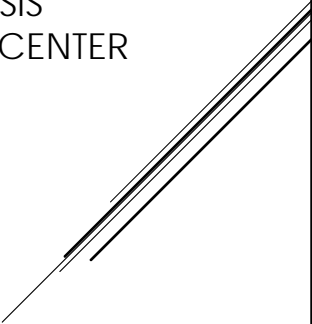


TOMOSYNTHESIS
PIPER BREAST CENTER
EXPERIENCE

Dr. Jessica Axmacher
Piper Breast Center
February 6th, 2016



PRIMARY SITES

- ▶Piper Breast Center
- ▶Abbott Northwestern
- ▶West Health Plymouth
- ▶CRL Southdale



PERIPHERAL SITES

- ▶Cambridge Medical Center
- ▶First Light Mora
- ▶District One Hospital Faribault
- ▶Regina Hospital Hastings
- ▶Allina Woodbury



AS WELL AS A FEW TELERADIOLOGY SITES...

Alexandria Clinic	ANW Heart Hospital	Olmsted Mem Ctr/Rochester
Allina Health Bandana Square Clinic	ANW Abbott NW Mpls	Parkview Medical Clinic
Allina Health Bloomington Clinic	ANW Radiation Therapy	People's Center Health Services
Allina Health Inver Grove Heights Clinic	Berlin Memorial Hospital	Prairie Lakes
Allina Health Maplewood Clinic	Brown Clinic	Quello Burnsville
Altru Clinic Crookston	Buffalo	Quello Chanhassen
AMC Crossroads	Cambridge	Quello Edina
AMC - Forest Lake	Catalyst Medical Clinic	Quello Lakeview
AMC - Hastings	Cherokee Regional Medical Center	Quello Savage
AMC - Shakopee	CHI St Joe's Park Rapids	Ridgeview Sibley
AMC Annandale	Cook Cty North Shores	Riverview Crookston
AMC - Cokato	DCH Faribault	Shakopee
AMC - Cottage Grove	Edina - COC	Sleepy Eye
AMC Nicollet Mall	Edina CRL	Southdale Pediatrics
AMC Prescott Clinic	Fire Fly Mobile Xray	Southdale CRI
AMC Regina Clinic	Royd Valley Hospital	Southside Community Health
AMC Shoreview Clinic	Hutchinson	Southside Medical Clinic
AMC St. Michael	Jamestown Regional Medical Center	St Luke's Duluth
AMC West St Paul	Lakewood Health Center	Tristate Brain/Spine
AMC WoodLake	LifeCare Medical Center	Two Twelve Medical Center
AMC Eagan	Madelia Community Hospital	Unity Medical Center
AMC Faribault	Mora - FirstLight Health Center	Waconia
AMC Farmington	New Ulm	Waconia-Lakeview
AMC Woodbury	Noran Clinic	WestHealth
	North Valley Health Center	
	Northfield Hospital	

SO YOU MAY SEE MY NAME ON A REPORT SOMEWHERE.

Unless there is a typo.
..... Then it's probably a different "Dr. Axmacher"

**** NOTE TO SELF: NEXT TIME MARRY AN "ANDERSON" ****

ON TO THE PRESENTATION ALREADY!

What is Tomosynthesis, Dr. Axmacher?

OVERVIEW OF TOMOSYNTHESIS

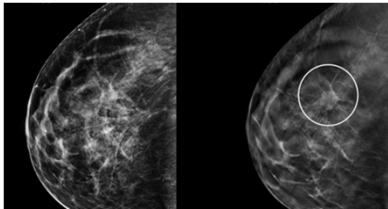
- ▶ It's a 3-D picture of the breast, created using x-rays
- ▶ Instead of a conventional 2-D mammogram, a series of low-dose images are obtained in an "arc", in both CC and MLO projections
- ▶ Similar to the difference between a "circle" and a "sphere"
- ▶ Next generation of mammography, similar to transition from plain film to digital mammograms

TOMOSYNTHESIS AT WEST HEALTH,
PLYMOUTH MN



STANDARD

3-D TOMO




WHY TOMOSYNTHESIS?

