

TECHNICIAN AND INTERMEDIATE ROLES IN THE HEALTHCARE SECTOR

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EXECUTIVE SUMMARY

1. The healthcare sector in the United Kingdom (UK) faces considerable challenges in meeting the needs of a growing and ageing population. Improvements in the care and treatment of people with long-term medical conditions mean that many are living longer. This helps explain why employment in the sector has been identified as a net growth area.
2. Technological advances and changes in the way work is organised have combined to facilitate the standardisation of a wide range of tasks. This has allowed such tasks to be classified as routine and to be devolved downwards, and has facilitated the expansion of more complex tasks at higher levels. This is causing national and sectoral policy-makers, employers and professional bodies to take a hard look at the nature of the skill mix in the sector and at how boundaries should be drawn between types and levels of work.
3. This study on technician level work in the healthcare sector is located within the Gatsby Foundation's broad programme of research and development on STEM issues, including pathways into STEM careers, the registration of the STEM workforce at technician level, and the expansion and development of the STEM workforce as a whole.
4. This report contributes to this debate by focusing on the role and meaning of 'technician' within the healthcare sector and its articulation with registration, qualification and career pathways. Its findings shed light on the complex and evolving range of responsibilities and levels of expertise of people working in what we have called the 'intermediate space' within the healthcare workforce. This space includes people formally called 'technicians', but also many more for whom the term is not seen as appropriate but who, nevertheless, are increasingly interested in acquiring greater recognition of their role.
5. Surprisingly little is known about technician or intermediate-level jobs (positioned between 'professional' and 'semi-skilled' grades) in the healthcare sector. Yet, as this report shows, if the sector is to address the challenges it faces then it has to recognise the importance of understanding the changing nature and place of the intermediate role, including the potential for registration.
6. The project addressed two main research questions:
 - What do we know about the existence and status of the technician role across the healthcare sector?
 - What are the current perceptions of the meaning and applicability of the 'technician' role from within four specific areas of the sector?
7. The study was organised in two overlapping phases. Phase One included a desk-based research encompassing the collection and review of readily available quantitative data, literature and policies on 'technicians' in the healthcare sector; and a mapping exercise of qualifications and career progression pathways in a range of occupational areas.
8. Phase Two involved interviews with key informants from overarching sectoral and regulatory bodies, as well professional bodies, employers, employees, trade

unions, and education and training providers. This enabled the development of illustrative case studies in four contrasting occupational areas:

- Maternity Support
 - Radiography Support
 - Healthcare Sciences
 - Dental Technician.
9. The participants in our research discussed the findings from Phase One and Phase Two at a workshop held in London in May 2012. This provided further valuable insights and information to enable us to complete the report.

CONCLUSIONS AND RECOMMENDATIONS

10. Our account of the available statistical data on intermediate-level workers in the healthcare sector indicated ambiguities about their classification and visibility in relevant datasets. Currently they fail to differentiate between levels of worker, and render the intermediate workforce invisible. Consequently it is only possible to present indicative findings about the size of the population across the sector and within occupational groupings. In so far as conclusions can be drawn, the account suggests that the intermediate level is small relative to both the 'semi-skilled' and 'professional' level workforce. There is growing fragmentation of the healthcare sector; diversification of service providers, and movement of healthcare workers between the NHS, private and voluntary sectors. This will make it even more challenging to obtain and sustain good quality data about the changing size and characteristics of the healthcare workforce, and therefore to plan changes in terms of workforce reform and appropriate educational opportunities.
11. Currently the binary presentation of quantitative data in terms of qualified versus unqualified, or professionally qualified versus the support workforce, is unhelpful. It divorces the actual level and nature of the qualifications of the support workforce in general, and the intermediate-level workforce in particular, from their position in occupational and organisational hierarchies.
12. Our case study evidence suggests that the intermediate level in the healthcare sector is generally associated with level 4/5 qualifications and in some cases (e.g. Dental Technicians and Pharmacy Technicians) with substantial (in terms of knowledge component and size) level 3 qualifications. The specification of level 3 qualifications for Dental Technicians was associated with their status as a statutorily regulated occupation, with only prescribed education and training pathways and qualifications accepted for entry to the register. In the case of other occupational areas (e.g. maternity, radiography and healthcare sciences), the pathway to intermediate level was variable, although intermediate roles were often associated with the acquisition of Foundation degrees (level 5). It was noted that qualifications included in the healthcare frameworks in the government-supported Advanced Apprenticeship programme (level 3) were normally linked to lighter weight generic health and social care support rather than substantial occupationally specific qualifications.

Recommendation 1 More accurate data on the intermediate level roles needs to be collected, produced and made publicly available, by building on existing data sets including the NHS workforce data. This should include more detailed data about the qualifications held across the areas of the healthcare workforce. This will have at least three benefits. It will:

- a. help raise the profile and visibility of intermediate-level workers;
- b. help policy-making bodies (such as Skills for Health and DoH) understand, monitor and plan for the size and characteristics of this group; and
- c. help provide the basis for developing a clearer relationship and alignment between qualification pathways and occupational level.

Recommendation 2 Better alignment between NHS career framework levels, qualification levels and the way jobs are evaluated in terms of the AfC banding structure is required in order to overcome the current confusion about what constitutes the content and skills associated with the intermediate roles. This in turn would enable greater clarity to be established about how these roles articulate with posts above and below in the occupational hierarchies.

Recommendation 3 There needs to be a review of the appropriateness of the diverse range of level 3 qualifications used in the healthcare sector, and their relationship to supporting intermediate level work and career development in each occupational area.

Recommendation 4 There appears to be scope for introducing new Advanced Apprenticeship frameworks in areas where they currently do not exist, such as Dental Technicians. Existing frameworks should also be reviewed to ensure that they provide sufficient technical and scientific content, as well as providing a platform for progression to higher-level qualifications allowing access to registered professions.

13. The qualitative evidence showed that, with some notable exceptions, the use of the term 'technician' is declining in the healthcare sector. It is clear from the evidence that there is no single readily understood definition or usage across the sector. The term 'technician' was generally perceived as being relevant to people working with equipment or manufacturing devices, and not to those working with people (patients). This was so even if much of their work was recognised as being technical and scientific in nature as well as 'caring'. There was evidence that technical aspects of intermediate roles in health may become more significant with advances in technology to facilitate patient care (as in telehealth and telecare).

Recommendation 5 In order to understand the complex and evolving meaning of intermediate (including technician) level work, we need further case study-based research in each occupational area of the healthcare sector.

14. In recent years, processes of professionalisation and credentialism, together with shifts to full-time education pathways, have altered the pattern of entry into a range of regulated healthcare professions including radiography, nursing and midwifery, which have all become graduate-only occupations. Whilst there have been positive consequences for the status of staff in these groups and

the recognition of increasing expertise required in these fields, our evidence suggests that there have been other effects. Most notably we highlight the loss of the work-based route previously available to existing employees – that has been associated with widening access to and participation in the professions from non-traditional groups. This has affected social mobility in the healthcare sector and the availability of intermediate level workers.

Recommendation 6 The healthcare sector needs to review the impact of the decline in the work-based route on the availability of intermediate level work, and how and by whom it is accessed.

15. The underpinning rationale for regulation is patient safety. Currently the regulatory regime achieves patient protection through regulation of the healthcare professions, and through their responsibility to delegate tasks according to scope of practice protocols to non-registered groups. Much of the recent criticism of healthcare has focused on health and social care support workers (usually located in 'semi-skilled' posts). Initiatives to assure standards of care through the creation of voluntary registers are being pursued via Skills for Health and Skills for Care (Sector Skills Councils). However, policy has been silent on the role of intermediate-level workers in relation to patient safety, and whether there could be distinctive expectations about their contribution. It is clear that all healthcare staff have a role to play in patient safety and high standards of care.
16. Our case studies, as well as discussion at the stakeholder workshop held in May 2012, indicate that statutory registration is seen as desirable for individuals working at intermediate level. This is because it is associated with a stronger position in the labour market – if registration is mandatory for the practice of the occupational role, those without registration cannot access the available positions. Statutory registration was also closely linked to enhanced occupational identity, visibility and status for the individual.
17. However, given that current government policy is not to extend statutory regulation, the more immediate debate revolves around the nature of voluntary registration and the extent to which this has value, and whether generic or occupationally specific standards are preferable. Overall, interview and workshop participants were in favour of more specific registers, and they questioned how generic standards would foster occupational recognition, identity and standards. It was noted that, from the individual's point of view, more generic registration could provide a portable credential which can facilitate mobility amongst registrants; it would also produce a pool of labour whose skills and competences and accreditation are readily understood by employers.
18. Apart from the effects of registration on the pool of labour at the intermediate level, perceptions of employer benefits were less clear, with concerns about the management, policing and costs of registers being aired. In addition, questions were raised about how regulating the intermediate workforce would affect the relationship with the healthcare professions, for example in terms of any changes in the distribution of responsibility and accountability, and the consequences for regulation.
19. The link between the nature of the register and the nature of education, training and qualification pathways to intermediate-level work also needs to

be thought through. Evidence from the case studies highlighted the uneven geographical availability of appropriate intermediate-level courses and qualifications. Clarifying the concept and role of intermediate-level roles in diverse occupational areas could feed into the development of standardised curricula and qualifications which could be made more widely available. This would help education and training meet the needs of employers, individuals, and education providers, as well as the significant policy challenges facing the healthcare workforce.

Recommendation 7 An investigation needs to be carried out to examine how the regulation and registration of intermediate workers in each specific occupational area could better support and recognise their expertise and contribution. A key result of this inquiry should be a clear decision about which organisations are responsible for regulating the intermediate workforce.

Recommendation 8 Existing voluntary registers in science and engineering could be an appropriate mechanism for recognising an individual's transferable knowledge and skills, and an external validation of competence and training pathways which could be of value to the employers. The Gatsby Charitable Foundation should work with employers and training providers to explore this potential, and should liaise with the relevant professional bodies to ensure greater awareness of the role of voluntary registration for technician roles within the healthcare sector.

ABBREVIATIONS

AfC	Agenda for Change
AHP	Allied Health Professions
AP	Assistant Practitioners
CHRE	Council for Healthcare Regulatory Excellence
CPD	Continuous professional development
DLA	Dental Laboratories Association
DTA	Dental Technologist Association
DoH	Department of Health
GDC	General Dental Council
GLH	Guided Learning Hours
GPhC	General Pharmaceutical Council
HHA	Human health activities
IBMS	Institute for Biomedical Science
MSC	Modernising Scientific Careers
NMC	Nursing and Midwifery Council
NOS	National Occupational Standards
NQF	National Qualification Framework
ODP	Operating Department Practitioners
QCF	Qualification Curriculum Framework
RAP	Radiography Assistant Practitioner
SCoR	Society and College of Radiographers
SET	Science, engineering and technology
SfH	Skills for Health
SHA	Strategic Health Authorities
SIC	Standard Industrial Classification
SOC	Standard Occupational Classification
STEM	Science, Technology, Engineering and Mathematics

SECTION I INTRODUCTION

1.1 AIMS AND SCOPE OF THE REPORT

The healthcare sector in the UK faces considerable challenges in meeting the needs of a growing and ageing population. Improvements in the care and treatment of people with long-term medical conditions mean that many are living longer. This helps to explain why employment in the sector has been identified as a net growth area in the Skills for Health (SfH) Skills Audit¹ (2011).

Technological advances and changes in the way work is organised have facilitated the standardisation of a wide range of tasks. This has allowed such tasks to be classified as routine and to be devolved downwards, and has facilitated the expansion of more complex tasks at higher levels. This is causing national and sectoral policy-makers, employers and professional bodies to take a hard look at the nature of the skill mix in the sector and at how boundaries should be drawn between types and levels of work.

This report contributes to this debate by focusing on the role and meaning of 'technician' (or its equivalent grade) within the healthcare sector and its articulation with registration, qualification and career pathways. Its findings shed light on the complex and evolving range of responsibilities and levels of expertise of people working in what we have called the 'intermediate space' within the healthcare workforce. This 'space' includes people formally called 'technicians', and many more for whom the term is not seen as appropriate, but who, nevertheless, are increasingly interested in acquiring greater recognition of their role.

As we will see from the research evidence presented in this report, an examination of the complex and often contradictory approaches to intermediate-level work sheds light on underlying tensions in the sector between the different career ladders and regulatory frameworks, between employer recruitment and workforce development practices, and between occupational hierarchies and national qualification frameworks.

Debates about workforce reform and development in healthcare take place against the backdrop of continuing austerity measures across the public sector. In addition, there is a long-standing commitment to improving widening participation and equity, and to increasing opportunities for staff to access education, training and career progression, including to professional status. Hence, the development of career ladders and educational pathways reflect strategies designed firstly to provide more opportunities for those with the ability to progress; secondly to increase the capacity of the workforce and organisations within the sector to respond to skills shortages and gaps as they emerge; and thirdly to allow changes in the skill mix.

Another important dimension has been the move towards graduate entry for particular occupations, and this has impacted on the way work is distributed and who carries it out. For example, the conversion of nursing to an all-graduate entry profession, with full-time participation in higher education becoming the primary entry route, has arguably created a skill shortage at pre-registration level.

¹ Skills for Health (2011) *UK Sector Skills Assessment 2011*.

Surprisingly little is known about 'technician-level' roles in the healthcare sector. Yet, as this report shows, if the sector is to address the challenges it faces then it has to recognise the importance of understanding the changing nature and place of the technician or equivalent role, including the potential for registration.

The project on which this report is based had two main research questions:

- What do we know about the existence and status of the technician role across the healthcare sector?
- What are the current perceptions of the meaning and applicability of the 'technician' role from within four specific areas of the sector?

The aims were as follows:

- To gather evidence about the current and evolving status of technician posts within the healthcare sector, including a consideration of the meaning and use of the term 'technician' within different professional and occupational strands.
- To provide a map of the appropriate education and training opportunities for workers at technician level across a range of health and health-related occupations, and to consider how well this provision fits with current practices and with the National Health Service (NHS) Agenda for Change (AfC) pay banding and occupational standards.
- To examine the role of registration (voluntary) and regulation (statutory) in technician occupations in the healthcare sector.
- To consider the drivers, barriers and opportunities for the development of the technician role within the healthcare sector.
- To explore the perspectives of key stakeholders including professional bodies, employers, education providers, and individuals currently working at 'technician level' in a sub-set of contrasting health occupations.

1.2 DEFINITIONS OF 'TECHNICIAN' AND 'TECHNICAL' WORK

At first glance, the term 'technician' would not seem to sit entirely comfortably in the healthcare sector and, until relatively recently, had fallen out of favour as the UK economy shifted away from manufacturing towards more service-oriented jobs. It is now recognised that this needs to be corrected, hence the current attempts to increase the number of Advanced and Higher Apprenticeships.

In a parallel study to that reported here, Geoff Mason has argued that 'technicians' can be defined in terms of the content of their work, what they actually do, and the knowledge resources and practical skills they draw on, as well as where they are positioned in occupational, organisational and qualification hierarchies (Mason, 2012).² Consequently there is ambiguity in the way technicians are positioned in relation to qualification levels. In the UK and internationally, science, engineering and technology (SET) technicians are typically associated with sub-bachelor level qualifications (e.g. HNC/D, Foundation degree, qualification level 4/5), but Geoff Mason argues that in the UK policy literature, level 3 qualifications are also increasingly being equated to technician level.

2 Geoff Mason (2012) *Science, Engineering and Technology (SET) Technicians in the UK Economy*. National Institute of Economic and Social Research, London. Final Report to the Gatsby Charitable Foundation.

In this report, the term 'level' is used to refer to the level of qualification (1-8) within the National Qualification Framework (NQF, Appendix 1) and Qualification and Credit Framework (QCF, Appendix 2) and the various levels included in the NHS Career Framework (levels 1-9, Appendix 3). It should be noted, however, that the two do not always coincide and, where this is the case, we will make it clear whether we refer to qualification level or career framework level. When we refer to posts in the healthcare sector we use the term 'band,' in line with the AfC pay banding system. This allows jobs to be allocated, on the basis of the NHS job evaluation system, to different bands in a hierarchical system, with band 1 at the lowest level of pay and band 9 at the highest level³. There is often a read-across from qualification and career framework levels to AfC band, but not always, and for this reason we are keen to maintain a distinction between the terms.

In our study, we focused on roles positioned at an intermediate level (AfC bands 3 and 4 and qualification levels 3, 4 and 5) between those classed as 'professional' and 'semi-skilled'. Where we use the terms 'profession' or 'professional' to describe a level of work hierarchically located above the intermediate we are reflecting how:

- roles are labelled by regulatory and professional bodies
- the terms are used to differentiate levels in workforce datasets (see Section 3)
- the way our interviewees distinguished between career and qualification levels.

It is not our intention to imply that people working in posts that can be classed as intermediate are not highly skilled or not regarded as 'professionals', or that they do not perform their duties professionally. Therefore, we have avoided using the negative term, 'non-professional', when talking about those groups which are not formally classed as professional in the healthcare sector.

