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# Variation in metastatic workup for patients with invasive breast cancer



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## KEYWORDS:

Breast cancer;  
Metastatic workup;  
Surgeon;  
Variation;  
Guidelines

## Abstract

**BACKGROUND:** Despite guidelines, surgeons vary in the metastatic workup they order for their breast cancer patients.

**METHODS:** Surgeons were surveyed as to their practices in ordering staging studies for their breast cancer patients using a Web-based survey. Nonparametric analyses were performed to determine factors associated with guideline adherence.

**RESULTS:** Two hundred fifty-three surgeons responded to the survey; 55.8% had practices with  $\geq 50\%$  breast patients; 7.3% of respondents stated they always did a metastatic workup before surgery, 8.6% never did; only 52.4% ordered a metastatic workup only in patients with clinical stage III disease. Surgeons who had  $\geq 50\%$  breast-related practices were more likely to follow these guidelines ( $P = .031$ ). Only 17% stated that a computed tomography chest/abdomen and bone scan was their “usual” metastatic workup.

**CONCLUSIONS:** Nearly 40% of surgeons perform metastatic workup when they are not indicated, and few adhere to National Comprehensive Cancer Network guidelines in terms of the tests ordered. © 2015 Elsevier Inc. All rights reserved.

Breast cancer remains the most common malignancy affecting women worldwide, and its incidence is steadily increasing.<sup>1</sup> In the United States, like many parts of the industrialized world, the majority of these patients present with early-stage disease.<sup>2</sup> The probability of asymptomatic

early-stage patients harboring distant metastases is exceedingly low<sup>3</sup>; however, the fear of metastatic disease on the part of patients is significant, causing many to desire imaging to rule out distant disease,<sup>4</sup> despite multiple evidence-based guidelines that indicate that a metastatic workup in these patients is contraindicated.<sup>5-9</sup> As health care spending continues to increase at an unsustainable rate, the use of unnecessary imaging studies has been identified as a potential etiologic factor that could be modified.

In the United States, National Comprehensive Cancer Network (NCCN) and American Society of Clinical

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Oncology (ASCO) guidelines are widely accepted. Although these guidelines specifically state that only asymptomatic patients with clinically stage III disease should undergo advanced imaging studies in search of occult distant metastases,<sup>5,6</sup> the extent to which physicians follow this recommendation remains unclear.<sup>10</sup> These guidelines have also been proscriptive in terms of the type of imaging that should be performed. In particular, NCCN guidelines recommend bone scan and computed tomography (CT) chest/abdomen as a cost-effective means to screen for metastatic disease in these patients.<sup>5</sup> However, there seems to be a significant variation in practice patterns. We sought to determine the extent to which surgeons differed in their practice of ordering a metastatic workup for asymptomatic breast cancer patients and the factors associated with this.

## Methods

An anonymous Web-based survey was distributed to surgeons via the American College of Surgeons Communities. Questions asked pertaining to this analysis are shown in [Appendix 1](#). This online platform is an initiative of the American College of Surgeons and allows its membership to communicate via a number of discussion boards. Our survey regarding practice patterns for ordering metastatic workups in asymptomatic breast cancer patients was posted in the General, Breast Surgery, and International forums. No identifiable personal information was collected, and given the nature of the survey, it was deemed exempt by the Human Investigations Committee of Yale University. We evaluated variation in both the indications for ordering a metastatic workup, and the tests used for the same. Non-parametrical statistical analyses were conducted using IBM SPSS Statistics (version 21) (IBM, Armonk, New York).

## Results

Two hundred fifty-three surgeons from 8 countries responded to the survey. The respondent characteristics are listed in [Table 1](#). The majority (92.4%) were from the United States; a diverse geographic representation across the country was obtained ([Fig. 1](#)).

Surgeons were asked “In which patients would you perform a metastatic workup prior to surgery?” Twenty respondents did not answer this question. Of the remaining 233 respondents, 17 (7.3%) claimed they “always do a metastatic workup for all patients with invasive disease,” 74 (31.8%) said they “perform a metastatic workup for all patients with clinically stage II disease or greater (ie, tumors >2 cm or node positive disease,” 122 (52.4%) said they “perform a metastatic workup for all patients with clinically stage III disease or greater” (ie, tumors larger than 5 cm with positive nodes), and 20 (8.6%) claimed they “never do a metastatic workup.” Given the NCCN and ASCO guidelines recommending that a metastatic workup

**Table 1** Characteristics of respondents

Factor	Number of respondents (%)
Age (y)*	
30–40	38 (15.0)
41–50	54 (21.3)
51–60	76 (30.0)
61–70	54 (21.3)
>70	16 (6.3)
Years in practice†	
<5	26 (10.3)
5–10	31 (12.3)
11–20	53 (20.9)
21–30	78 (30.8)
>30	52 (20.6)
Proportion of practice breast related (%)‡	
<10	25 (9.9)
10–25	60 (23.7)
26–50	22 (8.7)
51–75	27 (10.7)
76–99	34 (13.4)
100	74 (29.2)
Practice setting§	
Private practice	105 (41.5)
Hospital employed	95 (37.5)
Academic	43 (17.0)
Region	
United States	234 (92.4)
Canada	7 (2.8)
New Zealand	2 (.8)
United Kingdom	1 (.4)
Japan	2 (.8)
Mexico	2 (.8)
Argentina	1 (.4)
Saudi Arabia	1 (.4)

\*Age group not specified by 15 (5.9%) respondents.

†Years in practice not specified by 13 (5.1%) respondents.

‡Proportion of practice, that is, breast related, not specified by 11 (4.3%) respondents.

§Practice setting not specified by 10 (4.0%) respondents.

||Region not specified by 3 (1.2%) respondents. Geographic distribution in the United States is shown in [Fig. 1](#).

be done for asymptomatic patients with clinical stage III disease or greater, we sought to determine respondent characteristics that may be associated with compliance (or lack thereof) with these recommendations ([Table 2](#)). There was no significant difference between the degree of compliance between international respondents and their American counterparts (46.7% vs 53.0%, respectively,  $P = .79$ ). However, given that other non-US guidelines may not be completely congruent with the NCCN and ASCO guidelines ([Appendix 2](#)), we also analyzed compliance to these guidelines in the subpopulation of American surgeons alone ([Table 2](#)). Among US respondents, there was considerable variation in guideline adherence by state ( $P = .033$ ). Controlling for geographic region on multivariate analysis, however, only the proportion of practice that was breast related was significantly associated with adherence to

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