

Verwijs applicatie voor hartchirurgie

Ontwerp criteria:

Verminderen van de administratie rondom een verwijzing.

Compleet aanleveren van een verwijzing, dus inclusief de beelden, maakt EVOCS overbodig.

Vendor onafhankelijk

Ziekenhuis onafhankelijk

Gebaseerd in de cloud

Waterdichte beveiliging

Laatste standaarden voor webapplicatie ontwikkeling, .NET Core, Angular 7, Docker

List of Pending Referrals - Amphia -

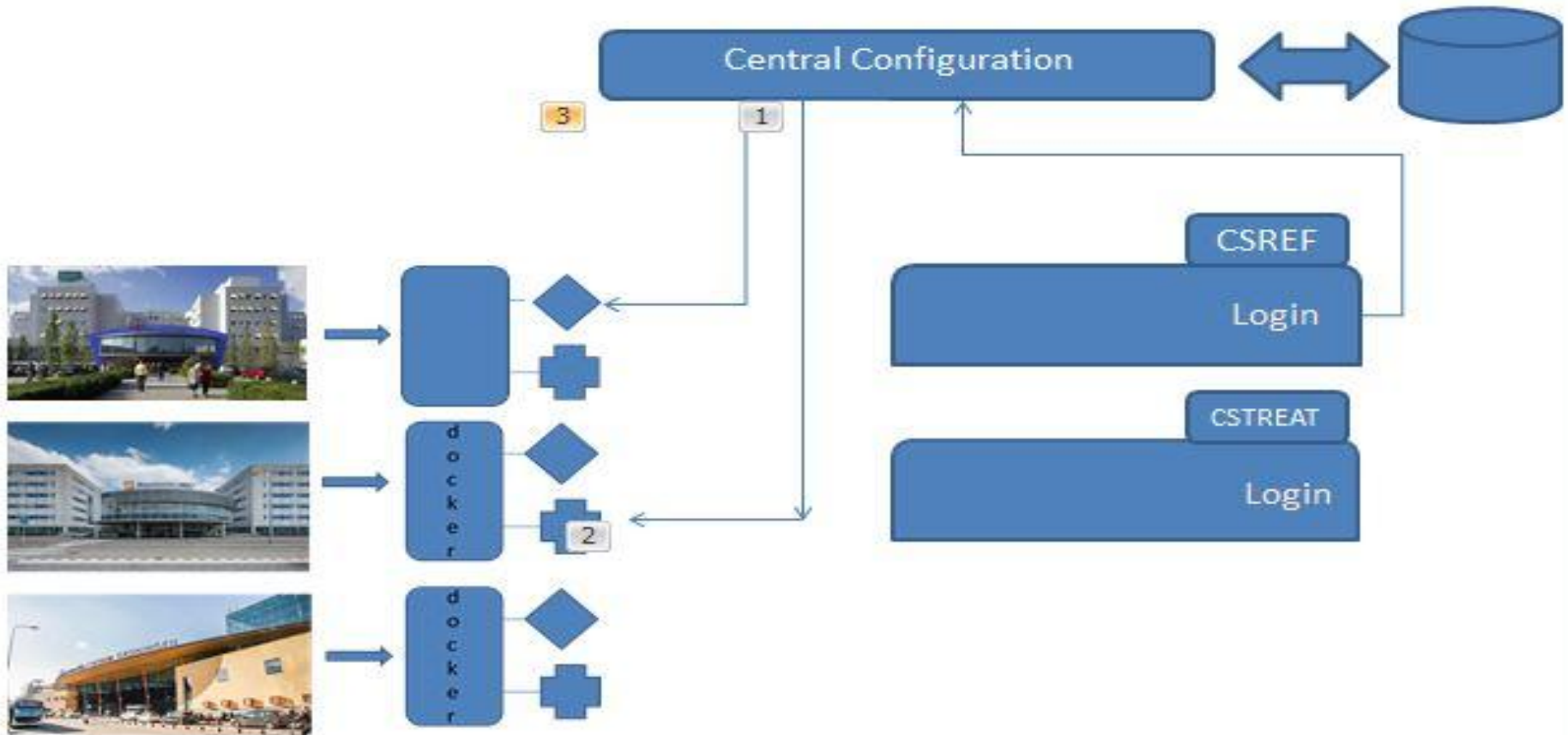
Add patient to refer:

Go

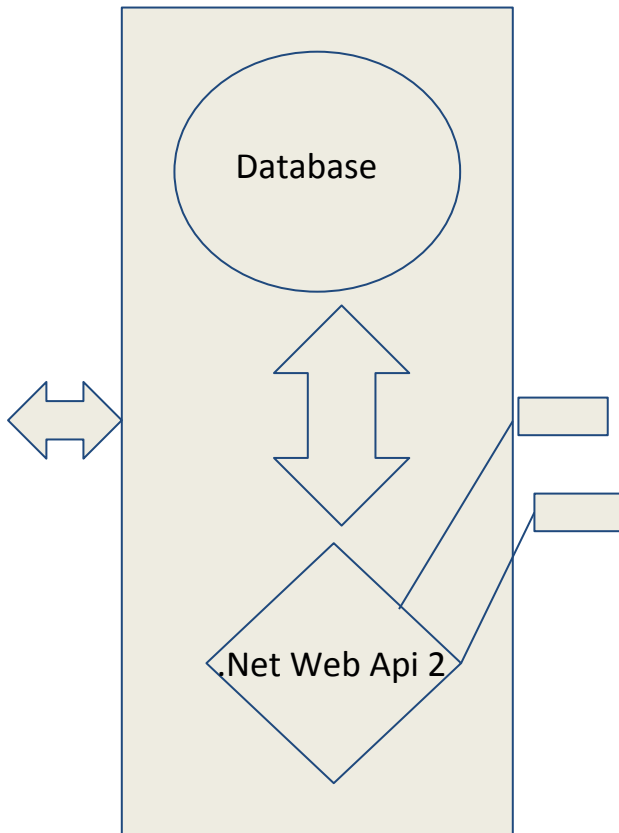
Id	Name	MRN	SSNO	RefTo	RefDate	RefReason	Sent		
2407	Akkermans	0024-98-12-34-56	23456	OLVG	13-Jan-2020	CABG	Yes	On Waitinglist	details
6962	Klein	0024-12-36-24-17	343425	Amphia	13-Jan-2020	CABG	Yes	On Waitinglist	details

Architectuur

Architecture



Architectuur



The docker container contains a database (MongoDb) and a .net WebApi2 application that exposes api endpoints for CSRef and CSTreat to communicate with. There is one api endpoint to request a data transfer object from the hospital if the hospital supports this.

Architectuur



Select a spec

My API V1

Hospital API ^{v1}

/swagger/v1/swagger.json

A proxy API for every hospital

[Terms of service](#)

[Contact Marcel P Harder](#)

Import

GET /api/getReasonNotReady/{id}

GET /api/getReasonNotForSurgery/{id}

GET /api/getRefdTH

GET /api/getRefdDetailsTH/{id}

Data Transfer Object

```
"refId": 1544,  
  "treatmentHospital": "UMCG",  
  "referringHospital": "Amphia",  
  "referral_sent": 0,  
  "referral_accepted": 5,  
  "refDate": "2019-04-14T00:00:00+02:00",  
  "refReason": null,  
  "LAST_NAME": null,  
  "FIRST_NAME": "fop",  
  "MIDDLE_INITIAL": null,  
  "MED_REC_NUMBER": "0024-33-68-23-97",  
  "ADDRESS1": null,  
  "CITY": null,  
  "STATE": null,  
  "ZIP": null,  
  "PHONE": null,  
  "MOBILE_PHONE": null,  
  "SSNO": "3443545",  
  "DOB": null,  
  "GENDER": null,  
  "RACE": null,  
  "BIRTH_COUNTRY": null,  
  "DOB_STRING": null,
```

DTO

Dit Data Transfer Object bevat alle data die de chirurg van deze patient wil weten. Hij heeft deze data nodig voor het inschatten van het operatie risico, de juiste werking van de apparatuur gedurende de operatie en het in de gaten houden van zijn chirurgische uitkomsten.