1.3 RESEARCH APPROACH AND DATA COLLECTION

The research project was organised in two overlapping phases. Phase One included: desk-based research encompassing the collection and review of readily available data, literature and policies on 'technicians' in the healthcare sector; and a mapping exercise of qualifications and career progression pathways in eight occupational areas (dental, dietetics, radiography, pharmacy, laboratory science, prosthetics and orthotics, maternity care, and paramedics).

Phase Two involved interviews (37 in total) with key informants from overarching sectoral and regulatory bodies, as well professional bodies, employers, employees, trade unions, and education and training providers. The evidence was used to develop illustrative case studies in four of the occupational groupings we examined in Phase One. It was clear from our research in Phase One that the term 'technician' is not widely used in the healthcare sector, and could not be consistently applied to one particular level within the NHS career framework or AfC bandings. Definitions of job roles were primarily centred on either caring for patients, working with equipment, or manufacturing and crafting medical devices. Some definitions also included the extent to which the roles could be said to involve 'practical skills' and drew on technical or scientific knowledge.

³ The following web link lists the pay rates from April 2012 associated with the AfC banding scale (accessed 15 November 2012)
<http://www.nhscareers.nhs.uk/working-in-the-nhs/pay-and-benefits/agenda-for-change-pay-rates/>

With these dimensions in mind, we selected four occupational areas that represented diverse characteristics and had the potential to generate substantive insights into the challenges of developing technician-level work in different parts of the healthcare sector, including outside the NHS. They were also chosen to reflect the different ways in which technician-level work is positioned in job and qualification hierarchies. In this regard, our starting point was to focus on the 'intermediate' workforce. Our interest within the NHS workforce, therefore, was on the career framework level and AfC bands 3 and 4 that broadly equate to qualification levels 3, 4 and 5. From the perspective of the healthcare sector, the interface between the intermediate and professional workforce is critical; this is because the latter is generally associated with graduate level qualifications (level 6), regulated by statute, and registered posts at AfC band 5 or above. Table 1 illustrates typical associations between categories of skill level, job roles, AfC bands and regulation.

Table 1 Characteristics associated with three broad skill categorisations

Broad categorisation of skill level	Typical job role	Typical education level for the Job	AfC band	Regulatory context
Semi-skilled	Healthcare Assistant, Radiography Support Assistant	2	2/3	Not statutory Voluntary registration possible with professional associations
Intermediate	Assistant Practitioner; Radiography Assistant Practitioner	3,4,5	3/4	Not statutory Voluntary registration possible with professional association Statutory (General Dental Council)
	Dental Technician	3		
Professional	Nurses and Midwife, Radiographer; Dentist	6+	5+	Statutory (Nursing and Midwifery Council; Healthcare Professions Council; General Dental Council)

The four case studies focus on:

- Maternity Support – to represent a role seen to be at the caring end of the spectrum with patient care and interaction at its heart; job titles include Assistant Practitioner or Senior Healthcare Assistant (AfC bands 3/4) and positioned below the Midwife (registered graduate professional with Nursing and Midwifery Council, NMC). This case study also included neo-natal and paediatric support work.

- Radiography Support – to represent a role that is seen to require technical knowledge and skills and patient interaction, but at a level below Radiographer (registered graduate professional with Health Professions Council, HPC⁴): job titles include Radiography Support Worker, Radiography Assistant Practitioner (AfC bands 3/4). This case study included both diagnostic and therapeutic support roles.
- Healthcare Sciences – to represent roles seen to require scientific and technical knowledge with little or no patient interaction or patient care, but below graduate level, e.g. below 'Biomedical Scientist' (registered graduate professional with HPC); job titles include Healthcare Science Assistant, Associate Practitioner/Medical Laboratory Assistant (AfC bands 2/3/4). This case study looked broadly at health sciences, but focused particularly on pathology as an example of life sciences.
- Dental Technician – to represent a role requiring technical knowledge and skill, but with little or no patient interaction or care and mainly practised in the commercial sector, where NHS AfC banding does not apply. Dental Technician is one of a family of roles and job titles that are statutorily regulated by the GDC. It does not require attainment of a bachelor degree for registration.

We invited the participants in our research to discuss the findings from Phase One and Phase Two at a workshop held in London in May 2012. The workshop was attended by people from organisations involved in all four case studies as well as by representatives of the overarching bodies in the healthcare sector. This provided further valuable insights and information to enable us to complete this report.

In presenting the views of the research participants, we have protected confidentiality by attributing quotations to the different stakeholder groups, rather than to individuals.

⁴ As this report was being written, the HPC was in the process of changing its name to the Health and Care Professions Council to reflect the inclusion of social workers in England in its register.

SECTION 2 POLICY CONTEXT

2.1 INTRODUCTION

The healthcare sector is currently undergoing substantial change as part of a 'modernisation' process which has been underway for some years. The March 2012 Health and Social Care Act has set the agenda for workforce change and development strategies and priorities within the NHS regions. Simultaneously, reforms outlined by the government in *Equity and Excellence (2010)*⁵ and taken forward in the 2012 Act, set out key changes in the commissioning of health services in England. The concept of 'any trusted provider'⁶ suggests that services currently provided by the NHS may, in future, be offered by private or voluntary sector organisations.

The 'modernisation' of healthcare professions can be seen throughout the sector in nursing⁷ and allied health professions,⁸ as well as health sciences.⁹ The Department of Health (DoH) 'Modernising Scientific Careers' (MSC) initiative can be seen as an attempt to define and streamline the career pathways for the healthcare science workforce. It also enables changes in the skills mix that could improve efficiency through greater devolvement of tasks between occupational levels. Likewise, local and regional initiatives by Strategic Health Authorities (SHAs) have focused on the development of education and training pathways and resources to support new staff roles. In this regard, Skills for Health (SfH) has been prioritising the development of the intermediate workforce, that is, below NHS career framework level 5 (AfC band 5) and around level 4 (AfC band 4) via the development of Assistant Practitioners (AP). The creation and expansion of the AP post is designed to facilitate the devolvement of tasks previously only performed by registered clinical staff.¹⁰

5 *Equity and Excellence: Liberating the NHS*, Department of Health White Paper; Cm 7881, July 2010.

6 The term 'any willing provider' was used in the Health and Social Care Bill on its first reading, but was changed later to 'any trusted provider'. There were not seen to be any key changes to the concept as a result of this change in terminology, but the emphasis was placed on 'licensed' providers.

7 See, for example, *Modernising Nursing careers – Setting the direction*, Department of Health, 2006

8 See for example, *Modernising allied health professions careers: a competence based framework*. London: Department of Health for England, July 2008.

9 *Modernising scientific careers: The UK way forward*, UK Department of Health, February 2010. See also *Modernising pharmacy careers programme: review of pharmacy education and pre-registration training and proposals for reform*, discussion paper; Medical Education England/NHS, January 2011.

10 This is not always the case. In some areas of health sciences, professionals are not subject to statutory regulation. However, even in these roles there are accepted standards for professional staff that usually involve bachelor degree level educational qualifications.

An Assistant Practitioner is defined as a worker who competently delivers health and social care to and for people. They have a required level of knowledge and skill beyond that of the traditional Healthcare Assistant or Support Worker. The Assistant Practitioner would be able to deliver elements of health and social care and undertake clinical work in domains that have previously only been within the remit of registered professionals.¹¹ (SfH, 2009, p. 1)

The development of the AP role follows a trend towards graduate-only entry at professional level for a wide range of healthcare occupations and, as a consequence, a growing shift away from the longstanding work-based education and training pathways towards full-time pre-entry education. There is a danger that these interconnected developments will widen the divide between the so-called professional workforce and the rest and, paradoxically, not address the uneven visibility and recognition of people in intermediate and technician roles. It is vital, therefore, that the sector develops a much better understanding of the structural and cultural barriers that stand in the way of expanding the intermediate and technician workforce.

2.2 DEVELOPMENT OF STATUTORY AND VOLUNTARY REGISTERS

Another policy concern has been the role of regulation and the development of statutory and voluntary registers. Historically, the health professions have been at the forefront of statutory regulation. Following the Health and Social Care Act 2008,¹² the Health Professions Council (HPC) has been instrumental in developing and putting forward new groups for registration. More recently, however, the priority for regulation has moved away from statutory towards voluntary registers. The Health and Social Care Act (2012) advances this through the newly renamed Professional Standards Authority for Health and Social Care¹³ (formerly the Council for Healthcare Regulatory Excellence), and the DoH White Paper, 'Equity and Excellence'. Subsequent proposals,¹⁴ as well as the CHRE's¹⁵ 'Right Touch Regulation', have made clear that the 'preferred' way forward for regulation is through the concept of 'voluntary assured registers' rather than statutory measures:

there is a tension between enshrining professional roles in law and maximising flexibility within the workforce as a whole ... an over-reliance on a centralised national system of regulation can weaken local responsibility for managing problems effectively and promptly.¹⁶ (DoH, Enabling excellence, 2011, p. 8)

Both the CHRE (as it was) and the DoH make the point that patient safety is often better served by allowing employers to ensure the competence and conduct of their staff than by extending statutory regulation. A number of the healthcare sciences used to be recommended for statutory regulation, but mostly¹⁷ there is no longer seen to be any compelling reason to move forward with new statutory registers:

¹¹ Skills for Health (2009) *Core Standards for Assistant Practitioners in England: a consultation report*.

¹² Health and Social Care Act, 2008, Department of Health.

¹³ The reform of the CHRE was established in the Health and Social Care Act, 2012, that granted it the powers needed to establish a system of assured voluntary registers through national accreditation.

¹⁴ *Enabling excellence: autonomy and accountability for Healthcare Workers, Social Workers and Social Care Workers*, Department of Health, February 2011.

¹⁵ *Right touch regulation*, Council for Healthcare Regulatory Excellence, August 2010.

¹⁶ *Enabling excellence*, 1.4 and 1.5, p. 8.

¹⁷ The exceptions to this are Herbal Medicine Practitioners, who are to be regulated and must be registered to supply unlicensed herbal medicines from April 2012.

The extension of statutory regulation to currently unregulated professional or occupational groups, such as some groups in the healthcare science workforce, 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. (DH, Enabling excellence, 2011: 19)

The policy debate about regulation and registration in the sector revolves around concerns for patient safety. Initiatives seeking to devolve tasks from professionals to an intermediate workforce raise questions about standards of care and accountability. However public and policy concern for patient safety has so far focused mostly on lower level roles, such as Healthcare Assistants and Support Workers, rather than intermediate-level roles such as APs. This emphasis is seen in the current project being undertaken for the DoH by Skills for Care and SfH¹⁸, focussing on the development of a voluntary register for healthcare and social care support workers so as to ensure minimum standards of competence and conduct. Although the work may consider intermediate staff, the main focus appears to be on workers in lower-level posts.

2.3 UK DEVOLVED GOVERNMENT

In considering the policy context for the UK healthcare sector, it is important to recognise that the four countries (England, Wales, Scotland and Northern Ireland) have devolved responsibilities for health. They may participate in NHS policy initiatives, but ultimately the timing and way in which policies are implemented is devolved. This means that, although there are national bodies and policies, not all initiatives are implemented at the same time or in the same way across the UK.¹⁹ Moreover, some of the more fundamental reforms in the Health and Social Care Act (2012) relate only to England, even though they impact on national bodies and occupational groups that traverse geographical boundaries.

¹⁸ SfH Briefing Note. *Minimum standards for Healthcare Support Workers and Adult Social Care Workers in England.*

¹⁹ For example, 'Modernising Scientific Careers' is a national initiative, but the implementation plans are prepared separately by the regions and taken forward accordingly. The same is so for the Allied Health Professions Strategy. Similarly, the HPC, although a national body, is responsible for the registration of Social Workers for England only.

SECTION 3

MAPPING THE INTERMEDIATE AND TECHNICIAN LEVEL WORKFORCE

3.1 INTRODUCTION

To create a quantitative picture of the intermediate-level workforce in the healthcare sector, we reviewed the main data sources for healthcare workers in the UK and other research sources which have used or collected relevant data.

Our review showed that, given the nature of current data sources, it is not possible to create a reliable statistical account of intermediate-level workers in the healthcare sector. Although some of the problems we encountered may be generic (such as the difficulty in identifying 'technicians' through occupational areas and/or educational qualification level),²⁰ others are more specific to healthcare. For example, occupational classifications for health-related occupations seem to move from professional classifications to all other levels without any distinctions between intermediate and roles at lower levels.

As noted earlier, the development of intermediate roles in the healthcare sector is being driven by pressures for workforce reform, including the devolvement of tasks from professional to intermediate levels. In data and classification terms, the roles we are attempting to capture are either not present in significant numbers or are only now in the process of being included in data collection exercises. The Health and Social Care Information Centre's (HSCIC) NHS data relating to intermediate workers such as APs is an example of the evolution of new classifications which are, as yet, not fully operational.

This section provides as comprehensive a picture as possible of the available data on healthcare technician (or equivalent) numbers, and discusses the limitations and inadequacies of current data sources.

3.2 INDUSTRIAL CLASSIFICATIONS OF THE WORKFORCE

Standard Industrial Classification (SIC) categories are based on industrial sectors and activities within these sectors. The category of 'Human health activities' (SIC 86, 2007) is a reasonable identifier for the healthcare sector. However, within this category there is some overlap with the social care sector, although the SIC 2007 codes distinguish between medical and care-based residential home activities. 'Human health activities' (HHA) do not include those activities that fall within manufacturing or retail. From the perspective of our project, this category could exclude the activities of Dental Technicians working outside the public health sector. It could also include healthcare workers based in retail establishments, such as those working alongside opticians, pharmacists and hearing aid dispensers. It is possible that some intermediate-level workers in science-based occupations working in pharmaceutical or medical equipment establishments could be included within the healthcare workforce. SIC classifications also represent industrial sectors and activities, not occupations, and therefore include all occupational groups. As such, the SIC data for workers undertaking clinical health (including allied health) and health science occupations would need to be disaggregated from the SIC data,

20 Jagger, N. (2011) *Econometric Analysis of SET Technicians: A European Comparative Study*, Report No. 482, IES, March 2011.

as this would also include non-clinical roles in the healthcare sector such as doctor's receptionist, probably through the use of the Standard Occupational Classification (SOC).

- SIC 86 is the main category for the healthcare sector. It includes the divisions: 86.1 'Hospital activities' (86.11 'Hospital activities'; 86.12 'Medical nursing home activities'); 86.2 'Medical and dental practice activities' (86.21 'General medical practice activities'; 86.22 'Specialist medical practice activities'; 86.23 'Dental practice activities'); and 86.9 'Other human health').
- SIC 21 covers 'Manufacture of pharmaceuticals', which could include health scientists and laboratory workers in a commercial manufacturing setting.
- SIC 32 'Other manufacturing' includes the sub-category 3210 'Manufacture of medical and dental instruments'. This category would include the work of Dental Technicians, and could also include other technicians engaged in the production of medical equipment.
- SIC 477 'Retail sale of other goods in specialised stores' includes the sub-categories 4773 'Dispensing chemists in specialised stores'; 47731 'Retail sale of hearing aids'; and 47782 'Retail sale by opticians'.
- Other SIC categories, e.g. 72 'Scientific research and development' and SIC 74 'Other professional, scientific and technical activities', could also be relevant.

For the four case studies included in our research, most of the intermediate-level workforce will be included in SIC 86 ('Human health activities'), with only the Dental Technicians being split between SIC 86 and SIC 32 ('Other manufacturing').

3.3 OCCUPATIONAL CLASSIFICATIONS OF THE WORKFORCE

Occupational data using SOCs are collected primarily via the Labour Force Survey. This divides the workforce into a number of major groups that broadly define an occupational hierarchy based on a combination of work content and the knowledge and qualification demands of the occupation. However, whilst for many technician-level occupations it is relatively unproblematic to identify the intermediate workforce through the SOC system, in the healthcare sector there are a number of issues which would seem to originate in occupational changes around the intermediate level which are not well represented in the current classifications.

SOC codes are initially classified into major groups (see Appendix 4). The SOC group for Associate Professional and Technical Staff would at first sight seem to identify the workforce in healthcare located at technician or intermediate level. However, the sub-categories suggest that the classification relates only to some occupations at this level. It is likely that newly evolving roles within the sector do not all fall easily into the SOC categories, particularly in allied health support and health sciences. The classification of 'Caring, leisure and other service occupations' (SOC major group 6) would also include those workers in healthcare who work at intermediate level. However, this group includes all workers at levels below professional/technical, and so makes no distinction between intermediate and lower-skilled workers. Table 2 provides a summary of the healthcare sub-groups

for SOC major groups 3 and 6 using SOC 2010²¹, and illustrates the difficulty of identifying 'intermediate' workers in the healthcare sector using SOC classifications. For example, whilst Dental Technicians are included in SOC 3, Maternity and allied support workers would be included in SOC 6 (Nursing Auxiliary). It is also unclear whether all sub-bachelor intermediate workers in healthcare sciences would be included as 'Medical Technicians'.

