



Palliative Care-Related Knowledge, Attitudes, and Practices Among Physicians in Vietnam

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

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Scholarly Report Title: Palliative Care-Related Knowledge, Attitudes, and Practices among Physicians in Vietnam

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Abstract

TITLE: Palliative Care-Related Knowledge, Attitudes, and Practices among Physicians in Vietnam

Purpose: Palliative care education is rare in low- and middle-income countries. In Vietnam, a Rapid Situation Analysis in 2006 showed a high prevalence of pain and other types of suffering among HIV/AIDS and cancer patients, limited access to pain medications, and a lack of training for physicians in pain control and palliative care. This study measured the Knowledge, Attitudes, and Practices (KAP) of Vietnamese physicians at palliative care training courses between 2007 and 2014 to inform and evaluate training efforts.

Methods: In collaboration with the Ministry of Health and Vietnamese hospitals, we developed basic and advanced Continuing Medical Education (CME) curricula in palliative care. We also designed an accompanying KAP survey that asks participants about demographics (including clinical area and experience prescribing opioids), self-assessment, attitudes, and a knowledge test. The basic curriculum was taught at 18 five-day training courses at hospitals and medical schools throughout Vietnam. Participants filled out the survey at the beginning and end of each conference, and data from a total of 392 physicians was analyzed. Descriptive statistics were conducted to summarize data, and relationships between KAP scores and demographic variables were analyzed.

Results: Physicians had a mean score of 44/100% on the knowledge test, revealing knowledge gaps particularly in the management of non-pain physical symptoms and of psychological symptoms such as depressed mood and delirium. 85% of physicians agreed that most cancer patients die in pain, and over 70 percent agreed that morphine unavailability and cost contribute to the under-treatment of pain, with a higher proportion of physicians working in HIV/AIDS care reporting these concerns than in oncology. Participants felt that they lacked adequate training in palliative care and pain treatment topics. Prior experience prescribing opioids, in particular oral morphine, was significantly associated with higher levels of knowledge, more appropriate attitudes toward palliative care topics, and higher self-rated understanding.

Conclusions: Our results indicate that Vietnamese physicians recognize the need for palliative care, identifying a high burden of untreated pain, and that concerns about cost and availability of morphine may be more prevalent among HIV/AIDS providers. Increasing access to opioids is necessary along with expanded education, and these efforts are likely to be mutually reinforcing.

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Glossary of abbreviations

KAP = Knowledge, attitudes, and practices

LMIC = Low- and middle-income countries

RSA = Rapid situation analysis

MOH = Ministry of Health

HCMC = Ho Chi Minh City

WHO = World Health Organization

APCA = African Palliative Care Association

IAHPC = International Association of Hospice and Palliative Care

INCTR = International Network for Cancer Treatment and Research

APHN = Asian Pacific Hospice and Palliative Care Network

EPEC = Education for Physicians in End-of-Life Care

ELNEC = End-of-Life Nursing Education Consortium

Section 1: Introduction

The objective of this study was to measure Knowledge, Attitudes, and Practices (KAP) in palliative care of Vietnamese physicians and to evaluate the impact of basic training in palliative care. Palliative care education in low- and middle-income countries (LMICs) is still uncommon, and evaluation of the effectiveness of palliative care training is virtually non-existent. To our knowledge, the only evaluations of palliative care education initiatives in LMICs measure only self-reports of improved knowledge or the numbers of trainees.(1–4) We sought to survey baseline KAP from a broad sample of Vietnamese physicians as a means to more objectively measure the impact of trainings.

Background

In 2014, there were 56 million deaths in LMICs including over 8 million from malignant neoplasms, over 1.5 million from HIV/AIDS, over 17 million from cardiovascular diseases, and over 3 million from chronic obstructive pulmonary disease (COPD).(5) These and other serious chronic, complex, or life-limiting health problems generate multiple kinds of suffering: pain and other physical distress; psychological distress; social distress; and spiritual distress. Existing data, mostly from high income countries, indicate that well over 50% of patients who die of malignant neoplasms and AIDS experience pain and that pain also is common among those who die of heart disease, COPD, renal failure, neurologic disease and dementia.(6,7) Dyspnea is especially common among people who die of COPD and heart failure and only slightly less so among those who die of malignant neoplasms and AIDS.(6) Depressed mood and anxiety also are quite common among patients with a variety of advanced life threatening illnesses. Data on prevalence of social and spiritual distress among these patients is scant. A US study found that 44% of advanced cancer patients experienced spiritual pain. In an impoverished rural district in Malawi, 76% of patients receiving palliative care needed social supports, while roughly 50% of German patients receiving palliative care needed them.(8,9)

Palliative care – the prevention and relief of pain and suffering of any kind – is considered a human right.(10,11) In 2014, the World Health Assembly (WHA), the governing body of the World Health Organization (WHO), resolved that “palliative care is an ethical responsibility of health systems” and that it is an “ethical duty of health care professionals to alleviate pain and suffering.”(12) Yet while palliative care is readily available in most high-income countries, it is rarely accessible in low- and middle-income countries (LMICs). Over 5.5 billion people – around 80% of the world’s population – lack sufficient access to treatment for moderate or severe pain.(13,14) In particular, an enormous disparity exists between high-income countries and low-to-middle countries in consumption of opioids for medical purposes, primarily pain relief. In LMICs, strong opioids such as morphine are rarely available to treat pain, and healthcare providers rarely are trained to use them. In 2011, high-income countries where 17%

of the world’s population lives consumed 94% of the world’s opioids (**Table 1**). In general, the rich have access to opioid pain medicines while the poor do not and suffer unnecessarily and unspeakably as a result.

Table 1: The global pain divide.

	Percentage of World’s Population (2011)*	Percentage of Global Opioid Consumption in Morphine Equivalence (2011)**
High Income Countries	17%	94%
Low and Middle Income Countries	83%	6%

* Data from World Bank.(15)

** Data from the International Narcotics Control Board (INCB) Report for 2011.(16)

Most LMICs have policies that severely restrict opioid prescribing.(16) These overly restrictive laws and regulations both stem from and propagate misconceptions and misguided fears about opioids – so-called *opiophobia*. Because of opiophobia, a vicious circle exists particularly in LMICs of low rates of morphine prescribing, leading to low estimates of morphine requirement submitted by governments to the INCB, leading to correspondingly small amounts of morphine approved by the INCB for import or production by these countries, leading to low morphine availability that – in combination with opiophobia – keeps the rate of morphine prescribing low.(17)

A major reason for the lack of access to pain relief and palliative care in LMICs, and for the persistence of opiophobia, is lack of palliative care training programs. Training in pain control or palliative care is rare in undergraduate and postgraduate medical and nursing curricula in LMICs, and few continuing education courses in palliative care are available. Among the few such training programs in existence, almost none routinely assess their effectiveness or quality. Some report on process measures such as the number of participants or on the participants’ subjective evaluation of the training. But we know of no published assessments of changes in palliative care-related knowledge, attitudes or practices among participants in palliative care training programs in LMICs. Such measures of educational quality are much needed.

Global Palliative Care Education Initiatives

In 2013 the Prague Charter called on governments to adapt palliative care curricula for all healthcare workers. It recognized that palliative care education should occur at different levels, as in high-income countries. All physicians should have basic skills in primary palliative care. Oncologists and other physicians who more frequently take care of patients with serious illnesses require an intermediate level of training. Lastly, specialty palliative care requires an advanced level of education.(18) Thus far,

palliative care education in LMICs has grown primarily through regional initiatives, international partnerships, and distance learning efforts.

First, *regional associations* play an important role in coordinating education efforts. Two examples are the African Palliative Care Association (APCA) and the Asia Pacific Hospice Palliative Care Network (APHN). The APCA has a core curriculum and competencies, provides research training, and supports scholarships for people to study palliative care abroad.(19) The APHN is based on Singapore. Members travel to different countries teaching courses and helping connect palliative care or hospice providers within a given area.(20)

Second, *international partnerships* have contributed to many of these training efforts. Examples include the University of Capetown post-graduate training program with the University of Wales(21); Asian Pacific Network Graduate Certificate course with Flinders University in Australia;(22) and the International Visiting Scholars Program at the San Diego Hospice & Institute of Palliative Medicine the U.S., which has trained international medical graduates in a 4-week course.(23) While there are anecdotal reports of these partnerships producing policy changes and services, there are no rigorous studies.

Third, educators are experimenting with *strategies for distance learning that use a mixture of online modules, in-person sessions, and clinical placements*. Hands-on opportunities are often not locally available. Some programs like the Asia Pacific Network offer a clinical placement with some supervision.(22) Another model that has been adopted by the University of Cape Town is a 6-month “Introduction to Palliative Care” distance learning course, targeted toward interdisciplinary teams (e.g. a doctor, nurse, and counselor) that organize their own weekly group activities at the workplace.(21)

The following sections will highlight some key examples from the literature in Africa and Asia:

Africa:

Africa is a region with significant development in palliative care services in LMICs. Four countries have integration of palliative care into national health policies—Uganda, South Africa, Kenya, and Tanzania. Five countries have integrated palliative care into health curricula, and of these Uganda and South Africa recognize palliative care as a testable field.(19)

Uganda

Uganda is the only African country with advanced integration of palliative care.(24) It was the first African country to make palliative care part of its national health plan and has provided morphine for free since 2002.(25) One notable example is a 9-month Clinical Palliative care course, which provides students with clinical time and training to prescribe morphine. This is the only course in Africa that

allows non-physicians to prescribe oral morphine and enrolls Nurse Practitioners, based on a statute allowing midwives to prescribe pethidine.(25) In order to further evaluate the results of these trainings, the hospice team makes some follow-up visits to participants' employers to ensure they are approved to use these medications afterwards. This illustrates how models for prescribing regulation (e.g. removing limits on dose and duration) and distribution work best hand-in-hand with education efforts.(26) Uganda has a diverse variety of other trainings, from short courses for community health workers to an 18-month distance learning diploma with Makerere University that enrolls students across Africa.

