

FAST ECHOGRAPHIE

EN TRANSPORT PÉDIATRIQUE

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HCL
HOSPICES CIVILS
DE LYON

SMUR
Pédiatrique
et Néonatal



FAST ?



= RAPIDE

FAST ?



= RAPIDE

= Focused
Assessment

With Sonography
For Trauma*



*évaluation ciblée avec échographie pour les traumatismes

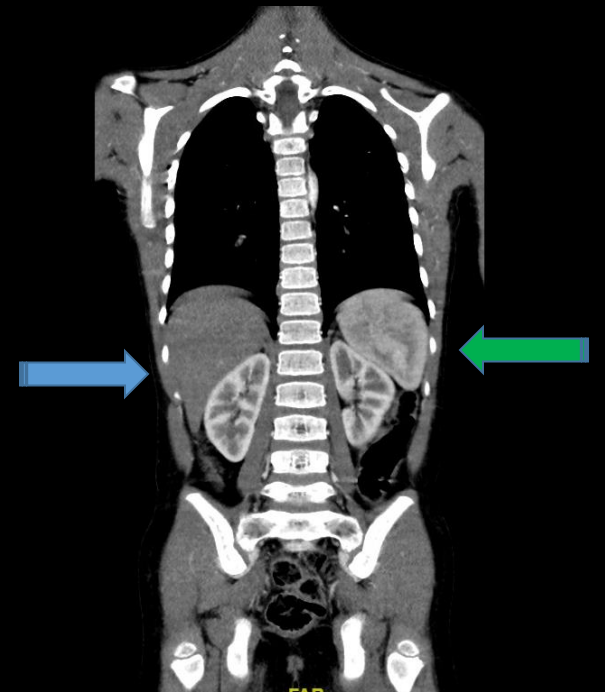
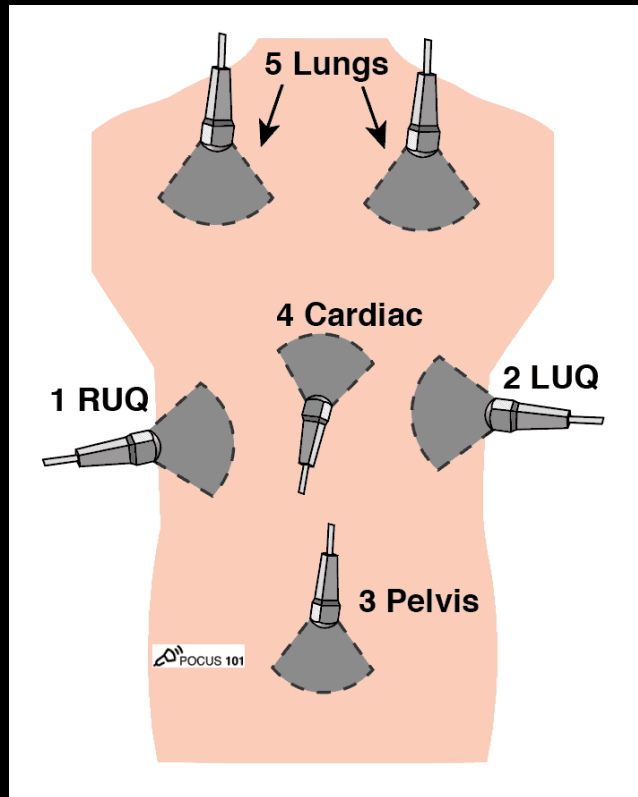
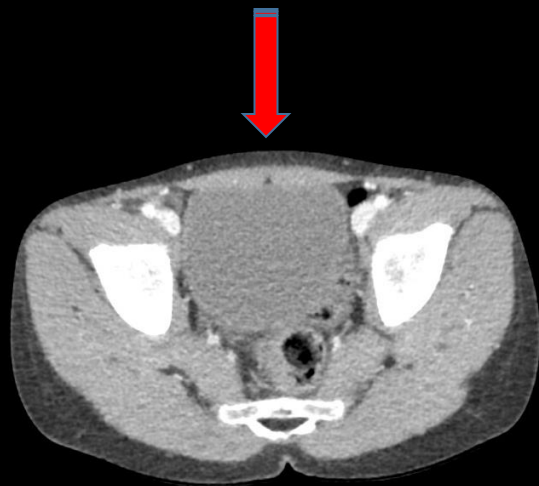
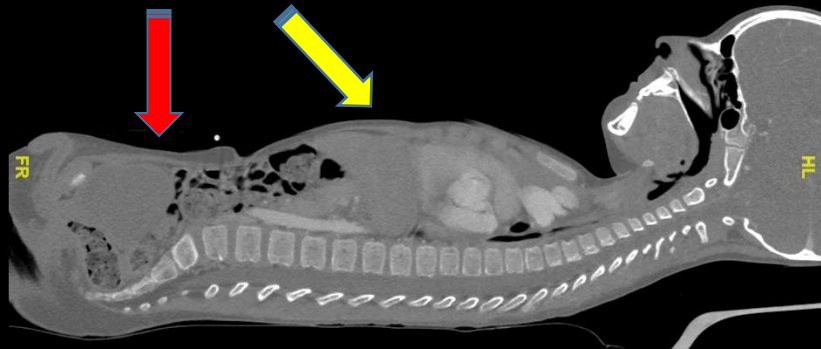
FAST ou e-FAST ?