Table 2 Standard Occupational Classifications relevant to the intermediate-level workforce in the healthcare sector (SOC 2010)

SOC major group	Sub-major group	Minor group	Unit group
3 Associate Professional and Technical Occupations	31 Science, Engineering and Technology Associate Professionals	311 Science, Engineering and Production Technicians	3111 Laboratory Technicians
	32 Health and Social Care Professionals	321 Health Associate Professionals	3213 Paramedics 3216 Dispensing Opticians 3217 Pharmaceutical Technicians 3218 Medical and Dental Technicians 3219 Health Associate professionals
6 Caring, Leisure and other Service Occupations	61 Caring Personal Service Occupations	614 Caring Personal Services	6141 Nursing Auxiliaries and Assistants 6148 Ambulance Staff (excluding paramedics) 6143 Dental Nurses
7 Sales and Customer Service Occupations	71 Sales Occupations	711 Sales assistants and retail cashiers	7114 Pharmacy and other dispensing assistants

Source: compiled using SOC 2010: *Volume 1: Structure and Descriptions of Unit Groups*, ONS, 2010

The Gatsby project undertaken by Geoff Mason also provided us with figures for a number of healthcare-related occupational groups (see Table 3). However, these data cannot provide a reliable figure for intermediate-level healthcare workers. For example, 'Nursing Auxiliaries' will include staff within NHS career framework levels 2-4, whilst routine laboratory testers are probably at a lower level and, for the most part, outside the healthcare sector.

A consideration of the data for SOC 6141 Nursing Auxiliaries and Assistants indicates that, for this category, 62% have a qualification at NVQ Level 3 or higher, and 10% are graduates. Of a total number of 213,000, the figures suggest that 131,500 could be working at a technician or intermediate level. However, there may not be a direct relationship between those working as Nursing Auxiliaries

²¹ SOC 2010 is the latest SOC system and has been used here for future relevance. However, the data for health occupations presented in this report is based on SOC 2000.

and Assistants and their highest qualifications. As the evidence from our interviews will indicate, employees are often recruited with qualifications higher than those required for the role.

Figures for Dental Technicians are combined with those for Medical Technicians, which makes it impossible to differentiate the numbers or the qualification levels of Dental Technicians. Whilst the minimum qualification for registration is now at level 3, many Dental Technicians gained access to professional status on the basis of previous experience and track record (so-called 'grandfather rights') and may have no formal occupational qualifications. Moreover, whilst the occupation of Medical Technician would certainly include occupations within health (e.g. Prosthetic and Orthotic Technicians), it is not exhaustive and may not include many employed in healthcare sciences below professional level.

An important feature of SOC is that it provides information on the highest qualification held. This qualification may or may not be relevant to the occupation, and thus it is difficult to comment on the level of education or training specifically undertaken for any particular job role. This is potentially less of a problem in SOC groups comprised of professionally qualified staff, where a bachelor degree is increasingly required. However, it is an issue for intermediate workers and also for less skilled occupational categories. The data suggest that there is no straightforward relationship between the 'level' of qualification deemed appropriate by the SOC coding and the level of qualification held.

Table 3 Health technicians in the UK 2010

Health technicians in the UK, 2010				Highest qualifications held (%)									
SOC 2000 code	Occupation	Estimated total employment	Estimated total NVQ3 or higher	% NVQ3 or higher	Graduates	Upper intermediate	NVQ3 Vocational	NVQ3 Gen-eral	NVQ2- Vocational	NVQ2- General	Low or no qualifi-cations	Other qualifi-cations (not classified)	TOTAL
<i>Percent of total in employment</i>													
3213	Paramedics	17000	13500	79	16	42	10	11	5	8	4	4	100
3217	Pharmaceutical Dispensers	45000	29000	64	11	16	31	6	17	12	3	3	100
3218	Medical and Dental Technicians	41000	31500	76	20	37	9	10	5	12	3	4	100
6111	Nursing Auxiliaries and Assistants	213000	131500	62	10	23	24	5	13	10	8	7	100
6112	Ambulance Staff (excl Paramedics)	24500	10000	41	5	12	20	4	15	25	7	12	100
6113	Dental Nurses	47000	28500	61	3	36	16	5	5	24	4	6	100
8138	Routine Laboratory Testers ²²	13000	10000	77	28	9	24	16	8	8	7	0	100
	TOTAL	400500	254000	63	11	25	21	6	11	13	7	6	100

Note: Weighted population estimates of total employment in each occupation are rounded to nearest 500.

Classification of qualifications

- Graduates: bachelor or higher degrees
- Upper intermediate: Foundation degrees, Higher National Certificates or Diplomas, sub-degree qualifications in teaching and nursing and equivalent awards;
- Diplomas in Higher Education and other higher education qualifications below bachelor degree level.
- NVQ Level 3 – Vocational: BTEC National awards, City & Guilds advanced craft and craft awards, completed trade apprenticeships and equivalent awards
- NVQ Level 3 – General: A level, A-S level, Scottish CSYS, Scottish Higher and equivalent awards; GNVO Advanced awards and equivalent awards
- NVQ Level 2 – Vocational: BTEC General and First awards; City & Guilds awards below craft level; SCOTVEC National Certificate modules; Y-TTP certificates and equivalent awards.
- NVQ Level 2 – General: GCSE grade A-C, O level, CSE grade one and equivalent Scottish awards; GNVO Intermediate and Foundation awards and equivalent awards

Source: Labour Force Survey 2010 (4 quarters)

²² 8138 is not found in SOC 2010 and would be included in 8139. It is considered in this table to show the difficulty in equating a routine occupation with qualification levels. However, it is unclear whether laboratory workers in the health sector would necessarily have been coded to 8139.

SfH provides a complementary source of data for the healthcare sector using SOC codings filtered by the SfH 'footprint'. This 'footprint' includes the SIC for 'Human health activities' minus (from 2010) 'Non-clinical/medical residential care activities'. This SIC code excludes those activities that might be relevant to healthcare workers, such as manufacturing of dental appliances and pharmacy retail outlets. It therefore provides a filtered, but not exhaustive, picture of the healthcare workforce. As the data use SOC groups, they suffer from the same difficulties outlined above with regard to intermediate-level staff.

In summary, although Table 3 provides some contextual data relating to the numbers of technicians working in the healthcare sector, it is not possible to provide a 'figure' for the number of intermediate or technician-level staff working in the sector. At a minimum, it may be possible to use the figures for some of the unit groups in SOC 3, accepting that this would probably underestimate the size of the intermediate healthcare workforce. The data would need to be disaggregated at lower levels to reflect different roles before it could fully identify the numbers of intermediate-level healthcare workers.

3.4 NHS WORKFORCE DATA

An alternative source of statistics on NHS (only) staff is provided by the workforce data collected by NHS regions.²³ These exclude Dental Technician, Pharmacy Technician and Optical and Audiology Technicians who work in the commercial sector, as well as staff working in the voluntary sector. The data used in this section relate only to England and are provided to illustrate the potential uses and limitations of this dataset, and to give some indication of proportions rather than absolute numbers.

NHS workforce data are collected under nine major occupational groups, of which three are of particular interest to this project:

- H (Healthcare Assistants and other support staff. This group includes 'patient care staff' who have a significant amount of patient contact; 'other support staff' can refer to NHS staff who have administrative support roles)
- S (Scientific, therapeutic and technical staff. This group includes staff primarily in the health professions including Chiroprody, Dietetics, Occupational Therapy, Physiotherapy, Radiography, Psychotherapy)
- T (Healthcare Scientists. This group includes staff primarily in the health science categories of Life Sciences/Pathology, Physiological Sciences, and Clinical Engineering and Physical Sciences.)

These groups are coded by staff group (such as level) and by area of work. A distinction is also made between professional/technical staff and the staff groups supporting them. It should be noted that the definition of a 'technician' staff member in the NHS data is someone working at a professional level, and does not accord with 'intermediate' as being sub-bachelor level. The NHS data definition reflects historical labels for technical non-medical staff in the healthcare sector, and is in the process of being phased out in favour of job titles that use the term

²³ <http://www.ic.nhs.uk/statistics-and-data-collections/workforce>

'Scientist'. Exceptions to this are when the 'professional level' is at sub-bachelor level itself; an example is the case of Operating Department Practitioners (ODPs) whose professional registration depends on the attainment of an approved qualification at level 5.

Overall, then, the NHS data provide a detailed view of the NHS workforce at any given time, although changes to the codes may make time series analysis difficult. From the perspective of this project, the inclusion of a new coding to refer to Assistant (or Associate) Practitioner (AP) is helpful, as it allows staff working at NHS career framework level 4 (intermediate/technician level) in different areas of the NHS to be identified. However, at the time of our analysis (in 2012), there are issues around the reliability of using these data exclusively to identify technician-level staff: the AP code is new and there may be other people doing similar jobs still coded elsewhere. It also relies, for our purposes, on the classification of AP being a proxy for intermediate level.

There are some disparities between Trusts on the classification of roles at different levels. These will be replicated in the data, and may make it difficult to pinpoint precisely those workers whose roles and qualifications are equivalent to an 'intermediate' worker. The notes for coding acknowledge that this might cause a problem for staff seeking to move between Trusts: 'They have formal education which is required for them to be able to do their job ... the qualifications may or may not be transferable for use at other organisations'²⁴. Some problems in classifying workers may be seen in the later sections of this report, and these same disparities will be reflected in the assignment of staff groups to classifications.

The terminology used in the NHS 'non-medical' workforce data (see Tables 4 to 8) and in the relevant occupational coding manual is problematic, differentiating 'qualified' or 'professionally qualified' staff from 'unqualified' 'support staff'. It is misleading to define intermediate roles in the NHS as 'unqualified', as our evidence clearly indicates (see Sections 4 and 5). Using a binary categorisation to distinguish between workers in this way is divisive, and is a barrier to enhancing the visibility and status of intermediate (and 'semi-skilled') roles. On the other hand, the distinction reflects key differences. Entry to the 'professions' classified as 'qualified' in the tables is associated with nationally agreed and regulated standards, usually (though not always) linked to membership of a statutory register, and usually (though not always) with a bachelor degree. We will return to debates about the significance of the terminology used in the healthcare sector and the implications for the development of intermediate and technician roles throughout the report.

Given these caveats about the terminology, the latest figures for England are provided in Table 4 and expressed as 'full-time equivalent' (FTE).

²⁴ National Health Service Occupation Code Manual Version 10, effective from 1 December 2011 – citation included in the notes relating to various non-medical occupational categories

Table 4 Non-medical staff in NHS hospital and community health services
(England, at September 2011)

	full-time equivalent
All non-medical staff	936,563
Professionally qualified clinical staff total	455,943
Qualified nursing, midwifery and health visiting staff	306,346
Qualified scientific, therapeutic and technical staff	131,742
Allied health professions	62,937
Qualified healthcare scientists	29,061
Other qualified scientific, therapeutic and technical	39,743
Qualified ambulance service staff	17,855
Support to clinical staff total	290,590
Support to doctors and nursing staff	225,858
Support to ST&T staff	51,763
Support to ambulance service staff	12,970
NHS infrastructure support total	189,800
Central functions	96,842
Hotel, property and estates staff	56,344
Managers and senior managers	36,613
Other staff or those with unknown classification	231

Source: Health and Social Care Information Centre, 2011, Non-Medical Workforce Census, Table 1.2b. This table has been used without amendment, figures rounded to nearest whole number.

As Table 4 shows, there was a total of 936,563 (FTE) non-medical staff, of whom 455,943 (FTE) were professionally qualified and 290,590 (FTE) supported clinical staff. In terms of the 290,590 (FTE) support staff, the vast majority (225,858) were in support roles to doctors and nursing staff, with a much smaller proportion (51,763) in support roles to science, therapeutic and technical staff. Support staff make up about 30% of the total staff for non-clinical staff²⁵ (i.e. if clinical staff were included, this would be a smaller proportion).

Table 5 presents data on nursing, and support for nursing staff.

²⁵ All figures and proportions relate to non-clinical staff groups. The percentages calculated are intended to illustrate broad differences between occupational areas with respect to the proportions of non-clinical staff and in particular APs. They are not intended to be used as proportions that reflect the total workforce in any given area of the healthcare sector.

Table 5 Qualified and support for nursing staff by occupational areas relevant to Maternity, Neo-natal and Paediatrics (England, September 2011, FTE)

	Paediatric nursing	Maternity services	Neo-natal services	All areas of work
All qualified nursing staff	15,629	24,916	2,777	306,346
All support workers	4,747	7,253	99	225,858
<i>Support Workers</i>				
Nursing Assistant Practitioner	43	24	12	750
Nursery Nurse	999	452	-	4,666
Nursing Assistants and Auxiliaries	1,286	2,199	87	59,456
Nurse Learners	-	661	-	3,114
Healthcare Assistants	1,508	2,916	-	44,787
Support Worker ²⁶	910	1,001	-	26,069
Clerical/Admin	-	-	-	86,942
Estates	-	-	-	74

Source: Health and Social Care Information Centre, 2011, Non-Medical Workforce Census. Adapted from Tables 1.2b and 1.5b

As Table 5 shows, there were 306,346 (FTE) qualified nursing staff and 225,858 (FTE) support workers, of whom 750 were classified as APs. In nursing areas, support workers make up about 42% of the workforce, although APs represent a very small proportion at present (0.3%). However, as commented above, there are other classifications that may contain intermediate workers, such as Nursery Nurses and potentially some of the Nursing Assistants and Auxiliaries and Healthcare Assistants. Nevertheless, the numbers of workers classified as APs is not significant.

Table 5 also provides data for paediatric, maternity and neo-natal nursing, and nursing support. The proportion of professionally qualified to support worker staff is lower for all three of these groups than for all areas of work. In maternity services, the number of professionally qualified staff is 24,916, whilst the number of support workers is 7,253, constituting 29% of all staff. There were only 24 FTE staff classified as APs, although the number of Nursery Nurses (452) might suggest that this is indicative of the newness of the AP role. Nevertheless, the figures suggest that maternity services are significantly skewed to professionally qualified staff, and this is replicated in a similar way for paediatric and neo-natal services. Overall, it suggests that at present intermediate workers in maternity and related fields are not a significant part of the workforce when compared with both professionally qualified staff and Healthcare Assistants.

Table 6 provides data for all scientific, therapeutic and technical staff including allied health professionals and support staff, and also data for professionally qualified radiographers and for staff supporting them.

²⁶ In this and following tables the NHS workforce data defines a support worker as someone who is not qualified or in training for a specific role.

Table 6 Qualified and support staff in Radiography and all scientific, therapeutic and technical occupations staff (England, September 2011, FTE)

	Radiography (diagnostic)	Radiography (therapeutic)	All areas
All qualified staff ²⁷	12,476	2,226	62,937
All support staff	3,513	238	10,877
<i>Support staff</i>			
Assistant Practitioner	521	63	1,193
Student/Trainee	67	16	193
Helper/Assistant	2,331	158	8,290
Healthcare Assistant	224	-	506
Support Worker	371	-	695

Source: Health and Social Care Information Centre, 2011, Non-Medical Workforce Census. Adapted from Tables 1.3b and 1.6b

Table 6 shows that the number of professionally qualified staff in all areas is 62,937, and the total number of support staff is 10,877. This means that around 14.7% of the total population are in support roles, a much lower proportion than in nursing. However, there are 1,193 APs (about 11% of all support staff); this represents a higher proportion of APs than for nursing, suggesting that this is an area where the AP role is further developed. The largest group of support workers, Helper/Assistant (8,290), may also include staff working at higher levels because it includes assistants to practitioners (e.g. Speech Therapy Assistants) who may span career levels. It is likely that the actual number of intermediate workers in this area is larger than suggested by the numbers working as APs.

In terms of radiography AP (RAPs) and senior support staff, Table 6 suggests that RAPs are a small (15%) but significant part of the support workforce for this occupational area. As with other areas of the scientific, therapeutic and technical staff, radiography (diagnostic and therapeutic) also have significant numbers of staff classified as 'helpers/assistants' who may or may not work at level 3/band 3 or above, so the actual numbers may be higher. However, this would need further clarification.

Table 7 provides summary information relating to healthcare sciences²⁸ and shows that, whilst support workers represent a significant proportion of all science staff (33%), most of these are at Assistant level (11,569) with only a small number (486) being classified as APs (3.4% of all support workers). Unlike other areas, it is likely that this figure provides a realistic idea of the proportion of intermediate-level staff currently working in the healthcare science area, although clarification of the Assistant category would be needed to confirm this. Interestingly, the physiological sciences indicate a different pattern from other areas, with more support workers than professionally qualified healthcare scientists, although the proportion of APs is similar to other areas.

²⁷ There is a 'Technician' in the qualified staff section. This has not been disaggregated as numbers are low or non-existent and it may be a residual category of staff. Principally they occur in chiropody (46), OT (1,501); physiotherapy (714); art/music/drama therapy (8); speech and language (80). In some areas they are probably staff who manufacture or undertake maintenance so the role is technical, but the level has been classified as 'qualified' so they are not included as intermediate workers.

²⁸ The NHS data provide separate categories for all areas of sciences. However, for the purposes of this project, the more detailed table has been amended to show the main branches of health sciences.

