

EP sévère et désobstruction



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Take home message ESC 2019

Vers une EP Team pour les EP severes

- Numero d'appel unique : cardiologue de garde (Grenoble 06 11 96 11 97- Annecy 04 50 63 67 77)
- Discussion pluridisciplinaire rapide et 24:7j médecins/ réa/ chirurgien cardiaque
- Expertise cardio/radiologique pour l'imagerie et les situations complexes (CTEPH)
- Filière Soins critiques disponible et spécialisée
- Acces au plateau technique : ECMO/ Interventionnel/ chirurgie
- Stratégie partagée au sein de l'arc alpin adossée aux centres de chirurgie cardiaque/RENAU
 - Grenoble
 - Annecy

PE-ESC guidelines 2019: what is new?



Recommendations	2014	2019
Rescue thrombolytic therapy is recommended for patients who deteriorate haemodynamically.	IIa	I
Surgical embolectomy or catheter-directed treatment should be considered as alternatives to rescue thrombolytic therapy for patients who deteriorate haemodynamically.	IIb	IIa
D-dimer measurement and clinical prediction rules should be considered to rule out PE during pregnancy or the post-partum period.	IIb	IIa
Further evaluation may be considered for asymptomatic PE survivors at increased risk for CTEPH.	III	IIb

La notion d'EP instable

Instability



Risk assessment

A clear definition of haemodynamic instability and high-risk PE is provided (Table 4).

Assessment of PE severity and early PE-related risk is recommended, in addition to comorbidity/aggravating conditions and overall death risk.

A clear word of caution that RV dysfunction may be present, and affect early outcomes, in patients at 'low risk' based on clinical risk scores.

