THE FUTURE OF
PARAMEDICINE

Pre-Hospital
Emergency Care
Council

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Pre-Hospital
Emergency Care
Council

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MISSION

The Pre-Hospital Emergency Care Council protects the public by independently specifying, reviewing, maintaining and monitoring standards of excellence for the safe provision of quality pre-hospital emergency care.

VISION

That people in Ireland receive excellent pre-hospital emergency care.

Pre-Hospital
Emergency Care
Council

Change is Coming to Paramedicine

The future of the service rests on the plans we make today

The Pre-Hospital Emergency Care Council (PHECC) was established in 2000, as an independent statutory body, with responsibility for standards, education and training in the area of pre-hospital emergency care in Ireland. In order to drive reform in the delivery of pre-hospital emergency care, the PHECC Establishment Order was amended in 2004 and PHECC became a statutory healthcare regulator. PHECC is uniquely positioned to provide insights into the role of pre-hospital emergency services.

Since its establishment, PHECC has championed change in this area of care and guided the improvements in the standard of services afforded to patients and the quality of clinical care. It is committed to developing a 'common currency' for pre-hospital emergency care (PHECC's Strategic Plan 2015–2017) in Ireland. In recent years however, the definition of pre-hospital emergency care has evolved, with this area of care experiencing explosive growth and demand worldwide. But like most new professions, no 'master plan' was conceived to guide its evolution systematically and pre-hospital emergency care is now at a crossroads in Ireland.

As our health service goes through the most fundamental reform in the history of the State, we are likely to witness major modifications to our pre-hospital emergency care services and their very definition in Ireland. While PHECC matures organisationally in parallel with this reform, it is crucial that we are clear about our direction, ambition and purpose in the years immediately ahead. Our current Strategic Plan (2015–2017) is well on the way to delivery and has served as an invaluable guide to our work year on year. The wider healthcare system is facing a number of challenges, new influencers and priorities within the Department of Health, changes in the policy landscape, significant manpower shortages and new healthcare strategies pending, such as the national trauma strategy.

In light of such changes, it is timely that PHECC seeks to critically evaluate its position in the health system overall and to develop a vision of our role in regulation and legislation, and in education, clinical practice and service delivery. In the process of this evaluation, PHECC is also seeking to review the organisational structure and capacity and ultimately PHECC's future position in the pre-hospital emergency and unscheduled care environment.

This Paper provides an opportunity to outline the most important directions for pre-hospital emergency care development and create a vision for the future. In drafting this Paper, PHECC sought and incorporated input from a broad, multidisciplinary spectrum of pre-hospital emergency care stakeholders and champions in the above domains and garnered evidence from leading countries to inform and project a vision for PHECC in the future.

It is our hope that this Paper will serve as a guide for all relevant influencers and stakeholders committed to improving the health of the population. PHECC sees great value in working with its stakeholders to guide the future direction of pre-hospital emergency care in Ireland. The future is bright if the response to the challenges is positive, proactive and exploits current opportunities and trends developing in addressing both the needs of the public/patients and the healthcare system. PHECC seeks, as it has done since its inception, to provide guidance for the future direction of pre-hospital emergency care. In doing so, it hopes to prepare the sector for the increasingly sophisticated, demanding and changing nature of the service.

Overview of Paramedicine

This section provides a background to PHECC's contribution to the pre-hospital emergency care sector, focusing on the current and emerging trends impacting these services, both in Ireland and abroad. International trends reveal that many countries are experiencing similar changes in services, demands and public expectations. This Paper seeks to identify and illustrate the impact of such changes on the workforce, profession, wider health services in addition to education and training providers. It also aims to brief policymakers on the direction of the discipline overall, and its implications for paramedicine in Ireland and for PHECC.

Background

Over the past 20 years, a fundamental shift has occurred in healthcare delivery worldwide, largely due to advances in science and technology. This shift has been paralleled by increasing recognition that healthcare is no longer the primary preserve of doctors and nurses. Rather, healthcare delivery is a multidisciplinary effort with optimal results achieved when the whole spectrum of available skills and expertise are harnessed along the patient's journey. Noting that success is dependent on such collective efforts, our view is that pre-hospital emergency care is particularly well positioned to be part of a multidisciplinary team approach to primary care and to improving patient access to care.

Worldwide, pre-hospital emergency care has witnessed a major transformation since the Emergency Medical Services programme was first established in 1966 in the Department of Transport in the US[1]. However, an enduring public international perception is that the sector is essentially a means to 'transport patients to treatment centres'.[2] This one-dimensional perception has overshadowed pre-hospital emergency care since its origin, but the functions of this area of care have undergone a sea change in recent years.

The establishment of PHECC was a key catalyst for this change in Ireland. In less than two decades, this area of care has developed major momentum and vastly increased sophistication. Despite general public perception, the role and scope has evolved from 'the ambulance driver' to the pre-hospital emergency care practitioner involved in the delivery of advanced, out-of-hospital emergency clinical care. A glance at the major milestones on the next page provides a clear picture of how far and how fast the specialty has developed over a short number of years.

Context

It needs to be recognised that paramedicine remains a relatively new speciality and there is still nothing that could be fairly described as international consensus on a future direction. However, certain countries, such as Australia, the United Kingdom (UK) and the Netherlands, have emerged as leaders in this area of care in recent years. In this regard, the establishment of PHECC has resulted in steady progress in Ireland, particularly around the following core themes:

- voluntary regulation;
- professional development;
- clinical practice guidelines (CPGs);
- education and training standards; and
- information standards.

In summary, PHECC has guided the evolution of a new profession—from 'ambulance driver' to registered healthcare professional—in a relatively short span of time. In doing so it has, for example, overseen the transformation of the training approach from being solely vocational to a 'mixed' academic/vocational approach, with developed best practice CPGs (from 27 SOPs in 2001 to 386 CPGs today).[3] It has also witnessed many advancements for practitioners, such as the administration of an increasing number of medications (from four medications in 2001 to 47 today).

[1]The Highway Safety Act of 1966. Legislative History. Washington DC: US Government Printing Office.

[2]Ministry of Health, Scottish Home and Health Department (1966) Report by the Working Party on Ambulance Training and Equipment. London: HMSO, 1966.

[3]Standard operational procedures (SOPs) is the term previously used for CPGs.

PHECC's achievements need to be set against the backdrop of the unprecedented changes occurring in our wider healthcare system over the last two decades. These have included several waves of structural reform, significant population growth, budgetary constraints and the emergence of new whole-system policies, which have direct implications for traditional ambulance services and paramedicine.

PHECC's work has supported the emergence of pre-hospital emergency care as one of Ireland's fastest developing healthcare sectors and has also generated an increased appreciation for the expert role of the paramedic. Paramedicine now has the potential to bridge some of the longer established disciplines and overlap some of the traditional healthcare domains. These achievements underscore PHECC's potential to further contribute to developmental challenges in our healthcare system.

2016

- **Paper Developed... 'The Future of Paramedicine'**
- Governance Validation Framework introduced
- Education and Training Standards for Cardiac First Response and Medications for Listed Organisations

2012–2015

- SI 449 published (2015)
- National Transport Medicine Programme launched (2012)
- Year 1 Quality Review Framework—to ensure quality assurance
- 13 one-day site visits carried out (2012)

2008–2012

- > 40 institutions approved to provide education & training at 6 levels (2011)
- EMS Call–Taker & Dispatch Standards Implemented (2011)
- First inspections of CPG approved ambulance service conducted (2010)
- Citizen CPR Campaign launched 2010
- CPGs developed to guide practice at all 6 levels of practitioner (2009)

2006–2008

- EU Competent Authority status achieved (2008)
- 1st National out-of-hospital cardiac arrest register in Ireland implemented (2007)
- 1st pre-hospital electronic patient data collection commenced (2007)
- Publications: First Responder Guide, Defib Standards & National AED (2008)
- Education & Training Standards implemented at 6 levels (2007)

2004–2006

- 1st National Patient Care Report implemented (2006)
- National Examinations (NQEMT) conducted for Advanced Paramedics (2005)
- Medication Regulations amended (2005) to include ambulance personnel for the first time
- The 1st Advanced Paramedics in Ireland graduate (2005)

2000–2004

- National Examinations (NQEMT) conducted for practitioners (2002)
- **PHECC Established (2000)**

Future Trends in Paramedicine

This Paper recognises that the manner in which pre-hospital emergency care has developed has varied significantly by country and health system. This evolution is clearly a function of many local factors, differing service demands and structures, legal systems, funding approaches and regulatory environments. As part of the development of this Paper, the trends and the influences affecting this sector were examined to help paint a picture of what pre-hospital emergency care is likely to look like in the next 20 years and then to relate that to the Irish context.

