



# Organization of the ECMO team.

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# ECMO

Is a tool and not a treatment.

Comparable with

Ventilator and

Dialyzing machine





# ECMO.

ECMO procedures are

Complex

High risk

Utilize many health care resources

Unpredictable in terms of volume and timing.

Consultants.

Blood bank.





# Ecmo is not a one man show

But

You need One driver ( medical director for ECMO ) who should be

Between 35-50 years old

100% respect as a doctor ethically and morally and skill in the unit among doctors and nurses.

100% support from his colleges specially the older ones.

1 month in a bigger unit together with the chief nurse





# He/She

Should talk with his family before and make them understand that this is a commitment and even if he is not on duty he has to go to the hospital many night just to help and check up. Even holidays can be cancelled.

But it will change his life and view of treatment and the way of thinking of medical problem.

**It will be the best time in he/her life**





# Chief nurse

- Has to be a dedicated person with totally support from the nurse group
- Also a very stable and understanding person who can stand failures without accusing people.
- One month in a bigger unit together with the medical director





# An ECMO Center

1 Medical Director

1 Chief Nurse.

ECMO physicians. A group of 5-6 really interested doctors

Surgeons

6 ECMO nursing specialists (ICU nurses).

1 Perfusionist controlling the circuit and education of the nursing group

Mobile ECMO team: 1 ECMO physician, 1 Surgeon, 1 ECMO specialist

Physiotherapist, medical social worker, storage, secretary.





# Staffing models

1 ECMO physicians should be in or very close to the unit 24/7

1 ECMO nurse specialist/1 patient

She is taking care of the patient, the ECMO machine, ventilator and dialyzing machine.

1 Assistance nurse/2 patients. Taking care of the patient help with the bed and feeding

Mobile ECMO team on-call 30 min from the center.

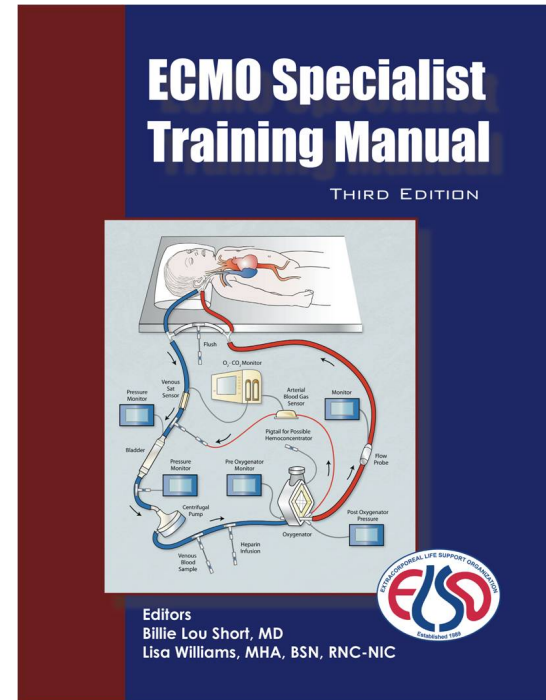






# Education

- 2 weeks
  - half theoretical and
  - Half waterdrill



- Use the ECMO training manual as the book



# Training

- First to handle the circuit- could be a water-drill
- Second – troubleshooting both waterdrill and animal experiments
- We train every 5 week in 4hours to troubleshooting and change circuit , oxygenator, pumphead and stop in cannulae – the 30 secs rule
- Everyone who is closed to the circuit even the doctors





# Training

- The goal is that everything in the circuit should be change within 30 secs otherwise you can not work with ECMO.
- If you can do this 30 secs rule you start to be safe with the machine with ands up with when you look at the machine you should realize that it is your best friend in the room.
- As long as the machine goes nothing will happen with the patient

