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The Development And Psychometric Assessment Of An Instrument To Assess

Palliative Care Competencies

by

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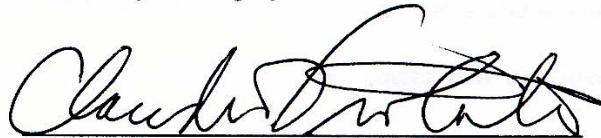
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ABSTRACT

In 2004, 3 OSCE stations were developed to assess the impact of a palliative care course on the competencies of rural family medicine residents. Instruments were also developed to assess the knowledge, attitudes and self-perceived comfort levels of the residents. The results of this pilot project guided the further development of these assessment instruments in 2005. This study aimed to evaluate the psychometric properties of the instruments developed, with specific focus on the OSCES, and to begin the development of a generic standardized OSCE scoring system for palliative care competencies. The OSCE scoresheets consisted of an itemized checklist and a global scale. The impact of the course on knowledge, attitudes and comfort levels were secondary aims.

A total of 20 and 16 residents participated in the 2005 pre- and post-course OSCEs, respectively, and completed the other assessment tools. The internal-reliability values of the OSCE scales ranged from 0.65 to 0.82 across the 3 stations, pre- and post-course. Face validity appeared high as demonstrated by feedback from the family medicine residents and palliative care physicians. The correlations between the total checklist scores and the Global scores were significant (r=0.47 to =.77; p=0.001 to p=0.07). Inter-item coefficient correlations identified several items that appeared redundant and others that provided evidence for divergent and convergent validity of the scale. Significant improvements were noted in OSCE 2 pre and post-course (t=3.14 and 0.01, p=0.01, d effect sizes of 1.42 and 1.94 respectively). The effect sizes in the other stations ranged from d=0.21 to 1.34. There were significant improvements in knowledge levels pre-versus post-course (t=4.44 and 8.99 in the 2004 and 2005 courses; effect sizes respectively were d=2.29 and 2.24). The 16-item knowledge scale however had a low internal reliability of 0.29. The Attitudinal Scale`s (12 items) internal reliability was 0.68 and the Comfort Scales`s 0.92 (22 items).

A generic standardized palliative care OSCE assessment instrument, the Palliative Care-OSCE Scale (Pal-OSCEs), is proposed on the basis of the data and experience derived from the results. Pal-OSCEs will facilitate scoring of Palliative Care OSCEs across many domains and serve as a learning tool for residents. An assessment framework for palliative care education interventions that includes assessment of competencies at knowledge, attitudes and skill levels is suggested. The benefits of including a self-perceived comfort assessment are unclear. Although assessment methods with high validity and reliability to assess these domains are advised, practicalities such as cost, time constraints and lack of sufficient numbers of faculty assessors pose a challenge, often requiring some compromises.

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CHAPTER ONE: INTRODUCTION

Introduction

Relief of human suffering remains a primary role for health professionals. Life limiting illnesses such as advanced cancer, motor-neuron diseases, end-stage heart, lung and renal diseases and advanced dementia can cause much suffering. Unfortunately, a growing number of studies are demonstrating large gaps in the knowledge and skill sets of health professionals as they relate to providing appropriate care to terminally ill patients and their loved ones. These gaps, which are evident amongst undergraduate medical students[1-3] residents [4-6] and health professionals already in practice [7-10], have prompted widespread calls for increased palliative care education across the learning spectrum[11-15], including in medical schools [16].

In response, palliative care content and competencies are being introduced in the curricula of many medical schools [17-19]. As these curricula are being implemented, palliative care educators, much like medical educators in other areas, are being asked to provide evidence of the effectiveness of their educational interventions through assessment and evaluation[20-28].

Defining Assessment and Evaluation

The terms "evaluation" and "assessment" are often used interchangeably. For the purposes of this thesis, "assessment" refers to the quantification of an attribute. The attribute can be related to knowledge, skills, attitudes, ability, behavior, performance, clinical reasoning and judgment, or problem-solving[28;29]. It is also sometimes referred to as "measurement". Various instruments, tests or procedures are available to measure these

attributes. Examples of tests and procedures include multiple choice questionnaires, standardized patients and objective structured clinical examinations (OSCEs). "Evaluation" on the other hand is an assessment accompanied by a judgment. In the context of a certification examination for example this would relate to judging whether or not the candidate has performed satisfactorily and met the requirements of the educational program. More broadly, judging whether or not an educational intervention has been effective in addressing the learning goals and objectives also constitutes "evaluation". The present study will focus largely on assessment of clinical competence in palliative care.

Assessment and evaluation play important roles in the process of medical education and serve goals germane to learners, instructors, institutions and society [28;30]. In general, assessment and evaluations are used to provide student feedback, certify competence, promote learning and determine the quality of an educational process [31;32]. McIlroy and colleagues demonstrated that students, for example, adapt their learning behaviours to the method of evaluation [33]. A properly constructed evaluation could positively motivate learners. The inclusion of humanistic behaviours, recognition of psychosocial domains and the exploration of the illness experience in the evaluation can also provide an important message to students and residents of their importance.

The Levels and Domains of Assessment

Two important questions that are currently the focus of considerable attention in medical education are what should be assessed or evaluated and what constitutes an adequate and representative assessment and evaluation? [32;34;35] At the heart of the

discussion is the construct of competency and the domains that constitute clinical competency, since these are ultimately the focus of assessment and evaluation.

Epstein and Hundert define competence as "*the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, knowledge, technical skills, clinical reasoning, emotions, values and reflection in daily practice…*"[36]. They propose that competence builds on a foundation of basic clinical skills, scientific knowledge and moral development. There is general agreement that competency includes cognitive, affective and psychomotor functions, often referred to as knowledge, attitudes and skills and learning objectives are commonly framed within these domains[37]. However, there is also growing recognition of the influence on competency of numerous other dimensions such as self-awareness, emotional intelligence, ethics, compassion, respect, managing uncertainty and ambiguity, and incorporating scientific and humanistic judgement. Competency is therefore an integrated functioning of many attributes necessary to successfully and adequately complete the tasks required in clinical practice, including those of caring for terminally ill patients and their families.

The conceptual model proposed by Miller provides a useful framework with which to consider competency and to select assessment methods (Fig.1) [38]. The base of the pyramid represents the knowledge component of competence, including knowledge of the facts ("knows") and the application of that knowledge ("knows how"). The third level represents the demonstration of competence ("performance"). "Action", which is represented at the highest level, represents what a student or physician actually does in real life. Miller conceptualized the lower two levels as representing the cognitive aspects of competency and the upper two levels as representing its behavioural components.

"Showing how" or performance however does not necessarily predict day-to-day performance ("does")[39;40]. Students may modify their behaviour to score well in a clinical examination with a standardized patient but behave differently in real life [41].

Performance is measurable but does not necessarily predict behaviour. Performance on an MCQ does not predict a high level of competence. A student may have a photographic memory and excellent recall of facts but not be able to apply this theory in practice in an appropriate manner [42].

However, it must be noted that the terms "competency", "performance" and "behaviours" have been defined in different ways by various researchers, giving rise to some confusion. Competency is occasionally interpreted as being represented by the second level in Miller's model ("knows how") or third level[43], while performance is sometimes used synonymously with "action" at the topmost level. Some have separated competence and performance as two different entities[39;44.] A pragmatic approach to this confusion that retains the broad definition of competency as being comprised of many different elements is to use the vocabulary of "knows", "knows how", "shows how" and "does".

Figure 1: Miller's pyramid for accessing clinical competence
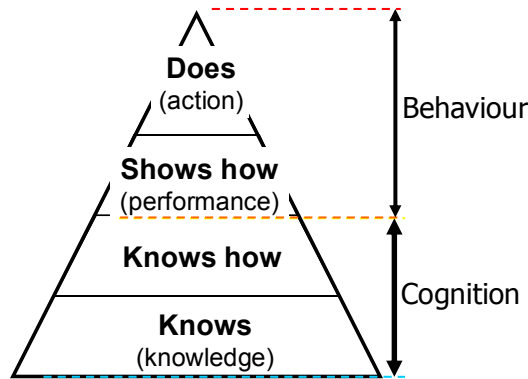
Bloom has proposed a framework that is also useful in conceptualizing assessment and selecting appropriate assessment methods [45]. Bloom's taxonomy can be viewed as a functional subdivision of Miller's cognitive domains. At the lowest level of the taxonomy is "recall", the lowest order of cognitive function. One simply remembers a previously learned fact. However recalling or "knowing" this fact does not imply that one is able to apply it in a clinical situation. "Recall" is followed by ascending orders of cognitive functioning, including comprehension, application, analysis and synthesis. At the highest level is "evaluation". Many multiple choice or short answer written tests tend to assess only recall.

Assessment Methods

Wass and colleagues[32] and Newble et al[46] have summarized the key issues when designing assessments and evaluations of clinical competence. The competencies to be assessed and the assessment methods should be planned against learning objectives, a process known a blueprinting[47]. Next is the selection of appropriate assessment methods [48]. Assessment tools selected should be valid, reliable, practical and enhance the learning

process[28]. The practicality of an assessment method, including the resources, expertise and costs, cannot be ignored. Prior to conducting the assessment, the minimal standard acceptable for passing a candidate should be decided using one of several methods of standard setting [49].

Assessment methods should match the competencies being learned as well as the instructional methods [35]. They should be valid and reliable for the context in which they will be used, practical and acceptable to both the students and faculty. They should also be congruent with the purpose of the assessment. They could be different depending on whether the assessment is part of a formative or summative or a high stakes licensing examination. If an education program strives to change behaviour and practice then the assessment method should be congruent with that goal. The methods and standards should also match the purpose of the assessment.

Numerous methods have been described to evaluate the various domains of competence such as knowledge, attitudes, skills, performance and behaviour. They, along with discussions related to their respective reliability, validity, advantages and disadvantages, have been summarized elsewhere[50-60]. A practical method to approach the process of selecting between the various methods is to match each up with one of Miller's levels (Table 1).

Table 1: Assessment methods matched to their corresponding Miller's Levels

Miller's Level	Assessment method
Does	• Under-cover standardized patients • Peer assessments • Self- assessments • Portfolios • Logs (but do not necessarily assess quality) • In-training evaluation of residents (ITERs) • Clinical observations
Shows how	• Objective structured clinical examination (OSCEs) • Standardized patient-based tests • Simulations (including computer-assisted simulations) • In-training evaluation of residents (ITERs)
Knows how	**Application of knowledge in clinical context** • Multiple choice questions (MCQ) • Extended matching items (EMIs) • Patient management problems (PMPs) • Survey • Oral • Essay • Computer simulations
Knows	**Assessment of facts** • Multiple choice questions (MCQ) • Extended matching items (EMIs) • Survey • Oral • Essay

The most common method of assessing factual knowledge ("knows") is the MCQ format. If done well, MCQs are time consuming but generally offer high reliability [55;61;62]. They can cover a large number of questions related to a broad range of content relatively quickly and are relatively inexpensive. Although difficult, it is possible to construct questions that test the application of knowledge rather than straight recall of factual knowledge (i.e. "knows how"). This can be done by setting them in the context of patient

scenarios or vignettes. Other methods of assessing "know" and to some degree "knows how" include true/false tests, single best answer format, extended matching (EMIs), and essays and oral examinations. Essays and oral examinations are difficult to mark consistently (lack of inter-rater reliability) and require numerous judges, sufficient testing time, and standardised questions and answer keys to achieve acceptable reliability and validity. Content specificity is another problem.

In response to the limitations of using unstandardized real patients in long and short cases (unreliable and low generalizability of clinical skills as they are generally confined to only one or two cases), Harden and colleagues pioneered a more systematic and objective strategy for observing and evaluating clinical skills, the objective structured clinical examination (OSCE)[59]. The OSCE is suitable for assessing many components of clinical competence, including physical examination skills, communication and technical skills [63-72] OSCEs appear to predict more accurately subsequent behaviour in practice than do traditional assessment formats such as essays, orals, and long cases[73], but the prediction is imperfect as physicians may behave differently in real life than in an examination conditions [74-76]. Poor correlations between OSCEs and written assessments suggest that separate domains of competency are being assessed by the two methods[77-79]. The psychometric properties of OSCES have been extensively studied and reported [67;80-85] and methods for standard setting [49;86-101] In summary, a considerable body of evidence on OSCEs exists to guide decisions and further developments.

In its original form, it consists of a series of timed 5 to 10 minute stations around which candidates rotate and are assessed on specific tasks [102]. One or two examiners score the performance using standardized score sheets. Some stations consist of standardized

patients (SPs- individuals, often actors but could also be patients, or health professionals trained to simulate a real life clinical encounter consistently [58;77] while other stations may test other skills such as interpretation of x-rays or other investigations. In some stations, writing may be required. Feedback can be given immediately to candidates.

OSCEs have been used, in various formats (short or long cases) in undergraduate education [63;103-105], residency curricula [106;107], in the assessment of physicians in practice [108;109] across a broad spectrum of specialty areas [72;110-113], and in formative and summative evaluations and licensing examinations [102;114]. OSCEs have been used not only to assess but also as learning tools [115].

Potential limitations of OSCEs include their resource intensity (require training and coordination of SPs, scorers, examination setting, amongst others), relatively high costs [47] and logistical challenges (e.g. availability of trained raters, actors and actresses) need to be recognized [48]. Another major limitation relates to "case or problem specificity" where satisfactory performance of a task on one problem does not provide a basis for accurate prediction of the ability to perform a similar task on a different problem [49, 50].

Many variations on the original OSCE format now exist. Stations may be longer and examiners may not be present (the station may be videotaped for assessment later or the SPs themselves may provide the scoring). The relatively high costs may present a challenge. Although low costs have been reported, costs that run into several hundred dollars per candidate are more the norm [63]. The costs relate to training of SPs and raters and hiring these persons. OSCEs are therefore resource intensive and can tax the human and financial resources of a small program attempting to incorporate large scale OSCEs.

The assessment of behaviour ("does") in real life is challenging [116;117]. Subjective evaluations by attending physicians are common [118;119]. Unannounced standardized patients have successfully been used in community practice to assess physicians' real life practice patterns [120-123]. Peer ratings are relatively reliable assessments of physicians behaviour in practice[124-127]. There is growing interest in using learning portfolios [128-130].

The task of measuring attitudes is not a simple one[53;131]. Attitudes influence behaviour but are often abstract constructs that are difficult to measure. They relate to affect, feelings, values and beliefs. Consequently, assessment frequently relies largely on inference. Moreover, behaviours, beliefs, and feelings will not always match. The assessment of attitudes is high on Miller's pyramid and is probably best assessed at the level of "does."

One single assessment method cannot properly assess all the facets of competence. A combination of methods assessing the various levels from "knows" to "does" is therefore optimal [77-79]. Combining assessment methods may not only provide improved overall reliability of the assessment [104], it may also minimize costs [132]. Combining methods also partly addresses the issue of sampling across broad areas of competence.

With some notable exceptions, evaluations using reliable and valid assessment methods and instruments are generally lacking. The body of literature related to palliative care education is growing but much of the published literature provides only subjective evidence of the success of educational interventions [133-135]. Attitudinal constructs have been evaluated but with an emphasis on changes in learners' level of anxiety with death, relying on the premise that increased acceptance of one's personal dying will translate to improved care of the dying[136;137]. OSCEs have had a limited focus, assessing only skills related to a

narrow issue at a time, therefore not reflective of real life situations[138,6;64;139-142]. These very focused assessments do not assess the broad competencies required to care for terminally ill patients and intensify the problem of case-specificity. Reports using OSCEs more broadly in palliative care are scant [143;144] and studies using combinations of assessment methods largely lacking. The paucity of robust evaluations of palliative care educational interventions likely reflects a general lack of appropriate assessment instruments and inexperience with assessment and evaluation in this emerging subspecialty.

Statement of Purpose

Given the general paucity of clinical assessments related to palliative competencies and guided by the issues summarized in this introductory chapter, this present study sets out to develop: a) a framework that assesses performance (or skills), knowledge, attitudes and self-perceived comfort levels to assess performance or skills; b) OSCE stations to assess the broad competencies that relate to palliative care; and c) and generic standardized OSCE scoresheet for Palliative Care OSCE stations. This approach would be similar to the Calgary-Cambridge Communication Assessment Tool which was developed as a generic tool to assess communication competencies in medical students and residents [145;146.]

Thesis Outline

Chapter Two presents a review of the relevant literature as it relates to OSCEs in general and in Palliative Care. The Chapter also summarizes the literature related to knowledge and attitude assessment methods germane to Palliative Care. The chapter concludes with a statement of the specific research questions. Chapter Three describes the development process of the assessment framework, which uses a combination of OSCEs,

knowledge test and attitude survey, and the research methods employed in this study. The context of the study is also summarized. Chapter Four presents the research results, including the descriptive and inferential statistical analyses. A discussion of the findings follows in Chapter Five. This includes the uniqueness of the study, how the findings relate to previous research in the area, the study's strengths and weaknesses and proposals for future direction. The chapter closes with a set of conclusions.

CHAPTER TWO: LITERATURE REVIEW

The literature review focuses on four areas pertinent to this present study. It summarizes the literature as it relates to: a) OSCEs in general; b) Palliative Care OSCEs; c) Assessment of the domain of knowledge in palliative care, and d) Assessment of Attitudes in Palliative Care education. An extensive review of the literature in these four areas was conducted using two databases (MEDLINE 1966 to present, and CINAHL 1982 to present), two text-books on Palliative Care (Oxford Textbook of Palliative Medicine, and Topics in Palliative Care) and the World Wide Web. References within articles retrieved were also searched. Search terms, including stems, used were: "palliative", "end-of-life", "hospice", "terminal illness", "cancer pain", "objective structured clinical examinations", "OSCE", "standardized patients", "knowledge", "attitudes", "education", "learning", "assessment" and "training". Search terms were combined where appropriate.

OSCEs in General

Reliability and validity issues

There are potentially several sources of measurement error in OSCEs, including task-, cases,-SP,-scorer-, setting- and candidate-related sources. Some of these sources can be minimized through effective examination design, training of both SPs and scorers, and standardized scoring processes [58.] Variables such as station organization, time of examination, and clinical background of examiner may also contribute to the overall variance and reliability of an OSCE [69].

Case-related sources, specifically case-specificity, is the largest contributor to error, with scorers and SPs surprisingly contributing much less [147]. Ideally therefore, in order to

better assess competence, OSCEs tests would have to be much longer than the traditional format of 15 to 20 stations, each 5-15 minutes long [147]. This would require tests lasting 4 to 8 hours; making it unpractical. While few cases are needed to assess straightforward skills, more sophisticated skills require several cases. To assess empathy for example, as many as 37 different scenarios could be needed to reliability assess this aspect of competency [148], while up to 27 cases may be necessary to assess interpersonal skills reliably in high-stakes examinations [149]. Various strategies have been suggested to address this, including combining the OSCE with other assessment methods [132]. Therefore, given an adequate number of stations and time, the OSCE can be a reliable test with modest validity.