Based on our analysis we have set out six major themes, which are identifiable internationally and which we believe will also be drivers for the shape of paramedicine into the future. These are the challenges that need to be considered in planning for pre-hospital emergency services in Ireland.

Changes in Service Demand

In every territory we reviewed, the demand on pre-hospital emergency care services has increased markedly in recent years. Both in Ireland and abroad, paramedical services are experiencing unremitting and increasing pressure. While the number of incidents attended to has also increased, the predicted demands for patient journeys is forecast to rise further. In 2015, the National Ambulance Service (NAS) responded to 303,502 calls of which, 3,810 were ECHO calls (life-threatening cardiac or respiratory arrest).

This increasing and seemingly endless demand has been a healthcare policy challenge for decades. However, despite strong political pressures, progress in responding to these demands has been slow and concerns have been voiced in many countries that efforts to plan a paramedicine response, in particular, are often fragmented, lacking in coordination and strategic planning. Despite variations in healthcare systems and reform agendas, the main drivers of growing demand for pre-hospital emergency care are fairly consistent across the developed countries.

> *Over one third of the Irish population report having a chronic illness and over half of Irish people over 50 have two or more chronic diseases.*
> *—Emergency Department Task Force, 2015*

- As the world's **population both grows and ages**, so too does the prevalence of comorbid and chronic diseases and clusters of risk factors (such as increasing frailty and obesity). These changing demographics present significant challenges to the traditional form of pre-hospital emergency care, which developed to meet the immediate needs of the acutely ill and injured, and the volume of these services needed. These challenges are further compounded by increasing societal expectations of 'absolute entitlement' to services.
- **Consolidation and centralisation of expensive and scarce specialist acute hospital services** and the establishment of the Centres of Excellence for major specialties has typically lengthened journey times, contributing to rising pressure on the paramedic workforce to treat sicker patients for longer durations. This reality demands a workforce that can recognise a wide range of both adult and paediatric conditions, carry out rapid on-scene assessments, institute increasingly complex treatments in line with evidence-based practice and fast-track the patient to an appropriate emergency department (ED) or specialist centre.
- A drive to **shift care from acute hospitals to the community**. This shift derives from the need to improve effectiveness and efficiency while stabilising or reducing healthcare costs. Efficiency and economy drivers are

matched by a recognition of the requirement to care for patients in the most clinically appropriate location, rather than the provider-determined one. The policy push towards primary and commmunity care has struggled with the reality of healthcare service gaps, institutional resistance and a lack of integration between primary and acute care in particular. This has left pre-hospital emergency care 'bridging the gap', often dealing with an increased number of unscheduled 'non-emergency' cases, which essentially introduce delay in the system.

- **Increasing and unsustainable pressures on the primary care sector**, which is multi-factorial. For instance, factors observed include: general practitioner (GP) workforce shortages; the expanding scope of practice for GPs; funding systems that incentivise specialisation and/or hospital care; and increasingly complex primary care presentations in major urban settings. These factors are being compounded by an escalation in the level of acuity presenting in the primary care setting as hospitals discharge a sicker cohort of patients with more complex and long-term care needs. However, many primary and community care services are discovering that they are ill-fitted to cope with this shift.

Internationally, the approaches for dealing with increased service demand have varied. However, paramedics are increasingly accepted as healthcare practitioners who can make significant contributions towards improving the health and well-being of populations beyond traditional emergency response and transportation roles.[4] As a result, in many instances the pre-hospital emergency care sector is taking on a greater workload and seeking to fill some of the gaps emerging.

Changes in Expectations

Adding to the pressure on this sector are the **rising expectations from both the public and funders**. Public expectations are being driven by the 'patient-centric' mantra, in which practitioners are expected to provide immediate, more sophisticated patient care. These expectations are being further fuelled by the increasingly present regulatory mechanisms and media coverage of key performance indicators (KPIs) associated with assurance and performance management in this sector.

> *Increased public expectations combined with a lack of appreciation for increased demand on pre-hospital emergency care services is resulting in low levels of patient satisfaction.*
>
> *—Workshop Participant*

Regardless of unprecedented demand, target response times for ambulances have been introduced across the globe. In Ireland, a report published earlier this year, commissioned by the Health Services Executive (HSE), found that the eight-minute response times set by the Health Information and Quality Authority (HIQA)[5] were 'unachievable', given the current service capacity.[6] This report highlighted the national expectation to provide an equal standard of medical cover to the large segment of the Irish population who live in medically under-served rural areas. The challenges involved in delivering care to rural areas resonate worldwide. Common challenges relate to population distribution, ensuring equity of access to quality services and managing the tension between limited funding and political and client demands for responsiveness.

In many countries the paramedic is increasingly seen as a healthcare professional. However, there is also a sense that policymakers and service providers have not yet fully realised the potential of the paramedic role. This in turn has led to the recognition that the discipline itself needs to take action in order to achieve full appreciation of the value that this workforce can play in healthcare delivery.

[4]O'Meara, P, Stirling, C, Ruest, M and Martin, A (2016) Community Paramedicine Model of Care: An Observational, Ethnographic Case Study. BMC Health Services Research.

[5]HIQA (2010) Pre-hospital Emergency Care Key Performance Indicators for Emergency Response Times.

[6]Lightfoot Solutions UK (2015) National Ambulance Service of Ireland Emergency Service Baseline and Capacity Review.

Requirement for Enhanced Skills

Since its inception, pre-hospital emergency care has expanded and evolved to meet the growing healthcare delivery challenges. However, as with most new professions, anticipating the nature of service demands was impossible. As the pressures on healthcare systems worldwide increased, the role of the paramedic has evolved in parallel. It has moved away from its focus on basic first aid and patient transportation, to encompass higher levels of patient care, to transform the clinical care for patients experiencing a wide range of both medical conditions and trauma.

Broadening the range of interventions has required practitioners to widen their scope of practice and to have the ability to differentiate between the many patient presentations before determining the most appropriate care. Although patient care for these practitioners is still mandated by protocols, they now have a wider scope to make decisions, ultimately delivering care with increased autonomy.

> *Healthcare reform is going to force a change on our pre-hospital emergency services.*
> —Workshop Participant

The wide range of therapeutic options available to the discipline varies internationally and expands with specialisation. Today we see increasingly widespread options for treatments and assessment, ranging from pharmacological to non-pharmacological measures. For instance, the route options for medication administration have progressed from oral only, to encompass other alternatives such as parenteral—i.e. intranasal, sub-cutaneous and intravenous. The range of medications have also expanded in tandem, to include anti-coagulants and analgesics including opioids and non-steroidal anti-inflammatory drugs and anti-emetics.

In countries like the UK, Canada and Australia, practitioners have been engaged in unofficial expanded practice opportunities for some time and have expressed huge interest in expanding these roles and developing broader and more general skills. The UK has developed courses that include assessment skills in neurological, cardiovascular and musculo-skeletal complaints alongside competence in ordering X-rays and referrals to GPs, public health nurse and social services.

> *The 'paramedic practitioner' was recently introduced in Sheffield to develop more specialised clinical care in areas such as suturing and wound care.*
> —Workshop Participant

The general increase in acuity and complexity of patients has also led to a demand for increased responsibilities and higher skillsets from this sector. This has compelled the workforce to move beyond their traditional, relatively uncomplicated role towards a more multifaceted position, encompassing more complex decision making, clinical care and referral. This is evidenced by the increasingly specialised levels of practitioners in Australia and New Zealand, where workforces have been divided into various area streams, including:

- **A professional stream** including paramedics, intensive care paramedic, retrieval paramedics and general care paramedics.
- **A technical stream** including first responders, patient transport attendants (Level 1 and Level 2) and basic life support medics.
- **An ambulance communications stream** including emergency medical dispatch support officers and emergency medical dispatchers.

