

Palliative care in dementia[✳]

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Abstract: Dementia is one of the leading causes of death in the US. Approximately, 6 million elderly people in the US had dementia in 2020. Advanced dementia is complicated by multiple problems that can lead to distress in both the patient and their caregivers. With the increase in aging population, physicians will be expected to take care of patients with dementia. Palliative and hospice care can play an important part in helping to alleviate physical symptoms as well as address non-medical/spiritual needs. In this review article, we highlight the patient-centered approach to treat symptoms and patient's needs to improve their quality of life. We discuss the most important and persistent challenges in advanced dementia with the aim to provide excellent care at the end-of-life and caregiver experience. Data were identified by using PubMed, EBSCO, and Google Scholar databases (January 1980 to present) using the following search terms: dementia, palliative care, advanced dementia, and hospice care. The search was repeated using geriatrics, end-of-life, decision making, advanced care, capacity evaluation, nutrition, infections, pain management, dyspnea, delirium, de-prescribing, and spiritual care. Additional review of literature was undertaken using relevant references of identified articles. There are many missed opportunities to improve care in this vulnerable patient population that when addressed can lead to peaceful and dignified death.

Keywords: Dementia; palliative care; advanced dementia; hospice care

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Introduction

Dementia is a chronic decline in one or more areas of cognitive domains (memory, learning, language, executive functioning, complex attention, visual-spatial, social interactions) sufficient to affect daily life. It is a progressive and disabling disease and is not an inherent aspect of aging. Dementia of Alzheimer's disease (AD) affects 60–80% of all dementia patients and hence is the, most common type of dementia (1). Other progressive disorders like vascular dementia (VD), Lewy body dementia (DLB), frontotemporal lobar degeneration (FTLD), and

Parkinson's induced dementia make up for 15% of the rest of dementias. About 2–5% of patients have completely reversible causes of dementia like medication side effects and interactions, metabolic/electrolyte changes, thyroid disease, head trauma, obstructive sleep apnea, vitamin deficiencies, depression and normal pressure hydrocephalus.

Scope/burden of disease

America is becoming older. Vespa *et al.* in their 'Demographic Turning Points for the United States:

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Population Projections for 2020 to 2060, Current Population Reports' mention that in the year 2030, all baby boomers will be older than 65 (2,3). In 2020, 56.1 million people were 65 years and older. This is projected to increase to 94.7 million in 2060 (3,4).

Rajan *et al.* in their study concluded that in 2020, the US census adjusted total prevalence of clinical AD was 11%. AD was present in 5.3% of adults between 65–74 years, 13.8% in adults 75–84 years old, which then more than doubled to 34.6% in adults 85 years and older (4). In other words, dementia is present in about 1 in 9 older people aged 65 years and above (4).

Approximately, 6 million older adults in the US had clinical AD in 2020. This number is projected to increase to 7.16 million in 2025 and 18.85 million in 2060 (4,5).

Total payments in 2022 for all individuals with Alzheimer's or other dementias were estimated at \$321 billion. Medicare and Medicaid covered about \$206 billion. Patient's personal spending was expected to be \$81 billion (1,6). The total cost is projected to rise to \$1–1.5 trillion by 2050 (1,6,7).

Life expectancy and place of care in advanced dementia

AD, the 6th leading cause in 2019, became the 7th leading cause of death in the US in 2020 (1,8,9). From 2000 to 2020 the patients with Alzheimer's who died in nursing home declined from 67% to 47%, who died in medical facility decreased from 14% to 4%. However, 32% patients died at home which increased from 15% (1). Even though the proportion of patients dying at home and in hospice facilities increased, the nursing facility remained the most common place of death (10).

Increased age was associated with more deaths at nursing facility (10). Male sex was associated with higher chances of dying in hospital or hospice facility (10). A higher number of black and Hispanic patients with dementia died in the hospital as compared to white patients who died more in nursing homes (11).

