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Facilitating Palliative Care in a Critical Access Hospital System: Implementation of Screening and Educational Interventions

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Screening and Educational Interventions

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Abstract

BACKGROUND: The United States health care system faces the dual challenge of an aging population with a concomitant increase in the presence of chronic and serious illness, the care of which accounts for the nation's largest expenditure of burgeoning healthcare costs. Palliative care is specialized care for people with serious illness aimed at reducing suffering, optimizing quality of life, and enhancing medical decision making. An ample evidence base demonstrates that palliative care increases both quality of care and patient and family satisfaction while also reducing associated costs. The aim of this quality improvement project was to facilitate palliative care services to patients and families through the identification of potential unmet palliative care needs using educational and screening interventions.

METHODS: The DMAIC QI framework approach of Lean Six Sigma was utilized to structure this quality improvement project. An initial needs assessment was performed utilizing targeted ICD-10 codes to extract three-month and twelve-month emergency department data from three critical access hospitals (CAHs) to provide a broad overview of potential unmet palliative care needs. One CAH was then selected to serve as the pilot site for the subsequent 30-day inpatient and emergency department patient screenings utilizing the Palliative Care Screening Tool (PCST) and educational intervention assigned to identified nurses at the facility. The Palliative Care Self-Efficacy Scale (PCSES) was employed to measure knowledge and confidence with associated palliative care concepts.

RESULTS: The PCST was completed on 77% of eligible inpatient admissions and 100% of emergency department encounters. Inpatient screening totals indicated the following: 12% of screened patients recommended for automatic palliative care referral, palliative care clinician review recommended for 21% of screened patients, and consideration of palliative care

consultation for 29% of screened patients. Emergency department results in each category were lower (4%, 8% and 12 %, respectively). The educational intervention was completed by 72% of identified nurses. Results demonstrated an aggregate improvement in knowledge and confidence level across all twelve domains in the PCSE.

CONCLUSIONS: Early identification of potential unmet palliative care needs provides a health system the opportunity to increase quality of care and patient and family satisfaction while reducing costs. Utilization of a valid and reliable palliative care screening instrument along with generalist palliative care education provides mechanisms for clinicians to identify and advocate for palliative care for patients and families with serious illness. Missed opportunities for palliative care screening can be addressed through integration of a screening instrument in the health system electronic health record (EHR).

Keywords: palliative care, serious health-related suffering, rural health, critical access hospital, palliative care screening tool

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Facilitating Palliative Care in a Critical Access Hospital System: Implementation of

Screening and Educational Interventions

The health care system and community support programs in the United States face the dual challenge of an aging population and a concomitant ongoing and expected increase in care needs across population segments. The population of those 65 and older is expected to increase from 54.1 million in 2019 to 94.7 million in 2060, with the overall population containing twice as many older persons in 2040 as it did in 2000 and the 85 and older population projected to more than double from 6.6 million in 2019 to 14.4 million in 2024, an approximate 118% increase (Administration on Aging, 2021, p. 4). Related to increased longevity, the growing number of those living with chronic disease in America is well documented. Current statistics indicate 6 in 10 Americans live with one chronic disease and 4 in 10 live with two or more chronic disease. Chronic disease is noted to be the leading cause of death and disability and "leading driver of the nation's $4.1 trillion annual health care costs" (CDC, 2022). An analysis by Schneider, et al. (2021) revealed that as compared to eleven other developed and high-income countries in the Organization for Economic Cooperation and Development (OECD), the United States (US) has the highest healthcare spending and the lowest health system performance, scoring lowest on health care outcomes and access to care (Schneider, et al., 2021).

In addition to the escalating healthcare costs and poor outcomes related to life-limiting and chronic illness, Sleeman, et al. (2019) estimate by 2060, 47% (48 million people) of all deaths globally will include serious health-related suffering (SHS). The construct of SHS, defined by Knaul, et al. (2018) refers to suffering related to illness or injury requiring medical intervention to be relieved and compromising physical, social, or emotional functioning (p. 1392). This type of suffering is expected to increase most rapidly for those 70 years of age and

older (183% increase between 2016 and 2060) and profoundly impact those with dementia, who are expected to experience a 264% rise in SHS between 2016 and 2060 (Sleeman, et al., 2019, p. e883).

The Institute for Healthcare Improvement (IHI) devised the "Triple Aim Framework" in 2007 with the intent to ameliorate the aforementioned factors, focusing on improving the patient experience, reducing per capita healthcare costs and improving the health of a population (IHI, 2014). Despite ongoing efforts such as the "Triple Aim", US healthcare costs continue to rise and outcomes remain poor (Schneider, et al., 2021).

Palliative care, referred to as the "best kept secret in healthcare" (Worldwide Hospice Palliative Care Alliance, 2020, p.10), is a form of specialized care provided in any care setting and offered to those with serious illness, whether newly diagnosed or experiencing advancing illness. The term "serious illness," defined conceptually by Kelly & Bollens-Lund (2018), includes health states or conditions with a high risk of mortality, which either negatively impact an individual's functional status or quality of life or unduly strain their caregivers (Kelley and Bollens-Lund, 2018, S-7). Palliative care, often provided concomitantly with curative treatment, is aimed at anticipating, preventing, and managing all forms of distress, including physical, psychosocial, and spiritual suffering (CAPC, 2023).

Utilizing an interdisciplinary care delivery system, the aim of palliative care is to optimize the quality of life for patients, families, and caregivers (National Consensus Project for Quality Palliative Care, 2018; Institute of Medicine (IOM), 2015; Center to Advance Palliative Care (CAPC), 2020). Palliative care emphasizes support to patients and families across every care setting, focusing on relief of symptoms, optimizing quality of life and well-being, and providing support in medical decision making and establishing goals of care (CAPC, 2019;

National Institute on Aging, 2021). Additionally, an ample body of evidence demonstrates that

palliative care reduces SHS of those living with a serious illness (Temel, et al., 2010; Temel, et

al., 2017; Quinn, et al., 2020) and reduces healthcare costs (Lustbader, et al, 2017; Worldwide

Hospice Palliative Care Alliance, 2020; Quinn, et al., 2020). Further, research has demonstrated

that palliative care reduces caregiver burden and increases caregiver satisfaction (Kavalieratos, et

al., 2016; Dionne-Odom, et al., 2015), and at times, increases longevity (Temel, et al., 2010).

Although the provision of palliative care services in hospitals has more than tripled since 2000,

provision of the service in the community-at-large is identified as the next phase of growth to

reach patients and families "upstream", prior to the need for hospitalization and in support of

care post-hospitalization (CAPC, 2022).

Problem Description

According to CAPC (2020), although hospitals with 50 or more beds have demonstrated

a 58% increase in the presence of palliative care programs between 2000 and 2020, availability

of palliative care remains impacted by geography and hospital size, with smaller and rural

hospitals less likely to house a palliative care program. In the US, 97% of the land is considered

rural, with 19.3% of the population (59.5 million people) residing in a rural area (Health

Resources and Services Administration (HRSA), 2022). Three-quarters of rural area hospitals

have fifty or fewer beds, accounting for 4% or 1.2 million inpatient admissions (CAPC, 2020).

Although 36% of small hospitals report some type of provision of palliative care, the majority do

not have palliative care service availability (CAPC, 2020), resulting in a gap in service and

access.

Further, even with the presence of established palliative care programs, only a limited

number of eligible patients receive palliative care services (CAPC, 2022). The push for broader

access to palliative care remains, with the Institute of Medicine (IOM) 2015 report, "Dying in America: Improving quality and honoring individual preferences near the end of life", affirming that "all people with advanced serious illness should have access to skilled palliative care" (p. 103). A 2017 joint publication by the American Nurses Association Professional Issues Panel and Hospice and Palliative Nurses Association, "A Call for Action", affirmed the need for broad access to palliative care, concluding that "seriously ill and injured patients, families, and communities should receive quality palliative care in all care settings" (p. 3). Additionally, the American Academy of Nursing Expert Panel (2022) published consensus recommendations calling for reduction of SHS by advancing, enhancing, and increasing access to palliative care (Rosa, et al., 2022).

North Country Home Health and Hospice Agency (NCHHHA) serves patients and families in Coos and Grafton counties in northern New Hampshire (NH) (NCHHHA, 2023). Providing home health, hospice and palliative care services to rural residents, the agency cares for patients and families with serious and life-limiting illness. Consistent with characteristics of a rural population, residents of Coos County, the most northern and rural county, are older, poorer and have a higher incidence of chronic disease (NH Department of Health and Human Services, 2023; North Country Region (NCR), 2022; NH Division of Public Health Services, 2022; CDC, n.d.). As noted in Table 1, a greater percentage of residents of Coos County are 65 or older, have a higher incidence of cancer, and die from cancer, heart disease, and dementia in higher numbers than other NH residents and US residents, apart from US dementia-related mortality.

Table 1

Coos County Resident Factors: Age, incidence of cancer, select mortality rates.

Category	Coos County	NH	US
Age 65+	24.7%	19.2%	17.3%
Incidence of cancer	484.3/100,000	479.3/100,000	439/100,000
Cancer-related mortality	184.3/100,000	145/100,000	146/100,000
Heart disease-related mortality	213.9/100,000	146.5/100,000	209.6/100,000
Dementia-related mortality	33.6/100,000	26.1/100,000	36/100,000

Note. Data for age and Coos County and NH incidence of cancer, cancer-related, heart disease-related and dementia-related mortality are from *2022 Community Health Needs Assessment* by NCR, 2022 (https://northcountryhealth.org/community-health-needs-assessment/). Data for US cancer-related mortality is from *Cancer Trends Progress Report: Mortality* by the National Cancer Institute (NCI), 2022 (https://progressreport.cancer.gov/end/mortality). The data for US heart disease-related mortality is from *National Center for Health Statistics: Heart Disease* by CDC, 2023 (https://www.cdc.gov/nchs/fastats/heart-disease.htm). Data for US dementia-related mortality is from *National Center for Health Statistics: Alzheimer disease* by CDC, 2023 (https://www.cdc.gov/nchs/fastats/alzheimers.htm).

Data indicate the percentage of Coos County residents 65 and older is expected to increase by 11.3% in the next five years (NCR, 2022). The NCR *2022 Community Health Needs Assessment* reflects the increasing importance of older adult care, with "access to senior services" listed as the third priority for the region, behind mental health and healthcare affordability. Prioritization of access to senior services was identified by the community and noted to be feasible to implement while positively impacting health disparities. Access to senior

services in Coos County is currently "worse than benchmark" in terms of corresponding state and national data (NCR, 2022, p.18).

Despite the increased percentage of the population 65 or older in Coos County and presence of serious and chronic illness in the region, palliative services are often provided late, with NCHHHA reporting that 23% of March 2023 decedents had a hospice length of stay of 7 days or less (NCHHHA, 2023, p. 6). Notably, in a retrospective chart review by the agency of 150 home health patients, approximately 114 patients (76%) demonstrated unmet palliative care needs but were not referred to palliative care (NCHHHA, 2023, p. 4). Thus, in Coos County, palliative care services appear under-utilized with low identification of those potentially benefiting from palliative care and with current unmet palliative care needs.

Available Knowledge

Serious Health Related Suffering (SHS)

The current and expected rise in global SHS is noted by Rosa, et al. (2021) to create urgency regarding integration of palliative care into the continuum of services provided in a health system. Schneider, et al. (2018) noted that for those living with serious illness in the US, 62% experience anxiety, confusion, or helplessness, 48% acknowledge illness-related emotional or psychological distress, and 61% acknowledge problems associated with the process of care, impacting their overall health (p.3-4).

The knowledge base related to the reduction in suffering with the implementation of palliative care services is robust. A landmark study by Temel, et al. (2010) examined outcomes for patients newly diagnosed with stage four lung cancer receiving palliative care at diagnosis (n=77) against a comparator group receiving usual care (n=74). Findings included reduction in symptom burden and use of aggressive care, improved mobility, increased quality of life, and

increased longevity for the intervention group receiving palliative care. A systematic review by

Kavalieratos, et al. (2016) examined forty-three randomly controlled trials (RCTs) involving

adults with life-limiting illnesses, including 12,371 patients and 2,479 caregivers. Studies were

analyzed for the impact of palliative care on measures of quality of life, symptom burden,

patient, and caregiver satisfaction, among other factors. The authors concluded that palliative

care is associated with improved quality of life, symptom burden, and patient and caregiver

satisfaction. Temel, et al. (2017) reported symptom improvement in patients with lung and

gastrointestinal cancers receiving palliative care as compared to a similar cohort receiving usual

care, the latter group reporting deterioration of the same symptoms over the intervention period

(p. 834). Quinn, et al. (2020) conducted a systematic review and meta-analysis examining similar

factors for adults with chronic non-cancer illness, analyzing twenty-eight RCTs involving 13,664

patients, finding statistically significant modestly reduce symptom burden, but without

significant difference in quality-of-life markers (p. 1439).

