

## Are further education opportunities for emergency care technicians needed and do they exist?

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**Background.** A recent review of emergency care education and training in South Africa resulted in the creation of a new 2-year, 240-credit National Qualifications Framework (NQF) level 6 Emergency Care Technician (ECT) qualification. The National Department of Health (NDoH) view ECTs as 'mid-level workers' in the emergency care profession. Concurrently, an existing 3-year National Diploma and a 1-year BTech programme were consolidated to form a single 4-year, 480-credit, NQF level 8 professional Bachelor Degree in Emergency Medical Care (B EMC). This study critically analysed and compared the ECT mid-level worker qualification with the professional B EMC degree to design a framework and bridging programme to support articulation between the two qualifications.

**Methods.** The researchers used an expository, retrospective critical analysis of existing documentation followed by a focus group discussion and a Delphi questionnaire. These processes ultimately informed the design of the framework and contents of a bridging programme.

**Results.** Similarities and substantial differences were identified between the ECT and B EMC qualifications in relation to scope, complexity and depth of knowledge. A framework for articulation was designed, which included a bridging programme for ECT graduates wishing to enter the B EMC degree programme.

**Conclusion.** The study predicted a strong sustained demand from ECTs as mid-level workers for further study and associated professional development. It is possible for graduates of the 2-year ECT programme to articulate directly into the third year of the B EMC degree through successful completion of a bridging programme.

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Prior to 1980, there were neither professional qualifications nor a professional board for emergency care practitioners in South Africa. Emergency care training was fragmented and varied among provinces. A number of standardised short courses were introduced in 1985. These consisted of a 3-week Basic Ambulance Attendant (BAA), an 8-week Ambulance Emergency Attendant (AEA) and a 4-month Critical Care Assistant (CCA) course.<sup>[1-3]</sup>

The BAA, AEA and CCA short courses were initially offered as a form of in-service training by the provincial Ambulance Training Colleges (ATCs). The primary focus of the short courses was on clinical skills training. As a result, the scope of practice of short-course graduates was designed around rigidly defined medical directives and clinical protocols, leaving clinical decision making and governance to medical doctors. A shortage of qualified emergency medical doctors led to inadequate clinical governance being provided to emergency care workers who were increasingly being required to function as independent clinicians. To support the required levels of independent clinical decision making and practice, the need arose for formal higher education (HE) qualifications in pre-hospital emergency care, which would be recognised, regulated and registered by the Health Professions Council of South Africa (HPCSA).<sup>[4,5]</sup>

The first of these qualifications was a 3-year National Diploma in Ambulance and Emergency Technology (N Dip AET), introduced in 1987. From 2003 onwards, a Bachelor of Technology Degree in Emergency

Medical Care could also be obtained by completing an additional two years of part-time study, after obtaining the undergraduate 3-year N Dip AET qualification.<sup>[4,5]</sup>

Apart from the CCA course, which was extended to include an additional five months of clinical roadwork, the short courses remained relatively unchanged since their inception. In contrast, the HE programmes continued to evolve via a number of extensive re-curriculum efforts. Since January 2005, Master's and Doctoral programmes have also been available to Bachelor of Technology (B Tech) graduates.<sup>[6,7]</sup>

With time, serious problems within short-course education and training structures began to emerge. The HPCSA became inundated with requests from multiple role players, all wishing to establish small colleges to offer the emergency care short courses.<sup>[8,9]</sup> As many as 60 providers were accredited by 2005 and the HPCSA began to receive numerous complaints regarding the quality of short-course training.<sup>[9]</sup> Within a relatively short period the number of short course graduates, specifically from the basic ambulance courses, far exceeded the number of available posts.