Disease progression

Dementia is a chronic, progressive and debilitating disease. Advanced dementia is characterized by significant decline in memory, cognition and function (12). Hughes *et al.* introduced clinical dementia rating (CDR) where they defined severe dementia as severe memory loss, the

patient is oriented to self only, cannot make reasonable judgments or solve simple problems, is too ill to be taken outside home, they require a lot of help with personal care and are frequently incontinent of bowel and bladder (13). Increased in burden on caregivers—mentally, physically and financially and a greater incidence of psychological and behavioral symptoms in patients results in higher risk of admission to institutions (14,15).

Reisberg *et al.* in their Global Deterioration Scale (GDS) for assessment of primary degenerative dementia described severe dementia as loss of all verbal abilities, incontinence of urine, inability to walk, toilet and self-feed. Generalized rigidity and developmental neurologic reflexes are frequently present at this point (16).

Another scale used in staging of dementia is The Functional Assessment Staging Test (FAST). It is divided into 7 stages of which stage 7 is described as severe dementia. It is further divided into stages 7a–f depending upon whether the patient can speak some words during the day, speaks only one word, can no longer walk, sit up, smile and hold up their head respectively (17,18).

Causes of death in dementia

In advanced stages of dementia, one loses ability to maintain posture, control bowel and bladder and ability to swallow. Degerskar *et al.* in their report on cause of death in autopsy-confirmed dementia disorders noticed pneumonia to be the number one cause of death (34.3%) followed by acute myocardial infarction (30.4%) (19,20). Pneumonia was more common in advanced cases of dementia and acute myocardial infarction was more common in milder cases of dementia (19,21). In 12.7% of the demented population dying of pneumonia, aspiration pneumonia was the most common (19). A Danish study of patients aged between 65 to 110 years who died between 2002 to 2015 showed that the leading causes of death in patients diagnosed with dementia were dementia, cardiovascular disease and cerebrovascular disease (22). Farfel *et al.* suggested dementia was associated with higher incidence of pneumonia and pulmonary embolism as causes of death with lower incidence of acute myocardial infarction (23).

Other factors associated with higher mortality include advanced age, anorexia, impaired nutritional and functional status were associated with early mortality in dementia patients (24,25). Pressure ulcers and paroxysmal slow-wave electroencephalogram (EEG) were also associated with increased mortality at the end in patients with advanced

dementia (26).

Role of palliative care and hospice

With rise in aging population and expected increase in patients with dementia, there are opportunities to improve care by means of palliative and hospice care. A study by McLaughlin *et al.* showed 38% of patients died at home which was their preferred place of care (27).

Another study by Holmerova *et al.* in their Best Practice Statement for Dementia offered learning framework for physicians and divided care of dementia patients into the following areas: protect basic rights of the patient; promote dignity with inclusion; plan for future; manage and appropriately treat symptoms; live the best possible life; provide support for friends and family and provide palliative care practice in advanced dementia (8,19,28).

Palliative care is an interdisciplinary specialty that focuses on improving quality of life for the patient, caregiver and the family. It focuses on providing relief from the symptoms and stress due to illness. The goal is to address any social, psychological and spiritual issues that arise during the course of disease. It does not replace the patient's ongoing treatment. As the disease progresses and prognosis is less than 6 months, care can be transitioned to hospice.

Hospice care focuses on relieving pain, symptoms and distress at the end stage of a serious illness. Medicare defines the terminal phase of a disease as life expectancy less than 6 months (29). The difference between palliative care and hospice is the limited time and forgoing aggressive treatments when enrolled in hospice. The goal then becomes comfort care and letting the patient die in a dignified, peaceful way surrounded by loved ones. However, there are missed opportunities in care provided to patients with dementia.

Gaps in the care of patients with dementia are complicated by poor communication during the last years of life (30). In addition, it is difficult to prognosticate the decline in these patients as dementia stage, type of dementia, comorbidities and level of support varies in every patient. Dementia is a disease process that not only affects the patient but the family and friends. Caring for a loved one with dementia is incredibly stressful and difficult (31). Many caregivers feel that they are not knowledgeable and skilled in taking care of people with dementia (32-34). This is, in addition, to dealing with complications of advanced dementia and disabilities expected at end of life (EOL). People with dementia require extensive care for a long

period of time before they die which requires increased amount of care and support (33,35-37).