CRef

Het doel van CRef is om alle relevante informatie van een patient te verzamelen. Afhankelijk van welke cardioloog er inlogt zoekt CRef alle relevante gegevens van de te verwijzen patient op. CRef gebruikt een centrale configuratie applicatie om de juiste docker container te vinden. Na het verzamelen van alle preoperatieve informatie kan dit naar de container van het gewenste ziekenhuis worden opgestuurd. De hartchirurg aldaar wordt van dit per SMS op de hoogte gesteld.

List of Pending Referrals - Amphia -

Add patient to refer:

Go

Id	Name	MRN	SSNO	RefTo	RefDate	RefReason	Sent		
2407	Akkermans	0024-98-12-34-56	23456	OLVG	13-Jan-2020	CABG	Yes	On Waitinglist	details
6962	Klein	0024-12-36-24-17	343425	Amphia	13-Jan-2020	CABG	Yes	On Waitinglist	details

Refer to: OLVG Refer for: CABG Referred on: Jan 13, 2020

Details	Anamnese	History	Investigations	Additional Investigations
Hospital number	0024-98-12-34-56			
Name	Last name Akkermans		Middle	First name Joop
Address				
Phone				
Mobile				
Date of Birth	1980/05/20	39 Yrs.		
Gender	Male			
Nationality	Holland			
National ID Number	23456			
<div>Cancel Send to surgical center</div>				

CSRef3.0

Home Referred patients Logout Welcome Mo

Refer to: OLVG Refer for: CABG Referred on: Jan 13, 2020

Details Anamnese History Investigations Additional Investigations

Additional Investigations

ECG X-Ray Stress test Echo Angio Lung function

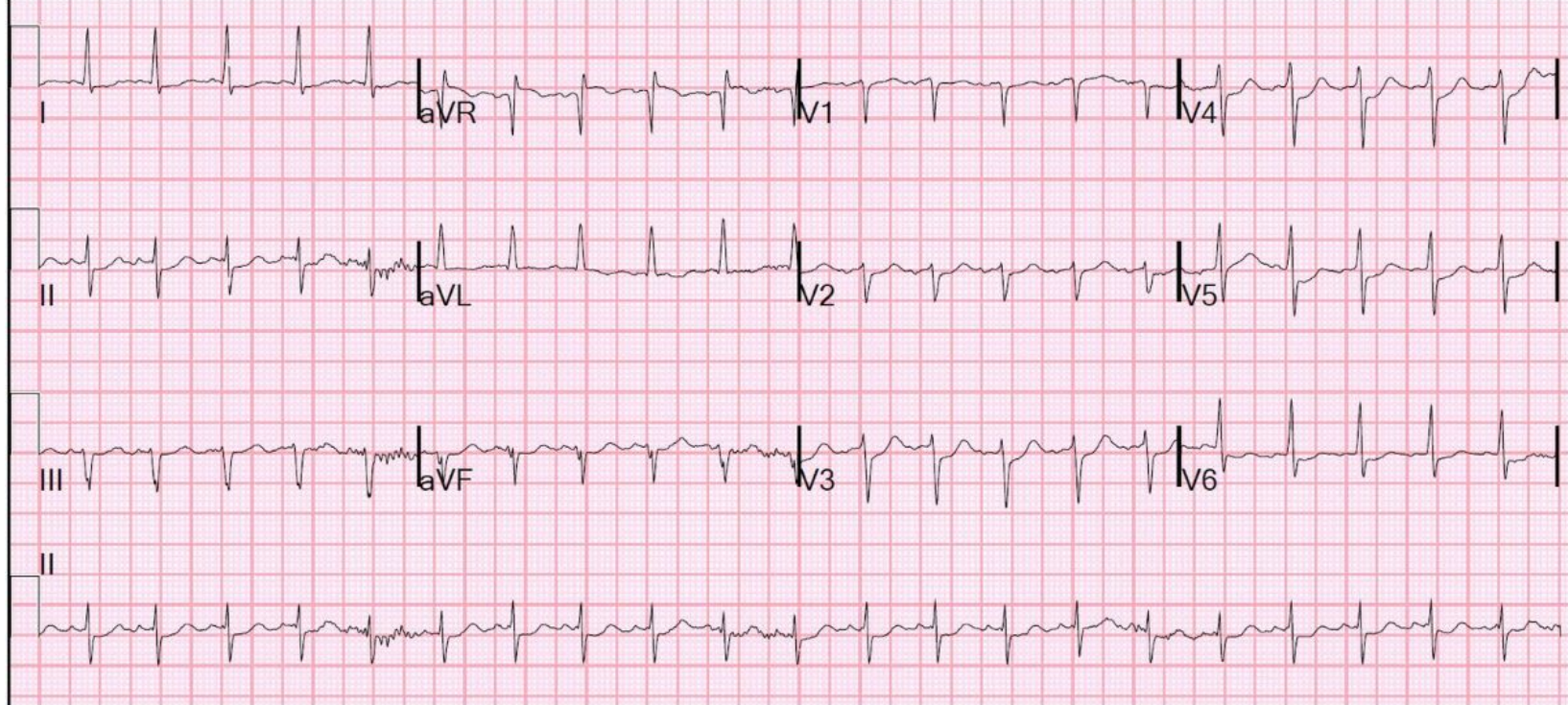
Rhythm	SR	
BPM	72	
Electrical axis	horizontal	
PR interval	34	msec
QRS interval	23	msec
QT interval	21	msec
Additional information	additional 1	

