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# The Future of Sonographic Education

*Lorelei Waring, Paul K. Miller & Charles Sloane*

A report for Health Education North West, June 2015.

# Executive Summary

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## Background

- This report investigates findings arising from in-depth interviews with twenty Ultrasound Department Leads throughout the North West of England.
- Research evaluated current staffing status, and considered participants' opinions on the best course(s) of action in relation to future workforce development, and proposed future sonographic education models, in the light of a current chronic lack of sonographers in the UK healthcare services.

## Methodology

- Participants were included from Merseyside, Greater Manchester, Lancashire and Cumbria, working both within NHS Trusts (N=17) and independent providers N=3.
- Interviews were semi-structured, conducted and recorded by telephone and transcribed verbatim. Key identifiers were removed to preserve participant anonymity.
- A Straussian Grounded Theory approach (Strauss & Corbin, 1998) was used to investigate qualitative contributions, allowing for the accommodation of both range and depth in the data.
- Some "snap polling" of participants was also undertaken, to provide some simple statistical description of trends within the sample.

## Findings

- *Polling:* 90% of the departments surveyed were understaffed, with the shortfall ranging from 0.5 – 6.0 WTE. 95% reported that permanent staff worked additional hours ranging from 8 – 45 hours per week at enhanced rates; 75% employ bank or agency staff ranging from 0.5 – 3 WTE at an average cost of £50 - £60 per hour enhanced for weekend cover; 95% train sonographers through a CASE accredited route, with 1 – 3 students per department.
- Regarding sonographer shortages, contributory factors were reported to include retirement and an aging workforce, plus a lack of trained sonographers to recruit into permanent roles, and loss of staff to private companies.

- There was a concern that levels of patient care are being threatened by the current ultrasound workforce shortfall. Areas of concern include maintenance of CPD activities, plus difficulties in ensuring there is adequate long term provision and service development.
- Participants argued that it is becoming less feasible to provide dedicated training lists, as departments are not in a position to reduce patient throughput due to stringent targets, and that there is increasing pressure on ultrasound departments to train professionals from other fields to gain basic competency in ultrasound scanning.
- Some participants interviewees argued that the current restricted access to ultrasound (via a PG route open only to healthcare professionals) is outdated, and potentially valuable sonographers are denied opportunities. Others were content that training sonographers from the radiographer pool produced professionals of the required standard and insisted that they were satisfied with the *status quo*.
- There are three new models of Sonographic Education under discussion nationwide: The direct entry undergraduate model (DEUM), the direct entry postgraduate model (DEPM) and the 3+1 postgraduate model (31PM).
- The DEUM was criticised due to its chance of producing professionals with limited life skills and experience, whose relative immaturity would hobble them in a pressurised working environment and mandate a higher level of clinical input from the department.
- There was also concern among participants that undergraduate sonographers would not fit into the current pay banding and advanced practitioner profile of the profession.
- It is felt that this may lead to issues within departments due to the risk of introducing an inherent class system as well as limited roles for undergraduates and thus limited value to the department.
- Several interviewees suggested that the DEUM may be a valid route in the future, and that there had been scepticism when a midwifery direct entry undergraduate degree was proposed (which has now been successfully implemented).

- The main concern participants voiced in regards to the DEPM was the potential lack of appreciation of healthcare issues among the prospective intake, and the selection process and financial implications were also alluded to as potential weaknesses.
- The interviewees raised concerns regarding the primary degree subject with many suggesting a science based or healthcare degree would be preferable or essential.
- Funding of direct access postgraduate routes into ultrasound has not yet been clarified and the issue of the potential financial burden this would place on students was raised as a possible weakness of this model.
- In terms of service provision the major strength of this model was seen to rest on the fact that Ultrasound training, service provision and pay banding is already geared towards postgraduate or Masters level practitioners. It was noted that the DEPM would also allow the service to increase its workforce without creating deficits elsewhere.
- It was felt that the applicants would have more experience both in life skills and academic skills and several interviewees felt that due to the complexity of the field of Ultrasound practitioners with postgraduate qualifications would be more able to cope with the inherent challenges therein.
- It was suggested that selecting students from varied backgrounds with broader work and life experience could make for a richer learning experience within the cohort and the perceived waste of three years Radiography training.
- By far the most clear concern regarding the 31PM was that the condensed one year postgraduate programme of study; CASE guidance states that a Postgraduate Diploma in Medical Ultrasound should take a minimum of eighteen months. This leaves a question mark over the actual validity of this educational model.
- Another area of discussion was the perceived waste of resources both clinically and financially resulting from training a candidate for three years in to Radiography for them to never practice in the field.
- The positive comments that emerged from the participant's feedback regarding this theme all centre on the fact that the students would have the benefit of undergraduate study and a background in imaging.

- *Polling:* 45% (n=9) of participants indicated a sole preference for the DEPM; 15% (n=3) indicated a sole preference for the 31PM; 5% (n=1) indicated that they would be prepared to consider all three models; 5% (n=1) indicated that they would be prepared to consider both the DEUM and DEPM; 5% (n=1) of participants indicated that they would be prepared to consider both the DEPM and 31PM. 25% (n=5) were not able to offer a preferred route.
- Although HCPC registration is not a prerequisite to the establishment of a direct access programme, it is desirable. The issue of lack of registration is more likely to arise post-qualification. There was a strong feeling among participants, however, that the necessity for HCPC registration is being outweighed by the current workforce crisis, and more non-HCPC registered sonographers are now being employed.
- In general the participants agreed that the standard of training was more important when it came to employability rather than whether the candidate was HCPC registered or not; the vast majority of participants conceded that they would be happy to employ non-HPCP registered sonographer under certain circumstances, with the biggest obstacle to this being HR (Human Resources) stipulations.
- *Polling:* 33% (n=6) of clinical departments already employ non-HCPC registered sonographers; 28% (n=5) indicated they would employ non-HCPC registered sonographers; 28% (n=5) indicated they would employ non-HCPC registered sonographers pending HR agreement; 11% (n=2) of clinical departments indicated they would not employ non-HCPC registered sonographers.
- It was highlighted by several interviewees that due to the nature of ultrasound they would be required to *acquire* advanced communication skills, such as breaking bad news, and the skills to cope with this challenging area of practice should be taught as a priority.
- Conversely other aspects of ultrasound practice can only really be acquired with continued experience and the aspects of ultrasound practice that were highlighted in the participants feedback related to this theme included development of good time management and the ability to work autonomously, skills would be expected of a newly qualified sonographer.

- An individual's previous experiences allow development of inherent skills for example a person's academic ability. The ability to be non-judgmental and empathetic also tends to evolve as a person matures and gains life experience.
- Interviewees agreed that certain inherent personality traits should be sought out as part of a selection process. These attributes included good interpersonal skills, personable, caring and a tendency towards perfectionism.
- An applicant's knowledge of the field of ultrasound would need to be tested as this would demonstrate the degree of interest and understanding. In order to pursue a career in sonography sound background knowledge should be evident.

## **Conclusions**

- There was unanimous agreement that Ultrasound services are currently in crisis in regards to the well reported national shortage of sonographers. It was widely agreed that the current approach to sonographer training is falling short in meeting the needs of many of the departments surveyed. Change is needed and in many cases welcomed and strong and well-reasoned opinions emerged on the proposed new education models.
- Although there is a general acceptance that the way we approach sonography education needs to change there is understandable trepidation within the regions clinical ultrasound community. There are concerns that the service will be 'watered down' or devalued if the current educational standards are not maintained. The ultimate aim should be to ensure this essential service maintains its reputation and sonographers preserve their current standing in the healthcare community.
- This report highlights the importance of continuous and thorough consultation between the HEI and local clinical stakeholders throughout the development process. To ensure a programme is successful it must meet the current needs of the clinical departments, the right candidates must be selected and the curriculum must be designed to align with the attributes expected of a "first post" sonographer.

# Acknowledgements

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# 1. Introduction

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This report investigates findings arising from interviews with twenty Ultrasound Department Leads within the North West of England, evaluating their current staffing status and considering their opinions on the best course of action in relation to future workforce development and the proposed future Sonographic education models.

## 1.1. Sonographer shortages in the UK

There is a well-documented crisis within the ultrasound workforce in the UK due to a shortage of qualified sonographer practitioners. This is leading to increasing difficulties for many NHS Trusts in meeting the demands on Ultrasound Departments and government targets as ultrasound service provision is adversely affected by staff shortages (Lovegrove, 2002). This is not a recent issue; as far back as 1996 it was reported that many advertised sonographer posts remained unfilled due to lack of applicants (Hurleston, 1996). Since then many reports and papers have been produced highlighting this worsening problem:

- Lovegrove and Price (2002): Increases in the general ultrasound workload of between 10 – 30% per annum over the last 5 years have placed greater demands on an already stretched service.
- British Medical Ultrasound Society (BMUS) (2003): Increases in demand have not been met by resources, it is estimated that 25% more posts are required nationwide to address the current sonographer shortage.
- The Society and College of Radiographers (SCoR) (2009): 2.3% of available sonographer posts are unfilled.

- Gibbs (2012): Ultrasound Investigations now comprise the largest group (22%) of all diagnostic imaging examinations in the UK.
- SCoR (2014): 18.1% of available sonographer posts are unfilled.

The result of these shortages is that sonographers are struggling to meet demands and look after their own safety in the workplace (SCoR, 2009). Indeed, it was reported over a decade ago that work-related musculoskeletal disorders (WRMSD) were already affecting up to 80% of sonography practitioners (BMUS, 2003). Moreover, while BMUS insist that staff must have access to CPD to keep abreast of current techniques and developments and renew and extend their skills, it is proving increasingly difficult for sonographers to undertake continued professional development (CPD) activities.

The combination of these factors is leading to sonographers retiring early, reducing hours and leaving the profession altogether, adding to the already critical situation. Additionally, a recent *Sonographer Workforce Survey* conducted by the SCoR (2014) reports that one third of all qualified sonographer are eligible to retire from the service in the next ten years.

## **1.2. Sonographic training**

Ultrasound is a complex area of practice with a broad spectrum of applications (Gibbs, 2012) and it is highly operator dependent, therefore operators must be properly trained. Examinations performed by staff not specifically or adequately trained in ultrasound scanning and interpretation may be misleading or dangerous to the patient (BMUS, 2003). It is widely accepted that diagnostic accuracy and,

thus, good patient management is directly related to the skill, training and experience of the operator (BMUS, 2003). Within the field of radiography, sonography practice was the pioneer of role extension - particularly in its reporting role and has become the most widely utilised diagnostic imaging modality throughout the world (Gibbs, 2012). As such, there is a strong argument in favour of ensuring sonography students study at Masters level, to ensure ultrasound maintains this status as a world leading innovative modality.

The current model in the UK, where qualified postgraduate sonographer-practitioners and medical practitioners provide ultrasound services, is highly successful in terms of accuracy and effectiveness (BMUS, 2003). However, and currently, the rate at which sonographers are being trained is barely keeping step with wastage (SCoR, 2009). Although robust training programs are essential to maintain the workforce, there is little scope for increasing training activity on the current model due to the added burdens this places on departments both financially and time-wise (BMUS, 2009).

The traditional route into sonography involves taking qualified healthcare practitioners (usually radiographers) from their existing roles to train either full-time or part-time in ultrasound. Widely identified issues with this route include:

- Training posts are employed status and it is estimated that the combined course fees and salary from the 18 months to two year training period is £60,000 to £70,000.
- 'Backfill' may be required to ensure service delivery is maintained adding further costs.
- If backfill funds are not available, there will be a deficit in the workforce.

- There is no National approach to sonography training, and funding is mostly left to local NHS Trusts. There is thus no guarantee the trainee will stay in the funding trust when qualified.
- Due to the above issues many departments, including independent service providers, will only employ qualified sonographers and do not contribute to the training or funding (SCoR, 2009).

The long-established model of postgraduate education leading to a CASE accredited award is, therefore, not able to supply the required number of sonographers to meet the current demand (SCoR, 2009). As such, new models of education need to be considered in order to grow the workforce in a sustainable way.

In a recent Sonography Workforce meeting held in Manchester in November 2014, Health Education North West (HENW) highlighted local issues with sonographer shortages, and demonstrated that there needs to be flexibility of education provision, including options for generic sonography and single modality. However, ultrasound requires specific workforce-planning and education-commissioning as sonographers need to be highly trained (Ultrasound Training Group, 2010). For any educational model to work, it is essential to gain the support of the clinical stakeholders as they will be investing time and resources into the training program by offering clinical placements; plus it will be these clinical Ultrasound departments that will ultimately employ the qualified graduates.

The current “new” models of Sonographic Education under discussion are:

- Direct entry undergraduate (BSc), open to applicants straight from 'A' levels.
- Direct entry postgraduate (MSc), open to applicants with a range of degrees (preferably science based).
- 3+1 postgraduate, in which high-achieving radiography students are offered the opportunity to carry on for an extra year to gain a postgraduate ultrasound qualification.

A recent study has highlighted that ten Hospitals in the North West of England are willing to provide the clinical training for postgraduate direct entry ultrasound. This could provide a medium term solution, where a much wider range of applicants are invited to apply who will be supernumary to NHS employers. However, attractive financial support arrangements would need to be considered as part of the commissioning and development process (SCoR, 2009).

There have been many consultations over the last 15 years on the issue of sonographer shortages, and it is clear that there is no "quick fix" for this problem. However, failure to address the current crisis will mean a number of risks will continue to exist and further manifest themselves.

