining.nhs.scot/events)

**MS Teams Webinar**



**Pathways to Success:  
Career Development  
for HCSW**


a webinar for support workers in Healthcare Science

12:30 – 13:30

31st January 2025

**NHS**  
Education for Scotland

[www.learn.nes.nhs.scot](http://www.learn.nes.nhs.scot)



**NHS**  
Education for Scotland

*Live Event*  
**ONLINE WEBINAR**

27th MARCH 2025  
12:30 - 13:30

**HEALTHCARE SCIENCE SUPPORT WORKERS**

**4 PILLARS OF PRACTICE**

**REGISTER NOW**

HOW CAN THEY SUPPORT YOUR LEARNING AND DEVELOPMENT

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**IMPACT SURVEY**

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We distributed an impact survey November 2024 – January 2025 to support the action plan towards Phase 4 of the wider Scottish Government commission for Healthcare Science Support Worker staff. As a result of the feedback survey results from **37 respondents**, we invited applications to form a dedicated Healthcare Science Support Worker Stakeholder Group membership with a review to improve HCSW's engagement.

Full report of the impact survey findings are available at: [link](#) and with a total **147** views of the survey report from our Healthcare Science colleagues.

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### *Invitation to apply for our HCSW Stakeholder group*

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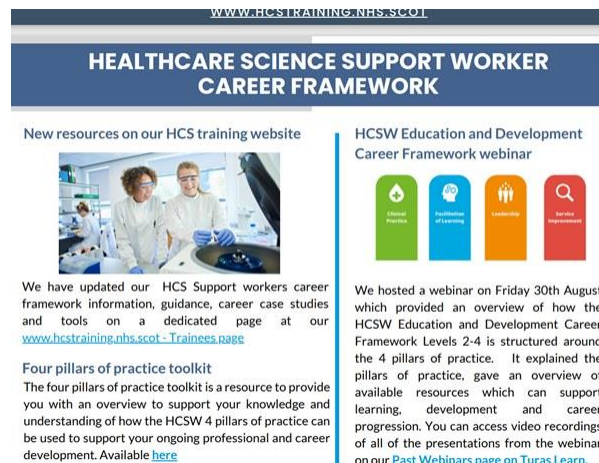
As a result of the feedback survey results, we put out requests to our Healthcare Science colleagues to reinstate a dedicated Healthcare Science Support Worker advisory group membership with a review to improve HCSW's engagement. Open to HCSW such as individuals who have completed education and development. This new Stakeholder group will help HCSW give their perspectives to the framework and the utilisation of this. With the Scottish Government education review report published, this will enable a collaborative approach with the work carried out from the transition between the career levels 2 – 4 along with the education findings gathered from stakeholders to inform the next approach

to meeting the objectives in the career framework commission. We sent out invites to support workers to join our Healthcare Science Support worker stakeholder group to help inform implementation of our objectives with a closing date of 31st July 2025 and to implement a series of quarterly meetings from the end of August 2025.

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### *Dedicated Healthcare Science Support Worker section in the HCS NES Noticeboard:*

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The screenshot shows a noticeboard section titled "HEALTHCARE SCIENCE SUPPORT WORKER CAREER FRAMEWORK" with the URL "WWW.HCSTRAINING.NHS.SCOI" at the top. It features two main updates:

- New resources on our HCS training website:** Accompanied by a photo of two scientists in a lab. The text states: "We have updated our HCS Support workers career framework information, guidance, career case studies and tools on a dedicated page at our [www.hcstraining.nhs.scot - Trainees page](http://www.hcstraining.nhs.scot - Trainees page)". Below this, it mentions a "Four pillars of practice toolkit" which provides an overview to support knowledge and understanding of the HCSW 4 pillars of practice, available [here](#).
- HCSW Education and Development Career Framework webinar:** Accompanied by four icons representing "Clinical Practice", "Education & Development", "Leadership", and "Research & Innovation". The text states: "We hosted a webinar on Friday 30th August which provided an overview of how the HCSW Education and Development Career Framework Levels 2-4 is structured around the 4 pillars of practice. It explained the pillars of practice, gave an overview of available resources which can support learning, development and career progression. You can access video recordings of all of the presentations from the webinar on our [Past Webinars page on Turas Learn](#)."

Our regular communication for all our activity and other relevant updates for our in-service colleagues and stakeholder with the NES Healthcare Science Noticeboard, was updated as of October 2024 to included a dedicated section for support workers about the developments and resources available as part of the Education and Career Framework.

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### *Turas Learn and HCS Training website Visibility*

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The first publication of the Healthcare Science Education and Career Framework 2-4 was hosted on the support worker central pages of Turas Learn. As of September 2024, we

updated our NES HCS training website to include dedicated pages for Support Workers to improve engagement and visibility of the framework, including associated links to our Healthcare Science CPD pages on Turas learn.

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### *Communications to increase visibility and accessibility of the framework resources*

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Our aim was to increase visibility of the NES Healthcare Science Support Worker Framework through various communication channels such as emails, professional body newsletters, health board communications, noticeboards, social media campaigns and newsletters. Ensuring that these communications were targeted to the relevant audience of our support workers and their managers.

