INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW

Comparative Effectiveness Research: How does radiation therapy stack up?

Steven D. Pearson, MD, MSc, FRCP

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  - Merck & Co.
  - The National Pharmaceutical Council
  - United Health Foundation

The good old days

Impetus for change

- Policy givens:
  - Unsustainable cost increases
  - Unexplainable variation in practice patterns
  - Not enough evidence for decisions about treatment options
- International efforts (health technology assessment)
  - NICE in England
- Democratic Congress in November 2006
  - “Comparative Effectiveness”
- The Obama health care agenda

Comparative Effectiveness Research

- Evidence generation
  - Prospective head-to-head trials
  - Observational studies using clinical registries
- Evidence synthesis
  - Systematic evidence review
  - Meta-analysis
  - Decision analysis
  - ? Cost-effectiveness analysis

Comparative Effectiveness Evidence Syntheses

- Culture and methods grounded in clinical epidemiology and pharmaco-epidemiology
  - Long struggle for greater rigor
- *Comparative* clinical effectiveness is the primary focus of evidence review and judgment.
- Not as important:
  - Relative “innovativeness” of the technique
  - Potential for evolution/improvement

Evidentiary Challenges for Radiation Oncology

- Comparative Clinical effectiveness
  - Techniques and devices are constantly evolving
  - Few RCTs or other high-quality designs
  - May not compare to best alternatives
  - Lack of consistency in outcome measures
  - Lack of evidence from use in representative patients
  - Short-term results
  - Best hands problem
  - Publication bias more likely

Institute for Clinical and Economic Review (ICER)

- Academic research group at MGH
- Comparative effectiveness reviews including separate ratings of clinical effectiveness and value
- Broad stakeholder engagement
  - Physician Societies (ACP, ACC, ACS, ACR)
  - Health plans (Aetna, BCBSMA, HPHC, Kaiser, Healthpartners, Unitedhealthcare
  - Manufacturers (NPC, J&J, Merck)
  - Purchasers (GIC of Mass, PBGH)

ICER evaluations of radiation therapy for localized prostate cancer

- 2007: IMRT vs. 3D-CRT
- 2008: Brachytherapy, proton beam, IMRT
- 2009: Active surveillance and prostatectomy
- 2009: Summary report on all management options for localized prostate cancer

Evidence Quality

- 4 RCT reports
  - None explicitly compared treatments of interest
- 1 report from non-randomized controlled study
  - Brachytherapy vs. IMRT (Eade, 2008)
- Remaining studies all case series
  - Mostly single-center, mostly uncontrolled

