

BENEFITS OF IMPROVING TECHNOLOGY FOR ECMO

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CHILDREN'S HOSPITAL OF PHILADELPHIA

A decorative horizontal bar at the bottom of the slide, featuring a gradient from red on the left to purple on the right.

WHERE WOULD WE BE WITHOUT IMPROVING TECHNOLOGY?

- 1st successful ECMO run
- 24 y/o male
- Blunt force trauma-car accident

LOOK AT THIS CIRCUIT!!



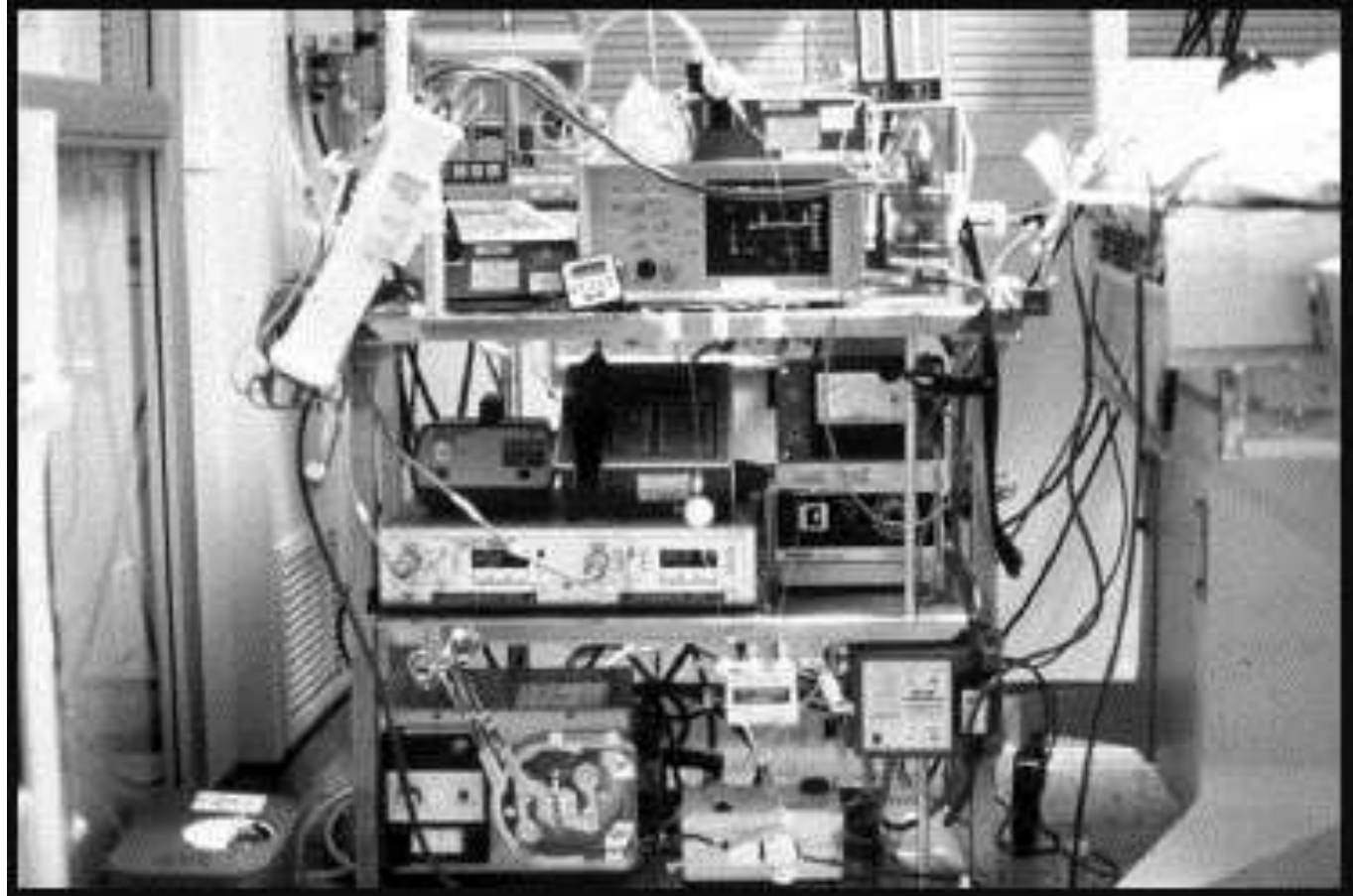
First successful ECMO patient,
1971



J Donald Hill MD and Maury Bramson BME, Santa Barbara, Ca, 1971. (Courtesy of Robert Bartlett, MD)

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OR THIS ONE?