Table 7 Qualified and unqualified staff in healthcare science, by science group and staff group (England, September 2011, FTE)

	Life sciences ²⁹	Physiological sciences	Physical sciences	Other healthcare sciences	All health sciences
Qualified Healthcare Scientists ³⁰	17,422	1,509	4,676	1,088	29,061
Support to Healthcare Scientists	10,571	2,090	1,107	521	14,288
<i>Support workers</i>					
Assistant Practitioner	287	96	30	73	486
Assistant	9,066	1,377	759	368	11,569
Student/trainee	1,003	617	318	81	2,019
Healthcare Assistant	20	-	-	-	20
Support Worker	195	-	-	-	195

Source: Health and Social Care Information Centre, 2011, Non-Medical Workforce Census. Adapted from Tables 1.3b and 1.6b

In life sciences (the classification in healthcare sciences that includes pathology) we see that, although support staff make up well over a third of the workforce (over 37%), only a small proportion of support workers would seem to be working at technician level if the AP classification is used alone (2.7%). It is possible that some intermediate workers are included in the student/trainee classification (although these could be higher level trainees) or as Assistants. Overall, then, it is probably not possible to use these data to indicate absolute numbers of intermediate workers and, as suggested by our interview evidence, this appears to be an area where intermediate-level staff are only just emerging.

Finally Table 8, compiled from NHS statistics, shows figures for scientific workers not included in other tables.

This table shows that staff who are qualified at sub-bachelor level are included in the professionally qualified category. For example, in ODP and dental, the majority of professional staff are at technician level (99% and nearly 91% respectively) in terms of qualification level, whilst in pharmacy the figure is not insignificant (46%). We know from our understanding of educational and career pathways for these groups that, whilst they are qualified below graduate level, they belong to statutorily regulated occupations requiring professional registration. However, this is not reflected in the category 'Other science, therapeutic and technical'. Table 8 provides a good indication of areas where there are significant numbers of technicians, but it also shows that the numbers classified as APs remain low and may not be an adequate indicator of intermediate-level staff.

²⁹ Main areas of health sciences are aggregated from the more detailed breakdown provided in the original tables.

³⁰ As stated previously, the category of qualified healthcare scientists includes 'Technicians'. However, these are primarily in areas where 'technician' is associated with a professional role. For example, in cardiology, there are 2,145 technicians (out of total of 2,502), but this is an area where the professional staff have used this term.

The NHS data do not provide adequate figures relating to Dental Technicians, as most work in the commercial sector. However, they show that for England there are currently 2,968 staff classified as at technician level within dental (over 90% of all qualified staff). This may not equate to those with the title 'Dental Technician', but does imply that this area of work includes intermediate workers who are not included in support staff classifications. However, a separation of Dental Technicians from other technician staff in dental work would be necessary in order to provide a realistic figure for this group. It is also possible that other 'technicians' in this category are working at above or below this level.

Table 8 Qualified and support staff in other scientific, therapeutic and technical (England, September 2011, FTE)

	Other therapies ³¹	Pharmacy	Dental	Operating theatres	Social services	Support to S&T	Other ST&T	All areas
Other qualified ST&T	9,545	14,250	3,267	6,808	1,667		4,207	39,743
Of whom Technician	157	6,586	2,968	6,730	-		1,558	18,000
Support Staff	4,600	3,566	1,527	1,711	1,942	10,607	2,645	26,598
Support Staff								
Assistant Practitioner	1,972	37	96	310	1,172	-	916	4,502
Student/ Trainee	2,163	582	334	98	12	-	192	3,381
Helper/ Assistant	466	2,948	1,097	1,303	759	-	723	7,294
Healthcare Assistant	-	-	-	-	-	-	171	171
Support Worker	-	-	-	-	-	-	643	643
Clerical and Administrative	-	-	-	-	-	10,456	-	10,456
Estates (maintenance and works)	-	-	-	-	-	151	-	151

Source: Health and Social Care Information Centre, 2011, Non-Medical Workforce Census. Adapted from Tables 1.3b and 1.6b.

³¹ Aggregated from psychotherapies various.

3.5 SUMMARY

This section has revealed a number of issues regarding the identification of 'technicians' and intermediate level staff in the healthcare sector using existing and available data sources. An important starting point relates to the inability to define 'technician' in a way that can be operationalised using existing sources of data, including SIC. Current SOC groups do not adequately reflect the intermediate group. This weakness is magnified for the healthcare sector, with a gulf between the classification of mainly professionally qualified healthcare workers and the classification of mainly lower level workers (such as auxiliaries). This is important, because SOC's use of highest qualification data cannot be assumed to relate to the requirements of the occupation. The aggregation of related occupations into one classification also acts as a barrier to building a database of specific workforce groups (for example Dental Technicians), or particular occupations linked to allied healthcare professions.

The NHS dataset provides a much richer source of workforce data. It is used here to illustrate both its potential uses and its limitations. As it stands, it does not provide an easy way of identifying 'intermediate' level workers, although it may be possible to do so with further interrogation and custom analysis, including clarification of the categories that amalgamate 'Assistant' categories. The coding of AP within this data is relatively recent and, whilst it is not robust at present, it could provide an indicator of technician and intermediate-level workers in the future.

Overall, the use of existing data sources to provide an estimate of technician or equivalent workers in the healthcare sector would be unreliable. The figures included in this section of the report should be seen as providing broad illustrations and indications.

SECTION 4

EDUCATION AND TRAINING PATHWAYS

4.1 INTRODUCTION

This section provides an overview of the education and training pathways for technicians or equivalent workers in the healthcare sector. The first part identifies the main developments and influences on education and training at intermediate level, drawing on examples from a range of occupational groups. The second part focuses on the four case studies, illustrating how their subjects have been shaped by the changing context as well as identifying some of their unique features. Examples of pathways and qualifications for intermediate or technician-level workers are provided, as well as comments on the way in which differences occur both organisationally and occupationally.

4.2 MAIN INFLUENCES ON THE PROVISION OF EDUCATION AND TRAINING PATHWAYS

For a number of years, education and training pathways in the healthcare sector have been influenced by two overarching and inter-related trends: firstly a shift away from work-based pathways; and secondly a growth in the number of graduates entering the sector. These trends have, in turn, begun to change the composition of the pool of people available to work in intermediate-level roles.

The work-based route enables individuals already employed in the relevant occupational area to attend college or university part-time (often on a day-release basis) to study a recognised curriculum and gain a formal qualification at a specified level. Individuals benefit from the experience they gain in the workplace as a practising member of the occupational team. The aspiration is that either during or at the end of the course (which often takes place over two years or more), the employee will be promoted to the next level.

The work-based model has been successful in recognising the skills of the healthcare support workforce. It opens up educational and career pathways and widens participation to members of staff, often experienced workers, with limited prior educational attainment or whose prior attainment was not relevant to the healthcare sector. It has also been used as a way of responding to skills shortages or changes in the skills mix, for example by providing a route for existing employees to fill newly created intermediate or pre-registration roles. The move away from the work-based route has been facilitated by the expansion of full-time education programmes. In this model, students gain practical experience through undertaking relevant work placements with employers. This approach has been adopted in the transition of nursing to an all-graduate entry profession, and has been relatively longstanding in some other healthcare professions such as physiotherapy.

The expansion of full-time pathways is associated with an increase in graduates across the healthcare sector. In cases where there are insufficient registered posts available at graduate level, employers have the option of drawing on this pool to fill intermediate positions. An advantage for the employer is that the cost of funding full-time education and training falls on the individual and on the government – health professions are commissioned so fees and bursaries are provided by the DoH. A disadvantage, according to some of our interviewees, can be that the full-time pathway does not provide the individual with sufficient practical experience

of the occupational role to meet employers' expectations. In addition, it reduces opportunities for widening participation and progression in the healthcare workforce; this primarily has an adverse effect on the career chances for those in AfC bands 2 to 4.

The move to develop intermediate roles in the sector comes at a time when, for many occupations, the pool of 'trainees' going through a work-based route has all but dried up, with staff such as healthcare assistants (HCA) and Assistant Practitioners (AP) undertaking significant amounts of patient care. Nursing has been cited³² as an occupation where routine tasks were traditionally undertaken by nursing students before the introduction of the full-time route. However, this is also the case in other occupational areas within the sector, for example, healthcare sciences, and some of the allied healthcare professions.

In general, the training of professional level staff has moved to the full-time route with a standardised curriculum, particularly where this links to the regulatory approval process for entry to a statutory register. Educational pathways are being re-organised in the context of a radical shift in the way staff are trained and recruited into professional level roles in the healthcare sector. This has produced variable responses both between different occupational areas and at NHS Trust level. Local variation has meant that, whilst in some Trusts the training of intermediate workers has focused on the pursuit of level 3 qualifications (e.g. NVQ3), in others the role has been extended (e.g. through the creation of AP posts) and linked with an education and training pathway leading to the award of a Foundation degree (level 5).

To some extent, the way in which the intermediate role is developing has been influenced by the context of what is occurring at the professional level, as the 'intermediate' is formulated in relation to the minimum entry point associated with professional status. For example, in the case of the Operating Department Practitioner (ODP) the role has become highly skilled. Education and training has been standardised in much the same way as those occupations requiring bachelor degrees, despite the lower level of qualification (level 5) required for entry to the register. The qualifications required to practice as an ODP can be categorised as intermediate level, but the role is not located in an intermediate position in an occupational hierarchy. Interestingly, the Pharmacy Technician role requires a qualification positioned at level 3. In terms of content this qualification is much more substantial than many other level 3 qualifications (see Table 9 below). However, there is a higher level professional, the Pharmacist, located above the Pharmacy Technician, and this role requires a master's rather than a bachelor degree as an entry point.

In the occupations included in this project there were key differences between the occupational groups. For example, most of the healthcare sciences were at an early stage in developing education and training opportunities to support roles in the NHS career framework at levels 3 and 4, although some Trusts were more advanced than others. Likewise, some of the Allied Health Professions (AHPs), such as podiatry, were using and locating Healthcare Assistants at a basic support level

32 Griffiths, P., Robinson, S. (2010) *Moving forward with Healthcare Support workforce regulation. A scoping review: Evidence, questions, risks and options*. National Nursing Research Unit, Kings College London. Report to the NMC, July 2010.

(career framework level 2, AfC band 2), and there was less use and development of more highly qualified staff (such as with Foundation degrees).

In practice, the availability and viability of appropriate education and training pathways depends on demand and levels of funding. In all Trusts included in this research, there were examples of occupational groups not well served by local educational provision at intermediate qualification levels 3, 4 and 5. In the case of level 3 provision, problems tend to centre around the extent to which qualifications are seen as being accessible (geographically) or appropriate (specific to the occupational role). In the case of qualification levels 4 and 5, there are occupational areas where the ability to develop courses which are either generic with some specialised options, or specific is hampered – by low numbers, lack of funding, and the inability of educational providers to sustain numbers over a period of time. In nearly all Trusts and providers, there were serious issues around the development and provision of Foundation degrees and equivalent level provision.

4.3 EDUCATION AND TRAINING IN THE CASE STUDY AREAS

4.3.1 Radiography support

Support workers in the AHPs assist or support the work of healthcare professions. Usually, the minimum requirement for registration as a healthcare professional is a bachelor degree, although there are exceptions with some (e.g. Paramedics and ODPs) having registration requirements at sub-bachelor level. This means that the route to professional status for most AHPs is through an approved bachelor degree, primarily although not exclusively via a full-time route.

Radiography is one of the AHPs that used to be accessible through a non-graduate, work-based route, but is now an all-graduate profession regulated by the HPC. All Radiographers have to complete an approved bachelor degree programme before they can register. The majority of these programmes are full-time although there are some part-time degrees. Interview evidence indicated that the demise of the work-based route, coupled with a switch to all-graduate entry, is making it harder for support staff to access the necessary training to enable them to progress to professional levels.

In some of the Trusts included in this project, the devolvement of tasks from the professional to the intermediate worker was occurring through the development of the Radiography Assistant Practitioner (RAP, career framework level 4, AfC band 4). The education and training seen as appropriate to these workers was the Foundation degree, although availability of provision was limited due to insufficient and uneven demand from year to year. In one case, the local HE provider had recently withdrawn a Foundation degree (level 5) in radiography after numbers began to fall. A participating employer explained that part of their response to a shortage of Radiographers a few years previously had been to develop the RAP role to allow some of the Radiographer's tasks to be devolved. However, the need for the role had not been high or stable enough to sustain a specialist Foundation degree:

It was very much done on the basis that we were short of Radiographers. At that time it was a national shortage, and so it was seen that this would be useful both from the point of view of the department and from the point of view of staff. And now there are hundreds of radiographers going for every job. (Employer)

In some areas of the UK, particularly large cities with greater concentrations of numbers, local provision may not be as difficult to sustain. In the RAP example above, it was felt that a more generic health and social care programme with specialist radiography units could provide an alternative route to RAP status and for existing radiography support workers looking for progression. There were mixed views in the case study about the extent to which RAPs need to have specific training in radiography, or whether they can develop adequate skills and knowledge through a core and options Foundation degree model.

Changes in NHS funding usually mean that a RAP who wants to become a Radiographer now has to leave their post and become a full-time student. In this field, the Foundation degree is usually an acceptable entry qualification to Year 2 of the bachelor degree programme.

Below Intermediate level, the Trusts participating in our research conceived radiography support workers (career framework level 3 posts and usually positioned at AfC band 2 or 3) as primarily focused on looking after patients coming into the department, with some responsibility for associated administration. It was apparent that radiography support workers were not expected to have a detailed knowledge of science, or an in-depth understanding of the science and technology underpinning imaging or radiotherapy work. The associated qualifications and training routes include a level 3 Diploma and an Advanced Apprenticeship. The Diploma consists of core units in generic health and social care, with some optional units specific to the radiography context. This provision could provide a platform for progression to an education and training pathway leading to RAP posts in Trusts where this ladder has been created.

4.3.2 Healthcare sciences

The field of healthcare science is broad, multi-disciplinary and complex. Traditionally, the field has been characterised by the separation of 'professionals' and 'laboratory assistants'. Capacity at the intermediate level was provided by the opportunity for some laboratory assistants to progress to the higher level via work-based training programmes, and also by trainee healthcare scientists undertaking intermediate-level work as part of an education and training pathway to professional status. However, as in other areas of healthcare, a move to graduate level entry through the completion of full-time programmes has disrupted the prior education and training practices which supported the intermediate level. The recent introduction of the Modernising Scientific Careers (MSC) initiative has sought to develop a transparent 'bottom to top' career ladder to distinguish between hierarchically organised occupational roles, and to rationalise education and training pathways.

The MSC identifies a range of career and associated education levels, including:

- Assistant/Associate level which would most probably correspond to level 2/3 (Assistant) and Level 4 (Associate), and so would encompass a broad conception of the intermediate workforce.
- Practitioner Training Programme (PTP) – funded BSc programmes which integrate HE and work-based elements.
- Scientist Training Programme (STP) – postgraduate entry training at Masters level.

- Higher Specialist Scientific Training Programme (HSSTP) – doctoral level education and training programme.

Our interview evidence suggests that the focus of the MSC so far has been on reforming the approach to graduate training. This has involved a transition from the work-based, part-time bachelor degree route to full-time attendance. It has also shifted the cost burden from the NHS to students drawing on higher education student loans to fund their studies. One Trust gave the example of how healthcare science training has changed in cardiac physiology. In the past, the Trust would have employed trainees in intermediate roles at the same time as they were attending university part-time to obtain their degree. Currently, aspiring healthcare scientists attend university full-time (work placements are built into the course design) to acquire a healthcare science degree in cardiac physiology before applying for jobs. To help provide capacity at intermediate level, this Trust has developed an AP role linked to a Foundation degree created via a partnership with a local university.

The effect of the shift of professional level training to the full-time route was also seen in Pathology. In order to become a Biomedical Scientist in a profession now regulated by the HPC, individuals must complete a bachelor degree and gain a certificate of competence from the IBMS (Institute for Biomedical Science), who in turn accredit degrees.³³ Currently, anyone undertaking a non-accredited degree has to undertake additional training to gain the certificate. There appears to be a push towards integrated degree and certificate programmes accredited by the IBMS. Our interview data indicates that this is seen as the option that employers might find most attractive, as they don't have to do any further training.

Previously, lower level staff could progress to professional level via a work-based training programme leading to an HNC. Indeed, a number of our interviewees had themselves followed the work-based training trajectory from ONC to HNC, enabling them to become 'scientific officers'. This role is now associated with graduate entry and the registered title 'Biomedical Scientist'. As the following comment highlights, the change in education and training pathways has had a negative effect on the development of existing staff:

So we had people who wanted to progress in the laboratory, and if we could get funding for them ... we were then able to send them to university to get their degree and become registered, and now we can't do that anymore, it's much worse. That's taken away our ability to progress staff. (Employer)

Whilst some Trusts were concerned about the development of education and training pathways to support intermediate roles in healthcare science, overall interviews expressed concern about an oversupply of biomedical science graduates. This had reduced the need to train up existing staff, as employers could recruit graduates into intermediate positions instead:

... over the next five to ten years we'll probably be employing registered biomedical scientists who have come through a full-time biomedical science degree, done the placement that gets them registered ... in these band 4 roles ... well why wouldn't you, because you don't have to train them. (Employer)

Echoing the traditional separation of laboratory assistants and healthcare scientists,

³³ See: <http://www.ibms.org/go/registration/routes-to-registration>

employers in our sample did not view their current laboratory support staff as working at intermediate or technician level. Employees undertaking these roles were not seen to need particularly high level training, and the associated level 3 qualification contained no underpinning scientific knowledge. Speaking about the laboratory support worker role and qualification, one interviewee observed:

It's quite low level. They do maintain basic laboratory equipment, like centrifuges, but mostly it's processing samples, it's labelling data entry, and it's more of an administrative role, but they are physically handling samples ... There's very little scientific knowledge required... there's no absolute requirement for any scientific input ... it [Diploma in Pathology Support] covers most of their competencies, but it doesn't have any scientific content, there's no science or clinical element to it. (Employer)

4.3.3 Maternity support

Nursing and midwifery are graduate entry professions regulated by the Nursing and Midwifery Council (NMC). The shift towards training via the full-time bachelor degree route has had implications not only for the way in which Nurses and Midwives are trained, but also on the availability of staff at lower levels, many of whom would previously have been trainees. Another consequence has been the curtailment of opportunities for existing healthcare support workers to progress to registered posts via part-time work-based study, with implications for widening participation. At the same time, workforce development strategies are encouraging the devolvement of tasks from registered staff to parts of the support workforce, for example through the creation of intermediate-level AP roles or in some cases Senior Healthcare Assistants.

