The Dilemma of Breast Density in Screening

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Overview

During this presentation, we will discuss:

1. Definition -- dense breasts

2. Update -- state density laws

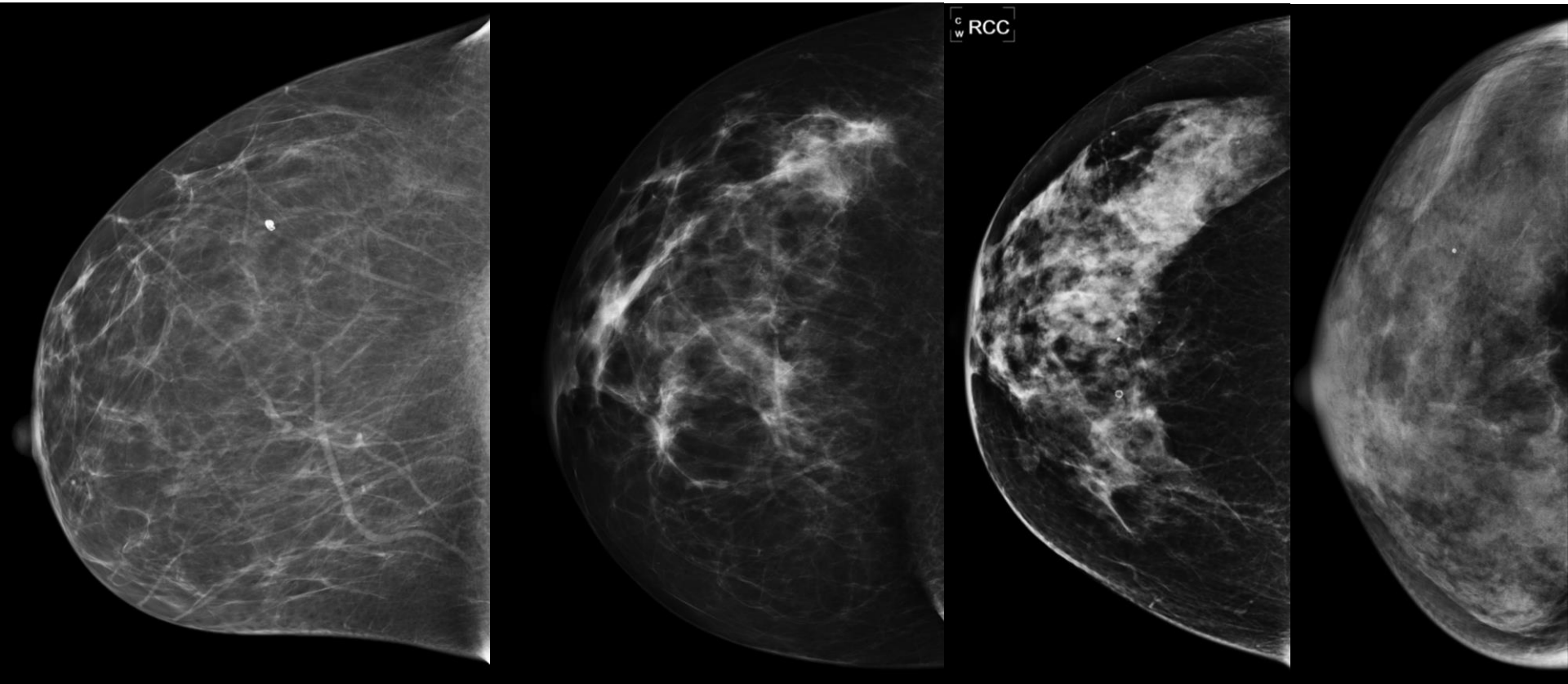
3. Opportunities & challenges -- patients and providers

4. Massachusetts -- evidence-based guidelines

5. Screening tools on the horizon

Breast Density

* Amount of glandular tissue relative to fat



Why now?

