Formazione e valutazione dei professionisti nell'epoca dell'intelligenza artificiale

Altre piattaforme didattiche online

Maura Tonutti

SS Diagnostica Senologica - Breast Unit - TRIESTE

test di Ciatto - regione FVG 2005

- 1ª EDIZIONE

  - 29 partecipanti (29 bocciati)

- 2ª EDIZIONE

  - corso di formazione al CSPO Firenze

  - **29** partecipanti (13 bocciati-**16 accreditati**)

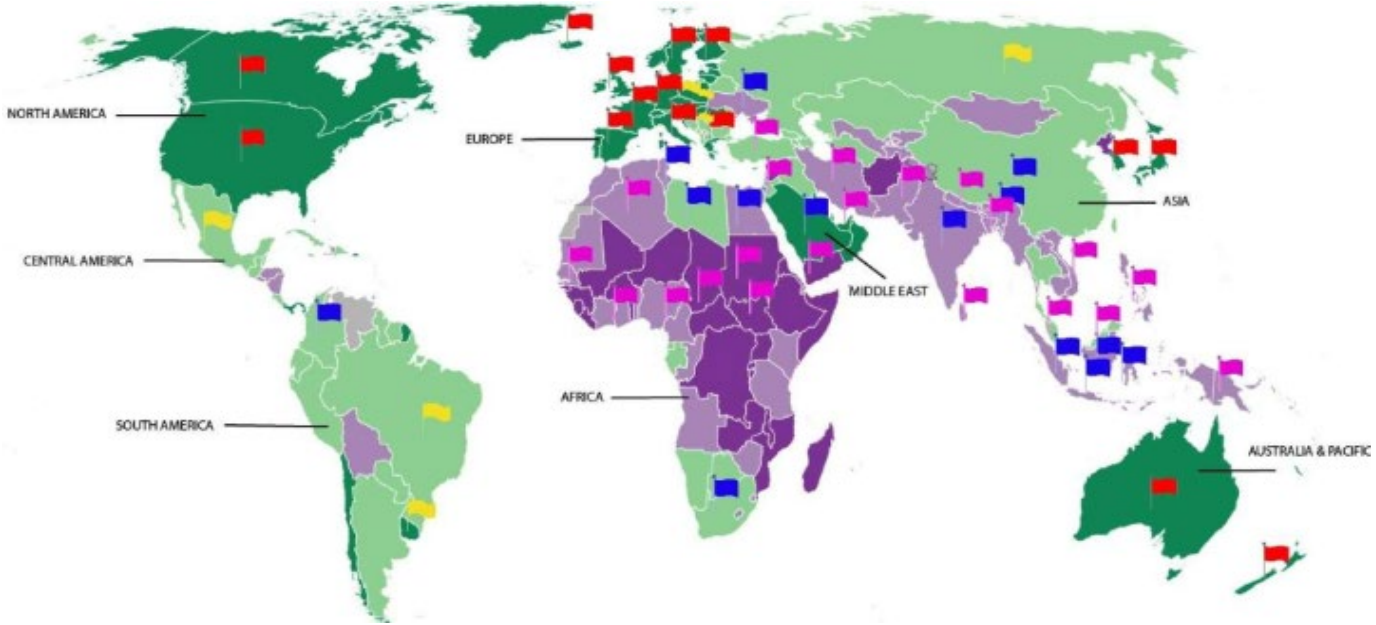
perché c'è bisogno di formazione in radiologia senologica

- in Italia non ci sono formali requisiti di esperienza da rispettare per i radiologi di screening
- non ci sono dati sulle loro caratteristiche di esperienza
- i tassi di richiamo variano fino a 6 x e sono sopra lo standard accettabile in 1/3 di questi
- molti radiologi di grande esperienza lasceranno il servizio

L.Bucchi GISMA 2017

Survey ICSN

International Cancer Screening Network



: Low-income countries (<$1,046)

: Lower middle-income countries ($1,046 - $4,095)

: Upper middle-income countries ($4,096 - $12,695)

: High income countries (>$12,695)

Group A: countries with nationwide breast screening programs;

Group B: countries with regional mammography screening programs;

Group C: countries had trials or pilot programs for mammography breast screening;

