

Improving the Use of Intravenous Bisphosphonates in Women With Breast Cancer Metastatic to Bone

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Abstract

The City of Hope Comprehensive Cancer Center has a long commitment to the creation of and adherence to treatment guidelines. The NCCN Opportunities for Improvement project provided the institution with a report card for adherence to the NCCN Clinical Practice Guidelines in Oncology for Breast Cancer and the opportunity to determine reasons for nonconcordance and improve concordance rates. The institution focused on improving compliance with the use of intravenous bisphosphonates in women with metastatic bone disease. (*J Natl Compr Canc Netw* 2014;[Suppl 1]:S40–S41)

As a founding member of NCCN, City of Hope Comprehensive Cancer Center has a long commitment to the creation of and adherence to treatment guidelines. The NCCN Opportunities for Improvement (OFI) project provided the institution with a report card for adherence to the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for Breast Cancer and the opportunity to determine reasons for nonconcordance and improve concordance rates. The OFI team initially planned to use the timing measures to shorten the time from diagnosis to surgery. However, before the project was started, an outpatient surgery center was opened at City of Hope, and time to surgery was drastically reduced.

Therefore, the team chose to focus on improving compliance with the guideline recommendations regarding the

use of intravenous bisphosphonates in women with metastatic bone disease. Given the importance of bone-directed therapies in decreasing the incidence of skeletal-related complications in breast cancer, the team felt that unjustified noncompliance with this recommendation was unacceptable.

Initial Data

Preliminary review of concordance with intravenous bisphosphonate use in 2009 identified nonconcordance with guideline therapy in 5 of 21 patients. In 3 of these women, the reasons for nonconcordance were deemed justifiable, including a meningeal carcinomatosis at presentation in a 24-year-old patient; multiple comorbidities, including renal insufficiency, in a 77-year-old patient who refused therapy; and a bone scan that showed “slightly abnormal” results in an area not amenable to biopsy in a 79-year-old patient. The other 2 cases were truly nonconcordant.

Intervention

To improve compliance, candidates for intravenous bisphosphonates needed to be identified. The team considered the possibility of including a comment about the need for intravenous bisphosphonates on all radiology reports in which bone metastases were identified. However, discussion with the medical oncologists and advanced care practice nurses indicated that the treatment team was generally aware of bone metastasis and inclusion of the radiologist was unnecessary.

The current practice at City of Hope is for medical oncologists and clinical pharmacists to write chemotherapy orders from a set of prepopulated orders located on an Intranet site. The OFI team hypothesized that the addition of bone-directed therapy orders to the chemotherapy or-

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Chemotherapy: Administer Once only Repeat every 3 weeks/cycle x _____ cycles

Day 1 of Cycle _____ = _____

Drugs	Dose Formula	Dose	SIG
Paclitaxel (Taxol)	175 mg/m ² x _____ m ² =	mg	IVPB infuse over 3 hours
Carboplatin (Paraplatin)	AUC 6 x (25 + CrCl _____ ml/min) =	mg	IVPB infuse over 1 hour

Additional Orders:

- Dexamethasone 20 mg orally at 12 hours and 6 hours before each paclitaxel dose.
- Metastatic Bone Treatment:
 - Zoledronic Acid (Zometa) 4 mg IVPB every 4 weeks
 - Zoledronic Acid (Zometa) _____ mg IVPB every _____ weeks
 - Pamidronate (Aredia) 90 mg IVPB every 4 weeks
 - None

Figure 1 Screenshot of chemotherapy orders incorporating bone-directed therapies.

der sets for metastatic disease would increase the use of bone-directed therapies.

Preintervention Data

In July 2012, the OFI team reassessed compliance with intravenous bisphosphonate use. Guideline nonconcordance was identified in 6 of 40 cases reviewed. Four of the cases showed justifiable reasons for not providing recommended therapy: 1 had chronic renal disease, 2 had been treated with either alendronate or zoledronic acid for osteoporosis and the individual physicians were concerned about the long-term effects of bisphosphonate use, and 1 received intravenous bisphosphonate, although it was not charted. The other cases were considered nonconcordant.

Postintervention Data

With the addition of bone-directed therapies to the standard order sets for chemotherapy of advanced breast cancer, guideline concordance improved. A review of 47 patients in January 2013 found a concordance rate of 100%.

Discussion

The number of cases reviewed at each of these data points is relatively small. However, the team felt that the heightened awareness to comply with the use of bone-directed therapies and the addition of orders for bone therapy resulted in an improvement in concordance.

Abnormal renal function may be considered a reason for nonconcordance. Since the OFI project was initiated, denosumab has been approved as a bone-directed therapy for women with bone metastasis from breast

cancer. Its administration does not require normal renal function. The OFI team identified no women for whom bone-directed therapy was withheld because of elevation in serum creatinine, and suspect that the use of denosumab contributed to the improved concordance rate.

Conclusions

City of Hope Comprehensive Cancer Center is currently in the process of building electronic order sets for the electronic record. All orders for treating metastatic breast cancer include pamidronate, zoledronic acid, or denosumab.

Adding orders for bone-directed therapies was recognized to be of value in the creation of order sets for metastatic cancers arising from other primary tumor sites. As a result, the order sets for treatment of metastatic carcinomas include orders for bone-directed therapy (Figure 1).

Institutionally, concordance with bone-directed therapies was recognized as a quality metric. The institution has made a commitment to incentivize physician concordance with the NCCN Guidelines recommendation for administering bone-directed therapies. Although this OFI project was not as complex as some of the other opportunities, the OFI team felt that the impact of bone-directed therapies on quality of life was important and that any nonjustified nonconcordance was unacceptable. The procedures that have been implemented were also of value not only to women with breast cancer but also to patients with bone metastasis from other sites. This project was considered extremely successful because it helped to improve chemotherapy order sets for many different disease sites and was recognized by the hospital leadership as a metric of quality of patient care.