Original Article

PALLIATIVE MEDICINE

Palliative Medicine
2019, Vol. 33(6) 578–588

DOI: 10.1177/0269216319826007
journals.sagepub.com/home/pmj
SAGE

Palliative care specialists in hospice and hospital/community teams predominantly use low doses of sedative medication at the end of life for patient comfort rather than sedation: Findings from focus groups and patient records for I-CAN-CARE

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Abstract

Background: Little research has explored the detail of practice when using sedative medications at the end of life. One work package of the I-CAN-CARE research programme investigates this in UK palliative care.

Aims: To investigate current practices when using sedative medication at the end of life in London, UK, by (1) qualitatively exploring the understandings of palliative care clinicians, (2) examining documented sedative use in patient records and (3) comparing findings from both investigations.

Design: We conducted focus groups with experienced palliative care physicians and nurses, and simultaneously reviewed deceased patient records.

Setting/participants: In total, 10 physicians and 17 senior nurses in London hospice or hospital/community palliative care took part in eight focus groups. Simultaneously, 50 patient records for people who received continuous sedation at end of life in the hospice and hospital were retrieved and reviewed.

Results: Focus group participants all said that they used sedative medication chiefly for managing agitation or distress; selecting drugs and dosages as appropriate for patients' individual needs; and aiming to use the lowest possible dosages for patients to be 'comfortable', 'calm' or 'relaxed'. None used structured observational tools to assess sedative effects, strongly preferring clinical observation and judgement. The patient records' review corroborated these qualitative findings, with the median continuous dose of midazolam administered being 10 mg/24 h (range: 0.4–69.5 mg/24 h).

Conclusion: Clinical practice in these London settings broadly aligns with the European Association for Palliative Care framework for using sedation at the end of life, but lacks any objective monitoring of depth of sedation. Our follow-on study explores the utility and feasibility of objectively monitoring sedation in practice.

Keywords

Focus groups, hypnotics and sedatives, medical records, midazolam, nurses, palliative care, patient comfort, physicians

What is already known about the topic?

- Sedative medication may be used to manage intractable symptoms at the end of patients' lives.
- No UK guidelines specifically address the detail of how sedatives should be used, but international guidelines endorse monitoring the depth of sedation, and the European Association for Palliative Care (EAPC) framework recommends that monitoring should relate to the aim of using sedatives.

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- Despite internationally agreed guidelines and recommendations, use varies widely between countries and settings, including the depth of sedation sought, and the dosages administered.

What this paper adds?

- This study shows that usual practice when using sedative medication in two palliative care settings in London, UK, is predominantly to use low dosages of midazolam to achieve patient comfort, rather than to sedate patients.
- Practice in these London settings broadly aligns with EAPC recommendations for proportionate use of sedatives at the end of life.
- Nevertheless, although the EAPC framework also recommends systematic objective monitoring to monitor the effects of sedatives, clinicians in these settings use only clinical observation, never structured objective tools, even when using high doses of sedatives.

Implications for practice, theory or policy

- The term 'palliative sedation' does not usefully describe all uses of sedative medication in palliative care, since this implies sedation is the aim, which is not always the case. Proportionate sedation might be a preferable term for the type of practice we found in our study.
- Palliative care guidelines and definitions should clearly distinguish between deep sedation and other uses of sedatives in palliative care.
- When higher doses of sedative medication are used and/or when the specific intention is to sedate a patient, clinicians may need to employ more structured monitoring of sedative effects.

Background

Two 2015 reports on palliative and end-of-life care indicated that further research and/or improvement of care in relation to symptom management would be of value. 'Dying without Dignity'[1] identified 'poor symptom control (pain and agitation)' as one area where care of dying patients needed improvement. The research priorities for palliative care identified by the Palliative and End-of-life care Priority Setting Partnership[2] in the same year included managing symptoms and medication.

The Marie-Curie-funded I-CAN-CARE research programme began in 2016. One of its two work packages addresses the use of sedative medication at the end of life in the United Kingdom. Sedative medications are used internationally[3,4] and may be used for patients with refractory symptoms, primarily aiming to relieve distress by reducing patient consciousness.[5–7] A recent Cochrane review of pharmacological sedation for terminally ill adults concluded that studies should address the effect of sedatives on 'a person's quality of life, or peacefulness and comfort during the dying phase', and how well sedatives control distressing symptoms.[8]