ECMO- WHERE HAVE WE BEEN?

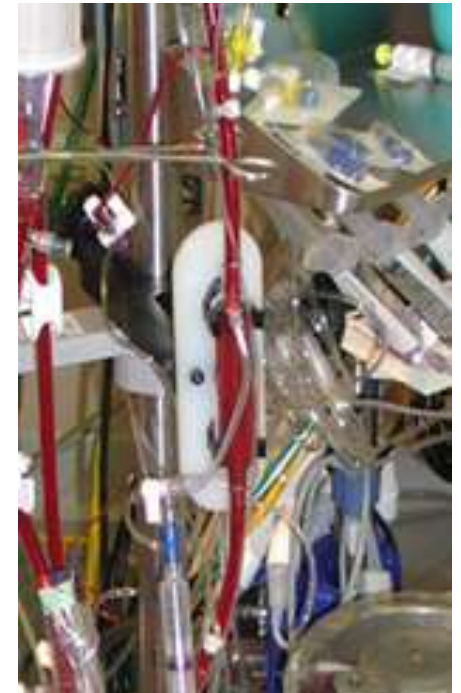
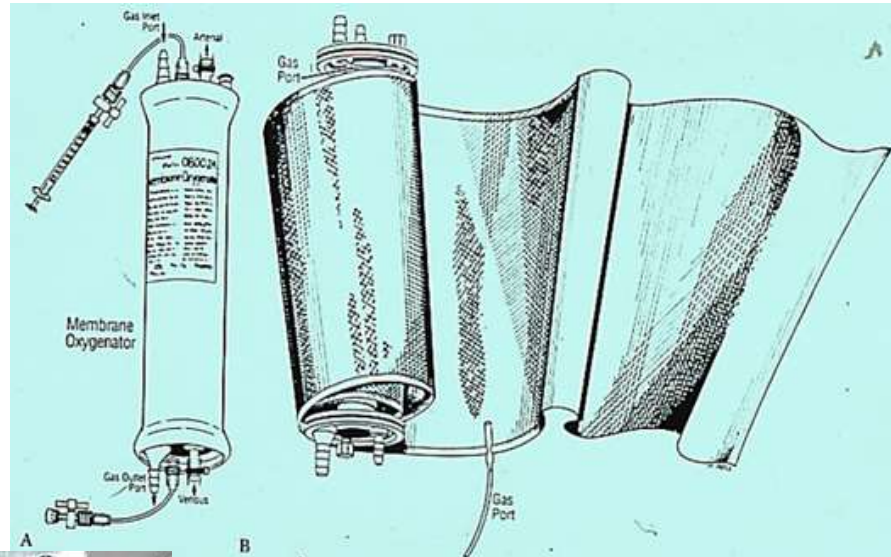


- 1971:1st successful ECMO
- 1990:CHOP began ECMO program
- Silicone Membrane Oxygenator
- Cart- in hospital transport

OPTIMIZING DRAINAGE



ECMO IN THE '90S AND '00



WISH LIST?

- Equipment specific to pediatrics
- Smaller more compact circuits
 - Circuit volume
 - Surface area
 - Mobility, PT
 - Transport ECMO
- Technology
 - Improve patient care/safety