South Africa

In 2000, the University of Cape Town partnered with the University of Wales College of Medicine to create a post-graduate palliative medicine program for doctors. Originally designed in Wales as a distance-learning degree, it was adapted to the cultural context of South Africa with the addition of modules for HIV/AIDS as well. The program is designed to take 2 to 3 years and involves a set of online modules, a forum for students to share clinical problems, a personal portfolio of cases, a written exam, and simulated consults, along with three in-person sessions in Cape Town.

This is one of the few training programs with a published evaluation: in 2007 the organizers conducted two multiple-choice surveys, one for current students and one for graduates, asking about self-rated competency in 5 areas: Palliative Care Activities, Pain, Assessment, Changes in management protocols, and General palliative care concepts. A total of 83 people participated (out of 134 people who had enrolled in the course up to 2007). They found that the graduates rated their competency higher in every area except in General concepts, which included cultural issues of death and dying, local palliative care resources, and policy debates around palliative care.(21) Differences in scores among current students also corresponded to their length of time in the program, suggesting that there was greater confidence over time. Limitations of this data include the fact that it is difficult to assess the implications of these different scores. As with much of the research in this field, the data measured self-rated competency only.

Asia:

In Asia, the Lien Collaborative for Palliative Care is a regional organization based in Singapore that is active in Bangladesh, Sri Lanka and Myanmar. Palliative care experts from throughout the region travel to educate others in a "train-the-trainers" model, and emerging leaders can be sponsored to spend 3 months at more established programs.(26)

In India, Kerala is the only state that has a government policy supporting palliative care through the public health system.(27) The Institute of Palliative Medicine in Kerala organizes a one-year distance education fellowship. No published evaluations of training programs were found, but other education

efforts in the country include: a post-graduate degree course; three one-year fellowship programs; 8-week certificate course by the Indian Association of Palliative Care which can also place trainees at a clinical site; and 4-6 week programs for both doctors and nurses at various WHO, palliative care, and oncology centers.(27)

International curricula: EPEC and ELNEC

Two international palliative care training efforts grew from efforts in the U.S. The Education for Physicians in End-of-Life Care (EPEC) Project developed in the late 1990s as a written curriculum and videos for a “train-the-trainers” model. As of 2015, it had reached over 74,000 end-users. Evaluations of EPEC have focused on trainers’ self-rated increase in knowledge and ability to teach about end-of-life care, the number of modules shared, and its use in CME and other courses.(2) Unfortunately, there have been few efforts to study the impact on physicians’ knowledge, attitudes, or outcomes. An exception was a study looking at the use of the EPEC-Oncology curriculum with international medical graduates who participated in a 4-week course in the U.S. The study found decreased concerns about end-of-life care, and increased knowledge and self-perceived competence, with post-course results similar to American trainees.(23) However, the course also involved 3 weeks of bedside teaching in various palliative care settings, which may have had a greater influence than the curriculum alone. International efforts have included the adaptation of the core curriculum to the specific needs and practices of India; trainings in Korea, Saudi Arabia, Guatemala, and Eastern Europe; and distance-learning projects.(3)

The End-of-Life Nursing Education Consortium (ELNEC) Project is another curriculum that uses a train-the-trainers model, tailored to the role of the nurse. In 2005 ELNEC started developing an international curriculum which is supposed to be more culturally adaptive and takes into account the limited access to opioids globally.(4) It has been used in 85 countries and translated into 8 languages, but like EPEC, its impact on attitude changes or outcomes is not well-studied even in the U.S. An American study in 2006 aimed to address this by comparing death anxiety, attitudes, and self-assessed knowledge between an intervention and control group at 3 time points: immediately after the training, at 6 months, and at 12 months.(28) It found no statistically significant effect from ELNEC over time, but was limited by small sample size.

Palliative care in Vietnam

Vietnam, like many other developing countries, has a huge burden of unnecessary pain and suffering among people with cancer and other serious chronic illnesses and their families.(29) Most Vietnamese lack access to palliative care. In response, Vietnam’s Ministry of Health (MoH) launched in 2005 a palliative care initiative with support from the US President’s Emergency Plan for AIDS Relief

(PEPFAR) and technical assistance primarily from Dr. Eric Krakauer of Harvard Medical School. First, the MoH organized a national Palliative Care Working Group. The Group's strategy was based on the World Health Organization's public health approach to developing palliative care.(30) This approach entails a rapid situation analysis to determine palliative care needs followed by attention to the "four pillars" of national palliative care programs: 1) policy; 2) essential drug availability; 3) education; and 4) implementation. The rapid situation analysis in 2005 revealed that severe pain was very common among AIDS and cancer patients in Vietnam, but also that availability of opioid analgesics and palliative care services were severely limited and that clinicians lacked palliative care training. (34,35)

Based on the concerning results from the rapid situation analysis, and again with technical assistance principally from Dr. Krakauer, the MoH issued national palliative care guidelines in 2006.(31) Dr. Krakauer and colleagues from the Pain & Policy Studies Group of the University of Wisconsin also assisted the MoH to revise its opioid prescribing regulations to bring them more into line with international standards.(17) Working with the MoH, the National Institute of Infectious and Tropical Disease, and the National Cancer Hospital, Dr. Krakauer and colleagues from Harvard Medical School then developed three curricula in palliative care: a basic course (Palliative Care Module 1); an advanced and refresher course (Palliative Care Module 2); and a Fellowship and Certification Program in Palliative Medicine. These remain the only palliative care curricula approved by the MoH.

The only similar study of palliative care-related KAP in Vietnam was a cross-sectional survey among 251 nurses working in oncology hospitals in Hanoi that assessed their knowledge, attitudes toward care of the dying, and self-competence.(32) The authors found that nurses had gaps in knowledge of symptom and pain management and some discomfort toward talking with patients about death. Nurses with more education, more time spent with the dying, fewer years of working, and less time in oncology hospitals had more positive attitudes towards the dying. Furthermore, higher knowledge scores were correlated with higher perceived self-competence and more positive attitudes. This study serves as a basis of comparison for physicians in our trainings.

Section 2: Student role

My role in this project was to begin the analysis on the collected surveys. The goal is both to learn about the knowledge gaps of Vietnamese physicians as well as to think about ways to improve the training. I also created a website (www.globalpallcare.com) to provide the training materials online and for people to access the survey electronically and automate our data collection and entry.

Section 3: Methods

Curriculum and survey design

To assess the effectiveness of our basic course in palliative medicine for Vietnamese physicians, and as a means of quality improvement, we routinely assessed the palliative care-related knowledge, attitudes, and practices (KAP) of our physician trainees from 2007 to 2014. (Please see appendix for a copy of the survey. The post-conference survey was identical except without the Demographics section.)

We began in 2006 by reviewing all available palliative care curricula for physicians (EPEC, ELNEC, INCTR manual, IAPHC manual). We found none that were designed for use in LMICs or were easily adaptable for use in LMICs. All assumed the availability of medicines, diagnostic testing, and staffing that are virtually never found in LMICs. Thus, we created a new curriculum intended for resource-limited settings and reviewed existing curricula only to help assure that we did not leave out any important topics. The topic categories included in the curriculum are shown in **Table 2**.

Table 2. Topics chosen for inclusion in a basic curriculum in palliative care for physicians in LMICs.

Topic Categories			
Demographics	Knowledge	Attitudes	Practices
<ul style="list-style-type: none"> • Basic • Educational • Clinical 	<ul style="list-style-type: none"> • Palliative care principles • Palliative care assessment • Information sharing • Pain treatment • Non-pain symptom treatment • Opioids • Treatment of psychological, social, and spiritual distress • HIV/AIDS • Cancer 	<ul style="list-style-type: none"> • Palliative care principles • Ethics and information sharing • Pain treatment • Non-pain symptom treatment • Opioids • Treatment of psychological, social, and spiritual distress • Caregivers and bereavement • Palliative care for injection drug users • HIV/AIDS • Cancer 	<ul style="list-style-type: none"> • Assessment of palliative care practice environment • Clinical practice <ul style="list-style-type: none"> ○ Number of times opioid prescribed • Educational practice <ul style="list-style-type: none"> ○ Number of physicians taught formally about palliative care ○ Number of other health professionals taught formally about palliative care

Based on the literature in adult education, we included various types of interactive teaching sessions including lectures with question/answer periods, small group case discussions, small group role play, and bedside teaching. With the exception of a lecture on the epidemiology of life threatening illness in

Vietnam written by a Vietnamese colleague, all lectures were written in English and translated into Vietnamese by bilingual Vietnamese physicians. The lecture materials consisted of a powerpoint presentation and accompanying outlines with greater detail written in the format of a clinical manual. Upon completion, the curriculum was reviewed and approved for use by the MoH.