Concerns have been expressed that palliative care patients may be over- or under-sedated, with potentially adverse consequences for their care and their relatives' experiences.[9–11] Guidelines generally recommend that sedative use at the end of life should be proportionate, with doses being 'individually tailored',[12] although Schildmann et al.[13] reviewed national and international guidelines for using sedation at the end of life and concluded that guidelines are inconsistent and of limited quality. Abarshi et al.[14] suggest in their later systematic review, however, that the European Association of Palliative Care (EAPC) Framework for using sedation in palliative care[15] is an acceptable standard. This Framework recommends that patients receive proportionate sedation, that is, minimum doses of sedatives to palliate their suffering, and be regularly monitored for the level of sedation,[15] although stating further that, if the aim of using sedatives is to ensure comfort for an imminently dying patient, the only critical parameters to be monitored are those pertaining to that person's comfort.[13–15]

However, terminology also lacks clarity and consistency,[6,14,16,17] and the frequently used term 'palliative sedation' does not always accurately describe practices,[6] which vary by country[18–21] and setting (community, hospice or hospital),[22–25] and in depth and type of sedation used (light, deep, continuous or intermittent).[26,27] Morita et al.[5,6] discuss this variability, and, following Quill et al.,[7] recommend more precision in the terminology used, including for approaches such as the EAPC's proportionate sedation.[6]

Previous qualitative research exploring UK clinicians' perceptions suggested that in the United Kingdom sedative drugs may be prescribed at the end of patients' lives to 'settle' agitation or ensure comfort, rather than unconsciousness.[28] A 1999 retrospective review of notes for deceased UK hospice patients, which defined sedation as receiving daily doses of $\geqslant$10 mg midazolam, found that (by this definition) 48% of patients had been sedated.[29] A subsequent study of sedative use in another UK hospice, using the same definition, found decreasing use between 1996 and 2006;[30] another UK study found a slight decrease

between 2009 (80% patients sedated), 2011 (62%) and 2014 (73%).[31]

As a first step in the I-CAN-CARE sedation project, we conducted a study to explore the detail of current practice when using sedatives at the end of life in two settings in London, UK, employing qualitative description[32,33] plus descriptive statistics. This article presents findings on sedative drugs and dosages used, reasons for using sedative medications and how their effects were monitored or assessed, obtained from two sources: qualitative focus group (FG) discussions and a retrospective review of patient records, and compares findings from both.

Methods

We wished to explore the detail of current practices in depth, so we conducted FGs with experienced hospice and hospital/community palliative care clinicians, while simultaneously retrospectively reviewing hospital and hospice records of recently deceased patients. We then compared FG participants' perceptions with documented data.

Focus Groups

No ethical approvals are required for research with clinicians in the United Kingdom, but other required approval was given (HRA ref. 16/HRA/1670) for conducting FGs with experienced physicians and nurses in a London hospice and on palliative care teams at a London hospital and linked community services. Potential participants were purposively selected for their level of experience in palliative care and informed of the study by email and/or team presentations. We arranged group discussions, organised by profession and setting, in the research offices or participants' places of work.

All participants used pseudonyms and gave written informed consent. The research lead, B.V., facilitated each group, following a topic guide (TG; Supplemental material online). Another researcher (J.H. or S.D.) observed and took notes. B.V. and J.H. are both social scientists, with lengthy experience in palliative care research, and S.D. an experienced nurse and researcher.

Our TG began with an open question, followed by more focused questions exploring details of practice. The first FG served partly to pilot-test the TG. Only minor adjustments were made subsequently (to the question order and to include some additional prompts), so those data were retained. All FGs were audio-recorded and transcribed. B.V. and J.H. reflected throughout to determine when topics had been saturated.

Transcripts were checked against recordings and notes, then the more focused TG questions used to construct a framework for framework analysis.[34,35] B.V. and J.H. independently analysed the transcripts using constant comparison,[36,37] then discussed and agreed the final analysis.

Patient records

Simultaneously, and independently, L.B.-Q., a palliative care specialist registrar (SpR) working in another setting, retrospectively reviewed deceased patient drug charts and medical/nursing notes, working backwards from 31 December 2015 to locate records for 25 people in both hospice and hospital who received continuous subcutaneous infusion (CSCI) of midazolam in the last 24 h of life. We were advised that this work should be classified as an audit, which requires no ethical approvals, but permission to access the records from hospice management and the hospital's clinical audit lead was required and obtained.

Patients' ages, genders, diagnoses (cancer or non-cancer) and length of the final period under palliative care were extracted from all records, plus, for people who had received CSCI midazolam, doses of sedative and analgesic medication prescribed and administered during their final 72 h, together with any notes regarding aims of using sedation, monitoring of symptoms and/or depth of sedation, and/or medication titration.

We used standard conversion ratios to convert opioid analgesic doses to oral morphine equivalents (OMEs), as follows: 2:1 morphine:oxycodone; 100 µg fentanyl = 10 mg morphine; 2 mg oral morphine = 1 mg oral methadone; 2 mg oral methadone = 1 mg subcutaneous methadone.[38] Patients' responses to medications vary individually, but we were unable to determine these from the reviewed records, and therefore employed an approximate, broad-brush calculation. We summarised all quantitative data by descriptive statistics. Written patient notes were analysed qualitatively, following the framework determined for the FG data, initially by L.B.-Q, and then independently by B.V., then discussed and agreed.