- ▶ Higher cancer detection rates
- ▶ Fewer recalls

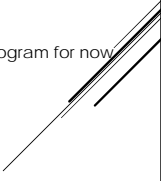
WHY TOMOSYNTHESIS?

- ▶ Better visualization in a dense breast
- ▶ Improved detection of architectural distortion
- ▶ Improved localization of a one-view only finding
- ▶ Definitive characterization of benign skin based calcifications and masses



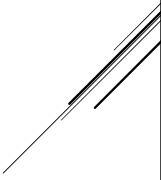
DISADVANTAGES OF TOMOSYNTHESIS

- ▶ Cost- More expensive
- ▶ Time to interpret studies is longer
- ▶ Data- More storage required
- ▶ Radiation- Slightly higher than a standard mammogram for now
 - ▶ Dosage is still below recommended guidelines



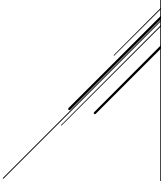
STORAGE FOR 20,000 MAMMOGRAMS

2D storage Standard 4 view mammogram	3D storage Standard 4 view mammogram
1.74 Terabytes/year	10 Terabytes/year




COMPARISON OF DIGITAL MAMMOGRAPHY ALONE AND DIGITAL MAMMOGRAPHY PLUS TOMOSYNTHESIS IN A POPULATION-BASED SCREENING PROGRAM

Radiology: Volume 267: Number 1-April 2013



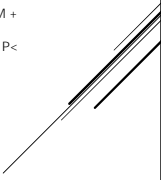
MATERIALS AND METHODS

- ▶ Sponsored by Hologic
- ▶ Large single-institution prospective study
- ▶ Two arms
- ▶ November 2010 to December 2011
- ▶ 12,631 women



RESULTS

- ▶ 27% increase in cancer detection rate with DM + 3D P = 0.001
- ▶ Cancer detection rate 8.0 MG/1000, versus 6.1/1000 MG.
- ▶ **Significantly** higher detection rate for invasive cancers. 40% increase P < 0.001
- ▶ 15 % reduction in false-positive findings P<0.001 with DM + 3D
- ▶ Longer interpretation time. 91 seconds vs 45 seconds P< 0.001



BREAST CANER SCREENING USING TOMOSYNTHESIS IN COMBINATION WITH DIGITAL MAMMOGRAPHY

JAMA 6/25/2014

- ▶ 13 Breast Centers, approximately 0.5 million screening exams
- ▶ Two year study March 2010 to December 2012
- ▶ All sites used the same technology

JAMA 2014

281,187 standard exams
1207 cancers (4.2 / 1000 MG)
173, 663 tomosynthesis exams
950 cancers (5.4 / 1000 MG)

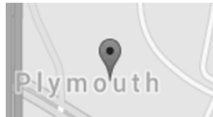
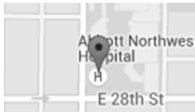
Recall decreased 15% with tomosynthesis
Overall cancer detection increased 29%

TOMOSYNTHESIS AND THE ACR

- ▶ "Breast tomosynthesis has shown to be an advance over digital mammography, with higher cancer detection rates and fewer patient recalls for additional testing. This is extremely important."
 - ▶ ACR - Digital Breast Tomosynthesis, May 1, 2015
- ▶ "Tomosynthesis is no longer investigational. Tomosynthesis has been shown to improve key screening parameters compared to digital mammography"
 - ▶ ACR - Statement on Breast Tomosynthesis, November 24, 2014

PIPER BREAST CENTER TOMOSYNTHESIS EXPERIENCE

- ▶ Piper Breast Center was proud to begin offering tomosynthesis in the Summer of 2014
- ▶ This includes one unit at Abbott Northwestern and one at West Health
- ▶ Both sites utilize Selenia Dimensions units





Just in case you were going to complain about the lack of original photos, I took a picture of the unit at West Health. And for comparison.....