Except for the epidemiology lecture, all teaching was done initially in English with sequential – not simultaneous – translation by the same bilingual Vietnamese physicians who translated the written materials. We chose this method because of our experience that non-physician interpreters, even so-called medical interpreters, often are unable to translate medical terms correctly and that simultaneous translation often loses or makes mistakes in details. We found the sequential translation by bilingual physicians already familiar with the curriculum maximized correct translation. Over time, we mentored our Vietnamese trainees to assume an increasing share of the teaching.

We also designed a survey to assess the palliative care-related knowledge, attitudes, practices, and self-assessment of our physician trainees immediately before the 30-hour course began, at its conclusion, and 6 – 18 months later to assess the durability of any improvements (see appendix for full survey). In the initial survey, we included demographic questions including age, sex, year of medical school graduation, and area of clinical training and work to enable us to look for associations with knowledge, attitudes, and self-assessment. Experience prescribing opioids of various forms and for different indications was our main measure of practice; in this baseline analysis it was treated as a demographic variable. The topics of the questions mirror those in **Table 2**. Knowledge questions were either multiple choice with one best answer or true/false. The attitudes section consisted of statements to which participants chose one of four possible responses: strongly agree, slightly agree, slightly disagree, or strongly disagree. Attitudes questions fell into two types: those with a medically appropriate answer (e.g. “Morphine is a medically appropriate medication to treat moderate-to-severe pain”) and those that represented a physician’s personal beliefs or worries (e.g. “I am worried about prescribing morphine because my supervisors might not approve”). The self-assessment part asked participants to rank their understanding of various topics or skills as: a little, average, a lot.

Data collection

Since March 2007, we have held several courses each year in basic palliative care in collaboration with colleagues, hospitals, and medical schools around the country. The faculty members have varied by time and location. The faculty for the initial courses in 2007 consisted almost entirely of US palliative care specialists. Beginning in 2008, it usually consisted of one or two US specialists with one or more Vietnamese colleagues who had participated in our advanced training programs. Physician trainees varied from staff members of one hospital to representatives of myriad provincial and district hospitals in a large

region. Most training were held at major cancer centers or tropical medicine/infectious disease hospitals in major cities. At most of the courses, data was collected using hardcopies of the survey and entered later into an Excel database. Data from a few courses held at a medical school were entered electronically by the participants in a computer laboratory using an electronic version of the survey. The follow-up survey was designed to re-test previous participants in the basic course who participated in an advanced course six to 18 months later. The study was deemed exempt from human subjects approval by the institutional review board at Harvard Medical School (CHS Study Number M10008-113) and approved by the Ministry of Health of Vietnam.

Data analysis

From an initial sample of 508 baseline surveys, the final dataset was narrowed to 392 surveys from physicians only (**Figure 1**).

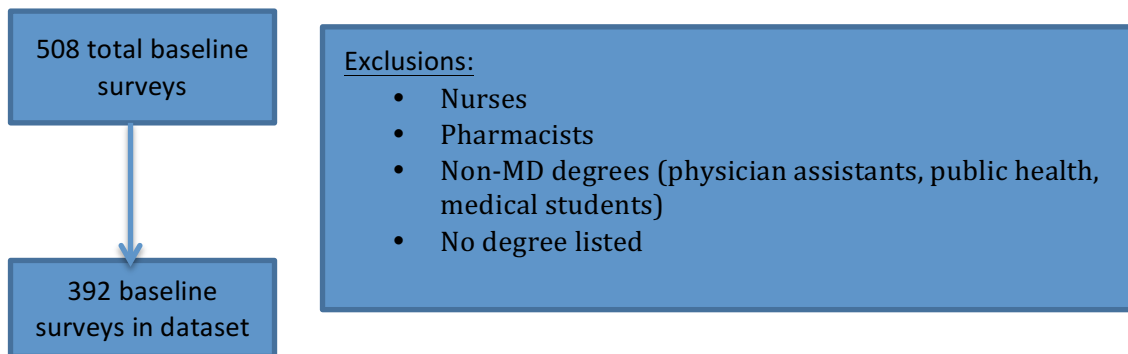


Figure 1: Participants included in dataset

Demographic variables were dichotomized. Physician trainees were divided based on whether they had post-graduate medical training, which in Vietnam is either a clinical fellowship or an advanced degree (Master's or Ph.D). For year of graduation from medical school, we looked at participants who graduated in 2006 or later, since this is when the Rapid Situation Analysis was released and national palliative care policy work began. For patient care volume, we set a cut-off of 20 patients in the last 3 months as a marker of clinical volume: this was twice as high as the median number of patients in the highest category, which was cancer. For opioid prescriptions in the past year, we created binary variables based on form of administration and indication: 1) any opioid (oral or IV morphine, pethidine, or fentanyl); 2) oral morphine for either pain or dyspnea; 3) IV or oral morphine for pain; and 4) IV or oral morphine for dyspnea. Proportions and percentages were calculated for each of the demographic variables.

For outcomes, we analyzed three overall categories: knowledge, attitudes, and self-assessment. We further divided these into subcategories based on topic (**Table 3**). Scores were considered missing if the participant answered less than 50% of the questions in that sub-category. If they answered more than

50%, the score was calculated as follows: for self-assessment questions, the lowest self-assessment score was assigned to missing values; for attitudes, the missing values were imputed with the average score across completed items; and for knowledge, a score was zero was assigned to missing values. Bivariate analysis was conducted to explore associations between the demographic characteristics and scores using linear regressions. For knowledge and self-assessment, we analyzed the relationship of demographic characteristics with total score. For attitudes, we separately analyzed demographic characteristics with 3 groups of attitudes: those with a medically appropriate answer (which combined subcategories about physical symptoms and psychosocial distress), concerns about morphine access, and concerns about morphine prescribing. Results were considered significant if $p < 0.0014$ based on the Bonferroni correction for multiple comparisons.

Table 3: Survey categories and corresponding questions

Outcome	Number of questions	Corresponding survey section and questions (refer to appendix)
Knowledge	31	
Pain, other physical symptoms, and opioids	21	Knowledge: Questions 1 to 9, 16, 17, 18, 21, 22, 24, 26 to 31
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	10	Knowledge: Questions 10 to 15, 19, 20, 23, 25
Attitudes	20	
Pain, other physical symptoms, and opioids	7	Attitudes: Question 4, 8, 10, 24, 25, 26, 27
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	8	Attitudes: Question 1,6,13,14,16,17,19,23
Concerns about morphine access	2	Attitudes: Question 20, 21
Concerns about prescribing morphine	3	Attitudes: Question 11, 12, 22
Self-assessment	13	
Pain, other physical symptoms and opioids	5	Education and Experience in Palliative Care: Question 1b, c, d, k & Attitudes: Question 5
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	5	Education and Experience in Palliative Care: Question 1e, f, g, l & Attitudes: Question 9
Practice of palliative care	3	Education and Experience in Palliative Care: Question 1a, h, j

Section 4: Results

Demographics:

A total of 392 responses were analyzed, representing 77% of total baseline surveys (**Table 4**). The mean age of participants was 35.4 (SD 8.4, range from 22 to 58). The group had more men than women (59% vs 41%). Over one-third had a post-graduate degree, either a clinical fellowship or a Master's or PhD. About one-third graduated after 2006, when the Rapid Situation Analysis was published. 36% worked in clinical cancer care, 31% in general medicine, and 15% in HIV/AIDS care. The majority worked at a national, regional, or provincial hospital, with a minority (10%) in HIV/AIDS clinics. 23% reported providing palliative care to 20 or more patients with HIV/AIDS or cancer in the past 3 months. Most participants had not received any formal lectures in palliative care in medical school and only 8% considered themselves adequately trained in palliative care.

Opioid Prescriptions

77% of physicians had prescribed any opioid in the past year, and of this group, 90% had at least one experience prescribing morphine for pain. We were especially interested in rates of prescribing oral morphine and morphine for dyspnea, as oral morphine is less accessible and dyspnea is a less familiar indication in Vietnam. There was a high non-response rate for these two questions: 24% and 27% respectively. Of those who responded, 52% reported prescribing oral morphine in the past year and 32% reported prescribing IV or oral morphine for dyspnea.

