

Chapter 2: Reflecting on Population Health Learning in Pre-Registration Paramedic Education during a Global Pandemic

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Introduction

The pre-hospital emergency care responses in the Covid-19 pandemic would not have been possible without the paramedic profession, mostly working within NHS ambulance services. The pre-registration education that underpins entry to the paramedic profession, therefore, becomes a vital area for considerable reflection on how it prepares paramedics for pandemics and what those involved in paramedic education can learn from this unique period of time. In March 2020, the university sector responses were both anticipatory yet fast moving at the start of first implementation of government regulations, aimed at preventing the mass spread of the SARS-CoV-19 virus. Across the sector, difficult decisions were made for the physical closure of university campuses, with rapid transitions to remote and online-only learning, and additionally for health students, postponement, or cancellation of clinical placements. Within three months of the University of West London's (UWL) first cohort of the MSc Paramedic Science (Pre-Registration) starting, the pandemic rules were part and parcel of our daily vigilance. Initially, for the UWL student paramedics, their academic experience was not to be so obviously affected as their first term of teaching had been completed and they were to commence their first emergency ambulance placement. However, with the 'touch and go' pace of the significantly increased patient demand (as well as the obvious risk of spread of infection) on NHS ambulance services, clinical placements were postponed, which affected, across the year, approximately 1000 student paramedics in London alone. This postponement led to a new responsibility on paramedic science academics to provide extra-curricular learning to replace clinical learning through virtual simulation and / or sustain educational enrichment, above and beyond 'normal' academic work. The Health and Care Professions Council (HCPC) had advised higher education institutions (HEIs) that approved programmes of study which led to eligibility for a HCPC-registered profession would be able to continue in a flexible manner providing the HCPC standards were maintained.

Ultimately, as educators, we personally knew of the Covid-19 induced occupational stress affecting the ambulance workforce and we continued our high efforts in educating the future paramedics who (mostly) would inevitably become part of the London Ambulance Service NHS Trust future workforce. So, the decision to postpone the programme would not have benefited anyone's longer term favour - our students, the ambulance service, the NHS, the patients, and the public. Whilst the move to remote and online-only learning for most of the first lockdown would be the obvious way forward, students became concerned for a lack of major practical experience in their clinical and theoretical learning for an unknown time period. This practical experience would ultimately consolidate their proficiencies to qualify and register as a paramedic. Managing this student concern was unique from non-clinical programmes of study, so ensuring and maximising the 'virtual' student experience became challenging for academics and students alike due to the 'uncharted waters' that the pandemic had brought.

Organisation of Chapter

Firstly, this chapter will provide a brief history of the evolution / professionalisation of paramedic education, from practical training through to the development of higher education programmes, in the advancement of enhancing pre-hospital care to patients, illuminating the greater need for public health curriculum and utilisation of student paramedics in pandemic responses. Secondly, an exploration takes place into how the public health curriculum can be designed in pre-registration paramedic education in both non-pandemic and pandemic times. Lastly, this chapter brings together the recent literature on the Covid-19 pandemic response experiences of student paramedics across the globe.

A Brief History of Paramedic Education

Historically, the evolution / professionalisation of ambulance workforce education has significantly transformed from the 'stretcher-bearer' requirements (Williams *et al.* 2009, First *et al.* 2012) or offering a 'deliver first aid and transport model' (O'Meara 2009) to a regulated health care profession, namely a paramedic able to problem solve and provide solutions within time-pressured, pre-hospital environments (O'Meara 2009). Within this professionalisation, pre-registration paramedic education has rapidly advanced from the first 'in-house' ambulance service paramedic training

scheme in Brighton in the 1970s (Van de Gaag and Donaghy 2013) to a predominantly higher education model with mandated clinical placements in approved practice learning partners (e.g. NHS ambulance services) across the UK. This growth of professionalisation / scope of practice in pre-registration paramedic education means that patients ultimately receive better care and can (although not exclusively) be treated at home without the need to go to hospital (Bigham *et al* 2013). Eaton rightly observes that '*...not all paramedics wear green*' (2019: 1) and this is, by in large, because their pre-registration education offers great transferability of knowledge, skills, values and behaviours to other clinical settings, such as emergency departments (e.g. Clarke 2019), hospices (e.g. Singer 2021) and primary and urgent care (e.g. Eaton *et al.* 2020). While these non-traditional settings can be considered as appropriate diversification of the paramedic profession, public perceptions may not recognise these professional movements.