* Recognized independent risk factor
  * 1.2-2.1 fold increased risk for majority of women
* Grassroots movement
  * areyoudenseadvocacy.org

Sickles EA. Radiol Clin No Am 2010
Sprague BL et al., Ann Intern Med epub 2014

Mammographic Screening

* 15-30% mortality reduction
* Detects 4-5 cancers/1000 screened in average population
  * Recall rate < 10%
  * Positive biopsy rates 25-40%
  * Prevent 6 cancer deaths/1000 screened
* Digital > analog for dense breasts

Sprague BL et al., Ann Int Med epub 2014
Smith RA et al., Radiol Clin No Am 2004
Roesenberg et al., Radiology 2006
Kerlikowske K et al., Ann Intern Med 2011

Breast Density Challenges

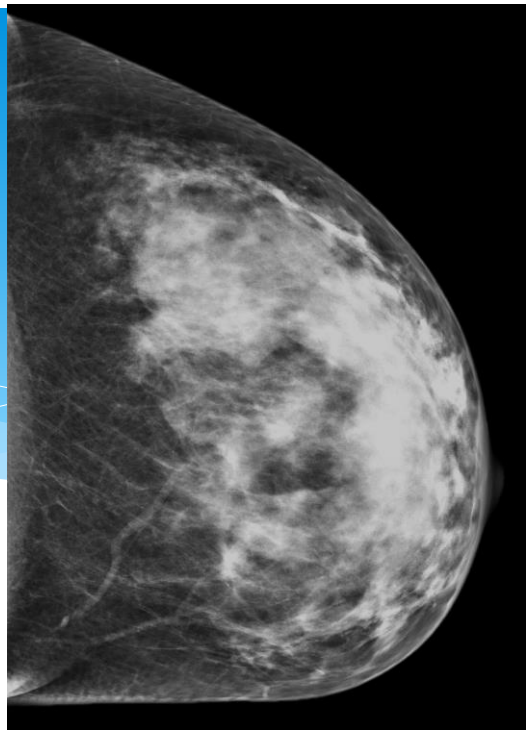
- Mammographic Limitations
  - Dense tissue “masks” cancers
  - Reduced sensitivity
    - 62-68% extremely dense vs. 85-89% fatty breasts
    - Improved sensitivity to 83% with digital
- Risk factor
  - Does not reliably identify breast cancer-risk in individuals
  - Women with dense tissue not associated with increased risk of death from breast cancer

Kerlikowske K et al., Ann Intern Med 2011
Cecchini RS et al., Cancer Prev Rese 2012
Gierach GL et al., J Natl Can Inst 2012

Breast Density Challenges

* Subjective vs. Objective
  * Varies with weight, hormones, diet and use of chemoprevention
  * Intra- and inter- reader variability
  * Density software has no established cut-offs
* Recent change in BIRADS
  * No longer use density quartiles
  * Assigned category based on presence of any confluent area of dense tissue

Breast Density Legislation



- 21 (42%) states have passed legislation as of January 2015
- Laws vary –
  - Mostly notification
  - Some recommend supplemental US screening
  - Only 4 states with insurance mandate

Slanetz PJ et al., NEJM 2015

Breast Density Legislation

* Intent well-meaning but implementation problematic
  * Limitations of supplemental US
  * Patient-related issues
  * Provider challenges

Limitations of Supplemental US

- Incremental cancer detection rate 3-4/1000 high risk women, 1-2/1000 average risk
  - Recall rate ≈ 20%
  - Up to 25% BIRADS 3, 4 or 5
  - Positive biopsy rate 3-8%
  - Prevent 0.36 deaths/1000 screened

Berg WA et al., JAMA 2008; Parris T et al., Breast J 2013
Sprague BL et al., Ann Int Med epub 2014
Brem R et al., AJR 2015

Patient Challenges

* Heightened anxiety
* Women of lesser socioeconomic status less able to pay out-of-pocket for supplemental screening
* False reassurance of risk for women of low density, especially young high-risk African-American women

Trinh L et al., JACR 2015;Yeh VM et al., JACR 2015
Ursin G et al., Cancer Epidemiology Biomarkers Prev 2003

Physician Challenges

* Recent survey of 77/174 California physicians,
  * 50% had no knowledge of legislation
  * 55% somewhat comfortable answering questions
  * 75% desired more specific education
  * 32% referred to breast clinic for consultation

Khong KA et al., JACR 2015

Physician Challenges

* Variable adoption in Connecticut
  * Some physicians referred all patients for US, others none
  * Only 45% who had initial screening US had the test the next year

Hooley RJ et al., Radiology 2012

Massachusetts Experience

* Density notification law – passed July 2014
  * Encourages patient-provider discussion of risks/benefits
  * No specific supplemental screening test
  * No insurance mandate