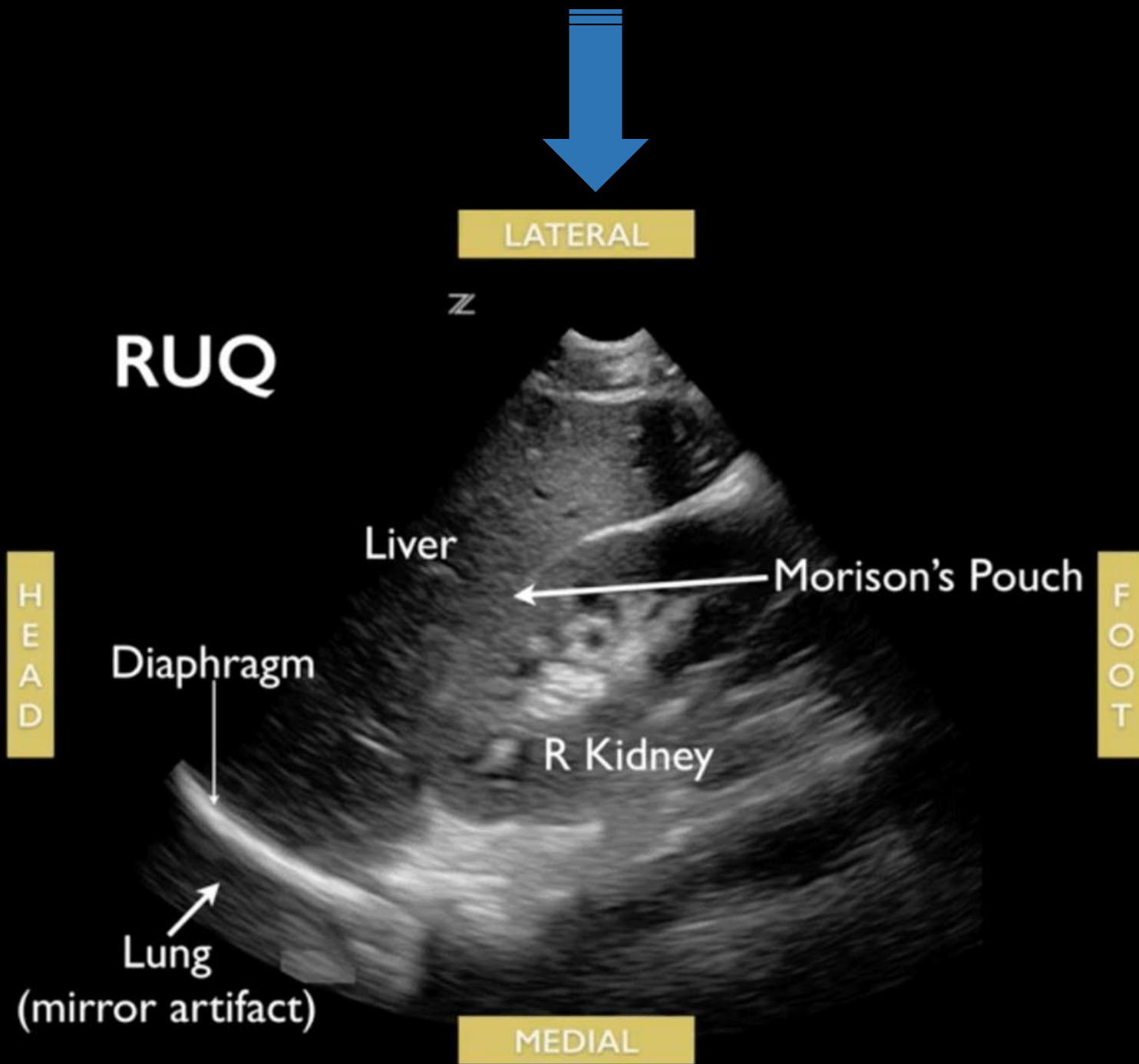
- FAST =
 - 4 incidences abdominales
- **E- FAST**
 - Idem
 - 4-6 Incidences Thoracique
- Traumatismes fermés

FAST ou e-FAST ?

- Mon patient a-t-il :
 - Un épanchement dans L'ABDOMEN ?
 - Un épanchement dans LE THORAX ?
 - Un épanchement dans LE PERICARDE ?
 - Un PNEUMOTHORAX ?

