Council, 9 May 2013

Revalidation – Update and PSA report

Executive summary and recommendations

**Introduction**

In late 2012 the Council for Healthcare Regulatory Excellence (CHRE), now the Professional Standards Authority for Health and Social Care (PSA) published a policy paper looking at issues associated with 'revalidation' (appended).

The attached paper provides the Council with a general update on the programme of work related to revalidation (updating a paper considered by the Council in March 2012), including a progress report from Durham University. The key points from the PSA report are summarised and discussed.

**Decision**

The Council is invited to discuss the attached paper and the PSA and Durham University reports.

**Background information**

Outlined in paper

**Resource implications**

None as a result of this paper

**Financial implications**

None as a result of this paper

**Appendices**

- Appendix 1. CHRE (2012). An approach to assuring continuing fitness to practice based on right-touch regulation principles.

- Appendix 2. Durham University (2013). Development of a questionnaire to explore professionalism as a multidimensional construct. Interim report.

**Date of paper**

29 April 2013

**Revalidation – update and PSA report**

**1. Introduction**

1.1    Revalidation is the concept that registered professionals should be subject to some kind of periodic check to ensure that they continue to remain fit to practise beyond the point of initial registration.

1.2    In late 2012, the Council for Healthcare Regulatory Excellence, now the Professional Standards Authority for Health and Social Care (PSA), published a paper looking at the issues around revalidation: 'An approach to assuring continuing fitness to practise based on right-touch regulation principles.' This paper is attached.

1.3    This paper includes:

- a brief summary of the policy context to revalidation;

- a summary of the outputs and outcomes of the HCPC's work in this area to date (this is an update of a summary provided to the Council at its March 2012 meeting);

- a summary of the key points from the PSA report;

- a discussion of the key issues that arise.

1.4    This paper refers to 'HCPC' throughout.

## 2. Background and context

2.1 The question of how regulators should best assure the on-going fitness to practise of their registrants has been on the policy agenda for some time. This section provides a short summary of some key areas.

- In 2007, the government published the White Paper 'Trust, Assurance and Safety – The regulation of health professionals in the 21st Century' which said that revalidation was necessary for all health professionals but that 'its intensity and frequency need to be proportionate to the risk inherent in the work in which each practitioner is involved'.[1]

- In response to the publication of the White Paper, the HCPC established the Continuing Fitness to Practise Professional Liaison Group (PLG) to explore and make recommendations in this area. The conclusions reached were as follows.[2]

  o Revalidation is one part of the process of assuring continuing fitness to practise.

  o The current evidence suggests that the risk posed by the professions regulated by the HCPC overall is low. However, this area merits further exploration; in particular, conduct was identified as an area of greater risk than competence.

  o Public trust in the health professions regulated by the HCPC is high. However, further work on ways to increase public involvement in regulation is merited. The potential costs of additional regulatory systems are likely to be significant and as such must be clearly justified, balancing the costs against demonstrable benefits.

  o In the light of these findings, existing regulatory systems are currently appropriate and sufficient when considered in the context of the wider environment in which they operate and the risk of harm posed by the professions regulated by the HCPC.

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[1] Department of Health (2007). Trust, assurance and safety – The regulation of health professionals in the 21st century, paragraph 2.29
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_065946
[2] Health Professions Council (2009). Continuing Fitness to Practise: Towards an evidence based approach to revalidation.
http://www.hpc-uk.org/publications/research/index.asp?id=207

- Alongside the PLG's work, the HCPC was represented on a Department of Health (DH) working group looking at the implementation of 'non-medical revalidation'. In 2008, the DH published a set of principles for revalidation based on the group's discussion. The Executive produced a document outlining how the HCPC's existing systems met those principles.[3]

- In 2011, the Command Paper 'Enabling excellence' outlined the government's continued support for medical revalidation, but for other professions said that it had an 'open mind', acknowledging that there was a 'wider spectrum of risk' and that therefore a 'one-size-fits-all' approach would not be appropriate. The cost of revalidation was also acknowledged. The regulators were to continue to develop the evidence base for their revalidation proposals. The Government would agree next steps for implementation 'where there is evidence to suggest significant added value in terms of increased safety or quality of care for users of healthcare services'. [4]

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[3] Council, March 2009. Response to the Department of Health 'Principles for revalidation – report of the working group for non-medical revalidation
http://www.hpc-uk.org/aboutus/committees/archive/index.asp?id=415 (enclosure 16)
[4] Department of Health (2011). Enabling excellence: Autonomy and accountability for healthcare workers, social workers and social care workers.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_124359

### 3. HCPC's programme of work on revalidation[5]

3.1 In 2009, the Department of Health (UK) awarded the HCPC a grant of £360,000 to undertake further work to explore the evidence base which will inform any revalidation system and to explore the potential feasibility of possible models of revalidation.

3.2 The programme of work which would be delivered using the Department of Health grant was agreed, in line with the recommendations made by the Continuing Fitness to Practise PLG report.

3.3 Sections A to G outline each project describing the rationale for the project; and the key findings, observations and/or conclusions as a result. (Please note: some projects have been removed and others have changed in scope since the Council agreed the programme of work in December 2009. This has previously been reported to the Council.)

### A. Review of existing revalidation processes that have been implemented by international regulators

3.4 In 2010, a visit was undertaken to Ontario, Canada to find out more about the 'quality assurance (QA) programmes' put in place by five regulatory colleges regulating professions within the HCPC's remit. These arrangements were similar to what has been proposed for revalidation but were aimed at improving standards.

3.5 These programmes typically involve a three-stage process which is risk-based and proportionate in that the level of scrutiny increases, and the number of registrants decreases, at each stage. They typically included the following.

- Professional development. This included requirements to maintain a CPD portfolio including completing self-assessments and a professional development plan to identify strengths, weaknesses and learning and development needs. They sometimes included specific tests; reflection tools; and/or compulsory CPD subjects or modules.

- Practice assessment. This included a sample of registrants undergoing specific tests of professional skills or peer assessments at an assessment centre or by peer assessors in the workplace.

- Practice enhancement. This included arrangements for remediating registrants who did not meet the requirements in practice assessment.

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[5] http://www.hpc-uk.org/aboutregistration/revalidation/

**Key findings, observations and conclusions**

- The arrangements in Canada were focused on 'quality improvement' – enhancing and improving the practice of all registrants. This raised the question of whether, for the HCPC, the aim of revalidation should be ensuring that threshold standards are met; and/or increasing the standard of all registrants.

- In their evaluation of their QA programmes, the Canadian regulators had found general support amongst registrants. There was limited evidence to support a definitive link between the programmes and the outcomes of improved public protection or improved patient experience. However, we acknowledged that this limitation applied to other aspects of regulators' activities, and that arguably the benefits may not be clear until piloting is undertaken.

- The costs associated with these approaches to revalidation could be significant – amongst the regulators studied, the QA programmes accounted for about 10% of operational costs. We estimated development and implementation costs of £500-£800,000 if we introduced similar processes and on-going costs of upwards of £500,000; considerably more if a practice-based assessment was introduced.

- A number of other areas were identified which might be considered further, including the following.

  - Sampling techniques to check compliance with CPD requirements.
  - Compulsory or prescribed CPD subjects.
  - Multi-source feedback tools as a way for registrants to identify their learning needs.

**B.   Review of existing revalidation processes that have been implemented or are being developed by other UK regulators.**

3.6   This project involved reporting on the existing revalidation processes that have been implemented or are being developed by other UK regulators.

3.7   Overall, there were a variety of different approaches being adopted by the different regulators. The regulators were also at different stages – with some conducting further research; some piloting proposals; and others nearing implementation. A report was produced which described the activities of the regulators up to the end of August 2011.

**Key findings, observations and conclusions**

- The regulators had conceptualised risk differently. This included risks associated with individuals (e.g. relative inexperience in a particular area) and situations (e.g. lone working). One regulator concluded that the risk of harm from practice was low, focussing instead on 'sub-optimal outcomes' – situations where the outcome for a service user is not the best outcome.

- A variety of different approaches were adopted in research examining risk including economic modelling; literature reviews; surveys of registrants; and analysis of complaints data. For most regulators, the research was based on reasonably homogenous practice in a single or small number of similar professions.

- In the proposed revalidation schemes, the outcome of revalidation was linked to continued registration – failure or a failure to participate would lead to removal from the register. For most regulators the anticipated approach to revalidation was to be based on the threshold standards required for entry to the Register.

- Most of the regulators were proposing a phased revalidation process by which the level of scrutiny of registrants increased at each stage.

- All of the regulators are considering the role that CPD plays in revalidation. For some regulators, enhancements to their CPD requirements form a central part in their revalidation proposals.

- Some of the regulators have explored whether they can use appraisal systems already in place to support revalidation, with different conclusions reached dependent on how developed appraisal is within a given profession.

- Professionalism and conduct, as well as matters related to technical competence, feature in some of the revalidation proposals.

3.8  Annex 1 to the PSA report includes a short summary of each regulator's approaches in this area, as of September 2012.

**C.   Professionalism in healthcare professions - qualitative study undertaken by Durham University**[6]

3.9   This study looked at three professions across four different education providers: paramedics (2); occupational therapists (1); podiatrists (1). The research sought to explore what is perceived as professionalism by both students and educators and why and how professionalism and lack of professionalism may be identified. This involved focus group research. 20 focus groups were held with 112 participants.

3.10  The research was precipitated by the observation in the Continuing Fitness to Practise report that, based on fitness to practise data, conduct appeared to be a greater risk than competence. It was further observed that there was some evidence in the medical profession that confirmed a link between conduct during pre-registration education and training and subsequent fitness to practise action. It was suggested that 'a clearer understanding of the potential link between poor conduct during pre-registration education and training and subsequent fitness to practise action would be helpful here in directing our efforts to the area of greatest risk' (pages 33 and 34).

**Key findings, observations and conclusions**

- The term professionalism was 'not easy to define'. Participants' interpretation of professionalism was varied and was conceived as both a holistic concept ('doing the job well') and as a multi-dimensional, multi-faceted concept covering aspects such as professional identity, professional attitudes and professional behaviour. This covered things such as communication and appearance.

- Regulation was seen as providing basic guidance, providing a baseline for behaviour rather than a specification.

- Professionalism had a basis in individual characteristics and values, but was defined by context including factors such as the following.

  o   Organisational support.
  o   The workplace.
  o   Expectations of others (including role modelling).
  o   Specifics of each service user / patient encounter.

- Views of participants did not diverge widely in the study, regardless of professional group, training route or status as a student or educator.

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[6] HCPC (2011). Professionalism in healthcare professionals.
http://www.hpc-uk.org/publications/research/index.asp?id=511

- Participants saw professionalism or professional behaviour as being the result of interaction of practitioner, service user and context, requiring situational judgement. Rather than a set of discrete skills, professionalism is instead a 'meta skill', knowing about what is most appropriate in a specific situation, drawing on appropriate technical and practical skills.

- The research suggests that one approach to the lack of a clear definition of professionalism may be to recode professionalism simply as using 'appropriate behaviour' in relevant communication and technical skills. It is suggested that educators might focus on professionalism by seeking to raise awareness of and increase students' capacity for making professional judgements.

**D.    Service user feedback tools - literature review and Delphi consultation exercise undertaken by the Picker Institute Europe**[7]

3.11   This study involved a literature review to explore 'standardised instruments' developed to gather service user feedback for the professional groups regulated by the HCPC. A Delphi consultation was also undertaken to identify areas of consensus on the use of service user feedback between individuals from professional bodies representing the professions regulated by the HCPC.

3.12   This project was precipitated by the observation in the Continuing Fitness to Practise report that multi-source feedback from patients and colleagues was being trialled as a source of evidence for the GMC's revalidation proposals. It was also observed that some kind of patient feedback measure 'could have the potential to provide structured, regular, external input and verification, which is currently missing from the existing HCPC processes'. This project was therefore about the feasibility of such a tool as part of a revalidation or CPD process.

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[7] Picker Institute Europe (2011). Service user feedback tools - an evidence review and Delphi consultation for the Health Professions Council.
http://www.hpc-uk.org/publications/research/index.asp?id=669

**Key findings, observations and conclusions**

- There were relatively few instruments found relating to HCPC professions. They looked at areas of practice such as communication and respect for privacy.

- Further evidence of the validity and reliability of standardised instruments is needed. Some evidence from the use of feedback instruments for doctors highlights some challenges in applying the instruments, particularly when applying these as summative assessments of doctors' performance.

- Any approach to obtaining feedback for HCPC professions must be tailored to the professional group and, where appropriate, sub-sets of the professional group, and be designed according to judgements about the capacity and willingness of a particular service user group to respond to a particular form of assessment.

- Existing instruments such as the CARE measure should be built upon.

- There was limited evidence of a clear link between the standardised instruments identified in the research and improved professional practice. More needs to be known about the long-term effectiveness of the feedback process and mechanisms for effective formative feedback.

- The Delphi consultation revealed support for the proposition that service users could have a valuable perspective on professional practice, and, with the caveat that good systems were in place, could be useful to inform developments in professional practice. There was less consensus on the proposition that benchmarking against peers was helpful.

- The overall conclusion was that although the case for measuring service user feedback is 'strong, the systems to do so are as yet imperfect and must continue to be developed in ways that accommodate the wide variety of contexts and service user groups encountered by HCPC registrants' (page 4).

**E.**  **Professionalism tool - quantitative study undertaken by Durham University to measure professionalism and track students after graduation**

3.13  This project is related to the qualitative study: 'Professionalism in healthcare professions.' This is five year study concluding at the end of 2014-2015.

3.14  Appendix 2 to this paper is the latest progress report from the Durham University research team.

**F.**  **Fitness to practise multi-variant analysis – data analysis undertaken by Lesley Brooks, Oxford Brookes University**[8]

3.15  This study looked at data from registrants who have reached a final fitness to practise hearing and where a sanction had been applied. It looked at the characteristics of registrants reaching final hearings and whether there were relationships with variables such as age, gender and route to registration.

3.16  The Continuing Fitness to Practise report noted that fitness to practise data revealed that a large majority of fitness to practise cases were about conduct or involved a conduct element, and that the available data seemed to indicate that the professions regulated by the HCPC at that time were 'lower risk' compared to others. The report further concluded that analysis of fitness to practise data to explore correlations between age, location of practice and fitness to practise would be helpful in contributing to the evidence based in this area.

3.17  The study was a case control study. It compared two data sets – the first derived from registrants who had a well-founded fitness to practice case with a sanction applied; the second of a sample of registrants without any fitness to practise cases.

**Key findings, observations and conclusions**

- Age, male gender, grandparenting application route and registration year within the last 10 years were found to be predictors of a well-founded fitness to practise case.

- The research also looked at the independent effects of variables and found that age was not a significant independent predictor.

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[8] HCPC Council December 2012. Revalidation: fitness to practise data analysis.
http://www.hcpc-uk.org/assets/documents/10003DCFenc06-
RevalidationFitnesstopractisedataanalysis.pdf

- Male gender and grandparenting application route were found to be significant independent predictors with the strongest relationships to well-founded fitness to practise cases.

- The finding about the significance of the grandparenting application route was based on a very small amount of data, with registrants who registered in this way also underrepresented in the control data set. In contrast, Fitness to Practise Annual Report data has previously shown no significant difference between the proportion of registrants registered via this route and the proportion of allegations received.

- The finding that male gender was a strong predictive factor mirrors previous data analysis.

- There were some data issues which affected the extent of the analysis that was possible on this occasion. These were, however, historic data issues which do not exist going forward.

**G. CPD audit analysis**

3.18 This proposed study will look at multi-variant analysis of CPD audit data looking at correlations between outcomes and variables such as age, gender and place of registration. This also includes collecting data from CPD profiles on location of practice to examine whether there is a link with outcomes.

3.19 This analysis has yet to commence as further work was necessary to gather and fulfil data requirements for the fitness to practise analysis. We also wanted to build on that experience in deciding the best way of approaching this work.

3.20 We anticipate inviting proposals for this work later in the year.

**4. Professional Standards Authority report on Continuing Fitness to Practise**

4.1     In late 2012, the PSA published a report looking at the role of the regulators in assuring continuing fitness to practise, including revalidation. The report is appended.

4.2     Some key points in the report include.

- 'Continuing fitness to practise mechanisms should be proportionate to the risks posed by their registrants, and are therefore likely to vary between professions.' (Paragraph 2.4; page 3)

- 'Revalidation will not be an appropriate response for all professions, but for high-risk professions it may be.' (Paragraph 2.4; page 3)

- There is a risk based continuum with auditing of 'self-reported CPD' at one end and revalidation at the other.

- The report advocates a focus on outcomes – that regulators should be able to demonstrate that registrants are safe and fit to practise:

  '…regulators should be able to provide assurances of the continuing fitness to practise of its registrants. We propose that this can be and, in most cases, should be achieved by means other than formal revalidation.' (Paragraph 3.4; page 5)

- Standards of conduct as well as competence should form the 'backbone' of continuing fitness to practise requirements.

  '...the primary (though not necessarily only) role of continuing fitness to practise should be that of reaffirming that registrants continue to meet the core standards of competence and behaviour.' (Paragraph 3.12; page 7.)

- The report acknowledges that regulators may wish to look at how much and what sorts of training and learning registrants undertake but concludes that: '…compliance with continuing professional development requirements, while it may be a helpful measure to some extent, is not of itself a demonstration of continuing fitness to practise.' (Paragraph 3.22; page 8).

- A range of risk factors which might inform the regulators' decisions about proportionate approaches in this area are identified. They include factors related to context (e.g. level of practitioner isolation); and activity (e.g. complexity of task). (Pages 12 and 13)

- The report argues that the 'severity and prevalence' of any risks relating to continuing fitness to practise' should inform decisions about the 'regulatory force' required to address them. The level of assurance needed is lower at lower levels of risk. (Paragraph 4.12; page 13)

## 5. Discussion

5.1  The Council is invited to discuss this paper and the attached reports from the PSA and Durham University. The Executive makes no recommendations for any specific actions, but the Council is invited to consider whether any further actions are required as a result of the PSA report.

5.2  This section outlines some key points and observations which might inform the Council's discussion.

### Policy context

5.3  The external policy context has changed since our programme of work commenced. The Government has set out its overall commitment for revalidation but with an 'open mind' and a focus on evidence of 'significant added value'. 'Enabling excellence' said overall:

'…the Government will not support the health professions regulators in taking on any new responsibilities or roles which add to the costs to their existing registrants without providing robust evidence of significant additional protection or benefits to the public.' (Paragraph 2.8; page 11)

5.4  Medical revalidation has recently been introduced and relies upon an infrastructure including specific legislation and statutory rules; responsible officers in the workplace; and guidance and standards from Royal Colleges and others. The system involves doctors undertaking appraisal in the workplace and maintaining a portfolio of evidence including evidence of CPD and quality improvement activity. This informs the recommendations of a network of 'responsible officers' in the workplace. The General Medical Council (GMC) then makes the final decision about whether to renew a doctor's licence to practice.[9] It would appear clear that the Government would be very unlikely at this time to consider similar arrangements for other professions / regulators, with all the attendant financial implications.

5.5  The GMC's and Nursing and Midwifery Council's (NMC's) revalidation arrangements / proposals have recently been discussed by the Health Committee in Westminster. The Committee were critical of the NMC's lack of progress in this area, seeking more information at their next hearing about the timeframes for implementation of a 'proportionate, but effective' revalidation process and which 'high risk groups' would be targeted. (The Committee's report is unclear, however, as to what kind of process they considered would amount to revalidation.)[10]

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[9] http://www.gmc-uk.org/doctors/revalidation.asp
[10] Health Committee (2013). Health Committee - Ninth Report. 2012 accountability hearing with the Nursing and Midwifery Council.
http://www.publications.parliament.uk/pa/cm201213/cmselect/cmhealth/639/63902.htm

5.6     The Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry made the following recommendation for the NMC:

'It is highly desirable that the Nursing and Midwifery Council introduces a system of revalidation similar to that of the GMC, as a means of reinforcing the status and competence of registered nurses, as well as providing additional protection to the public.'[11] (Recommendation 229)

**Observations on the PSA report**

5.7     The following are some observations from the Executive about the PSA report. They are not intended to stimulate discussion and are not inexhaustive.

- The use of the term 'continuing fitness to practise' is to be welcomed. The HCPC used this term early on in its own thinking, because this is more outcomes-focused; and because 'revalidation' is often poorly defined.

- The conclusion that the assurance of continuing fitness to practise 'can and in most cases, should be achieved by means other than formal revalidation' is a sensible one (paragraph 3.4; page 5). The report recognises 'significant variation' in the proposals being developed by the regulators, but usefully recognises that 'there are many possible responses to the challenge of continuing fitness to practise' (paragraph 6.1; page 19).

- The report refers to a risk-based continuum, with revalidation at one end, and 'self-reported CPD' at the other. However, revalidation itself is not really substantially defined (it is a 'periodic assessment of fitness to practise' – footnote 9, page 5) – it is unclear what the 'hallmarks' of a revalidation process are, compared to other measures on the continuum which assure continuing fitness to practise.

- The report usefully identifies aspects of risk considered in research undertaken by the regulators. The biggest challenge, however, is quantifying that risk to extent that there is a robust evidence base to target some registrants rather than others (if such 'targeting' is possible, feasible or desirable). For the HCPC this is perhaps even more challenging. 'Risk' (actual or perceived) is likely to vary between and within different professions. Further, we have the challenge of wishing to maintain a fair, consistent and equitable approach across the professions we regulate (unless we have clear

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[11] Mid Staffordshire NHS Foundation Trust Public Inquiry
www.midstaffspublicinquiry.com

evidence which would lead us to conclude that a differential approach was fair and proportionate).

- One of the risk dimensions is context and whilst the report emphasises the important role of the regulator, it perhaps downplays the role that other organisations and individuals might play in managing risk to the extent that, based on a holistic assessment, further regulatory intervention may not be required. This was the conclusion the Continuing Fitness to Practise PLG reached – that the role of the HCPC needed to be considered in the context of others (including registrants; peers; employers; regulators; professional bodies; service users).

- Some of the approaches introduced by the other regulators might be worthy of careful consideration as part of the forthcoming review of the CPD standards. Some of these changes are about introducing more compulsion into their approaches (e.g. compulsory subjects) as well as introducing changes in line with the HCPC's outcomes-focussed approach.

- Whilst the report concludes that 'standards of conduct' as well as competence should form continuing competence requirements, ensuring that continuing fitness to practise arrangements assure conduct remains a challenge. The Continuing Fitness to Practise report concluded: 'Conduct is associated with the attitudes and values which influence future behaviour – intangible aspects of practice which are difficult to identify and measure…it may be difficult to revalidate conduct in any meaningful way and it is unlikely that a revalidation process would prevent poor conduct occurring.' (Page 26)

**Further work**

5.8 The final piece of work from this programme is an analysis of CPD audit data. The Executive plans to tender for this work later this year (see 3.19-3.21), building on our experience of undertaking a similar exercise for fitness to practise data.

5.9 The planned commencement of work to review the standards of CPD, audits and process in 2013-2014 should also be considered to form part of this work. Whereas hitherto this has been considered a separate piece of work, it appears sensible to consider this as a part of developing any changes to our approach to continuing fitness to practise.

5.10 It is intended that as part of this work research will be commissioned to engage with registrants who have been audited, other registrants and key stakeholders in order to gather information about individuals' and organisations' experiences and perspectives of the CPD standards and audit

process.  This is currently planned to commence by the fourth quarter of 2013-2014.

# An approach to assuring continuing fitness to practise based on right-touch regulation principles

November 2012

council for
healthcare
regulatory
excellence

## About CHRE

The Council for Healthcare Regulatory Excellence promotes the health and well-being of patients and the public in the regulation of health professionals. We scrutinise and oversee the work of the nine regulatory bodies[1] that set standards for training and conduct of health professionals.

We share good practice and knowledge with the regulatory bodies, conduct research and introduce new ideas about regulation to the sector. We monitor policy in the UK and Europe and advise the four UK government health departments on issues relating to the regulation of health professionals. We are an independent body accountable to the UK Parliament.

CHRE will become the Professional Standards Authority for Health and Social Care during 2012.

## Our aims

CHRE aims to promote the health, safety and well-being of patients and other members of the public and to be a strong, independent voice for patients in the regulation of health professionals throughout the UK.

## Our values

Our values act as a framework for our decision making. They are at the heart of who we are and how we would like to be seen by our partners. We are committed to being:

- Focussed on the public interest

- Independent

- Fair

- Transparent

- Proportionate.

## Right-touch regulation

Right-touch regulation[2] means always asking what risk we are trying to regulate, being proportionate and targeted in regulating that risk or finding ways other than regulation to promote good practice and high-quality healthcare. It is the minimum regulatory force required to achieve the desired result.

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1 General Chiropractic Council (GCC), General Dental Council (GDC), General Medical Council (GMC), General Optical Council (GOC), General Osteopathic Council (GOsC), General Pharmaceutical Council (GPhC), Health Professions Council (HPC), Nursing and Midwifery Council (NMC), Pharmaceutical Society of Northern Ireland (PSNI)

2 CHRE, 2010. *Right-touch regulation*. Available at: http://www.chre.org.uk/policyandresearch/336/

# Contents

# 1. Executive Summary

1.1 This paper looks at the role that professional regulation plays in supporting registrants to demonstrate that they are fit to practise throughout their practising lives. Right-touch regulation[3], published in August 2010, sets out the principles that we believe should apply to regulation. It presents a risk-based approach, and argues that regulators should apply only the regulatory force that is necessary to achieve the desired result. We have used these principles to structure our thoughts on continuing fitness to practise.

1.2 In our view, the primary role of continuing fitness to practise should be that of reaffirming that registrants continue to meet the regulator's core standards. Evidence considered in this report suggests that standards of conduct as well as competence should form the backbone of continuing fitness to practise requirements.

1.3 In order to be fit to practise, a professional must practise in accordance with the regulator's standards, including requirements relating to the maintenance of professional skills and knowledge, however, compliance with input-based continuing professional development requirements is not of itself a demonstration of continuing fitness to practise.

1.4 Other regulatory functions can help support the outcomes of the dedicated continuing fitness to practise function. Registration, fitness to practise and education can all contribute in different ways.

1.5 Right-touch regulation recommends taking a risk-based approach to regulatory decisions: mechanisms for assuring continuing fitness to practise should mitigate risks in a manner that is proportionate. Gaining a clear understanding of what registrants do and of the context in which they do it will help to understand and quantify the risks presented by the regulated groups. We should take a broad view of risk and of its causes and consider their impact on both competence and conduct.

