Polypharmacy in Palliative Care: Can it be Reduced?

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ABSTRACT

Introduction: Minimising polypharmacy is important. A study was done to see if this was achievable in patients under palliative care and compares the types of drugs used before and after referral.

Method: Medication charts of 345 patients seen in June to August 2000 in hospital-based palliative consultation service, home care and hospice, were reviewed. The drugs used were recorded on two occasions – before referral and two weeks after or just before discharge from hospital or hospice, provided that death was not imminent.

Result: The median number of drugs used was five, before and after referral. Analgesics and laxatives were frequently used in palliative care (60.3% and 60% respectively). The commonest analgesic was opiates (41.2% before and 47.8% after referral). Only the difference in laxative usage (50.4% prior to referral and 60% after) was statistically significant at $p<0.01$. 40.3% of the patients had an increase in the number of drugs after referral and 45.3% of them had addition of laxatives, compared to less than 30% for other drugs. A significantly higher proportion of patients (24.6% versus 18%) were on two or more drugs for constipation after referral.

Conclusions: Reducing polypharmacy in palliative care is often difficult. There was higher awareness of bowel habits and treatment of constipation amongst those involved in palliative care. In addition to reviewing the use of some drugs, other measures such as patient education may be useful in minimising polypharmacy.

Keywords: Polypharmacy, palliative care, drugs, laxatives, analgesics

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INTRODUCTION

Polypharmacy is the concurrent use of several different medications[1]. This results in many problems, notably drug interactions, increased cost, non-compliance and adverse effects[2,3]. Each addition of a new drug increases the risk of deleterious drug interactions and results in an exponential rather than a linear increase in the incidence of adverse drug reaction[4,5]. All these increase patient iscomfort as well as hospitalisation.

Patients with terminal illnesses experience a multitude of symptoms secondary to their illness, treatments and psychosocial problems. It is thus not surprising that these individuals are at risk of polypharmacy and its adverse effects.

Palliative care aims to optimise symptom control and maximise comfort in individuals with terminal conditions. Hence, efforts should be made to minimise polypharmacy as it can adversely affect the quality of life of the individual.

A study was done on patients who were seen from June to August 2000 by three different palliative care services in Singapore. The objectives of the study were

1. to see if the number of drugs prescribed decreased after referral to palliative care service
2. to compare the types of drugs used before and after referral, and see if there is a difference
3. to see if further review of the types of drugs used is required

METHOD

Patients were from three centres:

1. An in-patient palliative care consultation service in a 1000-bedded acute hospital
2. An in-patient hospice with forty beds
3. A home care service that sees 500 to 600 patients a year

The case records and medication charts of patients seen from June to August 2000 were perused. Prescribed drugs (both parenteral and non-parenteral), except those given on an "as required" basis, were recorded. This was done on two occasions – just prior to referral to the palliative care service and two weeks after. Patients in hospital and hospice, who were with the service for at least 48 hours but were discharged before two weeks, had the recording of medications

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Table I. Age and sex distribution.

Location	Age		Sex	
	<65 years	>/=65 years	Male	Female
Home Care	96 (37.6%)	159 (62.4%)	126 (49.4%)	129 (50.6%)
Consultation Service	13 (40.6%)	19 (59.4%)	16 (50%)	16 (50%)
Hospice	30 (51.7%)	28 (48.3%)	34 (58.6%)	24 (41.4%)

Table II. Frequency of the number of drugs used.

Number of drugs	Before	After
0 to 4	159 (46.1%)	149 (43.2%)
5 to 7	128 (37.1%)	125 (36.2%)
8 or more	58 (16.8%)	71 (20.6%)

Table III. Frequencies of the various drugs used.

