

# Psychotropic and Opioid Medication Use in Older Patients With Breast Cancer Across the Care Trajectory: A Population-Based Cohort Study

Ania Syrowatka, PhD(c)<sup>a,b</sup>; Sue-Ling Chang, MSc<sup>a</sup>; Robyn Tamblyn, PhD<sup>a,b,c</sup>; Nancy E. Mayo, PhD<sup>b,c,d</sup>; and Ari N. Meguerditchian, MD, MSc, FRCS<sup>a,e,f</sup>

## Abstract

**Background:** Older patients with breast cancer represent a vulnerable population at higher risk of experiencing distress and pain, as well as medication-related adverse events from pharmacological treatment of these symptoms. The purpose of this study is to estimate the prevalence of psychotropic (anxiolytic, antidepressant, and antipsychotic) and opioid medication use by older women diagnosed with breast cancer. **Methods:** This population-based cohort study followed 19,353 women older than 65 years diagnosed with incident, nonmetastatic breast cancer in Quebec, Canada. Data were obtained from provincial, universal health and drug insurance plans covering all medical and pharmaceutical care. Descriptive statistics were calculated for demographic information, breast cancer characteristics, and treatments. Psychotropic and opioid medication use was assessed across the care trajectory: precancer baseline, active care, and first-year survivorship. **Results:** There was a marked increase in the prevalence of medication use from precancer baseline to active care, followed by a decrease into first-year survivorship. Anxiolytics were used most often across the care trajectory (36.3%, 50.6%, and 44.4% at baseline, active care, and survivorship, respectively). In contrast, antipsychotic and opioid medications were sought primarily during active care (4.5- and 7-fold increases from baseline, respectively), with opioid use during active care increasing dramatically over the study period (9.0% to 40.9% from 1998 to 2010). Unlike other drugs, antidepressant use peaked in active care but persisted into survivorship (14.7%, 22.4%, and 22.3% at baseline, active care, and survivorship, respectively). **Conclusions:** A substantial proportion of older patients with breast cancer use psychotropic and opioid medications. The different patterns of medication use represent distress and pain experienced by patients across the care trajectory. Given that medication use in this vulnerable population is associated with an increased risk of adverse events, a multidimensional approach integrating psychological interventions in cancer care may better address psychosocial needs of older patients with breast cancer.

*J Natl Compr Canc Netw* 2016;14(11):1412–1419

## Background

NCCN defines distress as “a multifactorial unpleasant emotional experience of a psychological (ie, cognitive, behavioral, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms, and its treatment.”<sup>1</sup> Along with pain, distress represents a complex symp-

tom that can develop or intensify along the cancer care trajectory.<sup>2,3</sup> Both pain and distress have been shown to impact all-cause and cancer-related morbidity and mortality, as well as quality of life.<sup>4–6</sup>

Most new breast cancer diagnoses occur in women older than 60 years, with the proportion expected to increase with demographic changes in age distributions.<sup>7</sup>

From <sup>a</sup>Clinical and Health Informatics Research Group, <sup>b</sup>Department of Epidemiology, Biostatistics, and Occupational Health, <sup>c</sup>Department of Medicine, and <sup>d</sup>School of Physical and Occupational Therapy, McGill University; and <sup>e</sup>Department of Surgery, and <sup>f</sup>Department of Oncology, McGill University Health Centre, Montreal, Canada.

Submitted May 10, 2016; accepted for publication August 9, 2016.

The authors have disclosed that they have no financial interests, arrangements, affiliations, or commercial interests with the manufacturers of any products discussed in this article or their competitors.

**Author Contributions:** *Study conception and design:* Meguerditchian, Mayo, and Tamblyn. *Data acquisition:* Meguerditchian. *Data analysis and interpretation:* Meguerditchian, Chang, and Syrowatka. *Drafting of manuscript:* Syrowatka. *Critical revision of manuscript:* Meguerditchian, Mayo, Tamblyn, and Chang. *Manuscript approval:* All authors.

Correspondence: Ari N. Meguerditchian, MD, MSc, FRCS, McGill University Clinical and Health Informatics Research Group, 1140 Pine Avenue West, Montreal, QC H3A1A3, Canada. E-mail: ari.meguerditchian@mcgill.ca

## Medication Use in Older Patients With Breast Cancer

Distress and pain are expected to differentially affect older patients with breast cancer. Older women present with a higher number of preexisting chronic medical conditions and associated medications, have greater cognitive and functional impairments, and experience higher rates of adverse events resulting from cancer-related treatments, which may amplify cancer-related challenges and contribute to the development of distress or perception of pain.<sup>8</sup> Furthermore, pharmacologic treatment of distress or pain may lead to additional complications. Most evident, certain types of antidepressant medications indicated for the treatment of distress (eg, selective serotonin reuptake inhibitors) may interfere with tamoxifen anticancer therapy.<sup>9</sup> In addition, older women have a disproportionately increased risk of overdose and drug-related adverse events when using medications, such as drug–drug interactions, falls and injuries, and progression from subclinical cognitive impairments to delirium or serious cognitive decline.<sup>10,11</sup> Despite this differential risk in older patients, research rarely focuses on patients with breast cancer aged 65 years or older.