### Development of additional resources for the career framework

#### **4 Pillars of Practice Tool Kit Healthcare Science;**

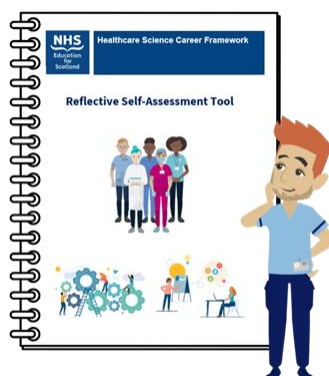


This resource was developed to help provide information and practical guidance as well as scenarios showcasing how the four pillars of practice can be used to support ongoing personal and career development. The toolkit is intended to be a flexible resource which can be used for self-directed learning or as part of taught training provision. The toolkit can be used to support existing learning programmes or activities or used in its entirety to plan specific programmes depending on local or individual needs. The four pillars of practice set

out the knowledge, skills and behaviours needed to safely and effectively carry out your role. The emphasis on each pillar may vary according to the level of practice and the specific role.

This resource is available on our website at [4 Pillars of Practice Tool Kit Healthcare Science](#)

### **The Reflective Self -Assessment tool**



This reflective self-assessment tool is designed to help you evaluate the knowledge, skills, and behaviours (KSBs) outlined in the Framework for your level of practice. It encourages you to reflect on your job role, identify areas for potential growth, and recognise opportunities for further development. Find out about the Reflective Template Assessment tool at this [link](#) on our website.

### **An Interactive CPD Resource Tool for Healthcare Science Support Workers**



To help assist with relevant career development relating to the Four Pillars of Practice, defined by the Career Levels 2 - 4, we developed an interactive CPD resource tool to signpost various CPD resources with overview of the the associated learning activities that can support personal development. This resource supports a gap analysis of what is already in place to support the various elements of the framework, looking across professions and within HCS.



Our CPD interactive tool is available on our website, as a Power BI application tool, which can identify appropriate resources by firstly selecting what Development Framework Level (2-4) you currently are and then what Pillar of Practice you want to develop. Subsequently, an appropriate list of relevant courses is generated to choose from. You can find our CPD resource tool on our website at [Resources and Learning Activities | Health Care Science](#)

[Transition from Support worker to registered practitioner](#)



Following the publication of “*Healthcare Sciences in Scotland: Defining our Strategic Approach*” by the Scottish Government in March 2024, education was recognised as a fundamental pillar in building a sustainable future workforce. To support this aim, the Healthcare Science (HCS) Education Subgroup was established, bringing together Scottish Government policy officials and Healthcare Science professionals to review the current educational provision for Healthcare Science in Scotland. Following on from the findings concluded in the Education Review report, February 2025, it was proposed that progress for Healthcare Science education, would be in the creation of a comprehensive education framework for the Healthcare Science (HCS) workforce at all career stages. This framework will serve as a mechanism to evaluate and incorporate the flexibility needed for acquiring knowledge, skills, and formal qualifications that support expert practice across all levels. A broad-based education that includes core components common to all pathways will lay the groundwork for more specialised and advanced learning, enabling practitioners to evolve into specialised roles or higher levels of practice within service delivery.

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*The next stage of this development is a Scottish Government Commission for the Healthcare Science Education and Career Framework for Levels 5-9, to follow on as a progression of our published framework at Levels 2-4. This commission will commence in April 2025.*

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## Next steps for the HCSW Commission in 2025 -26

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- *Utilising the work that has been carried out within the Education review to map the what is required across the Healthcare Science Professionalisms to ensure seamless transition between support worker and registered practitioner.*
  - *Development of further Educator and Manager resources to support HCSW development*
  - *Audiology HCSW Career Framework to support specialism development*
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## Healthcare Science Education partnerships & stakeholders



HCS continue to engage with colleagues within the NHS Scotland Academy on a range of initiatives such as cardiac physiology programmes, the new Accelerated IBMS Registration Training Portfolio Programme and input to the Decontamination science accelerated programme. In September 2024, a Senior Specialist Lead for Genomics Science was recruited into the NES HCs team on a 2-year secondment from NHS Lothian to provide professional leadership for education and training within genomic medicine in line with the Genomic UK strategy and in collaboration with the Scottish Strategic Network for Genomic Medicine. Work has included undertaking a scoping exercise to identify the available training and education resources for the genomics workforce including those from the NHS England education programme and working in collaboration across the UK in relation to Genomics Training Academy. In December 2024, negotiations began with Scottish Government regarding a new commission to develop a Levels 5-9 career framework.

## Quality assuring all HCS training and education

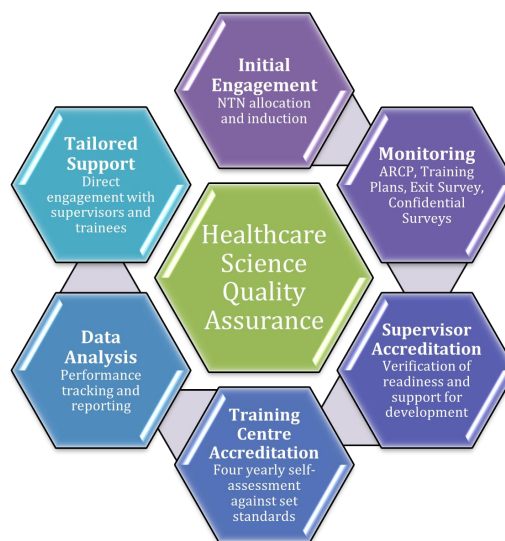
### Overview of the NES Healthcare Science QA Process

The NES Healthcare Science QA system comprises six interlinked stages designed to support consistent, high-quality work-based training. The model enables both proactive and responsive quality management, and underpins national reporting and improvement activity.