Trends in hospital-based specialty palliative care in the US from 2013–2017 show that end stage dementia patients are not referred to palliative care as compared to patients with non cancer end-stage disease (38).

A randomized control trial showed that patients with late stage dementia who were referred to palliative care consultation during hospitalization were more likely to get treatment for physical symptoms, their spiritual needs addressed (47%) and receive hospice (25%) (39). More advanced stage dementia patients who received palliative care in hospital were discharged to home or assisted living instead of nursing homes (39).

However, many groups still never receive referral and enrollment for palliative and hospice care. Factors associated with higher hospice enrollment include older age, women, patients with higher education, more severe cognitive impairment, and more decline in instrumental activities of daily living (IADL) (40). Emergency department visits and admissions to the hospital after hospice enrollment are more common in African American and Hispanic populations with dementia (40). This group also is less likely to complete advance directives and prefers choosing all care possible to prolong life (33).

Decision making/advance care

Modern society values autonomy and it is the basis for all advance directives/advance care planning (ACP) (41). As dementia progresses, especially in later stages, patients lose their ability and independence to make decisions for themselves. In these cases, decisions are made by surrogates. This can be very challenging to the family members emotionally, mentally and can lead to family discordance if no prior wishes have been expressed by the patient. Not only are these surrogates facing the challenges brought by disease process, but they are expected to, make end-of-life decisions for their loved ones.

Gotanda *et al.* in their analysis of patients from Health and Retirement Study, who died between 2000–2014, found that in dementia patients requiring surrogate decision making at EOL, only 34.8% had written EOL care instructions, assigned durable power of attorney (DPOA) or patient was engaged in EOL care discussions (42). Family decision makers had an average age of 59.7 years, 79% were females and more than half were daughters (39).

Yumoto *et al.* identified differences in approach of care

in patients with advanced dementia in the UK and Japan. Dementia care in the UK tended towards patient-centered care with strong interest in ACP as part of palliative care; however, in Japan, it was common for the family and medical professionals to make EOL care decisions for older, especially frail patients (43).

It is therefore, very important for healthcare professionals to initiate advanced care planning in their patients with dementia, to avoid unnecessary burden on loved ones to make decisions for the patients and to avoid unwanted treatments for the patients. As soon as dementia diagnosis is made, a detailed discussion of what to expect in coming years should be undertaken with patient and family and a copy of advance directives and physician orders for life sustaining treatment (POLST) should be given to the patient to be completed and brought back to the clinic at next visit.

Standard advance directives may not work for patients with dementia. Since dementia usually progresses over years, patient preferences may change over time. They may lose ability to make complex decisions. It is important to achieve a balance between patient care and their informed goals. One can consider Gaster *et al.*'s health directives for dementia. The patient goals of care are discussed according to the severity of dementia (44). Another option is to use Dartmouth Dementia Directive which has a more detailed discussion about patient options, medical interventions, location of care, nutrition and hydration, based on stage of dementia they have (41,45).

Capacity evaluation

As the dementia progresses to advanced stages, many patients are unable to make decisions for themselves. At this time, usually the family members or their power of attorneys can help to ensure patients care and wishes. Capacity is a functional assessment made by a physician to determine if a patient is capable of making a specific decision at a specific time and situation. It reflects an individual's ability to adjust to the environment, and the gap between performance and capacity reflects the difference between the current environment and the impact of a uniform environment (46,47). Competence is a legal determination made by a judge in the court.

There are many areas of daily life involved in capacity evaluation that a physician may be asked to examine—patient's ability to consent for treatment, act as witness,

vote, drive, carry on as a professional, live alone or to take medications independently (48). A capacity evaluation may be necessary to keep the patient safe—physically, medically, financially and legally. This becomes especially important when advanced dementia patients refuse treatment, need psychiatry treatment, want to write advanced directives, are unable to communicate their needs and need new living arrangements (49,50).

Given the fact that taking away a person's capacity can compromise patient's autonomy and independence, so following the four legal standards based on U.S. Case Law becomes vital (51-55).