Therefore, the purpose of this study was to estimate the prevalence of psychotropic (anxiolytic, antidepressant, and antipsychotic) and opioid medication use by older women diagnosed with breast cancer in order to help understand pharmacologic management of distress and pain in this high-risk group of patients. Medication use was assessed at important clinical time points across the care trajectory: precancer baseline, active care, and first year of survivorship.

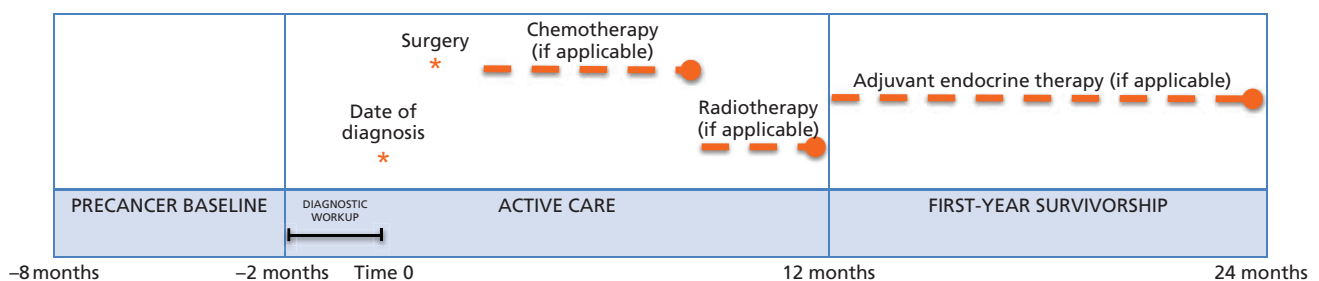
## Methods

This population-based cohort study followed women older than 65 years diagnosed with incident, non-metastatic breast cancer in Quebec, Canada between January 1, 1998, and March 31, 2011, across the cancer care trajectory: precancer baseline (the 6

months before diagnostic workup), active care (diagnostic workup to 1 year after date of diagnosis), and first-year survivorship (Figure 1). Data were obtained from the provincial, universal health insurance plan (Régie de l'assurance maladie du Québec [RAMQ]). The RAMQ provides health insurance for all Quebec residents and public drug insurance for all residents aged 65 years and older. The following databases were linked: (1) RAMQ registrant database, which provides demographic and socioeconomic data for registrants; (2) RAMQ medical services database, which contains physician fee-for-service claims; (3) Ministry of Health hospital abstract discharge database (MED-ÉCHO), which provides administrative and clinical information on hospital discharges; and (4) RAMQ prescription drug claims database. Ethical clearances were obtained from the Institutional Review Board at McGill University and the provincial Access to Information Office.

Women diagnosed with breast cancer were identified using ICD primary diagnostic codes (Table 1)<sup>12</sup> and RAMQ procedure codes for breast cancer surgery.<sup>13</sup> Women were excluded if they were diagnosed with recurrent or metastatic breast cancer or did not have a documented breast surgery, representing more advanced or atypical disease states that may affect prevalence of distress and pain. Women were also excluded if they were not continuously covered by RAMQ starting at least 8 months before the index date of diagnosis until at least 2 years after the index date or until the study end date. The index date of diagnosis was the date of the first interventional procedure (eg, biopsy) confirming a breast cancer diagnosis.

Descriptive statistics were calculated to characterize demographic information, breast cancer characteristics, and treatments received by women in the cohort. Age was determined on the index date. Socioeconomic status was determined based on level of benefit received from the Federal Guaranteed



**Figure 1.** Important clinical time points across the cancer care trajectory: precancer baseline, active care, and first-year survivorship.

