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The identification of the role and competencies of the graduate nurse in recognising and responding to the deteriorating patient in an acute ward environment: A mixed methods study

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Chapter 4

Phase 1: Development of the questionnaires

Introduction

The previous chapter portrayed the design of this study, provided a discussion of the MMR approach used and the rationale for using an explanatory MMR design. Within this chapter the development of the phase 1 questionnaires (Q-Role and the Q-Comp) will be discussed. Initially, the processes used for the development of the Q-Role will be provided, including an overview of the expert panel review, and the test for validity and reliability. Following this section, a discussion of the processes used for the development of the Q-Comp will be provided including an overview of the pilot test.

Overview of the questionnaires

At the time of developing the questionnaires, it was envisaged that the data would be collected from participants enrolled on the GradConnect program and working within the Perth metropolitan public and private hospitals. The aim was to administer the questionnaires in an online format to the target population. The online format was aimed at providing flexibility and ease of access for participants and to facilitate completion. The questionnaires were developed to answer four research questions:

- What is the role of the graduate registered nurse in relation to the identification, assessment and management of the acutely deteriorating ward patient?
- What factors impact the role of the graduate registered nurse in the management of the acutely deteriorating ward patient?
- Which acute care competencies are important to the graduate registered nurse practice in the management of the deteriorating ward patient?

- At what level are graduate registered nurses working in relation to the key acute care competencies within the clinical setting?

To answer the research questions, key conceptual areas were explored, generating a large number of questions. This necessitated the development of two questionnaires. The first centred on the participant's current clinical role in relation to the deteriorating ward patient, and the second questionnaire focused on identifying the acute care competencies that were important in the role. Additionally, the second questionnaire ascertained the level of working and complexity of the role undertaken by the participants within their current clinical practice.

Questionnaire 1: The role of the graduate registered nurse

The first questionnaire concerned the GRN role (Q-Role) in managing the deteriorating ward patient and was developed following an extensive literature review. It was designed to capture an understanding of the GRNs current role, level of knowledge, confidence and educational preparation in to detecting, assessing and managing the deteriorating ward patient. The Q-Role provided data to help answer the research questions.

Following the literature review, a version of thematic analysis was used to identify a number of themes related to the GRN role and competencies in managing the deteriorating ward patient. In total eight core themes were identified for inclusion within the Q-Role:

- Definition, Detection & Frequency of Clinical Deterioration
- Undergraduate & Postgraduate Preparation
- Role in Deterioration
- Knowledge Levels
- Confidence
- Competence

- Clinical Management of Deterioration
- Clinical Support of Graduates

The Q-Role aimed to collect nominal demographic data, followed by ordinal data. The demographic data was related to the participants: age; gender; current areas of speciality; private or public hospital employment; and university of undergraduate nursing education. This data provided scope for additional data analysis and understanding of variances within the sample.

A five point Likert scale was used to collect the ordinal data. It was aimed at measuring the level of agreement with 75 closed ended statements, centred on the eight core themes developed from the literature review. The Likert scale choices included “Strongly Agree”, “Agree”, “Undecided”, “Disagree” and “Strongly Disagree”. Once the Q-Role questionnaire was designed, the process of determining clarity, internal consistency, content validity and reliability continued.

Q-Role development.

Expert panel review.

An expert panel was invited to assure validity and reliability of the Q-Role (Imle & Atwood, 1988). The final decision of who should constitute a panel of experts took into account both the capacities of experts to provide useful advice and issues of feasibility (Toye et al., 2003). The expert panel members needed to constitute people with expertise in acute care environments, an understanding of the GRNs’ working environments, and an understanding of research design.

Six experienced senior RNs from both the acute hospital setting and nursing academia were recruited to review the questionnaire. The expert panel included several senior RNs working alongside GRNs within the acute hospital setting. Their expertise and insight with regards to the context and the clinical work undertaken by GRNs within the hospital setting, was extremely valuable in designing the questionnaire. The expert panel also included nursing academics with clinical

expertise in the management of the deteriorating patient and experience in research design.