List ECG's

ECG dated:		Include in transfer
04-09-2018	Select Show	<input checked="" type="checkbox"/>
05-09-2018	Select Show	<input checked="" type="checkbox"/>
08-09-2018	Select Show	<input checked="" type="checkbox"/>

Undo

Cancel Send to surgical center



CSRef3.0

Home Referred patients Logout Welcome Mo

Refer to: OLVG Refer for: CABG Referred on: Jan 13, 2020

Details Anamnese History Investigations Additional Investigations

Additional Investigations

ECG X-Ray Stress test Echo Angio Lung function

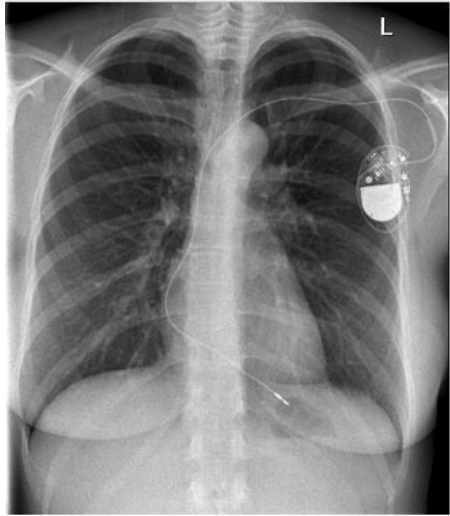
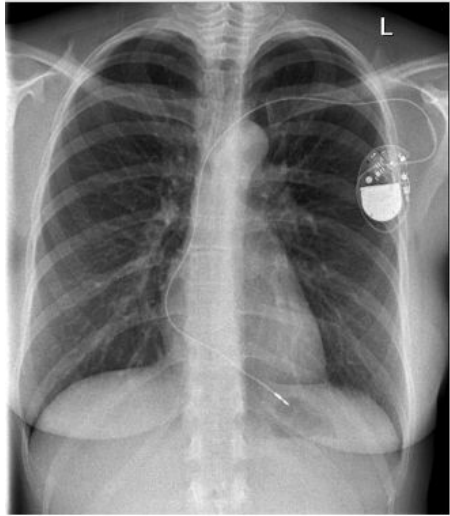
mijn comment 1

List of Chest X-Ray's

Date:		Include in transfer
09-09-2018	Select Show	<input checked="" type="checkbox"/>
24-09-2018	Select Show	<input checked="" type="checkbox"/>