Syrowatka et al

**Table 1. ICD Codes to Establish Breast Cancer Stage**

Stage	ICD-9 Codes	ICD-10 Codes
No breast cancer	No 174.x, 233.0, 238.3, 239.3	No C50.x, D05.x, D48.6
Carcinoma in situ	233.0	D05.x
Uncertain	238.3 or 239.3 with no 233.0, 174.x, 196.0–199.1	D48.6 with no C50.x, D05.x, C77.x–C80.x
Localized (primary breast cancer with no reported lymph node involvement or metastasis)	174.x with no 196.0–199.1	C50.x with no C77.x–C80.x
Regional (primary breast cancer with lymph node involvement but no metastasis)	196.0–196.9 but no 197.0–199.1	C77.x but no C78.x–C80.x
Distant (primary breast cancer with metastasis beyond lymph nodes)	197.0–199.1	C78.x–C80.x

Income Supplement (GIS).<sup>14</sup> Charlson comorbidity index score was calculated using Romano's adaptation.<sup>15</sup> Tumor stage was established based on ICD codes (Table 1).<sup>12</sup> Type of surgery and receipt of chemotherapy and radiotherapy were determined based on RAMQ procedure codes.<sup>13</sup> Receipt of adjuvant endocrine therapy (AET) (ie, tamoxifen, anastrozole, letrozole, or exemestane) was determined based on relevant Drug Identification Numbers.<sup>13</sup>

Psychotropic and opioid medication use was determined based on dispensed prescriptions of American Hospital Formulary Service (AHFS) Pharmacologic-Therapeutic Classification for anxiolytics (28:24.08, 28:12.08, 28:24.92), antidepressants (28:16.04), antipsychotics (28:16.08, 28:28.00), and opioids (28:08.08, 28:08.12). The proportions of women who filled at least one prescription for an anxiolytic, antidepressant, antipsychotic, and opioid were calculated across the care trajectory at precancer baseline, active care, and first-year survivorship. Proportions are presented with 95% confidence intervals (95% CIs). Subsequently, proportions of medication use across the care trajectory were stratified by year of breast cancer diagnosis to assess for changes in prevalence of medication use from 1998 to 2010. Statistical significance of changes was assessed based on 95% CIs around prevalence estimates. Finally, medication use across the care trajectory was determined for each of the women to identify longitudinal patterns of medication use as women move between different periods of the care trajectory. Longitudinal patterns of medication use are reported alongside the proportion of women who followed each specific medication use pattern. Finally, descriptive statistics were calculated to characterize the population of prescribing physicians for

each type of medication. All statistical analyses were conducted using SAS software, Version 9.4 (SAS Institute Inc., Cary, NC).

## Results

The study cohort consisted of 19,353 women older than 65 years diagnosed with incident, nonmetastatic breast cancer (Table 2). Notably, 35.2% of women had one or more comorbidities in the Charlson index that are associated with increased risk of death, and 48.1% used tamoxifen hormonal therapy.

Across the care trajectory, a marked increase was seen in the prevalence of psychotropic and opioid medication use from the precancer baseline to active care, followed by a decrease into first-year survivorship, although not returning to baseline levels (Figure 2). A substantial proportion of women used anxiolytics within each period of the care trajectory: 36.3% (95% CI, 35.6%–37.0%) of women used an anxiolytic at baseline, 50.6% (95% CI, 49.9%–51.3%) during active care, and 44.4% (95% CI, 43.7%–45.1%) during first-year survivorship. Antipsychotic and opioid medication use dramatically increased during active care compared with precancer baseline and first-year survivorship. Medication use increased 4.5-fold for antipsychotics (3.6% [95% CI, 3.3%–3.9%] at baseline to 16.2% [95% CI, 15.7%–16.8%] in active care) and 7-fold for opioids (3.5% [95% CI, 3.2%–3.8%] at baseline to 25.0% [95% CI, 24.4%–25.7%] in active care). In contrast, although antidepressant use increased from baseline [14.7%; 95% CI, 14.1%–15.1%], the proportion of women using antidepressants was equal in active care and first-year survivorship (22.4% [95% CI, 21.8%–23.0%] and 22.3% [95% CI, 21.7%–22.9%],

## Medication Use in Older Patients With Breast Cancer

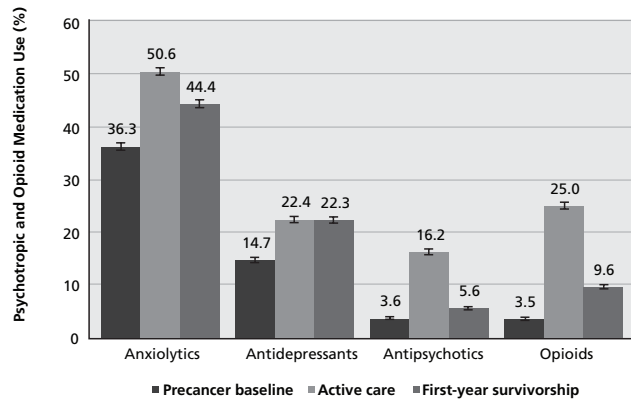
**Table 2. Demographic Information, Breast Cancer Characteristics, and Treatments Received by Women in the Cohort (N=19,353)**