Cost

Reduction of healthcare-associated costs has remained at the forefront of prioritized

health initiatives in the United States since Berwick, et al. (2008) highlighted the poor rankings

of the United States in terms of cost, quality of care and satisfaction. The "Triple Aim" from the

IHI prioritizes reduction in cost (IHI, 2014) and remains a framework endorsed by multiple

accrediting bodies and organizations, including the Joint Commission (Nundy, et al., 2022).

The literature base on the impact of palliative care services related to costs for

hospitalized patients is robust. The Morrison, et al. (2008) landmark study revealed direct cost

savings of palliative patients discharged alive of $1696 per admission and $279 per day, with

palliative patients dying during admission realizing a cost savings of $4908 per admission and

$374 per day (p. 1783). Similar cost savings related to hospitalized palliative patients have been demonstrated and replicated in further studies (Penrod, et al., 2010; Morrison, et al., 2011; May, et al., 2017). A more recent meta-analysis by May, et al. (2018) reviewed six studies and examined total direct hospital costs for patients with serious illness receiving palliative care. The authors concluded that palliative care consultation for hospitalized patients with serious illness results in "a statistically significant reduction in costs," with higher cost savings noted in patients with four or more comorbidities and a cancer diagnosis than those with two or fewer comorbidities and a non-cancer diagnosis (p. 820).

The in-hospital cost reduction associated with palliative care has been mirrored in other settings, including home-based palliative care (HBPC). Cassel, et al. (2016) conducted a retrospective study of 368 patients receiving HBPC between 2007-2014, comparing them to 1,075 individuals across four clinical conditions: cancer, chronic obstructive pulmonary disease, heart failure, and dementia. Study results demonstrated reduction in hospital use, hospital costs, and overall healthcare costs across all four conditions for intervention participants (p. 2288). A study by Lustbader, et al., (2017) demonstrated a cost reduction of $12,000 in the last three months of life for patients utilizing HBPC as compared to usual care, with hospital admissions decreased by 34% and hospice enrollment increasing by 35% in the intervention group (p.23).

Costs have also been examined across multiple settings and within healthcare organizations. Smith, et al. (2014) examined forty-six studies on cost and cost-effectiveness of palliative care in any setting and noted that despite variation in reimbursement models, study type and characteristics, palliative care was found to result in cost reduction for palliative patients versus comparator groups and in many studies the cost savings was statistically significant. CAPC, in the 2022 publication, "Serious Illness Strategies: Driving Value in High-

Need Populations," noted cost savings of $12,600 per patient enrolled in palliative care through

the Aetna Medicare Advantage Compassionate Care Program and a cost savings of $12,000 per

person utilizing palliative care in the ProHealth Accountable Care Organization Supportive Care

Program. Notably, both programs had the highest patient satisfaction as well as compared to

patients within each organization but not enrolled in the programs (p. 2).

Rationale

DMAIC Process for Project Implementation

The process utilized for project implementation is the Define, Measure, Analyze,

Implement and Control (DMAIC) approach of Lean Six Sigma. This approach is noted to

improve quality performance and facilitate the provision of guidelines in a quality service

system, enhancing satisfaction while reducing waste (Ahmed, 2019). This project employs

DMAIC to investigate interventions aimed at facilitating palliative care. The following process

was utilized as outlined in Figure 1:

Figure 1

DMAIC Process
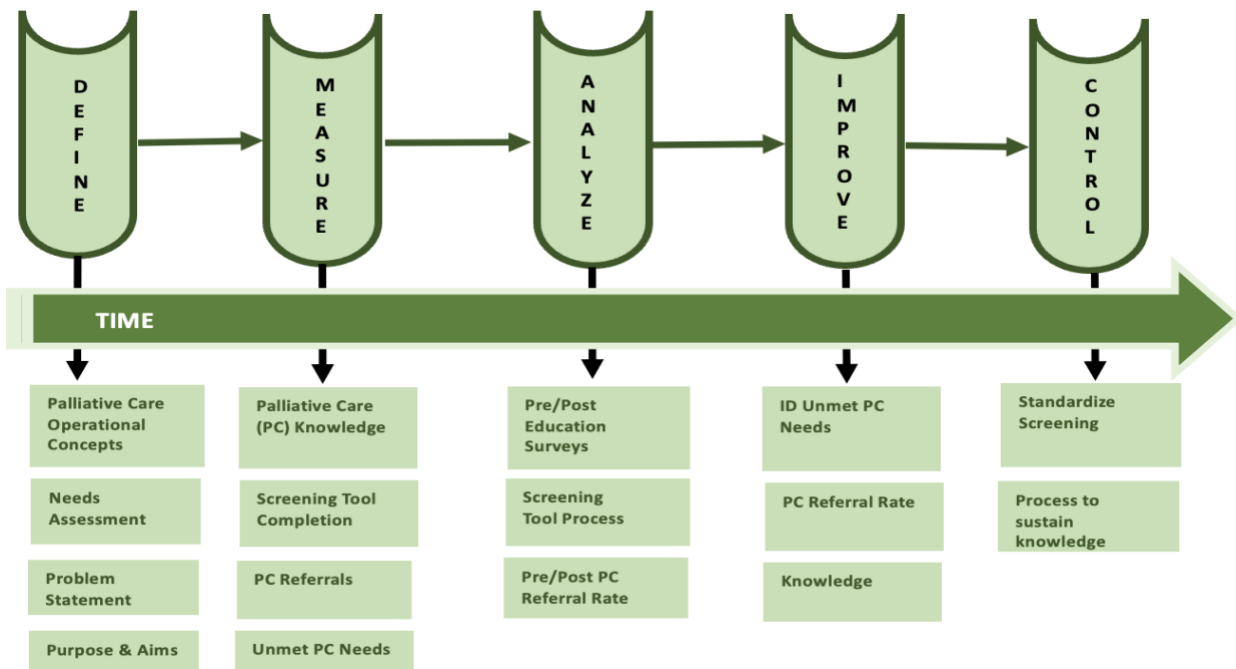
Define. This phase required identification of a problem within the healthcare system, namely the recognition of potential unmet palliative care needs within a population in a critical access hospital (CAH) system. This hypothesis was generated after consultation with North Country Healthcare leadership and review of the *NCR 2022 Community Health Needs Assessment* and other pertinent data. Operational concepts related to the specialty practice of palliative care are defined and discussed, including the terms palliative care, serious illness, and serious health-related suffering.

Measure. A retrospective chart review of inpatient admissions over 30-day and 12-month time periods at three critical access hospitals within the North Country Healthcare system was performed to identify unmet palliative care needs and patients potentially benefiting from palliative care services. Data was culled utilizing ICD-10 codes (Appendix A) related to conditions (cancer, heart disease, chronic obstructive pulmonary disease and other respiratory, dementias, renal disease, liver disease, and other) identified by CAPC and based on the National Committee for Quality Assurance (NCQA) 2020 Advanced Illness Value set (CAPC, 2021). After the initial needs assessment was performed, Weeks Medical Center was identified as the location from which to perform screening of adult inpatient admissions utilizing the Palliative Care Screening Tool (PCST) (Appendix B) during a 30-day period (DeLello, et al., 2018). Additionally, knowledge of and confidence with elements of palliative care was assessed with pre and post test scores of the Palliative Care Self Efficacy Scale (PCSES) tool (Appendix C), provided prior to and following an educational intervention (Philips, et al., 2011). The process of the screening tool implementation was measured, with data points including the numbers of tools completed fully, partially completed, and missed, as well as the resulting screening tool numeric totals and range.

Analyze. Results from the PCSES tool, provided before and after the educational intervention were analyzed to evaluate for impact and themes. The screening tool process was examined to note any constraints and barriers to implementation, process difficulties, variance in implementation, and other factors. Analysis of the scoring totals and groupings from the PCST was completed to consider the range of potential palliative care needs.

Improve. Potential palliative care penetration of inpatient admissions was derived using results from the PCST results and benchmarked against figures from the 2018 National Palliative Care Registry (Rogers, et al., 2019). Knowledge and confidence level with elements and provision of palliative care was measured by pre-test and post-test PCSES results.

Control. In this future phase, informed by results, a formalized and standardized screening process may be implemented in parts of the CAH system, with the aim of triggering the screening process in the EHR. A process to sustain ongoing palliative care knowledge and confidence levels, as well as referrals, may be identified and incorporated in the health system, potentially via training and new employee orientation modules.

Screening Process

The use of a screening tool to identify patients with potential unmet palliative care needs was first advocated by Weissman & Meier (2011) on behalf of the CAPC Consensus Report (p.17). Since then, additional studies investigating the impact of screening on identifying unmet palliative care needs have demonstrated a positive relationship between screening and actual or potential palliative care consultation (Glare & Chow, 2015; Adelson, et al., 2017; Flaherty, et al., 2018). Additionally, guidelines related to the provision of palliative care by national and international organizations all recommend utilizing a screening mechanism or instrument in a

timely manner to appropriately identify patients with serious illness or medical complexity with

unmet palliative care needs (WHO, 2016; CAPC, 2022)

Rogers, et al. (2019) reported findings and key metrics from the 2018 National Palliative

Care Registry survey, which derived data from 365 hospital-based adult palliative care programs,

representing varied geographic locations, tax status and hospital sizes. Palliative care

penetration, which is defined as the percentage of annual inpatients receiving an initial palliative

care consultation, rose from 2.5% to 5.3% (112% increase) between 2008 and 2017, representing

increasing provision of palliative care services to hospitalized patients. The use of a formal

screening mechanism or "triggers" for consultation was positively correlated with higher

penetration. Hospitals that did not utilize screening/triggers had a 5.0% penetration rate while

those employing screening/triggers had a 6.0% penetration rate, representing a 20% increased

access to palliative care for patients with serious illness (p. 1029). Kelley and Bollens-Lund

(2018) advocated for continued development of evidence-based methods to proactively identify

patients and caregivers potentially benefitting from or needing palliative care services. Citing

the lack of a "gold standard" measure to prospectively identify the care needs of those with

serious illness, the development and use of a "brief screening tool" initially identifying patients'

needs in relation to palliative care is recommended to promote broad access to palliative care

(Kelley & Bollens-Lund, 2018, p. S-13).

Education

Kamal, et al. (2016) analyzed the palliative provider workforce, projecting a 1% or less

growth in numbers of palliative physicians in 20 years during which the expected numbers of

individuals seeking palliative care is expected to grow by 20%, resulting in a ratio of one

physician to 26,000 patients by 2030 (p. 113). Extending services as the patient population with

serious illness and SHS rapidly increases without adequate specialty provider availability presents a challenge for referral of patients and families needing those services. As such, generalist palliative care knowledge and education are crucial for all clinicians to adequately identify and refer patients and caregivers with unmet palliative care needs.

Reville, et al. (2013) examined an educational intervention aimed at increasing knowledge on palliative care and referral criteria in a 700-bed urban teaching hospital. The intervention consisted of didactic and outreach visits in the oncology setting. Results demonstrated a 26% increase in referrals, an increase in the variety of reason for referral, and a trend towards patients being seen earlier rather than at end of life (p. 786). A 2021 systematic review by Li, et al. analyzed 39 studies to investigate the effectiveness of palliative care education. Most palliative care education (PCE) offerings were self-developed with symptom management and communication the two top themes within any didactic session. The authors concluded that PCE intervention was effective in improving "knowledge, attitude and confidence in palliative care" (Li, et al., 2021, p.106). Sabolish and Pennartz (2023) examined the effects of a two-hour end-of-life care educational intervention offered to acute care nurses (n=52), utilizing pre and post-intervention tools to evaluate the impact of the intervention. An increase in self-efficacy in palliative care was found to be statistically significant. A 30% increase in knowledge was demonstrated post-intervention (p. E34).

Specific Aims

The purpose of this quality improvement project was to facilitate palliative care services for individuals and families with unmet palliative care needs. This was accomplished via the specific aims of this project:

1). Implementation of a valid and reliable screening tool to identify patients with unmet palliative care needs.