### **1.3. Report structure**

The remainder of this report is organised around the following structure:

- In the Methodology (p.17), the sample, data collection and analytic procedures are outlined.
- In the Findings (p.21), the central qualitative trends emerging from analysis of interview transcripts is presented and discussed.

- In the Conclusion (p.67), a synthesis of all central themes is advanced, alongside a reflection on how this might direct further development.
- In Appendix 1 (p.73), the interview schedule utilised in the evaluation is included.

## 2. Methodology

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Although there are some illustrative statistics included throughout, describing “snap polls” of the participants on key issues, the dominant form of research reported herein is of a qualitative-thematic form, ideally suited to investigation of semi-structured interview data.

### 2.1. Participants & procedure

An information letter explaining the aim and rationale of the project was distributed by email to senior Ultrasound Department leads in the North West of England. The department leads were invited to take part in an interview to address the issues highlighted in the information letter. A total of **N=20** interviews were conducted, which included participants from both NHS Trusts (**n=17**) and Private Ultrasound Service Providers (**n=3**). Data was obtained from departments from Merseyside, Greater Manchester, Lancashire and Cumbria<sup>1</sup>.

### 2.2. Design

Data were collected by means of a semi-structured interview, conducted, and recorded via telephone over a period of one month in April and May 2015.

Interviews were conducted using a formalised schedule, which was itself developed with a view to elucidating all priority issues (See Appendix 1). Semi-structured interviews are organised around a series of central broad and open

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<sup>1</sup> It should be noted a marginally larger number of interviews was originally planned; however, participant numbers were reduced due to difficulties finding convenient times to contact all the departments within the time constraints of the study.

questions, with subsidiary topical “prompts,” rather than a rigid set of pre-defined inquiries. As such:

‘...the interviewer asks major questions the same way each time, but is free to alter their sequence and probe for more information. The interviewer can thus adapt the research instrument... [to] handle the fact that in responding to a question, people often also provide answers to questions [they] were going to ask later.’ (Fielding & Thomas, 2008, pp. 246-247)

The core strengths of this technique in mixed method research are fivefold:

1. Lateral comparability of findings is still fully feasible across participants;
2. Complementarity is evident where you are able to measure overlapping but different elements of a phenomenon;
3. The ability to broaden and widen the range of the study allowing assessment of the outcomes as well as exploring the perspectives of the participants;
4. The respondent is also given the opportunity to voice ideas and thoughts that might not have been strictly specified within the question, i.e. there is space for new and potentially valuable themes to arise;
5. The respondent can link topics and themes in their own way, providing a sense of how they themselves understand the ‘bigger picture’, rather than being tied to a structure that demands they (a) repeat things they have already said, and/or (b) answer questions in a sequence that does not seem logical to them – both of which can often ‘frustrate and annoy’ participants (Suchman & Jordan, 1990).

At the beginning of each interview, and in line with formal academic research ethics, each respondent was provided with the following information, and consent to proceed sought:

- The interview would be audio recorded.
- Data from the interview would be disseminated as part of the report.
- These data will be rendered anonymous in all outputs.
- The participant has the right, with no negative consequence, to:
  - Refuse to be interviewed.
  - Withdraw their whole contribution, or any part of thereof, after the interview itself.
  - See all outputs of the research once completed.

In all reported data, the anonymity of participants is preserved insofar as practically achievable. This intention was made clear to participants at the beginning of each interview as a constructive research strategy designed to stimulate the most open and honest feedback possible.

Each interview was anticipated to take between 20 and 30 minutes in total, though some were longer and some shorter (contingent on the level of detail the respondent provided). Sound files from all interviews were transcribed verbatim, but are presented in this report with necessary deletions for clarity of reading wherever practically possible. These deletions are:

- 'Minimal continuers' (Hutchby & Wooffitt, 1998), such as 'uhm', 'erm' and 'err'.
- Word repetitions and stutters.

- Aborted or reformulated sentence starts.
- Linguistic idiosyncrasies, such as 'you know', 'kind of like' and 'sort of'.

All data were transcribed and prepared for analysis by late May 2015.

## **2.3. Data analysis**

A descriptive statistical method of data description was utilised for the quantitative data. Both nominal and ordinal data was presented in bar chart form. This allows communication of the data in readily accessible formats.

A Straussian Grounded Theory approach (Strauss & Corbin, 1998) was used to investigate the qualitative contributions, in which responses were initially free-coded, and then grouped into sub-themes and meta-themes. Finally, these meta-themes were collected into common evaluative categories.

It is essential to keep in mind that this mode of thematic analysis is designed to display the *range* of themes emergent of the qualitative data, and not accord significance according to frequency of occurrence. From a Straussian point of view, every issue has potential ramifications and it would be myopic to dismiss an innovative idea or suggestion because it is less statistically significant. Indeed, innovation itself is often defined by the fact that it is not widely posited.

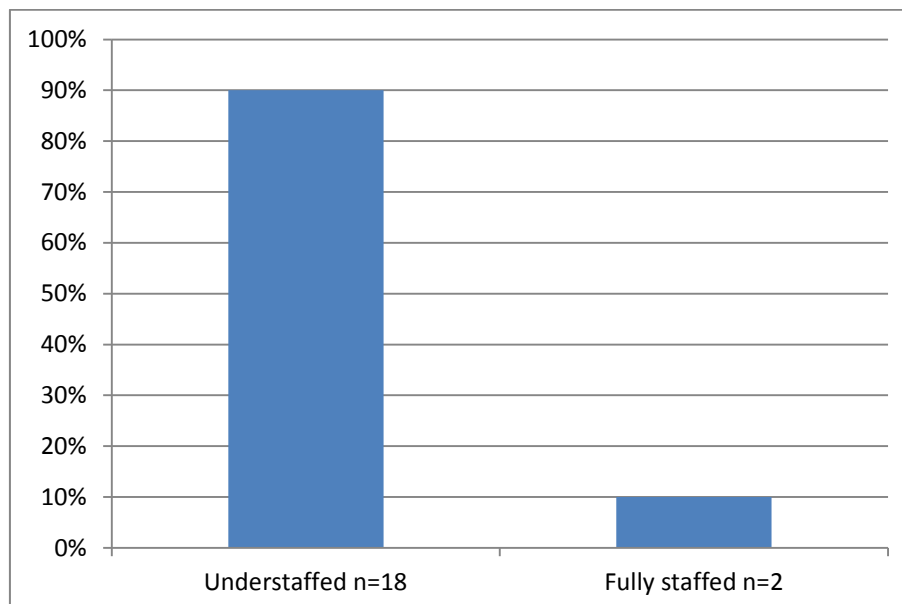
# 3. Participant Feedback

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In this section, findings are reported in several sections. Firstly, some descriptive statistics assembled from the collected data are presented to give some sense of the contemporary staffing situation within sonography departments in the North West UK. There then follows a thematic breakdown of qualitative data, exploring participants' experiences and recommendations regarding (respectively) extant and future sonographic education. Finally, two "snap polls" regarding key issues of controversy are reported.

## 3.1. Quantitative data analysis: The state of play

In Figure 1 (below), the current staffing status of the participating Ultrasound departments is shown .

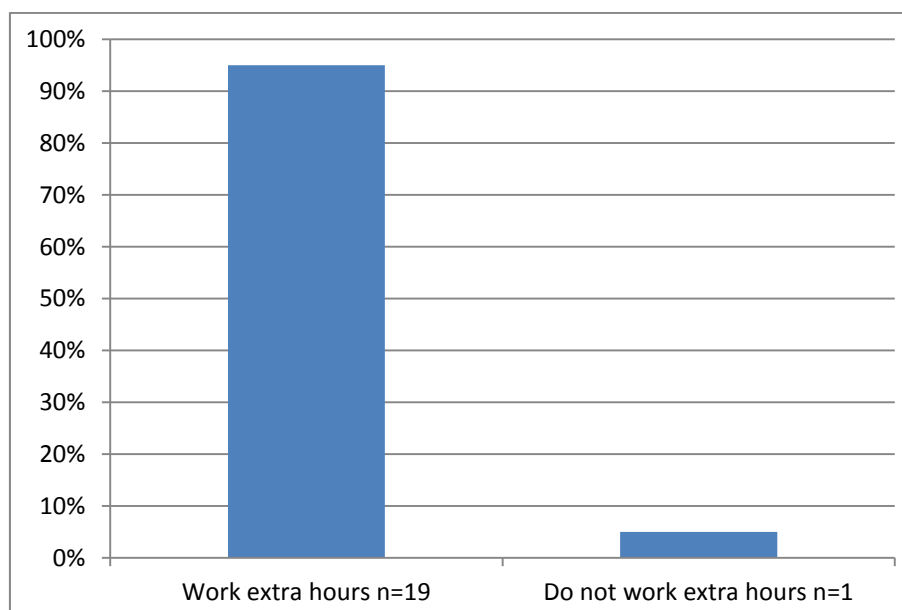


**Figure 1: Current staffing levels**

Further analysis of the data revealed the following variations in the extent of these shortages (note: this information was not provided by 4 participants):

- 0 – 2 WTE<sup>2</sup> sonographer shortfall (n=10);
- 2 – 4 WTE sonographer shortfall (n=2);
- 4 – 6 WTE sonographer shortfall (n=2).

Figure 2, meanwhile, describes the number of participating Ultrasound departments where permanent members of staff work extra hours to help to meet the demands on the Ultrasound service.



**Figure 2: Sonographers working additional hours**

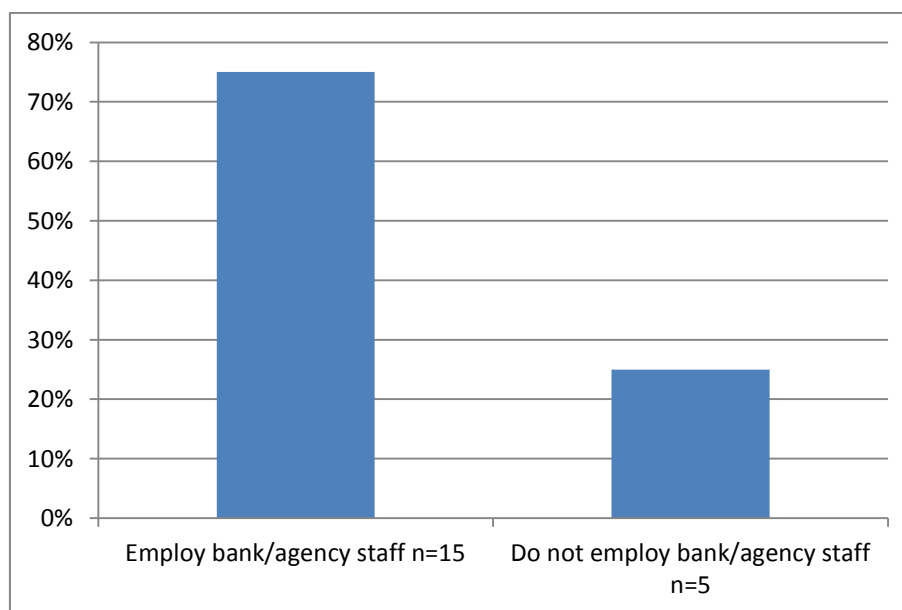
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<sup>2</sup> WTE = whole time equivalent.

Further analysis of the data revealed that permanent staff cover between 8 – 45 hours per week across the participating departments. Interviewees who provided information of the cost of described rates of up to:

- £14 per patient;
- £40 per hour;
- Time and a half rate of current salary.

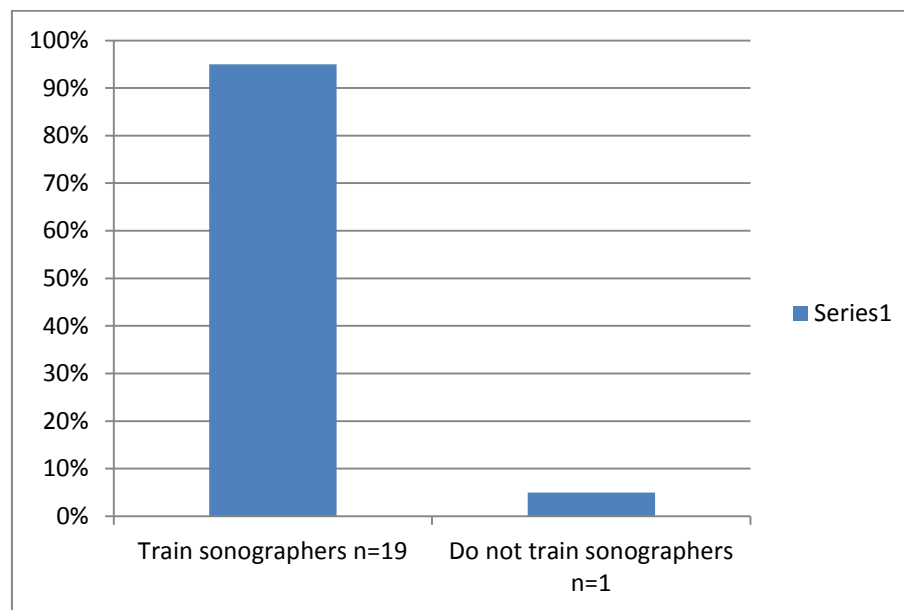
In Figure 3, the proportion of participating Ultrasound departments that employ bank or agency staff to help to meet the demands on the service is shown.



**Figure 3: Employment of bank or agency staff**

The majority of responding departments employed 0 – 2 WTE agency sonographers (n=6), with the rest employing 2 – 3 WTE agency sonographers (n=1), with the average hourly rate reported as £50 - £60 for week day agency staff<sup>3</sup>.