1.6 The severity and prevalence of risks should guide decision-making about the regulatory force that is needed to address them. We have found it helpful to think of the range of possible continuing fitness to practise frameworks on a risk-based continuum, with those providing the highest levels of assurance (for the highest-risk professions) at the top of the scale, and decreasing levels of assurance as the risk decreases.

1.7 The information derived from quantifying risks can also allow continuing fitness to practise measures to focus on the practice areas or groups that present the greatest risks, for example the tools used to collect evidence of continuing fitness to practise can be used to gather information about specific areas of performance or conduct; some methods of collecting evidence of continuing fitness to practise can by their very nature help to mitigate certain risks.

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3 CHRE, August 2010. *Right-touch regulation*. Available at: www.professionalstandards.org.uk

1.8 Right-touch regulation also suggests that we should make use of any existing local or national mechanisms that can help with the delivery of their regulatory aims. The challenge will be to ensure that any mechanisms which are chosen to support the delivery of continuing fitness to practise are fit for their purposes.

1.9 In applying right-touch regulation, we found the concept of reliability was a useful way of thinking about the levels of assurance that different continuing fitness to practise measures can provide. By reliability, we mean the extent to which a regulator's test of continuing fitness to practise accurately identifies as 'passes' the individuals who continue to meet their standards and as 'fails' those who do not. Some measures will be more reliable than others, and we suggest this variation should influence the design of each regulator's continuing fitness to practise mechanisms.

1.10 Following the principle of proportionality, the level of risk should determine how reliable a response needs to be. On that basis, the question of whether a continuing fitness to practise framework is effective should be decided by whether it is as reliable as it needs to be to mitigate the risks presented by the profession.

1.11 Finally, we feel it is important that the public understands the levels of assurance these mechanisms can provide, and there should be transparency about what lies behind these decisions that determine how much regulatory force is needed to mitigate identified risks.

# 2. Introduction

2.1 This paper addresses the question of how the public can be assured that their health or care professional is always fit to care for them. More specifically, it looks at the role that regulation plays in supporting registrants to demonstrate that they are fit to practise throughout their practising lives.

2.2 We recognise that professionalism is key to keeping patients and service users safe and maintaining the quality of their care. Professionals, professional bodies, employers and regulators should all do what they can to encourage and embed professional attitudes and behaviour. When it comes to supporting practitioners to remain safe and competent over time, professionalism has an important part to play.

2.3 Regulators also have a duty to ensure that the people on their register are fit to remain registered – they need to have answers to the question: 'how can I know that the professional looking after me is up to date and fit to practise?'. There needn't be a tension between regulation and professionalism here. In developing mechanisms that enable them to periodically assure themselves of the fitness to practise of their registrants, regulators can provide an answer to this question, and in doing so support a culture of continuous learning and improvement.

2.4 Just how regulators choose to gain these assurances will depend on the groups they regulate, and on the context in which their registrants work. Continuing fitness to practise mechanisms should be proportionate to the risks posed by their registrants, and are therefore likely to vary between professions. Revalidation will not be an appropriate response for all professions, but for high-risk professions it may be. We find it helpful to think of the regulatory responses as sitting on a risk-based continuum, with revalidation at one end, and the auditing of self-reported, input based continuing professional development (CPD) at the other. What should be common to all responses is the monitoring of their effectiveness and of the transparency around these arrangements – over time regulators will need to be able to demonstrate that these mechanisms are achieving what they set out to achieve.

2.5 This paper sets out some broad guidance for regulators in the development and ongoing improvement of their continuing fitness to practise frameworks. We hope it will support regulators in taking a thoughtful and flexible approach to the challenge of assuring continuing fitness to practise.

## About our approach

2.6 Throughout this paper we refer to regulators assessing continuing fitness to practise (rather than the term revalidation) because it describes the intended outcome, the purpose of the activity. As discussed above, revalidation is one way of demonstrating continuing fitness to practise. We distinguish between the regulators' responsibility for assuring themselves that registrants continue to be fit to practise – complying with their codes of practice; and the registrants' own responsibility for

continuing professional development which includes but may extend beyond the regulatory components of fitness to practise.

2.7    *Right-touch regulation*[4], published in August 2010, sets out the principles that we believe should apply to regulation. It presents a risk-based approach, and argues that regulators should apply only the regulatory force that is necessary to achieve the desired result. It also stresses that the responsibility for assuring the quality of healthcare needs to be shared among regulators, employers, professionals, the law, and the people who use services. Right-touch regulation, we say, *'is based on a proper evaluation of risk, is proportionate and outcome focussed; it creates a framework in which professionalism can flourish and organisations can be excellent.'*

2.8    In order to apply right-touch regulation to continuing fitness to practise in this paper, we begin by defining the problem – setting out the purpose and scope of continuing fitness to practise. We go on to look at the sorts of risks associated with continuing fitness to practise, and how quantifications of risk should influence the design of continuing fitness to practise mechanisms to ensure that they are proportionate and targeted. Finally, we explain how, by taking into account both reliability and risk, these mechanisms can achieve what they were designed to achieve.

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4 CHRE, August 2010. *Right-touch regulation*. Available at: www.professionalstandards.org.uk

# 3. The purpose and scope of continuing fitness to practise

3.1 This section explores some key questions about the regulator's role in supporting its registrants to demonstrate their ongoing fitness to be on the register.

3.2 In the years following the publication of the report of the Shipman Inquiry[5], there was much debate about the purpose of medical revalidation: was it to root out poorly performing doctors or to reconfirm their fitness to practise? In 2008, the Department of Health published a progress report on medical revalidation[6] in which it was stated, broadly, that the purpose of revalidation was to confirm the fitness to practise of registrants, take remedial action where standards appeared to have been breached, and remove from the register the small proportion of registrants for whom remediation has been unsuccessful.

3.3 In the Command Paper *Enabling Excellence*[7], published in February 2011, the Government made clear that while the development by the GMC of revalidation for doctors should continue as planned, proposals for revalidation for other professions must demonstrate 'significant added value in terms of increased safety or quality of care for users of health care services'. The other regulators have responded to this by taking stock of their work on revalidation and by commissioning research, notably on the risks of the professions they regulate. A summary of the position of each regulator in relation to continuing fitness to practise is available at Annex 1.

3.4 Our last Performance Review[8] stated that the outcome of revalidation or equivalent schemes should be that registrants could demonstrate they were safe and fit to practise. This continues to be our view, as does its corollary that **regulators should be able to provide assurances of the continuing fitness to practise of its registrants**. We propose that this can be and, in most cases, should be achieved by means other than formal revalidation[9]. This paper sets out this position in more detail, using the principles of right-touch regulation.

## What is the purpose of assuring continuing fitness to practise?

3.5 In its paper on continuing fitness to practise published in 2008[10], the Health Professions Council[11] (HPC) touched on an important distinction relating to the purpose of revalidation, between 'quality control' which is aimed at ensuring that

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[5] The Shipman Inquiry, December 2004. *Fifth Report - Safeguarding Patients: Lessons from the Past - Proposals for the Future*. HMSO. Available at: http://www.shipman-inquiry.org.uk/fifthreport.asp. Accessed 22/08/12
[6] Department of Health, July 2008. *Medical Revalidation – Principles and Next Steps*. Available at: http://www.rcpch.ac.uk/sites/default/files/asset_library/Education%20Department/Revalidation/CMO%20Report%20of%20Revalidation%202008.pdf. Accessed 23/08/12
[7] HM Government, February 2012. *Enabling Excellence – Autonomy and Accountability for Healthcare Workers, Social Workers and Social Care Workers*. TSO.
[8] CHRE, June 2012. *Annual Report Volume II: Performance Review Report 2011-2012, Safety First*. TSO.
[9] Where revalidation is defined as a periodic assessment of fitness to practise.
[10] Health Professions Council, October 2008, *Continuing Fitness to Practise, Towards an evidence-based approach to revalidation*. Available at: http://www.hpc-uk.org/assets/documents/10002AAEContinuingfitnesstopractise-Towardsanevidence-basedapproachtorevalidation.pdf.
[11] The Health Professions Council became the Health and Care Professions Council in August 2012

professional standards are met, and 'quality improvement' which aims to improve standards of care generally. They found that proposals for revalidation were often unclear in what they were trying to achieve.

3.6     This distinction had already been touched on in the 2006 Department of Health publication, *The Regulation of the Non-medical Healthcare Professions*. The report stated that a balance needed to be struck between compliance and improvement, and that a framework focusing on both was more likely to 'motivate and engage with the majority who always aim to practise safely'[12].

3.7     More recently, in *Enabling Excellence*, Government stated they would consider proposals for revalidation where 'there [was] evidence to suggest significant added value in terms of increased safety *or* quality of care'[13]. We can interpret 'increased safety' as the quality control option, and 'increased […] quality of care' as the quality improvement option.

3.8     Using research into models in Canada, New Zealand and the UK, the World Health Organization's (WHO) European Observatory on Health Systems and Policies[14] identified a similar classification of two types of model for assessing the competence of physicians:

- The learning model, that rewards activities that improve quality such as attendance at CPD events, self-assessment of learning needs, patient feedback, academic activities and audits, and

- The assessment model in which performance is assessed either reactively, periodically, through systematic screening or through screening of high-risk groups.

3.9     The learning model is input-based, and therefore cannot be said to assure fitness to practise. The assessment model on the other hand aims to assess the fitness to practise of professionals and is therefore output-based, and should, if effectively implemented, be more reliable than the learning model.

3.10    The two options are not mutually exclusive however. Indeed the WHO research identified that where the assessment model was used, it was always in conjunction with the learning model, although the latter model on its own was most prevalent. Under the WHO definitions, the learning requirements are seen as providing the knowledge and improvements needed to allow registrants to succeed under the assessment requirements.

3.11    We feel that quality improvement can likely be achieved through considered and intelligent use of quality control mechanisms: using their various regulatory levers, professional regulators can support and encourage quality improvement. However,

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[12] Department of Health, 2006. *The Regulation of the Non-medical Healthcare Professions: a review by the Department of Health.* p. 11. Available at:
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4137239. Accessed 24/07/12.
[13] The Authority's italics.
[14] Sherry Merkur, Philipa Mladovsky, Elias Mossialos and Martin McKee, June 2008. *Policy Brief: Do lifelong learning and revalidation ensure that physicians are fit to practise?* World Health Organization. p16-17.

professional regulators remain the guardians of minimum standards of conduct and competence, and have a duty to protect the public.

3.12    Therefore, in our view, the *primary* (though not necessary only) role of continuing fitness to practise should be that of **reaffirming that registrants continue to meet the core standards of competence and behaviour**.

## What is the scope of continuing fitness to practise?

3.13    It is important to view *continuing* fitness to practise in relation to the full range of factors that define fitness to practise. All nine regulators have a legal duty to ensure that their registrants are fit to be on their register. How this duty is described varies between regulators in its wording but always consists of a competence element and a conduct element. Whichever model or combination of models is used to assess continuing fitness to practise it is clear that it must encompass both conduct and competence.

3.14    The HPC identified, from an analysis of the outcomes of its fitness to practise cases from 2006 to 2008, that conduct was the predominant risk posed by the professions it regulated[15]. Research published by the General Social Care Council in June 2012[16] also showed that 79% of its cases involved unacceptable behaviour, with only 29% of those cases involving both unacceptable behaviour and poor practice.

3.15    Other fitness to practise statistics back this up, for instance the General Dental Council found that 50 of the 171 issues considered by its Professional Conduct Committee in 2010 concerned either fraud and/or dishonesty, convictions or cautions, personal behaviour, or indecent assault or inappropriate sexual behaviour[17].

3.16    Evidence from the National Clinical Assessment Service (NCAS), the NHS body that looks into concerns about the performance of dentists, doctors and pharmacists in England, Wales and Northern Ireland, also shows that a significant proportion of cases (44% of the cases they dealt with between December 2007 and March 2009) involved concerns about conduct.

3.17    Failings of conduct therefore seem to represent a high proportion of identified failings in fitness to practise.

3.18    Competence is the other essential component of fitness to practise. Competence issues accounted for 50% of the issues considered by the GDC's Professional Conduct Committee in 2010[18], 42% of cases considered by the GSCC (including

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[15] Health Professions Council, October 2008, *Continuing Fitness to Practise, Towards an evidence-based approach to revalidation*; section 5.1.1, page 21

[16] General Social Care Council, June 2012. *Regulating Social Workers (2001-12).* Available at: http://www.gscc.org.uk/cmsFiles/Publications/LR_Regulating_social_workers_2001-12.pdf; accessed 28/05/12

[17] General Dental Council, July 2012. *General Dental Council Annual report and accounts 2011: Regulation Statistical Report, Fitness to practise.* Available at: http://www.gdc-uk.org/Newsandpublications/factsandfigures/Documents/2011%20report%20additional%20figures%20Final.pdf. Accessed 10/10/12

[18] Taking the data from the GDC Annual Report, CHRE has classified the following as competence issues: poor treatment, poor practice management, failure to obtain consent/explain treatment, failure to take appropriate radiographs, and prescribing issues.

the 29% of cases that concerned both conduct and competence), and 54% of cases reported by NCAS[19].

3.19   The NCAS research into the cases it considered between 2001 and 2008[20] suggests that clinical difficulties are more common in the older age groups (although the figures are not statistically significant). This could be symptomatic of the challenge that professionals face in remaining up to date throughout their professional career. In order to remain fit to practise, practitioners have to keep up with developments in the technical aspects of their practice, as well as with work-place practices and cultural norms. This is reflected in the regulators' standards, which all include a requirement to maintain professional skills and knowledge. The evidence suggests that **standards of conduct as well as competence** should therefore form the backbone of continuing fitness to practise requirements.

3.20   Competence is assured at the point of entry on the register through the approval or recognition of pre-qualifying training provision. Once on the register, registrants must at the very least maintain the threshold level of competence, by which we mean the 'contemporary' standard of registration. For activities where practice and technique evolve over time practitioners must also keep up-to-date, meaning that just to maintain a minimum level of competence, they need to be continually developing their skills and knowledge.

3.21   Revalidation is often referred to, as it was in *Trust, Assurance and Safety*, as a means of ensuring that professionals are both fit to practise and up-to-date. These two things are complementary – being up-to-date is a component of fitness to practise. In order to be fit to practise, **a professional must practise in accordance with the regulator's standards, including requirements relating to the maintenance of professional skills and knowledge.**

3.22   For the purposes of assuring continuing fitness to practise, regulators may choose to translate their generic requirements about keeping up to date into something more specific about how much and what sorts of training and learning professionals should undertake, or how they should demonstrate that they have stayed in touch with new developments. However, we caution that compliance with continuing professional development requirements, while it may be a helpful measure to some extent, is not of itself a demonstration of continuing fitness to practise.

**How does continuing fitness to practise fit with other regulatory functions?**

3.23   Other regulatory functions can **support the dedicated continuing fitness to practise function** in providing assurances to the public of registrants' fitness to practise.

3.24   Registration and, where applicable, licensing, form an integral part of continuing fitness to practise mechanisms. Registers are the regulator's public-facing record of who is and continues to be fit to practise, and exclusion or suspension from the

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[19] National Clinical Assessment Service, September 2009. *NCAS Casework, The first eight years*. Available at http://www.ncas.nhs.uk/publications/; accessed 18/06/12
[20] National Clinical Assessment Service, September 2009. *NCAS Casework: The first eight years*. Table 3.2 – concerns by practitioner group. Available at http://www.ncas.nhs.uk/publications/; accessed 18/06/12

register means exclusion or suspension from the profession. Re-registration and re-licensing schemes give the regulators the opportunity to periodically assure themselves and therefore the public of their registrants' fitness to practise.

3.25 Education and training functions can help reduce the numbers of registrants whose conduct and competence fall below acceptable standards later in their careers. This can be achieved not only by maintaining the quality of pre- and post-qualifying education, but also by ensuring that accredited training programmes produce professionals who understand the importance of professionalism and of keeping up to date and fit to practise throughout their careers.

3.26 Fitness to practise mechanisms can also play a part in supporting continuing fitness to practise, by providing valuable information about who is failing to meet standards, which standards are most frequently breached, and how the standards apply in different situations. This information can then be used to help registrants stay above the line, and to inform the design of mechanisms that contribute to mitigating these risks.

## In summary

3.27 In this section, we have established that assuring continuing fitness to practise is about reaffirming that registrants continue to meet minimum professional standards of conduct and competence. We have explained that this can be achieved not only by introducing dedicated continuing fitness to practise mechanisms, but also by ensuring that all other functions contribute to this overarching aim.

# 4. Towards a risk-based approach

4.1    In accordance with the principles of right-touch regulation, we consider in the following section how regulators could use the quantification of risk so that their approach and methods of assessing continuing fitness to practise are targeted and proportionate.

## Understanding and quantifying the risks presented by a profession

4.2    Developing ways of assuring continuing fitness to practise that are proportionate and effective at mitigating risks will require **a clear understanding of what professionals do, and of the context in which they do it.** Some regulators have commissioned research in this area, which we have sought to consolidate in the following paragraphs, in order to get a broad understanding of range of issues that regulators are considering.

4.3    The General Optical Council (GOC) commissioned Europe Economics to determine what the key risks were in the optical professions[21]. They considered a classification of risks based on 'adverse events', which are clinical actions that could result in harm to a patient, such as misdiagnosis of glaucoma; and 'contextual factors', which are the factors independent of the clinical specifics of a patient-practitioner encounter that could influence the level of risk in that encounter, such as the length of time in practice.

4.4    In Table 1, we offer a classification that follows a broadly similar model to this one. It identifies a range of factors that could determine whether a practitioner poses a risk to service users. We have used the research carried out by the different regulators to inform the classification, as well as the table provided in *Trust, Assurance and Safety*[22] and the research carried out by NCAS on its casework. The factors in the table relate to the practitioner and their continuing fitness to practise, and fall into two categories:

- **Context**: this covers variables relating to the context of the professional's employment, and to their education and training.

- **Activity**: this covers factors[23] associated with different health and social care tasks, that determine how risky they may be.

4.5    The table was developed with reference to materials in which causal risk factors were identified as applying, or potentially applying to certain professions or groups within a profession, and we have noted the source of the information in the table for reference[24]. The factors appear in the table in alphabetical order.

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[21]   General Optical Council and Europe Economics, March 2010, *Risks in the optical profession, final report.* Available at: http://www.optical.org/goc/filemanager/root/site_assets/risk_research_cet/risk_report.pdf; accessed 18/06/12.

[22]   Department of Health, February 2007. *Trust, Assurance and Safety – the regulation of health professionals in the 21st Century.* TSO.

[23]   For the purposes of this paper, we have not considered the specifics of these risks, which of course vary from one profession to another, however, we have considered a broad classification.

24 We recommend that the source material is referred to for more detailed information about how these risk factors are thought to apply to specific professions.

4.6　The table also includes our own interpretations of what each risk factor might entail.

4.7　We have excluded from the table:

- Factors where the risk to the patient is unaffected by the individual's competence and/or conduct
- Spurious indicators[25] of risk that may indicate the presence of but are not in a causal relationship with an increase in risk.

4.8　With regard to the latter point, examples of indicators are age, gender and ethnicity, or the 'locum status' of a practitioner. Taking the locum status as an example, the research carried out by Europe Economics for the GOC concluded that 'there is no compelling reason why a locum practitioner should be inherently less competent than one who is permanently employed. [...] It is likely that any increased risk is a combination of individual characteristics […] and systemic failures […]'[26]. The important term here is 'inherent'. If locum practitioners are found to present a greater risk than non-locums, this can most likely be explained by factors relating to employment arrangements, rather than something inherent in locum practitioners.

4.9　In considering whether these causal factors apply to the groups they regulate, we would urge regulators to look for the impact they might have both on the **competence and the conduct** of their registrants.

4.10　This table exemplifies the **broad range of factors that regulators might wish to consider** when determining how much resource to put into continuing fitness to practise, and how to design the continuing fitness to practise mechanisms. Some of them are likely to apply to all professions, such as the length of time in practice. Others may not apply to all professions, or indeed to all groups within a profession.

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[25] We acknowledge that the distinction between spurious and causal is not always clear-cut or indeed easily identifiable – determining which is which is a notorious challenge for researchers. But it is important to note that while spurious indicators may provide a useful indication of where further research is needed, identifying them will not in and of itself enable a regulator to understand the nature of the risk that is posed by its registrants.

[26] Europe Economics, March 2010. *Risks in the Optical Profession, Final Report*. General Optical Council. p 46, para 6.21.

**Table 1: Risk factors associated with continuing fitness to practise**

| Risk factor (*source*) | | CHRE description |
|---|---|---|
| **Context** | **Effectiveness of clinical governance (or equivalent) mechanisms (*GOC*)** | What measures are in place to manage risk and learn from mistakes |
| | **Effectiveness of qualifying training (*HPC*)** | How well the course has taught skills, knowledge, and professionalism |
| | **Frequency of practice (*PSNI, TAS*)** | If practitioner is well-versed in his/her field, e.g. returners to practice, practitioners in predominantly management roles |
| | **Level of autonomy (*TAS*)** | Extent to which practice is monitored and practitioners able to practice independently |
| | **Level of isolation (*GOC*)** | Level of interaction with other practitioners (linked to practice context) |
| | **Level of support (*PSNI)*** | Quantity and quality of appraisals, learning opportunities, etc. to which registrant has access |
| | **Practice context (*GOC, GOsC, TAS)*** | Whether practising in private practice, NHS or non-NHS managed environments, or domiciliary |
| | **Time since qualification (*GOC, NCAS, TAS*)** | Length of time since practitioner qualified (linked to age) |
| | **Workload (*PSNI*)** | Pressure on practitioners to be more efficient; increased stress |
| **Risk factor (*source*)** | | **Description** |
| **Activity** | **Complexity of task (*GOC, TAS*)** | Complexity of diagnosis, procedure, or treatment; including the management of issues related to the service user such as compliance with treatment |

| | |
|---|---|
| **Emotional and psychological engagement** (*CHRE*) | Extent to which intervention poses an emotional and /or psychological risk to the service user |
| **Level of responsibility for service user safety** (*TAS*) | Whether responsible for service user safety, how many responsible for; vulnerability and/or severity of condition |
| **Likelihood and severity of treatment side effects** (*GCC*) | Extent to which practitioner manages negative side-effects |
| **Medical invasiveness** (*TAS)* | Whether the intervention requires invasive medical treatment |
| **Rate of evolution of techniques** (*GOC*) | Level of need for ongoing training and learning |
| **Sexual invasiveness** (*GOsC*) | Whether the intervention requires undressing and/or contact with intimate areas |

**CHRE:** although it did not feature in any of the literature reviewed, this risk factor has been added by the authors, on the basis that if medical and sexual invasiveness can be said to result in heightened risks for service users, so too can psychological or emotional 'invasiveness'.
**GCC**: Europe Economics, February 2010. *Report to the General Chiropractic Council*. General Chiropractic Council.
**GOC**: Europe Economics, March 2010. *Risks in the Optical Profession, Final Report*. General Optical Council.
**GOsC**: KPMG, 2011. *How do osteopaths practise? Executive summary*. General Osteopathic Council.
**HPC**: Health Professions Council, October 2008. *Continuing Fitness to Practise, Towards an evidence–based approach to revalidation*. Health Professions Council.
**NCAS**: National Clinical Assessment Service, September 2009. *NCAS Casework, The first eight years*. National Clinical Assessment Service.
**PSNI**: University of Manchester, June 2011. *Assessing Risk Associated with Contemporary Pharmacy Practice in Northern Ireland, Executive Summary of the Final Report*. Pharmaceutical Society of Northern Ireland
**TAS**: HM Government, February 2007. *Trust, Assurance and Safety – The Regulation of Health Professionals in the 21st Century*. TSO.

## Towards a proportionate and targeted approach

4.11   The principles of right-touch regulation suggest that regulatory responses should be proportionate to risk.

4.12   The **severity and prevalence of any risks relating to continuing fitness to practise should guide decision-making** about the regulatory force that is needed to address them. This approach can also guide decisions about the resources it should be dedicating to continuing fitness to practise.

4.13    Judgements will need to be made about how serious and prevalent a risk factor need to be in order to trigger a regulatory response; which particular factors or combinations of factors are cause for greatest concern; and when the low-level presence of multiple factors becomes problematic.

4.14    We find it helpful to think of the **range of possible continuing fitness to practise frameworks on a risk-based continuum**, with those providing the highest levels of assurance (for the highest-risk professions) at the top of the scale, and decreasing levels of assurance as the risk decreases.

4.15    This can be usefully illustrated with a graph: the level of risk is on the *x* axis (the independent variable), and the level of assurance/ reliability of measurement on the *y* axis (the dependent variable).

**Figure 1: How levels of risk drive levels of assurance**
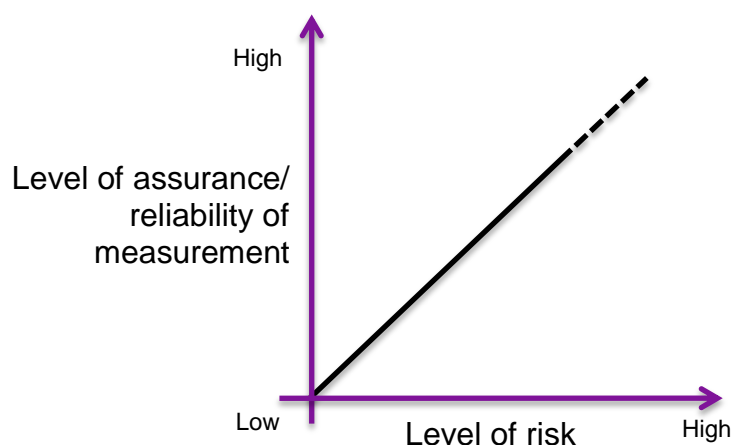


4.16    The information derived from **quantifying risks** could also allow continuing fitness to practise measures to **focus on the practice areas or groups that present the greatest risks**.

4.17    The regulator can tailor the tools it uses to collect evidence of continuing fitness to practise processes to gather information about specific areas of performance or conduct. For example, if there were serious concerns about one-to-one consultations involving intimate examinations, information on that topic could be gathered through continuing fitness to practise mechanisms to try to identify and root out sub-standard practice.

4.18    Some methods of collecting evidence of continuing fitness to practise can by their very nature help to mitigate certain risks. If, for instance, isolated practice is identified as a major risk factor, practitioners could be required to provide feedback from peers on their performance. This provides the regulator with valuable third party feedback, but is also a way of getting practitioners to engage with each other and reflect on their own and others' practice and behaviour.