Results

Focus Groups

We conducted eight FGs with 27 clinicians: four groups with 10 physicians (8 consultants and 2 SpRs) and four groups with 17 senior nurses (11 clinical nurse specialists (CNSs), 2 team leads, 3 ward sisters and 1 ward manager) (Table 1).

Following the open-ended question on what participants understood by sedation, the more focused TG questions (2–6) asked when and why sedative medications were used, which specific drugs and dosages were employed, and how effects, including depth of sedation, were monitored. FG participants' responses to these more focused questions are presented below (section 'Themes from responses to TG questions 2–6' (a)–(c)), and findings from related patient record data follow (section 'Patient records' (a)–(c)). Findings from the more open, exploratory TG questions will be presented in later publications.

Table 1. Focus group codes, participants and researchers.

Focus group	Participants – settings	Participant pseudonyms and professional roles	Facilitator/observer
PFG1	Physicians – hospice	Bob, Joanne, Sara (consultants), Rebecca (specialist registrar (SpR))	B.V./J.H.
PFG2	Physicians – hospital	Shelley, Marie (consultants)	B.V./J.H.
PFG3	Physicians – hospital	Abigail, Bridget (consultants)	B.V./J.H.
PFG4	Physicians – hospital	Lara (consultant), Libby (SpR)	B.V./J.H.
NFG1	Nurses – hospice	Lorell (ward sister), Lucy (clinical nurse specialist (CNS))	B.V./S.D.
NFG2	Nurses – hospital	Adele, Claire, Jane, Mary (CNSs; Claire team lead)	B.V./J.H.
NFG3	Nurses – community	Florence, Jenny, Lucille, Moira, Natania (CNSs; Lucille team lead)	B.V./J.H.
NFG4	Nurses – hospice	Bhim, Bibi (ward sisters), Heidi (ward manager), Ivor, Sienna, Tina (CNSs)	B.V./J.H.

Themes from responses to TG questions 2–6

(a) Reasons for using sedative medications. All participants said sedative medication was primarily used for people experiencing intractable symptoms, particularly distress and/or agitation, at the end of life. All our participants, both physicians and nurses, also emphasised that sedatives were only used after exploring possible causes and other interventions for patient distress or agitation:

> **NFG4; Heidi (hospice ward manager, 4 years; 10 years PC):** Well, if they're showing signs of agitation or similar. If someone […] is being symptomatic, being agitated and showing signs of distress […] you need to rule out everything else first […] they can't speak, and that, maybe that's why they're agitated, or just making sure they're not in pain […]. Sometimes people die that never get agitated […]
>
> **Tina (senior hospice ward sister, 1 year; 14 years PC):** Yes, sometimes somebody sitting with them relieves their agitation more than medication […]
>
> **Bibi (senior hospice ward sister, 1 year; 15 years PC):** […] deal with other things that could cause the agitation, like constipation […], urinary retention.

Participants said the aim when using sedatives was for patients to be 'relaxed', 'calm' or 'comfortable', not sedated per se, and stressed that the aim was to 'settle' the patient and/or their symptoms, and if a level of sedation occurred, this was a side effect, or a 'by-product'. However, participants in most FGs discussed requests from family members that their relative be 'made sleepy', and the need for conversations with family and/or patients regarding how sleepiness, while not the aim, might be an outcome of the medication:

> **NFG2; Jane (hospital CNS, 2 years; 2 years PC (20 years elsewhere)):** … you get family who will say, who will be begging, 'Can you just make her sleepy, I don't want her going through this, she didn't want to go through this'. I was very fortunate to have this conversation with the patient before she got really distressed, to say, 'Some of the drugs we give you might make you really sleepy, how are you feeling about that?' and she said, 'Yeah, that's fine'. It did take a lot to get her settled, because she was really distressed.

(b) Drugs and dosages used. Reinforcing comments on exploring other causes and treatment options before beginning sedative medication, participants all said they would reflect carefully before deciding to begin administering sedatives and always begin with low doses, usually of midazolam:

> **NFG1; (Lucy – hospice CNS, 1 year; 11 years PC):** I don't think it's taken lightly when you decide you're going to try some sedation with a patient […] you would definitely go in with a very small amount of something first of all, just to see if they're going to respond to that even small dose.

