Entrustable professional activities for nutrition and dietetics practice: Theoretical development

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Abstract

Background: Nutrition and dietetics competencies in Australia have recently changed to incorporate greater emphasis on client-centredness, flexibility, marketing skills, advocacy and a systems-based approach to practice. This study examined the translation of the new competency standards into a series of entrustable professional activities (EPAs) to achieve authentic assessment practice.

Methods: An iterative, multiple-methods approach was used. Two senior academic dietitian-nutritionists conceptualised key tasks for everyday practice and devised a list of 14 EPAs. Face validity of the 14 EPAs, new curriculum and assessment plans was established through expert review and presentation to four dietetics department directors and 10 clinical educators. Dietetics students trialled the new assessment procedure.

Results: Each domain of competence was included in 9–10 EPAs. Each EPA included the demonstration of 12–21 key tasks/elements. The EPAs were positively received by expert reviewers and were considered a strong framework. Students considered the EPA assessment process easier than previous competency-based methods and reported a higher recognition of learning and skills development.

Conclusions: EPAs are feasible for translating competency standards into a workplace-driven nutrition and dietetics curriculum and are an effective catalyst for curriculum and assessment modifications to drive the development of client-centred and entrepreneurial dietetics professionals.

Keywords: authentic assessment; entrustable professional activities; nutrition and dietetics.

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Introduction

There is an imperative in health professional education to develop the diverse skill sets needed to maintain successful employment into the future (Frank & Danoff, 2007). Health professionals will need broader expertise than currently exists, strong client-centredness, flexibility, entrepreneurial attributes, change management skills and a strong ability to deal with ambiguity (Mulder, Cate, Daalder, & Berkvens, 2010). Australian competency standards for dietetics were originally published in 1993, reviewed in 1998, 2005 and 2009 and completely revised in 2015 in recognition of the need to incorporate new skills into practice (Palermo et al., 2016). The major functions of dietitian-nutritionists determined in 2015 included: being a professional; influencing the nutritional health of individuals, groups, communities and populations through evidence-based nutrition practice; and working collaboratively in teams (Palermo et al., 2016). An additional layer involved the application of critical thinking and the integration of evidence into practice. These themes formed the basis of the new framework for dietetics competence and are consistent with those identified in the CanMEDS framework, which encompasses seven key physician roles, or "domains" of practice: (i) medical expert, (ii) communicator, (iii) collaborator, (iv) health advocate, (v) manager, (vi) scholar, (vii) professional (Frank, 2005). The CanMEDS initiative of the Royal College of Physicians and Surgeons of Canada (RCPSC), which commenced in the early 1990s, was driven by the rise in technology, consumerism, "societal responsiveness", the "explosion in medical knowledge" and the growing emphasis on a requirement for accountability and professionalism (Frank, 2005). The impetus of the framework is to facilitate the acquisition of the essential abilities needed for all physicians to address client, community and societal healthcare requirements (Frank, 2005). The key difference for dietetics, as expected, is that the "medical expert" is replaced with "role in influencing nutritional health" (Palermo et al., 2016).

Each of the four domains of competence in the new Australian dietetics competency standards has two to five key tasks/elements comprised of independent sets of skills and attitudes, represented as "observable and/or measureable actions" (DAA, 2015). The inclusion of business skills, marketing skills, capacity building of the workforce and emotional intelligence engendered some debate within the dietetics profession (Palermo et al., 2016) but represented the growth needed to ensure dietitian-nutritionists are equipped to provide highly-valued services, evolving to meet the needs of clients and society from diverse perspectives. Dietitian-nutritionists are finding and creating employment opportunities in increasingly diverse areas, for example, as sole private practitioners in small business, industry or information technology (Palermo et al., 2016). The new dietetics competency standards address this growing diversity to ensure graduates are adequately prepared to prosper when novel opportunities arise. Importantly, the new competency standards have a greater emphasis on client-centredness, flexibility, taking a systems-based approach to practice, applying marketing skills and advocacy (Palermo et al., 2016).