Group D: countries conducted campaigns on breast cancer screening awareness and access to mammography

Survey in 30 paesi membri ICSN:

ICSN:
International Cancer Screening Network

per entrare: training racc 8, obblig 6
tutoraggio racc 8, obblig 7
test racc 2, obbl 1 Australia, Giappone, UK

per continuare: rispettare indicatori racc 8, obbl 5
numero mx racc 4, obbl 10
II livelli racc 3, obbl 3
audit clinico racc 3, obbl 4
test obbl 1 UK

Hofvind S et al. J Méd Screen. 2016;23:150–9

COMMENTARY

To think it, wish it, even want it—but do it! Quality control measures in mammography image interpretation: radiologists' attitudes and preferences vs perceived obstacles and limitations

European Quality Assurance Scheme for Breast Cancer Services:

- audit clinico
  - detection rate
  - recall rate
  - ca invasivi ≤ 10 mm
  - ca invasivi > 20 mm
  - ca intervallo
  - revisione errori T2+ e ca intervallo

Pedersen K, et al. Eur Radiol. 2023;33:8100–2

European Commission, Joint Research Centre, Mansel, R., Uluturk, A., Janusch-Roi, A. et al., *Manual for breast cancer services – European quality assurance scheme for breast cancer services*, Publications Office of the European Union, 2021, https://data.europa.eu/doi/10.2760/155701

A survey by the European Society of Breast Imaging on radiologists' preferences regarding quality assurance measures of image interpretation in screening and diagnostic mammography

EUSOBI online survey 2023 (251 radiologi di 34 paesi):

- 33,5% in screening devono leggere 5000
- 45,8% in clinica non ha soglia
- 53% hanno programma di QA - **47% no**
- 28,3% fanno test
- 3 su 4 ritengono che il test utile per aumentare performance

Michalopoulou E, et al.Eur Radiol. 2023;33:8103–11

Fattori che influenzano performance della mammografia:

- popolazione in studio
- tipo di lesione
- fattori tecnici
- **caratteristiche del lettore** maggior determinante di acc diagnostica

Ekpo EU et al. Asian Pac J Cancer Prev : APJCP. 2018;19:291–301.

Caratteristiche del lettore:

➢ numero di anni e numero di mx per anno

esperienza
è complessa da misurare

- differenti livelli di tutoraggio
- approfondimenti II livello
- social network
- partecipazione MDM
- PACS RIS

Ekpo EU et al. Asian Pac J Cancer Prev : APJCP. 2018;19:291–301.

Errori comuni che influiscono sulla interpretazione della mammografia:

- 42% **ricerca**
- 31% **percezione** povere capacità di riconoscimento
- 37% **decision making** scarse capacità di giudizio (no prec o storia clinica, RR basso)

Ekpo EU et al. Asian Pac J Cancer Prev : APJCP. 2018;19:291–301.

➢ da **casi difficili** e revisione propri **errori**

- i **primi sono rari**: un radiologo che (media italiana) visiona 2-3000 esami l'anno, incontrerà 4-6 ca. non palpabili, e se i casi difficili sono la metà (per fortuna sono di meno) la sua esperienza si formerà al ritmo di 2-3 casi l'anno!

- i **secondi** spesso restano ignoti: in assenza dell'informazione automatica da parte di un registro tumori gli errori diagnostici non rilevati dallo stesso operatore, tendono a non essergli segnalati dai colleghi (se mai dal giudice)

- l'esperienza può essere accelerata con la visione di casistiche selezionate di casi difficili o di errori diagnostici

