Report on the Rehabilitation Engineering Workforce 2016

Background

This report details the findings of a survey carried out of the rehabilitation engineering workforce during 2015. It describes the landscape of rehabilitation engineering service provision, and the Scientist and Practitioner's role, both in NHS-funded services, independent and third sector. This report concludes with recommendations as to how IPEM can best support the profession in this area of work.

Key Findings

27% of (known) wheelchair services responded, which represents a good response rate for this hard-to-reach group. Information on a total establishment of 305 WTE posts was received (68 Clinical Scientist posts, 237 technologist posts).

- 13.8% CS vacancy rate in large centres
- 10.1% CS vacancy rate in small services
- 17.6% CS aged over 55; which is high compared to radiotherapy (7.8%)
- 9.8% overall technologist/practitioner vacancy rate
    - 7.5% in large centre
    - 11.1% in small services
- 30% technologists aged over 55
- 80% of respondents believe the technologist establishment to be insufficient

Introduction

Rehabilitation Engineers design, develop and implement assistive technology to restore or improve the ability of a person to carry out everyday tasks all settings.

Academic research areas include biomechanics, including gait analysis, motor control and neuroprosthetics, and functional electrical stimulation. Within healthcare settings rehabilitation engineering and assistive technology departments work to restore or improve the ability of a person to carry out everyday tasks in domestic, educational, vocational, recreational, social and institutional settings.

Rehabilitation Engineers working in healthcare provision are involved in the assessment of patients for assistive devices, fit and repair devices, as well as manufacturing, designing and developing new ones. The range of devices includes wheelchairs and other specialist vehicles, specialised seating, Augmentative and Alternative Communication (AAC) systems such as speech synthesizers, Electronic Assistive Technology (EAT) including telecare, technology access, customised or modified controls, power mobility and integrated access, Functional Electrical Stimulation (FES) (for example to control dropped foot after a stroke), and specialised orthoses and prostheses such as artificial legs. Rehabilitation Engineers work in partnership with physiotherapists, speech therapists, prosthestists and orthotists to provide aids to living for individuals with physical disabilities.

There is no officially agreed definition of a Rehabilitation Engineer, and each employer, both within and without the NHS, will use the term differently. Most frequently, and for the purposes of this report, a rehabilitation engineer is defined as someone who is a registered Clinical Scientist (Rehabilitation Engineering), eligible to join the Register of Clinical Technologists (Rehabilitation Engineering) or working as a Technologist (Rehabilitation

engineering). Those who upholster or repair devices (mostly wheelchairs), or manufacture to specification, are usually described as Rehabilitation Engineering Technicians, wheelchair technicians, or workshop technicians. Technicians are just as integral to the provision of Rehabilitation Engineering Services as Clinical Scientists and Technologists, although they are not eligible to join IPEM or the RCT, as they are critical to the provision of Rehabilitation engineering services, they have been included in this survey.

Rehabilitation engineers work in integrated multidisciplinary teams, and as such are often (but not always) separate managerially and professionally from other healthcare science engineers and physicists. Many teams are well integrated and there can be some flexibility of staffing mix with some interchange and role crossover between Clinical Scientists, Occupational Therapists and Physiotherapists.

Rehabilitation equipment manufacturers may also offer advice and services along the same lines as a wheelchair enablement service, on seating modification and assistive technology. Many equipment manufacturers employ registered Clinical Technologists, Clinical Scientists or qualified, but not registered, technologists, however there is no requirement to do so. This is particularly true of equipment that is not funded by the NHS, for example high-specification wheelchairs.

Service Provision Structure

The provision of Rehabilitation Engineering Services varies widely. There are several different routes to access rehabilitation equipment within a healthcare setting; this varies from country to country as well as within England.

In Wales, Scotland and Northern Ireland, almost all provision is through large services;

Wales:

- ALAS
- Bryn-y-Neudd

Northern Ireland:

Regional Disablement Services

Scotland:

- SouthEast Mobility and Rehabilitation Technology Centre (SMART Centre), based at Astley Ainslie Hospital, Edinburgh
- Tayside Orthopaedic and Rehabilitation Technology Centre (TORT), based at Ninewells Hospital
- West of Scotland Mobility and Rehabilitation Centre (WestMARC),based at Southern General Hospital, Glasgow
- NHS Highland Rehabilitation, based at Raigmore Hospital, Inverness
- Mobility and Rehabilitation Service (MARS), NHS Grampian, based in Aberdeen

These large integrated services provide all services from one centre, and employ a number of Clinical Scientists, as we all as a large number of Technologists and technicians. They usually comprise electronic assistive technology, environmental controls, prosthetics and orthotics, specialist seating and wheelchair services, and frequently gait analysis. In NI, Wales and Scotland, there are a small number of supporting wheelchair-only services in addition.

In England as well as large integrated services there are a plethora of wheelchair only services, which predominantly employ technologists and technicians, other models of access, such as via the LEA for paediatric services or the local council for adult and children's services. Each Clinical Commissioning Group (CCG) commissions a wheelchair

service, and the present model is that almost all are provided locally. There are some exceptions, such as Birmingham Community NHS Trust being commissioned to provide Coventry Wheelchair Service. There are approximately 150 of these wheelchair services, often employing just one or two engineers. As well as NHS wheelchair and enablement services, rehabilitation engineers (both Scientist and Technologist) are employed by equipment manufacturers, charities, Universities, schools, and independent companies, who may be contracted to provide NHS services.