Not bad, right!?!

TOMOSYNTHESIS STATISTICS

► 2014 Statistics

Method of Study	Total Studies	Callback %	Cancers Detected (rate)
Regular	7252	6.5%	29 (4.00/1000MGs)
Tomosynthesis	3218	5.5%	18 (5.60/1000MGs)

► 2015 Statistics

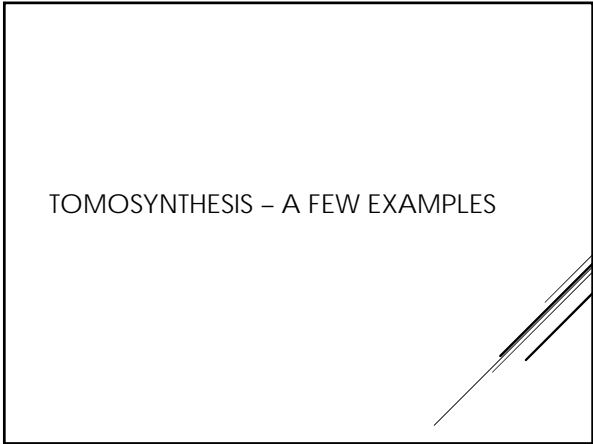
Method of Study	Total Studies	Callback %	Cancers Detected (rate)
Regular	13536	7.98%	76 (5.61/1000MGs)
Tomosynthesis	6308	6.3%	38 (6.02/1000MGs)

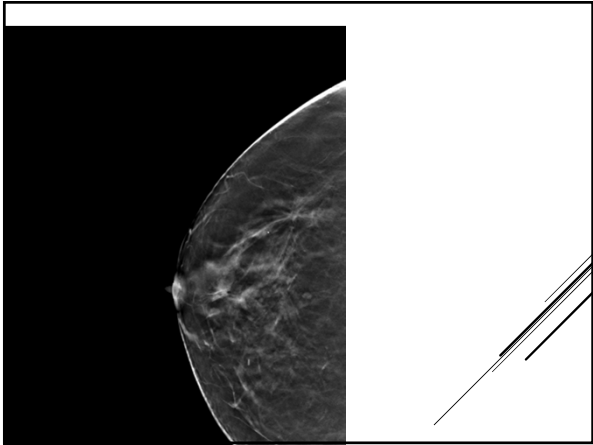
OVERALL NUMBERS

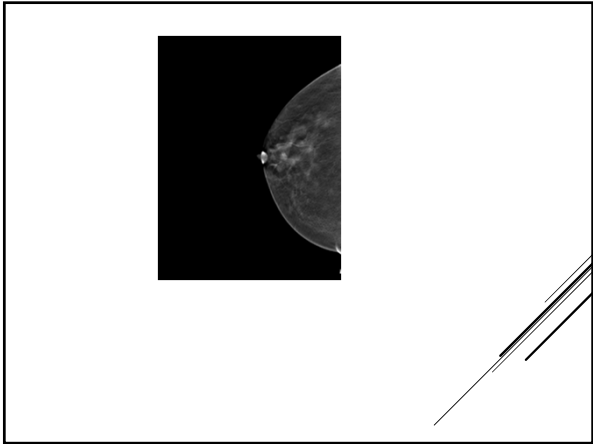
- 20,788 standard exams with 105 cancers, CDR 5.05/1000 MG
- 9526 3D mammograms with 56 cancers, CDR 5.87/1000 MG
- Overall cancer detection rate increased by 16%
- Callback rates decreased by approximately 19%