Increasing Professionalisation

The increasing professionalisation of paramedicine was detectable in all countries reviewed. As the profession demands a transition from a strict protocol-driven practice to one that involves carrying out increasingly complex procedures, professionalisation is set to become increasingly important. However, despite proactive steps towards professionalisation to date, the sector is still not universally recognised as a healthcare profession among many government bodies and other healthcare professions.

Moreover, the lack of professionalisation in many countries has resulted in a **lack of a protected title** for paramedics. In Australia for instance, where paramedicine is generally well developed, a Bill is in preparation in order to make it illegal for anyone who is not a paramedic to 'hold himself or herself out to be a paramedic'.[7] The lack of progress in this area is at odds with the desire within the pre-hospital emergency care discipline to become recognised as a full profession both at individual and sectoral level. From our analysis, it is evident however, that certain 'hallmarks' are required to transition this skilled workforce to professional status.

> *A lack of protected title means that anyone can label themselves as a paramedic, despite not being suitably qualified or experienced to deliver safe and effective healthcare to the public.*
>
> *—Workshop Participant*

A key hallmark of professionalising any sector is the successful transition from vocational to tertiary level education. The importance of shifting paramedicine from its vocational origins to the tertiary level education environment was echoed internationally. This transition is becoming apparent worldwide, with Australia leading paramedicine in this domain; there, over ten universities offer degree courses and post-employment training is being slowly phased out in most states.

Adoption of the **tertiary level education** is not universal however. Many countries still permit entry to practice for the traditional paramedic via vocational and diploma level courses, recognising the distinct value in maintaining a vocational route. This poses two challenges. The first concerns consistency of practice application, as not all paramedics are being taught in the same manner, or to the same standards. The second is a cultural or industrial relations issue, with tensions observed between the traditional, vocationally-trained workforce and the newer academically trained recruits. This phenomenon mirrors the experience many countries have had with the introduction of nursing degree courses. Options such as bridging courses are being deployed to support the transition.

Another component of professionalisation is research-led practice. This has been slow to develop in many countries. However, a unique body of knowledge is gradually developing in this sector in Ireland. This will pave the way for the establishment of an extended scope of practice for the profession and will ultimately underpin greater autonomy at institutional or health system level, as well as in the field. Undoubtedly, paramedics today are taking greater ownership of the knowledge base of their profession but currently this knowledge often remains medically dependent. The challenge for the paramedic profession going forward will be developing its own body of knowledge while drawing on other relevant professional knowledge as appropriate.[8]

[7]Emburn. M (2015) Protecting the Title of Paramedic. Australian Emergency Law, NSW.

[8]Griffiths, P. and Mooney, G (2014) Research and the Paramedic. McGraw-Hill Education.

Advancing Technology

> *Finding desperately needed answers to many important questions in EMS are hopeless without the development of new ways to collect, link and analyse valid, meaningful information. This is the very foundation of the future of EMS.*
>
> *—EMS Agenda for the Future (1996)*

Today, this statement is as true as it was in 1996.[9] The last 20 years have witnessed an unparalleled technology revolution in IT systems, including the variety of ways that information can be processed and communicated. These new systems, whether social, mobile, big data intensive or cloud-based, are fundamentally affecting healthcare delivery throughout society and changing the way healthcare is conceptualised and delivered. As paramedicine develops its roadmap for the future, it is important to stay abreast of technological advances and critically appraise new technologies and advancements.

- Internationally, the coordination of pre-hospital emergency care services extends beyond the command and control centres. It also includes the need for on-scene personnel to work well together. In certain countries, mobile devices with secure wireless broadband networks, in combination with **interactive and interoperable databases,** enable a 'snapshot view' of the scene. This provides updated information to the pre-hospital emergency care team regarding the resources on scene, available and needed. One expert in paramedicine described the model as a 'common operating picture'.

- Recognising the benefits of **real time information sharing**, many countries have issued electronic tablets to their paramedic workforce. These shared information systems have enabled a much more robust layer of intelligence, becoming more patient-centred and increasing the transparency of the clinical responses, including clinical care, medication administration and geo-positioning. These tablet devices have also enabled increased support to the paramedic workforce, who can now access CPGs or clinical support instantly through a number of means and monitor and stream live patient information back to the control or reception centres (such as an ECG or ultrasound). This increased connectivity between pre-hospital emergency care workforces has vastly increased the scope of pre-hospital emergency care provided.

- **Telemedicine, albeit in its infancy, is also gaining traction on the international paramedicine spectrum.** It is drastically changing the interventions that can be performed in the pre-hospital setting in some countries by facilitating improved collaboration between the paramedic and the emergency physician in order to deliver time-critical interventions prior to arrival in the ED. This is leading to vastly improved patient outcomes, particularly in rural areas, where medical coverage is low. One example can be seen in Texas, where they have introduced a programme known as ETHAN (Emergency Telehealth and Navigation), which allows emergency physicians to conduct real time assessments of the patients in the field to determine if they require transport to the ED or could be better served elsewhere.

- The use of **electronic health records** (EHR) in this field is also growing quickly. The adoption of new technologies is enabling the transmission of larger amounts of patient data electronically (electronic patient records), both pre and post arrival on scene. For control centres, such as those in the UK, this has enabled the appropriate dispatch of services and skills to the scene. In other locations, such as New York, this has proved a powerful tool in monitoring important patient outcome KPIs, research, analysis and in areas of auditing and quality assurance. For the paramedic, EHR enables rapid retrieval of records. Equally, it enables healthcare auditors to review patient records to assess if care is being delivered consistently to patients with similar complaints. EHR also allows the hospitals to provide clinical feedback to the EMS via electronic communication, so that outcomes can be improved and lessons learned. Auditors of the data can also ensure that staff are adhering to the protocols governing patient care and transportation.

[9]National Registry of Emergency Medical Technicians (1996) EMS Agenda for the Future.

The Journal of Emergency Medical Services revealed that 86% of respondents to one of their surveys were using electronic patient care records.

- The introduction of control centre systems, which can **predict the incidence of emergency calls,** is enabling the emergency services to strategically locate ambulances for the quickest response times. For instance, in Australia, mobile data terminals located in each ambulance notify the paramedics about emergencies through a screen that is directly linked to a satnav and which subsequently maps the journey to the address. Geo-positioning also allows the dispatch team to ensure that the closest ambulance is directed to the scene.

- Mobile **tele-presence technology** is also presenting opportunities in parts of Europe for 'at home' GP-authorised treatment and discharge without the need for transport to an ED, leading to significant improvements in medical productivity and more appropriate care. In other countries, EDs are being upgraded to allow a portal to medical treatment in underserviced or remote areas. The paramedics at these stations have the opportunity to significantly expand their scope of practice under direct guidance from medical colleagues.

- **Technology has also had a major impact on the collaboration of the various emergency services internationally.** The development and integration of computer aided dispatch (CAD) systems between all emergency services has enabled a more strategic and common deployment of services in common geographical areas. This has been particularly efficient in Australia, revolutionising care in the remote parts, particularly when combined with their advanced medical facilities and technical support. This combination has enabled integrated patient care networks to evolve and has contributed to greater equity between urban and rural areas with regards to access to care.

- **Unmanned Aerial Vehicles (UAV),** commonly referred to as 'drones', is another technological phenomenon, used for remote sensing and aerial imagery collection in the US. Its success has given rise to new opportunities to use drones for medical emergencies. For instance, the US and Denmark are currently developing a geographical approach to the strategic placements of medical drones, which are to be equipped with automated external defibrillators (AEDs). These are designed to minimise travel time to patients experiencing an out-of-hospital cardiac arrest.

Integrating and Coordinating Healthcare Services

Internationally there is much emphasis on integration and coordinated care and **the need to reduce fragmentation within healthcare systems**, improve continuity and deliver improved patient outcomes. In countries where integrated care models have been successful, there is evidence to show that close collaboration and partnerships between service providers and front line staff have been instrumental in that success. Pre-hospital emergency care has a pivotal role to play in this regard. Lessons can be found in countries that have chosen to invest in integration and coordinated care models.