Massachusetts Experience

- Formed MA-BREAST, multidisciplinary task force
  - Evidence-based guidelines for providers using risk stratification
  - Standard patient letter across state
    - Sent to all women regardless of density
  - Website – breast.massrad.org

Slanetz PJ et al, NEJM 2015;372:593-595

Risk Stratification

* Multiple risk assessment tools exist, but no one model is optimal
  * Gail
  * Tyrer-Cuzick
  * BRCAPRO
  * Claus
* None include breast density

Evidence-based guidelines

* Risk Assessment
  * Low/Average risk ➔ no additional screening
  * Intermediate risk ➔ discuss options (US or MR) with PCP
  * High risk ➔ Breast MRI

    8.5 additional cancers/1000 screened

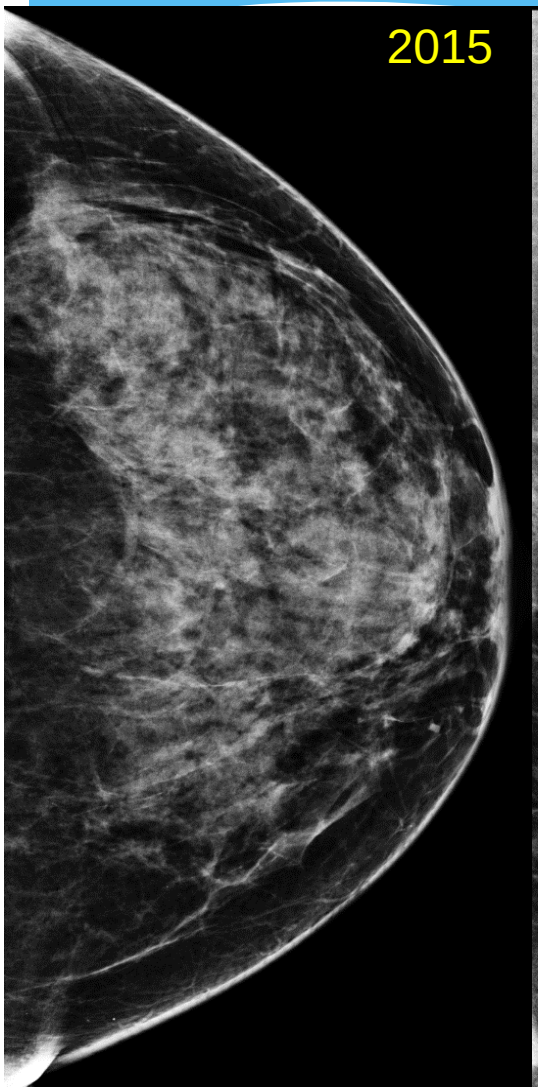
Tice JA et al., Institute for Clinical and Economic Review, 2013.

Massachusetts Experience

* Next steps
  * Continually update risk-based recommendations based on evidence
  * Collaborate with grassroots organizations to implement insurance coverage