There has been a paradigm shift towards an outcome rather than input-based framework for competence across the health professions, and this requires a change in the way the framework is conceptualised and curricula are designed (Mulder et al., 2010). Methods utilised to facilitate learning require a stronger emphasis on adult learning principles,

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student-led self-directed approaches, self-reflection and peer review. Assessment based on student self-assessment, peer assessment and students' identification of their own competence is essential. Metacognition is defined as "thinking about thinking" and is an important ingredient for this process (Weidman & Baker, 2015). Students require education about how to engage in this within curricula. Within the new outcomes-based framework, the skills and ability to "think about thinking", reflect on and revise practice, and display emotional intelligence are considered equally as important as the underlying content knowledge of the discipline (Hodges & Lingard, 2012). University programmes based solely on didactic delivery of the latest, but current, evidence-based recommendations for diagnosis and treatment generally develop health professionals focused on narrower aspects of care. This issue is promulgated by competencies requiring specific practice tasks within a clearly defined scope of practice, resulting in less flexibility and adaptability to the changing needs and expectations of clients within a dynamic fiscal framework (Fish & De Cossart, 2006).

The new domains of practice for dietitian-nutritionists incorporate skill sets centred around the client, flexibility, entrepreneurial attributes and change management; they go beyond that of the standard nutrition care process. This provides a significant challenge for implementing a new competency framework, both logistically from a curriculum and assessment redesign perspective, and professionally through education and change management. The domains of medical practice, such as those outlined in the CanMEDS framework, have been translated into a series of entrustable professional activities (EPAs) to achieve authentic assessment practice (ten Cate, 2013). EPAs are defined as "a unit of professional practice that can be fully entrusted to a trainee, as soon as he or she has demonstrated the necessary competence to execute this activity unsupervised" (ten Cate et al., 2015, p. 983). EPAs represent what clinicians do in daily practice, i.e., EPAs are structured descriptions of professional work (Mulder et al., 2010; ten Cate et al., 2016), while competencies are descriptions of people's abilities, including "content expertise" and "professional attitude" (ten Cate et al., 2015). EPAs are executable within a given time, observable, measurable, confined to qualified personnel and suitable for focused entrustment decisions (ten Cate et al., 2016). Mulder et al. (2010) explained that being "entrusted" to perform an EPA requires competence in different domains, underpinned by knowledge, skills and attitudes. In this way, EPAs lead to a more holistic evaluation of students and include assessment of skills as well as overall trustworthiness, an essential component of professionalism.

Studies in internal medicine have identified that 30–76 EPAs may encompass medical practice (Hauer et al., 2013; Shaughnessy et al., 2013). As long as the EPA appropriately identifies the "professional activity" to be mastered and certified, different views of the nature of EPAs is appropriate (ten Cate, 2013). It is essential for those assessing the EPAs to not rely only on the students' skills and knowledge. An important factor to take into account when determining "entrustment" is whether the student can reflect on their own limitations, take responsibility and deal appropriately with mistakes. These are key components of the new competencies for graduate dietitian-nutritionists in Australia (DAA, 2015). EPAs prompt the need to provide students with the opportunity for autonomy with patients (i.e., consulting with patients without constant supervision and observation by preceptors or clinical educators) throughout their practical training. Failing to do this has been shown to impair their skills development in patient care post-

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training (ten Cate et al., 2015). In summary, an EPA-based competency framework seeks to establish a gradual increase in responsibility and autonomy in a safe and justifiable manner (ten Cate et al., 2015).

Given the significant medical literature around the use of EPAs to drive curriculum change and assessment procedures for modern competency frameworks (Caverzagie, Cooney, Hemmer, & Berkowitz, 2015; Chang et al., 2013; Englander et al., 2014; Englander et al., 2016; Hauer et al., 2013; ten Cate et al., 2016), it was considered that this was a suitable method to facilitate implementation of the new competency standards for dietitian-nutritionists in Australia. The research question addressed by this study focused on how to translate a set of new competency standards into EPAs for curriculum and assessment redesign and skills assessment in practice. The paper outlines the process for creation of EPAs for nutrition and dietetics practice at the University of Queensland, Australia. The processes of redesign, the refinement of associated assessment strategies and the results of implementation in practice are also presented.

