

# iTrain: Remote Training in Imaging

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NATIONAL RESEARCH COUNCIL

## ICT & HEALTH

THE ROLE OF THE DIGITAL SECTOR  
IN MAKING THE HEALTH & CARE  
NEARER TO THE USERS

May 6th 2015 · Lecce · Italy

**CNR-IFC and EQAS**

- EQAS - External Quality Assessment Schemes - programs, contrarily to Internal Quality Control, requires an external provider
- CNR-IFC was provider of EQAS programs for more than 30 years
- a CNR SpinOff was founded based on this activity

Main advantage of EQAS programs vs Internal Quality Control:

Laboratory competition → Better performance

**iTrain: quality control in imaging**

Developed along the activities of DAHITe project - Diagnostic Approach in Heart Failure with Normal Ejection fraction (POB-CNR-IFC-2013-2012)

Aims:

- to standardize reporting in imaging
- to improve the service skills of emergency cardiology units
- such an application tool can be incorporated into other sectors (into regulation)

• fast and effective

- low cost
- transportable
- easily transportable

**iTrain in AdriHealthMob**

"It is aimed at making ICT the means for the implementation of preventive and efficient solutions for optimizations and extension of transport services for health and care. In particular:

- distance learning platform
- aims to reduce the need of moving for education and training of professionals

# CNR-IFC and EQAS

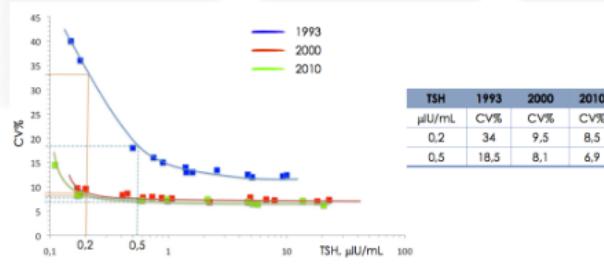
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Main advantage of EQAS programs vs Internal Quality Control:

Laboratory comparition

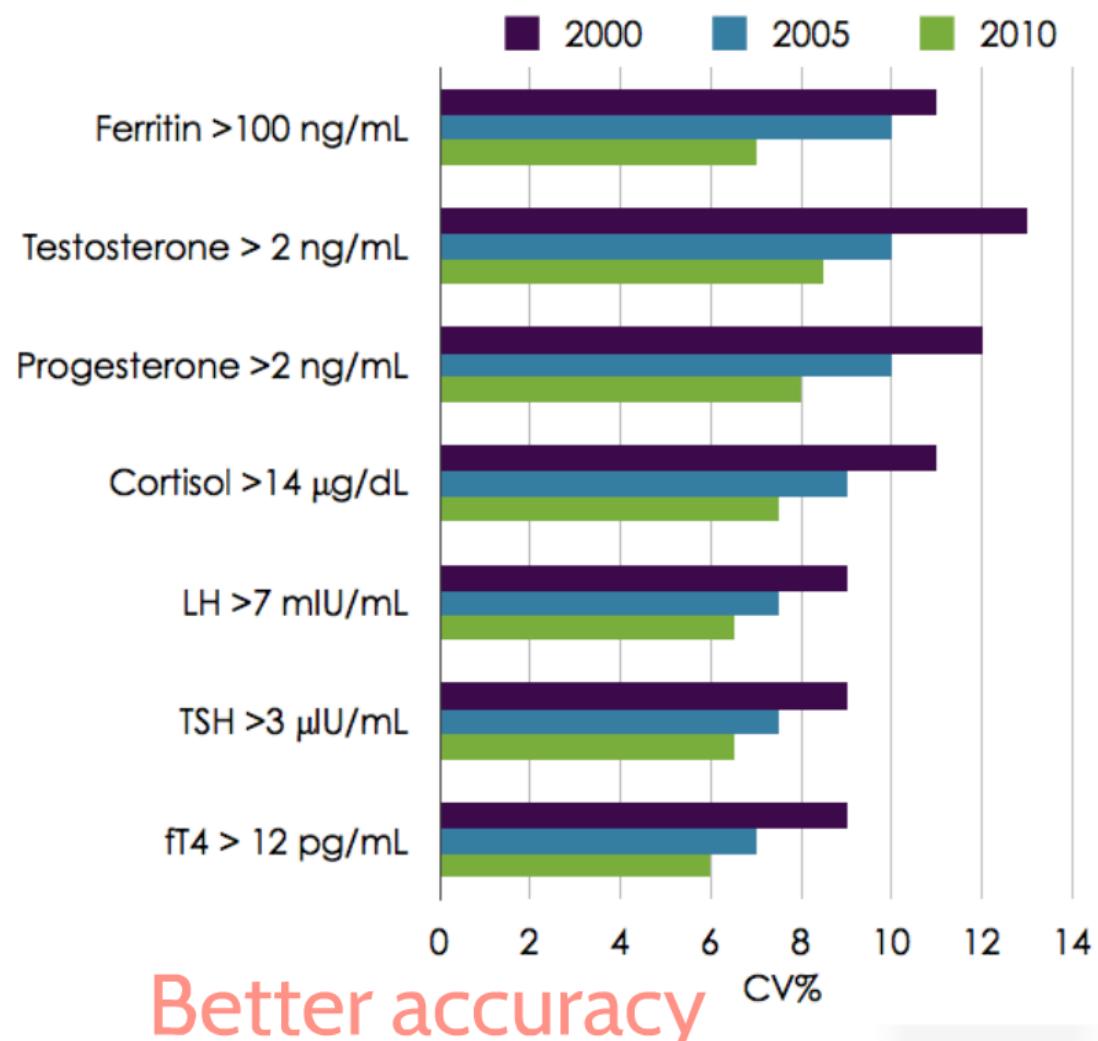


Better performance

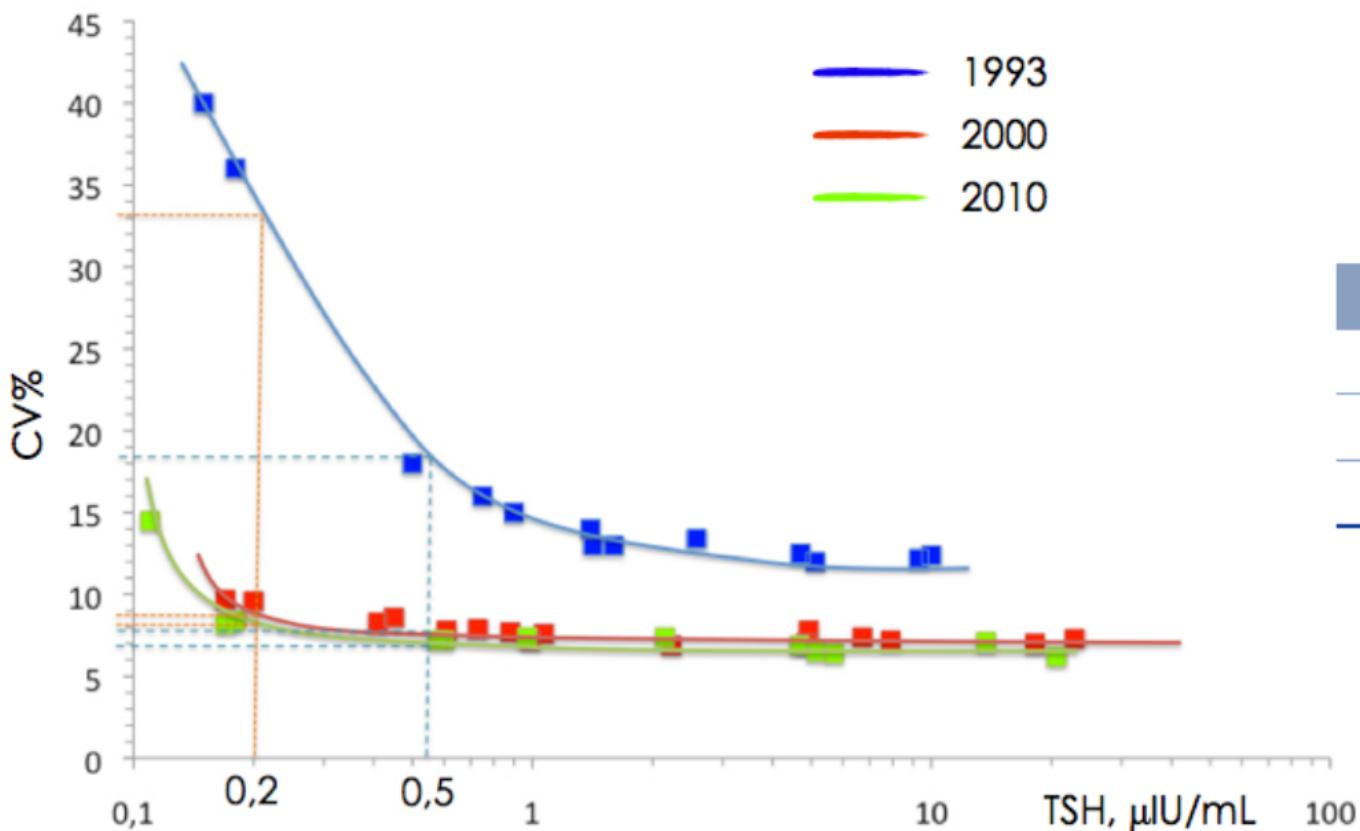


<b>ANALYTE</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>	<b>UNITS</b>
<b>Ferritin</b>	< 20	20 - 100	> 100	ng/mL
	10	8	7	CV%
<b>Testosterone</b>	< 0,6	0,6 - 2	> 2	ng/mL
	23	13	10	CV%
<b>Progesterone</b>	< 0,9	0,9 - 2	> 2	ng/mL
	20	13	9	CV%
<b>Cortisol</b>	< 7	7 - 14	> 14	µg/dL
	13	9	8	CV%
<b>LH</b>	< 2	2 - 7	> 7	mIU/mL
	13	7	7	CV%
<b>TSH</b>	< 0,1	0,1 - 0,3	> 3	µIU/mL
	20	10	7	CV%
<b>free T4</b>	< 7	7 - 12	> 12	pg/mL
	12	8	7	CV%