The experts were each provided with an information pack (see Appendix 2). The pack contained an explanation of the study, including the objectives. It also outlined the expectations of the role and the processes involved in the questionnaire review. A consent form, eliciting agreement to participate as an expert panel member, was also provided. This form also acted as a confidentiality agreement between the expert panel member and the researcher. The pooling of expertise provided a group of panel experts with capacity to provide valuable feedback from a multitude of different perspectives in the process of the questionnaire development.

The expert panel were asked to evaluate the 75 Q-Role statements in relation to clarity, apparent internal consistency and overall content validity (Lynn, 1986). The panel review helped to preserve the context of the data, retain the accuracy of meaning and promote the content validity of the questionnaire (Imle & Atwood, 1988). The competency of the expert was crucial, as they are defined as a person who represents the content of interest (Halek, Holle & Bartholomeyczik, 2017). The proportion and the stability of agreement was determined from the responses provided by the expert panel

The review process was divided into the three separate elements: clarity; apparent internal consistency; and content validity. The expert panel were provided with a comprehensive set of instructions for each element and equipped with review containing rating scales and space to make comments. Each element was given a two-week period for review and return of feedback for the draft questionnaire. Following the return of the feedback, the data was analysed, the level of agreement ascertained, and the necessary adjustment made in light of the panel review. The review process took 2 months to complete. The processes of determining clarity, apparent internal consistency and content validity will now be outlined.

Clarity.

Checking for clarity of content refers to reviewing the scale items to see that they are clear and understandable (Halek et al., 2017). The assessment process included: were items clear in their intent; do they make sense; and can people understand them fully (Toye, Kristjanson, & Mastaglia, 2003). The draft Q-Role asked reviewers to read each closed ended statement and comment on the clarity of: the language used; the ease of reading; and grammar (see Appendix 3). The questions sets were randomised for each panel member to reduce chance agreement (Imle & Atwood, 1988).

Analysis of the expert panel feedback involved recording the scores and comments given by each reviewer on a Microsoft Excel (2010) spreadsheet. This facilitated all scores and comments being compared across all panel members for probability of agreement to each individual statement. This agreement was calculated along with the overall probability of agreement between expert panel members. The agreement of 5 out of 6 experts was seen to be an adequate level of agreement which accounted for a 0.83 level of significance (Halek et al., 2017; Lynn, 1989).

In total, the six reviewers provided 450 individual ratings of clarity for the 75 closed statements. In situations where more than two raters are utilised, one method recommended as appropriate for calculating inter-rater agreement, is the mean level of agreement across all pairs of reviewers (Oliveira Lopes, Silva, Araujo, & Silva Filho, 2015). This method was used to calculate the inter-rater agreement using the Microsoft Excel (2010) spreadsheet. Each reviewer's 75 ratings were paired with each of the other five reviewers, to identify probability of agreement levels for each pairing (see Table 2).

Table 2

Clarity: Expert Reviewers Probability of Agreement Levels

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6
Rater 1						
Rater 2	0.946					
Rater 3	0.946	0.92				
Rater 4	0.973	0.973	0.946			
Rater 5	0.96	0.933	0.906	0.96		
Rater 6	0.973	0.973	0.986	1	0.96	

This process of accounting for probability of agreement provided 15 paired agreement levels. The mean of the paired rating was calculated by summing the paired levels of agreement and dividing this by the number of ratings. The overall probability of agreement on clarity for the Q-Role was 0.954. The accepted level to identify agreement amongst raters is 0.78 (Halek et al., 2017; Lynn, 1989). The calculated scores generated from this process demonstrated a very high level of inter-rater agreement and confirmed that the Q-Role tool met a high standard of clarity (Halek et al., 2017).

To confirm item level inter-rater agreement, the probability of agreement for each individual statement was calculated. Again this confirmed a high degree of clarity per item. None of the statement items scored less than 0.78 for levels of agreement between the raters. Of the individual statements, 92.5% (n=65) scored 1.0 or perfect agreement and 7.5% (n=10) had a level of agreement of 0.83. The score of 0.83 was still seen to be an acceptable level for item agreement and confirmed a high level of clarity for the Q-Role (Imle & Atwood, 1988; Halek et al., 2017).