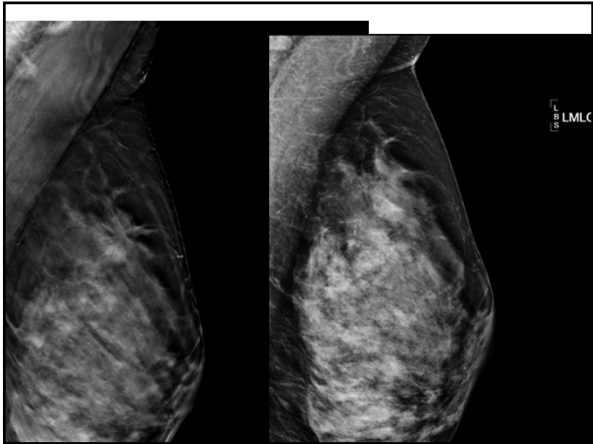
PIPER BREAST CENTER EXPERIENCE

- Essentially new technology for all radiologists- Dr. Shearer and I had limited "exposure" during fellowship
- New for all technologists
- As we all become more familiar with the technology, we expect our cancer detection rate to stay the same or improve











TOMOSYNTHESIS IS NOT JUST FOR SCREENING

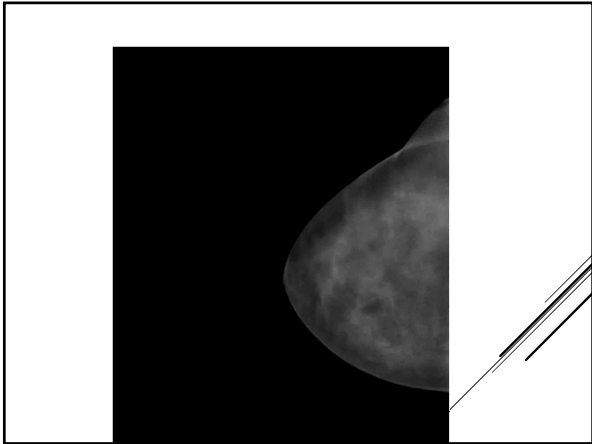
- ▶ Diagnostic mammograms
- ▶ Localizations
- ▶ Stereotactic biopsy
 - ▶ Our group does not utilize this functionality as we have dedicated stereotactic biopsy devices

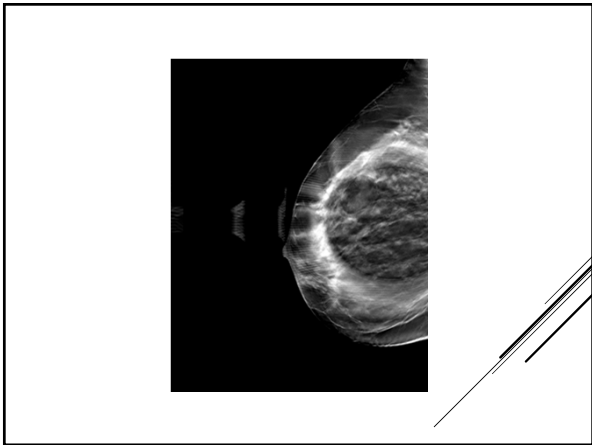


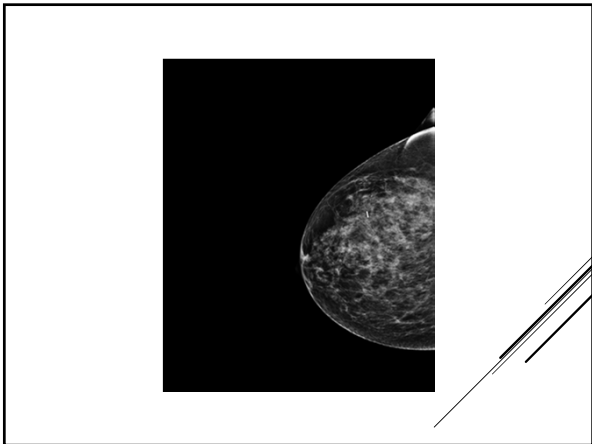
TOMOSYNTHESIS FOR LOCALIZATION

- ▶ Requires compression in only one view
- ▶ Final pictures still taken in two views
- ▶ Depth of lesion calculated by which "slice" the finding is seen on.
- ▶ Most of our localizations are still done conventionally, freeing up the tomo room for screening and diagnostics.