Table 4: Demographics of Physicians Who Participated in Training (N = 392)

Characteristic	Frequency (%)	% Missing
Age		3.7
20-30	138 (36.5)	
31-40	133 (35.2)	
41-50	85 (22.5)	
>50	22 (5.8)	
Sex		8.9
Male	211 (59.1)	
Female	146 (40.9)	
Degrees		2.0
Medical school only	243 (63.3)	
Post-graduate	141 (36.7)	
Year graduated from medical school		3.1
Before 2006	244 (64.2)	
2006 and later	136 (35.8)	
Area of Clinical training: (could select multiple)		8.9
General adult medicine		
Pediatrics	137 (38.4)	

HIV/AIDS or infectious or tropical diseases	41 (11.5)	
Cancer	85 (23.8)	
Other	143 (40.1)	
	98 (27.5)	
Type of work: (could select multiple)		2.0
Clinical general adult medicine	119 (31.0)	
Clinical pediatrics	24 (6.3)	
Clinical HIV/AIDS care and treatment	59 (15.4)	
Clinical cancer care and treatment	139 (36.2)	
Clinical palliative care	14 (3.7)	
Clinical pain management	13 (3.4)	
Research	10 (2.6)	
Teaching in a medical school	20 (5.2)	
Other	63 (16.4)	
Primary institution: (could select multiple)		1.5
National or regional hospital	114 (29.5)	
Provincial hospital	198 (51.3)	
District hospital	17 (4.4)	
HIV/AIDS outpatient clinic	37 (9.6)	
Private clinic or practice	11 (2.9)	
Medical school	16 (4.2)	
Treated ≥20 patients for AIDS in the past three months	57 (18.0)	19.1
Treated ≥20 patients for cancer in the past three months	133 (39.2)	13.5
Provided ≥20 HIV/AIDS or cancer patients with palliative care in the past three months	76 (23.0)	15.6
Number of lectures you heard on general palliative care in medical school		18.9
None	221 (69.5)	
0-5	93 (29.2)	
>5	4 (1.3)	
Number of lectures you heard on general palliative care since graduating from medical school		8.2
None	126 (35.0)	
0-5	192 (53.3)	
>5	42 (11.7)	
Number of lectures you heard on treatment of pain in medical school		18.4
None	156 (48.8)	
0-5	144 (45.0)	
>5	20 (6.3)	
Number of lectures you heard on treatment of pain since graduating from medical school		8.2
None	101 (28.1)	
0-5	216 (60.0)	
>5	43 (11.9)	
Do you have adequate training in palliative care?		5.4
No	340 (91.6)	

Yes	31 (8.4)	
Do you have adequate training in treatment of pain?		6.4
No	326 (88.8)	
Yes	41 (11.2)	
Prescribed any opioids in the past year	253 (76.7)	15.8
Prescribed oral morphine for either pain or dyspnea in the past year	155 (52.0)	24.0
Prescribed IV or oral morphine for pain in the past year	227 (69.9)	17.1
Prescribed IV or oral morphine for dyspnea in the past year	91 (31.9)	27.3

Knowledge:

The mean total knowledge score was 13.7 out of 31, or 44% (**Table 5**). Physicians scored similarly on the knowledge sub-categories of 1) pain, other physical symptoms, and opioids, and 2) psychological, social, and spiritual distress, ethics, communication, and palliative care principles. Specific deficits included management of non-pain symptoms, including constipation, nausea, and secretions. For example, only 11% properly identified a stimulant laxative and 27% knew that patients do not develop tolerance opioid-related constipation (**Supplementary Table 1**).

Factors that were significantly associated with higher and lower knowledge scores are listed in **Table 6**. Physicians who were younger and more recent graduates performed better, as well as those who trained or worked in cancer care and who had experience prescribing oral morphine. Those who worked in HIV/AIDS were less knowledgeable when assessed with our instrument.

Table 5: Mean Knowledge, Attitudes, and Self-assessment Scores

Test area	Maximum possible score	Actual score range	Mean \pm SD	% Missing
Knowledge total score	31	4-25	13.7 \pm 3.6 (44%)	7.4
Pain, other physical symptoms, and opioids	21	0-18	8.8 \pm 3.0 (42%)	2.6
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	10	0-9	4.5 \pm 1.7 (45%)	3.8
Attitudes				4.3
Pain, other physical symptoms, and opioids	28	9-28	21.0 \pm 3.2	4.1
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	32	16-32	24.3 \pm 2.8	3.1
Concerns about morphine access	8	2-8	6.0 \pm 1.8	2.8
Concerns about prescribing morphine	12	3-12	8.1 \pm 2.6	3.8
Self-assessment total score	41	13-38	21.2 \pm 5.0	6.4
Pain, other physical symptoms and opioids	16	5-16	8.0 \pm 2.2	
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	16	5-16	9.1 \pm 2.5	
Practice of palliative care	9	3-9	0.1 \pm 1.3	

*Please refer to Table 3, supplementary tables, and appendix to see questions in sub-category and the results by question

Table 6: Demographic factors associated with knowledge score

Higher knowledge score	
Variable	P value
Younger age	<0.0001
Graduation from medical school after 2006	0.0003
Cancer training	<0.0009
Doing clinical cancer care and treatment	<0.0001
>20 patients treated for cancer in the past three months	0.0001
Prescribed oral morphine for pain or dyspnea in past year	0.0010
Lower knowledge score	
Variable	P value
HIV/AIDS or infectious or tropical diseases training	0.0009
Doing clinical general adult medicine	0.0008
Doing clinical HIV/AIDS care and treatment	0.0005
Work for HIV/AIDS outpatient clinic	0.0013
>20 patients treated for AIDS in the past three months	0.0004

Attitudes:

As discussed in Methods, attitude questions with medically appropriate answers were analyzed separately from those that asked physicians' personal beliefs or worries. On questions with medically appropriate answers, physicians scored similarly in the subcategories of 1) pain, other physical symptoms, and opioids (mean score 21.0 out of 28), and 2) psychological, social, and spiritual distress, ethics, communication, and palliative care principles (mean score 24.3 out of 32) (**Table 5**). These indicated that many physicians had appropriate attitudes. In the physical symptom and treatment domain, physicians tended to think morphine was more appropriate for treatment of pain than dyspnea, with 93% agreeing that it is indicated for moderate-to-severe pain but only 81% agreeing that it is effective for dyspnea (**Supplementary Table 2a**). Most physicians were concerned about the risk of dependence, with 77% reporting that patients using morphine for symptom relief could easily become dependent. In the psychosocial domain, many physicians thought that persistent symptoms of depression were normal in dying patients and that prolonged grief beyond 6-12 months was normal for family members (**Supplementary Table 2b**). Of note, 54% thought that it was not possible to successfully treat delirium with medications. When looking at demographic factors associated with appropriate attitude score, younger age and working in cancer care were associated with a higher score ($p < 0.0001$), while working at the district level were associated with a lower score ($p = 0.0004$) (**Table 7a**).

For questions about personal beliefs, we separated them into concerns about patients' access to morphine and concerns about prescribing morphine. 73% of respondents felt that patients died painful deaths because they could not afford to pay for medications like morphine and 77% that morphine is not readily available (**Supplementary Table 2c**). Physicians who worked at an HIV clinic or had seen more patients

with AIDS were more likely to be concerned about these issues (**Table 7b**), relative to those who worked in oncology. Experience prescribing an opioid in the past year and specifically morphine for pain was associated with less concern about availability and cost. Similar patterns were observed with concerns about prescribing morphine (**Table 7b**). In terms of specialty, HIV doctors were more worried about prescribing morphine due to lack of acceptance and supervisor approval (**Table 7c**): 81% of HIV doctors were worried about prescribing morphine for pain because of supervisor disapproval, whereas only 37% of oncologists were specifically concerned about this. Prior experience prescribing opioids was associated with a significantly lower level of concern around prescribing morphine related to lack of acceptance or approval from supervisors (**Table 7c**).

Table 7: Demographic factors associated with attitude scores

a. Demographics associated with appropriate palliative care attitudes

More appropriate attitudes	
Variable	P value
Doing clinical cancer care and treatment	<0.0001
Less appropriate attitudes	
Variable	P value
Older age	<0.0001
Work for district hospital	0.0004

b. Demographics associated with concern about access to morphine

Greater concern about access to morphine	
Variable	P value
Work for HIV/AIDS outpatient clinic	0.0002
>20 patients treated for AIDS in the past three months	0.0016
Less concern about access to morphine	
Variable	P value
Cancer training	0.0002
Doing clinical cancer care and treatment	<0.0001
>20 patients treated for cancer in the past three months	<0.0001
Prescribed any opioid in past year	0.0001
Prescribed IV or oral morphine for pain in past year	<0.0001

c. Demographics associated with concern about prescribing morphine

Greater concern about prescribing morphine	
Variable	P value
HIV/AIDS or infectious or tropical diseases training	<0.0001
Doing clinical general adult medicine	0.0012
Doing clinical HIV/AIDS care and treatment	<0.0001
Work for HIV/AIDS outpatient clinic	<0.0001
>20 patients treated for AIDS in the past three months	<0.0001

Less concern about prescribing morphine	
Variable	P value
Cancer training	<0.0001
Doing clinical cancer care and treatment	<0.0001
>20 patients treated for cancer in the past three months	<0.0001
Prescribed any opioid in past year	0.0007
Prescribed oral morphine for pain or dyspnea in past year	<0.0001
Prescribed IV or oral morphine for pain in past year	0.0002
Prescribed IV or oral morphine for dyspnea in past year	0.0009

Self-rated palliative care understanding:

The mean self-assessment total score was 21.2 out of 41, with a standard deviation of 5 points (**Table 5**). Similar proportional scores were seen in the subcategories of 1) pain, other physical symptoms, and opioids, and 2) psychological, social, and spiritual distress, ethics, communication, and principles, and 3) practice of palliative care in different patient groups. The 3 topics that participants felt most competent with were: side effects of morphine, breaking bad news compassionately, and problems associated with bereavement (**Supplementary Table 3**). The 3 topics they had the least understanding of were: using morphine in patients with a history of opioid dependence, using morphine for dyspnea, and providing palliative care for patients with HIV. There were a variety of factors associated with higher self-rated understanding, including cancer training, working at the national or regional level, clinical experience in palliative care, formal lectures, and experience prescribing opioids (**Table 8**).

About half of people felt somewhat competent using morphine in dying patients, while one-third did not feel competent at all (**Figure 2**). There was a statistically significant difference in self-rated competence using morphine among people who had and had not prescribed an opioid ($\chi^2 = 27.7, p < 0.001$). However, 41% of people who had prescribed oral morphine still had some concerns about their competence. Participants felt they had less understanding of how to use morphine for dyspnea than for pain, and rated themselves least knowledgeable about using morphine in patients with a history of heroin or opioid dependence (**Figure 3**). Among the psychosocial topics, participants felt that they had less knowledge of delirium than of bereavement and breaking bad news, which corresponded with the attitudes and knowledge results on delirium as well (**Figure 4**).