Apparent internal consistency.

The next stage of developing the draft Q-Role, involved the review of apparent internal consistency. Apparent internal consistency referred to whether the items were grouped, or appropriately linked together as a particular subset of the conceptual domain (Toye et al., 2003). This process involved the development of a second Likert scale to test apparent internal consistency. The expert panel were once again provided with information packs containing instructions, a timeframe for the review, and a form with the 75 closed ended statements grouped into six related conceptual sets (see Appendix 4).

The panel members were asked to review the closed ended statements within each set, and to rate their agreement as to whether the statement belonged together as a generally related set. Further they were asked to identify if each individual statement, within the general set, belonged within that set. Space was provided for any comments.

The results were transferred to a Microsoft Excel (2010) database for comparison. Again the probability of agreement between expert reviewers was ascertained by calculating the mean agreement across all pairs of reviewers for each set (see Figure 4).

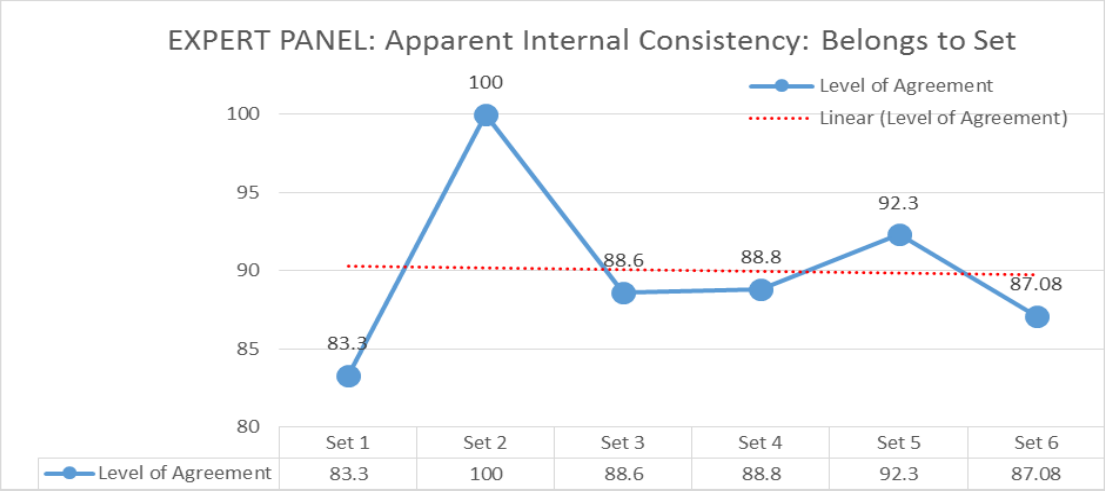


Figure 4. Expert panel apparent internal consistency: probability of agreement

The high mean inter-rater agreements confirmed that the Q-Role items were appropriately grouped together in subsets of the conceptual domains (Toye et al., 2003). The overall mean probability of agreement from the paired raters for all six sets was 0.90. The probability of agreement scores, were also calculated for the individual items. None of the individual statements scored less than 0.78 probability of agreement. Given this level of agreement no statements were altered or removed from original allocated sets. From the 75 individual statement probability of agreements, 65.33% (n=49) had perfect agreement of all six raters, confirming their internal consistency. A total of 34.67% (n=26) had an overall probability of agreement of 0.83, which was seen as acceptable for a level of agreement to confirm apparent internal consistency of the Q-role (Halek et al., 2017; Lynn, 1989).

Content validity.

The final process of determining the validity of the draft Q-role, was to assess its content validity. This form of assessment involves an evaluation of the extent to which items within a scale relates to the domain of interest (Nunnally & Bernstein, 1994). To measure the level of content validity, a third review tool was developed for the expert panel reviewers to utilise. The tool used a rating to ascertain level of agreement concerning the relevance of the item statements using an ordinal rating scale (Lynn, 1986; Wynd, Scmidt & Schaefer; 2003). This level of agreement provided data to calculate the content validity index for both individual items within the tool (I-CVI) and the tool overall (S-CVI) (Polit, Beck & Owen, 2007).