	n (%)
<b>Age at diagnosis, y</b>	
66–74	11,112 (57.4)
75–84	6,934 (35.8)
≥85	1,307 (6.8)
<b>Socioeconomic status at baseline</b>	
No government income supplementation	9,884 (51.1)
Partial government income supplementation	8,168 (42.2)
Maximum government income supplementation	1,301 (6.7)
<b>Charlson comorbidity index score at baseline</b>	
0	12,541 (64.8)
1	4,285 (22.1)
≥2	2,527 (13.1)
<b>Cancer stage at diagnosis</b>	
Carcinoma in situ	2,090 (10.8)
Localized	13,559 (70.1)
Regional	3,704 (19.1)
<b>Type of surgery</b>	
Breast-conserving	14,180 (73.3)
Mastectomy	5,173 (26.7)
<b>Receipt of chemotherapy</b>	
No	17,110 (88.4)
Yes	2,243 (11.6)
<b>Receipt of radiotherapy</b>	
Did not consult	3,909 (20.2)
Consulted only, no treatment	3,715 (19.2)
Consulted, received treatment	11,729 (60.6)
<b>Receipt of adjuvant endocrine therapy</b>	
None documented	4,179 (21.6)
Tamoxifen only	5,340 (27.6)
AI only	5,861 (30.3)
Switch between tamoxifen and AI	3,973 (20.5)

Abbreviation: AI, aromatase inhibitor.

respectively). This pattern of sustained antidepressant use from active care into first-year survivorship was evident in each year (Figure 3).

Antidepressant, antipsychotic, and opioid medication use across the care trajectory significantly increased from 1998 to 2010 (Figure 3). The most notable increase occurred for opioids during active care,



**Figure 2.** Proportions (95% CIs) of women using anxiolytic, antidepressant, antipsychotic, and opioid medications by period of the cancer care trajectory (precancer baseline, active care, and first-year survivorship).

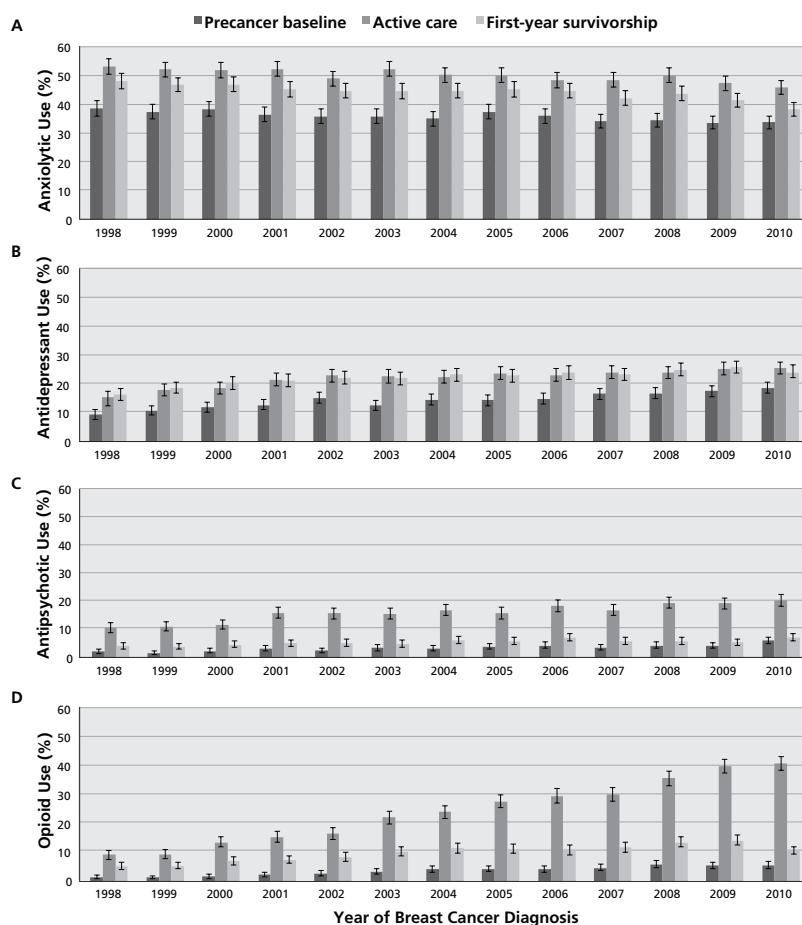
which increased from 9.0% (95% CI, 7.5%–10.7%) to 40.9% (95% CI, 38.5%–43.3%), representing a 4.5-fold increase. Anxiolytics were the only medications for which use decreased. From 1998 to 2010, anxiolytic use in active care decreased from 53.9% (95% CI, 51.2%–56.6%) to 46.5% (95% CI, 44.1%–49.0%), and use in first-year survivorship decreased from 48.8% (95% CI, 46.1%–51.5%) to 38.9% (95% CI, 36.5%–41.3%).