In the UK, paramedics have required state registration since 2000 and are regulated by the HCPC, who also set, maintain, and monitor pre-registration education standards. Certainly, since the introduction of state regulation and registration, the profession has placed greater aspiration on an ambitious model of paramedicine; beyond the 'scoop and run' / 'only convey to hospital' approach, which is still a perception for a majority of the public. This ambitious model characteristically aims to distinguish a unique contribution within the multi-disciplinary team, *i.e.* autonomous out-of-hospital / pre-hospital clinical decision-making and intervention(s) (Donaghy 2008, McCann *et al.* 2013) and experts in episodic biopsychosocial care, a unique feature that I would also add. This professional aspiration is congruent with Lord Carter's review into unwarranted variation in NHS ambulance trusts (NHS England 2018), who identified that the NHS could save £500 million if more patients were better assessed during the 999 call and / or treated in the pre-hospital environment by paramedics, avoiding the need for an unnecessary conveyance to hospital. Lord Carter's review challenges the traditional pattern of ambulance practice (attendance, stabilisation and conveyance) sustainability in use of resources for patients who are now older, sicker and have more complex exacerbations of long-term conditions, when more complex decision-making and discharge / referral plans are now required. The review's findings support the need for paramedic education to go way beyond the historic, biomedically-centric episodic care delivered

and take into account models of health at population levels, such as public health, which is observed in the College of Paramedics (CoP) (2019) curriculum guidance (the UK's professional body for paramedics).

The CoP (2019) curriculum guidance, aimed at HEIs, specifies greater granularity in comparison to the HCPC (2014) Standards of Proficiency (SoPs) for Paramedics. Whilst the CoP curriculum guidance is not mandatory, in order to become a HCPC-approved programme, it offers educational aspiration to the future workforce as well as influencing the content of future HCPC Standards of Proficiency. Now in its fifth iteration, the curriculum guidance demonstrates the breadth of learning that UK student paramedics undertake. I have highlighted key areas of the guidance that have direct relevance to Covid-19 at a population health level:

- public health
- health promotion
- resilience and disaster preparedness
- health psychology
- sociology of health

O'Meara *et al.* (2017) have observed that the paramedic education places great centrality on emergency medicine curricular (understandably) and this, along with 'packed' programme planners, reduces the possibility (or creativity) for programmes to include more public health content. However, O'Meara *et al.* also note that paramedic higher education programmes can be flexible in how they are organised, so increasing public health content is entirely possible. A reason for this limitation may be that the paramedic science academic discipline requires more explicit inter-disciplinary input from other academic disciplines such as specialist community public health nursing, public health medicine, community development and epidemiology.

For context-sake, despite this advancement in pre-registration paramedic education and diversification of settings, there has been accelerated and paradoxical introduction of differing strata of very (in comparison) basically skilled ambulance staff (e.g. Emergency Care Assistants), most often that is, as Whitmore and Furber (2006) point out, driven by employer / service provision needs. Basically skilled

ambulance personnel have always been in existence (with varying role titles) but are limited in what they can offer professionally to patients in the pre-hospital environment when compared with paramedics. The professional differences in the patient offer potentially becomes problematic as all ambulance staff wear green uniforms. When concentrating on the sole visibility (and value) of paramedics in ambulance services, two situations potentially occur: 1) paramedics become diluted in workforce numbers, and 2) all staff are perceived as 'paramedics' from a layperson's perspective (regardless of rank and role bars / epaulettes). Even a recent UK Secretary of State for Health and Member of Parliament publicly called paramedics 'ambulance drivers'. Many, if not all, NHS ambulance services having rolling vacancy advertisements for paramedics and there is a clear demand for more people to enter the paramedic profession.

Anecdotally, the majority of the public expect the ambulance service to be as quick and responsive to assess and treat their emergency and urgent care needs (in a suspected / expected paramedic capacity) and convey to hospital and it is unlikely the pandemic changed this perception, other than increase frustration in delay in response or frustration in receiving a different response to what they may have anticipated. So, the paramedic profession potentially begins to fall into a mixed yet highly charged political / public portrayal of two extremes (or somewhere in between): 'ambulance drivers who basically should treat and convey to hospital when called upon' versus 'evidence-based pre-hospital care professionals who can make safe, complex and ethical decisions, with sometimes non-conveyance outcomes over the phone or in person'. Similar political / public discourse problems that can be seen in parallel within nursing workforce discourse (e.g. Rafferty 2018). It is the latter portrayal that the profession must continue to advocate beyond paramedics through research inquiry, public education and political lobbying. Lay perceptions of pre-registration paramedic education developments may be poor or unknown, leading to a potential hinderance to the forward-momentum and public support for advancing professional education in paramedicine, including using student paramedics as part of pandemic responses, increasing non-repayable funding available for studying paramedic science and perhaps, part-time self-funded study options.