Hodges has recently highlighted some important issues related to validity of OSCEs[82]. He notes that validity is a property of the application of the instrument and not of the instrument itself. Low test reliability seems to limit the role of the OSCE as a stand-alone method for the evaluation of clinical ethics [150.] The traditional short format (5- 10 minutes stations) is not suited for assessing competence in history taking and treatment of psychiatric cases where in real life an encounter with a patient may take upwards of 50 minutes on average[106]. Long-format OSCEs can address this problem.

Length of OSCE stations

OSCEs are flexible enough to allow stations of longer duration [151]. Longer stations may reflect certain situations better (e.g. caring for a terminally ill patient or a psychiatric patient) and therefore have higher construct validity in these cases. They may also decrease the risk of trivialization.

Reliability of SPs

Training of SPs is essential to ensure validity or accuracy of the performance. SPs with adequate training have been found to portray real life accurately and simulations are generally convincing [121;152;153]. SPs are rarely distinguished from real patients when unannounced SPs are used to assess behaviour of physicians in practice [41;120-123;154]. Various actors may play the same role without affecting the reliability of the station, as long as they are trained adequately [78.] The performances by SPs generally remain consistent over time (even as long as 3 months) and between trainees[155]. Vu et al found that SP are able to enact their roles reliably up to 12 times a day[156].

Burden on SPs

Highly emotional roles can have residual effects on SPs[106;113]. These include difficulties emerging from the characters, exhaustion and sometimes even sleep disturbances and heightened levels of anxiety or sadness. Care should therefore be taken in selecting SPs for these types of roles. Ongoing opportunities for debriefing and monitoring of SPs are advised.

Scorers.

Although scoring is usually done by physicians, ratings by trained SPs are generally accurate and reliable [78;157;157-159]. SPs appear to do better in rating aspects of communication and empathy than medical issues[160]. SPs appear consistent over time when recording checklist items[161.] The contribution of objective mark sheets to objectivity is relatively

minor compared with examiners' contribution. Achieving objectivity requires diligent examiners who are involved in the whole assessment[162].

Checklists versus global ratings

Scores based on global rating scales correlate highly with scores based on checklists, indicating that they are basically assessing similar aspects of competence. Global rating scales scored by experts generally have as high, and sometimes better, inter-station reliability and construct validity as checklists do. [72;83;94;108;111;163-165] Some studies have found higher internal consistency with global rating scales than checklists [163]. The checklist scores are highly content-specific, while the global scores appear to evaluate more broadly-based set of skills [83]. Checklists may lead to trivialization where scoring becomes focused on irrelevant minutiae and the cohesiveness of the whole encounter is lost. Checklists that do not differentiate between important, vital tasks and other less important tasks also risk introducing trivialization. Increasing levels of medical expertise may be missed with checklists as experts' decision-making cognitive processes are different than those of novices [72;94;166;167]. Increasing the number of checklist items per mark sheet decreased both reliability and validity[162] and binary checklists (YES/NO) may be insufficiently sensitive to detect higher clinical components such as empathy, rapport and ethics[106;168].

However, global ratings are also subject to their own limitations, especially biases and providing a checklist provides inexperienced scorers with a scoring framework. Adding checklists may not improve the reliability or validity of the global rating scale over that of the global rating scale alone, but the combined approach does provide a framework for

inexperienced scorers. This has led to some leaders in the field advocating a combined approach of using both global scales and a small number of itemized checklists-checklists used to identify specific elements of content or skill and global ratings used for providing a measure of process aspects ("the larger picture") [169].

Standard setting

An absolute (criterion-reference)-based approach is more appropriate than a relative (norm)-based approach for assessing competency [49;101;170]. Numerous articles describing various methods and philosophies of standard setting for OSCEs have been published – making it difficult to select between the various methods [49;86-101;171;172]. Different methods may produce different results. Clearly there is no one perfect method and each approach has its strengths and limitations - different approaches may be more appropriate for specific circumstances (such as the availability of large numbers of judges) than others.

Palliative Care-related OSCEs and Standardized Patients

In 1996, Sloan et al reported using two OSCE stations to assess the skills of 33 resident physicians in assessing and managing cancer pain[173.] The first station, Station A, was a 7-minute long interview with a SP presenting with cancer pain and the second a 7-minute written station (Station B) responding to questions based on Station A. The following year the same group reported a similar study, this time assessing the skills of primary care physicians as they relate to cancer pain management and shortening Stations A and B to 5 minutes each[174]. No data or discussions on reliability or validity were provided. This group then developed a 4-station OSCE to assess cancer pain management skills of medical students[175]. Each station was 5 minutes long.

Sloan et all followed this study up with a prospective, controlled trial comparing three educational methods against a control group who received no formal education [176]. These included A) self-instruction; B) self-instruction with a CD-ROM module; C) CD-ROM self-instruction plus a 2-hour workshop; and D) CD-ROM self-instruction plus a 2-hour workshop plus a structured home patient visit. The assessment occurred at 4 months post-instruction using a 4-component OSCE almost identical to the 2001 study (see above). All three educational groups performed better on the Cancer Pain OSCE at 4 months than the control group (p= 0.05); but students in Group D outperformed all the other 3 groups. No validity or reliability data were provided. The OSCES focussed only on cancer pain.

Aronson and colleagues in 2002 implemented an OSCE to evaluate advanced directive discussions, including discussions on code status[177]. In the 20-minute station internal medicine residents were presented with a case (written, not a real patient or SP) and for the following 15 minutes they are asked standardized questions by faculty about the case. The last 5 minutes is then for faculty to provide feedback and instruction. The OSCE station is therefore more akin to a standardized oral station instead of the more traditional OSCE that requires several stations that assess a variety of practical competencies. No validity or reliability data was provided and neither were the questions or score sheets.

Amiel et al developed an OSCE made up of eight 15 minute stations, each with SPs, but the focus again was narrow- breaking bad news [71]. The same group have applied this method elsewhere [140]. The intervention group significantly increased their average grade on the post-test as compared to the pre-test (effect size 0.94), whereas there was little improvement in the control group (effect size 0.23). Internal consistency reliability of the

OSCE was reported as Cronbach's α = 0.81. The 5-point scale common to all stations was provided.

Vaidya et al also used SPs to assess the effectiveness of a one-day course for pediatric fellows on breaking bad news to parents [64]. Seven pediatric fellows participated. The OSCE consisted of two 30 minute sessions before the course and then two similar but not identical sessions after the course. The investigators reported significant improvements in the skills but no effect sizes, reliability or validity data were reported. Moreover, the scope was very limited.

Singer and colleagues administered a four-station ethics OSCE on a volunteer sample of 88 final-year medical students to assess competencies related to clinical ethics [178]. Overall internal consistency reliability of the test was only 0.28, with a low average inter-station correlation of 0.07. To achieve a test reliability of 0.8, the investigators calculated that they would need 41 stations (almost seven hours of testing time). They concluded that the OSCE stations they had designed was not a feasible stand-alone method for summative evaluation of clinical ethics. Freer and Zinnerstrom reported a variation of the OSCE, the extended standardized patient scenario (ESPS) format [143]. A single SP is presented over several sessions spread out across several weeks, portraying an extended period in the patient's life. The ESPS is used for teaching purposes rather than for assessment.

Assessment of Knowledge in Palliative Care Education

The literature review revealed numerous articles assessing changes in palliative-care related knowledge but most used instruments developed by the investigators for the

purposes of the study, few of the actual instruments were actually published and almost none reported any reliability and/or validity data [179-182].

The Palliative Care Quiz for Nursing (PCQN) is a 20-item test of knowledge using answer options of "TRUE", "FALSE" or "I DON'T KNOW" for each item [183]. The 20 items are derived from 3 content areas: philosophy and principles of palliative care (4 questions), pain and symptom management (13 questions) and psychosocial aspects (3 questions). The items rely almost exclusively on recall and little use of clinical vignettes to elicit higher order cognitive learning in Bloom's taxonomy. The initial report cites an internal consistency of 0.78 It has been used in several studies to assess nurses[184] and medical students [185]. The true-false items do not prompt higher order cognitive reflections by candidates and they tend to be less reliable than multiple-choice items[62].

Weissman has published a collection of approximately 60 multiple choice type questions assessing knowledge related to various aspects of providing palliative care (See www.eperc.mcw.edu/format_mcq.htm). Neither the process of developing the items nor their collective and individual psychometric properties have been reported.

Assessment of Attitudes in Palliative Care Education.

Several instruments that assess attitudes to death and death anxiety have been reported[137]. Instruments developed and used to assess attitudes related to caring for dying patients can be divided into 3 large categories; a) those that explore attitudes towards death itself, including personal anxiety of dying; b) those that assess attitudes related to caring for the dying; and c) mixed instruments that assess both attitudes to death and attitudes related to caring for the dying. Those that explore attitudes towards death include the Death Attitude Profile-Revised (DAP-R) instrument[186;187], the Concerns about Dying Scale

(CAD)[188,] and the Concept of a Good Death Measure[134]; although overlap with some of the instruments that assess attitude to caring for the dying is noted. These scales draw largely on the work by Engel who proposed that physicians may avoid dying patients because dying patients remind them of their own mortality [189]. Correlations have been found between death anxiety and discomfort working with terminally ill patients[190-193]. Health professionals with increased death anxiety and negative attitudes to caring for terminally ill patients may use avoidance when confronted with a dying patient [187;194-196]. Dunn and colleagues and Durand have therefore argued for the inclusion of interventions that increase positive attitudes towards the care of the dying, along with the assessment of these attitudes, in palliative care education programs [187;197]. Others however have reported inconsistent correlations between death anxiety and attitude towards caring for dying patients, calling into question the utility of measuring personal death anxiety[187]. Moreover, many of these tools are long (consisting of up to 32 items).

Schwartz et al sought to validate two measures of attitude changes- the Concept of a Good Death Measure and the Concerns About Dying instrument (CAD)- in two palliative care courses (a year-long Elective and a day-long Inter-Clerkship for medical undergraduates) [134]. The Concept of a Good Death Measure explores constructs such as spiritual peace, acceptance, closure with family and friends and pain. An acceptable internal consistency of alpha 0.62 was reported. It was also stable over a 14-day retest period. The CAD consists of 10 descriptive statements divided in three subscales (Spirituality; General concern about death; and general concerns about working with dying patients)[198].

Mazor and colleagues administered the CAD to 207 medical students, nursing students, hospice nurses, and life sciences graduate students[188]. Results suggest the CAD measures three areas: general concern about death, spirituality, and patient-related concern about death. Reliability estimates were good, and correlations with related measures were strong. The Death Anxiety Scale (DAS) is a 15-item true/false instrument. Test-retest reliability has been reported as 0.83 in a general population and an internal consistency of 0.76[199]. Kvale and colleagues found that decreasing physicians' stress from uncertainty by educating them in the management of dying patients may improve their attitude toward death and may better prepare them to provide palliative care[190]. In their study they used four different scales to measure anxiety of death and uncertainty: "Death Anxiety", "Death Attitudes", "Physicians Reactions to Uncertainty", and "Experiences in Close Relationships."

The instruments that assess attitudes towards caring for the dying include The Frommelt Attitude Toward Care of the Dying Scale (FATCOD) [200;201], the Self-Efficacy in Palliative Care Scale[202], and the Semantic Differential Scale (SDS) [203;136;204]. The FATCOD was designed to assess nurses' attitudes toward caring for terminally ill persons and their family members[200]. It is however long, containing 30 items. The Semantic Differential Scale (SDS) comprises 10 bipolar adjectives describing feelings related to caring for the dying patient or the dying patient's family such as helpful versus helpless[203]. Using a seven-point scale, respondents qualify their feelings towards these opposing adjectives. The SDS has previously been used in medical education interventions with students and health professionals[136;204;205].

Instruments that assess both anxiety about death and attitudes towards a dying patient include the Collett-Lester Fear of Death Scale (C-LDAS) [136;206], and the Thanatophobia Scale [202]. Kaye and Loscalzo studied the long-term impact of a medical-school death education course on death-related anxiety and attitudes using the C-LDAS [136]. Attitudes towards "treating the dying patient" and "dealing with the dying patient's family" were improved as a result of the course. The effects were sustained throughout medical school, with significant differences between the groups at the end of the course ($p < 0.001$) and for third-year students. Fischer and colleagues used the Semantic Differential Scale (SDS) and a 16-question knowledge-based test to assess the impact of a 1-month clinical ward rotation-[207]. No significant improvements on the SDS, C-LDAS, or knowledge test occurred after the curriculum intervention. Psychometric properties of the knowledge test were not reported, and neither were effect sizes.

Mason's study assesses the attitudes of medical students to caring for the dying[202]. The investigators used two scales, the Thanatophobia Scale and the Self-Efficacy in Palliative Care Scale and reported Cronbach Alpha measures of internal reliability ranging from 0.84 to 0.92. Kvale and colleagues used an 11-item survey to assess the attitudes of family medicine faculty and residents toward management of the dying patient[190]. Unfortunately, neither the 11-item survey nor the original survey by Dickson and Pearson could be accessed.   Jubelirer et al used a palliative medicine comfort-confidence survey developed by Weisman et al to assess self-reported competence and comfort with four end-of-life dimensions along with PCQN knowledge assessment [185]. Psychometric data for the comfort confidence survey have not been published.

Improvements in knowledge and attitudes are not always universal. Some studies have reported no improvements in these domains following a palliative care education intervention[203;208;209].

Research questions

The study described in this proposal represents a secondary and more in-depth analysis of the data collected in two previous studies, the courses of 2004 and 2005 respectively. The assessment instruments developed for the 2004 course served as a basis for further development of the instruments for the 2005 course.

The study addressed the following questions:

1. What is the reliability of the OSCE instrument, including internal consistency reliability, inter-rater reliability, and standard error of measurement?

2. What is the validity of the OSCE instrument, including the face, content and construct validity?

3. What are the internal consistency reliabilities of the Knowledge, Attitudes Survey and Comfort Level Scales?

4. How valid are the Knowledge, Attitudes Survey and Comfort Level Scales?

5. What was the impact of the course on residents' knowledge, attitudes and skills (competencies) as assessed by the knowledge test, attitudinal survey, changes in comfort levels and OSCEs?

The ultimate goal was to use these results and experience to inform the development of a generic standardized OSCE score sheet for Palliative Care OSCE stations.

CHAPTER THREE: METHODS

Context of the Study

In 2002, the University of Calgary, University of Alberta and the College of Physicians and Surgeons of Alberta (Rural Physician Action Plan) collaborated in establishing a rural Family Medicine Residency Program in Alberta, Canada. Given the rural focus, the majority of learning and instruction is conducted in rural settings. Eighteen to twenty-two residents have enrolled annually in this program. The residents complete their two year residency in small and large rural communities dispersed across the province of Alberta. They all meet face-to-face approximately 4 to 5 times a year for two to three days at a time, This reality requires a non-traditional approach to residency education.

With this in mind, a palliative care course was designed that uses a hybrid of face-to-face small group learning and distance internet-based learning. The course consists of two face-to-face workshops, each one and a half days long and 4 months apart to coincide with when the residents are together. During the intervening months, they continue learning by distance using asynchronous and synchronous small group learning methods centred largely around case discussions. The learning activities for the face-to-face portion of the course include short didactic sessions that provide overview of the topics, interactive workshops using problem-based learning, audiovisual material illustrating aspects of palliative care including communication issues, and two of three movies ("Wit", "The Doctor" and "My Life"). The movies' goals are to prompt reflection.

Residents in the 2002 and 2003 classes expressed a need for experiential learning to complement their classroom and distance learning. There was also, at the same time, a need expressed by the course committee to improve the evaluation of the course, specifically as

it related to the courses' learning objectives. This required moving beyond simply assessing learner satisfaction levels and knowledge to assessing broader competencies as they relate to palliative care. A decision was made to pilot the introduction of an assessment framework that included objective structured clinical examination stations (OSCEs), a test of knowledge, survey of attitudes and self-perceived comfort in caring for terminally ill patients. It became apparent that the OSCEs could serve several roles; a) a needs assessment of learning needs for residents at the beginning of the course, b) a learning tool and c) an assessment tool to assess the course's impact on competencies ("shows how"). The OSCE stations (OSCEs) and the other instruments were administered at the beginning of the course and then again at the end of the course 4 months later as a final activity of the course. In 2004 the OSCEs were supplementary and residents completed them voluntarily. Following very positive feedback from the 2004 class, the OSCEs became a compulsory component in 2005 and the assessment framework as formally introduced into the course. The 2004 course therefore provided the opportunity for initial development and testing of the assessment framework and to inform further development of the instruments in 2005.

Instrument Development

Instrument development was an iterative process that included modifications of initial drafts of the instruments and piloting of the instruments in the 2004 class. In addition, focus groups were conducted with the residents at the end of each course to elicit input on the instruments, with a special focus on the OSCEs, for the purposes of instrument development and exploring face/content validity. The focus groups were facilitated by a research associate neutral to the course. The focus groups were taped and transcripts made

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for content analysis (conducted by two research associates). [The focus groups also explored the residents' learning experiences, which formed part of the overall summative evaluation of the course. Formative evaluation was also done using mid-course focus groups but these focussed on curriculum issues].

The process of developing each instrument is described in more detail below. Table 2 lists the various instruments used, the number of items in each and the number of scorers for the OSCEs. With the exception of the Self-Perceived Comfort Levels, the numbers of items in all the instruments were reduced in the 2005 course as weak items were removed and items measuring similar constructs amalgamated.

Table 2: Instruments, their respective item numbers and number of scorers.

Year	Instrument	Number of Items	Number of scorers
2004	OSCE 1	35 + global score	4
	OSCE 2	36+ global score	4
	OSCE 3	37+ global score	4
	Knowledge Quiz	20	
	Attitudes to Caring for the Dying Survey	17	
	Self-Perceived Comfort Levels Scale	22	
2005*	OSCE 1	27+ global score	7 (8)*
	OSCE 2	25+ global score	7 (8)*
	OSCE 3	30+ global score	7 (8)*
	Knowledge Quiz	16	
	Attitudes to Caring for the Dying Survey	12	
	Self-Perceived Comfort Levels Scale	22	

* 7 scorers in the pre-course OSCES and 8 in the post-course OSCES.

OSCE Stations (OSCEs) and Scoresheets

Four OSCEs were developed for the 2004 course. They included a much broader range of palliative care-related competencies than addressed by the OSCE stations previously reported in the literature and used the long-case format, each lasting 20 minutes to better reflect real life conditions. These cover competencies across five domains: a) biomedical problems (pain, nausea and shortness of breath); b) social issues (family and community support systems, access to home-based care, financial issues); c) psycho-spiritual needs (adjustment disorder with a depressed mood and despair, meaninglessness and total suffering); d) communication (responding to "how long do I have to live?", being empathetic, exploring the illness experience, responding to a patient's feelings of hopelessness and abandonment); and e) advanced planning (advanced directives and code status discussion, plans in case of an emergency). To improve content validity, a blueprint of course objectives, competencies and clinical issues was used to identify the content for the OSCES and Knowledge Quiz. The OSCEs were based on real cases so as to better reflect real life. The real identities of the cases were removed to ensure patient anonymity. Established guidelines for developing OSCEs were followed (210). The cases and their main goals are described in Table 3.