Similar services, especially for children, may be provided through local education authorities. For example the City of York Council Special Educational Needs Service - Specialist Teaching Team comprises a physical difficulty and medical need team, and a vision support service, equipment is often supplied direct to them from a manufacturer without independent technical support. Special Schools frequently employ qualified technical staff; Chailey Heritage School for example has a specific Clinical Services department located there, provided by the local NHS Community Trust.

In England, such integrated services are:

- Bristol Centre for Enablement
- Oxford Centre for Enablement
- Kent Communications and Assistive Technology
- Specialised Ability Centre, Manchester
- West Midlands Rehabilitation Centre
- Chailey Heritage Clinical Services
- Sheffield
- Rehabilitation and Aids to Living Service, Newcastle

In summary service providers can be broadly categorised as:

- Large specialist services, providing all services, and accepting referrals from a very large area, often employing a large number of clinical scientists.
- Wheelchair-only services
- Other models of access, such as via LEA, or local council (England only)
- Independent and third sector services, which may be contracted to the NHS or standalone (England only)

In January 2015, NHS England commissioned a hub and spoke model for Augmentive Assistive Communication services, and these Specialised AAC Services are to be funded by NHS England and will provide assessment, review and equipment for those with the most complex communication needs, and/or those who require a high tech powered communication aid. This was anticipated to cover approximately 10% of the AAC population. The remaining 90% of children and adults who need AAC will be supported by local AAC services, which will be commissioned by Clinical Commissioning Groups (CCGs), education and social care commissioners and overseen by Health and Wellbeing Boards that have been established in every Local Authority in England.

Many integrated centres encompass an equipment loan service or library, or Disabled Living Centre whereby small pieces of commercial equipment such as chairs, special seating, and kitchen and bathroom equipment can be tried out with the benefit of impartial clinical input and advice, prior to purchase.

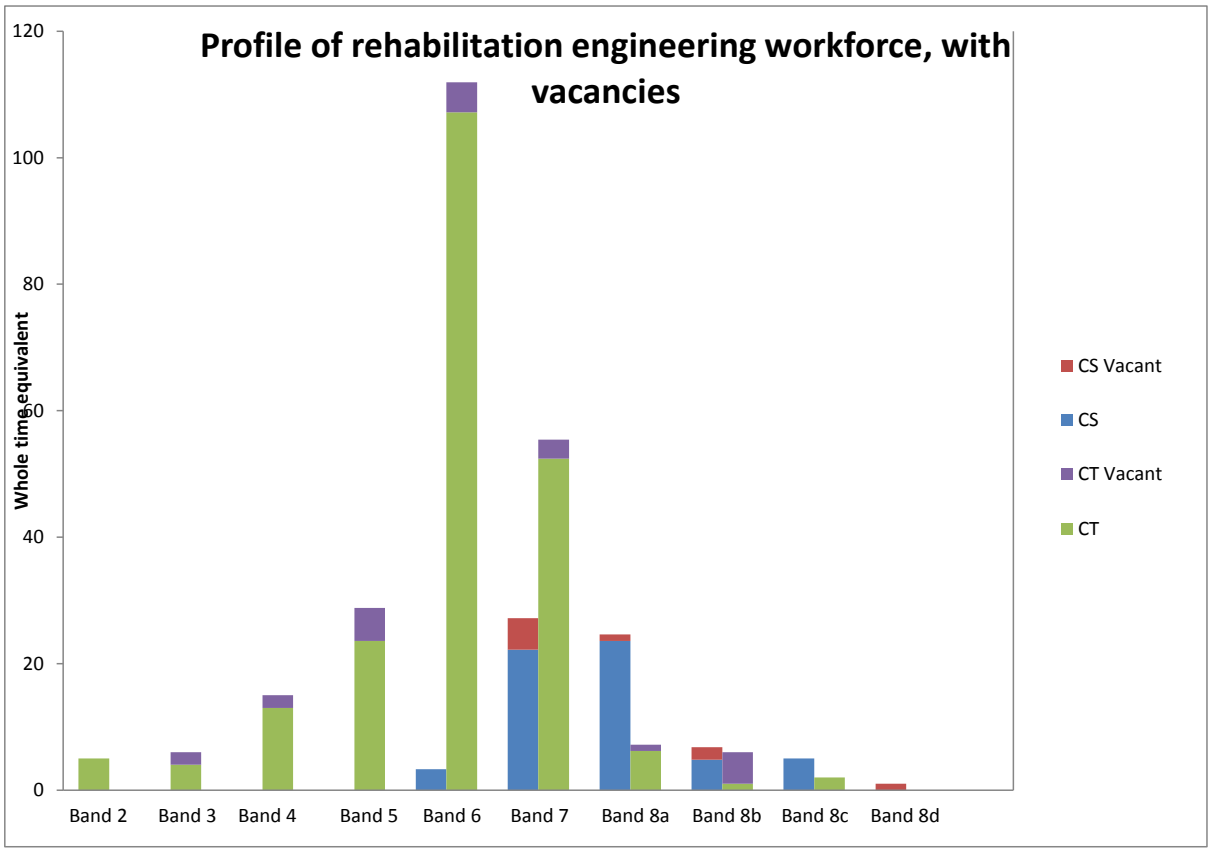
This varied landscape of service provision is a challenge to collecting workforce data, and also means that it is entirely possible that services are supplied without the expertise of Clinical Scientists or technologists.