2). Provision of an educational intervention to increase clinician palliative care knowledge and confidence level.

Methods

Context

The state of New Hampshire, in the northeast corner of the United States, has an approximate population of 1.37 million people with the population density highest in the southeast area (200 to 500 people per square mile) and dwindling to a low of 10 to 25 people per square mile in Coos County, located in the northern most part of the state and bordering Canada (United States Census Bureau, 2021). Coos County is the largest county in NH in terms of square miles, with its sparse population spread out over 1,795 square miles. Although the population of Coos County decreased between 2010-2020, the largest segment of the population (24.8%) is 65 years of age and older (Unites States Census Bureau, 2022). This figure represents a significant increase over the state average of 19.3%, placing NH ninth in the country in terms of percentage of population over 65 years of age (Population Reference Bureau, 2021). Thus, Coos County, as the largest territory in NH, has the highest percentage of older adults, located in rural areas of the state.

The health system in Coos County is part of the parent organization, North Country Region (NCR), comprised of North Country Healthcare (NCH) and Coos County Family Health Services (CCFHS). NCH, whose mission is "to improve lives by assuring consistently excellent, integrated healthcare" (NCH, 2023) provides access to acute care services in three hospitals: Androscoggin Valley Hospital (Berlin, NH), Upper Connecticut Valley Hospital (Colebrook,

NH) and Weeks Medical Center (Lancaster, NH). NCH also provides home health services, including hospice and palliative care, through North Country Home Health and Hospice Agency (NCHHHA) (North Country Region, 2022). Each of the acute care hospitals in NCH is designated as a federal Critical Access Hospital (CAH), defined as a facility with 25 or less inpatient beds, located more than 35 miles from another hospital or 15 miles if surrounded by mountainous terrain or accessed by secondary roads, providing 24/7 emergency care services and for which the average length of acute care admission is less than 96 hours (New Hampshire Department of Health and Human Services, 2023). The latter facility, Weeks Medical Center (WMC), was the location for this quality improvement project. WMC is a 25-bed critical access hospital providing 24-hour emergency care, inpatient acute care, rehabilitation, and oncology care, as well as ancillary services (North Country Healthcare, 2023).

Cost-Benefit Analysis

The Value Transformation Framework (VTF) (Modica, 2020) was applied in considering implications of this quality improvement (QI) project across three domains: infrastructure, care delivery and people. Within the VTF, each domain is further distilled, resulting in fifteen "change areas" cultivated from evidence-based research and best practices (Modica, 2020, p.109). The VTF aims to provide a structure to transform a system towards value-based care, using an approach to activate positive change within each of the three domains, moving a system in a practical and objective manner towards achievement of the "Quadruple Aim", which Sikka, et al. (2015) identified as improving health outcomes, patient experience, and the experience of providing care, while reducing costs. The applicable VTF "change areas" within each domain that may be potentially impacted by this quality improvement project are noted below.

Infrastructure

Improvement strategy. Through this QI project, processes to achieve improved outcomes applicable to and integrated within the health system were identified. Infrastructure elements supporting positive change are proposed to integrate processes supporting high quality, effective and efficient care.

Health information technology. Evidence-based processes harnessing NCH technology were utilized to screen patients for early identification of unmet and potential future palliative care needs. A trigger process was identified and implemented enabling consistent consideration of unmet and future palliative care needs. Cost to the system consists of time and expense to implement the screening process in the EHR.

Cost. As noted previously in "Available Knowledge, Cost", a robust evidence-base exists documenting positive healthcare related cost reduction with implementation of palliative care services. Conversely, any health system embedding palliative care services within the system will incur operating and staffing costs, the expense of which is negated by cost savings demonstrated by the service. This QI project costs include clinician time to complete the educational intervention and screening tool.

Care Delivery

Population health management. Care of older adults in the NCH region was identified in the 2022 CHNA as the third priority for the health system (NCR, 2022). This QI project facilitates provision of palliative care to a population known to be older and with a higher incidence of chronic disease (NH Department of Health and Human Services, 2023; North Country Region, 2022; NH Division of Public Health Services, 2022; CDC, n.d.), two factors often implicated in the need for palliative care.

Evidence based care. As noted previously, multiple aspects relating to the provision of palliative care are supported by a strong evidence base, including reduction of burdensome symptoms, increased quality of life, increased patient and caregiver satisfaction, enhanced shared decision making, and reduction in health care related costs. Facilitating palliative care in the NCH system moves it towards achievement of three facets of the quadruple aim in quality. Costs to the system includes embedding specialty staff and ongoing education to maintain knowledge.

People

Patients. When considering the cost and benefit to patients in terms of palliative care, the benefits are clearly documented previously in this paper. Cost may be considered in terms of missed opportunities or mandates to relieve SHS of patients and caregivers, as noted in previous discussion. Palliative care is a Medicare and Medicaid covered service, with many commercial insurances providing coverage as well. Financial cost to the patient may be dependent on insurance or grant opportunities.

Partnerships. Early identification of patients and caregivers with unmet or future potential palliative care needs facilitates provision of palliative services supporting the patient and family, potentially negating future SHS and costs. It strengthens collaboration between and among care providers and settings within transitions of care. This benefits patients, caregivers, care teams, and the NCH system with the potential to provide evidence-based care optimizing outcomes congruent with the goal of NCHHHA to serve the "right patient, (in the) right program, (at the) right time" (NCHHA, 2023, p.1)

Figure 2

Value Transformation Framework (Modica, 2020, p. 107 and 109)
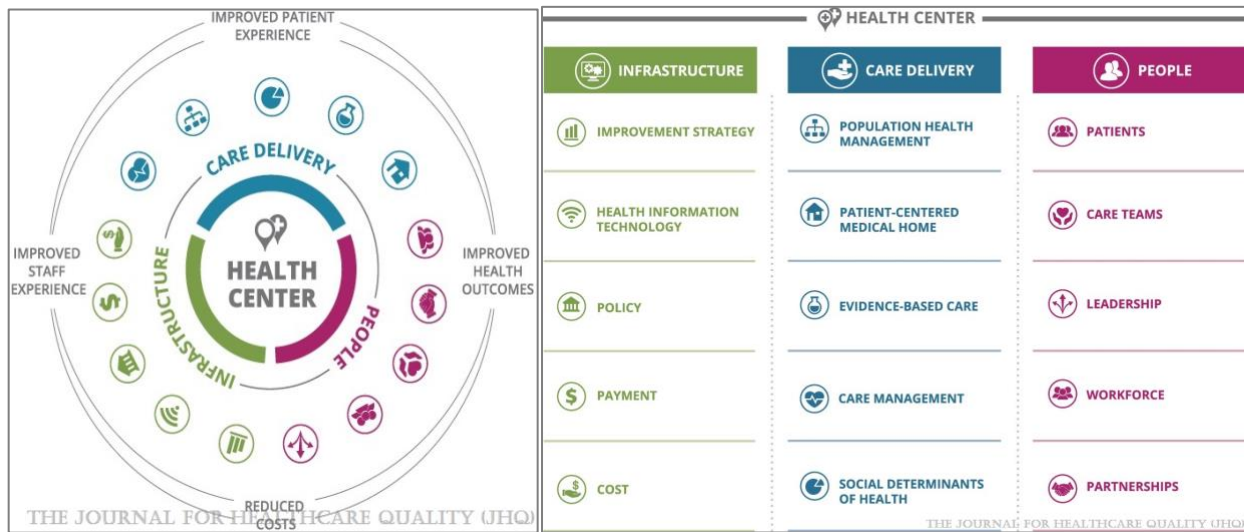
Interventions

Palliative Care Screening Tool

The PCST was completed for all adult emergency department visits and inpatient admissions over a 30-day period. Eligible admissions included those for individuals eighteen or older and with an admission type of full admission, observe admission, or swing bed admission, occurring on the medical/surgical (MS) or intensive care unit(s) (ICU). The PCST, created by CAPC and validated by DiLello, et al. (2018) and Glare & Chow (2015), provides a numerical rating based on clinical assessment of basic disease process (2 points for presence of each of six disease categories), presence of other comorbid factors (1 point for each of four factors), functional status (0-3, representing fully active to fully disabled, respectively) and healthcare utilization (1 point for each of five utilization points). Completed tools were assessed by this author for consistency and completion. The tool was administered by clinicians in a paper form and secured on the unit for review by the author. Data was deidentified for project purposes.

Education

A brief, online, asynchronous 36-minute educational intervention was developed utilizing evidence based palliative care guidelines (National Consensus Project for Quality Palliative Care, 2018) and knowledge from the End-of-Life Nursing Education Consortium (ELNEC) curriculum (ELNEC, 2019), for which the author is a certified educator with access to training materials. Additional information from the Ariadne Labs "Serious Illness Care" program was included in training and educational material. Ariadne Labs, a collaboration between Brigham and Women's Hospital (BWH) and the Harvard T.H. Chan School of Public health, seeks to improve health through innovation (Ariadne Labs, 2023).

Study of the interventions

Palliative Care Screening Tool

Completed PCST forms were examined for accuracy in scoring as well as for completion. A review of screening forms indicating the presence of unmet palliative care needs (Score range: 2 or less, no intervention needed; 3 observation only; 4 consider palliative care consult; 6 palliative care team review; 8 palliative care consult) was performed, with scoring categories grouped according to frequency and percentage.

Education

A brief (5-minute) educational training providing instruction on the use and completion of the PCST was provided to nurse participants. Completion rate as well as post-test survey responses were examined.

After completing the online palliative care education module, the PCSES, a validated tool developed by Philips et al. (2011) was utilized to measure participants' perceptions of confidence with and knowledge of a palliative approach to care across twelve domains. This tool was

administered prior to the online educational intervention and immediately following the

intervention, with participants blinded to the repeated use of the instrument upon initial

completion. Additional questions pertaining to age, clinical location, self-reported Benner rating

of novice to expert (Benner, 1982), years of practice, and experience in caring for a loved one

with a chronic, complex, or life-limiting illness were administered.

Measures

The following measures were identified and related outcomes were examined in the

project (also discussed in **Rationale**, *DMAIC Process for Project Implementation*, **Measures**):

- Process Measure: the process of PCST implementation, completion and integrity of

  results was examined. Data was analysed for rate of PCST completion (number of

  eligible admissions versus number of completed PCST), partially or incorrectly

  completed PCST, variance in scoring, and missed opportunities.

- Outcome Measure: PCST results were stratified to delineate the number of PCST

  indicating the presence of potential unmet palliative care needs as well the range of

  PCST results.

- Outcome Measure: Palliative care self-efficacy was measured before and after the

  educational intervention using the PCSES.

Analysis

Quantitative methods utilizing descriptive statistics were utilized to convey results from

all measures. The initial retrospective twelve-month needs assessment utilized ICD-10 codes

across three CAHs and stratified data according to facility, type and number of visits, and seven

disease categories. The subsequent retrospective three-month needs assessment further stratified

data to include the count of individuals with repeat visits during the study period (1, 2, 3 or 4+

visits), allowing for identification of the most frequently associated disease presentation and numbers of patients with repeat visits.

Post-test results from the PCST online training module were examined for effectiveness of the instruction as well as completion rate. Analysis of the 30-day screening intervention utilizing the PCST captured completion rates for both ED encounters and inpatient admissions as well as any variance between staff RN and control completion of the PCST for inpatient admissions. Age range categories for ED encounters and inpatient admissions were analyzed for frequency and percentages in the patient population. Completed PCST intervention grouping results for both ED encounters and inpatient admissions were reported using frequency and percentage distributions. A proposed palliative care penetration rate was derived using PCST intervention grouping results and inpatient census data.

Data related to the online educational intervention assigned to identified staff nurses was analyzed for percentage of participation as well as demographics of nurse participants. Pre-test and post-test scores of the PCSE, measuring confidence level with and knowledge of twelve palliative care domains, was examined for effectiveness of the educational intervention.

Ethical Considerations

Review of this project for quality improvement status was sought from the University of New Hampshire (UNH) Nursing Quality Review Committee. The committee concluded the project met the standards for a quality improvement initiative, based on the SQUIRE 2.0 guidelines (SQUIRE, 2015) and did not require review by the UNH Institutional Review Board for the Protection of Human Subjects. It was noted that the project did not pose any financial, professional, or institutional conflicts of interest.