Better precision



# Better performance



TSH	1993	2000	2010
$\mu\text{IU/mL}$	CV%	CV%	CV%
0,2	34	9,5	8,5
0,5	18,5	8,1	6,9

# iTrain: quality control in imaging

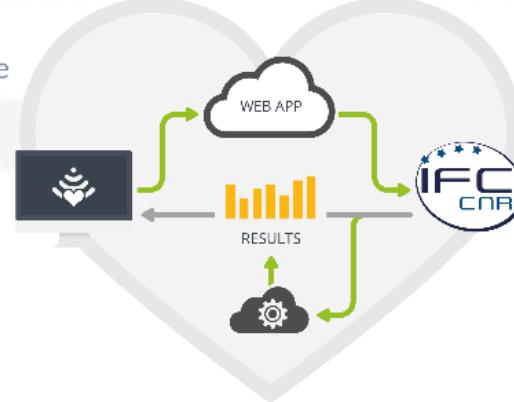
Developed among the activities of DAHFNE project - Diagnostic Approach in Heart Failure with Normal Ejection fraction (POR CREO FESR 2007-2013)

## Aims:

- to standardize reporting in imaging
- to improve the physicians' skill in interpreting diagnostic images
- not as an evaluation tool but as a comparison tool inter/intra-organisation
- in echocardiography, to encourage the spread of a technique:
  - low cost
  - non-invasive
  - easily transportable



Programs' Schemes



The User Interface



But... do we need it?