The residents are instructed to simply address the patient's needs without performing a physical examination. Residents are given 20-minutes to complete each station and a 5 minute break between stations. Apart from the name, diagnosis, previous treatments, current medications and a summarized past medical history, the residents are not given any further information about the cases. They are given instructions to address

the patient's needs without having to do a physical examination and 20 minutes in which to

complete each OSCE.

Table 3: OSCE station case descriptions and their main goals

OSCE	OSCE Description	OSCE Main Goals
1	64 year-old retired university professor with breast cancer and bone metastases. Considering palliative chemotherapy. Has not had any palliative radiotherapy. Presents with moderate to severe back pain related to bone metastases. Has a concern about being started on opioids. Social issues in that she lives alone at home in a rural community. Her family live in the city. She has a depressed mood (adjustment disorder).	• Assess and manage cancer pain, including offering palliative radiotherapy. • Address opioid concerns • Explore affect • Explore social issues • Provide an appropriate total care plan • Provide supportive counselling
2	34-year old woman, recently diagnosed with metastatic ovarian cancer, presents with severe nausea and some vomiting, and mild abdominal discomfort. She is emotionally distraught and tearful. She feels abandoned and hopeless. Her life suddenly seems meaningless. She is devastated at the thought of "leaving behind" her two young children and is worried about their well-being.	• Assess and manage nausea and vomiting • Explore affect • Explore spiritual concerns she has • Explore her illness experience • Reframe hope • Provide supportive counselling.
3	58-year old man with advanced amytrophic lateral sclerosis who presents with increasing shortness of breath, weakness, fatigue, and dysphagia. He is accompanied by his wife who is reluctant to have him speak about dying, which he wants to do. He asks the question "how much time do I have?" and "what should I expect towards the end?". They live in a rural community in a home that is not very well set up for his needs. He has some financial issues.	• Assess and provide treatment options, including opioids and non-invasive breathing support, for managing his dyspnea. • Provide him the information he is requesting. • Address his wife's concerns about discussing his questions. • Explore his social,

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		including financial circumstances
		• Explore advanced planning, including code status, (no resolution required) and what to do in case of an emergency

The preparation of the OSCE scripts followed the guidelines of the medical skill stations of the University of Calgary's Undergraduate Medical Skills Course. Four palliative care consultants, all of whom are certificants of the College of Family Physicians of Canada, and four family medicine residents not associated with the course reviewed the initial OSCE stations as well as the Knowledge Quiz and made recommendations on how to improve them. This represented a further step in ensuring face validity. A decision was made discard the fourth OSCE (station in which a community-based nurse asks the candidate to assist in caring for a dying patient who is at home) after the 2004 pre-course OSCES as it became evident that the OSCE required considerable prompting from the nurse, making it difficult to evaluate the candidate's real abilities and performance. OSCE 2 underwent some minor changes after the 2004 residents indicated that the diagnosis of gastric cancer was unusual in a woman in her mid-thirties (although the real life patient on which the OSCE was based did have gastric cancer) and that this was a distracter. For the 2005 OSCE, the diagnosis was changed to ovarian cancer but all the presenting symptoms and problems remained the same.

A separate score sheet was developed for each of the stations. The score sheet consisted of a checklist covering tasks that the residents were expected to perform, using a 3-point scale: "Not done", "Performed but not competently" and "Performed competently". If a task was performed competently, the scorer indicates on a separate three point scale

whether the task was performed competently at a "minimal", "moderate" or "outstanding" level. A Global Score was also given to each resident on each station indicating the scorer's overall impression with the performance. This was recorded as either "Clear Fail", "Borderline" or "Clear Pass". (See Appendices 1,2 and 3 for the Score sheets of the 2005 OSCE stations 1, 2 and 3). The items were divided into 6 categories: Psychospiritual issues, Social issues, Biomedical Problems, Communication, Patient Centered Care (Illness Experience) and Advanced Planning. Approximately 70% to 80% of the items are common to all 3 OSCEs. The main differences are in the Biomedical and Communication categories.

Actors and actresses underwent 7 hours of training each to play the roles of standardized patients. Scripts were prepared and a palliative care clinician (JP) assisted with the training so as to mirror real life. An SP coordinator (an actor and SP himself) assisted with the coordination of the SPs and their training. Each station, along with its accompanying score sheet, underwent several test runs with the actors, actresses and two faculty members and further modifications were made to stations and the score sheets based on these. Later, during the actual OSCES, the SP coordinator also provided ongoing feedback to the actors and actresses to ensure they kept to character and provided ongoing opportunities for debriefing of the SPs.

During the OSCEs, each resident was provided with a summary sheet of the relevant clinical and social information and the broad instructions to address the patient's needs as best possible in the 20-minutes allotted. A physical examination was not required. Scorers, in addition to the scoresheets, were provided with the same information sheet as well as an overview of the OSCE station's goals.

Scorers underwent a 1-hour orientation to the OSCE stations and marking system immediately prior to the pre-course OSCEs, and a 20 minute review prior to post-course OSCEs. The standard was based on the levels of competence expected of a recently-certified family physician. One of the main challenges in conducting this study was the limited availability of scorers. The relatively small palliative program in Calgary with a very busy clinical workload and numerous other work and personal responsibilities did not allow for more comprehensive assessment of inter-rater reliabilities and other reliability and validity testing.

Knowledge Assessment (The PalCare-Quiz)

Assessment of knowledge, attitudes and self-perceived comfort levels were included as part of the overall assessment framework. The aim in including the Knowledge Quiz was to widen the scope of problems and content covered by the assessment framework. Because of a lack of instruments with identified psychometric properties and instruments with items designed to address Bloom's cognitive taxonomy at higher levels (application of knowledge rather than simply recall), a new instrument, using an MCQ format with a stem and 4 to 5 options, was developed for the purposes of this study- called the Palliative Care Knowledge Quiz (PalCare-Quiz) (See Appendix 4). The 2004 PalCare Quiz had 20 items but this was reduced because residents indicated that the 20-item test was too long for the purposes of this course. Four items that were found to be weak based on item analysis were therefore omitted. The reduction in the number of items was at the expense of reliability. Twelve of the 16 items use clinical vignettes as stems to prompt candidates to reflect rather than simply recall. The instrument and its items were derived from an instrument designed

by our team to assess the knowledge of family physicians and nurses in practice as part of the Pallium Project (www.pallium.ca). The instrument has undergone several modifications based on feedback from over 60 learners and an item-by-item analysis. The development of the items and the instrument was based on established guidelines [55;62]. See Appendix 4 for the Knowledge Quiz.

Attitudes to Caring for the Dying Survey (The PalCare-Attitude Survey)

A decision was made to focus the assessment of attitudes on attitudes towards caring for the dying rather than on attitudes assessing one's own anxiety or fear towards death. The Collett-Lester Fear of Death Scale (C-LDAS) [136;211] and Frommelt Attitude Toward Care of the Dying Scale (FATCOD) [200;212] were deemed too lengthy for the purposes of this study. It was over burdensome on the residents and too lengthy for the limited time available with the residents during the face-to-face sessions. Several elements from both the Thanatophobia Scale [202] and the Self-Efficacy in Palliative Care Scale[202] were felt to be useful but using both scales would also be too burdensome. A decision was therefore made to create an instrument de novo that would incorporate some elements of both scales as well as some items from the other scales that was deemed useful. Modifications were made to the 2004 survey based on initial psychometric testing which revealed a Cronbach's α value for internal reliability of 0.6. The resulting instrument has 12 items, uses a Likert Scale (1=Strongly Disagree and 5=Strongly Agree) and has been called the PalCare Attitudes to Dying Patients Survey, shortened to PalCare-Attitude Survey (See Appendix 5).

Self-Perceived Comfort Levels Scale (PalCare-Comfort Scale).

Following a lack of published instruments with adequate psychometric properties, a de novo instrument, referred to as the PalCare Self-Perceived Comfort Levels Scale (shortened to PalCare Comfort Scale), was developed to assess self-perceived comfort levels in addressing various needs of palliative care patients (See Appendix 6). The 21-item scale is based on the learning objectives and competencies of the course. Residents rate their self-perceived level of comfort using a 5-point Likert-like scale where 1="Very Uncomfortable" and 5="Very comfortable".

The post-course versions of both the Attitudes and the Comfort Scales include a Part B which asks the candidates, on each item, to indicate if their levels of agreement with the statements had "decreased", "not changed" or "increased" as a result of the course. This is to explore the phenomenon where learners may not be aware of their deficiencies prior to course, thereby potentially scoring their perceived comfort levels higher than they would otherwise had they been aware of them. Both the Attitudes and Comfort Scales were not applied in the 2004 pre-course assessment as they were not yet ready at the time the course began.

Participants and Participation in Assessment Components

Participants were family medicine residents of the Rural Family Medicine Programs at the Universities of Calgary and Alberta who participated in the 2004 and 2005 Palliative Care Courses.

Data Collection

OSCEs, Knowledge Quiz, Attitudes Survey and Comfort Scale

The OSCEs, Knowledge Quiz and Self-perceived Comfort Scale were administered pre and post-course in both courses (2004 and 2005). The Attitude Survey was administered post-course in 2004 (the instrument was not ready for pre-course administration) and pre- and post-course in 2005. The same version of each tool was administered pre and post-course. The number of items in each instrument and the number of scorers have been listed in Table 2 (Section on Instrument Development).

The 2004 pre- and post-course OSCES were videotaped and scored post hoc by a team of 4 scorers. The scorers were full time palliative care physicians with family medicine backgrounds. The scorers were involved in developing the stations and the score sheets. In the 2004 class, 16 residents participated in the pre-course OSCEs and 11 in the post-course OSCEs. The 64 pre-course OSCEs (4 stations, 16 residents) were divided amongst the four raters and each rater scored therefore 16 OSCE stations; 4 residents in each OSCE station. However, 12 of the 64 pre-course OSCE stations (3 residents x 4 stations) were scored by all four raters to determine inter-rater reliability. Larger numbers were not practical. The large amount of time required to score all the stations and other work commitments of the faculty precluded the possibility of determining inter-rater reliability of the post-course OSCEs and the 2005 OSCEs. The 2004 post-course OSCE stations were scored by the same four scorers that scored the pre-course stations.

In 2005, in order to provide the residents with immediate feedback and address the workload of marking numerous video-taped stations post hoc, 7 palliative care physicians (including the same 4 from the 2004 OSCEs) were recruited to score the OSCEs in real

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time. The same scorers assessed the pre- and post-course OSCES. In the 2005 Pre-course OSCES, there were an insufficient number of scorers to score 10 OSCEs by 3 residents. These OSCEs were videotaped and the scoring done afterwards.

The 2004 pre-course OSCEs were conducted in the University of Calgary's Health Telematics Centre (with videotaping) and the 2004 post-course OSCES as well as the 2005 pre- and post-course OSCES in the University of Calgary's Medical Skills Centre which is designed for Standardised Patient learning, equipped with one-way mirrors and videotaping facilities in each room.   These facilities were available for only three and a half hours for each session. To allow all residents to completed the OSCE in the limited time allotted, two simultaneous streams of OSCEs were required (i.e. 2 stations each of OSCEs 1, 2 and 3).

Data Analyses

The data was saved to an Excel® database and converted to be analyzed within SPSS® software package for quantitative analysis. Data analysis consisted of descriptive and inferential statistics. Descriptive statistics were used to describe the samples, the responses, scores and the normalcy distribution.

The quantitative analysis was divided into 2 main areas: A. Psychometric analysis of the instruments (with particular attention on the OSCEs); and B: Impact analysis of the course on the residents' knowledge, attitudes and skills levels. For the purposes of analysis, the scores of the OSCE checklist items, knowledge quiz, attitude survey and comfort -level scales were treated as continuous data and means, standard deviations and standard errors of the mean, where appropriate, were used in the analysis. Table 4 lists the analysis constructs and methods performed. Unless stated otherwise, analyses related to the 2005

data. The focus on the 2005 results is because the 2004 experience and data merely served to inform the development of the 2005 instruments. With the exception of the Attitudes Scale, all the OSCE scoresheets and the Knowledge Quiz underwent modifications in 2005 (including the removal and amalgamation of items). Future development of a generic standardized OSCE assessment tool is therefore based largely on the 2005 instruments with their various modifications from the 2004 versions. 2004 data will only be reported if it relates to impact of the course on learning outcomes, internal reliability and inter-rater reliability. Inter-rater reliability was tested using a sample of 12 OSCEs, all scored independently by 4 scorers. Because of insufficient numbers of faculty scorers and time constraints, inter-rater reliability could not be tested in the 2004 post-course OSCEs and the 2005 OSCEs.

Table 4: Data analysis approaches, methods and comments (Unless stated otherwise, analyses relate to the 2005 data)

Analysis Constructs	Instrument Analyzed	Method of Analysis	Comments
Psychometric Analysis			
Reliability			
Scale reliability*	• OSCES • Knowledge Quiz • Attitudes Survey • Comfort Scale	Cronbach's alpha (α)	Reliability was also calculated for 2004 to provide an indication of how reliability changed with instrument development.
Standard error of measurement (S_{em})	OSCES		This provides an estimate of the error of measurement around the scale scores, or an indication of the dispersion of the data.
Inter-rater reliability	• 2004 Pre-course OSCES	Cronbach's alpha (α)	Performed only on a sample of the 2004 pre-course OSCES. Insufficient number of faculty to allow for inter-reliability testing of the other OSCES.
Item analysis			
Frequency analysis	• OSCES • Knowledge Quiz • Attitudes Survey • Comfort Scale	Frequency analysis	
Inter-item correlations	• OSCES • Knowledge Quiz • Attitudes Survey • Comfort Scale	Pearson Product Moment correlation coefficient.	High correlation, for the purposes of this study, was set at >0.7, while good correlation was set at 0.3 to 0.7. Significance set at p=0.05
Correlations between OSCE Global scores and OSCE total checklist item scores.		Pearson's Product Moment Correlation	Significance set at p=0.05
Validity analysis			
Content and face validity	• OSCES • Knowledge Quiz • Attitudes Survey • Comfort Scale		Addressed during the development phases of the instruments and through resident and physician input and focus groups. See text (Chapter 3) in "Tool development".
Instrument construct validity	• OSCES • Knowledge Quiz • Attitudes Survey • Comfort Scale	Inter-item correlations (see above)	
Dimensionality of the score sheet items		Exploratory factor analysis (EFA)	Using principal components and varimax rotation methods.

Impact analysis			
Changes in total mean scores pre versus post course	• OSCES (2004 and 2005) • Knowledge Quiz (2004 and 205) • Attitudes Survey • Comfort Scale	Paired-samples t-test	Matched pairs of data were used. Significance set at <0.05
Number of fails versus passes pre versus post course	• OSCES (2004 and 2005)		Significance testing not possible because of the small numbers
Effect sizes [213].	• OSCES (2004 and 2005) • Knowledge Quiz (2004 and 205) • Attitudes Survey (2005)	Cohen's d effect size	
Changes pre versus post course in individual instrument items	• OSCES (2004 and 2005) • Knowledge Quiz (2004 and 205) • Attitudes Survey • Comfort Scale	Paired-samples t-test	Matched pairs of data were used. Significance level set at p=0.05

* Scale reliability = internal consistency scale reliability

Imputation of the mean was used where data was missing. Without imputation of the mean, SPSS uses a process called List Wise deletion where a missing value causes the whole case (resident's OSCE) to be discarded.

An exploratory factor analysis was performed to explore the hypothesis that the competencies assessed by the OSCEs were multidimensional and included elements of knowledge and attitudes. The assumption was that the OSCES would load in a single factor with the scores of the Knowledge Quiz and the Attitudes Survey since they could be related. The total checklist scores of the specific OSCE were incorporated into the analyses along with the total Global score, the total scores of the Knowledge Quiz, the total scores of the Attitudes Survey and the total scores of the Comfort Scale. The 2005 pre-course assessments were used for this analysis.

These results were then used to inform the development of a generic OSCE scoring system for palliative care OSCE stations, with special attention to the internal consistency reliability, inter-item correlations and the validity-related indicators.

Ethics approval

The study was approved by the Conjoint Health Research Board of the University of Calgary on 29 December 2005; Grant number 18902.

CHAPTER FOUR: RESULTS

There were a total of 18 and 20 residents who participated in the 2004 and 2005 courses respectively. Of these, 16 and 20 in 2004 and 2005 respectively participated in the various assessment components of the course. The numbers of participants in the study and the various assessment components are listed in Table 5. Sources of discrepancies in the numbers are also shown.

Table 5: Participants in the study and across assessment components

	2004 Class		2005 Class	
	# of residents completing		# of residents completing	
Assessment Instruments	Pre-Course	Post-Course	Pre-Course	Post-Course
Total # of residents in the Program	18	18	21	21
OSCE Station 1	16	7*	20	16
OSCE Station 2	16	11	20	16
OSCE Station 3	16	11	20	16
Knowledge Quiz	15	11	19	16
Attitudes Survey	0[†]	11	20[††]	16[††]
Self-Perceived Comfort Levels	16	11	20	14

* A technical problem affected the sound recording, rendering OSCES by 4 residents in-evaluable.
[†] The Attitude Survey was not ready for the pre-course assessment.
[††] The residents did not insert their identification numbers in the Post-course survey, paired sample analysis was therefore not possible.

A. Psychometric Analyses

OSCES

Descriptive Analyses and Scale Internal Consistency Values

The data on which the item analyses of the 2005 OSCES were conducted were relatively complete and the number of missing data small, ranging from 1.3% to 5.2% (Table 6). The number of missing data was similar in the 2004 OSCES, ranging from 0.8% to 7% across the 6 OSCES. Imputation of the mean was used in the analysis so that the SPSS statistical analysis package would not discard cases with missing variables which would potentially reduce the numbers in this already small study even further. However, this likely did not impact the integrity of that analysis much as the amount of missing data was small.

Table 6: Numbers of missing data for the 2005 OSCES

OSCE	Total number of values (items in OSCE X residents)	Number of missing values (%)
Pre-course 1	540	7 (1.3%)
Pre-course 2	500	16 (3.2%)
Pre-course 3	600	25 (4.2%)
Post-course 1	432	7 (1.6%)
Post-course 2	500	9 (1.8%)
Post-course 3	480	25 (5.2%)

The total test scores for the OSCES showed relatively normal distributions across all the OSCES (See Figure 2).

