RSNA 2023
LEADING THROUGH CHANGE

Technologist experience implementing a mammographic image quality improvement program using automated artificial intelligence-based software

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Background

Breast positioning a key aspect of mammography image quality (IQ)

Bassett et al., 1993;
Taplin et al., 2002; Bae et al., 2014

Targeted initiatives improve image quality

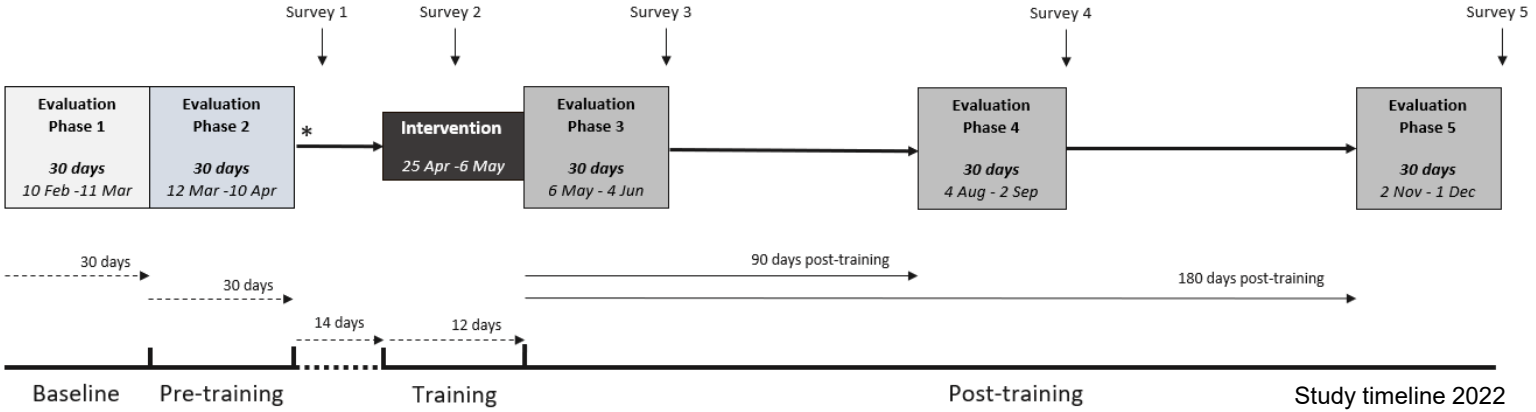
Pal et al., 2018;
Santner et al., 2021; Kozlov et al., 2023

Artificial Intelligence (AI)-based software available to automate IQ assessment, but user experience unknown

Purpose: To evaluate technologist experience with, and attitudes toward, the use of an automated IQ assessment system following individualized hands-on mammography positioning training, tailored by AI-derived metrics

Methods

Study Timeline



- Volpara Analytics™ in use >2 years at all sites prior to study
- Technologist ('Tech') inclusion criteria: completed training & all surveys
  - Survey 1 = baseline; Survey 2 = immediately post-training; Surveys 3, 4, & 5 = post-training (identical)

Methods

Surveys & Intervention

- Surveys distributed using SurveyMonkey®
- Hands-on positioning training by Mammography Educators®, individualized by Volpara® Analytics™ objective breast positioning assessment

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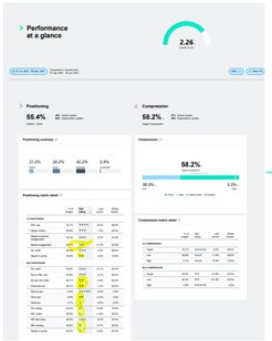

Performance report generated

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Areas of focus identified by AI

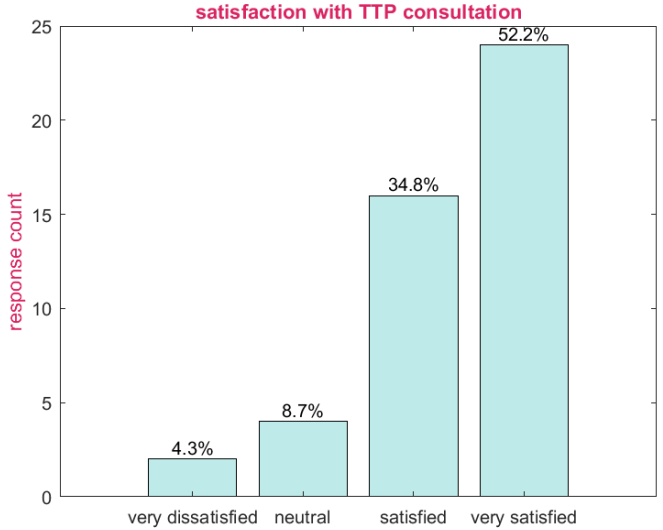
POSITIONING METRIC	REVIEWED
CC POSITIONING	
Nipple midline Nipple exaggerated	
Nipple in profile	
MLO POSITIONING	
No pec skin folds	
Adequate pec Short pec Wide pec	
Pec shape	
IMF visible IMF missing	
Nipple in profile	