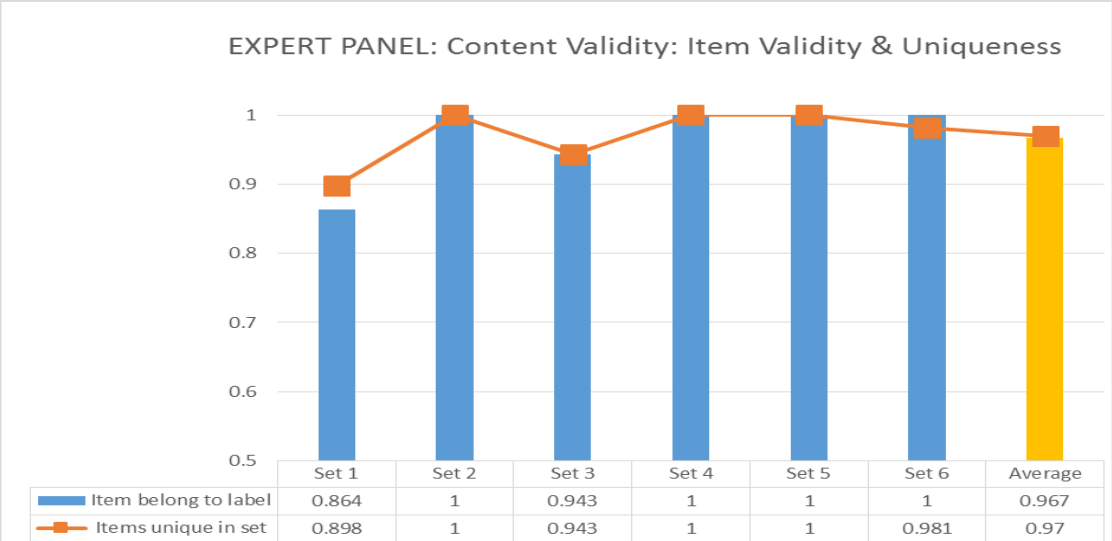
The expert panel were given evaluation packs containing instructions with regards to the assessment of content validity and a timeframe for the review. The draft Q-role contained the 75 closed ended statements grouped into the same six related conceptual sets confirmed by the apparent internal consistency review (see Appendix 5). A label was then developed for each set, along with a comprehensive descriptor for the set. This process provided the expert panel members with concept labels and definitions allowing them to make an assessment of the content validity of the items individually and within a set (Monterossa, Kristjanson & Dadd, 2006).

The same expert panel were then asked to rate two different constructs for each set using the Likert scale rating. Firstly the expert reviewers were asked to decide if the label and descriptor matched each of the item statement within the set. Secondly the expert reviewer was asked to confirm if each item statement was unique within the set. The content validity index was calculated from the reviewer responses on the Likert scale. If the expert indicated the labels and descriptors matched the set and each statement was viewed as unique within the set, then this would indicate agreement that the content of the draft Q-Role was valid. The form gave the expert reviewer space to provide comments, if any content was missing from the sets.

The results from the expert panel members were once again transferred to a Microsoft Excel (2010) database spreadsheet for comparison. A content validity index for individual item statements (I-CVI), and the Q-Role overall (S-CVI) was calculated using the percentage level of agreement between experts (Lynn, 1986). The I-CVI was identified by ascertaining the mean probability of agreement for each item (Polit, Beck & Owens, 2007). The higher the level of agreement between the reviewers, the higher the generated I-CVI score. An acceptable I-CVI for each item from six expert rates was 0.83, equating to five out of six raters agreeing the content item was valid (Halek et al., 2017; Lynn, 1989; Polit, Beck & Owen, 2007). The average percentage agreement of all items across the expert panel was then calculated to ascertain the overall content validity index or the S-CVI for the Q-Role (Halek et al., 2017; Lynn, 1989; Polit, Beck & Owen, 2007).