Survey Results

An online survey, constructed with aim of taking less than 30 minutes to complete was distributed through a network of contacts, displayed on IPEM's website, RESMaG's website, and disseminated via twitter.

There were 53 usable responses containing workforce data, which represents approximately a third of the known centres providing rehabilitation engineering services. Respondents were skewed towards large centres employing more than one clinical scientist, and providing a multiplicity of services, from which a 67% response rate was achieved. By contrast only 27% of (known) wheelchair services responded, which does represents a good response rate for this hard-to-reach group, but nevertheless it must be borne in mind that technologists working in this field me be under-represented in the responses.. Information on a total establishment of 305 WTE posts was received (68 Clinical Scientist posts, 237 technologist posts).

The workforce profile, both filled and vacant posts of the whole responding workforce is shown in the figure below:



Vacancy rates and recruitment

Clinical Scientists

Within the responding centres, there is a 12.8% vacancy rate for Clinical Scientist, which in a workforce numbering less than 100 (68 responding) is very significant. There are reportedly 21 (20.4 WTE) supernumerary STP trainees, which would be expected to fill these vacancies within the next two years, but this does not take into account the geographic location of the trainees and vacancies. 12 of the Clinical Scientist at the responding centres are over 55, 17.6% of the responding workforce. This is an extremely high percentage c.f. for example radiotherapy, of which only 7.8% over the workforce is aged over 55, and is no doubt adding to the concern amongst this workforce. HSCiC statistics show that, according to ESR records, 16% of the Qualified Healthcare Scientist workforce is aged 55 and over.

- 13.8% vacancy rate in large centres
- 10.1% vacancy rate in small services
- reportedly 21 (20.4 WTE) supernumerary STP trainees

- this out-turn will reduce vacancies over the next two years, but is insufficient to eliminate them
- 17.6% aged over 55; which is high compared to radiotherapy (7.8%)

Clinical Technologists

The vacancy rate is lower amongst technologists, although still high enough for concern: 9.8%. There is considerable concern over the pipeline with very limited training opportunities, and 30% of the workforce aged over 55. Just one supernumerary rehabilitation engineering technologist was identified; others registered on training schemes are already employed in established posts and will be unable to fill the identified vacancies.

- 9.8% vacancy rate
  - 7.5% in large centre
  - 11.1% in small services
- 30% aged over 55
- Low numbers exiting from the PTP scheme (<10)

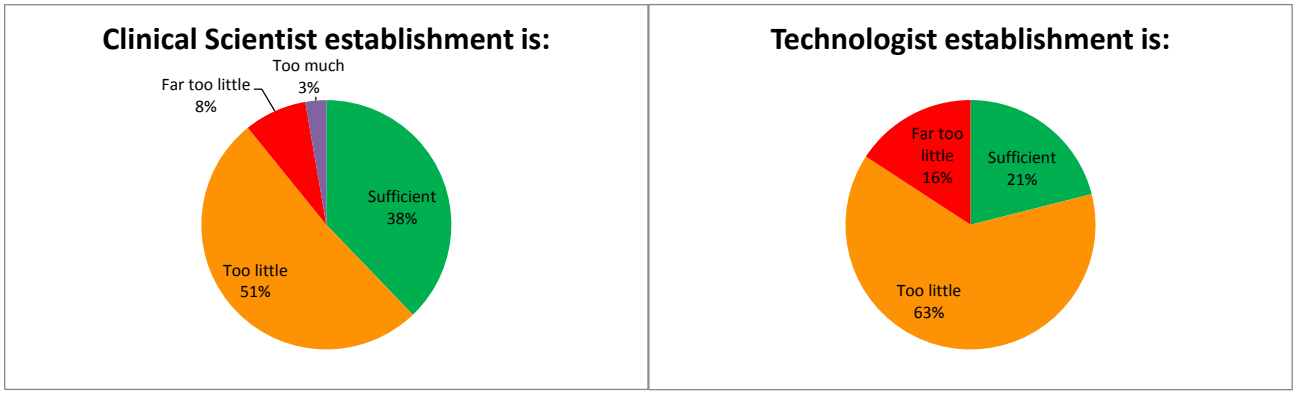
Many respondents reported recruitment difficulties into both technologist and practitioner roles.

> "Due to so few trained staff it is very difficult to recruit and experience have shown that appointed people are often pulling out for other graded jobs available at the same time"
>
> "Vacant post still unfilled after over a year"
>
> "Also having recruited to this area before i found very few people applying for posts for unknown reasons despite being band 6. Possibly due to relocation budgets being cut.
>
> "Found it very difficult to recruit qualified technologists with any kind of experience in service other than their training degree, which is not enough to move into our service. Interviewed in excess of 10 for a post."

The data is clear: there is a shortage of trained staff, throughout all four countries of the UK.

Establishment Concerns

In terms of establishment, only 38% (14/37) of respondents believed the Clinical Scientists establishment was sufficient. Of these, 3 worked in a service which did not employ a clinical scientist, and they felt this was appropriate, and a further 2 commented that although the WTE establishment was sufficient, the lack of resilience for covering annual leave, maternity leave and other occurrences reduce the actual workforce available on a day-to-day basis.