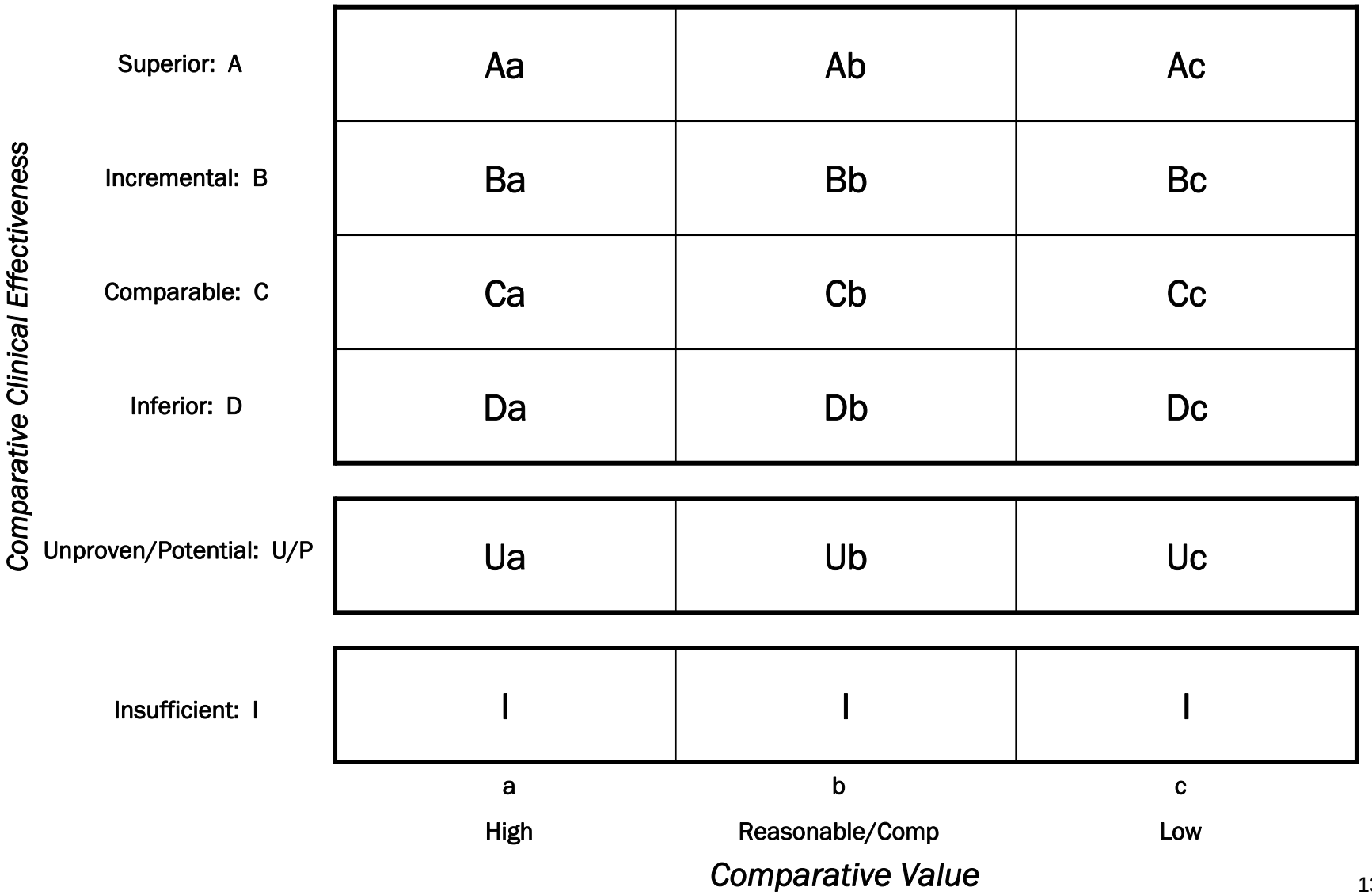
Evidence Quality (cont.)

- Comparisons of benefit/harm complicated by
  - Variable biochemical failure and toxicity definitions
  - Definition and proportion of low-risk populations
  - Detail in reporting of adjuvant treatment received
  - Population demographics
- Pooled estimates subject to high degree of heterogeneity
  - Extremely wide ranges of reported rates for many estimates
  - Data on PBT particularly sparse