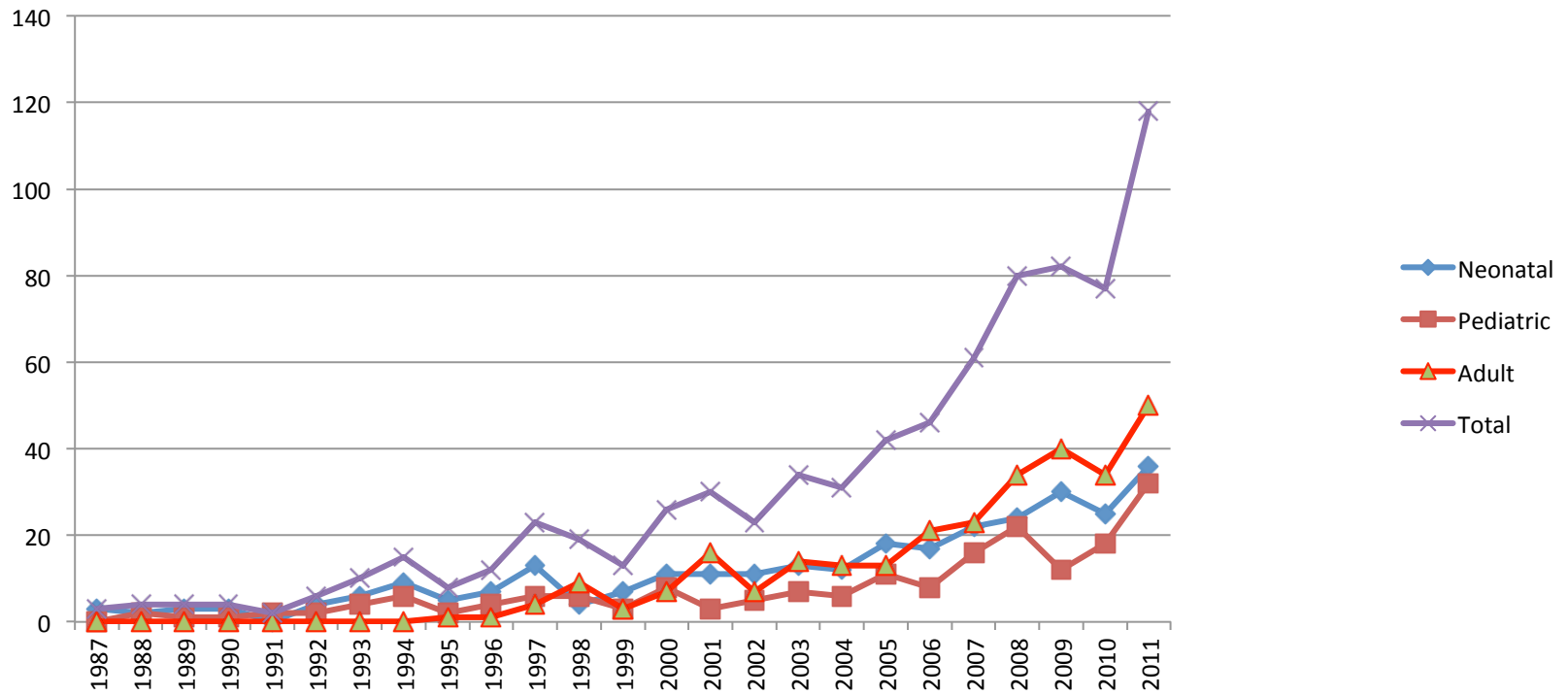




# Continuing building an ECMO unit

- The expectation should be at least 20 patient per year like always having at least one or more patient on ECMO.
- Otherwise it's better to send them to a bigger unit, it's major different in result.

# Number of patient per year





# Continuing building an ECMO unit

- When gradually the amount of patient increases, more staff has to be trained, and the original nurses could be coordinators and supervisor for the new staff.
- It use to take 3 month to be together with an experience nurse to be ready for nightshifts





# Awake patient and Long run ECMO

- We were too stupid to realize that this type of patient has to sleep, so we have had them awake since 1987
- The last 3-5 years the rest of the world has started to have them awake too.
- An awake patient also involves long run ECMO like 30-300 days