- (I) Understanding—the ability to comprehend information related to diagnosis and treatment including risk, benefits and potential consequences of the treatment.
- (II) Appreciation—the ability to relate the above information to their situation.
- (III) Reasoning—the ability to compare and evaluate different treatment options.
- (IV) Expressing a choice—the ability to convey a decision about treatment.

Making a medical care decision is a complex process that requires intact attention, executive function and memory (53,56). Royall *et al.* concluded that as many 88% of probable AD patients may not be able to comprehend medical information, even when it has been presented well below their level of education at the sixth grade level (57,58).

Given the chronic, slow progressive nature of dementia with high economic, ethical and legal burden, we will review various medical issues that a practitioner can face when taking care of these patients (Table 1).

Nutrition

Food plays a strong social, religious and symbolic roll in all cultures. Patients with advanced dementia commonly develop eating/feeding difficulties. They may pocket or spit the food in the mouth (oral phase dysphagia), delay swallowing and aspirate the food (pharyngeal phase dysphagia). These patients are usually dependent on caregivers for all their activities of daily living, hence may not be able to procure and cook the food and feed themselves. Concurrent medical illnesses, adverse medication effects, denture issues all can worsen the problem. In advanced stage, these patients may forget to eat or may aspirate.

Table 1 Recommendations for management of common issues in advanced dementia

Issues	Recommendations
Decision making/ advanced care	<ul style="list-style-type: none"> ❖ Initiate advanced care planning early in the disease process as soon as diagnosis is made ❖ Give advanced directives and physician orders for life sustaining treatment to patient/family to fill out ❖ Can use Gaster <i>et al.</i>'s health directives for dementia or Dartmouth Dementia Directive ❖ Capacity evaluation
Nutrition/feeding tubes	<ul style="list-style-type: none"> ❖ Enteral tube feeding does not prolong life, improves quality of life, or leads to better nutrition or decrease the risk of pressure sores ❖ Increased mortality risk associated with artificial nutrition via nasogastric tube ❖ Higher risk of pneumonia and pressure sores with feeding tube ❖ Placement of percutaneous endoscopic gastrostomy tube leads to many adverse side effects ❖ Recommendations <ul style="list-style-type: none"> ◆ Comfort/hand feeding ◆ Frequent small high calorie meals ◆ Softer thickened liquid or semi-solid food consistency ◆ Smaller portions and sips of water ◆ No dietary restriction and patient's favorite foods should be given priority ◆ Nutrition and speech pathology ◆ Music therapy during meals ◆ Treating dental issues ◆ Stopping medications
Infections with fever (UTI/pneumonia)	<ul style="list-style-type: none"> ❖ Antibiotic treatment can lead to multidrug-resistant organisms and Clostridium difficile infection ❖ The workup can be uncomfortable if parenteral therapy and hospitalization is being considered ❖ Concerns of side effects and drug interactions of antibiotics ❖ Decide to treat an infection based on patient's goals of care ❖ Use Loeb's minimal criteria for initiation of antimicrobial ❖ Do not treat asymptomatic bacteriuria
Pain	<ul style="list-style-type: none"> ❖ Use Pain Assessment in Advanced Dementia scale and Non-communicative Patients' Pain Assessment Instrument ❖ Address pain due to arthritis, back pain, constipation, and pressure sores ❖ Non-pharmacological <ul style="list-style-type: none"> ◆ Patient repositioning ◆ Music therapy ◆ Behavioral therapy ◆ Movement therapy (rocking chair) ◆ Message/human touch/Reiki ◆ Person centered showers ◆ Heat and relaxation therapy ◆ Pet therapy

Table 1 (continued)