Figure 4 illustrates the relative proportions of participating Ultrasound departments that actively do or do not *train* sonographers on-the-job.



**Figure 4: Sonographer training in-department**

Further evaluation of the data revealed that there is no real variation in the current *rate* of sonography training across the region. Nine of the participating departments were currently training 2 sonographers, four departments training 3 sonographers and three departments training a single sonographer.

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<sup>3</sup> This is further enhanced for weekend cover.

### **3.2. Qualitative data analysis: Mapping the terrain**

Qualitative data collected from participants feedback reveal there is a significant amount of variation within and between responses. Six broad areas of focus emerged and findings are, thus, presented below in terms of these global themes:

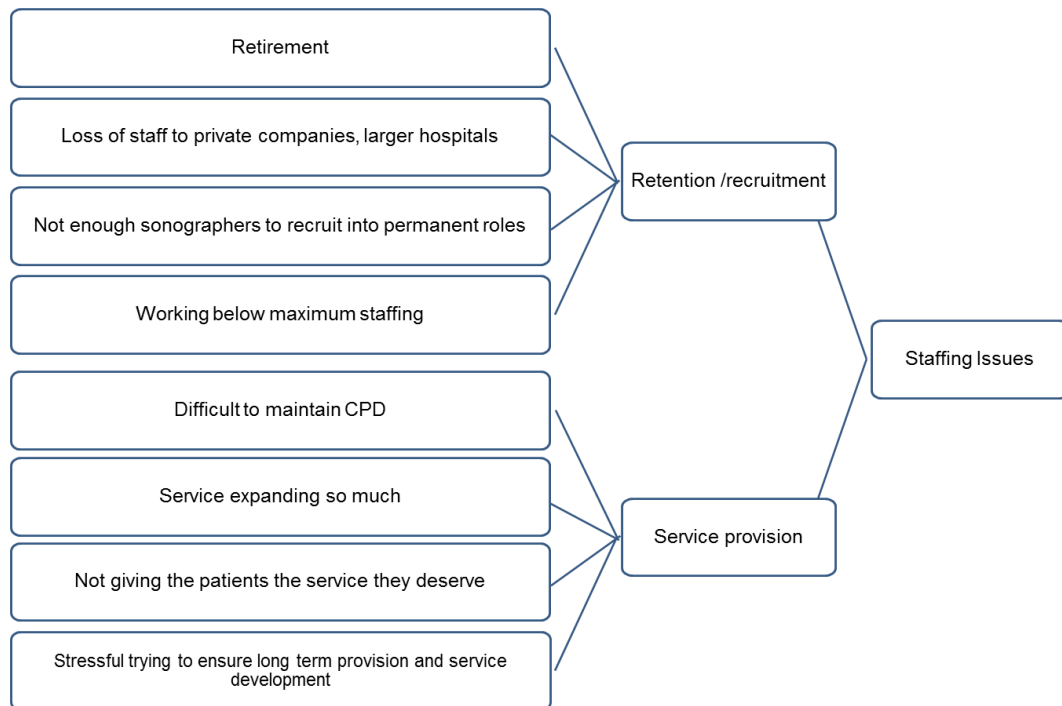
1. Sonographer shortages;
2. The current educational model;
3. The direct entry undergraduate model;
4. The direct entry postgraduate model;
5. The 3+1 postgraduate model;
6. HCPC registration;
7. Attributes of a sonographer.

It should be noted that the graphical representations included herein are schematisations of thematic occurrence, dimensions and linkage, but not are not quantifications thereof. As such, the charts below reflect the range and depth of themes, rather than the frequencies with which they were raised.

#### **3.2.1. Sonographer shortages**

The first major theme to emerge from participant feedback relates broadly to the issues surrounding the shortage of sonographers. Considering the findings, which are schematically outlined in Figures 5 and 6 (below), it is evident that numerous negative issues emerged and, perhaps understandably, no positive comments were made on this issue. Within this meta-theme, the issues were divided in two high order

themes: (a) staffing levels, and (b) student training issues. These are addressed in turn, with reference to participant comment.



**Figure 5: Sonographer shortages I - Staffing issues**

Factors contributing to the decrease in staffing levels were reported to be retirement and an aging workforce, plus a lack of trained sonographers to recruit into permanent roles. This was a common theme throughout the data with no particular prevalence to the type or location of the department. Loss of qualified staff to Private scanning companies and larger hospitals (in the case of smaller District General Hospitals) was also highlighted as a recurring problem. There was a feeling that there is a lack of recognition of this crisis, with interviewees describing a lack of understanding that Ultrasound itself is a struggling healthcare profession. For example:

*Just when you think you're getting towards full establishment the older members of the team retire or move into flexible retirement and you have to start again.*

*Not been a lot of forward thinking for people retiring.*

*The youngest of us is forty nine.*

*There's not enough sonographers out there to recruit.*

*People qualify and then move on, so we actually have less staff now than we had six years ago.*

*There is a real threat from the independent imaging service providers because they pay more basically.*

*We've got difficulty retaining staff due to the AQP (any qualified provider) issues that we've now got going on, since the beginning of last year I've lost at least two of my own staff and two locums to them.*

*If you've got a department down the road offering alternative training opportunities, and role extension, then they will pinch staff.*

*Other hospitals seem to be able to attract them to get a second level of experience. Were a district general and they leave to go to a tertiary center.*

*The current shortfall is horrendous and it seems like we're the only healthcare profession who doesn't hit the headlines.*

Interviewees noted the detrimental effect that a lack of qualified sonography practitioners has on service provision. In healthcare the service offered to patients is of paramount importance and there is real concern among the interviewees that this level of care is being threatened by the current shortfall in the sonography workforce. Areas of concern raised included difficulties in maintaining CPD (continuous professional development) activities as well as difficulties in ensuring there is adequate long term provision and service development. These issues have been reported as leading to increased stress within the participating ultrasound

departments and a feeling that the standard of patient care standards is not as high as they could be.

*Makes a big difference in terms of our ability to maintain our CPD programme, to undertake audit on an ongoing basis and to undertake peer review for example.*

*Very difficult to ensure your long term provision and service development because you can't rely on the fact that your current staffing levels will be maintained.*

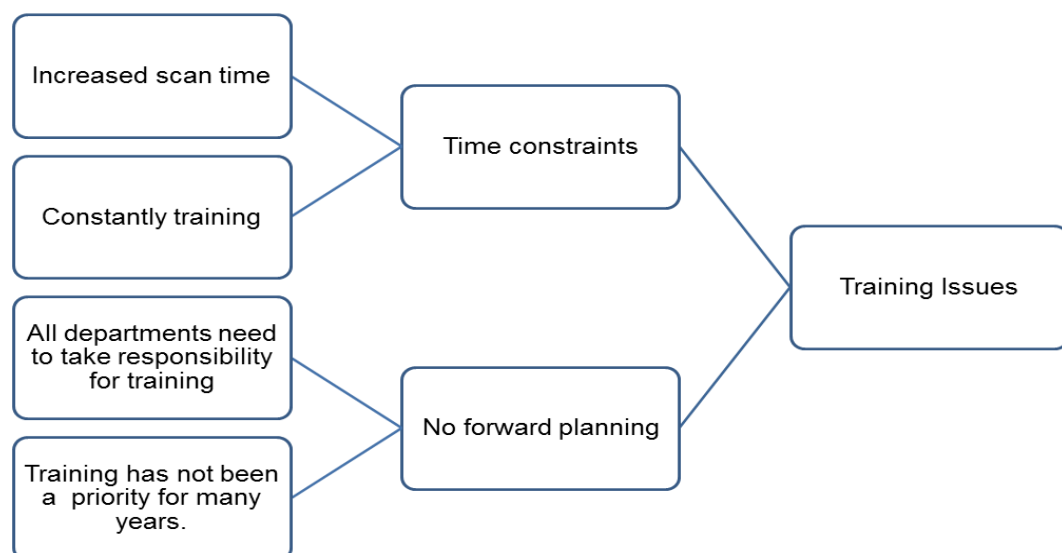
*Anytime you want to expand your service or introduce a new technique the difficulty in recruiting needs to be factored in.*

*Do have problems making capacity and demand meet.*

*The shortfall makes running an ultrasound department, let alone being a Sonographer very, very stressful.*

*You want to give your quality of care but you know you're always up against a deadline , it's like you're not giving the patients the service they deserve.*

In terms of training issues, meanwhile, core themes are evident in Figure 6.



**Figure 6: Sonographer shortages II - Student training issues**

Training sonographers is a time-consuming process with the interviewees pointing out issues with increased scan times when a trainee is present for a scan session.

Ultrasound is a highly complex modality with many applications and as such students are expected to demonstrate high standards of competency. This takes a considerable amount of time and effort from all concerned in this training.

Interviewees also commented on the fact that due to the shortages of qualified sonographers and the urgent need for training posts it is very rare that a sonographer scans a list without the added pressure of a trainee.

It is generally agreed that it is becoming less feasible to provide dedicated training lists with restricted patient numbers as departments are not in a position to reduce patient throughput due to stringent targets and less qualified sonographers available to meet these targets. There is now also increasing pressure on Ultrasound departments to train professionals from other fields such as Gynaecologists and Surgeons to gain basic competency in ultrasound scanning:

*There are not enough sonographers being trained, there really isn't.*

*We haven't done as much training as other departments have but that's probably down to our staffing levels.*

*The big difference with ultrasound teaching is that it's so time consuming as we know.*

*Scanning with students increases the scan time.*

*You need to be able to cut lists down and have specific training sessions.*

*I think all staff feel pressured to maintain training to a very high level.*

*There's very few sessions where the sonographers are just scanning without somebody training.*

*There's pressure to train other professionals in ultrasound as well.*

In terms of forward planning, interviewees agreed that the lack of forward preparation has been a major factor that has contributed to the current shortfall of qualified sonographers. Some departments have not received the funding or support to develop a training programme and some report only receiving support when the shortage issue reached crisis point.

There was also a strong sense among the interviewees that all departments, regardless of whether they are NHS Trusts or Independent Service providers, should accept some of the responsibility for maintaining and expanding the future ultrasound workforce.

*There isn't a lot of forward planning for people retiring, in our trust anyway.*

*We worry for the future because we've got quite a lot of our sonographers who could retire at any point.*

*This trust had not trained anybody for over ten years until we were left with a job we were unable to fill. That's when they became aware that they weren't going to be able to shy away from training people.*

*We have had a fairly significant ten year gap in training 10 to 15 years ago and we are paying the penalty for that now.*

*We recognise that this has been an ongoing issue for many years so, at a cost to the rest of the department, we've prioritized ultrasound training.*

*The department has been below the fully staffed level for more than five years.*

*We need to press people to give clinical placements at every available opportunity.*

*We need to nurture good training environments and give the students the support they need.*

### 3.2.2. The current educational model

The next major theme to emerge from participant feedback relates to the issues surrounding the current educational model. Today, Ultrasound training is a Postgraduate level concern, generally limited to applicants who are already employed within a healthcare setting; the applicants are predominantly Radiographers but can include Midwives, Nurses and Physiotherapists. These professionals need to be pulled from their existing roles in order to complete their training which often leaves unfilled deficits in their original workforce.

Considering the findings, which are schematically outlined in Figures 7 and 8 (below), it is evident that there were both (a) limitations and (b) strengths highlighted. There was however an uneven distribution of positive and negative comments with the majority of interviewees describing increasing limitations.

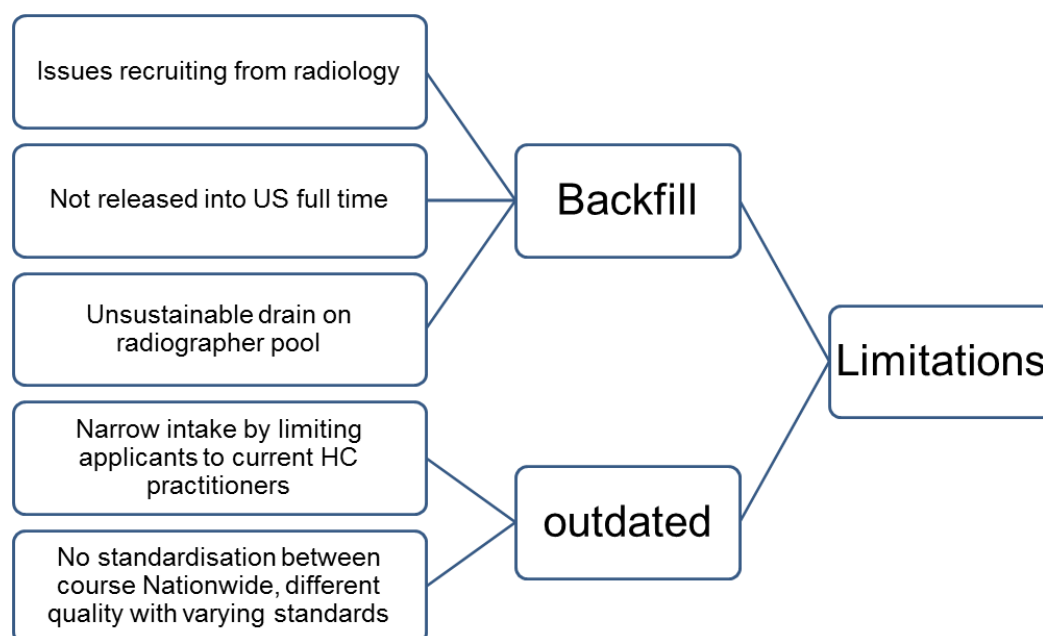


Figure 7: The current educational model I - Limitations

In terms of *backfill*, there was overwhelming agreement among the interviewees that one of the most challenging aspects of maintaining or developing an Ultrasound training programme is ensuring a continuous flow of suitable candidates. The biggest obstacle to this is the drain that places on other departments, more often than not the Radiography (X-Ray) departments. The deficit left by the Ultrasound trainee is left unfilled as there are very rarely funds available to 'backfill' these deficits. Often due to the backfill issue students are only released into Ultrasound on a part-time basis which interviewees felt was not satisfactory for the student.