Our research revealed the influence of all these trends. However, the particular way in which NHS Trusts were responding to the need to develop intermediate workers seemed to vary. Central to this variation is how Trusts perceive the location of such staff in relation to the NHS career framework level and AfC banding. In some Trusts, the development of band 3 workers to take on intermediate roles was often associated with the acquisition of level 3 qualifications and in-house training. In other Trusts, the intermediate-level worker was more likely to be developed through a level 5 qualification such as a Foundation degree, and to be positioned as an AP (band 4).

Level 3 training in this occupational area is generally work- and competence-based, leading to qualifications such as the Diploma in Maternity and Paediatric Support. There is also an Advanced Apprenticeship programme which includes this Diploma as well as other components. Although the diploma programme appears to be job specific, it is comprised mostly of generic clinical healthcare units with some options on maternity and paediatric care. Progression and training at qualification level 5, for example through a Foundation degree in Maternity Support, was an accepted route for an AP position. However, specific Foundation degree provision in this occupational area was limited, and not all Trusts had access to local provision. It is not unusual for staff to undertake generic Foundation degrees in Health and Social Care, taking optional specialist modules where possible.

Overall, evidence from maternity support points to the under-development of a distinctive intermediate position between the Midwife and healthcare assistant. In terms of education and training pathways, there appears to be no clear

link between the acquisition of an appropriate Foundation degree and career progression. There is no co-ordinated national push to define and develop this role and the associated education, training and qualifications. Consequently, it is being left to individual employers to create an intermediate role and to define how it articulates upwards to Midwives and downwards to 'semi-skilled' healthcare support workers, as well as being left to educational providers (in partnership with employers) to develop appropriate education and training programmes.

4.3.4 Dental Technicians

Historically, the training of Dental Technicians relied on apprenticeship or other time-served forms of training. Training could lead to a recognised award, for example the City & Guilds Final Certificate in dental technology, but there was no requirement to acquire formal qualifications. Debates about the lack of a clear and consistent education, training and qualification strategy, and about the most appropriate level and mode of training for Dental Technicians go back to the 1960s.³⁴

Early City & Guilds qualifications for Dental Technicians were designed in line with other qualifications for occupations in the trades and manufacturing-related occupations. Some Dental Technicians interviewed for this case study reported that they were initially called 'Dental Mechanics'. Subsequently, a BTEC National Diploma in dental technology was developed. Over the last ten years, the routes to qualified status have included the development of higher-level qualifications, but concern about whether there is sufficient provision to fulfil the needs of the sector have remained.³⁵

A statutory register for Dental Technicians regulated by the GDC opened in 2006 with a two-year transition period. The initial criteria for inclusion provided 'grandfathering' rights for those who had sufficient experience but did not have formal qualifications, as this interviewee explains:

*Until technicians had to be registered with the General Dental Council a large number of them never had any education at all, they were just time served. They started as a plaster worker and they worked through doing models until they could really do the models well, and then they went on to the next section. And they ended up being able to produce the appliance from start to finish.
(Professional Body)*

During the initial transition period, qualifications such as the City & Guilds Final Certificate (no longer awarded) as well as BTEC National Certificates and Diplomas were acceptable for entry to the register. However, following the transition phase there was some uncertainty about which qualifications would be regarded as being acceptable to the GDC for registration purposes.

Currently there are three qualification levels that qualify individuals for entry to the register: level 3 in the form of a BTEC Extended Diploma (before the introduction of the QCF this was known as the BTEC National Diploma); level 5 in the form

³⁴ Ministry of Health, Central Health Services Council, Standing Dental Advisory Committee, *Dental Technicians* HMSO 1968. This report noted in 1968 the problem of shortage of Dental Technicians but regarded it as a private sector issue at the time. See also Bower, E. J. P. D Newton, D.E Gibbons and J.T Newton (2004) A national survey of dental technicians: Career development, professional status and job satisfaction. *British Dental Journal* 197, 144-148 (2004).

³⁵ For example, Bower et al. (2004) report that the BTEC National Diploma had 100 completions in 2001 against a specified 'need' (by the joint committee of the Dental Laboratory Association and Dental Technologists Association) of 700 per year.

of an occupationally specific Foundation degree; and level 6 in the form of a BSc in Dental Technology. In addition, there are further specialist courses that can be undertaken in particular areas of dental technology, and a Master's level course. There is no standard career pathway that links to these education levels in terms of hierarchy or grading structures across the NHS and commercial dental laboratory sectors (see also Table 9 below). Neither is there any overall consensus on the appropriate qualification level for becoming a Dental Technician. The National Occupational Standards (NOS) for Dental Technicians and the learning outcomes specified by the GDC relate to education and training content rather than qualification level.

The level 3 training pathway consists of the BTEC Extended Diploma in Dental Technology; this has been designed by the awarding body Edexcel in conjunction with the GDC, the Dental Technologist Association (DTA), and the Dental Laboratories Association (DLA). The specification is linked to the NOS and the registration requirements of the GDC. The mode of delivery and attendance can be determined by the educational provider so as to allow for a range of options to suit students (and employers), including a part-time route for those already employed in a dental laboratory setting. Four GCSEs at grades C and above, including Maths and Science, are required for entry onto the course. Some providers also have internal tests covering literacy and manual dexterity.

Information on both the GDC and DTA websites indicates that in 2012 there were five Foundation degree providers. However, the ongoing availability of this route is unclear because some providers were withdrawing and 'teaching out' their provision due to changes in funding arrangements in the higher education sector. A search of the UCAS website for Foundation degrees in Dental Technology indicated that there were only three courses available. However, where information was available there was an expectation that Foundation degree applicants would have a level 3 qualification with a science or technology component, and would be employed in an occupationally relevant position, but there were no standard entry criteria.

The last decade has seen the development of BSc programmes in Dental Technology. In 2012 three universities were offering this degree, all on a full-time basis. One of the courses was listed as a top-up for those progressing from the institution's Foundation degree. The other two required a level 3 qualification for entry (between 200 and 280 UCAS points), typically A-levels including at least one science. Qualifications such as a BTEC National Diploma and Access to HE Diplomas were also mentioned as acceptable entry qualifications.

There were mixed views over the 'appropriateness' of these different levels. For many, the level 3 pathway represented the best route for an occupation that was viewed as technical, scientific and practical. The Foundation degree was also seen as a reasonable option or progression route. There was less consensus about the value of the bachelor degree. Some interviewees regarded it as a vehicle for the development of the Dental Technician role, and as increasing its status. Others maintained that the level of scientific knowledge included in the BSc was not necessarily a benefit, and could not compensate for the need for trainees to gain substantial practical experience in order to become proficient in the job:

But if you can have a BTEC and a degree, and both are technicians, both legally are technicians, you're poles apart in terms of academic qualification. And yet the more employable is almost certainly the person with the BTEC degree, the lower qualification. And certainly if I was an employer I would choose the BTEC way before anybody who had a degree. (Professional Body)

There was also some concern that raising the educational level for entry could result in the exclusion of people with the 'right' aptitude for the work:

The trouble with a degree, a full degree, it's the qualification. I think if you start bumping it up to everybody having to do A-levels, you'll lose the people who are very good with their hands but haven't quite got the educational ... couldn't do it, but they can still make fantastic dentures. You don't always need to be super qualified. (Professional Body)

Another issue for this case study was the inadequacy of the education and training provision in terms of geographical coverage. There were (in 2012) only four providers of the level 3 programme in the UK listed on the GDC and DTA websites. This raises particular difficulties for those employers wanting to utilise the work-based training route:

And it's the classic postcode lottery as to where you are. I mean for instance if you're in Southampton you have to send somebody in to London or to Cardiff to send them to college. (Professional Body)

There is no government-supported Advanced Apprenticeship framework for Dental Technicians. This is puzzling, given that many of our interviewees indicated that a preferred method of training involves a structured mix of on- and off-the-job provision to help ensure trainees gain practical work-based experience as well as underpinning theoretical knowledge. Correspondence with providers on this topic indicated that the level 3 qualification (the BTEC Extended Diploma) would have to be changed to fit with the government requirements for an Advanced Apprenticeship framework. This raises questions about the flexibility of the government programme, and its capacity to support what is undoubtedly a high-quality and high-value pathway to a recognised and registered technician-level occupation with good employment and career prospects.

4.4 INTERMEDIATE WORKERS AND TRAINING PATHWAYS: EQUIVALENCIES AND VARIATIONS

It is important to identify the impact of broader developments in the education, training and qualification pathways in the healthcare sector on the intermediate-level workforce. As we have seen, the shift to full-time bachelor degree programmes as a route to professional level work is associated with a weakening of part-time work-based routes which traditionally provided a ladder for (some) staff to progress both occupationally and in terms of formal educational attainment. However, the impact of these trends plays out in different ways:

- geographically
- organisationally
- occupationally.

Occupationally, it is clear that there are differences in the education and training pathways for different groups of workers in the healthcare sector. The way in which qualifications have been developed to suit employer-defined needs has compounded these variations. In some areas such as Pharmacy Technician and Dental Technician, a level 3 qualification can lead to a highly skilled technician or equivalent post, as well as to access to the relevant statutory register. In other areas the occupational role of the worker with a level 3 qualification is not seen as technical or scientific in terms of content, or perceived as intermediate in the sense of coming between the professional and semi-skilled levels.

Table 9 below provides summary information relating to level 3 qualifications for the range of occupations considered in this research, and reveals wide differences between the content of qualifications. For Pharmacy and Dental Technicians, inclusion of a knowledge-based qualification differentiates them from occupations where the associated level 3 qualification is competence-based. The number of QCF credits and Guided Learning Hours (GLHs) linked to the qualifications presented in the table provide indications of differences in their size and substance.

Overall, the way in which level 3 qualifications have been developed suggests that they fall short of reflecting the education and training required to undertake intermediate roles. The development of training for intermediate-level posts, which enable staff to complete tasks previously only carried out by registered staff, would seem to match more closely to sub-bachelor level provision such as Foundation degrees.

Table 9 Examples of level 3 health qualifications

Qualification	Optional pathways/occupations	QCF credits	GLH
Level 3 Diploma in Allied Health Profession Support	Dietetics, Physiotherapy, Occupational therapy, Speech and Language therapy, Radiography	65	373-490
Level 3 Diploma in Blood Donor Support	Blood donor support	65	411-483
Level 3 Diploma in Clinical Healthcare Support	Health Care Assistant, can include optional tracks (e.g. radiography)	65	373-494
Level 3 Diploma in Maternity and Paediatric support	Maternity, Neo-natal, Paediatrics	65	376-502
Level 3 Diploma in Pathology Support	Pathology support	65	411-483
Level 3 Diploma in Perioperative Support	Perioperative/Theatre support	66	468-709
BTEC Level 3 Extended Diploma in Dental Technology	Dental Technician	180	1080
Level 3 Diploma NVQ in Pharmacy Service Skills <i>and</i> Level 3 Diploma in Pharmaceutical Science	Pharmacy Technician	75 for NVQ 120 for Diploma	344-352 720

Source: Table compiled from information on separate qualifications from Ofqual, Register of Regulated Qualifications, <http://register.ofqual.gov.uk/>

The ways in which NHS Trusts have developed their intermediate workforce differs, and there is no clear and standardised relationship or way of mapping between AfC band, career framework level, and qualification level. This is important because it means that it is impossible to make assumptions about the nature and scope of jobs from the ways in which they are positioned. As interviewees noted, the relationship between the career framework and the banding of staff is not standardised:

You will find the same job title appearing at different levels of the career framework. Similarly, we know of examples within the health sector where the term Assistant Practitioner is applied to a role, and they may well be being paid at band 4 for example. But if you looked at the competencies and knowledge and skills that role has with that employer, you may well find in some instances other employers make even their band 2s do exactly the same. (Overarching Body)

Similarly, there is no straightforward relationship between qualification levels and the career framework:

We can't assume that career framework level 4 requires a Foundation degree in the health sector. What we haven't got is any definition of what we mean. You know, there's no alignment between career framework level 2, 3 and 4, and academic levels... there's no standardisation. (Overarching Body)

There is also variation in the way the same qualification is designed. In relation to Foundation degrees, some courses are generic with optional modules to target particular roles; others have been developed with specific job roles in mind. Thus, the learning outcomes of two learners from these different models would be very different. Whilst it is beyond the scope of this research to comment on whether one is more appropriate than another, there may be implications for the development of the AP roles. Some employers grappled with the different possibilities, and recognised that provision seemed to have been developed around different concepts of these roles.

Another important feature of the healthcare sector is that the government-supported apprenticeship programme is seldom used to train intermediate-level staff. One interviewee observed:

Historically apprenticeships haven't been used in the healthcare sector, so therefore everything had to be contained within previously the NVQ and now the diploma. Whereas with engineering, construction, whatever, the apprenticeships have a long-standing history and somebody would probably never take just an NVQ in construction – they would only ever take it as part of that bigger package. (Employer)

Table 10 maps out the case study occupational areas in terms of the NHS (or equivalent) career framework and associated qualification levels and examples. There are two key points to note. Firstly, NHS career framework levels 4 and 5 usually map onto qualification levels 5 and 6. Secondly, we have located Dental Technicians outside the NHS career framework. This is because the majority of Dental Technicians work in commercial laboratories outside the NHS, and it is not clear where those who are employed in the NHS are categorised in terms of career framework level. It is likely to depend on their qualification level which, as the table confirms, can range from level 3 to level 6.

Table 10 Case study occupational areas, career framework and qualification levels, and example qualifications

		NHS Career Framework level or equivalent							
		Level 2	Level 3	Level 4	Level 5				
Case Study		Locally determined, mostly work-based education and training pathways (non-registered roles)				Nationally determined, mostly full-time education pathways leading to registration			
	Radiography	Health Care Assistant	L2 Diploma in Clinical Healthcare Support	Senior Health Care Assistant, Radiography Support Worker	L3 Diploma in Allied Health Profession Support or L3 Diploma in Clinical Healthcare Support	Radiography Assistant Practitioner	Foundation Degree (L5), either generic (eg. Health & Social Care) or specific (eg. Radiography or Diagnostic Imaging)	Radiographer (Diagnostic or Therapeutic)	Approved bachelor degree (L6), Registration with HPC
	Health Sciences - Pathology	Health Science Assistant	L2 Diploma	Health Science Assistant	L3 Diploma in Pathology Support	Associate Practitioner	Foundation degree (L5) or higher diploma, either generic (eg. Health and Social Care with optional units, or Life Sciences)	Biomedical Scientist	bachelor degree (L6) programme, registration with HPC
	Maternity and Paediatric	Health Care Assistant, Nursing Auxiliary	L2 Diploma in Clinical Healthcare Support	Senior Health Care Assistant, Maternity Support Worker	L3 Diploma in Maternity and Paediatric Support	Assistant Practitioner	Foundation degree (L5) in Health and Social Care (with optional units) or Foundation degree (L5) in Maternity and Paediatric Care	Midwife, Qualified Nursing Practitioner	Approved bachelor degree (L6), registration with NMC
Outside NHS Career Framework									
Dental Technician	Process Worker	No formal qualifications, usually on-the-job training	Dental Technician, Registration with GDC	BTEC (L3) Extended Diploma in Dental Technology – full-time or work-based	Foundation degree (L5) in Dental Technology full-time or work-based		bachelor degree (L6) in Dental Technology		

SECTION 5

EVIDENCE FROM THE CASE STUDIES IN THE HEALTHCARE SECTOR

5.1 INTRODUCTION

This section presents our findings from the case study evidence in relation to: firstly the meanings and understandings attributed to the term ‘technician’ and the concept of technician-level roles; and secondly the potential of registration and regulation to enhance and promote the technician or equivalent workforce in the healthcare sector.