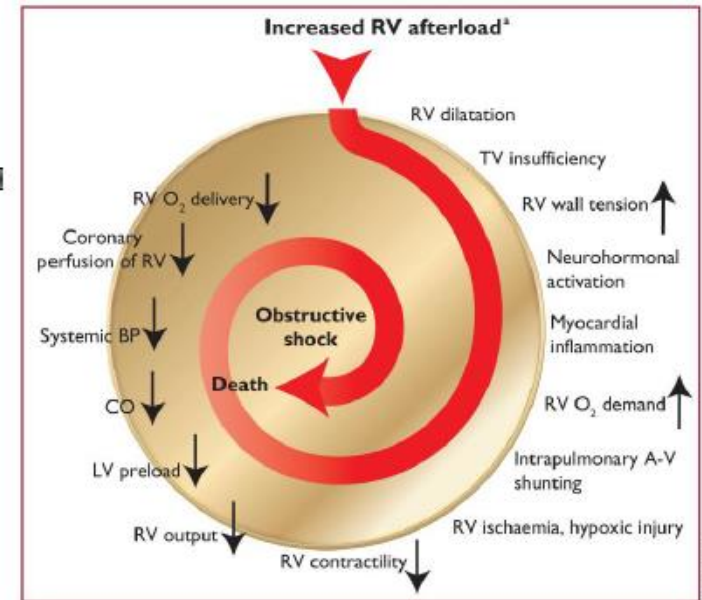



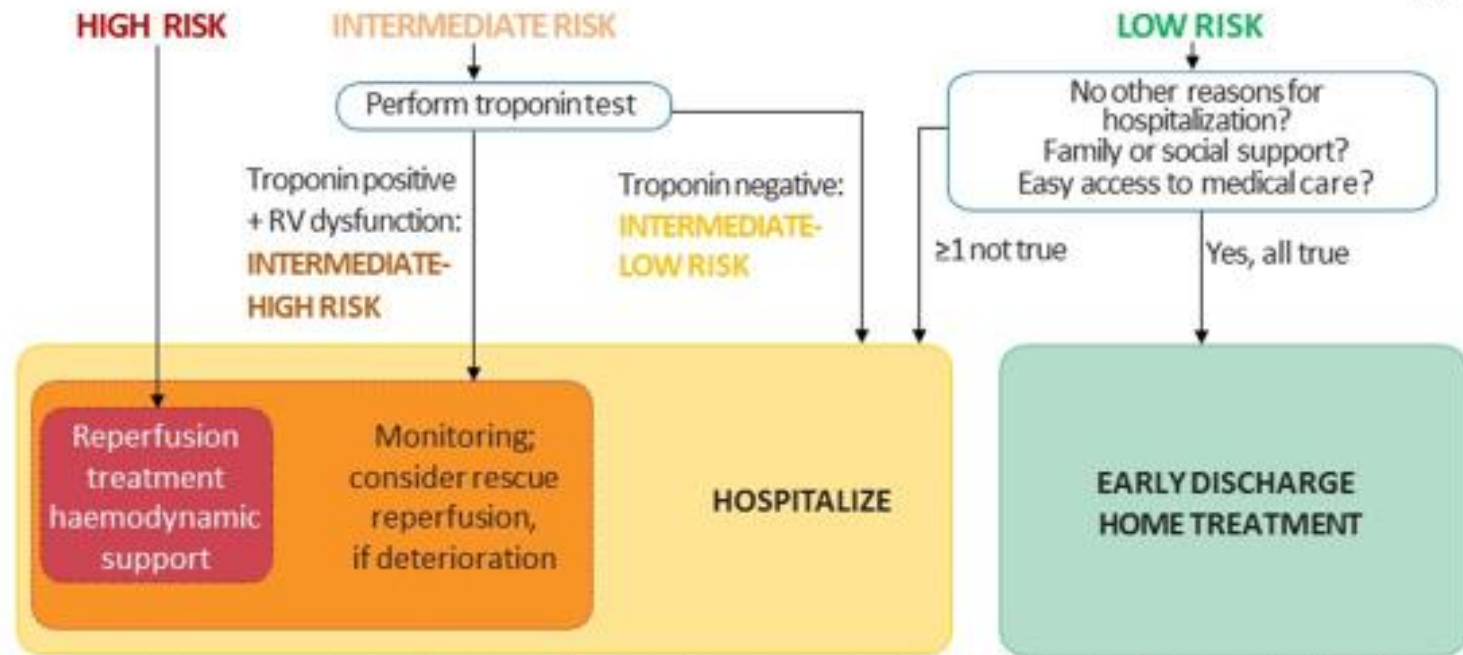
Table 4 Definition of haemodynamic instability, which delineates acute high-risk pulmonary embolism (one of the following clinical manifestations at presentation)

(1) Cardiac arrest	(2) Obstructive shock ^{68–70}	(3) Persistent hypotension
Need for cardiopulmonary resuscitation	Systolic BP < 90 mmHg or vasopressors required to achieve a BP ≥ 90 mmHg despite adequate filling status	Systolic BP < 90 mmHg or systolic BP drop ≥ 40 mmHg, lasting longer than 15 min and not caused by new-onset arrhythmia, hypovolaemia, or sepsis
	And	
	End-organ hypoperfusion (altered mental status; cold, clammy skin; oliguria/anuria; increased serum lactate)	

BP = blood pressure.

Recommendations ESC 2019

Figure 5 Risk-adjusted management strategy for acute PE (2)  **ESC**
European Society of Cardiology



CTPA = computed tomography pulmonary angiography; PESI = Pulmonary Embolism Severity Index; RV = right ventricular; TTE = transthoracic echocardiography.

Les outils en fonction de la disponibilité et de la severité

EP à risque intermédiaire haut (dysfonction VD +troponine)

- En USIC ou USC de l'hôpital de proximité
 - => Oxygene (Haut débit si besoin)
 - => HNF +/- Diuretiques
 - => Contact pour rapprochement centre interventionnel EP/ chirurgical si aggravation+ amines + Thrombolyse en l'absence de contreindication
- A Grenoble / Annecy
 - ⇒ Inclusion dans PEITHO-3 (thrombolyse faible dose vs placebo)
 - ⇒ Registre national Thromboaspiration

EP severe - Les outils

Pour la désobstruction

HNF

- Bolus IVD de 80 UI/kg
- Perfusion 18UI/kg/h (500UI/kg/24h)
- Si HBPM : faire Enoxaparine bolus 0,3 mg +1 mg/kg, puis 1mg/kg toutes les 12h

FIBRINOLYSE

- Actilyse (Alteplase) bolus de 10 mg + 1mg/kg ou 90 mg en 2 heures
- Metalyse 30-50mg (si Actilyse indisponible)
- Le risque hémorragique dans PEITHO (HNF vs HNF+ Tenecteplase)
 - Hemorragies majeures extracraniennes 6,3% vs 1,2%
 - AVC hémorragiques 2,4% vs 0,2%

THROMBOASPIRATION PERCUTANEE

- Flow triever
- EKOSonic + Thrombolyse in situ 10-20mg
- Angiojet

CHIRURGIE - EMBOLECTOMIE

EP severe -Les outils

Pour aider le ventricule droit

DIURETIQUES ?