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*We use a standard method to monitor training across the HCS workforce. This helps us compare different training centres and specialties, provide necessary assurances to partners, and share best practices.*

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The QA stages are:

1. **Initial Engagement** – allocation of National Training Numbers (NTNs), induction, and guidance to supervisors and trainees.
2. **Monitoring** – regular data collection including ARCP returns, training plans, and exit surveys.
3. **Supervisor Accreditation** – assurance of supervisor readiness, professional suitability, and access to NES development resources.
4. **Centre Accreditation** – four-yearly self-assessment against defined standards, supported by NES guidance and review.
5. **Data Analysis** – monitoring of trends, completion rates, and performance by specialty and Board.
6. **Tailored Support** – direct engagement with services where risks or non-compliance are identified.

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*This document summarises NES Healthcare Science Quality Assurance (QA) activity for the financial year 2024–25. It evidences our approach to monitoring and supporting the quality of training environments, resources, and outcomes across Scotland. Our QA activity focuses on NES’s strategic priorities: **People**, **Partnerships**, and **Performance**, and is informed by QA processes developed in alignment with NES governance, HCPC Standards of Education and Training, and the wider Healthcare Science training infrastructure.*

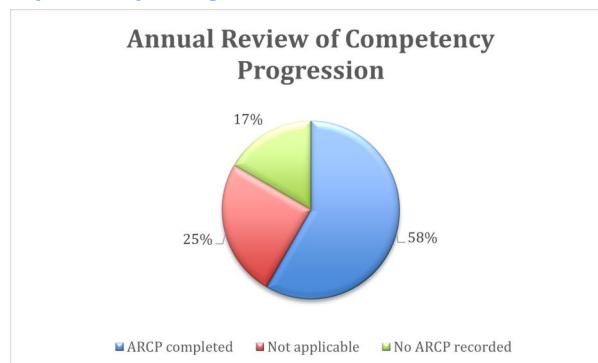
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Through structured monitoring, collaborative engagement, and strong working relationships with training centres and Boards, NES continues to maintain and promote high-quality training provision for postgraduate and practitioner-level Healthcare Scientists.

**Key areas of QA activity during this period included:**

- Annual Review of Competency Progression (ARCP)
- Training Plan compliance
- Supervisor and Training Centre Accreditation
- Monitoring of trainee exit data.

**Annual Review of Competency Progression (ARCP)**



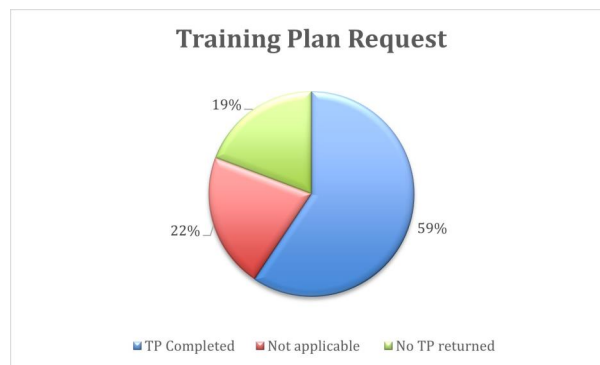
The Annual Review of Competency Progression (ARCP) process continues to be a core mechanism for ensuring progression transparency.

Of the **156** ARCP requests issued during **2024–25**:

- **91** were completed (**58%**)
- **39** were marked as not applicable (**25%**)
- **26** were not returned (**17%**)

**NES continues to monitor completion patterns by Health Board and training pathway to identify areas requiring support or escalation.**

## Training Plan Compliance



Annual training plans are requested for Healthcare Science trainees. These plans facilitate early discussion of learning needs and ensure alignment with curriculum and regulatory standards.

In **2024–25**:

- **111** training plans were returned (**59%**)
- **40** were marked as not applicable (**22%**)
- **36** were not returned (**19%**)

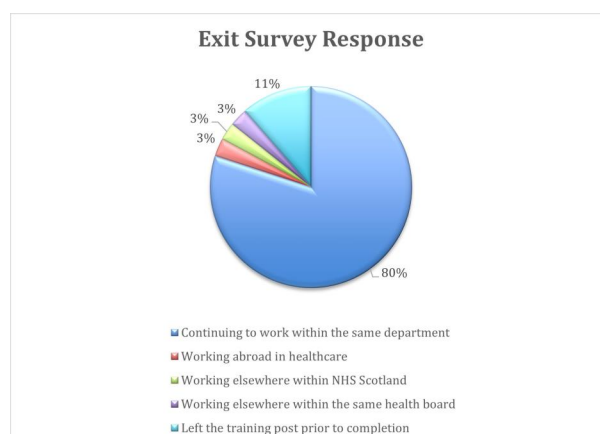
**Compliance continues to be tracked, with tailored support provided where repeated non-returns are identified.**

## Monitoring of trainee exit data

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### *Exit Surveys*

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Exit surveys provide key insight into the trainee experience. An Exit Survey is requested on completion of all Healthcare Science training programmes, and supported academic courses.