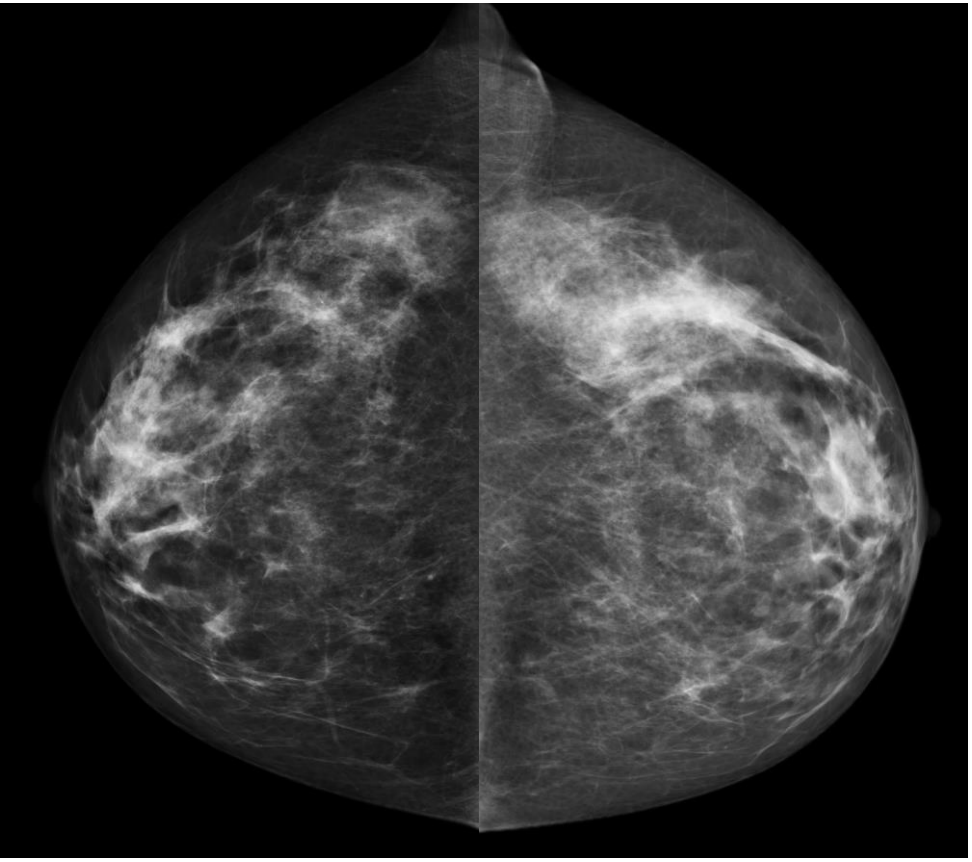
On the Horizon: Digital Breast Tomosynthesis