5.2 TECHNICIAN ROLES IN THE HEALTHCARE SECTOR: MEANINGS AND UNDERSTANDINGS

Use of the label ‘technician’ to refer to a particular occupation carries with it particular connotations of the content of the work, and in many cases, the level of complexity or responsibility associated with this role. For example, a technician has been defined as:

a person who is skilled in the use of particular techniques and procedures to solve practical problems, often in ways that require considerable ingenuity and creativity. Technicians typically work with complex instruments and equipment, and require specialised training, as well as considerable practical experience in order to do their job effectively. (Lewis and Gospel, 2011, p. 12)³⁶

In light of our research, we agree with Geoff Mason’s view (referred to in Section 1) that the ways in which the term ‘technician’, has been and continues to be applied vary according to how it is being used to define the content of technicians’ work, what they actually do, and what knowledge resources and practical skills they draw on; as well where they are positioned in occupational, organisational and qualification hierarchies. In other words, the shifting and variable meaning of ‘technician’ and ‘technical work’ is rooted in and reflects changing organisational and disciplinary contexts, occupational cultures and hierarchies, regulation requirements, and the structure and purpose of qualifications, and education and training pathways.

Research and policy literature reflects a debate about the content and nature of what technicians do. This hinges on issues such as the extent to which their work is technically-based, the extent to which they have supervisory responsibilities, and ways in which they support the activities of more highly-qualified professional engineers and scientists. As our case study evidence will show, this debate is replicated in practice in the healthcare sector.

Historically, the term ‘technician’ has been applied to a number of roles in the healthcare sector. More recently, its usage has declined, with few occupations now retaining the label ‘technician’. The label is seen as problematic:

36 P.A. Lewis and H. Gospel (2011) *Technicians under the microscope: a study of the skills and training of university laboratory and engineering workshop technicians*, p. 12. Department of Management, Kings’ College London. Research Commissioned by the Gatsby Charitable Foundation. Lewis and Gospel cite multiple sources for this definition: S. R. Barley and J. Orr (1997) Introduction: the neglected workforce, in S. Barley and J. Orr (Eds) *Between craft and science: technical work in US settings*, pp. 12-15. Ithaca and London University Press; OECD (2002) *Frascati manual: the measurement of scientific and technological activities: proposed standard for surveys of research and experimental development*. 6th edn, pp. 92-94. Paris. Technician Council (2011) *Presentation – the Technician Council*. London: The Technician Council, 2011.

The word technician doesn't really have any resonance... at the career framework level 3 and 4.... In the health sector, you know, the term healthcare support workers, Assistant Practitioner, those kinds of terminology have much more resonance ... you're looking at much softer care and social type of skills. It's the use of the terminology rather than perhaps the wider meaning of a technician. It's actually that word that conjures up something in the health sector which just doesn't fit, doesn't have appeal to health sector employees. (Overarching Body)

However, our evidence suggested that there is an important intermediate level of work in the sector that does have significant technical and scientific content. Our interviews confirmed the findings that emerged through desk-based work, that there is no single educational or qualification level which can be associated with technician or intermediate-level work, or one rung on an organisational career ladder. Overall, interviewees perceived the role as requiring substantial, recognised and approved education and training at least at level 3, and often at levels 4 and 5. Where a level 3 qualification or package of qualifications was recognised as intermediate or technician level, it would encompass a significant and assessable knowledge-based curriculum approved as meeting the standards specified either by regulators (e.g. the GDC in the case of Dental Technicians), or by employers and professional bodies). Qualifications associated with NHS career framework level 4 (AP) posts were often linked to the acquisition of a Foundation degree (qualification level 5).

The term 'technician' invoked a range of responses from our participants related to:

- whether the term is currently used in their occupational field
- the position and responsibilities it was associated with in the relevant occupational, organisational and qualification hierarchies
- the extent to which the work being performed at this level was considered technical and/or scientific in nature.

Reactions to the term were often bound up with history and tradition, and viewpoints about the relative status of different types of work and roles. Here are our findings from the four case studies.

5.2.1 Dental Technician

The term 'Dental Technician' has a long history and, since 2006, it has been a protected occupational title. Not surprisingly, for interviewees in this case study the label has strong resonance with a distinctive occupational identity that fits well with conventional understandings about the content of the work of a technician. The role itself was seen as combining technical and scientific knowledge and practical skills, entailing a lengthy period of training and practical experience to acquire the expertise involved in producing high-quality medical devices. One interviewee explained:

If you're working out how a denture fits, for example, it's very complex mechanical sort of set-ups – I don't know how to describe it – processes that you have to have a knowledge of; it's not just crafting the wax into the shape of the gums or whatever. So there is a big technical aspect to it ... it is anatomy, it's science, and it's technology. So I think the term 'Dental Technician', yeah, I think it's an appropriate term. (Employee)

The work of Dental Technicians may be seen as a manufacturing process, and it is both the 'manufacturing' element and the application of a craft skill that were seen as being central to the role. Dental Technicians manufacture medical devices 'crafted' to a unique specification (no two mouths or dental scenarios are ever the same). One interviewee explained:

You can have a PhD in Dental Technology... but if you can't make that denture, or that crown ... you're, you know, wasting your time, basically. It's all about the hand skills, and it's a combination of artistry; technical work; understanding the technical concepts; being able to visualise a finished product in three dimensions. (Education Provider)

Notwithstanding the consensus that technician is an appropriate label, some interviewees felt that the term did not fully capture the essence of the occupation. This was variously described as highly skilled 'craft work', 'artisanal', 'bespoke' and 'artistic', in addition to technical and practical. Job satisfaction and pride were associated with the ability not only to create a device to specification, but to also create the most aesthetically pleasing device possible. Dental Technicians rank their expertise in relation to the technical, craft and aesthetic qualities of the finished article.

Dental Technicians are trained to undertake the manufacturing process from beginning to end. However, in practice, work in commercial dental laboratories may be organised so that Dental Technicians specialise in a particular type of device, or focus on a particular part of the manufacturing process. In relation to responsibility and autonomy, Dental Technicians are qualified to sign off their own work, and to supervise and sign off work undertaken by non-registered staff such as dental process workers. Within the dental laboratory, they carry responsibility for the end product. However, there are limits to the Dental Technician's autonomy in that they work to specifications provided by a clinician (a Dentist, Orthodontist or other specialist).

As discussed in Section 4, a range of qualifications at different levels (from level 3 to level 6) are approved for entry to the Dental Technician register. In theory, there is no hierarchical distinction between Dental Technicians with different qualification levels, and there is no formal career hierarchy in the commercial sector that might map onto these qualifications.

In some cases, interviewees put forward the view that 'dental technologist' was a more appropriate term than 'technician':

Technologist, I think that is a better way of putting what we are, and it kind of promotes us a little bit as you know, more scientific. (Employee)

However, this perspective was often linked to what was seen to be higher-status work in the public health sector compared with the commercial sector. A number of interviewees made the point that the recruitment policies within the NHS specified Foundation degrees or even bachelor degrees for entry-level positions, usually level 5 of the career framework (AfC band 5). It is possible that, for Dental Technicians within the NHS, opportunities for progression are facilitated by the existence of a career framework which, in theory, allows progression through specialism or increased responsibility through to level 9.

Whilst 'technical work' is clearly central to the role of Dental Technicians, this group appears to have a distinctive and perhaps unique status in comparison to technicians and intermediate roles in our case studies. They are not positioned at an intermediate level relative to other roles in an occupational or organisational hierarchy, or in terms of the scope of their work. Rather, the Dental Technician is a well-defined and discrete occupational role with discretion over the execution and evaluation of the devices being manufactured. Dental Technicians also have the autonomy necessary to sign off their own work (within the scope of the original specification) as well as that of process workers.

5.2.2 Radiography support

Historically, the term 'technician' has been used in the field of radiography, for example to refer to Darkroom Technicians, a group of workers who were not qualified to a high level (equivalent to level 2, or even unqualified). The introduction of new imaging techniques has made this role redundant. At a much higher end of the career and qualification ladder, Radiographers also used to be called technicians, but this term was dropped some years ago around the time when the NHS AfC structure was introduced.

The evidence from our case study revealed that the concept of technician did not resonate with staff working in radiography or radiotherapy at either professional or intermediate levels. Although interviewees acknowledged that technology is integral to their work, they stressed that their focus was on the patient, with the technology conceived as a tool. This view was articulated in the following quotation from a Radiography Assistant Practitioner (RAP):

I'm not a technician... our role is predominantly with the patient, and although we are involved in technology we are a very caring role, we're with the patient... At our level we are the ones who speak mostly to the patients and have most interaction with the patient so I don't really feel like I'm a technician. (Employee)

Radiographers saw patient care as paramount, with technical aspects secondary – as the means by which they worked effectively with and for patients:

... that's [technician] something that we don't really subscribe to. Because radiography has a technical element, as I think most professions with the health care, but we have a lot of patient interaction So whilst there is a technical aspect, I wouldn't actually call any particular role 'technical'.... For me, if you call someone a technician they work exclusively, mostly, with equipment, and that is not a Radiographer. A Radiographer will use equipment but they will use it for the benefit of the patient. (Employer)

In addition, the term technician was not perceived to capture or be compatible with the level of responsibility and autonomy associated with the professional role. For example, Radiographers have responsibility for making decisions about which images to take, how to take images and interpretation of results. They also have the right to query the referrals for imaging from doctors, surgeons or sometimes dentists if there is insufficient information or if, in their judgement, the clinical details do not justify doing an X-ray. Interestingly, the case of Radiography Technicians in the United States (US) was given as an illustration of why the term would not be applicable to the UK role. In the US, Radiography Technicians carry out imaging as instructed and do not have an autonomous interpretative function.

At the intermediate level, the use of the term Radiography Assistant Practitioner (RAP) was seen as an appropriate job title. The RAP is positioned between the ('semi-skilled') radiography support assistant and the ('professional') Radiographer. However, the role of the RAP is relatively underdeveloped, with differences across Trusts emerging and with, as yet, no shared understanding of the technical content of the role and its scope of practice. This contrasts with the role of Radiographer which incorporates all the facets of 'professional' level work (autonomy, discretion, ability to perform the whole range of tasks, responsibility for the work of others, and completion of approved education and qualifications) associated with a well-defined and regulated occupation with a protected title.

RAPs work under the supervision of Radiographers and only have responsibility and authority to carry out tasks within their specified and restricted scope of practice. On the other hand, evidence from one Trust in our case study indicated that, in practice, experienced RAPs can acquire high levels of expertise within their area of work and can even be charged with teaching student Radiographers. One employer explained:

What you call super APs, because they're very experienced now. And there is now this area of 'what can an AP teach' because we have student Radiographers within areas where only APs are there, but they have to teach student Radiographers... likewise, Radiographers coming will see an Assistant Practitioner do a chest X-ray or do a dental X-ray and it's fantastically brilliantly smooth and they'll think 'that's a great Radiographer' because they've worked in this one, or limited area and they do it day in, day out and they become experts. (Employer)

The work of radiography and radiotherapy is underpinned by Radiographic Engineers and Physicists. Although these individuals might also be categorised within the healthcare sciences, they work closely with Radiographers and in particular with radiography equipment. A number of interviewees saw these roles as being more closely aligned to the concept of 'technician' than those of the Radiographer or RAP. This was not on the grounds of 'level' or qualification (they often have bachelor degrees), but because they worked with equipment rather than patients.

5.2.3 Maternity support

The term 'Midwife' has a long history and is now a protected title, with registration requiring an approved bachelor degree. Staff located below Midwives have generally been labelled as healthcare support workers, generic auxiliaries or, more specifically, as maternity support workers or neo-natal support workers. Our interviews confirmed that the terminology is inconsistent across Trusts. The term 'technician' has no history or tradition in the area of ante-natal and neo-natal care. The intermediate-level posts have generally adopted the term 'Assistant Practitioner' and this is seen as more appropriate in describing the level and content of the role:

It [technician] does not immediately resonate in terms of those roles. Because I tend to think of Assistant Practitioners in nursing terms ... So the technician term doesn't resonate where you don't have that technological focus, the thing, the technical task. (Overarching Body)

The view of those interviewed was that the label technician did not fit comfortably with the job and skills of any worker in maternity and neo-natal care at any level,

because the role is not conceived as primarily technical. In much the same way as nursing, the roles are perceived to revolve around caring, as this interviewee explained:

I wouldn't like them to be called technicians, really, because this is about ... you know, we must go back to the focus of this, which is the woman and baby and the family. (Education Provider)

Technician work was viewed in terms of maintaining or producing inanimate objects, or working with machinery and equipment. Even though Midwives or maternity support workers may or indeed often have to work with complex equipment, this was not seen as the core focus of their role, as this interviewee explained:

In terms of midwifery there aren't many technical things or technical tasks if you like that we would expect our maternity support workers to do. The things that we... if we take it as technical tasks if you like, mainly around data inputting and data retrieval, so making sure notes are available, making sure blood results are available, making sure that the clinic runs on time, you know, because like your bookings things like that. In terms of actual equipment looking and caring for a woman, it's probably just the blood pressure monitor that they would be involved in. (Education Provider)

In some Trusts there is a devolution of tasks previously only undertaken by Midwives. An extended maternity support worker or AP role is created, working at an intermediate level between Midwives and healthcare assistants. However, the case study evidence suggests that stakeholders are a long way from establishing a shared definition of the occupation, what the role can entail, how it interacts with the role and responsibilities of the Midwife, and how it can be distinguished from the healthcare assistant. One of our interviewees spoke of how maternity support workers are often referred to as 'non-qualified' or 'not trained' by more senior medical staff in hospitals. She said that trying to develop consensus about their role would be difficult, but that everyone should remember that there were the same debates about Nurses.

Perceiving the maternity or neo-natal support role primarily in terms of patient care rather than technical skills meant that the way in which knowledge and practice interact was not seen in terms of the skills/knowledge combination typical of the technician. In much the same way as the radiography case study, the term AP is seen as being more appropriate in describing both the intermediate role and the relationship to the professional group.

5.2.4 Healthcare sciences

This case study focused primarily on pathology. However, some interviewees extended the discussion to other areas of the healthcare sciences.

Healthcare sciences can be broadly divided into three main groups: life sciences and pathology ('laboratory sciences'); physiological sciences; and clinical engineering and physical sciences. There has been a tradition in healthcare sciences of using the terms 'technician' or 'technologist', although this has been declining for some time. A number of medical technician roles were changed during the period of transition to the AfC structure, with a further move away from the term with the introduction of the MSC initiative. In some cases, the loss of the term 'technician'

is part of a process of role professionalisation and putting the associated scientific knowledge-base in the foreground. There has also been a move to replace the title 'Laboratory Assistant' with the more generic title 'Healthcare Science Assistant'.

The label 'technician' varies between different disciplines. In some cases it describes a relationship to technology, in others a position in the hierarchy. For example, the Cardiac Physiology Technician is a graduate level role, but fits with the concept of technician because the role involves using and maintaining complex equipment. Likewise, occupations that could come under the title of Clinical Scientist may also be referred to by their specialty, for example as in the roles of the Radiotherapy Technologist or Nuclear Physics Technologist. These occupations are based around the disciplines of physics or engineering, and the use of the term technologist aligns with their relationship to science and technology. Generally speaking, higher level roles will adopt the term technologist or scientist rather than technician. This is because they imply a relationship to technology rather than to manufacturing, or in some cases a hierarchical relationship to a professional practitioner.

In contrast, the Pharmacy Technician is situated between the registered Pharmacist and the pharmacy support role; this designates a level of responsibility and a scope of practice defined by the regulator the General Pharmaceutical Council (GPhC). The role of the Pharmacy Technician is not viewed as having a strong technical component, and the use of the term 'technician' in this case would seem to denote an intermediate position in the hierarchy of pharmacy posts.

In terms of both content and hierarchy, the use of 'technician' as a label across healthcare science varies, spanning qualification levels and NHS framework levels. If the term technologist is used, it usually refers to graduate-entry roles; although it tends to be used for roles involving technical equipment, this is not always the case. However, overall our interview evidence suggests that the use of the term technician is declining. At lower career framework levels there is a move away from technician to AP, and at the higher levels towards technologist or scientist.

Our focus on pathology indicated that, before the development of 'Biomedical Scientist' as a registered profession, Biomedical Scientists were called Medical Laboratory Technicians and then Medical Scientific Officers. Interviewees described the adoption and use of the title of Biomedical Scientist as a way of identifying the role more strongly with its scientific content and training, aligning it with scientists rather than technicians. They felt that technicians were more likely to maintain equipment or be involved in manufacturing. An employer said:

Technician is a term that people use outside laboratories. People who work in the laboratories don't like to be called technician. (Employer)

There was an acknowledgement that intermediate-level roles in healthcare sciences are still emerging. Where they have been developed, they are seen as requiring both theoretical knowledge and practical skills. Their position in the organisational and occupational hierarchy reflects limitations in the degree of autonomy and responsibility associated with the role. The key distinction between the role of staff working in intermediate or pre-registration positions as APS, and those working in registered positions is that only the latter are responsible for the interpretation and validation of test results. The intermediate role involves work up to the point of validation, and this includes some tasks that were previously only undertaken

by registered staff. The AP role was considered to be distinctive in hierarchical and content terms:

So they've [APs] got more knowledge and skill than your kind of support worker type person but maybe have not decided to develop it as highly as maybe your [registered] scientists. (Employer)

5.3 REGISTRATION AND REGULATION

The regulation and registration of certain professions within the healthcare sector has evolved over centuries in order to protect public safety and define scope of practice. This ensures that the skills and competencies of all who practice are at an acceptable standard, whilst binding registrants to a code of conduct. Occupations with statutory registration may reap a number of related benefits, for example in terms of status or restricted access to a profession. However the rationale for regulation has always been in terms of patient safety, and debates and policies around regulation in the healthcare sector continue to focus on this key dimension.