Another challenge emerged as articulation between the short courses and the HE qualifications became increasingly difficult owing to the ever-widening knowledge gap. Further frustrating the efforts of educators was the fact that the academic architecture of the short courses could not be aligned with the new National Qualifications Framework (NQF). They were also not compliant with South African Qualifications Authority (SAQA) requirements for registration of qualifications on the NQF. SAQA is the

'Body responsible for overseeing the development and implementation of the National Qualifications Framework, established in terms of the SAQA Act No. 58 of 1995'.<sup>[10]</sup> The NQF is a 'Framework on which standards and qualifications, agreed to by education and training stakeholders throughout the country, are registered'.<sup>[10]</sup>

It became clear that a new approach was needed that could address important issues of lifelong learning, academic progression, career-pathing and general professional development within the emergency care industry. The challenge lay in designing a SAQA and NQF-compliant education and training structure, which would meet the needs of the National Department of Health (NDoH) and the emergency care industry.

Together with input from role players, including the NDoH, the HPCSA reviewed the learning outcomes of the existing short courses. This led to the design of an evidence-based, formal, 2-year, 240-credit NQF level 6 Emergency Medical Care Technician (ECT) qualification. The NDoH views ECTs as 'mid-level workers' within the emergency care profession. Although new in South Africa, mid-level health worker programmes are already in place in a number of other countries.<sup>[11]</sup> Locally, similar to the ECT, other mid-level worker programmes look set to be introduced in many other registered professions. These include medicine, radiography, and environmental health.<sup>[12]</sup> The first intake of ECT students took place in 2007 at provincial ATCs and at one university of technology.<sup>[13]</sup>

At the HE level, the 3-year National Diploma and 1-year B Tech programme were merged to form a single, 4-year, 480-credit, NQF level 8 B EMC degree. This degree allows for direct articulation with relevant Master's and Doctoral programmes.

## Objective

The main aim of the study was to design a framework and pathway to facilitate and support articulation between the ECT mid-level worker qualification and the professional B EMC degree.

## Methods

The researchers used an exploratory, sequential mixed-method design, which is characterised by a qualitative phase of research followed by a quantitative phase. This design is useful to explore a topic, using qualitative data before attempting to measure it quantitatively.<sup>[14]</sup> The qualitative phase of the study involved document analysis, a literature review and a focus group interview. The quantitative aspect of the study took place in the form of a Delphi survey.

With this design, the researcher critically compared the structure, learning outcomes and methods of delivery of the ECT and B EMC programmes. It also included identification of potential obstacles and challenges relating to articulation between the two qualifications. The subsequent findings were used to inform and refine the design of the framework for articulation and associated bridging programme.<sup>[14]</sup>

## Literature review and document analysis

The starting point in the research process involved a review of the literature around paramedic education and training, followed by an in-depth analysis of existing coursework and curricula documents relating to the ECT and B EMC programmes. This literature review and document analysis provided the researchers with a more thorough understanding of the similarities and differences between the ECT and B EMC qualifications.

Critical comparison of these two qualifications was further assisted by the identification and use of predetermined criteria similar to those used by SAQA for the recording and registering of academic qualifications. Selection of the SAQA criteria was both logical and important as both qualifications had previously been lodged with SAQA on similar templates.

## Focus group interview

Seven purposively selected participants took part in a focus group interview. They comprised representatives of the Professional Board for Emergency Care, the NDoH (HR and Training), principals of provincial Health Training Structures (Gauteng and Limpopo) and academics from HE institutions offering the B EMC degree.

The focus group interview focused on four key areas:

- the need for articulation between the ECT and B EMC qualifications
- how well the ECT programme prepares graduates for further study in the NQF
- the academic structure of the ECT and B EMC programmes
- the need for a bridging programme, and potential problems associated with the bridging process/programme.

The focus group interview was recorded and a verbatim transcript produced. Content analysis was used and data were placed into common themes and categories.

## The Delphi technique

In the absence of literature addressing articulation between the relatively new ECT and B EMC programmes, other sources of information and data had to be explored. Following the literature review, document analysis and focus group interview a Delphi questionnaire was used to gather additional quantitative data on the content of and articulation between the two programmes.