4.19    Continuing fitness to practise requirements can be adapted to improve performance in specific areas in order to help registrants meet standards – continuing

professional development requirements in particular. For example, the regulator may wish to mandate training on record-keeping if this has been highlighted, perhaps from analysis of fitness to practise data, as an area of particularly poor performance and one which is putting patients and service users at risk.

4.20    Regulators can also use continuing fitness to practise mechanisms to better assure themselves of the fitness to practise of specific groups, if they have good reason to believe that they pose a higher risk to patients and the public. Practitioners with responsibility for a greater number of patients, or who practise with particularly vulnerable groups could be targeted for non-random sampling, for instance. Care must always be taken to ensure that such targeted methods do not discriminate against any groups who share the protected characteristics as defined in the Equality Act 2010.

## Making use of existing mechanisms

4.21    Right-touch regulation suggests that regulators may want to **make use of any existing local or national mechanisms** that can help with the delivery their regulatory aims. This can help reduce costs to the regulator, as well as keeping a check on the overall regulatory burden by avoiding duplication of effort. With continuing fitness to practise, the regulator may be several steps removed from the practitioner – peers, employers, and patients and service users are no doubt closer than the regulator to assess fitness to practise. In the NHS, quality and clinical governance systems, including existing appraisal and patient feedback mechanisms, could be a valuable source of information. For professions who sit outside the NHS, professional bodies may also be able to provide some support.

4.22    The challenge will be to ensure that **any mechanisms which are chosen are fit for their purposes,** as we believe regulators should retain responsibility for assuring their registrant's continuing fitness to practise. This means they must make sure any such delegated mechanisms are providing them with the type and quality of information necessary for them to make timely and accurate decisions about an individual's continuing fitness to practise.

## In summary

4.23    In this section we have illustrated the breadth of factors that can determine whether or not there are risks associated with the continuing fitness to practise of a profession, explained how evaluations of risk can be used to ensure that continuing fitness to practise mechanisms are proportionate and targeted, as well as how regulators can reduce the regulatory burden by making use of existing national and local mechanisms.

# 5. Developing effective and proportionate continuing fitness to practise measures

5.1 We feel that measures of continuing fitness to practise should provide assurances of the competence and conduct of professionals. This means that they must allow regulators to make informed decisions about a registrant's fitness to practise. In this section we consider how this could be achieved in a way that is in line with principles of right-touch regulation.

**Developing reliable and consistent measures of continuing fitness to practise – the theory**

5.2 The techniques used to periodically reaffirm fitness to practice should, in theory, **consistently and accurately identify as a 'pass' those registrants who continue to meet standards, and as a 'fail' those who do not** – in other words their measurement techniques should yield reliable results.

5.3 It may be useful here to look to quantitative research, which often relies on measurement techniques that measure *indirectly* something that is very difficult if not impossible to measure directly. In order for such research methods to be valid, it must be shown that these indirect measurements consistently track the variations in the phenomena they purport to measure – in other words, proxy measures need to be shown to be reliable.

5.4 Opinion polls attempt to predict election outcomes, but what they actually measure is what people are willing to say are their voting intentions in response to an interview or questionnaire. Similarly, a self-assessment questionnaire can only directly measure a registrant's ability to successfully complete the questionnaire, so what regulators using this technique may want to demonstrate is that their questionnaire can be used as a *reliable* indirect measure of continuing fitness to practise. Its ability to do so can be improved by making improvements either to the questionnaire or to the interpretation of the results.

5.5 Another technique used by researchers is 'triangulation', which is the use of a minimum of two instruments to measure the same phenomenon. This works on the basis that overall reliability of measurement can be improved by using several measurement techniques. We consider the basic principle of evidence corroboration can be of huge value, by improving the accuracy of measurement mechanisms. For example, combining a self-assessment questionnaire with patient feedback is likely to result in a more reliable overall assessment than the use of one of them alone.

5.6 A researcher presented with the problem of how to measure fitness to practise would seek to reduce the margins of error as much as possible. Two types of error will arise from these assessments. The first are 'false alarms', also known as false negatives, where assessments incorrectly identify a person as unfit. These errors have cost implications and present difficulties for registrants and sometimes employers, but they are not risky as such. The second are false positives, when the

system fails to identify someone who is not fit to practise – these errors present a greater risk than false negatives. Improving reliability is important because it should help to reduce both types of error.

5.7 This concept is usefully illustrated by the multi-stage funneling processes proposed by some regulators. These processes involve an initial high-level screening of a large number of registrants with triggers for further investigation, examination of more detailed evidence, referral for assessment, and finally regulatory action if the registrant is identified as unfit to practise. Built into this model is the tacit acknowledgement that the initial screening process will inevitably pick out for further investigation a number of registrants who are fit to practise, but the model is designed to screen out these registrants in subsequent stages of the process.

5.8 Typically, reducing the number of false alarms results in an increase of false negatives – 'lowering the bar' to avoid missing any genuine concerns will undoubtedly lead to more false alarms – and vice versa. We should expect some trade-off between reducing (or not increasing) the burden of regulation, and reducing the number of incorrect 'fit to practise' outcomes. For this, we suggest regulators consider the levels of risk that they are prepared to tolerate when it comes to the false positives.

5.9 That said, generally improvements can be made to reduce both types of error, for example by changing the nature of the test, or by improving the regulator's assessments of continuing fitness to practise submissions. For this to happen, however, regulators would need to develop a sound understanding of the results their continuing fitness to practise tests are yielding, in terms of false negatives and as well as false positives. This will involve scrutinising and learning from their own data as well as from external research resources.

5.10 **Reliability** refers here to the extent to which a regulator's test of continuing fitness to practise **accurately identifies as 'passes' the individuals who continue to meet their standards and as 'fails' those who do not.** We put forward this concept as a useful way of thinking about the levels of assurance that different continuing fitness to practise measures can provide. Some measures will be more reliable than others, and we suggest this variation should influence the design of each regulator's continuing fitness to practise mechanisms.

5.11 Developing an understanding of reliability and consistency can take place in testing and piloting, but we recommend it also forms part of the regulator's ongoing performance monitoring of continuing fitness to practise. An **intelligent and agile** continuing fitness to practise function should be capable of improving and adapting over time, without necessarily becoming more costly or burdensome.

**Developing proportionate and effective measures of continuing fitness to practise – the practice**

5.12 Following the principle of proportionality, if reliability is the key defining variable of different continuing fitness to practise frameworks, then it is **the level of risk that should determine how reliable a response needs to be**. The extent to which regulators are willing to compromise on reliability of measurement should be

determined by their assessment of what **level of risk they are prepared to tolerate**.

5.13    As we saw above, the risks presented by different professions are likely to differ in type, severity and prevalence, so the challenge faced by each regulator is different.

5.14    For a very high risk profession, it would be appropriate for a regulator to seek highly reliable ways of measuring registrants' continuing fitness to practise. Regulators of lower risk professions on the other hand may not need to have such high levels of confidence in their continuing fitness to practise decisions.

5.15    Effectiveness can be defined as the ability of a measure to achieve the desired result. On that basis, the question of whether a continuing fitness to practise framework is **effective** should be decided by **whether it is as reliable as it needs to be to mitigate the risks presented by the profession.**

5.16    Finally, in line with the Better Regulation Principles[27] of **transparency and accountability**, we feel it is important that the **public can understand the levels of assuranc**e these mechanisms can provide; there should also be transparency about **what lies behind these decisions** that determine how much regulatory force is needed to mitigate identified risks.

## In summary

5.17    In the final section of this paper, we considered the theory of effective continuing fitness to practise measurement, and suggested that reliability of measurement might be a useful way to think about how effective a continuing fitness to practise model is. We went on to apply the all-important principle of proportionality to this, by recommending  that regulators ensure that the levels of assurance of continuing fitness to practise they seek are appropriate to the level of risk presented by the profession.

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[27] http://www.bis.gov.uk/policies/bre/principles-of-regulation. Accessed 15/10/12.

# 6. Conclusion

6.1 At the time of writing, there was significant variation in the continuing fitness to practise proposals being developed by the regulators we oversee (see Annex 1). This reflects the range of professions they regulate as well as the different circumstances in which these professionals practise. We feel this is in keeping with everything we have put forward in this paper – there are many possible responses to the challenge of continuing fitness to practise, revalidation is just one of them.

6.2 The focus of this paper is the role that the regulation can, and we feel should play in supporting registrants to continue to meet the regulator's standards of professional conduct and competence. We hope that it may provide some useful guidance to regulators for the development and review of their continuing fitness to practise mechanisms.

6.3 We recognise the crucial role that professionalism can play in maintaining and improving standards of care and practice. However, regulators nevertheless have a duty to maintain the integrity of their register, and continuing fitness to practise seems likely to become the regulatory function that fulfills this role.

6.4 We have suggested in this paper that regulators may want to think about the effectiveness of their continuing fitness to practise measures in terms of how reliably they identify registrants who fail to meet their standards.

6.5 How reliable they need their continuing fitness to practise mechanisms to be should be determined by the seriousness and prevalence of the risks presented by each profession. When considering such risks, we should take a broad view, to encompass factors relating both to context and practise, and conduct as well as competence.

6.6 We also put forward the concept of a risk-based continuum on which potential continuing fitness to practise responses could sit, with revalidation at the top end, and other responses further down the scale. In our view, different professions sit at different points on this scale, and regulators may want to think about how their position(s) on this scale might influence their response(s). We hope that the approaches taken will be both intelligent and agile, making use of existing mechanisms where possible, and adapting in response to intelligence about their effectiveness and impact.

# 7.    Annex 1: health and care regulators' plans for continuing fitness to practise

*CHRE oversees nine health and social care professional regulators in the UK. This annex describes their plans for continuing fitness to practise.*
*These descriptions were confirmed as accurate by each of the regulators in November 2012.*

## General Chiropractic Council

In 2010, the GCC consulted on a revalidation scheme based on improving 'sub-optimal outcomes'. These proposals were developed from the research they commissioned into the risks of chiropractic, which focused on clinical risks. The responses to the consultation were not overly supportive and in March 2011 its Council decided not to proceed with these revalidation proposals on the grounds that they would not deliver sufficient demonstrable benefits.

In September 2011, the GCC set up a new Revalidation Working Group to take forward the revalidation work, reporting to Council on a regular basis. The Council formally recognised the need for it, as a regulator to assure the continuing fitness to practise of its registrants.

In June 2012, the GCC's Council stated that patient expectations and the views of key stakeholders should inform the proposals to be put to Council later in the year, and that a full consultation on a proposed revalidation scheme would be conducted during late 2012 – early 2013.

The GCC is in the process of developing proposals for consultation based on a broad definition of risk covering both conduct and competence, and informed by the work on patient expectations and the outcomes of its initial communication with key stakeholders.

The Council's long-term aim is to introduce an effective and proportionate system for assuring chiropractors' continuing fitness to practise that will achieve the public's confidence and enhance the quality of patients' care.

### Useful links

- Updates on the Council's thinking on revalidation – http://www.gcc-uk.org/page.cfm?page_id=481
- Papers being considered by Council and Council's minutes – http://www.gcc-uk.org/page.cfm?page_id=1598

## General Dental Council

The GDC regulates seven dental professionals (dentists, dental nurses, dental hygienists, dental therapists, orthodontic therapists, dental technicians, clinical dental technicians). It is committed to developing a revalidation model for dentists that is 'workable,

proportionate and cost effective'[28]. It consulted on a set of revalidation proposals for dentists in late 2010 based on a three-stage process.

In April 2012 it held a national conference on 'Maintaining Quality and Impact of CPD in Dentistry' in the context of continuing assurance of fitness to practise, and published an associated discussion document.  There has been further extensive engagement with the dental sector on revalidation and CPD through regular presentations, an online survey and a call for views.

In response to the publication of Enabling Excellence, it is now consolidating its evidence base for revalidation in parallel with a thorough review of mandatory CPD requirements.

Some research has recently been undertaken into CPD, looking at the literature available in dentistry about effectiveness of CPD, and employer and registrant perspectives on CPD. The former report found some evidence of benefits of long-term, self-directed and planned CPD activity. The latter research report focused on perspectives on the GDC's specific CPD framework, looking at how CPD is undertaken and what factors influence it. It found support for the main elements of the CPD framework, but recommended moving towards the recording of outcomes rather than just inputs. A proposed outcomes-based model of CPD linked to Standards for Dental Professionals and registration retention was opened for public consultation in late 2012.

In November 2012 a study commissioned by the GDC and delivered by the Picker Institute Europe considered the effectiveness of existing performance management and quality assurance tools in dentistry for indicating continuing fitness to practise.  The GDC is also in the process of commissioning research into risks in dentistry.

It is currently intended that the introduction of new enhanced scheme of mandatory CPD, based on planning, reflection and learning outcomes, and linked to on-going registration, is a key step in providing further assurance of continuing practice of dental professionals. A fuller scheme of revalidation will continue to be developed and be introduced for dentists as appropriate once a new CPD scheme is embedded.

**Useful links**
- GDC revalidation webpages – http://www.gdc-uk.org/Dentalprofessionals/Revalidation/Pages/default.aspx


**General Optical Council**

In 2009, the GOC commissioned extensive research into the risks of the optical profession. The research highlighted two categories of risk areas: adverse events, which are competency issues that can present a risk to patients, and the contextual factors that can have an effect on the likelihood or severity of the risk.

The researchers recommended[29] that revalidation should focus on improving decision-making in the higher risk areas through focused training requirements, that areas of lower risk could be addressed through an enhanced CET scheme, and that revalidation could include an interactive element.

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[28] http://www.gdc-uk.org/Dentalprofessionals/Revalidation/Pages/default.aspx, accessed 20/03/12
[29] Europe Economics, March 2010, *Risks in the optical profession: A report for the General Optical Council*

The GOC also carried out a number of consultation events[30] and incorporated the feedback obtained from patients, public and other stakeholders at these events into their proposals. In 2010 and 2011 the GOC conducted further research into the use of appraisal, patient feedback, the effectiveness of its existing CET Scheme and the impact of undertaking CPD on changing behaviour.

The GOC used the research findings to formulate a business case to enhance its CPD scheme to respond to the risks identified. The enhanced CPD scheme stipulates a minimum number of CPD points and compulsory learning topics based on the GOC standards of competence and conduct for each of its registrant group. Registrants are required to undertake 50% of their activity in interactive learning methods and it is compulsory to participate in peer review.

All CPD activities are accredited by the GOC in advance with greater weight given to activities involving discussion with peers and reflection on own and others practise than self study and distance learning.  It also will show less leniency towards non-compliance than at present with registrants progress being tracked annually and failure at end of the 3 years cycle resulting in the registrant failing to be able to demonstrate their continued fitness to practise and therefore at risk of being removed from the Register.

The GOC will introduce its enhanced Continuous Education and Training (CET) scheme on 1 January 2013.


**Useful link:**
Enhanced CET webpage: http://www.optical.org/en/our_work/Education/enhanced-cet-post--2012/index.cfm


### General Osteopathic Council

Following the publication of *Trust, Assurance and Safety* in 2007, the GOsC consulted on a revalidation scheme in 2009[31] from which emerged a model [32] consisting of a four-stage process, the first of which is a self-assessment. The other three stages constitute an escalation of measures for submissions that are deemed not to have met the required standards.

Since then, the GOsC has developed its thinking to focus on enhancing quality as well as meeting minimum standards and is undertaking a year-long pilot to produce a scheme which supports osteopaths to demonstrate continually that they are up to date and fit to practise (as opposed to a one point-in-time fixed assessment).

Osteopaths typically work in independent practice – without teams or employers – and usually operate as a point of first contact for patients. Research has shown that complaints to the regulator and to insurers comprise both conduct and competence issues (see adverse events below). The GOsC has therefore explored a scheme which enhances both the regulatory role and the individual role to make up for the absence of teams or employers, and which looks across all the standards for registration.

Being aware of the limits of competence and being able to refer are key components of practice and using evidence to inform a self-assessment is important in this context. The

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[30] http://www.optical.org/goc/filemanager/root/site_assets/revalidation/revalidation_consultation_report.pdf,
[31] http://www.osteopathy.org.uk/uploads/revalidation-for-osteopaths.pdf, accessed 03/04/12
[32] http://www.osteopathy.org.uk/uploads/revalidation_poster.pdf

GOsC has commissioned a series of projects about risk in osteopathy which were coming to fruition at the time of writing. These findings will be incorporated into an independent evaluation and impact assessment of our revalidation pilot to support an understanding of proportionality and patient safety in the context of osteopathy.

The GOsC is developing its thinking in two ways:

- It is piloting a self-assessment scheme with approximately 10% of its registrants. The standards for the revalidation pilot are the Osteopathic Practice Standards – the core standards for registration. Assessment criteria have been developed. The participants in the pilot are required to produce a variety of objective and subjective evidence to demonstrate they meet all the standards. An independent evaluation and impact assessment, due for publication in the spring of 2013, of the scheme will explore the costs and benefits and proportionality of the approach in osteopathy.
- It is also exploring how the existing CPD scheme might be enhanced to better support osteopaths to demonstrate that they are up to date and fit to practice through its CPD Discussion Document. The Document looks at what makes CPD effective in osteopathy and how it might be enhanced. The responses will be analysed and published in the spring of 2013.

Detailed proposals for regulating continuing fitness to practise in osteopathy should be published in the spring of 2013 for further consultation.

**Useful links**

- CPD Discussion Document (September 11 to September 12) – http://www.osteopathy.org.uk/uploads/cpd_discussion_document_public.pdf
- Revalidation Poster – outlines the background to the development of the scheme - (October 2010)- http://www.osteopathy.org.uk/uploads/revalidation_poster.pdf
- Revalidation Pilot Poster – outlines how the pilot is working - (September 2011) - http://www.osteopathy.org.uk/uploads/revalidation_pilot_poster.pdf
- Adverse Events Research (2008 to 2012) – http://www.osteopathy.org.uk/resources/research/Adverse-events-studies/
- Patient Expectations Research (2009 to 2010) – http://www.osteopathy.org.uk/resources/research/Osteopathic-Patient-Expectations-OPEn-study/
- Evaluating the revalidation scheme including costs, benefits and proportionality - http://www.osteopathy.org.uk/practice/Revalidation/Research/

Revalidation Pilot Manual (September 2011) – the Revalidation Pilot Participation Manual consists of the following:

- **Part 1**: About the pilot - http://www.osteopathy.org.uk/uploads/part1_about_the_pilot.pdf
- **Part 2**: Guidelines for osteopaths seeking revalidation (revalidation pilot) - http://www.osteopathy.org.uk/uploads/part2_guidelines_for_osteopaths_seeking_revalidation_pilot.pdf
- **Part 3**: Osteopathic Practice Standards - http://www.osteopathy.org.uk/uploads/osteopathic_practice_standards_public.pdf

### General Medical Council

The GMC is on track to introduce revalidation at the end of 2012. At this point, responsible officers and other medical leaders will be required to revalidate in order to maintain their licence to practise. By 2018, all licensed doctors will have undergone revalidation to maintain their licence.

Revalidation is the process by which licensed doctors will periodically demonstrate that they remain up to date and fit to practice. Licensed doctors must participate in revalidation in order to maintain their licence. The licence was introduced in November 2009, and revalidation will enable the GMC to control access to the practice of medicine based on the outcomes of individual revalidation decisions.

The revalidation framework relies on local appraisals, to which doctors must contribute a portfolio consisting of six different pieces of evidence: continuing professional development, quality improvement activity, significant events, feedback from colleagues, feedback from patients, and a review of complaints and compliments.

It is the role of the responsible officer to make a recommendation to the GMC, based on the appraisal outcomes and any other information available to them, about whether or not the doctor is up to date and fit to practise.

The GMC will carry out its own checks to ensure no other concerns have been raised about that doctor. If this is the case, the doctor is revalidated and they continue to hold their licence to practise.

**Useful links:**

- The Good Medical Practice Framework for appraisal and revalidation, which translates the key guidance into a set of domains for doctors and appraisers to use in appraisal – www.gmc-uk.org/doctors/revalidation/revalidation_gmp_framework.asp
- Guidance on the supporting information doctors have to bring – www.gmc-uk.org/doctors/revalidation/revalidation_information.asp
- New guidance for ROs (intended as a live online document as we will be updating it frequently) – www.gmc-uk.org/FINAL_Responsible_Officer_Protocol_16.08.2012.pdf_49621408.pdf


### General Pharmaceutical Council

The GPhC is committed to introducing revalidation to require pharmacists and pharmacy technicians to demonstrate their continuing fitness to practise. They have decided to proceed with this work on the grounds that it may act as a catalyst for improving practice.

They set up a Task and Finish Group in February 2011 to advise their Council on how best to take forward the revalidation agenda. They were tasked with considering the outputs from the Royal Pharmaceutical Society of Great Britain (the previous pharmacy regulator) on revalidation, the terminology to describe what the GPhC was trying to achieve, revalidation in the context of the risks in pharmacy practice, and approaches taken by other regulators.

This led the GPhC Council to agree a definition of revalidation as:
"*The process by which assurance of continuing fitness to practise of registrants is provided and in a way which is aimed primarily at supporting and enhancing professional practice.*"

A number of high level principles for revalidation have also been agreed, and the GPhC is committed to building on these principles as a basis for taking forward revalidation development. To inform the development of its proposals, it held an event in July 2012 for stakeholders, including pharmacists, pharmacy technicians, and patients and public representatives. The event enabled discussion of the principles of revalidation, and focused on sources of information and evidence, and the types of assessment and standards that would be relevant for revalidation, including existing systems that potentially could contribute.

How the GPhC's revalidation mechanisms would relate to its existing CPD requirements has yet to be decided. Its CPD scheme is based on a reflective cycle, as set out in the requirements made by the CPD standards and CPD framework.

**Useful documents**

- Recommendations from the Task and Finish Group – GPhC Council Meeting paper January 2012 – http://pharmacyregulation.org/sites/default/files/Revalidation%20Recommendations%20from%20the%20RG%20-%20Council%20January%202012.pdf
- CPD requirements – http://www.pharmacyregulation.org/regulatingpharmacy/educationandprofessionaldevelopment/continuingprofessionaldevelopmentcpd/index.aspx


## Health and Care Professions Council

When considering the question of continuing fitness to practise in 2008, the HCPC (formerly HPC) found that the majority of its cases concerned conduct and lack of professionalism rather than competence, and that revalidation might not be the most appropriate response to the risks posed by their registrants.

They suggested that 'further regulation [in the area of continuing fitness to practise] was not necessary for the professions regulated by the HPC', but identified a number of areas for further investigation.

They subsequently embarked on an extensive programme of work to understand the risks posed by their registrants, and how they can address them. A key focus of this work so far has been professionalism as a means of preventing the risks. The HCPC is also in the process of analysing its FtP and CPD data to determine the common characteristics of the registrants who fail to meet their Standards.

The HCPC's CPD framework does not specify the amount of learning that must be undertaken. Registrants who are audited must report on the CPD they have undertaken and how they feel it has benefited their practice and service users.

**Useful links:**

- Continuing Fitness to Practise: Towards an evidence based approach to revalidation – http://www.hcpc-uk.org/publications/research/index.asp?id=207
- Revalidation paper, HCPC Council meeting, 29 March 2012 – http://www.hpc-uk.org/aboutus/committees/archive/index.asp?id=606 (click on enclosure 08)

## Nursing and Midwifery Council

The NMC's initial proposals for revalidation were signed off by Council in 2011 and have been refined following a UK-wide engagement exercise with around 2,000 stakeholders.

The NMC remains committed to introducing revalidation, but other priorities mean that this will happen no earlier than 2015.

The NMC model relies on its existing legislation at the outset but aims to provide greater assurance that registrants are upholding standards of proficiency and the code, and remain fit to practise, by introducing new post registration standards and enhancing the renewal of registration process. All nurses and midwives must complete this process every three years to stay on the register.

Nurses and midwives will be required to comply with new 'revalidation standards'. These will emphasise that it is their responsibility to maintain their continuing fitness to practise. The standards will compel registrants at the point of renewal to demonstrate that they have:

- Complied with the Code (NMC's standards of conduct, performance and ethics)
- Met the standards of proficiency relevant to their part(s) of the register and ensured that their skills and knowledge remain up to date and relevant to their practice
- Engaged in CPD that has a positive impact on patient safety and well being
- Obtained third party confirmation that they have met these standards, which may include evidence of employer appraisals, supervision meetings for midwives (and for nurses where these exist, for instance in Northern Ireland), peer review and patient or user feedback.

A sample of nurses and midwives will be selected for audit from the group that is due to renew its registration. If the evidence they submit is not deemed sufficient to demonstrate compliance, they will be offered the opportunity for remediation. If remediation is unsuccessful or not taken up, their application to renew will not be granted and their registration will lapse. There will be a right of appeal. The revalidation sample is likely to include a random stratified element and a targeted element, the latter based on risk hypotheses that will be tested through comparison with the generality of registrants. This approach will enable the NMC to develop a sounder picture of risk and its mitigation over time.

**Useful links**

- NMC revalidation page - http://www.nmc-uk.org/Nurses-and-midwives/Developing-standards-and-guidance/Revalidation/


## Pharmaceutical Society of Northern Ireland

The PSNI has considered the question of revalidation, and commissioned research into the risks of the pharmacy profession. The research found that patient-facing roles and returners to practice presented the greatest risks, and recommended that any revalidation scheme should be based on a set of practice standards, and make use of CPD in a risk-based model.

The current Council of the PSNI remains committed to ensuring the continuing fitness to practise of its registrants, although it has not formulated explicit plans, as a completely new Council will be appointed on 1st October 2012 following amendment to the legislative framework. The current Council is in the process of putting its CPD framework on a statutory footing as a consequence of legislative reform.

The new Council, currently in shadow form, has committed to entering dialogue with the Department of Health, Social Services and Public Safety in relation to the Department's policy on continuing fitness to practise for pharmacists in Northern Ireland, recognising that their approval would be required before introducing the necessary legislation to support any new model.

**Useful links**

- PSNI revalidation webpage – http://www.psni.org.uk/professionals/continuing-professional-development/revalidation.php

Interim report

# Development of a questionnaire to explore professionalism as a multi-dimensional construct

**Professionalism and Conscientiousness in Healthcare Professionals – Study 2**

**Interim report for the HCPC**

**April 2013**

Dr Bryan Burford

Dr Madeline Carter

Dr Gill Morrow

Ms Charlotte Rothwell

Prof John McLachlan

Prof Jan Illing

Centre for Medical Education Research

Durham University

## Executive Summary

This report presents the development of a questionnaire for measuring perceptions of professionalism as a multi-dimensional construct, and preliminary analysis of data collected from students and qualified paramedics.

