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Original Study

Changes in Prescribed Drugs Between Admission and the End of Life in Patients Admitted to Palliative Care Facilities

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A B S T R A C T

Background: The aim of prescribing medication in palliative end-of-life care should be symptom control. Data are lacking regarding the prescription of medication at the end of life.
Aim: To investigate the prescription of medication in patients at the end of life in palliative care facilities.
Design, setting, and participants: An observational multicenter study in 7 inpatient palliative care facilities. Participants were adults with an estimated life expectancy of less than 3 months. The study was conducted from February 1, 2012, to January 1, 2013.
Results: A total of 155 patients were enrolled. On average, patients were prescribed 6.1 drugs at the moment of admission and 4.6 drugs on the day of death. The prescription of analgesics, psycholeptics, and drugs for functional gastrointestinal disorders increased from admission until death. In general, these are drug classes prescribed for symptom control. All other drug classes decreased between admission and the day of death, including different drug classes for the treatment of comorbid disease, such as anticoagulants, beta-blocking agents, drugs used in diabetes, and lipid-modifying agents.
Conclusions and relevance: A reduction in the total amount of medication is seen between admission and death in the palliative care facilities. Although there is an increase in prescribed symptom-specific medication and a reduction in medication prescribed for comorbid disease, there are still patients dying with medication not used for symptom control. This increases pill burden and indicates that physicians need to develop guidelines and educational programs for decreasing medication for comorbidities at the end of life.

Patients with life-limiting diseases, such as cancer, terminal heart failure, or terminal chronic obstructive pulmonary disease (COPD), are sometimes admitted to palliative care facilities at the end of their lives. Often, these patients also have several comorbidities. The prevalence of comorbidities in unselected community-dwelling patients with cancer is reported to be 63% in patients older than 75 years and is the highest for patients with lung cancer.[1] The most frequent comorbidities are cardiovascular diseases, hypertension, and diabetes mellitus, with prevalence rates of 10% to 30%, 11% to 25%, and 5% to 25%, respectively, depending on the type of tumor.[1]

Consequently, patients in need of palliative care are prescribed several drugs.[2] In general, 2 types of drugs are prescribed: symptom-specific medication (SSM), such as analgesics for the treatment of pain, and medications for specific comorbidities, such as lipid-modifying agents in cases of hypercholesterolemia.[3] The latter are often prescribed for chronic use to prevent disease. Polypharmacy, defined as the simultaneous use of more than 5 different medications, is highly prevalent in patients receiving palliative care, resulting in many problems, such as unwanted drug-drug interactions, adverse effects, noncompliance because of pill burden, and increased costs.[4,5] The indication, purpose, appropriateness, and usefulness of several of these drugs can be questioned for patients on a palliative trajectory,

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particularly in the final period preceding death. Recently, it was shown that several factors should be weighed to make treatment decisions regarding the appropriateness of the medications, such as remaining life expectancy, goals of care, treatment targets, time until benefit, number needed to treat/harm, and adverse drug reactions.[6] Medication that does not benefit the patient in the short term should be avoided because the primary aim of medications at the end of life should be symptom control and not the prevention of disease.[6] However, specific guidelines or recommendations regarding the prescription of medication at the end of life are lacking.[7] Furthermore, more attention for the discontinuation of unnecessary medication in terminally ill patients is warranted.[8,9] The beneficial effect of several drugs, such as statins, antihypertensive agents, anticoagulants, and antihyperglycemic agents are highly questioned in patients with a short life expectancy. However, specific research studying the appropriateness and usefulness of different drugs at the end of life is scarce.[10] A recent study found that discontinuing statin therapy at the end of life was safe and even improved quality of life.[11] However, existing research mainly focuses on geriatric patients, who only partly overlap with patients in need of palliative care. One study about the use of statins in patients with end-stage dementia in nursing homes found that it was difficult for physicians to make a decision about stopping these medications, even if they knew the agents can cause muscle pain and do not contribute to the quality of life.[12,13] Among nursing home residents with advanced dementia, 53.9% received at least 1 medication with questionable benefit.[13]

Examples of patients using inappropriate drugs in palliative care indicate to physicians that adapted drug management may improve quality of life and reduce unnecessary pharmacotherapy.[14] The knowledge and education physicians have in the field of appropriate prescription at the end of life might play a role in the awareness of this specific topic. In the Netherlands, specialized elderly care physicians (ECP) are trained in a 3-year specialist training program, including palliative care issues and issues of polypharmacy and medication use in frail elderly at the end of life.[15] In this typical Dutch context in which ECPs are the primary responsible physicians in most hospices and palliative care units of nursing homes, we expect to observe a shift in focus in these settings toward drugs for relieving burdensome symptoms and a reduction in medication for comorbidities because these agents are less appropriate.