# The Lungs

Consolidated stiff lungs totally occupied with cells

It's not possible to force them to open up

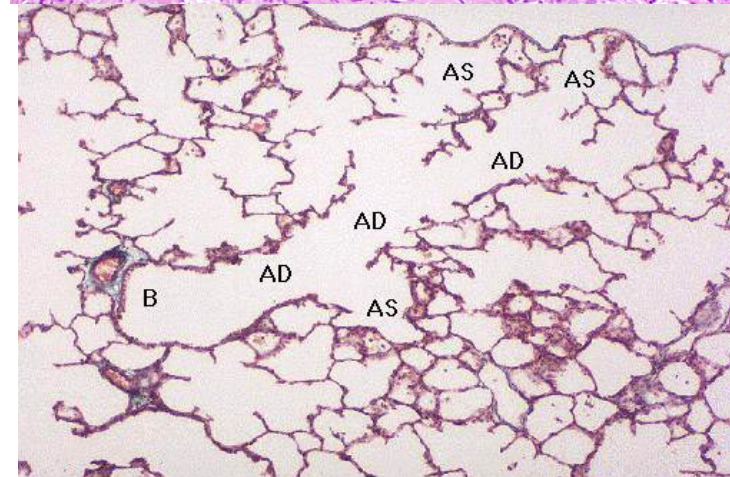
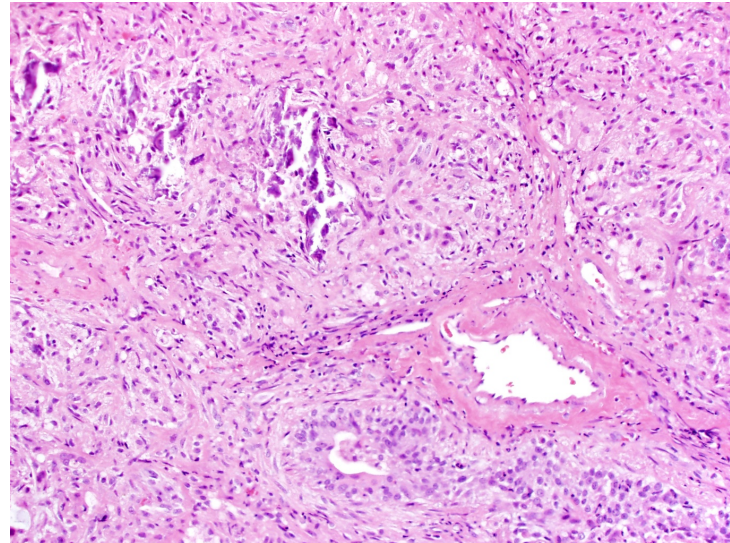
No need for high PEEP with a dry patient

No need for high Peak pressure

No HFOV

The lungs will not open up until nearly all the cells is gone

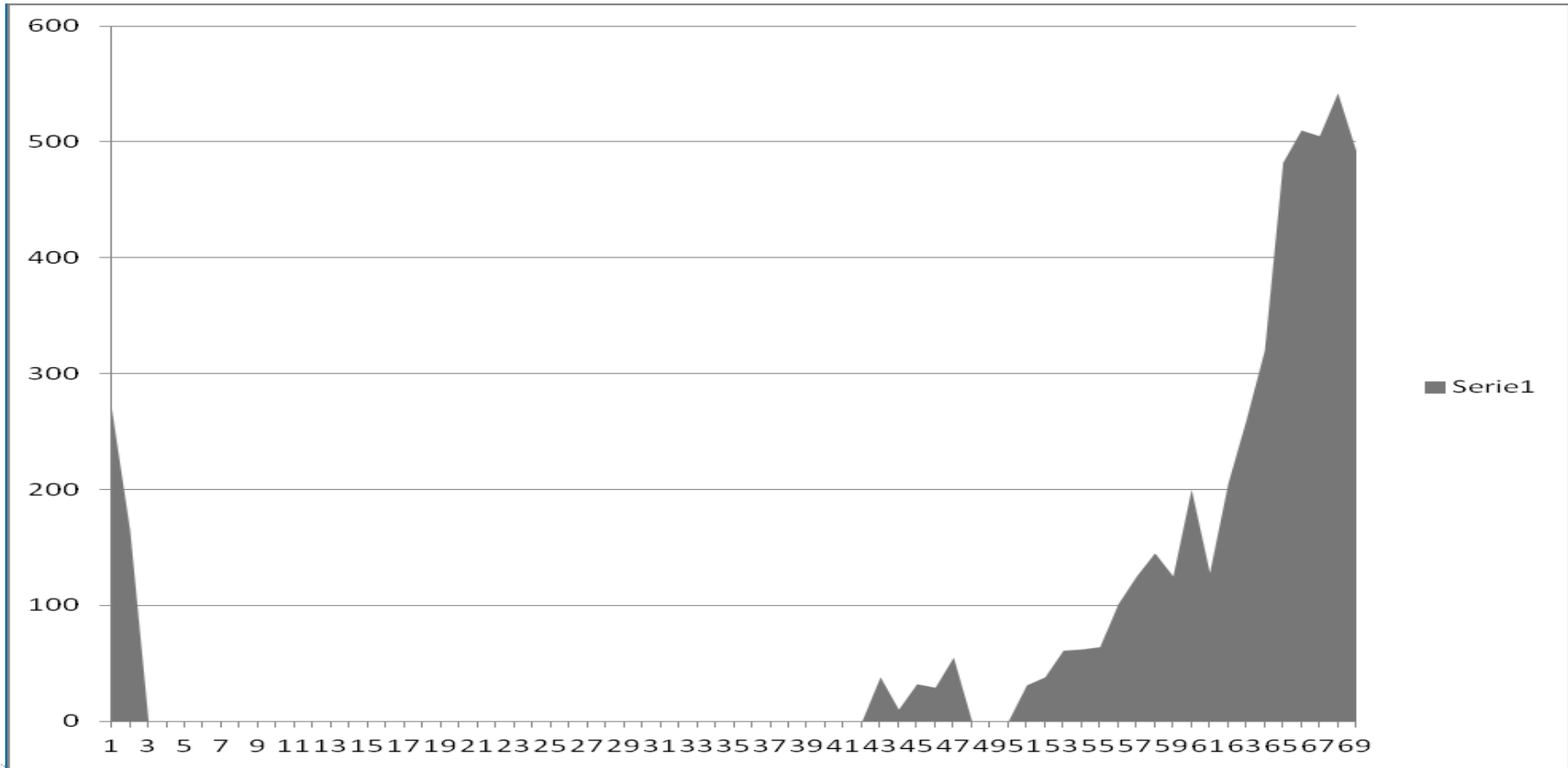
The elasticity is very low for several month, and the recovery phase takes up to one year.