Undo

Cancel Send to surgical center



Refer to: OLVG Refer for: CABG Referred on: Jan 13, 2020

DetailsAnamneseHistoryInvestigationsAdditional Investigations

Additional Investigations

ECGX-RayStress testEchoAngioLung function

EF

45%

Valves

mild mi

Sizes

LV

4

RV

4

LA

3

RA

3

Other comments

Slightly hypokinetic ventricle

List of echo's

Date:

Include in transfer

12-Jul-2018

Select

Show

☒

13-Jul-2018

Select

Show

☒

14-Jul-2018

Select

Show

☒

Undo

Cancel

Send to surgical center

Start

CSRef3.0

ecg-2.jpg

wpef7be608.png

MedDream viewer

← → ↺ 🏠

https://www.dicomlibrary.com/meddream/md5/index.html?study=1.2.826.0.1.3680043.8.1055.1.20190113144054840.493565392.3435229

🔖 ☆ ⭐ 🖋️ ↗️ 🗑️ ⋮

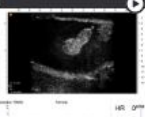
medDream
WFR DICOM viewer

Window... Pan Zoom Measure... Rotate Magni... Scroll Handl... Chain... Layout Thum... Forward Export Print FullScr... Reset DICOM Theme


EN

⌵

Anonymized
Date: 2019-01-13
1/1



1
1024 x 768



1 2 3 4 5 6 7 8 9 10 11 12 13

10.3 FPS
16.1
1.18.0 MHz

Anonymized
0
2011-08-24 09:48:36

1/1

Z: 0.52
W: 256 L: 128
QC: WebGI
S: ☒

Epicardiac 15MHz

Femoral

HR 0BPM

ECG

🪟 🔍 Type here to search

🌐 📁 🐉 🌐 📧 ⚙️

⌵ 🖨️ 🌤️ 🖥️ 🔊 NLD 10:34 AM 1/16/2020 5

Refer to: OLVG Refer for: CABG Referred on: Jan 13, 2020

Details Anamnesis History Investigations **Additional Investigations**

Additional Investigations

ECG X-Ray Stress test Echo Angio Lung function

Cath Date	01/06/2020
Cath No:	DFRE - 1929394
LM:	ns
LAD:	wall irregularities
LCx	ns
RCA	100%
LV gram:	slight hypokinetic LV
Right heart study:	normal
Conclusion:	Total occlusion RCA

List of angio's

Date: Include in transfer

03-Mar-2018

Select

Show



Undo

Cancel

Send to surgical center

StartCSRef3.0MedDream viewer

https://www.dicomlibrary.com/meddream/md5/index.html?study=1.2.826.0.1.3680043.8.1055.1.2019011314171646.364632030.15519001

medDream

WFR DICOM viewer

Windows

Pan

Zoom

Measure

Rotate

Magnify

Scroll

Hang

Chain

Layout

Thumbnails

Forward

Export

Print

Fullscreen

Reset

DICOM

Theme

EN

Anonymized

Date: 2019-01-13

1/1

2/1

3/1

4/1

5/1

1

512 x 512

Anonymized

0

Coro ND

2012-06-11 12:41:22

Z: 0.78

W: 160 L: 125

QC: WebGI

S: ☒

1/1

Type here to search

10:29 AM
1/16/2020

CRef

CSTRef2.0 Home About Delete this referral

Hello meeuw@google.com! Log off

Refer to: AP Henri-Mondor Refer for: CABG Referred on: Apr 14, 2019

Send email to Dr. Jean Paul Couetil

Using: Direct referral ?

Subject

Verwijzing uit Amphia

Message

Dear Dr. Jean Paul Couetil, Today we like to present this patient with BSN number: 2132434235 This patient's preoperative data were pushed on your waitinglistKind regards,

Cancel

SMS

Send Email



CRef

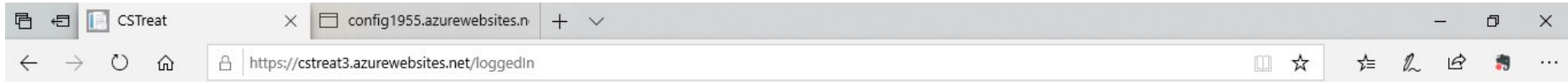
Nadat de patient is verwezen wordt de container van het verwijzende ziekenhuis op de hoogte gehouden van wat er met de patient gebeurt. Als de patient wordt geopereerd verdwijnt de patient uit de lijst.

