

# Longembolen anno 2023

## Uitbreiding van het therapeutisch arsenaal

# PERTUZA'

Dr. Frederic De Roeck  
Interventiecardioloog



### Onvervulde behoefte(s)... als katalysator voor verandering

Huisartsen



## Onvervulde behoefte(s)... als katalysator voor verandering

- Risicostratificatie



Konstantinides SV, et al; 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism Eur Heart J. 2020 Jan 21;41(4):543-603.

## Onvervulde behoefte(s)... als katalysator voor verandering

- Risicostratificatie

| Early mortality risk (30d)<br>~ RV strain<br>(Oxygenatie?) | Increased RV afterload*               |   |  |   | RV strain |
|--|---------------------------------------|---|--|---|-----------|
|  | CLINICAL                              | Indicators of risk  | IMAGING                                    | BIOMARKERS                                    |           |
|  | Haemodynamic instability <sup>a</sup> | Clinical parameters of PE severity and/or comorbidity: PESI class III–V or sPESI ≥1 | RV dysfunction on TTE or CTPA <sup>b</sup> | Elevated cardiac troponin levels <sup>c</sup> |           |
| 24.4% High   | +                                     | (+) <sup>d</sup>  | +  | (+)   |           |
| 10.4% Intermediate-high                                    | -                                     | + <sup>e</sup>  | +  | +   |           |
| 3.1% Intermediate-low                                      | -                                     | + <sup>e</sup>  | One (or none) positive                     |   |           |
| 1% Low   | -                                     | -   | -  | Assesment optional; if assessed, negative     |           |



Konstantinides SV, et al; 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism Eur Heart J. 2020 Jan 21;41(4):543-603.

## Onvervulde behoefte(s)... als katalysator voor verandering

- Risicostratificatie **MAAR**



### Risk modifiers

Syncope?      Lactate ↑      Evolutie Δ24-48u



## Onvervulde behoefte(s)... als katalysator voor verandering

- Risicostratificatie
- Behandelstrategie



If it is recommended that anticoagulation with DOACs reducing a weight-adjusted bolus dose may be initiated without delay in patients with:

Rescue thrombolytic therapy is recommended for patients with haemodynamic deterioration on anticoagulation treatment.<sup>202</sup>

As an alternative to rescue thrombolytic therapy, surgical embolectomy<sup>203</sup> or **percutaneous catheter-directed treatment<sup>204</sup>** should be considered for patients with haemodynamic deterioration on anticoagulation treatment.

Routine use of primary systemic thrombolysis is not recommended in patients with intermediate- or low-risk PE.<sup>179</sup>

?

Systemic thrombolysis is strongly recommended for high-risk PE.<sup>179</sup>

Superior outcomes with catheter-directed treatment compared to systemic thrombolysis in patients with high-risk PE in whom thrombolysis is contraindicated or has failed.<sup>180</sup>

**Percutaneous catheter-directed treatment should be considered for patients with high-risk PE in whom thrombolysis is contraindicated or has failed.<sup>180</sup>**

Pericardial catheter-directed treatment should be considered in patients with high-risk PE.

ECVAD may be considered in combination with surgical embolectomy or catheter-directed treatment in patients with PE and refractory circulatory collapse or other causes.<sup>181</sup>

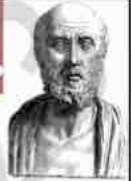
|     |   |
|-----|---|
| I   | B |
| I   | C |
| IIa | C |
| IIb | C |
| III | B |



**10.4% 30d mortaliteit**

Konstantinides SV, et al; 2019 ESC Guidelines. Eur Heart J. 2020 Jan 21;41(4):543-603.