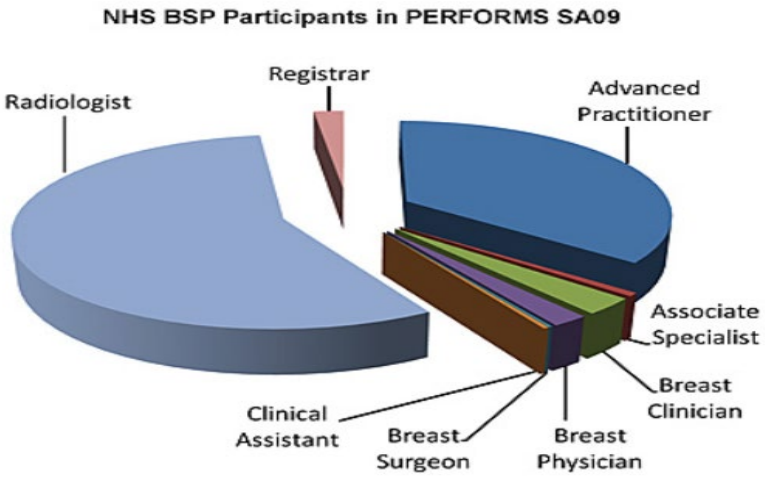
S.Ciatto

Piattaforme per test di mammografie con immediato feedback percettivo:

- TEST SIRM
- PERFORMS - UK
- BREAST - Australia

PERFORMS: PERsonal PerFORmance in Mammographic Screening

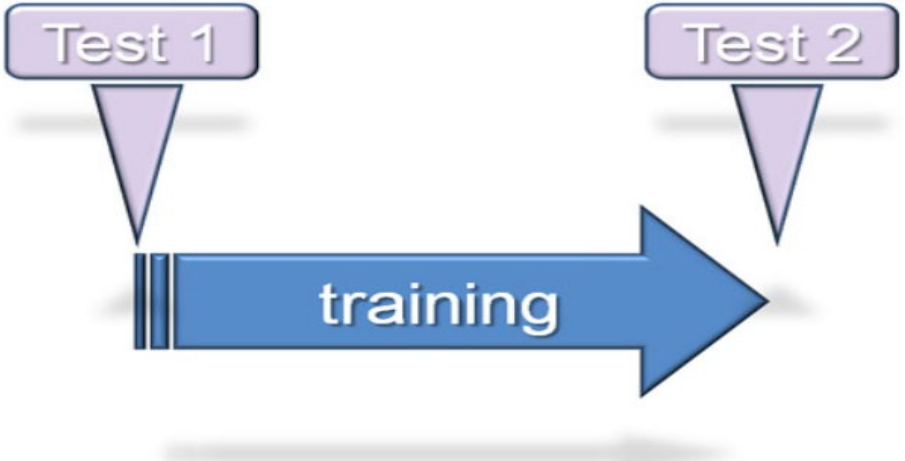
- PERsonal PerFORmance in Mammographic Screening
- implementato nel 1991 in UK per NHSBSP
- 2 set all'anno di 60 casi, no precedenti
- autovalutazione e formazione continua
- feedback immediato: sensibilità, specificità
- risultati trattati in maniera anonima
- offerta di training mirati



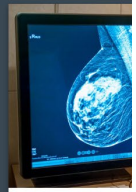
Chen Y, et al. Imaging Cancer. 2020;2:e200016

IMPROVE variante di PERFORMS

- usato in centri di training
- prima e dopo il training
- soglia di SENS e SPEC
- accreditamento