Eight distinct patterns of medication use were identified across the care trajectory (Table 3). Most women did not use an antidepressant, antipsychotic, or opioid medication in any period of the care trajectory (72.1%, 81.5%, and 69.5%, respectively); however, only 42.7% of women did not use an anxiolytic in any period of the trajectory. Overall, only 31.6% of women did not use any psychotropic medications across all periods of the care trajectory.

If antidepressants were used, the most common pattern was continued use starting from either baseline or active care through to first-year survivorship (12.3%, and 5.6%, respectively). Similarly, anxiolytics were commonly continued once initiated (30.5% starting in baseline, and 8.9% starting in active care), but were also used for a single period during active care (8.6%). Antipsychotics and opioids were most commonly used for a single period only in active care (11.8%, and 19.1%, respectively). A nonnegligible proportion of women became first-time medication users within the first year of survivorship: 3.5% of women initiated anxiolytics, 4.2% initiated antidepressants, 1.5% initiated antipsychotics, and 4.2% initiated opioids within the survivorship period.

Most physicians who prescribed psychotropic and opioid medications were general practitioners.

Syrowatka et al



**Figure 3.** Proportions (95% CIs) of women using (A) anxiolytic, (B) antidepressant, (C) antipsychotic, and (D) opioid medications by year of breast cancer diagnosis (1998–2010) and period of the cancer care trajectory (precancer baseline, active care, and first-year survivorship). Proportions for 2011 are not reported due to low sample size and insufficient follow-up time to characterize medication use across the care trajectory.

Specifically, 75.8% of anxiolytic prescribers and 79.4% of antidepressant prescribers were general practitioners. For antipsychotics, general practitioners (37.2%) and medical oncologists (38.1%) accounted for most prescribers. For opioids, 54.2% and 32.6% of prescribers were general practitioners and general surgeons, respectively.

## Discussion

This study presents a descriptive analysis of the prevalence of psychotropic (anxiolytic, antidepressant, and antipsychotic) and opioid medication use among older patients with breast cancer. The results are presented in the context of a care trajectory to provide a more comprehensive account of distress and pain that accompany patients through the transition to survivorship. The general trend for medication use

was a marked increase from precancer baseline to active care, followed by a decrease into first-year survivorship, although not returning to baseline levels. Anxiolytics were used more often than any of the other medications throughout the care trajectory. In contrast, antipsychotic and opioid medications were sought specifically during active care, with opioid use in active care increasing dramatically over the study period. Unlike other medications, antidepressant use persisted from active care into first-year survivorship.

A substantial proportion of women used an anxiolytic within each period of the care trajectory, placing these women at higher risk of adverse events, most notably medication-related falls and injuries.<sup>10,11,16</sup> Approximately half of the women (50.6%) used an anxiolytic during active care. Although this proportion may seem high, it is important to consider that more than one-third (36.3%) of women used an anxiolytic

## Medication Use in Older Patients With Breast Cancer

in the baseline period. This proportion is comparable to that of the general population of older women (38%), which highlights an underlying problem of potentially inappropriate medication use in this older population.<sup>17</sup>

A study from the Netherlands supported findings of increased anxiolytic use after breast cancer diagnosis followed by a decrease into early survivorship, although not to baseline levels.<sup>18</sup> The study showed that anxiolytic and hypnotic/sedative use increased from baseline levels in the 6-month period before initiation of AET (ie, during active care), from 17% to 26% and 16.5% to 24%, respectively. Medication use subsequently decreased in the 6 months after initiation of AET (ie, early survivorship) to 18% to 21% for anxiolytics and 20% to 23% for hypnotics/sedatives. When added together, the findings are similar to proportions reported in this study.