Table 8: Demographic factors associated with higher self-assessment score

Characteristic	p value
Cancer training	0.0008
Doing clinical palliative care	0.0010
Work for national or regional hospital	0.0001
>20 patients provided with palliative care in the past three months	<0.0001
Lectures on general palliative care since graduating from medical school	<0.0001
Lectures on treatment of pain since graduating from medical school	<0.0001
Feels self has adequate training in palliative care	<0.0001
Feels self has adequate training in treatment of pain	<0.0001
Prescribed any opioid in past year	<0.0001
Prescribed oral morphine for either pain or dyspnea in past year	<0.0001
Prescribed IV or oral morphine for pain in past year	<0.0001
Prescribed IV or oral morphine for dyspnea in past year	<0.0001

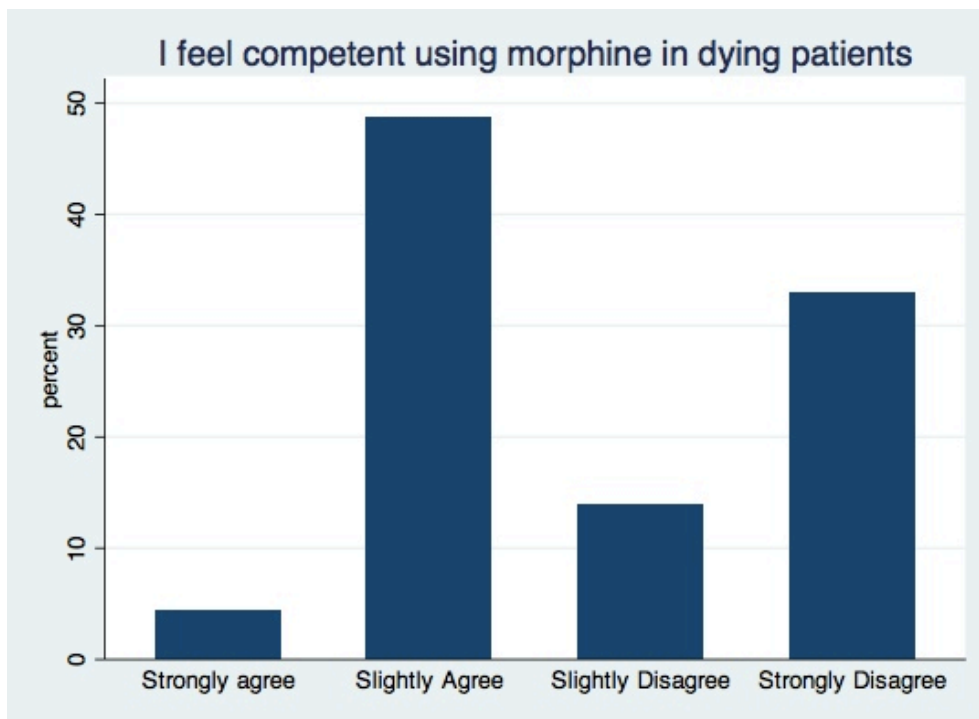


Fig. 2: Self-rated competence with morphine in dying patients.

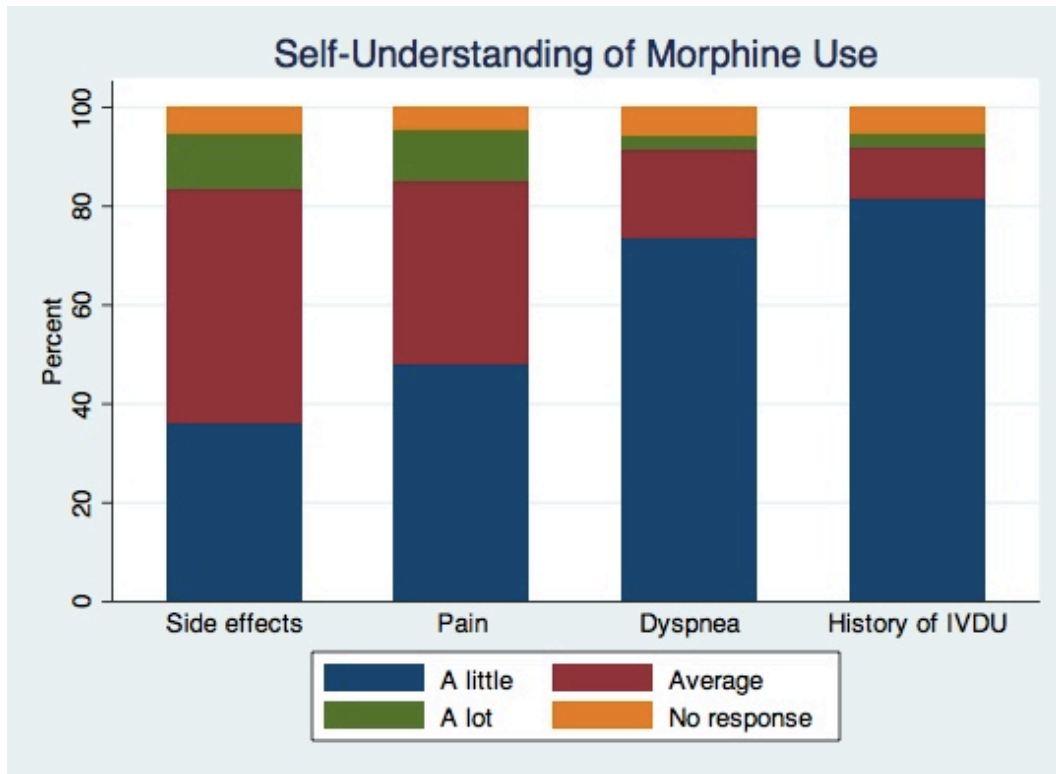


Fig. 3: Self-rated understanding of morphine use

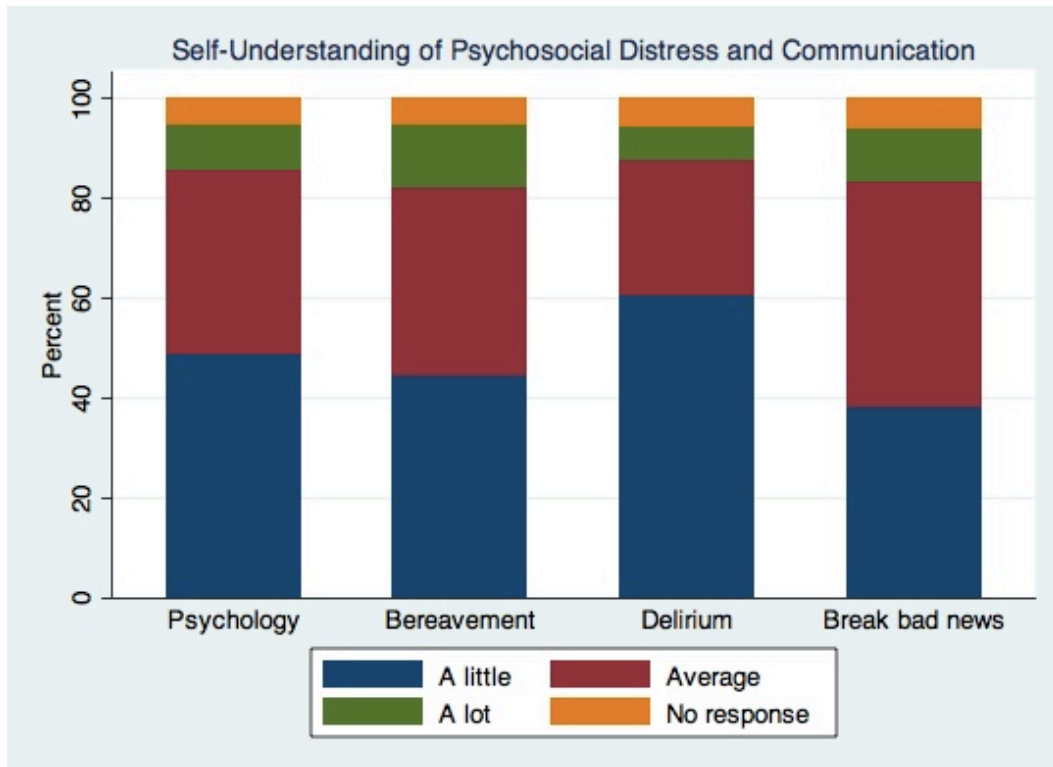


Fig. 4: Self-rated understanding of psychosocial and communication topics

Section 5: Discussion, Limitations, Conclusions, and Suggestions for Future Work

Discussion:

The data and analysis in this study provide a broad overview of the state of the palliative-care related knowledge, attitudes, self-assessment and opioid prescribing practices among Vietnamese physicians from 2007 to 2014.