External Q

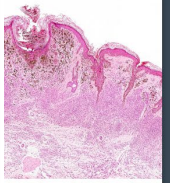


PERFORM

FIND OUT MORE

PERFORMS International

FIND OUT MORE >



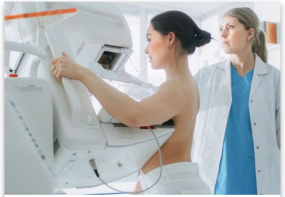
Pathology

RE >

Research

MyPeBS

FIND OUT MORE >



PROSPECTS

FIND OUT MORE >

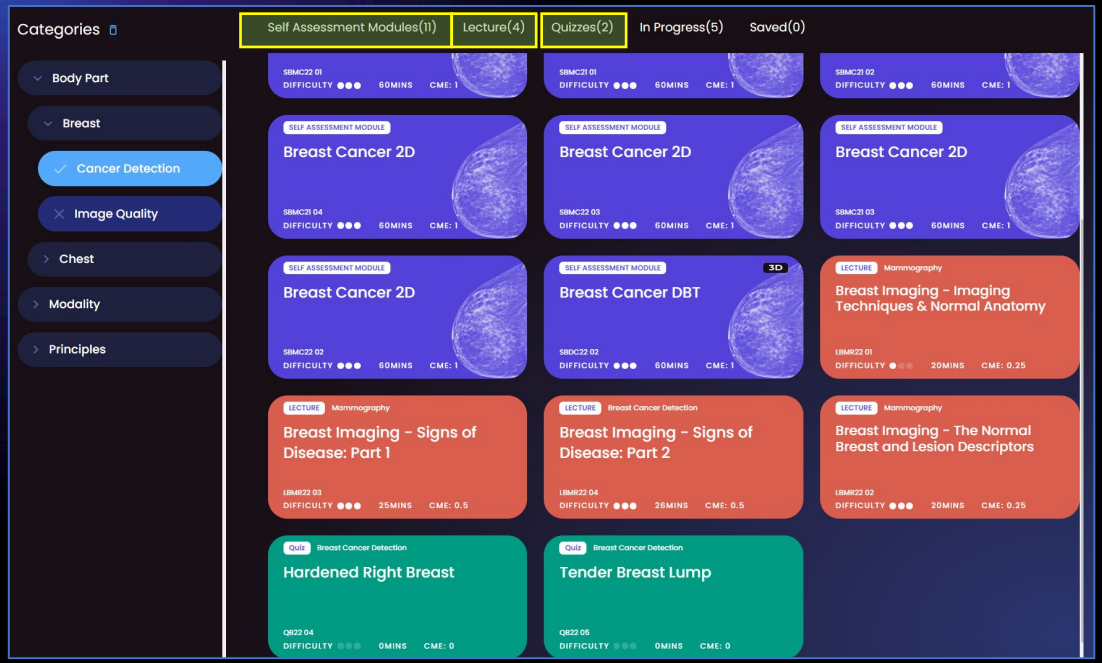
Digital Pathology Trial

FIND OUT MORE >

BREAST Breastscreen REader Assesment STrategy

- **B**reastscreen **RE**ader **A**ssesment **ST**rategy
- sviluppato nel 2001 in Australia e Nuova Zelanda
- test set di 60 casi, con precedenti, annuale
- feedback immediato su sensibilità, specificità
- confronto immediato delle risposte su immagini

DetectedX gives users access to a library of learning content



Self-assessment modules

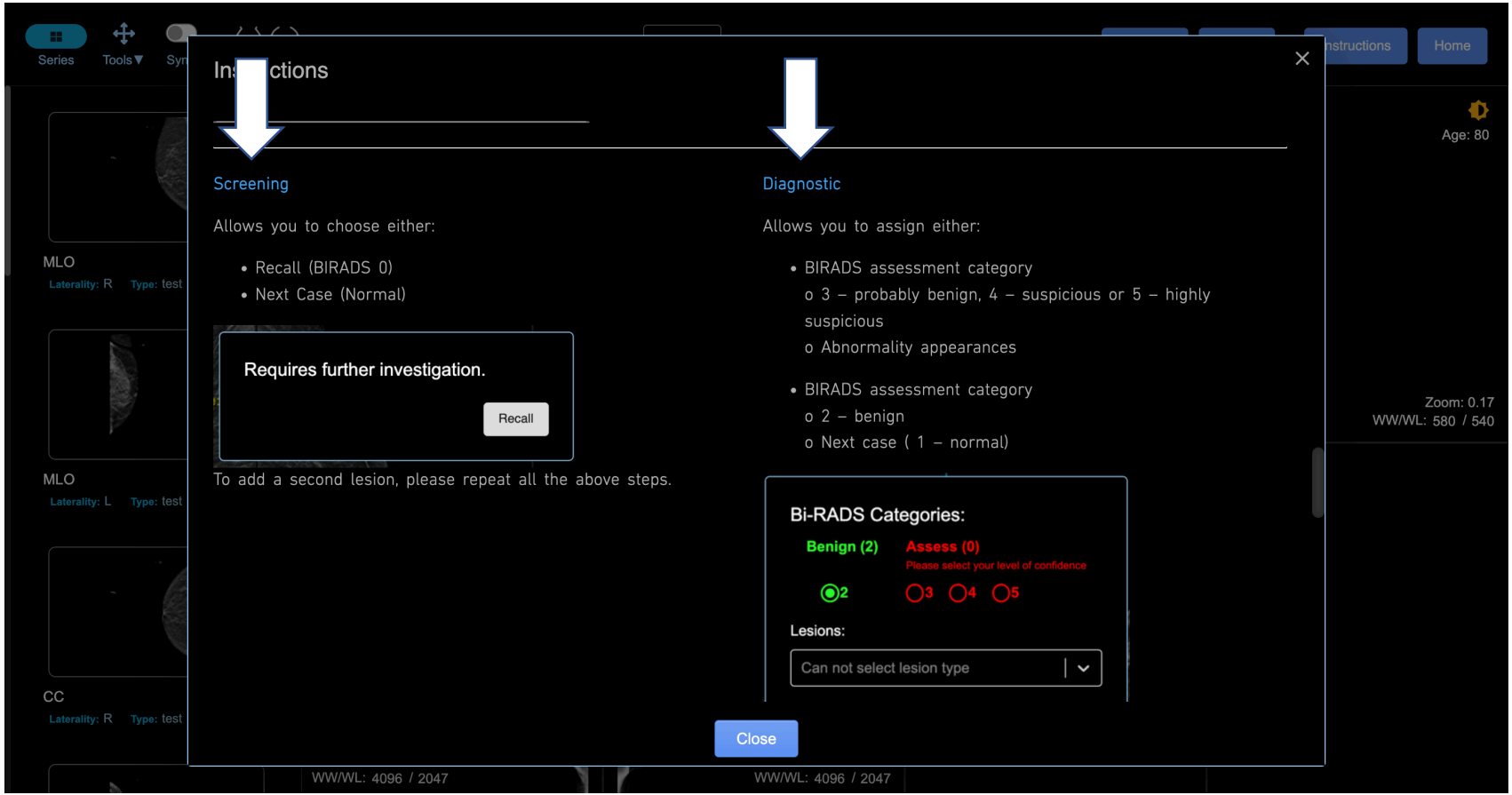
Breast and chest image lesion diagnosis, and radiographic assessment

