



Primary advantage: Reveals cancers masked by dense breast tissue

MBI

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Molecular Breast Imaging Physics and QC Testing

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Disclosures

- CMR Naviscan, institutional licensing agreement
- Siemens, research agreement
- DenseBreast-Info.org, Medical Advisory Board member

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MBI Protocol

- Tc-99m sestamibi administered via injection
 - FDA-approved for diagnostic breast imaging, 1997
 Gamma-emitter, 140 keV
 - 8 mCi (~2 mSv effective dose)
 Uptake related to perfusion, mitochondrial activity
 - Special patient prep not required
- Imaging begins about 5 min after injection
- Patient is seated, light compression applied
- Bilateral CC/MLO view
 10-min each (~40 min total)
- Swanson et al. Best Practices in Molecular Breast Imaging... JNMT 2018







Why use MBI?

Consider MBI when:

post-surgery, etc)

Conventional imaging with mammography / ultrasound is not sufficient (dense breast,

MRI is recommended but not feasible





Case Example: Supplemental Screening with MB. 62 year-old woman presenting for screening Rec Lec Rec Lec MBI with 3 mCT D-90m sestambit Tocal area of moderate intensity uptake (arrows) 0.9 cm Grade 2, Invasive ductal carcinoma, Triple Negative, Node negative

Screening Modality	Total N	Incremental CDR per 1000	Incremental Invasive CDR per 1000	Recall Rate
DBT	103,245	1.7	1.4	-2%
Ultrasound	452,743	2.0 to 2.7	1.8 to 2.3	7.6% to 10.69
MBI	4,277	8.1	6.2	6.7%
MBI, after DBT (prelim. results)	1,608	9.3	7.5	10.3%
MRI	9,256	16.0	12.1	10.4%
Abbreviated MRI, after DBT	1,444	9.7	6.9	21.5%
CEM (retrospective analysis, women at increased risk)	1,311	10.7	8.4	15.0%





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Conventional	l Sodium Iodide G	amma Camera	Cadmium 2	Zinc Telluride Gam	ma Camera
140 keV	120 keV	110 keV	140 keV	120 keV	110 keV

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