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Issues	Recommendations
	<ul style="list-style-type: none"> ❖ Pharmacologic approaches <ul style="list-style-type: none"> ◆ Consider analgesic trial to assess patient response ◆ Use acetaminophen, non-steroidal anti-inflammatory drugs and opioids ◆ Consider their side effects, drug interactions and worsening of confusion especially with opioids ◆ Schedule the medications ◆ Transdermal route where oral intake is an issue ◆ Team approach
Dyspnea	<ul style="list-style-type: none"> ❖ Use caregiver assessment of patient's dyspnea and Edmonton Symptom Assessment Scale ❖ Respiratory Distress Observation Scale can be used by nurses ❖ Address depression, anxiety, interpersonal issues (social, familial and financial) and religious concerns ❖ Immediate release opioids—IV or oral ❖ Excessive secretions/death rattle—frequent suctioning, mouth care, oral or sublingual hyoscyamine, atropine 1% eye drops sublingual or scopolamine patch ❖ Anxiolytics can reduce anxiety ❖ Oxygen therapy if pulse oximetry less than 88% on room air ❖ Fan directed to face
Delirium	<ul style="list-style-type: none"> ❖ Associated with increased morbidity and mortality and longer hospitalizations ❖ Usual assessment methods may not work ❖ Use caregiver/family input to identify change in mental status from baseline ❖ Look for reversible causes—infection, pain, polypharmacy, dehydration and a wide variety of acute and chronic conditions ❖ Terminal delirium may not be reversible ❖ Pharmacologic approaches <ul style="list-style-type: none"> ◆ Antipsychotics, neuroleptics ◆ Risperidone/haloperidol (haldol)-associated with higher mortality and morbidity ❖ Non-pharmacological <ul style="list-style-type: none"> ◆ Avoid or camouflage medical devices ◆ Maintain quiet, well lit environment ◆ Make familiar objects like photographs, personal objects available ◆ Frequent orientation ◆ Maintain daily schedule ◆ Explain the procedure by staff ◆ Allow family and friends to visit the patient ◆ Provide familiar staff for daily care ◆ Train staff on communication skills

Table 1 (continued)

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Issues	Recommendations
Continuing medications	<ul style="list-style-type: none"> ❖ Deprescribe medications with questionable benefit ◆ Cholinesterase inhibitors ◆ Memantine ◆ Lipid lowering drugs ◆ Chemotherapy ◆ Antiplatelet agents ◆ Anti-coagulants ◆ Sex hormones ◆ Hormone antagonists ◆ Leukotriene inhibitors ◆ Immunomodulators
Spiritual care	Spiritual needs should be addressed

Feeding tubes

As the challenges to feed become persistent, caregivers usually face the difficult choice between hand feeding or initiate enteral tube feeding through percutaneous endoscopic gastrostomy (PEG) tube. Families sometimes see tube feeding as path to recovery for their loved one (59,60). The common indications to start enteral feeding are 'neurological deficiency', refusal to eat, decreased level of consciousness, dysphagia, stroke and inadequate oral intake (61-66).

The common justifications given to initiate a PEG tube include prolongation of life span, decreasing incidence of aspiration, pressure ulcers and pneumonia, improving malnutrition and hence quality of life (62,67-69).

A Cochrane database of systemic review 2009 done by Sampson *et al.* showed no evidence that enteral tube feeding prolongs life, improves quality of life, or leads to better nutrition or decrease the risk of pressure sores (62). Alvarez-Fernández *et al.* in prospective analysis of community-based patients with dementia found an increased mortality risk associated with artificial nutrition via nasogastric tube (70). Nair *et al.* in their study noted that patients who had a PEG placement had higher mortality rate at six months (63,71-75).

Another systemic review and meta-analysis done by Lee *et al.* showed that the patients with advanced dementia PEG tube placement were associated with higher mortality rate (76). These patients also had

significantly higher risk of pneumonia and pressure sores (61,63,64,70,71,75,77-79). There is no association between the survival period and nutritional status between groups (61,63,64,70,71,76,77,80-82).

In addition to showing no benefits, placement of PEG tube leads to many adverse side effects namely tube occlusion, leaking, local infection, erosion and necrosis and organ perforation. Emergency department transfers were/are most common with tube dislodgment, blockage and leakage (83-85). Agitation in the patients with PEG tube leads to more usage of physical and chemical restraints to prevent patient pulling out the tube which compromises patient autonomy and dignity (64,84,85).