Figure 2: Distribution Graphs of the total test scores of the 2005 OSCES

Graph A: 2005 Pre-Course OSCE 1

Mean =41.95
Std. Dev. =5
N =20
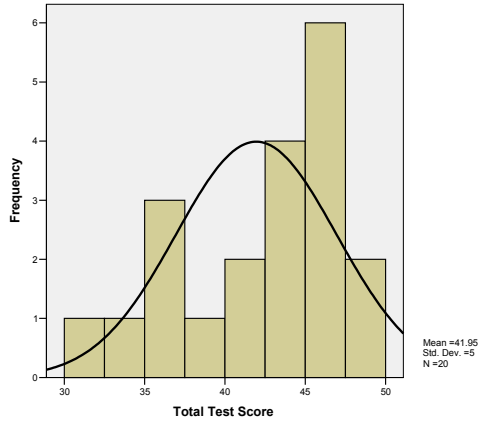
Graph D: 2005 Post-Course OSCE 1

Mean =44
Std. Dev. =5.562
N =16
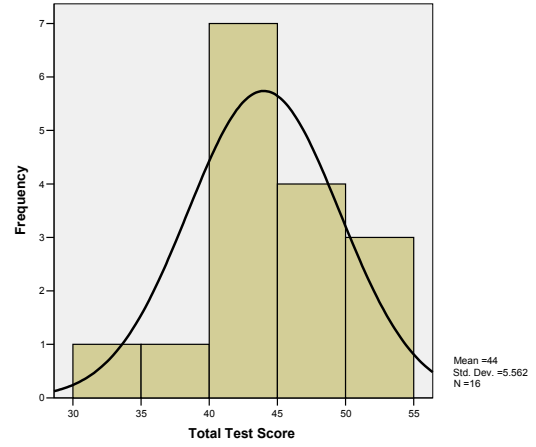
Graph B: 2005 Pre-Course OSCE 2

Mean =34.65
Std. Dev. =6.907
N =20
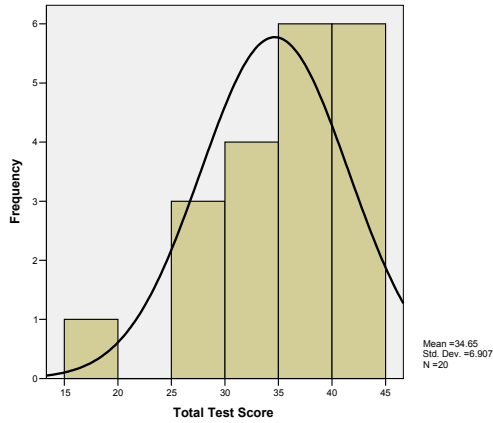
Graph E: 2005 Post-Course OSCE 2

Mean =38.69
Std. Dev. =4.827
N =16
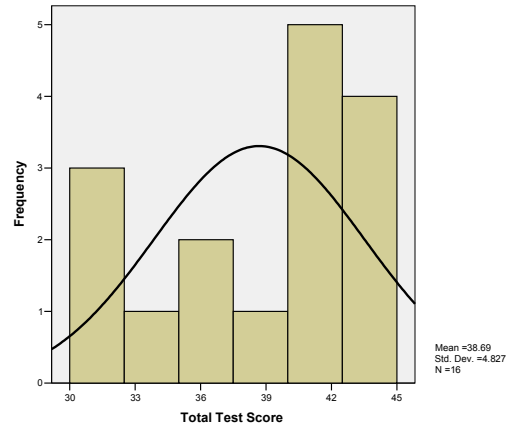
Graph C: 2005 Pre-Course OSCE 3

Mean =39.1
Std. Dev. =9.296
N =20
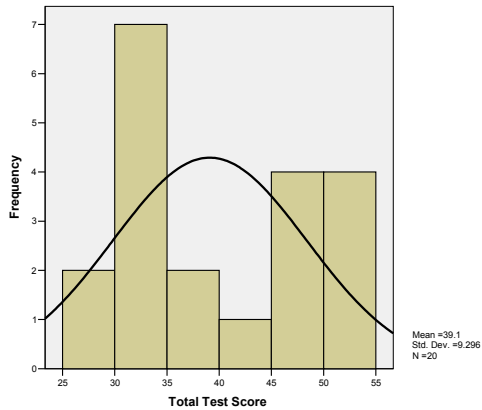
Graph F: 2005 Post-Course OSCE 3

Mean =40.88
Std. Dev. =7.974
N =16
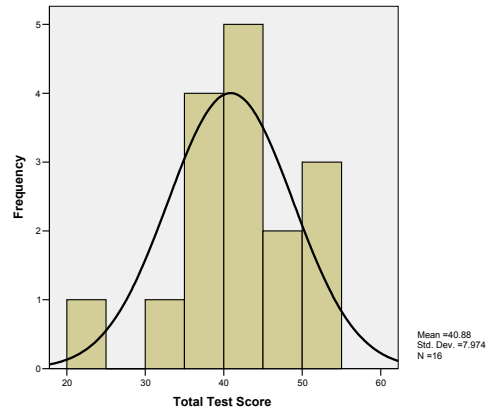
Reliability coefficients (using Cronbach's α) were determined with imputation of the mean. Reliabilities without imputation were also done and not found to be significantly different to the imputed ones. The reliability coefficients and distribution data are reported in Table 7.

Table 7: Scale reliabilities and data distributions for 2004 and 2005 OSCES

	Number of residents completing OSCE	Total number of items	Cronbach's alpha (α)[†]	Mean of the total score	S_{em} (total test)	SD	Mini-mum score	Maxi-mum score
2004								
Pre-Course								
OSCE 1	16	35	**0.80**	41.6	2.8	11.2	23	60
OSCE 2	16	36	**0.70**	39.4	2.6	10.6	18	54
OSCE 3	16	37	**0.82**	47.5	2.6	10.6	26	62
Post-Course								
OSCE 1	7	35	*	48.7	0.3	1.3	45	52
OSCE 2	11	36	**0.63**	52.2	1.7	5.7	41	58
OSCE 3	11	37	**0.74**	42.4	2.4	8.0	25	54
2005								
Pre-Course								
OSCE 1	20	27	**0.65**	42.00	1.12	5.0	30	49
OSCE 2	20	25	**0.79**	34.7	1.6	6.9	19	45
OSCE 3	20	30	**0.89**	39.10	2.1	9.3	25	54
Post-Course								
OSCE 1	16	27	**0.74**	44.0	1.4	5.6	32	54
OSCE 2	16	25	**0.71**	38.7	1.2	4.8	31	45
OSCE 3	16	30	**0.82**	40.9	2.0	8.0	20	52

*   Small number of cases with too little variance, therefore precluded determination of reliability.
†   Cronbach alpha with imputation of the mean
S_{em} = standard error of measurement of the total test
SD   = standard deviation

Reliability coefficients were acceptable, ranging from 0.63 to 0.82 in the 2004 OSCES and from 0.65 to 0.89 in the 2005 OSCES. The reliability of OSCE 1's scale decreased in the 2005 OSCES but still maintained acceptable internal consistency, even with fewer items. The reliability of OSCE 2 increased in 2005 despite the fewer items.

Inter-rater reliability was determined using Cronbach's α for the pre-course 2004 OSCES amongst four raters rating 12 OSCES (across 3 stations). Overall instrument reliabilities were high and ranged from 0.87 to 0.92 across the three OSCE stations.

Item analyses

Frequency analyses

The distribution of residents' responses to the items in the OSCES are provided in Appendix 8. In some items, all or most of the residents scored "competently". These items appear to cluster in the "communication" category in all 3 OSCES. In the 2005 pre-course OSCE 1 for example, all the residents scored "competently" in 6 of the 9 communication items. In some cases, most residents did not address specific issues at all. A noteworthy example of this is the "Explores spiritual issues…" item in OSCES 2 and 3. This was evident in both the pre- and post-course OSCES. In the pre-course OSCES many residents failed to take an adequate history of the symptoms and focussed rather on psychosocial issues.

Correlations between OSCE Global Scores and OSCE Checklist Item Scores

The correlations between the OSCE Global Scores and the OSCE Checklists are shown in Table 8. They are all highly significant.

Table 8: Correlations between OSCE Global Scores and OSCE Checklist item total scores (2005 OSCEs)

	Number of residents	r	p
Pre-course OSCE 1	20	0.48	0.03
Pre-course OSCE 2	20	0.55	0.01
Pre-course OSCE 3	20	0.74	0.001
Post-course OSCE 1	16	0.57	0.02
Post-course OSCE 2	16	0.47	0.07
Post-course OSCE 3	16	0.77	0.01

Inter-item correlations

Inter-item correlations (using Pearson Product Moment correlation coefficient) of the OSCE scoresheets were tabulated and are shown in Appendix 9. Those correlations that are significant to $p=0.001$ are highlighted in a shaded box, while those that are significant to $p=0.05$ are indicated by an unshaded box. Refer to the respective OSCE scoresheets for a key of the various items on the item-correlation tables' X and Y axes.

In all of the OSCEs some of the items were dropped from the analysis. In 2005 OSCE 1, for example, the communication-related items Com12, Com13, Com14, Com17, Com19, Com26 were excluded from the analysis, largely because they had no variance- a review of the item frequencies shows that most if not all the residents scored these items the same (competently).

There are several noteworthy correlations in pre-course OSCE 1. Two items that relate to exploring the illness experience, "explores what the symptoms mean to the patient" (IL22) and "explores how the illness impacts the patient's life" (IL23) are very

highly correlated. Item IL24 ("explore the patient's expectations") is also closely correlated with IL23. Item 24 is also very highly closely related to "explores social supports", a social item. There are also some moderate to good correlations between some psychology items ("explores affect") and some communication items such as Com 16 ("encourages patient to expand on issues") and "organizes the interview" (Com20). Of note are the weak correlations between Psy 1 ("screens for depression") and the biomedical items (Bio 7-11), which explore physical symptoms. There is a moderate negative correlation between Psy1 and Bio11.

In OSCEs 2 and 3, the low correlations between the first item Psy1, a spirituality-related item, and the social, biomedical, communication and illness experience tasks is worth noting, as is the perfect correlations (1.0) between communication items, com15-("appropriate use of silence"), com 16 ("appropriate use of non-verbal communication"), and Bio8 ("explores what loss of appetite means to the patient"). Negative correlations are noted between some communication and biomedical items. Similar patterns are repeated in the other 2005 OSCES. Post-course 2005 OSCE 1 has fewer negative correlations than the Pre-course OSCE 1.

In the pre-course 2005 OSCE 3, Soc3 ("explore support systems"), Com16 ("encourages patient to expand on issues") and IE22 ("explores how the illness affects the patient's life") are very closely related. In some rare cases, there was a high correlation between certain items in the pre course OSCE, yet in the post course OSCE there was a negative correlation. An example of this is the correlation between item IE21 ("explores fears and feelings and what symptoms means to the patient") and item AP27 ("explores code status") in the pre-course (0.86). In the post-course however the items correlated

strongly, but negatively (-0.54). Others include items Psy2 ("explores affect…"), Soc3 ("explores social supports"), Soc4 ("explores social stressors") and Soc5 ("explores preferred place of care") in the pre-course where they all correlated negatively with Psy1 ("explores spiritual and religious sources of …as they relate to the illness"), but in the post course the correlations changed to very strong positive correlations. "Explores social stressors" (Soc4) and "explores fears and feelings" (IP21) show very high strong correlations (0.86 to 1.0).

Some perfect correlations between different items were also noted. In the pre-course 2005 OSCE 3, for example, item IE21 (""explores fears and feelings and what symptoms means to the patient") had a perfect correlation with item Soc 4 ("explores social stressors"). Oddly, in the post course 2005 OSCE 3, "discussing advanced directives"(AP26) had a perfect but negative correlation with "explores preferred place of care"(Soc5).

Exploratory factor analysis (EFA).

An insufficient number of variables and lack of variance precluded performing factor analyses of each of the OSCE scoresheets.

The Palliative Care-OSCE Scale (Pal-OSCEs)

On the basis of the psychometric analyses of the OSCE instrument and the experience derived from the development process, a generic standardized OSCE instrument (combination of OSCE stations and an OSCE scoring system), the Palliative Care-OSCE Scale (Pal-OSCEs) is proposed (See Appendix 10) as one of the main aims of this study.

The present study has identified some important strengths of the current tools as well as some limitations that require remediation. These are summarized in Tables 9 and 10 below.

Table 9: Current OSCE instrument strengths

1.	The OSCE is integrated within a larger assessment framework that includes assessment of Knowledge, Attitudes, and Comfort levels.	
2.	Integrates various issues and domains of care (biomedical, communication, psychological, social and spiritual) into the various OSCEs to better reflect real life and cover a broader array of competencies.	
3.	Use of a Global scoring scale and item checklists.	
4.	Item checklists provide orientation to scorers- with some remedial changes, these could also serve as good learning prompts to residents/medical students/physicians.	
5.	Iterative development process that has allowed for extensive input, both qualitative and quantitative, to provide validity.	

Table 10: OSCE scoresheets: Identified weakness, remedial steps and underlying principles of PallCare OSCE Scale (PalCare-OSCEs)

	Identified weakness of current OSCE scoresheets	Remedial Steps
1.	Excessive number of items. Residents in the post-course felt pressured to complete as many as possible to score high (they were now aware of scoring system) and faculty felt tension to address all items.	Amalgamate and remove items redundant or duplicate items- the inter-item correlations findings and residents/faculty feedback to guide process.
		Amalgamate items in communication, patient centred care and illness experience items into two categories – "Communication" and "illness experience".
2.	Suggests that all items are important and have to be completed by the resident- no weighting of importance of items. Leads to disproportionate scoring and trivialization	Introduce method to allow OSCE developers opportunity to differentiate between "must do items" and "optional methods"
3.	Spirituality is embedded within psychological domain.	Spiritual care of terminally ill patients is an important aspect of care. Identifying it as a category unto itself demonstrates this.
4.	Item analysis shows that scores in "Degree of competence" component of the scale cluster to the left of the scale.	Create a 2-item scale ("borderline competent" and "fully competent") (5 or 7 point scales would be redundant for the purposes of these OSCES)
5.	Global scale useful but no sub-global scales for the categories (i.e. Biomedical, Illness Experience	Create sub-global scales to assess these domains separately.
6.	Lack of opportunity to assess ethical issues should these be introduced into an OSCE	Create a category related to "Ethics"
7.	Some ambiguity in the instructions to scorers.	Accompanying document with instructions and orientation information for a quick reference- this should not however replace faculty/scorer training and orientation.
8.	Potential heavy burden on standardized patients (SPs).	Ensure adequate and ongoing SP debriefing and support.
9.	Resource intensive-scorers, SPs, assistants, facility, time, costs	Some compromises may be required. Collaboration by several programs to allow for future testing of reliability and further validity parameters.

On the basis of the results of this study and using the strengths and limitations as for further guidance, a new tool, the Palliative Care OSCE System (or PalCare-OSCEs) is proposed (See Appendix 10). The tool incorporates several of the elements summarized in Table 12.

Knowledge Test, Attitudes Survey and Comfort Scale

The internal consistency reliabilities for the Knowledge Quiz, Attitudes survey and Comfort Scale are listed in Table 11. There was a considerable decrease in reliability in the 2005 knowledge quiz as compared to the 2004 quiz. The internal reliability of the Attitudes Scale also decreased. The Comfort Scale, which had undergone no changes from 2004, retained a high internal reliability.

Table 11: Internal consistency reliability values for the Knowledge Quiz, Attitudes Survey and Comfort Scale

		Number of items	Internal consistency reliability (Cronbach's α)
Knowledge Quiz	2004	20	0.45
	2005	16	0.29
Attitudes Scale*	2004	17	0.78
	2005	12	0.68
Comfort Scale	2004	22	0.89
	2005	22	0.92

* 2004 was not calculated because of insufficient variables.

An analysis of the distribution of the residents' responses to the various questions in the 2005 Knowledge Tests (pre and post) revealed 3 items with very little dispersion of responses in the pre-course test; the majority of residents (>80) gave the correct answer.

The inter-item correlations of the 2005 Knowledge Quiz appear in Appendix 11. There is a significant negative correlation between item 10, which relates to treating opioid toxicity (a biomedical issue) and item 2, which relates to discussing prognosis (an item in the communication/psychological domain) (-.506). There is however a significant positive correlation between item 10 and item 9, another biomedical-related question which tests dyspnea (.508). The third significant positive correlation is between item 10 and item 2; 2 items from different domains. Appendix 12 tabulates the inter-item correlations for the Attitudes Survey. There are several significant correlations, some negative. There are also several non-significant but noteworthy negative correlations- and several of these involve Items 1 and 4. The inter-item correlations of the Comfort Scale are in Appendix 13. There are several strong positive correlations, in particular amongst the items that relate to symptom management and amongst the items that relate to communication and psychological issues.

An insufficient number of variables and lack of variance precluded performing factor analyses of each of the knowledge quiz, the attitudes survey and the comfort scale.

B. Impact Analyses

A secondary goal of the study was to explore the impact of the course on skills, knowledge, attitudes and comfort levels as measured by changes in the resident's scores in each of these domains.

Table 12 lists the comparisons between the pre- and post-course OSCE total checklist scores, using paired samples. In 2004, OSCE 2 was the only one of the three to see a significant improvement in total OSCE scores. OSCE 1 came close to statistically significant improvement in score. However, the effect sizes were acceptable in the other two OSCEs. In 2005, OSCE 2 was also the only one to see a statistically significant improvement in pre- versus post course scores. It must be noted that in the 2004 OSCE 1, only 7 residents entered the analysis (paired groups were required and only 7 residents completed this OSCE). A Student's t-test could have been used which does not require pairing but some assumptions would then be violated, including a) unequal variance and b) independence of observations.

Table 12: Changes in performances on OSCE total checklists pre- versus post-course (paired sample t-tests)

OSCE	Pre-course		Post-course		n	t	p	Cohen's d Effect size
	Mean	Std. Dev.	Mean	Std. Dev.				
2004								
OSCE 1	41.6	11.2	48.7	5	7	.71	0.06	1.34
OSCE 2	39.4	10.6	52.2	6.9	10	3.14	0.01	1.42
OSCE 3	47.5	10.6	42.4	49.3	8	1.4	0.19	0.73
2005								
OSCE 1	42.0	5	44	5.6	16	0.98	0.35	0.21
OSCE 2	34.7	6.9	38.7	4.8	16	2.9	0.01	1.94
OSCE 3	39.1	9.3	40.9	8.0	16	1.4	0.2	0.39

Another approach to exploring changes between the pre and post OSCE performances is to compare the number of pass/fails in each OSCE. Figure 3 depicts this data. The number of passes appeared to have increased in the post-courses (2004 and 2005) as compared to the pre-course scores. However, because of the small numbers, inferential statistics to explore if the differences were statistically different could not be performed.