First, it reveals that there is an enormous need for palliative care in Vietnam. Many trainees expressed concern about the current situation. 85 percent of respondents, including 87 percent of oncologists, agreed to some extent that most cancer patients die in pain, indicating a major unmet need in pain and symptom relief (**Supplementary Table 2c**). This is consistent with a cross-sectional study of cancer pain prevalence at a tertiary cancer hospital in Hanoi, considered a state-of-the-art facility in Vietnam, where 50% of patients reported moderate-to-severe pain. (33)

Second, these results highlight the need for palliative care education among physicians. Few participants felt adequately trained in palliative care or the treatment of pain, even among oncologists who frequently encounter such symptom burdens. Participant's self-assessment of their understanding as below-average across a variety of palliative care topics indicate their recognition of this problem. The knowledge scores, with a mean score of 44%, also show room for improvement, especially in assessment and treatment of non-pain symptoms and psychological symptoms. However, there were also encouraging results from the survey. Overall, the attitudes of Vietnamese physicians toward palliative care was positive. The majority (65%) already believed that palliative care was not limited to patients actively dying (**Supplementary Table 2b**); they recognized different types of suffering addressed by palliative care and felt that sharing prognosis was appropriate if the patient desired it.

Third, a major topic of interest in this study was the attitudes toward, knowledge of, and use of opioid medications given the global under-supply of morphine and history of opiophobia. While there was a fair amount of missing data for opioid prescriptions, the majority of those who responded had appropriate attitudes about opioids. Participants were more familiar with morphine for pain than dyspnea, consistent with our faculty's experience teaching these sessions. The survey was also designed to explore common myths about opioids, including risk of addiction. Results were mixed, with some inconsistency and higher non-response rates. 77% of respondents felt that patients who use morphine for pain or dyspnea could easily become dependent, but 55% also answered correctly that the risk of addiction in cancer patients was less than 2/1000 (**Supplementary Table 2a; Supplementary Table 1a**). Most people agreed that morphine *should* be used in *dying* patients despite a history of IV drug use, but 60% opposed its use for untreated cancer pain in a patient with a history of drug use who was *not dying* (**Supplementary Table**

2a). These findings may indicate that despite physicians' knowledge of low risk or prevalence, personal or anecdotal experience nonetheless leads to significant concern about addiction. Our survey results also indicate that restrictive prescribing regulations, cost, and limited availability perpetuate under-treatment of pain, as endorsed by the physicians themselves. Locally manufactured oral opioids were starting to become available during the course of our study, but in the cancer pain prevalence study mentioned above, only 40% of patients reported partial pain relief from medications, and only 1% reported total relief. (33)

Lastly, the association of demographics and prescribing practices with knowledge, attitudes, and self-assessment revealed several important trends. Oncologists had higher knowledge scores and more appropriate attitudes than physicians in general medicine or HIV/AIDS care. There was considerable concern across all participants about patients dying in pain due to morphine unavailability and cost, but HIV physicians were significantly more concerned about this than other physicians and more worried about prescribing morphine. This may be related to differences in training, resources, patient population, or a combination of all these factors. HIV doctors likely do receive less training in symptom management than oncologists, and HIV patients as a population in Vietnam have been marginalized due to poverty, drug use, and stigma. This makes a case for expanding access of palliative care to HIV patients and palliative care education to their physicians, as these differences likely reflect an economic reality and inequality. Lower levels of concern among oncologists may indicate, encouragingly, that they have more resources to work with. However, one-fifth of oncologists still strongly agreed that they were worried about prescribing morphine for pain because it is not yet an accepted treatment, indicating room for culture change in their specialty as well.

A key finding of our study is that experience prescribing opioids was associated with higher self-rated understanding, more appropriate attitudes, and higher knowledge scores. For the knowledge assessment, this was statistically significant only for oral morphine, which is a less common form of morphine in Vietnam and may indicate that these individuals held more senior positions or worked in hospitals where morphine was more widely available. Interestingly, the trend of p values and effect size for prescribing experience's impact on knowledge score was greater for oral morphine and morphine for dyspnea than morphine for pain and any opioid. Experience using the less common form and indication of morphine may indicate more clinical training or more progressive attitudes among younger, more recent graduates. The finding that prescribing experience was positively associated with all our outcome measures strengthens the case for increasing morphine accessibility and easing overly restrictive prescribing laws in Vietnam.

Limitations

One limitation is sampling bias. This is a non-random group of physicians who either volunteered because of interest in palliative care or were required to take the course as part of their training program. Thus the responses may not be representative of the knowledge and attitudes of the overall population of Vietnamese physicians. However, it does survey physicians from hospitals throughout Vietnam, with different clinical focuses (cancer, geriatrics, infectious disease). Also, importantly, this represents a large subset of the physicians most likely to encounter patients with palliative care needs.

Another limitation is survey validity: this survey was developed specifically for the Vietnam context and has not been previously piloted. Between versions, some questions were translated slightly differently due to variations in local Vietnamese language.

Data is self-reported. The survey is subject to recall bias in asking participants how many patients and opioid prescriptions they have had in the past months and years. We cannot verify changes in actual practice patterns without additional methods like chart review or interviews.

In terms of studying the intervention itself, we did not have a control group to compare the results with. As a result, we would not be able to tell the difference between the impacts of the training specifically with the broader policies and cultural changes happening in Vietnam during these years.

Future work

Analysis

We are planning to analyze the matched pre- and post-surveys for change in knowledge and attitudes.

Improvement and targeting of trainings

These preliminary results help us hone the trainings to address some of the knowledge gaps. In particular, questions about medications for specific symptoms were often missed by participants. The questions with the lowest rate of correct answers were for treatment of depression when looking for an effect within a few days (methylphenidate – 5% correct) and identifying a stimulant laxative (senna – 11% correct). In the current basic curriculum, dyspnea, nausea, and constipation each have their own lecture, and there is a dyspnea patient case. Palliative care for patients with HIV and for patients with a history of opioid addiction are also specifically addressed. Given the concern for opioid use in patients who are not imminently dying, future trainings can address strategies for minimizing risk while emphasizing that opioids are indicated in severe pain and often require higher doses because of tolerance.

Dissemination of curriculum and improved evaluation

This curriculum has also been translated into French, and the trainings have been taught on a smaller scale in Haiti, Rwanda, and Malawi. They offer an alternative to the EPEC and ELNEC curricula. The lessons learned from this project will enable better evaluation of the intervention in the future. Collection of qualitative data asking participants to identify barriers in their experience for palliative care and pain treatment could enrich the data. Providing online access to the training materials and survey in multiple languages besides Vietnamese would further help with dissemination.

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Tables and Figures

Supplementary Table 1: Performance on Knowledge Questions by Topic

1a) Knowledge of pain, other physical symptoms, and opioids

Question topic	Participants answered correctly (%)	% Missing
Meaning of pseudoaddiction	37 (10.4)	9.2
Stimulant laxative	32 (10.9)	25.3
Treatment of secretions	42 (15.0)	28.6
Mechanism of Haldol in nausea	56 (19.1)	25.3
Morphine for cancer pain and dependence	83 (23.9)	11.2
Morphine dose for breakthrough pain	86 (24.2)	9.2
Medications for nausea	85 (25.3)	14.3
Do not develop tolerance to constipation with opioids	93 (27.4)	13.5
Titrating morphine for pain	114 (31.7)	8.2
Titrating morphine for dyspnea	141 (40.2)	10.5
Pain type different to control with morphine	151 (40.4)	4.6
Starting dose for morphine	152 (42.5)	8.7
Risk of addiction with morphine	176 (54.5)	17.6
Meaning of physical dependence	214 (57.8)	5.6
Meaning of tolerance	206 (62.4)	15.8
Constipation as possible cause of nausea	217 (64.8)	14.5
Morphine and risk of respiratory depression	238 (70.4)	13.8

Morphine side effects	282 (75.8)	5.1
WHO ladder	298 (79.1)	3.8
Higher dose needed for patients with history of IVDU	299 (87.7)	13.0
Indication for starting morphine	368 (97.6)	3.8

1b) Knowledge of psychological, social, and spiritual suffering, ethics, communication, and palliative care principles

Question topic	Participants answered correctly (%)	Missing n (%)
Treating depression	17 (5.2)	63 (16.1)
Treating delirium	62 (17.2)	32 (8.2)
Treating agitation in advanced dementia	105 (31.3)	56 (14.3)
When to initiate palliative care	153 (43.3)	39 (10.0)
Palliative care assessment	156 (44.8)	44 (11.2)
Assessing delirium	185 (52.1)	37 (9.4)
Terminal delirium	191 (55.0)	45 (11.5)
Assessing depression	199 (55.7)	35 (8.9)
Recognizing different types of suffering	317 (88.8)	35 (8.9)
How to discuss an uncertain prognosis	300 (84.5)	37 (9.4)

Supplementary Table 2: Responses to Individual Attitudes

2a) Attitudes toward pain, other physical symptoms, and opioids

Statement	Appropriate attitude	Frequency (%)	% Missing
Morphine is a medically appropriate medication to treat moderate-to-severe pain.	Agree	355 (92.9)	2.6
Morphine is effective for treating dyspnea in cancer patients.	Agree	301 (81.4)	5.6
Morphine is effective for treating most pain in AIDS patients.	Agree	291 (79.7)	6.9
Patients who use morphine for pain or dyspnea can easily become dependent on it.	Disagree	88 (23.1)	2.8
Morphine should be used in a patient with dyspnea who is dying and has a history of intravenous drug use.	Agree	259 (73.2)	10.0
Morphine should be used in a patient with moderate- to-severe pain who is dying and has a history of intravenous drug use.	Agree	311 (85.0)	6.6
Morphine should <i>NOT</i> be used in a cancer patient with moderate-to-severe pain who is not dying and has a history of intravenous drug use.	Disagree	223 (60.4)	5.9

