



POCUS

-Point of care ultrasound

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Kim Nylund

Overlege og postdoc

Nasjonal senter for gastroenterologisk ultrasonografi

Haukeland Universitetssjukehus

Bergen



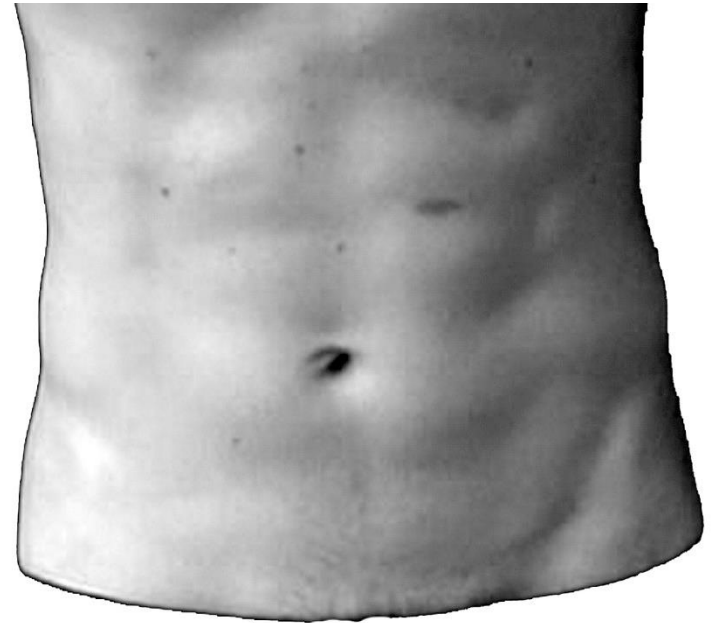
QUESTION
EVERYTHING

??
WHY?



Oversikt

- POCUS definisjon
- POCUS utstyr
- POCUS Hvorfor?
- POCUS Kasuistikker



En helt vanlig mage



En karikert ultralydprobe

POCUS

Point Of Care UltraSonography

Målrettet ultralydundersøkelse



POCUS-selvstudium

Ulike begreper

- POCUS
- Visual stethoscope→
- Echoscapy

Synonymer for målrettet
ultral lyd

- BLUE-bedside lung ultrasound in emergency
- FAST-focused assessment with sonography in trauma
- Extended FAST (inkluderer lungene)
- CLUE-cardivascular limited ultrasound examination

Spesifikke metoder



FAST



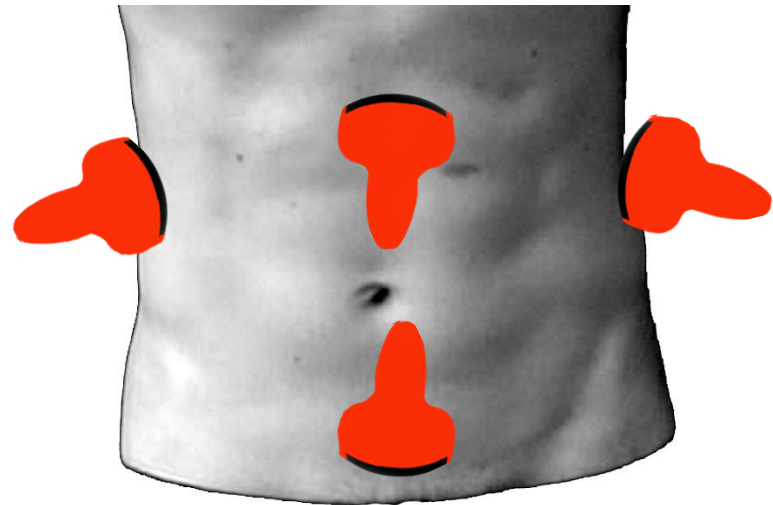
-Focused assessment with Sonography for Trauma

- Problemstilling:

- Traumeutløste blødninger.