Once anxiolytic use was initiated, women continued to use the medication in future periods of the care trajectory; however, this does not imply continuous use, given that anxiolytics are commonly prescribed “as-needed.” Even so, short-term use of benzodiazepines is associated with adverse events in older patients.<sup>19</sup> Positively, there was a significant decrease in use during the study period. However, the reduction is far from target use in this older population, where best practice guidelines recommend limiting and ideally avoiding specific types of anxiolytics.<sup>10</sup>

A substantial proportion of women also used antidepressants, again placing them at greater risk of medication-related falls and injuries.<sup>10,11</sup> In addition, use of certain types of antidepressants may interfere with the metabolism of tamoxifen, thereby reducing its anticancer properties.<sup>9</sup> Nevertheless, 22% of women used an antidepressant during active care, and this proportion did not decrease as women transitioned into first-year survivorship. These findings correspond to estimates reported in the literature; a recent systematic review reported a 22.6% prevalence of antidepressant use after breast cancer diagnosis.<sup>20</sup> One of the studies included in the review conducted a temporal analysis, reporting antidepressant use by 7% to 8% of women before initiation of AET (ie, during baseline and active care), followed by a significant increase to 12% prevalent use during the 12 months after initiation of AET (ie, early survivorship).<sup>18</sup> The substantially lower prevalence and difference in medication use across the care trajectory may reflect the study population, which includ-

ed patients with breast cancer older than 20 years treated with AET in the Netherlands.

Similar to anxiolytics, once antidepressant use was initiated, women continued to use antidepressants in future periods of the care trajectory. This phenomenon was observed for all years of breast cancer diagnosis under study. This likely represents continuous use, given that antidepressants can take up to 8 weeks to reach therapeutic effectiveness. There was a significant increase in antidepressant use during the study period, despite best practice guidelines to limit use in older populations.<sup>10</sup>

Antipsychotics were the least prevalent psychotropic medication used by women in this study; however, 16.2% of women still used an antipsychotic during active care. Use of antipsychotics has been associated with increased risk of falls and injuries, as well as progression from subclinical cognitive impairments to delirium or serious cognitive decline.<sup>10,11</sup> However, there is a paucity of literature around use of antipsychotics in breast cancer populations. A study from the Netherlands reported that 4.7% of patients with cancer used an antipsychotic medication within 3 years following cancer diagnosis.<sup>21</sup> This lower prevalence may reflect the study population, which included both sexes, and all ages and cancer types.

Best practice guidelines generally recommend avoiding antipsychotics in older populations; however, short-term use of antipsychotics is considered acceptable to manage chemotherapy-induced nausea and vomiting.<sup>10</sup> Given that antipsychotics were primarily sought during active care and 38.1% of prescribers were medical oncologists, this may reflect appropriate treatment for chemotherapy-induced nausea and vomiting, rather than treatment for distress.

A high proportion of women (25.0%) sought opioids during active care, also placing these women at increased risk of medication-related falls and injuries, and of progression from subclinical cognitive impairments to delirium or serious cognitive decline.<sup>10,22,23</sup> Despite these risks, a dramatic 4.5-fold increase in opioid use during active care occurred during the study period. This escalation may have been motivated by increased acceptability of opioids for the treatment of pain.<sup>24</sup> Although opioids are indicated for the treatment of acute postoperative pain, it is difficult to determine whether increased use reflects best practice standards. The American Pain Society recently published guidelines on the

Syrowatka et al

**Table 3. Patterns of Psychotropic and Opioid Medication Use Across the Care Trajectory**

Pattern of Medication Use	Type of Medication, n (%)				
	Any Psychotropic <sup>a</sup>	Anxiolytic	Antidepressant	Antipsychotic	Opioid
Never user	6,110 (31.6)	8,270 (42.7)	13,944 (72.1)	15,781 (81.5)	13,454 (69.5)
Precancer baseline only	305 (1.6)	324 (1.7)	212 (1.1)	142 (0.7)	197 (1.0)
Active care only	2,179 (11.3)	1,671 (8.6)	683 (3.5)	2,281 (11.8)	3,686 (19.1)
First-year survivorship only	655 (3.4)	668 (3.5)	813 (4.2)	284 (1.5)	815 (4.2)
Precancer baseline + active care	446 (2.3)	487 (2.5)	196 (1.0)	71 (0.4)	163 (0.8)
Active care + first-year survivorship	2,074 (10.7)	1,720 (8.9)	1,078 (5.6)	305 (1.6)	723 (3.7)
Precancer baseline + first-year survivorship	180 (0.9)	306 (1.6)	47 (0.2)	6 (0.0)	42 (0.2)
All periods	7,404 (38.3)	5,907 (30.5)	2,380 (12.3)	483 (2.5)	273 (1.4)

<sup>a</sup>Any combination of anxiolytic, antidepressant, or antipsychotic medication use.

management of postoperative pain, recommending a reduction of opioids in exchange for nonopioid analgesics or nonpharmacologic therapies.<sup>25</sup>

Continued use of anxiolytics and antidepressants when transitioning into survivorship, and new use initiated in the survivorship period, indicate that distress may be present despite completion of active care. A higher prevalence of distress during active care is anticipated due to patients receiving a life-altering diagnosis and undergoing invasive treatments, such as breast surgery, chemotherapy, or radiation. However, reasons for distress in survivorship may be less apparent; distress may arise from fear of cancer recurrence, chronic or latent treatment-related side effects, or financial burden resulting from costs of cancer treatments or lost time at work.<sup>26–29</sup>

Although psychotropic and opioid medications represent appropriate treatment for distress and pain, use of these medications by older patients with breast cancer may be problematic. The Beers Criteria identify specific types of psychotropic and opioid medications as potentially inappropriate for older adults due to increased risks of serious adverse events.<sup>10</sup> As a result, there has been an evidence-based recommendation to limit prescribing these medications in older populations.