ECMO CIRCUIT CHANGES IN THE '10S

Better Bladder

Centrifugal ECMO
Maquet Quadrox

Cardiohelp

Medos

Abbott

1998

2008

2011

2015

2022



PEDIATRIC EQUIPMENT: OXYGENATORS

- Maquet Quadrox
- Medos
- Abbott-Euroset
- Nautilus



PEDIATRIC ECMO OXYGENATORS

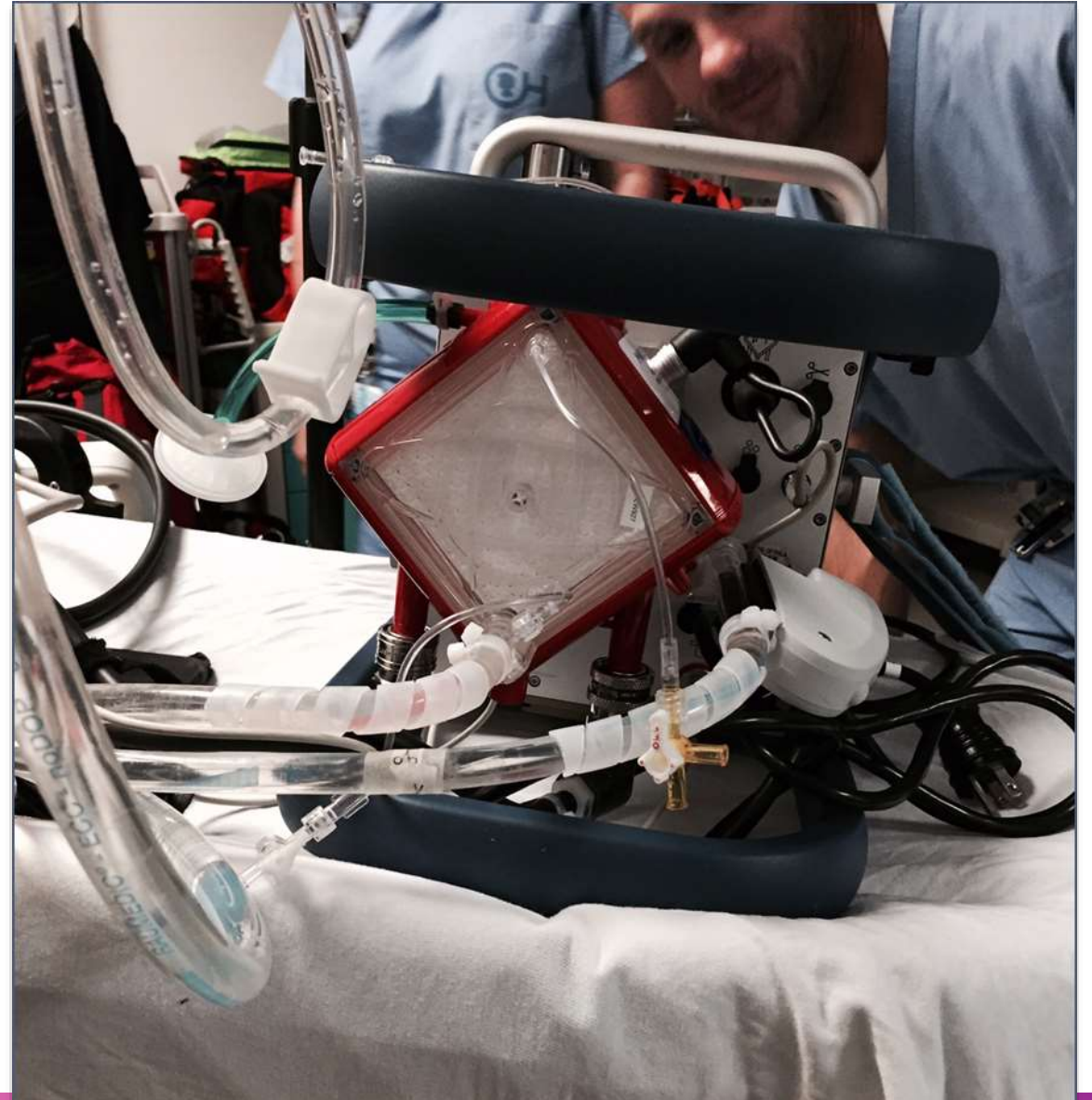
Oxygenator	Prime Volume	Max Flow	Surface Area (m ²)
Quadrox iD Pedi	81ml	2.7 LPM	0.80
Medos Hilite 800LT	55ml	0.8 LPM	0.074
Medos Hilite 2400LT	95ml	2.4LPM	0.65
Abbott-Euroset AMG PMP Infant	90ml	1.5ml	0.69
Abbott-Euroset AMG PMP Ped	190ml	4.0LPM	1.35
Medtronic Nautilus	226ml	0.5-7LPM	1.8

