

# Bone Metastases Treatment In A Rural Setting- The Effect of “Choosing Wisely”

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Home > Lists > American Society for Radiation Oncology

## American Society for Radiation Oncology 10 Things Physicians and Patients Should Question



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### 3 Don't routinely use extended fractionation schemes (>10 fractions) for palliation of bone metastases.

- Studies suggest equivalent pain relief following 30 Gy in 10 fractions, 20 Gy in 5 fractions, or a single 8 Gy fraction.
- A single treatment is more convenient but may be associated with a slightly higher rate of retreatment to the same site.
- Strong consideration should be given to a single 8 Gy fraction for patients with a limited prognosis or with transportation difficulties.

Patients	Before*	After*
Number of Patients	17	20
Number of radiation courses	21	24
Courses Treated with 800cgy times 1	0	1
Courses Treated with 400cgy times 5	3	15
Courses Treated with 300cgy times 10	18	8
Primary Sites:		
Breast	8	7
Prostate	4	1
Esophagus	3	3
Lung	3	4
Kidney	1	2
Sarcoma	1	1
Melanoma	1	1
Unknown	1	1
Total	17	20
Number requiring retreatment	0	0

\*Before and After ASTRO release of the Choosing Wisely Guidelines

### Introduction

In 2013, the American Society of Therapeutic Radiology (ASTRO) released its list of Choosing Wisely Initiatives. One of these initiatives, was to use fractionation schemes which allow less than 10 fractions for the palliation of bony metastatic disease. Such schemes may use one or five fractions to treat an uncomplicated case of bone metastases. This project looks at a rural radiation practice, university affiliated, in Vermont, both before and after a decision was made to employ the Choosing Wisely guidelines whenever appropriate. This is a non randomized, retrospective analysis of 12 months of bone metastasis treatments in a single provider practice comparing the 6 months before Choosing Wisely to the six months after Choosing Wisely.

### Materials and methods

All patients treated in this analysis were treated on a Varian Trilogy Linear Accelerator with either 6 or 10 MV photons or electrons. Most have multileaf collimator blocking, either 2D or 3D planning, none were treated with IMRT. The patients were 12 months of consecutive patients with bone metastases. Treatment related expenses are based on gross charges. Travel money is based on \$0.555 per mile. Salary is calculated at \$63,000 average salary in Rutland Vermont (\$30.29/ hour).

All savings from reduced fraction schemes were calculated by comparing the fraction scheme used against 10 fractions as the historic standard. Mileage traveled was calculated using Google Maps from the patient's residence to the treating hospital and back.

Data	Before*	After*
Patients	17	20
Treatment Courses	21	24
Sites Treated	29	34
Total Treatment Visits	207	178
Treatment Visits Saved	15	84
Patient Courses With Shortened Fractionation	3	16
Technical Charges Saved	\$9,735.00	\$54,516.00
Professional Charges Saved	\$2,540.00	\$18,784.00
Total Charges Saved	\$12,375.00	\$69,300.00
Patient Expense		
Miles Saved (6 months)	516	2240
Travel Dollars Saved (6 months)	\$286.38	\$1243
Time Saved Commuting (6 months)	13h20min	65 hours
Patients With Shortened Fractionation	3	16
Miles Saved (per patient)	172	140
Travel Dollars Saved (per patient)	\$78.79	\$77.69
Time Saved Commuting (per patient)	4h44min	4h6min
Time Saved Commuting and For Treatment	5h59min	5h31min
Salary Loss by Caregiver for Commute and Treatment		
	\$179.21	\$166.59

\*Before or After ASTRO release of Choosing Wisely Guidelines

### Discussion and Conclusions

The Choosing Wisely Initiative was designed by the American College of Medicine as an effort to contain medical costs by challenging professional groups to lay out 5 methods of cost containment in their field.

One of ASTRO's is to shorten fractionation schemes for bone metastases. One can consider the cost to third party insurance carriers, Medicare and Medicaid as the savings points, but I have looked at other potential savings, including those to the patient.

Clearly more fractions of radiotherapy were saved when compared to the same length of time prior to the decision to employ Choosing Wisely Initiatives. This finding, however is seen in a retrospective analysis of a single physician practice, who decided to adopt the Initiative, thus built in bias existed. Before the Choosing Wisely Initiative was released, 14% of patients received shorter fraction schemes, compared with 68% after. Each patient and care giver who saved treatment visits saved time and commuting expense, these on a per patient basis, were similar, but after the Initiative more patients benefited from this savings. Assuming similar patient charges for treatments, savings after the Initiatives were released were over 5.5 times as much as prior to the release.

Numerous assumptions must be made in the analysis and the numbers are subject to discussion, but no one can deny that a patient with painful bone metastases would benefit from saving almost 4 hours in the car on rural roads. Care givers in Vermont may be retired, and may not loose wages, but at the average wage of \$63,000, there is a cost in getting a loved one to treatment.

In a time when health care costs are growing faster than the GDP, any savings we can achieve can benefit society as a whole. This study showed 5 times the savings in charges after the Initiatives (\$69,000 versus \$12000)

Other savings were seen in one patient who needed to be hospitalized for her treatment. Her hospital stay was reduced by the use of shorter fractionation. No patient in this study required retreatment, the minimum follow up period was 6 months. Many patients have passed away from their disease within this follow up period.

Studies have shown that shortened fractionation schemes offer adequate palliation, this paper simply illustrates some of the potential cost and time benefits of doing so.

### Conclusion

Shorter fraction schemes when used as clinically appropriate do offer savings not only to health care payers, but also to patients and patients families. Consideration of Choosing Wisely Initiatives have saved patients time and expense as opposed to a similar time period before the initiative.