DOBUTAMINE

NORADRENALINE

ECMO

Les outils en fonction de la disponibilité et de la severité

EP massive en état de Choc

- Disponible n'importe où (Domicile, SMUR, CH sans plateau technique invasif...)
 - => HNF + Thrombolyse+ Amines + Diuretiques
 - => Contact pour rapprochement
- En centre chirurgical Annecy + Grenoble
 - ⇒Thromboaspiration percutanée
 - ⇒ECMO
 - ⇒Embolectomie chirurgicale

Quel traitement de desobstruction pour EP instable sous ECMO?

Outcomes after extracorporeal membrane oxygenation for the treatment of high-risk pulmonary embolism: a multicentre series of 52 cases

Nicolas Meneveau^{1,2*}, Benoit Guillon^{1,2}, Benjamin Planquette³, Gaël Piton^{2,4}, Antoine Kimmoun^{5,6}, Lucie Gaide-Chevronnay⁷, Nadia Aissaoui^{8,9}, Arthur Neuschwander¹⁰, Elie Zogheib^{11,12}, Hervé Dupont^{11,12}, Sébastien Pili-Floury^{2,13}, Fiona Ecarnot^{1,2}, François Schiele^{1,2}, Nicolas Deye^{14,15}, Nicolas de Prost¹⁶, Raphaël Favory¹⁷, Philippe Girard¹⁸, Mircea Cristinar¹⁹, Alexis Ferré²⁰, Guy Meyer³, Gilles Capellier^{2,4}, and Olivier Sanchez³