This dropped to 21% (8/39) for the technologist establishment. One respondent commented that the service provided was matched to the staff available, not the service needs.

Several respondents commented that there was insufficient resilience to accommodate annual leave, sickness, or maternity, and many commented that Trust funding for short-term cover for maternity was not possible. Other respondents commented that in their experience it was impossible to recruit to short-term posts.

> "If fully staffed, then level is nearly sufficient to run a hand-to-mouth service provided they are supported by other staff (technologists, admin, therapists). Problems arise when other staff groups are not replaced and clinical scientists are required to undertake work that is more appropriately done by other staff groups. Establishment level is not sufficient for service development nor providing planned clinical reviews nor meeting new external developments, such as reacting to changes in regulations. "

> "No capacity to cover annual leave or long term sickness"

If a service cannot maintain service with their establishment during expected annual leave, normal sickness levels and maternity leave the establishment is actually insufficient . Such absences are expected, as statutory working benefits, and must be accounted for in establishing adequate staffing levels. Maternity leave may not be have historically been adequately allowed for in this traditionally male-dominated workforce, but as the workforce changes to more accurately reflect the demographics of the working population, this will be encountered more frequently.

One centre had no concerns, in sharp contrast to all other respondents. They say:

> "We have had to proceed with our own recruitment and training system as there are not enough technologists on the labour market. Don't forget the massive resource of experienced engineers in industry who just need a short conversion course and some experience to convert to Clinical Engineering. They also come with cutting edge ideas and a great work ethic."

How this centre is able to utilise this route, when others report that:

> "There is a need for a post graduate route into the profession, which needs to attract graduates with mechanical engineering experience. - There then needs to be a further education programme to support the work place competencies."

> "Reducing opportunities to recruit from outside industry and train in-house has, in my opinion, had a detrimental impact on the recruiting of REs nationally."

Is unclear, but is worthy of further investigation.

There are further concerns of the workforce regarding career progression, with 34/38 expressing concern over this as not only does it reduce the attractiveness of the profession, both scientists and practitioners, it encourages experienced staff to leave in search of progression.

> "Yes, this [career progression] is a very important issue. Clinical scientist staff in Rehab Eng do not have the same career ladder as do colleagues in Medical Physics and are generally graded lower, even though they have direct patient contact and take are responsible for patient safety and risks associated with use of assistive technology. They generally work in smaller groups and less options for career progression or changes to their role. This is having a detrimental effect on recruitment and retention, as well as on the morale of current staff."

Except at the same centre which is able to recruit from industry and has proceeded with its own training system:

> "career progression is dependent on the whole range of their work of which rehab eng is only a part"

The absence of a clear progression scheme from apprenticeship through to registration (as either a technologist or a scientist) is a barrier to career progression, and the absence of a functional training programme directly producing qualified technologists creates a very concerning picture.

The workforce is undergoing change, is aging, and the pipeline for new staff is unclear. While there is a clear route for training of Clinical Scientist staff, this is a relatively small part of the workforce, and the career progression is limited, reducing attractiveness of the profession, particularly in areas with a high cost of living.

For technologist staff, there is no clear training pathway, with limited uptake of the Practitioner Training Programme by Higher Education Providers, and an out-turn of just two in the last year. The IPEM Technologist's Training Scheme continues to be a respected source of technologists, but has just undergone re-structuring, and limited availability of moderators and assessors mean that throughput is limited. Just four trainees are currently registered with IPEM, two of these are overdue for completion by 3 years, and none of them correspond to the survey responses. Furthermore, there is a widespread misconception that IPEM's Technologists' Training Scheme has closed. Several centres reported that there was no route to registration for qualified engineers from other disciplines, whereas the equivalence route to registration on the RCT was opened early in 2015, which requires applicants to be working at a standard equivalent to degree, and present a portfolio of work demonstrating the required competencies. This would be open to engineers, qualified elsewhere once they have amassed a suitable rehabilitation engineering portfolio, which would typically take around 12 months. This may, however be difficult in small services with only 1 or 2 employees

There is an almost universal concern over filling vacancies. Respondents in high cost of living areas attribute difficulty in recruitment to the cost of living, or cuts in the availability of relocation expenses. However, given that similar difficulties are experienced in all areas, this suggests that the difficulty is multi-layered, but at the root is an acute lack of training provision.

Rehabilitation departments and services known to the workforce intelligence unit, with staffing levels where known can be viewed through an interactive map on the Workforce Intelligence Unit's webpages.

Background to Training in Rehabilitation Engineering, Scientist and Practitioner

Clinical Scientists

IPEM Training Scheme

Prior to 2011, IPEM ran a four year training programme for Clinical Engineers, leading to a Diploma from the Institute of Physics and Engineering in Medicine, assessment by the independent Association of Clinical Scientists (ACS) and registration with the Health and Care Professions Council as a Clinical Scientist. The training consisted of two parts; Part 1 and Part 2, each taking a minimum of two years to complete. In 2011, England moved to training via the Modernising Scientific Careers (MSC) Scientist Training Programme (STP), and Part 1 applications were only considered from Scotland and Northern Ireland. Wales adopted the STP in 2012, and Northern Ireland in 2013. Scotland implemented an alternative 3-year supernumerary training scheme in 2014.