Les coupes







Z

LATERAL

LUQ

Spleen

L Kidney

Diaphragm

H
E
A
D

Lung

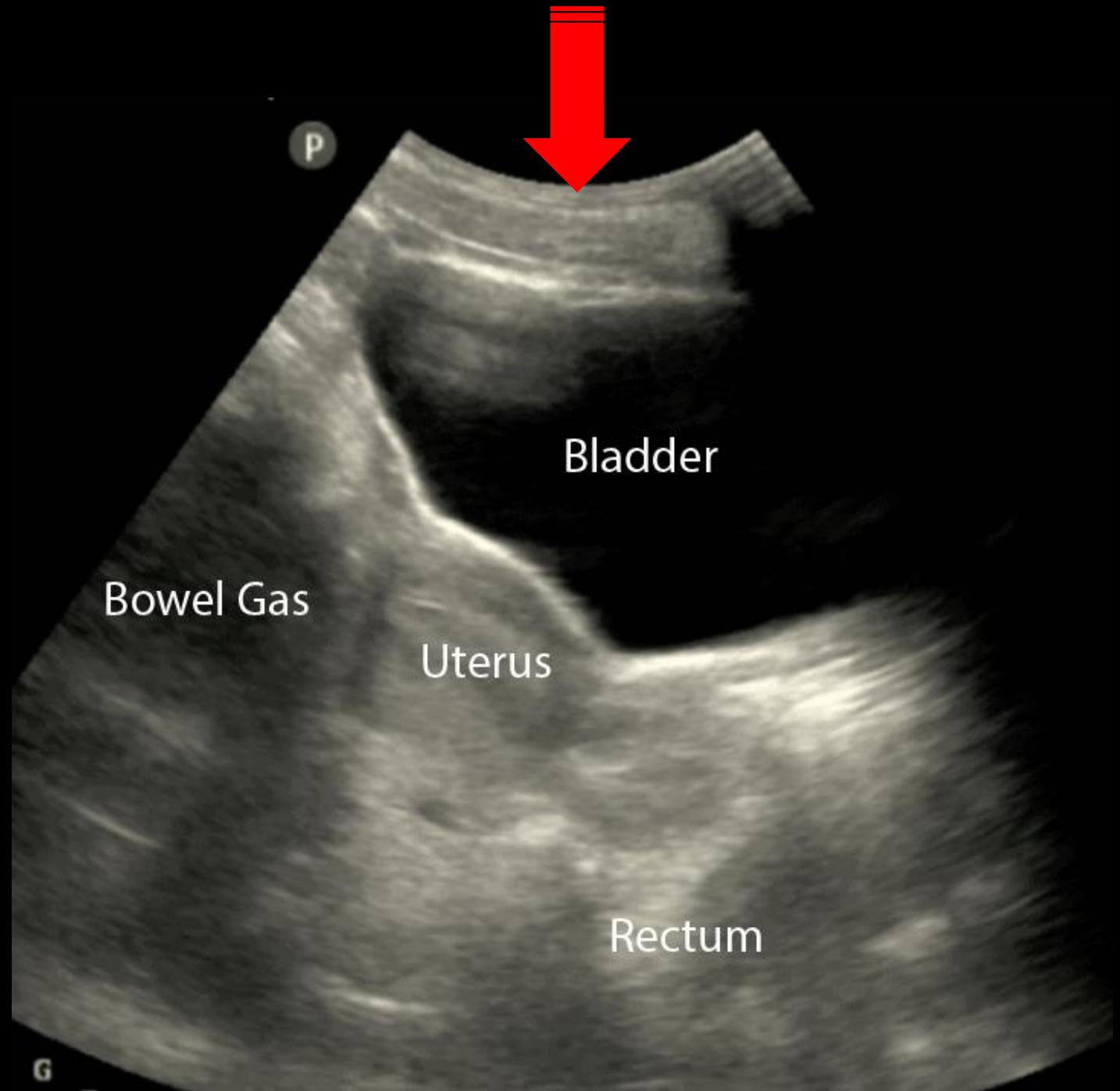
(mirror artifact)