Figure 3: "Passes" versus "Fails" Global scores: Pre-course compared to Post-course
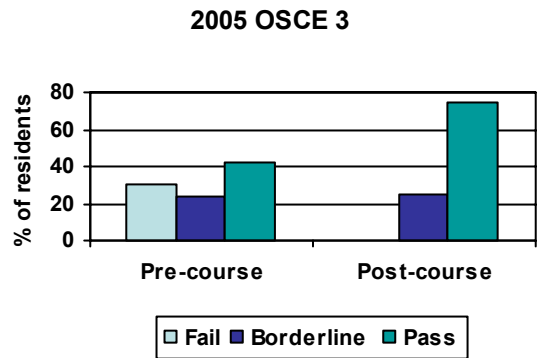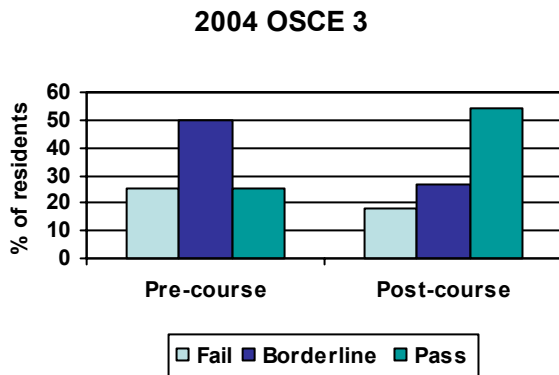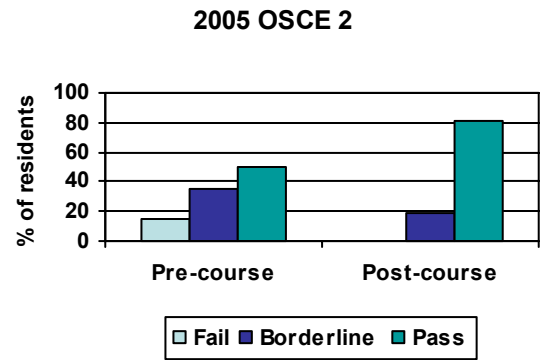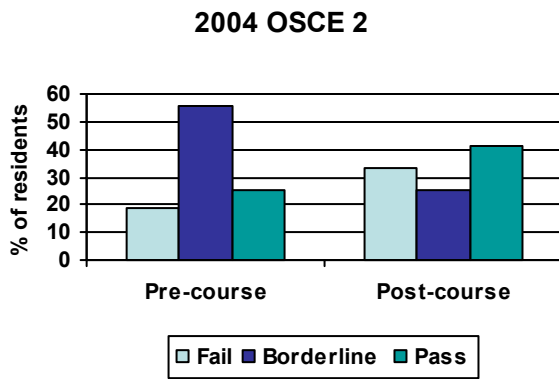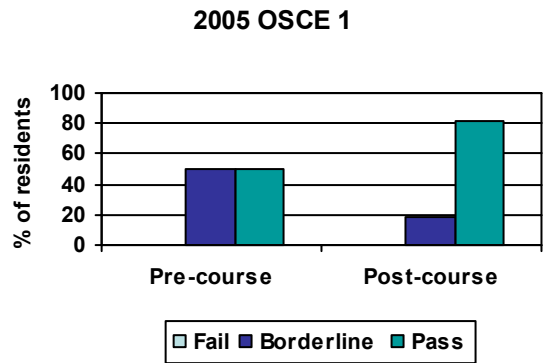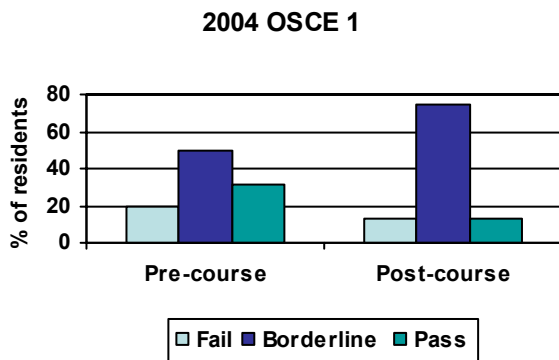
2004 OSCE 1

2005 OSCE 1

2004 OSCE 2

2005 OSCE 2

2004 OSCE 3

2005 OSCE 3

There were significant improvements in knowledge in 2004 and 2005, attitudes (2005), and comfort levels in 2004 and 2005 (See Table 13). The differences between the pre- and post-course scores in the assessments related to knowledge, attitudes and comfort showed significant improvements in score in all the tests with the exception of the 2005 Attitudes survey. This tended towards significance and had a moderate Cohen's d effect size. The changes in 2004 could not be calculated as no pre-course survey was administered.

Table 13: Pre- versus Post-course: Changes in knowledge, attitudes and comfort levels. (paired samples t-test)

Year	Pre-course		Post-course		n	t	p	Cohen's d Effect size
	Mean	Std. Dev.	Mean	Std. Dev.				
Knowledge								
2004	12.1	2.64	15.6	1.9	14	4.44	0.001	2.29
2005	7.4	2.4	12.8	0.2	16	8.99	0.000	2.42
Attitudes								
2005	43.9	2.8	46.1	4.2	16	1.82	0.09	0.65
Comfort								
2004	60.3	10.9	81.3	5.4	11	6.3	0.000	2.58
2005	53.3	12.3	74.6	14.8	16	4.00	0.002	1.64

CHAPTER FIVE: DISCUSSION

Main findings

The present study is one of the first known studies in palliative care education to explore a framework for the assessment of competencies in medical students and residents which uses several methods to assess a broad base of competencies in palliative care[32;46]. Of particular note, at least within the palliative care education literature, is the development of long-case type OSCE stations that assess a broad range of competencies related to more than just one issue. Previous studies have tended to focus on one issue at a time and provide limited time in which to do so [214,6;64;140;215-217]. It is also one of the few studies in this body of literature to report reliability and validity data[133-135].

A group of 16 and 20 family medicine residents contributed to the testing of the current instruments and the data derived was based on a natural test of the instrument. However, within this small group, the data was largely intact with few missing values. Although this was a small numbers of participants, the data and the experience derived from the development process has been very useful in informing the development of this new instrument, the PalCare-OSCEs. The study provided reliability and validity confirmation of several elements that have been incorporated into the instrument

It is anticipated that this instrument will facilitate the scoring of Palliative Care OSCEs as this form of assessment of competencies become increasingly used in medical education. Developing such instruments requires considerable effort, resources and expertise and a ready-made instrument that can be used "off the shelf" as it were would be useful, particularly if it were flexible and covered the numerous competencies required in palliative care.

The results of the OSCE-related analyses, although based on small numbers, are promising and provide good empirical evidence for the further testing of this generic OSCE ratings instrument for palliative care. The internal-consistency of the scoresheets hold promise and the finding that there does not appear to be much difference between the Global scores and the checklist system of scoring confirms similar reports by several investigators [72;83;94;108;111;163-165]. The OSCE stations themselves appear to have excellent face and content validity as assessed by the responses of the residents and the faculty during the development process and the focus group sessions. The inter-item correlations in which like tasks appear to correlate with one another (e.g. the biomedical items and the psychology items) corroborates aspects of construct validity (divergent) while tasks that are unlike (e.g. assessment of social stressors and management of symptoms) were less likely to be related, speaking to divergent validity. Nonetheless, there were some correlations that require discussion.

Two items that relate to exploring the illness experience, "explores what the symptoms mean to the patient" and "explores how the illness impacts the patient's life" are very highly correlated and are likely assessing very similar constructs, requiring consideration of merging them. The item "exploring what the illness means to the patient" is very highly correlated with "explores social supports". The reasons for the close relationship are unclear as at first glance they appear to assess different constructs. It may relate to the scorers interpreting them as being similar constructs. The moderate negative correlation between Psy1 and Bio11, suggests that in the residents who explored the psychological domain tended to not cover this biomedical item in the same way, and vice versa. This somewhat correlated an observation made by the faculty scorers following the

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debriefing stations that in the Pre-course OSCEs the residents appear to focus more on the psycosocial domains and less so on the "biomedical" domains, while in the post-course OSCEs the opposite trend appeared to occur. Further data exploration is required to confirm this observation. The perfect correlations (1.0) between two communication items, and the biomedical item that "explores what loss of appetite means to the patient" suggests that the latter may be exploring a salient psychological construct. This would seem valid as in real practice discussions requests to address poor appetite and weight loss issues are veils that hide a deeper need to talk about the dying process and concerns around it. Some of the correlations that were poor in the pre-course but became strong in the post-course OSCEs may speak to the impact of the course on the learning outcomes- if residents begin to perform very well on most tasks then one would expect the correlations to improve as well.

In some rare cases, there were high correlations between certain items in the pre course OSCE, yet strong but opposite correlations in the post course OSCEs (e.g. "explores fears and feelings and what symptoms means to the patient") correlated highly positively with item "explores code status" in the pre-course OSCE but highly negatively (-0.54) in the post course OSCE. In the post course OSCE therefore exploring fears and feelings would predict not addressing code status, a key task in this OSCE score scale.

The score sheet is divided into several domains, including "biomedical", "Psychological", "Social", "Spiritual", "Illness Experience", "Communication" and "Advanced Planning". Each domain has a set of checklist items to guide the scorer but the examiners are able to indicate whether it is a "must" do item or an "optional" item. Each domain has a sub-global score and the whole instrument has a total Global score for the

overall impression of the candidates` performances. The sub-global and global scores are scored as "clear pass", "borderline" or "clear fail".

The moderate to good internal consistency reliability of attitudes and comfort related scales is promising. The significant improvements in these domains pre versus post course are welcome but the exact role of these measures, particularly the self-perceived comfort scales, at least to this writer, are still not clear. Further data analyses may be required to explore this better. This would include correlating the results of the comfort scale (total) with the other instruments. Clearly, the Comfort Scale requires further modifications since the inter-item correlations reveal very close correlations amongst the "biomedical" (symptom management) issues and the amongst the "psychological" items. They can probably be explored with single sub-global scales (e.g. one that assess only symptom management globally and another that assesses communication issues globally, ad so forth). However, in reducing the number of items, the reliability will likely reduce.

The impact of decreasing the number of items is particularly visible with the Knowledge Quiz. Despite dedicating significant amount of time to developing a tool with well written question stems and answer options, many exploring higher cognitive learning (based on Bloom's taxonomy), the reliability value decreased substantially. This speaks to the challenge of trying to balance the need for instruments with good psychometric properties and curriculum-related practical issues such as time and resources. It also highlights the caution of not overburdening students and residents with lengthy burdensome tests that are exhausting and take up valuable learning time in already full curricula.

However, the assessment framework used, including the use of various methods, appears to paid dividends in terms of better assessing the learning outcome of this course.

The impact data was particularly encouraging in that the residents demonstrated improvements in knowledge, attitude and skill levels across numerous domains and tasks. Even in the OSCEs the effect sizes were large, indicating general improvements pre- versus post-course. The other benefit, which is not reported in the results but was elicited during the focus group discussions as they relate to the curriculum, was the useful role of the OSCEs as learning tools. This role of OSCEs has previously been described[115].

Study strengths and limitations

This study took a systematic approach, drawing on an extensive body of knowledge residing in the literature, was used to develop the assessment framework and the instruments. The process was grounded in well established assessment frameworks and concepts. The major limitations of the study relate to the small number of participants which limited further inferential analyses, particularly exploratory factor analysis and the application of a generalizability model. The small numbers limit to some degree the interpretations of inter-item correlations, amongst others. The data collection was further hampered by some technical difficulties with the videotaping equipment although this excluded only a small number of participants in the 2004 class. A major limitation was the inability to match the pre- and post-course Attitude items, thereby missing an opportunity to better assess the role of this scale.

Future Directions

The generic scoring instrument will require further reliability and validity research to asses its psychometric properties. This will be required across settings and learner

populations, including undergraduate medical students and physicians in practice. Further work is also required to test the framework of using combined methods of assessing competencies, including the use of knowledge, attitude and self-perceived comfort levels. Research to assess their respective roles is particularly needed in the palliative care setting. Further development of these tools and testing should optimally go hand in hand with further testing of the PalCare-OSCEs in natural settings.

Conclusions

The importance of recognizing clinical competence as comprising of many elements, including some related to knowledge, attitudes and skills is recognized. Equally, is the need to assess these broadly and to use assessment methods and instruments that appropriately and adequately assess these elements of competence.

This study provides a framework that uses OSCEs to assess performance as an indicator of competence, along with a knowledge test and attitudes survey to assess other domains of the construct. This work reports the development and implementation of palliative care OSCEs, specifically designed to assess these broad tasks related to caring for the dying, within a multimethod assessment framework. Results are provided that confirm moderate reliability and validity of the process and the instruments although caution is advised in interpreting these results given the small number of participants in the study. Clearly more research is required to explore reliability and validity of the PalCare-OSCEs scoring system which is proposed as a generic OSCE scale for the assessment of palliative competencies. Further research is also required to explore the multimethod framework and determine further use of the improve versions of the other tools developed as part of this study, namely the PalCare Knowledge Quiz , PalCare-Attitudes Survey, and PalComfort

Scale. In the interim, palliative care educators should consider using several methods as long as they remain practical and not overly burdensome on resources, learners and faculty.

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Appendix 1: OSCE 1 Scoresheet (2005)

SCORE SHEET   **PALLIATIVE CARE OSCE #1**

Examiner's name: _____

Candidate's number: _____

Circle the appropriate mark for each criteria. The standard is expected of a family medicine resident about to enter practice.

Key

	Criteria	Not performed	Performed but not competent	Performed competently		Degree of competence		
		0	**1**	**2**		**1. Minimum level**	**2. Exceeds by moderate degree**	**3. Outstanding**
	PSYCHO-SPIRITUAL ISSUES							
Psy1	Screens appropriately for depression (e.g. guilt, worthlessness, hopelessness & death wish).	0	1	2		1	2	3
Psy2	Offers appropriate management plan. (supportive counselling- may suggest anti-depressant. Patient is not depressed, but has an adjustment disorder with depressed mood.)	0	1	2		1	2	3
	SOCIAL ISSUES							
Soc3	Explores support system (including family, friends and home care).	0	1	2		1	2	3
	BIOMEDICAL PROBLEMS							
	Cancer Pain							
Bio4	Adequate pain history (location, severity, etc)	0	1	2		1	2	3
Bio5	Explores breakthrough, incident pain.	0	1	2		1	2	3
Bio6	Suggests investigations (specifically X-ray of hips)	0	1	2		1	2	3
Bio7	Addresses concerns about opioids & side effects	0	1	2		1	2	3
Bio8	Appropriate analgesic regimen (should include a weak or strong opioid)	0	1	2		1	2	3

		0	1	2		1	2	3
Bio9	Appropriate management plan to prevent constipation & nausea	0	1	2		1	2	3
Bio10	Encourages palliative radiotherapy	0	1	2		1	2	3
Bio11	Reviews treatment plan	0	1	2		1	2	3
	COMMUNICATION							
Com12	Appropriate introduction of him/herself.	0	1	2		1	2	3
Com13	Opens with open ended question to explore and expand reasons for visit.	0	1	2		1	2	3
Com14	Appropriate use of periods of silence.	0	1	2		1.	2	3.
Com15	Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.	0	1	2		1	2	3
Com16	Encourages patient to expand on issues.	0	1	2		1.	2	3.
Com17	Provides sufficient time for patient to absorb information.	0	1	2		1.	2	3.
Com18	Reviews treatment plan.	0	1	2		1	2	3
Com19	Uses language understandable to patient.	0	1	2		1	2	3
Com20	Organizes interview (opening, exploration, reflection & summary & able to transition between these).	0	1	2		1	2	3
	PATIENT-CENTRED CARE							
IE21	Explores feelings and fears	0	1	2		1	2	3
IE22	Explores what symptoms or problems mean to the patient	0	1	2		1	2	3
IE23	Explores how the illness impacts patient's life	0	1	2		1	2	3
IE24	Explores patient's expectations.	0	1	2		1	2	3
IE25	Attempts to find common ground	0	1	2		1	2	3
IE26	Displays empathy and sensitivity(acknowledges the patient's perspective and emotions)	0	1	2		1	2	3
	ADVANCED PLANNING							
AP27	Explores "code status" – (no resolution needed)	0	1	2		1	2	3
	Total (max)							

Overall impression of station	Clear Fail	Borderline	Clear Pass
	0	1	2

Appendix 2: OSCE 2 Scoresheet (2005)

SCORE SHEET **PALLIATIVE CARE OSCE #2**

Examiner's name: _____

Candidate's Number: _____

Circle the appropriate mark for each criteria. The standard is expected of a family medicine resident about to enter practice.

Key

	Criteria	Not performed	Performed but not competent	Performed competently		Degree of competence		
		0	**1**	**2**		**1. Minimum level**	**2. Exceeds by moderate degree**	**3. Outstanding**
	PSYCHO-SPIRITUAL ISSUES							
Psy1	Explores spiritual and religious beliefs & resources as they relate to patient's illness.	0	1	2		1	2	3
Psy2	Explores affect (e.g. screens for anxiety & depression).	0	1	2		1	2	3
Psy3	Provides appropriate care plan (supportive counselling - patient does not have a major depression, but has an adjustment disorder with depressed mood)	0	1	2		1	2	3
Psy4	Explores patient's meaning of "hope".	0	1	2		1	2	3
Psy5	Reframes "hope" for patient (hope is not only related to "cure".)	0	1	2		1	2	3
	SOCIAL ISSUES							
Soc6	Explores support systems, including family, friends and home care	0	1	2		1	2	3
Soc7	Explores other social stressors: e.g. financial issues.	0	1	2		1	2	3
	BIOMEDICAL PROBLEMS							
	Appetite & weight loss							
Bio8	Explores what "loss of appetite" means to patient (fear of starving to death or dying sooner)	0	1	2		1	2	3
Bio9	Explains limited role of artificial nutrition (enteral or TPN)	0	1	2		1	2	3

	Nausea & vomiting						
Bio10	Obtains history of **nausea** (onset, severity, frequency, duration, factors that improve and worsen it, impact of treatments).	0	1	2	1	2	3
Bio11	Suggests appropriate anti-emetic such as metoclopramide or domperidone as first line.	0	1	2	1	2	3
Bio12	Suggests abdominal x-ray to rule out obstruction	0	1	2	1	2	3
	COMMUNICATION						
Com13	Appropriate introduction of him/herself.	0	1	2	1	2	3
Com14	Opens with open ended question to explore and expand reasons for visit.	0	1	2	1	2	3
Com15	Appropriate use of periods of silence.	0	1	2	1	2	3
Com16	Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.	0	1	2	1	2	3
Com17	Encourages patient to expand on issues.	0	1	2	1	2	3
Com18	Provides sufficient time for patient to absorb information.	0	1	2	1	2	3
Com19	Uses language understandable to patient.	0	1	2	1	2	3
Com20	Organizes interview (opening, exploration, reflection & summary & able to transition between these).	0	1	2	1	2	3
	PATIENT-CENTRED CARE						
IE21	Explores fears and feelings	0	1	2	1	2	3
IE22	Explores how the illness impacts patient's life	0	1	2	1	2	3
IE23	Attempts to find common ground	0	1	2	1	2	3
IE24	Displays empathy and sensitivity(acknowledges the patient's perspective and emotions)	0	1	2	1	2	3
	ADVANCED PLANNING						
AP25	Discusses advanced directives (May- not expected in this OSCES)	0	1	2	1	2	3
	Total (max)						

Overall impression of station	Clear Fail	Borderline	Clear Pass
	0	1	2

Appendix 3: OSCE 3 Scoresheet (2005)

SCORE SHEET PALLIATIVE CARE OSCE #3

Examiner's name: _____

Candidate's Number: _____

Circle the appropriate mark for each criteria. The standard is expected of a family medicine resident about to enter practice.