ACS Route 1

Part 1: Individuals would be registered on the scheme, and join IPEM as Associate Members. Working in a Training Centre, they would be trained in-house, and would specialise in three areas of medical physics and/or clinical engineering. Trainees also completed an MSc in an engineering discipline, and some opted to interrupt their clinical training in order to complete a PhD. After a minimum of two years, once their training co-ordinator was satisfied that their work was of the appropriate level, trainees would submit for assessment. This took place by portfolio and viva voce examination conducted by IPEM assessors. Up to two resits, and/or resubmission of the portfolio were permitted. Occasionally individuals left the training programme, either following failure, or for other reasons. Trainees could take more than two years to complete if:

- their training co-ordinator felt they needed longer to reach the required level;
- they opted for a PhD;
- they were required to re-sit, or re-submit a portfolio;
- personal circumstances forced a leave of absence for a period of time, eg maternity.

Part 2: for the second part of their training, trainees could take one of two routes.

1) Register with IPEM on the Part 2 programme: IPEM would provide a mentor or "external advisor", who would oversee and comment on their training programme, and assist in ensuring trainees acquired a sufficiently large range of experience to pass ACS assessment.

OR

2) Not register on Part 2, but rely on internal assistance from their workplace to acquire a sufficient range of experience to pass ACS assessment.

   Often candidates were turned down for registration on Part 2 if too great a period of time had elapsed between completion of Part 1 and application for Part 2 (at one time application was required within 6 months of completion, but this was waived in later years)

Following a further two years of work, amassing a further portfolio and sufficient experience, following successful completion of Part 1, individuals could submit for assessment by the Association of Clinical Scientists (ACS) in one or two of their specialties from which they could progress to registration as a Clinical Scientist.

Route 2

In an alternative route to registration, known as Route 2, sufficiently qualified and experienced candidates could submit a longer portfolio to ACS and undergo assessment against the same standards as Route 1 candidates. Sometimes, but by no means always,

these individuals registered for Part 2 of the IPEM scheme and were provided with an external assessor to guide them through ACS assessment.

Modernising Scientific Careers (MSC) Scientist Training Programme (STP)

This has been operating in England since 2011, in Wales since 2012, and in Northern Ireland since 2013. Trainees are recruited nationally, and take part in a three-year programme leading to an MSc in a relevant discipline. They undertake specialty rotations and then specialise in one of these areas. STP trainees are assessed by an Objective Structured Final Assessment (OSFA) in their final year. If successful, they obtain a Certificate of Attainment, which allows registration with the HCPC. As this is a three-year, rather than a four year, programme, individuals are achieving registration with less experience than under the previous scheme.

Scotland has elected to run a separate but similar scheme which maps to the outcomes of STP and enables Scottish trainees to be assessed for equivalence by the Academy for Healthcare Science.

Clinical Technologist training in Rehabilitation Engineering

IPEM Technologist Training Scheme

IPEM has offered a training scheme for clinical technologists since 2001, and continues to do so. This scheme offers the opportunity for individuals employed as trainees in an accredited training centre to complete a training programme and achieve registration on the Register of Clinical Technologists (RCT). A Diploma in Clinical Technology is awarded. This scheme continues to run, but progression through the scheme in rehabilitation engineering, as in all specialties is currently slow, owing to a shortage of moderators or a reluctance of employers for releasing these moderators.

An education-only route used to be available, through accredited degrees, such as the BSc Clinical Technology from De Montford University, Rehabilitation Engineering at Coventry University. Places on these courses attracted significant funding from the (then) Strategic Health Authorities, but this funding is no longer available and the courses have been discontinued.

RCT Equivalence

This route onto the Register of Clinical Technologists requires applicants to be working at a standard equivalent to degree, and present a portfolio of work demonstrating the required competancies. This would be open to engineers with a general engineering degree, as well as those who have trained in-house, once they have amassed a suitable rehabilitation engineering portfolio. This would typically take around 12 months for an engineer who had qualified in another engineering discipline.

Modernising Scientific Careers (MSC) Practitioner Training Program (PTP)

This has been operating in England since 2011, in Wales since 2012, and in Northern Ireland since 2013. Applicants apply to a university offering an accredited course through the UCAS application procedure, in an analogous way to applying for radiography, nursing or midwifery. Students exit after a 3-year course, involving a clinical placement in years 2 and 3, eligible to join the Academy for Healthcare Science Register or the Register of Clinical Technologists. However, unlike other healthcare disciplines, students on healthcare science undergraduate degrees are not eligible for an NHS bursary or any financial assistance with course fees.

Only two Higher Education Institutions (Bradford and Middlesex) have opted for accreditation, and only Bradford University has, to date, accepted students, although the

number has been capped at 10 across all four engineering specialties (rehabilitation engineering, radiation engineering, renal technology and medical engineering).

PTP does not operate in Scotland, and IPEM has no knowledge of any Technologist Training in Scotland outwith IPEM's Technologist's Training Scheme.

The education-only route through Coventry University used to out-turn around 15 technologists eligible for RCT accreditation per annum, which, given the evident current shortage, was insufficient to entirely meet demand. The loss of this training route is critical to the profession.

While the training provision and supply of Clinical Scientists, in Rehabilitation Engineering as other disciplines is well-supported, and turning out good-quality registrants, the demand for technologists has now become critical. There is now only a very limited pipeline, very small numbers emerging from Bradford, even if the current quality concerns are eliminated, and the throughput of the IPEM scheme limited by moderator availability. The levels of shortages are unsustainable if a quality service is to be provided.