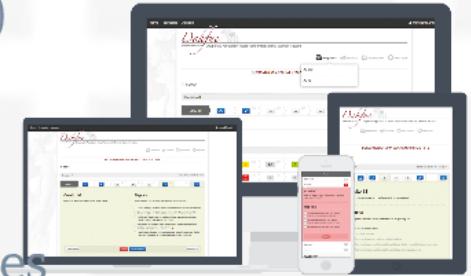


# iTrain: quality control in imaging

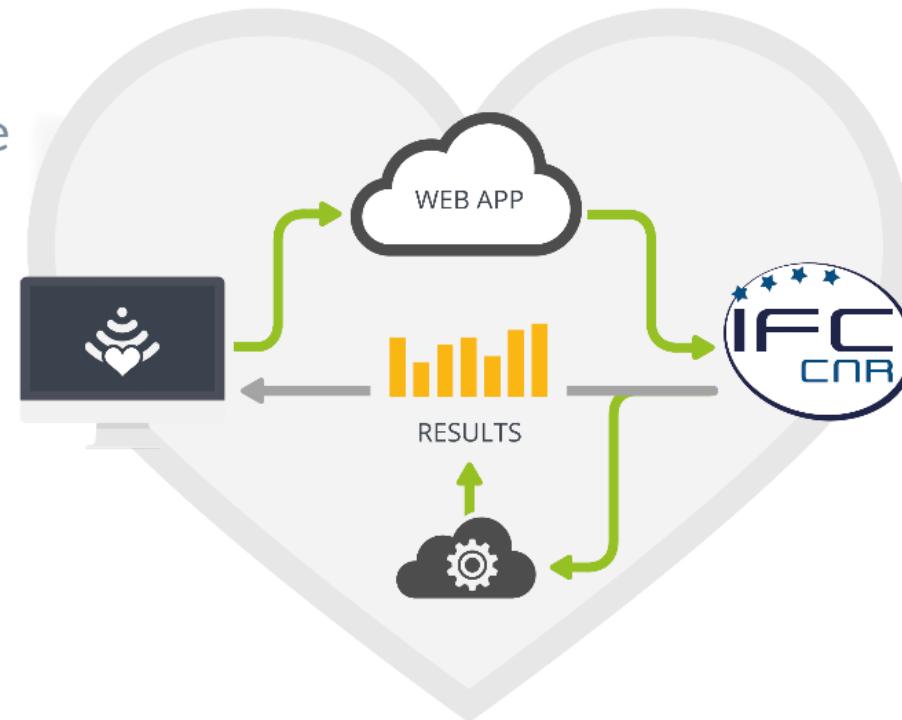
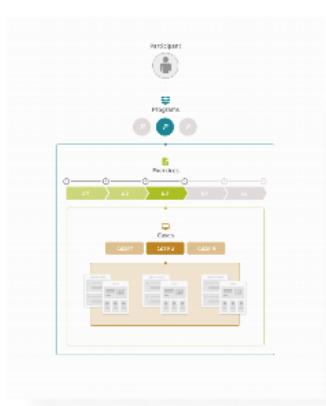
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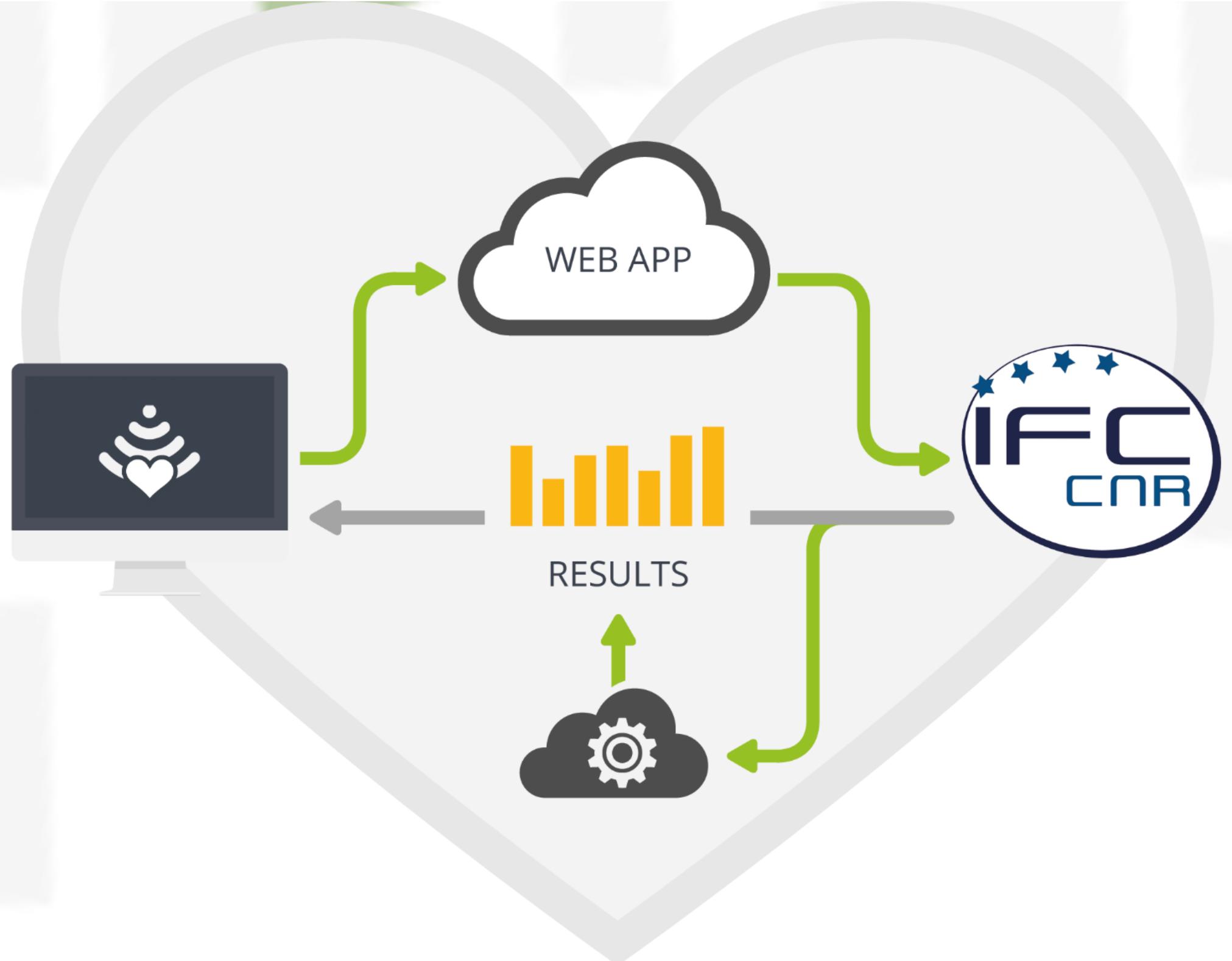