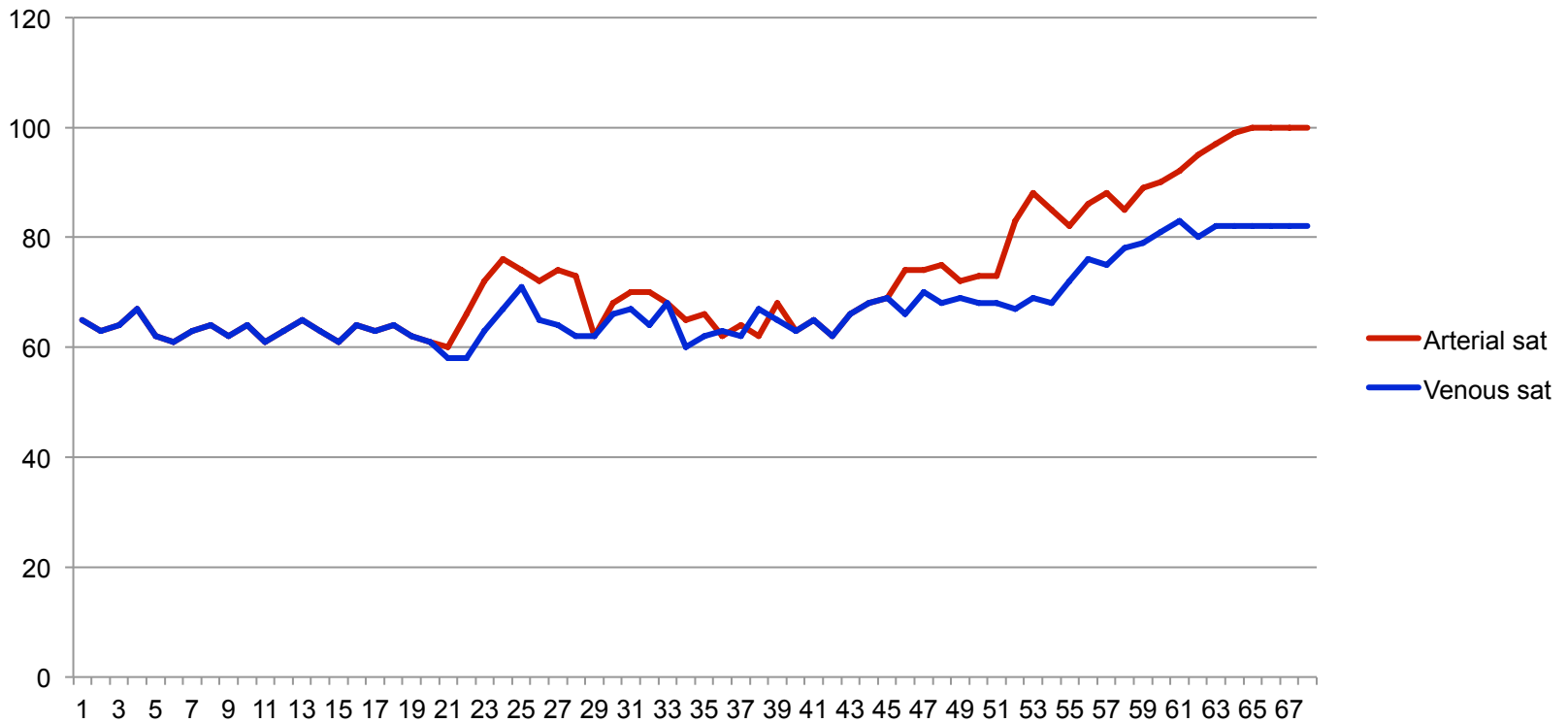
# Infection with cellular infiltrate in the interstitium of the lung