Comfort feeding or hand feeding is an alternative measure to feed patients with advanced dementia. It consists of providing patients with frequent small high calorie meals, softer thickened liquid or semi-solid food consistency, smaller portions and sips of water (59,86,87). There should be no dietary restriction and patient's favorite foods should be given priority. Nutrition and speech pathology can be consulted to help formulate individualized nutrition care plan for the patient. Mealtime should be regarded as an important event rather than task to be completed. Music therapy during meals, as well as, environment with less clutter and noise are more conducive to eating (59,86). Treating reversible causes like offending medications and dental issues may improve intake (60,88).

Infections with fever (UTI and pneumonia)

Pneumonia and UTI are the most common causes for infections and fever in patients with advanced dementia followed by skin/soft tissue infection and fever of unknown origin (89). The former two can often be terminal events and predict the EOL (20,90-92). It is difficult to decide whether to treat, withhold, or stop antibiotics for an infection (93). Antibiotic treatment can lead to symptom relief and prolong survival but can also lead to multidrug-resistant organisms (MDRO's) and *Clostridium difficile* infection (94,95). This is especially significant when the patient is residing in a long-term care facility, a nursing home, a residential home or is admitted in a hospital as it can help spread MDRO's to other residents, patients and hospital equipment which represents a public health threat. Mitchell *et al.* in their study found that quinolones followed by third- or fourth-generation cephalosporins were the most commonly prescribed antibiotics followed by penicillins. Majority of patients were prescribed antibiotics, but only 44% of treated patients met the clinical criteria for antibiotic initiation (94). The workup including lab draw, chest X-ray, and procuring a urine specimen can be uncomfortable, especially when parenteral therapy and hospitalization is involved (96). Side effects and drug interactions are another concern in this age group due to comorbidities and polypharmacy (97).

The decision to treat an infection in patient with advanced dementia should be based on what the patient's goals of care are. Discussions with family and caregivers should guide the physician on how to proceed. A detailed clinical assessment should be performed to assess the need for antimicrobial treatment. Loeb's minimal criteria for initiation of antimicrobial use for suspected urinary, respiratory tract, skin infections in residents with advanced dementia is a useful guide when a decision to start antibiotics is made (98,99). Givens *et al.* in their CASCADE study found that treatment of pneumonia with antimicrobials improved survival but worsened comfort (100,101). However, treatment of UTI was not associated with mortality (102). Treatment of asymptomatic bacteriuria is not advised (103). Antibiotics should be discontinued once the results of initial urine analysis and culture (collected before starting the antibiotics) come back negative.

Pain management

Sampson *et al.* reported 11% patients with advanced

dementia had pain at rest and 61% during movement (104). Pain assessment is very challenging in these patients. The gold standard in pain assessment is self report which does not work in this population due inability to remember, interpret and respond to pain secondary to advanced dementia (105). Other barriers to underreporting pain include lack of pain management education, failure to use a standardize pain assessment too, inadequate documentation, patient's not reporting pain due to fear of getting addicted to pain medications and assuming pain to be normal part of aging (105-109). Hoffmann *et al.* in their study noted that even though the dementia patients had comparable pain etiologies, they were given less pain medication than non dementia patients (110). Plooij *et al.* reported 45% of dementia patients did not receive any analgesics despite presence of pain (111).

Recognition of pain in these vulnerable patients is essential in treating and improving their quality of life. Multiple pain assessment scales are available. The most common tools used are: Pain Assessment in Advanced Dementia scale (PAINAD) and Non-communicative Patients' Pain Assessment Instrument (NOPPAIN) (112-114). The former utilizes patients breathing, negative vocalization, facial expression, body language and ability to be consoled (112). The latter assesses observations made during patient care: whether patient's activities are affected, pain level, areas and severity of symptoms. Common causes of pain in old age like arthritis, back pain, constipation, and pressure sores should be addressed.

Management should consist of both non-pharmacological and pharmacologic approaches. Patient repositioning, music therapy, behavioral therapy, movement therapy (rocking chair), message, human touch, Reiki, person centered showers, heat and relaxation therapy and pet therapy are helpful to reduce pain and psychiatric symptoms in dementia (108,115-118).

