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Data to Dialogue: Communicating Radiotherapy's Value to Advance Care

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Cost effectiveness of prophylactic bone irradiation for prevention of skeletal-related events in patients with metastatic solid cancers

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Disclosure

- I have no conflicts of interest to disclose.

Learning Objectives

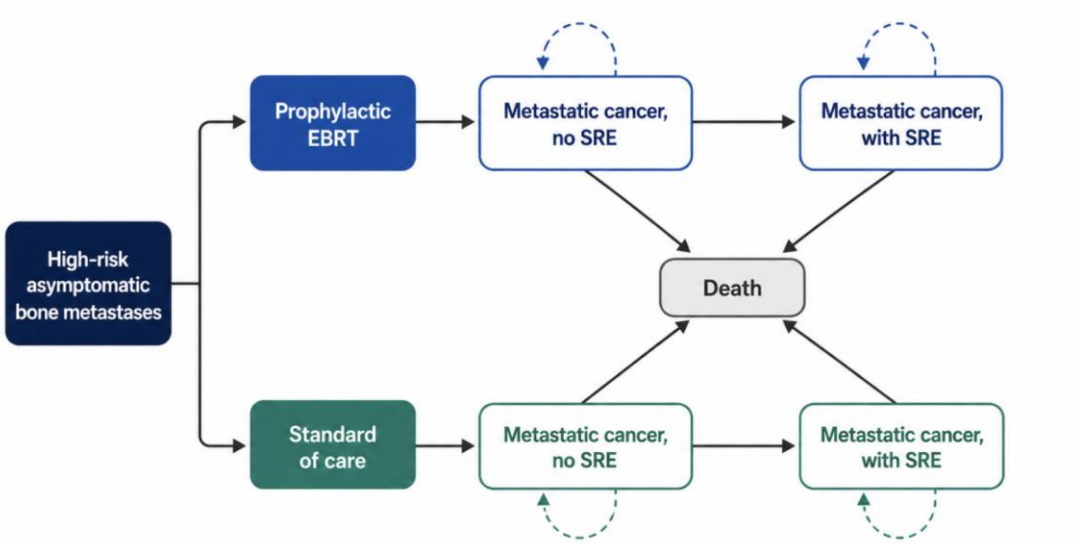
- Recognize the clinical and economic burden of skeletal-related events in patients with high-risk asymptomatic bone metastases
- Discuss how cost-effectiveness evidence informs the potential use of prophylactic EBRT ahead of results from NRG-CC014

Introduction

- Bone metastases can lead to skeletal-related events (SRE), including pathologic fractures and spinal cord compression
  - Leads to severe pain, increased morbidity and mortality, and increased healthcare costs
  - Radiation is standard therapy for symptomatic SRE
- **NRG-CC014** has completed accrual and is currently studying the use of preventative EBRT to reduce progression of high-risk, asymptomatic bone metastases to SRE
- Our goal is to determine whether prophylactic EBRT is anticipated to be a cost-effective option

Methods

- Developed Markov model to simulate patients receiving EBRT vs standard of care (SOC) over four years
- Inputs:
  - Monthly costs, utilities, and transition probabilities from literature and phase II clinical trial (Gillespie 2024)
  - Willingness-to-pay threshold of $150,000 per quality-adjusted life year (QALY)
- Outputs:
  - Quality-adjusted life months (QALMs)
  - Incremental cost-effectiveness ratio (ICER)



Results

- **Gained 3.82 additional QALMs** with prophylactic EBRT
- Leads to a **greater incremental cost of $10,038** compared with standard care
- **ICER of $31,524/QALY**
  - Remained cost-effective at a $150,000/QALY willingness-to-pay threshold
- Cost-effective for total incremental costs below **$47,750** throughout a 4-year period

Discussion/Conclusion

- Prophylactic EBRT can be a cost-effective option for prevention of further bone-related complications in patients with solid tumors and high-risk asymptomatic bone metastases
- Limitations
  - Survival benefits driving effectiveness are drawn from phase II data, and not yet confirmed
- Final estimates will be strengthened with data upon completion of NRG-CC014 trial