Methods

Development of EPAs for dietetics practice

The EPAs for dietetics practice were developed using an iterative multiple-methods approach. This was preceded by a review of the literature on EPAs, around how to develop EPAs and specific wording requirements (ten Cate et al., 2015). Two senior academics, one an advanced accredited practising dietitian with 15 years' experience and the other a fellow of the Dietitians Association of Australia with more than 40 years' experience, conceptualised the key tasks needed in everyday practice for dietitian-nutritionists and devised a list of 14 EPAs. Several revisions to wording were made after consultation with experienced clinical educators, and the arrangement of the EPAs was modified to be alphabetical so as not to prioritise any particular area of practice through ordering. Ethical approval was not required for this study.

Mapping of skills and attitudes

The skills and attitudes underpinning each of the four new domains of competence for graduate dietitian-nutritionists in Australia are termed "observable and/or measurable actions" and were grouped under each new EPA to provide details of content and scope (Mulder et al., 2010). This meant that each EPA contributed to several of the domains of competence as is recommended for the design of workplace curricula (ten Cate et al., 2015). This was an iterative process with multiple reviews between the two senior academic dietitian-nutritionists developing the material, working independently between each review.

Curriculum development

The 2015 competencies for graduate dietitian-nutritionists in Australia no longer include any required underlying knowledge. Underlying knowledge from historical competency documents was used, and it was augmented with content considered essential to fill any gaps in the current dietetics curriculum to address new skills and

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attitudes. This information was mapped across all specific courses within the dietetics programme of study. This knowledge map was used alongside the Dietitians Association of Australia key tasks/elements and observable and/or measurable actions documents to assign each of these to a theory and/or professional practice subject. This assisted in determining where assessment of each EPA would occur and indicated where the curriculum needed strengthening.

Development of assessment procedures

Professional practice in the Master of Dietetics Studies at the University of Queensland is completed over three semesters, with students attending a diverse range of acute care, chronic disease self-management, food service and community/public health nutrition placements concurrent to the theory programme, to achieve immediate application of skills. All students have completed undergraduate degrees in nutrition.

The framework for assessment of the new EPAs in the curriculum includes a variety of approaches: (i) written documentation from students demonstrating appropriate peer and self-assessment, (ii) an evidence portfolio of nutrition care plans, project reports and self-reflections on the observable and/or measureable actions relevant to the theory or practical course, (iii) observation of students' practice by preceptors and clinical educators with a view to providing mentoring and support rather than assessment and (iv) informal interviews with students regarding their evidence portfolios and written documentation. Clinical educators across all settings of practice utilise a range of these strategies where appropriate.

Students develop their skill level with the observable and/or measurable actions over 18 months, with the "entrustment" decision occurring at the end of that year for those EPAs associated with professional practice in medical nutrition therapy and at the end of 18 months for those EPAs associated with management and professional activities. A proportion of the observable and/or measurable actions for medical nutrition therapy (EPA 10 and 11) were identified by the two senior academics as essential for students to achieve by halfway through the first year, to ensure progression in learning and skill acquisition, as well as to provide formative assessment. Students also complete some of the EPAs after finishing specific assessment pieces of work across a semester. Students are set a variety of tasks associated with written assignments to identify (by discussing with relevant evidence) how they have achieved the observable and/or measurable actions related to specific EPAs. These strategies are consistent with the recommended gradual progression of skills development towards entrustment across the curriculum (ten Cate et al., 2015).

