

# Development of a system for reporting pharmaceutical care issues in cancer patients receiving chemotherapy

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**AIM** • To develop and test a system for documentation of pharmaceutical care issues in the delivery of chemotherapy to cancer patients, and to develop a database to categorise the pharmaceutical care issues with different tumour types and chemotherapy regimens.

**DESIGN** • Retrospective analysis.

**SETTING** • Edinburgh Cancer Centre, Western General Hospital, Edinburgh.

**RESULTS** • Of the pharmaceutical care plans (PCP) completed, a convenience sample of 171 patients who received chemotherapy were entered on the database. The provision of care led to 0.7 pharmaceutical care issues per assessment. These pharmaceutical care issues represented 238 monitoring checks (55%; 0.39 per patient assessment) and 192 drug therapy interventions (44%; 0.31 per patient assessment). Documented

patient monitoring checks were largely due to safety enquiries (80%; 191/238), such as monitoring for potential toxicities of treatment and the need for additional drug therapy to manage these toxicities (14%; 32/238). Documented drug therapy interventions included actions to address drug selection issues (49%; 95/192), inappropriate doses (29%; 55/192) and inappropriate dose intervals or duration of therapy (15%; 29/192).

**CONCLUSION** • The development of the PCP has standardised the provision of pharmaceutical care to patients receiving chemotherapy for cancer. The ultimate aim is the development of electronic hand-held care plans, which will facilitate data capture. Populating the database with more patients will allow assessment of the pharmaceutical care needs of different tumour groups and will help inform strategic decisions in the development of pharmaceutical services across Scotland.

Pharmaceutical care is “the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life” and as “the process through which a pharmacist co-operates with a patient and other health care professionals in designing, implementing and monitoring a therapeutic plan that will produce specific therapeutic outcomes”.<sup>1</sup> Successful pharmaceutical care planning depends on the pharmacist being integrated within the multidisciplinary team and using a documented system of monitoring drug therapy in patient care.<sup>2-4</sup>

There is limited published work on pharmaceutical care systems and there is a need for testing suitably designed models of pharmaceutical care in particular patient groups with defined needs.<sup>5</sup> Research using both qualitative and quantitative methods is required to allow the pharmaceutical contribution to patient care to be evaluated.<sup>5</sup>

Cancer care is a priority in the United Kingdom for improvements in patient outcomes in the National Health Service.<sup>6-8</sup> In cancer treatment there is increasing focus on comparisons of patient outcomes and therefore methods of operation and the performance of services.<sup>1,8</sup> We describe the implementation of standardised pharmaceutical care plans (PCPs) for cancer patients receiving chemotherapy under a nationally co-ordinated scheme developed within

NHS Scotland. Mandatory patient assessment by a pharmacist ensures treatment verification precedes administration of chemotherapy. At each chemotherapy cycle the patients’ needs are assessed (according to patient assessment criteria) and monitored (according to clinical and laboratory criteria) by a pharmacist as part of the documented care plan.

Previous case studies, illustrating the pharmaceutical care needs of patients through the treatment plan, its implementation and outcome, have been published.<sup>9-11</sup> This concept has been applied in the provision of pharmaceutical care to cancer patients within the specifically defined care plans.

The aims of this study were to develop and test a system for documentation of pharmaceutical care issues in the delivery of chemotherapy to cancer patients, and to develop a database to categorise the phar-

maceutical care issues associated with different tumour types and chemotherapy regimens.

## METHODS

The standardised PCP (available from the authors on request) was developed by the Scottish Cancer Care Pharmacy Group and piloted before being implemented nationally in November 2001. Three “generic” patient assessment criteria were identified: chemotherapy eligibility, therapeutic appropriateness (drug, dose and administration schedule) and concurrent immunosuppressive therapy. Chemotherapy eligibility was recorded before the first cycle only. At each subsequent cycle, patients were assessed, using a tick-box prompt system, against the remaining generic patient assessment and standard monitoring criteria: nausea and vomiting, mucositis or mouth care issues, neurological symptoms, changes in bowel habit, neutropenic sepsis, skin toxicity, pain control, insomnia, depression, absorption and distribution issues, patient education needs, discharge or self-medication issues, full blood count, hepatic function, renal function and “others”. Any identified care issues were expanded in the individual care issues section of the PCP.