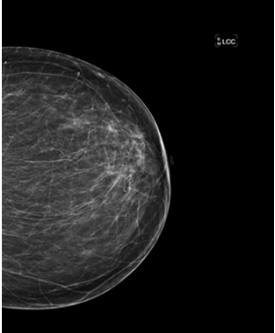
INCREASED DETECTION OF HIGH RISK LESIONS

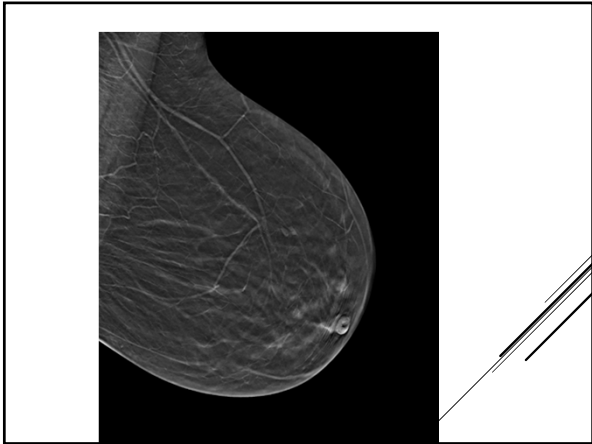
- ▶ In this case, it was atypia (and was actually bilateral)
- ▶ Most often we are seeing radial scars (debate on whether to excise)
- ▶ Counts as a "false positive"
- ▶ Benefits this patient, who is now appropriately risk stratified and can obtain insurance coverage for breast MR and high-risk clinic
- ▶ Time will show whether identifying more high risk lesions can prevent breast cancer through excision (when appropriate), and high risk screening protocols
- ▶ Indirect tomosynthesis benefit



TOMOSYNTHESIS FOR CALCIFICATIONS









TOMOSYNTHESIS- CHALLENGES

- ▶ Utilization of one unit
 - ▶ Localizations, diagnostics, and screening mammograms
- ▶ Insurance coverage
 - ▶ This could be a topic in an of itself


TOMOSYNTHESIS- INSURANCE COVERAGE

- ▶ In the beginning, there was no "code".
- ▶ January 2015: CMS (Medicare/Medicaid) added a code for tomosynthesis and began reimbursement.
- ▶ The code "legitimizes" tomosynthesis and paves the way for improved insurance coverage

TOMOSYNTHESIS- BILLING

- ▶ Some insurance providers cover the "2-D" portion only (ie, only reimburse what a standard mammogram would cost and bill the patient the difference)
- ▶ Some cover tomosynthesis entirely 
- ▶ Some call tomosynthesis "investigational" and don't cover it 

TOMOSYNTHESIS - BILLING

- ▶ What's more, different insurance plans through the SAME provider can provide DIFFERENT levels of coverage for the same exam on two different patients 

PATIENT PERSPECTIVE

- ▶ Patients frequently ask what their bill will be and we can't give them a firm answer because insurance coverage is unpredictable and inconsistent
- ▶ We do our best to facilitate preauthorization
- ▶ Facilities have offered discounts in situations where insurance provided no coverage or limited coverage

IN SUMMARY

- ▶ From the technologist and radiologist perspective tomosynthesis represents an advance in breast cancer imaging and should become the standard of care in the future
- ▶ Our initial 18 months of data supports that tomosynthesis will become the standard of care:
 - ▶ Reduction in screening recalls
 - ▶ Increase in cancer detection rate
- ▶ The CMS "code" which was created in 2015 has paved the way for insurance companies to begin providing coverage for tomosynthesis, both screening and diagnostic
- ▶ We hope to see more insurance providers covering tomosynthesis in the future

TOMOSYNTHESIS: SO OBVIOUS, EVEN A BABY CAN DO IT



Thank you!