## The typical recovery of the tidal volume





# 68 days run with saturation of 65% in 45 days



Viktor 45 days with saturation of 65%  
Total 68 days on ECMO





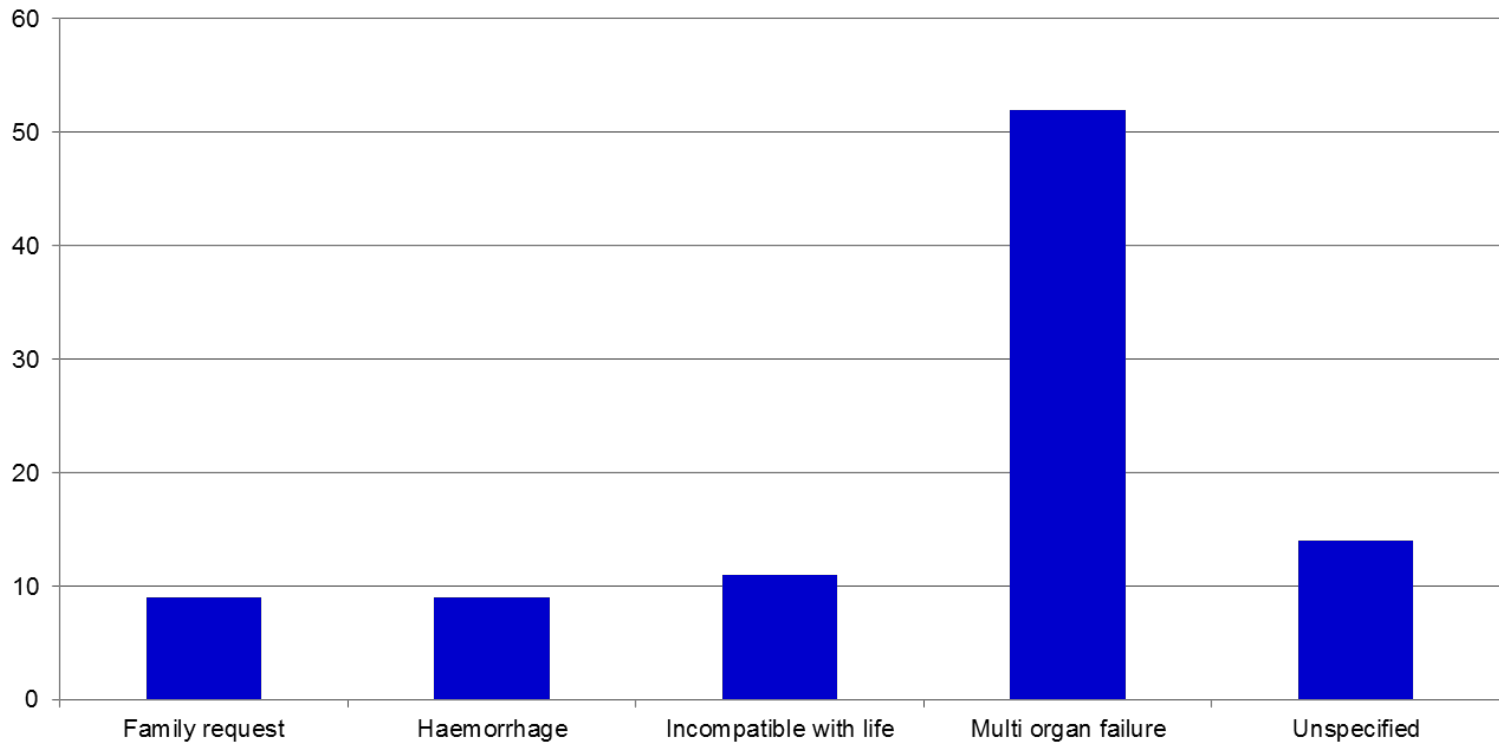
# Long run ECMO > 4 weeks

- 167 Patients 6 %
- 60 survived 36 % (54%)
- 95 discontinued ECMO treatment
-



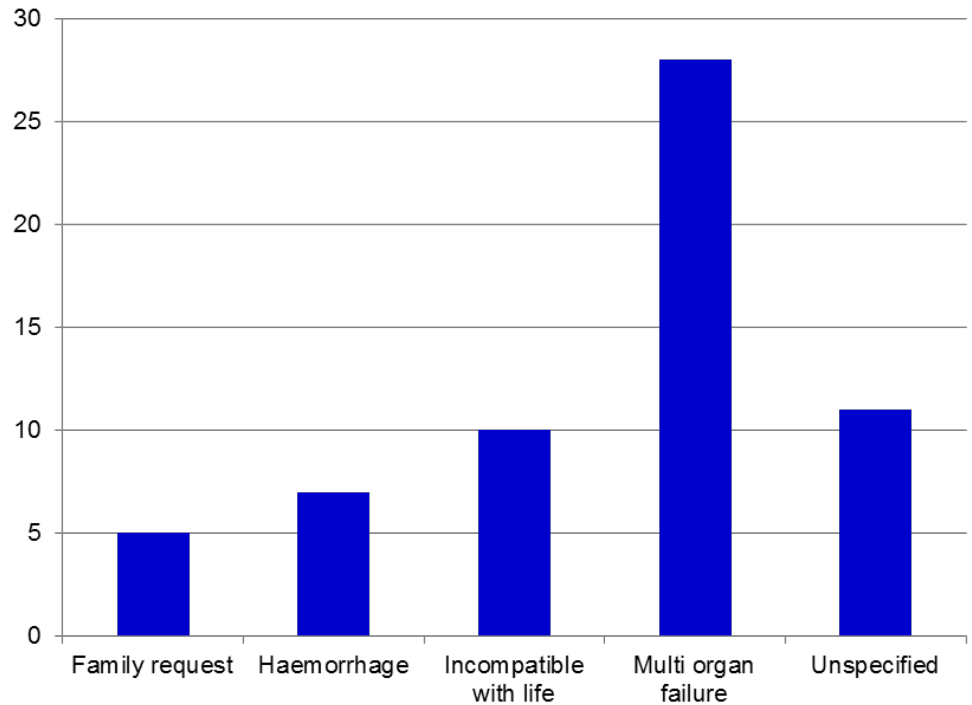
# Reason to stop ECMO treatment

## 95 pat of 167



# Long run ECMO 4-7 weeks

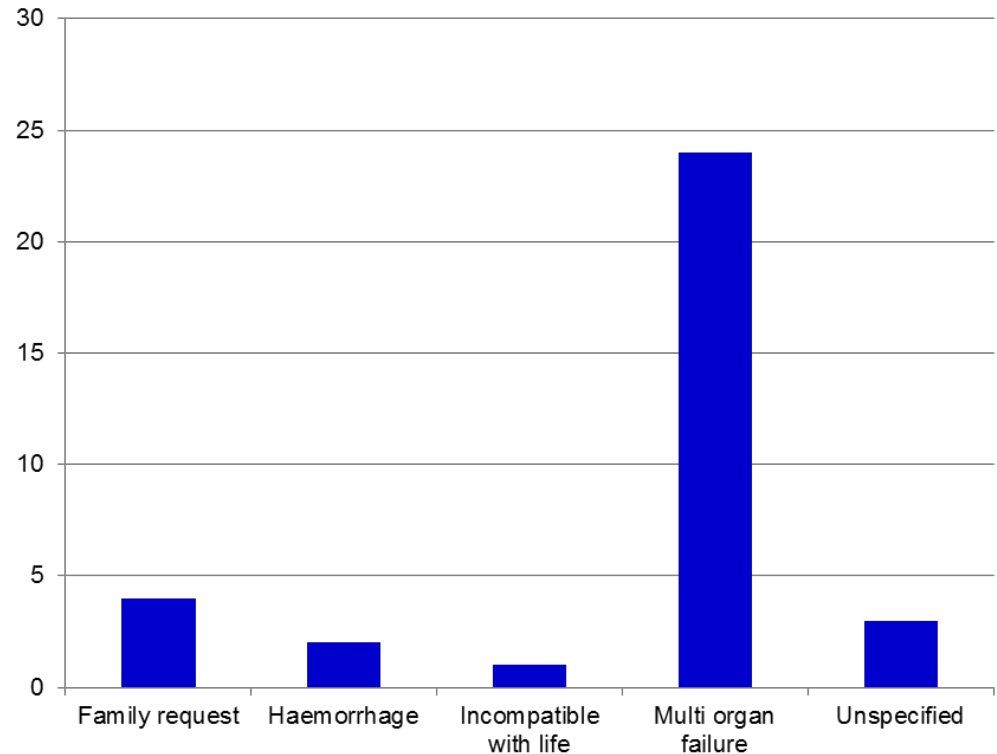
- 103 patients
- 32 survived  
31 % (54%)
- V-V 81%
- V-A 18%





# Long run ECMO > 7 weeks

- 64 patients
- 28 survival  
44% (54%)
- V-V 50%
- V-A 50%





# The need of ECMO in Italy

## 60 million people

- Every thoracic surgery dept. need Cardiac-ECMO.
- Respiratory ECMO 1/ 5 million people
- Children 1/ 10 million people
- If you can cooperate you can start ECMO in the cath-lab and a bigger unit come immediately and pick up the patient





# Mobile -ECMO

- To get more patient then your own hospital will produce.