Programs' Schemes

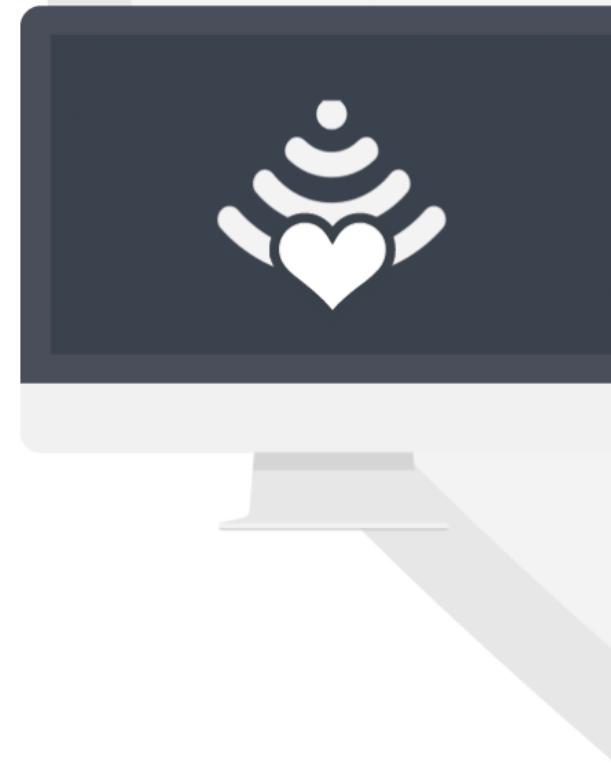
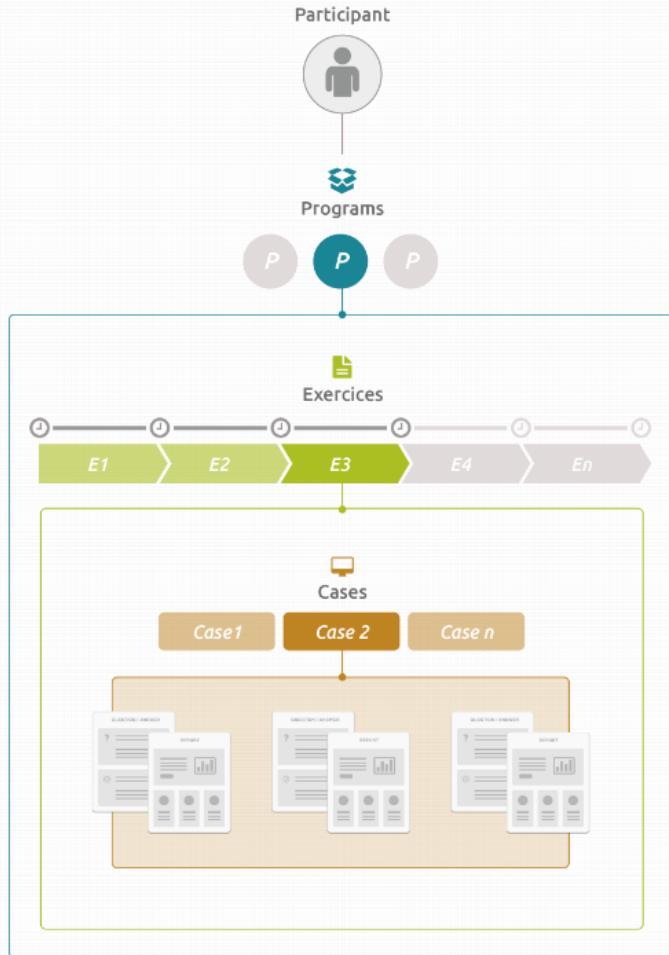


