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

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 discomfort 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...
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 team. 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.

### Table I. Age and sex distribution.

<table>
<thead>
<tr>
<th>Location</th>
<th>Age &lt;65 years</th>
<th>≥65 years</th>
<th>Sex Male</th>
<th>Sex Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Care</td>
<td>96 (37.6%)</td>
<td>159 (62.4%)</td>
<td>126 (49.4%)</td>
<td>129 (50.6%)</td>
</tr>
<tr>
<td>Consultation Service</td>
<td>13 (40.6%)</td>
<td>19 (59.4%)</td>
<td>16 (50%)</td>
<td>16 (50%)</td>
</tr>
<tr>
<td>Hospice</td>
<td>30 (51.7%)</td>
<td>28 (48.3%)</td>
<td>34 (58.6%)</td>
<td>24 (41.4%)</td>
</tr>
</tbody>
</table>

### Table II. Frequency of the number of drugs used.

<table>
<thead>
<tr>
<th>Number of drugs</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4</td>
<td>159 (46.1%)</td>
<td>149 (43.2%)</td>
</tr>
<tr>
<td>5 to 7</td>
<td>128 (37.1%)</td>
<td>125 (36.2%)</td>
</tr>
<tr>
<td>8 or more</td>
<td>58 (16.8%)</td>
<td>71 (20.6%)</td>
</tr>
</tbody>
</table>

### Table III. Frequencies of the various drugs used.

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Before</th>
<th>After</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analgesics</td>
<td>192 (55.7%)</td>
<td>208 (60.3%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Antiemetics</td>
<td>52 (15.1%)</td>
<td>61 (17.7%)</td>
<td>0.36</td>
</tr>
<tr>
<td>Laxatives</td>
<td>174 (50.4%)</td>
<td>207 (60%)</td>
<td>0.01</td>
</tr>
<tr>
<td><em>Health supplements</em></td>
<td>93 (27%)</td>
<td>75 (21.7%)</td>
<td>0.11</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>14 (4.1%)</td>
<td>23 (6.7%)</td>
<td>0.13</td>
</tr>
<tr>
<td>Appetite stimulants</td>
<td>31 (9%)</td>
<td>33 (9.6%)</td>
<td>0.79</td>
</tr>
<tr>
<td>Diuretics</td>
<td>48 (13.9%)</td>
<td>57 (16.5%)</td>
<td>0.34</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>10 (2.9%)</td>
<td>12 (3.5%)</td>
<td>0.67</td>
</tr>
<tr>
<td>+Chronic illness</td>
<td>100 (29%)</td>
<td>92 (26.7%)</td>
<td>0.50</td>
</tr>
<tr>
<td>Haematinics</td>
<td>75 (21.7%)</td>
<td>67 (19.4%)</td>
<td>0.45</td>
</tr>
<tr>
<td>Anti-ulcer therapy</td>
<td>147 (42.6%)</td>
<td>152 (44.1%)</td>
<td>0.70</td>
</tr>
</tbody>
</table>

* 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
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).

Opitmates 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.

**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

**Table IV. Frequency of usage of the various analgesics.**

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

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

**Table V. Types of drugs added and their frequencies.**

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