- 4 stasjoner:

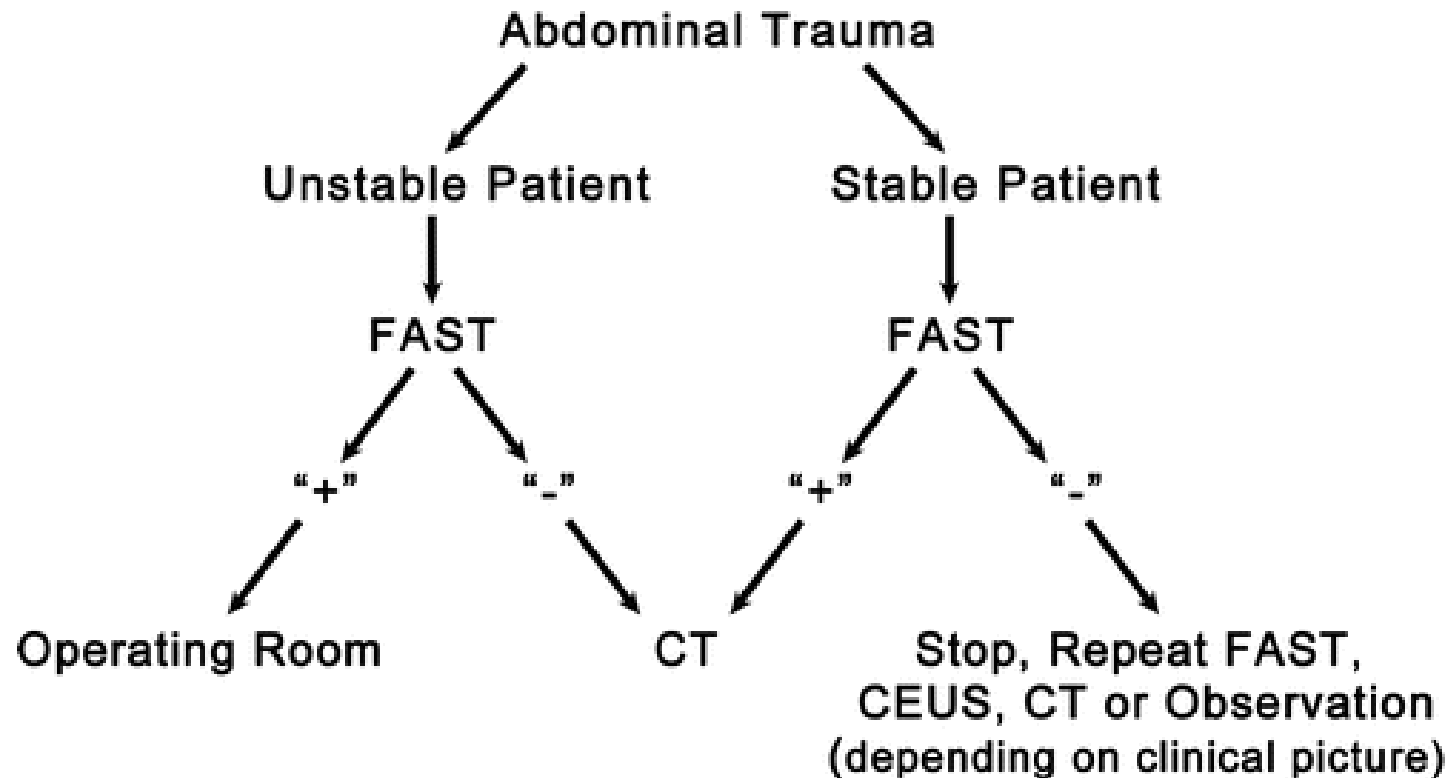
- Subxiphoid
 - Øvre venstre kvadrant
 - Øvre høyre kvadrant
 - Suprapubisk