Targeted Training Profile prepared for individualized training

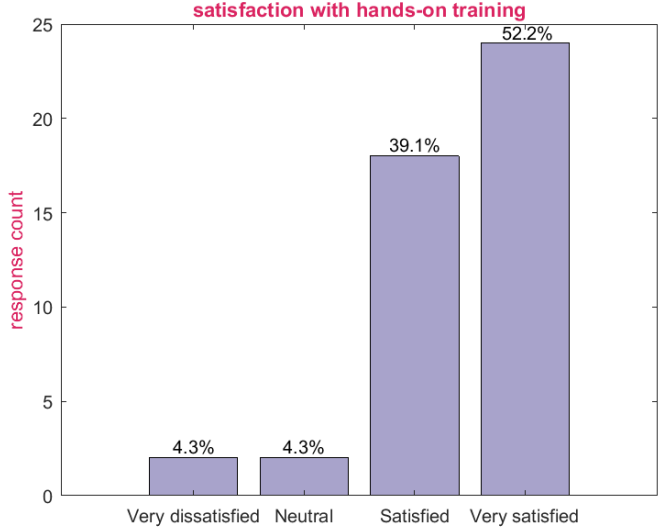
Results

Training satisfaction

Immediately post-training (Survey 2)



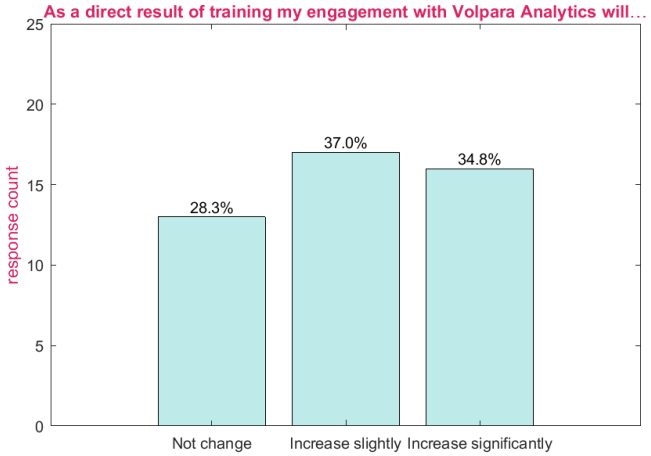
- 87% reported being satisfied or very satisfied with the targeted training profile (TTP) consultation



- 91.3% reported being satisfied or very satisfied with the individualized, hands-on training

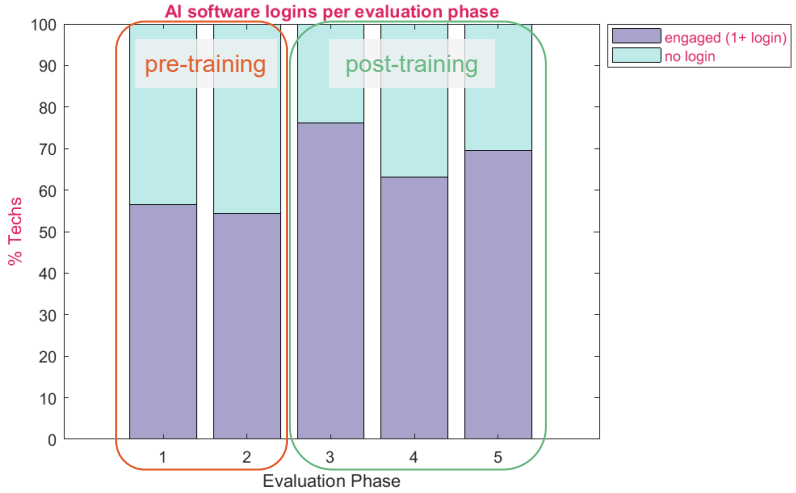
Results

AI software engagement



Immediately post-training:

- 71.8% anticipated their software engagement would increase slightly or significantly



Immediately post-training (Eval 3):