2b) Attitudes toward psychological, social & spiritual distress, ethics, communication, and palliative care principles

Statement	Appropriate attitude	Frequency (%)	% Missing
Persistent symptoms of depression are normal for patients at the end-of-life.	Disagree	88 (23.5)	4.3
People who have cancer and depression should be treated with antidepressants, even if their life expectancy is less than three months.	Agree	348 (91.8)	3.3
It is normal for family members to experience intense symptoms of grief for longer than 6-12 months.	Disagree	105 (28.1)	4.6

If it is not possible to successfully treat acute delirium with medications.	Disagree	163 (45.8)	9.2
Palliative care should be offered only when the patient is actively dying.	Disagree	249 (65.4)	2.8
If the patient wants to know, it is helpful to tell the patient an estimate of how much time he/she has left to live.	Agree	322 (85.0)	3.3
When a patient is suffering from pain or shortness of breath that is refractory to treatment, it is morally justifiable to sedate them so that they do not have to suffer further.	Agree	353 (94.2)	3.8
Physicians have an ethical obligation to provide end-of-life care to patients with AIDS.	Agree	350 (92.4)	3.3

2c) Attitudes toward concerns about morphine access

Statement	Agree with statement (%)	Missing (%)
Most cancer patients die in pain	335 (85.5)	2.8
Many patients die painful deaths because they do not have the financial resources to pay for medicines such as morphine	278 (73.0)	2.8
Many patients die painful deaths because morphine is not readily available	291 (76.6)	3.1

2d) Attitudes toward concerns about morphine prescribing

Statement	Agree with statement (%)	Missing (%)
Many patients die painful deaths because morphine is difficult to prescribe	254 (75.4)	14.0
I am worried about prescribing morphine because my supervisors might not approve	197 (52.4)	4.1
I am worried about prescribing morphine because it is not yet accepted as a standard treatment for pain	229 (60.9)	4.1

Supplementary Table 3: Self-assessment ratings by topic

Self-Assessment Subcategory	Self-Assessment Topic	% rated themselves as knowing at least “average” amount	% Missing
Pain, other physical symptoms and opioids	Using morphine to treat moderate-to-severe pain	47.4	4.9
	Using morphine to treat moderate-to-severe dyspnea	20.7	5.9
	Common side effects of morphine	58.7	5.6
	Using morphine to treat moderate-to-severe pain or dyspnea in patients with a history of heroin or other opioid dependence	13.0	5.6
Psychological, social, and spiritual distress & ethics, communication, and palliative care principles	Psychological problems of dying patients	46.2	5.4
	Problems associated with bereavement	50.3	5.4
	Diagnosing and treating delirium	33.9	5.9
	How to break bad news to patients most compassionately	55.9	6.1
Practice of Palliative Care	The practice of palliative care	34.2	4.9
	How to provide palliative care to patients with cancer	36.7	5.9
	How to provide palliative care for patients with HIV/AIDS.	22.7	6.1

Supplementary Table 4: Training Sites

Location: Hospital (City)	Year	Number of surveys
National Institute of Infectious & Tropical Disease and K hospital (Hanoi)	2007	25
Tropical Disease Hospital (Ho Chi Minh City)	2007	20
Viet Czech General Hospital (Hai Phong)	2007	8
Da Nang region	2008	11
Nhan Ai	2008	3

HCMC Cancer Hospital	2009	27
Bach Mai / National Hospital (Hanoi)	2009	18
K Hospital	2010	28
HCMC Cancer Hospital	2010	16
HCMC Cancer Hospital	2010	26
National Geriatrics Institute (Hanoi)	2011	15
HCMC Cancer Hospital	2011	20
National Geriatrics Institute (Hanoi)	2012	8
Can Tho Cancer Hospital	2012	18
Pham Ngoc Thac Lung Disease & TB Hospital (Ho Chi Minh City)	2012	10
Hanoi Medical University	2013	16
University of Medicine & Pharmacy (HCMC)	2013	42
University of Medicine & Pharmacy (HCMC)	2014	40

Appendix: Survey with Answers Marked

Training on Palliative Care Education and Practice

Survey of Palliative Care Knowledge, Attitudes and Practices

Pre-Conference Evaluation

This survey is designed to assess knowledge and attitudes about palliative care and opioid analgesics among doctors in Vietnam who participate in palliative care training conferences. We will ask you to fill out a similar survey at the end of the conference and possibly again in one to two years.

The purpose of this survey is to assess responses of a group or population and not to test you as an individual. It will allow us to see how palliative care knowledge, attitudes and practices change during the next few years in Vietnam. It will also allow us to see if our teaching conferences are effective so that we can improve them. Your answers cannot be linked to you personally. By completing this survey, you agree to allow us to use your responses as part of our data for our assessment of palliative care knowledge, attitudes and practices among Vietnamese physicians. Your participation is completely voluntary. You are not required to complete this survey and you may skip any questions you do not wish to answer. If you choose not to complete any parts of this survey, your participation in the conference will not be affected in any way. Thank you for your help.

DEMOGRAPHICS

1. Age: _____

2. Gender: (circle one): Male Female

3. Degrees: _____

4. Year of Graduation from Medical School: _____

5. Area of clinical training (Please check all that apply):

<input type="checkbox"/>	General adult medicine
<input type="checkbox"/>	Pediatrics
<input type="checkbox"/>	HIV/AIDS or infectious or tropical diseases
<input type="checkbox"/>	Cancer
<input type="checkbox"/>	Palliative care
<input type="checkbox"/>	Pain management
<input type="checkbox"/>	Other (Please specify):

6. What type of work do you do (please check the one best answer)?

<input type="checkbox"/>	Clinical general adult medicine
<input type="checkbox"/>	Clinical pediatrics
<input type="checkbox"/>	Clinical HIV/AIDS care and treatment
<input type="checkbox"/>	Clinical cancer care and treatment
<input type="checkbox"/>	Clinical palliative care
<input type="checkbox"/>	Clinical pain management
<input type="checkbox"/>	Research
<input type="checkbox"/>	Teaching in a medical school
<input type="checkbox"/>	Administration
<input type="checkbox"/>	Healthcare policy
<input type="checkbox"/>	Other (please specify)

7. What kind of institution do you work in primarily (please check one best answer)?

<input type="checkbox"/>	National or regional hospital
<input type="checkbox"/>	Provincial hospital
<input type="checkbox"/>	District hospital
<input type="checkbox"/>	Communal health center
<input type="checkbox"/>	HIV/AIDS outpatient clinic
<input type="checkbox"/>	Private clinic or practice
<input type="checkbox"/>	Ministry of Health
<input type="checkbox"/>	Provincial Health Service
<input type="checkbox"/>	NGO
<input type="checkbox"/>	Research center

Medical School

8. In the past three months, how many individual patients have you provided with treatment for AIDS or AIDS-related opportunistic infections: _____

(Note: if the same patient was seen more than once in the past three months, count this patient only once.)

9. In the past three months, how many individual patients have you provided with treatment for cancer: _____

(Note: if the same patient was seen more than once in the past three months, count this patient only once.)

10. In the past three months, how many individual patients with HIV/AIDS or cancer have you provided with palliative care (treatment of symptoms rather than disease-specific treatment): _____

(Note: if the same patient was seen more than once in the past three months, count this patient only once.)

EDUCATION AND EXPERIENCE IN PALLIATIVE CARE

1. Please rate your level of understanding of the following:

	<u>A Little</u>	<u>Average</u>	<u>A lot</u>
a. The practice of palliative care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Using morphine to treat moderate-to-severe pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Using morphine to treat moderate-to-severe dyspnea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Common side effects of morphine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Psychological problems of dying patients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Problems associated with bereavement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Diagnosing and treating delirium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. How to provide palliative care to patients with cancer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. How to breaking bad news to patients most compassionately	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. How to providing palliative care for patients with HIV/AIDS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Using morphine to treat moderate-to-severe pain or dyspnea in patients with a history of heroin or other opioid dependence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many lectures have you heard on general palliative care?

	None	0 – 5	More than 5
In medical school			
Since graduating from medical school			

3. How many lectures have you heard specifically on treatment of pain?

	None	0 – 5	More than 5
In medical school			
Since graduating from medical school			

4. How many times in the past year did you order or prescribe the following medications?

Oral morphine to treat pain	
Parenteral morphine to treat pain	
Oral morphine to treat dyspnea	
Parenteral morphine to treat dyspnea	
Parenteral pethidine	
Fentanyl transdermal patch	

5. Do you feel you have adequate training in palliative care?

- a) Yes b) No

6. Do you feel you have adequate training in treatment of pain?

- a) Yes b) No

ATTITUDES ABOUT PALLIATIVE CARE

Please specify how you feel about the following statements:

	Strongly Agree	Slightly Agree	Slightly Disagree	Strongly Disagree
1. Palliative care should be offered only when the patient is actively dying.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
2. In most cases, the family rather than the patient should be told when the patient is dying. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Most cancer patients die in pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Morphine is a medically appropriate medication to treat moderate-to-severe pain.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I feel competent using morphine in dying patients. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Physicians have an ethical obligation to provide end-of-life care to patients with AIDS.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Morphine is readily available for patients with cancer. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Patients who use morphine for pain or dyspnea can easily become dependent on it.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
9. I have the skills needed to speak compassionately with a dying patient or with a dying patient's family about dying. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Morphine is effective for treating dyspnea in cancer	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

patients.