A review of occupational regulation (Forth et al., 2011)³⁷ makes the distinction between four types of regulation. The first category, **Licensing**, requires people to have a licence to practise in order to carry out specified activities within a defined occupation. This category would include those occupations in the healthcare sector that come under statutory regulation, have protection of title, and necessitate the registrant to have demonstrated standards of competence. This could include minimum qualification levels and ongoing continuous professional development (CPD) submissions. The second type of regulation is referred to as **Certification**. This would comprise a voluntary register based on competence, but with certification awarded by a regulatory body or another organisation able to act on its behalf. The third category, **Registration**, would include statutory registration with an appropriate regulatory body, but without the specification of minimum levels of qualification or competence. Finally, the fourth type of regulation, **Accreditation**, would involve an internally recognised process of accreditation (for example by a sector or professional body), but is not statutorily regulated.

Large sections of the healthcare workforce either remain subject to voluntary regulation, or are unregulated. This includes most of the workforce currently employed in positions at the NHS career framework level 4, and AfC band 4 and below. Most occupations requiring statutory regulation start at career framework level 5 (band 5) and require an approved bachelor degree (level 6) for entry. As we have highlighted in this report, there are a few healthcare occupations which are statutorily regulated and are positioned at career framework level 5 (band 5), but require qualifications below level 6 for entry.

Currently, occupations in the healthcare sector are regulated by ten³⁸ different regulatory bodies, not including regional councils. Whilst there was a policy commitment in the last decade to extend statutory registers, with the HPC recommending a range of occupations for statutory regulation, the current (2012) government is not in favour of extending the list. Instead, the preferred option is

³⁷ Forth, J., Bryson, A., Humphris, A., Koumenta, M. & Kleiner, M. (2011) *A review of occupational regulation and its impact*. UKCES Evidence Report 40, October 2011.

³⁸ This figure includes the General Social Care Council which will become part of the HPC, and does not include those non-occupational councils from the four regions. The ten include the General Chiropractic Council; General Dental Council; General Osteopathic Council; General Medical Council; General Optical Council; General Pharmaceutical Council; General Social Care Council; Health Professions Council; Nursing and Midwifery Council; and Pharmaceutical Council of Northern Ireland. Source: *Enabling Excellence* (2011, p. 27)

to promote 'voluntary assured' registers.³⁹ These would be held by professional or other bodies but accredited by the Professional Standards Authority for Health and Social Care (formerly the CHRE).

In the wake of ongoing concerns about the care of hospital patients and residents in nursing and social care homes, there has been pressure to introduce quality standards for support workers in health and social care. The DoH paper 'Enabling Excellence' (2011), extends the idea of voluntary registers to support workers; while in 2012 the relevant Sector Skills Councils, SfH and Skills for Care, were leading a consultation on the nature of standards required in order to develop recommendations for such a register(s). Research on the regulation of healthcare support staff has raised a number of operational questions including:

- Which body would 'hold' the register?
- What groups would be included?
- What would the register mean in terms of minimum standards (e.g. qualifications, code of conduct) ⁴⁰?

Our interviews explored a range of issues including: the relative merits of statutory and voluntary registers for healthcare workers at different levels; the relationship of registers with other developments in the sector such as devolvement of tasks, professionalism, Modernising Scientific Careers, and pressures to develop the support workforce, and implications of registration for this group on the professional and regulatory bodies. In the discussion below we reflect views that cut across specific occupations, and then turn to the more specific case study material.

Those responsible for maintaining statutory registers can often have a limited remit with regard to the defined occupation or occupations for which they are responsible. It was apparent in the interviews that some regulators took an interest in the healthcare workforce more generally. Some also had a wider remit to look beyond their current registers,⁴¹ whilst others did not. The views of regulators were very much set within their sphere of activity, as this comment indicates:

The business by statute of the Nursing and Midwifery Council is the registration of Nurses... they have no capacity to bring in another part of the workforce into their registration remit. (Overarching Body)

Overall, interviewees were in favour of statutory registers for professional groups, but had more mixed views about the need for, and role of, such registers for occupational groups positioned below the statutorily registered professional:

... they are working under supervision ... to a great degree, what they do will be supervised and set out for them and be procedural; sort of, the lower levels of autonomy and decision-making, than more senior professional groups. Those things ... don't suggest that statutory regulation is the right way to solve whatever the problem is. (Overarching Body)

39 Department of Health (2011) *Enabling Excellence: Autonomy and Accountability for Healthcare Workers, Social Workers and Social Care Workers*. Department of Health, Cm 8008, February 2011.

40 Griffiths, P, Robinson, S (2010) *Moving Forward with Healthcare Support workforce regulation. A Scoping Review: evidence, questions, risks and options*. National Nursing Research Unit, Kings College London. Report to the NMC, July 2010.

41 This was the case for the HPC which did have a remit to recommend new registers.

Although the work of many professional groups is unregulated (by statute), this was seen as either reasonable in the context of their work (i.e. public safety was not compromised) or an anomaly that needed sorting out, for example in the case of healthcare sciences. The interviews tended to the view that statutory regulation brings about improved occupational status, even if this is not an explicitly stated rationale:

You want to protect your patch, so you want to protect your profession, you don't want people doing ... the tasks that you do not as well as you do it And it's professional status as well. (Employer)

The purpose of a regulator is not, on the face of it, occupational status. But then go back to the history and clearly it has been very much about professional status ... And I think some of the motivation of being regulated is exactly that, and I think it probably matters less from that point of view who regulates you, but that you are regulated. (Overarching Body)

The views on regulation for occupations below professional level were contested. Interviewees raised issues about how such registers would work, whom they would target, whether they were intended to be beneficial to employees, employers or both, and the costs. Some interviewees thought that regulation at sub-bachelor level should be generic, for example, for healthcare sciences, or healthcare support workers irrespective of the particular occupation. The generic concept is associated with the provision of a general code of conduct, and is linked to qualification level rather than a particular qualification. In contrast, others preferred the idea of registers based on specific occupational standards and roles designed to promote occupational identity and quality of performance. Overall, practitioners were more likely to prefer the idea of specific occupational registers.

The issue of extending statutory registration to those at NHS career framework level 4 and below also raises questions about individual responsibility and accountability. At present, devolvement of tasks does not imply devolvement of responsibility from registered to non-registered staff. Some interviewees felt that registration for the latter would threaten the professional status and undermine the scope of responsibility of current registrant groups. Others perceived that extending statutory registration could facilitate changes in the skills mix:

... if they [APs] were regulated and registered in their own right with assessment of their behaviour, skills, you know, knowledge and attitude, much like you do with a professional regulation, that might alter the skill mix even more. (Employer)

The views on voluntary registers for intermediate-level workers were also mixed. On the one hand, there was an acceptance that a voluntary register could, along with other factors, promote occupational identity in a positive way. On the other hand, it was not clear whether employers would take account of candidates' membership of a voluntary register during recruitment and selection processes. Currently, there is a lack of standardisation in employers' recruitment and internal regulatory practices. An employer said:

You know, you could argue 'well employers regulate through the job description, through responsibilities and accountabilities' and so on, but that's not consistent across the country. (Employer)

There were also concerns about the costs and the burden of registration on the often relatively low-paid support workforce. Overall, interviewees were uncertain about how voluntary registers would operate, and about the relative benefits or implications of them being overseen by different sorts of organisation (such as professional or occupational body, employer, regional NHS, scheme accredited by a regulatory body).

Some interviewees pointed that where voluntary registers become very popular and widely used by individuals and employers they can, in practice, operate in a similar way, or act as a stepping stone to a statutory register. However, this is not the case for those not widely taken up:

The problem with the voluntary register is, it works if it becomes really popular, if it doesn't it doesn't ... that's fine but it's not regulation, it's a voluntary credentialing scheme which is almost the opposite idea of regulation in many ways. (Overarching Body)

It was also suggested that pitching the requirements for joining a register too low could have a negative impact on the skills and qualifications of the intermediate workforce. For example, there was some concern that a generic register for support staff set at qualification level 2 would undermine initiatives for the development of the intermediate workforce at least at qualification level 3, but more commonly at level 4 or 5.

The range of issues associated with registration and regulation played out in different ways across the four case studies.

5.3.1 Registration and regulation in Radiography

Radiography is one of the 15⁴² professions currently protected by the HPC and subject to statutory regulation. The titles of Radiographer, Diagnostic Radiographer and Therapeutic Radiographer are protected, with a defined scope of practice and competences detailed in a Standard of Proficiency.⁴³ There are over 27,000 (as at 29 February 2012) registrants. To become registered, Radiographers must now possess a degree in radiography accredited by the HPC and pay a fee of £152 for a two-year period. They are required to undertake and provide evidence of CPD. New graduates are able to register as Radiographers directly after completing their degree. Historically, the role of Radiographer required training to undergraduate diploma level, and so there are likely to be some Radiographers on the register who qualified before the raising of the registration requirement to bachelor degree.

As with other regulated professions, the scope of practice sets out the roles and responsibilities, and in so doing prohibits those who are not registered from carrying out specified tasks unsupervised. Statutory regulation is seen as making an essential contribution to ensuring patient safety and to defining the radiography profession, but it does not apply to staff working under the Radiographer. Interviewees made the point that the extent to which tasks could be devolved to intermediate staff (such as RAPs) related to the ability and capacity of staff to supervise, as well as to the interpretation of what 'supervision' entailed. Concerns

42 This does not include Social Workers, who will come under the remit of the HPC from 2012 with a transient period, although the register formally transfers on 1 August 2012.

43 The HPC publishes standards of proficiency for all 15 of the professions it regulates. These include generic and specific proficiencies and standards of conduct. The current (2012) document for Radiographers is: http://www.hpc-uk.org/assets/documents/10000DBDStandards_of_Proficiency_Radiographers.pdf

were often linked to the issue of responsibility, particularly if something went wrong causing harm to the patient:

I'm not sure that being registered by the HPC would be an advantage to anybody. Because if you were an AP I still need to see that before I leave you alone with a patient I want to see you work, because what you do I'm going to take responsibility for. (Employer)

The Society and College of Radiographers (SCoR) is both a professional body and a trade union for Radiographers and associated staff. The SCoR has an associate membership category and an accredited voluntary register for APs. Attitudes towards the statutory registration of RAPs were mixed and questions were raised:

- Would registration allow this group to work outside the supervision of the Radiographer?
- Would this blur the boundary between the two levels?
- What would be the consequences for the status of the professional group?

In contrast, some suggested that statutory registration could formally set out the scope of practice of the RAP. This could both clarify the role of the intermediate worker and the supervisory role of the Radiographer, and could ultimately release Radiographers from more routine tasks enabling more tasks to be devolved to them by Radiologists.

There were also mixed views on the value and role of voluntary registers. Those who saw statutory registers as beneficial because they would define a scope of practice and responsibility were less likely to see the value of a voluntary register that may not function in this way. However, others saw voluntary registers, not so much as instruments that might designate roles, but as a way of strengthening occupational identities and building on good practice in areas such as education, training and CPD. The point was also made that voluntary registers need a critical mass of members in order to function across geographical and organisational boundaries and to create occupational identity. The low numbers of RAPs and inconsistencies in the way the role is currently conceived confirm the challenge of developing a successful voluntary register for this group.

In the Trusts included in this case study there was little support for any kind of register for workers at career framework level 3 or below. This was primarily because in these Trusts, level 3 staff in radiography or radiotherapy departments were not seen as having a specific occupational role but as providing general administrative or patient care support to the team.

5.3.2 Maternity support

The title and job role of the Midwife is protected in law, and all practising Midwives have to be registered with the NMC. There are over 35,000 registrants on the midwifery register (2012) who pay an annual fee of £76. The minimum qualification for registration is now an approved bachelor degree in midwifery, although the register will include some Midwives who qualified prior to the requirement of a degree and who may hold diploma-level qualifications. Currently, the NMC does not see itself as a potential regulator for staff below professional level. This would seem to place registers for staff at career framework level 4 (or below) within the scope of a potential generic register for 'Healthcare Support Workers' or

'Healthcare Assistant Practitioners'. This would have limited potential to foster occupational identity, or provide a focus for professional development. It also raises questions about the 'ownership' of occupational areas:

Given that nursing exists as an autonomous profession... that actually what we're doing is having nursing work regulated by somebody else... well actually surely the people who understand this are Nurses, the profession knows what nursing work is and how it should be done and how people should be educated to do it, and how can you take that away and regulate it somewhere else with people who by definition are not Nurses. (Overarching Body)

The case of maternity support workers or APs raises the very real question as to how registration would work for staff who are considered to be part of the support workforce, but who work within specialised occupational areas. There were conflicting views in this case study about the value of registers for this group. On the one hand, the NMC has its remit defined by its current register and the need to safeguard this, and has no role in promoting additional registers for staff assisting Nurses and Midwives. On the other hand, some interviewees felt that there was a real need for some form of recognition of maternity support workers' specific occupational expertise, and that regulation would resolve important issues around the quality of care:

Yes, be registered, absolutely. And I think that is right. I think that there are people out there that, you know, in both nursing and midwifery that are doing things that they shouldn't really be doing, and I think if we have regulation we can address that. (Educational Provider)

A further issue arising from the case study was the difficulty in pinpointing the actual level at which APs are working. In order for a voluntary register to be developed, the variations between Trusts as to what constitutes a particular 'level' or 'band', particularly in terms of intermediate workers, would need to be resolved.

Concerns about patient safety have been heightened in recent years in the areas of ante- and post-natal care. In light of these, there would seem to be a case for registering intermediate workers to help ensure that they meet minimum standards of training and competence. On the other hand, it can be argued that patient safety concerns militate against any kind of devolvement of tasks from professional to intermediate level. The interviews reflected a wide spectrum of views on the pros and cons of statutory registration below professional level.

The value of a voluntary register was seen only in terms of the professional identity it could convey to maternity support workers or APs, rather than on the impact it might have on job roles, scope of practice and the relationship with Midwives. The debate over registration for support workers in midwifery would seem to tap into concurrent debates over the future and role of the profession as a whole.

5.3.3 Dental Technicians

The job title and role of a Dental Technician is regulated by the GDC as part of its duty to ensure the safety of all parts of the dental sector. There are about 7,000 registered Dental Technicians (2012), paying an annual fee of £120. The key criteria for registration as a Dental Technician⁴⁴ include a recognised dental technology qualification at level 3, 5 or 6, and 150 hours of CPD over five years, of which 50 hours must be validated.

Dental Technicians are responsible for supervising the work of non-registered workers and have responsibility for the quality of devices. There are relatively few registered compared with non-registered staff working in dental laboratories; this challenges the idea that Dental Technicians can supervise the manufacture of all devices:

If you got rid of all the process workers you would get rid of such a large number of people in the industry that labs wouldn't be able to function and appliances would not be able to be made. (Professional Body)

Overall, interviewees perceived the benefits of statutory regulation and registration to include enhanced occupational status and the assurance of workforce training standards. There was less of a consensus about whether the qualification for entry to the register should be set at one particular level, and about the appropriate balance between practical skills and theoretical knowledge. However, there was broad-based support for the principle of CPD, as it would ensure that Dental Technicians were motivated to keep pace with new developments and techniques:

I think, as a sort of a secondary ... aspect of the fact that we've now become more involved in CPD and more patient focused, I think it's also really brought forward Dental Technology as a career option. (Employee)

Statutory registration was seen to have helped give the occupation a more visible and stronger professional identity and status both within the 'dental team' and more widely:

I think it's a good idea because it does make it feel more of a profession rather than ... not that there's anything wrong with it being a craft type of thing, but it's ... you know, it should bring it up a bit.... (Employee)

Against this, there were also arguments that statutory registration is problematic in a commercial environment where competitors, for example from other countries, are not bound by the same requirements. More than one of the interviewees questioned how quality could always be assured when foreign competitors did not have to abide by the same standards as Dental Technicians in the UK. It was pointed out that, if the rationale for regulation was public safety, overseas competitors should be subject to the same manufacturing standards that include not only the materials used, but also how and by whom the manufacturing process is overseen and carried out.⁴⁵ As one interviewee commented,

⁴⁴ General Dental Council, *Preparing for practice – Dental teams learning outcomes for registration* (undated). See also the previous publication, General Dental Council (2009) *Developing the Dental Team*.

⁴⁵ It is important to note that this comment is reported from interviewees' understandings and concerns and may not be accurate.

For example... an appliance now can be made in China in a lab that employs a thousand technicians; it comes back into the country; it gets signed off by a competent person, and can be delivered to a dentist to go into a patient's mouth ... but when you allow them to go abroad to source your work from a Chinese lab ... and all it takes is one signature from a competent technician to sign it back in. (Educational Provider)

5.3.4 Healthcare sciences

At present (2012) there are only two areas within healthcare science that have statutory registers and protected titles (Biomedical Scientist and Clinical Scientist). Both these registers are regulated by the HPC and there is a registration fee of £152 for two years.⁴⁶ There are currently nearly 22,000 Biomedical and just over 4,500 Clinical Scientist registrants. In both cases, registration depends on the achievement of an approved biomedical science degree programme and a period of workplace experience which, in some cases, can be integrated into the degree programme or an approved degree with additional in-service training. Those who have undertaken integrated bachelor degrees are able to register as Biomedical Scientists, regardless of whether the job they obtain is at registered professional level (level 5 of the career framework, AfC band 5).