Of the **63** exit survey requests issued:

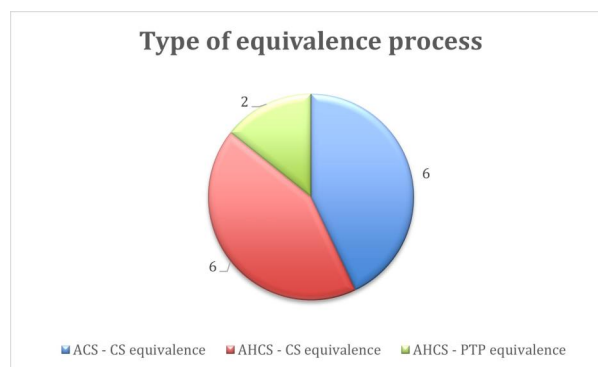
- **34** were completed
- **51** were not applicable
- **29** were not completed

**Low response rates remain a concern, particularly across practitioner and academic training routes. This data is now being used to shape improvement actions in collaboration with training centres.**

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### *Equivalence Processes*

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Persistent delays continue to affect equivalence processes. NES is working with relevant providers and specialties to support improvements. In 2024–25, 14 trainees completing the exit survey had undertaken an equivalence process. Five of these were asked for additional evidence post-submission—ranging from one to three standards and occurring both pre- and post-viva.

### **Supervisor and Training Centre Accreditation**

Centre Accreditation is a four-yearly requirement for all NES-recognised Healthcare Science training centres. This self-assessment process is based on HCPC Standards of Education and Training and is managed through NES QA systems.

#### **As of 31 March 2025:**

- **40** centres held current NES accreditation.
- **19** were in the process of reaccreditation.
- **40** additional centres had incomplete or expired submissions.

Many of the latter were originally accredited in 2020–21 and reached the end of their cycle this financial year. NES is in active dialogue with these centres to support completion of reaccreditation, ensure governance arrangements are in place, and confirm adherence to national standards.

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## *National Training Number (NTN) Allocations*

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QA processes provide NES with consistent oversight of the quality of education and training delivery across Healthcare Science. Monitoring and escalation procedures ensure timely support and informed decision-making.

In **2024–25**, NES issued **41** new National Training Numbers (NTNs) across a wide range of Healthcare Science disciplines.

Each allocation is accompanied by training expectations and access to NES QA processes, ensuring clarity and support for both trainees and host departments.

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*At the end of March 2025 Covering 160 national training number holders and **70** training centres, we have achieved a to requests from trainees for Annual Review of Competency Progression*

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Select each text card to read the comments;

***There are common and recurrent themes reported by trainees, not least the tension between time-to- train and the pressure of service.***

***Our annual survey of trainees and supervisors included a specific set of questions around equality, diversity and inclusion.***

*The results from both surveys, including details of EDI responses can be found on our Healthcare Science training website, within the Quality Assurance section*  
[\(hcstraining.nhs.scot/quality- assurance/\).](https://hcstraining.nhs.scot/quality-assurance/)~

### **Next Steps for 2025–26**

NES Healthcare Science will build on current QA work in the coming year through the following developments:

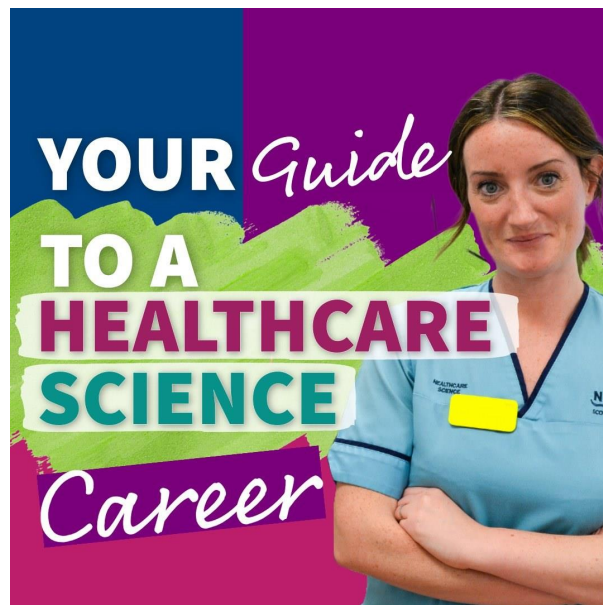
- **Administrative Automation:** Implementation of automated QA tasks (e.g., form tracking, notifications) to increase efficiency and allow greater focus on educational quality.
- **QA System Evaluation:** Completion of a full mapping exercise against the NES Practice Learning Environment Framework, identifying areas for development.
- **Centre Accreditation Guidance:** Finalisation and publication of a detailed guidance document for training centres to support consistent, evidence-based accreditation submissions.



- **Supervisor Support:** Development of new resources and support materials to strengthen supervisor capability and confidence across all training routes.
- **Targeted Board Engagement:** Continued work with Boards demonstrating ongoing gaps in ARCP, training plan or exit survey returns, with a focus on collaborative improvement.