An additional issue raised was financial burden. Ultrasound trainees are employed status and the combined course fees and salary represent a significant funding obligation for the Trust:

*I think it's a big drain on the X-Ray pool that they can't sustain.*

*The current model doesn't meet our needs mainly because of the challenges with the backfill.*

*It's becoming increasingly difficult to get people released to be able to train because of shortages elsewhere.*

*They don't get full time release, they still have to do X-Ray work and we feel from the training point of view this is not ideal for the student.*

*There is also the financial issue.*

With respect to the matter of the educational model's *datedness*, meanwhile, issues reported include the fact that there appears to be no standardisation of the current Postgraduate training programme, with interviewees suggesting that standards across Higher Education Institutes are significantly different. Other interviewees

commented on the fact that this method of restricted access is outdated and we are missing out on potential sonographers by limiting applications to current healthcare staff.

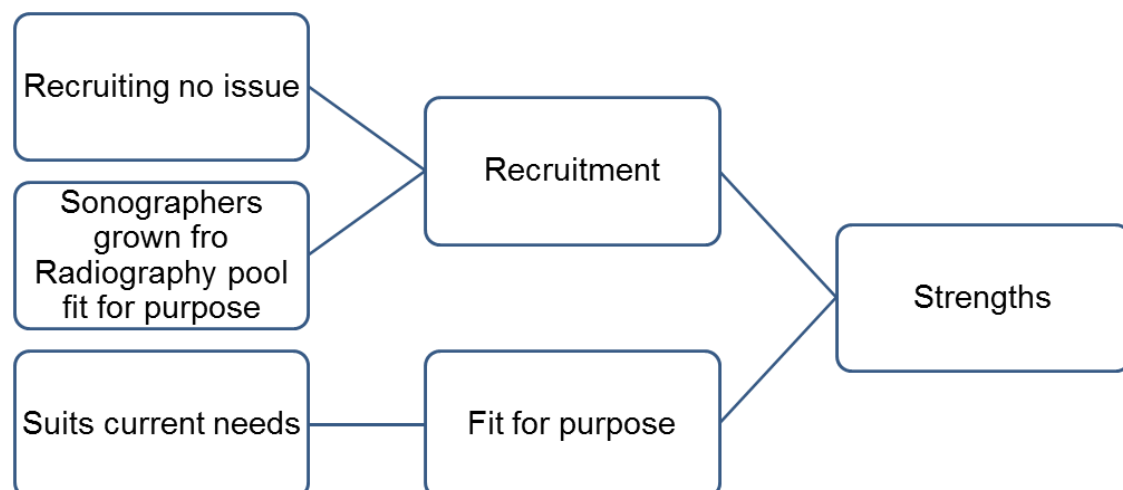
*I can see a difference in the quality of the courses despite them all being through the robust CASE accreditation process. So even though the aim is to try and make sure there's a benchmark and things are standardised, I'm not sure that's actually meeting its objectives.*

*There's an awful lot of other people out there who could do the Ultrasound course but aren't necessarily trained as Radiographers.*

*Don't feel they need to be trained as Radiographers first before they become sonographers.*

*There are some problems with the current model and I think it does need reviewing.*

Matters raised regarding the strengths of the current model, meanwhile, are schematized in Figure 8.



**Figure 8: The current educational model II - Strengths**

According to the respondents, one of the perceived strengths of the current educational model is the fact that there is no shortage of sonographers wanting to train in ultrasound, so recruitment of potential students is not often an issue.

*We have got quite a pool of interested radiographers.*

*There is no shortage of Radiographers wanting to train in Ultrasound.*

*Recruiting is no issue.*

Some interviewees also felt that, due to their previous experience and training, the current method of training sonographers from the radiographer pool produced sonographers of the required standard and insisted that they were satisfied with the training provision as it is.

*Sonographers that are produced as a result of the way they are trained at the moment result in some very good practitioners.*

*Sonographers grown from Radiographers are fit for purpose.*

*People who go into radiography and then ultrasound are clinically driven, drawn to that kind of work.*

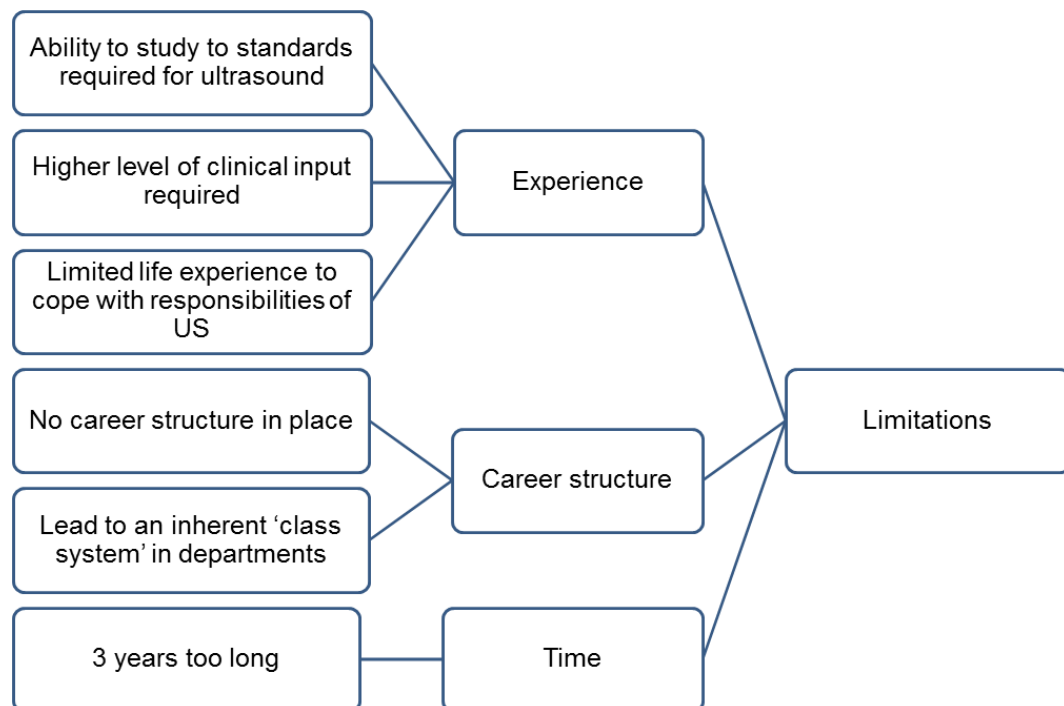
*It does work for us, the PgD.*

### **3.2.3. The direct entry undergraduate model**

Nationally, there are three new models of Sonographic education under discussion, and the next major theme to emerge from participant feedback relates to the issues surrounding one of these: the "direct entry undergraduate model" (henceforth DEUM). No courses of this kind currently run within the UK, but it is a potential long term strategy to address the current crisis affecting Ultrasound. The term "direct

entry" relates to the fact that there would be no requirement to have studied or work within a healthcare setting prior to application. Applications would be welcomed from any potential candidate as long as they met the academic requirements of the programme of study.

Discussions around this issue are thematised below into (a) likely limitations of the DEUM, schematised in Figure 9, and (b) prospective strengths of the DEUM, schematised in Figure 10.



**Figure 9: The direct entry undergraduate model I – Likely limitations**

Interviewees overwhelmingly cited the lack of life skills and immaturity of potential undergraduate students as a major limitation of this model. As previously noted, ultrasound is a complex area of imaging, and current Masters level educational

standards in this field reflect this complexity. It can require the practitioner to perform physically and emotionally intimate examinations as well as issue reports of the required standard to a variety of referrers.

Interviewees felt that candidates entering into this area straight from college level study may struggle with the academic standard that would be required and the responsibility of performing and reporting in this sometimes stressful field of imaging. It was also felt that these less mature, inexperienced students would require a higher level of clinical input from the department than is required with more experienced students studying at postgraduate level.

*Somebody who has just completed their 'A' Levels hasn't necessarily got the right background with life experience.*

*To be taking eighteen year olds, having them as qualified sonographers by twenty one, I'm a little apprehensive about that.*

*I don't feel the direct entry undergraduate works for me, you haven't got life skills there.*

*At eighteen you've not got the right experience to be handling the situations that ultrasound throws at you.*

*Based on life skills and life experience I think the undergraduate is not my preferred choice.*

*It is quite a big responsibility in terms of reporting on the images , the worry is with reporting.*

*I am concerned that they won't have had the breath of life experience or the extra learning skills, as an undergraduate student you are quite protected.*

*This model is not one that I personally advocate I would be concerned about the fact they have not studied to M level.*

*Concerned about potential immaturity of emerging qualified members of staff into what is essentially a senior role in the NHS.*

*Concerned about the amount of input that the department would be required to give to a very young potential member of staff, a young student.*

*Undergraduate students would be a lot more demanding, need a lot more support from a clinical level.*

The current pay banding awarded to sonographers within the NHS recognises both the advanced skills they demonstrate in clinical practice as well as the CASE accredited 'M' level qualification they have to attain. There was concern among the interviewees regarding where undergraduate sonographers would fit into the current pay banding and advanced practitioner status. It was felt that this may lead to issues within departments due to the risk of introducing an inherent class system as well as limited roles for undergraduates and thus limited value to the department.

*I'd also be slightly concerned about where the agenda for change banding and the job valuation points and job scoring would fit in because I think you would end up having a two tier workforce.*

*Having two levels of practitioner in ultrasound is quite difficult due to reporting.*

*You'd have people who are potentially doing a similar job, getting paid differently, it doesn't lead to a satisfied, happy workforce.*

*Would lead to an inherent class system within the department and I don't think it's the way forward.*

*There is no career structure in place.*

*Time:* There is a general feeling that the current situation in ultrasound requires immediate attention and the participants in this study definitely demonstrated a predilection towards more of a quick/medium fix solution. One issue that was highlighted in the participant's feedback was the fact that a direct access

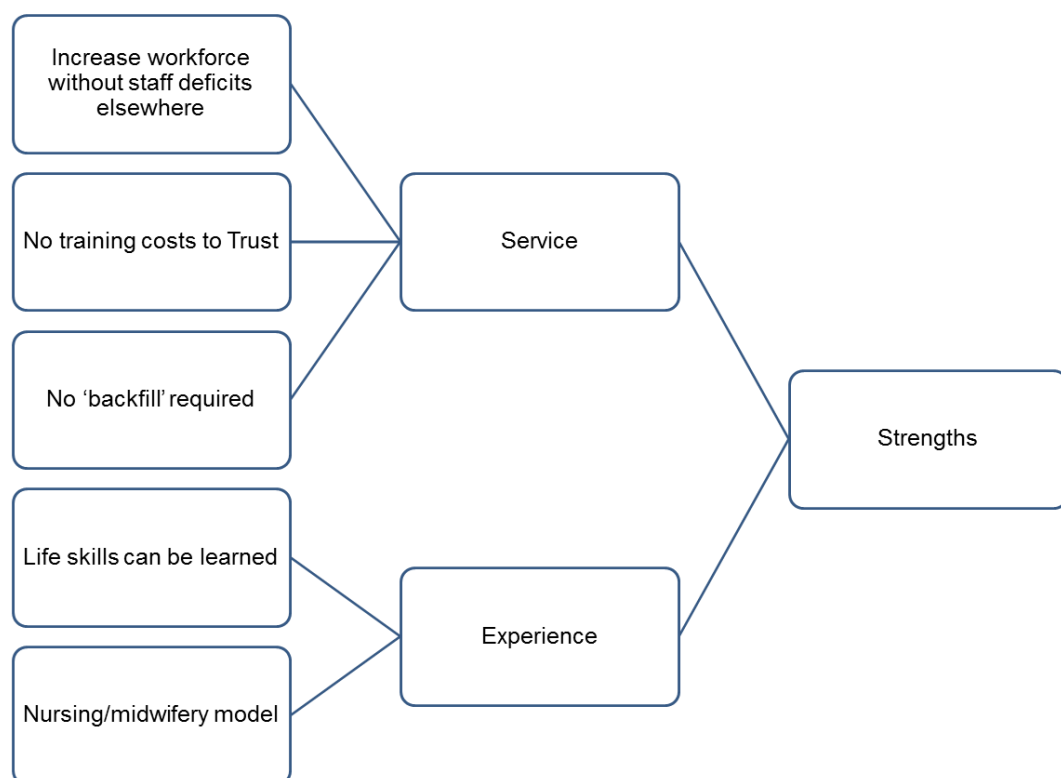
undergraduate degree could take several more years to develop and the course is a three year program. It was felt that this was not the quick fix that is required at the moment. Several interviewees suggested that it may be a valid route in the future.

*Three years is too long to wait.*

*I think there could be a place for that in the future.*

*If they look at career structure and salary scales it might be an option I just don't know that it would work at the minute.*

There were, however, a series of potential strengths to the model also identified:



**Figure 10: The direct entry undergraduate model II - Prospective strengths**

As previously noted, although there was a discernible bias towards the limitations of this model of Sonographic education<sup>4</sup> across the participant sample, positive comments were nevertheless grouped into two distinct categories: Experience and service provision.