## Onvervulde behoefte(s)... als katalysator voor verandering



- Risicostratificatie
- Behandelstrategie

|                                     |  |  |
|-------------------------------------|--|--|
| Zuurstof / beademing<br>iNO         |  | Inotropie<br>dobutamine vs milrinone               |
| Anticoagulatie<br>UFH vs LMWH vs DO |  | systemische thrombolysie<br>full-dose vs half-dose |
| Catheter-directed therapy           |  | VA ECMO  |



## Onvervulde behoefte(s)... als katalysator voor verandering

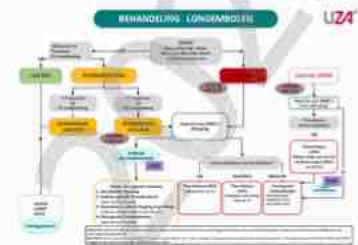
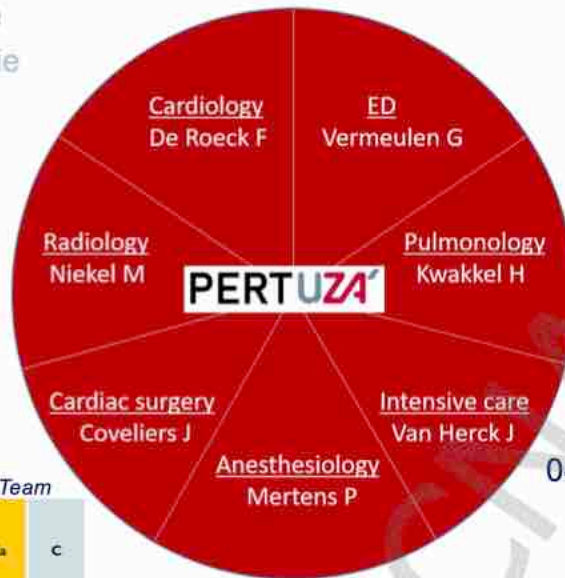
- Risicostratificatie
- Behandelstrategie





## Onvervulde behoefte(s)... als katalysator voor verandering

- Risicostratificatie
- Behandelstrategie



'Hoofdbehandelaar'  
Spoed ↔ IZ ↔ CCU ↔ Pneumologie

04/2021

### Pulmonary Embolism Response Team

Set-up of a multidisciplinary team and a programme for the management of high- and (in selected cases) intermediate-risk PE should be considered, depending on the resources and expertise available in each hospital.



## Katheterbehandeling als 'new kid on the block'



### EKOS (BoSci)

US-assisted locale thrombolysse



### FlowTrievers (Inari)

Suctie embolectomie  
(+ klonter grijpen dmv disks)



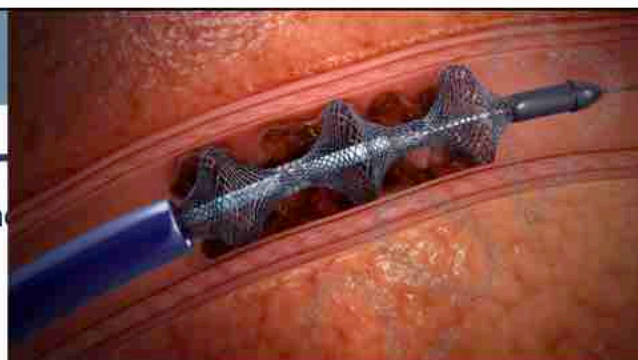
### Indigo (Penumbra)

Suctie embolectomie



## FlowTrievers longembolectomie

- *Large bore* thromboaspiratie
- 24Fr (8mm) vena femoralis – 16Fr – nitinol
- Specifiek design voor a. pulmonalis
- Suctie & *clot entrapment*



Tu T, et al. The FLARE Study. JACC Cardiovasc Interv. 2019 May 13;12(9):859-869.

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## PERTUZA als BeNeLux pionier

### FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE

- *'Real world'* technisch succes, veiligheid en effectiviteit, bovenop standaardtherapie
- **IHR** = opname CCU, iv heparine, geen recuperatie na 24u
- **HR** = indien CI (of gefaalde) thrombolysse en geen chirurgische kandidaat

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## PERTUZA als BeNeLux pionier

## FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE



Vermeulen Griet @Griet\_EM · 2 m

First #PE thrombectomy with @InariMedical FlowTrievers Aspiration System in the Benelux is a fact! Successfully performed by our #UZA interventional colleagues Niekel and De Roeck! Very proud to be part of our enthusiast PERTteam in progress....! @UZAnieuws @PERTConsortium