All our information and guidance about Healthcare Science Quality Assurance of training at our website [Quality Assurance | Health Care Science](#)

## Promoting and raising the visibility of the HCS Profession



A range of promotional events have been delivered in partnership with HCS colleagues in the regional boards to promote the healthcare science profession and this has been extended to collaborating with external organisations such as DYW Live; My world of work; Skills Development Scotland; Glasgow Science Centre, Dundee Science Centre and Scottish Universities Life Sciences Alliance (SULSA).

Every year it's great to see all the engagement across the NHS Scotland boards either with STEM activities, from setting up stalls in the hospitals, to hosting webinars or contributing with social media posts to celebrate and raise awareness of Healthcare Science.

This year there was a large variety of activities organised throughout the week that involved Healthcare Scientists across Scotland getting involved, such as; **NHS Tayside Dundee Science Centre** School event, and visits from with our **Chief Scientific Officer** as part of the Roundtable event (redefining the Healthcare Science Workforce) at **NHS Tayside, NHS Lothian** and **NHS GGC**.

NES Healthcare Science have good stakeholder engagement and support from our **DYW Live** group who host Schools Webinar series which share insights into the classrooms of Scottish Schools about the roles of a Clinical Engineer, Vascular Scientist and a Reconstructive Scientist -Healthcare Science Week page here - [Healthcare Science Week Videos 2025 | e-Sgoil](#)

Our team participated in the **Glasgow Science Centre** for another year of '**Curious about Session**' as a live streamed webinar to schools about Biomedical Science Careers from NES Healthcare Science. Total numbers of views on live stream were **49** viewers, and for the recorded version, a further **949** views across Scottish Schools. We also presented a welcome to healthcare science week opener at **NHS Tayside**, Education Day for healthcare scientist colleagues. NES HCS team worked in partnership Healthcare Science Careers Webinar for Scottish University Students with **89** attendees and presenters from **NHS Grampian** and **NHS Lothian** covering Clinical Scientist programmes in Genomics and Clinical Engineering.

We work closely with the **NHS Scotland Careers** marketing team to support promotions on social media channels during Healthcare Science Week as part of an national campaign. The key aim of these collaborative resources is to also engage with the NHS boards for shared marketing assets to work towards the CWS Strategic Objective of increasing attraction to the NHS Scotland workforce, and raising awareness of these career opportunities.



## Join our Live Webinar

### *A Career in NHS Healthcare Science*


 **FRIDAY 14TH MARCH, 2025**

 **13:10-13:50**

Come along and meet our panel of Healthcare Scientists talk about their career pathways into the NHS. Find out how you can apply too!



[REGISTER NOW](#)



# HEALTHCARE SCIENCE Week

10th March 2025

<b>MONDAY</b>	<b>11:45</b>	<b>CLINICAL BIOENGINEER: REHABILITATION</b>
<b>WEDNESDAY</b>	<b>13:45</b>	<b>VASCULAR SCIENTIST</b>
<b>THURSDAY</b>	<b>10:45</b>	<b>RECONSTRUCTIVE SCIENTIST</b>

National e-Learning Offer

**DYW | Live**  
Skills | Employability | Pathways



**10 March - 13.00**

**A Biomedical Scientist's Journey**  
Claire Cameron  
NHS

**GLASGOW SCIENCE CENTRE**  
Regional Science Learning Partnership



## NHS Scotland Careers Website for Healthcare Science

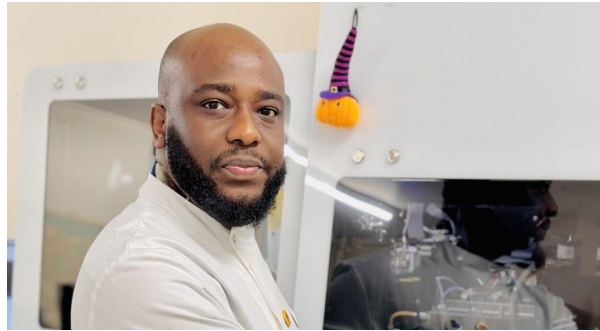


Our latest updated career profile for NHS Scotland Careers website, Healthcare Science is '[How to become a clinical scientist in gastrointestinal physiology](#)'. Thank you to our GI Specialist Matter Expert, GI Physiology Clinical Scientists in service who helped review the content for our website Healthcare Science careers to include this profile. We are continuing to update this website to represent the various career opportunities in Healthcare Science which can be viewed at [Healthcare science | NHSScotland Careers](#). Our next profile due to published in Summer 2025, is the Vascular Scientist role.

The latest career blog in Healthcare Science on our NHS Scotland career website is 'Basil's story: An international journey in biomedical science'. Find out more about Basil's career in biomedical science which has taken him over 4000 miles. Here's his journey, from Nigeria via Cyprus, to Scotland at [Basil's story: An international journey in biomedical science](#)



1 - [How to become a clinical scientist in gastrointestinal physiology](#)'



2 - [Basil's story: An international journey in biomedical science](#)

Supporting Healthcare Scientists to progress their career through the provision of a range of resources