By far the most concerning aspect of the Undergraduate route among the interviewees was the issue of lack of life experience. However it was pointed out that life skills can be learned, and that the three years spent studying would allow the students to build up the necessary experience to equip them to work in the field. It was also proposed that there was similar scepticism when a midwifery direct entry undergraduate degree was originally formulated; however, this route has now been successfully implemented.

*People learn life skills by working in a hospital to me.*

*There may be merit in looking at the nursing/midwifery model... direct entry midwifery was widely opposed but now it is commonplace.*

Most interviewees suggested that the major strength of the DEUM related to service provision: that it would (a) expand the workforce without leaving a deficit elsewhere (i.e. there would therefore be no "backfill" issues), and (b) full-time students impose no cost upon an NHS Trust in terms of wages, as they are not strictly employees.

*Don't have to pay salary costs or training costs for the trainees.*

*Direct entry does not cost the Trusts money in the same way.*

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<sup>4</sup> However it is worth noting that all of the strengths associated with this model in regards to service provision are also strengths of the direct entry **Postgraduate** model which will be discussed subsequently.

*Would be a way to increase the workforce without creating other deficits.*

### **3.2.4. The direct entry postgraduate model**

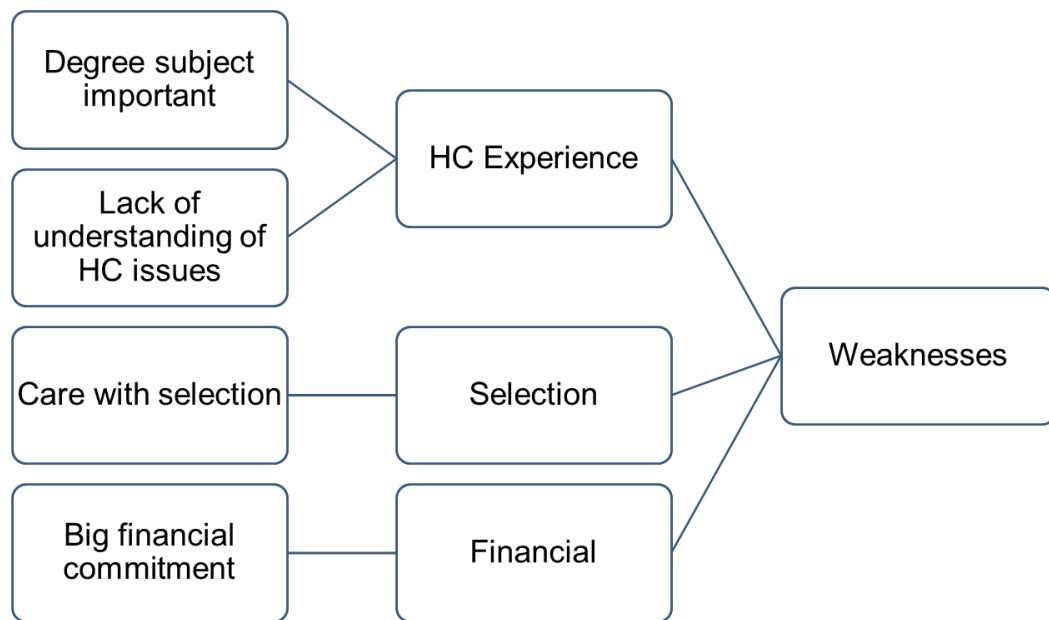
The next emergent theme arising from analysis of participant feedback relates to the issues surrounding the second proposed new model of Sonographic education, the “direct entry postgraduate (MSc) model” (henceforth DEPM). Although direct postgraduate access into ultrasound does currently exist in some educational institutes in the UK, it is largely underutilised. It remains, however, a potentially valuable medium term-strategy for addressing the current crisis effecting Ultrasound.

The term “direct entry” in this case relates to the fact that the course is open applicants with *any* Honours degree, negating the need to have a degree in Radiography or indeed a background in healthcare. Applications would be welcomed from any potential candidate as long as they met the core academic requirements of the programme of study. As before, participant discussion of the DEPM is analytically organised below into two higher-order themes:

- a) Likely weaknesses of the DEPM (see Figure 11), and;
- b) Prospective strengths of the DEPM (see Figure 12).

The main concern interviewees voice in regards to the former was the potential lack of appreciation of healthcare issues but the selection process and financial implications were also alluded to as potential weaknesses. In terms of healthcare experience, meanwhile, the interviewees raised concerns regarding the primary

degree subject with many suggesting a science based or healthcare degree would be preferable or essential.



**Figure 11: The direct entry postgraduate model I – Likely limitations**

Interviewees felt that candidates entering into this area from a non-healthcare or science background may struggle with the academic standard and anatomical knowledge that would be required.

*I think you need to be very careful which students you chose and what their initial degree is.*

*If it's from any course no, no I don't want that.*

*I have some concerns about the potential lack of understanding about healthcare provision.*

*I think it's quite useful to have a health background and an awareness of health overall.*

*If you have somebody who doesn't have a healthcare background how would these people get up to speed?*

Regarding the issue of selection, interviewees broadly agreed that the process would need to be robust to ensure that the right candidates were to be selected at all. It is widely accepted that a postgraduate ultrasound programme of study is challenging, particularly if the students will actually be graduating with Master's degree in Ultrasound. Poor selection could affect course attrition rates, and could severely impact on the Ultrasound department providing the clinical training.

*Need to interview them appropriately so that we can make sure that they have got the right skills .*

*Need to have a strict selection process.*

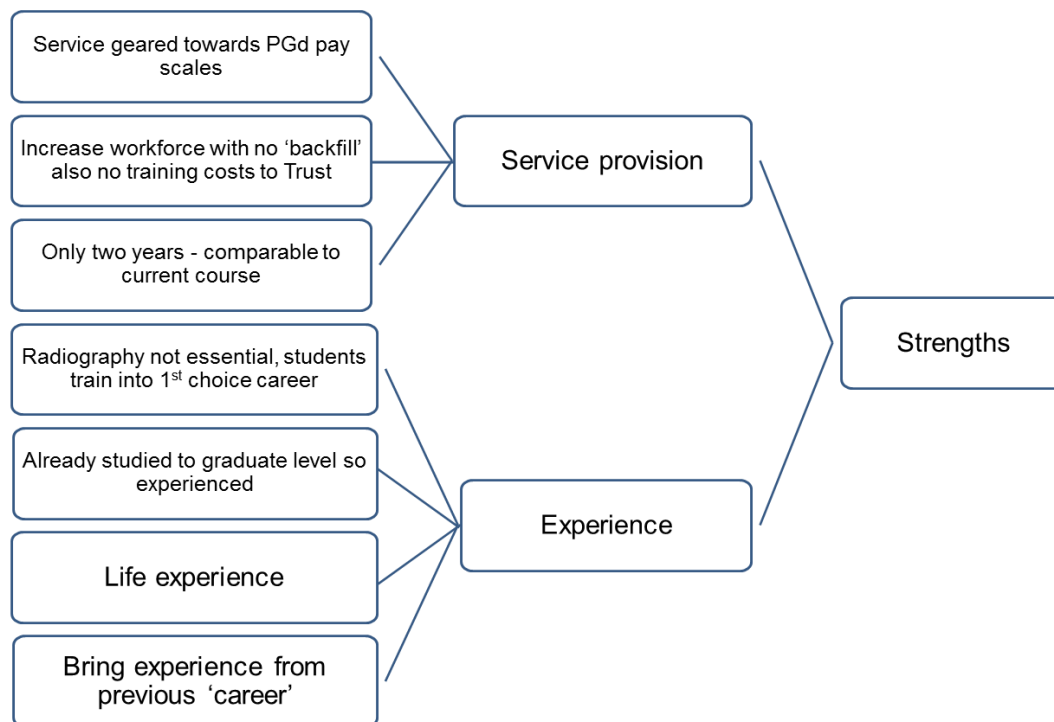
Moreover, funding of direct access postgraduate routes into ultrasound has not yet been clarified, and the issue of the potential financial burden this would place on students was raised as a possible weakness of this model.

*You've got somebody who has already been at university for three years and then you are expecting them to pick up and go on to do another two years to do an MSc which is a big financial commitment*

*I think if people are going to be self-funding their postgraduate courses how do you attract people to do that?*

In terms of the strengths of the DEPM, meanwhile, participants indicated that this was, for them, by far the most suitable of the new educational models. Comments

addressed two main domains in which the DEPM would work particularly well, these being *service provision* and *experience*.



**Figure 12: The direct entry postgraduate model II – Prospective strengths**

Participants recognised that, in terms of service provision, the major strength of this model rests in the fact that Ultrasound training, service provision and pay banding is already geared towards postgraduate or Masters-level practitioners. It was also noted that the course would generally be a two year full time programme which is comparable to the current course time wise and would provide more of a medium term solution. Also it would allow the service to increase workforce without creating deficits elsewhere, so there would be no backfill issues and no financial commitment for the Trust.

*Everything is geared to postgraduate with the salary scales and the way we employ people, that's what we have experience with.*

*We know more about the people we'll be training on that [postgraduate]route.*

*It doesn't cost money in the same way as the [current] postgraduate does.*

*Trusts don't have to pay the salary or training costs for the trainee.*

*It negates the fact that we need to get someone released from their current role and have them sat in a paid role where they are un-productive for 2 years.*

Most interviewees also looked favourably upon the DEPM on the basis that the applicants would enter the professional environment with better life skills and academic skills due to greater experience. Several interviewees felt that due to the complexity of the Ultrasound field itself, newcomers with postgraduate qualifications would be more able to cope with the inherent challenges therein. There was a general sense throughout the feedback that an initial background in Radiography was not necessary to be successful in sonography. Indeed feedback suggested that students could bring invaluable skills and knowledge from their previous careers and this broader work and life experience in a cohort could make for a richer learning experience.

*Students would have proven ability at graduate level study.*

*Less to pick up because they at least would have got an undergraduate qualification.*

*They're likely to be a little older and the level they would be functioning at would be more commensurate with their education.*

*They'll have developed a nice broad knowledge, they've got a little bit of life experience.*

*They would have a bit of life experience and learnt how to apply their knowledge to the situation they are in and apply it more quickly than undergraduate.*

*I think with Postgraduate they've had life experience and they've studied before and I think they will come out better, a higher quality of student.*

*Ultrasound is a different kettle of fish to radiography.*

*There's an awful lot of other people out there who could do the Ultrasound course but aren't necessarily trained as Radiographers.*

*Don't feel they need to be trained as Radiographers first before they become sonographers.*

*People tend to be offended that you might have to be a radiographer first.*

*I've got a friend who's a sonographer and has a biochemistry background, so I've got no issue [with direct entry postgraduate].*

*There is an awful lot to be said for other professionals who would bring their own professional views, everyone can learn from each other, that's something that should be embraced.*

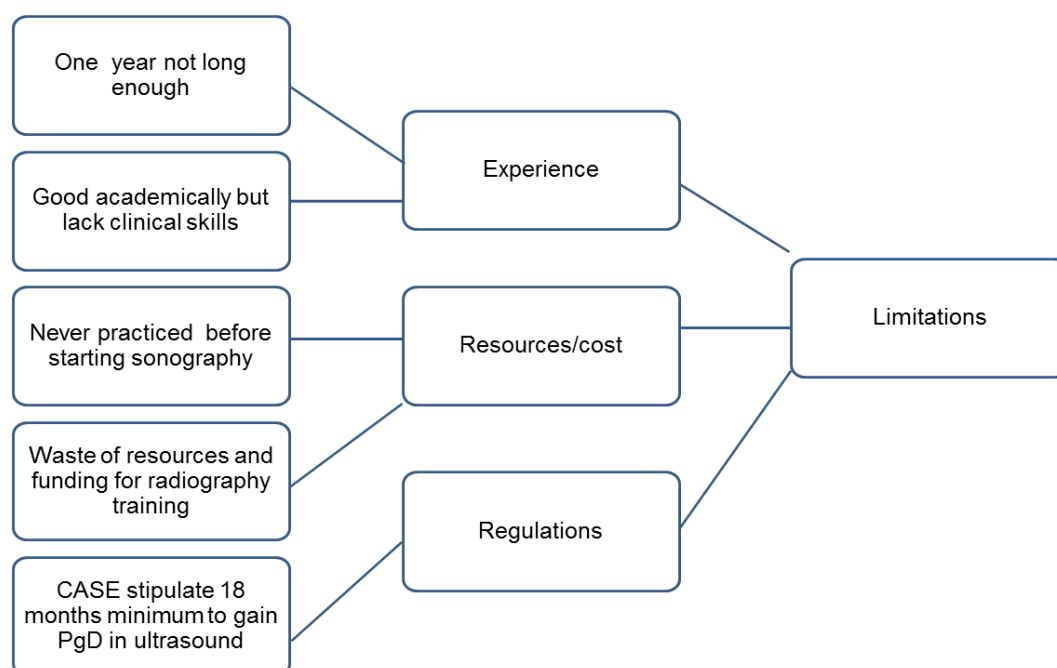
### **3.2.5. The 3+1 postgraduate model**

The next theme to arise from analysis of participant feedback relates to issues surrounding the final proposed new model of Sonographic education, the "3 + 1 postgraduate model" (henceforth 31PM) The term "3+1" relates to the fact that the PG course is offered to a limited number of high achieving Radiography students as they come to the end of their three year primary degree.; essentially, they are given to opportunity to add an extra year onto the end of their degree to gain a postgraduate qualification in Ultrasound<sup>5</sup>. As with prior models discussed, participant

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<sup>5</sup> The model is currently available in some domains, but incidences of its use are still relatively rare.

feedback is thematised below into issues around (a) limitations of the 31PM (Figure 13) and (b) strengths of the 31PM (Figure 14).