If patients' experiences and/or past histories indicated that small dosages would be ineffective, participants said that they would adjust dosages and/or drugs accordingly:

> **PFG2 Shelley (hospital consultant 8 years; 15 years PC):** I would use small doses […] it depends very much on […] the patient's renal function, their age, but also how […] large a dose of drug they've required […] to get […] on top of different things […]
>
> younger patients who are on, you know, huge amounts of opiates, and huge amounts of neuropathic agents, and you just know that when it comes to that terminal event, that 2.5 milligrams [*of midazolam*] … is not going to touch it, so I wouldn't even start with something like that […] I'd easily start with 5 or 10 […]
>
> The very young or the very old […] who've never had anything more than a paracetamol … who've become a bit agitated, where I might just start at 1.25.

If midazolam proved ineffective, participants said they would then, after further consideration of causation, most

commonly use levomepromazine, followed by phenobarbitone, and then, very rarely, propofol:

> **PFG3; Abigail (hospital/community consultant, 2.5 years; 11 years PC):** We would commonly use levomepromazine after midazolam, although […] be aware of that for somebody who might be prone to seizures, because […] the increased risk with that […] It's unusual to use a lot more [*medications*] than that […] but then there is […] phenobarbitone; I did once have someone on a propofol infusion.

(c) Monitoring and assessing levels of sedation. Participants all said they used clinical observation rather than any objective monitoring tools when assessing the effects of sedative medication, and most said they did not only assess the patient personally, but also discussed with colleagues and/or patient relatives how they perceived patients' situations. Some strongly preferred using clinical observation and judgement:

> **PFG2; Bridget (hospital consultant, 1 year; 5 years PC):** I think […] in terms of judging … sedation, or judging any kind of symptom relief, whether that's pain, or respiratory secretions, or … I don't think there's anything better than actually the way I was taught to examine somebody at medical school, which is to stand at the end of the bed and look at them.

All our participants discussed looking for particular features of behaviour or patients' movements and/or expressions when making their assessments:

> **PFG1; Bob (hospice consultant, 12 years; 18 years PC):** There are no … objective physical measurements that we use … It's all observation.
> **Sara (hospice consultant, 9 years; 14 years PC):** There are no hugely hard and fast scientific markers, we're looking at … people's grimacing.
> **Joanne (hospice consultant, 5 years; 10 years PC):** furrowed brows
> **Rebecca (hospice SpR, 4 years; 4 years PC):** moving around the bed
> **Joanne:** restless movement
> **Sara:** crying out
> **Joanne:** groaning

Emergent related themes. Our TG did not include any questions on hastening death, but this theme emerged in all FGs.

(a) Relatives' anxieties regarding hastening death. In most FGs, participants discussed the concerns and anxieties of patients' relatives regarding syringe drivers, and their associations with hastening death. This theme arose particularly when speaking about starting with low dosages of medication:

> **NFG1; Lucy (hospice CNS, 1 year, 11 years PC):** Sometimes we start the syringe driver at the lowest dose, just because there is a lot of anxiety in relation to syringe drivers […] you get the family member who says, 'Oh, they put up that syringe driver, then they died', but they're dying anyway … it doesn't hasten death.

(b) Non-specialist staff anxieties. Participants in many FGs also remarked that non-specialist staff were also anxious about hastening death:

> **NFG2; Jane (hospital CNS, 2 years, 2 years PC (20 years elsewhere)):** the other difficult […] is actually dealing with staff, and *staff* anxiety […] staff in different settings […] wanting to take, sort of quite drastic measures to try and keep this person alive, when quite clearly their disease was so … advanced, like massively advanced … and she was losing her airway, and it was quite hard for people to understand that we're not hastening her death, but we're just going to make it as comfortable as *possible.* (Jane's own emphases)

Physician participants in two separate FGs used the phrase 'dying at the end of a needle' when discussing this issue in relation to the concerns of non-specialist staff, in both hospital and community settings, especially when injections were administered shortly prior to patients' deaths:

> **PFG1; Rebecca (hospice SpR, 4 years; 4 years PC):** I think particularly in the hospital … [*staff*] who are less used to doing it […]
> **Joanne (hospice consultant, 5 years; 10 years PC):** Because of the nature of the beast … So you have a very … sick patient who is dying, who is agitated, so because of that you give them an injection, and then they die […] so for the person giving the injection that can be quite … hard to reconcile.
> **Sara (hospice consultant, 9 years; 14 years PC):** 'Dying at the end of a needle'; it's got a name.

Resonating with earlier discussions regarding how the decision to start sedative medication was not taken 'lightly' (NFG1, Lucy – section 'Drugs and dosages used' above), and although one hospital consultant commented that her team's practice had always been cautious, many FG participants reflected on how staff concerns, and their consequent caution, possibly resulted from media representations of the Liverpool Care Pathway (LCP):[39]

> **NFG4; Bibi (senior hospice ward sister, 1 year; 15 years PC):** There's been so much negative, umm, coverage in the media about the LCP, that had a huge effect on us and the organisation, and also I think it has had an effect on how we approach sedation now. I think there has been a slight shift in how medical teams have been a bit more cautious.