The Delphi questionnaire was e-mailed to expert panel members purposely selected according to predetermined criteria. They completed the questionnaire electronically and e-mailed it back to the researcher after each of three rounds. The researcher analysed the responses from each of the panel members. The format of the Delphi and statements remained consistent between the three rounds. For the purpose of this study, consensus was defined as having been achieved where at least 9/11 or 82% of the participants' responses fell in the same range, i.e. 1 = essential/agree, 2 = useful/undecided, or 3 = unnecessary/disagree, as indicated per statement.<sup>[13]</sup>

The Delphi questionnaire consisted of seven sections and 1 051 statements. The first three sections focused on eliciting views and opinions that could serve as potential solutions to the obstacles and challenges that educational managers are likely to face in articulating the mid-level worker ECT graduate into the B EMC programme. The remaining four sections focused on identifying potential learning outcomes for a bridging programme.

The following sections of the Delphi survey were selected to inform the framework for articulation:<sup>[13]</sup>

**Section A.** This section contained eight statements focusing on exploring participants' views regarding the demand, desire and/or motivation for articulation between the ECT and B EMC and possible factors affecting such a demand. Analysis of the statements and responses in this section confirmed that there is a real and sustained demand for articulation between the ECT and B EMC programmes.

**Section B.** This section contained 19 statements focusing on the extent to which the ECT programme prepares the graduate for further academic study within the NQF and, more specifically, to articulate into the B EMC degree. Analysis of the statements and responses in this section of the questionnaire confirmed that there are a number of differences and similarities between the learning outcomes of the 2-year ECT programme and those covered during the first two years of the B EMC degree. These differences and similarities become important when attempting to facilitate articulation between the two qualifications.<sup>[13]</sup>

**Section C.** This section contained 10 statements aimed at eliciting the participants' views around the possible format and structure of a framework and bridging programme that may support academic articulation between the ECT mid-level worker qualification and the B EMC degree. Analysis of the responses showed strong similarities and agreements regarding the themes and trends that emerged from the focus group discussion.

## Results

Analysis of the data from the above research processes led to a number of important results and findings described below. These in turn were used to inform the design of the framework for articulation.

- The primary function of the ECT and B EMC programmes is to produce mid-level workers and professional practitioners, respectively. Therefore, the level of depth, complexity and scope of the two programmes differ significantly. There are however topics common to both programmes, i.e. a fundamental knowledge of anatomy, emergency medical care, professional practice and introductory rescue.
- While the abovementioned similarities may assist in gaining the academic credits required for advanced placement within the B EMC degree, differences in the scope and level of depth achieved in a number of areas preclude ECT graduates from simply entering directly into the third year of the B EMC degree. Areas identified as requiring deeper understanding included physiology, diagnostics, general pathology and health sciences (chemistry and physics).
- The didactic methodologies of the provincial colleges offering the ECT programme were also seen as very different from those at universities offering the B EMC programmes.
- The NDoH has expressed a strong desire for ECT graduates to spend some time working as mid-level workers before continuing their studies. Certain academics are in favour of this, arguing that a period of work will consolidate knowledge and improve clinical skills before entering the degree programme. Others argue that a break in studies is not always desirable due to potential knowledge decline.
- There is a desire to limit the time away from work when ECT graduates embark on further study. Therefore it is suggested that the bridging programme be offered as a limited-contact programme.<sup>[13]</sup>

A proposed framework for articulation is presented in Fig. 1, followed by a brief discussion of the central key components.

## Discussion

The main factors driving the demand for articulation and further study appear to be the ECTs' desire for increased recognition and status within the profession, enhancing their clinical scope of practice and enjoying associated benefits such as promotion and improved salaries.

The process of articulation is not possible without completing the ECT qualification. While certain members of the focus group panel did not feel that a period of work post qualification was necessary for ECT graduates wishing to continue into the B EMC degree, the majority consensus was that a period of clinical practice as an ECT was indeed desirable.<sup>[12]</sup>

The authors agree that ECT graduates should make a contribution to the workforce as mid-level workers before moving into the degree programme so that the objective of the ECT programme is not defeated, i.e. to produce additional numbers of qualified staff for local emergency services. Furthermore, it is unrealistic to assume that every ECT graduate will move on and obtain a professional degree.