Drugs	Before	After	P value
Analgesics	192 (55.7%)	208 (60.3%)	0.22
Antiemetics	52 (15.1%)	61 (17.7%)	0.36
♣Laxatives	174 (50.4%)	207 (60%)	0.01
#Health supplements	93 (27%)	75 (21.7%)	0.11
Antidepressants	14 (4.1%)	23 (6.7%)	0.13
Appetite stimulants	31 (9%)	33 (9.6%)	0.79
Diuretics	48 (13.9%)	57 (16.5%)	0.34
Antipsychotics	10 (2.99%)	12 (3.5%)	0.67
+Chronic illness	100 (29%)	92 (26.7%)	0.50
Haematinics	75 (21.7%)	67 (19.4%)	0.45
Anti-ulcer therapy	147 (42.6%)	152 (44.1%)	0.70

♣ Marks the drug with a significant difference in usage
Health supplements refer to vitamin pills
+ Chronic illness refers to conditions such as hypertension, diabetes mellitus, ischaemic heart disease, end-stage renal failure, dyslipidaemia

done just prior to discharge. As performance scores were not charted in the patients under home care service, an attempt was made to ensure some form of homogeneity of all patients by excluding those in which death occurred within 24 hours of the second recording of medications. Home care patients who were admitted to hospital within two weeks of referral were excluded.

A total of 345 patients were recorded – 58 from hospice, 32 from in-patient hospital consults and 255 from home care service. The charts of another six hospice residents, five palliative care consultation service patients and nine home care patients were not recorded, as their case notes were either lost or incomplete.

The median number of drugs and frequency of the various drugs used before and after referral to palliative care team were calculated. Chi square test of significance was used.

RESULTS

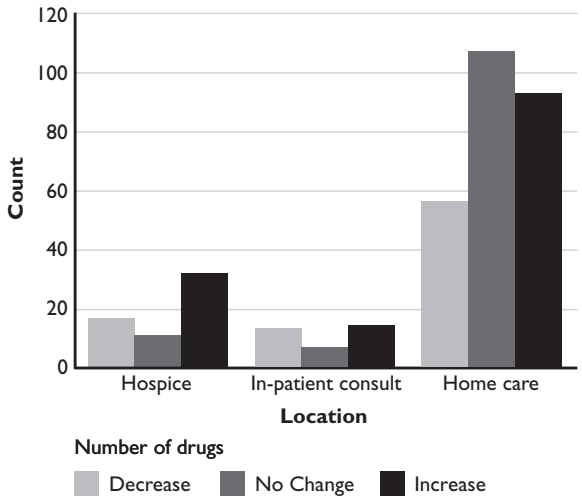
The age and sex distribution in the various services are shown in Table I. There was a higher proportion of patients who were 65 years old or older in the home care and in-patient consult services. The gender distribution was fairly equal in all the services.

The number of drugs used (grouped into three categories) before and after referral to the palliative care teams are shown in Table II. There was no statistically significant difference in the number of patients receiving less than five drugs before and after referral to the palliative care teams. This was also the case with patients on eight or more drugs, although there was an absolute increase in the number of patients on these number of drugs after referral to the palliative care teams (71 versus 58). The median number of drugs used was five and there was no significant difference before and after referral to the palliative care services. 186 (53.9%) patients were prescribed five or more drugs prior to referral compared to 196 (56.8%) after referral to the palliative care services. The number of drugs ranged from zero to 11 prior to referral and zero to 13 after referral.

There were three patients who were on eleven drugs prior to referral. The first of these patients had dementia and renal cell carcinoma with bone metastases. She was on multiple sedating agents (diazepam, haloperidol, thioridazine, amitriptyline) and had the number of drugs reduced to seven after the palliative care team reviewed her and replaced them with olanzepine. The second patient had lung cancer, end-stage renal failure, diabetes mellitus, hypertension, ischaemic heart disease and tuberculosis. He was on multiple drugs for his chronic conditions and tuberculosis. After referral to the palliative care team, the number of drugs was reduced to seven with the completion of anti-tuberculosis therapy and omission of anti-hypertensives as his blood pressure decreased. The third patient had adrenal carcinoma and ascites. He was on oral chemotherapy, diuretics, analgesics and aminoglutethamide. The number and types of drugs remained unchanged after referral to the palliative team.