Analgesic trial can be considered to assess patient response. Pharmacological interventions include using acetaminophen, non-steroidal anti-inflammatory drugs (NSAIDs) and opioids. Prior to starting patients on medications, one should consider their side effects, drug interactions and worsening of confusion especially with opioids. It is important to schedule these medications rather than provide them on as needed basis (119,120). Transdermal route can help in patients where oral intake is an issue.

Team approach including caregivers, aides, nursing staff interacting with physicians should be adopted. Algorithm-based pain management interventions were shown no benefit in patients with dementia (121).

Dyspnea

Dyspnea is subjective experience of breathing discomfort that consists of qualitatively distinct sensations that vary in intensity (122,123). It is similar to suffocation (123). It is the most distressing symptom experienced by the patients with advanced illness and at EOL (123). Soares *et al.* reported that as death approaches prevalence of dyspnea and agitation are similar between patients dying with dementia and patients dying with cancer (124). Assessment of dyspnea is best done by patient self—report, however in patients with advanced dementia this may not be reliable (125,126). Oxygen saturation, heart rate and respiratory rate are weakly associated with patients' experience of dyspnea (127). Caregiver assessment of patient's dyspnea and Edmonton Symptom Assessment Scale (ESAS) are more strongly associated with patient's report of dyspnea (125,126). Respiratory Distress Observation Scale (RDOS) can be used by nurses to monitor respiratory distress at EOL. It is the only known tool for assessing intensity and distress in patients unable to report dyspnea (127). A score greater than 3 signifies patient's need for palliation of respiratory distress (127). One must also address depression, anxiety, interpersonal issues (social, familial and financial) and religious concerns that may be contributing to respiratory distress.

Immediate release opioids are mainstay of treatment for acute episodic dyspnea at the EOL (123,126,128-130). Current evidence supports the use of oral and paternal opioids for dyspnea management; however nebulized opioids effectiveness is not established (128,129). Excessive secretions/death rattle can be managed by frequent suctioning, mouth care, oral or sublingual Hyoscyamine, Atropine 1% eye drops sublingual or Scopolamine patch. Anxiolytics can reduce anxiety component of dyspnea.

Oxygen therapy helps with dyspnea reduction in hypoxemic patients with pulse oximetry less than 88% on room air. Patients who are not hypoxemic do not benefit from supplemental oxygen (123,130,131). Fan directed to the face is cost effective, easy, safe and does not require prescription (132-135). Its effect may be the result of stimulation of facial cold receptors as cold air directed at the cheeks significantly reduces dyspnea (136,137).

Delirium

Delirium is very common at EOL. Watt *et al.* reported the prevalence of delirium prior to death across all palliative

care settings was 42–88% (138). It is distressing to not only the patient, but also their family/loved ones and the healthcare professionals providing care to them (139,140). Multiple studies have shown that the presence of delirium is associated with increased morbidity and mortality and longer hospitalizations (141-145). The diagnosis of delirium can be a challenge in a patient with advanced dementia due to many overlapping features. Symptoms of delirium such as disorganized thinking, inattention, disorientation, difficulty to engage the patient, decline in cognitive function and fluctuating consciousness are also seen in dementia (88,146). Testing the patient using common tools to diagnose delirium like Confusion Assessment Method (CAM), Nursing Screening Scale (Nu-DESC), Single Question in Delirium (SQiD) that are helpful in diagnosing delirium in palliative care patients may not work in advanced stage dementia due to inattention, non-verbal, lack of decision making capacity, lethargic and somnolent state (88,146-150). Patients with fluctuating symptoms in DLB may be even more difficult to diagnose with delirium (134,144,146,150). Given above factors, it is essential to identify a change in mental status from baseline. Family/caregiver input has been found to be the most useful source of information (146,150).

Identifying whether the delirium is reversible or irreversible in context of patient's pending death should also be taken into consideration. Reversible causes like infection, pain, polypharmacy, dehydration and a wide variety of acute and chronic conditions should be treated in context of goals of care, focusing on quality of life, dignity and comfort of the patient (150,151). It is important to keep in mind that delirium may not be reversible in last 24–48 hours. This is sometimes referred to as "terminal delirium" (145,152,153). Terminal Delirium-Related Distress Scale (TDDS) is a validated tool for assessing the irreversibility of terminal delirium (152,153).