During the interventional phases of the project, data extracted during the initial retrospective chart review was de-identified. Participation in the educational intervention was voluntary, with results deidentified. Screening tool completion and results were deidentified. The author accessed all electronic health record information using only the agency supplied computer, which required a two-step authentication process.

Results

Needs assessment

Utilizing ICD-10 codes identified by CAPC as inclusion criteria for adult palliative care screening (CAPC, 2021), the initial 12-month retrospective review of ED patient encounters at the three NCH CAHs revealed a total of 4,843 encounters with 9,360 associated ICD-10 codes, stratified according to facility and ICD-10 disease-related code groupings (Appendix D). The top three ICD-10 diagnosis groupings were noted to be cancer, chronic obstructive pulmonary disease (COPD) and "other", which includes diagnoses related to skin alteration, muscle wasting, radiation therapy, decreasing functional status, reduced mobility, and increased dependence (CAPC, 2021).

Table 2

Twelve-month data extrapolation: ICD-10 Codes – 3/1/2022 to 3/1/2023

Facility	Patients	Encounters	ICD-10 Cancer	ICD-10 Heart Disease	ICD-10 COPD	ICD-10 Dementia	ICD-10 Renal	ICD-10 Liver	ICD-10 Other	TOTAL CODES
ANV	922	2120	1369	251	674	275	310	194	1039	4112
UCVH	496	1139	859	207	404	129	160	56	391	2206
WMC	797	1584	1045	264	348	299	242	219	625	3042
TOTAL	2215	**4843**	**3273**	722	**1426**	703	712	469	**2055**	9360

Data was further distilled to examine type of encounter with ED discharge status. Androscoggin Valley Hospital (ANV) had the highest patient encounters with the highest discharge disposition to inpatient status, followed by Weeks Medical Center (WMC) and Upper Connecticut Valley Hospital (UCVH), respectively.

Table 3

Twelve-month data extrapolation: Visit Type and Discharge Status – 3/1/2022 to 3/1/2023

Facility	*Visit Type				
	ER	ERBO	IN	INO	Grand Total
ANV	1505	24	426	165	2120
UCVH	869		167	103	1139
WMC	1176		301	107	1584
Grand Total	3550	24	894	375	4843

Visit Type: ER = emergency room, ERBO = ER bed observation, IN = inpatient, INO = inpatient observation.

A subsequent 3-month retrospective review was completed to review patient encounters at the three NCH CAHs, enabling identification of patients with high-frequency visits (patients with 4+ encounters). Stratification of data also included the ICD-10 codes within disease groupings and discharge status (Appendix E).

Table 4

Three-month data extrapolation: ICD-10 Codes and Patient Encounters – 12/1/2022 to 3/1/2023

Facility	Patient Count	Encounters	# Patients with 1 encounter	# Patients with 2 encounters	# Patients with 3 encounters	# Patients with 4+ encounters	ICD-10 Cancer	ICD-10 Heart Disease	ICD-10 COPD	ICD-10 Dementia	ICD-10 Renal	ICD-10 Liver	ICD-10 Other	TOTAL CODES
ANV	323	529	207	66	30	20 Range (4-8)	326	58	194	59	89	77	290	1093
UCVH	175	275	115	34	15	11 Range (4-7)	201	59	64	45	46	10	95	520
WMC	262	377	195	43	17	7 Range (4-9)	228	64	95	62	53	80	150	732
TOTAL	760	1181	517	143	62	38	755	181	353	166	188	167	535	2345

An in-depth chart review was performed on the 38 patients identified as high-frequency

users at the three CAH facilities. Disease-related ICD-10 groupings were distilled as well as the

count of high-frequency patients per CAH, status (deceased or alive) as of time of review and

presence of advance directives as noted in the individual chart during the review.

Figure 3

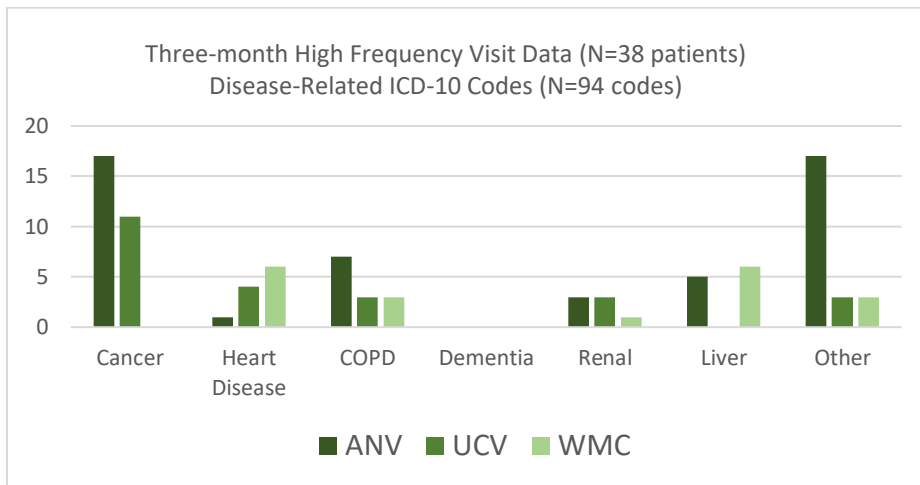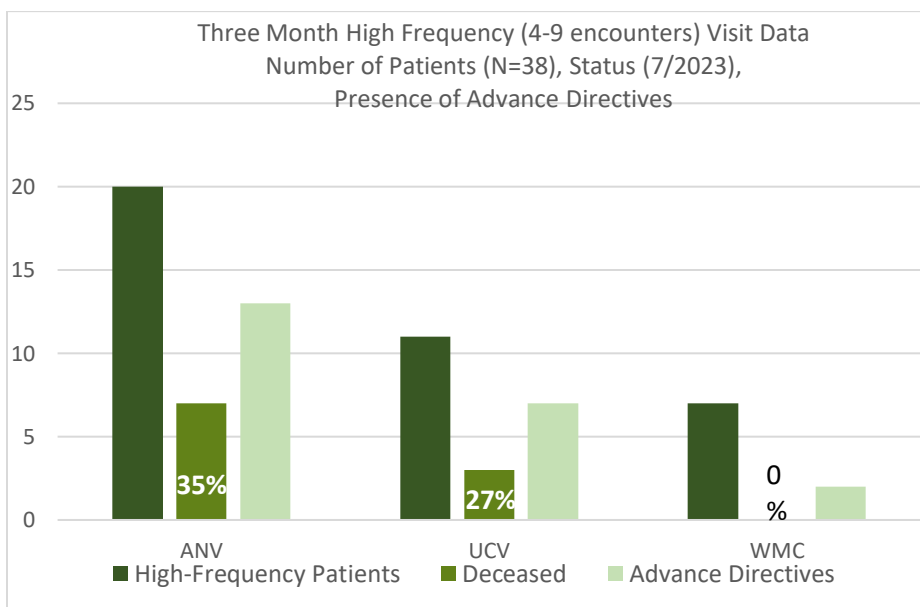*Three-month High-Frequency (4-9 encounters) Visit Data and ICD-10 Codes*

Figure 4

Three-month High Frequency (4-9 encounters) Visit Data

Educational interventions

NCH and WMC nursing leadership agreed that online, asynchronous delivery of education for both the use of the PCST and provision of generalist palliative care education would increase completion rates to assigned nurse participants. Educational modules were developed and provided via HealthStream© through the NCH network. Modules included the "Palliative Care Screening Tool", a 5-minute training on evidence for and use of the PCST, and a 36-minute educational module titled "Palliative Care Essentials". Nurses invited to participate (N=39) included staff nurses working on MS and/or ICU and house supervisors. This included full-time, part-time, per diem and travel nurses. A total of 28 nurses participated in the educational interventions (72% response rate).

Table 5

Nurse Participant Demographics

| Characteristic	N=28 (72%)	Characteristic	N=28 (72%)	Characteristic	N=28 (72%)
Age		Unit Affiliation		Personal Experience	
20-35	4 (14%)	Med/Surg	15 (54%)	Yes	26 (93%)
26-35	5 (18%)	ICU	4 (14%)	No	2 (7%)
36-45	6 (21%)	Med/Surg & ICU	5 (18%)		
46-55	5 (18%)	Other	4 (14%)		
55+	8 (29%)				
Years of Practice		Benner Rating			
0-3	7 (25%)	Novice	2 (7%)		
4-10	5 (18%)	Advanced Beginner	3 (11%)		
11-15	7 (25%)	Competent	6 (21%)		
16-20	1 (4%)	Proficient	10 (36%)		
20+	8 (29%)	Expert	7 (25%)		

Palliative care screening tool (PCST) education

A 4-question post-test survey was completed by all participants (N=28). Questions focused on eligibility criteria for screening as well as process measures for identification of type

of clinician specified to complete the screening tool, scoring of the screening, and subsequent

location of screening tools once completed.

Figure 5

PCST education post-test survey results

PCST HealthStream© Nurse Participant (N=28)
% Correct Response
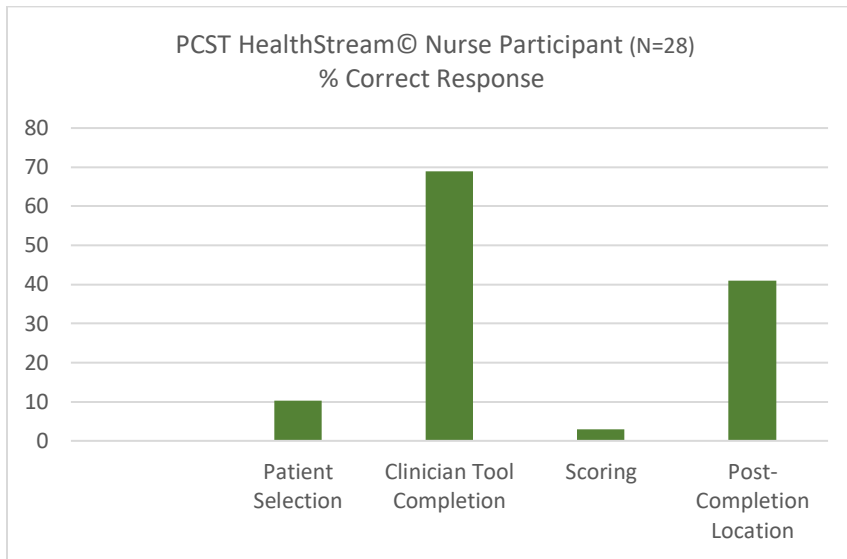
Palliative care generalist education

Responses to the pre-test and post-test surveys completed by nurse participants

demonstrated an overall improvement in confidence level across all twelve domains (Appendix

F). A 95% reduction in "needs further instruction" was achieved in four of twelve domains.

"Confident to perform independently" responses increased in eleven of twelve domains, with a

range of 4% to 40% and an average 19% aggregate increase of confidence achieved in the

"confident to perform independently" across all domains. The highest increase (40%) in

confidence level related to the provision of support services, while the smallest shift in

confidence level related to pain management (no change in highest level of confidence), with 23

of 28 respondents reporting they were "confident to perform independently" on the pre-test

survey, prior to the educational intervention.