- **The focus is moving from vertical integration of care (linking primary, secondary and tertiary care) to placing more emphasis on horizontal integration.** This involves moving away from a model where the GP acts as the sole gatekeeper to one where inter-professional multidisciplinary teams act as gatekeepers to specialist services and enable integration between the care sectors (social and health). Evidence of this integration is prevalent in Torbay Care Trust in England, which is perceived as the integration pioneer in the NHS. It provides positive examples whereby the pre-hospital workforce work jointly with local hospitals to improve the quality of care and overall service delivery.

A unified, consolidated approach extends the reach and capabilities of the service, maximises resources and releases staff potential.
—Workshop Participant

- **Integrating care and encouraging partnerships and collaboration between personnel, sectors and systems.** Many territories are focusing on some form of integration between pre-hospital emergency care, acute care, primary care and community care. This approach is delivering improved patient outcomes and care closer to home for patients. It is also encouraging better coordination of patient care pathways and improving dialogue between sectors and key players (frontline professionals, the governments and healthcare providers). This change has been particularly evident in the organisational, logistical and clinical practice areas. The state of Victoria provides a good example of this; over time, the number of ambulance services serving that state fell from 17 to two. In Canada, they have succeeded in introducing a comprehensive national approach, integrating their public and private emergency services. Such approaches improve coordination and cooperation between the public and private services.

- **Investment in initiatives to reduce hospital re-admissions.** There has been a big push at both local and national level in many countries to reduce the average length of stay and the re-admission rates in the acute sector. A number of initiatives in Australia are underway to reduce patients' reliance on EDs as their first point of access and to avoid unnecessary admission. This involves more interoperability between emergency teams. For example, 'hospital at home care' is supported by paramedics operating in expanded roles, providing care to non-acute conditions under the supervision of emergency doctors. The collaborative team approach strengthens the workforce, optimising capabilities and leading to improved patient outcomes. Another prime example is the 'Human Service Referral Program' in Arizona, where the use of a computer-based system allows the dispatch centre to automatically relay information and refer the patient to a community-based partner agency for non-emergency cases.

- **Strengthening the governance between pre-hospital emergency care providers.** Most countries recognise the need for and value in establishing fully coordinated unified responses. In order to achieve this, some countries have developed shared service 'portals', optimising information sharing and enabling professional support. For instance, in San Diego, they have implemented a programme called 'Resource Access Program', which utilises a sophisticated shared portal to identify patients who frequently call 999. The programme coordinator then alerts a network of healthcare professionals instead of conventional emergency teams and arranges for them to receive appropriate medical or social care.

> *Unified responses involve integration of the full spectrum of emergency service providers to act in a proactive and systematic way.*
>
> *—Workshop Participant*

- **Support for local initiatives and innovation** is increasingly acknowledged as a means of modernising ways of working in the pre-hospital arena, by developing multidisciplinary team environments with a flexible use of staffing responses. This in turn is creating more collaboration and interoperability between various emergency services (ambulance, fire, police etc.) at both institutional and skillset level. This is evidenced by a new model of service called STARRS (Short-Term Assessment, Rehabilitation and Reablement Service), which is a rapid response service managed by The North West London Hospitals NHS Trust. The model links expertise from London Ambulance Service workforce with those of occupational therapists and physiotherapists. The aim is to reduce hospital admissions by providing more care in the home. This is perceived as an important initiative in developing the pre-hospital emergency services as the vast majority of 999 calls do not fit into the urgent care category and only require basic pre-hospital emergency care. This enables the workforce to utilise all of their skillsets as they are trained in all aspects of pre-hospital emergency care and to make a significant contribution to public health.

Implications for PHECC's Role in Education, Clinical Practice and Service Delivery

Increasing demands for pre-hospital care provision have led to pre-hospital care practitioners being required to perform increasingly complex interventions. Emerging trends suggest that future approaches should be focused on the development of a professional workforce with enhanced knowledge and skills, capable of working both autonomously and with the support and recognition of the other healthcare professionals. Against this backdrop, we examine major challenges for PHECC's existing role, focusing particularly on three dimensions: education, clinical practice and service delivery.

Education

International trends, together with our analysis of the existing situation in Ireland, suggest that PHECC must surmount many challenges in its mission to set the standard to prepare paramedics for their evolving role in the Irish health system. The emerging consensus is that these practitioners will be autonomous professionals at the point of registration and well placed to effectively deliver a patient-centric, out-of-hospital health service. To achieve this aim some major issues will need to be addressed:

- Currently there is **no national master plan** for paramedic education. Achieving consensus for a standardised education plan has been challenging in recent years, due to the large number of stakeholders: educational institutions, service providers, policymakers, regulators and funders. A master plan for paramedic education needs to be devised in tandem with a manpower planning exercise. There is also a requirement for much greater clarity at policymaker level around the future role of paramedicine in Ireland.

- **It is unclear where the locus of control lies** when it comes to making decisions regarding education for this key workforce, or indeed, how one participates in the decision-making process. While PHECC currently sets the standards for education in this domain, it has traditionally had very little input into strategic educational decision making. The lack of transparency in this domain poses a risk that the decisions being made in relation to educating our workforce are based on historic need rather than on current or forecasted demand.

- There is currently no **consistency in education and training models** for paramedics. While education and training models are in place for paramedics, they are locally determined, which leads to varying experiences for students and discrepancies in learning outcomes.

- **Clinical behaviour is a key component missing from the current education model.** According to Professor Andy Newton, the future of the service requires a 'new guiding principle based on a more clinical decision-focused approach'.[10] This approach requires a professional workforce with enhanced decision-making skills and clinical capabilities. In response to extraordinary technological advancements and changes in societal expectations, education is expected to emphasise high-level cognition, problem solving, and the ability to deal with ambiguity and conflicting priorities. Newton also states that 'it is recognised that education of this workforce is essential for lasting change and is the core enabler for changing clinical behaviour'. However, given the number of stakeholders, realising this paradigm shift is likely to take longer than many may appreciate.

- **Service pressures often mean that the educational and training dimensions suffer.** There is a lack of clinical supervision both for the paramedics and for students, which can result in a failure to prepare students adequately for the transition to practitioner. Equally, there is a shortage of placement opportunities within the ambulance service to allow adequate training or learning time. Pre-hospital emergency care attracts a cohort of mature individuals who have attributes such as life experience but the current system is not established to teach young students (post Leaving Certificate) paramedic behaviours and attitudes required to excel.

[10]Newton, A (2012) The Ambulance Service: The Past, Present and Future (Part 1). Journal of Paramedic Practice, Vol 4, No 5.

- **There is a lack of formal mentorship, which is likely to affect the quality of the service in the future.** PHECC believes that a mentorship programme is required and that this is key to producing high-quality paramedics today. Despite the existence of the current mentoring structure, concerns have been voiced regarding its sustainability and effectiveness.

Clinical Practice

The clinical aspect of pre-hospital emergency care has witnessed enormous change in recent years. This change has seen the roles of this workforce becoming increasingly formalised, particularly since the establishment of PHECC. As a result of this redesign, the provision of pre-hospital emergency care today comes from a range of disciplines and includes responders (cardiac first responders, first aid responders and emergency first responders) and practitioners (emergency medical technicians, paramedics and advanced paramedics) from the statutory, private, auxiliary and voluntary services. These multiple levels of practice and the huge diversity in this sector necessitate that PHECC acts as a 'driving force'—the central body setting a standard that each service provider is expected to reach. However, experience from abroad and challenges voiced in our research suggest that PHECC must take a stronger leadership and monitoring role in certain aspects of clinical practice in Ireland.

- Despite the importance in quality improvement, there is **little or no clinical audit** in pre-hospital emergency care today. The clinical governance role is the responsibility of both PHECC and local management. However, increasing demand, combined with manpower capacity issues, means that supervisors are too stretched to carry out the minimum number of audits per month. As a result, there is a lack of transparency and understanding of clinical practice in the pre-hospital emergency care setting. As the scope of practice evolves and becomes more complex (for example, the administration of 47 medications), there is an increased risk of adverse consequences. The lack of clinical audit also means that there is limited learning from adverse events and near misses. Only 12 adverse incidents were reported in 2015 out of 400,000 interventions, further highlighting the capacity issue, but this may also indicate a lack of understanding of the significance of reporting. A 'no blame' culture is not the same as a 'no accountability' culture.

