



Impact of Imaging – 21st Century

Barbara J. McNeil, M.D., Ph.D.

Departments of Radiology and Health Care
Policy, HMS and BWH

Impact: Traditional Emphasis Areas



- Is information from Test A better than Test B and by how much?
- Are there cost savings associated with imaging either absolutely or comparatively?

Our Additional Roles Going Forward



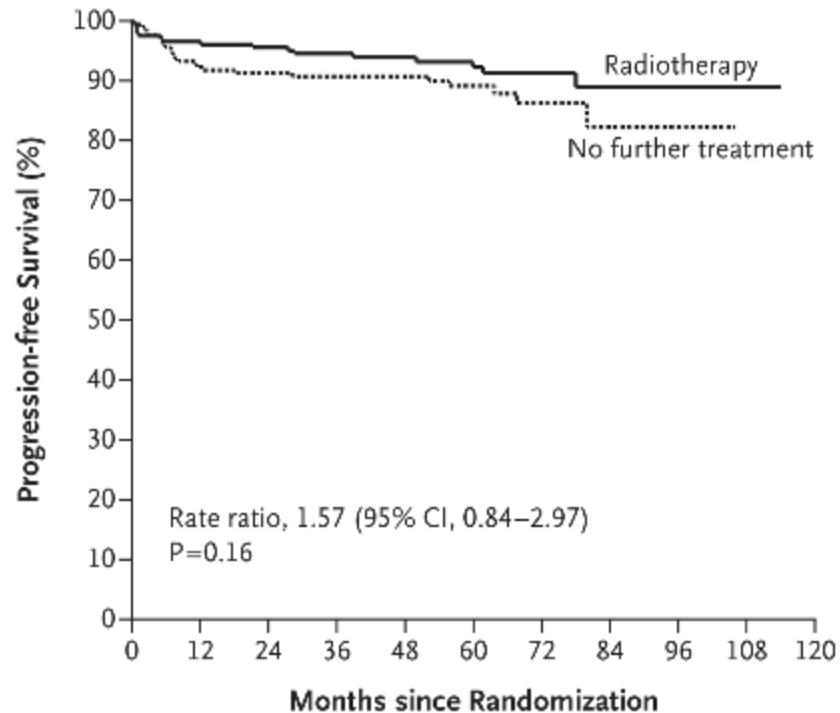
- PREDICTION: Chemotherapy directed endpoints from PET
 - Early stage Hodgkins lymphoma: 3 cycles of AVBD \pm RT
 - Advanced HD; ABVD or AVD (no bleo)
- INTEGRATION: genetics and imaging
- THERANOSTICS: diagnosis and treatment



PET Directed Rx for Early HD

No SD by stopping Rx early after negative PET.

A Intention-to-Treat Analysis



No. at Risk

Radiotherapy	209	198	188	170	134	99	57	30	13	2	0
No further treatment	211	190	181	153	129	89	50	14	5	0	0



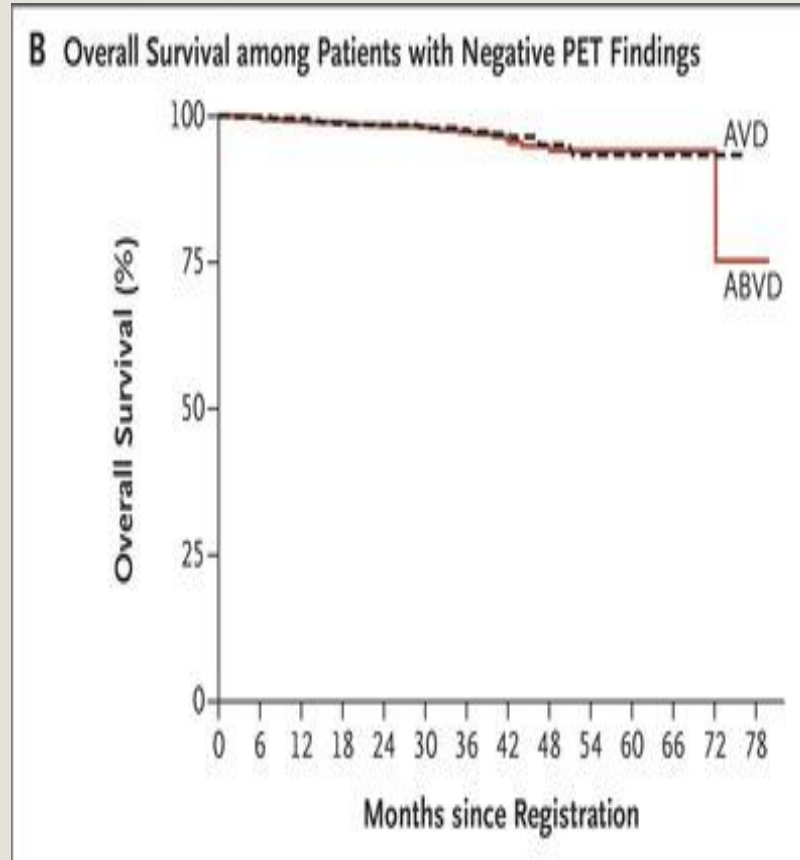
Advanced HD and PET

- Design
 - Positive PET – continue treatment with ABVD*
 - Negative PET – randomize to ABVD or AVD
- Result: no difference in efficacy but lower incidence of toxic pulmonary effects

Johnson et NEJM 2016 374: 25, 2016

*Doxrubicin, bleomycin, vinblastine, dacarbazine

Advanced HD; ABVD or AVD (no bleomycin-- B)





Now and the Future

- PREDICTION: Chemotherapy directed endpoints from PET
- INTEGRATION: genetics and imaging
 - Issue: huge sample sizes (unbiased) (MSKCC)
- THERANOSTICS: diagnosis and treatment



Now and the Future

- PREDICTION
- INTEGRATION
- THERANOSTICS: diagnosis and treatment
 - Somastatin positive-Lutetium-177
 - Liver Cancer, synovitis -- Yttrium-90
 - Bone mets– Radium-223



ONE CAUTION: WITH INCREASED SOPHISTICATION AVOID OVER-DIAGNOSIS



Our Collective Ideas?