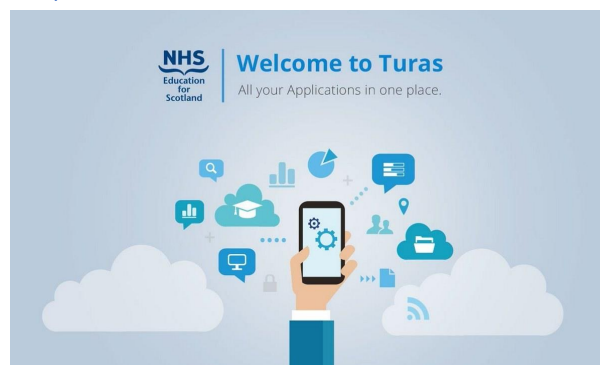


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*Our ambition is to offer a multi-profession repository of CPD and e-learning resources which are beneficial to all Healthcare Science staff, irrespective of role, level, or specialism. Our resources cover a broad range of generic skills and more specialised learning, ultimately aiming to help you develop in your role and to support you throughout your career.*

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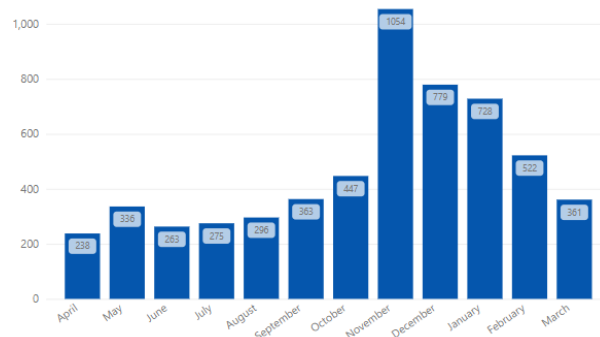
CPD and e-learning 1st April 2024–31st March 2025



**Analysis of Turas Learn engagement between 01/04/2024 and 31/03/2025**

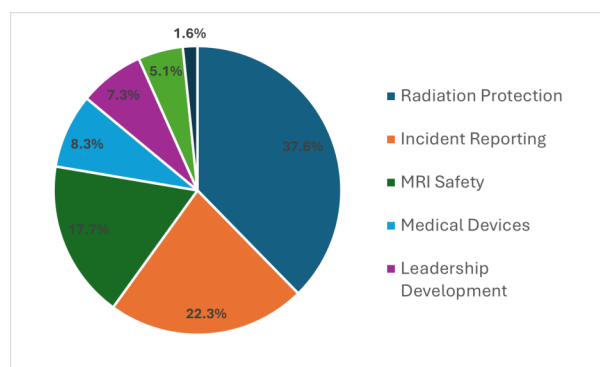


During the 2024-25 financial year **5,001** unique learners engaged with and completed at least one of the CPD and e-learning resources developed by NES Healthcare Science. Our wide range of resources includes comprehensive learning programmes and e-learning modules hosted on our [Turas Learn area](#).



3 - Figure 1

Figure 1 (opposite) shows engagement with our available CPD and e-learning resources throughout the year,



4 - Figure 2

Figure 2 (opposite) demonstrates a breakdown of completions by broad theme of resources.

## Healthcare Science Events 2024 - 2025

### Annual Healthcare Science Conference 2025





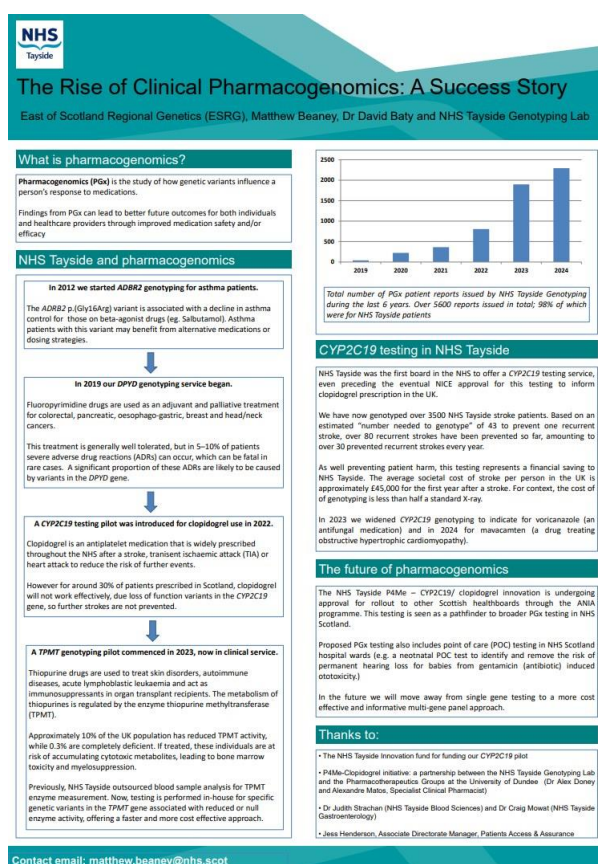
## NHS Education for Scotland / Scottish Government Healthcare Annual Event 2025

Our event attracted a total of **245** attendees across four themed sessions:

- Healthcare Science Strategic Approach
- Healthcare Science Education
- Healthcare Science Leadership
- Innovation in Healthcare Science

You can access an interactive programme which has embedded links to recordings of the presentations by selecting the following link: [Recordings from the NES / SG Healthcare Science Annual Event 2025](#).