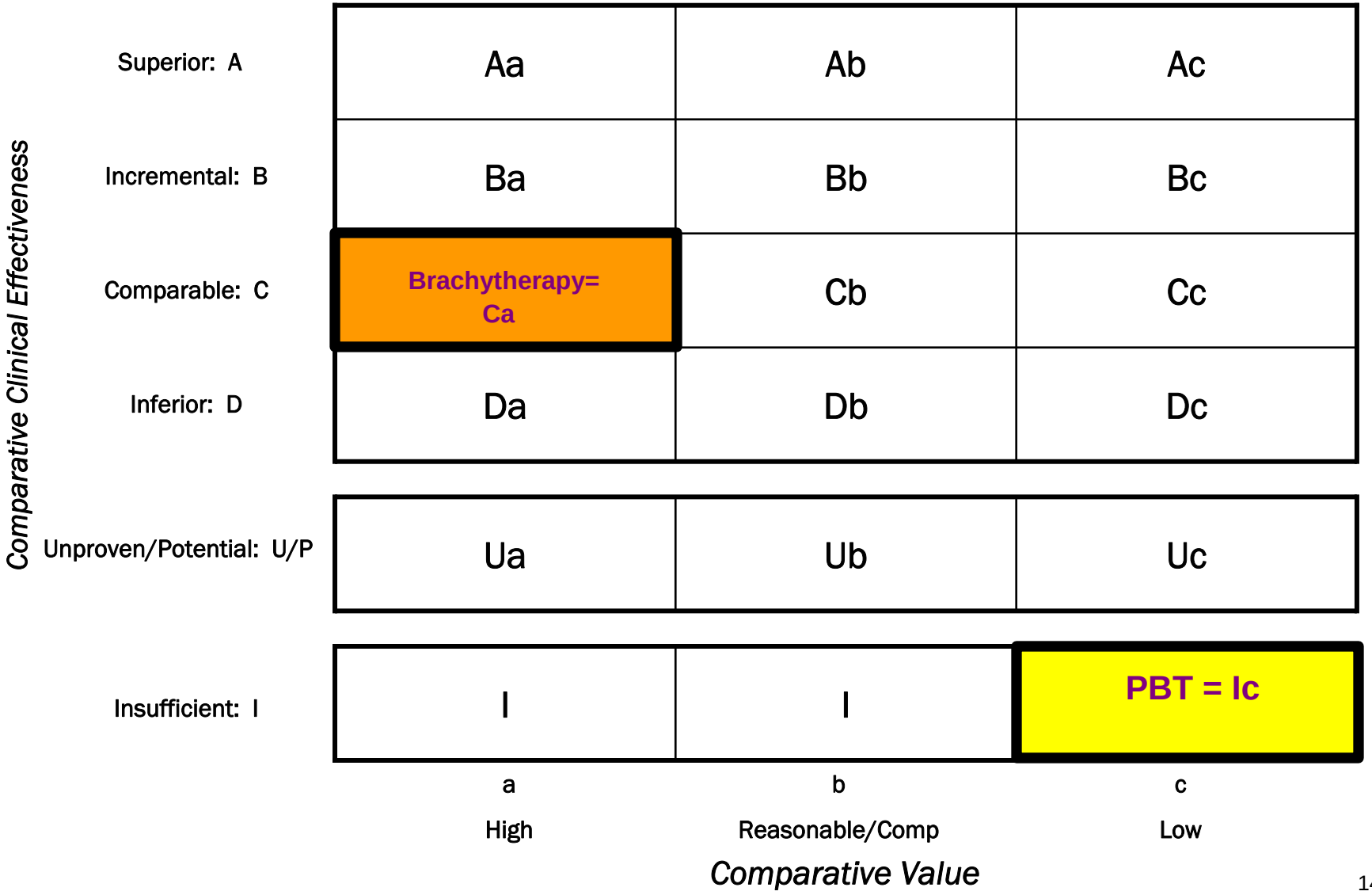
Summary

- Inadequate evidence to make clear distinctions in patient outcomes across all modalities of treatment
- Evidence on proton beam therapy is so limited that it cannot be judged with certainty whether the net comparative health benefit is inferior, comparable, or superior to other options
- The body of evidence from case-series suggest no substantial differentiation in cancer-specific outcomes or overall survival between IMRT and brachytherapy.
- The body of evidence cannot provide the basis for clear distinctions in comparative rates of side effects between brachytherapy and IMRT

ICER Integrated Evidence Rating™



Radiation for localized prostate cancer Compared to IMRT



Comparative Effectiveness and Advertising

- Advertising can bring important information to patients
- Does CER undervalue aspects of care of importance to patients?
- Advertising is the epitome of “cherry picking”
- Ultimately, patients (and clinicians) need objective, authoritative sources of information and guidance

Conclusion

- An increased effort in Comparative Effectiveness is likely to be a core feature of health care reform
- Specialties that orient themselves toward developing and implementing evidence to guide better decision-making will have a significant advantage
- Action this day:
  - Standardize outcome measures
  - Push for comparative research of complementary designs
  - Collaborate with evidence review groups to learn and teach