- **The CPG approach to training paramedics restricts their scope of practice.** Practitioners today have a wide range of therapeutic options within their scope of practice, as outlined by PHECC. However, the use of the CPG approach has led to some uncertainty as to the exact nature of the scope of practice for this workforce and the boundaries of each discipline. In addition, there is currently an apparent gap between the knowledge and skills of an emergency medical technician (EMT) and that of a paramedic.

- EMT continuing professional competency (CPC) standards are in place; however, the **CPC standard for paramedics and advanced paramedics have yet to be published.** PHECC currently issues guidance by way of CPGs for practitioners; however, there is a lack of robust mandatory requirements for upskilling practitioners by service providers. In order to ensure that innovation and research are appropriately reflected in service improvement and evidence-based clinical practice, there needs to be a consistent push to embed CPC as part of the professional culture of the workforce.

Service Delivery

As the drive to deliver more healthcare in the community gathers momentum, there is a greater demand for a skilled and competent paramedic workforce to facilitate this shift at a local level. These changes further highlight the pressing need to develop and strengthen the pre-hospital emergency workforce. However, the following service and delivery challenges for PHECC, at both local and national level, will have to be overcome.

- **There is a critical need for strategic workforce planning and a review of the number of resources earmarked for paramedicine**. Government strategies and funding of the pre-hospital emergency workforce will require significant resources in order to function efficiently. Following a period of severe restrictions on recruitment significant efforts are presently being expended around getting people into the system and educated.

- **There is inadequate integration of pre-hospital emergency care at both service level and institutional level.** The synergistic potential across the various aspects of EMT, paramedicine, advanced paramedicine and other emergency services is enormous, yet remains largely unexploited. Undoubtedly, the whole is greater than the sum of its parts, yet there is a lack of effective mechanisms to release the potential value through collaboration. At institutional level, the relevant government departments and national agencies do not have a collective vision on the development or deployment of paramedicine capability and operational elements, which may fall under the remit of a number of different agencies. At operational level, pre-hospital emergency services from organisations such as the NAS, DFB, Coastguard, Defences Forces and private providers do not generally have well-established interoperability features allowing them to combine resources.

- **The service delivery potential of the pre-hospital emergency care sector is not fully recognised** among the community, other healthcare professions or government bodies. Often the sector is considered as a 'semi-profession' and perceived less as a professionally qualified workforce than a uniformed/unionised organisation. This means that when gaps emerge in the healthcare system, policymakers and managers are less likely to perceive paramedics as a group with a role to play in the solution. Arguably, the term 'pre-hospital emergency care' is limiting the discipline to a geographical or system boundary. In reality, paramedics are now also operating within the acute system. As a result, the value that this key workforce brings to the service is not perceived; this is reflected in the fact that they remain among the lowest-paid clinical disciplines.

- **The paramedicine 'brand' is not well established with the public.** As things stand, the branding of the pre-hospital emegency care sector is weak, compared to the branding of other disciplines. This is in stark contrast to our international counterparts, where paramedicine is seen as both a high-profile and well-trusted profession, in many countries. By way of example, opinion surveys in Australia show the paramedic is perceived as the most trusted clincial professional.[11]

[11]Australian College of Ambulance Professionals Ltd. (2011) Enhancing Patient Outcomes, Improving Pathways of Care through Clinical Engagement and Collaborative Action.

As the role of the contemporary paramedic evolves, it is evident that the role of PHECC will be required to evolve in tandem. With the clinical practice and service delivery challenges in mind and with a view to keeping pace with our international counterparts, we foresee that the paramedicine education model will inevitably need to shift from what remains essentially vocational training to formal, university education, in order to meet the intellectual demands of the evolving practice. The anticipated education and training model will have the following features:

- **An education system, led by paramedics, which is:**
  - national in scope, allowing for reasonable local flexibility;
  - flexible enough to meet the needs of the diverse communities that it serves;
  - educationally sound; and
  - politically feasible.

- **A clinical practice model, which provides:**
  - opportunities to differentiate at post-graduate level;
  - a combination of both clinical practice and theory, supervised at appropriate levels;
  - a formal mentorship scheme using appropriate hubs;
  - an increased focus on clinical audit, CPG approval and ensuring CPC; and
  - mandatory requirements for upskilling of practitioners.

- **A service delivery model, which:**
  - integrates the different healthcare sectors;
  - provides a clearer definition of paramedics' interrelationships with other professions; and
  - enables an expanded role in health promotion and prevention.

Implications for PHECC's Role in Regulation and Registration

PHECC was originally established to set the standards for education in pre-hospital emergency care. However, the evolution of the discipline, along with the adoption of an increased number of significantly complex clinical interventions, has put increasing pressure on PHECC to regulate and monitor the practitioners under the pre-hospital emergency care umbrella. PHECC is unusual in that, as well as its formal role in professional registration, PHECC also provides a system of recognition for both institutions and services in paramedicine.

The principal challenge facing PHECC today in this regard is that this area of care is governed under secondary legislation. This means that PHECC is limited to providing a system of recognition for both institutions and service providers, but that approval is not compulsory unless working for the statutory ambulance services.

In this context, we set out four major implications for PHECC's existing role.

- Once qualified, there are n**o regulatory requirements to provide evidence of competence or any link between competence and registration to practice.**[12] The need to develop and implement a continuing professional competency (CPC) framework for this workforce has been specified in PHECC's Strategic Plans (2011–2014 and 2015–2017). The current CPC approach is enforced through the triple lock of credentialing practitioners, approving service providers and practitioners being privileged by their service provider. One of the functions of a healthcare regulator is to protect the public by ensuring that acceptable standards of care are being provided. However, PHECC's lack of robust investigative powers to compel the production of documentation is limiting the extent of oversight and transparency of same.

- Currently, the titles 'paramedic', 'emergency medical technician' and 'advanced paramedic' are **not protected titles** under the PHECC Establishment Order. This means that anyone can call themselves a paramedic, despite not being suitably qualified or experienced to provide safe and effective healthcare to the public. Protected titles are vital to obtain public assurance that a person using a protected title is appropriately qualified, trained and registered with the regulatory body. In addition, health professional titles are recognised because they indicate competence and fitness to practice. It should be noted that the title 'paramedic' is a protected title in other jurisdictions. It seems desirable that, in order to ensure the protection of these titles, a statutory provision is sought with the powers to enforce any misuse of the title through criminal prosecution.

- PHECC currently has no **consistent audit or evaluation of paramedics to assess or address fitness to practice.** Assessing fitness to practice is crucial for the following reasons.

  - Paramedics can make clinical judgment and practice errors, act beyond the scope of their training and provide care below an acceptable standard.

  - Paramedics work autonomously without direct supervision in 'open' and uncontrolled settings. They are often involved in making very time-critical decisions for patients in difficult or hazardous circumstances.

  - Paramedics are administering a variety of scheduled medications by invasive techniques and undertaking advanced clinical procedures.

- Moreover, PHECC is currently limited in its ability to apply robust sanction measures to protect the public, but also to maintain standards and public confidence in the profession. For example, unlike all of the other statutory healthcare regulators, currently PHECC does not have the power to restrict a practitioner's registration through the imposition of conditions or the suspension or cancellation of registration. PHECC can only determine whether a practitioner should be advised, admonished or censured. PHECC must rely on a service provider to limit or restrict the practice privileges of a practitioner through the triple lock mechanism.

[12]Knox, S Cullen, W and Dunne, C (2014) Continuous Professional Competence (CPC) for Irish Paramedics and Advanced Paramedics: A National Study. BMC Medical Education, Vol 14, No 41.