ICDR = 2-3/1000 screened



On The Horizon: CESM

42 year old high risk woman



FFDM

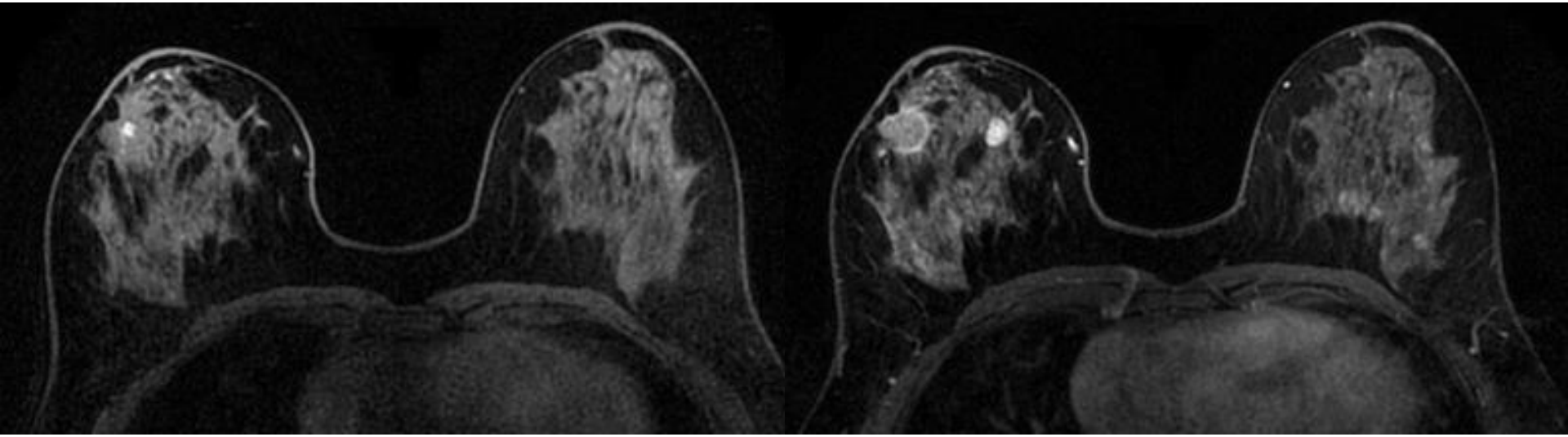
CESM

On the Horizon: Fast MRI

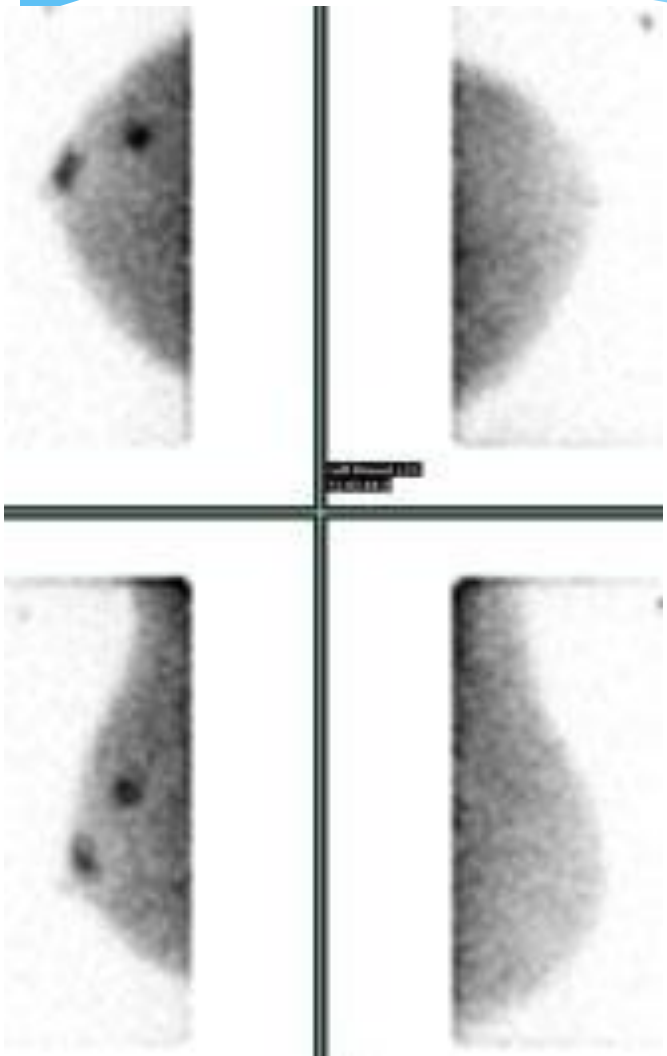
46 year old for screening MR

Bx: IDC and FA

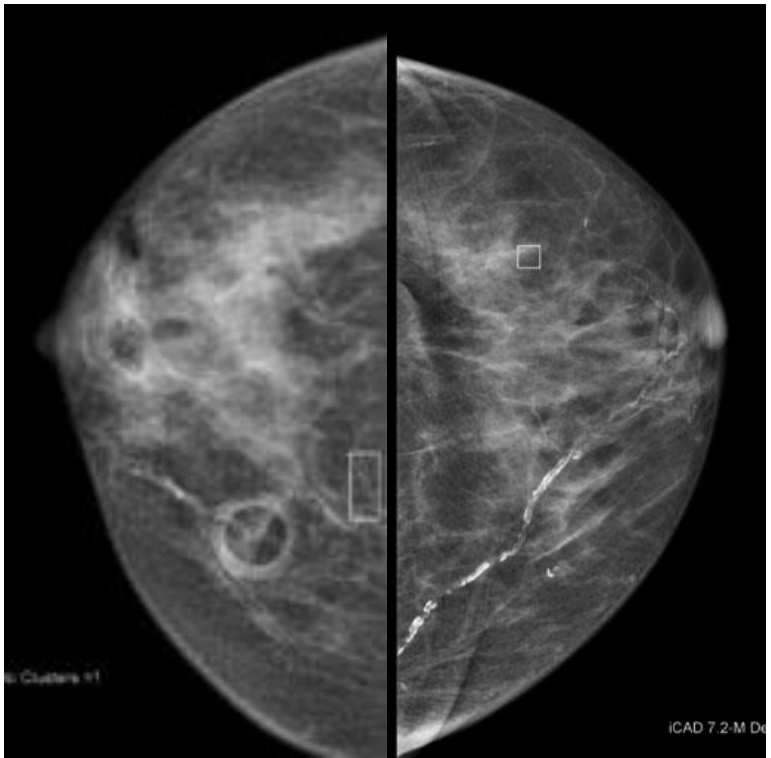
ICDR = 8-36/1000 screened high risk



On the Horizon: Molecular Breast Imaging (MBI)



BSGI of 48 yo for left breast calcifications



ICDR ≈8-9/1000 screened

Images courtesy of Dr. P. Morris

Conclusions

* All women, regardless of breast density, are at risk
* Risk stratification reasonable approach to guide decision for supplemental screening
* Further education of patients and providers needed
* Revise recommendations based on emerging data