18/05/2021

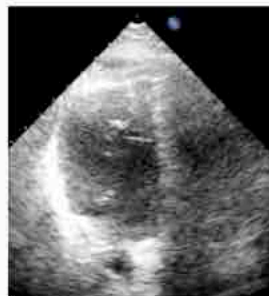
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## Eerste resultaten

## FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE

- 9 patiënten; 63 jaar [29-78]
- Bilaterale centrale embolen en/of zadelembol op CT
- 5/9 IHR, 4/9 HR
  - Syncope 4/9, shock 2/9, cardiaal arrest 2/9, VA ECMO 1/9
  - PE risico scores ↑↑ (PESI, BOVA)
  - Biomarkers ↑↑ (hs-cTnI, lactaat)
  - Overtre rechterhartoverbelasting op TTE



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Eerste resultaten (2)

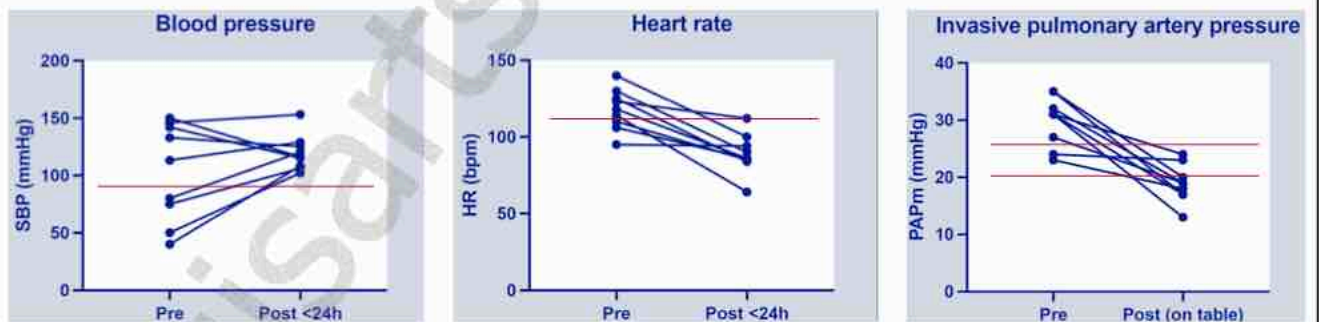
FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE



Eerste resultaten (3)

Hemodynamica

FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE

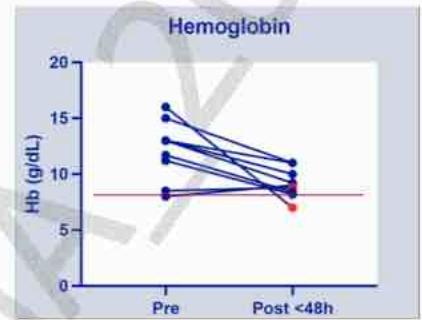
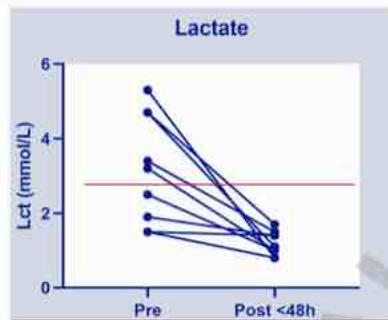
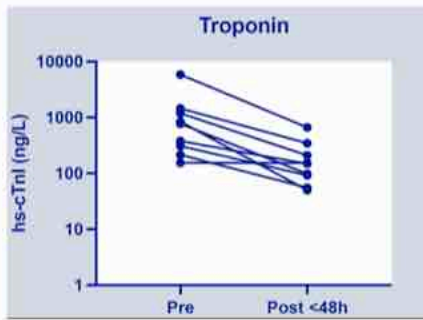




Eerste resultaten (4)