Completed PCPs were entered retrospectively into an Access database, designed

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to profile the care provided. The pharmaceutical care issues identified were categorised according to recognised classifications of actual and potential drug therapy problems<sup>12</sup> and a categorisation system of care issues that was designed to capture monitoring activity of such problems.<sup>13</sup> The intention of this phase of the work was to generate reports that would facilitate analysis of the pharmaceutical care provided to cancer patients.

## RESULTS

Of the PCPs completed by pharmacists at the Edinburgh Cancer Centre, a convenience sample of 171 patients who received chemotherapy for acute myeloid leukaemia (n=2), breast cancer (n=33), colorectal cancer (n=39), Hodgkin's disease (n=12), lung cancer (n=49), multiple myeloma (n=1) and Non-Hodgkin's lymphoma (n=35) was entered on the database. For these patients, a total of 611 episodes of chemotherapy (3.57 episodes per patient) were assessed and verified by a pharmacist before administration. The provision of care led to 430 recorded pharmaceutical care issues (0.7 per patient assessment). These pharmaceutical care issues represented 238 (55 per cent) monitoring checks (0.39 per patient assessment) and 192 (44 per cent) pharmacist-initiated changes to drug therapy (0.31 per patient assessment). Table 1 illustrates the breakdown of care issues across the different tumour sites.

Documented patient monitoring checks were largely due to safety inquiries (80 per cent; 191/238) such as monitoring for potential toxicities of treatment and to the efficacy of additional drug therapy prescribed to manage these toxicities (14 per

**TABLE 1: SUMMARY OF THE GENERATION OF PHARMACEUTICAL CARE ISSUES**

Diagnosis category	Number of assessments	Care issues	Per patient assessment		
			Care issues	Monitoring checks	Changes
Acute myeloid leukaemia	3	10	3.33	2.00	1.33
Breast cancer	115	68	0.59	0.35	0.24
Colorectal cancer	142	73	0.51	0.37	0.14
Hodgkin's disease	83	36	0.43	0.28	0.15
Lung cancer	135	164	1.21	0.48	0.73
Multiple myeloma	10	12	1.20	1.00	0.20
Non-Hodgkin's lymphoma	123	67	0.54	0.34	0.20
<i>Total</i>	<i>611</i>	<i>430</i>	<i>0.70</i>	<i>0.39</i>	<i>0.31</i>

cent; 32/238). Of the documented drug therapy changes, 49 per cent (95/192) addressed drug selection issues, 29 per cent (55/192) inappropriate doses and 15 per cent (29/192) inappropriate dosing intervals or duration of therapy.

## DISCUSSION AND FUTURE WORK

The development of the PCP provides a basis on which to continue to standardise the provision of pharmaceutical care to cancer patients across Scotland. Work is now under way to design and validate a system for providing reports to cancer care centres and cancer units of pharmaceutical care provided to their cancer patients. The project will adopt qualitative research approaches to formulate and validate restricted language for describing and categorising actual and potential drug therapy problems and the pharmaceutical input to individual patient care. The aim is to develop an electronic hand-held pharmaceutical care plan that will facilitate prospective data capture at the patient's bedside.

Populating the database with more patients will allow assessment of the pharmaceutical care needs of different tumour groups, help to inform strategic decisions in the development of pharmaceutical services across Scotland and allow targeting of resources to patient subgroups with the highest pharmaceutical care needs.

**ACKNOWLEDGMENTS** We thank: Surarong Chinwong, University of Strathclyde, Glasgow, for design of the database and John McAnaw, University of Strathclyde, for a system of coding of pharmaceutical care issues used in the database; C. Nilsen and K. Moeller, University of Strathclyde and University of Tromsø, Norway, for interpreting the completed pharmaceutical care plans and populating the database; the Scottish Pharmacy Steering Group for the Pharmaceutical Care of Cancer Patients and the Scottish Cancer Care Pharmacy Group for co-operation in the design and piloting of the system.

*This paper was accepted for publication on 4 July 2003.*

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