Two constructs were rated for the 75 statement items, generating 150 items to rate per expert reviewer. A total of 900 statement ratings were received from the six expert reviewers. Of the 150 rated items, 92% (n=138 items) had perfect agreement of validity or an I-CVI of 1.0 from all six expert reviewers. This indicated that the label and descriptor matched each of the statements within the set and each statement was unique within the set, confirming content validity. The remaining 8% of rated items (n=12 items) received an I-CVI of 0.83, which met the standards set by other researchers to confirm content validity (Halek et al., 2017; Lynn, 1989; Polit, Beck & Owen, 2007).

To calculate the overall content validity index or S-CVI for the Q-Role, the mean agreement across all of the reviewers for the two different constructs in each set were calculated (see figure 5 below).



	Set 1	Set 2	Set 3	Set 4	Set 5	Set 6	Average
Item belong to label	0.864	1	0.943	1	1	1	0.967
Items unique in set	0.898	1	0.943	1	1	0.981	0.97

Figure 5. Overall content validity index (S-CVI) for the Q-Role.

The mean of the inter-rater agreements was high for all sets across both of the rated constructs. The overall item S-CVI for the Q-Role was calculated by averaging the mean percentages of inter-rater agreement from the six sets for both constructs. For the construct of "items belonging to the label", the mean CVI was 0.967, and for the construct "item uniqueness within the set", the mean CVI was 0.970, both score indicating excellent agreement of content validity. The S-CVI was calculated as 0.969, which demonstrated an excellent level of agreement and confirming content validity of the draft Q-Role as a whole (Halek et al., 2017; Lynn, 1989; Polit, Beck & Owen, 2007).

Q-Role: Reliability.

Following the confirmation of clarity, apparent internal consistency and content validity, the questionnaire was next tested for reliability. The measure of reliability reflects the stability, consistency and dependability of a questionnaire (Polit

& Beck 2012 p. 331). It relates to the degree to which a measure provides a reproducible or consistent value when undertaken at different points in time or in a variety of situations (Saw & Ng, 2001). A test-retest design was used to measure intra-rater agreement over time. This form of testing was reputed to be the most common measure of reliability. It involved administering the draft questionnaire at two different points in time to the same individual and correlating the degree of variation that occurred in the individuals responses to the questions (Saw & Ng, 2001).

A convenience sample of RNs working within a Critical Care Unit at a metropolitan hospital, were recruited to participate in the tests. Prior to their recruitment, permission to undertake the tests was sought from the hospital executive team, the hospital ethics committee and the Critical Care Unit manager, prior to contacting the RNs for their consent (see Appendix 1). An information pack was provided to the appropriate people. Once agreement was reached, an invitation email containing information about the study, the tests, confidentiality and consent was sent to 15 RNs. The email contained an embedded hyperlink to the online draft Q-Role (see Appendix 6). Consent was assumed when the hyperlink was accessed. A secondary check of consent was attained before proceeding on to complete the tests.

The initial test (T1) collected demographic information so it could be matched with the second test (T2). Completion of the online T1 involved the RNs' rating their level of agreement to 75 closed-ended statements using the five point Likert scale (Strongly Agree, Agree, Undecided, Disagree & Strongly Disagree).

The use of an online format for the tests reflected the planned method of delivery to the participants involved in the main data collection procedure. The online format facilitated easy cloud-based access via any Internet connected device and allowed the RNs to conveniently complete and submit the draft questionnaire at a time and place of their choosing. The RNs were given two weeks to access the online link and complete the T1. The response rate for the T1 was 53% (n=8). Following this period of time, a second email with an embedded hyperlink was sent to the same RNs to complete T2. The RNs were again given a period of two weeks to complete the online test. The response rate for the T1 and T2 completion was 33% (n=5) from the

original sample of 15 registered nurses. The low completion rate may have been due to the RNs busy workload and a lack of time to complete the questionnaire.