CURRENT ECMO SYSTEMS



MOBILE ECMO CARDIOHELP

- Physical Therapy on support
- Transition to durable VAD
- Heart or Lung transplant candidate
- Transfer Institutions



TECHNOLOGY



PATIENT SAFETY



IMPROVING CARE

SPECTRUM QUANTUM ECMO 'SPECMO'

- Technology platform
 - Flow Probes
 - In-line blood gas monitoring
 - Ventilation module
- Consistency of equipment within the hospital
- Transition to centrifugal ECMO

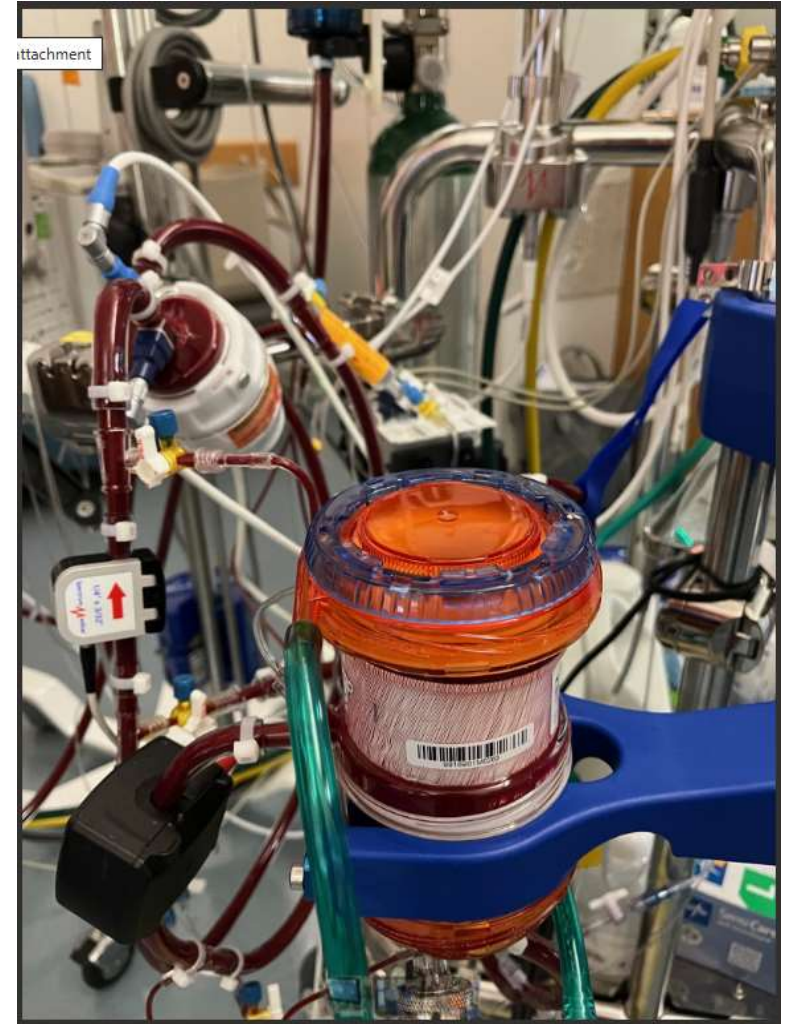


TECHNOLOGY OVERLOAD



IMPROVEMENTS!

- What will continue to challenge us?
- What will improve outcomes?
- What will be on the new wish list?





There's always room for improvement, but the judges are looking for big airs and stylish tricks.

(Shaun White)

izquotes.com

A photograph of The Children's Hospital of Philadelphia building at night. The building is a large, multi-story structure with a complex facade of windows and scaffolding. The scaffolding is illuminated with colorful lights in shades of red, yellow, and blue. The name of the hospital is visible on the top of the building.

The Children's Hospital of Philadelphia

Thank you!