Figure 6

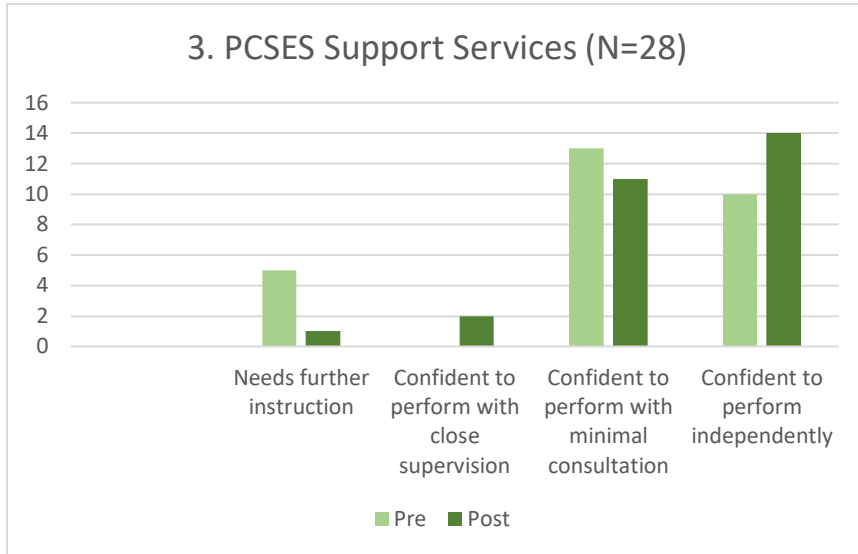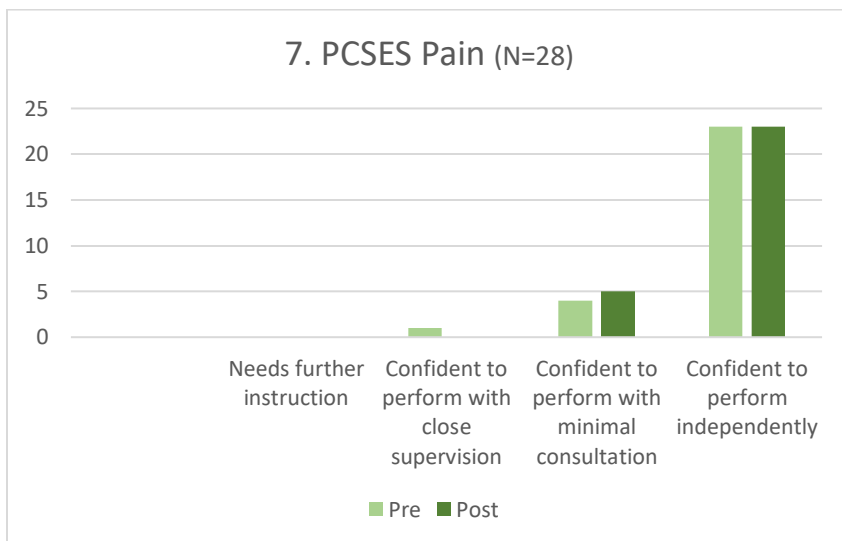*PCSES results: Support Services – 40% increase in "confident to perform independently"*

Figure 7

PCSES results: Pain management – no increase in "confident to perform independently"

Screening

Screening of adult ED patients and adults admitted with a status of full admission, inpatient observation, or swing bed admission took place between 09/15/2023 and 10/15/2023. The admitting nurse was responsible for the adult admission (regardless of admission type) with the project lead conducting the ED screenings. Patients were excluded from ED screenings if they were under the age of eighteen or had a discharge status on the daily census report indicating "left before being seen". Missed opportunities for inpatient screenings were noted as well as inclusion of direct admissions of patients not entering the facility through the ED.

Table 6

Data Metrics: ED and Inpatient – PCST 09/15/2023 to 10/15/2023

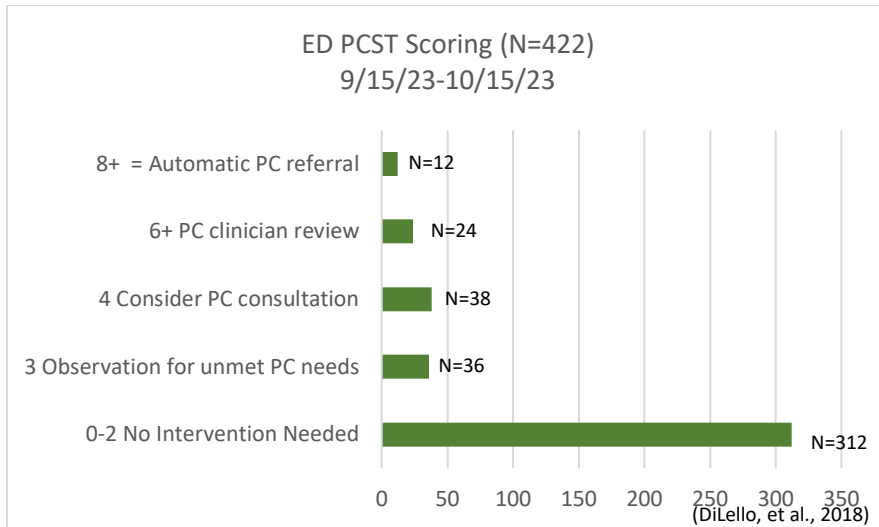| Data Metrics 9/15/23 – 10/15/23	Emergency Department Visits	Inpatient Admission	*Transfer Admission	Direct Admission
Screening Days	31	31	31	31
Patients	512	44	23	Unknown
Completed PCST	422	34	N/A	7
Excluded (E) / Missed (M)	90 (E)	10 (M)	N/A	N/A
% PCST Completion	100%	77%	N/A	N/A
Average Age	51	68	N/A	N/A
Age Range	<1 -100	19-93	N/A	N/A

*Transfer admission indicates a patient with inpatient admission status who was transferred to another inpatient facility either due to lack of bed availability or needing a higher level of care.

Emergency Department

A total of 512 patients visited the ED during the screening period. Ages ranged from several months old to age 100, with slightly more than half the visits occurring with those fifty-one years of age or older (53%) versus fifty years old or younger (47%). Screening results of eligible patients (N=422) revealed that 18% of screened patient met criteria to either consider palliative care consultation (N=38, 9%), review by palliative care clinician (N=24, 6%), or require an automatic palliative care referral (N=12, 3%).

Figure 7

*PCST ED Screening Results by PCST Scoring Guidelines (N=422)*

ED PCST Scoring (N=422)
9/15/23-10/15/23

- 8+ = Automatic PC referral — N=12
- 6+ PC clinician review — N=24
- 4 Consider PC consultation — N=38
- 3 Observation for unmet PC needs — N=36
- 0-2 No Intervention Needed — N=312

(DiLello, et al., 2018)

Inpatient

A total of 44 patients met criteria for screening once admitted via the ED. Completion rate of the PCST was 77% (N=34), with a missed opportunity of 10 eligible inpatient screenings, subsequently performed by the author via a retrospective chart review. Inpatient age ranges (N=44) differed significantly from ED age ranges.

Figure 8

PCST Age Difference: ED versus Inpatient

ED Patient Age Ranges (N=512)
9/15/23-10/15/23

Inpatient Age Ranges (N=44)
9/15/23-10/15/23
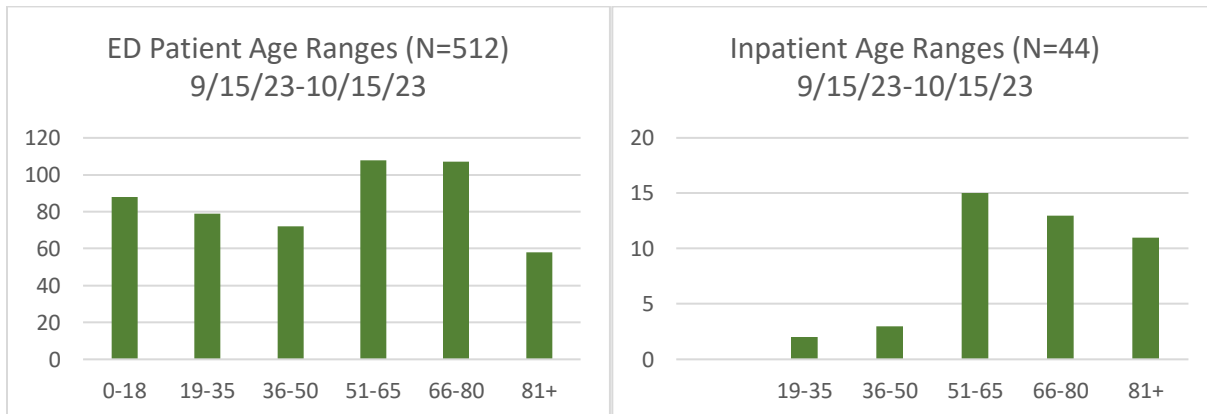
Results of nurse participant completed inpatient admission screenings (N=34) revealed that 62%

of screened patients met criteria to either consider consultation (N=10, 29%), review by

palliative care clinician (N=7, 21%), or require an automatic referral (N=4, 12%).

Figure 9

PCST Nurse Participant Inpatient Screening Results by PCST Scoring Guidelines (N=34)
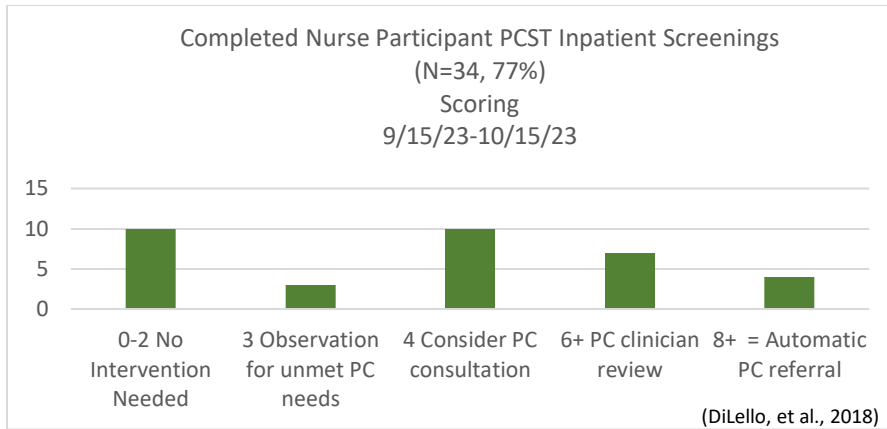
A total of 23% (N=10) of eligible admissions were not screened during the intervention period.

All missed opportunities for screening occurred between 8PM and midnight (30%, N=3), at or

around midnight (50%, N=5) or overnight (20%, N=2). Subsequent screening was performed via

retrospective chart review with 60% (N=6) of eligible inpatients meeting criteria to consider

palliative care consultation (30%, N =3) or review by palliative care clinician (30%, N=3).

Figure 10

PCST Retrospective Chart Review Results: Eligible Missed Palliative Care Screening
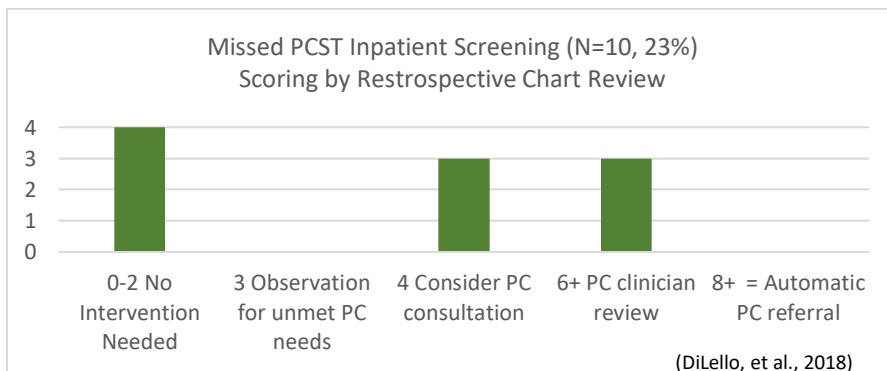
The inpatient nurse participant screening results were compared by individual screening element (basic disease process, presence of co-morbid conditions, functional status and health care utilization elements) with a control screening of the same elements performed by the project lead via a retrospective chart review. Overall variance between scoring elements revealed a mean variance of less than 1 (0.1875), a mode of -1 and a median of 0.5, as compared to the control scoring elements.