Early identification of distress and pain and timely intervention with psychotherapy may be a viable alternative to pharmacotherapy. Prevention strategies to improve coping can help patients manage distress and pain.<sup>30,31</sup> In fact, a meta-analysis has shown that cognitive behavioral therapy has positive effects on reducing both pain and distress in patients with breast cancer, with effect sizes of 0.31 and 0.49, respectively.<sup>32</sup>

This study has several limitations. Similar to other studies using administrative health databases, there was no information about treatment indications for dispensed medications. Therefore, some of the psychotropic medications may have been prescribed for indications other than distress, such as sleep disorders, migraine headaches, or pain.<sup>33</sup> Medication use was defined as at least one dispensed prescription within a particular period of the cancer care trajectory, and therefore did not capture whether medications were consumed. Similarly, the study did not capture medications that were prescribed but never dispensed (ie, primary non-adherence),<sup>34</sup> or alternative treatments for distress not covered by the universal health insurance plan, namely psychotherapy.

## Conclusions

A substantial proportion of older patients with breast cancer use psychotropic and opioid medications. The different patterns of medication use represent distress and pain experienced by patients across the care trajectory. Anxiolytic use was high within each period of the cancer care trajectory, which may reflect an older, female population. Antipsychotic and opioid medications were sought primarily during active care, suggesting treatment for period-specific symptoms. Antidepressant use did not decrease after completion of active care, suggesting carryover of unresolved distress. Given that medication use in this vulnerable population is associated with an increased risk of adverse events, a multidimensional approach that integrates psychological interventions

## Medication Use in Older Patients With Breast Cancer

in cancer care may better address the psychosocial needs of older patients with breast cancer.

## Acknowledgments

The authors thank Tracy Westley and David Henault for editorial review of the manuscript.