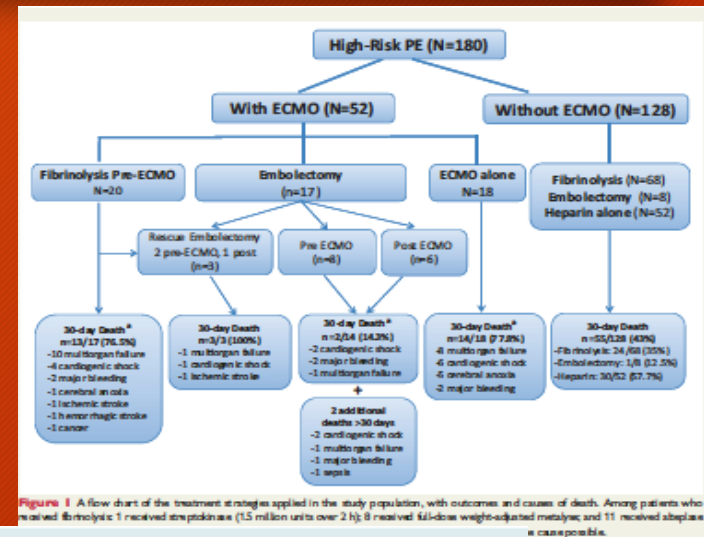


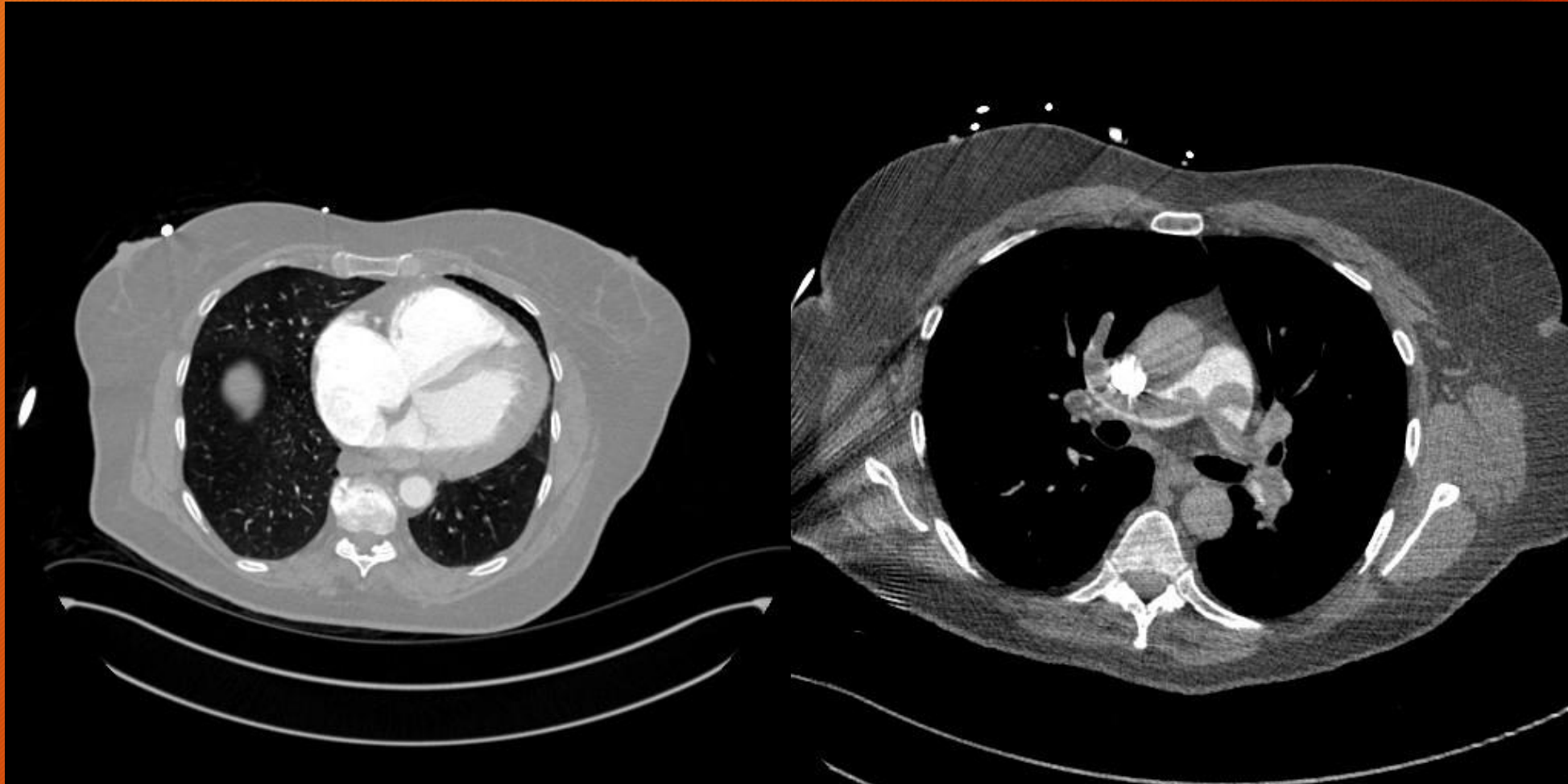
Table 4 Outcomes of patients undergoing extracorporeal membrane oxygenation according to initial treatment strategy

Outcomes	ECMO alone (A) (N = 18, 95% CI)	ECMO + thrombolysis (B) (N = 17, 95% CI)	ECMO + surgical (C) embolectomy (N = 17, 95% CI)	RR A vs. B (95% CI)	RR A vs. C (95% CI)
30-Day all-cause death	14 (77.7%, 59–97)	13 (76.5%, 57–97)	5 (29.4%, 51–89)	1.02 (0.71–1.46)	2.64 (1.22–5.75)
90-Day all-cause death	14 (77.7%, 59–97)	13 (76.5%, 57–97)	7 (41.2%, 18–65)	1.02 (0.71–1.46)	1.89 (1.02–3.51)
90-Day major bleeding	4 (22.2%, 4–42)	7 (41.2%, 18–65)	9 (52.9%, 30–77)	0.54 (0.19–1.52)	0.42 (0.16–1.11)
90-Day non-major bleeding	5 (27.7%, 11–53)	9 (52.9%, 30–77)	9 (52.9%, 30–77)	0.52 (0.22–1.25)	0.52 (0.22–1.25)
Successful weaning from ECMO	3 (16.7%, 57–97)	5 (29.4%, 57–97)	11 (64.7%, 57–97)	0.57 (0.16–2.02)	0.26 (0.09–0.77)



Thromboaspiration: Le cas idéal

- Femme 73 ans - CH Aubenas
- AVC ischémique compliquée d'une EP severe a J5- teleexpertise/CT
- Dobutamine et Noradrenaline et transfert SAMU à 22h
- Decision de thromboaspiration percutanée à 9h le lendemain matin





Cas idéal

- Retour USIC
- Suites simples
- Sevrage amines à H12
- HBPM curatif le soir meme de la procedure
- Retransfert à Aubenas à J+1

Real-world, all comer patient population

Baseline characteristics of 500 patients enrolled at 26 US sites

Characteristic	% or mean ± SD
High-risk PE	6.2%
Intermediate-risk PE	93.8%
Intermediate-high	84.2%
Intermediate-low	7.7%
Intermediate-unknown	8.1%
Lytic contraindication	40.1%
Concomitant DVT	66.4%
RV/LV Ratio (CT or Echo)	1.53 ± 0.48

Unmatched Procedural Safety

Mechanical thrombectomy with Inari FlowTriever

provides a safe, lytic-free treatment option for high-acuity patients with PE.