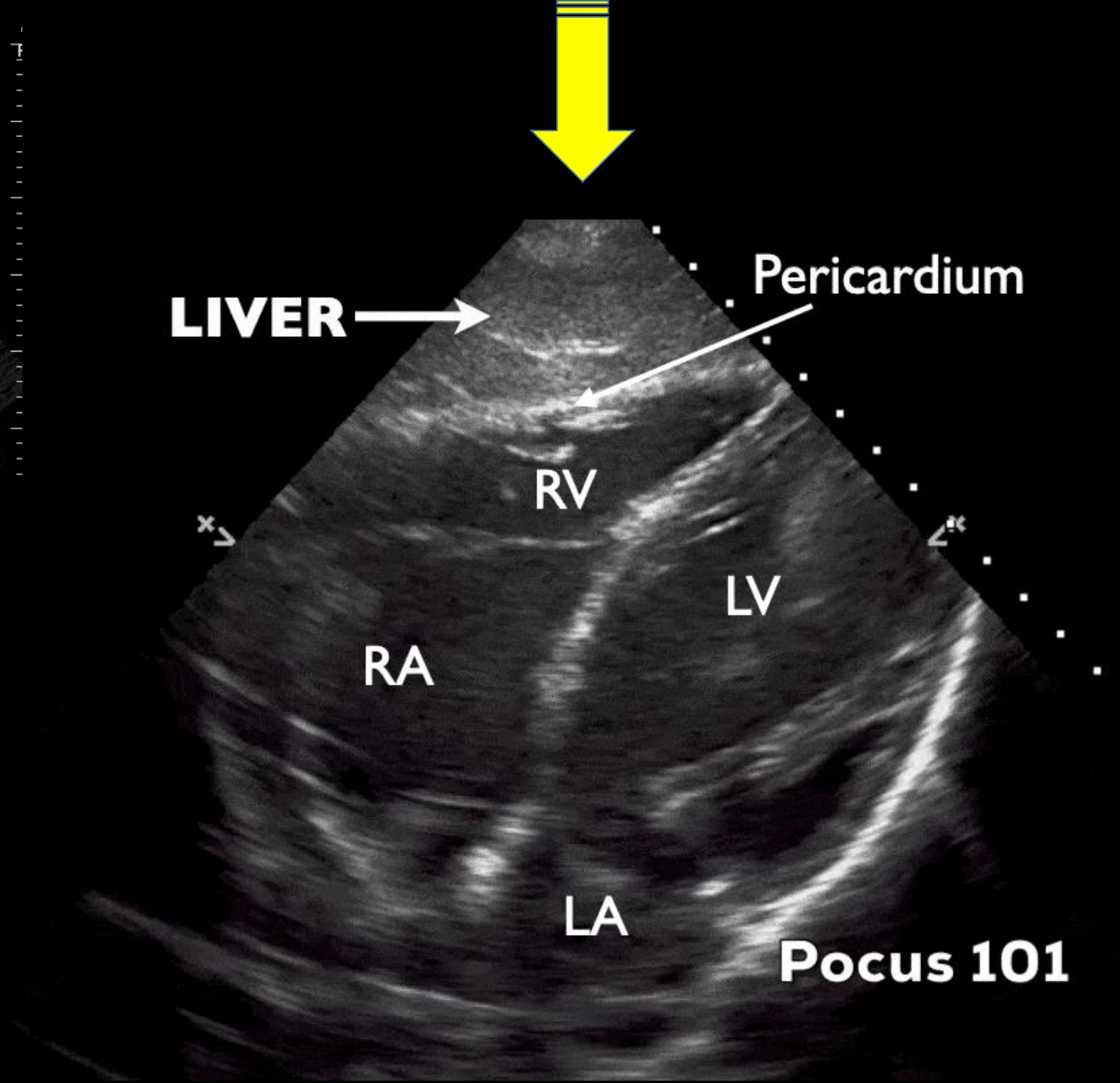
MEDIAL

LUQ

F
O
O
T







Gén
S MB

Abd
P10



64%

IM

0,8

ITM

0,7

A

B

Ne Pas
Divulgacher



Gén



0



Guide



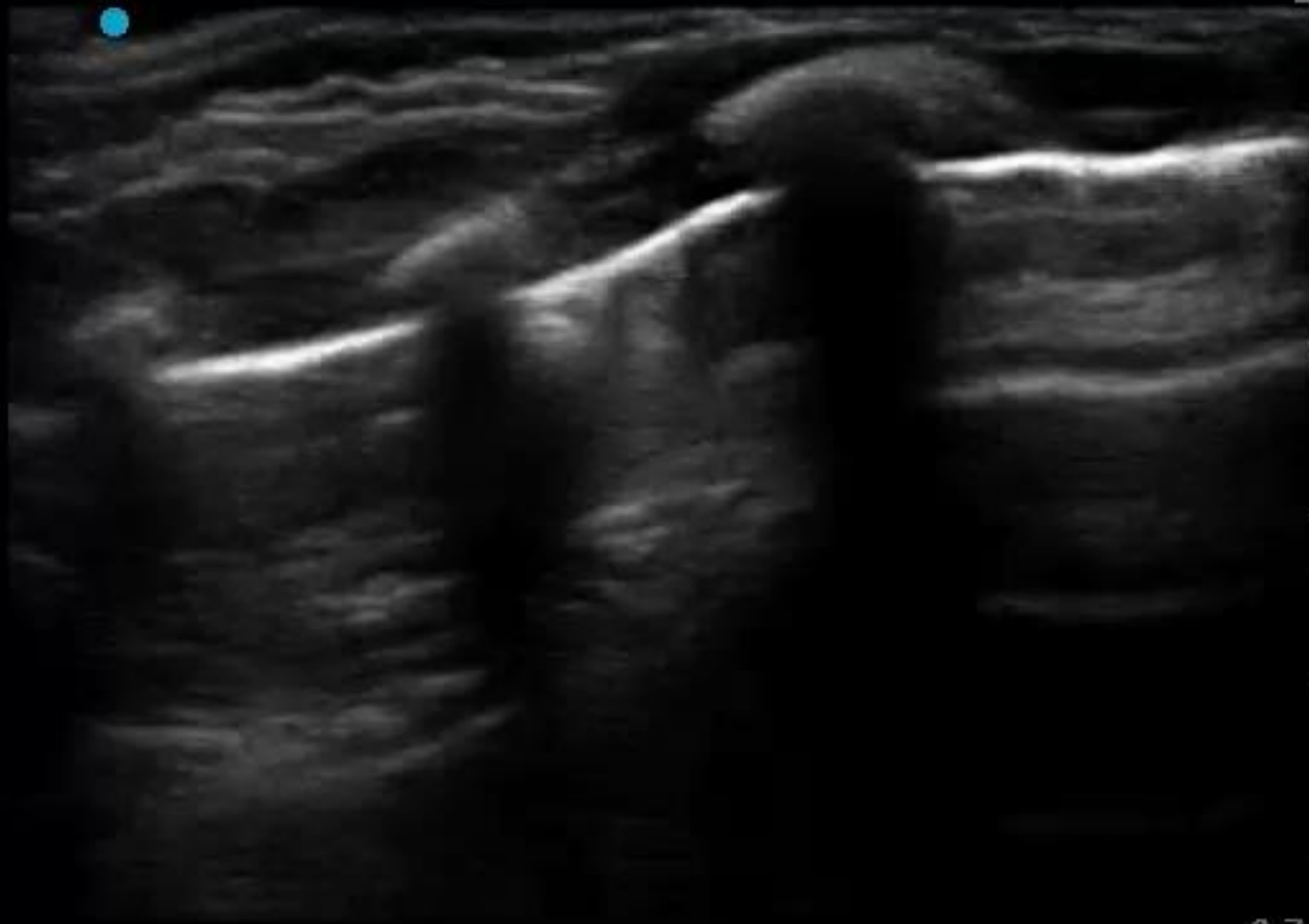
MB Oui



Double

Page 1/2

1103
S MB



HFL



94%

IM

1,0

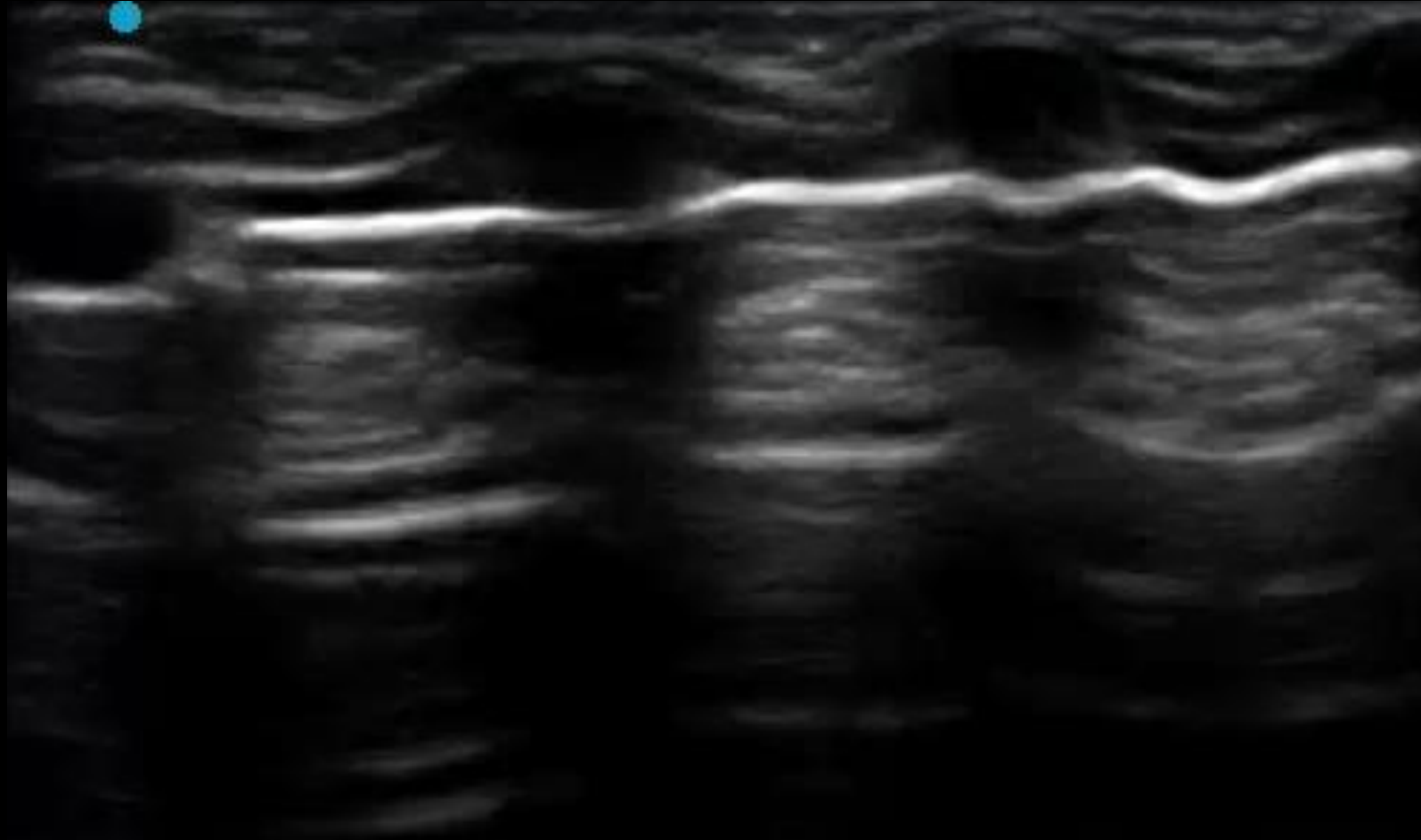
ITM

0,2

A