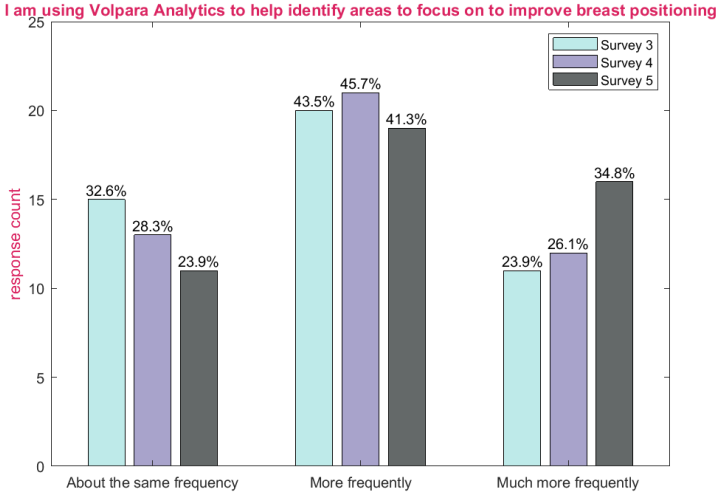
- 76.1% Techs logging in, up from 54.3% ($p<0.05$)

Post-training:

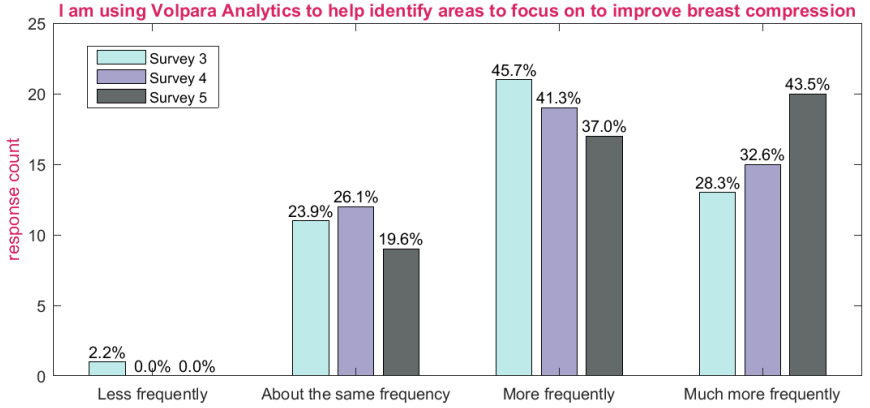
- A trend ($p<0.05$) for persistence of logins

Results

Post-training, software use for quality improvement



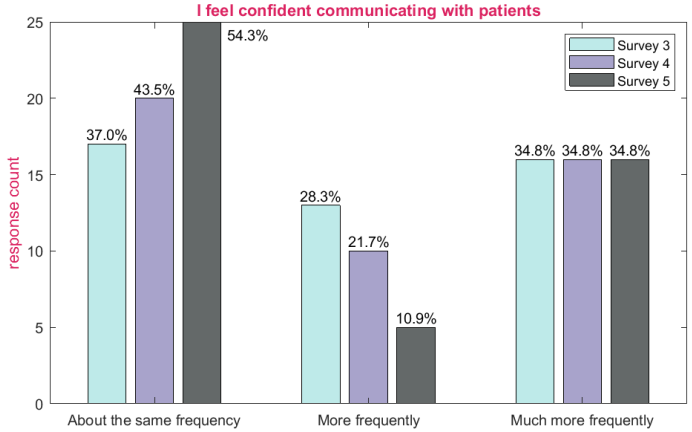
- 67%+ Techs using AI software more or much more frequently to improve breast positioning



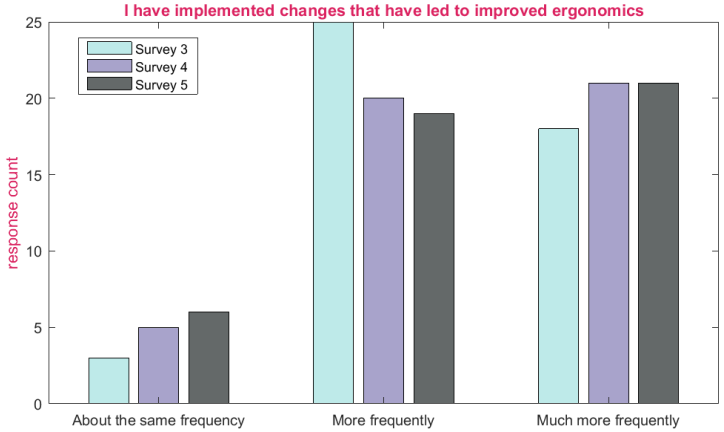
- 73%+ Techs using AI software more or much more frequently to improve breast positioning

Results

Post-training skill development



- 45%+ Techs reported feeling confident in communicating with patients <u>more or much more frequently</u>



- Pre-training: 52.2% reported physical discomfort associated with acquiring mammograms
- Post-training: 87%+ responded they implemented changes that improved ergonomics <u>more or much more frequently</u>

Summary

After hands-on, individualized training, the majority of participating Techs:

- were satisfied with the training
- increased their software engagement
- actively used the software to improve positioning & compression
- noted improvements in ergonomics & patient communication

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