Biomarkers

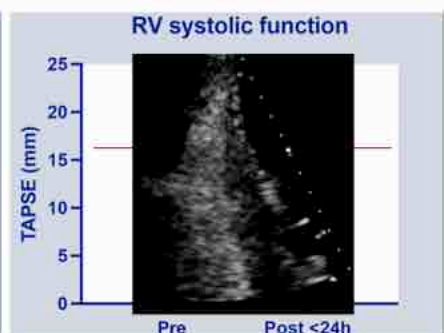
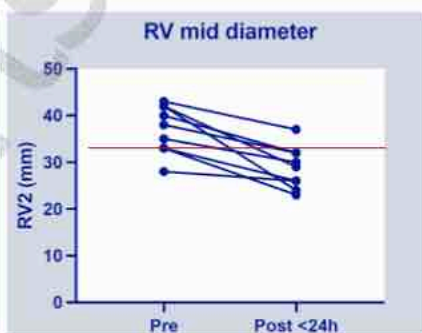
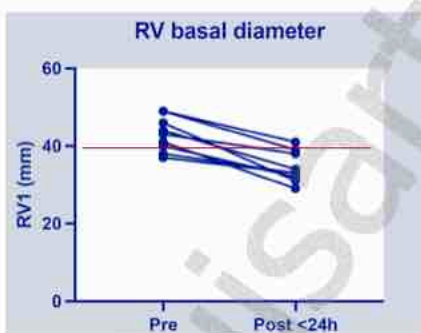
FlowTrieve® Pilot Study In (Intermediate-)High-Risk PE



Eerste resultaten (5)

TTE

FlowTrieve® Pilot Study In (Intermediate-)High-Risk PE



## Eerste resultaten <sup>(6)</sup>

### FlowTrievers® Pilot Study In (Intermediate-)High-Risk PE

- **Ontslag uit ziekenhuis**    Dag 7 [3-13]
- **In-hospitaal mortaliteit**    0/9
- **3-maand follow-up**
  - Mortaliteit                    1/8    (non-PE related)
  - Residuele dyspnoe            0/7
  - PHT of afwijkende TTE        0/7



Veelbelovend **MAAR**

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## Nog (veel boeiend) werk aan de winkel

- **Optimaliseren** van het UZA longembool zorgprogramma
- Opzetten longembool **verwijspatroon** binnen (Groot-)Antwerpse regio (≠ netwerken)
  - *Hub and Spoke*
  - **PERTUZA'** **03/821.41.23** overleg 24/7
  - 50 patiënten *and counting*...
- Toename van # FlowTrievers procedures (€)
- **Research**
  - Aantonen evidentie CDT op harde klinische eindpunten
    - FLASH: UZA Belgische PI
  - Impact CDT op levenskwaliteit, CTEPH, ...
  - VA ECMO en CDT bij high-risk longemboolie?
  - ....



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## Take home messages

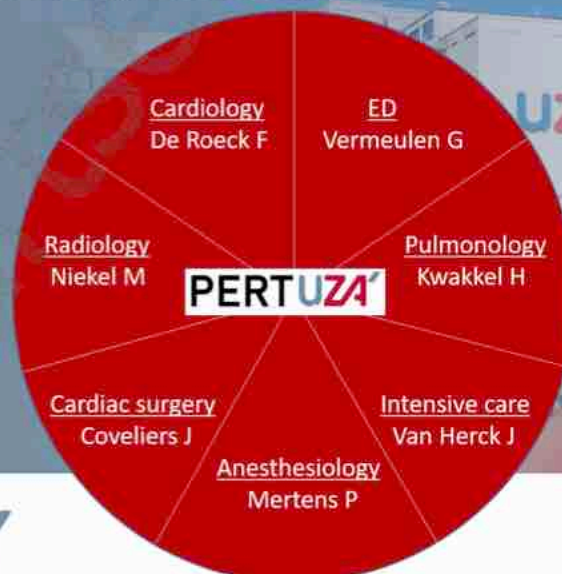
- **RV strain ~ PE mortaliteit**
- Vroege **risicostratificatie is cruciaal** en bepaalt beste aanpak (cave)
- **Katheterbehandeling** is nieuwe veelbelovende techniek
  - PERT UZA als pionier in BeNeLux
- Herorganisatie van **academische** zorg en uitbouwen expertise/verwijspatroom
  - **PERT UZA** bereikbaar voor overleg (via **03/821.41.23**)

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## Longembolen anno 2023 Uitbreiding van het therapeutisch arsenaal

**BEDANKT!**  
Vragen?



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