Experience with Lexicomp® online drug database for medication review and drug-drug interaction analysis within CGA in elderly cancer patients[1]

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Purpose of the study: Oncogeriatric patients often present with significant co-morbidities and associated polypharmacy, consequently leading to an increased risk of adverse drug-drug interactions (DDIs) possibly interfering with cancer therapy. Medication review is an essential part of a Comprehensive Geriatric Assessment (CGA), the key treatment approach in elderly cancer patients. Our objective was to describe medication use in this population and evaluate the use of Lexicomp® interaction analyser, an online drug information database (available through "uptodate")[2], within CGA for adequate identification of potentially harmful DDIs.

Methods: We retrospectively reviewed data of 149 elderly cancer patients that presented at the General Hospital Groeninge or Ghent University Hospital between January 2010 and February 2012 for their cancer treatment. Sixty-three percent participated in an observational study recruiting head and neck cancer patients (*H&N-group*)[3], 37% in a registry recruiting general oncology patients (*GO-group*). Drug information was collected once before therapy decision or at therapy start, by a health professional, through the medical interview within CGA. Drug class usage was quantified and potential DDIs were assessed and categorized (risk rating "C": monitor therapy, "D": consider therapy modification, "X": avoid combination) with Lexicomp®.

Results: The population under study comprised mainly male patients (72%), aged 74 (range 65 – 90 years), with primary tumours of the following origins: head and neck (65.8%), urological (10.1%), gynaecological (8.7%), gastro-intestinal (6.0%), breast (4.7%), skin (2.0%), hematological (1.3%) and occult primary (1.3%). On average, *H&N* and *GO-patients* took 5 and 8 prescription drugs at presentation, respectively. An average of 4 drugs were added in both groups as part of their proposed therapy. Potential DDIs (n=211 *H&N*; n=247 *GO*) were detected by Lexicomp® in 64.9% (85.3% "C", 14.7% "D", 0% "X") and 83.6% (83.4% "C", 15.8% "D", 0.8% "X") of all *H&N* and *GO* patients, respectively, at therapy start. Administration of cancer-therapy-related drugs lead to additional DDIs (n=75 *H&N*; n=68 *GO*) in 73.7% (90.7% "C", 9.3% "D", 0% "X") and 58.3% (72.1% "C", 26.5% "D", 1.5% "X") of *H&N* and *GO* cases that were scheduled for systemic cancer therapy (38/94 *H&N*, 36/55 *GO*) respectively. DDIs occurred mainly with supportive drugs (100% *H&N* and 83.8% *GO*). Sixteen percent of potential DDIs were identified with anti-neoplastic drugs in the *GO-group*. In 28.7% and 60.0% of *H&N* and *GO* patients, respectively, at least one drug was not recognized by Lexicomp®.

Conclusions: Use of Lexi Comp® online drug database for medication review within CGA is feasible. It could reduce the administration of inappropriate drugs and/or enhance patient monitoring by increasing physician awareness for potentially severe drug interactions, and in that way improve the quality of patient-individualised therapy.

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Table 1: Medication use and drug-drug interactions of elderly cancer patients

Chronic prescription drug characteristics of all patients under study	**H&N Group (n=94)**	**GO-group (n=55)**
Chronic prescription drugs		
Average [n]	5	8
Range	0-15	1-19
Total number of DDIs [% (n)]	100.0 (211)	100.0 (247)
Risk rating "C"	85.3 (180)	83.4 (206)
Risk rating "D"	14.7 (31)	15.8 (39)
Risk rating "X"	0 (0)	0.8 (2)
Number of patients exposed to potential DDIs [% (n)]	64.9 (61)	83.6 (46)
Cancer drug characteristics of a subset of patients scheduled for (systemic) cancer therapy (with curative, palliative or symptomatic intent)	**H&N subgroup (n=38)**	**GO subgroup (n=36)**
Anti-neoplastic and cancer supportive drugs		
Average [n]	4	4
Range	-**	1-12
Total number of additional DDIs [% (n)]	100.0 (75)	100.0 (68)
Risk rating "C"	90.7 (68)	72.1 (49)
Risk rating "D"	9.3 (7)	26.5 (18)
Risk rating "X"	0 (0)	1.5 (1)
With supportive drugs		
Total number of interactions [% (n)]	100.0 (75)	83.8 (57)
With anti-neoplastic drugs		
Total number of interactions [% (n)]	0 (0)	16.2 (11)
Number of patients exposed to potential DDIs [% (n)]	73.7 (28)	58.3 (21)

***Four drugs (one anti-neoplastic drug and three additional supportive drugs) were per chemo(bio)therapy regimen included in the interaction analysis of H&N cancer patients; DDI: drug-drug interaction; risk rating "C": monitor therapy; risk rating "D": consider therapy modification; risk rating "X": avoid combination*

[1] Pottel L, Lycke M, Boterberg T, Ketelaars L, Pottel H, Goethals L, et al. Experience with Lexicomp® online drug database for medication review and drug-drug interaction analysis within CGA in elderly cancer patients. J Analy Oncol. 2012;1; [in press].

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[3] Pottel L, Boterberg T, Pottel H, Goethals L, Van Den Noortgate N, Duprez F, et al. Determination of an adequate screening tool for identification of vulnerable elderly head and neck cancer patients treated with radio(chemo)therapy. JGO. 2012;3:24-32.