Initially, the results from each RN were exported from the online web-based server and converted into a Microsoft Excel (2010) spreadsheet. This allowed for the string data from the Likert scale responses to be recoded into numerical data. Each of the T1 and T2 responses were converted into columns of scores with each item on the Likert scale response given an individual score between 1 and 5 depending on the level of agreement. This produced a column of 75 individual statement scores for T1 and 75 individual statement scores for T2 from each participate.

The participants' scores were then exported to SPSS™ Ver.24 (IBM SPSS, 2016) program that allowed for more comprehensive statistical analysis to be undertaken. Five participants completed both T1 and T2 questionnaires and this generated five sets of data, one pair of 75 statement scores for each. Each data pair included 150 separate responses from T1 and T2. This process culminated in a total of 750 responses from the five participants being included in the analysis of data.

Intra-rater reliability refers to the ability of a rater to reproduce quantitative outcomes under the same conditions (Gwet, 2016). To ascertain intra-rater reliability of the draft Q-Role, the scores were analysed using the Cohen's kappa statistic. Cohen's kappa was recognised as the most popular and appropriate method of assessing the reliability of categorical data within questionnaires (Sun, 2011). Cohen's kappa calculates a correlation coefficient for the intra-rater agreement and, therefore, the reliability of the questionnaire. The Cohen's kappa measures the level of agreement above and beyond the amount of agreement which would be expected by chance alone (McHugh, 2012). The kappa score can range from -1 to +1, where a score of 0 represents the amount of agreement that can be expected from random chance and 1 represents perfect agreement between the raters' responses (McHugh, 2012). The closer each respondent's scores are on T1 and T2, the higher the resultant kappa score will be and high kappa score is seen to reflect a more reliable test measure (Sun, 2011). From the test-retest data, the Cohen's kappa for intra-rater agreement for the Q- Role participants was calculated (see figure 6).

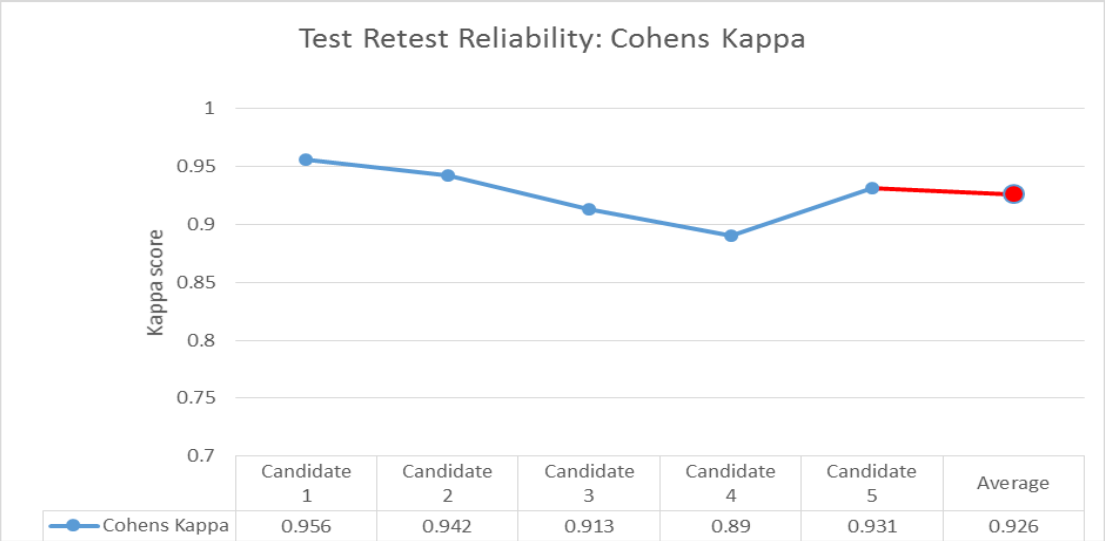


Figure 6. Cohen's kappa intra-rater agreement for the Q- Role.