Table 2. Comparison of patients who received CSCI midazolam at the end of life with others.

	CSCI midazolam (*n* = 50)	Others (*n* = 42)
Male/female	21/29	21/21
Cancer diagnosis, *n* (%)	45 (90)	32 (76)
Median length of final admission (days)	11	11.5
Median length of time as palliative care inpatient (days)	7	9

CSCI: continuous subcutaneous infusion.

(c) Patients' requests to be unconscious until death. In contrast to the discussion in all FGs of the concerns of relatives and non-specialist staff that patients' deaths not be hastened, some FG participants also raised the opposite issue: wishes and/or explicit requests or expectations of some patients that they be made unconscious, so they could sleep until they died, and how difficult they and their colleagues found such requests:

> **NFG4; Bhim (junior hospice ward sister, 6 months; 14 years PC):** we had this patient, she's only like 30-something […] and she clearly said that if the time comes she really wanted to be sedated, and then […] She'd asked one of the sisters here before that, you know, 'Do you think that once they put the medication I am not going to wake up again, because I don't want to wake up, you know, after that'. So we started her on the syringe driver and then after two days she woke up, and she was so angry, she was very, very angry, and she said, 'You promised me that … [*I was*] not going to wake up again'.

One participant commented that occasionally patients themselves did not only ask to be made unconscious, but for their deaths to be hastened:

> **PFG3; Abigail (hospital/community consultant, 2.5 years; 11 years PC):** I think that [*using sedatives to address distress or agitation*] is quite different to having somebody who you're almost having a rational conversation with saying, 'Oh, now I'd like you to sedate me for however long I live for now', which isn't something I've ever been asked to do either, but … I guess, just like occasionally, patients ask us about going to Dignitas or euthanasia, it's not … you know, I'm aware of occasional cases with colleagues, where somebody has asked that question.

Patient records

To obtain 25 patients at each site who had received CSCI midazolam in their final 24 h necessitated retrieving 92 patient records (44 at the hospice, 48 at the hospital) prior to 31 December 2015 (Table 2).

(a) Documented reasons for using sedative medications. For the 50 patients who received CSCI midazolam at the end of life, 44/50 records (88%) included both patient descriptions and plans/aims underlying introducing midazolam:

> *C51 (M, age 80–84; starting dose 20 mg; 20–40 mg prescribed)*: Agitated++, distressed, trying to climb out of bed. No response to 2.5 mg midazolam therefore 5mg midazolam given with some response. Difficulty with oral medicines … Plan … Commence CSCI … Midazolam 20mg.

The other six records (12%) did not specifically state reasons or give a detailed plan:

> *L22 (M, age 35–39; starting dose 5 mg; 5 mg prescribed)*: Patient looks like he is actively dying. Unable to rouse with voice /// Plan: End of life care.

Reasons for starting CSCI midazolam were explicitly stated in 28/50 records (56%), with the most frequent being agitation (23/50; 46%). Other frequent indications were being unsettled (including restlessness or having a disturbed night), discomfort, pain, distress, anxiety, confusion and breathing difficulties (Table 3):

> *C49 (F, age 50–54; starting dose 10 mg; 10–30 mg prescribed)*: Difficult day … Anxious+++, finding it a lot to cope with at times, finds lorazepam helpful … Anxiety a big problem for [*her*] at the moment … Add 10mg/24h Midazolam to CSCI to help with anxiety.

In total, 10 patient records noted just one indication; the other 35 noted more than one, most frequently (19/50) two (e.g. both agitation and distress). The largest number of indications was seven (for one patient). We found no pattern in the combination of indications recorded:

> *L43 (F, age 30–34; starting dose 5 mg; 5 mg prescribed)*: Patient reviewed due to deterioration in condition. Has required a number of PRNs in last 24h … Currently breathing fast, has pain, feels sick, obviously dying … [*She*] asked what will happen next. I have explained we will review SC pump regularly and increase as needed to keep her comfort paramount. Plan: Suggest increase S/C pump to 80mg oxycodone. Use midazolam S/C to help breathing.

Some records noted patients' behaviours and/or expressions, and some also included comments on the thoughts and impressions of patients' relatives:

> *L47 (M, age 80–84; starting dose 5 mg; 5 mg prescribed)*: Unresponsive. Small twitches/jerking noted. Frowning and

Table 3. Indications for administration of CSCI midazolam noted in patient records.