On-demand lectures

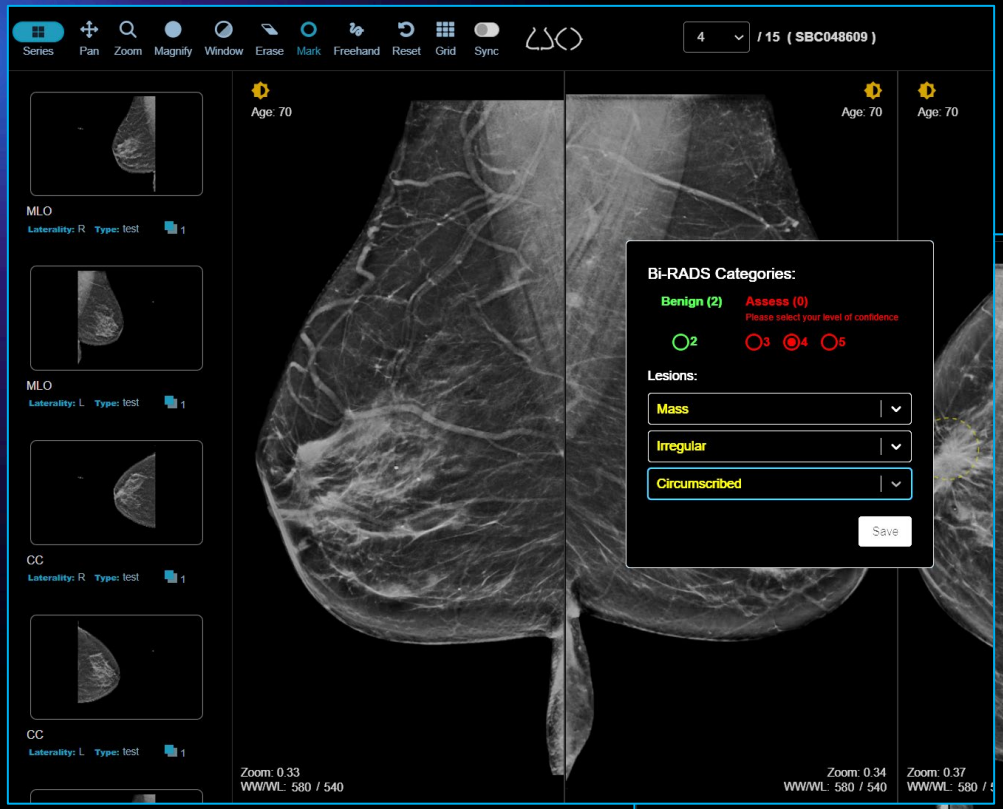
Breast, chest and other imaging physics, radiographic technique, and more