FAST

-Focused assessment with Sonography for Trauma



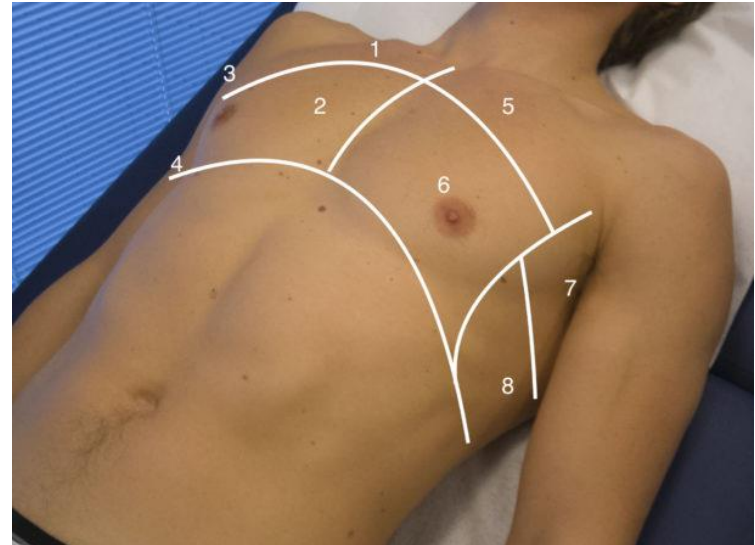


BLUE



-Bedside lung ultrasound in emergency

- Problemstilling:
 - Lungeødem,
pneumoni,
pleuravæske,
pneumothorax



POCUS

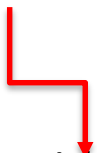
Klinisk informasjon



Måltrettet ultralydundersøkelse

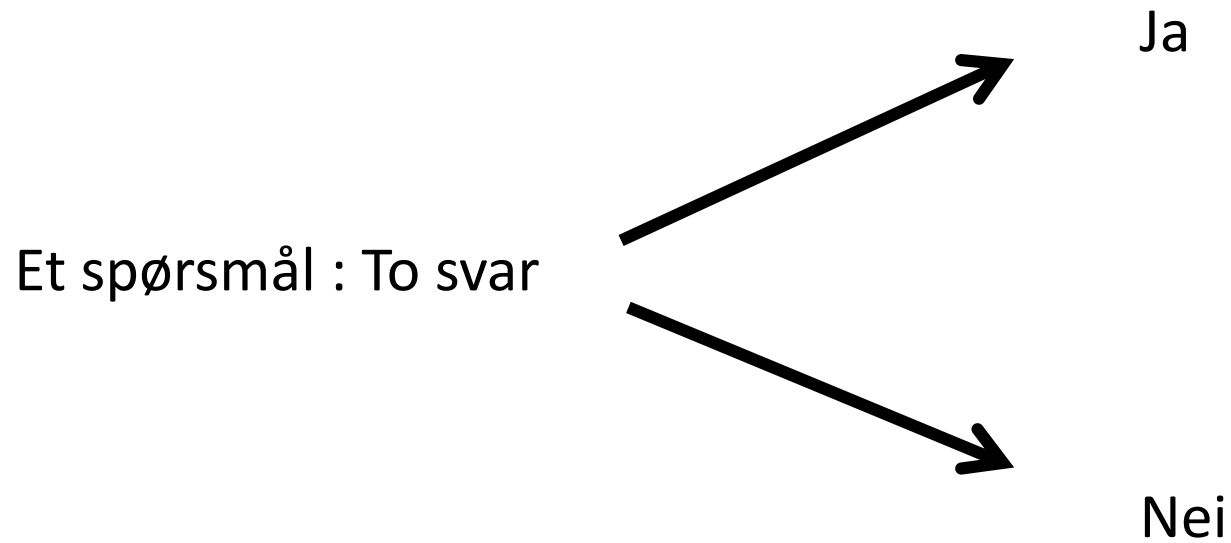


Reduksjon i antall tentative diagnoser

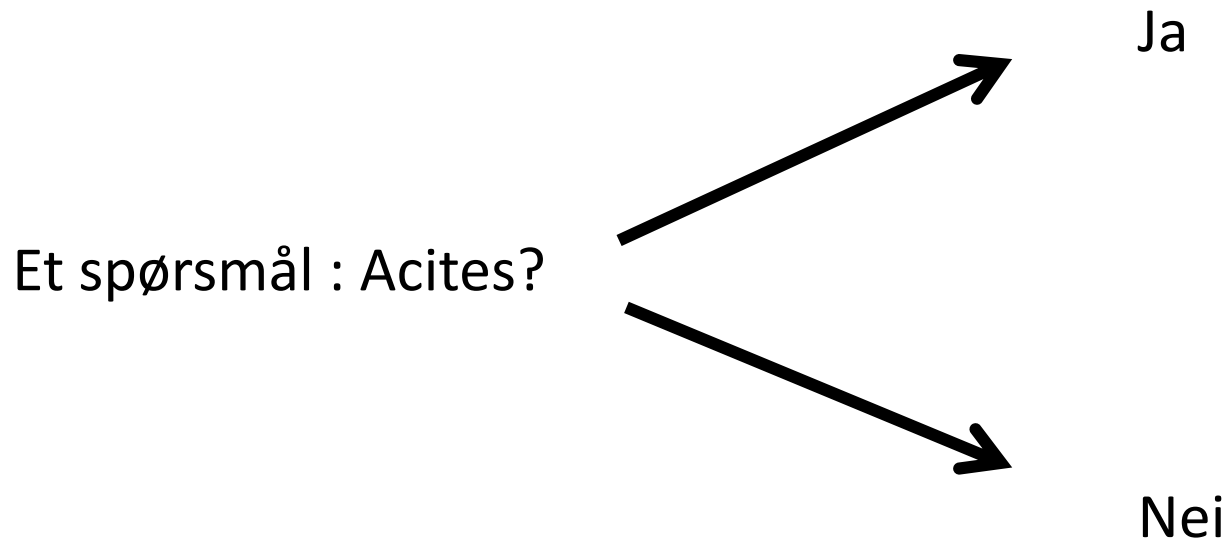


Spissing av videre diagnostikk

POCUS



POCUS



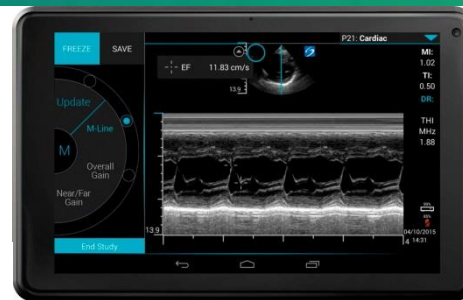
Utstyr til POCUS



VSCAN



Logiq S8



IVIZ



Hvorfor?



VS





Hvorfor?



VS



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Hvorfor?



VS





Hvorfor?



VS



Klinisk undersøkelse

- Lite presist
- Tilstander som lett kan sees med ultralyd er vanskelig å vurdere klinisk:
 - pleuravæske, lungeødem, pneumothorax, lungeinfiltrat med luftbronkogram, aortaaneurisme
 - dyp venetrombose
 - sentralvenetrykk (dilatert vena cava), pericardvæske, venstre ventrikkelfunksjon
 - ascites
 - urinretensjon

POCUS vs klinisk undersøkelse

TABLE. Test Characteristics of Physical Examination vs Point-of-Care Ultrasonography