This work follows earlier qualitative work published by the HCPC which examined perceptions of professionalism in three professional groups, including paramedics.

Analysis of the questionnaire data indicates that it constitutes a valid and reliable tool for the exploration of professionalism, although further confirmatory work will be necessary.

Factor analysis identified 11 potential dimensions of professionalism: Pride in professional identity; Organisational Support; Focus on time; Comparative professional status; Focus on professional development; Flexible communication; Appropriate behaviour; Confidence in action; Communication with patients, and Adherence to rules.

Analysis identified some systematic differences between groups on these measures. There are differences between students and qualified paramedics on several of the dimensions, as well as trends for some variation with age and sex of respondents. Some measures change over time, through training and into practice.

The different dimensions were also compared with an overall rating that has been found to predict performance to a limited extent in doctors.

Analysis shows that this overall rating is not strongly linked to the dimensions of professionalism identified in earlier work, particularly those related to performance in practice.

While self-ratings on this measure do reflect attitudes towards communication with patients, other strong relationships are with the perceived status of the profession, support from employers/educators, and individual identification with the professional group. The overall rating may therefore be a proxy for respondents' attitudes towards the profession overall, rather than reflecting perceptions of behaviour.

Educators' ratings of students on this measure have a similarly weak relationship with the separate dimensions of professionalism, although as there are significant relationships with both 'communication with patients' and 'ethical practice', it may be more valid as an external rating than a self-rating. However it may simply be that educators and students are attending to different definitions of 'professionalism' in completing this scale.

Findings have relevance to understanding the nature of professionalism, to practical issues relating to its measurement, and to policy which may seek to improve it.

Measures of professional identity show that identification as a paramedic increases sharply post-qualification, as would be expected, but that the importance of that identity drops off. This is interpreted as indicating the importance of attaining the paramedic identity for students, rather than its being a minor concern for the qualified paramedics. However, there is a distinct pattern that perceptions of organisational support for professional practice decline steeply in qualified paramedics. This suggests that professionalism should not be seen just at an individual level as something addressed in training and education, but rather as something that needs to be sustained over time, throughout an organisation.

# Contents

# 1    Introduction

This report summarises progress on the second, quantitative study being carried out as part of the project looking at professionalism and conscientiousness in healthcare professionals. Specifically, it describes progress since April 2012 on the development, data collection and analysis of a questionnaire exploring the relationship between different components or elements of professionalism that were identified in the qualitative Study 1 [1]. While Study 1 considered three professional groups, Study 2 is concerned solely with paramedics.

The aim of study 2, as stated in the research protocol, was: "To develop a meaningful quantitative approach to assessing professionalism, and to investigate links with the Conscientiousness Index (CI)". Early on in the development of the study, it was found that there were issues around the implementation of the Conscientiousness Index (a measure involving the collation of basic, objective behaviours which may be linked to professionalism [2]) which may place obstacles in the way of its effective collection in the partner organisations (one University, one NHS Trust). These concerns were summarised in Interim Report 1 [3], and included both logistical issues (the workload and feasibility of reliably collecting CI information for all students), and ethical (the feeling of some staff that such monitoring is antithetical to the educator-student relationship). While these issues have been addressed in part, practical issues remained limiting the available data, and so this report does not include any CI data. It is still hoped that CI data will be available for comparison with the questionnaire in the final two years of the project.

This report is concerned with the development and piloting of a questionnaire, meeting the following objectives as stated in the protocol:

- "To develop a professionalism scale or scales, informed by existing theoretical approaches to professionalism and related constructs such as professional identity. Where possible existing tools will be adapted."
- "To explore the psychometric properties of the scale…including concurrent validity and reliability. "
- "To compare the component scale scores of the trainee sample with those of qualified paramedics, to see which elements of professionalism may develop over time."

Three organisations were involved in this part of the study – referred to as Ambulance Trust A, University B and Ambulance Trust C.


# 2    Questionnaire development

The questionnaire was developed in four phases:

1. Literature review –> first draft
2. Workshop –> second draft
3. Pilot data collection –> final draft
4. Full data collection

The first two phases were described in detail in Interim Report 2 [4], but are summarised here.

## 2.1 Literature review

An initial review of the literature relating to professionalism, both in healthcare and a wider societal context was considered alongside the findings from the qualitative study. This process identified a number of elements, components or dimensions of professionalism which any quantitative measure should include. These were:

- Professional status
- Professional identity
- Attitudes
- Behaviours
- Organisational context
- Situational awareness

Attitudes and behaviours were further subdivided with reference to the five 'clusters' of professionalism identified by Wilkinson et al [5]:

- Adherence to principles of ethical practice
- Effective interactions with patients and with people who are important to those patients
- Effective interactions with other people working in the healthcare system
- Reliability
- Competence, Knowledge, Commitment to autonomous maintenance and continuous improvement of competence (henceforth referred to as 'competence, knowledge and improvement')

The review, and results from Study 1, indicated further dimensions:

- Pride in profession
- Appearance
- Flexibility
- Behaviour outside work

Candidate items for a first draft of the questionnaire were selected on the basis of meeting criteria of being self-reported numerical scales, and constituting a short enough draft for realistic completion in a postal survey.

Two global measures, which treat professionalism as an undifferentiated holistic construct, were also included – see box 'Global measures'. The first was a single scale derived from the American Board of Internal Medicine's 'Project Professionalism' document [6] and used in some influential work in medical professionalism [7]. This measure has 'compound anchors' – each end of the scale has a number of descriptors. This approach is often avoided in questionnaire design because it may conflate different constructs and beliefs, and contains assumptions that each descriptor varies in the same way. There is consequently a risk of misrepresenting a respondent's views. For this reason the second unidimensional scale was included which identified professionalism as a relative construct (compared to 'other paramedics'). This measure also used a 'visual analogue' scale without printed numbers, to reduce respondents' focusing on a numerical quantity.

The initial list of candidate items included 137 items. This was felt to fail the criterion of sufficient brevity for an effective self-completion questionnaire, and so following review by the research team to eliminate cumbersome, repetitive or unclear items, a first draft of 105 scale items (plus demographic questions) was developed and taken forward for initial piloting with student paramedics.

## 2.2  Pre-pilot workshops

The first draft was revised in two workshops with student paramedics in Ambulance Trust B (12 participants in each workshop). Participants discussed each item in turn, focusing on issues of clarity (did the questions make sense?), relevance (were questions relevant to paramedics?) and utility (will the questionnaire produce useful data, or will respondents be reluctant to respond honestly?). Concerns were raised about whether some items would elicit truthful or complete answers if they involved a disclosure of breaching or bending of rules. These items were revised to be less specific, and to require responses which may be seen as less personally revealing, although not all concerns could be addressed while retaining items.

The first workshop led to the elimination of 19 items and revision of others, while the second led to further revisions and the addition and reinstatement of other items. The second main draft following both workshops included 102 scale items. This draft was then used to collect pilot data.

## 2.3  Pilot data collection

### 2.3.1  Method

The second draft was used to collect data from second and final year undergraduate student paramedics at University B. Questionnaires were distributed, completed and collected in lectures. All students who attended those sessions completed the questionnaires.

*2.3.2   Results and revisions to questionnaire*

Forty-three questionnaires were returned – 18 from Year 2 and 25 from Year 4 BSc students. Data were reviewed for content validity, as indicated by completion rates for different items, free text comments and further consideration by the researchers. A number of items were removed following this, leaving a final questionnaire of 79 items (plus demographics) for the main data collection.

# 3   Final data collection

## *3.1   Final questionnaire*

The final version of the questionnaire is included in Appendix A. It contained 79 items with Likert scale responses, items asking for information including respondents' role and job, experience in the ambulance service, age and sex, as well as a free text area for further comments.

There were two global items with a nine-point response scale:

- ABIM measure with compound anchors
- Measure relative to other paramedics

The other 77 scale items used a five-point response scale, and reflected the *a priori* constructs identified in the literature review and pilot work:

- Professional identity
- Professional status
    - o   normative elements such as regulation and social status
    - o   comparative perceived status in relation to other professions
- Adherence to ethical practice principles
- Interactions with patients
- Interactions with staff
- Reliability
- Competence, knowledge and improvement
- Pride in the profession
- Appearance
- Flexibility
- Behaviour outside work
- The organisational context

These constructs constitute areas which the earlier work suggests may be dimensions of global professionalism. Some are reflections of attitudes and beliefs, some perceptions of behaviour, and one perceptions of context.

Importantly they do not ask respondents to rate or assess their own behaviour, and are not linked explicitly to desirable qualities. It is respondents' own beliefs or perceptions being reported. Scales are anchored with estimates of frequency ('Sometimes' to 'Always') or agreement, rather than the evaluative ABIM scale which contains a value judgment of what is 'satisfactory'. While this does not eliminate risks of inaccuracy associated with self-assessment, it does reduce risks of a 'social desirability effect'.

### 3.2 Method

The questionnaire was distributed in two ways. For students the same approach as for the pilot data collection was used, with questionnaires distributed, completed and collected following teaching sessions in April 2012 at University A and October 2012 at Ambulance Trust B. Questionnaires were distributed to year 2 of the Foundation Degree programme at Ambulance Trust A, all years of the Foundation Degree programme at University B, and Years 1-3 of the BSc at University B. (It was not possible to collect further data from Year 4, and so their pilot data were included in the analysis where possible.)

To allow these responses to be linked to other data (any CI data that may have been collected, and global ratings by educators), questionnaires included an identifying number which was linked to the student's name on a cover sheet which was detached and retained by the University/NHS Trust. The questionnaires, which featured the number but no identifying details, were then passed on to Durham University researchers.

An online version of the questionnaire was implemented on Bristol Online Surveys (http://www.survey.bris.ac.uk/) for completion by qualified paramedics in Ambulance Trust A and Ambulance Trust C. The link to this was distributed by email from the ambulance trusts to their staff in October 2012. No identifying code was included in this version. Unfortunately a bug in the online system meant that the second global scale was not accurately recorded for all respondents. The intention was to reproduce the analogue scale, i.e. without numerical anchors, that was included on the print version. While the online version appeared to deliver this, the recorded data did not distinguish between different levels of the scale, meaning the data were ambiguous and therefore unusable.

To provide some evidence on the concurrent validity of the questionnaire, and to address the questions of bias arising from an entirely self-report questionnaire, global ratings were also obtained from trainers in both University A and Ambulance Trust B. These were matched to student responses using the anonymised identifier. One site produced a single rating of each student agreed between two members of staff, the other provided a single rating from a member of staff who was familiar with all students. One site reported that as their rating on the ABIM scale was based on relative judgments, there was no difference in their use of the scales.

### 3.3 Data analysis

Data analysis was conducted using the R statistical programming language (v3; www.r-project.org). Documentation on the different R packages and functions used is available online via http://cran.r-project.org/web/packages/. Other statistical information has been taken from standard textbooks [8] [9] and discussion with Dr Paul Tiffin of the Wolfson Research Institute, Durham University.

## 4    Results

### 4.1    Participants

A total of 323 responses were obtained. Table 1 summarises the numbers of respondents from each of the three sites, with gender and age summarised in table 2. Some online questionnaires were completed by emergency medical technicians (EMT) or 'other' staff groups. These numbers are too low to meaningfully compare with student and qualified data, so are excluded from the subsequent analysis.

**Table 1. Frequencies of responses in each group and location**

|  | Ambulance Trust A | University B | Ambulance Trust C | Total |
|---|---|---|---|---|
| Qualified | 41 | 0 | 72 | 113 |
| Student | 13 | 174 | 8 | 195 |
| EMT/Other | 2 | 0 | 13 | 15 |

**Table 2. Sex of respondents (where indicated) and modal age in each group**

|  | Male | Female | Modal age |
|---|---|---|---|
| Qualified | 74 | 31 | 35-44 |
| Student | 88 | 105 | 18-24 |
| EMT/Other | 11 | 4 | 35-44 |

Qualified paramedics had worked in the ambulance service for between two years and 37 years, with a mean of 11 years.

Nineteen students had worked in the ambulance service before (although their total length of service was not recorded).

### 4.2    Content validity

The development process and respondent validation in the pilot workshops give confidence that the items have adequate 'content validity' – meaning they are relevant and meaningful to the respondents and so will gain meaningful responses. Content validity is also indicated by the absence

of missing values – respondents are more likely to leave an item blank if it is unclear or irrelevant. While a few missing values are to be expected, any systematic pattern or large number of missing values for a single item suggests it may not be useful.

Very few items had any missing values at all, and no item had more than 10% missing values, indicating that all items were meaningful to the majority of respondents. Some values were missing because slight changes in wording between pilot and main data collection meant that pilot data were not included for those items. All other missing data appeared to be at random. For the current analysis, to maximise use of the data, no items were removed, and missing values replaced using the Amelia II function implemented in R (gking.harvard.edu/amelia). (See box 'Missing data' for more details.)

However, while no items were removed, two respondents had left more than 20% of the questionnaire blank, in a pattern suggesting whole pages had been omitted. This raised concerns about how much attention they may have paid to the remainder of the questionnaire, so their responses were excluded.

> ### *Missing data*
>
> It is expected that questionnaires will include some missing data, where respondents have omitted isolated questions. If these are low in number and do not appear to be systematic, it is more useful to insert values rather than to lose data and reduce statistical power by omitting items or respondents.
>
> Common approaches are to use the median or mean, but these are vulnerable to systematic error. A more powerful approach is to calculate, or impute, the missing values from a statistical model.
>
> The program Amelia II (gking.harvard.edu/amelia) allows single or multiple imputations to be carried out. Imputation samples across a distribution of possible scores, and so repeated imputations will produce different results. Multiple imputations can be combined using complex statistical techniques, but for the current purpose of estimating an initial factor solution, a single imputation was felt to be adequate.

A related issue is that it is important that items distinguish between high and low quantities of the underlying construct. In practice this relates to the distribution of responses along the length of the scale. The majority of items using the five point scale (51 of the 77 items) elicited use of the whole scale. Fifteen had responses on four points, nine on three points, and just two used only two points. Most individual items had a distribution with a negative skew – that is towards the upper end of the scale (which associated with increased professionalism). While such a skew can influence some statistics that assume a normal distribution, the analyses used here are reasonably robust to violations of that assumption. It was decided not to exclude any items on this basis at this stage.

Both global scales had an approximately normal distribution, albeit with a mean above the scale midpoint for the ABIM scale (see figure 1).
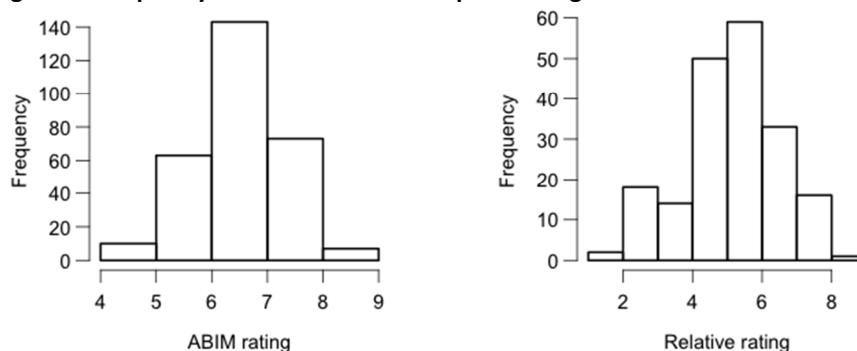
**Figure 1. Frequency distributions of all responses to global items**

## 4.3    Construct validity – factor analysis

The questionnaire was designed around a number of *a priori* constructs, and while analysis can proceed with the assumption that the items do in fact reflect those constructs, it is good practice to conduct further analysis to demonstrate 'construct validity' – that items hypothesised to measure the same underlying construct are in fact doing so.

To do this an exploratory factor analysis (EFA) was carried out. This looks at the relationships between different items and identifies underlying structures (see box 'Exploratory factor analysis' for details of analysis).

Table 3 summarises the 'factor loadings' (pattern matrix) from the final 11-factor solution, which illustrate the items which most strongly associate with each underlying construct. Values below .4 are not given, following convention, which allows the main elements of each factor to be identified and labels to be given to the factors. The higher the loading, the more the item is contributing to that factor – some values which are just above 0.4 indicate a minimal contribution. (The full pattern matrix is provided in Appendix C).

*Exploratory factor analysis*

To estimate the number of factors in the dataset a parallel analysis was carried out (using the parallel.fa() function in R), which estimated that the data represent 12 factors. A weighted least squares factor analysis was carried out using geominQ oblique rotation (which allows the resultant factors to correlate with each other, which is to be expected when the factors are hypothesised to represent elements of professionalism).

Initial diagnostics indicated the removal of two items before the data set would be suitable for an EFA. The Kaiser-Meyer-Olkin statistic of sampling adequacy (KMO=0.79) indicated the dataset was suitable for factor analysis, but initial communalities suggested that three variables with very low communalities (<0.2) may not contribute to the factor structure. These items were removed and the analysis repeated.

The 12 factor solution produced one factor with no loadings above the conventional, if conservative, threshold of 0.4, and a fourth item with a low communality. A final solution of 11 factors derived from 68 items is reported. This is relatively high for the number of variables, but provides the maximum number of scales reflecting the *a priori* constructs of interest. A psychometric analysis may aim to reduce this further and consider fewer factors, but this solution fits current aims.

The final model produced a fit of 0.85 (significant with p<0.001), indicating a solution that reflects the data well. However it should be noted that exploratory factor analysis is not a procedure for identifying a single 'correct' solution. This solution is one way of representing and explaining the data, and others may be equally plausible. A confirmatory factor analysis on an independent data set would be desirable to reinforce this structure.

**Table 3. Labelled factors with items with loadings > .4**

| Factor 1 – Pride in professional identity | Loading |
|---|---|
| Q7. I think of being a paramedic as 'a career', not just a job | 0.55 |
| Q60. Feel enthusiastic about going to work | 0.43 |
| Q10. The paramedic profession is vital to society | 0.42 |
| Q73. Being a paramedic is important to me | 0.76 |
| Q74. Being a paramedic makes me feel good about myself | 0.64 |
| **Factor 2 – Organisational Support** | |
| Q5. The organisation I work for is professional | 0.75 |
| Q3. The organisation I work for allows me to be professional | 0.64 |
| Q4. The organisation I work for looks after my welfare | 0.64 |
| Q72. I have a good work/life balance | 0.42 |
| Q6. Patients are more important than targets to my organisation | 0.41 |
| **Factor 3 – Focus on time** | |
| Q29. Feel some patients waste the ambulance service's time | 0.74 |
| Q30. See some referrals from other healthcare providers (e.g. GPs, urgent care centres) as a waste of time | 0.60 |
| Q31. Think patients may be responsible for their problems (through alcohol, drug misuse, obesity) | 0.47 |
| Q52. Think about my next break or end of shift when I am working | 0.43 |
| **Factor 4 – Comparative professional status** | |
| Q15. Paramedics are as valued by the general public as police officers | 0.85 |
| Q14. Paramedics are as valued by the general public as fire fighters | 0.84 |
| Q16. Paramedics are as valued by the general public as nurses | 0.76 |
| Q17. Paramedics are as valued by the general public as doctors | 0.65 |
| **Factor 5 – Focus on professional development** | |
| Q57. Attend training which is not mandatory | 0.78 |
| Q56. Read books and articles on paramedic practice | 0.73 |
| Q58. Keep my CPD portfolio up to date | 0.52 |
| Q59. Regularly refresh my skills | 0.52 |
| Q12. It is important that paramedics have their own professional organisations (such as the College of Paramedics) | 0.41 |
| **Factor 6 – Flexible communication** | |
| Q68. Adjust how I speak to different colleagues | 0.67 |
| Q67. Adjust how I speak to different patients (e.g. how formal to be, vocabulary to use) | 0.65 |
| Q69. Tailor information to a patient's or relative's needs | 0.62 |
| **Factor 7 – Appropriate behaviour** | |
| Q40. 'Take the mick' out of colleagues when they are not there | 0.70 |
| Q42. Swear around colleagues | 0.69 |
| Q23. I have occasionally realised after the event that I did not follow the rules regarding informed consent | 0.49 |
| Q41. Use humour about patients as a way of letting off steam after a job | 0.49 |
| Q39. 'Take the mick'/banter with colleagues while they are there | 0.47 |
| Q44. Talk or don't pay attention during lectures or training courses | 0.41 |
| **Factor 8 – Confidence in action** | |
| Q55. Act decisively in critical situations | 0.68 |
| Q54. Feel able to justify my actions/clinical decisions | 0.53 |
| Q27. …I would intervene directly | 0.41 |
| **Factor 9 - Appearance** | |
| Q65. Make sure my uniform is well presented (ironed, shoes polished) | 0.68 |
| Q66. Make sure I look clean, tidy and well-groomed at work | 0.59 |
| **Factor 10 – Communication with patients** | |
| Q35. Listen carefully to patients' concerns | 0.70 |
| Q37. Try to take time to reassure patients/their families | 0.69 |
| Q32. Treat all patients with respect and sensitivity | 0.49 |
| Q36. Enjoy talking to patients | 0.49 |
| Q34. Make sure patients understand what is happening | 0.47 |
| Q63. Take the initiative to improve or correct my behaviour | 0.41 |
| **Factor 11 – Adherence to rules** | |
| Q21. It is not always possible to follow codes of conduct to the letter | 0.53 |
| Q22. It is not always possible to follow procedures exactly | 0.45 |

The factor labels are arrived at from interpretation of the loading factors, and to a large extent reflect the *a priori* constructs, although there are differences.

- Factor 1 contains elements of normative status and professional identity, but overall seems to be best interpreted as a sense of wellbeing derived from being a member of the profession, and so is labelled 'Pride in professional identity'.
- Factor 2 contains most of the items related to organisational context, but with the work-life balance items also loading, 'Organisational support' may be more appropriate.
- Factor 3 is ostensibly about patients, but the inclusion of the item about thinking about breaks suggests a focus on timekeeping, or simply an awareness of or 'Focus on time', and may be linked to the *a priori* construct of reliability.
- Factor 4 contains all the items relating to the *a priori* construct 'Comparative professional status'.
- Factor 5 relates to a 'Focus on professional development', and is closely linked to the *a priori* construct of Competence, knowledge and improvement. The item referring to the College of Paramedics, intended to link to normative status, loads just above the threshold, and may be conceptually linked because continuing professional development is often stressed by professional organisations (e.g. www.collegeofparamedics.co.uk/about_us/member_information/cpd_system/).
- Factor 6 contains items relating to the *a priori* construct of flexibility, or more explicitly 'Flexible communication'.
- Factor 7 contains elements of communication with colleagues, but the inclusion of the item relating to lapses in taking consent, using humour about patients, and paying attention in training suggest it may be overall best interpreted as relating to aspects of 'Appropriate behaviour'.
- Factor 8 relates to competence, but specifically appears to link items relating to decisive action and particularly 'Confidence in action'.
- Factor 9 contains the two items relating to 'Appearance'.
- Factor 10 contains items relating to 'Communication with patients'. The item 'Take the initiative to improve or correct my behaviour' is just over the threshold for inclusion but may indicate the improvements in behaviour are conceptually linked to behaviour with patients.
- Factor 11 contains two items relating to 'Adherence to rules', a term taken to include codes of conduct and procedures.

---

**What does this tell us?**

This analysis tells us that there is fairly good *construct validity* in the data, which reflects the *a priori* constructs to some degree. Differences from the *a priori* constructs may be interpreted as demonstrating the questionnaire's focus on the respondents' perceptions and attitudes.

Overall, and with the caveat that further analysis with independent data will be necessary to confirm validity, the analyses to this point indicate that the questionnaire constitutes a valid tool.

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### 4.4 Reliability of derived scales

The factor analysis suggests an underlying structure of distinct constructs. To ensure that the constituent items of these factors can be treated as forming meaningful and coherent scales, internal consistency was calculated (see box 'Internal consistency').

The standard threshold for good internal consistency is alpha=0.7. All scales achieve this (albeit to one decimal place in the case of Factor 11) as indicated in table 4. Factor 8 achieves this with the deletion of one further item (see box).

In some cases further items could be deleted without reducing the value of alpha, but these have been retained in further analysis at this initial stage to maximise usage of data.

**Table 4. Optimised internal consistency measures**

| *A priori* construct | Adjusted alpha |
|---|---|
| Factor 1 – Pride in professional identity | 0.79 |
| Factor 2 – Organisational Support | 0.81 |
| Factor 3 – Focus on time | 0.75 |
| Factor 4 – Comparative professional status | 0.87 |
| Factor 5 – Focus on professional development | 0.76 |
| Factor 6 – Flexible communication | 0.77 |
| Factor 7 – Appropriate behaviour | 0.74 |
| Factor 8 – Confidence in action | 0.70 |
| Factor 9 - Appearance | 0.76 |
| Factor 10 – Communication with patients | 0.74 |
| Factor 11 – Adherence to rules | 0.68 |

**Internal consistency**

Internal consistency is an indicator of reliability derived from the relationship between items within a scale. The statistic most often used is known as Cronbach's alpha.

This statistic was examined for each scale indicated by the factor analysis, and item-total statistics examined in order to identify any items which could be deleted to optimise the alpha statistic. While the data are skewed, the sample size is adequate for alpha to be robust to this in order to identify moderate reliability [10].

One set of items (for Factor 8) had an alpha of below the threshold for 'good' internal consistency (alpha=0.7) with a value of 0.57. Examination of item-total statistics ('Alpha with item removed') indicated the removal of one item ('…I would intervene directly') would give an alpha of 0.7.

**What does this tell us?**

This analysis indicates the construct subscales derived from the factor analysis are reliable in the sense of being internally consistent. This means that individual items are consistently measuring the suggested underlying construct.

### 4.5 Concurrent validity of global measures

Concurrent validity refers to the extent to which a measure correlates with an independent measure with which it would be expected to vary. However, there is no 'gold standard' of professionalism against which subjective measures can be compared, so in this case concurrent validity was operationalised against a global rating by educators with knowledge of the students. While this data should have validity given the educators' knowledge of the students, this analysis has the caveat that the reliability of the educators' ratings is unknown. However, if we assume the educators' ratings are

*closer* to a 'true' assessment of professionalism, then a high correlation would indicate the students' ratings are more 'accurate'.