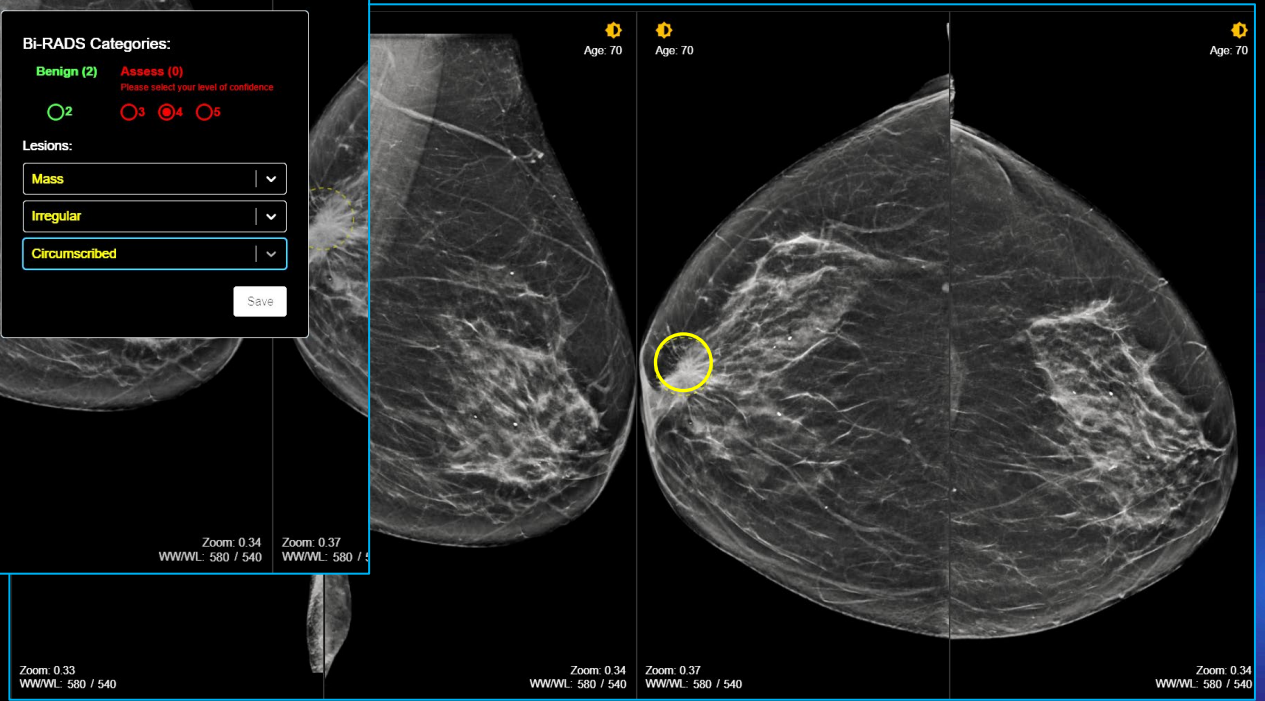
Quizzes

15-minute case-based quizzes include hand=picked interesting cases


Series
Tools
Home
Age: 80
MLO
Laterality: R
Type: test
MLO
Laterality: L
Type: test
CC
Laterality: R
Type: test
Zoom: 0.17
WW/WL: 580 / 540
WW/WL: 4096 / 2047
WW/WL: 4096 / 2047
Instructions
Screening
Allows you to choose either:
• Recall (BIRADS 0)
• Next Case (Normal)
Requires further investigation.
Recall
To add a second lesion, please repeat all the above steps.
Diagnostic
Allows you to assign either:
• BIRADS assessment category
o 3 – probably benign, 4 – suspicious or 5 – highly suspicious
o Abnormality appearances
• BIRADS assessment category
o 2 – benign
o Next case (1 – normal)
Bi-RADS Categories:
Benign (2)
Assess (0)
Please select your level of confidence
2
3
4
5
Lesions:
Can not select lesion type
Close