This section has essentially outlined that pre-registration paramedic education has always been embedded in clinical practice but is now structured through formalised learning (Laurillard 2012) in a higher education model, together with *probably* as much, if not more ‘clinical’ training (whether actual or simulated) in current paramedic education programmes than historical, shorter, in-house paramedic courses. In a recent academic commentary, Whitfield *et al.* (2020) argues that student paramedics are / were under-utilised in the Covid-19 pandemic even though their education is premised on their development to become ‘...*safe, adaptable and ethical clinicians who can analysis situations and react appropriately in a dynamic and continually challenging environment*’ (Whitfield *et al.* 2020: 2). Whitfield *et al.* also highlights that when compared to other types of pandemic responders such as basically trained health volunteers, student paramedics are far more versatile and useful in times of national emergency need.

Identifying the public health curriculum in paramedic education design

Building upon the CoP (2019) curriculum guidance and O’Meara’s *et al.* (2017) findings from the literature, the UWL MSc Paramedic Science programme offers a first-year 30 credit module entitled: *Population Health and Behavioural Science for Paramedic Practice*. The module introduces the principles of population dynamics and health care demand, in order to understand how service constraints impact on population need and dispatch decision making in ambulance practice. The module provides teaching and learning on recognising the impact of the psychosocial and economic determinants of health on populations and individuals and contribute to improvement in health outcomes, through multi-agency working and the use of behavioural interventions in patient contacts. This includes an understanding of the health system interfaces, which impact on ambulance service response and deployment. From a UK Quality Code for Higher Education (QAA 2014) perspective, this module requires learners to demonstrate a systematic, extensive and comparative understanding of the key / main population health topics within the current multi-disciplinary knowledge base(s), whilst also (critically) appraising and appreciating ambiguity, uncertain and limitations of population health knowledge within a systematic and wide-ranging way, when applied to paramedic science. A small number of taught session examples of the module can be found in Table 2.1.

Introduction to Public Health: UK and Global Challenges

Topics included:

- Identifying local, national and international public health priorities
- Principles of health protection and promotion at individual and population levels in national and international contexts e.g. antimicrobial stewardship, cold weather plan, heatwave plan and pandemic influenza plan

Appraising Demographic and Epidemiological Data for Paramedic Practice

Topics included:

- Demographic and Epidemiological Data Interpretation for Paramedic Practice
- Case Definition and different data used in determining Medical Diagnosis
- Principles of Screening versus Testing
- Epidemiological Monitoring

Sociological Considerations to Health & Illness

Topics included:

- Applied sociology of health and illness in paramedic practice
- Political Ideologies in State Health Provision
- The Construction of Social Problems
- Theoretical Consideration for the Biomedical Model underpinning JRCALC assessments and interventions
- Critically appraising 'person-centred', 'lived experience' and 'biopsychosocial' concepts in paramedic practice

Population Health Needs and Ambulance Deployment

Topics included:

- Resource utilisation and organised in ambulance services to meet population health needs (including multi-agency working)
- Signposting / referral systems e.g. ambulance response and deployment decisions
- Local Strategic Health Needs Assessments
- Inequality and healthcare resource use in different social groups

Table 2.1 Selected Examples of Taught Sessions on the Population Health and Behavioural Science for Paramedic Science

At the start of the pandemic and its unfolding, there was a new pressure on academics to ensure that students could begin to sense-make of the daily (or at least weekly) media-facilitated, public display of conflict and clashing between ardent advocates of evidence-based medicine, policy advisors, clinicians and politicians on the government pandemic decisions (Watson and McCrae 2020). This public conflict and clashing, which led to a confusing public discourse, were often a result of the different interpretation of the same (emerging) evidence on infectivity / transmissibility of the SARS-CoV-19 virus with the ranging introduction of preventative measures such as handwashing, face masks, social distancing and the implementation of lockdowns, and latterly vaccines (Fanner and Maxwell 2021). The UWL MSc Paramedic Science created a 'wholesale' response to framing the emerging Covid-19 condition and pandemic across modular learning where appropriate.