Global ratings were collected from educators in University A and Ambulance Trust B, using the anonymous identifier code to match data to students' own responses. These ratings are slightly positively skewed (towards the lower end of the scale). The distribution of students' self-ratings on the ABIM scale is also more skewed than the overall sample seen in figure 1, although the relative scale maintains its relatively normal shape (see figure 2).

**Figure 2. Frequency distributions of student and educator responses to global items**
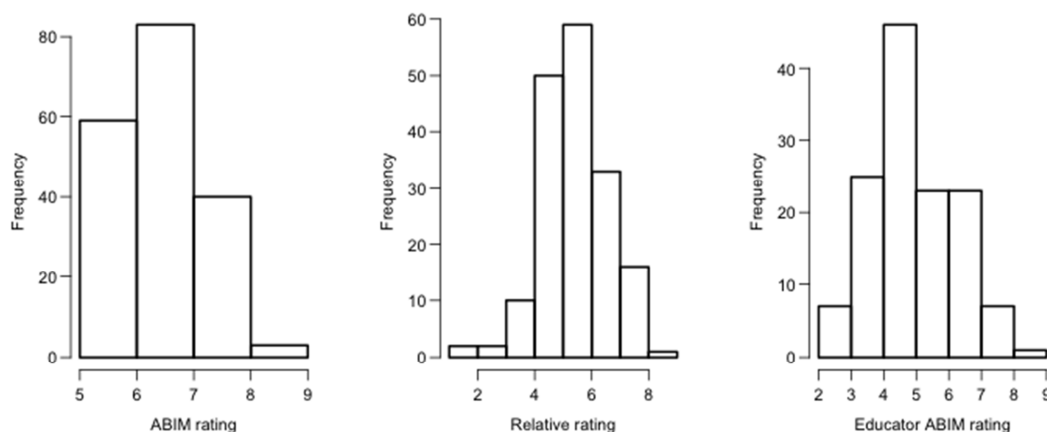


The educators' scores were correlated with the trainees' global ratings on the ABIM and relative scales. These correlations are very low:

Student ABIM vs. Educator ABIM: Spearman's rho = 0.107 (n=123)

Student relative vs. Educator ABIM: Spearman's rho = 0.042 (n=121)

The two self-reported global measures do not correlate highly (0.21 for the student sample who complete both scales on paper), indicating they are measuring different constructs. This may also be true of the educator measure – that even though the same item is used, it is accessing a different construct.

However, the most pragmatic interpretation of the correlations between self-completion and educator ratings is that neither global measure completed by the students is an accurate representation of their professionalism as seen by their educators. This may be a reflection of the well-established phenomenon that self-assessment of performance is not accurate. Both the global scales involve explicit evaluation of professionalism – either against the standard of 'satisfactory' or against other paramedics – and as such may be biased by a desire to maintain self-esteem by rating oneself more highly.

It is possible that those who are more 'objectively' professional (as indicated by the educator ratings) have more insight and are more accurate self-raters. Separate correlations for the sub-groups who were rated low or high by educators were therefore carried out. Selecting sub-groups in this way attenuates the correlations by only using part of the educator scale, but this can be corrected for (in this case using the rangeCorrection() function in R). These correction coefficients are included in table 5, and suggest that there is a greater relationship between educator ratings and

self-ratings for those who are rated high by educators, than those who are rated low. The relative scale in particular correlates to an acceptable, albeit moderate, level for the high-rated students.

**Table 5. Correlations between global and educator scales for high and low scoring subgroups.**

| Subgroup | Uncorrected correlations | Correlations corrected for range restriction on educator ratings |
|---|---|---|
| High (Educator ABIM >6) | Student ABIM vs. Educator ABIM: Spearman's rho = 0.101 (n=28) Student relative vs. Educator ABIM: Spearman's rho = 0.164 (n=27) | Student ABIM vs. Educator ABIM: Spearman's rho = 0.251 (n=28) Student relative vs. Educator ABIM: Spearman's rho = 0.394 (n=27) |
| Low (Educator ABIM <4) | Student ABIM vs. Educator ABIM: Spearman's rho = -0.092 (n=30) Student relative vs. Educator ABIM: Spearman's rho = 0.040 (n=30) | Student ABIM vs. Educator ABIM: Spearman's rho = -0.191 (n=30) Student relative vs. Educator ABIM: Spearman's rho = 0.085 (n=30) |

Therefore while the most pragmatic interpretation of this finding is that the global measures are not an accurate self-report measure, they do have some validity for those who are rated as more professional by educators.

---

*What does this tell us?*

There is no overall relationship between student paramedics' self-ratings on the global professionalism measures and their rating by educators. However, the relationship is stronger for those students who are rated more highly by the educators. If we assume that the educator ratings are themselves valid and reliable, this suggests that global professionalism may be related to insight or self-awareness.

---

## 4.6    Descriptive statistics

Table 6 summarises the descriptive statistics for global items, the derived scales, and the single item measures used in the subsequent analysis. These show that all scales have a reasonable range covering at least half of the scale, but many are negatively skewed with means toward the upper end of the scale.

**Table 6. Descriptive statistics**

| | n | mean | sd | median | min | max | skew | kurtosis | se |
|---|---|---|---|---|---|---|---|---|---|
| **Global Measures** | | | | | | | | | |
| ABIM | 296 | 7.01 | 0.83 | 7.00 | 5.00 | 9.00 | -0.12 | -0.11 | 0.05 |
| Relative | 193 | 5.62 | 1.42 | 6.00 | 1.00 | 9.00 | -0.36 | -0.01 | 0.10 |
| **Derived scales** | | | | | | | | | |
| Factor 1 – Pride in professional identity | 306 | 4.43 | 0.56 | 4.60 | 2.00 | 5.30* | -1.42 | 1.90 | 0.03 |
| Factor 2 – Organisational Support | 306 | 3.36 | 0.83 | 3.40 | 1.20 | 4.80 | -0.25 | -0.62 | 0.05 |
| Factor 3 – Focus on time | 306 | 2.78 | 0.69 | 2.75 | 1.00 | 4.75 | 0.33 | -0.21 | 0.04 |
| Factor 4 – Comparative professional status | 306 | 2.98 | 1.02 | 3.00 | 1.00 | 5.00 | 0.13 | -0.86 | 0.06 |
| Factor 5 – Focus on professional development | 306 | 3.80 | 0.57 | 3.80 | 2.20 | 5.00 | -0.37 | -0.12 | 0.03 |
| Factor 6 – Flexible communication | 306 | 4.32 | 0.67 | 4.33 | 1.55 | 5.00 | -0.97 | 0.97 | 0.04 |
| Factor 7 – Appropriate behaviour | 306 | 3.37 | 0.65 | 3.34 | 1.50 | 4.86 | -0.14 | -0.35 | 0.04 |
| Factor 8 – Confidence in action | 306 | 4.47 | 0.49 | 4.50 | 3.00 | 5.43* | -0.54 | -0.24 | 0.03 |
| Factor 9 - Appearance | 306 | 4.62 | 0.55 | 5.00 | 2.50 | 5.00 | -1.56 | 2.49 | 0.03 |
| Factor 10 – Communication with patients | 306 | 4.59 | 0.35 | 4.67 | 3.33 | 5.00 | -0.93 | 0.47 | 0.02 |
| Factor 11 – Adherence to rules | 306 | 2.22 | 0.77 | 2.00 | 1.00 | 4.50 | 0.39 | -0.16 | 0.04 |
| **Single item identification scales** | | | | | | | | | |
| Identification as a paramedic | 306 | 3.72 | 1.25 | 4.00 | 1.00 | 6.33* | -0.72 | -0.44 | 0.07 |
| Identification as a healthcare professional | 306 | 3.89 | 1.01 | 4.00 | 1.00 | 5.00 | -0.83 | 0.37 | 0.06 |
| Identification as a member of emerg. serv. | 306 | 4.11 | 0.96 | 4.00 | 1.00 | 5.12* | -1.15 | 1.32 | 0.05 |
| Identification as a uni student | 296 | 3.22 | 1.60 | 4.00 | 1.00 | 5.59* | -0.34 | -1.48 | 0.09 |
| Identification as a student paramedic | 193 | 3.40 | 1.74 | 4.00 | 1.00 | 5.00 | -0.48 | -1.56 | 0.10 |

\* Values greater than 5 are a result of imputation.

## 4.7    Correlations between derived scales

The correlation matrix in table 7 indicates the relationships between the different subscales. There are several small correlations between constructs (.2 < r < .4), and some moderate ones (.4 < r < .5). This degree of inter-correlation is to be expected – the dimensions of professionalism are expected to be related to each other. There are no very high correlations which would indicate that separate factors may be redundant.

**Table 7. Correlations between derived scales. (Only rho > .2 shown)**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Factor 1 – Pride in professional identity | 1.00 | .45 | .34 | | .34 | | | | .21 | .40 | |
| Factor 2 – Organisational Support | .45 | 1.00 | .42 | .34 | .26 | | .25 | | .23 | | |
| Factor 3 – Focus on time | .34 | .42 | 1.00 | | .22 | | .44 | | | .34 | .26 |
| Factor 4 – Comparative professional status | | .34 | | 1.00 | | | | | | | |
| Factor 5 – Focus on professional development | .34 | .26 | .22 | | 1.00 | | | .25 | .25 | .32 | |
| Factor 6 – Flexible communication | | | | | | 1.00 | | .20 | .27 | .29 | |
| Factor 7 – Appropriate behaviour | .20 | .25 | .44 | | | | 1.00 | | | .33 | .36 |
| Factor 8 – Confidence in action | | | | | 0.25 | .20 | | 1.00 | | .27 | |
| Factor 9 – Appearance | .21 | .23 | | | .25 | .27 | 0.22 | | 1.00 | .31 | |
| Factor 10 – Communication with patients | .40 | | .34 | | .32 | .29 | .33 | .27 | .31 | 1.00 | |
| Factor 11 – Adherence to rules | | | 0.25 | | | | .36 | | | | 1.00 |

*What does this tell us?*

The inter-correlations between the subscales indicate that the factors relate to each other, but not to the extent that any is redundant.

### 4.8   Differences between groups

#### 4.8.1   Differences with role and demographics

To compare the differences between different groups' responses to the scale items, a multivariate analysis of variance (MANOVA) was carried out (see box 'Multivariate analysis').

This included 13 dependent variables (DVs: the ABIM global measure, the 11 derived scales and the single item 'Strength of identification as a paramedic') and three independent variables (IVs: student/qualified, sex and age).

The test statistic for each of the DVs was statistically significant (for student/qualified $p<0.000$, for age $p<0.005$, for sex $p<0.001$), indicating an overall difference between the IVs. A two-way interaction between age and sex is also significant ($p < 0.01$), indicating that for at least one IV the differences between male and female respondents are not constant for all age groups. (This is illustrated below).

Univariate ANOVAs for each of the variables were then examined to identify where the main differences lay. Tables 8 and 9 summarise the significant univariate comparisons by student/qualified, tables 10 and 11 the differences by age group, and tables 12 and 13 by sex. All tables include any significant differences by standard criteria (i.e. $p<0.05$), with corrected significance flagged.

> **Multivariate analysis**
>
> Multivariate analysis involves analysis of several variables simultaneously. Because statistical significance is probabilistic, carrying out several analyses at once increases the chance of finding a false positive result (aka a 'Type I error') – that is one which is interpreted as significant when there is no genuine effect. Using multivariate analysis of variance (MANOVA) rather than multiple univariate analyses reduces this risk, but having found a significant multivariate effect, interpretation of the follow up univariate analyses must be corrected to avoid such an error.
>
> A common, if conservative, approach is known as the 'Bonferroni correction', by which the critical value for significance, usually 0.5 or 0.1, is adjusted proportionately to the number of simultaneous tests. In this case, where there are 13 variables being tested, this means that a significant value equivalent to $p=0.05$ is $0.05/13=0.004$, and equivalent to $p=0.01$ is $0.01/13=0.0008$.
>
> The analysis produced by the R language uses 'Type I' sum of squares in its calculation (this term is unrelated to Type I errors), which differs from output produced by SPSS. The order of DVs in analysis affects the results, and is driven by theoretical interests. Here student/qualified is entered first, followed by age, then sex. However the solutions were compared with different orders, and the overall pattern of results was consistent.

#### Differences between student and qualified paramedics

There are highly significant differences between student and qualified respondents on five of the 11 factors, and on the single item 'Strength of identification as a paramedic'. Two other factors differed at the lower level of significance.

Table 9 summarises the means of all the variables. Where there are significant differences, student paramedics tend to score more highly than qualified paramedics, with the exception of the ABIM global scale, the strength of their identification as a paramedic, and their confidence in their actions.

**Table 8. Summary of significant differences between student and qualified paramedics**

|  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| ABIM global scale | 4.52 | 1 | 4.52 | 6.279 | .013 |
| Strength of identification as a paramedic | 111.52 | 1 | 111.52 | 97.802 | .0000** |
| Factor 1 – Pride in professional identity | 14.05 | 1 | 14.05 | 54.367 | .0000** |
| Factor 2 – Organisational Support | 54.48 | 1 | 54.48 | 104.256 | .0000** |
| Factor 3 – Focus on time | 10.22 | 1 | 10.22 | 22.931 | .0000** |
| Factor 4 – Comparative professional status | 7.08 | 1 | 7.08 | 7.261 | .008 |
| Factor 5 – Focus on professional development | 9.20 | 1 | 9.20 | 30.822 | .0000** |
| Factor 7 – Appropriate behaviour | 2.12 | 1 | 2.12 | 5.643 | .018 |
| Factor 8 – Confidence in action | 3.49 | 1 | 3.49 | 15.748 | .0000** |
| Factor 10 – Communication with patients | 0.99 | 1 | 0.99 | 8.569 | .0037* |
| Factor 11 – Adherence to rules | 5.92 | 1 | 5.92 | 10.940 | .0010* |
| Residual |  | 271 |  |  |  |

\* $p<0.004$ significant equivalent to 1% level after Bonferroni correction
\*\* $p< 0.0008$ Significant at 5% level after Bonferroni correction

**Table 9. Means for significant differences between student and qualified paramedics**

|  | Students (n = 190) | Qualified paramedics (n = 104) |
|---|---|---|
| **Qualified paramedics score higher** |  |  |
| ABIM global scale | 6.9 (0.81) | 7.2 (0.87) |
| Strength of identification as a paramedic | 3.2 (1.27) | 4.5 (0.64) |
| Factor 8 – Confidence in action | 4.4 (0.49) | 4.6 (0.43) |
| **Student paramedics score higher** |  |  |
| Factor 1 – Pride in professional identity | 4.6 (0.40) | 4.1 (0.64) |
| Factor 2 – Organisational Support | 3.7 (0.68) | 2.8 (0.79) |
| Factor 3 – Focus on time | 2.9 (0.73) | 2.5 (0.57) |
| Factor 4 – Comparative professional status | 3.1 (0.96) | 2.8 (1.12) |
| Factor 5 – Focus on professional development | 3.9 (0.52) | 3.6 (0.58) |
| Factor 7 – Appropriate behaviour | 3.4 (0.68) | 3.3 (0.60) |
| Factor 10 – Communication with patients | 4.6 (0.32) | 4.5 (0.39) |
| Factor 11 – Adherence to rules | 2.3 (0.76) | 2.0 (0.75) |

*Differences between age groups*

Tables 10 and 11 give the significant results and means for differences between respondents in different age groups. Perception of comparative professional status appears to increase only with the over-45 age group, while confidence in action shows an increase with the 35-44 age group. NB Factor 4 and Factor 7 exhibit significant interactions between age and sex, indicating this effect is not constant for men and women.

**Table 10. Summary of significant differences between age groups**

|  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Factor 4 – Comparative professional status | 17.1 | 3 | 5.699 | 5.844 | .0007** |
| Factor 7 – Appropriate behaviour | 4.09 | 3 | 1.365 | 3.627 | .0135 |
| Factor 8 – Confidence in action | 3.13 | 3 | 1.042 | 4.699 | .0032* |
| Factor 9 – Appearance | 3.14 | 3 | 1.047 | 3.781 | .0110 |
| Residual |  | 271 |  |  |  |

\* $p<0.004$ significant equivalent to 1% level after Bonferroni correction
\*\* $p< 0.0008$ Significant at 5% level after Bonferroni correction

**Table 11. Means (and standard deviations) for significant differences between age groups**

|  | 18-24 (n =164) | 25-34 (n = 54) | 35-44 (n =47) | Over 45 (n = 29) |
|---|---|---|---|---|
| Factor 4 – Comparative professional status | 3.0 (0.97) | 2.9 (1.00) | 2.9 (1.06) | 3.7 (1.19) |
| Factor 7 – Appropriate behaviour | 3.4 (0.67) | 3.3 (0.68) | 3.2 (0.56) | 3.7 (0.56) |
| Factor 8 – Confidence in action | 4.5 (0.50) | 4.4 (0.43) | 4.5 (0.47) | 4.7 (0.32) |
| Factor 9 – Appearance | 4.6 (0.50) | 4.6 (0.47) | 4.5 (0.73) | (0.31) |

*Differences between men and women*

Tables 12 and 13 give the significant results and means for differences between male and female respondents. None is significant with a corrected significance level, but there is a trend for women to score more highly than men, although men score higher on 'Focus on professional development'. NB Factor 7 exhibits a significant interaction between age and sex, indicating this effect is not constant for all age groups.

**Table 12. Summary of significant differences between sexes**

|  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Strength of identification as a paramedic | 6.50 | 1 | 6.50 | 5.701 | .0176 |
| Factor 2 – Organisational Support | 3.29 | 1 | 3.29 | 6.295 | .0127 |
| Factor 5 – Focus on professional development | 1.44 | 1 | 1.44 | 4.816 | .0290 |
| Factor 7 – Appropriate behaviour | 2.46 | 1 | 2.46 | 6.525 | .0112 |
| Residual |  | 271 |  |  |  |

* p<0.004 significant equivalent to 1% level after Bonferroni correction
** p< 0.0008 Significant at 5% level after Bonferroni correction

**Table 13. Means (and standard deviations) for significant differences between sexes**

|  | Men (n=159) | Women (n=135) |
|---|---|---|
| **Women score higher** |  |  |
| Strength of identification as a paramedic | 3.5 (1.37) | 3.9 (1.13) |
| Factor 2 – Organisational Support | 3.3 (0.85) | 3.5 (0.77) |
| Factor 7 – Appropriate behaviour | 3.3 (0.65) | 3.5 (0.64) |
| **Men score higher** |  |  |
| Factor 5 – Focus on professional development | 3.9 (0.59) | 3.7 (0.54) |

*4.8.2    Interactions*

The MANOVA indicated a significant interaction between age and sex. Following univariate follow-up analysis, interactions for three scales were moderately significant by standard criteria, although not with the Bonferroni corrected p-value. The results of these are included in table 14. Means are plotted in figure 3.

**Table 14. Summary of significant interactions**

|  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| **Age x Sex** |  |  |  |  |  |
| Factor 4 – Comparative professional status | 6.47 | 2 | 3.23 | 3.315 | .0378 |
| Factor 7 – Appropriate behaviour | 3.19 | 2 | 1.59 | 4.234 | .0155 |
| Factor 11 – Adherence to rules | 4.38 | 2 | 2.191 | 4.052 | .0185 |
| Residual |  | 294 |  |  |  |

* p<0.004 significant equivalent to 1% level after Bonferroni correction
** p< 0.0008 Significant at 5% level after Bonferroni correction

Figure 3 shows that for Factor 4 there is a divergence between men and women in the 35-44 age group, where women rate more highly. For Factor 7 there is a convergence after separation in the 18-24 age group, while Factor 11 shows divergence in the 25-34 age group, then convergence in the older bracket. (The data for the over-45 age group, which contains no women, are not included in the interaction, and are displayed only for completeness.)

**Figure 3. Plots of significant Age x Sex interactions**
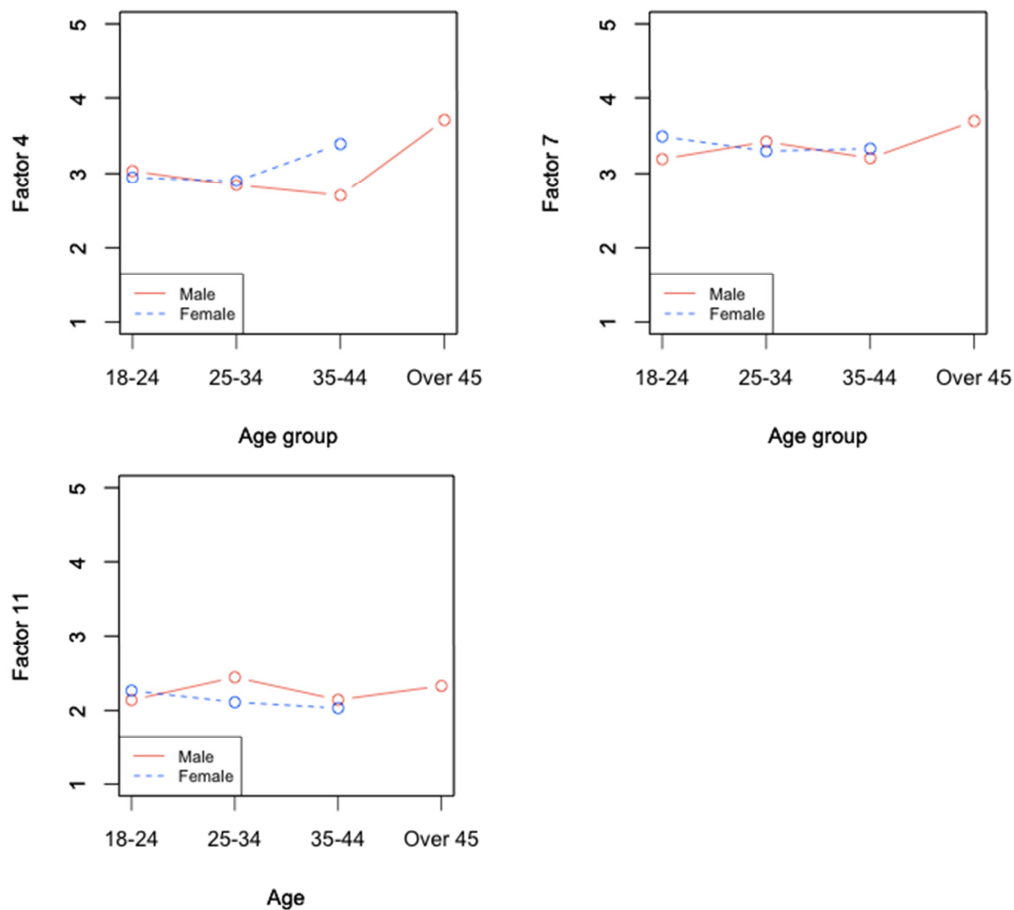


### What does this tell us?

This part of the analysis tells us that there are significant differences between the responses of student and qualified paramedics on a number of the derived scales, and on identification as a paramedic. Where there are significant differences, students' scores tend to be higher, although qualified paramedics rate higher on strength of identification as a paramedic, and on 'Confidence in action'. A difference in the global scale is significant with a less conservative approach to significance.

There is some indication that older paramedics may score more highly, and that women may score more highly on some measures than men, but these effects are not consistent.

### 4.8.3 Differences with route of qualification

The sample included students and qualified paramedics from different locations, and students following different programmes (Foundation Degree or BSc). Qualified paramedics were also asked which route to qualification they had taken (Foundation Degree, BSc or IHCD course).

Separate MANOVAs were carried out on the student and qualified samples, using programme and route to qualification as DVs. These found no significant effects of these variables.

A univariate ANOVA on the Educators' ABIM ratings of students at University A found no significant difference between ratings of Foundation Degree and BSc students.

---

*What does this tell us?*

Whether a student is on a Foundation Degree or BSc, or whether a qualified paramedic qualified by Foundation Degree, BSc or IHCD programme, does not affect their score on the global scale or any of the derived scales.

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### 4.8.4 Differences with stage of career

Students, and to a greater extent qualified paramedics are not homogenous groups. Qualified paramedics had a wide range of experience, and student paramedics' experience increases sharply during their training. Simply comparing the responses of qualified and student paramedics may therefore mask differences arising from the degree of experience.

A separate MANOVA therefore compared responses against an indicator of time served in the ambulance service. For students this was the number of years to go before qualification (this takes account of different programmes being of different length – so a final year student in any programme is given the value -1), and for qualified paramedics the total time they reported having been in the service, quantised into 5-year groups. Students who reported previously working in the service were excluded from this analysis. The MANOVA was again significant, with similar significant univariate differences to the effect for student/qualified status (with the same criteria for multiple analyses as applied above). These are summarised in table 15.

**Table 15. Summary of differences with career progression**

|  | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| ABIM global scale | 14.87 | 8 | 1.86 | 2.761 | .006 |
| Strength of identification as a paramedic | 161.9 | 8 | 20.235 | 20.35 | .000** |
| Factor 1 – Pride in professional identity | 17.68 | 8 | 2.21 | 8.268 | .000** |
| Factor 2 – Organisational Support | 80.9 | 8 | 10.112 | 22.66 | .000** |
| Factor 3 – Focus on time | 25.7 | 8 | 3.213 | 8.083 | .000** |
| Factor 4 – Comparative professional status | 13.19 | 8 | 1.649 | 1.61 | .122 |
| Factor 5 – Focus on professional development | 11.48 | 8 | 1.44 | 4.904 | .000** |
| Factor 6 – Flexible communication | 2.91 | 8 | .364 | .797 | .606 |
| Factor 7 – Appropriate behaviour | 4.92 | 8 | .615 | 1.515 | .152 |
| Factor 8 – Confidence in action | 10.3 | 8 | 1.288 | 6.538 | .000** |
| Factor 9 - Appearance | 3.34 | 8 | .417 | 1.535 | .145 |
| Factor 10 – Communication with patients | 3.117 | 8 | .390 | 3.43 | .001* |
| Factor 11 – Adherence to rules | 12.51 | 8 | 1.56 | 2.744 | .006 |
| Residual |  | 269 |  |  |  |

\* p<0.004 significant equivalent to 1% level after Bonferroni correction
\*\* p< 0.0008 Significant at 5% level after Bonferroni correction

Figures 4 and 5 plot the means for effects which are significant with the Bonferroni correction applied. Figure 4 plots the means of the two identity measures – the derived scale (which remember reflects the importance of and affective response to that identity, not its strength) and the single item which measures its strength. This shows that as the strength of identity increases sharply after qualification, its importance or centrality decreases.