Five kappa scores were generated, one for each participants' paired responses (T1 v T2). The kappa scores were high for all respondents (kappa > 0.88 in all cases). The highest kappa score was 0.956 and lowest was 0.890, the mean kappa for the questionnaire test-retest was 0.926. The high level of kappa coefficient demonstrated that the Q-Role was reliable over time.

Questionnaire 2: Competencies (Q-Comp)

The second questionnaire, Q-Comp (see Appendix 9), related to the competencies utilised by GRNs when managing the deteriorating ward patient. The Q-Comp was developed to identify which acute care competencies were important and currently utilised. It was also designed to measure the level at which the GRNs were working in order to identify the complexity of their role.

The Q-Comp was developed from the UKDH document entitled "Acutely Ill Competency Framework" (Department of Health, 2009). This document prescribed a list of 79 acute care competencies for healthcare staff to manage the deteriorating ward patient. The competencies were split into five key domains, and each domain contained a number of competency groups (see Table 3 below).

Table 3

Five Competency Domain (Department of Health, 2009)

Domain	Focus of Competency Domain
1	**Airway, Breathing, Ventilation and Oxygenation** (15 competency groups in total)
2	**Circulation** (27 competency groups in total)
3	**Acute Neurological Care** (14 competency groups in total
4	**Transport & Mobility** (3 competency groups in total)
5	**Patient Centred Care: Team Working and Communications** (20 competency groups in total)

The first domain contained 15 competency groups related to airway, breathing, ventilation and oxygenation of the patient. The second domain contained 27

competency groups related circulation and perfusion. The third domain contained 14 competency groups related to acute neurological care of the patient. The fourth domain contained three competency groups related to transport and mobility issues. Finally, the fifth domain contained 20 competency groups related to patient centred care, team working and communications (see Appendix 9).

A competency group was comprised of two sets of information. Firstly a specific competency was provided such as "Arterial blood gas sampling". Alongside the competency, a description of the roles ascribed to each level of the "chain of response" (COR) was provided. This identified the expected tasks to be completed by those individuals undertaking the specified role such as "Collect equipment and transport sample" (see Figure 7 below).

Competency Group	*Non-Clinical Staff*	*"Recorder"*	*"Recogniser"*	*"Primary Responder"*	*"Secondary Responder"*
Arterial blood gas sampling	Transports sample according to local protocol.	Collects equipment and transports sample.	Assists operator in performing task.	Undertakes arterial blood gas sampling and measurement. Has knowledge of and can interpret arterial blood gas measurement.	Recognises need for assistance from Critical Care.
High flow and controlled oxygen therapy	Identifies and collects medical gases if designated.	Identifies and uses masks /nasal cannulae/venturi adapters at appropriate oxygen flow rates. Records oxygen concentration/flow.	Follows oxygen prescription. Understands the context when controlled oxygen is required and applies high flow oxygen effectively in emergencies.	Prescribes oxygen and evaluates effectiveness.	Has detailed knowledge of the use of controlled and high flow oxygen therapy. Evaluates effectiveness of oxygen therapy and revises treatment accordingly.

Figure 7. Example of competency groups with COR descriptors (Department of Health, 2009).

Within the COR, particular sets of skills, knowledge and attitudes were prescribed to meet a certain level of working or role. There were six pre-determined levels or roles within the COR, moving sequentially downwards from "non-clinical supporter" through to "tertiary responder" (see Chapter 2, pg 29). The level of complexity in each role increased the further along the COR staff were working.

The only COR role with a specified level of expertise was the "tertiary responder" role. The healthcare practitioner undertaking this role would need to have advanced knowledge and skills related to the critically ill patient. This level included competence to undertake advanced airway management, advanced resuscitation, clinical examination and interpretation of results for the critically ill patient. As the "tertiary responder" role was viewed as an advanced practice role, this was not included in the Q-Comp, as none of the GRNs would meet the criteria of advanced practitioner in critical care.