Figure 11

PCST Control Score Variance: Nurse Participant Screening Scores vs Control Scores (N=34)
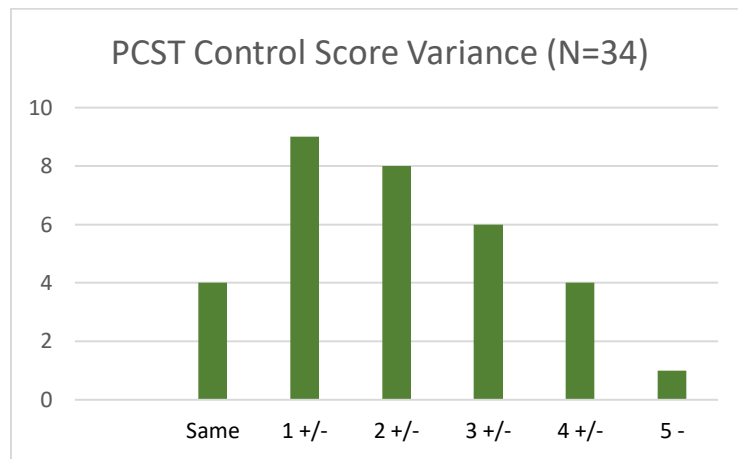
Discussion

Summary

As the nation experiences an aging population with an increased burden of chronic illness, strategies to target reduction of serious health-related suffering and economic strains of serious illness while also enhancing quality and effectiveness of care remain a priority, emphasized in the IHI "Triple Aim Framework" (IHI, 2014). The provision of palliative care is demonstrated to increase patient and caregiver satisfaction while reducing patient-identified burdens and the cost of care (Morrison, et al., 2008; Penrod, et al., 2010; Morrison, et al. 2011 May, et al., 2017; Cassel, et al., 2016; Lustbader, et al., 2017; Temel, et al., 2010; Temel, et al.,

2017, Quinn, et al., 2020). This type of care is most often available in urban areas in non-profit hospitals with more than 300 beds, of which 94% report having a formalized palliative care program (CAPC, 2020, p. 12). However, more than two thirds of the nation's hospitals are in rural areas and have fewer than fifty beds to serve their patient populations, of which 17% report the presence of a palliative care program (CAPC, 2020, p. 12). In New Hampshire's Coos County, the geographic location of this quality improvement project, the current challenge of an aging rural population with a poorer socioeconomic status and higher burden of chronic disease (NH DHHS, 2023; NCR, 2022; NH Division of Public Health Services, 2022; CDC, n.d.) is coupled with limited access to palliative care, both due to lack of formal palliative programs and underutilization of existing palliative care programs (NCHHA, 2023, p.4).

The aim of this quality improvement project was to facilitate palliative care in a rural health system serving an older population with an increased burden of chronic illness. The approach to achieving this aim was tiered, commencing with a 12-month and 3-month needs assessment targeting ICD-10 codes consistent with palliative care screening inclusion criteria, followed by a focused retrospective chart review of high-frequency visit patients and then implementation of educational interventions focused on palliative care screening training and palliative care generalist education. This was immediately followed by a 30-day screening period of both ED and inpatients at the pilot facility.

Assessment of the potential palliative care patient population in terms of numbers and needs was accomplished through analysis of quarterly and annual data targeting codes related to inclusion criteria for palliative care screening. Key findings demonstrated a significant presence of encounters for those with serious illness potentially benefiting from palliative care screening. Further retrospective chart reviews and screenings for both ED and inpatient encounters revealed

the presence of unmet palliative care needs. These results aligned with the study by Gruhler, et al. (2018) that revealed triggering criteria for palliative care consultation via retrospective chart review using an established algorithm. Palliative care education, provided to 28 nurse participants (N=77%), increased knowledge and confidence level across twelve domains, while the screening training revealed the need for clarification of process elements and screening eligibility criteria.

A strength of the quality improvement project was the creation of an online, asynchronous educational intervention that provides evidence-based information to participants, allowing them to cultivate a common understanding of the definition and provision of palliative care, dispelling myths and misconceptions related to this type of care. Piloting the PCST was another benefit of the project, as it allowed for assessment of both the process of screening and consideration of future use as an integrated and triggered process in the EHR to identify potential unmet palliative care needs and consider future referral patterns based on results.

Interpretation

Quantitative data from the initial 3-month and 12-month needs assessment demonstrated the presence of indicators identified as inclusion criteria for the consideration of palliative care screening within the related patient population, across all three CAH facilities. A further focused retrospective chart review of high-frequency (4-9 visits in 3 months) visit patients (N=38) revealed the presence of potential unmet palliative care needs. One significant finding of the focused retrospective chart review was that 26% of individuals were deceased at the time of the chart review (N=10), approximately four months after the identified and reviewed encounter, representing a potential missed opportunity for palliative or hospice care. Additionally, 42% of high-frequency visit patients did not have advance directives in the electronic health record at the

time of the retrospective chart review, despite high interaction with the health system and

apparent declining health, both opportunities for palliative care support. Approximately 76% of

patients appeared to have unmet palliative care needs due to multiple medical problems, mobility

concerns, decreasing functional status, and/or unrelieved symptom burden, with one clinician

noting the patient endorsed being "miserable" in his/her current state.

Results from the ED and inpatient screening using the PCST at the pilot CAH suggest

that formalized screening enhances identification of patients and families with unmet palliative

care needs, echoing evidence from several studies concluding that screening for unmet palliative

care needs is more likely to result in palliative care consultation, thus increasing access to

services (Glare & Chow, 2015; Adelson, et al., 2017; Flaherty, et al., 2018). One critical finding

relates to the palliative care penetration rate, defined by CAPC as the number of palliative care

referrals per total admissions (CAPC, 2015). Utilizing the data from the inpatient screenings,

penetration rates were computed.

Table 7

Computed palliative care penetration rates based on PCST inpatient scoring

Inpatient PCST Scoring (N=44)	Count	Penetration Rate
8+ = Automatic Referral	4	1%
6-7 Palliative clinician to review	10	3%
4-5 Consider palliative care consultation	13	4%
**Admissions = 344		

Applying a conservative approach and using only those screenings that generated a scoring result

of "automatic referral", the penetration rate would be 1%, indicating a low rate, according to

CAPC, which is expected with a new palliative care program (CAPC, 2015). Including those

screenings scoring between 6-7 increases the penetration rate to 4% (significant clustering at this

rate reported in the palliative care registry) and including screenings scoring between 4-5

increases the penetration rate to 8%, at the upper level of the clustering trend noted by CAPC

(2015) in the palliative care registry and noted as a benchmark in the Gruhler, et al. (2018) study.

Thus, results from the inpatient PCST pilot appear to mirror the presence of palliative care needs

in the inpatient population related to total admissions.

Results from this project also suggest that palliative care education increases nurse

knowledge and confidence level related to care domains. Importantly, the most significant

improvement noted in post-test results was the improvement of knowledge of and confidence

with discussion of support services, one of which can be identified as palliative care. Reville, et

al. (2013) noted a 26% increase in referrals after education on palliative care and referral criteria,

with a trend towards earlier referral (p. 786). Thus, sustained education may improve clinician

knowledge, resulting in recognition of unmet palliative care needs and increased access to

palliative care for those with serious illness.

Limitations

This quality improvement project was impacted by several important limitations. As the

project pilot took place in a rural area within a CAH system, results are not generalizable to other

contexts. Additionally, although the educational interventions were administered and completed

prior to commencement of the screening intervention, results from the PCST training module and

palliative generalist education module were not available until after the 30-day screening period

was completed. Misconceptions regarding eligibility criteria, utilization of the screening tool,

and process components were not identified in a timely manner, thus not allowing for

supplemental guidance from the project lead to nurse participants utilizing and administering the

screening tool, impacting the methodology of the screening intervention. PCST measurement

results may also be impacted, as noted in the variance of scoring results on the inpatient (N=34)

nurse participant screenings versus control screenings (Figure 11).

Both educational interventions (5-minutes and 36-minutes in length) were provided

online in an asynchronous format to accommodate nurses' schedules and competing demands.

Although this format allowed for ease of administration and completion, the asynchronous

format prevented exchange of ideas and application of new knowledge to enhance learning and

clarify concepts. Broglio and Bookbinder (2014) concluded that brief online palliative care

education appears to improve intention to change practice and enhances short-term knowledge

but acknowledged the need for further studies to understand the impact of online education on

nursing behavior change and patient outcomes. Rouleau, et al. (2019) completed a systematic

review of online nursing education and similarly concluded that implications for nursing practice

change and patient outcomes related to online learning remain unclear. Thus, the format of the

educational intervention may present a limitation in terms of nursing practice change and patient

outcomes related to provision of and nursing advocacy for palliative care services.

An additional limitation involves the issue of time. The original intent of the project was

to provide both screening and educational interventions to assess efficacy with subsequent

formalization of the screening process to trigger palliative care referrals based on screening

results. The time frame of the project did not allow for implementation and integration of the

screening process in the NCH electronic health record. Additionally, lack of palliative provider

availability to provide consultation prohibited implementation of the formal screening process

outside of the pilot screening period. Thus, the outcome measure identifying referrals to

NCHHHA during the intervention period could not be derived as the project did not progress to

inclusion of a formalized screening process embedded in the electronic health record, generating referrals.

Conclusions

As the numbers of individuals with serious illness and the potential for experiencing serious health-related suffering increase in the nation and worldwide, the provision of palliative care shines forth as a potential solution to minimize suffering, provide goal concordant care, decrease costs, and increase patient and caregiver satisfaction. Evidence demonstrates that employing screening processes to assess for potential unmet palliative care needs results in earlier identification of palliative needs and increases the palliative care inpatient penetration rate, thereby broadening access to palliative care for patients and families with serious illness (Kelley & Bollens-Lund, 2018; Regers, et al., 2019). The findings of this quality improvement project support the use of a screening process to identify unmet palliative care needs and facilitate access to palliative care. Further recommendations for practice include integrating the PCST into the EHR for automatic completion in the presence of certain patient characteristics captured on the screening tool (chronic disease, symptoms, functional status, healthcare utilization). Triggering of the screening process based on patient characteristics and need would eliminate the subjective nature of determining whether an individual may or may not qualify for or benefit from palliative care.

The asynchronous online educational module provided as an intervention in this project represents dissemination of the very basics of palliative care knowledge, due to the required brevity of the intervention. Results demonstrated an increase in palliative knowledge and confidence level in the short-term, but implications on practice change and patient outcomes were not explored, and it is unknown whether the knowledge and confidence demonstrated in

post-test results will be retained in the long-term. The educational intervention was provided in a

format to allow for ease of completion without high utilization of resources. However, the format

negates use of role play, case study, and active application of concepts, all of which may serve to

increase cognitive effort, retention, and prompt a change in practice. Outcomes related to online

palliative care education in terms of long-term change in practice or patient outcomes presents as

a knowledge gap in the current literature. While a recent study by Saoblish and Pennartz (2023)

investigated the impact of a live two-hour educational session on nurse knowledge, behavior, and

patient outcomes, there is a dearth of evidence relating to outcomes with online palliative care

education. With the current nursing shortage and a shift towards low-resource utilization of

educational offerings, efficacy of the type, length, and format of online education as compared to

other modalities should be explored to understand patient outcome implications regarding

ongoing education, thus informing the health system of future palliative care education needs.

In rural health areas, patients and families have the challenge of both geography and

availability of resources in terms of accessing care to optimize health and well-being, whether

that means engaging with preventive care or utilizing supportive care to optimize quality of life.

Those with serious illness face living with a life-limiting illness and experiencing distressing

symptoms, increasing the risk for serious health-related suffering. Navigating an increasingly

complex healthcare system, patients and families with serious illness benefit from the support of

palliative care services, designed to minimizing suffering and optimize quality of life, based on

patient-derived goals of care. Increasing access to this type of care for those with serious illness

is a "win-win" as it increases quality of care, increases patient and family satisfaction, and

decreases cost. It provides the opportunity and invitation to achieve goal concordant care for a

patient and family, resulting in achievement of the NCHHHA goal of providing the right patient

with the right program (of care) at the right time (NCHHA, 2023). No patient or family deserves

less.