**Figure 4. Differences in strength and importance of paramedic identity with progression**
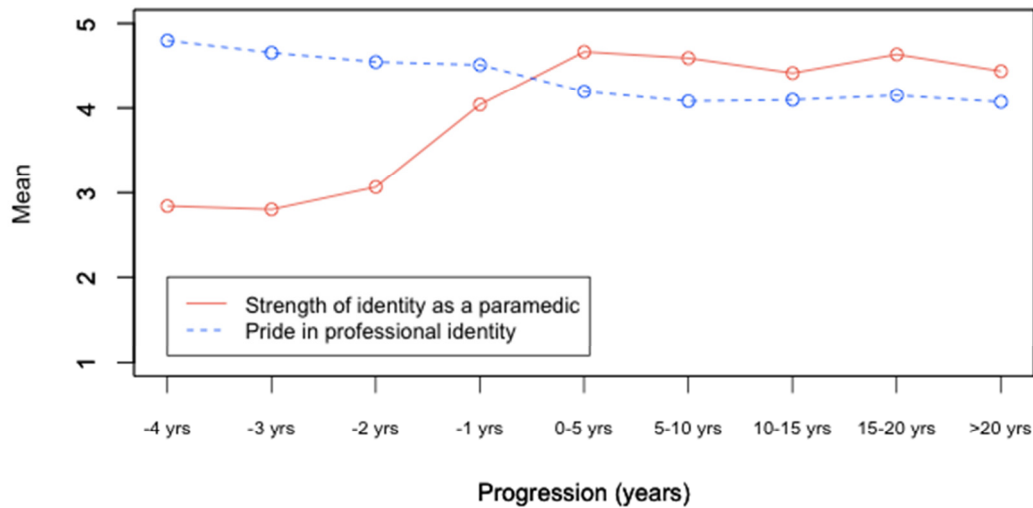


Figure 5 plots the remainder of the significant effects. Factor 2 (Organisational support) and Factor 3 (Focus on time) show a decline during training which continues until 5-10 years in practice, when there is some recovery. Factor 5 (Focus on professional development) shows a similar, if shallower, decline, with a rise in the final year of study, while Factor 8 (Confidence in action) shows an increase. Factor 10 (Communication with patients) does not display a linear trend, but rather a dip at 5-10 years.

**Figure 5. Derived scales where there is a significant difference plotted against years in service. Negative numbers indicate student paramedic years remaining on course (so final year is -1).**
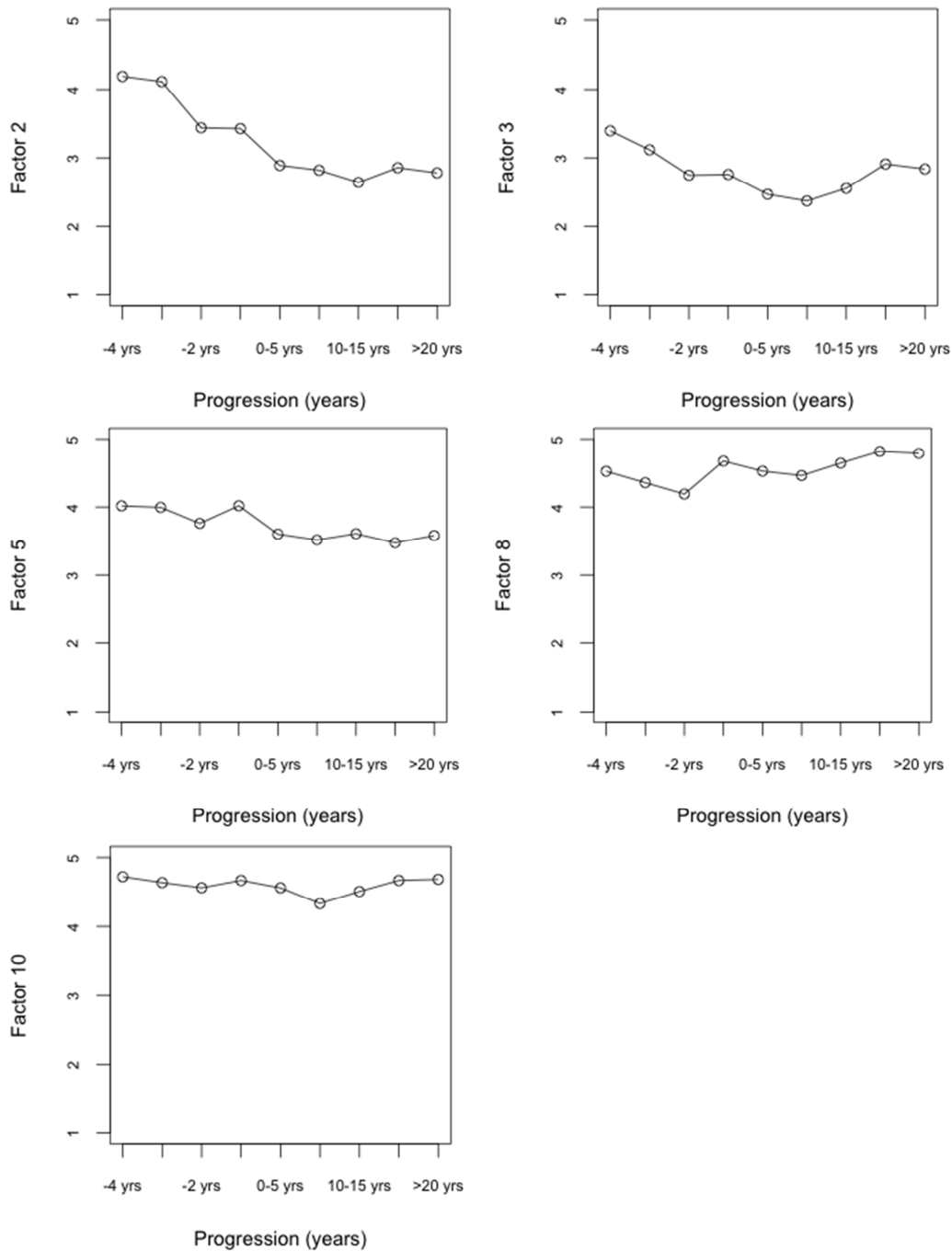


### 4.8.5 Change in identity

Individuals can identify simultaneously as members of different groups. The single item identity measures measured the degree of identification with four groups: paramedic (as discussed above), healthcare professional and member of an emergency service (both of which are potential superordinate groups to paramedic), and university student and student paramedic.

Figure 6 considers how these items vary with progression. As noted above, paramedic identity drops during training, perhaps through increased contact with qualified paramedics, and then increases sharply once qualified. Both measures of student identity (reflecting the different programmes –

whether workplace-based or university-based) drop sharply at qualification. These patterns both reassure of the validity of the scales. The means for 'healthcare professional' and 'member of an emergency' service are similar, indicating that overall paramedics are seen as member of both groups. Interestingly identification as a paramedic does not plateau, or reach the ceiling of the scale, but dips for those with 10-15 years' service, and again for those with more than 20 years' service. This may be indicative of the relatively recent professionalisation, and indeed existence, of the paramedic role. Some particularly long-served staff may have professional identities formed in the earlier context of the ambulance service. However it may also be an artefact of the scale which had 'completely' identify as its upper anchor.

**Figure 6. Changes in single-item measures of strength of identification with different groups**
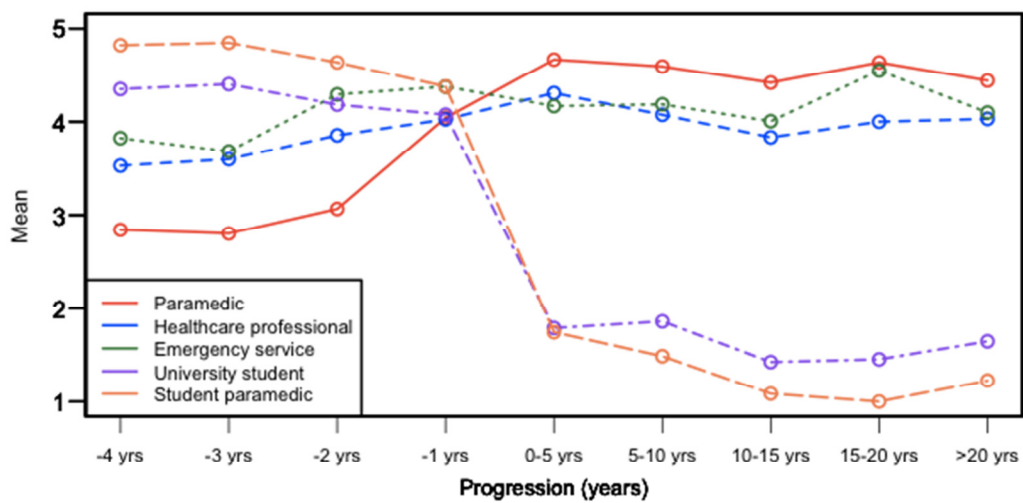
## 4.9   Regression analysis

It is hypothesised from the findings of the qualitative work in Study 1 that the constructs reflected by the factor-derived scales of the questionnaire are components of the global construct of professionalism. This means that if the ABIM scale is a valid measure of the global construct, it should be 'predicted' by the subscales in a regression analysis (see box 'Regression analysis').

As well as the derived scales, the item for strength of identification as a paramedic was also included as a potential influence on perceived professionalism.

Table 16 gives the coefficients from the regression analysis. These indicate the influences of the different variables on the global scale. The t-values and associated significance indicate whether the coefficient should be seen as significantly different from zero.

> ### Regression analysis
>
> An initial ordinary least squares regression analysis identified several outliers in the data, which can bias the regression statistics. However, there were no theoretical reasons for excluding these outliers and so a 'robust regression' analysis, which weights the contribution of outlying cases to the model, was carried out in R (cross-checked using lmrob(), rlm() and lmRob() functions). The results from this are similar to those from the standard regression, suggesting the influence of outliers is small, but the robust analysis is reported in the interests of caution.
>
> Robust regression does not allow the calculation of a precise goodness of fit statistic ($R^2$ in standard linear regression). The lmRob() function does however provide an estimate, in this case 0.14. (This is slightly higher than the adjusted $R^2$ of 0.11 in the initial, non-robust, analysis, which was significant with $p < 0.001$). This suggests that the predictor variables explain around 14% of the variance in the global rating.

The coefficients indicate that the biggest single predictor of the global variable is the 'Communication with patients' factor, followed by 'Organisational support' (which has a negative relationship), followed by 'Comparative professional status'. 'Strength of identification as a paramedic' is also statistically significant.

Other elements of professionalism identified in the literature and the qualitative work do not significantly predict the global scale. However, overall the variables included in this model account for only 14% of the variance in the ABIM measure (see box). This indicates that there are other influences on the global scale that are not accounted for in this model.

**Table 16. Coefficients from Robust Regression analysis of self-rated ABIM scale against derived scales (descending absolute coefficients indicate descending influence)**

| Predictor variable | Coefficient (beta) | t-value | Significance |
|---|---|---|---|
| Factor 10 – Communication with patients | 0.386 | 2.292 | 0.023* |
| Factor 2 – Organisational Support | -0.192 | -2.569 | 0.011* |
| Factor 4 – Comparative professional status | 0.170 | 3.352 | 0.001** |
| Factor 7 – Appropriate behaviour | 0.135 | 1.502 | 0.134 |
| Factor 6 – Flexible communication | 0.126 | 1.683 | 0.093 |
| Strength of identification as a paramedic | 0.101 | 2.351 | 0.019* |
| Factor 11 – Adherence to rules | 0.086 | 1.246 | 0.214 |
| Factor 8 – Confidence in action | 0.070 | 0.662 | 0.509 |
| Factor 9 - Appearance | 0.057 | 0.561 | 0.575 |
| Factor 1 – Pride in professional identity | 0.055 | 0.531 | 0.596 |
| Factor 3 – Focus on time | -0.020 | -0.238 | 0.811 |
| Factor 5 – Focus on professional development | 0.016 | 0.167 | 0.867 |

A second regression was carried out using the Educator ABIM scores as the predicted variable (so limited to student data). The intention of this was to see if the students' non-evaluative self-reports on the derived scales predicted their educators' evaluative reports on the ABIM scale. This has a slightly better fit than for the self-rating ABIM measure, with an estimated R2 = 0.21, although with only two significant predictors – 'Communication with patients' and 'Appropriate behaviour' (see table 17). 'Communication with patients', then, predicts both self-ratings and educator ratings, but while self-ratings are predicted by more abstract, identity and status-based perceptions, the educator ratings are more linked to behaviours.

**Table 17. Coefficients from Robust Regression analysis of educator ABIM ratings against derived scales (descending absolute coefficients indicate descending influence)**

| Predictor variable | Coefficient (beta) | t-value | Significance |
|---|---|---|---|
| Factor 10 – Communication with patients | 1.041 | 2.264 | .025* |
| Factor 7 – Appropriate behaviour | -.523 | -2.166 | .032* |
| Factor 5 – Focus on professional development | .450 | 1.603 | .112 |
| Factor 6 – Flexible communication | .408 | 1.816 | .072 |
| Factor 1 – Pride in professional identity | .368 | .977 | .330 |
| Factor 9 - Appearance | .364 | 1.060 | .291 |
| Factor 8 – Confidence in action | -.162 | -.569 | .570 |
| Factor 3 – Focus on time | -.073 | -.296 | .767 |
| Strength of identification as a paramedic | -.039 | -.377 | .706 |
| Factor 11 – Adherence to rules | .038 | 1.946 | .054 |
| Factor 4 – Comparative professional status | -.029 | -.204 | .839 |
| Factor 2 – Organisational Support | .000 | .002 | .999 |

**What does this tell us?**

The global rating appears to be independent of most of the perceived behavioural measures. It is associated with the perceived attitudes towards communication with patients, but otherwise with perceived organisational support, the perceived status of the profession in comparison with other professions, and strength of identification as a paramedic. The ABIM measure as a self-rating therefore appears not to fully capture all the elements of professionalism that were identified as important in the earlier qualitative work.

The relationship between the derived scales and educator ratings suggests that educator ratings may be more influenced by attitudes and behaviours, but that it is still a partial measure of the multidimensional construct of professionalism.

### 4.9.1 Relative scale

Data from the relative global scale, on which respondents compared themselves to other paramedics they know, was only available for those students who had completed the questionnaire on paper (n=162). A robust regression analysis using just these data gave an estimated R2 of 0.15, with coefficients as shown in table 18. Coefficients are generally higher than for the ABIM scale, but with the smaller sample size only one factor – the "Focus on time", which remember included items

such as 'I feel some patients are a waste of time' – is highly significant, although 'Strength of identification as a paramedic' is also a moderately significant predictor.

The two global scales, for just this group of students, correlated moderately (r=0.25).

**Table 18. Coefficients from Robust Regression analysis of ABIM against derived scales (descending absolute coefficients indicate descending influence).**

| Predictor variable | Coefficient (beta) | t-value | Significance |
|---|---|---|---|
| Factor 3 – Focus on time | -0.542 | -3.596 | 0.000*** |
| Factor 1 – Pride in professional identity | -0.353 | -1.514 | 0.132 |
| Factor 10 – Communication with patients | 0.315 | 0.972 | 0.332 |
| Factor 6 – Flexible communication | -0.223 | -1.589 | 0.114 |
| Strength of identification as a paramedic | 0.197 | 2.780 | 0.006** |
| Factor 7 – Appropriate behaviour | 0.186 | 1.144 | 0.254 |
| Factor 4 – Comparative professional status | 0.134 | 1.470 | 0.144 |
| Factor 5 – Focus on professional development | 0.236 | 1.225 | 0.223 |
| Factor 9 - Appearance | -0.084 | -0.412 | 0.681 |
| Factor 2 – Organisational Support | -0.063 | -0.422 | 0.674 |
| Factor 11 – Adherence to rules | -0.033 | -0.274 | 0.785 |
| Factor 8 – Confidence in action | 0.021 | 0.107 | 0.915 |

### 4.10 Inter-correlations between identity measures

Table 19 summarises correlations between the separate identity measures, and the derived scale 'Pride in professional identity'. Interestingly there is a low correlation between the derived scale and simple identification as a paramedic, but there are moderate correlations both with student paramedic and university student.

The derived scale is composed of items reflecting pride and the *centrality* of the paramedic identity ('Being a paramedic is important to me' and 'Being a paramedic makes me feel good about myself'), whereas the single item is about the strength of that identity. Being a paramedic is therefore more important to those who identify as students, than it is to those who identify as paramedics. This is sensible if the centrality items are seen as tapping the aspiration and focus of students on achieving the professional status.

There are moderate correlations between identification as a paramedic, as a healthcare professional and as a member of an emergency service. This suggests that overall being a paramedic is associated with both of these potential superordinate groups to a roughly equal extent.

**Table 19. Correlations between single-item measures of strength of identification with different groups (only rho > .2 shown)**

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Identification as a paramedic | 1.00 | .44 | .31 | -.38 | -.50 | |
| Identification as a healthcare professional | .44 | 1.00 | .54 | | | |
| Identification as a member of emerg. serv. | .31 | .54 | 1.00 | | | |
| Identification as a uni student | -.38 | | | 1.00 | .54 | 0.37 |
| Identification as a student paramedic | -.50 | | | 0.75 | 1.00 | 0.42 |
| Factor 1 – Pride in professional identity | | | | 0.37 | 0.42 | 1.00 |

### 4.11 Items removed

The analysis involves a number of items being removed. 46 items are retained in the analysis, meaning that 26 are not used. These are summarised in table 20 with their reasons for removal. Some of these items may still be of interest, although their relationship with the hypothesised structure is questionable in light of the factor analysis. A single MANOVA including all these items was carried out, using only student/qualified as an independent variable. This was significant ($p<0.000$), with univariate analysis indicating that 10 of the 26 variables had significant differences (with $p<0.01$, uncorrected for multiple tests) between students and qualified paramedics. These are indicated with * below.

**Table 20. Items deleted from scale analysis**

Deleted for low communalities

    Q38. Disclose personal information about myself to patients
    Q47. Arrive late for work *
    Q48. Check equipment at the start of a shift
    Q70. Post comments about work on the internet (e.g. Facebook, other social media)

Deleted for low factor loadings

    Q8. I think paramedics should have to regularly update their skills *
    Q9. Paramedics have special qualities which mark them out from other professions
    Q11. Becoming a paramedic requires a high degree of expertise and knowledge *
    Q13. It is important that paramedics are a regulated profession with a protected register *
    Q18. I feel I represent the ambulance service when I am wearing the uniform in public *
    Q20. Members of the public expect paramedics to be professional
    Q24. It is a waste of time to report a minor collision in an ambulance, if there was no damage and no one else was involved
    Q25. It is a waste of time reporting a near miss if no one was aware of it and there were no adverse consequences *
    Q26. Sometimes there are good reasons to delay making myself available for the next job after taking a patient to hospital
    Q33. Allow my liking or dislike for patients to affect the way I approach them
    Q43. Work well with other healthcare professions, in general *
    Q45. Arrive late for training/classes *
    Q46. Leave station duties for other people
    Q49. Complete the appropriate paperwork as soon as I am able to, after each job
    Q50. Take responsibility for my own work
    Q51. Approach work in an organised way
    Q53. Think doing a job 'well enough' is acceptable
    Q61. Get bored in training about non-clinical elements of practice
    Q62. Seek help when I need it *
    Q64. Accept constructive criticism in a positive manner *
    Q71. Discuss a bad job with family or friends outside work as a way of coping *

Deleted for low item-total relationship

    Q28. …I would report them

Future analysis may explore these items further, but they are secondary to the aims of the current report.

# 5 Discussion

This report has presented the development of a questionnaire looking at professionalism as a multi-dimensional construct, and analysis of data collected from samples of student and qualified paramedics.

Although further analysis, ideally with independent samples, will be necessary to confirm the findings, the early indications are that the questionnaire constitutes a valid and reliable tool for the exploration of issues around professionalism. Findings have relevance in a number of areas: developing understanding of the nature of professionalism and its measurement, issues around the development of professionalism over time, and practical issues in the application of these concepts.

## 5.1 The nature of professionalism

The primary intention of the questionnaire was to elaborate the relationships between some of the attitudes, behaviours and perceptions which were identified as components or elements of professionalism, and the global concept as measured by the single item used by the ABIM and consequently in much of the literature.

Analysis found differences between student and qualified paramedics on several of the components, as well as trends for some variation with age and sex of respondents.

The relationship between the derived scales which reflect the multiple hypothesised dimensions of professionalism and the global scale was slight. Of the derived scales, the only significant predictor of self-ratings on the global scale that related directly to practice was linked to communication with patients – a scale that links to communication skills and attitude towards patients. The other significant predictors were more abstract: the 'strength of identity as a paramedic', and external beliefs relating to the professional status of paramedics compared to other professions, and to perceived organisational support for professionalism. There was a similarly weak relationship between the subscales and educators' ratings, although the only significant predictors of the educator's responses were related to practice, and not the abstract or external dimensions.

If we assume that the ABIM measure is a meaningful and valid reflection of a global judgement of professionalism, it means that the relationship between that global, holistic construct and behavioural and attitudinal dimensions of professionalism identified in Study 1 is minimal, and that the global concept can not be subdivided in such a way. This would in fact reflect the way in which professionalism was described in the qualitative work – with global and specific definition largely separate.

This conceptual separation of the global and specific may have consequences for the way in which professionalism is discussed in terms of policy – including assessment and revalidation. There may be a mismatch between what is intended by references to 'professionalism', as specific aspects of practice, and what is actually interpreted as a global, status-related concept.

The lack of any observed relationship between the educator and student global measures may not simply be a measurement error, but may reflect a similar conceptual mismatch.

An alternative view is that the ABIM measure is simply not a valid measurement of a truly global concept of professionalism. It uses compound anchors referring to more idealistic aspects of professionalism ('compassion', 'integrity', 'honour') that may relate more to the symbolic and abstract dimensions than to behavioural interpretation. However, this is only an issue if respondents

attend to the anchors in detail, and do not simply map the global scale to their own interpretation of 'professionalism' – we do not know enough about how respondents interpret the scale to be clear on this.

Whether the disconnect between global and specific is conceptual or methodological, there is limited evidence here that the ABIM measure as a self-report reflects behavioural or attitudinal elements of professionalism. While it does reflect respondents' attitudes towards patients, it is also a proxy for their feelings about the profession. These are important elements, but not what is often implied in discussions of professionalism and unprofessional behaviour. Its use by educators may tap into behavioural elements to a greater extent, for both groups there is much of the global construct that is not being explained by the dimensions identified so far.

## 5.2    Changes over time

Several subscales indicated differences between student and qualified paramedics. Closer examination of differences between paramedics at different points in their training and careers indicated that perceptions of organisational support in particular drops off sharply, and does not recover. Given the importance of the working environment in encouraging and developing professionalism that was identified in the qualitative work, this may be of particular concern. Other differences over time suggest attitudes may 'dip' for those who have been in the service for 10-15 years.

Measures of professional identity show that identification as a paramedic increases sharply post-qualification, as would be expected, but that the importance of that identity drops off. This is interpreted as indicating the importance of attaining the paramedic identity for students, rather than its being a minor concern for the qualified paramedics.

## 5.3    Practical implications

If there is indeed a lack of any relationship between a global measure of professionalism and its theoretical components, there is limited value in operationalising a measure of such a global concept as a proxy for behavioural or attitudinal failings. Rather it makes sense to target attention *directly* on those elements of behaviour and attitudes for which there is clear evidence of relevance in practice. Even where there is a relationship – for example in the 'Communication with patients' scale, it may be more useful to look at this communication directly, rather than risk confounding it in the wider concept of professionalism.

The findings suggest that professionalism is in part a proxy for perceptions of professional status as reflected by the public, and by employing organisations. These elements are not directly in the control of professional education and training. However, they may be areas which can be influenced at an organisational level with input from the regulator, professional organisations and employers. Making a professional group feel valued may enhance attitudes towards, and feelings of professionalism at an individual level.  The risks of adverse organisational cultures in particular have been in the public eye following the public inquiry into Mid Staffordshire NHS Foundation Trust 11.

### 5.4    Future work

This report has presented an initial analysis of a first operational version of the questionnaire. There is evidence of content and construct validity, but further analysis is needed to confirm and refine the model discussed.

A dataset currently being collected as part of an independent study being carried out by Monash University in Australia will help further establish the reliability and validity of the questionnaire as a measure of different components of professionalism. Following this it is hoped the work can be submitted to a peer-reviewed journal.

The questionnaire may be also used to develop understanding of professionalism at a conceptual level among other professions, as few items relate uniquely to the paramedic profession.

There have been no 'cases' – that is individuals who may be experiencing professional difficulties – so far identified. Given the low frequency of such cases, this was an anticipated issue in identifying predictive validity. A larger dataset may provide this, although will be subject to local ethical governance. The final phase of the project will continue to explore the feasibility of this. (To provide some context on the prevalence of cases, the influential US study by Papadakis and colleagues [7] identified 638 cases in a sample of over 66,000 doctors over 16 years).

Further practical applications of the questionnaire – perhaps in shortened form – may be of benefit to professional development. The participants in the development workshops felt completing and discussing the questionnaire was of great value in reflecting on professionalism and what constitute the boundaries of professional behaviour.

The decrease in some dimensions over time, and particularly the sharp dip in perceptions of organisational support for professionalism, may not be linked to individuals' demonstrated professionalism per se, flags concerns about paramedics' morale and lowered motivation in the middle of their careers. It would be useful to explore these findings with paramedics, and other professional groups, in order to consider in more detail why such a decline occurs. It is suggested that professionalism should not be seen just at an individual level as something addressed in training and education, but rather as something that needs to be sustained over time, throughout an organisation. Further work may consider these organisational influences on ongoing professionalism.

## 6    Conclusion

A valid and reliable questionnaire for measuring and comparing different dimensions of professionalism has been developed. Findings from the initial data collection indicate that there is not a straightforward relationship between a global concept of professionalism and the separate dimensions which may contribute to that concept, with practical as well as theoretical consequences.

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**Appendices**

**Appendix A: Final questionnaire**

**Appendix B: R code**

**Appendix C: Factor loading matrices**

**Appendix D: Free text analysis**

**Appendix A: Final questionnaire**

**Professionalism at Work**

**Questionnaire for Qualified Paramedics,**

**Student Paramedics and EMTs**

This survey aims to improve our understanding of what constitutes 'professionalism', which is a subject of great interest in all areas of healthcare.