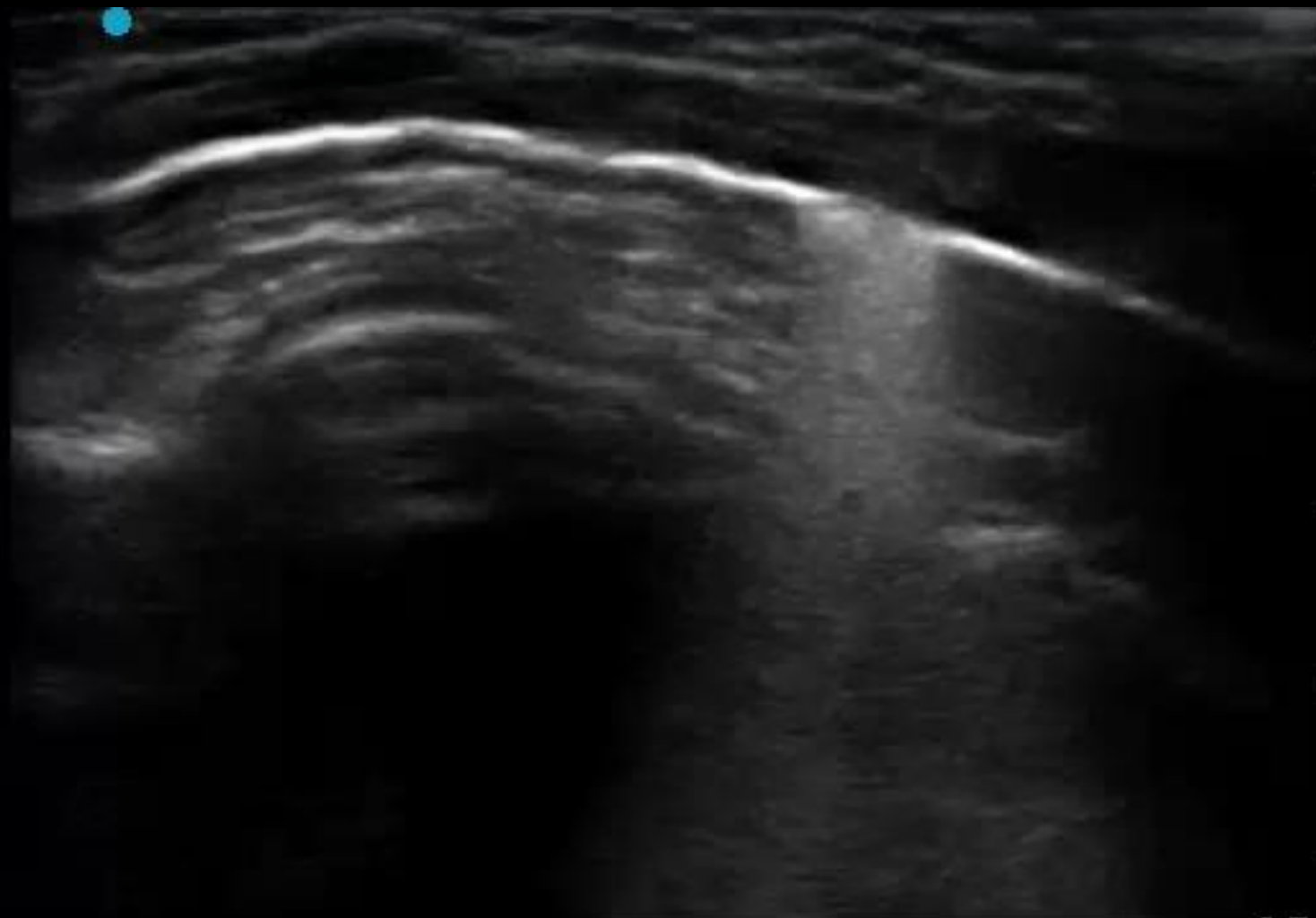
B

2,7



S

MB



HFL



94%

IM

1,0

ITM

0,2

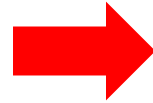
A

B

2,7

différent type d'échographe et de sondes

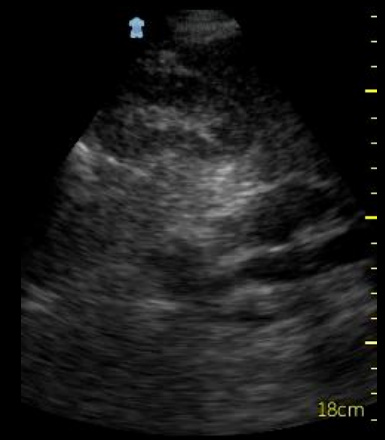
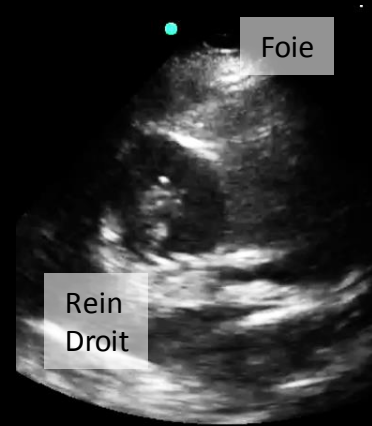
- Transportables
- **Portatifs**
- **Ultra Portatifs**



différent type d'échographe et de sondes