One centre appears to have forged a novel route, adapting to current circumstances, and the circumstances that allow them to do this will be explored.

Other training considerations

Clinical Technologists

The training burden falls on a relatively small number of services, as in order to become an accredited centre, there must be a certain number of registered staff, and many services only employ 1 or 2 technologists.

As part of the picture of staff shortages, 28/32 commented negatively on the availability of training provision at the present time, and a further 14 commented negatively on the quality of training those who had exited the graduate scheme had received. All comments related to the training provision for technologists, both PTP and the prior scheme at Coventry University.

Only 3 respondents had no concerns about training, including the centre highlighted above who have developed a novel, local route.

Leaving aside the complaints that many academically-trained engineers have insufficient practical experience when starting employment, there are two options to achieve registration as a technologist (rehabilitation engineering).

1. Practitioner Training Programme. This is the preferred option for Health Education England, but in its current format is evidentially not fulfilling its purpose
2. IPEM's Technologist's Training Scheme
3. Registration on The RCT through the equivalence route

The latter two options allow recruitment locally and in-house training, which is preferred by many senior rehabilitation engineers who often are able to source suitable candidates for training but are unable to attract already-trained candidates (should they exist!). The barriers to this are that there is no national available apprenticeship scheme, and then, since an individual cannot progress to registration without a degree, a locally-available suitable degree course. Some centres have created a local apprenticeship scheme, but training via this route is entirely dependent on local manager's ingenuity in securing funding, and skill in making a case for this funding. This does not make for a robust training model. There has been a great deal of interest in the prospect of an IPEM co-ordinated apprenticeship scheme, and this is in discussion by the Education and Training Panel.

While employer based, employer led training is the preferred option of many in terms of the suitability of those exiting for employment, there are a limited number of employers able to

provide such training. Whether utilising an accredited scheme or not, training requires mentoring time from experienced engineers, and the very large number of small wheelchair services do not have such time available. This limits the number of training centre to the large integrated centres. There are sixteen centres accredited to train in Rehabilitation Engineering in the whole UK under IPEM's technologists training scheme, and it may place an unrealistically large training burden upon these few centres to expect them to be train to meet the needs of all wheelchair services, without significant additional funding. Additionally throughput of IPEM's Technologist's Training Scheme is currently slow owing to a shortage of moderators. There have been many verbal reports of uncertainty regarding the future or existence of the Technologist's Training Scheme. It is likely that awareness of the Equivalence Route to RCT registration is low amongst this staff group as well.

For this staff group, a centralised, education-based training route would provide an attractive option, to bring to a suitable level for employment. However all such training routes have been criticised for producing graduates who have insufficient practical experience. Health Education England is committed to the Practitioner Training Programme, so it would be expedient for IPEM to encourage and input to ensure suitable content, at the same time as supporting the workforce-preferred alternative employer based training.

The survey data also shows that 30% over technologists and over 15% of Clinical Scientists in rehabilitation engineering are aged over 55 and therefore likely to be considering retirement in the next five years. This data makes the training provision situation even more critical, if a recruitment crisis is to be averted.

The success of any training scheme is dependent upon recognition of the role as for training investment to be approved the importance of the role must be recognised.

Low visibility and understanding of value and role

Several responses reported that the role of Clinical Scientist or Technologist in rehabilitation engineering was poorly understood, under-rated, and seen as an opportunity for economy. This may be as a result, or indeed a cause, of rehabilitation engineering and wheelchair services moving away from traditional NHS delivery to provision through a variety of sources. The various models of this were discussed in the background introduction. There were several responses citing concerns over commercially-driven advice, with inaccurate/inappropriate support being provided by unregistered, unaccountable staff employed by equipment manufacturers.

> "I feel that neither the [Trust] appreciates or understands the importance of our service to the disabled people it serves. The benefits to the Patient of the service are many and mean that other services - e.g. Medical, Surgical, Community, Pharmacological may experience relief which means it is actually good value for money. "

> "We need to be using appropriately validated, nationally applied, outcome measures to help make confident judgements and decisions about or services and this is not currently happening. In my view this is the most important thing we can do so that services can be benchmarked or compared and the effects of staffing levels, funding, private sector use, differing practices and geographic areas can be quantified."
> "Many MDT do not understand the role or what the added value of an engineer trained in clinical practice can add to their role. With the privatisation of wheelchair serivces, engineers are in some cases reduced to reps for the company and the focus is on the sale of the chair rather than meeting the clinical needs of the client. "

> "Commenting from my time and most recent experience of NHS wheelchair services, the commissioning bodies do not see the need for Rehab Engineers/Clinical Technologists. One service refused to allow the REs to function as they were not HPC

> registered. There is a generally held belief among commissioners that the RE function can be provided by maintenance service staff and/or wheelchair dealers/reps."
>
> "There are posts within wheelchair services for therapist roles which are currently advertised for just physiotherapists and occupational therapists which could also be open to clinical scientists. It needs to be more widely known the benefits of clinical scientists, that we are HCPC registered and can take on these traditional therapist (OT PT) roles."
>
> "Also we need to remind trusts of the implications of employing non registered/app trained staff in equipment services."

Several responses commented on the need and utility for benchmarking and a Staffing Levels Policy. The Right Wheelchair campaign states that "The right chair, right from the start can prevent expensive NHS treatment later on". The forthcoming "Role of the Clinical Scientist in Rehabilitation Engineering will go a long way to addressing this, and a similar document on the Role of Technologists is also to be produced.