Interviewees commenting on the registration of healthcare scientists working in pathology were generally supportive of statutory regulation and the protection of the title of Biomedical Scientist. It was agreed that there was a clear and rational distinction between the roles and responsibilities of Biomedical Scientists and non-registered healthcare science staff, with the former's training and accreditation justifying their sole responsibility for interpreting and validating test results. In light of this, and the accreditation of laboratories, there was not felt to be a need for registration of intermediate or lower-level healthcare science workers:

I think it's good to have registration for the people who are going to make the final decision about the result issue, and that role is connected to a registered person at the moment ... that group do need to be registered, I think that's good thing. Below that, I don't think there's a special requirement for a registration ... as an accredited laboratory we have to have evidence that those staff are trained and competent.... So as long as that is all in place, which it is, every hospital laboratory you go to, I don't think there's any particular reason to register those staff. (Employer)

One of the queries employers raised about the move away from the work-based education and training pathway to the full-time route was related to statutory registration. There was concern that those accessing professional registration through full-time study may lack the level of competence and experience of practice that was perceived as the strength of graduates from the previous part-time, work-based pathway. The following comment is illustrative of this concern:

Well it's because these people would be in work, going to do their degree and be signed off. And now you're getting them on placement and how are they going to cope with doing, I don't know, 40 weeks in all in three years when they would have done x number of weeks before. It's the whole fitness to practise issue. (Employer)

⁴⁶ Routes to registration including voluntary registers are undergoing change as a result of the MSC initiative. This description does not fully deal with the new arrangements which have specified routes for trainees/recruits within the MSC framework.

Prior to the introduction of current government policy designed to limit the extension of statutory registers, the HPC recommended statutory regulation of five other professions in healthcare sciences.⁴⁷ It is likely that these and other healthcare science occupations will (only) have access to assured voluntary registers. Some interviewees commented on the lack of consistency this would introduce into the regulation of healthcare sciences, and the implications it had for the ability of the MSC initiative to create a streamlined healthcare science workforce:

So as far as the Modernising Scientific Careers project was concerned, in a way that left them in a corner.... So they have these two Registers that only apply to a sector of the whole healthcare science workforce. (Employer)

Our interviews revealed a range of attitudes towards voluntary registers. If the idea of voluntary registration was to promote recognised standards of practice and occupational identity, it was generally viewed as positive from the perspective of individuals but not necessarily as being valuable for employers:

If people want to do that, that's fine, I'm always willing to support anything anyone wants to do in that sort of remit, but as to the value of it ... I mean if it makes the person feel more valued then that's good, but as an employer – does it mean anything? (Employer)

Of relevance to this case study is the introduction of voluntary registers promoted by the Science Council through a number of professional bodies.⁴⁸ These are intended to promote standards and to provide recognition for staff below graduate level working in a wide range of scientific occupations including healthcare science. At the time of this study (2012) these voluntary registers, known as Registered Science Technician (RSciTech) and Registered Scientist (RSci), were new and most of our interviewees were unfamiliar with them. For the organisations involved there is much to be learned about the process of running these kinds of registers, particularly with regard to matters such as CPD. This involves discussions about what might be acceptable in relation to an individual's professional experience and level of educational attainment, and how this articulates with progression to Chartered Scientist (CSci) status.

The concept of the CSci is more established: it was developed by the Science Council in 2004 in partnership with a range of professional bodies working in the science field. Some 24 bodies, including the IBMS, are now classed as Licensed Bodies by the Science Council, which means they can manage a CSci register for their professional area. There are currently some 13,000 registered CScis. As one interviewee explained:

CSci is all about sort of cross-disciplinarity, it's about having parity of esteem between different scientific disciplines and so on, and also about obviously trust, so any sort of public trust, the trust of employers, the trust of colleagues and so on, because it's a status of your professionalism, it's an embodiment of your professionalism effectively. (Professional body)

⁴⁷ These were Clinical Perfusionists Clinical Physiologists, Clinical Technologists, Medical Illustrators and Maxillofacial Prosthetists and Technicians. These recommendations were made between September 2003 and September 2005. <http://www.hpc-uk.org/aboutregistration/aspirantgroups/healthcarescientists/>

⁴⁸ It is not clear how these and other voluntary registers will fit into the government's 'assured voluntary registers' and be accredited by the CHRE (renamed Professional Standards Authority for Health and Social Care).

The existence of voluntary registers that denote specialist professional status is well established in healthcare sciences, as is membership of professional bodies. However, if they are extended to intermediate (or semi-skilled) staff the question arises as to what function they are likely to serve, and how they would need to be developed and marketed for this initiative to succeed. The rationale for regulation on the grounds of patient safety is well understood. However a number of interviewees were unsure what value might attach to voluntary registers that were too generic to instil professional identity, and yet not sufficiently rigorous to denote competence and status for particular occupations. Allied to this was the perception that a level 3 Healthcare Science Worker does not operate at a level likely to justify registration, either in terms of the levels of responsibility they carry or the depth of scientific knowledge they are expected to possess. In the Trusts included in this research, level 3 pathology support staff were not considered to be operating at a level that required much in the way of scientific knowledge.

Those graduates who have not, as yet, been able to satisfy the training and experience conditions required for statutory registration as Biomedical Scientists may not see any benefit in registration at a lower level. Labour market supply issues may inadvertently weaken the progression aspect of the voluntary registers. It is also not clear whether, and if so how, voluntary registers will be constructed to relate to specific areas of healthcare science rather than science occupations more generally.

SECTION 6

CONCLUSIONS AND RECOMMENDATIONS

1. The drivers and challenges for the development of the healthcare workforce outlined at the beginning of this report formed the backdrop to our study. Our findings reflect a complex landscape, where the legacy of previous approaches to developing and understanding the role of technicians and intermediate workers vies or even clashes with more recent attempts to carve out a new 'intermediate space'. The points we raise here will require action to be taken by all the organisations involved in the healthcare sector. Some of this action will need to be taken by overarching bodies at national level, and some action will require detailed development work by professional and sectoral bodies, employers and providers.
2. The study on technician level work in the healthcare sector is located within the Gatsby Charitable Foundation's broad programme of research and development on STEM issues, including pathways into STEM careers, the registration of the STEM workforce at intermediate and technician level, and the expansion and development of the STEM workforce as a whole.
3. The qualitative evidence showed that, with some notable exceptions, the use of the term 'technician' is declining in the healthcare sector. It is clear from the evidence that there is no single readily understood definition or usage across the sector. The term 'technician' was generally perceived as being relevant to people working with equipment or manufacturing devices and not to those working with people (patients), even if much of their work was recognised as being technical and scientific in nature as well as being 'caring'.
4. Our account of the available statistical data on technicians or intermediate-level workers in the healthcare sector indicates ambiguities about their classification and visibility in relevant datasets. Currently they fail to differentiate between levels of worker, and render the intermediate workforce invisible. Consequently it is only possible to present indicative findings about the size of the population across the sector and within occupational groupings. In so far as conclusions can be drawn, the account suggests that the intermediate level is small relative to both the 'semi-skilled' and 'professional' level workforce. There is growing fragmentation of the healthcare sector; diversification of service providers, and movement of healthcare workers between the NHS, private and voluntary sectors. This will make it even more challenging to obtain and sustain good quality data about the changing size and characteristics of the healthcare workforce, and therefore to plan changes in terms of workforce reform and appropriate educational opportunities.
5. Currently the binary presentation of quantitative data in terms of qualified versus unqualified, or professionally qualified versus the support workforce, is unhelpful. It divorces the actual level and nature of the qualifications of the support workforce in general, and the intermediate-level workforce in particular, from their position in occupational and organisational hierarchies.
6. Our case study evidence suggests that the intermediate level in the healthcare sector is generally associated with level 4/5 qualifications and in some cases

(e.g. Dental Technicians and Pharmacy Technicians) with substantial (in terms of knowledge component and size) level 3 qualifications. The specification of level 3 qualifications for Dental Technicians was associated with their status as a statutorily regulated occupation, with only prescribed education and training pathways and qualifications accepted for entry to the register. In the case of other occupational areas (e.g. maternity, radiography and healthcare sciences), the pathway to intermediate status was variable, although intermediate (AP) roles were often associated with the acquisition of Foundation degrees (level 5). It was noted that the qualifications included in the healthcare frameworks in the government-supported Advanced Apprenticeship programme (level 3) were normally linked to lighter weight generic health and social care support, rather than substantial occupationally specific qualifications.

7. In recent years, processes of professionalisation and credentialism, together with shifts to full-time education pathways, have altered the pattern of entry into a range of regulated health care professions including radiography, nursing and midwifery, which have all become graduate-only occupations. Whilst there have been positive consequences for the status of staff in these groups and the recognition of increasing expertise required in these fields, our evidence suggests that there have been other effects. Most notably we highlight the loss of the work-based route previously available to existing employees and which has been associated with widening access to and participation in the professions from non-traditional groups. This has affected social mobility in the healthcare sector and also the availability of intermediate level workers.
8. Our case studies and the discussion at the stakeholder workshop held in May 2012 indicate that statutory registration is seen as desirable for individuals working at intermediate level. This is because it is associated with a stronger position in the labour market – if registration is mandatory for the practice of the occupational role, those without registration cannot access the available positions. In addition, from the individual's point of view, registration is a portable credential which can facilitate mobility amongst registrants, and produce a pool of labour whose skills and competences and accreditation is readily understood by employers. Statutory registration is also closely linked to enhanced occupational identity, visibility and status for the individual. Apart from the effects of registration on the pool of labour at the intermediate level, perceptions of employer benefits were less clear, with concerns about the management, policing and costs of registers being aired. In addition, questions were raised about how regulating the intermediate workforce would affect the relationship with the healthcare professions, for example in terms of any changes in the distribution of responsibility and accountability and consequences for regulation.
9. Given that current (2012) government policy is not to extend statutory regulation, the more immediate debate revolves around the nature of voluntary registration and the extent to which this has value, and whether generic or occupationally specific standards are preferable. Overall, interview and workshop participants were in favour of more specific registers, and questioned how generic standards would foster occupational recognition, identity and standards.

10. The link between the nature of the register and the nature of education, training and qualification pathways to intermediate-level work also needs to be thought through. Evidence from the case studies highlighted the uneven geographical availability of appropriate intermediate-level courses and qualifications. Clarifying the concept and role of intermediate-level roles in diverse occupational areas could feed into the development of standardised curricula and qualifications, which could be made more widely available. This would help education and training, and help meet the needs of employers, individuals, and education providers, as well as help to address the significant policy challenges facing the healthcare workforce.
11. The underpinning rationale for regulation is patient safety. Currently the regulatory regime achieves patient protection through regulation of the healthcare professions, and through their responsibility to delegate tasks according to scope of practice protocols to non-registered groups. Much of the recent criticism of healthcare has focused on health and social care support workers (usually located in 'semi-skilled' posts), and initiatives to assure standards of care through the creation of voluntary registers are being pursued via Skills for Health and Skills for Care (Sector Skills Councils). However, policy has been silent on the role of intermediate-level workers in relation to patient safety, and whether there could be distinctive expectations about their contribution. It is clear that all healthcare staff have a role to play in patient safety and high standards of care.

RECOMMENDATIONS

Recommendation 1 More accurate data on the intermediate level roles needs to be collected, produced and made publicly available, by building on existing data sets including the NHS workforce data. This should include more detailed data about the qualifications held across the areas of the healthcare workforce. This will have at least three benefits. It will:

- a. help raise the profile and visibility of intermediate-level workers;
- b. help policy-making bodies (such as Skills for Health and DoH) understand, monitor and plan for the size and characteristics of this group; and
- c. help provide the basis for developing a clearer relationship and alignment between qualification pathways and occupational level.

Recommendation 2 Better alignment between NHS career framework levels, qualification levels and the way jobs are evaluated in terms of the AfC banding structure is required to overcome the current confusion about what constitutes the content and skills associated with the intermediate roles. This, in turn, would enable greater clarity to be established about how these roles articulate with posts above and below in the occupational hierarchies.

Recommendation 3 There needs to be a review of the appropriateness of the diverse range of level 3 qualifications used in the healthcare sector, and their relationship to supporting intermediate level work and career development in each occupational area.

Recommendation 4 There appears to be scope for introducing new Advanced Apprenticeship frameworks in areas where they currently do not exist, such as Dental Technicians. Existing frameworks should also be reviewed to ensure that they provide sufficient technical and scientific content, as well as providing a platform for progression to higher-level qualifications that allow access to registered professions.

Recommendation 5 In order to understand the complex and evolving meaning of intermediate (including technician) level work, we need further case study-based research in each occupational area of the healthcare sector:

Recommendation 6 The healthcare sector needs to review the impact of the decline in the work-based route on the availability of intermediate level work, and how and by whom it is accessed.

Recommendation 7 An investigation needs to be carried out to examine how the regulation and registration of intermediate workers in each specific occupational area could better support and recognise their expertise and contribution. A key result of this inquiry should be a clear decision about which organisations are responsible for regulating the intermediate workforce.

Recommendation 8 The existing voluntary registers in science and engineering could be an appropriate mechanism for recognising an individual's transferable knowledge and skills, and an external validation of competence and training pathways which could be valuable to employers. The Gatsby Charitable Foundation should work with employers and training providers to explore this potential, and liaise with the relevant professional bodies to ensure greater awareness of the role of voluntary registration for technician roles within the healthcare sector.

APPENDIX I

NQF QUALIFICATIONS AND EQUIVALENCIES

Level	NQF qualifications (Examples)			
Entry	Entry level certificates Skills for Life at Entry level	Entry level VQs:		
		Entry level awards, certificates and diplomas Foundation Learning Tier pathways Functional Skills at Entry level		
1	GCSEs graded D-G NVQs at level 1 Key Skills level 1 Skills for Life Foundation Diploma	Level 1 VQs:		
		BTEC awards, certificates and diplomas at level 1 Functional Skills level 1 OCR Nationals Foundation Learning Tier pathways		
2	GCSEs graded A*-C NVQs at level 2 Level 2 VQs Key Skills level 2 Skills for Life Higher Diploma	Level 2 VQs:		
		BTEC awards, certificates and diplomas at level 2 Functional Skills level 2		
3	AS/A levels Advanced Extension Awards International Baccalaureate Key Skills level 3 NVQs at level 3 Cambridge International Awards Advanced and Progression Diploma	Level 3 VQs:		
		BTEC awards, certificates and diplomas at level 3 BTEC Nationals OCR Nationals		
4	NVQs at level 4 Key Skills level 4 Certificates of higher education	Original NQF Level 4*	Level 4 VQs:	Certificates of higher education
			BTEC Professional Diplomas, Certificates and Awards	
5	Higher national diplomas Other higher diplomas NVQs at level 4*		Level 5 VQs:	
			HNCs and HNDs BTEC Professional Diplomas, Certificates and Awards	
6	National Diploma in Professional Production Skills NVQs at level 4*		Level 6 VQs:	bachelor degrees, graduate certificates and diplomas
			BTEC Advanced Professional Diplomas, Certificates and Awards	
7	Postgraduate certificates and diplomas BTEC advanced professional awards, certificates and diplomas Fellowships and fellowship diplomas Diploma in Translation NVQs at level 5*	Original NQF Level 5*	Level 7 VQs:	Masters degrees, postgraduate certificates and diplomas
			Advanced professional awards, certificates and diplomas	
8	NVQs at level 5*		Level 8 VQs:	Doctorates
			Award, certificate and diploma in strategic direction	

APPENDIX 2 QUALIFICATION CURRICULUM FRAMEWORK (QCF) LEVELS AND CREDITS SUMMARY (WITH EXAMPLES)



Diagram provided by Ofqual and available at <http://www.ofqual.gov.uk/help-and-advice/comparing-qualifications/>

APPENDIX 3 NHS CAREER FRAMEWORK LEVELS

Level	Indicative or reference title
Level 9	Director
Level 8	Consultant
Level 7	Advanced Practitioner
Level 6	Specialist/Senior Practitioner
Level 5	Practitioner
Level 4	Associate or Assistant Practitioner
Level 3	Senior Healthcare Assistants/Technicians
Level 2	Support Worker
Level 1	Cadet

Source: Skills for Health (amended/summarised)

APPENDIX 4 SOC MAJOR GROUPS

Standard Occupational Classification 2010 (SOC2010)

The Standard Occupational Classification consists of the following major groups:

1. Managers, Directors and Senior Officials
2. Professional Occupations
3. Associate Professional and Technical Occupations
4. Administrative and Secretarial Occupations
5. Skilled Trades Occupations
6. Caring, Leisure and Other Service Occupations
7. Sales and Customer Service Occupations
8. Process, Plant and Machine Operatives
9. Elementary Occupations

Source: ONS (2010) Standard Occupational Classification 2010, Volume 1, Structure and descriptions of unit groups, Basingstoke: Palgrave Macmillan.

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