- Sondes Curvilignes
- Sondes Linéaires
- **Sondes Phased-array**





**Premier niveau de compétence pour l'échographie clinique
en médecine d'urgence.**

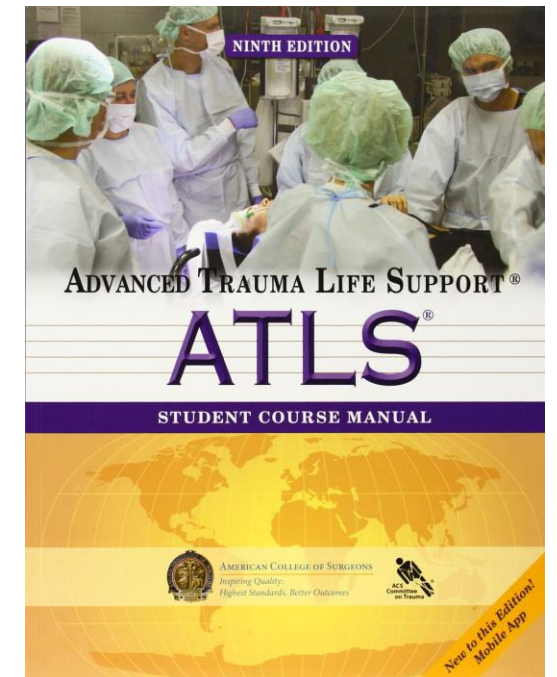
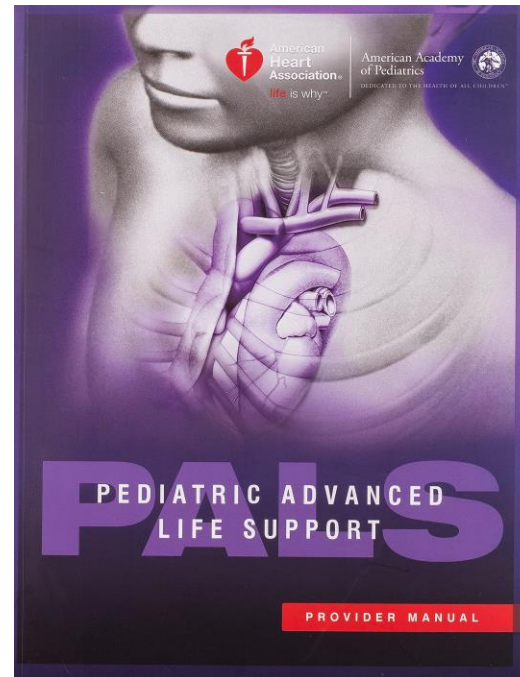
Recommandations de la Société française de médecine d'urgence par
consensus formalisé.