Impact of service structure on service delivery and provision

Many respondents expressed concern over the consequences of the varied landscape of service structure. The concerns here are twofold: one is that by diluting, breaking up and separating services and therefore staff, this creates professional isolation and prevents a critical mass from developing and with it the important cross-fertilisation of ideas. This also impacts on the facilitation of CPD and succession planning. A second concern is that without a clear line of sight from rehabilitation through to other services, the benefits to other services are not visible. Medical, surgical, community, and pharmacological services will experience relief from high-quality, timely provision of rehabilitation services and equipment to patients. The benefits are proactive as well, as the provision of special seating will prevent unnecessary back pain, and appropriate communication devices enhance independence. Within a fractured workforce these benefits or early interventions may not be effectively communicated to organisation leads and commissioners.

A frequently expressed concern is that independent companies are not bound to employ qualified staff, frequently using technicians in place of engineers. This both risks the quality of the service and encourages role downgrading especially in the short term.

Another respondent reports that:

> *"We were supplying 12 wheelchair services with rehabilitation engineers, but since the running of wheelchair services went out to public tender we can't tender for these services alone. You would have to tender for the complete running of the wheelchair services and we are unable to do this. We are finding that now that the wheelchair service has been out for tender and private companies/approved repairers are winning the tender, they are not using engineering support but using technicians to take on the role that the RE would have done. This will continue to force companies like ours to no longer supply engineering support going forward"*

By constraining the commission to exclude those who would tender for wheelchair services alone, but not requiring the tendering organisations to employ qualified staff the role, its significance and abilities of engineers are downgraded. There are frequently-voiced concerns regarding role-downgrading, and many feel that statutory registration is the route forward to protecting the profession.

Role downgrading in turn reduces the attractiveness of the profession, and creates difficulty in recruiting trainees, even without the difficulty of the shortcomings of the current training provision.

Career Progression and Succession Planning

There is almost unanimous agreement that career progression in Rehabilitation for both Scientists and Technologists is limited, with 32/33 comments stating there is a difficulty. This is in part because, in a small field of work, there are limited opportunities for progression into management. Qualified staff may leave the profession into other areas of engineering in order to progress, which in turn will lead to a very limited pool of suitable candidates for senior positions when they do become vacant.

Once respondent commented:

> *"Clinical scientist staff in Rehab Eng do not have the same career ladder as do colleagues in Medical Physics and are generally graded lower, even though they have direct patient contact and take are responsible for patient safety and risks associated with use of assistive technology. They generally work in smaller groups and less options for career progression or changes to their role. This is having a detrimental effect on recruitment and retention, as well as on the morale of current staff."*

The limited opportunities for career progression will have a detrimental effect on retention and morale, and in conjunction with the frequently-reported threat of role down-grading. Technologists report

> "Have noticed some wheelchair services have started to employ Band 5 Technician to carry out work we would have suppled a Band 7 Rehabilitation Engineer [technologist]."

> "When staff in substantive posts leave there is often pressure to de-skill and down-band."

Several comments suggested that protecting titles and registration would mitigate role downgrading, and, as stated on the RCT (www.therct.org.uk) website:

"The RCT continues to fight for statutory regulation for clinical technologists; but in the meantime, the Government has made clear* that becoming an Accredited Voluntary Register is an essential step, so the RCT is looking at how to achieve this.†

****The coalition government stated in its February 2011 Command Paper 'Enabling Excellence: Autonomy and Accountability for Health and Social Care Staff' that extensions to statutory regulation "will only be considered where there is a compelling case on the basis of a public safety risk and where assured voluntary registers are not considered sufficient to manage this risk".***