For example, for medical nutrition therapy practice, various checklists of skills and observable and/or measurable actions were created for use at the professional practice placement sites. These included items such as "prioritises key issues, formulates goals and objectives and prepares goal oriented plans in collaboration with patient/client or carer, community/population/service, other members of the health care team, key stakeholders and partners" (DAA, 2015, p. 2). Students wrote short summaries of how they had achieved each of these on their checklist forms, substantiated with reference to evidence. Evidence of their achievements was kept in the form of completed self-assessment tools, including peer-review forms for the nutrition care process,

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interviewing and counselling, as well as nutrition care plans. Preceptors and clinical educators monitored students' progress, verified the content on the self-assessment forms with reference to the collated evidence when required and assisted in determining whether students were fully competent, "in progress" or "not in progress" with each skill or observable/measurable action. At the end of the year, achievement of competence on all items on the checklists determined whether they were entrusted to perform EPA 10 and 11. The entrustment decision was made by University staff, incorporating clinical educator feedback. For in-class assessments and assignments, University staff evaluated students' performance against the skills and observable/measurable actions that had been mapped against each assessment piece. Sometimes, this involved students writing a holistic, one-page reflection of the relevant EPA, describing how they had achieved competence across identified skills and observable/measurable actions. This was marked by University staff.

Consultation with the nutrition/dietetics profession

Face validity of the new curriculum plan was established by: (i) review by an expert colleague from another jurisdiction and (ii) the presentation of the new curriculum map, including the EPAs, corresponding lists of observable and/or measurable actions, the EPA-competency matrix (Figure 1) and new assessment approaches for professional practice, to a group of four dietetics department directors (or proxies) and 10 clinical educators at a collaborative workshop in February 2016. This was preceded by a presentation and discussion about EPAs and the background literature. All key stakeholders were given the opportunity to comment on their perceptions of the appropriateness of EPAs to translate the new competencies for graduate dietitian-nutritionists in Australia into practice. The conversation was not recorded, as it was an informal collegial workshop rather than designed as a research activity at this stage. Formal thematic analysis was not undertaken.

Evaluation of student responses from EPA assessments conducted in the first cycle of implementation

A sample of written reflective pieces from the initial cycle of implementation of EPA 13 and 14 in Semester 1 and 2, 2016, was compared against the reflective pieces utilised in the previous competency assessment approach (i.e., no EPA) to determine their utility. Anecdotal student feedback about the new EPA process was solicited throughout the semester by the course coordinator, during drop-in tutorial sessions, as part of monitoring student progress, understanding of the EPAs and concerns. This was informal feedback only. Two content experts reviewed the 2016 responses in comparison with responses provided in 2015 to the previous competencies (DAA, 2009).

Results

A curriculum map, including 14 EPAs with corresponding "observable and/or measurable actions", was developed. For a list of the 14 EPAs, see Table 1.

The EPAs were mapped to the key tasks/elements and the four domains of competence through the development of an EPA/competency matrix, shown in Figure 1. Table 1 and Figure 1 are best interpreted concurrently.

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Table 1
Entrustable Professional Activities to Implement Nutrition and Dietetics Competencies

1. Apply knowledge of measurement issues to improve care for individuals, population or systems
2. Conduct project planning in public health and community nutrition
3. Critique and develop nutrition education resources
4. Design policies for monitoring the level of quality in a nutrition service
5. Develop a business or marketing plan for a new product or service with budget
6. Develop and present recommendations informed by a community, situation and determinant analysis
7. Engage in professional communication in the social media
8. Facilitate a nutrition education session
9. Facilitate a workshop or discussion group to present gathered evidence
10. Manage medical nutrition therapy for patients with complex nutrition conditions requiring lifestyle change
11. Manage medical nutrition therapy for patients with non-complex nutrition conditions in acute care
12. Present recommendations for practice informed by a literature review
13. Provide consultation to staff team and management on food service issues
14. Work collaboratively within teams