Key

	Criteria	Not performed	Performed but not competent	Performed competent-ly		Degree of competence		
		0	**1**	**2**		**1. Minimum level**	**2. Exceeds by moderate degree**	**3. Outstanding**
	PSYCHO-SPIRITUAL ISSUES							
Psy1	Explores spiritual and religious beliefs & resources as they relate to patient's illness.	0	1	2		1	2	3
Psy2	Explores affect (i.e. screens for anxiety & depression).	0	1	2		1	2	3
	SOCIAL ISSUES							
Soc3	Explores support systems (including family, friends and home care, and support groups-including online support groups).	0	1	2		1	2	3
Soc4	Explores social stressors:	0	1	2		1	2	3
Soc5	Explores preferred & most appropriate place of care.	0	1	2		1	2	3
	BIOMEDICAL PROBLEMS							
	ALS: Shortness of breath							
Bio6	Assesses SOB (onset, intensity, alleviating and exacerbating factors, etc)	0	1	2		1	2	3
Bio7	Appropriately discusses issues around ventilatory support (referral to an ALS clinic for BiPAP support)	0	1	2		1	2	3
Bio8	Suggests appropriate regimen of opioid for shortness of breath	0	1	2		1	2	3
Bio9	Suggests oxygen	0	1	2		1	2	3

	Nutrition/swallowing							
Bio10	Appropriately discusses artificial nutrition	0	1	2		1	2	3
	OTHER DOMAINS							
	Responding to "How long do I have to live?"							
Com11	Response contains following elements: - validation of question, disclaimer re accuracy, general estimation (e.g. weeks to several months).	0	1	2		1	2	3
	COMMUNICATION							
Com12	Appropriate introduction of him/herself.	0	1	2		1.	2.	3.
Com13	Opens with open ended question to explore and expand reasons for visit.	0	1	2		1	2	3
Com14	Appropriate use of periods of silence.	0	1	2		1	2	3.
Com15	Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.	0	1	2		1	2	3
Com16	Encourages patient to expand on issues.	0	1	2		1	2	3
Com17	Provides sufficient time for patient to absorb information.	0	1	2		1	2	3
Com18	Reviews treatment plan.	0	1	2		1	2	3
Com19	Uses language understandable to patient.	0	1	2		1	2	3
Com20	Organizes interview (opening, exploration, reflection & summary- able to transition between these).	0	1	2		1	2	3
	PATIENT-CENTRED CARE							
IE21	Explores fears and feelings and symptoms or problems mean to the patient (fear of suffocation, fear of starving)	0	1	2		1	2	3
IE22	Explores how the illness impacts the patient's life	0	1	2		1	2	3
IE23	Explores patient's expectations.	0	1	2		1	2	3
IE24	Attempts to find common ground	0	1	2		1	2	3
IE25	Displays empathy and sensitivity (acknowledges the patient's perspective	0	1	2		1	2	3

	and emotions)							
	ADVANCED PLANNING							
AP26	Discusses advanced directives	0	1	2		1	2	3
AP27	Explores "code status" – (no resolution needed)	0	1	2			2	3
AP28	Explores home environment with respect to ADLs.	0	1	2		1	2	3
AP29	Discusses plans in case of emergency.	0	1	2		1	2	3
AP30	Explores extent of home care support	0	1	2		1	2	3
	Total (max)							

Overall impression of station	Clear Fail	Borderline	Clear Pass
	0	1	2

Appendix 4: PallCare Knowledge Quiz (2005)

Knowledge Quiz (2005)

<u>Rural Family Medicine Residency Program</u>

<u>Palliative Care Course</u>
<u>October 2005</u>
<u>POST COURSE KNOWLEDGE TEST</u>

Thank you for completing this quiz. Its purpose is to generate reflection and identify learning needs for you. It will not be used to evaluate you. Please use it to generate questions during the course.

Please **circle** the letter of that response that you feel is the **correct answer** to each of the following questions. Select only one response for each question.

Name:………………………………………………….   **Date:……………………….**

1. **Which one of the following opioids is <u>not recommended</u> for chronic pain management in advanced cancer patients?**

    a. Meperidine (Demerol)
    b. Codeine
    c. Methadone
    d. Oxycodone
    e. Fentanyl

2. **A patient who has been diagnosed with pancreatic cancer metastatic to the liver asks you: "How much time do you think I have?" With respect to his life expectancy, which one of the following would be the <u>most appropriate</u> response?**

    a. "I am not sure. It is difficult to predict. On average patients with this condition live for about 6 months"
    b. "I am not sure. It is difficult to predict. Only God can determine how long someone has to live."
    c. "I am not sure. It is difficult to predict. But I believe your time is unfortunately short, probably several weeks to a few months".
    d. "I really cannot tell how much time you have left, but miracles do happen and you could live much longer than expected".
    e. "We are very inaccurate at predicting how long people with illnesses such as yours have to live, but it must be an important question for you so I would say 3 months."

3. **A 72-year-old woman with diffuse metastatic bone disease from breast cancer (lung, liver and spinal metastases) presents with a sudden escalation of pain in her mid back. The pain radiates to her flanks. She complains of some weakness and numbness in her legs and some difficulties with controlling her bladder.**

   In addition to a comprehensive history and examination and adjustments in her analgesic regimen, which one of the following is the <u>ideal initial</u> management plan?

   a. Urgently order an augmented CT scan of the brain to exclude brain metastases.
   b. Urgently order an augmented CT scan of the brain to exclude brain metastases and start dexamethasone treatment.
   c. Urgently order an MRI of the spine and start dexamethasone treatment.
   d. Urgently order a plain X-ray of the spine and start dexamethasone treatment.
   e. Admit the patient to hospital, start dexamethasone and monitor her neurological status closely (twice a day).

4. **A 38-year-old man with metastatic renal cell cancer is found to have a severe major depression. He has a very flat affect and admits to pervasive feelings of hopelessness, guilt and worthlessness. He denies feeling suicidal. His life expectancy is estimated to be in the order of a few weeks to perhaps many weeks.**

   Which of the following would be the <u>most</u> appropriate management of his depression?

   a. A tricyclic antidepressant such as amitryptiline
   b. A stimulating selective serotonin reuptake inhibitor (SSRI): e.g. sertraline
   c. A newer norepinephrine serotonin reuptake inhibitor NSRI. e.g. venlafaxine
   d. A psychostimulant; e.g. methylphenidate
   e. Supportive counselling only- no medications needed.

5. **A 44-year-old woman with advanced gastric cancer is being cared for at home. She develops an agitated delirium and starts to vomit. Her wish is to die at home. On examination she is dehydrated and has generalized myoclonus. She is on hydromorphone 6mg orally every 4 hrs and 4mg every hour as needed (prn).**

   With respect to artificial hydration (intravenous or subcutaneous fluids), which of the following statements best describes the role of artificial hydration in this patient?

   a. Artificial hydration is futile treatment and should therefore not be offered.
   b. Artificial hydration constitutes a basic standard of care and should be offered
   c. Artificial hydration may improve this patient's delirium and opioid toxicity and should be offered.
   d. Artificial hydration may improve this patient's delirium but, because adequate volumes cannot be given subcutaneously, hydrating her at home will not be possible.
   e. The adverse effects of artificial hydration (including increased airway secretions and edema) far outweigh the potential benefits in this patient and should therefore not be offered in this patient.

6. **In a patient who no longer has the capacity to make decisions about his or her health care and finances, which one of the following best describes "guardianship"?**

   a. Guardianship relates to finances. Prior to becoming incapacitated he had formally identified someone to make those decisions on his behalf.
   b. Guardianship relates to health care. Prior to becoming incapacitated he had formally identified someone to make those decisions on his behalf.
   c. Guardianship relates to finances. Prior to becoming incapacitated he had not formally identified someone to make those decisions on his behalf. The court has therefore appointed someone to make those decisions.
   d. Guardianship relates health care. Prior to becoming incapacitated he had not formally identified someone to make those decisions on his behalf. The court has therefore appointed someone to make those decisions.
   e. Guardianship relates to health care as well as finances. Prior to becoming incapacitated he had formally identified someone to make those decisions on his behalf.

7. **A 45-year-old, 60-kg cancer patient with severe pain related to metastatic bone disease is in need of a strong opioid. You decide to initiate him on a morphine regimen. He has not previously been on a strong opioid. What starting dose would you use?**

   a. Morphine (long acting formulation) 30 mg orally twice a day and morphine (short-acting formulation) 5 mg orally every hour as needed (prn) for breakthrough pain.
   b. Morphine (short-acting) 5-20 mg orally every 4 hours and morphine 5 mg orally every hour as needed (prn) for breakthrough pain.
   c. Morphine (short-acting) 5 mg orally every 4 hours and 5 mg orally every hour as needed (prn) for breakthrough pain
   d. Morphine (short-acting) 5 mg orally every hour as needed (prn) for pain.
   e. Morphine (short-acting) 5mg orally four times a day and 5mg orally as needed (prn) for breakthrough pain).

8. **The dose conversion ratio of morphine to oxycodone in the setting of advanced cancer is?**

   a. 10 mg po of morphine = 5 mg to 7.5 mg po of oxycodone
   b. 10 mg po of morphine = 15 mg po of oxycodone
   c. 10 mg po of morphine = 20 mg po of oxycodone
   d. 10 mg po of morphine = 10 mg po of oxycodone
   e. 10 mg po of morphine = 1 mg po of oxycodone

9. **A 68 year old man with progressive amyotrophic lateral sclerosis (ALS) presents with increasing weakness and shortness of breath, even at rest. He has no symptoms or signs to suggest a pneumonia. Which one of the following would be the most appropriate first-line symptomatic management of his dyspnea at this time?**

   a. Morphine 5mg nebulized (via an airway mask) every 4 hrs and every hour as needed (prn).
   b. Morphine 5mg orally every 4 hrs and 5mg orally every hour as needed for dyspnea.
   c. Lorazepam 1mg orally or sublingually three times a day.
   d. Non-invasive airway support with BIPAP.
   e. Tracheostomy with artificial ventilation.

10. **A 67 year-old man with advanced lung cancer and bone metastases is taking slow release morphine 90 mg orally q12h. In the last two days he has complained of increased pain and his family have noticed that he has developed severe generalized myoclonus (muscles twitching) and has started "picking at the air".**

   Which one of the following is the most appropriate change to make to his opioid regimen?

   a. Switch his morphine to short acting hydromorphone at a dose of 8 mg orally q4h
   b. Switch his morphine to short acting hydromorphone at a dose of 4 mg orally q4h
   c. Increase the morphine dose to 120mg orally twice a day.
   d. Switch his opioid to transdermal fentanyl at a dose of 25micrograms/hr every 3 days.
   e. Do not adjust the morphine dose at all but treat him symptomatically for delirium.

11. **A patient with advanced colon cancer and liver metastases presents to you with severe somnolence. Up until yesterday he was alert, lucid and active. He is on morphine 180mg orally twice a day (controlled release formulation). His dose was increased a few days previously from 150mg twice a day to control his abdominal pain. His respiratory rate is 10/min and his pupils are 2-3mm wide. They respond to light. You also note some myoclonus in his limbs.**

   Which of the following options is the most appropriate management at this time?

   a. Discontinue his morphine and monitor him closely for signs of opioid withdrawal. When he is more alert or shows signs of opioid withdrawal, restart the morphine.
   b. Institute palliative sedation with a continuous subcutaneous midazolam infusion with the aim of controlling his myoclonus and keeping him comfortable.
   c. Administer naloxone intravenously immediately (0.4mg) and then be prepared to re-administer it as naloxone's half-life is shorter than that of the morphine.
   d. Switch his morphine to hydromorphone, reduce the dose of the new opioid by 20% to 50% and search for other causes of somnolence.
   e. Administer a single dose of methylphenidate 5mg orally immediately and then continue it every 8 hours until he is more awake.

12. **A 48 year-old man with refractory, advanced leukemia presents with mild delirium. He has mild cognitive impairment and is a little agitated. He is also experiencing some visual hallucinations. He is on a regular regimen of oxycodone 20mg orally every 4 hours. Which one of the following regimens , would be the most appropriate initial pharmacological management to control his delirium?**

   a. Haloperidol 2.5mg orally or subcutaneously q12hrs and haloperidol 2.5mg every hour as needed (prn).
   b. Diazepam 5 mg to 10 mg orally twice a day and 5mg every hour as needed (prn).
   c. Lorazepam (Ativan) 2mg orally or sublingually three times a day and 1mg every hour as needed (prn)
   d. Methotrimeprazine (Nozinan) 12.5mg orally or subcutaneously q12hrs and 12.5mg every hour as needed (prn).
   e. Midazolam (Versed): a bolus dose of 2.5mg subcutaneously or intravenously followed by a continuous infusion of 1mg to 4mg/hour titrated to control his agitation.

13. **Which one of the following is the most appropriate anti-emetic for opioid-induced nausea?**

    a. Dimenhydrinate (Gravol)
    b. Metoclopramide (Maxeran)
    c. Ondansetron (Zofran)
    d. Cannibinoid derivative (Marinol or Cesamet)
    e. Prochlorprazine (Stemetil)

14. **An anxious patient with pancreatic cancer, metastatic to liver, asks you for artificial nutrition (feeding by tube or through an intravenous line) as he has lost a lot of weight and is concerned that he is "starving" to death. Which one of the following best describes your response to his request for artificial feeding?**

    a. Suggest he try an appetite stimulant such as megesterol acetate, a cannibinoid derivative or a steroid in the hope that this would increase his weight.
    b. Refer him to a nutritionist for nutritional counselling.
    c. Refer him for the placement of a gastrostomy tube and initiate enteral feeding.
    d. Sensitively explain to him that artificial feeding would not improve his quality of life or life expectancy.
    e. Even though you suspect that artificial nutrition would not improve his quality of life, you would offer it to him so as to provide him with some hope and diminish his anxiety.

15. **A 37-year-old man with AIDS refractory to antiretroviral treatment starts experiencing burning pain in his feet and hands. The pain is getting worse. He is already taking a slow release formulation of morphine at 30 mg q12h for pain.**

    Adjuvant therapies that have been found useful in the treatment of this type of pain include all of the following except for:

    a. Tricyclic antidepressants
    b. Anticonvulsants (e.g. carbamazepine, gabapentin)
    c. Bisphosphonates
    d. Oral local anaesthetics
    e. Corticosteroids

16. **A 52 year old man whose wife died 8 weeks previously from cancer comes to see you in your office. He is tearful and admits that occasionally he sees glimpses of her in the house. He also finds that he cannot stop thinking of her. His yearning is even more pronounced when he sits down for supper alone or goes to bed. He is back at work half-time and finds that it is a helpful distraction. He is concerned about these glimpses.**

    What is he most likely experiencing?

    a. A complicated grief reaction.
    b. A delayed grief reaction.
    c. A normal grief reaction.
    d. A major depression.
    e. An adjustment disorder.

Appendix 5: Attitudes Caring for the Dying (The PallCare-Attitudes Survey) 2005

Section C: Attitudes to caring for terminally ill patients

The following items also require that you complete two parts to each statement- Part A and Part B.

Part A: What is your current level of agreement with the following statements as they relate to caring for palliative patients-using a of 1 to 5 (where 1=strongly disagree and 5=strongly agree)?
Part B: Compared to the beginning of the course, to what extent has your level of agreement with the statement changed? Has it decreased, not changed or increased?

Please circle the numbers and letters that best apply to you
(1 = strongly disagree and 5= strongly agree.

		Part A					Part B		
							Since the beginning of the course, my level of agreement with the statement has…		
		Strongly disagree		Neutral		Strongly agree	Decreased	Not changed	Increased
1	A dying patient makes me feel uneasy	1	2	3	4	5	a	b	c
2	I feel helpful when I am involved in the care of terminally ill patients	1	2	3	4	5	a	b	c
3	I feel comfortable when patients begin to discuss death	1	2	3	4	5	a	b	c
4	To avoid unnecessary psychological distress, I will discuss palliative care with patients who have incurable progressive illnesses only when they are in the last few weeks or months of their lives	1	2	3	4	5	a	b	c
5	Dying patients require active care.	1	2	3	4	5	a	b	c
6	Providing palliative care to terminally ill patients is personally rewarding with respect to my own growth as a person	1	2	3	4	5	a	b	c
7	Providing palliative care is emotionally draining	1	2	3	4	5	a	b	c
8	I, as a physician, have a role to play in addressing a terminally ill patient's spiritual suffering.	1	2	3	4	5	a	b	c

		Part A					Part B		
							Since the beginning of the course, my level of agreement with the statement has…		
		Strongly disagree		Neutral		Strongly agree	Decreased	Not changed	Increased
9	Providing appropriate spiritual care should be included in undergraduate and postgraduate medical curricula.	1	2	3	4	5	a	b	c
10	Emotions provoked in me when caring for someone who is suffering influence the clinical decisions I make about that patient.	1	2	3	4	5	a	b	c
11	Narrative (patients' stories of their illness experiences and lives) offers a method for addressing the suffering of patients with chronic illnesses, including those with terminal illnesses.	1	2	3	4	5	a	b	c
12	Hope can be instilled in a realistic way even when a patient is terminally ill.	1	2	3	4	5	a	b	c

Appendix 6: Self-Perceived comfort Levels Scale (PalCare-Comfort Scale) 2005

Attitudes and Self-perceived Comfort levels Survey (2005)

FAMILY MEDICINE RURAL RESIDENCY PROGRAM
PALLIATIVE CARE COURSE
October 2005

SELF-PERCEIVED COMFORT LEVELS SURVEY

<u>Instructions</u>
The whole survey should not take you more than 10-15 minutes to complete.
Please circle the letter or number (in the case of scales) that best applies to you.
Please note that the numbering of the items does not always necessarily follow consecutively. The numbers correspond to your Pre-course survey. Do not worry about this. Simply go from one item to the next one listed.

Section B: Self-Perceived Comfort Levels

The following items require that you complete two parts to each statement- Part A and Part B.

Part A: What is your current level of comfort when addressing the following issues in the context of caring for a terminally ill patient-using a scale of 1 to 5 (where 1=very uncomfortable and 5=very comfortable)?
Part B: Compared to the beginning of the course, to what extent has your comfort level changed? Has it decreased, Not changed or increased?