TEXTE LONG



Société française de médecine d'urgence

2016



Principaux pièges

- Rétropéritoine inaccessible
 - Thorax et Abdomen dédouanés
 - Instabilité hémodynamique
 - Bassin en pédiatrie
- Epanchements de petit volume
 - Adulte 500 ml
 - Enfants ?
- Organes creux (perforation)
 - Urgence retardée
- Niveau opérateur
- Interposition digestive
 - Estomac et espace spléno-rénal
- Ovulation et Douglas

Intérêt et limites

Table 4 Results of the sensitivity analysis (including only level 1 and 2 studies)

Ultrasound protocol	FAST (imaging solely for IP)	FAST (imaging solely for IP)
Outcome of interest	Hemoperitoneum	Any IAI ^a
	(n = 6)	(n = 5)
Sensitivity	66% (56%-75%)	50% (41%-59%)
Specificity	95% (93%-97%)	97% (95%-98%)
→ Likelihood ratio positive	14.5 (9.5-22.0)	14.8 (8.9-24.4)
→ Likelihood ratio negative	0.36 (0.27-0.47)	0.51 (0.43-0.61)

Sensitivity analysis included only those articles graded as level 1 or level 2 methodology. 95% CIs are provided in parenthesis.

^a Any IAI refers to those IAIs with and without hemoperitoneum.

RV+	RV-	Apport pour le diagnostic
> 10	< 0,1	Très bon - Diagnostic fiable
de 5 à 10	de 0,1 à 0,2	Assez bon - Diagnostic à confirmer avec d'autres tests
de 2 à 5	de 0,2 à 0,5	Faible - Autres tests nécessaires
de 1 à 2	de 0,5 à 1	Sans utilité pour le diagnostic

Intérêt et limites

Point-of-care ultrasonography for diagnosing thoracoabdominal injuries in patients with blunt trauma (Review)

Again, it remains important to consider the individual clinical scenario when interpreting POCS findings. While positive results will be almost always trustworthy and should prompt bleeding control measures, negative scans must be confirmed by a reference test like computed tomography (CT), or, in the case of limited resources, by sequential sonograms and clinical observation. This is of particular importance in paediatric trauma, where the sensitivity of POCS is extremely poor (0.62, 95% CI 0.47 to 0.75), potentially resulting in 118 children with missed injuries in a cohort of 1000 children with suspected blunt thoracoabdominal trauma. These accuracy patterns are probably a signature feature of POCS that cannot be overcome even by state-of-the-art equipment.

and 62 children would be falsely diagnosed as having sustained injuries (compared to 29 in the overall cohort).

Intérêt et limites

Point-of-care ultrasonography for diagnosing thoracoabdominal injuries in patients with blunt trauma (Review)

Adulte : Sensibilité 78% Spécificité 97%

Enfants : Sensibilité 63% Spécificité 91%

Abdomen : Sensibilité 68% Spécificité 95%

Thorax : Sensibilité 96% Spécificité 99%

Intérêt et limites

Point-of-care ultrasonography for diagnosing thoracoabdominal injuries in patients with blunt trauma (Review)

1. POCS is **positive** for free abdominal or thoracic fluid, or both, in a **haemodynamically stable** patient. This will prompt a CT scan (usually a pan-scan) to identify bleeding sources. In most cases, haemostatic transfusion (plus transarterial embolisation (TAE)) and intensive care unit (ICU) monitoring will be the treatment of choice in this setting.
2. POCS is **negative** for free abdominal or thoracic fluid, or both, in a **haemodynamically stable** patient. This will prompt a CT scan (usually a pan-scan) to verify that there are no active bleeding sources that were missed by ultrasound.
3. POCS is **negative** for free abdominal or thoracic fluid, or both, in a **haemodynamically unstable** patient. This will almost always prompt a CT scan (usually a pan-scan) to identify bleeding sources and to decide about TAE or emergency surgery, or both.
4. POCS is **positive** for free abdominal or thoracic fluid, or both, in a **haemodynamically unstable** patient. Currently, it is unlikely that stability could not be achieved by haemostatic resuscitation and other critical care efforts to make patients pan-scan ready.

Intérêt et limites

Point-of-care ultrasonography for diagnosing thoracoabdominal injuries in patients with blunt trauma (Review)

FAST Négative

FAST Positive

Patient Stable

Body – Scan
(pour être sûr)
Autres lésions
TRANSPORT !

Patient Instable

Body – Scan ?
Autres lésions
TRANSPORT ???