- There are **no compulsory registration requirements** for practitioners. PHECC currently has no enforcement powers to impose mandatory registration on persons who wish to practice as an EMT, paramedic or advanced paramedic and to use these titles. In the interest of public safety, PHECC requires similar enforcement powers to healthcare regulators. The purpose of regulation and a robust fitness to practice regime is to mitigate against the risk that is associated with interventions in the healthcare setting. PHECC's powers to protect the public are considerably restricted in this regard. Typically, service providers are registering under PHECC due to insurance reasons, authority to implement CPGs and access to medicinal products rather than for any regulatory requirement.

The foregoing summary highlights that the pre-hospital emergency care arena in Ireland remains to some degree isolated from mainstream healthcare legislation and policy in relation to current standards of quality assurance and public protection. It also reiterates the importance of obtaining primary legislation and registration powers for the safety of the public, as registration will allow these practitioners to be viewed as a professional body by the public and as equals with other healthcare professionals.

Ultimately, a primary Act would provide the opportunity to furnish PHECC with a more robust and modern regulatory framework with similar powers to other statutory healthcare regulators, particularly in areas such as fitness to practice. The benefits of national registration and regulation of paramedics are arguably greater (because of inherent potential risk given the nature and extent of their healthcare role) than for some other currently registered health disciplines.

With these challenges in mind PHECC considers the following:

1. A new legislative status should:

- draw on the best features of other regulatory agencies and learn from their experience;
- be designed in a 'flexible' manner, to reflect the fast evolving realities of paramedicine and to allow for changes in technology; and
- allow for annotation and division of registers (like the Nurses and Midwives Act, which enables upgrades to scope of practice).

2. A mandatory register would enable PHECC to:

- control entry and exit of the profession;
- identify those who have met the regulatory requirements required of the profession;
- inform the public and providers about any limits on the practitioner's entitlement to practice;
- assure the standards set by the profession are being maintained; and
- take action, where necessary and in serious cases, to ensure that the public is being protected and the standards of the profession are being upheld.

PHECC strongly believes that these issues and implications cannot be considered in isolation. At the same time, a collegial approach is needed and pre-hospital emergency care practitioners must be involved in improving their skills and knowledge in conjunction with other healthcare professionals, so as to create a high-quality seamless system of care that begins with the first point of contact with the patient.

PHECC's Organisational Structure & Capacity

The trends and challenges highlighted throughout this Paper raise questions about the extent to which PHECC's current role, structure and functions enable it to achieve its Mission of protecting the public. It also raises questions about how it can accomplish its Vision of providing sufficient assurance regarding the quality of pre-hospital emergency care.

PHECC's Mission

The Pre-Hospital Emergency Care Council protects the public by independently specifying, reviewing, maintaining and monitoring standards of excellence for the safe provision of quality pre-hospital emergency care.

PHECC's Vision

That people in Ireland receive excellent pre-hospital emergency care.

Based on the analysis from the workshops, the consultations (local and international) and PHECC's current strategy, we considered the changes that are required to make PHECC, as an organisation, fit to accomplish both its Mission and Vision effectively and also to meet the anticipated requirements of the sector.

The findings from this Paper indicate implications for each of PHECC's organisational characteristics: its role, structure and capabilities/functionalities. In the schematic presentations below we have differentiated between *'current'* and *'required'* characteristics, in anticipation of the changes that will be required to strengthen the service and protect the public as the sector evolves.

PHECC's Role

ROLE IN EDUCATION & STANDARDS

Current

- Recognises institutions providing courses;
- Sets the national standards of theoretical and practical knowledge required for qualifications in pre-hospital emergency care;
- Approves the course content for pre-hospital emergency care education and training;
- Conducts the National Qualification Emergency Medical Technology (NQEMT) State examinations leading to the award at Emergency Medical Technician, Paramedic and Advanced Paramedic levels;
- Assesses the equivalence of other professional qualifications;
- Maintains a register of pre-hospital emergency care practitioners;
- Provides scope of practice statements for the three levels: EMT, paramedic and advanced paramedic.

Required

- Develop standards for the paramedic degree programme;
- Develop an accreditation function for tertiary level and expanded for vocational level (to universities);
- Refine and embed a Quality Review Framework process.

ROLE IN REGULATION

Current

- Maintains a register of pre-hospital emergency care practitioners;
- Conducts inquiries into allegations of professional misconduct or unfitness (or both) to engage in the practice of pre-hospital emergency care on the part of persons who are named on the register;
- Maintains records of responder organisations who provide pre-hospital emergency care.

Required

- Attain primary legislation;
- Impose mandatory requirements for service providers, training Institutions, registrants and responders;
- Utilise enforcement instruments to regulate service providers, training institutions, registrants and responders;
- Establish a formal role in the regulation of service providers, training institutions, registrants and responders;
- Conduct oversight to monitor compliance and provide assurance.

PHECC's Role

ROLE IN CLINICAL PRACTICE & SERVICE DELIVERY

Current

- Prepares, maintains and updates clinical practice guidelines (CPGs) across six defined levels of pre-hospital emergency care;
- Develops and disseminates standards of operation for service providers;
- Formally recognises those service providers that undertake to implement the clinical practice guidelines and standards of operation;
- Develops Governance Validation Framework (GVF) for licensed providers.

Required

- Set standards to reflect contemporary best practice;
- Implement and manage an extensive CPC agenda;
- Establish professionalisation for the workforce;
- Support the transition towards autonomous practice and prescribing authority;
- Develop and implement a robust clinical audit model;
- Establish and support the GVF.

OTHER ROLES

Current

- Engages in research into pre-hospital emergency care (including emerging technology, education and training, the formulation of experimental curricula and the evaluation of existing courses and assessment and examination procedures).

Required

- Promote the widest possible understanding of paramedicine in the wider health sector;
- Ensure oversight for the full spectrum of pre-hospital emergency care provision;
- Develop a database / register of all pre-hospital emergency care personnel and associated devices (i.e. AEDs).

PHECC's Structures

THE STRUCTURE OF THE COUNCIL

Current

17 Members (appointed by the Minister for Health):

- Six committees
  - Education and Standards
  - Audit
  - Quality and Safety
  - Priority Dispatch
  - Fitness to Practice
  - Medical Advisory
- Four groups
  - Appeal Panel
  - Examiner Panel
  - Examination Quality Group
  - Test Item Writing Group

Required

Need to reassess and ensure Council is aligned with modern regulatory bodies in terms of size and composition:

- Lay versus professional.
- Nature of disciplines represented.
- Gender balance.
- Overall size given emerging functions.

THE STRUCTURE OF THE MEDICAL ADVISORY COMMITTEE

Current

30 Members

The membership is made up of members representing a position or an organisation and those that have individual expertise.

Required

Need to review the Medical Advisory Committee in terms of:

- Role
- Size
- Mix

THE STRUCTURE OF THE ORGANISATION

Current

14 employees with five business areas:

- Educational Standards, Qualifications Assessment, Recognised Bodies and Individuals.
- Clinical Practice Guidelines, Equipment and Medication Matters.
- Clinical Care Information and NQEMT Examinations.
- Registration and Fitness to Practice Issues.
- Corporate Services Finance, HR, Administration and IT Support.

Required

- Increase number of employees to carry out current roles more effectively and develop new roles as described above.

PHECC's Structures

RESOURCE STRUCTURE

Current

- Inadequately sized premises
- Basic ICT infrastructure

Required

- Increased space for additional PHECC resources
- Updated ICT infrastructure with improved functionality

PHECC's Capacity

PHECC'S CAPABILITIES

Current

- Accounts and Finance
- Human Resources and Staff
- Training and Support
- Administration
- Communications and Marketing
- Research

Required

- Research development
  - » Establish authority to mandate specific solutions
- Communications
  - » Raise profile
- Establish specialist advisory panel, with knowledge in:
  - » Logistics
  - » Health economics
  - » Pharmacy
  - » eLearning / Educationalists
  - » Critical care / Community care
  - » Develop robust 'inspectorate' model

PHECC'S FUNCTIONALITY

Current

- Basic ICT functionality

Required

- Updated ICT infrastructure and functionality, including:
  - » enhanced security features
  - » new registration system
  - » improved communication channels (website, social media)

Conclusion

It is our hope that this Paper will serve, firstly, as a resource document for all relevant influencers and stakeholders committed to improving the health of the population.