Indication		Number	Total number of patients (%)[a]
Agitation		23	23 (46)
Unsettled	Unsettled	3	9 (18)
	Restless	4	
	Disturbed night	2	
Discomfort/uncomfortable		8	8 (16)
To make comfortable	Achieve comfort	2	11 (22)
	Keep comfortable	4	
	Make comfortable	5	
Pain		13	13 (26)
Distress	Distress	9	15 (28)
	Groaning	2	
	Moaning	1	
	Scared	1	
	Shaking	1	
	Tremulous	1	
Anxiety		6	6 (12)
Confusion	Confusion	2 (1 patient all 3)	6 (12)
	Confused	4 (–1)	
	Muddled	2 (–1)	
Breathing difficulties	Change in breathing	7	11 (22)
	Shortness of breath	2	
	Breathlessness	1	
	Stridor	1	
Chest secretions		3	3 (6)
Seizure control/prevention		3	3 (6)

CSCI: continuous subcutaneous infusion.
[a]Note that these do not sum to 50 (100%) since records for most patients noted more than one indication.

> screwing up face. Daughter present and notes that [*he*] often makes this face & she thinks it is a sign of pain – I agree … Plan … Start CSCI 10 mg oxycodone, 5 mg Midazolam, & 1.6mg hyoscine … PRN medications as needed.

One of the 50 records noted that the patient had expressed the wish to die more quickly:

> *C54 (F, age 70–74; starting dose 15 mg; 10–20 mg prescribed)*: Had a very distressing night, lots of pain. 4× oramorph overnight … Had bowel motion through her vagina. She is very tearful this morning and 'wants it all over' and does not want to be here. Wants to die quicker. Explained that we cannot make it happen quicker but we can make her more comfortable and that maybe a SD is appropriate. Slept every two hours – diazepam did not help as well as before … Plan: Trial of syringe driver – nervous about needles but will try.

(b) Documented drugs and dosages used. Patients began CSCI midazolam a median of 1.5 days (range: 0–19) before death. The median dose of CSCI midazolam received in the last 24 h of life was 10 mg (range: 0.4–69.5) (Table 4 and Figure 1), with 30/50 patients (60%) also receiving pro re nata *(*PRN, or 'as required') midazolam – median PRN dose 5 mg/24 h (range: 2.5–50). The median total dose of midazolam received in the last 24 h of life was 15.7 mg/24 h (range: 5–108 mg).

The majority of patients (47/50; 94%) who received CSCI midazolam also received CSCI opioid analgesia (median dose OME: 80 mg/24 h), with 31/50 (62%) also receiving PRN analgesia in the last 24 h of life (median total dose OME: 100 mg/24 h). In total, 15 of these patients (30%) also received additional sedatives: nine (18%) levomepromazine, five (10%) haloperidol and one (2%) phenobarbitone (Table 3). Three patients (6%) received hyoscine for chest secretions.

(c) Documented monitoring of level of sedation. No patient records contained any indication of structured monitoring. Three sets (all for patients who died 1–3 h after commencing CSCI) understandably did not document additional sedative doses nor clinical observations/patient descriptions. All other records (47/50; 94%) documented either or both; most (31/50; 62%) included both, as illustrated below (our emphases).

Low final doses of midazolam

> *L35 (F, age 75–79; total midazolam in the last 24 h of life 5.2 mg)*: Asked to review [*patient*] after difficult night of

Table 4. Medication received by patients receiving CSCI midazolam during the last 24 h of life.

	Number of patients	Median dose (mg/24 h)	Range (mg/24 h)
Midazolam			
CSCI	50	10.0	0.4–69.5
Additional PRN	30	5.0	2.5–50.0
Total	50	15.7	5.0–108.0
Levomepromazine			
Total	9	6.25	3.0–25.0
Haloperidol			
Total	5	1.5	1.0–5.0
Phenobarbitone			
Total	1	561.0	N/A
Opioid analgesics			
Regular administration	47	80.0	2.0–1200.0
PRN	31	30.0	5.0–320.0
Total	47	100.0	8.0–1200.0

CSCI: continuous subcutaneous infusion; PRN: pro re nata.