A major aim of the study was to determine the validity of the 79 acute care competency groups prescribed by the UKDH in the "Acutely Ill Competency Framework" (Department of Health, 2009). This could only be achieved if the Q-Comp accurately reflected the UKDH framework competency groups. It was, therefore, important to use the exact wording from the UKDH framework competency groups and the "chain of response" levels (Department of Health, 2009) in the Q-Comp. For this reason, no alterations were made to the groupings or wording of the competency groups within the Q-Comp.

As no alterations to the UKDH competency group wording or grouping were intended, it was decided that an expert panel for clarity, apparent internal consistency and content validity was unnecessary. This decision was predicated on any alterations to the wording and format of the competency groups may have changed the context or meaning of the competency. This would then have potentially compromised the determination of validity for the acute care competencies in relation to the GRN group.

To measure the importance of each competency group and the GRNs level of practice, an online Q-Comp was developed that contained all 79 UKDH acute care competency groups in their respective domains. The Q-Comp was designed to allow each competency group within the domain to be rated for importance using a 4 point Likert scale: (Very Important, Important, of Little Importance, Not important). A 4 point Likert scale was used to avoid neutral answers. It was important for the

participants to provide a directional response as to the importance of the competency and its use in their current clinical practice.

Following the participants rating of the importance of the competency group to their clinical role, an algorithm was utilised to decide the next question for the participant to answer. If they had selected either "Very Important" or "Important" on the Likert scale, the algorithm would open a secondary page designed to measure their current level of practice using the COR level descriptors for the competency. The participants then selected the relevant COR competency descriptors that reflected their current clinical role, and level of practice complexity.

Alternatively, if the participant had selected either "Of Little Important" or "Not Important" when rating the importance of the competency group, the algorithm would then bypass the secondary COR level question page, moving on to the next competency group for their rating of importance.

Pilot testing the competency questionnaire (Q-Comp)

To test the usability and ease of completion of the Q-Comp, the same small convenience sample of registered nurses working within a Critical Care Unit were asked to participate in a pilot of the Q-Comp (see Appendix 8). This followed on from the completion of the initial test retest concerning the Q-Role questionnaire. The intention was to gather feedback following completion of the Q-Comp on the online accessibility, ease of use, and time taken to complete the Q-Comp. Of the 15 RNs invited to participate in the pilot test, seven (46.6%) completed the Q-Comp and provided feedback.

Comments from the RNs concerning the ease of use and clarity were positive but they were concerned about the amount of time taken to complete the draft Q-Comp. This comment was not surprising since the Q-Comp was designed to measure five competency domains, containing the 79 competency groups with the competency descriptors to identify the COR role. Those RNs completing the Q-Comp could potentially take 160 separate ratings. Of the seven RNs who undertook the testing, two

did not fully complete it due to the length of time taken. On average it took 47 minutes to complete the testing of the draft Q-comp.

Following the feedback from the RNs, adjustments were made to reduce the time taken to complete the Q-Comp and to improve completion and submission rate. The solution was to divide the Q-Comp into three separate, online parts to be completed at different times to prevent fatigue. This phenomenon occurs when participants grow weary of the survey task resulting in a deterioration of quality of data provided (Lavrakas, 2008). Accordingly, the Q-Comp was rearranged into three parts representing the five domains (see Appendix 7):

- Q-Comp Part 1: Airway, Breathing, Ventilation and Oxygenation (16 competency groups in total)
- Q-Comp Part 2: Circulation (27 competency groups in total)
- Q-Comp Part 3: Acute Neurological Care, Transport & Mobility, Patient Centred Care: Team Working and Communications (37 competency groups in total)

Separate emails were sent to participants at two-week intervals with embedded hyperlinks for the three parts of the Q-Comp. In this way, the time taken to complete the the Q-Comp was dramatically reduced, improving compliance and submission rates by the GRN participants.

Summary

Within this chapter, the development of the phase 1 questionnaires (Q-Role and the Q-Comp) were discussed. The processes used for the development of the Q-Role including the confirmation of clarity, apparent internal consistency, content validity and reliability were provided. The chapter also provided a description of the processes used for the development of the Q-comp including the pilot testing of the questionnaire.