**Poster Competition** Congratulations to Matthew Beaney (Trainee Clinical Scientist, NHS Tayside) who was the winner of our poster competition. The brief was to design an engaging poster that clearly communicates and celebrates research or innovation within their Healthcare Science specialism or service. You can see the winning poster in addition to the two runners-up below. You can also view all the poster entries within by selecting the following link to the [event website](#) and navigating to the Posters tab at the bottom of the page.



5 - Poster Winner: Matthew Beaney (Trainee Clinical Scientist, NHS Tayside) – “The Rise of Clinical Pharmacogenomics: A Success Story

## Transforming genomic medicine with Next Generation Sequencing

## How NGS contributes to diagnosing heritable disease

*Diana Rios Szwed, South East Scotland Genetic Service, NHS Lothian*

**~10 000** Rare diseases - affecting fewer than 1 in 2000 people

80%  
Of rare diseases  
are genetic

~6%  
Of people will be affected by a rare disease at some point in their life

## What is DNA sequencing?

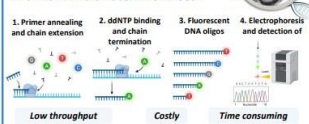
Sequencing decodes the genetic blueprint of life, providing the foundation for diagnosing and treating diseases at their root cause.

**We determine how the patient's DNA sequence has changed, allowing to diagnose genetic disease**



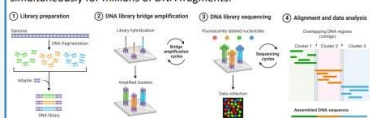
## How Sanger Sequencing works

The British biochemist Frederick Sanger developed the dideoxy chain termination sequencing method (i.e. Sanger sequencing) which won him the Nobel Prize in 1980.



## NGS: Sequencing by synthesis

Sequencing by synthesis (NGS) was developed in the mid-2000s. DNA strands are copied, and each nucleotide is identified as it is added to the growing strand. Fluorescently labelled nucleotides emit a signal when added, which is detected by the sequencing machine. This process happens simultaneously for millions of DNA fragments.

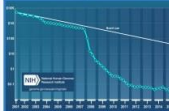


**Benefits of NGS sequencing:**

- **Fast:** results in hours instead of weeks
- **Cost effective,** sensitive and versatile
- **Large scale:** massively parallel, suitable for small panels to whole genome sequencing  
- *generates a lot of data!*



Cost per raw Mb of DNA



## Our Whole Exome Sequencing service

**30%** Have pathogenic or likely pathogenic variants


This can inform patient management, potential treatments and family planning

6% Have variants of uncertain significance (VUS)

Underscoring the need for more research to strengthen evidence and improve interpretation

Image credit: Hoffender, Blumina, NYU Bloom

6 - Runner up: Diana Rios Szwed (Trainee Clinical Scientist, NHS Lothian) with "Transforming Genomic Medicine with Next Generation Sequencing"








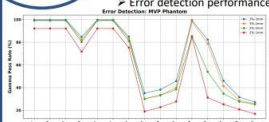

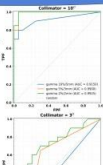



**NHS**  
Education  
for Scotland

# Implementing MobiusFX: Enhancing Treatment Outcomes

Michael Taylor, Emma McIntosh, Sankar Pillai

Radiotherapy Physics, Medical Physics Department, Ninewells Hospital and Medical School, NHS Tayside, Dundee, DD1 9SY

Project Timeline	Introduction
<div style="display: flex; align-items: center;"> <div style="flex: 1;">  <b>Data Transfer</b>  <b>Error Detection</b>  <b>Commissioning First Site: Prostate</b>  <b>Review</b>  <b>Commission New Sites</b>  <b>Clinical Service &amp; QA</b> </div> <div style="flex: 1; text-align: center;">  </div> </div>	<ul style="list-style-type: none"> <li>➤ Technological advancements have resulted in increasingly complex radiotherapy (RT) treatment plans.</li> <li>➤ Advanced methods are required to provide verification of the entire treatment chain. [1]</li> <li>➤ Numerous commercial solutions are available in the UK for Online Treatment Monitoring (OTM).</li> <li>➤ Log-file analysis from the LINAC trajectory files is generally considered to be the optimal solution for OTM. [2]               <ul style="list-style-type: none"> <li>➢ At NHST, we have a project underway to commission and bring into service, MobiusFX (MFX, Varian Medical System, Palo Alto, CA, USA) for log-file based OTM.</li> </ul> </li> </ul> <h2 style="text-align: center; background-color: #0056b3; color: white; padding: 5px; margin-top: 20px;">First Steps: Error Detection</h2> <ul style="list-style-type: none"> <li>➤ In-house software was developed (Python) to introduce known errors to plans generated using the treatment planning system (TPS) and test data transfer to the MFX system.</li> <li>➤ Error detection performance was tested by delivering a standard plan without any errors, then delivering treatment with an intentional error (Fig. 1):               <ul style="list-style-type: none"> <li>○ Jaw + 5, 5, 10mm</li> <li>○ MLC + 3, 5, 10mm</li> <li>○ MU ± 3, 5, 10, 15</li> </ul> </li> </ul> <div style="text-align: center; margin-top: 20px;">  <p><b>Figure 1: Gamma pass rates of plans analysed within the MFX, for standard (SQ) and error plans</b></p> </div>
<h2 style="background-color: #0056b3; color: white; padding: 5px; margin-bottom: 10px;">Future Work: Commissioning</h2> <ul style="list-style-type: none"> <li>➤ First clinical site will begin with prostate patients, allowing users to gain experience interpreting and investigating results (Fig. 2).</li> </ul> <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="margin-left: 10px;"> <p><b>Figure 2: Prostate VMAT plan from the Delta4 patient</b></p> </div> </div> <ul style="list-style-type: none"> <li>➤ Delta4 patient QA phantom can be compared to MFX and error detection tolerances, to set clinically acceptable baselines.</li> <li>➤ Receiver Operating Characteristic (ROC) analysis will allow for tuning of OTM behaviour, yielding satisfactory compromises between detection &amp; workload (Fig. 3).</li> </ul> <div style="text-align: center; margin-top: 20px;">  <p><b>Figure 3: ROC of gamma tolerances for introduced errors</b></p> </div>	<h2 style="background-color: #0056b3; color: white; padding: 5px; margin-bottom: 10px;">Outlook</h2> <ul style="list-style-type: none"> <li>➤ OTM with MFX will allow for verification and dose assessment for each treatment fraction, and will require additional quality assurance.               <ul style="list-style-type: none"> <li>○ Release into clinical service requires the development of a regular QA protocol to trend and monitor the systems performance.</li> <li>○ Patient outcomes are improved by making treatment more sensitive and reactive to errors, allowing for it to be corrected during treatment.</li> </ul> </li> <li>➤ Time spent on patient specific QA can be dramatically reduced, reducing the burden to the service (Fig. 4).</li> </ul> <div style="text-align: center; margin-top: 10px;">  <p><b>Figure 4: Advantages of MobiusFX OTM compared to standard patient QA practice</b></p> </div>