Three patients had 13 drugs prescribed after referral to the various palliative care teams. Two of them had lung cancer with brain metastases and had the number of drugs increased from nine to 13 after referral as a result of addition of antibiotics, salbutamol, antisecretory agents and sedating agents. The third patient had lung cancer and developed acute glaucoma and acute exacerbation of his chronic bronchitis, resulting in an increase of prescribed drugs from seven to thirteen due to the addition of various eye drops and nebuliser therapy.

Fig. 1 Graph showing change in the number of drugs.



There was no significant difference in the median number of drugs (which was five) between males and females. There was also no significant difference in the median number of drugs (which was five as well) between those less than 65 years of age and those who were 65 years old and above. The frequencies of the various drugs used were similar.

The frequencies of various drugs used before and after referral are shown in Table III. The most frequently used drugs were analgesics (55.7% before and 60.3% after referral) and laxatives (50.4% before and 60% after referral). Anti-ulcer therapy (H2-blockers or proton pump inhibitors) was also used quite frequently (in approximately 40% of the patients). Only the difference in the use of laxatives reached statistical significance.

The number of patients on two or more laxatives was significantly higher after referral to the palliative care teams (85 versus 62, p = 0.032). There was an absolute increase in the use of two or more analgesics (88 versus 67 patients), though this did not reach statistical significance (p=0.055).

Opiates were the commonest analgesic used – 41.2% before referral and 47.8% after referral. This was not statistically significant p = 0.08, although there was an absolute increase in the number of patients on opiates. A similar trend was seen for non-steroidal anti-inflammatory drugs. The breakdown of the various analgesics used is shown in Table IV.

A majority of patients had an increase in the number of drugs used (40.3%), 35.7% of them had no change in the number and 24.1% had a decrease in the number of drugs used, after referral to palliative care services. Fig. 1 shows the data for the various services in the form of a bar chart.

Out of the 139 patients who had an increase in the number of drugs used, 63 (45.3%) of them had an addition of laxatives, compared to less than 30% for the other drugs. Table V shows the various types of drugs that were added.

Table IV. Frequency of usage of the various analgesics.

Analgesics	Before	After	P value
Paracetamol	45 (13.0%)	46 (13.3%)	0.91
NSAIDS	51 (14.8%)	66 (19.1%)	0.13
Opiates	142 (41.2%)	165 (47.8%)	0.08
TCA/AED♠	23 (6.7%)	23 (6.7%)	1

♠TCA = tricyclic anti-depressants, AED = antiepileptic agent

Table V. Types of drugs added and their frequencies.

Drugs that were added	Number of patients (%)
Laxatives	63 (45.3%)
Analgesics	41 (29.5%)
Antibiotics	35 (25.2%)
Anti-ulcer therapy	19 (13.7%)
Antiemetics	18 (12.9%)
Diuretics	14 (10.1%)
Dexamethasone	8 (5.8%)
Anti-tussives	7 (5.0%)
Bronchodilators	7 (5.0%)
Sedatives	7 (5.0%)
Anti-pyretics	6 (4.4%)
Mucolytics	6 (4.4%)
Anti-depressants	6 (4.4%)
Anti-pruritic agents	5 (3.6%)
Health supplements	4 (2.9%)
Appetite stimulants	4 (2.9%)
Drugs for chronic illness	3 (2.2%)
Haematinics	3 (2.2%)
Topical steroids	3 (2.2%)
Antipsychotics	3 (2.2%)
Eye drops (for conjunctivitis/glaucoma)	3 (2.2%)

DISCUSSION

Many studies on polypharmacy were done in the geriatric population and it appears that our patients, many of whom were elderly as well, were prescribed more drugs – a median of five drugs compared with 2.03 to 4.6 in individuals 65 years old and above in the general population[6-8]. Dr Robert Twycross also reported five drugs per patient in the group of palliative care patients that he studied[9]. Concurrent use of five or more drugs results in significant risk of experiencing the adverse effects of polypharmacy[10] and more than 50% of our patients were on this number of drugs. The unexpected finding was that there was no significant decrease in the number of drugs after referral to palliative care service. Instead, many of the patients had an increase in the number

of drugs used. Hence, we took a closer look at the types of drugs used and attempted to explain what contributed to an increase in the number of prescribed drugs after referral to the palliative care teams.