In this study, we aimed to observe specific changes in prescribed drugs in patients admitted to a palliative care facility between the day of admission and the day of death.

Methods

We conducted an observational multicenter cohort study with follow-up until death that investigated drug use in 7 “inpatient palliative care facilities” in the middle and southern part of the Netherlands: 6 hospices (1 free-standing hospice and 5 hospices that are part of a long-term care organization) and 1 palliative care unit in a nursing home, with a total capacity of 66 beds. Patients can be admitted to these facilities when their estimated life expectancy is less than 3 months. The inclusion period was between February 1, 2012, and September 1, 2012, with follow-up until January 1, 2013.

A regional medical ethics committee rendered the study not subject to ethical research legislation because in accordance with the criteria of the Dutch Medical Research Involving Human Subjects Act, no medical scientific research was involved. All participating patients or their representatives, ensured of their anonymity, gave their verbal informed consent.

All newly admitted patients in the given period were included in the study. Inclusion criteria were being older than 18 years and being able and willing to provide verbal informed consent. Patients unable to consent or without a legal representative present were excluded. Data were collected by the attending ECP. The first author instructed the physicians before the start of the study. The authors had no relationship to the prescribers. Data collection consisted of patient characteristics: gender, age, residency before admission, current medical diagnoses including all comorbidities if present, and type of malignancy and main diagnosis for admission to the palliative care facility. Diagnoses were coded using ICD-10 classification.[16] Main diagnosis was defined as the disease that, according to the ECP, is expected to be responsible for the estimated reduction in life expectancy and was therefore the primary reason for admission. The current medical diagnoses refer to comorbidities. The ECP collected medication lists of hospitals or general practitioners at admission. The electronic medical prescriptions of all oral, rectal, and parenteral drugs were photocopied or printed during the stay in the palliative care facility until death. For the classification of all drugs, the “Anatomic-therapeutic-chemical classification of drugs” was used.[17] Dose, frequency, and pro re nata use (prn) were registered; prn medication was defined as medication not regularly prescribed with a daily dose but available in time of need (eg, pain, shortness of breath).

Medians, means, and frequencies were calculated to describe the patient characteristics and drug use. Both the use of individual drugs and the use of drugs from different drug classes were reported at admission and on the day of death. We also reported the changes in drugs from different drug classes between admission and death. SPSS 20.0 (IBM SPSS Statistics, IBM Corporation, Chicago, IL)was used for analysis.

Results

Demographics of the Study Population

In total, 177 patients were admitted during the inclusion period, of whom 22 were excluded because they were discharged or were still alive at the end of the study. At the end of the follow-up period, 155 patients had died (study population), with a median stay of 13 days (range 0–235) and mean stay of 26.4 days until death (SD 36.9). The study population consisted of 87 (56.1%) men. The mean age at admission was 75 years (SD 11.6). The youngest patient was 31, and the oldest was 95. Most were admitted from nonacademic hospitals or from home. Cancer was the most frequent main diagnosis (81.3%), with the most prevalent types being cancer of the digestive or respiratory tracts. The most frequent comorbid diseases were heart failure, COPD, hypertension, and diabetes mellitus (Table 1).

Drugs Prescribed at Admission and on the Day of Death

On average, patients were prescribed 6.1 (± SD 3.7; range 0–19) drugs at admission. Three patients had no drugs prescribed. The most prescribed drug classes were analgesics (63.2%), drugs for acid-related disorders (51.6%), psycholeptics (39.4%), and laxatives (38.7%). Lipid-modifying agents were used by 8.4% and drugs for diabetes by 12.9% of patients. On admission, beta-blocking agents were used by 25.8% of patients and anticoagulants by 33.5% (Table 2). The most frequently prescribed drugs on admission were paracetamol (38.7%), fentanyl (31.0%), and macrogol (23.2%). Drugs for acid-related disorders were mostly omeprazole (20.0%) and pantoprazole (18.7%). Psycholeptics were mostly temazepam (15.5%), haloperidol (11.0%), and oxazepam (9.0) (Table 3).

On average, patients were prescribed 4.6 (± 3.6; range 0–19) drugs on the day of their death. The most prescribed drug classes were analgesics (77.4%), psycholeptics (61.9%), drugs for acid-related disorders (27.1%), and laxatives (27.1%). Lipid-modifying agents were used by 2.6% and drugs for diabetes by 6.5% of patients. On the day of death, beta-blocking agents were used by 9.0% of patients and anticoagulants by 14.8% (Table 2). The most frequently prescribed drugs on the day of