Competencies	**Key Tasks/ Elements**	**EPA 1**	**EPA 2**	**EPA 3**	**EPA 4**	**EPA 5**	**EPA 6**	**EPA 7**	**EPA 8**	**EPA 9**	**EPA 10**	**EPA 11**	**EPA 12**	**EPA 13**	**EPA 14**
Domain 1*	1.1										•			•	
	1.2										•			•	
	1.3							•			•			•	
	1.4		•	•	•			•			•			•	
	1.5		•												
Domain 2**	2.1		•	•	•		•				•			•	
	2.2				•		•								
	2.3			•				•			•	•			
Domain 3***	3.1		•	•							•	•	•	•	
	3.2	•			•			•		•			•		
Domain 4****	4.1	•	•	•				•	•		•	•		•	
	4.2	•	•	•	•				•		•				

* Practises professionally
** Positively influences the health of individuals, groups and/or populations to achieve nutrition outcomes
*** Applies critical thinking and integrates evidence into practice
**** Collaborates with clients and/or stakeholder
For further information about the key tasks/elements, please see web address for National Competency Standards for Dietitians in Australia: https://daa.asn.au/wp-content/uploads/2017/01/NCS-Dietitians-Australia-1.0.pdf

Figure 1. Entrustable professional activities and competency matrix.

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Each EPA contributed to more than one domain of competence so that all of the domains were included within 9–10 EPAs. Each EPA included the demonstration of 12–21 key tasks/elements, ensuring increased confidence in the overall assessment. For example, EPA 13 and EPA 14 currently map to the food service management area of practice. The matrix in Figure 1 is best interpreted when read alongside Table 1, with the EPAs. The knowledge, skills and observable or measurable actions for each EPA were embedded throughout the curriculum. Course learning objectives were aligned to these so that there was a clear link between the theory and practical curriculum content and the EPAs.

The use of EPAs to translate the new competency standards into practical assessment strategies was very positively received by all of the clinical educators and departmental directors present and was considered to be a strong framework to drive the assessment of competence in the dietetics programme. Feedback on the 14 EPAs was encouraging, and all directors and clinical educators consulted considered that the list adequately represented the professional roles of a dietitian-nutritionist. Extensive discussion around the new assessment procedures occurred, and based on the feedback received, revisions to the assessment forms and milestones for achievement of some of the observational and/or measurable actions were modified.

Results of a comparison of sample reflective pieces from the new EPA system of assessment with the previous competency system of assessment are shown in Table 2. The responses show that students using the EPA system utilised the evidence they gained from the individual projects they completed to write good reflective pieces. The review of responses by two content-area experts at the University of Queensland indicated the reflective piece to address the EPA was more holistic and showed greater understanding across a broader number of issues than the reflection addressing the previous competency statement. This enabled University staff to "entrust" the student with this task. The group of students who had completed part of their studies using the previous system and part using the new EPA framework for professional practice in 2016 (n = 35) reported, anecdotally, that it was easier than the preceding system of self-assessment against the old (2009) DAA competencies. The new process was perceived as significantly streamlined with an integration of important skills across different domains of competence contributing to an overall entrustment decision. For example, EPA 13, "provide consultation to staff team and management on foodservice issues", incorporates skills and observable and/or measurable actions across the four domains of competence. Students also indicated the mapping of the relevant skills and observable and/or measurable actions under each EPA improved their understanding of what they were meant to be learning and the skills they were meant to be developing and refining. This helped to facilitate their development of metacognition, as it provided substantial guidance for considered reflection. Table 2 provides a comparison of student answers to the EPA for food service management compared with addressing competency statements.

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Table 2
Comparison of Student Answers to EPA Compared With Addressing Competency Statements, Relative to the Domain of Food Service Management