Responses will only be seen by researchers at Durham University, and are completely anonymous. Please answer as honestly as you can to make sure our data is meaningful.

The questionnaire is designed to be completed by different groups including qualified and student paramedics and EMTs. If a question does not apply to you, please tick the 'N/A' box.

The survey should take no more than 20 minutes to complete. There is the opportunity at the end for you to make any comments about any of the issues raised in the questionnaire.

**1.** Overall, I think my standard of professionalism is…(please circle a number)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| -------Unsatisfactory-------- | | | -------Satisfactory-------- | | | -------Superior-------- | | |

**Where unsatisfactory includes:** Lacks respect, compassion, integrity, honesty; disregards need for self-assessment; fails to acknowledge errors; does not consider needs of patients, families, or colleagues; does not display responsible behaviour

**Superior includes:** Always demonstrates respect, compassion, integrity, honesty; teaches/role models responsible behaviour; total commitment to self-assessment; willingly acknowledges errors; consistently considers needs of patients, families, or colleagues

**2.** **Mark the line to indicate where you think your professionalism lies compared to other paramedics you know:**
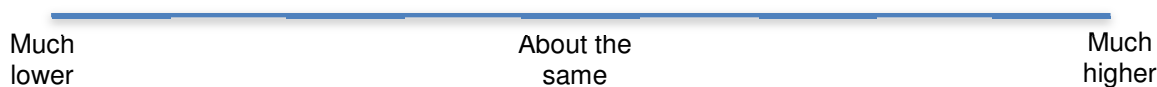
Much lower          About the same          Much higher

| How much do you agree with the following statements? | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | N/A |
|---|---|---|---|---|---|---|
| **3.** The organisation I work for allows me to be professional | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **4.** The organisation I work for looks after my welfare | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **5.** The organisation I work for is professional | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **6.** Patients are more important than targets to my organisation | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **7.** I think of being a paramedic as 'a career', not just a job | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **8.** I think paramedics should have to regularly update their skills | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **9.** Paramedics have special qualities which mark them out from other professions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **10.** The paramedic profession is vital to society | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| How much do you agree with the following statements? | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | N/A |
|---|---|---|---|---|---|---|
| 11. Becoming a paramedic requires a high degree of expertise and knowledge | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12. It is important that paramedics have their own professional organisations (such as the College of Paramedics) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13. It is important that paramedics are a regulated profession with a protected register | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14. Paramedics are as valued by the general public as fire fighters | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15. Paramedics are as valued by the general public as police officers | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 16. Paramedics are as valued by the general public as nurses | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17. Paramedics are as valued by the general public as doctors | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18. I feel I represent the ambulance service when I am wearing the uniform in public | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19. I try to always act in a manner that brings credit to the profession | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20. Members of the public expect paramedics to be professional | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | N/A |
|---|---|---|---|---|---|---|
| 21. It is not always possible to follow codes of conduct to the letter | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22. It is not always possible to follow procedures exactly | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 23. I have occasionally realised after the event that I did not follow the rules regarding informed consent | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 24. It is a waste of time to report a minor collision in an ambulance, if there was no damage and no one else was involved | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 25. It is a waste of time reporting a near miss if no one was aware of it and there were no adverse consequences | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 26. Sometimes there are good reasons to delay making myself available for the next job after taking a patient to hospital | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| If I witnessed a paramedic delivering substandard care… | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree |
|---|---|---|---|---|---|
| 27. …I would intervene directly | ☐ | ☐ | ☐ | ☐ | ☐ |
| 28. …I would report them | ☐ | ☐ | ☐ | ☐ | ☐ |

| Please indicate how often you do the following: | Never | Rarely | Sometimes | Often | Always | N/A |
|---|---|---|---|---|---|---|
| 29. Feel some patients waste the ambulance service's time | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 30. See some referrals from other healthcare providers (e.g. GPs, urgent care centres) as a waste of time | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 31. Think patients may be responsible for their problems (through alcohol, drug misuse, obesity) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 32. Treat all patients with respect and sensitivity | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 33. Allow my liking or dislike for patients to affect the way I approach them | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 34. Make sure patients understand what is happening | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 35. Listen carefully to patients' concerns | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 36. Enjoy talking to patients | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 37. Try to take time to reassure patients/their families | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 38. Disclose personal information about myself to patients | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| Please indicate how often you do the following: | Never | Rarely | Sometimes | Often | Always | N/A |
|---|---|---|---|---|---|---|
| 39. 'Take the mick'/banter with colleagues while they are there | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 40. 'Take the mick' out of colleagues when they are not there | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 41. Use humour about patients as a way of letting off steam after a job | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 42. Swear around colleagues | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 43. Work well with other healthcare professions, in general | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 44. Talk or don't pay attention during lectures or training courses | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 45. Arrive late for training/classes | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 46. Leave station duties for other people | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 47. Arrive late for work | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 48. Check equipment at the start of a shift | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 49. Complete the appropriate paperwork as soon as I am able to, after each job | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 50. Take responsibility for my own work | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 51. Approach work in an organised way | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 52. Think about my next break or end of shift when I am working | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 53. Think doing a job 'well enough' is acceptable | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 54. Feel able to justify my actions/clinical decisions | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 55. Act decisively in critical situations | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 56. Read books and articles on paramedic practice | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 57. Attend training which is not mandatory | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 58. Keep my CPD portfolio up to date | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 59. Regularly refresh my skills | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 60. Feel enthusiastic about going to work | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 61. Get bored in training about non-clinical elements of practice | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 62. Seek help when I need it | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 63. Take the initiative to improve or correct my behaviour | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 64. Accept constructive criticism in a positive manner | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 65. Make sure my uniform is well presented (ironed, shoes polished) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 66. Make sure I look clean, tidy and well-groomed at work | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 67. Adjust how I speak to different patients (e.g. how formal to be, vocabulary to use) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 68. Adjust how I speak to different colleagues | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 69. Tailor information to a patient's or relative's needs | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 70. Post comments about work on the internet (e.g. Facebook, other social media) | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 71. Discuss a bad job with family or friends outside work as a way of coping | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| How much do you agree with the following statements? | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strongly agree | N/A |
|---|---|---|---|---|---|---|
| **72.** I have a good work/life balance | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **73.** Being a paramedic is important to me | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| **74.** Being a paramedic makes me feel good about myself | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| Indicate how much you define yourself as a member of each of these groups... | Not at all | Slightly | To some extent | Very Much | Completely |
|---|---|---|---|---|---|
| **75.** … a paramedic | ☐ | ☐ | ☐ | ☐ | ☐ |
| **76.** … a healthcare professional | ☐ | ☐ | ☐ | ☐ | ☐ |
| **77.** … a member of an emergency service | ☐ | ☐ | ☐ | ☐ | ☐ |
| **78.** … a university student | ☐ | ☐ | ☐ | ☐ | ☐ |
| **79.** … a student paramedic | ☐ | ☐ | ☐ | ☐ | ☐ |

The following questions will allow us to compare the responses of different groups, both within your Trust and across different parts of the country.

**80. What is your job?**

Qualified Paramedic ☐[1]   Student Paramedic ☐[2]   EMT ☐[3]

Other ☐[4] (please specify) ……………………

**81. How long have you been in your current job?**

……………………………………

**If you are a qualified paramedic…**

**82. …what year did you qualify?**

……………………………………

**83. What course did you complete?**

BSc/Honours Degree ☐[1]   Foundation Degree ☐[2]

Institute of Healthcare Development (IHCD) course ☐[3]

Other ☐[4] (please specify) ………………………

**If you are a student paramedic…..**

**84. …what course are you on?**

BSc/Honours Degree ☐[1]   Foundation Degree ☐[2]

Institute of Healthcare Development (IHCD) course ☐[3]

Other ☐[3] (please specify) ………………………

**85. What year of the course are you on?**

1st Year ☐[1]   2nd Year ☐[2]

3rd Year ☐[3]   4th Year ☐[4]

**86. Are you…?**

Male ☐[1]   Female ☐[2]

Do not wish to disclose ☐[3]

**87. What is your age?**

18-24 ☐[1]   25-34 ☐[2]   35-44 ☐[3]   45-54 ☐[4]

55 or over ☐[5]   Do not wish to disclose ☐[6]

**88. Have you worked in the ambulance service before your current job?**

Yes ☐[1]   No ☐[2]

**89. If yes, what was your job?**

EMT ☐[1]   ECSW ☐[2]   Dispatcher ☐[3]   Other ☐[4] (please specify) …………

**90. In total, how long have you worked for the ambulance service, in any role?**

………………………….

**91. Have you worked in any of the following sectors before working for the ambulance service?**

Health service (apart from ambulance service) ☐[1]   Social care ☐[2]

Police service ☐[3]   Fire service ☐[4]   Armed forces ☐[5]

**92. Do you have any other comments about the issues covered in the questionnaire that you think would be helpful to us?**

**Appendix B: R code**

In R code all text after a # is a comment included for explanation. Some repetition has been removed from this code – for example where a function is repeated for each factor. This is noted in comments.

```
# required libraries for analyses
library("psych") #for describe, alpha, fa
library("GPArotation") #for oblique rotation
library("Amelia") #for imputation and missmap
library("robust") #for mlRob

## this section is run once only to impute data
## running this again may change rest of results
# set up data
 #prof.m <- read.csv("master data for R.csv", header=T)

## missing value cases and scales
 # rawscales <- (prof.fm[5:76])

 # par(mar=c(.7,.5,.5,.5), mai=c(.5,.7,.2,.2),  mfcol=c(1,1), cex=.7, srt=0)
 # missmap(rawscales, rank.order=F, legend=F)

 # item.missing <- colSums(is.na(rawscales))
 # resp.missing <- rowSums(is.na(rawscales))

 # which(resp.missing>.208*72) #gives index
 # m.r = resp.missing[resp.missing>9] # gives frequency

 # which(item.missing>12)
 # m.i = item.missing[item.missing>.04*308]

## impute dataset for rest of analysis
 #temp <- amelia(prof.m[5:81], m=1) # single imputation
 #temp.imp <- temp$imputations[[1]]
 #prof.m[5:81] <- temp.imp # insert into dataset
## needs to be saved as random procedure will vary each time
## not using this data may lead to different results!
 #write.table(prof.m, file="working data with imputations.csv",  col.names=T, row.names=F, na="",
sep=",")

## end of one-time setup

# load data for main analysis
prof.fm <- read.csv("working data with imputations.csv", header=T)

# rename variables for display
names(prof.fm)[3] <- "ABIM"
names(prof.fm)[4] <- "relative"
names(prof.fm)[5:76] <- c(paste("Q",3:74, sep=""))
names(prof.fm)[77] <- "Identification as a paramedic"
names(prof.fm)[78] <- "Identification as a healthcare professional"
names(prof.fm)[79] <- "Identification as a member of emerg. serv."
names(prof.fm)[80] <- "Identification as a uni student"
names(prof.fm)[81] <- "Identification as a student paramedic"
names(prof.fm)[82] <- "Job"
names(prof.fm)[88] <- "Sex"
names(prof.fm)[86] <- "Course"
names(prof.fm)[85] <- "Route if qualified"
names(prof.fm)[89] <- "Age"
names(prof.fm)[101] <- "Educator ABIM rating"
names(prof.fm)[102] <- "Educator relative rating"

prof.fm <- subset(prof.fm,prof.fm$Job<3) # limit to qualified and students
prof.fm <- prof.fm[-c(165,230),] # delete two cases with high, systematic missing values

## factor analysis
# just the items for factor analysis into a dataset
m = prof.fm[5:76]

# parallel analysis to identify number of factors
fa.parallel(m, fm="wls")
```

```
# factor modelling using number from parallel analysis
# then iterating looking at communalities and factor loadings
fit0 <- fa(m, nfactors=12, rotate = "geominQ", fm = "wls", oblique.scores=T)
KMO(m)
fit0$communality[fit0$communality<.2] # identify low communalities
m1 <- m[,-c(36,46,68)] # remove them from dataset and iterate

fit1 <- fa(m1, nfactors=12, rotate = "geominQ", fm = "wls", oblique.scores=T)
KMO(m1)
fit1$communality[fit1$communality<.2] # identify low communalities
print(fit1$loadings,digits=2,cutoff=.4,sort=T) #check loadings - one factor has no loadings>.4 so
iterate

fit2 <- fa(m1, nfactors=11, rotate = "geominQ", fm = "wls", oblique.scores=T)
fit2$communality[fit2$communality<.2] # identify low communalities
m2 <- m1[,-c(44)] # remove them from dataset and iterate

fit3 <- fa(m2, nfactors=11, rotate = "geominQ", fm = "wls", oblique.scores=T)
fit3$communality[fit3$communality<.2] # check communalities
print(fit3$loadings,digits=2,cutoff=.4,sort=T) #check loadings - all okay

fit1$fit # check fit
fit1$PVAL # check significance

# export scores – output included in Appendix C
write.table(fit3$loadings, file="loadings.txt", row.names=T, col.names=T, quote=F, sep="\t") # pattern
matrix
write.table(fit0$Structure, file="loadings.txt", row.names=T, col.names=T, quote=F, sep="\t")

## set up scales
# summarise factors into placeholder variables
factor1 <- prof.fm[c(9,12,62,75,76)]
factor2 <- prof.fm[c(5,6,7,8,74)]
factor3 <- prof.fm[c(31,32,33,54)]
factor4 <- prof.fm[c(16,17,18,19)]
factor5 <- prof.fm[c(14,58,59,60,61)]
factor6 <- prof.fm[c(69,70,71)]
factor7 <- prof.fm[c(25,41,42,43,44,46)]
factor8 <- prof.fm[c(56,57)] #29 deleted on alpha
factor9 <- prof.fm[c(67,68)]
factor10 <- prof.fm[c(34,36,37,38,39,65)]
factor11 <- prof.fm[c(23,24)]

# check alphas
summary(alpha(factor1, na.rm = TRUE)) # repeated for all factors

# calculate subscales and add to dataset
prof.fm$factor1 <- rowMeans(factor1,na.rm = TRUE) # repeated for all factors

## prof.fm is now ready to use in the main analysis ##

## main analysis ##
# copy main dataset for working
prof2 <- prof.fm


# descriptive stats for main variables
table(prof.fm$Job,prof.fm$Sex) # frequencies
table(prof.fm$Job,prof.fm$Site) # frequencies

summ.stats <- describe(prof2[c(3,4,103:113,77:81)],na.rm = TRUE)
print(summ.stats[c(2:5,8,9,11,12,13)],digits=2) # view stats

## intercorrelations
# global scales and educator scales
prof.c <- prof2

print(cor(prof.c$ABIM, prof.c$"Educator ABIM rating", use="pairwise", method="spear"), digits=4,
sep="\t")
print(cor(prof.c$relative, prof.c$"Educator ABIM rating",use="pairwise", method="spear"), digits=4,
sep="\t")
print(cor(prof.c$ABIM, prof.c$relative,use="pairwise", method="spear"), digits=4, sep="\t")
```

```
# split compares high and low rated
prof2$split.ABIM <- cut(prof2$"Educator ABIM rating",breaks=3,
include.lowest=T,labels=c("Low","Middle","High"))

prof.t <- subset(prof2,prof2$split.ABIM=="Low" | prof2$split.ABIM=="High") # compare low and high
scores
t.test(prof.t$ABIM ~ prof.t$split.ABIM) # no significant difference

c1 <- cor(prof.t$ABIM, prof.t$"Educator ABIM rating", use="pairwise", method="spear")
print(c1, digits=4, sep="\t")
c2 <- cor(prof.t$relative, prof.t$"Educator ABIM rating",use="pairwise", method="spear")
print(c2, digits=4, sep="\t")

# correct rho for range restriction from Educator subsetting
restrictedsd=sd(prof.t$"Educator ABIM rating",na.rm=T)
unrestrictedsd=sd(prof.c$"Educator ABIM rating",na.rm=T)

rangeCorrection(c1,unrestrictedsd,restrictedsd)
rangeCorrection(c2,unrestrictedsd,restrictedsd)

describe(prof.t$ABIM)
describe(prof.t$relative)

# derived scales
prof.c = prof2[c(103:113)]
c = cor(prof.c, use="all.obs", method="spear")
print(c, digits=2)
write.table(c, sep="\t")

# identity scales
prof.c = prof2[c(77:81,103)]
c = cor(prof.c,use="all.obs", method="spear")
print(c, digits=2)
write.table(c, sep="\t")

## manova
prof.lm <- cbind(prof2[c(3,77,103:113)]) # matrix of DVs for MANOVA

# change DVs to correct factors
prof2$Age[prof2$Age==6] <- NA # remove 'Prefer not to answer'
prof2$Age[prof2$Age==5] <- 4 # collapse low frequency
# prof2$Age[prof2$Age=="Over 45"] <- NA # delete higher age group to test gender effect
prof2$Age <- factor(prof2$Age, labels=c("18-24", "25-34", "35-44", "Over 45"))
prof2$Sex[prof2$Sex==3] <- NA # remove 'Prefer not to answer'
prof2$Sex <- factor(prof2$Sex, labels=c("Male", "Female"))
prof2$Job <- factor(prof2$Job, labels=c("Qualified", "Student"))

# MANOVA by job, age, sex
m <- as.matrix(prof.lm)
mav.job <- manova(m ~ prof2$Job + prof2$Age + prof2$Sex + prof2$Job*prof2$Age + prof2$Job*prof2$Sex +
prof2$Age*prof2$Sex  + prof2$Job*prof2$Age*prof2$Sex)
summary.manova(mav.job)

k.main <- summary.aov(mav.job)
print(k.main, digits=4)

# this does univariate ANOVA and prints means; not possible directly from MANOVA
# repeat for all factors, create int0-11
intA <- (model.tables(aov(prof2$ABIM ~ prof2$Job + prof2$Age + prof2$Sex + prof2$Job*prof2$Age +
prof2$Job*prof2$Sex + prof2$Age*prof2$Sex  + prof2$Job*prof2$Age*prof2$Sex),type="means"))

int7$tables[4] # display means

# removed items by Job only
m = as.matrix(cbind(prof2[c(10,11,13,15,20,22,26:28,30,35,40,45,47,48,49:53,55,63,64,66,72,73)]))
mav.removed <- manova(m ~ prof2$Job)
summary.manova(mav.removed)
k.removed <- summary.aov(mav.removed)

print(k.removed, digits=2)

## MANOVA by course and route
# separate students and qualified
students <- subset(prof2,prof2$Job==2 & prof2$Site=="H")
```

```
qual <- subset(prof2,prof2$Job==1)

m <- as.matrix(cbind(students[c(3,77,103:113)]))
mav.course <- manova(m ~ students$Course + students$Site)
summary.manova(mav.course)
m <- as.matrix(cbind(qual[c(3,77,103:113)]))
mav.route <- manova(m ~ qual$"Route if qualified" + qual$Site)
summary.manova(mav.route)

summary(aov(students$"Educator ABIM rating" ~ students$Course))

## MANOVA by progression
# recode progression into groups
my.breaks<-c(-4,-3.1,-2.1,-1.1,0,5,10,15,20,1000)
my.labels<-c("-4 yrs","-3 yrs","-2 yrs","-1 yrs","0-5 yrs","5-10 yrs","10-15 yrs","15-20 yrs",">20
yrs")
prof2$prog.group<-cut(prof2$progression,breaks=my.breaks, labels=my.labels, include.highest=F,
right=F, ordered_result=T)

# remove students who had worked in service before as confounds
p <- which(prof2[90]==1 & prof2$Job==2)
m <- as.matrix(prof.lm[-c(p),])
mav.prog <- manova(m ~ prof2[-c(p),]$prog.group)
summary.manova(mav.prog)
k.prog <- summary.aov(mav.prog)
print(k.prog, digits=4)

## regression - rlm robust to outliers and non-normality
# use this as estimates R^2 - other methods commented at end
# bisquare used to be comparable
prof.lm <- cbind(prof2[c(77,103:113)]) # matrix of DVs
my.control <- lmRob.control(weight=c("bisquare", "bisquare"), estim="Final") # settings for regression
model.lmRob <- lmRob(prof2$ABIM ~ ., data=prof.lm, na.action=na.omit, control=my.control)
summary(model.lmRob)
write.table(model.lmRob$coefficients,sep="\t")

# look at whether prediction of Educator ratings is any better
juststudents <- subset(prof2, prof2$Job==2)
names(prof2[102])
prof.lm <- cbind(juststudents[c(77,103:113)]) # matrix of DVs
my.control <- lmRob.control(weight=c("bisquare", "bisquare"), estim="Final", mxr=500) # settings for
regression
model.ed.lmRob <- lmRob(juststudents$"Educator ABIM rating" ~ ., data=prof.lm, na.action=na.omit,
control=my.control)
summary(model.ed.lmRob)

# non-robust to check
model.lm <- lm(prof2$ABIM ~ ., data=prof.lm, na.action=na.omit)
summary(model.lm)

# just students against relative scale
juststudents <- subset(prof2, prof2$Job==2)
juststudents <- subset(juststudents, juststudents$Site=="A")
describe(juststudents$relative)

relative.lm <- cbind(juststudents[c(77,103:113)]) # matrix of DVs for MANOVA
my.control <- lmRob.control(weight=c("bisquare", "bisquare"), estim="Final") # settings for regression
relative.lmRob <- lmRob(juststudents$relative ~ ., data=relative.lm, na.action=na.omit,
control=my.control)
summary(relative.lmRob)
cor(juststudents$ABIM,juststudents$relative,use="pairwise.complete.obs")

# calculates means for each variable, by progression, for plots
forprogABIM = (by(prof2$ABIM, prof2$prog.group, mean, na.rm=TRUE))[1:9]
forprogfactor1 = (by(prof2[[103]], prof2$prog.group, mean, na.rm=TRUE))[1:9] # repeat for all factors

forprogparaID = (by(prof2[[77]], prof2$prog.group, mean, na.rm=TRUE))[1:9]
forproghealthprof = (by(prof2[[78]], prof2$prog.group, mean, na.rm=TRUE))[1:9]
forprogemergservID = (by(prof2[[79]], prof2$prog.group, mean, na.rm=TRUE))[1:9]
forprogunistud = (by(prof2[[80]], prof2$prog.group, mean, na.rm=TRUE))[1:9]
forprogstudpara = (by(prof2[[81]], prof2$prog.group, mean, na.rm=TRUE))[1:9]
```