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Appendix A

CAPC ICD-10 Codes: Inclusion Criteria for Screening

Inclusion Criteria for a Population to be Screened for Palliative Care Services

Condition	ICD-10 Codes
Cancer	C00 - C14, C15 - C26, C30 - C39, C40 - C49, C50.xx, C51 - C58, C60 - C63, C64 - C68, C69 - C72, C73 - C75, C76 - C80, C7A - C7B, C81 - C97, D00 - D09, D45.0, D46.xx, D 75.1
Heart Disease	I09.81, I110.0 - I110.9, I111.1, I130.0 - I130.9, I132.0 - I132.9, I50.1, I50.20 - I50.23, I50.30 - I50.33, I50.40 - I50.43, I50.90 - I50.99, J8100 - J8109
Chronic Obstructive Pulmonary Disease and Other Respiratory	J43.0 - J43.2, J43.8 - J 43.9, J68.4, J84.10, J84.112, J84.17, J96.10 - J96.22, J 96.9x, J98.2 - J 98.3
Dementias	A81.00, A81.01, A81.09, F01.50, F01.51, F02.80, F02.81, F03.90, F03.91, G30.0, G30.1, G30.8 , G30.9, G31.01, G31.09, G31.83
Renal Disease	I12.0, I13.11, N18.1 - N18.6, N18.9, N19.0, N28.0, Z49.32
Liver Disease	K70.10, K70.11, K70.2, K70.30 - .31, K70.40 - .41, K70.9, K74.0 - K74.69
Other	163.xx, L89.119, L89.139, L89.149, L89.209, L89.309, L89.899, L89.90, M 62.50, M 62.81, M61.85, Z51.5, Z73.6, Z74.01, Z74.09, Z74.1 - Z74.3, Z 74.8 - Z74.9, Z91.81, Z99.11, Z99.3, Z99.81, Z99.89

[Note: Codes are based on guidance from the CAPC Multi-Payer Workgroup convened in 2016, and the NCQA Advanced Illness Value Set released 2020]

Appendix B

Palliative Care Screening Tool

Palliative Care Screening Tool (PCST)

Place patient sticker here

Criteria: Please consider the following criteria when determining the palliative care score of this patient.	
	SCORING
Basic Disease Conditions (select all that apply): ___Cancer (Metastatic or Recurrent) ___Advanced lung disease, oxygen dependent (such as COPD or interstitial lung disease) ___Stroke with significant limitations or swallowing dysfunction ___End stage renal disease (on dialysis) ___Advanced cardiac disease (for example, severe cardiomyopathy, CHF, ischemic heart disease) with symptoms at rest ___Other chronic progressive illness (for example, advanced dementia, advanced Parkinson's, failure to thrive/debility, advanced cirrhosis	*Score 2 points EACH* _____
Other Co-Morbid Conditions (select all that apply) ___Any other medical conditions (i.e. liver disease, renal disease, COPD, CHF, diabetes, other neurological diseases ___Has an unacceptable level of pain > 24 hours with or without treatment ___Has uncontrolled symptoms (nausea, vomiting) with or without treatment ___Has profound depression with or without treatment	*Score 1 point EACH* _____
Grade Scale for Functional Status *Self-care or ADLs equals eating, bathing, dressing, toileting, transferring and walking independently.* ___Fully active, able to carry on all pre-disease activities without any limitations to perform ADL's (self-care) ___Limited activity; confined to bed or chair more than 50% of waking hours; requires assistance with 1 ADL ___Completely disabled; totally confined to bed or chair; requires assistance with more than 1 ADL	*Score (circle) as specified below* _____0_____ _____2_____ _____3_____
Utilization The Patient: ___Has frequent visits to ER > 1X per month, same diagnosis. ___Has more than one hospital admission for same diagnosis in last 30 days ___Nursing home resident ___Admission to ICU ___Prolonged hospitalization with poor prognosis	*Score 1 point EACH* _____
TOTAL SCORE	
SCORING GUIDELINES **8+** = Automatic palliative care referral **6+** = Palliative care clinician review to determine eligibility **4** = Consider palliative care consultation **3** = Observation for potential unmet palliative care needs **2** = No intervention needed	

(DiLello, et al., 2018)

Appendix C

Palliative Care Self Efficacy Scale

Please rate your degree of confidence with the following patient/family interactions and patient management topics by choosing the relevant response below:

1). Answering patients' questions about the dying process:

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

2). Supporting the patient or family member when they become upset:

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

3). Informing people of the support services available:

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

4). Discussing different environmental options (e.g., hospital, home, family):

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

5). Discussing patient's wishes for after their death:

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

6). Answering queries about the effects of certain medication:

    a) Need further basic instruction
    b) Confident to perform with close supervision
    c) Confident to perform with minimal consultation
    d) Confident to perform independently

7). Reacting to reports of pain from the patient:

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

8). Reacting to and coping with terminal delirium:

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

9). Reacting to and coping with terminal dyspnea (breathlessness)

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

10). Reacting to and coping with nausea / vomiting

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

11). Reacting to and coping with reports of constipation

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

12). Reacting to and coping with limited decision-making capacity:

   a) Need further basic instruction
   b) Confident to perform with close supervision
   c) Confident to perform with minimal consultation
   d) Confident to perform independently

(Phillips, Salamonson & Davidson, 2011)

Appendix D

Twelve Month Needs Assessment: NCH CAH ICD-10 Codes – 3/1/2022 to 3/1/2023

Facility	Patients	Encounters	ICD-10 Cancer	ICD-10 Heart Disease	ICD-10 COPD	ICD-10 Dementia	ICD-10 Renal	ICD-10 Liver	ICD-10 Other	TOTAL CODES
ANV	922	2120	1369	251	674	275	310	194	1039	4112
UCVH	496	1139	859	207	404	129	160	56	391	2206
WMC	797	1584	1045	264	348	299	242	219	625	3042
TOTAL	2215	**4843**	**3273**	722	**1426**	703	712	469	**2055**	9360

Data: Visit Type per NCH Critical Access Hospital (CAH)

Facility	Visit Type				
	ER	ERBO	IN	INO	Grand Total
ANV	1505	24	426	165	2120
UCVH	869		167	103	1139
WMC	1176		301	107	1584
Grand Total	**3550**	**24**	**894**	**375**	**4843**

ANV = Androscoggin Valley Hospital, Berlin, NH
UCVH = Upper Connecticut Valley Hospital, Colebrook, NH
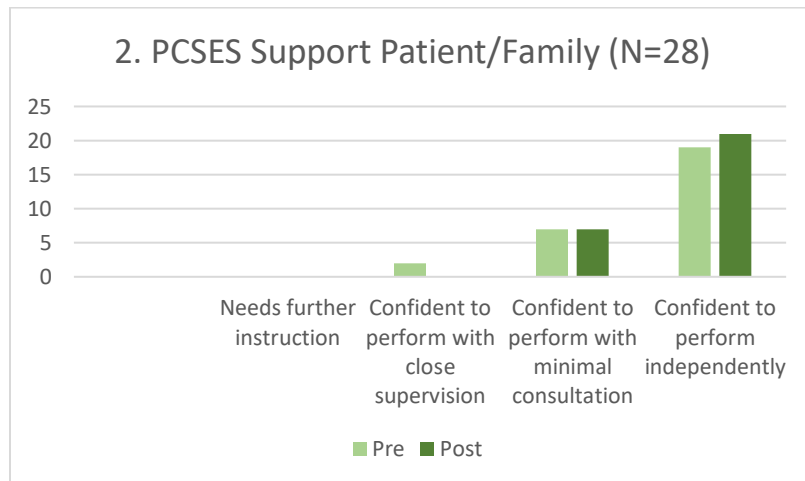WMC = Weeks Medical Center, Lancaster, NH

Appendix E

Three Month Needs Assessment: NCH CAH ICD-10 Codes – 12/1/2022 to 3/1/2023

Facility	Patient Count	Encounters	# Patients with 1 encounter	# Patients with 2 encounters	# Patients with 3 encounters	# Patients with 4+ encounters	ICD-10 Cancer	ICD-10 Heart Disease	ICD-10 COPD	ICD-10 Dementia	ICD-10 Renal	ICD-10 Liver	ICD-10 Other	TOTAL CODES
ANV	323	529	207	66	30	20 Range (4-8)	326	58	194	59	89	77	290	1093
UCVH	175	275	115	34	15	11 Range (4-7)	201	59	64	45	46	10	95	520
WMC	262	377	195	43	17	7 Range (4-9)	228	64	95	62	53	80	150	732
TOTAL	760	1181	517	143	62	38	755	181	353	166	188	167	535	2345

Data: Visit Type per NCH Critical Access Hospital (CAH)

Facility	Visit Type				
		ER	ERBO	IN	INO	Grand Total
ANV		364	2	104	59	529
UCVH		196		35	44	275
WMC		268		71	38	377
Grand Total		**828**	**2**	**210**	**141**	**1181**

ANV = Androscoggin Valley Hospital, Berlin, NH
UCVH = Upper Connecticut Valley Hospital, Colebrook, NH
WMC = Weeks Medical Center, Lancaster, NH

Appendix F

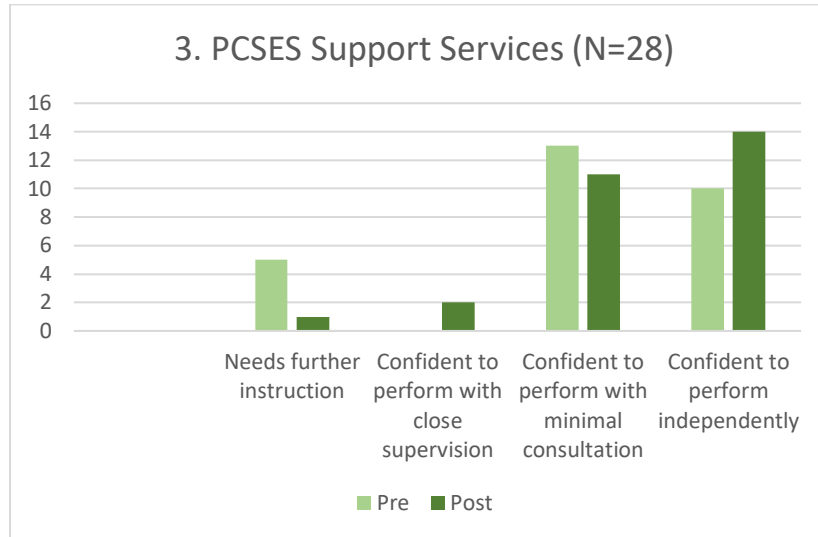Palliative Care Self Efficacy Scale Pre-Test and Post-Test Nurse Participant Survey Result

1). Answering patients' questions about the dying process:
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
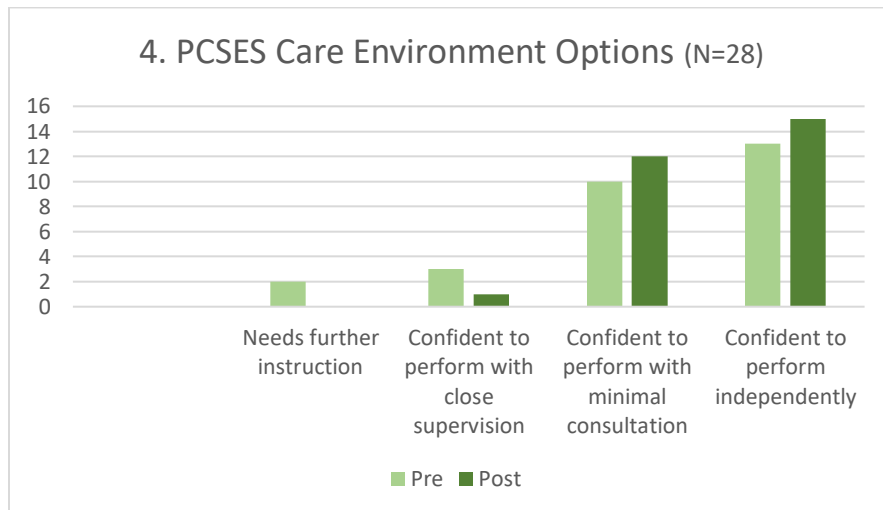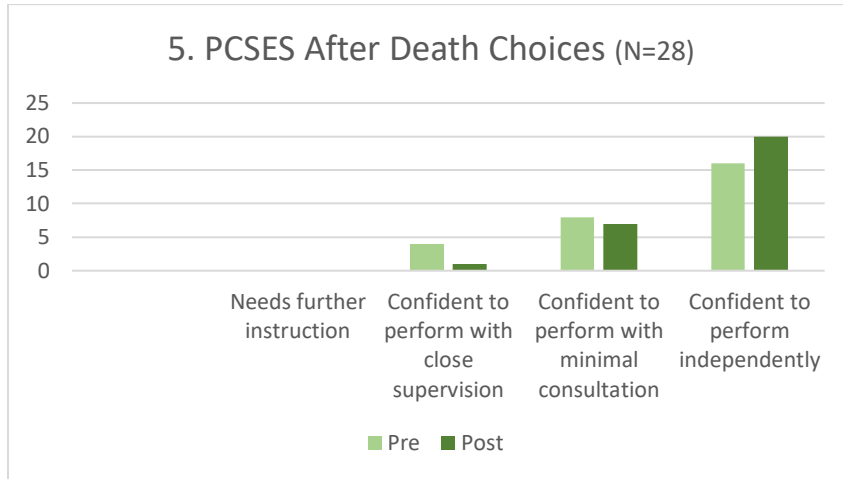- d). Confident to perform independently
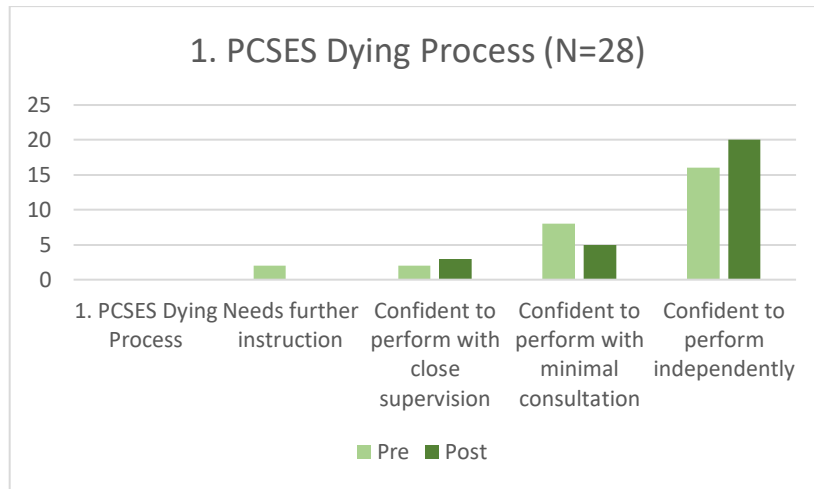
2). Supporting the patient or family member when they become upset:
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
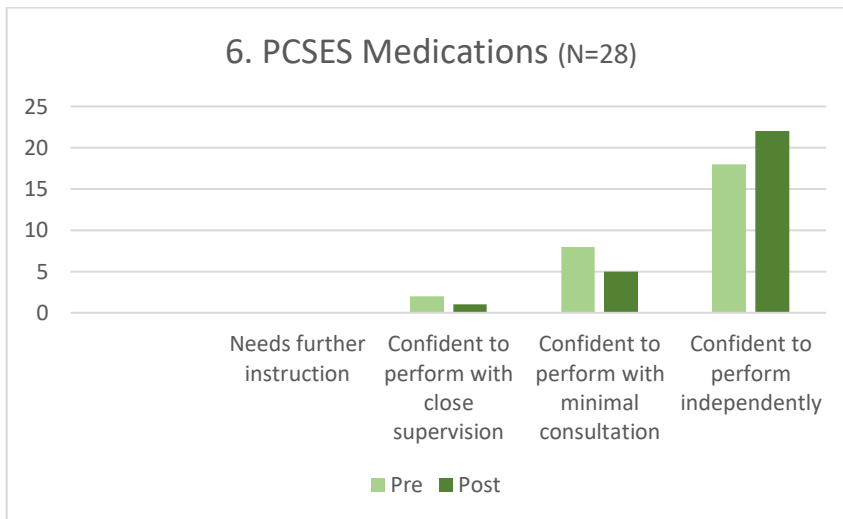- h)   Confident to perform independently