Construct	EPA	Competency Statements
Terminology	Observable and/or measurable actions (OMA)	Performance criteria (PC)*
Length of placement	20 days	20 days
Number of items/behaviours required for topic assessment	20 OMA across 4 domains and 9 elements of competence	19 PC across 3 domains and 7 elements of competence
Length of student response	One-page holistic reflective response	PCs addressed in groups at PC or element level, on average 3–4 pages in length for reflective response
Submission of evidence	Uploaded to Blackboard™ through Turnitin®	Uploaded to ePortfolio**
Overall	Broader and more generic	Specific and reductionist
Example of text providing the evidence for meeting competence	"I worked efficiently and professionally with my partner for both placements, dividing the work fairly. When data collection did not go according to plan for the XX project, I conducted process evaluation and developed a solution to modify the method. These demonstrate (OMA# 1.2.2, 1.3.5). I demonstrated good rapport with key stakeholders throughout both projects by constantly liaising with staff, management and in XX, the residents. For XX, I asked staff about barriers and limitations of distributing mid meals to inform the current recommendations. I evaluated the previous project's recommendations by liaising with the manager. At YY, I asked about staff's perspectives around waste." (OMA# 4.1.2, 4.1.1, 2.1.4)	"Semi-structured informal interviews were conducted with facility manager, clinical manager, food service manager, team leaders. From these interviews, it was identified that resident nutrition was being provided in a cost effective and time efficient manner. From observations, it was also noted that many procedures within the system were not effective, and this is also considered to be a goal for the facility. It is recognised that changes of policy and procedure is a large task and is therefore a recommendation; however, it is not realistic in the current timeframe. These goals were also discussed with the XX preceptor to ensure they were relevant and appropriate considered the breadth of the project and time frame." (PC# 6.2.1)

*PC = statements associated with the 2009 National Competency Standards for Entry Level Dietitians that describe the knowledge, skills and attitudes required for successful performance as a dietitian in Australia.
**ePortfolio = collection of electronic copies of uploaded nutrition care plans and evidence statements inputted as text and managed by each student. Clinical educators log in to read, verify and make comments on the material.

Discussion

This paper outlined the processes utilised to translate the new competency standards for dietitian-nutritionists in Australia (2015) into 14 entrustable professional activities. These EPAs represented key tasks undertaken by dietitian-nutritionists in everyday practice, using strong theoretical frameworks. The iterative process outlined for creating and refining the EPAs, redesigning curriculum and assessment strategies,

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and consulting with professional experts in dietetics education demonstrates the structure and detail required to move towards a more robust, future-driven approach to health professional education and training. The findings presented in this paper show that professional experts and students, by their willingness to participate in the implementation process, provide input and complete the revised assessment tasks set, have embraced the new approach in the early stages. There is no body of evidence on the utilisation of EPAs for translating competence in dietetics education; therefore, this work is the first of its kind. However, EPAs are well accepted across numerous other disciplines (ten Cate et al., 2016).

The use of EPAs in dietetics as part of a workplace curriculum provides numerous advantages for the achievement of authentic assessment in a challenging, resource-constrained environment. EPAs facilitate opportunities for flexibility in assessment with regards to timing and setting of practice experiences. By attaining skills and competence at different time points throughout the curriculum, students achieve "entrustment" at their own pace. The curriculum is designed so that students have the opportunity to gather appropriate evidence to support their achievement of the EPAs across a number of theory and professional practice courses across the entire programme of study. This approach is essential for managing the finite resources available for professional practice placements for students, which is a challenging factor for many dietetics programmes. Most importantly, the EPA system is outcome based rather than time based, and this is the key driver of its authenticity and ability to result in "true" competency-based education (Frank et al., 2010; Mulder et al., 2010). The timeframe for entrustment may vary for each student, but guidance is provided in other health professional contexts regarding the maximum time within which this should be achieved (ten Cate & Scheele, 2007). Due to this complexity, the EPA approach does not support the use of didactic, standardised assessment tools.

The nuances associated with this new assessment framework using EPAs are important—there is no assessment tool that is "ticked off", but there is significant emphasis on trust (Hauer et al., 2014); it involves "gut instinct" (Touchie & ten Cate, 2016) and emotional intelligence. This cannot be captured in lists of tasks but requires professional judgment, expertise and insight. EPAs are meant to bring together a holistic assessment of the student. Recent comment in the medical literature suggests that "reductionist" views of competence, involving assigning a score or a number to student achievements is neither holistic nor valid (Touchie & ten Cate, 2016). Touchie & ten Cate (2016) also suggest that it is impossible to observe or obtain examples from students of their ability to manage situations with the extricable range of scenarios they may experience in practice, and these observations are often the basis for competence assessment.