## Appendix C: Factor loading matrices

| Pattern matrix | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | WLS1 | WLS2 | WLS3 | WLS4 | WLS5 | WLS6 | WLS7 | WLS8 | WLS9 | WLS10 | WLS11 |
| Q3 | 0.06 | 0.63 | 0.01 | 0.16 | 0.01 | 0.03 | -0.11 | -0.03 | 0.18 | 0.00 | 0.12 |
| Q4 | 0.02 | 0.65 | -0.09 | 0.09 | 0.01 | 0.00 | 0.32 | 0.01 | 0.06 | -0.05 | 0.03 |
| Q5 | 0.13 | 0.76 | -0.01 | 0.00 | -0.08 | 0.04 | 0.14 | -0.02 | -0.02 | -0.01 | 0.07 |
| Q6 | 0.07 | 0.42 | 0.01 | 0.12 | 0.02 | -0.02 | 0.31 | -0.03 | 0.07 | -0.17 | -0.06 |
| Q7 | 0.54 | 0.06 | -0.09 | 0.13 | 0.16 | -0.06 | 0.19 | 0.04 | -0.04 | 0.00 | 0.04 |
| Q8 | 0.10 | -0.22 | 0.00 | 0.12 | 0.18 | 0.12 | 0.02 | 0.13 | -0.14 | 0.09 | -0.15 |
| Q9 | 0.34 | -0.06 | -0.02 | -0.04 | -0.04 | 0.17 | -0.04 | 0.06 | 0.12 | 0.03 | -0.27 |
| Q10 | 0.42 | 0.06 | 0.08 | -0.05 | -0.05 | 0.15 | -0.06 | -0.04 | 0.05 | 0.00 | -0.31 |
| Q11 | 0.33 | 0.06 | 0.03 | 0.02 | 0.13 | 0.17 | 0.02 | -0.10 | 0.20 | 0.01 | -0.10 |
| Q12 | 0.20 | -0.25 | -0.11 | 0.02 | 0.43 | 0.17 | 0.04 | -0.26 | 0.10 | -0.06 | 0.02 |
| Q13 | 0.23 | -0.01 | 0.01 | 0.17 | 0.27 | 0.05 | -0.09 | -0.21 | 0.09 | -0.04 | -0.01 |
| Q14 | -0.03 | 0.06 | -0.04 | 0.84 | -0.01 | -0.01 | 0.06 | -0.03 | -0.01 | 0.00 | 0.06 |
| Q15 | -0.03 | -0.04 | 0.00 | 0.85 | 0.02 | 0.06 | 0.00 | -0.03 | -0.03 | 0.01 | 0.14 |
| Q16 | 0.03 | 0.12 | 0.08 | 0.77 | 0.00 | -0.04 | 0.00 | 0.00 | 0.02 | -0.01 | -0.04 |
| Q17 | -0.01 | 0.05 | 0.01 | 0.65 | 0.02 | -0.02 | -0.04 | 0.10 | 0.13 | 0.02 | -0.06 |
| Q18 | 0.35 | 0.03 | 0.08 | 0.17 | -0.09 | 0.08 | -0.01 | 0.07 | -0.08 | 0.08 | -0.05 |
| Q19 | 0.39 | -0.04 | 0.09 | 0.17 | -0.14 | 0.14 | 0.03 | 0.15 | -0.03 | 0.22 | -0.02 |
| Q20 | 0.17 | -0.05 | 0.01 | 0.33 | 0.00 | 0.09 | 0.03 | 0.06 | 0.06 | 0.13 | -0.13 |
| Q21 | 0.02 | 0.05 | 0.30 | 0.00 | 0.13 | 0.06 | -0.07 | -0.02 | 0.02 | 0.01 | 0.53 |
| Q22 | 0.03 | 0.01 | 0.35 | -0.06 | 0.01 | 0.01 | 0.06 | 0.07 | 0.07 | -0.07 | 0.44 |
| Q23 | -0.07 | 0.01 | 0.46 | 0.04 | -0.06 | 0.02 | -0.15 | 0.01 | -0.03 | 0.12 | 0.24 |
| Q24 | 0.01 | -0.12 | -0.02 | -0.02 | -0.02 | -0.03 | 0.26 | 0.06 | 0.34 | 0.17 | 0.08 |
| Q25 | 0.02 | -0.21 | 0.03 | -0.03 | 0.02 | -0.04 | 0.11 | 0.13 | 0.29 | 0.06 | 0.23 |
| Q26 | 0.03 | 0.01 | 0.05 | 0.02 | -0.07 | 0.02 | 0.29 | 0.01 | 0.30 | -0.05 | 0.09 |
| Q27 | 0.02 | -0.35 | -0.01 | 0.04 | -0.05 | -0.11 | -0.02 | 0.38 | 0.06 | -0.02 | 0.00 |
| Q28 | 0.09 | -0.09 | 0.17 | 0.08 | 0.03 | -0.05 | 0.05 | 0.23 | 0.22 | -0.07 | 0.00 |
| Q29 | -0.04 | 0.19 | 0.01 | -0.01 | 0.05 | 0.02 | 0.73 | 0.01 | -0.02 | 0.11 | -0.02 |
| Q30 | -0.09 | 0.23 | 0.15 | 0.07 | 0.01 | 0.06 | 0.59 | -0.10 | -0.09 | 0.15 | -0.05 |
| Q31 | -0.01 | -0.04 | 0.15 | -0.01 | -0.05 | 0.07 | 0.48 | -0.17 | 0.01 | 0.16 | 0.10 |
| Q32 | 0.09 | 0.04 | 0.04 | 0.00 | -0.02 | 0.06 | 0.00 | -0.01 | 0.26 | 0.46 | 0.33 |
| Q33 | 0.25 | -0.05 | 0.33 | 0.01 | 0.04 | 0.07 | 0.11 | -0.01 | -0.11 | 0.11 | 0.07 |
| Q34 | -0.09 | 0.02 | 0.15 | 0.04 | -0.01 | -0.02 | -0.10 | 0.04 | 0.01 | 0.47 | 0.05 |
| Q35 | -0.03 | -0.08 | -0.03 | 0.00 | 0.04 | -0.08 | 0.04 | 0.00 | 0.30 | 0.64 | 0.05 |
| Q36 | 0.18 | -0.03 | 0.00 | 0.01 | 0.03 | -0.03 | 0.02 | -0.06 | 0.32 | 0.43 | -0.12 |
| Q37 | 0.07 | -0.05 | -0.13 | 0.00 | 0.01 | -0.02 | -0.03 | 0.01 | 0.28 | 0.63 | -0.04 |
| Q39 | 0.00 | -0.05 | 0.56 | 0.10 | 0.06 | -0.14 | 0.05 | 0.00 | 0.12 | -0.04 | -0.05 |
| Q40 | -0.02 | 0.05 | 0.58 | -0.01 | 0.10 | 0.00 | 0.09 | -0.16 | 0.02 | 0.12 | 0.05 |
| Q41 | 0.07 | -0.05 | 0.50 | -0.03 | -0.07 | -0.11 | 0.31 | 0.14 | 0.08 | -0.05 | 0.02 |
| Q42 | 0.06 | 0.12 | 0.57 | 0.05 | -0.09 | -0.08 | 0.11 | -0.01 | 0.12 | -0.06 | 0.02 |
| Q43 | 0.04 | 0.01 | -0.01 | 0.18 | -0.16 | 0.03 | 0.06 | 0.25 | 0.05 | 0.27 | 0.02 |
| Q44 | 0.01 | -0.09 | 0.48 | 0.04 | 0.02 | 0.08 | -0.12 | 0.28 | -0.05 | -0.01 | -0.03 |
| Q45 | -0.16 | 0.05 | 0.15 | -0.04 | 0.01 | -0.10 | 0.01 | 0.42 | 0.01 | 0.03 | -0.04 |
| Q46 | 0.07 | 0.11 | 0.34 | -0.09 | 0.02 | 0.10 | 0.01 | 0.09 | 0.16 | 0.07 | -0.09 |
| Q49 | -0.05 | 0.00 | 0.24 | -0.09 | 0.09 | 0.19 | -0.17 | 0.21 | -0.10 | 0.03 | 0.00 |
| Q50 | -0.02 | -0.06 | 0.05 | -0.16 | 0.03 | 0.14 | 0.07 | 0.35 | 0.03 | 0.07 | 0.00 |
| Q51 | -0.02 | 0.01 | 0.09 | 0.02 | 0.09 | 0.15 | -0.11 | 0.38 | 0.14 | 0.09 | -0.19 |
| Q52 | 0.14 | 0.01 | 0.17 | -0.07 | 0.07 | 0.00 | 0.43 | 0.14 | 0.05 | 0.00 | 0.05 |
| Q53 | 0.15 | 0.02 | 0.19 | -0.06 | -0.03 | 0.00 | 0.29 | 0.21 | 0.01 | 0.10 | 0.06 |
| Q54 | 0.02 | -0.02 | -0.13 | 0.06 | 0.03 | 0.12 | 0.02 | 0.53 | -0.04 | 0.02 | 0.08 |
| Q55 | 0.02 | 0.00 | -0.15 | -0.01 | 0.05 | 0.10 | -0.01 | 0.67 | 0.03 | 0.02 | 0.03 |
| Q56 | 0.00 | -0.03 | -0.01 | 0.05 | 0.73 | -0.01 | 0.05 | 0.05 | -0.07 | 0.07 | 0.04 |
| Q57 | 0.07 | 0.01 | 0.05 | -0.06 | 0.79 | 0.03 | -0.05 | 0.01 | 0.00 | 0.02 | 0.00 |
| Q58 | -0.04 | 0.18 | 0.03 | -0.03 | 0.52 | 0.02 | 0.00 | 0.21 | 0.04 | -0.02 | 0.03 |
| Q59 | 0.00 | 0.21 | 0.04 | 0.01 | 0.52 | -0.08 | 0.00 | 0.07 | 0.02 | 0.15 | -0.01 |
| Q60 | 0.44 | 0.31 | -0.01 | -0.12 | 0.18 | -0.04 | 0.17 | 0.14 | -0.02 | 0.06 | -0.01 |
| Q61 | -0.08 | 0.01 | 0.34 | 0.10 | 0.18 | -0.03 | 0.19 | -0.03 | -0.02 | 0.12 | -0.05 |
| Q62 | 0.09 | 0.27 | -0.06 | -0.02 | 0.02 | 0.10 | 0.01 | 0.11 | 0.01 | 0.31 | -0.03 |
| Q63 | 0.04 | 0.22 | 0.08 | -0.03 | 0.07 | 0.19 | 0.03 | 0.04 | -0.11 | 0.44 | -0.12 |
| Q64 | 0.01 | 0.13 | 0.07 | 0.02 | 0.16 | 0.18 | 0.04 | 0.04 | 0.02 | 0.38 | -0.06 |
| Q65 | -0.11 | 0.14 | 0.05 | 0.01 | 0.15 | 0.33 | 0.03 | 0.00 | 0.55 | -0.02 | -0.07 |
| Q66 | -0.02 | 0.21 | 0.03 | 0.04 | -0.02 | 0.31 | -0.15 | 0.06 | 0.52 | 0.08 | 0.05 |
| Q67 | -0.04 | 0.05 | -0.09 | -0.04 | -0.09 | 0.75 | 0.02 | 0.01 | 0.05 | 0.03 | 0.01 |
| Q68 | 0.03 | -0.06 | -0.01 | 0.03 | 0.06 | 0.75 | 0.04 | -0.16 | -0.01 | -0.02 | 0.00 |
| Q69 | 0.03 | -0.03 | -0.04 | 0.06 | -0.01 | 0.60 | -0.04 | 0.11 | -0.14 | -0.04 | 0.08 |

**Pattern matrix**

| | WLS1 | WLS2 | WLS3 | WLS4 | WLS5 | WLS6 | WLS7 | WLS8 | WLS9 | WLS10 | WLS11 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Q71 | -0.03 | -0.22 | 0.05 | 0.03 | 0.01 | 0.03 | 0.32 | 0.28 | 0.08 | -0.23 | -0.03 |
| Q72 | -0.01 | 0.43 | -0.01 | 0.12 | 0.07 | -0.06 | 0.20 | 0.19 | -0.01 | -0.05 | -0.06 |
| Q73 | 0.76 | 0.16 | -0.02 | -0.05 | 0.03 | -0.06 | -0.01 | -0.04 | 0.01 | 0.00 | 0.12 |
| Q74 | 0.64 | 0.30 | 0.05 | 0.05 | 0.02 | -0.10 | -0.05 | -0.05 | 0.01 | 0.01 | 0.01 |

**Structure Matrix**

| | V1 | V2 | V3 | V4 | V5 | V6 | V7 | V8 | V9 | V10 | V11 | V12 |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Q3 | 0.33 | 0.13 | 0.69 | 0.11 | 0.29 | 0.15 | 0.10 | -0.07 | 0.09 | 0.26 | 0.07 | 0.12 |
| Q4 | 0.29 | 0.12 | 0.67 | 0.45 | 0.27 | 0.17 | 0.09 | -0.06 | 0.06 | 0.17 | -0.01 | 0.06 |
| Q5 | 0.19 | 0.15 | 0.80 | 0.30 | 0.34 | 0.10 | 0.11 | -0.09 | 0.09 | 0.08 | 0.07 | 0.12 |
| Q6 | 0.27 | 0.16 | 0.49 | 0.40 | 0.19 | 0.13 | -0.04 | -0.07 | -0.03 | 0.18 | 0.08 | 0.03 |
| Q7 | 0.23 | 0.08 | 0.21 | 0.32 | 0.61 | 0.31 | 0.22 | 0.07 | 0.03 | 0.15 | 0.17 | 0.04 |
| Q8 | 0.07 | 0.03 | -0.14 | 0.02 | 0.02 | 0.26 | 0.19 | 0.21 | 0.14 | -0.06 | 0.30 | -0.21 |
| Q9 | -0.01 | 0.02 | 0.00 | -0.01 | 0.29 | 0.10 | 0.16 | 0.12 | 0.14 | 0.20 | 0.27 | -0.26 |
| Q10 | 0.02 | 0.11 | 0.16 | 0.01 | 0.37 | 0.09 | 0.16 | 0.02 | 0.12 | 0.17 | 0.29 | -0.30 |
| Q11 | 0.11 | 0.14 | 0.23 | 0.14 | 0.35 | 0.27 | 0.17 | 0.01 | 0.14 | 0.30 | 0.37 | -0.03 |
| Q12 | 0.06 | -0.06 | -0.10 | 0.05 | 0.23 | 0.38 | 0.04 | -0.14 | 0.19 | 0.09 | 0.06 | 0.04 |
| Q13 | 0.24 | 0.04 | 0.13 | 0.02 | 0.30 | 0.27 | 0.05 | -0.13 | 0.11 | 0.14 | 0.05 | -0.02 |
| Q14 | 0.86 | 0.04 | 0.22 | 0.20 | 0.07 | 0.06 | 0.02 | -0.03 | 0.07 | 0.08 | 0.12 | 0.01 |
| Q15 | 0.85 | 0.06 | 0.11 | 0.15 | 0.07 | 0.08 | 0.05 | 0.00 | 0.16 | 0.05 | 0.08 | 0.06 |
| Q16 | 0.82 | 0.16 | 0.28 | 0.18 | 0.13 | 0.09 | 0.06 | 0.02 | 0.05 | 0.15 | 0.11 | -0.09 |
| Q17 | 0.67 | 0.11 | 0.17 | 0.11 | 0.07 | 0.12 | 0.08 | 0.12 | 0.04 | 0.23 | 0.19 | -0.09 |
| Q18 | 0.18 | 0.15 | 0.16 | 0.09 | 0.30 | 0.09 | 0.20 | 0.13 | 0.08 | 0.03 | 0.44 | 0.02 |
| Q19 | 0.18 | 0.23 | 0.10 | 0.14 | 0.35 | 0.10 | 0.39 | 0.28 | 0.16 | 0.09 | 0.53 | 0.03 |
| Q20 | 0.33 | 0.13 | 0.09 | 0.12 | 0.14 | 0.17 | 0.22 | 0.17 | 0.10 | 0.13 | 0.45 | -0.06 |
| Q21 | 0.03 | 0.32 | 0.15 | 0.13 | 0.13 | 0.18 | 0.11 | 0.05 | 0.07 | 0.11 | 0.05 | 0.47 |
| Q22 | -0.02 | 0.38 | 0.10 | 0.22 | 0.09 | 0.08 | 0.08 | 0.14 | -0.01 | 0.16 | 0.04 | 0.43 |
| Q23 | 0.03 | 0.43 | 0.06 | 0.03 | -0.02 | 0.01 | 0.16 | 0.13 | 0.05 | 0.05 | 0.08 | 0.23 |
| Q24 | 0.03 | 0.15 | -0.11 | 0.33 | 0.12 | 0.11 | 0.25 | 0.19 | -0.02 | 0.34 | 0.09 | 0.16 |
| Q25 | -0.02 | 0.12 | -0.20 | 0.19 | 0.10 | 0.08 | 0.14 | 0.23 | -0.02 | 0.29 | -0.04 | 0.25 |
| Q26 | 0.10 | 0.18 | 0.06 | 0.38 | 0.09 | 0.04 | 0.05 | 0.09 | -0.05 | 0.36 | 0.14 | 0.19 |
| Q27 | -0.06 | -0.01 | -0.40 | -0.05 | -0.08 | -0.03 | 0.02 | 0.40 | -0.10 | 0.08 | 0.05 | 0.02 |
| Q28 | 0.11 | 0.26 | -0.04 | 0.17 | 0.11 | 0.14 | 0.09 | 0.31 | -0.05 | 0.33 | 0.13 | 0.05 |
| Q29 | 0.16 | 0.30 | 0.20 | 0.78 | 0.18 | 0.21 | 0.29 | 0.10 | 0.09 | 0.11 | -0.04 | -0.01 |
| Q30 | 0.21 | 0.36 | 0.28 | 0.67 | 0.09 | 0.17 | 0.28 | 0.01 | 0.10 | 0.05 | 0.06 | -0.06 |
| Q31 | 0.08 | 0.30 | 0.00 | 0.53 | 0.13 | 0.05 | 0.25 | -0.04 | 0.10 | 0.07 | -0.02 | 0.09 |
| Q32 | 0.07 | 0.26 | 0.11 | 0.18 | 0.29 | 0.16 | 0.55 | 0.20 | 0.18 | 0.28 | 0.11 | 0.30 |
| Q33 | 0.07 | 0.42 | 0.06 | 0.25 | 0.32 | 0.17 | 0.29 | 0.13 | 0.14 | 0.04 | 0.14 | 0.09 |
| Q34 | 0.02 | 0.24 | 0.04 | 0.03 | 0.00 | 0.13 | 0.45 | 0.20 | 0.07 | 0.05 | 0.17 | -0.01 |
| Q35 | 0.02 | 0.20 | -0.06 | 0.18 | 0.15 | 0.22 | 0.63 | 0.25 | 0.05 | 0.30 | 0.14 | 0.03 |
| Q36 | 0.06 | 0.17 | 0.03 | 0.18 | 0.27 | 0.23 | 0.48 | 0.14 | 0.02 | 0.39 | 0.29 | -0.13 |
| Q37 | 0.01 | 0.08 | -0.03 | 0.09 | 0.20 | 0.21 | 0.62 | 0.23 | 0.09 | 0.28 | 0.24 | -0.07 |
| Q38 | -0.08 | 0.26 | -0.03 | 0.06 | 0.11 | 0.07 | 0.05 | 0.05 | 0.08 | 0.01 | -0.01 | 0.24 |
| Q39 | 0.16 | 0.58 | 0.05 | 0.26 | 0.07 | 0.14 | 0.10 | 0.13 | -0.13 | 0.30 | 0.05 | -0.01 |
| Q40 | 0.08 | 0.65 | 0.16 | 0.30 | 0.13 | 0.20 | 0.27 | 0.04 | 0.06 | 0.17 | 0.03 | 0.08 |
| Q41 | 0.04 | 0.60 | 0.03 | 0.48 | 0.13 | 0.07 | 0.17 | 0.28 | -0.11 | 0.28 | 0.08 | 0.10 |
| Q42 | 0.16 | 0.61 | 0.20 | 0.33 | 0.17 | 0.02 | 0.11 | 0.11 | -0.07 | 0.31 | 0.01 | 0.05 |
| Q43 | 0.16 | 0.12 | 0.05 | 0.14 | 0.05 | 0.03 | 0.34 | 0.33 | 0.06 | 0.11 | 0.31 | 0.01 |
| Q44 | 0.04 | 0.47 | -0.04 | 0.03 | 0.02 | 0.14 | 0.18 | 0.39 | 0.12 | 0.11 | 0.12 | -0.06 |
| Q45 | -0.01 | 0.25 | -0.02 | 0.06 | -0.05 | 0.08 | 0.18 | 0.48 | 0.03 | 0.07 | -0.23 | -0.09 |
| Q46 | 0.02 | 0.45 | 0.14 | 0.18 | 0.22 | 0.17 | 0.26 | 0.24 | 0.16 | 0.30 | 0.03 | -0.09 |
| Q47 | 0.05 | 0.21 | 0.23 | 0.10 | 0.14 | 0.09 | 0.26 | 0.20 | 0.14 | 0.04 | -0.22 | 0.01 |
| Q48 | 0.07 | 0.18 | 0.23 | -0.01 | -0.07 | -0.06 | 0.09 | 0.00 | -0.07 | 0.03 | 0.19 | 0.02 |
| Q49 | -0.08 | 0.26 | 0.01 | -0.13 | -0.02 | 0.14 | 0.17 | 0.27 | 0.25 | -0.04 | 0.04 | -0.10 |
| Q50 | -0.14 | 0.17 | -0.10 | 0.07 | 0.04 | 0.15 | 0.25 | 0.41 | 0.20 | 0.07 | 0.02 | -0.05 |
| Q51 | 0.04 | 0.21 | 0.00 | -0.02 | 0.06 | 0.27 | 0.28 | 0.45 | 0.21 | 0.24 | 0.18 | -0.25 |
| Q52 | 0.03 | 0.36 | 0.10 | 0.53 | 0.23 | 0.24 | 0.23 | 0.24 | 0.01 | 0.21 | 0.14 | 0.09 |
| Q53 | 0.03 | 0.37 | 0.06 | 0.39 | 0.27 | 0.13 | 0.33 | 0.33 | 0.08 | 0.15 | 0.03 | 0.06 |
| Q54 | 0.05 | 0.01 | -0.06 | 0.03 | 0.07 | 0.17 | 0.21 | 0.53 | 0.21 | 0.01 | 0.08 | 0.03 |
| Q55 | -0.02 | 0.01 | -0.07 | 0.01 | 0.07 | 0.22 | 0.23 | 0.64 | 0.19 | 0.10 | 0.12 | 0.00 |
| Q56 | 0.12 | 0.13 | 0.09 | 0.18 | 0.18 | 0.75 | 0.25 | 0.16 | 0.15 | 0.05 | 0.00 | -0.04 |
| Q57 | 0.03 | 0.16 | 0.15 | 0.11 | 0.24 | 0.80 | 0.24 | 0.14 | 0.17 | 0.14 | 0.04 | -0.06 |
| Q58 | 0.06 | 0.17 | 0.25 | 0.14 | 0.14 | 0.61 | 0.19 | 0.27 | 0.13 | 0.16 | 0.06 | 0.02 |
| Q59 | 0.10 | 0.19 | 0.31 | 0.18 | 0.18 | 0.62 | 0.31 | 0.16 | 0.05 | 0.15 | 0.10 | -0.05 |

| Structure Matrix | | | | | | | | | | | | |
|-----|------|-------|------|-------|------|-------|-------|-------|-------|-------|-------|-------|
|     | V1   | V2    | V3   | V4    | V5   | V6    | V7    | V8    | V9    | V10   | V11   | V12   |
| Q60 | 0.05 | 0.21  | 0.40 | 0.32  | 0.60 | 0.36  | 0.34  | 0.17  | 0.09  | 0.18  | 0.07  | -0.04 |
| Q61 | 0.16 | 0.43  | 0.08 | 0.35  | 0.05 | 0.28  | 0.24  | 0.11  | 0.03  | 0.13  | 0.07  | -0.07 |
| Q62 | 0.07 | 0.11  | 0.25 | 0.13  | 0.28 | 0.20  | 0.43  | 0.18  | 0.24  | 0.09  | 0.04  | -0.14 |
| Q63 | 0.06 | 0.26  | 0.23 | 0.15  | 0.25 | 0.27  | 0.57  | 0.20  | 0.37  | -0.02 | 0.09  | -0.26 |
| Q64 | 0.11 | 0.26  | 0.16 | 0.17  | 0.21 | 0.35  | 0.51  | 0.21  | 0.33  | 0.11  | 0.13  | -0.15 |
| Q65 | 0.17 | 0.22  | 0.16 | 0.18  | 0.12 | 0.29  | 0.15  | 0.14  | 0.33  | 0.58  | 0.08  | -0.04 |
| Q66 | 0.17 | 0.19  | 0.22 | 0.01  | 0.22 | 0.15  | 0.22  | 0.17  | 0.36  | 0.56  | 0.05  | 0.02  |
| Q67 | 0.03 | -0.02 | 0.04 | -0.02 | 0.03 | 0.07  | 0.15  | 0.10  | 0.69  | 0.00  | 0.24  | -0.06 |
| Q68 | 0.08 | 0.03  | 0.01 | 0.01  | 0.07 | 0.17  | 0.12  | -0.03 | 0.69  | -0.03 | 0.27  | -0.05 |
| Q69 | 0.08 | -0.01 | 0.00 | -0.08 | 0.05 | 0.10  | 0.10  | 0.16  | 0.60  | -0.15 | 0.19  | 0.00  |
| Q70 | 0.09 | 0.19  | -0.13| 0.12  | -0.03| -0.02 | 0.05  | 0.29  | 0.10  | 0.11  | -0.06 | 0.05  |
| Q71 | 0.03 | 0.13  | -0.21| 0.29  | -0.10| 0.05  | -0.09 | 0.32  | -0.04 | 0.16  | 0.10  | 0.05  |
| Q72 | 0.25 | 0.16  | 0.44 | 0.31  | 0.17 | 0.19  | 0.11  | 0.15  | 0.03  | 0.12  | -0.03 | -0.06 |
| Q73 | 0.09 | 0.09  | 0.29 | 0.17  | 0.86 | 0.17  | 0.22  | -0.02 | 0.05  | 0.20  | 0.07  | 0.11  |
| Q74 | 0.19 | 0.15  | 0.43 | 0.15  | 0.74 | 0.16  | 0.21  | -0.03 | 0.01  | 0.20  | 0.10  | 0.01  |

**Appendix D: Analysis of free text comments from the Questionnaire:**

Both qualified and student paramedics were asked for any additional comments about issues covered in the questionnaire that were thought to be helpful.

The two main themes which emerged from respondents were related to issues with the organisation and these were the way in which staff were undervalued and that the profession is too target driven. However there were other themes which emerged from the comments which were associated with training and development and perceptions of the profession.

**Organisation**

**Undervalued by the profession**

Several comments (mostly from qualified respondents) were associated with the overall way in which the organisation treats staff and trainees. Respondents did not feel that they were valued.

> *I love my job but unfortunately the knowledge that we won't be backed in a difficult situation is slowly draining my desire to do it.* (Qualified)

> *…management and operations do not always accept that frontline staff are best placed to make decisions about the treatment of patients they are attending.* (Qualified)

> *They treat crews like robots we have feelings, to them it is job after job. (Qualified)*

> *The [organisation] does not seem to value or care about staff anymore.* (Qualified)

> *…no compassion or consideration for the clinicians on duty relocation of jobs is relentless no matter what the previous job was…work/life balance is affected by the fatigue imparted by the workload...* (Qualified)

> *Pressure that we are being scrutinised all the time and always in the wrong.* (Qualified)

> *…shift patterns can affect work/life balance.* (Student)

**Target driven**

There were a large number of comments from both qualified and student paramedics related to the ambulance service being too target driven to the detriment of patient safety and staff welfare.

> *Patient care takes second place to patient care.* (Qualified)

> *They rigorously chase their targets but these do not always translate to improved patient care on the ground.* (Qualified)

> *The service is too focused on times and has no consideration for the Paramedic's welfare or patient …* (Qualified)

> *I think it is very hard to work in patients' best interest when ambulance services put pressure on you to finish treating a patient to be able to do another job.* (Student)

> *I would be a lot more positive about my job of it was more centred around patient care than response times and targets.* (Student)

> *…it's ok to allow people to do a 12 hour shift without any type of rest break…so hence not looking after staff welfare.* (Qualified)

*All emergency services should be treat the same would be nice to feel that staff matter more than targets and protocol. (Student)*

Some comments were related to there not being enough time to check equipment before starting their shift.

*We can't often check equipment at the start of a shift because there is no time allowed to check equipment or sign out drugs…pressure from the service to respond to a call even if the vehicle isn't fully kitted (Qualified)*

There were some qualified staff that commented that a target driven organisation had changed the profession and not always for the better.

*The stressors (professional and organisational governance factors) are now major factors to reducing longevity in this professional field (Qualified)*

**Staff training and development**

Several comments from qualified respondents related to the lack of time allocated to training and staff development. This was linked in most cases to service demands and targets.

*The reason any professionals are seen as such is that they train regularly, be they sportsmen/women or military units. Why am I not afforded the same treatment? (Qualified)*

*If management gave staff the time to learn the job and to develop skills and research then this would make the staff feel a professional rather than just a resource to send to the next waiting job (Qualified)*

*A lack of training within [name of organisation], training being cancelled, unable to get time off to do training…(Qualified)*

*The training aspect of our role is a joke. I've not received any formal training for nearly 2 year. Every time our [name] (service demand) goes up, training is completely stopped. This is unacceptable and worries me greatly. (Qualified)*

**Perceptions of the profession**

There were several comments regarding the perception of the profession from the point of view of other healthcare professions and patients. Some participants made comments relating to the importance of maintaining a positive perception of the profession.

*The terminology that is used is very important as it sets the tone for how you are viewed as does as does a professional image i.e. uniform, vehicle and equipment. (Qualified)*

*Professionalism is very important to me, in terms of my colleagues' perceptions of me and public perception of me as an individual and of the ambulance service I work for. Unfortunately my experience and observation tells me that this attitude is not widely adopted like it should be. (Qualified)*

*Today the ambulance service is no longer used purely for emergencies. It is viewed by some patients and other healthcare professionals as a blue light taxi service which it most certainly is not…therefore it would be beneficial to have a more pro-active PR department which may help to …improve the perception of what the ambulance service is. (Qualified)*