**References**

1. Sankar P, Kishore A, Subramanian S, Neel C, Vishnu V, Rangan J, Prabhu A, et al. Simola J. 2020. Open report server: guidelines for the clinical implementation of online treatment monitoring capabilities for VMAT/IMRT. Physica Med Biol. doi:10.1088/1741-9590/ab9d0c

### *"Spotlight Your Work!" Webinars*

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We ran one of our "Spotlight Your Work!" webinars on Friday 29th November 2024, highlighting the work that our Healthcare Science colleagues are doing to improve healthcare across NHS Scotland. The presentations covered the following specialisms:

- Genomics
- Maxillofacial Prosthetics / Reconstructive Science
- Reproductive Sciences

**All our past webinars are available at [Upcoming Events / What's On | Turas | Learn](#)**

#### [IBMS Degree Assessment Bursary 2024-2025](#)

This degree assessment is a prelude by the professional body, advising candidates about top-up learning necessary to acquire Biomedical Scientist HCPC registration. Support Workers are an important source of workforce supply into higher career-grades, so we were pleased to maintain this initiative for 2024 - 2025.



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*We offered;*

**35** *Biomedical Science support staff fee support for assessment of their non- accredited degree transcripts application with the Institute of Biomedical Science.*

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Higher Specialist Scientific Training Equivalence Cohort 2020 -2025

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*We continue to track the progress of the Higher Specialist Scientist cohort, initially sponsored in 2020 by the Scottish Government. With the first of the cohort anticipated to complete by the end of 2025.*

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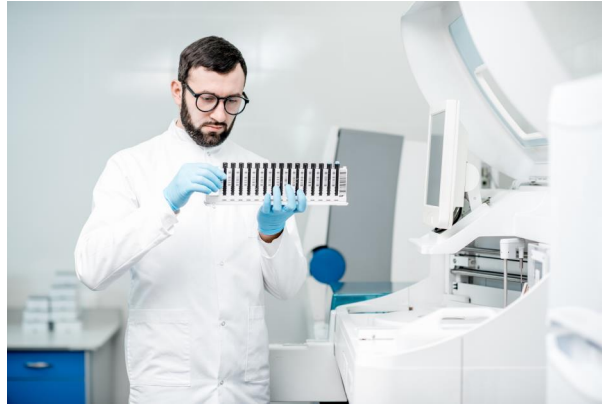
Clinical Physiologists training



- 
- *a cohort of **14** trainee physiologists on the 4-year work-based degree programme at Glasgow Caledonian University.*

- *17 trainee clinical scientists/ physiologists commenced the three-year Scientist training programme.*
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## Postgraduate Bursary



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*Funding was not initially allocated as the bursary had been removed to meet required financial savings. However, it has now been reinstated for the 2025–2026 financial year in response to pressures from both service and the Scottish Government.*

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## Commissioning Trainee Clinical Scientists 2024 - 2025



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*Our core intake of Clinical Scientist 3-year training posts for April 2024 - March 2025*

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- 
- *23 new starts in **2024** across the various specialties.*



- *using a co-funding model with service to maximise September's training post numbers.*
  - *47 expressions of interest for Trainee clinical Scientist posts from NHS boards.*
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## Our vision for 2025 -2026

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***As we move forward to 25-26, our focus will be;***

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- *development and implementation of a new vision for NES HCS team*
  - *development of further resources for our already existing Level 2-4 Career Framework and the expansion of this to our various HCS specialties*
  - *development of Level 5-9 Career Framework for HCS. We have already reached out through our networks for key individuals who wish to be involved in this development, and we thank all who have noted their interest.*
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