The evidence provided from our first implementation of the EPAs is encouraging. Students undertaking EPA 13 and 14 were able to clearly use the evidence they gained from the individual projects they undertook to write acceptable reflective pieces that allowed university staff to "entrust" them with this task. Anecdotal reports from students to their course coordinator throughout the semester, generally, suggested that

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the students perceived that the EPA approach facilitated more coherence, less focus on minutiae and more clarity about their learning, compared to the former system they completed in 2015. We believe this in itself is useful, so that students understand their own skill base and how they have developed this; however, further studies are needed to clarify these conclusions from students in a formalised systematic way. Such empirical work has commenced in our setting.

Limitations

The iterative process of curriculum development did not follow a particular theoretical framework, such as the Delphi method; however, wide, relevant and external consultation was used. The study presents anecdotal feedback from students about the first cycle of implementation of the EPAs, comprising EPA 13 and 14, as a form of formative evaluation. This means the views expressed may not be representative of the entire group of students who utilised EPA 13 and 14. The additional EPAs are currently being implemented gradually. Further student consultation is imperative to gain a more representative opinion of the EPA assessment process. A formal evaluation of the EPA assessment process is planned and will involve focus group discussions with students who have experienced assessment associated with all 14 EPAs. These students are currently enrolled in the programme and will graduate mid-2017.

Conclusions

This paper describes the process of development of 14 EPAs for professional practice in dietetics. Across the 14 EPAs, all competencies of a dietitian-nutritionist in Australia are demonstrated. The EPAs may be utilised to guide assessment, to ensure that graduates can be entrusted to complete these activities without supervision. The processes outlined here may serve as a guide for all dietetics programmes at both a national and international level to restructure and streamline their curricula in a broader context, using EPAs. The process may also provide insights for other programmes considering EPAs as part of their curriculum.

Further consultation is planned, firstly at the national and then international level, to ascertain professional opinion of this approach and to evaluate its effectiveness in facilitating authentic assessment of competency in dietetics. Additionally, it is anticipated that our approach will increase professional practice placement capacity by increasing flexibility around assessment processes, as it allows for a more extensive variety of professional practice experiences and placement arrangements.

The EPA framework can be modified in line with professional and health system needs. New EPAs could be devised and superfluous ones removed as practice and the health system changes over time. If healthcare imperatives shift, the EPAs would shift in concordance with this. This is essential to ensure curricula remain contemporary and facilitate the training of new practitioners, with diverse skill sets, who are prepared for the healthcare needs of the future and are flexible, adaptable, entrepreneurial and savvy to the needs of clients as well as the health system.

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References

Caverzagie, K. J., Cooney, T. G., Hemmer, P. A., & Berkowitz, L. (2015). The development of entrustable professional activities for internal medicine residency training. *Academic Medicine*, *90*(4), 479–484.

Chang, A., Bowen, J. L., Buranosky, R. A., Frankel, R. M., Ghosh, N., Rosenblum, M. J., . . . Green, M. L. (2013). Transforming primary care training: Patient-centred medical home entrustable professional activities for internal medicine residents. *Journal of General Internal Medicine*, *28*(6), 801–809.

Dietitians Association of Australia (DAA). (2015). *National competency standards for dietitians in Australia*. Retrieved from http://daa.asn.au/wp-content/uploads/2015/12/NCS-Dietitians-Australia-1.0.pdf

Englander, R., Flynn, T., Call, S., Carraccio, C., Cleary, L., Fulton, T., . . . Lypson, M. L. (2014). *Core entrustable professional activities for entering residency: Curriculum developers' guide*. Washington, DC: Association of American Medical Colleges.