Analgesics and laxatives were most frequently used in our palliative care setting. This was similar to the studies of drug use in palliative care by Drummond et al[11] and Twycross et al[9], in which analgesics and gastrointestinal drugs were the commonest drugs used. In contrast, studies by Hale et al[12] and Vener et al[13] on ambulatory and non-institutionalised older patients showed that vitamins and drugs for chronic illnesses were the commonest. Considering that pain is one of the commonest symptoms in terminally ill patients and that use of morphine and subsequent morphine-related constipation are common, it is not surprising that our patients had higher prescriptions for analgesics and laxatives. Interestingly, while the use of morphine was not significantly higher after referral to the palliative care services, the use of laxatives was. More attention was thus given to morphine-related side effects and patients' bowel habits by the palliative care teams. There was perhaps also under-utilisation of laxatives in non-palliative care units.

Another finding in the study was that more patients were on two or more analgesics or laxatives after referral to the palliative care teams. This was because different drugs were used to target various parts of the pathway leading to the development of the symptoms.

Most of the patients with an increase in the number of drugs after referral, had addition of laxatives – a finding that is consistent with the general increase in the use of laxatives in the palliative care setting. Twenty-two to 30% had an addition of analgesics and/or antibiotics (mainly used for pneumonia). This may reflect the patients' general deterioration two weeks later, resulting in increased pain and susceptibility to infection. Recording the change in performance status and symptom score of the individual patient will be useful.

There was no significant decrease in the use of health supplements (mainly vitamins) and drugs for chronic illness (e.g. hypertension, diabetes mellitus, ischaemic heart disease). It would be useful to review the use of these drugs in our patients. Vitamins have limited roles in the relief of symptoms and the treatment of cachexia in patients with terminal illness and can be stopped in many instances. Many terminally ill patients have poor appetite, low glycogen stores and low blood pressure, hence hypoglycaemics and anti-hypertensives may be withdrawn for some of them.

Besides reviewing the indications and effects of the drugs, there are other measures that can be employed to minimise polypharmacy and its adverse effects[2]. Educating the patients regarding the drugs, simplification of drug regimens e.g. single-day dosing schedules, checking and counting of pills and health promotion to improve the quality of life have all been used to minimise polypharmacy.

CONCLUSION

Reducing polypharmacy in palliative care may be difficult in reality. Improvement in the quality of life and the relief of symptoms take precedence in the management of patients under palliative care. Multiple medications may be required to achieve good symptom control. It is thus a difficult balance between reducing polypharmacy and achieving maximal comfort for patient. This is especially so when more patients are referred earlier in the course of their illnesses, while still on fairly aggressive therapy and at the same time requiring symptom relief. This goes to show the complexity of the patients that were referred to the palliative care services.

We concluded that there was a higher awareness for bowel habits and the treatment of constipation amongst doctors involved in palliative care compared to non-palliative care doctors – hence the increased use of laxatives. In addition, there was also an increase in the use of multiple drugs to treat constipation. We also suspect from the natural history of the patients' illnesses, that their general condition had deteriorated two weeks after they were first seen, resulting in increased symptoms and treatments for these symptoms. Patients' level of function as well as the severity of symptoms will influence the type and amount of drug used. Thus a limitation of this study was that the performance and symptom scores of the patients were not recorded.

Polypharmacy may be necessary at times, but efforts should still be made to minimise polypharmacy in other circumstances. There is a need to review the necessity for vitamins, hypoglycaemics, anti-hypertensives and other drugs for chronic illnesses when they are not improving the quality of life or prognosis of a terminally ill patient. From experience, however, it is difficult at times to convince the patients and their families that the drugs that they have been taking for years are no longer required. Many may see it as an act of withdrawal of treatment or an indication that death is imminent. Other strategies such as patient education, pill counting, simplifying dosing schedules and health promotion should also be employed to minimise polypharmacy and its adverse effects.

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