- ✓ Review using real-life reading protocols
- ✓ Mark abnormalities/indications
- ✓ Select Bi-RADS Category





Receive Scores

Results

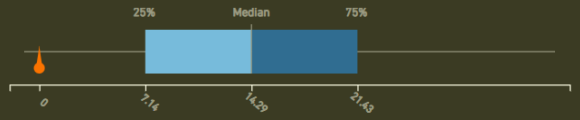
POSITIVES
True 0
False 1

NEGATIVES
True 7
False 7

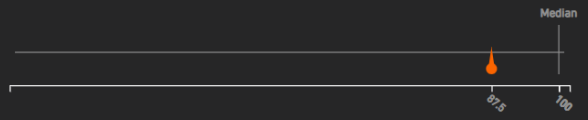
Specificity(%)	87.5
Sensitivity(%)	0
Lesion sensitivity(%)	0
ROC	0.438
JAFROC	0.438

Download Score | Send Via Email

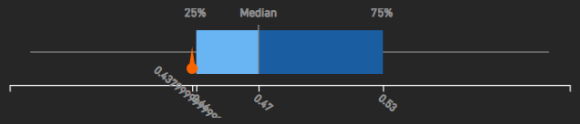
Sensitivity compared to Radiologist



Specificity compared to Radiologist



ROC compared to Radiologist



Certificate of Completion

Click below to download a certificate of completion

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AMA PRA Category 1 Credit(s)™

Complete 4 more cases to receive AMA PRA Category 1 Credits and certificate. Click to Start

Start

Answers

Review your answers alongside our notes of why cases were scored in that way.

Answers

Score Definitions

Click here to find out more about what each of your scores mean.

Definitions

Administrator Dashboard

DetectedX

Dashboard

BreastEd

- Key Metrics
- Platform Usage
- Performance Tracking
- Lesion Types
- Individual Users

Download

Key Metrics

Your Center's details
Your Centre: XX
No. of Sites: 4
No. of Users: 26
No. of completed test sets: 3

Highest performers
3rd quartile
Median
1st quartile
Lowest performers

79.6%
Lesion Sensitivity
(True Positive Rate)

Highest performers
3rd quartile
Median
1st quartile
Lowest performers

83.2%
Specificity
(True Negative Rate)

Explain the metrics!

Using the dashboard

Track user progress

Compare results

Other Sites | Average of all other sites | Your Site | Average of all your sites

Low-performers | High-performers

AUC

Site/Centers

Filter the Data

Your Sites
Site: 1 | Site: 2 | Site: 3 | Site: 4

Test Sets
Test Set: 1 | Test Set: 2 | Test Set: 3

Completed Dates
All
27-09-2020 → 26-04-2022

DetectedX

BREAST test in ASUGI

The following table presents a comparative analysis of the sensitivity and specificity of Italian radiologists in comparison to other radiologists from other developed screening programs.

	Italian		Others	
	Specificity(%)	Sensitivity(%)	Specificity(%)	Sensitivity(%)
Number of Readers	7	7	22	22
mean	74.64	86.431	82.6%	80.5%
std	17.23	10.69	11.8%	17.9%
min	40	70	45.0%	25.0%
25%	72.5	80	78.1%	76.3%
50%	77.5	85	82.5%	87.5%
75%	82.5	95	90.0%	90.0%
max	95	100	97.5%	100.0%

Note: This report compiles the module completed by users up to 7 May 2024.

The difference between the two groups is not statistically significant, based on the Mann-Whitney U-test (data are not normal based on the Kolmogorov-Smirnov test):
p-value for Specificity = 0.1966
p-value for Sensitivity = 0.5385

Formazione e valutazione dei professionisti nell'epoca dell'AI

- audit clinico annuale individuale
- test complementare all'audit

Grazie per l'attenzione

DALL-E CHAT GPT

GISMa
gruppo italiano
screening mammografico

Grazie per l’attenzione