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INPATIENT HOSPITAL COSTS OF FEBRILE NEUTROPENIA AS A CONSEQUENCE OF CHEMOTHERAPY FOR BREAST CANCER AND NON-HODGKIN LYMPHOMA IN SWITZERLAND

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Objectives

Febrile neutropenia (FN) can be a serious complication of chemotherapy (CHT), increasing mortality risk and healthcare costs [1, 2]. Incidence and inpatient hospital costs of FN in Switzerland are currently not reported. The study aimed to: 1. Estimate the number of CHT induced FN-related hospitalizations. 2. Assess inpatient hospital costs per FN event in Switzerland.

Methods

The main data source was MedStat, a comprehensive database of all Swiss hospitalizations from 1997-2010 [3]. We focused on breast cancer (BC) and Non-Hodgkin lymphoma (NHL). These two types of cancer are often treated with myelosuppressive CHT. BC and NHL cases were identified from ICD-10-GM codes. Hospitalizations for FN were identified by a simultaneous code of BC or NHL and neutropenia [4]. Incident cases of cancer were identified as patients treated in 2010 for the first time since 2002. Results were compared with data from the Foundation National Institute for Cancer Epidemiology and Registration (NICER) [5]. Cost data were derived from the cantonal hospital of Winterthur (KSW). Four clinical experts in the inpatient treatment of FN who represent university and cantonal hospitals as well as the German- and French-speaking part of Switzerland were interviewed to understand BC, NHL and FN treatment practice.

Results

1'202 NHL patients and 6'391 female BC patients were hospitalized in 2010 for the first time. Corresponding annual incidence data from NICER were 1'468 NHL patients and 5'388 female BC patients. Differences can be explained by the fact that MedStat only includes inpatient stays and does not allow for identification of recurrent tumors.

7.2% of all hospitalizations in NHL-patients and 2.6% of all hospitalizations in BC-patients were related to FN (table 1). Average length of stay was 16.4 days for NHL and 8.8 days for BC (table 1). The in-hospital mortality was 8.0% for NHL and 4.3% for BC (table 1).

Cost data was available from 18 patients with basic insurance (6 with BC and 12 with NHL). Average costs per stay were CHF 14'006 in NHL and CHF 10'020 in BC patients (table 2). Cost composition in KSW (figure 1) reflects standard of care in Switzerland: Nursing forms the largest cost share followed by diagnostic imaging (thorax x-ray) and lab tests (urinalysis, blood count and blood cultures).

Table 1: Number of FN-related hospitalizations, length of stay and mortality

	women	men
Proportion of all hospitalizations		
Aggressive NHL	70/750 (9.3%)	92/829 (11.1%)
Indolent NHL	10/296 (3.4%)	19/313 (6.1%)
Rest of NHL	44/1'020 (4.3%)	79/1'183 (6.7%)
Breast cancer	255/9'650 (2.6%)	2/89 (2.2%)
Average length of hospital stay (days)		
Aggressive NHL	19.2	17.3
Indolent NHL	11.8	11.4
Rest of NHL	15.3	15.2
Breast cancer	8.8	10.5
Mortality among hospitalizations		
Aggressive NHL	3/70 (4.3%)	8/92 (8.7%)
Indolent NHL	0/10 (0%)	0/19 (0.0%)
Rest of NHL	4/44 (9.1%)	10/79 (12.7%)
Breast cancer	11/255 (4.3%)	0/2 (0%)

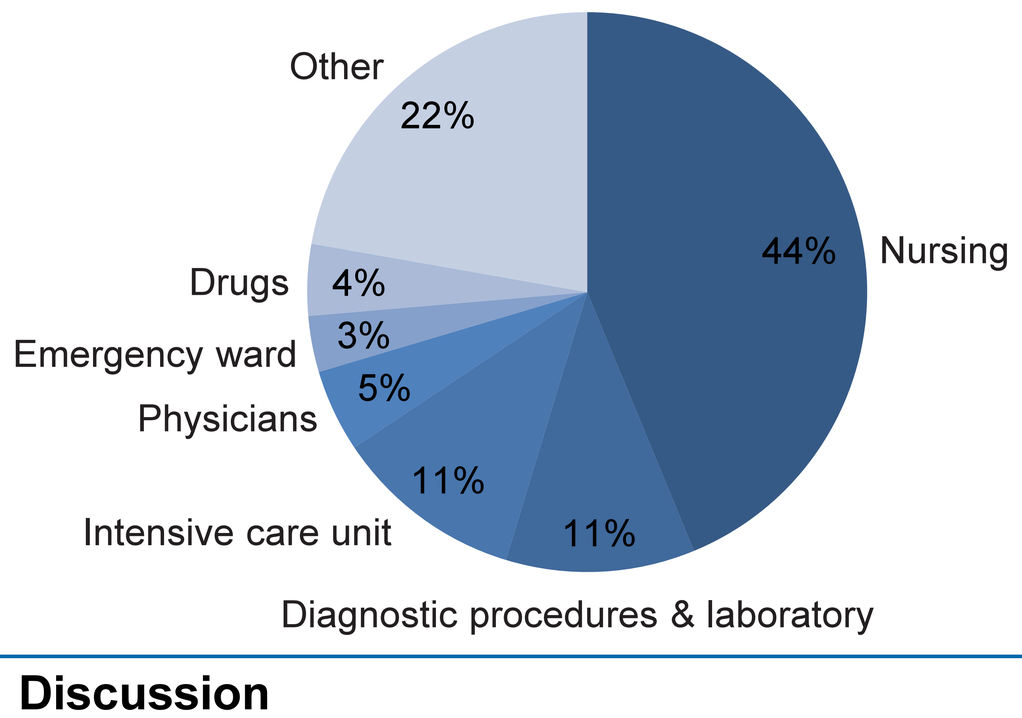
Source: Swiss Medical Statistics of Hospitals (FSO, 2011)

Table 2: Inpatient hospital costs per FN event [CHF]

	total cost	cost per day	length of stay [days]
Non-Hodgkin lymphoma (N=12)			
average	14'006	983	14.3
median	8'399	843	10
Breast cancer (N=6)			
average	10'020	1'822	5.5
median	4'208	934	4.5

Source: Cantonal hospital of Winterthur

Figure 1: Cost composition (N=18)



Discussion

In 2010, 571 cases with NHL or BC were hospitalized due to FN. Average cost per FN hospitalization are considerable but lie within possible SwissDRG reimbursement rates. Main limitations of this study are the indirect identification of FN cases by ICD-10 diagnoses and the small sample in the cost analysis. Our results suggest that FN leads to considerable risk of death and incurs high in-hospital care cost in Switzerland.

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