1 ECMO physicians.

1 Surgeon.

1 ECMO specialist.

Prepacked equipment 30 min to go





Forgot something???

Cannulas

Oxygen

Heater

Ventilator

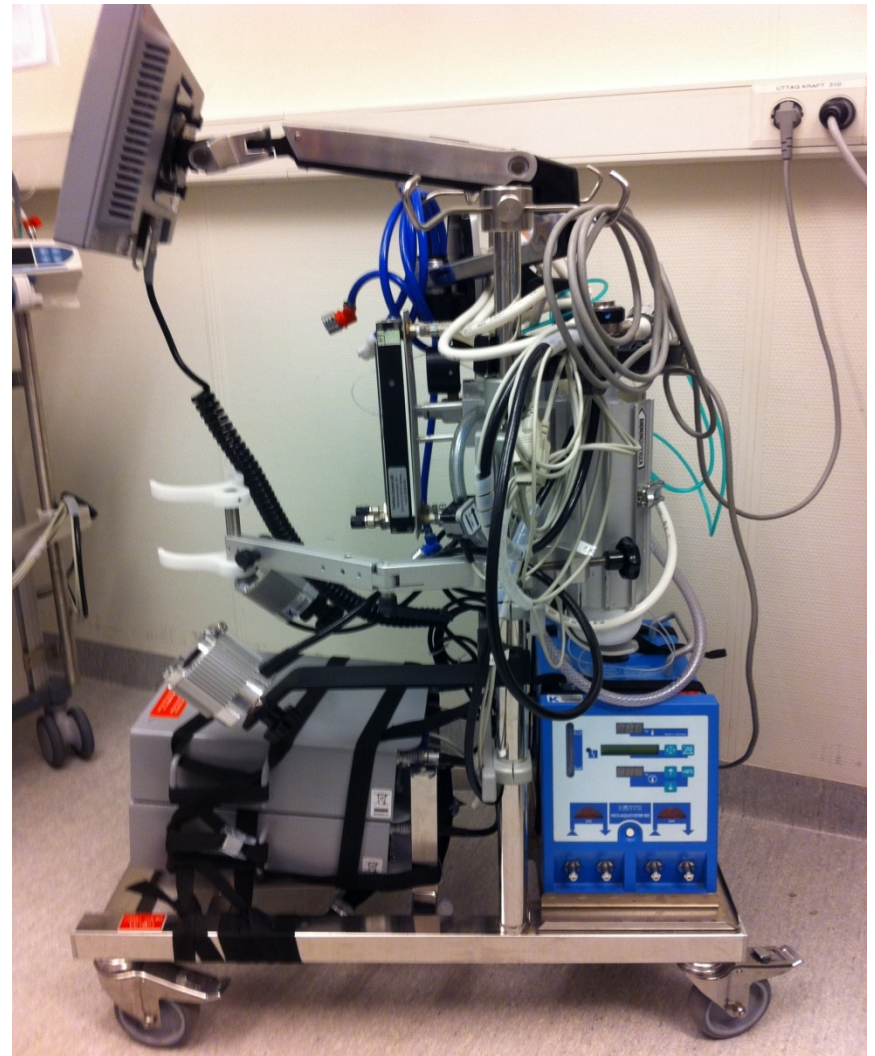
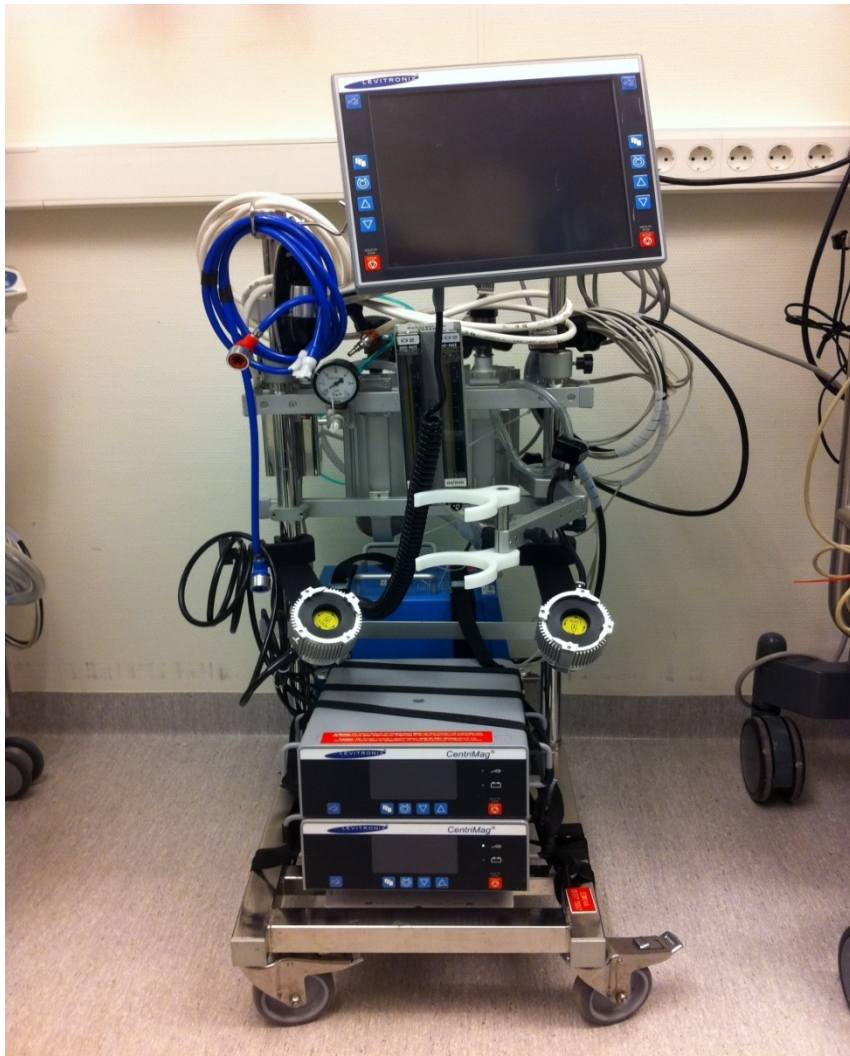
Power supply