3). Informing people of the support services available:
  e) Need further basic instruction
  f) Confident to perform with close supervision
  g) Confident to perform with minimal consultation
  h) Confident to perform independently

3. PCSES Support Services (N=28)

4). Discussing different environmental options (e.g., hospital, home, family):
  e) Need further basic instruction
  f) Confident to perform with close supervision
  g) Confident to perform with minimal consultation
  h) Confident to perform independently

4. PCSES Care Environment Options (N=28)

5). Discussing patient's wishes for after their death:
- e) Need further basic instruction
- f) Confident to perform with close supervision
- g) Confident to perform with minimal consultation
- h) Confident to perform independently
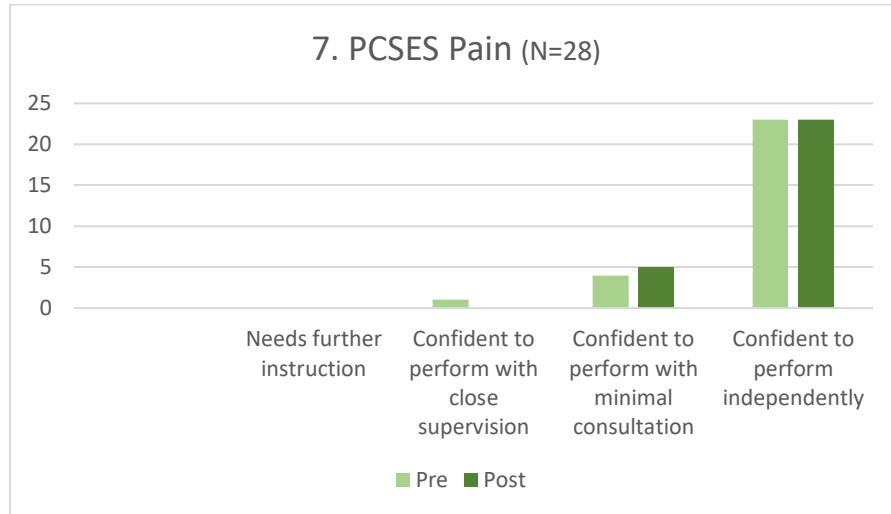
5. PCSES After Death Choices (N=28)

6). Answering queries about the effects of certain medication:
- e) Need further basic instruction
- f) Confident to perform with close supervision
- g) Confident to perform with minimal consultation
- h) Confident to perform independently
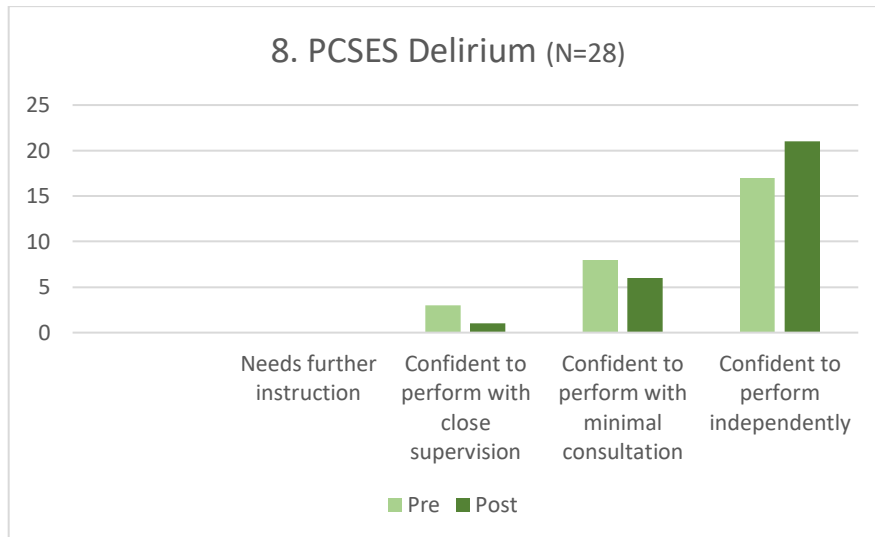
6. PCSES Medications (N=28)

7). Reacting to reports of pain from the patient:
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
- h)   Confident to perform independently
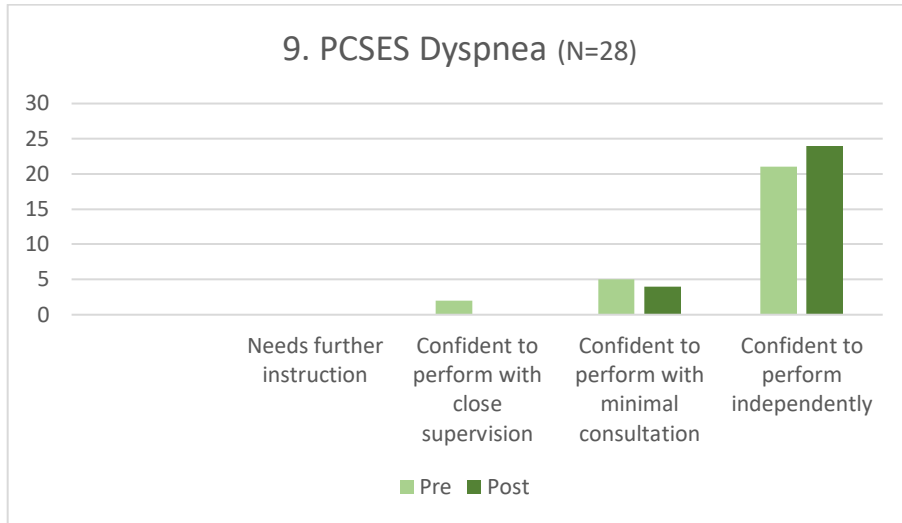
7. PCSES Pain (N=28)

8). Reacting to and coping with terminal delirium:
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
      Confident to perform independently

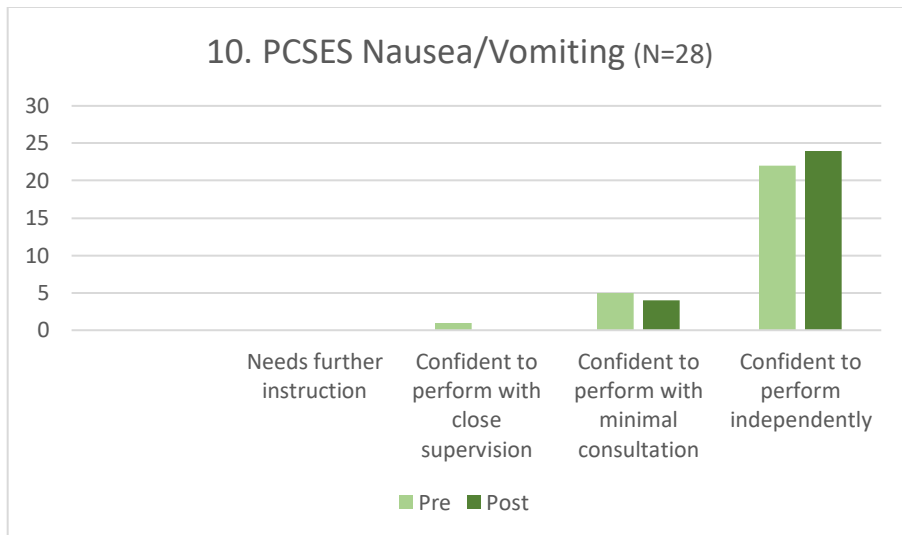## 8. PCSES Delirium (N=28)

9). Reacting to and coping with terminal dyspnea (breathlessness)
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
- h)   Confident to perform independently
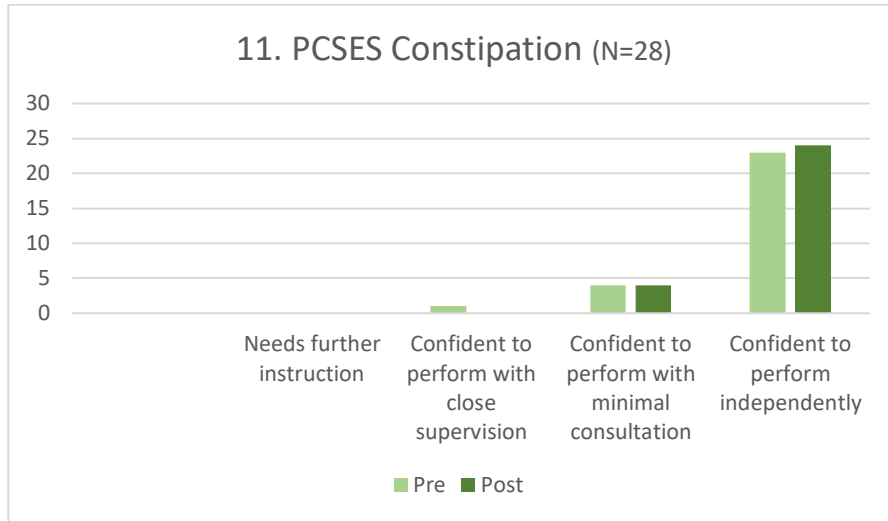
9. PCSES Dyspnea (N=28)

10). Reacting to and coping with nausea / vomiting
- e)   Need further basic instruction
- f)   Confident to perform with close supervision
- g)   Confident to perform with minimal consultation
- h)   Confident to perform independently

10. PCSES Nausea/Vomiting (N=28)

11). Reacting to and coping with reports of constipation
- e) Need further basic instruction
- f) Confident to perform with close supervision
- g) Confident to perform with minimal consultation
- h) Confident to perform independently

11. PCSES Constipation (N=28)

12). Reacting to and coping with limited decision-making capacity:
- e) Need further basic instruction
- f) Confident to perform with close supervision
- g) Confident to perform with minimal consultation
- h) Confident to perform independently

12. PCSES Limited Decision Making (N=28)