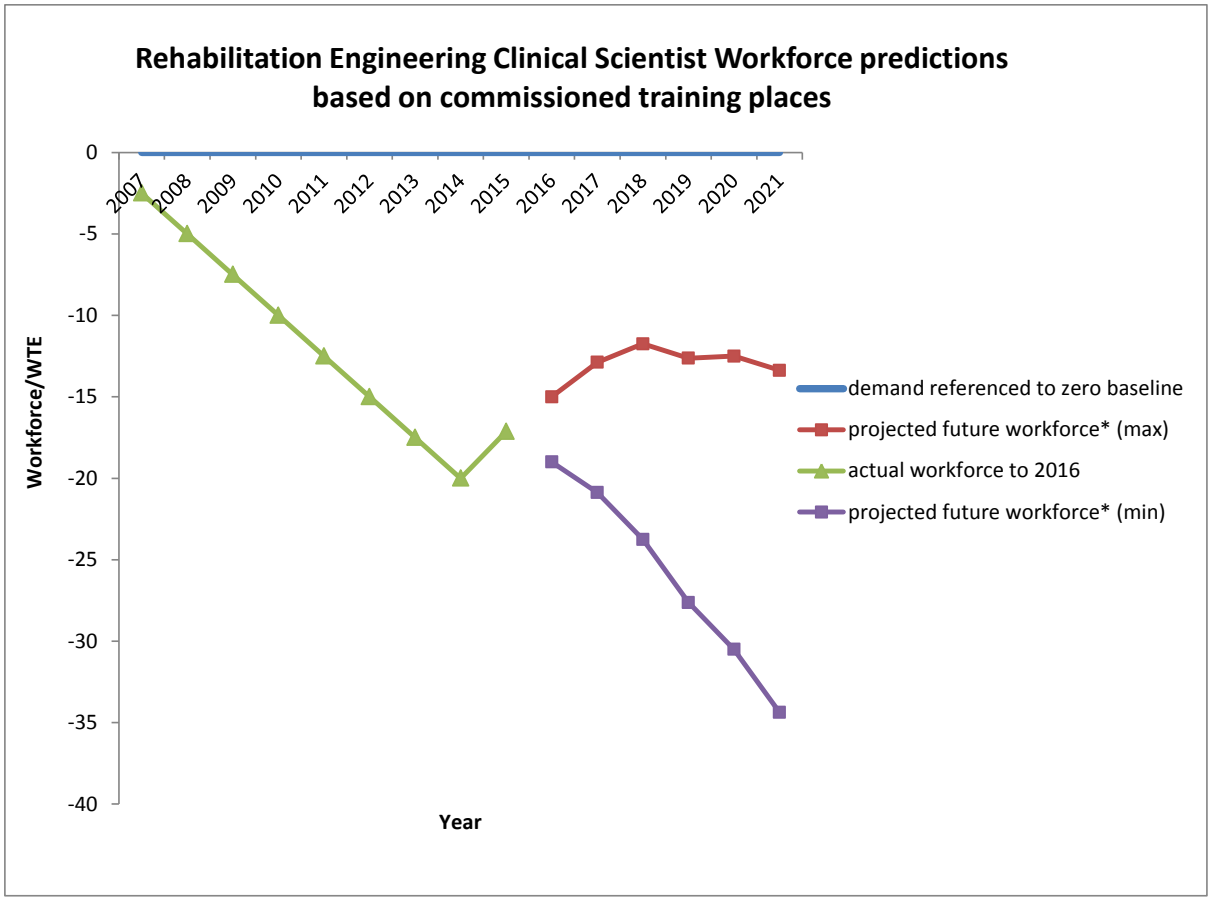
†The RCT was accredited by the Professional Standards Authority as an Accredited Voluntary Register in September 2015

As well as compulsory registration and title protection being some way distant, protection would only be effective in conjunction with recognition of the value and importance of the title to be protected.

Projected Vacancies and Workforce, Clinical Scientists

IPEM's training records, together with information form the National School of Healthcare Science has been used to model the workforce supply and demand over the next five years. The baseline demand has been estimated from the number of Clinical Scientists completing training since 2007, and the number of vacancies developed. This is assumed to be uniform over the 8 year period, and encompasses all movement out of the profession, and any growth in service provision. In essence, 41 Clinical Scientists qualified over the 2007-2015 period, yet despite this, 20 vacancies developed, so the demand was actually 61 over the 8-year period. This does not take into account any who were recruited from overseas, but this

is not a common recruitment route in rehabilitation engineering, unlike radiotherapy physics. Since there is no reason to believe otherwise, it was assumed that rehabilitation engineers will continue to be required at the same rate. The future projections are based on the STP commissions 2014-2016, taking into account the reduced commissions for 2015, the attrition rate, and the historical numbers opting for rehabilitation engineering[i]. It is assumed that there will continue to be 2-3 per annum qualifying via Route 2, and that the three remaining registrants on Part II will pass ACS assessment in the next two years. The projected impact on the vacancy rate of the changes in training numbers, taking all routes into consideration can be observed in the chart below. It should be noted that this only takes into account the vacancies in the responding services (67%), so is an optimistic projection. Commissioned STP engineering places are either linked to one specialty, or undefined. The minimum numbers result from the situation if only those places commissioned as rehabilitation engineering opt for rehabilitation engineering. The maximum is if all the undefined places opt for rehabilitation engineering. As can be seen from the chart, neither situation is desirable, leading to vacancy rates of close to 15%.



Recommendations:

The Rehabilitation Engineering profession could be supported by IPEM by:

1) Publicising the role and benefit of Rehabilitation Engineers

Produce literature on the role and benefit of both Clinical Scientist and Practitioner involvement in rehabilitation engineering, wheelchair service provision and assistive technology. This would help commissioners and services tendering for contracts, and make clear the advantage of qualified, registered staff. These are in progress, with publication of the Clinical Scientist document expected soon.

Producing IPEM guidelines on adequate levels of staffing, noting that statements of staffing levels from professional bodies are often expected to be over-stated. However, with reference to data, inclusion of key aspects of the role, including time for CPD/research as per a registered profession, and the importance of adequate resilience for annual leave, sickness and maternity, will strengthen the credibility of such guidelines.

2. Supporting existing training and improve visibility

Publicise and improve visibility of existing training and registration. The survey revealed that the equivalence to RCT registration is not well understood; with comments suggesting many are not aware of this route.

3. Lobby for improvement in training and implementation of review of PTP

The Practitioner Training Programme is not currently producing a large number of staff. IPEM has been active in raising concerns over this with Health Education England, which resulted in a proposal of funding for PTP commissions. Unfortunately these were withdrawn at the Autumn Comprehensive Spending Review, to which IPEM responded in January 2016.

Providing an apprenticeship framework, and raising awareness of the routes through from apprenticeship to registration, would also be greatly beneficial.

[i] Information provided by Dr Richard Scott, Professional Lead for Engineering, School of Healthcare Science