The User Interface

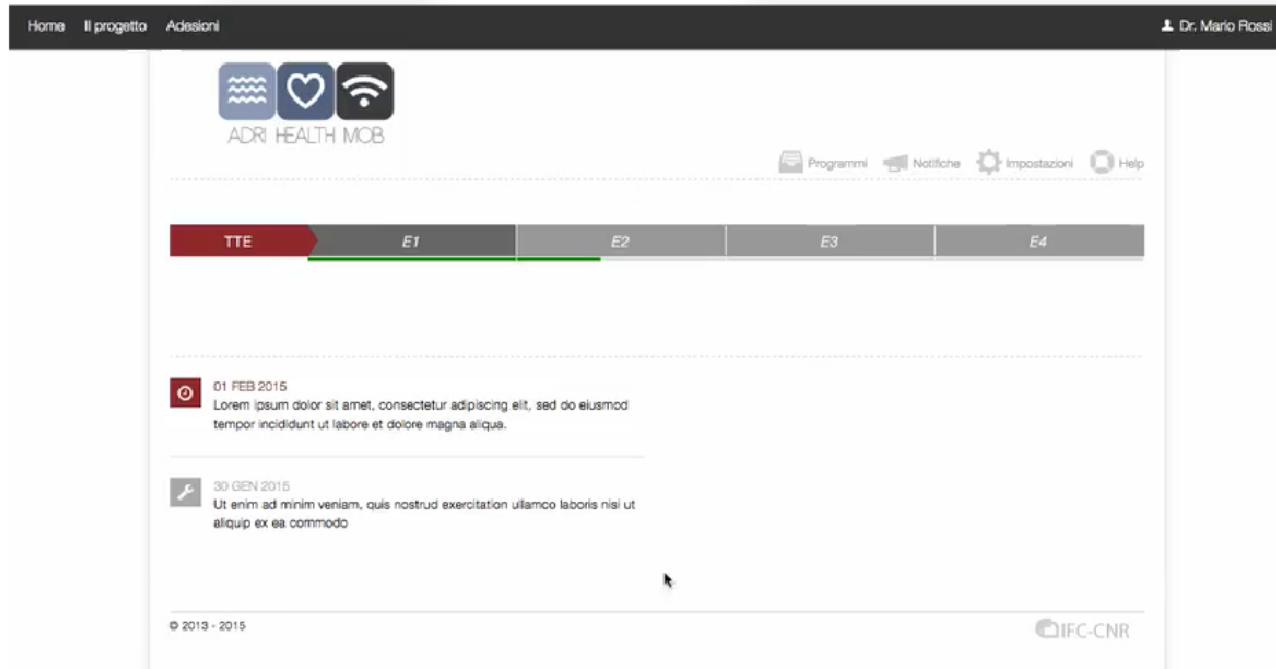




# Programs' Schemes



# The User Interface



Home Il progetto Adesioni

Dahfue standardization of Diagnostic Aproach in Heart Failure with Normal Ejection fraction

Programmi Notifiche Impostazioni Help desk

ECOCARDIOGRAFIA TRANSTORACICA - TTE

In corso

Esercizio 6

Caso 10

TTE

SE

ECOCARDIOGRAFIA TRANSTORACICA - TTE

Data chiusura: 31-12-2014

Caso 9

Questo 7

Quale dei seguenti esami può apprezzare di questa registrazione M-mode?

Risposta

Collasso sistolico dell'arteria destro  
Collasso sistolico del ventricolo destro  
Collasso sistolico dell'arteria sinistro  
Collasso sistolico del ventricolo sinistro

Questo 8

Questo 9

ECOCARDIOGRAFIA TRANSTORACICA - TTE

Data chiusura: 31-12-2014

Caso 10

Questo 16

Indica per ogni affermazione se è vera o falsa:

Risposta

Questa immagine mostra la velocità massima della insufficienza tricuspidea  
Questa immagine mostra la velocità media della insufficienza tricuspidea  
Applicando l'equazione di Bernoulli semplificata, la pressione ventricolare destra di questo paziente è circa 37 mmHg  
Applicando l'equazione di Bernoulli semplificata, la pressione ventricolare destra di questo paziente è circa 32 mmHg  
In pazienti con disfunzione ventricolare destra, la pressione arteriosa sistolica polmonare misurata in ecocardiografia è generalmente molto alta

Precedente

Successivo

Chiudi Salva e prosegui

Questo 17

Questo 18

# But... do we need it?

**Quesito**  
Cosa puoi apprezzare al colorDoppler nel video con zoom?

**Risposta**

- Insufficienza mitralica severa
- Stenosi mitralica severa
- Insufficienza mitralica ed insufficienza tricuspidale
- Insufficienza mitralica, insufficienza tricuspidale e difetto valvola tipo senz'aria
- Insufficienza mitralica, insufficienza tricuspidale e valvola ovale per via

Opzione	Valore
Insufficienza mitralica severa	0
Stenosi mitralica severa	0
Insufficienza mitralica ed insufficienza tricuspidale	4.2
Insufficienza mitralica, insufficienza tricuspidale e difetto valvola tipo senz'aria	0
Insufficienza mitralica, insufficienza tricuspidale e valvola ovale per via	0

**Quesito**  
Seleziona l'affermazione che ritieni vera.

**Risposta**

- Il Doppler continuo mostra la velocità massima dell'insufficienza gastronome.
- Il Doppler continuo mostra la velocità media dell'insufficienza tricuspidale
- Applicando l'equazione di Bernoulli semplificata, la pressione artericola destra di questo paziente è circa 37 mmHg
- Applicando l'equazione di Bernoulli semplificata, la pressione artericola destra di questo paziente è circa 32 mmHg
- In pazienti con distensione ventricolare destra, la pressione arteriosa statica a polmone misurata in ecocardiografia è generalmente molto alta

In pazienti con distensione ve...  
Applicando l'equazione di Bernoulli...  
Il Doppler continuo mostra ...

Categoria	Valore
Verità (vera)	~85%
Falsa (falsa)	~15%

**Quesito**  
Misura la vena contracta dell'insufficienza mitralica (in mm) dalla proiezione aocce e 3-camera

**Risposta**

La tua misura:

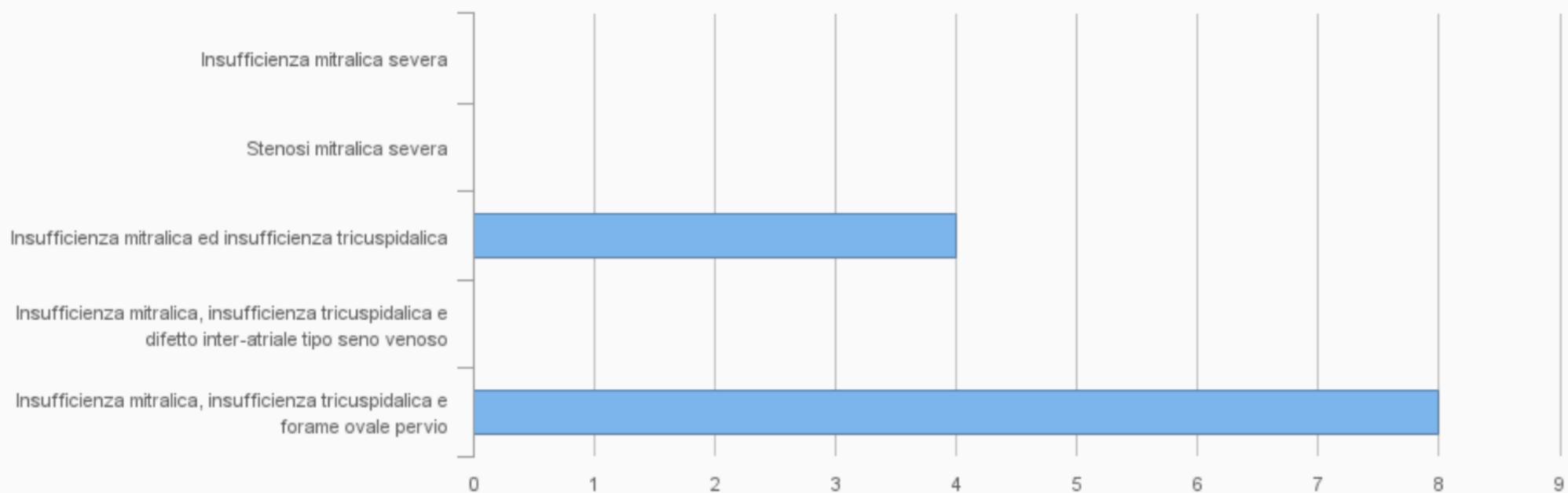
Intervallo (mm)	Conteggio
[2.3, 2.8]	1
[2.8, 3.3]	3
[3.3, 3.8]	5
[3.8, 4.3]	1
[4.3, 4.8]	6
[4.8, 5.3]	3
[5.3, 5.8]	2
[5.8, 6.3]	1
[6.3, 6.8]	1

## Quesito

Cosa puoi apprezzare al colorDoppler nel video con zoom?

## Risposta

- Insufficienza mitralica severa
- Stenosi mitralica severa
- Insufficienza mitralica ed insufficienza tricuspidalica
- Insufficienza mitralica, insufficienza tricuspidalica e difetto inter-atriale tipo seno venoso
- Insufficienza mitralica, insufficienza tricuspidalica e forame ovale pervio

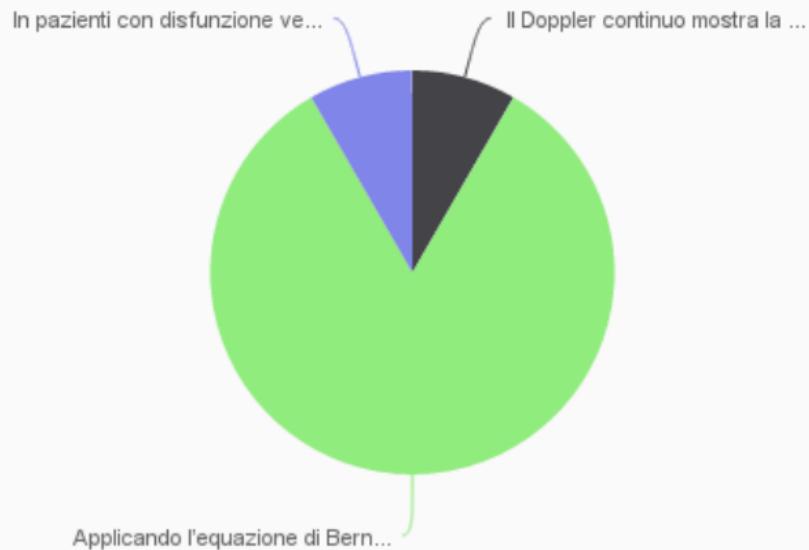


## Quesito

Seleziona l'affermazione che ritieni vera:

## Risposta

- Il Doppler continuo mostra la velocità massima dell'insufficienza polmonare
- Il Doppler continuo mostra la velocità media dell'insufficienza tricuspidalica
- Applicando l'equazione di Bernoulli semplificata, la pressione ventricolare destra di questo paziente è circa 37 mmHg
- Applicando l'equazione di Bernoulli semplificata, la pressione ventricolare destra di questo paziente è circa 32 mmHg
- In pazienti con disfunzione ventricolare destra, la pressione arteriosa sistolica polmonare misurata in ecocardiografia è generalmente molto alta