0.2%
ALL-CAUSE MORTALITY
AT 48H

1.4%
MAJOR ADVERSE EVENTS
AT 48H*

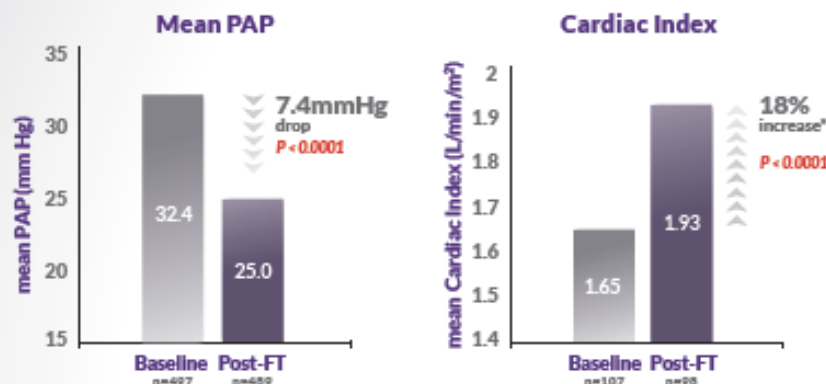
0.4%
ACCESS SITE
COMPLICATIONS

0.0%
DEVICE-RELATED
MAJOR ADVERSE EVENTS

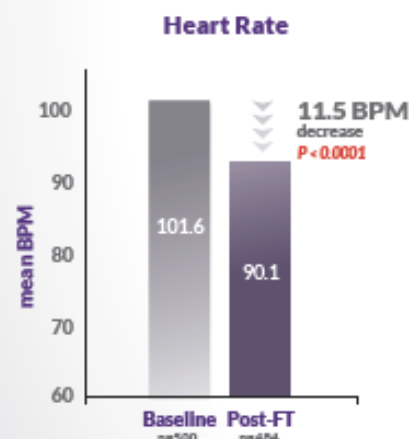
*Primary endpoint includes device-related death and major bleeding at 48h, and intra-procedural device or procedure-related adverse events

Clinically Meaningful, On-table Improvements

Clot removal results in immediate symptom relief and improved cardiac function.



*In patients with low baseline CI (<2.0)



Minimized Hospital Resource Utilization

Patients benefit without the need for thrombolytics or consequent ICU.

63.1%
OF PATIENTS NOT ADMITTED TO THE ICU
OVERNIGHT FOLLOWING TREATMENT

96%
TREATED WITHOUT
ADJUNCTIVE
THERAPIES

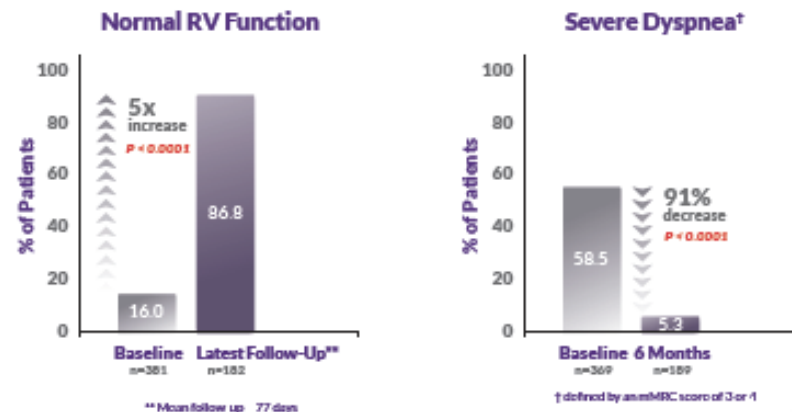
1.3%
PE-RELATED
READMISSION AT 30 DAYS

Sustained Long-term Outcomes and Improved Quality of Life

Immediate results lead to long-term patient benefits.

1.3%
ALL-CAUSE MORTALITY
AT 30 DAYS

Significant improvement in long-term quality of life*



* At 6 months, median PEmb QoL FoC score was 0, which is the best possible score.