11. I am worried about prescribing morphine for my patients with moderate-to-severe pain because it is not yet accepted as a standard treatment for pain NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I am worried about prescribing morphine for my patients with moderate-to-severe pain because my supervisors might not approve of this treatment. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. When a patient is suffering from pain or shortness of breath that is refractory to treatment, it is morally justifiable to sedate them so that they do not have to suffer further.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Persistent symptoms of depression are normal for patients at the end-of-life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
15. I feel competent providing end-of-life care for HIV-infected patients. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. It is normal for family members experience intense symptoms of grief for longer than 6-12 months.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
17. If the patient wants to know, it is helpful to tell the patient an estimate of how much time he/she has left to live.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Adult learn best when they can engage in discussion with the instructor.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. People who have cancer and depression should be treated with antidepressants, even if their life expectancy is less than three months.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Many patients die painful deaths because they do not have the financial resources to pay for medicines such as morphine. NO CORRECT ANSWER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Many patients die painful deaths because morphine is not readily available.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Many patients die painful deaths because morphine is difficult to prescribe. NO CORRECT ANSWER				
23. It is not possible to successfully treat acute delirium with medications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
24. Morphine should be used in a patient with dyspnea who is dying and has a history of intravenous drug use.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Morphine should be used in a patient with moderate-to-severe pain who is dying and has a history of intravenous drug use.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Morphine should not be used in a cancer patient with moderate-to-severe pain who is not dying and has a history of intravenous drug use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X <input type="checkbox"/>
27. Morphine is effective for treating most pain in AIDS patients.	X <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

KNOWLEDGE ASSESSMENT

For the following questions, please circle the letter in front of the one best answer:

1. What type of pain is often difficult to control, even with morphine?
 - a) somatic pain
 - b) visceral pain
 - c) neuropathic pain
 - d) bone pain

2. A patient with pain or dyspnea who has not taken any opioid in the past should be started on what oral dose?
 - a) 10-20 mg every 8 hours as needed
 - b) 10-20 mg every 4 hours as needed
 - c) 5-10 mg every 4 hours as needed
 - d) 1-2 mg every 4 hours as needed

3. According to the WHO analgesic ladder, what should be the first treatment for cancer pain?
 - a) A mild opioid such as codeine
 - b) Nonopioid analgesics such as paracetamol or ibuprofen
 - c) Morphine
 - d) Reassurance

4. What percentage of patients will achieve adequate pain control by using the WHO analgesic ladder?
 - a) 95%
 - b) 88%
 - c) 50%
 - d) 25%

5. What is a typical indication for starting morphine?
 - a) Pain with swallowing in a patient with AIDS.
 - b) Persistent pain despite treatment with codeine and paracetamol in a patient with cancer
 - c) Mild chronic lower back pain in a patient who does not have cancer
 - d) A patient with cancer and bony metastases but without pain

6. Which of the following is not a common side-effect of morphine?
 - a) nausea
 - b) sedation
 - c) constipation
 - d) angioedema

7. What does it mean if a cancer patient who has pain is *physically dependent* on morphine?

- a) They may start taking extra doses of morphine compulsively, even when they do not have pain.
- b) A patient may begin to think about morphine all the time.
- c) **If morphine use suddenly stops, patients will experience withdrawal symptoms.**
- d) If their pain goes away, the patient will want to keep taking the morphine.

8. What does *pseudo-addiction* mean?

- a) The patient has addictive behavior but has well controlled pain
- b) The patient has addictive behavior that is not improved when additional doses of morphine are given.
- c) The patient has addictive behavior but is willing to admit his addiction.
- d) The patient has addictive behavior but also has uncontrolled pain

9. All of the following medications can be used to control nausea except:

- a) haloperidol
- b) metoclopramide
- c) dexamethasone
- d) **methylphenidate**

10. What is an appropriate morphine dose for breakthrough pain?

- a) 5 mg of morphine
- b) 10 mg of morphine
- c) 5-15% of the daily dose
- d) 15-25% of the daily dose

12. Which of the following is not included in an ideal, complete palliative care assessment?

- a) Disease history and physical symptoms
- b) Psychological symptoms
- c) Decision making capacity
- d) Social circumstances
- e) Spiritual needs
- f) Practical needs and anticipatory planning for death
- g) All of the above are included.

13. Ba Mai has advanced osteoarthritis and advanced Alzheimer's type dementia. She has chronic pain in her hips, back and knees that is moderately well controlled with ibuprofen. She is hospitalized for pneumonia. Her overall level of consciousness has declined. On the third hospital day she begins moaning and crying out. Delirium is:

- a) unlikely
- b) rarely related to medications
- c) sometimes misinterpreted as pain
- d) usually inevitable

14. Ba Mai's agitation worsens, and the goal is to reverse the symptoms of delirium. She is initially best managed with:

- a) diazepam
- b) haloperidol
- c) morphine
- d) amitriptyline

15. Anh Tuan is a 32 year old man who has advanced AIDS. He has lost weight and reports a poor appetite. He sleeps poorly. He reports a lack of energy and spends most of his time at home. During a visit to his physician, he reports feeling hopeless and helpless. He is comfortable talking about the fact that he will die. A clinical suspicion of depression is most supported by:

- a) changes in appetite and sleep patterns
- b) feelings of hopelessness and helplessness
- c) lack of energy
- d) comfort in talking about the prospect of death

16. To treat a diagnosis of major depression for Anh Tuan, with a goal of response within a few days, the best initial drug of choice would be:

- a) methylphenidate
- b) amitriptyline
- c) diazepam
- d) paroxetine

17. Ba Thuy is a 98 year old with advanced dementia. She is mostly non-verbal and lives at home with her family. Her daughter complains that the patient is agitated and calls out at night, but is somnolent during the day. She thinks she is anxious and wants you to give her something to “calm her down.” The best choice would be:

- a) diphenhydramine
- b) diazepam
- c) amitriptyline
- d) haloperidol

19. Which of the following is a stimulant laxative at conventional doses?

- a) senna
- b) sodium docusate
- c) mineral oil
- d) oral naloxone

20. When a dying patient is treated with morphine for breathlessness, the drug is titrated based on:

- a) respiratory rate
- b) pulse oximetry
- c) patient's comfort
- d) blood pressure

21. Which of the following antiemetics acts primarily at dopamine receptors?

- a) scopolamine
- b) metoclopramide
- c) haloperidol
- d) diphenhydramine

22. In discussing an uncertain prognosis, it is best to:

- a) reassure the patient and family that all will be well
- b) warn the family that the outcome is likely to be poor
- c) discuss possible outcomes, including likelihood
- d) say that no one knows what will happen

24. Anh Son is a 62 year-old man who is dying of glioblastoma multiforme (malignant brain tumor). He has not had much pain during his illness. He has been unconscious most of the past 24 hours. The nurse calls to report that he has begun to moan. The family is very distressed. This is most likely to be:

- a) terminal delirium
- b) crescendo pain
- c) spiritual distress
- d) depression

25. Anh Cong has locally advanced transitional cell cancer of the bladder which chronic pelvic and abdominal pain. Which of the following is most important in determining the maximum dose of oral morphine during dose titration?

- a) pain relief
- b) respiratory depression
- c) risk of overstepping regulatory limits
- d) strength of pill

26. Chi Phuong is a 42 year-old woman who has breast cancer metastatic to bone and liver. Her pain has been well controlled on morphine 20mg every 4h hours. Which of the following is most likely to occur as a result of this treatment?

- a) psychological dependence
- b) physical dependence
- c) respiratory depression
- d) all of the above

27. When should palliative care be initiated?

- a) When a patient is actively dying.
- b) When a patient has a lot of symptoms such as pain or shortness of breath.
- c) When a patient is first diagnosed with metastatic cancer.

28. Chi Huong is dying. She has been in a coma for the past 12 hours. Her family is at her bedside stroking her hair. However, over the past hour they have noticed a “choking or gurgling” sound in her throat. The most likely medication to be helpful is:

- a) morphine
- b) hyoscine
- c) diphenhydramine
- d) lorazepam

29. Anh Duc is a 35 year old with AIDS who has infected his wife with HIV. He has been unable to work due to weakness. He might be expected to be suffering in which sphere?

- a) emotional
- b) social
- c) spiritual
- d) all of the above
- e) none of the above

Please indicate with an 'X' whether the following statements are TRUE or FALSE:

	<u>True</u>	<u>False</u>
30. With time, patients can become tolerant to the constipating side effects of morphine.	<input type="checkbox"/>	X <input type="checkbox"/>
31. Patients who have a history of using intravenous drugs may need high doses of morphine for pain because they have a higher tolerance for opioids.	X <input type="checkbox"/>	<input type="checkbox"/>
32. When given morphine for dyspnea, most patients will have dangerous respiratory depression.	<input type="checkbox"/>	X <input type="checkbox"/>
33. The risk of addiction in cancer patients who take morphine is less than 2 in 10,000.	X <input type="checkbox"/>	<input type="checkbox"/>
34. Neuropathic pain rarely responsive to opioid analgesics.	<input type="checkbox"/>	X <input type="checkbox"/>
35. <i>Tolerance</i> means that a patient will need more morphine to achieve the same pain relief.	X <input type="checkbox"/>	<input type="checkbox"/>
36. Constipation is a possible cause of nausea.	X <input type="checkbox"/>	<input type="checkbox"/>