**Figure 13: The 3+1 postgraduate model I – Likely imitations**

Participants were more broadly focused upon the limitations of this model than its strengths, with experience, resources/cost and regulations all being of key concern. By far the most prominent concern among these related to the condensed one year postgraduate programme of study. The case was strongly made that one year would not be enough in terms of skill development, even among students would have a proven high level of academic ability.

*Too much practically and academically to learn in a twelve month period.*

*I don't think you could do it in a year, a year's too ambitious.*

*I don't know whether the year would be enough to get them up to speed in scanning.*

*Difficult to see how we can turn out a high quality sonographer in 12 months.*

*I think they'd be able to do their academic components quite well but how would the ultrasound students gain sufficient clinical experience in the plus one year?*

*The 3 + 1 course seems to be over quite quickly.*

*You're squeezing the thing that's going to be their career into the last 12 months, it's not logical in my opinion.*

*The people that I've had experience with have all been really great academically but some of them I've found have lacked slightly in the clinical skills.*

*I think you'd need a massively long preceptorship period.*

Another major area of concern was the perceived waste of resources both clinically and financially that would result from training a candidate for three years in to Radiography when they will ultimately never practice in that field. Using NHS money and other healthcare funds to train radiographers but then instead of adding them to the radiographer pool they are given a very condensed training programme in ultrasound

*It's just a terrible waste because they've done radiography for three years and then radiography is not going to benefit from that training.*

*I'm not sure that it is a cost effective way to deliver training because you're training them for three years in something they are never going to practice at a cost.*

*I don't think that is actually helping anybody in any staffing areas, whether it be radiography or sonography.*

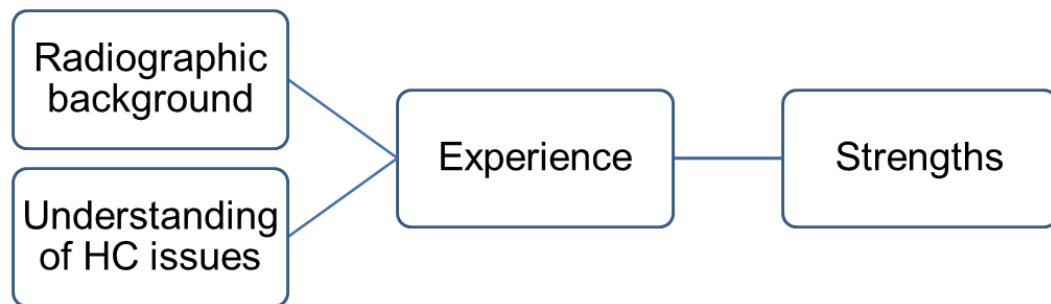
*It's a waste of three years training and potentially three years financial commitment as well.*

*It is potentially creaming off the more academic students but I do think this has a big impact on the radiography profession.*

The Consortium for the Accreditation of Sonographic Education (CASE) have produced regulations and guidance to ensure the quality of education in the field, and it was noted in the participants feedback that CASE guidance states that a Postgraduate Diploma in Medical Ultrasound should take a minimum of eighteen months. This leaves a further question mark over the actual validity of such educational models.

*CASE guidance alone states that it should take eighteen months at postgraduate diploma level.*

Participants' discussions of the strengths of the 31PM, on the other hand, were rather more truncated in form, with only a few issues raised.



**Figure 14: The 3+1 postgraduate model II – Prospective strengths**

All positive commentary centred on the fact that the students would have the benefit of undergraduate study and a background in imaging. It was felt that this

would ensure an appreciation of healthcare issues that would support their role in the field of sonography.

*They've already got a little bit of life skills, they'll be used to working in a hospital, they've got a background radiography degree with anatomy and physiology and physics.*

*I think it's fine in theory they'd definitely come out with the right clinical competencies.*

*They would be radiographers going into sonography so they'd actually understand the hospital environment.*

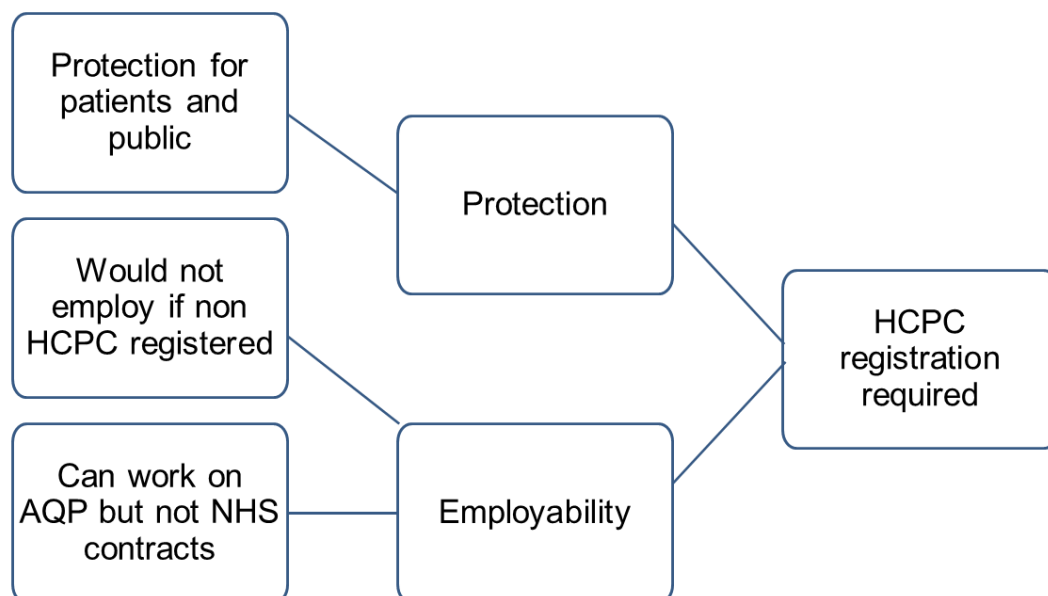
### **3.2.6. HCPC registration**

The next emergent theme arising from analysis of participant feedback relates to the issues surrounding statutory registration of sonographers, or HCPC (Health Care Professions Council) registration. This is a complex and far reaching issue that could have significant impact on the implementation of new educational models in the field of Ultrasound.

"Sonography" is not currently a regulated profession and sonographer is not a protected title; this means that students qualifying via either the Undergraduate or Postgraduate route will not be eligible for state registration by the HCPC unless they are entering into the profession from an alternative healthcare route such as radiography, Nursing, Midwifery or physiotherapy. Moreover, there is no current legal requirement for a sonographer to be registered with a statutory regulatory body. Hence there is no requirement for an employer to make this a pre-requisite for employment. Despite this there are still many NHS Trust who would be reluctant to employ non HCPC registered sonographers. As such, although sonographer

regulation is not a prerequisite to the establishment of direct access programmes it is desirable but the issue is more likely to arise post qualification.

Findings indicate a division among participants regarding the facility and importance of HCPC registration. Below, arguments regarding why HCPC registration should be required among new professionals (Figure 15) and why it should not (Figure 16) are analytically investigated.



**Figure 15: HCPC registration I - Required**

Although concerns were raised regarding the limitations encountered with non-HCPC registered sonographers, the majority of the participants recognised that this issue was primarily a concern for NHS Trusts themselves, rather than workplace-level management. The concerns raised in relation to not having HCPC registered professionals, however, grouped into two distinct categories: protection and employability.

The role of the HCPC was determined to be one of ensuring registrants adhere to the codes of practice and conduct expected with the profession. Participants, thus, proposed that it provides protection for patients and the general public.

*The HCPC and MC, all these registration bodies are there for the protection of the patient.*

*If the practitioner deviated from any codes of conduct or misconduct we have an ultimate method by which they can be deregistered, it protects the public.*

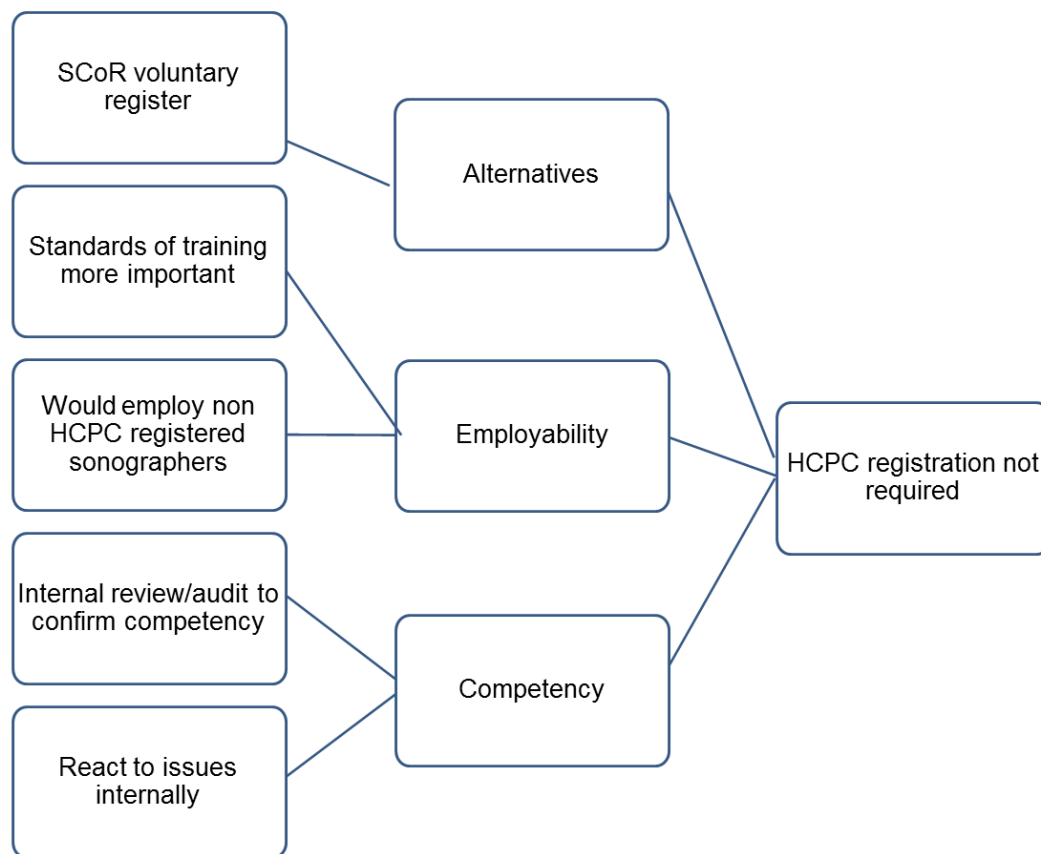
Regarding employability, meanwhile, some interviewees indicated that they would not employ non-HCPC registered sonographers while others, exclusively from the independent service provision sector, indicated that even though they did employ non-registered sonographers, they could only work within the AQP (any qualified provider) setting and not within an NHS Trust.

*I would expect someone to have some form of professional registration, by which sanctions could be applied if they don't meet the code of conduct.*

*I think there needs to be some kind of registration, whether its HCPC or not.*

*We employ them [non HPCP registered sonographers] for all our AQP contracts, we cannot put them into hospitals – it's very frustrating.*

The primary argument against HCPC registration as a necessity was that the current workforce crisis often mandates the employment of competent sonographers irrespective of their registration status. This argument had three core components, relating to viable alternatives, employability and competency.



**Figure 16: HCPC registration II - Not required**

In 2007 it became possible to register as a “Sonographer” with the College of Radiographers through accreditation of level of practice, via the Public Voluntary Register of Sonographers. This offers a code of conduct and ethics, standards of proficiency and the registrants have to sign a declaration that they will adhere to these standards. The intention is to protect the public where statutory regulation does not exist. A number of the participants in the current study argued that (through necessity) they were now viewing this as an acceptable alternative to HCPC registration.

*We intend to go down the College of Radiographers with preceptorship route with newly qualified staff and the Voluntary Register once they've got competencies approved, at least they are on the register.*

*For the future of sonography we don't have a choice as long as they're on the Voluntary Register.*

*There's the voluntary register that people can sign up to, you need to have two references and prove your qualification which is technically no different to what you have with the HCPC.*

*There are still routes where you can contact the Voluntary Register and see if somebody is registered as a trained member of staff.*

*I currently have a member of staff who is non HCPC registered and she is a member of the Voluntary Register of Sonographers.*

*The fact that they have applied and been successful to the Voluntary Register can give the public peace of mind in terms of eligibility and qualifications.*

In general the interviewees agreed that in many ways the standard of training was more important when it came to employability rather than whether the candidate was HCPC-registered or not. The vast majority of participants conceded that they would be happy to employ non HPCP registered sonographer under certain circumstances, with the biggest obstacle to this being HR (Human Resources) stipulations.