Table 2.1 illustrates a sample of what the UWL student paramedics learnt in the three months running up to the implementation of pandemic rules, meaning they were able to start 'dissecting' the pandemic decision-making and make sense of the pandemic through a (broader and post-graduate) paramedicine lens. Whilst the module teaching had finished by the time the pandemic rules came into place, the module continued regular virtual learning contact, facilitating either taught sessions or academic journal clubs on topics that arose in the government briefings (e.g. herd immunity, the emerging case definition of Covid-19 and social distancing measures). As the module leader and lecturer, I had to rapidly interpret the daily-changing government public health measures through an academic and professional lens based on my own professional learning as a specialist community public health nurse and post-doctoral research literacy. Sometimes I felt self-doubt by the differences between my academic / professional opinion and the UK government pandemic decisions. For example, the taught session I designed on the theoretical basis of 'herd immunity' was potentially contradicting at the time as it was not 'in line' with the UK government's pandemic ideology of 'following the science'. We have since learnt, through public inquiry, that the herd immunity through natural infection spread approach taken by the UK government was disastrous, leading to thousands of unnecessary Covid-19 deaths.

The online journal clubs were effective when learning design explicated the online teaching and learning experience (e.g. based on Laurillard's (2002) Conversational Framework) as well as explicit learning types, such as Laurillard's (2012) six learning types (acquisition, inquiry, discussion, practice, production, collaboration). Two papers used in the journal clubs included: the original retrospective cohort study on the clinical course and risk factors for mortality of adult inpatients with Covid-19 in Wuhan (Zhou *et al.* 2020) and an earlier 2004 comparative study on the public's response to Severe Acute Respiratory Syndrome in Toronto and the United States (Blendon *et al.* 2004). The journal clubs worked incredibly well at reflecting both forwards and backwards and gave students stability in their daily lives as learners as well as citizens.

Considering the teaching and learning experience / explicit learning types point towards solution of the existing research findings on online / hybrid learning experience of student paramedics during the Covid-19 pandemic, including: the need to create more social connection opportunities with campus closure (Whitfield *et al.* 2021); supporting the development of positive coping strategies (Williams *et al.* 2021), and; increasing the motivation to learn online when face-to-face teaching is favoured (Allfred *et al.* 2021).

The Student Paramedic Experience of the Covid-19 Pandemic

On the 3rd April 2020, a joint statement by the Health and Care Professions Council (HCPC), the Chief Allied Health Professions Officers of the four nations of the UK and the Council of Deans of Health was published that outlined how allied health professions students (including paramedics) would be supported to respond to the Covid-19 pandemic. The joint statement (HCPC *et al.* 2020) quickly established that any intervention they would put into place would need to balance the needs of patients, front line health professionals and students, to enable students to offer their support to the NHS with the least disruption to their education. The joint statement made four over-arching points:

1. Automatic (temporary) registration for final year students who had completed their clinical placements with approval from their HEI were able to work at NHS Agenda for Change (AfC) Band 5 pay. Full registration would occur later,

as per normal processes, and in some cases of additional theoretical learning and assessment.

2. Final year students who had not completed their clinical placements, second year of their BSc (third year in Scotland) or first year of an MSc could support the NHS in a paid support worker role, remunerated at NHS AfC Band 3 and the hours undertaken would go towards their required practice hours (determined by each HEI). This second point recognised a progressive and sustain clinical learning whilst bearing in mind reduced placement capacity in the health system.
3. All other students would continue their university programmes but have placements paused. This third point meant that students were to focus on the theoretical parts of their education (with HEIs encouraged to bring academic learning forward), with clinical learning requirements to be achieved later in their programme.
4. All students were able to volunteer to support the front line in their spare time, which would make no contribution to their clinical learning hours.

It should be noted that if students who fell under point two could have been deployed anywhere that may or may not have been directly relevant to their usual clinical environments, such as a hospital ward rather than an ambulance. Naturally, many student paramedics sought to volunteer their support to local ambulance services – even offering to just restock and prepare ambulances for front-line work.

Following the onset of the pandemic, UK ambulance services were faced with four main challenges, which Emmerson (2021) observed as:

1. difficulties in answering and clinically triaging unprecedented increased number of 999 and 111 calls (March 2020: 999 calls doubled, and 111 calls trebled)
2. being able to find enough additional vehicles
3. being able to find enough clinical and operational staff from answering calls to clinical response to logistics to vehicle maintenance
4. the loss of up to 20% of workforce to Covid-related sickness and self-isolation

In order to deal with these difficulties, ambulance services thought creatively about how this increased demand for services could be met, which included rapidly

recruiting from a wide of public sector workers (such as firefighters, the military), voluntary workers (e.g. Community First Responders) and student paramedics to work on the front-line (e.g. East of England Ambulance Service NHS Trust 2020) or using first and second year student paramedics to work in 999 call centres (e.g. Emmerson 2021). Voluntary sector organisations, such as St John Ambulance, NHS England's resilience ambulance service, created opportunities for second- and third-year student paramedics to have their prior learning recognised to operate at 'Emergency Ambulance Crew' level in assisting front-line calls. So, it is evident that student paramedic played a part in helping the ambulance services but there is currently no formalised data that exists that captures their full and collective contribution.