CSTreat

Nu volgt een korte beschrijving van de chirurgische kant van deze verwijsapplicatie.

De gegevens van de verwezen patient doemen op in de wachtlijst van de chirurg. Nadat de SMS is ontvangen.

CSTreat



CSTreat

Home Referred patients Logout Welcome Marcel

Cases referred to OLVG

Not ready for surgery

Id	Name	MRN	RefHospital	RefDate	RefReason	
2407	Akkermans	0024-98-12-34-56	OLVG	1/13/20	CABG	details

CSTreat

Browser tabs: CSTreat, config1955.azurewebsites.n

Address bar: <https://cstreat3.azurewebsites.net/details/https:%2F%2Fhospitalapi05.azurewebsites.net/2407>

Navigation: CSTreat Home Referred patients Logout Welcome Marcel

This patient was referred from: Amphia

Cardiologist: Baldeu Surgeon: Hardjowijono Procedure/diagnosis: CABG EuroScore-II:

Cardiologist side

Surgeon side

Demographics

Anamnesis

History

Investigations

Additional investigations

Demographics

Hospital number: 0024-98-12-34-56

Name: Last name: Akkermans Middle: First name: Joop

Address:

PostCode:

City:

Phone:

Mobile:

Date of Birth: 1980-05-22 39 Yrs.

Gender: Male

National ID Number: 23456

Discussion

Planning

Research

Euroscore II

SOA

Save

Windows taskbar: Type here to search, 8:51 AM, 1/16/2020, NLD

This patient was referred from: Amphia

Cardiologist

Baldew

Surgeon

Hardjowijono

Procedure/diagnosis

CABG

EuroScore-II: 0.63 %

Demographics

Date of discussion

01/16/2020

Anamnesis

History

Investigations

Additional
investigations

Discussion

Planning

Research

Euroscore II

SOA

Save



Type here to search



NLD
8:58 AM
1/16/2020



This patient was referred from: Amphia

Cardiologist Baldeu Surgeon Hardjowijono Procedure/diagnosis CABG EuroScore-II: 0.63 %

Demographics

Anamnesis

History

Investigations

Additional investigations

The planning for this patient is:

Not ready for surgery

Enter comments/requests for referring cardiologist:

nog een pre-operatief longfunctie onderzoek

Discussion

Planning

Research

Euroscore II

SOA

Save

This patient was referred from: Amphia

Cardiologist: Baldew Surgeon: Hardjowijono Procedure/diagnosis: CABG EuroScore-II: 0.63 %

Demographics

Anamnesis

History

Investigations

Additional investigations

The EUROSORE II is: 0.63 %

Renal impairment

Age: 39

Gender: Male

NYHA: I

PHT: None

Urgency: Choose

Intervention: Choose

LV function: N/A

Thoracic Aorta: Choose

Critical pre-op state

0.03

CCS IV: No

Recent MI: No

PVD: No

Poor mobility: Yes

Previous Surgery: No

COPD: No

Endocarditis: No

Diabetes on insulin: No

0.2407181

Discussion

Planning

Research

Euroscore II

SOA

Save

This patient was referred from: Amphia

Cardiologist Baldew Surgeon Hardjowijono Procedure/diagnosis CABG EuroScore-II: 0.63 %

Demographics

Anamnesis

History

Investigations

Additional investigations

The EUROSCORE II is: 0.63 %

Renal impairment

Age39

GenderMale

NYHA I

PHTNone

UrgencyChoose

InterventionChoose

LV functionN/A

Thoracic AortaChoose

Critical pre-op state

0.03

CCS IVNo

Recent MINo

PVDNo

Poor mobilityYes

Previous SurgeryNo

COPDNo

EndocarditisNo

Diabetes on insulinNo

Discussion

Planning

Research

Euroscore II

SOA

Save

EPD ?

Type here to search 9:03 AM 1/16/2020