Body – Scan
Autres lésions
**TRANSFUSION
EMBOLISATION
TRANSPORT**

Body – Scan ?
Autres lésions
**BLOC
EMBOLISATION
TRANSPORT**

1. POCUS is **positive** for free abdominal or thoracic fluid, or both, in a **haemodynamically stable** patient. This will prompt a CT scan (usually a pan-scan) to identify bleeding sources. In most cases, haemostatic transfusion (plus transarterial embolisation (TAE)) and intensive care unit (ICU) monitoring will be the treatment of choice in this setting.
2. POCUS is **negative** for free abdominal or thoracic fluid, or both, in a **haemodynamically stable** patient. This will prompt a CT scan (usually a pan-scan) to verify that there are no active bleeding sources that were missed by ultrasound.
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4. POCUS is **positive** for free abdominal or thoracic fluid, or both, in a **haemodynamically unstable** patient. Currently, it is unlikely that stability could not be achieved by haemostatic resuscitation and other critical care efforts to make patients pan-scan ready.

One More Thing



One More Thing



+ BIF !



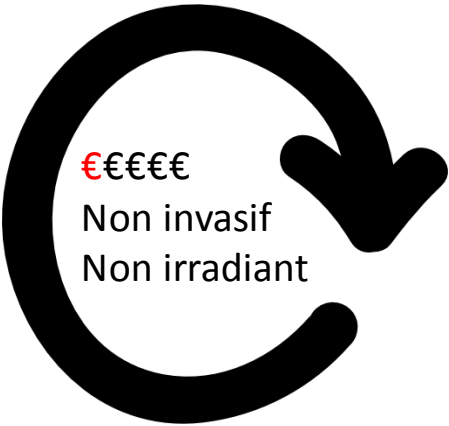
Take Home Message

 Minimum thorax & abdomen

E-FAST

 ≠ Abdomen

Take Home Message



Minimum thorax & abdomen

E-FAST

≠ Abdomen

Take Home Message



↖ Minimum thorax & abdomen

E-FAST

↘ ≠ Abdomen

€€€€€
Non invasif
Non irradiant

- YES
- NO
- ~~MAYBE~~

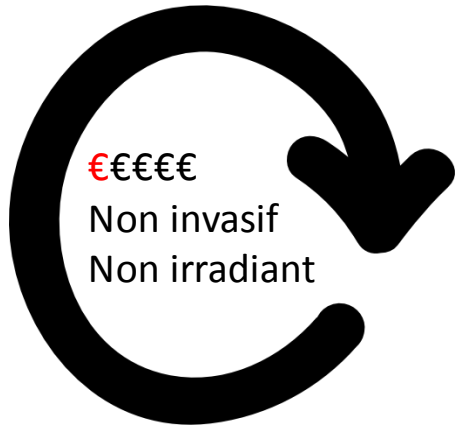
Take Home Message



↖ Minimum thorax & abdomen

E-FAST

↘ ≠ Abdomen



- YES
- NO
- ~~MAYBE~~

Take Home Message

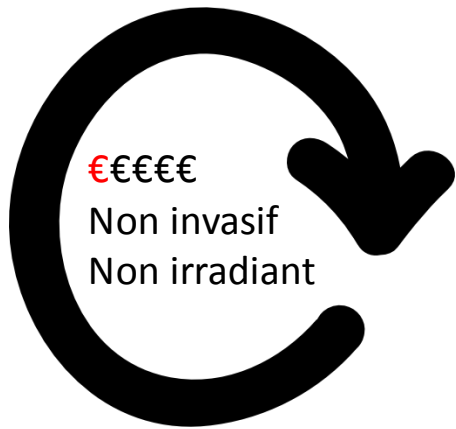


↖ Minimum thorax & abdomen

E-FAST

↘ ≠ Abdomen

- YES
- NO
- ~~MAYBE~~



PLACE ?

Algorithmes locaux : Préhospitalier et IntraHospitalier
Triage

Take Home Message

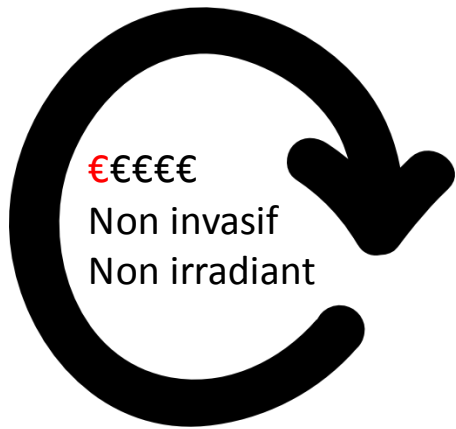


↖ Minimum thorax & abdomen

E-FAST

↘ ≠ Abdomen

- YES
- NO
- ~~MAYBE~~



PLACE ?

Algorithmes locaux : Préhospitalier et IntraHospitalier
Triage

Formation institutionnelle
#FOAMED : www.pocus101.com

Take Home Message

- Examen peu onéreux, non invasif et non irradiant
- **Apprentissage** facile (pas de belles images)
- Doit être **rapide** (pas de belles images, on vous dit ! Vous n'êtes pas radiologues)
- **Réponse binaire** (vous n'êtes pas radiologues)
- **Facile** en pédiatrie (condition techniques), mais **moins informatif** que chez l'adulte
 - Attention aux Faux négatifs (répéter l'examen ou réaliser un autre examen)
 - Attention aux Faux positifs (vous n'êtes pas radiologues)
- A intégrer dans un raisonnement diagnostique et thérapeutique global
- Permet rarement (en l'état) d'emporter seul une décision

Minimum thorax & abdomen
E-FAST
≠ Abdomen

PLACE ?