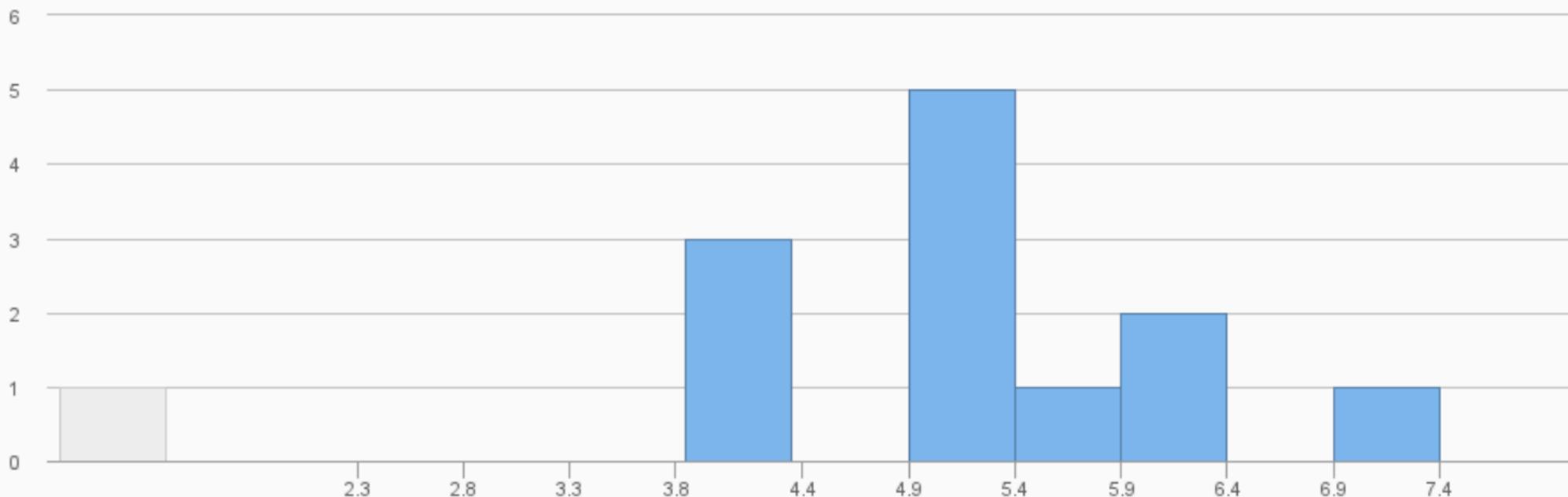


## Quesito

Misura la vena contracta dell'insufficienza mitralica (in mm) dalla proiezione apicale 3-camere

## Risposta

La tua misura:

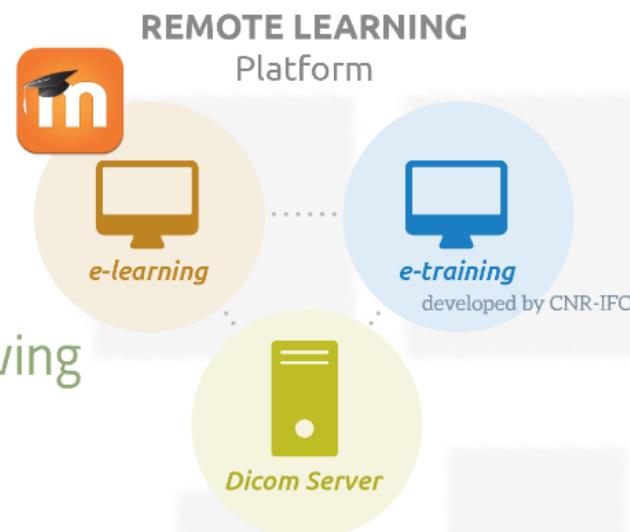


# iTrain in AdriHealthMob

"It is aimed at making ICT the mean for the implementation of effective and efficient solutions for optimisation and rationalisation of transport services for health and care. It provides:

- ...
- distance learning platform;
- ..."

Aim: to reduce the need of moving for education and training of professionals



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## Thank You!

## ICT & HEALTH

THE ROLE OF THE DIGITAL SECTOR  
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The image displays three separate presentation slides arranged vertically, each featuring a green circular icon in the top right corner.

- CNR-IFC and EQAS:** This slide discusses External Quality Assessment Schemes (EQAS) and Internal Quality Control (IQC). It highlights that EQAS, provided by CNR-IFC, has been active for over 30 years and compares its performance against IQC, showing better results through laboratory comparison.
- iTrain: quality control in imaging:** This slide is developed under the DAHITe project. It aims to standardize reporting in imaging and improve service delivery. Key features include a mobile application for test management, a user guide, and a quality management system.
- iTrain in AdriHealthMob:** This slide focuses on reducing the need for physical movement for education and training. It highlights distance learning features and aims to facilitate the exchange of knowledge between professionals.