Please circle the numbers and letters that best apply to you)

		Part A					Part B		
							Since the beginning of the course, my level of comfort has...		
		Very uncomfort-able		**Neutral**		**Very comfort-able**	**Decreased**	**Not changed**	**Increased**
1	Caring for terminally ill patients in general	1	2	3	4	5	a	b	c
2	Communicating with terminally ill patients in general	1	2	3	4	5	a	b	c
3	Determining when a patient is "palliative"	1	2	3	4	5	a	b	c
4	Managing cachexia (weight loss) in patients with advanced cancer	1	2	3	4	5	a	b	c

		Very uncomfort-able		Neutral		Very comfort-able	Since the beginning of the course, my level of comfort has...		
							Decreased	Not changed	Increased
5	Using the WHO Ladder	1	2	3	4	5	a	b	c
6	Managing cancer pain in general	1	2	3	4	5	a	b	c
7	Selecting between different opioid formulations	1	2	3	4	5	a	b	c
8	Switching between different opioids	1	2	3	4	5	a	b	c
9	Managing opioid neurotoxicity	1	2	3	4	5	a	b	c
10	Managing cancer bone pain	1	2	3	4	5	a	b	c
11	Managing cancer neuropathic pain	1	2	3	4	5	a	b	c
12	The role of radiation therapy in palliative care	1	2	3	4	5	a	b	c
13	Breaking bad news	1	2	3	4	5	a	b	c
14	Discussing code status (DNR)	1	2	3	4	5	a	b	c
15	Responding to patients requests for alternative treatments								
16	Managing delirium in the palliative setting	1	2	3	4	5	a	b	c
17	Managing shortness of breath	1	2	3	4	5	a	b	c
18	Instilling hope in the palliative setting.	1	2	3	4	5	a	b	c
19	Responding to the question "how long do I have to live?"	1	2	3	4	5	a	b	c
20	Managing chronic nausea	1	2	3	4	5	a	b	c
21	Diagnosing depression in terminally ill patients	1	2	3	4	5	a	b	c
22	Caring for bereaved family	1	2	3	4	5	a	b	c

Appendix 7: Distribution of responses in the 2005 OSCES

OSCE 1

2005	**Palliative Care**	**Pre Course** OSCE 1 n = 20			**Post Course** OSCE 1 n = 20		
	Criteria	Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
	PSYCHO-SPIRITUAL ISSUES						
Spiritual	Explores spiritual and religious beliefs & resources as they relate to patient's illness.	70	0	30	55	0	15
Psych	Explores affect (i.e. screens for anxiety & depression).	50	15	25	55	5	5
	SOCIAL ISSUES						
Social	Explores support systems (including family, friends and home care, and support groups- including online support groups).	5	15	75	10	15	55
Social	Explores social stressors.	40	10	45	40	15	15
Social	Explores preferred & most appropriate place of care.	5	20	75	10	5	65
	BIOMEDICAL PROBLEMS						
	ALS: Shortness of breath						
Bio	Assesses SOB (onset, intensity, alleviating and exacerbating factors, etc)	20	35	40	5	15	60
Bio	Appropriately discusses issues around ventilatory support (referral to an ALS clinic for BiPAP support)	45	25	30	0	5	75
Bio	Suggests appropriate regimen of opioid for shortness of breath	70	15	10	25	15	40
Bio	Suggests oxygen	80	5	10	40	10	25

	Nutrition/swallowing						

OSCE1 Continued

<table>
<tr><td rowspan="2"></td><td rowspan="2">Criteria</td><td colspan="3">Pre Course OSCE1 n = 20</td><td colspan="3">Post Course OSCE 1 n = 20</td></tr>
<tr><td>Not performed</td><td>Performed but not competent</td><td>Performed competently</td><td>Not performed</td><td>Performed but not competent</td><td>Performed competently</td></tr>
<tr><td>Bio</td><td>Appropriately discusses artificial nutrition</td><td>30</td><td>30</td><td>35</td><td>15</td><td>15</td><td>50</td></tr>
<tr><td></td><td>OTHER DOMAINS</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>Responding to "How long do I have to live?"</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Com</td><td>Response contains following elements: validation of question, disclaimer re accuracy, general estimation (e.g. weeks to several months).</td><td>0</td><td>55</td><td>45</td><td>25</td><td>0</td><td>40</td></tr>
<tr><td></td><td>COMMUNICATION</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Com</td><td>Appropriate introduction of him/herself.</td><td>0</td><td>0</td><td>100</td><td>0</td><td>0</td><td>80</td></tr>
<tr><td>Com</td><td>Opens with open ended question to explore and expand reasons for visit.</td><td>0</td><td>10</td><td>90</td><td>5</td><td>0</td><td>75</td></tr>
<tr><td>Com</td><td>Appropriate use of periods of silence.</td><td>0</td><td>10</td><td>80</td><td>5</td><td>5</td><td>65</td></tr>
<tr><td>Com</td><td>Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.</td><td>0</td><td>15</td><td>85</td><td>0</td><td>0</td><td>80</td></tr>
<tr><td>Com</td><td>Encourages patient to expand on issues.</td><td>0</td><td>30</td><td>70</td><td>5</td><td>10</td><td>65</td></tr>
<tr><td>Com</td><td>Provides sufficient time for patient to absorb information.</td><td>0</td><td>0</td><td>95</td><td>0</td><td>10</td><td>65</td></tr>
<tr><td>Com</td><td>Reviews treatment plan.</td><td>0</td><td>40</td><td>40</td><td>0</td><td>20</td><td>35</td></tr>
<tr><td>Com</td><td>Uses language understandable to patient.</td><td>0</td><td>0</td><td>95</td><td>0</td><td>5</td><td>75</td></tr>
<tr><td>Com</td><td>Organizes interview (opening, exploration, reflection & summary- able to transition between these).</td><td>0</td><td>45</td><td>55</td><td>0</td><td>20</td><td>60</td></tr>
<tr><td></td><td>PATIENT-CENTRED CARE</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

OSCE 1 Continued		Pre-course			Post course		
	Criteria	**Not performed**	**Performed but not competent**	**Performed competently**	**Not performed**	**Performed but not competent**	**Performed competently**
Illness exp	Explores fears and feelings and symptoms or problems mean to the patient (fear of suffocation, fear of starving)	40	20	40	25	25	25
Illness exp	Explores how the illness impacts the patient's life	25	30	40	10	15	50
Illness exp	Explores patient's expectations.	40	10	45	5	20	50
Illness exp	Attempts to find common ground	5	15	65	0	10	65
Illness exp	Displays empathy and sensitivity (acknowledges the patient's perspective and emotions)	0	30	65	0	5	75
ADVANCED PLANNING							
Advanced planning	Discusses advanced directives	30	5	65	45	10	20
Advanced planning	Explores "code status" – (no resolution needed)	40	25	25	35	10	25
Advanced planning	Explores home environment with respect to ADLs.	20	25	55	15	20	45
Advanced planning	Discusses plans in case of emergency.	30	35	30	40	20	20
Advanced planning	Explores extent of home care support.	15	25	60	15	0	60

Appendix 7 continued: Distribution of responses in the 2005 OSCES: <u>OSCE 2</u>

2005	Palliative Care	Pre Course OSCE 2 n = 20			Post Course OSCE 2 n = 20		
	Criteria	Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
	PSYCHO-SPIRITUAL ISSUES						
Spiritual	Explores spiritual and religious beliefs & resources as they relate to patient's illness.	50	5	40	40	5	35
Psych	Explores affect (e.g. screens for anxiety & depression).	25	25	50	25	15	25
Psych	Provides appropriate care plan (supportive counselling - patient does not have a major depression, but has an adjustment disorder with depressed mood)	5	40	55	15	15	45
Illness experience	Explores patient's meaning of "hope".	30	30	35	20	5	55
Illness experience	Reframes "hope" for patient (hope is not only related to "cure".)	25	20	50	10	5	65
	SOCIAL ISSUES						
Social	Explores support systems, including family, friends and home care	5	10	85	15	5	60
Social	Explores other social stressors: e.g. financial issues.	15	40	45	50	5	20
	BIOMEDICAL PROBLEMS						
	Appetite & weight loss						
Bio	Explores what "loss of appetite" means to patient (fear of starving to death or dying sooner)	50	15	30	25	10	45
Bio	Explains limited role of artificial nutrition (enteral or TPN)	60	15	25	20	15	45

OSCE 2 Continued

	Criteria	Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
Bio	Suggests appropriate anti-emetic such as metoclopramide or domperidone as first line.	35	40	25	0	10	70
Bio	Suggests abdominal x-ray to rule out obstruction	70	0	25	5	0	75
	COMMUNICATION						
Com	Appropriate introduction of him/herself.	20	10	65	10	5	65
Com	Opens with open ended question to explore and expand reasons for visit.	0	20	75	0	5	75
Com	Appropriate use of periods of silence.	0	0	100	0	0	80
Com	Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.	0	5	95	0	10	70
Com	Encourages patient to expand on issues.	0	0	95	5	10	60
Com	Provides sufficient time for patient to absorb information.	0	0	80	0	5	75
Com	Uses language understandable to patient.	0	0	100	0	0	80
Com	Organizes interview (opening, exploration, reflection & summary & able to transition between these).	0	20	80	0	10	70
	PATIENT-CENTRED CARE						
Illness experience	Explores fears and feelings	0	25	75	0	20	60
Illness experience	Explores how the illness impacts patient's life	0	25	70	10	10	50

Appendix 7 continued: Distribution of responses in the 2005 OSCES: OSCE3

	Criteria	Pre Course OSCE 3 n = 20			Post Course OSCE 3 n = 20		
		Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
	PSYCHO-SPIRITUAL ISSUES						
Spiritual	Explores spiritual and religious beliefs & resources as they relate to patient's illness.	70	0	30	55	0	15
Psych	Explores affect (i.e. screens for anxiety & depression).	50	15	25	55	5	5
	SOCIAL ISSUES						
Social	Explores support systems (including family, friends and home care, and support groups-including online support groups).	5	15	75	10	15	55
Social	Explores social stressors.	40	10	45	40	15	15
Social	Explores preferred & most appropriate place of care.	5	20	75	10	5	65
	BIOMEDICAL PROBLEMS						
	ALS: Shortness of breath						
Bio	Assesses SOB (onset, intensity, alleviating and exacerbating factors, etc)	20	35	40	5	15	60
Bio	Appropriately discusses issues around ventilatory support (referral to an ALS clinic for BiPAP support)	45	25	30	0	5	75
Bio	Suggests appropriate regimen of opioid for shortness of breath	70	15	10	25	15	40
Bio	Suggests oxygen	80	5	10	40	10	25

**OSCE 3
Continued**

	Criteria	Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
	Nutrition/swallowing						
Bio	Appropriately discusses artificial nutrition	30	30	35	15	15	50
	OTHER DOMAINS						
	Responding to "How long do I have to live?"						
Com	Response contains following elements: validation of question, disclaimer re accuracy, general estimation (e.g. weeks to several months).	0	55	45	25	0	40
	COMMUNICATION						
Com	Appropriate introduction of him/herself.	0	0	100	0	0	80
Com	Opens with open ended question to explore and expand reasons for visit.	0	10	90	5	0	75
Com	Appropriate use of periods of silence.	0	10	80	5	5	65
Com	Appropriate use of non-verbal (e.g. gestures, body posture, eye contact, touch) techniques.	0	15	85	0	0	80
Com	Encourages patient to expand on issues.	0	30	70	5	10	65
Com	Provides sufficient time for patient to absorb information.	0	0	95	0	10	65
Com	Reviews treatment plan.	0	40	40	0	20	35
Com	Uses language understandable to patient.	0	0	95	0	5	75

**OSCE 3
Continued**

	Criteria	Not performed	Performed but not competent	Performed competently	Not performed	Performed but not competent	Performed competently
Com	Organizes interview (opening, exploration, reflection & summary- able to transition between these).	0	45	55	0	20	60
	PATIENT-CENTRED CARE						
Illness exp	Explores fears and feelings and symptoms or problems mean to the patient (fear of suffocation, fear of starving)	40	20	40	25	25	25
Illness exp	Explores how the illness impacts the patient's life	25	30	40	10	15	50
Illness exp	Explores patient's expectations.	40	10	45	5	20	50
Illness exp	Attempts to find common ground	5	15	65	0	10	65
Illness exp	Displays empathy and sensitivity (acknowledges the patient's perspective and emotions)	0	30	65	0	5	75
	ADVANCED PLANNING						
Advanced planning	Discusses advanced directives	30	5	65	45	10	20
Advanced planning	Explores "code status" – (no resolution needed)	40	25	25	35	10	25
Advanced planning	Explores home environment with respect to ADLs.	20	25	55	15	20	45
Advanced planning	Discusses plans in case of emergency.	30	35	30	40	20	20
Advanced planning	Explores extent of home care support.	15	25	60	15	0	60

Appendix 8: 2005 OSCE Inter-item correlations of 2005 OSCES.

2005 Pre_course_Osce 1 (Refer to the OSCE Scoresheet in Appendix 1 for the key to the items)
Items dropped during correlation analysis: Com 12, 13, 14, 17, 19, 26

	Psy1	Psy2	Soc3	Bio4	Bio5	Bio6	Bio7	Bio8	Bio9	Com10	Com11	Com15	Com16	Com18	Com20	IE21	IE22	IE23	IE24	Com25	AP27
Psy1	1.000																				
Psy2	.239	1.000																			
Soc3	-.430	-.167	1.000																		
Bio4	.537	-.375	-.375	1.000																	
Bio5	.291	.081	.366	.342	1.000																
Bio6	-.355	.000	.248	.000	-.060	1.000															
Bio7	.239	.417	-.167	.281	.366	.000	1.000														
Bio8	.162	.679	-.113	-.255	.248	-.168	.679	1.000													
Bio9	.258	.341	-.528	.035	-.325	-.138	.124	.232	1.000												
Com10	-.078	-.030	-.030	.051	-.244	-.045	.394	.268	-.017	1.000											
Com11	-.406	-.125	-.125	-.117	-.508	.000	.167	.113	.310	.774	1.000										
Com15	.162	.679	-.113	-.255	.248	-.168	.679	1.000	.232	.268	.113	1.000									
Com16	.162	.679	-.113	-.255	.248	-.168	.679	1.000	.232	.268	.113	1.000	1.000								
Com18	-.096	.417	-.167	-.047	.366	.000	.417	.679	.341	-.030	.167	.679	.679	1.000							
Com20	.239	.417	-.167	-.047	.081	.000	.417	.679	.341	.394	.167	.679	.679	.417	1.000						
IE21	.020	.284	.284	-.200	.225	.106	.284	.531	.066	.505	.213	.531	.531	.284	.782	1.000					
IE22	-.041	.430	.430	-.349	.361	.071	.430	.747	-.009	.322	.072	.747	.747	.430	.765	.835	1.000				
IE23	-.096	-.167	.417	-.047	.081	.248	-.167	-.113	-.093	.394	.167	-.113	-.113	-.167	.417	.782	.430	1.000			
IE24	-.312	-.198	.842	-.250	.265	.294	-.198	-.135	-.369	.216	.025	-.135	-.135	-.198	.149	.633	.511	.842	1.000		
Com25	-.292	-.113	.679	-.255	.248	.168	-.113	-.077	-.358	.268	.113	-.077	-.077	-.113	-.113	.531	.292	.679	.807	1.000	
AP27	.213	-.496	.248	.279	.181	.158	.000	-.168	-.508	.135	-.248	-.168	-.168	-.496	.000	.106	.071	.248	.294	.168	1.000

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience
⌞…⌟: Correlation is significant at the 0.05 level (2-tailed).   ▓: Correlation is significant at the 0.01 level (2-tailed).

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Inter-item correlations. 2005 Pre_course_Osce 2   (Refer to the OSCE Scoresheet in Appendix 2 for the key to the items)

Items dropped during correlation analysis: Com 12, 13, 14, 17, 19, 26

	Psy1	Psy2	Soc3	Bio4	Bio5	Bio6	Bio7	Bio8	Bio9	Com10	Com11	Com15	Com16	Com18	Com20	IE21	IE22	IE23	IE24	Com25	AP27
Psy1	1.000																				
Psy2	.239	1.000																			
Soc3	-.430	-.167	1.000																		
Bio4	.537	-.375	-.375	1.000																	
Bio5	.291	.081	.366	.342	1.000																
Bio6	-.355	.000	.248	.000	-.060	1.000															
Bio7	.239	.417	-.167	.281	.366	.000	1.000														
Bio8	.162	.679	-.113	-.255	.248	-.168	.679	1.000													
Bio9	.258	.341	-.528	.035	-.325	-.138	.124	.232	1.000												
Com10	-.078	-.030	-.030	.051	-.244	-.045	.394	.268	-.017	1.000											
Com11	-.406	-.125	-.125	-.117	-.508	.000	.167	.113	.310	.774	1.000										
Com15	.162	.679	-.113	-.255	.248	-.168	.679	1.000	.232	.268	.113	1.000									
Com16	.162	.679	-.113	-.255	.248	-.168	.679	1.000	.232	.268	.113	1.000	1.000								
Com18	-.096	.417	-.167	-.047	.366	.000	.417	.679	.341	-.030	.167	.679	.679	1.000							
Com20	.239	.417	-.167	-.047	.081	.000	.417	.679	.341	.394	.167	.679	.679	.417	1.000						
IE21	.020	.284	.284	-.200	.225	.106	.284	.531	.066	.505	.213	.531	.531	.284	.782	1.000					
IE22	-.041	.430	.430	-.349	.361	.071	.430	.747	-.009	.322	.072	.747	.747	.430	.765	.835	1.000				
IE23	-.096	-.167	.417	-.047	.081	.248	-.167	-.113	-.093	.394	.167	-.113	-.113	-.167	.417	.782	.430	1.000			
IE24	-.312	-.198	.842	-.250	.265	.294	-.198	-.135	-.369	.216	.025	-.135	-.135	-.198	.149	.633	.511	.842	1.000		
Com25	-.292	-.113	.679	-.255	.248	.168	-.113	-.077	-.358	.268	.113	-.077	-.077	-.113	-.113	.531	.292	.679	.807	1.000	
AP27	.213	-.496	.248	.279	.181	.158	.000	-.168	-.508	.135	-.248	-.168	-.168	-.496	.000	.106	.071	.248	.294	.168	1.000

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience

⌐…⌐: Correlation is significant at the 0.05 level (2-tailed).   ⌐…⌐ Correlation is significant at the 0.01 level (2-tailed).

Inter-item correlations .2005 Pre_course_Osce 3 (Refer to the OSCE Scoresheet in Appendix 3 for the key to the items)
Items dropped during correlation analysis: Com 12, 14, 17, 19

	Psy1	Psy2	Soc3	Soc4	Soc5	Bio6	Bio7	Bio8	Bio9	Bio10	Com11	Com13	Com15	Com16	Com18	Com20	IE21	IE22	IE23	Com24	Com25	AP26	AP27
Psy1	1.000																						
Psy2	-.086	1.000																					
Soc3	-.229	.551	1.000																				
Soc4	-.086	.338	.551	1.000																			
Soc5	-.500	.086	.574	.600	1.000																		
Bio6	-.289	.693	.464	.099	.000	1.000																	
Bio7	-.180	.801	.474	.385	.180	.518	1.000																
Bio8	-.574	.020	.053	-.334	.229	.066	-.268	1.000															
Bio9	-.250	.472	.229	.086	.250	.289	.045	.746	1.000														
Bio10	.090	.524	.288	.246	-.090	.674	.710	-.639	-.359	1.000													
Com11	.158	.271	.399	.515	.316	-.183	.653	-.580	-.395	.398	1.000												
Com13	.250	.300	-.229	.300	-.250	-.289	.359	-.229	.125	-.045	.395	1.000											
Com15	.378	.454	.434	.454	.189	.546	.238	-.347	.189	.543	.060	-.189	1.000										
Com16	-.189	.454	.824	.454	.756	.218	.543	.043	.189	.238	.598	-.189	.357	1.000									
Com18	-.158	.949	.580	.461	.158	.730	.880	-.073	.395	.625	.350	.316	.478	.478	1.000								
Com20	.158	.759	.725	.759	.316	.365	.653	-.254	.316	.398	.550	.395	.598	.598	.800	1.000							
IE21	-.086	.338	.551	1.000	.600	.099	.385	-.334	.086	.246	.515	.300	.454	.454	.461	.759	1.000						
IE22	-.107	.695	.758	.530	.426	.492	.881	-.342	-.053	.708	.742	.053	.443	.806	.775	.742	.530	1.000					
IE23	-.250	.386	.516	.900	.750	.000	.404	.000	.375	.000	.474	.375	.283	.567	.474	.712	.900	.480	1.000				
Com24	.000	-.303	.162	.061	.000	-.204	.127	-.568	-.884	.318	.559	-.177	-.267	.134	-.224	-.112	.061	.302	-.177	1.000			
Com25	.250	.300	-.229	.300	-.250	-.289	.359	-.229	.125	-.045	.395	1.000	-.189	-.189	.316	.395	.300	.053	.375	-.177	1.000		
AP26	-.189	.454	.824	.454	.189	.546	.238	.043	.189	.238	.060	-.189	.357	.357	.478	.598	.454	.443	.283	.134	-.189	1.000	
AP27	-.100	.240	.436	.857	.400	-.058	.126	-.184	.100	-.036	.316	.350	.189	.189	.253	.601	.857	.235	.750	.071	.350	.529	1.000
AP28	-.115	.689	.895	.689	.459	.331	.639	-.053	.287	.268	.580	.229	.347	.737	.725	.907	.689	.783	.688	.081	.229	.737	.596	1.0
AP29	-.577	.495	.331	.644	.577	.333	.726	-.066	.144	.415	.456	.289	.109	.436	.639	.456	.644	.615	.722	.000	.289	.109	.404	.4
AP30	-.200	.532	.390	.377	-.100	.231	.683	-.229	-.100	.359	.538	.550	-.189	.151	.601	.538	.377	.533	.300	.354	.550	.491	.440	.6

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience
[ ]: Correlation is significant at the 0.05 level (2-tailed).   [ ]. Correlation is significant at the 0.01 level (2-tailed).