We would also see the Paper as an opportunity to engage in substantive dialogue with the Department of Health around a number of major issues raised during our analysis, including the following:

The role of paramedicine in the health system overall, involving:

- recognition of paramedicine potential;
- involvement in policy development; and
- operational contribution to service improvement.

The need for a new legislative base for PHECC, which should:

- draw on the best features of other regulatory agencies and learn from their experience, particularly in relation to relation to fitness to practice;
- be designed in a 'flexible' manner, to reflect the fast evolving realities of paramedicine and to allow for changes in technology; and
- allow for annotation and division of registers.

Overall levels of resources available to PHECC, including:

- Staffing;
- Skill mix; and
- Infrastructure.

As noted at the beginning of this Paper, PHECC sees great value in working with its stakeholders to guide the future direction of pre-hospital emergency care in Ireland. We recognise that it is a core part of our existing mandate to provide guidance for the future direction of pre-hospital emergency care. In doing so, we plan to continue preparing the sector for the increasingly sophisticated demands being made on it and, above all, to ensure the safest and highest quality of care for the Irish public.

Appendices

Contributors

We would like to give our thanks and appreciation to our many colleagues in Ireland and abroad who supported us in developing this Paper.

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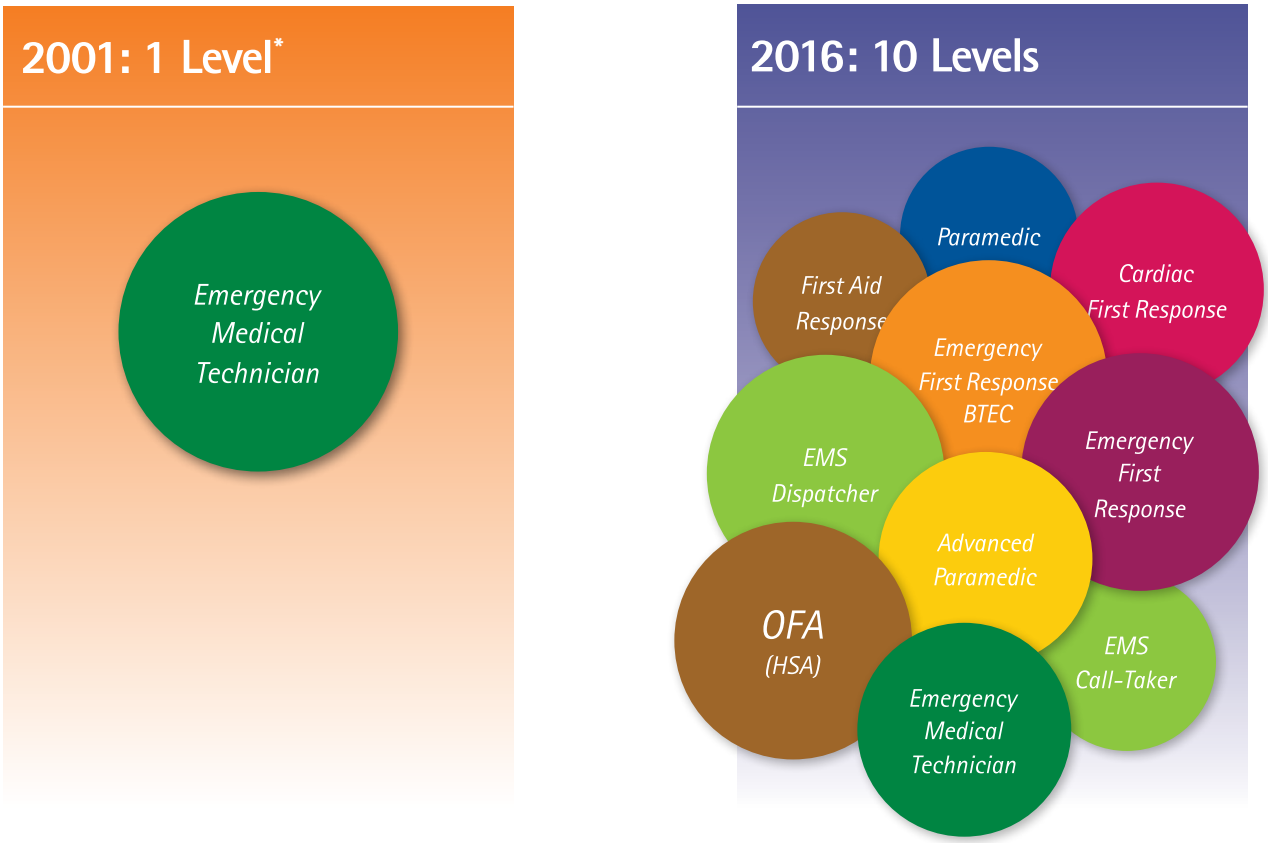
List of Acronyms

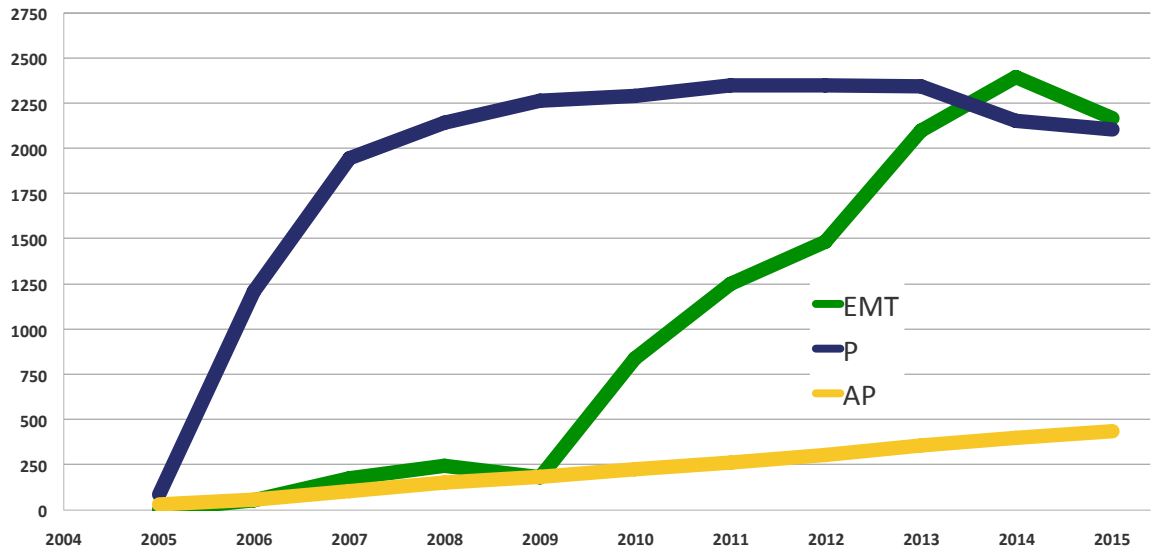
AED	Automated external defibrillators
CAD	Computer aided dispatch
CPC	Continuing professional competency
CPGs	Clinical practice guidelines
DFB	Dublin Fire Brigade
ED	Emergency department
EHR	Electronic health records
EMT	Emergency medical technician
EMS	Emergency medical services
GP	General practitioner
GVF	Governance validation framework
HIQA	Health Information and Quality Authority
HSE	Health Services Executive
KPI	Key performance indicator
NAS	National Ambulance Service
NHS	National Health Service
NQEMT	National Qualification Emergency Medical Technology
PHECC	Pre-Hospital Emergency Care Council
QRF	Quality review framework
RCSI	Royal College of Surgeons in Ireland
UCD	University College Dublin
UAV	Unmanned aerial vehicles