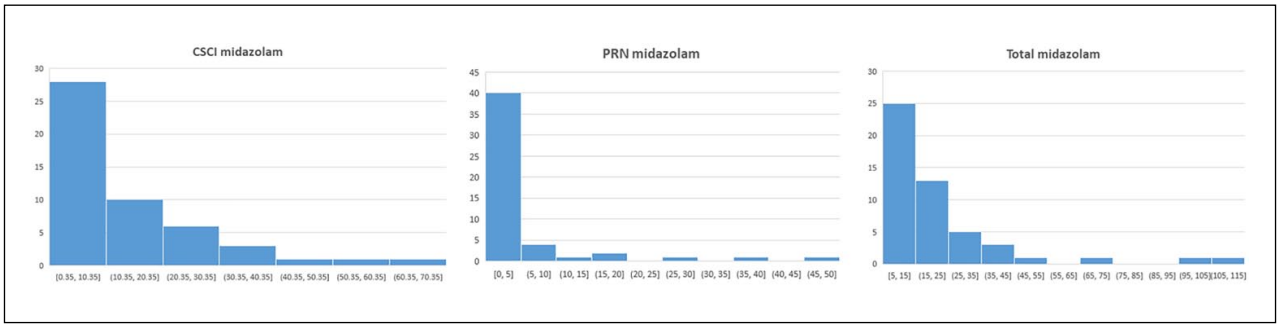

Figure 1. CSCI, PRN, and total midazolam for all 50 'CSCI patients' in the last 24 h of life.

distress and coffee ground vomiting. Ryles tube passed since and patient sleeping. D[iscussion]/w[ith] nursing staff, patient appears to have massively deteriorated from last wk … *Currently comfortable*, inappropriate to move, needs EoL paperwork … *Midazolam S/C to keep comfortable.*

Not reactive to verbal and pain stimuli … comfortable in bed … Plan … Midazolam PRN. Already on SD – *seems comfortable* so no changes for now

Pain poorly controlled overnight and today in the morning … Patient with eyes closed, *responds to verbal and pain stimuli with groaning. Doesn't look comfortable*. Cheyne-Stokes breathing … Plan: Increase SD midazolam (from 2.5 to 5) and oxycodone (from 10 to 15). At the moment SD with levomepromazine 12.5 and metoclopramide 30 + midazolam 5 + oxycodone 5. Palliative care to kindly review patient and analgesia, please.

Seems comfortable now but was restless last night. Team has increased midazolam to 5mg and oxycodone to 15mg today. Continue with same.

High final doses of midazolam. Notes for patients receiving large final doses were similar to those for patients receiving low doses, that is, recording also solely clinical assessments of their level of comfort. The following extract indicates the monitoring of a hospice patient who received 107.9 mg in her last 24 h of life (the highest final total dose in all patient records reviewed):

C53 (F, age 45–49; total midazolam in the final 24 h 107.9 mg (57.9 mg CSCI + 50.0 mg PRN): Patient in bed, drowsy. Was agitated earlier this morning … SD: Midazolam 60mg. ×3 Midazolam 10mg overnight. *Discussed increasing sedation to keep comfortable* with visiting friend. Prognosis short. Plan: … Add phenobarbitone 1600mg via 2nd SD

[*She*] has been agitated at times and *needed medication to help settle* – We have added in 2nd syringe pump with additional medication (Phenobarbital) to help *settle her and keep calm*.

Patient is comfortable

Midazolam administered twice during the night for distress and agitation

Appeared agitated at time of handover, 10mg of midazolam given with short effect.

We found no noteworthy differences between records such as those above for patients who received large doses of sedative medication at the ends of their lives, and those for the majority, who received low doses.

Discussion

Main findings

Our FG participants' statements that when administering sedative medications they generally started with low dosages of midazolam, using other sedatives, infrequently, as second-line treatment, were corroborated by data from patient records. Just over half (50/92; 54%) of retrieved records indicated use of CSCI midazolam at the end of life, just under half of those (24/92; 26% of all records reviewed) received 10 mg or more. The median CSCI dose was 10 mg/24 h; the median total dose was 15.7 mg/24 h, lower levels of sedative use than found in the two recent retrospective reviews in the United Kingdom.[30,31] Patient records showed infrequent use of other sedatives, of which the most frequent was levomepromazine (9/50 patients; 18%).

Our FG participants said they used sedatives primarily for exceptional distress or agitation, occasionally for other intractable symptoms, aiming for patient comfort, not unconsciousness. Again, data from patient records supported these statements; the most frequent indications were agitation, discomfort, distress, and pain. No FG participants mentioned following any guidelines, and all said that they never used structured tools to determine the effects of medications on patients, but rather clinical observations plus consultation with colleagues and relatives. The reviewed patient records also corroborated this. Records for patients receiving high or low total doses did not differ in their content, and we found no indication of any systematic structured monitoring, regardless of the sedative dose received (although high levels of sedative medication do not necessarily mean loss of consciousness).

In all our FGs, participants extended the discussion beyond the TG to the perceptions of some patients, relatives and non-specialist staff that using medication via syringe driver at the end of life implied hastening death. All spoke of the consequent need to manage related concerns, with some linking these negative perceptions with critical representations of the LCP. From the opposite perspective, some participants also discussed needing to address requests from some patients that they be made unconscious until they died, or even actively assisted in dying. One set of patient records noted a discussion with a patient who had indicated a desire for her death to be hastened.