## References

- Holland JC, Jacobsen PB, Andersen B, et al. NCCN Clinical Practice Guidelines in Oncology: Distress Management, Version 2.2016. Accessed May 8, 2016. To view the most recent version of these guidelines, visit NCCN.org.
- Cancer Control Continuum. National Cancer Institute Web site. Available at: <http://cancercontrol.cancer.gov/od/continuum.html>. Accessed May 8, 2016.
- Levit L, Balogh E, Nass S, et al, eds. *Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis*. Washington, DC: The National Academies Press; 2013.
- Adler NE, Page AEK, eds. *Cancer Care for the Whole Patient: Meeting Psychosocial Health Needs*. Washington, DC: The National Academies Press; 2008.
- Mantyh PW. Cancer pain and its impact on diagnosis, survival and quality of life. *Nat Rev Neurosci* 2006;7:797–809.
- Letellier ME. The impact of breast cancer and its treatment on arm dysfunction and quality of life [dissertation]. Montreal, Quebec, Canada: McGill University; 2016.
- Canadian Cancer Society's Advisory Committee on Cancer Statistics. *Canadian cancer statistics 2015*. Toronto, ON: Canadian Cancer Society; 2015. Available at: <https://www.cancer.ca/~media/cancer.ca/CW/cancer%20information/cancer%20101/Canadian%20cancer%20statistics/Canadian-Cancer-Statistics-2015-EN.pdf>. Accessed October 6, 2016.
- Pollack BG, Semla TP, Forsyth CE. Psychoactive drug therapy. In: Halter JB, Ouslander JG, Tinetti ME, et al, eds. *Hazzard's Geriatric Medicine and Gerontology*, 6th ed. New York, NY: McGraw-Hill; 2009:767–778.
- Desmarais JE, Looper KJ. Interactions between tamoxifen and antidepressants via cytochrome P450 2D6. *J Clin Psychiatry* 2009;70:1688–1697.
- American Geriatrics Society 2015 Beers Criteria Update Expert Panel. American Geriatrics Society 2015 updated Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2015;63:2227–2246.
- van Strien AM, Koek HL, van Marum RJ, et al. Psychotropic medications, including short acting benzodiazepines, strongly increase the frequency of falls in elderly. *Maturitas* 2013;74:357–362.
- Mayo NE, Scott SC, Shen N, et al. Waiting time for breast cancer surgery in Quebec. *CMAJ* 2001;164:1133–1138.
- Krotneva SP, Ramjaun A, Reidel KE, et al. Use of hormonal therapy in senior breast cancer patients treated with or without radiotherapy. *Curr Oncol* 2014;21:e105–115.
- How much will you receive from public programs in retirement? *Retraite Quebec* Web site. Available at: [http://www.rrq.gouv.qc.ca/en/flashretraiteqc/Pages/capsule\\_retraite\\_007.aspx](http://www.rrq.gouv.qc.ca/en/flashretraiteqc/Pages/capsule_retraite_007.aspx). Accessed May 8, 2016.
- Romano PS, Roos LL, Jollis JG. Adapting a clinical comorbidity index for use with ICD-9-CM administrative data: differing perspectives. *J Clin Epidemiol* 1993;46:1075–1079.
- Tamblyn R, Abrahamowicz M, du Berger R, et al. A 5-year prospective assessment of the risk associated with individual benzodiazepines and doses in new elderly users. *J Am Geriatr Soc* 2005;53:233–241.
- Dionne PA, Vasiliadis HM, Latimer E, et al. Economic impact of inappropriate benzodiazepine prescribing and related drug interactions among elderly persons. *Psychiatr Serv* 2013;64:331–338.
- de Bock GH, Musters RF, Bos HJ, et al. Psychotropic medication during endocrine treatment for breast cancer. *Support Care Cancer* 2011;20:1533–1540.
- Hartikainen S, Lonnroos E, Louhivuori K. Medication as a risk factor for falls: critical systematic review. *J Gerontol A Biol Sci Med Sci* 2007;62:1172–1181.
- Sanjida S, Janda M, Kissane D, et al. A systematic review and meta-analysis of prescribing practices of antidepressants in cancer patients. [published online ahead of print January 17, 2016]. *Psychooncology* 2016;25:1002–1016.
- Ng CG, Boks MP, Smeets HM, et al. Prescription patterns for psychotropic drugs in cancer patients; a large population study in the Netherlands. *Psychooncology* 2012;22:762–767.
- Miller M, Stürmer T, Azrael D, et al. Opioid analgesics and the risk of fractures in older adults with arthritis. *J Am Geriatr Soc* 2011;59:430–438.
- Lawlor PG. The panorama of opioid-related cognitive dysfunction in patients with cancer. *Cancer* 2002;94:1836–1853.
- Manchikanti L, Fellows B, Ailani H, et al. Therapeutic use, abuse, and nonmedical use of opioids: a ten-year perspective. *Pain Physician* 2010;13:201–235.
- Chou R, Gordon DB, de Leon-Casasola OA, et al. Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. *J Pain* 2016;17:131–157.
- Deimling GT, Bowman KF, Sterns S, et al. Cancer-related health worries and psychological distress among older adult, long-term cancer survivors. *Psychooncology* 2006;15:306–320.
- Fallowfield L, Jenkins V. Psychosocial/survivorship issues in breast cancer: are we doing better? *J Natl Cancer Inst* 2014;107:335–335.
- Stan D, Loprinzi CL, Ruddy KJ. Breast cancer survivorship issues. *Hematol Oncol Clin North Am* 2013;27:805–827.
- Kale HP, Carroll NV. Self-reported financial burden of cancer care and its effect on physical and mental health-related quality of life among US cancer survivors. *Cancer* 2016;122:283–289.
- O'Connell ME, Boat T, Warner KE, eds; Committee on the Prevention of Mental Disorders and Substance Abuse Among Children, Youth and Young Adults: Research Advances and Promising Interventions; Board on Children, Youth, and Families; Division of Behavioral and Social Sciences and Education; National Research Council; Institute of Medicine. *Preventing mental, emotional, and behavioral disorders among young people: progress and possibilities*. Washington, DC: The National Academies Press; 2009.
- Muñoz RF, Beardslee WR, Leykin Y. Major depression can be prevented. *Am Psychol* 2012;67:285–295.
- Tatrow K, Montgomery GH. Cognitive behavioral therapy techniques for distress and pain in breast cancer patients: a meta-analysis. *J Behav Med* 2006;29:17–27.
- Wong J, Motulsky A, Egale T, et al. Treatment indications for antidepressants prescribed in primary care in Quebec, Canada, 2006-2015. *JAMA* 2016;315:2230–2232.
- Tamblyn R, Egale T, Huang A, et al. The incidence and determinants of primary non-adherence with prescribed medication in primary care: a cohort study. *Ann Intern Med* 2014;160:441–450.