Test characteristics	Physical examination ³¹					Point-of-care ultrasonography								
	Finding	Sensitivity	Specificity	LR+	LR–	Finding	Sensitivity	Specificity	LR+	LR–				
Pulmonary														
Pleural effusion	Percussion dullness	89%	81%	4.8	0.1	Pleural fluid visualization ³²	93%	96%	23	0.07				
	Decreased breath sounds	88%	83%	5.2	0.1									
Pulmonary edema	Crackles	19%-64%	82%-94%	3.4	NS	B lines (bilateral) ³³	94%	92%	10.4	0.06				
Pneumonia	Bronchial breath sounds	14%	96%	3.3	NS	Consolidation pattern ^{34,35}	94%-95%	90%-96%	13.5	0.06				
	Egophony	4%-16%	96%-99%	4.1	NS									
	Crackles	19%-67%	36%-94%	1.8	0.8									
Cardiac														
Elevated LV filling pressures	4th Heart sound	37%-71%	50%-70%	NS	NS	PCWP ≥17 if	75%	83%	4.4	0.3				
						IVC >2.0 ³⁶					MCCI <45% ³⁶	83%	71%	2.9
Elevated CVP >8 cm H ₂ O	Neck vein inspection	47%-92%	93%-96%	9.7	0.3	For CVP >10 mm Hg:	73%	85%	4.9	0.32				
						IVC size >2 cm ³⁷					87%	82%	4.8	0.16
						with IVCCI <50% ³⁸								
						For CVP <10 mm Hg:					85%	81%	4.4	0.2
						IVC <2 cm ³⁹	47%	77%	2.1	0.7				
						with IVCCI >50% ³⁹	78%	77%	3.5	0.3				
						IJV aspect ratio for CVP <8 ⁴⁰								
Reduced ejection fraction <50%	3rd Heart sound	11%-51%	85%-98%	3.4	0.7	LV systolic dysfunction ⁴¹⁻⁴³	84%-91%	85%-88%	6.5	0.14				
Congestive heart failure	Crackles	12%-23%	88%-96%	NS	NS	B lines, bilateral ²⁶	97%	95%	19.4	0.03				
	Elevated JVP	10%-58%	96%-97%	3.9	NS	For CVP >10 mm Hg:	73%	85%	4.9	0.32				
						IVC size >2 cm ³⁷					87%	82%	4.8	0.16
						with IVCCI <50% ³⁸								
	Abdominojugular test	55%-84%	83%-98%	8.0	0.3	CVP <10 mm Hg:	85%	81%	4.4	0.2				
						IVC <2 cm ³⁹					47%	77%	2.1	0.7
	Edema	10%	93%-96%	NS	NS	with IVCCI >50% ³⁹								