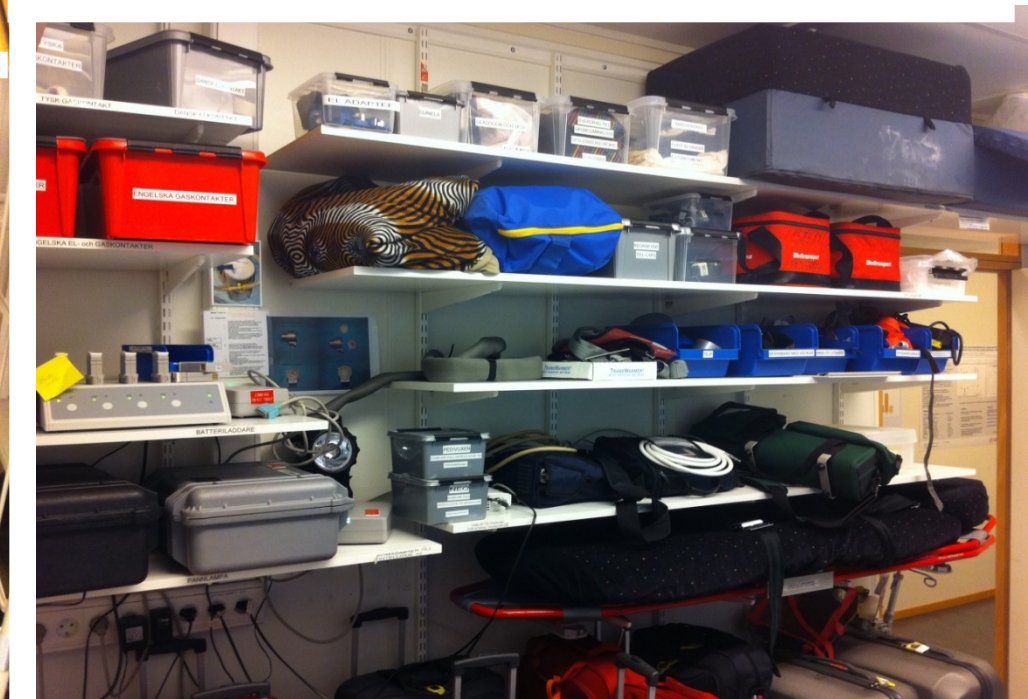
Drugs

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# Bromma airport Stockholm





# 59 year old woman 229 days on ECMO

transplanted and survived











# This was like a Home-ECMO for 8 hours

- 5-10 years from now we will for sure have Home Ecmo running
- A totally awake patient
- A stable patient with little of lung function
- Can be treated home waiting for transplant or for destination therapy
- We have to treat the lung patient as well as we treat kidney and heart patients



# Summary

Staffing models: What`s right for your program.

Introduction program.

Continouos training.

Mobile ECMO. What`s the right mix of the team members?

ECMO Red Book and ECMO specialist Training manual.

ELSO registry.