*I would judge someone on their merits.*

*Hospitals and the Department of Health need to understand that HCPC doesn't mean you are a good or bad sonographer.*

*Registration doesn't prove to you that a sonographer is a good sonographer does it?*

*We would [employ non HCPC registered sonographers] if that person had a proven track record.*

*They haven't so far [employed non HCPC registered sonographers] but if they've got a valid qualification and they show clinical competence then I don't see any reason why not.*

*I think we would [employ non HCPC registered sonographers] if we trained them.*

*Have they been trained properly, that's all – that's what it's all about for me.*

*As long as they've been trained properly and it's been a recognised course.*

*My Trust is particularly governance orientated, however providing that the professional bodies endorse a training route then they will be left with a fait accompli.*

*We as a Trust need to decide if we are happy to do that, which means we have to change all our current job descriptions for sonographers and our attitude to registration.*

*The Trust currently says they have to be HCPC registered but if it was CASE accredited I would have more ammunition to go back to the Trust and try and get things changed.*

*Currently we wouldn't be in a position to recruit staff without professional registration but I think that's something that is likely to change.*

*We've got to be inventive and you've got to think of a way around this people in HR and Trust boards have to be made aware of that.*

Indeed, some participants felt that responsibility for maintaining and monitoring staff members' clinical performance should fall with the Trust and clinical department, rather than presuming that a member of staff with HCPC registration automatically works within the required standards of practice.

*The HCPC is there to protect the public but the Trust should be doing that as well. So providing you've got good audit processes in place, that you're going to maintain their competency and react to any issue internally I don't see that it would be an issue.*

*Any discipline issues would be dealt with through our internal discipline process and utilising our own HR mechanisms.*

*The fact that they're not registered by a body doesn't necessarily mean that they're not fit to practice there are local routes if there's concerns about practice, behaviour or anything else.*

*You can have people who have been struck off the HCPC as a radiographer who are still practicing now as sonographers because it is not a protected title.*

*We have to do everything we can to make them as accountable as possible.*

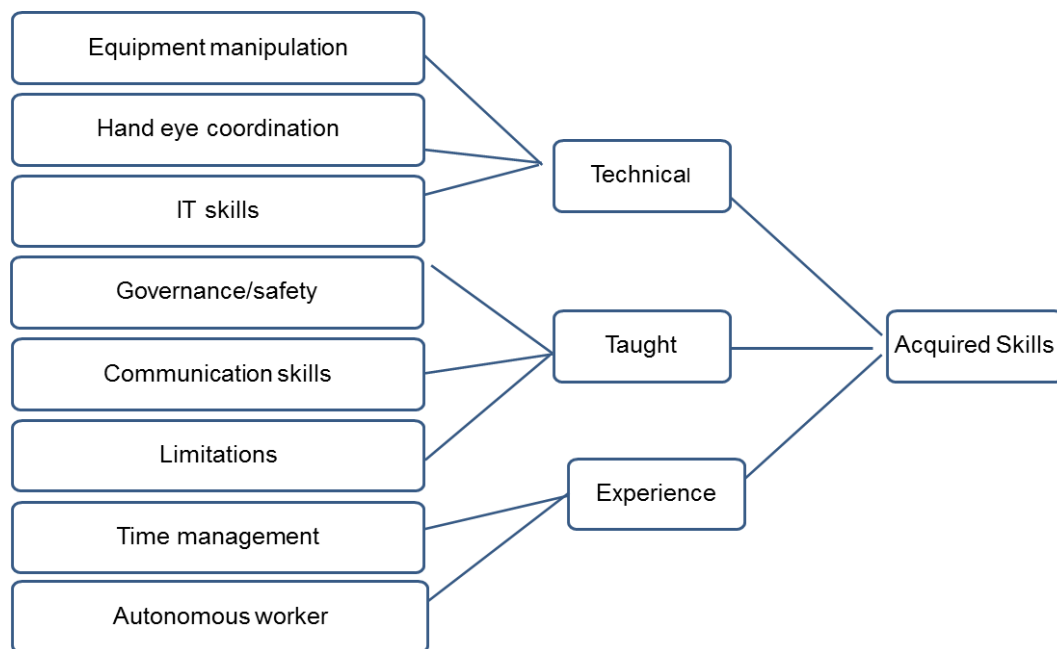
### **3.2.7. Attributes of a sonographer**

The final theme to arise from analysis of participant feedback relates to attributes that the interviewees felt were important when assessing a candidate's suitability for an Ultrasound program of study, and what skills the participant felt would be desirable at the point of qualification. As previously discussed, care must be taken with selection to ensure suitable candidates are chosen. It is also important that the "finished product" fits into the requirements and expectations of working clinical departments.

Considering the findings schematically outlined in Figures 17 and 18 (below), it was evident that participants' concerns related to two different "orders" of attribute that prospective students and professionals in ultrasound should have. These were:

- a) *Acquired* attributes, i.e. the general and specific skills they should have learned in order to function effectively as a sonographer, and;
- b) *Inherent* attributes, i.e. qualities that make an individual the "right kind of person" to work in ultrasound.

Regarding the former, interviewees expected that a newly qualified (or “first post” sonographer) would have acquired skills in three clear domains: technical, taught/soft skills and basic general work skills (i.e. experience).



**Figure 17: Attributes of a sonographer I - Acquired**

Ultrasound equipment is highly specialised, and it is important that ultrasound practitioners are taught and build up a good understanding of the manipulation, functionality and safety issues of the machines. Participants felt that use of the equipment was a skill that should be taught but would also be acquired as the students progressed through the programme. They also agreed that the technical skill of developing hand eye coordination and IT skills specific to ultrasound could be assessed as part of a selection process but again these skills would also be acquired with clinical exposure.

*Manipulation of the machine [should be a priority].*

*At the end of the course they can demonstrate a good practical technique.*

*They have to be able to understand the physics.*

*There is a requirement for basic hand eye coordination which will be built on in any department.*

*Good hand eye coordination, they've got to have that dexterity to actually physically scan.*

*Wise to have some sort of test, watch how they work a probe and what they see and how the hand moves in coordination with that.*

*I think this can be tested [hand eye coordination] the use of simulators etc. will be useful from that point of view.*

*Pattern recognition and spatial awareness [essential skills].*

*Definitely needs to be hand eye coordination there.*

*Test for hand eye coordination.*

*They need IT and audit skills.*

*They have got to be IT sufficient.*

*Looking for someone who is responsible to pick up the reporting challenges we face.*

Some aspects of ultrasound have to be taught, and some of the issues surrounding ultrasound that the interviewees felt needed to be instilled in the students included governance and a firm understanding of the limitations both of ultrasound and of the practitioner themselves. Although it would be expected that applicants to a healthcare role would inherently have good communication skills it was highlighted by several interviewees that due to the nature of ultrasound they would be required to develop advanced communication skills, such as breaking bad news

and the skills to cope with this challenging area of practice should be taught as a priority.

*Got to be IG sufficient and governance literate and competent so those need to be incorporated.*

*They need to know about Governance implications, [have] an understanding of governance.*

*Got to be able to recognise their boundaries of clinical competence.*

*Need to have an understanding of their limitations.*

*Know their own scope of practice.*

*Communication is the most important thing.*

*Extremely good communication skills obviously.*

*They have to have that advanced level of interpersonal communication.*

*I want a person who has aptitude and experience to manage advanced communication in challenging situations.*

*Advanced communication needs to be highlighted as a priority, breaking bad news is a big part of being a qualified sonographer.*

*They have to have the ability to break bad news and deal with it appropriately.*

*Giving bad news I think that really should be a big focus.*

Conversely, other aspects of ultrasound practice can only really be acquired with continued experience and the aspects of ultrasound practice that were highlighted in the participants feedback related to this theme included development of good time management and the ability to work autonomously. These skills would be expected of a newly qualified sonographer.

*I would be looking for the ability to prioritise a workload.*

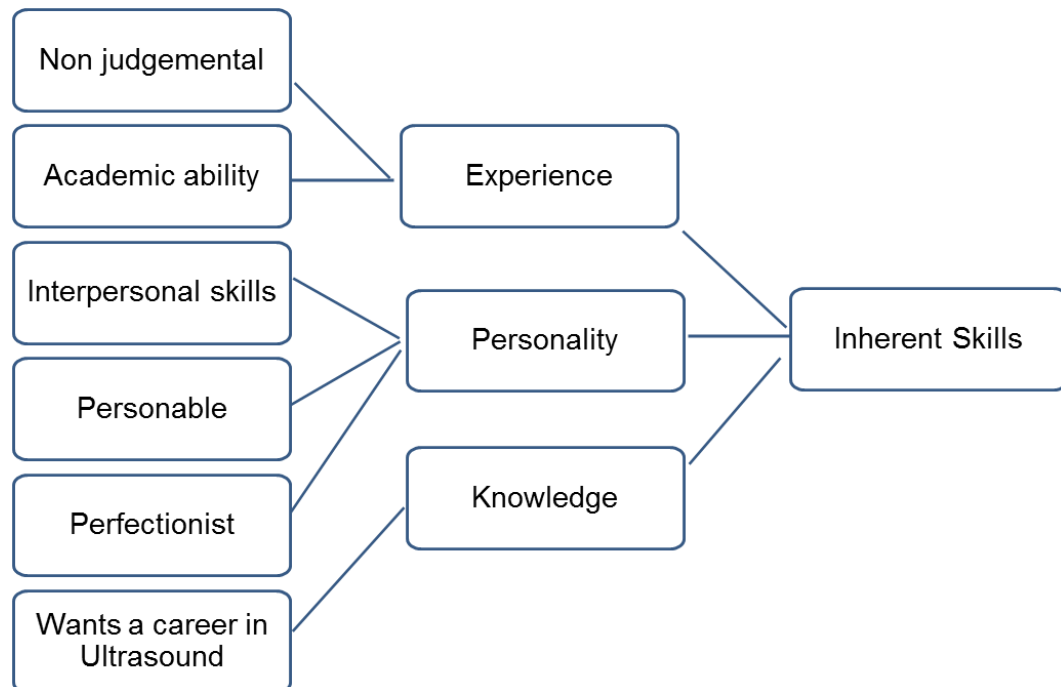
*Good time management and proven ability in that area is probably essential.*

*The ability to work autonomously.*

*They've definitely got to be independent.*

*Need to have an appreciation of the autonomous level at which they are going to be expected to work.*

Participants' feedback also highlighted personal attributes that were felt to be embedded within individuals' personalities, and that it would be possible that some of these "inherent" skills could be assessed as part of a selection process to assess an applicant's suitability for the programme of study.



**Figure 18: Attributes of a sonographer II - Inherent**

In this area, three key “forms” of focus emerged, relating to personal experience, personality and knowledge. Regarding the former, it was argued that an individual's previous experiences can develop inherent skills; for example, a person's academic ability. The ability to be non-judgemental and empathetic also tends evolve as a person matures and gains general life experience. These attributes were recurrently highlighted as essential for a successful career in ultrasound.

*There needs to be academic ability to make sure you can understand pathology and anatomy.*

*A fairly key facet is the ability to cope with the academic requirements of the course.*

*Require the individuals to be technically excellent in terms of their technical and academic knowledge.*

*Certainly have to have academic intelligence.*

*Seeing everyone as equal, all kinds of people walk through our doors so you can't be prejudiced or judgmental.*

*You've got to be able to treat people with dignity and respect.*

*Have to show empathy, that will come across to your patient.*

*Personal skills like empathy, empathise with people [are a priority].*

*Have the patient at the forefront of everything you do.*

Interviewees also agreed that certain inherent personality traits should be sought out as part of a selection process. These attributes included good interpersonal skills, personable, caring and a tendency towards perfectionism.

*Interpersonal skills although you can hone them I think some of that is innate emotional intelligence.*

*Obviously good interpersonal reactions [are a priority].*

*They have to have an advanced level of interpersonal communication.*

*You've got to be able to talk to people.*

*They do just have to be quite personable overall, as you are interviewing you get that feeling overall.*

*It's important that it's a caring person.*

*I think it's somebody who's a bit of a perfectionist.*

An applicant's knowledge of the field of ultrasound was taken to demonstrate a degree of predisposed interest and understanding. In order to pursue a career in sonography, it was argued, a sound background knowledge should be a clear indicator of the "right kind of candidate."

*I think the biggest thing is someone who wants a career in ultrasound.*

*I'm looking for someone who's training who wants to do this job.*

### **3.2.8. Thematic summary**

Thematic analysis of a large body of qualitative data revealed a range of diverse and nuanced concerns relating to the future direction of sonographic education, the importance of registration and the kinds of "person" that the profession should be seeking to both attract *and* develop. The participating department leads drew upon a range of professional and personal experiences (positive and negative) in providing a detailed blueprint for where they might like to see sonography education "going" in the forthcoming years, and how the current staff shortages in the NHS might be addressed. These matters are summarised, for convenience, in Figure 19 (below).



**Figure 19: Thematic summary**

### **3.3. Judgement calls: Participant preferences**

Emergent of the analysis above are two main domains of contestation. Firstly, there was no clear agreement among participants regarding the best model of sonography education to adopt in the future and, secondly, there was some considerable divergence in opinion about the facility of HCPC registration. In this section, simple “snap polls” relating to each are reported, to give a basic indication of prevailing trends among Ultrasound department leads in the North West. Given

the relatively small size of the sample, such statistical exercises should be seen as indicative at most, but could be useful in guiding further survey-oriented research.

### 3.3.1. Education model preferences

It is clear from the above that there were many contrasting and interlinked arguments put forward in support and censure of any future advancements, but it is important to try to demonstrate the overall feelings amongst the participants in relation to the proposed new models of Sonographic education. The interviewees were asked to indicate their preferred model out of the three discussed (DEUM, DEPM and 31PM) and the results are displayed graphically in Figure 20 (below).