PHECC's Impact on Professionalisation

Levels of Pre-Hospital Emergency Care



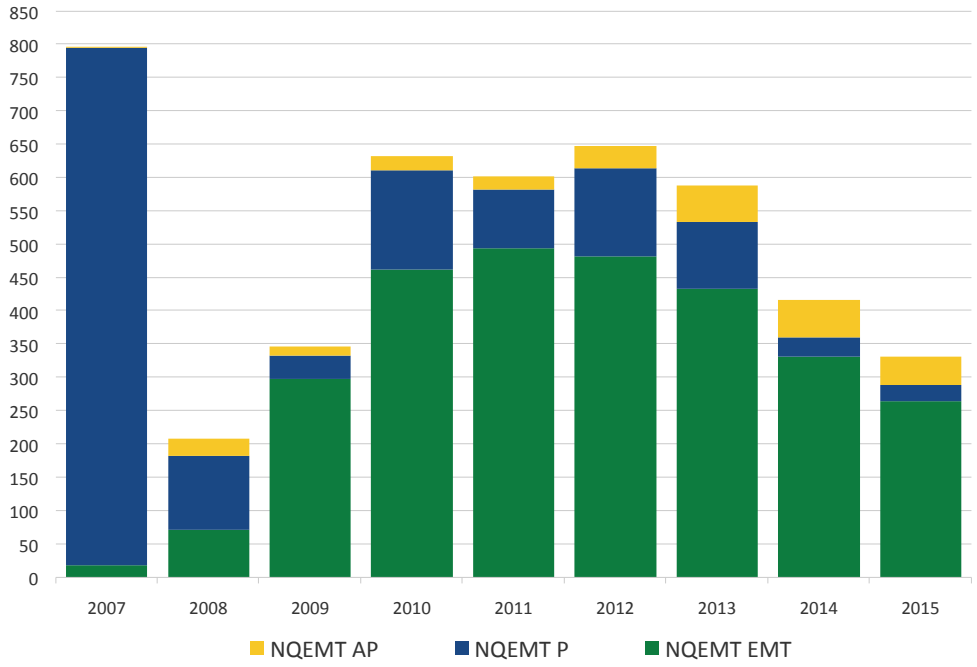
EMT, Paramedic and Advanced Paramedic Registration 2005–2015*



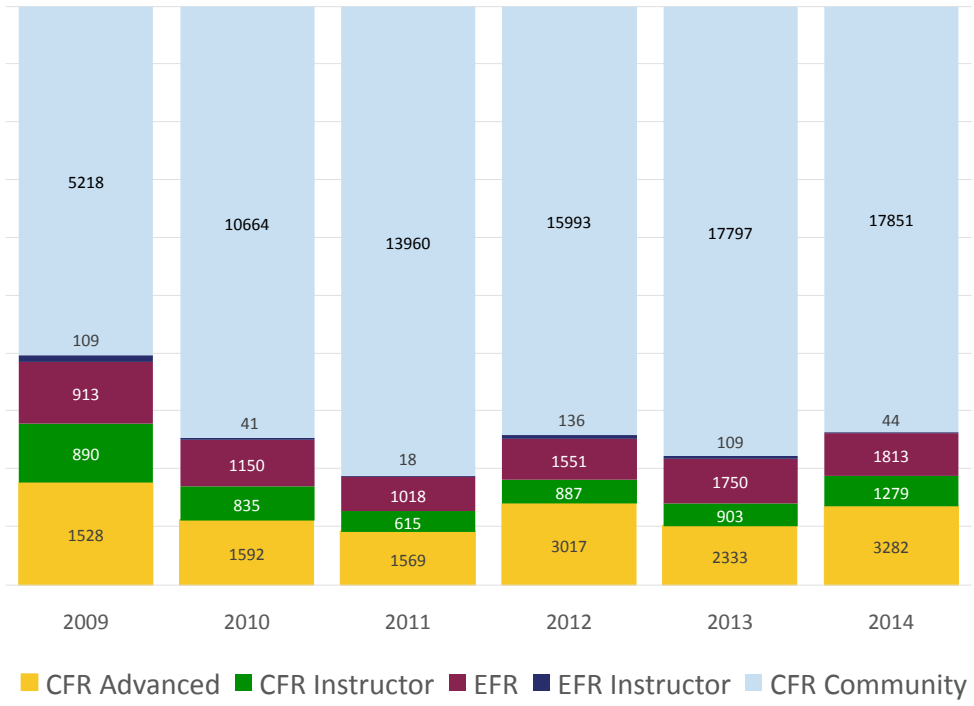
** Original EMT's Only—Statutory Ambulance Services (Health Boards and DFB)*

PHECC's Impact on Registration Numbers

NQEMT Certificates Issued 2007–2015

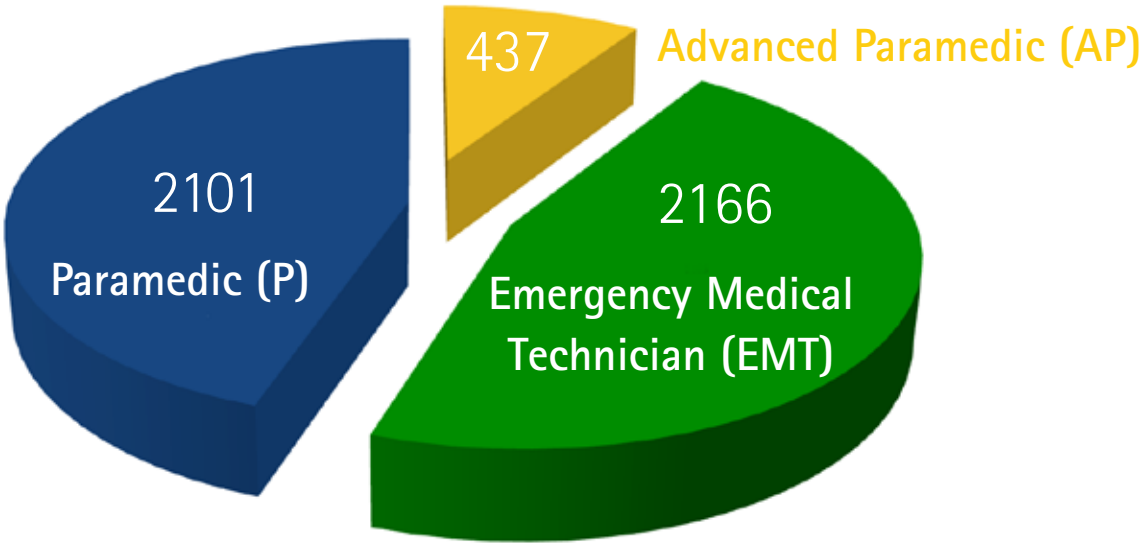


Number of Responder Certificates awarded 2009–2014



PHECC's Impact on Registration Numbers

Total Registration Numbers—October 2015



PHECC's Impact on Scope of Practice

Number of Medications

2001

- 4 Medication for EMTs
- No Legal basis
- Custom and practice only

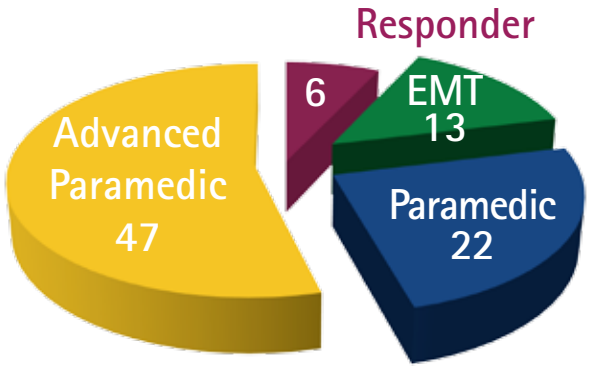
Number of CPG's

2001

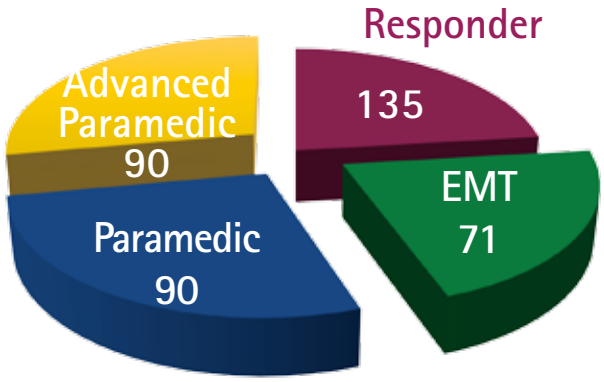
- 27 SOPs
- No Legal basis
- Voluntary code

—Health Boards and DFB (EMTs)

2016: Total 47



2016: Total 386



THE FUTURE OF
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