The framework proposes that at the end of their first year of practice, ECTs who wish to study further apply to enter a structured bridging programme (during their second year of clinical practice). The aim of this programme would be to prepare them for advanced placement in year three of the degree programme.

Applicants may also submit a portfolio documenting their clinical work and prior learning as well as continued professional development activities post qualification as an ECT. The portfolio may be further developed and expanded while completing a bridging programme.

Vincent-Lambert<sup>[13]</sup> showed that, although a number of similarities do exist between the 2-year ECT programme and the first two years of the degree programmes, there remain a number of shortfalls in terms of the academic level and depth of knowledge in the following key areas: physics, chemistry, physiology, general pathology, diagnostics and selected areas of clinical exposure.

The framework therefore includes a bridging programme with modules that focus on addressing the abovementioned knowledge gaps identified in the study. These need to be covered at the same academic level as those offered during years one and two of the degree programme.

In summary, the main aim of the bridging programme would be to ensure that the foundation and core knowledge of an ECT graduate, having

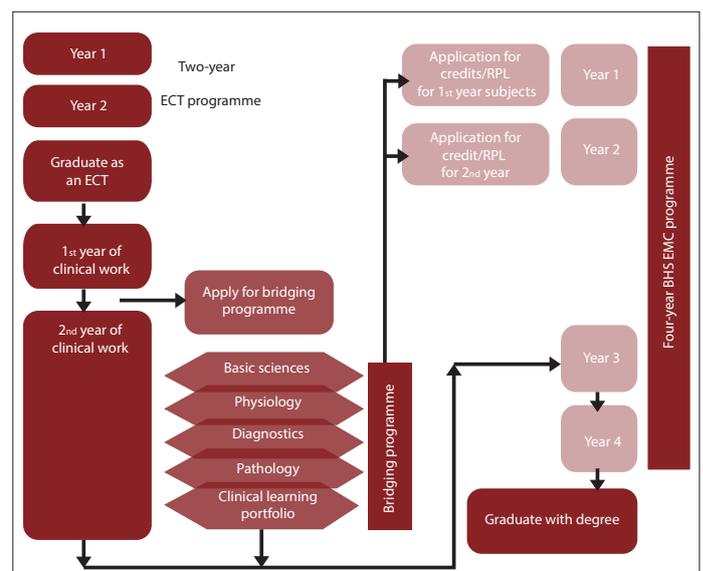


Fig. 1. Framework for articulation between the Emergency Care Technician certificate and the professional degree in emergency medical care<sup>[13]</sup> (RPL = recognition of prior learning; BHS = Bachelor of Health Sciences; ECT = emergency care technician; EMC = emergency medical care).

successfully completed the bridging programme, would be exactly the same as that of a B EMC student at the end of their second year of study. This will allow ECT diplomates who have completed the bridging programme to join the Bachelor degree students who are entering their third year of the B EMC programme.

It is acknowledged that B EMC degree programmes differ somewhat in terms of academic architecture, depth and content. Therefore, each institution will need to compare the content of the suggested bridging programme with that of their physiology, diagnostics, general pathology, physics and chemistry modules. Similarly, the awarding of academic credits and/or recognition of prior learning will be guided by the policies and procedures of the respective higher education institutions.

## Conclusion

There remains a shortage of tertiary-qualified emergency care workers in South Africa, especially practitioners with advanced life-support skills. The majority of current emergency medical service staff lack formal qualifications and the new mid-level worker ECT programme provides an exciting opportunity for entry into the NQF.

Mid-level worker programmes look set to remain and even expand with additional training providers being accredited each year in a number of professions. The subsequent demand of growing numbers of mid-level workers for further career development and learning opportunities may be partially addressed by creating opportunities for entry into Bachelor degree programmes. This study predicts that there will be a sustained demand by ECT graduates in the emergency care profession to further their studies and obtain the B EMC degree.

Articulation between the ECT programme and the third year of the B MEC degree may indeed be possible through completion of a bridging

programme. The first pilot of the bridging programme was conducted at the University of Johannesburg with 10 ECT graduates from the North West Province during 2013.

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