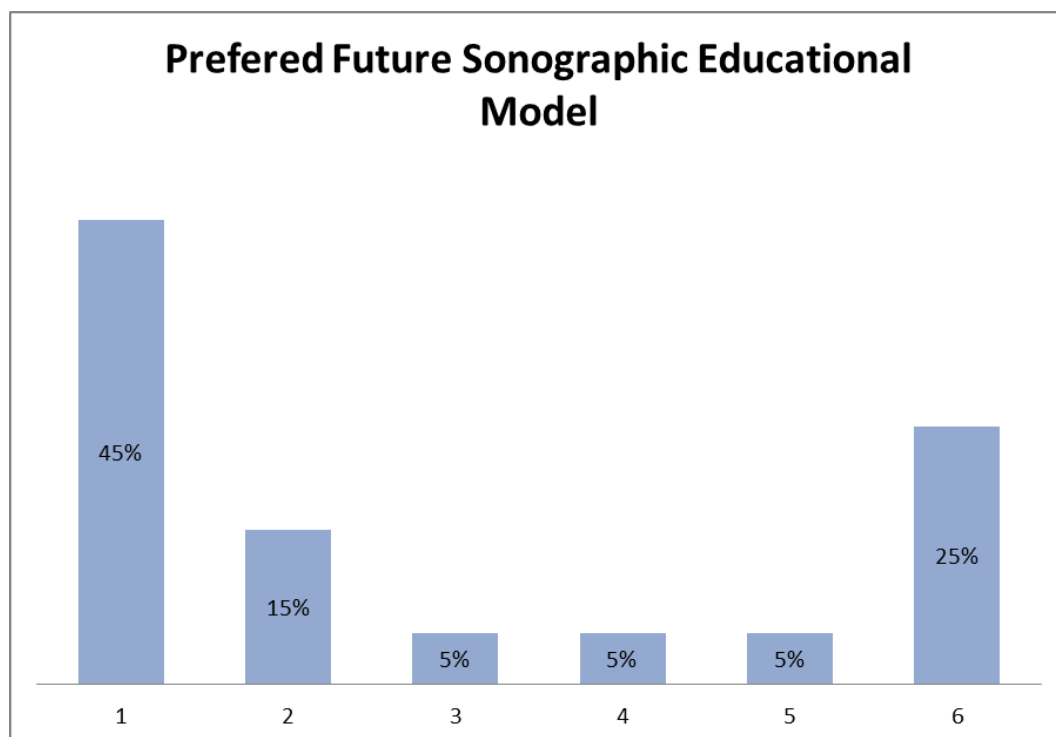


Figure 20: Sonographic education preferences

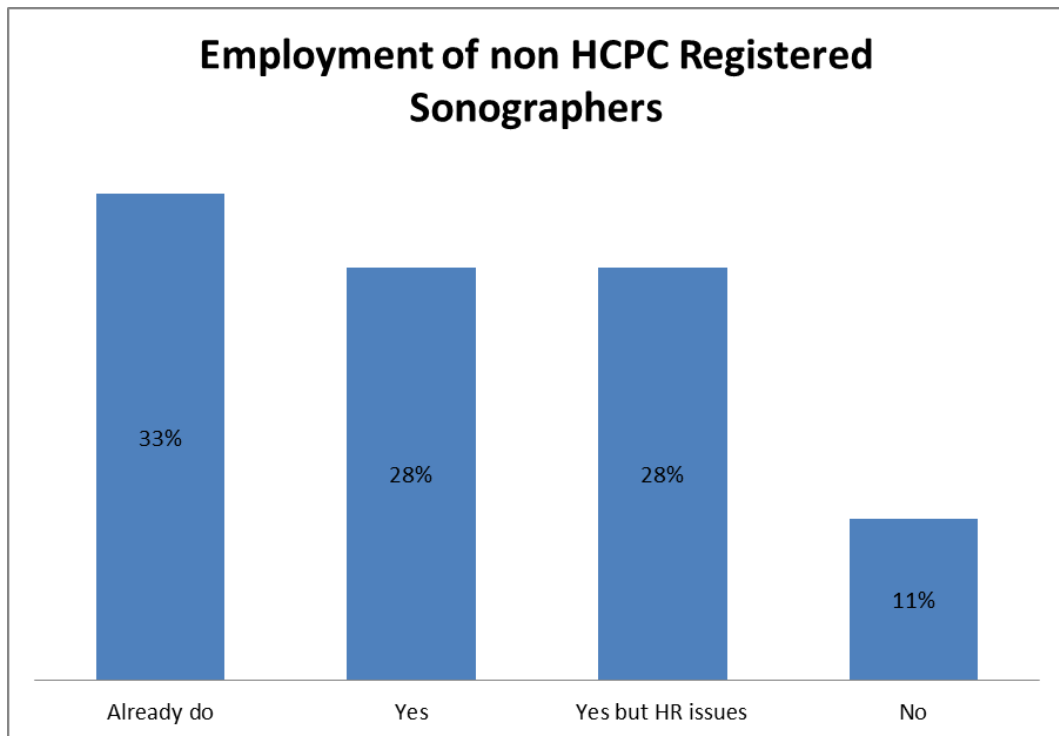
Key:

1. 45% (n=9) of participants indicated a sole preference for the DEUM;
2. 15% (n=3) of participants indicated a sole preference for the 31PM;
3. 5% (n=1) of participants indicated that they would be prepared to consider all three models;
4. 5% (n=1) of participants indicated that they would be prepared to consider both the DEUM and DEPM;
5. 5% (n=1) of participants indicated that they would be prepared to consider both the DEPM and 31PM;
6. 25% (n=5) of participants were not able to offer a preferred route.

### **3.3.2. HCPC registration preferences**

HCPC is an important but contentious issue, and it is important to provide an overview of the participants' views on the employment of non HCPC registered sonographers as this could have implications for future sonography education developments. Many arguments were put forward in support and censure of this matter, but overall there was overwhelming feeling that HCPC registration was not as essential today as strategies for addressing the current workforce shortage.

Participants were, thus, asked to indicate if their clinical department would employ non-HCPC registered sonographers, and the results are displayed graphically in Figure 21 (below).



**Figure 21: HCPC preferences**

In sum:

- 33% (n=6) of clinical departments already employ non HCPC registered sonographers;
- 28% (n=5) of clinical departments indicated they would employ non HCPC registered sonographers;
- 28% (n=5) of clinical departments indicated they would employ non HCPC registered sonographers pending HR agreement;
- 11% (n=2) of clinical departments indicated they would not employ non HCPC registered sonographers.

## 4. Conclusion

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In summary there was unanimous agreement that Ultrasound services are currently in crisis in regards to the well reported national shortage of sonographers. It was widely agreed that the current approach to sonographer training is falling short in meeting the needs of many of the departments surveyed. Change is needed and in many cases welcomed and strong and well-reasoned opinions emerged on the proposed new education models.

It has been detailed that seven higher-order themes emerged from the data, and it is evident that different facets of a number of the same issues were raised across themes. The key findings are summarised here. They are:

1. The current workforce crisis is creating an increasingly heavy operational and financial burden on the service and is becoming unmanageable;
2. Although the current model of sonography training produces highly skilled sonographers that are fit for purpose, with the deficit this programme causes in other departments and the financial commitment it is unsustainable;
3. A Postgraduate programme of study is more desirable currently as it is more of a short to medium term solution and the current role and banding of sonographers is geared to postgraduate standards of education;
4. Undergraduate direct entry could be considered as a more long term solution as a complete overall of the way we train and employ sonographer would be needed. It was almost unanimously agreed that at this present time Graduate sonographers were not what this region wanted;

5. The need to address the workforce crisis outweighed any issues with lack of HCPC registration with only two respondents categorically stating that they would not employ non HCPC registered sonographers;
6. Robust selection processes and curriculum design is essential to ensure the right candidates are chosen who can successfully complete the course and demonstrate first post sonographer competencies when qualified.

#### **4.1. Current position**

The workforce issues within ultrasound are not a recent phenomenon and in general are attributed to a lack of forward planning with many departments reporting long periods where sonography training was not a priority. This had led to a situation where the rate of sonography training is not keeping up with the rate of natural wastage in the profession. The current educational model has provided highly skilled, competent sonographers for the last twenty years and with developments in the field of focused courses for allied professionals in some respects ultrasound training has taken a big step forward.

However the traditional route of selecting a salaried member of staff, usually a Radiographer , into ultrasound leaves a deficit in the radiographer pool. Shortages in the radiographer workforce and the withdrawal of any financial support for backfill means this model is becoming unsustainable both from an operational and financial perspective.

There is a general feeling in the ultrasound community that there is a need for change and several new educational models have been proposed and in some cases implemented in an attempt to alleviate the current pressure on the service.

## **4.2. New educational models**

The three new educational models under scrutiny in this study, in particular the direct entry routes, would require a radical change in the way we approach sonography education. The current arrangement whereby hospitals send members of staff to a Higher Education Institute (HEI) to undertake training would be replaced by an arrangement where the HEI would send their students to placement hospitals to gain their clinical experience, much like the current Radiography programme. This would remove the financial and operational burden from the placement Trust.

There is an overwhelming preference for postgraduate level training among the participants of this study mainly because service provision, training and pay banding currently reflects a postgraduate sonographer post. The direct access undergraduate route has been accepted as a possible long term approach however there is unease with this model at present as no clear career structure, role definition or pay banding has been proposed for the graduate sonographer. There is also concern about the possible lack of maturity and life skills of the applicants so there is still a reluctance to accept the undergraduate route in the region at present. The perceived waste of both financial input and time input into training a radiographer for them to go straight onto sonography training, along with the condensed one year postgraduate training make the 3+1 model unpopular among the respondents although this model in general was more popular than direct entry undergraduate.

### **4.3. HCPC registration**

There is no question that sonographers are highly skilled practitioners providing an essential service, referrals for ultrasound examinations increase year on year with sonographers performing the bulk of this work. Regardless of this 'sonographer' is not a protected title and there is a general feeling of frustration that the profession is not getting the recognition it deserves. This impacts on the development of direct entry educational models as currently all graduate and some postgraduate sonographers exiting from direct entry programmes will not be eligible for HCPC registration.

While HCPC registration is still desirable the need to address the workforce shortages is being seen as a more urgent issue than the need for HCPC registration. Departments employing non HCPC sonographers are utilising the Society of Radiographer's Voluntary Register of Sonographers as a legitimate alternative, negating the need for statutory registration. If this issue is not addressed there is a danger as new models are developed and introduced that HCPC registration for sonographers may become obsolete.

### **4.4. Selection and curriculum design**

Ultrasound training programmes are challenging and there are many facets to consider when designing a curriculum or developing a selection process. These include:

1. Technical aspects such as spatial awareness and hand eye coordination, manipulation of the equipment and IT issues;
2. Proven academic ability, and;

3. Personality traits that are specifically required and need to be developed further .

It is important that regardless of the educational model the selection criteria and processes match the expectations of the academic facility and the clinical stakeholders to ensure the right candidates are identified and that they can study at the expected academic level. Before an educational programme is developed a period of consultation between the educational facility and the supporting clinical departments is essential to ensure the requirements of both are met.

#### **4.5. Impact statement**

Although there is a general acceptance that the way we approach sonography education needs to change there is understandable trepidation within the regions clinical ultrasound community. There are concerns that the service will be “watered down” or devalued if the current educational standards are not maintained. The ultimate aim should be to ensure this essential service maintains its reputation and sonographers preserve their current standing in the healthcare community.

Using a broadly Grounded Theoretical approach, this report highlights the importance of continuous and thorough consultation between the HEI and local clinical stakeholders throughout the development process. To ensure a programme is successful it must meet the current needs of the clinical departments, the right candidates must be selected and the curriculum must be designed to align with the attributes expected of a first post sonographer.

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# Appendix 1: Interview Schedule

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## **The future of Sonographic training: Interview schedule.**

There is a current UK wide shortage of sonographers that has led to severe difficulties for many NHS trusts in meeting increasing demands on the ultrasound service.

The aim of this interview is to establish the current sonographer workforce status of our local ultrasound departments and determine if the needs of our clinical stakeholders are being met with the current training provision. The aim is to keep the interview quite open to allow you to express your views but some of the information we will ask you to provide is:-

1. What number of whole time equivalent (wte) Sonographers should be employed within your trust/department if you were fully staffed?
2. How many Sonographers are currently employed in terms of wte?
3. Do your sonographers work additional hours to meet demand?
  - a. If so how regularly and at what cost
4. Does your department offer weekend or extended working day cover?
  - a. If so is this covered with your permanent staff
5. Do you employ locum or agency sonographers?

- a. If so how regularly and at what cost
7. Does your department train sonographers through a CASE accredited PgC or PgD route?
  8. If so how many and how often do you recruit students?
  9. Do you have any comments on the current nationwide shortage of sonographers and how this may be affecting your department?
  10. Do you have any specific comments or opinions on whether the current ultrasound education model meets your department's needs?

There are currently 3 new models of Sonography training being discussed nationally:-

- Direct Entry Undergraduate - entry to an undergraduate degree course in ultrasound imaging straight from 'A' Levels or equivalent.
- Direct Entry Postgraduate (MSc) – entry to a post graduate course from any degree course.
- '3+1' Postgraduate course – Selected, high achieving students are offered the chance to add an extra 'bolt on' year after their Radiography degree to gain a postgraduate qualification in Medical Ultrasound.

11. What are your opinions on these proposed models?
12. Some of the students graduating via the direct entry postgraduate and undergraduate routes will not be eligible for HCPC registration would your department employ non HCPC registered sonographers?

13. In terms of the attributes required from a newly qualified sonographer what clinical and personal skills do you feel need to be highlighted as a priority when designing a curriculum for direct entry Ultrasound and determining the applicants suitability for this program of study?
14. Do you have any further comments or suggestions on how we can ensure there is an adequate workforce for the future needs of Ultrasound?