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Inter-item correlations .2005 Post_course_Osce1 (Refer to the OSCE Scoresheets in Appendix 1 for the key to the items)

Items dropped during correlation analysis: Bio 8; Com 12, 13, 14, 15, 17, 19, 25, 26

	Psy1	Psy2	Soc3	Bio4	Bio5	Bio6	Bio7	Bio9	Com10	Com11	Com16	Com18	Com20	IE21	IE22	IE23	IE24	AP27
Psy1	1.000																	
Psy2	.052	1.000																
Soc3	-.108	-.250	1.000															
Bio4	.332	.394	-.232	1.000														
Bio5	.559	.346	-.391	.594	1.000													
Bio6	.383	.445	-.464	.509	.214	1.000												
Bio7	.043	-.267	.174	-.143	.289	-.494	1.000											
Bio9	-.064	.033	-.257	.367	.356	.122	.329	1.000										
Com10	-.452	.233	.517	-.013	-.484	.108	-.073	-.156	1.000									
Com11	-.170	.690	-.309	.409	.427	.122	-.329	-.108	.024	1.000								
Com16	.346	-.179	.373	.115	.194	-.332	.671	-.184	.130	-.221	1.000							
Com18	.516	.100	-.209	.171	.289	.494	-.222	-.274	-.340	-.027	-.149	1.000						
Com20	.261	.289	.060	.495	.375	.214	.241	-.095	.253	.095	.516	.241	1.000					
IE21	-.289	.805	-.140	.537	.194	.332	-.149	.221	.489	.588	-.100	-.149	.516	1.000				
IE22	.297	.690	-.120	.564	.427	.488	-.027	-.108	.156	.405	.184	.575	.617	.588	1.000			
IE23	.261	.606	.060	.495	.375	.214	.241	-.095	.253	.356	.516	.241	.542	.516	.878	1.000		
IE24	.481	.039	-.082	.807	.425	.436	.033	.484	-.029	-.129	.263	.033	.510	.263	.226	.198	1.000	
AP27	.311	.134	-.279	.733	.810	.198	.356	.439	-.312	.286	.239	.356	.463	.239	.527	.463	.524	1.000

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience
[...]: Correlation is significant at the 0.05 level (2-tailed).   [...]. Correlation is significant at the 0.01 level (2-tailed).

Inter-item correlations .2005 Post_course_Osce2 (Refer to the OSCE Scoresheets in Appendix 2 for the key to the items)

Items dropped during correlation analysis: Bio8; Com 12, 13, 14, 15, 17, 19, 25, 26

	Psy1	Psy2	Soc3	Bio4	Bio5	Bio6	Bio7	Bio9	Com10	Com11	Com16	Com18	Com20	IE21	IE22	IE23	IE24	AP27
Psy1	1.000																	
Psy2	.052	1.000																
Soc3	-.108	-.250	1.000															
Bio4	.332	.394	-.232	1.000														
Bio5	.559	.346	-.391	.594	1.000													
Bio6	.383	.445	-.464	.509	.214	1.000												
Bio7	.043	-.267	.174	-.143	.289	-.494	1.000											
Bio9	-.064	.033	-.257	.367	.356	.122	.329	1.000										
Com10	-.452	.233	.517	-.013	-.484	.108	-.073	-.156	1.000									
Com11	-.170	.690	-.309	.409	.427	.122	-.329	-.108	.024	1.000								
Com16	.346	-.179	.373	.115	.194	-.332	.671	-.184	.130	-.221	1.000							
Com18	.516	.100	-.209	.171	.289	.494	-.222	-.274	-.340	-.027	-.149	1.000						
Com20	.261	.289	.060	.495	.375	.214	.241	-.095	.253	.095	.516	.241	1.000					
IE21	-.289	.805	-.140	.537	.194	.332	-.149	.221	.489	.588	-.100	-.149	.516	1.000				
IE22	.297	.690	-.120	.564	.427	.488	-.027	-.108	.156	.405	.184	.575	.617	.588	1.000			
IE23	.261	.606	.060	.495	.375	.214	.241	-.095	.253	.356	.516	.241	.542	.516	.878	1.000		
IE24	.481	.039	-.082	.807	.425	.436	.033	.484	-.029	-.129	.263	.033	.510	.263	.226	.198	1.000	
AP27	.311	.134	-.279	.733	.810	.198	.356	.439	-.312	.286	.239	.356	.463	.239	.527	.463	.524	1.000

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience
….: Correlation is significant at the 0.05 level (2-tailed).   ... Correlation is significant at the 0.01 level (2-tailed).

Inter-item correlations .2005 Post_course_Osce 3 (Refer to the OSCE Scoresheets in Appendix 3 for the key to the items)

Items dropped during correlation analysis: Bio 7; Com 12, 13, 14, 15 17, 24, 25; AP 29

	Psy1	Psy2	Soc3	Soc4	Soc5	Bio6	Bio8	Bio9	Bio10	Com11	Com16	Com18	Com19	Com20	IE21	IE22	IE23	AP26	AP27	AP28	AP30
Psy1	1.000																				
Psy2	.926	1.000																			
Soc3	.463	.429	1.000																		
Soc4	1.000	.926	.463	1.000																	
Soc5	.316	.293	.293	.316	1.000																
Bio6	.316	.293	-.293	.316	-.200	1.000															
Bio8	-.131	.122	-.122	-.131	-.415	-.415	1.000														
Bio9	.250	.000	-.463	.250	.316	.316	-.525	1.000													
Bio10	-.131	.122	-.122	-.131	.581	.083	-.034	-.131	1.000												
Com11	.500	.463	-.463	.500	-.316	.632	.131	.500	-.263	1.000											
Com16	.500	.463	.926	.500	.632	-.316	-.263	-.250	.131	-.500	1.000										
Com18	.707	.655	.655	.707	.447	.447	-.557	.000	.186	.000	.707	1.000									
Com19	.316	.293	.878	.316	-.200	-.200	.083	-.632	-.415	-.316	.632	.447	1.000								
Com20	.316	.293	.293	.316	1.000	-.200	-.415	.316	.581	-.316	.632	.447	-.200	1.000							
IE21	.866	.802	.535	.866	.000	.000	.227	.000	-.455	.433	.433	.408	.548	.000	1.000						
IE22	.500	.463	.000	.500	.632	.632	-.657	.500	.525	.250	.250	.707	-.316	.632	.000	1.000					
IE23	.463	.429	-.143	.463	.293	.878	-.608	.463	.365	.463	.000	.655	-.293	.293	.000	.926	1.000				
AP26	-.316	-.293	-.293	-.316	-1.000	.200	.415	-.316	-.581	.316	-.632	-.447	.200	-1.000	.000	-.632	-.293	1.000			
AP27	-.316	-.293	-.878	-.316	.200	.200	-.083	.632	.415	.316	-.632	-.447	-1.000	.200	-.548	.316	.293	-.200	1.000		
AP28	.343	.476	.794	.343	.108	.108	-.045	-.686	.225	-.343	.686	.728	.759	.108	.297	.171	.159	-.108	-.759	1.000	
AP30	.500	.463	-.463	.500	-.316	.632	.131	.500	-.263	1.000	-.500	.000	-.316	-.316	.433	.250	.463	.316	.316	-.343	1.000

Psy = Psycho-spiritual; Soc = social; Bio = Biomedical ; Com = Communication; PC = Patient Centred; AP = Advanced planning; IE = Illness Experience

⬜: Correlation is significant at the 0.05 level (2-tailed).   ▨. Correlation is significant at the 0.01 level (2-tailed).

Appendix 10: Palliative Care OSCE Scale (PalCare-OSCEs)

PALLIATIVE OSCE TOOL (POSCET)

Examiner's name: _____

Candidate's number/name: _____

Prior to conducting the OSCE /s, complete the following steps
Step 1: Decide on the minimum performance level for each item (See accompanying instructions)
Step 2: Identify those items that do not apply for this particular OSCE
Step 3: Add, in the open section, items that will be assessed but are not listed
Step 4: Describe the "biomedical problems" being addressed in the OSCE.

Specific instructions
Circle the score that is most appropriate for the candidate's level of performance on each of the following items.
When an item does not apply to the scenario, place a tick in the cell in the column indicating "Not applicable"
mark the NA (not applicable column). When a candidate has performed competently, indicate whether it was
done at a minimum degree or at a level superior to the "minimum" degree of competence.

Criteria	Must do	Optional	Not performed	Performed but not competent	Performed competently		Degree of competence (only if item completed competently)	
			0	**1**	**2**		**a. Minimum level**	**b. Exceeds by moderate degree**
COMMUNICATION								
Appropriate use of silence.			0	1	2		1.	2
Appropriate use of non-verbal communication (e.g. gestures, posture, eye contact, touch).			0	1	2		1	2
Encourages patient to expand on issues.			0	1	2		1.	2
Uses understandable language.			0	1	2		1.	2
Explores patient's preferences regarding information needs*			0	1	2		1	2
Organizes interview (opening, exploration, reflection & summary).			0	1	2		1	2
Displays empathy			0	1	2		1	2
Uses open-ended questioning*			0	1	2		1	2
Attempts to find common ground			0	1	2		1	2
Provides realistic expectations*			0	1	2		1	2
Other (describe)			0	1	2		1	2

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	Sub-Global score	Clear Fail	Borderline	Pass			
BIOMEDICAL PROBLEMS							
Problem 1*							
Obtains adequate history of physical symptom/problem*		0	1	2		1	2
Explores misperceptions related to illness/treatment*		0	1	2		1	2
Suggests appropriate investigations*		0	1	2		1	2
Suggests appropriate management plan*		0	1	2		1	2
Gives explanation regarding problem, consistent with pt's preference. *		0	1	2		1	2
Provides information regarding treatment, consistent with pt's preference.*		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
Problem 2							
Obtains adequate history of physical symptom/problem*		0	1	2		1	2
Suggests appropriate investigations*		0	1	2		1	2
Explores misperceptions related to illness/treatment*		0	1	2		1	2
Suggests appropriate management plan*		0	1	2		1	2
Provides sufficient information for patient regarding problem*		0	1	2		1	2
Provides sufficient information regarding treatment*		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
PSYCHOLOGICAL DOMAIN-							
Explores patient's feelings*		0	1	2		1	2
Explores how patient is coping*		0	1	2		1	2
Screens for depression*		0	1	2		1	2
Screens for anxiety		0	1	2		1	2
Offers appropriate management plan. *		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
ILLNESS EXPERIENCE							
Explores patient's fears*		0	1	2		1	2
Explores what symptoms or		0	1	2		1	2

		Clear Fail	Borderline	Pass			
problems mean to the patient							
Explores overall impact of illness on quality of life		0	1	2		1	2
Explores patient's expectations		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
SPIRITUAL DOMAIN							
Explores role of spirituality /religion in patient's illness experience*		0	1	2		1	2
Explores need to access religious/spiritual resources		0	1	2		1	2
Appropriate advice regarding patient's spiritual/religious needs		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
SOCIAL ISSUES							
Explores social supports		0	1	2		1	2
Explores other social issues (e.g. financial, wills, etc)*		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
ILLNESS EXPERIENCE							
Explores patient's fears*		0	1	2		1	2
Explores what symptoms or problems mean to the patient		0	1	2		1	2
Explores overall impact of illness on quality of life		0	1	2		1	2
Explores patient's expectations		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			
ADVANCED PLANNING							
Explores goals of care*		0	1	2		1	2
Provides appropriate advanced planning given patient's life expectancy and goals of care (including code status discussion, emergency plans, preferred place of death,)*		0	1	2		1	2
Other (describe)		0	1	2		1	2
	Sub-Global score	Clear Fail	Borderline	Pass			

ETHICS							
Explores adequately ethical issue		0	1	2		1	2
Addresses ethical issue appropriately		0	1	2		1	2
		0	1	2		1	2
OTHER ITEMS (Decribe)							
		0	1	2		1	2
		0	1	2		1	2
		0	1	2		1	2
Total							

Global Score	Clear Fail	Borderline	Clear Pass
Overall impression of station	0	1	2

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Appendix 11: Knowledge Quiz inter-item correlations (16 items) 2005 Pre-course

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Q1_Opioids not recommended	1															
Q2_ Discussing prognosis	-.148	1														
Q3_ Cord compression treatment	-.262	.150	1													
Q4_ Depression	-.068	-.121	.026	1												
Q5_ Guardianship	.373	.000	-.126	-.382	1											
Q6_ Initial opioid dose	-.036	.602)	.247	-.113	.239	1										
Q7_Artificial hydration	.191	.109	-.298	-.114	.367	.105	1									
Q8_ Opioid conversion	.084	-.149	-.191	-.027	-.063	-.093	.045	1								
Q9_Dyspnea	-.065	-.415	.197	.439	-.261	-.083	-.240	.261	1							
Q10_Opioid toxicity	.000	-.506	.014	.197	-.075	-.304	-.227	-.162	.508	1						
Q11_Delirium	-.098	.186	.081	.037	.281	.372	.263	-.199	-.049	.011	1					
Q12_Delirium treatment	.233	.028	.394	-.272	.284	.024	.114	-.103	.149	.264	.022	1				
Q13_Nausea treatment	-.064	.370	-.192	-.244	.429	.373	.012	-.187	-.336	.024	-.087	.081	1			
Q14_Feeding	.220	.061	-.117	.118	.051	-.294	.204	.163	.000	-.222	.067	.068	-.239	1		
Q15_Aduvants	-.051	.239	.263	.077	-.344	.251	-.156	.047	.224	.145	-.259	.288	-.002	-.408	1	
Q16_Grief	.041	.271	.036	.103	.000	.307	.068	.008	-.071	-.230	-.111	.055	.331	-.160	.271	1

[....]: Correlation is significant at the 0.05 level (2-tailed).   [...] Correlation is significant at the 0.01 level (2-tailed).

Appendix 12: 2005 Attitudes Survey inter-item correlations

		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
Item 1	A dying patient makes me uneasy	1											
Item 2	I feel helpful when I am involved in the care of terminally ill patients	.470	1										
Item 3	I feel comfortable when patients begin to discuss death	-.406	-.647	1									
Item 4	To avoid unnecessary distress, I will discus …only in the last few weeks	.233	.641	-.777	1								
Item 5	Dying patients require active care	.389	.613	-.691	.599	1							
Item 6	Providing palliative care is personally rewarding	-.088	-.259	.168	-.198	-.096	1						
Item 7	Providing palliative care is emotionally draining	-.287	.242	.059	.095	.178	.000	1					
Item 8	I have a role in addressing a terminally ill patient's spiritual distress	.029	.270	-.371	.674	.121	-.245	-.035	1				
Item 9	Providing spiritual care should be taught in medical curricula	-.150	-.340	.208	-.407	-.251	.154	-.029	-.416	1			
Item 10	Emotions provoked in me by a dying patient influences my clinical decisions	.144	-.159	-.321	.377	.117	-.163	-.351	.501	-.126	1		
Item 11	Narrative offers a method to address suffering	-.155	-.423	-.071	-.160	-.265	.195	-.358	-.052	.240	.596	1	
Item 12	Hope can be instilled in a realistic way	-.513	-.393	.340	-.435	-.584	.264	-.080	-.327	.095	-.251	.244	1

[....]: Correlation is significant at the 0.05 level (2-tailed).   [...]. Correlation is significant at the 0.01 level (2-tailed).

Appendix 13: Self-perceived comfort level inter-item correlations 2005

Part A

Items		1	2	3	4	5	6	7	8	9	10	11
1	Caring for terminally ill person in general	1										
2	Communicating with a terminally ill person	.746	1									
3	Determining when a patient is palliative	.311	.352	1								
4	Managing cachexia	.191	.145	.562	1							
5	Using the WHO ladder	.036	-.254	.174	.331	1						
6	Managing cancer pain	.520	.371	.230	.591	.309	1					
7	Selecting between opioids	.536	.245	.118	.474	.480	.849	1				
8	Switching between opioids	.383	.176	.281	.358	.624	.660	.827	1			
9	Managing opioid toxicity	.441	.427	.503	.480	.306	.645	.662	.704	1		
10	Managing cancer bone pain	.479	.277	.448	.380	.592	.541	.677	.741	.609	1	.
11	Managing neuropathic pain	.336	.198	.523	.586	.366	.578	.629	.766	.704	.687	1

Part B

Items		12	13	14	15	16	17	18	19	20	21	22
12	Role of radiation therapy	1										
13	Breaking bad news	-.271	1									
13	Discussing code status	-.162	.063	1								
15	Responding to a request for alternative treatment	-.271	.545	.189	1							
16	Managing delirium	.342	.000	-.170	-.246	1						
17	Managing shortness of breath	.356	.027	-.315	.241	.507	1					
18	Instilling hope	-.023	.752	.236	.570	.062	.047	1				
19	Responding to "How long to live?"	.202	.447	.141	.366	.330	.443	.296	1			
20	Managing chronic nausea	.632	.182	-.314	-.091	.246	.401	.068	.447	1		
21	Diagnosing depression in terminally ill patients	.299	.503	-.070	.201	.272	-.030	.680	.045	.402	1	
22	Caring for bereaved family	.126	.364	-.314	.091	.000	.080	.433	-.203	.455	.704	1

[....]: Correlation is significant at the 0.05 level (2-tailed).   [...]. Correlation is significant at the 0.01 level (2-tailed).

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