Delirium is divided into 3 motor subtypes—hyperactive, hypoactive and mixed presentations within diagnostic criteria in DSM-5 (150,154). Hypoactive presentations are more common in patients with underlying dementia and are frequently missed in palliative care (145,150,155). Having underlying dementia has been recognized as leading risk factor for developing delirium (156-158). Boettger *et al.* reported that in dementia patients, delirium resolution rate is very slow (159).

Antipsychotics are mainly indicated for hyperactive form of delirium and hallucinations and delusions in both hyperactive and hypoactive delirium (160). Gaertner *et al.*

noted that neither risperidone nor haloperidol (haldol) was superior to placebo, but they were both associated with higher mortality and morbidity (160-162). Lorazepam along with Haldol reduced agitation in patients, but was unable to reduce severity and incidence of delirium (160). Among atypical antipsychotics, Olanzapine has been shown to be safe in several palliative care studies (163,164). Neuroleptics can be used for severe agitation and aggression when non pharmacological interventions fail (160). Non-pharmacological interventions include avoidance or camouflaging medical devices, maintaining quiet, well lit environment, making familiar objects like photographs, personal objects available, frequent orientation, maintaining daily schedule, explanation of procedure by staff, allowing family and friends to visit the patient, providing familiar staff for daily care and training staff on communication skills (88,165-168).

Continuing medications

Administering medications in advanced dementia patients can be overwhelming task for caregivers and can make patient stressed and anxious (169). Multiple studies have shown that between 25–53.9% patients with advanced dementia receive at least one medication with questionable benefit (MQBs) (170-173). Cholinesterase inhibitors (36%), memantine (25%) and the lipid lowering drugs (22%) were the most commonly prescribed MQBs (170,171). Other medications include chemotherapy, antiplatelet agents, sex hormones, hormone antagonists, leukotriene inhibitors and immunomodulators (170). The use of anti-coagulation medications poses a challenge as symptoms from stroke, deep vein thrombosis and dyspnea can affect quality of life but use of these medications can increase risk of bleeding at EOL (174). Patients who had eating problems, feeding tube or a do-not-resuscitate order had lower likelihood of receiving these medications (170). Three-month expenditure for MQBs was 35% of total 90-day medication expenditure for these patients with advanced dementia (170). De-prescribing MQBs is an important step given these medications maybe more harmful in this population (170). Determining goals of care, discussing benefits and harms of continuing these medications with the family and monitoring after discontinuation can decrease side effects, drug interactions and medication burden, which in turn leads to better quality of life (175). It is helpful to use tools like Beers criteria, the Screening Tool of Older Person's Prescriptions (STOPP), and the Screening Tool to Alert

Doctors to Right Treatment (START) when de-prescribing (172,176,177).

Spiritual care in advanced dementia

Almost all people have spiritual needs, although it may be expressed and have different meanings for each individual (178-180). Spirituality is one of the least developed dimensions in palliative care (178,181). It has been defined as search for meaning and purpose in life (178,182). Bursell *et al.* suggested that spiritual needs of patients with dementia should be addressed (182). Ødbehr *et al.* described spiritual care for patients with dementia as executing religious rituals that bring comfort, help understand person's meaning and purpose and appreciating their vulnerability and humanness by providing basic needs (183-185). Spiritual care can help patients with dementia fulfill meaning in life, get connected to self and God (180,183-185). The Namaste Care program was developed to meet spiritual needs of interaction and participation in patients with advanced dementia and can be implemented across varied patient settings (34,186-188). It provides holistic and personalized care to people with advanced dementia improving engagement and reducing social isolation (187).

Conclusions

Advanced dementia is a terminal diagnosis and takes a financial, emotional, psychological and physical toll on patients, and their loved ones as well as health care professionals. Palliative care and hospice can address these issues in caring for these patients. Careful assessment and open conversations with family and caregivers and reasserting patient's beliefs and values can improve care for patients with advanced dementia.

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