Englander, R., Flynn, T., Call, S., Carraccio, C., Cleary, L., Fulton, T. B., . . . Aschenbrener, C. A. (2016). Toward defining the foundation of the MD degree: Core entrustable professional activities for entering residency. *Academic Medicine*. Advance online publication. doi:10.1097/acm.0000000000001204

Fish, D., & De Cossart, L. (2006). Thinking outside the (tick) box: Rescuing professionalism and professional judgement. *Medical Education*, *40*(5), 403–404. doi:10.1111/j.1365-2929.2006.02441.x

Frank, J. R. (2005). *The CanMEDS 2005 physician competency framework: Better standards. Better physicians. Better care.* Ottawa, Canada: The Royal College of Physicians and Surgeons of Canada.

Frank, J. R., & Danoff, D. (2007). The CanMEDS initiative: Implementing an outcomes-based framework of physician competencies. *Medical Teacher*, *29*(7), 642–647. doi:10.1080/01421590701746983

Frank, J. R., Snell, L. S., ten Cate, O., Holmboe, E., Carraccio, C., Swing, S., . . . Dath, D. (2010). Competency-based medical education: Theory to practice. *Medical Teacher, 32*(8), 638–645.

Hauer, K. E., ten Cate, O., Boscardin, C., Irby, D. M., Iobst, W., & O'Sullivan, P. S. (2014). Understanding trust as an essential element of trainee supervision and learning in the workplace. *Advances in Health Science Education: Theory and Practice*, *19*(3), 435–456.

Hauer, K. E., Kohlwes, J., Cornett, P., Hollander, H., ten Cate, O., Ranji, S. R., . . . O'Sullivan, P. S. (2013). Identifying entrustable professional activities in internal medicine training. *Journal of Graduate Medical Education*, *5*(4), 54–59.

Hodges, B., & Lingard, L. (2012). *The questions of competence: Reconsidering medical education in the twenty-first century*. New York, NY: Cornell University Press.

Mulder, H., ten Cate, O., Daalder, R., & Berkvens, J. (2010). Building a competency-based workplace curriculum around entrustable professional activities: The case of physician assistant training. *Medical Teacher*, *32*(10), e453–e459. doi:10.3109/0142159X.2010.513719

ISSN 1442-1100

Palermo, C., Conway, J., Beck, E. J., Dart, J., Capra, S., & Ash, S. (2016). Methodology for developing competency standards for dietitians in Australia. *Nursing & Health Sciences*, *18*(1), 130–137. doi:10.1111/nhs.12247

Shaughnessy, A. F., Sparks, J., Cohen-Osher, M., Goodell, K. H., Sawin, G. L., & Gravel, J. (2013). Entrustable professional activities in family medicine. *Journal of Graduate Medical Education*, *5*(1), 112–118.

ten Cate, O. (2013). Nuts and bolts of entrustable professional activities. *Journal of Graduate Medical Education*, *5*(1), 157–158.

ten Cate, O., Chen, H. C., Hoff, R. G., Peters, H., Bok, H., & van der Schaaf, M. (2015). Curriculum development for the workplace using entrustable professional activities (EPAs): AMEE Guide No. 99. *Medical Teacher*, *37*(11), 983–1002. doi:10.3109/0142159X.2015.1060308

ten Cate, O., Hart, D., Ankel, F., Busari, J., Englander, R., Glasgow, N., . . . Wycliffe-Jones, K. (for the International Competency-Based Medical Education Collaborators). (2016). Entrustment decision making in clinical training. *Academic Medicine*, *91*(2), 191–198. doi:10.1097/acm.0000000000001044

ten Cate, O., & Scheele, F. (2007). Viewpoint: Competency-based postgraduate training. Can we bridge the gap between theory and clinical practice? *Academic Medicine*, *82*(6), 542–547. doi:10.1097/ACM.0b013e31805559c7

Touchie, C., & ten Cate, O. (2016). The promise, perils, problems and progress of competency-based medical education. *Medical Education*, *50*(1), 93–100. doi:10.1111/medu.12839

Weidman, J., & Baker, K. (2015). The cognitive science of learning: Concepts and strategies for the educator and learner. *Anesthesia & Analgesia*, *121*(6), 1586–1599. doi:10.1213/ane.0000000000000890

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