POCUS vs klinisk undersøkelse

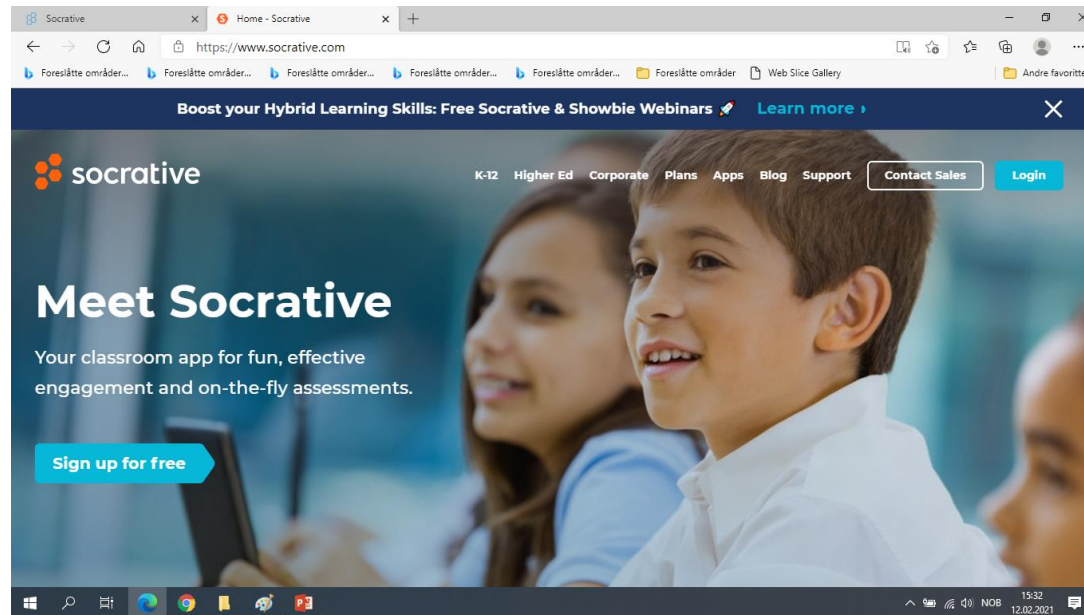
TABLE. Continued

Test characteristics	Physical examination ³¹					Point-of-care ultrasonography				
	Finding	Sensitivity	Specificity	LR+	LR–	Finding	Sensitivity	Specificity	LR+	LR–
Abdomen										
Hepatomegaly	Percussion	61%-92%	30%-43%	NS	NS	Hepatomegaly (≤13 or ≥15.5 cm) ⁴⁴	82%	90%	8.2	0.2
	Palpation	39%-71%	56%-85%	1.9	0.6					
Splenomegaly	Percussion	25%-85%	32%-94%	1.7	0.7	Splenomegaly ⁴⁵	100%	74%	3.8	0
	Palpation	18%-78%	89%-99%	8.5	0.5					
Bladder volume >400 mL	Palpation	82%	56%	1.9	0.3	US bladder volume >600 mL (transverse diameter >9.7 cm) ⁴⁶	96%	75%	3.84	0.05
Ascites	Bulging flanks	73%-93%	44%-70%	1.9	0.4	Ascites visualization ⁴⁷	96%	82%	32	0.04
	Flank dullness	80%-94%	29%-69%	NS	0.3					
	Shifting dullness	60%-87%	56%-90%	2.3	0.4					
	Fluid wave	50%-80%	82%-92%	5.0	0.5					
Vascular										
Lower extremity DVT	Calf swelling >2 cm	61%-67%	69%-71%	2.1	0.5	Compression venous ultrasonography ⁴⁸	96%	97%	32	0.04
	Homans sign	10%-54%	39%-89%	NS	NS					
	Wells score (high probability)	38%-87%	71%-99%	6.3	NA					

CVP = central venous pressure; DVT = deep vein thrombosis; IJV = internal jugular vein; IVC = inferior vena cava; IVCi = IVC collapsibility index; JVP = jugular venous pressure; LR+ = positive likelihood ratio; LR– = negative likelihood ratio; LV = left ventricle; NA = not applicable; NS = not significant; PCWP = pulmonary capillary wedge pressure; US = ultrasound.



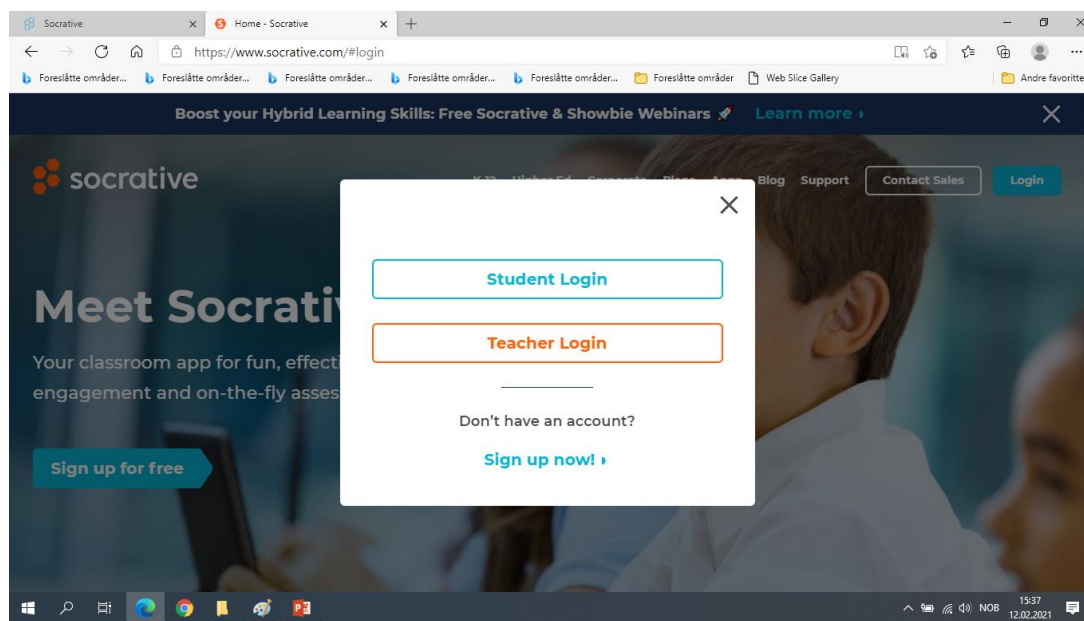
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