There is few published literature (primary research and academic commentary) that identifies the student paramedic experience of the Covid-19 pandemic from Australia (Whitfield *et al.* 2020, Perkins *et al.* 2020, Williams *et al.* 2021, Whitfield *et al.* 2021), England (Miller 2021), Norway (Häikiö *et al.* 2021) and the United States (Allfred *et al.* 2021). A number of key considerations on how student paramedics can contribute front-line services during a health crisis / pandemic can be identified from the primary research findings as outlined below.

Miller (2021) undertook a small qualitative study exploring a new, paid, hybrid role for student paramedics working as one half of a double-crewed ambulance to increase workforce capacity in the East of England NHS ambulance service during the first wave. Miller found that there was a broad positivity about this role with perceptions that this type of role could continue post-pandemic, but also identified that issues regarding job descriptions and working conditions were not always clear-cut and many felt they should have been given driver training.

Williams *et al.* (2021) identified from the qualitative interview part of their mixed methods study, that almost all of the 17 undergraduate paramedicine students reported that they were not dissuaded from studying to be a paramedic since the outbreak and were aware of the 'dangers' that may face on qualification. Only two of the 17 participants were concerned about undertaking placements during the pandemic, but this was in light of the fear of contracting and passing the infection on

to others. The other participants perceived themselves to be fit and healthy and if they were to contract Covid-19, they would be 'fine'.

Häikiö *et al.* (2021) identified that 36.7% (n=40 / 109) of study participants (student paramedics) undertook patient-related healthcare work during the pandemic, with 20 in study-related clinical placement in the ambulance service. A further 10% (n=11 / 109) undertook vehicle decontamination and logistical work in the ambulance service. Häikiö *et al.* found that student paramedics were motivated to participate in the pandemic response, despite poor personal protective equipment supplies. Häikiö *et al.* asserted that student paramedics should be considered as a valuable operational resource during crisis and student paramedics with '*...theoretical knowledge and simulation- acquired skills in emergency medicine, trauma and disaster management and with clinical experience should be considered for unsupervised clinical work as part of a national response to a pandemic or other major disasters*' (2021: 11).

From reviewing this small amount of literature, there is an apparent appetite from student paramedics and their educators to consider students in the pandemic response(s) with their pre-hospital-focused acquired knowledge, skills, values and behaviours. Safeguards for student participation, do of course, need to be considered in respects to patient safety, practice supervision requirements together with professional indemnity and insurance cover.

Conclusion

In summary, student paramedics bring a unique contribution to the table that differs from other healthcare students and are potentially more likely to 'deal with' Covid-19 positive patients most effectively because they:

- want to be considered, on par, with other students and be made useful to health and care systems with their developing paramedic knowledge, skills, values, and behaviours – encouraging their life-long ambition and drive to want to help

- focus on episodic biopsychosocial care, in the main, providing a triaging mindset in symptom-led assessment and intervention with greater confidence in managing uncertainty
- have significant experience in responding to unplanned / emergency care needs of patients including enhanced communication and history-taking skills
- have competence in assessing and treating patients in time-pressurised environments, utilising both lifesaving (e.g. ABCDE) and systems-based (e.g. organ-focused) assessment models, without great reliance upon definitively diagnoseable conditions with familiar assessment / interventional trajectories
- have competence in immediate and advanced life support, such as resuscitation and managing critically unwell patients
- have critical awareness of human factors when dealing with emergencies
- have a specific curriculum on public health that will inevitably grow

This list is purposively simplistic and aspirational and not all student paramedics would be appropriate to deploy, such as first year students, or those who are subject to action plans. This chapter has also considered how explicit reflection on the academic performance level of a paramedic programme (e.g. Master's level) as well as explicit learning design can help support and promote student / learning experience during health crisis / pandemics and post-pandemic. This chapter continues the long-standing academic discourse that demonstrates how university education (in this case, Master's level) can truly benefit the paramedic profession, especially in its articulation to contributing in times of national health emergencies and at the same time develop a clinical-academically resilient future workforce able to relatively comprehend new and emerging diseases (such as Covid-19) and new / resultant clinical practices.

Reflective questions

1. How might the public perceptions change in light of the pandemic with your profession's education / professional curriculum?
2. What ways did you adapt your professional curriculum in this current pandemic (or could adopt in a future pandemic) that would enhance personal and academic resilience in students?

3. How might you consider using online teaching and learning differently moving forward?

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