

“A Stitch In Time Saves Nine”: Early Definitive therapy for rapidly recurrent malignant pleural effusions decreases procedures and saves money



The clinical question

What are the clinical implications (outcomes, complications, health care resources used, and costs) associated with rapidly recurrent malignant pleural effusions?

Study Conclusions

Early definitive therapy for rapidly recurrent malignant pleural effusion is followed by only 37%. When the second procedure for rapidly recurrent malignant pleural effusion is definitive with either chest tube, indwelling tunneled pleural catheter or thoracoscopy it is associated with less procedures and less cost.

Study Background

Rapidly recurring malignant pleural effusions (MPE) defined as recurrence within 14 days of the initial thoracentesis is associated with significant health care usage and expenditure. Most recent guideline management calls for early definitive management with indwelling tunneled pleural catheters (IPC) or pleurodesis over repeat thoracentesis [1]. At the same time, previous studies demonstrated that while cost effective, the guideline recommended care may only be followed ~ 24% of the time [2].



Study Design

Retrospective cohort study utilizing Surveillance, Epidemiology, and End Results (SEER) Medicare Data

Population

Aged 66–90 with rapidly recurrent malignant effusion defined as a malignant pleural effusion requiring a second pleural procedure within 14 days of initial thoracentesis (thoracentesis, chest tube, IPC or thoracoscopy)

Data Accessed

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Primary Outcome

Proportion of patients requiring a 2nd pleural procedure and number of subsequent pleural procedures

Outcomes



Primary outcomes:

- 36.9% (3,090) of the 8,378 (with ≥ 1 MPE diagnosis) continuously enrolled patients underwent 2nd pleural procedures within 14 days of thoracentesis
- 37.7% (1,165) patient's 2nd procedure was definitive procedure (IPC, chest tube or thoracoscopy)
- 62.3% (1, 925) patient's 2nd procedure was non-definitive pleural procedure (thoracentesis)

Secondary:

- Subsequent pleural procedures were decreased if the 2nd pleural intervention was definitive per patient lifetime (0.82, 0.31, and 0.22) for chest tube, IPC, and thoracoscopy respectively, compared with thoracentesis (1.71) with a p-value of <0.05
- Adjusted costs for IPC and Chest tube placement were lower compared to thoracentesis as a 2nd pleural procedure over patient lifetime – \$37,443 ($p < 0.0001$ IPC) \$40,627 ($p = 0.004$ chest tube) vs \$47,711 (thoracentesis).
- Thoracoscopy as a 2nd pleural procedure had similar costs to thoracentesis (45,386, $p=0.5$)
- No significant differences among groups for total median inpatient days per group.



Funding

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Study Strengths

This is a large retrospective cohort of data demonstrating different pathways of treatment associated with rapidly recurrent MPEs and the costs, hospitalizations, procedure frequency based on 2nd pleural intervention. It highlights the importance and the potential economic implications of following the guideline recommended care for this population of patients.

Study Limitations

Study Strengths:

- SEER Medicare Data's primary purpose is for billing and not for research. Data is collected based on CPT codes. Thus, it is inherently reliant on the use of proper CPT codes. Further, while it is efficient, it cannot further describe nuanced decision making that is often being considered for a particular intervention.

AABIP Take Home Message

Early definitive therapy (IPC placement, chest tube placement, and thoracoscopy) for rapidly recurring malignant pleural effusions is associated with fewer procedures and less cost based on retrospective analysis of Medicare linked database supporting guideline recommended care for rapidly recurring malignant pleural effusions.



Article Citation

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Suggested Reading/Citations

1. Feller-Kopman DJ, Reddy CB, DeCamp MM, Diekemper RL, Gould MK, Henry T, et al. Management of Malignant Pleural Effusions. An Official ATS/STS/STR Clinical Practice Guideline. *Am J Respir Crit Care Med*. 2018 Oct 01;198(7):839-49. PubMed PMID: 30272503.
2. Ost DE, Niu J, Zhao H, Grosu HB, Giordano SH. Quality Gaps and Comparative Effectiveness of Management Strategies for Recurrent Malignant Pleural Effusions. *Chest*. 2018 Feb;153(2):438-52. PubMed PMID: 28864054. PMCID: PMC6743066. Epub 20170831.
3. Mummadi SR, Stoller JK, Lopez R, Kailasam K, Gillespie CT, Hahn PY. Epidemiology of Adult Pleural Disease in the United States. *Chest*. 2021 Oct;160(4):1534-1551. doi: 10.1016/j.chest.2021.05.026. Epub 2021 May 20. PMID: 34023322.

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