Strengths and limitations

A strength of our study is its multi-method approach, triangulating qualitative findings with data from pre-existing patient records, which corroborated FG participants' comments. However, as a small-scale exploratory study of current practice in two London settings, our study is limited in its generalisability, although our qualitative findings support those from recent research interviews in the United Kingdom.[28]

Another limitation is that we assessed patient records, rather than directly observing patient care, and the recorded data cannot be taken to exhaustively represent patients' conditions. The information recorded was what clinicians chose to document, and factors such as time pressure might affect their choices. Furthermore, because systematic objective monitoring tools were not used, the notes reflect clinicians' subjective decisions regarding what to document, and in what terms. Although some terminology was common, occasionally clinicians used their own personal vocabularies and language which was not necessarily standard or consistent between individuals, for example, 'muddled' and 'confused' (Table 3). Our analysis therefore sometimes required interpretation regarding equivalent meanings.

What this study adds

There is no standard practice for use of sedation at the end of life; it is known that practice varies internationally, and locally by setting, and that guidelines are inconsistent.[13,14] Our findings indicate that clinicians' practices in these London settings, in relation to drugs and dosages used and indications for usage, align with the EAPC framework's[15] recommendations for proportionate use of sedatives and echo previous qualitative findings with UK palliative care professionals.[28] We found lower levels of sedative use in both London settings than found in previous patient record reviews in other UK settings.[29–31]

The EAPC also recommends that sedative use for imminently dying patients should be regularly monitored, with patient comfort being the primary parameter, if this is the aim.[15] All records examined for patients receiving CSCI midazolam demonstrated monitoring of patient comfort, with no evident differences in approach between dosage levels.

Implications for practice

Our clinician participants did not mention following any guidelines, whether EAPC or otherwise, but practice when using sedatives at the end of life in these two London settings meets EAPC recommendations for proportionate use. However, the EAPC also recommends systematic, objective monitoring of sedative effects, which we did not find. Such monitoring might be beneficial by facilitating consistency in approach, thereby ensuring that patients are neither over- nor under-sedated, and also in clinicians' terminology. Among other things, when handing over or comparing notes between clinicians, systematic language would help clarify whether clinicians' perceptions are

equivalent when using terms such as 'muddled' or 'confused', 'agitated' or 'restless', 'settled' or 'comfortable', and so ensure continuity of care.

Conclusion

Our FG findings, corroborated by patient record data, demonstrate that, when using sedatives at the end of life, current practice in the London settings studied is cautious and proportionate, as per EAPC recommendations. Clinicians first consider using sedatives if patients are agitated and/or experiencing considerable anxiety or distress, and, if used, begin with low doses if possible, aiming primarily to increase patient comfort. Sedation, if it occurs, is a by-product, so this approach is best described as proportionate sedation. The only variation we found from EAPC recommendations for drugs, dosages and monitoring was that clinicians did not objectively monitor sedative effects, even when using moderate–high doses of sedatives. The next step in this research programme therefore explores the feasibility of introducing such objective monitoring in clinical care.

Acknowledgements

We thank the peer reviewers and editors for their helpful comments and feedback. We also gratefully thank all the FG participants for their time and thoughtful contributions, and colleagues at both sites for help with accessing patient records. Thanks also to all the current and former members of the study advisory and working groups: Bridget Candy, Alice Colum, Anna Gola, Tariq Husain, Yana Kitova, Anna-Maria Krooupa, Nuriye Kupeli, Philip Lodge, Rebecca Lodwick, Jon Martin, Stephen McKeever, Liz Sampson, Liz Thomas, Adrian Tookman, Vinnie Nambisan and Tim Wehner. Particular thanks to Hilary Bird and Kathy Seddon (Marie Curie Expert Voices PPI representatives on the Advisory Group). We thank Matthew Bemand-Qureshi for his help with statistical analysis, and Mia Davis, Anna Floyer and Nuriye Kupeli for transcribing. Parts of the data reported on in this paper were presented at the 15th World Conference of the EAPC, Madrid, 18–20 May 2017[40, 41], and at the Marie Curie/Royal Society of Medicine (Palliative Care Section) Palliative Care Research Conference, 6 October 2017[42]. P.S. conceived the overall study design and funding application. B.V. and P.S. conceived the detailed design and prepared the initial protocol and study documents. B.V., J.H., S.D. and L.B.-Q. performed the data collection. B.V., J.H., P.S. and L.B.-Q. performed the analysis. B.V. prepared the initial draft of the paper and performed initial revisions and response to editors/reviewers following peer review. All authors performed further drafting and revisions, approval of the final version, revisions and approval of resubmission.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: This work was supported by Marie Curie (grant no. MCCC-FPO-16-U). BV, JH, SD, and PS are also supported by the UCLH NIHR Biomedical Research Centre.

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