Embolie pulmonaire: Stratégie thérapeutique RENAU

Haut Risque

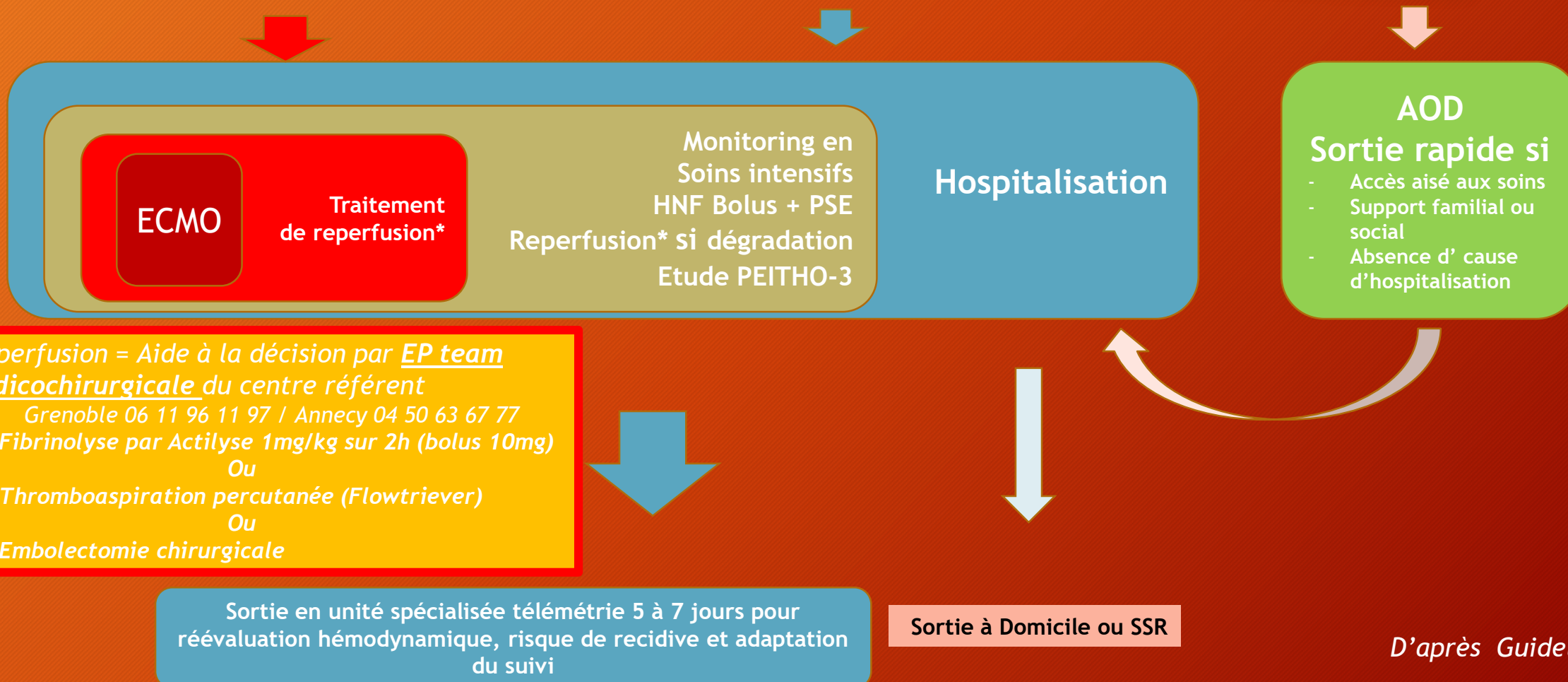
Risque intermédiaire

Bas risque

Etat de choc, amines ou ACR

Haut: Troponine+ et dysfonction VD

Bas



**Reperfusion = Aide à la décision par EP team médicochirurgicale du centre référent*

Grenoble 06 11 96 11 97 / Annecy 04 50 63 67 77

- Fibrinolyse par Actilyse 1mg/kg sur 2h (bolus 10mg)
Ou*
- Thromboaspiration percutanée (Flowtriever)
Ou*
- Embolectomie chirurgicale*

EP sévère - RENAU 2022

- Pensez la stratégie de desobstruction de l'EP massive comme celle de l'IDM!
 - Diagnostic => appel pour discussion desobstruction => thrombolyse/ transfert
 - Medicalisation des transferts
 - Les numéros d'appel
 - Annecy *04 50 63 67 77*
 - Grenoble *06 11 96 11 97*

Merci pour votre attention

