Etienne Richard, Directeur

SONOSCANNER
Premium Diagnostic Ultrasound

@sonoscanner
Webinar
27th of November 2019

With Tomislav Petrovic
Md, Emergency Physician, WINFOCUS

Welcome
Webinar – Sonoscanner – Our Product Range:

- Premium Ultrasound Orcheo XQ, wide screen 21” and 4 active probes, intensive use

- High-end Portable Ultrasound: Orcheo Lite, HD Probes and dedicated customized reports, regular use

- Ultraportable HD Ultrasound : U-Lite & T-Lite, <1kg fully featured, mixed use in & out patients

More than 2560 ultrasounds installed around the world
For your practice, benefit from T-Lite’s 5G 5F:

1. Full Day of Scan: 8h Back to Back Scanning
2. Full Probe Range: Up to 11 probes!
3. Full Ease of use: touchscreen functions
4. Full Screen Display: 10” of HD Ultrasonic image
5. Full Doppler Modes: including PW & TDI, CFM & PDI
Webinar – Sonoscanner - Our 5 reasons of success:

1. Ease of use, touchscreen interface
2. Image Quality HD
3. Full workflow: from scan to integrated reports
4. Financing solutions
5. Technical and medical support

« I have been using my Sonoscanner for 3 months. I use it 3 to 5 times a day. I am very satisfied of it. »

Dr Jean-Pierre Morvan, GP in Baud (56)
Webinar – Sonoscanner – Our team for your service:

We will be happy to assist you to:

1. Get onsite demonstration
2. Present our technical specifications
3. Study your budget
4. Plan your training

- To get in touch with your local representative:
  - Internation Sales Dept
  - international@sonoscanner.com
  - + 33 9 54 97 15 57
CLINICAL EMERGENCY ULTRASOUND

November 2019

Dr Tomislav PETROVIC
SAMU 93, Bobigny, France
WINFOCUS Past-President
WINFOCUS-France, President
Emergency medicine in French National Health system...
Emergency Medical Service (EMS)

Unique nationwide phone number

"Service d'Aide Médicale Urgente" SAMU

Emergency Medical Service (EMS)

Emergency Physician Dispatcher (EPD)

General Practitioner

Light ambulance

Mobile Intensive Care Unit (M.I.C.U.)

Police department

Fire department
Emergency Medical Service (EMS)

- **Mobile Intensive Care Station** (MICS)
- **Mobile Intensive Care Unit** (M.I.C.U.)

**On field**
- Diagnosis
- Treatment
- Stabilization

**M.I.C.U.** squad
- Driver
- Emergency nurse
- Emergency physician

**Orientation**
- EPD

* Mobile Intensive Care Station
** Mobile Intensive Care Unit
Emergency Medical Service (EMS)

446 MICS (24 paediatric)

- 910 MICU
- 638 Light Intensive Care vehicles
- 45 flying vehicles (mostly helicopters)
- Total: 1593 transportation means

\[ \cong 745,000 \text{ OH interventions} \]

- Primary interventions: 77% (approx. 572,000)
- Secondary interventions: 23% (approx. 166,000)
- "Air" interventions: 5% (approx. 42,000)

645 Emergency Departments

- Level 2 and 3: 60% (65% public)
- Level 1: 33% (97% public)
- Specialized departments: 7% (52% public)

Approx. 17 200 000 patients (for an overall population of 62 millions)

- 84% consulting in public centers
- 5% consulting in private centers with public agreement
- 11% consulting in private centers without public agreement

Inhospital Emergency Departments...

Patient’s pathway and waiting time

1. Patient’s arrival
2. Patient’s registration
3. Welcome by Hosting Organizer Nurse
4. 1st medical contact
5. Additional exams - Special advice
6. Medical conclusion and orientation
7. Home discharge
   (no specific transportation)
8. Discharge:
   Transfer or hospitalization
   or home discharge with
   specific transportation

- Waiting time before medical management
- Length of staying
- Time between end of management in ED and orientation towards hospitalization ward

ORU-CA 2014
Nationale survey

Step 1: Dec 2010 – June 2011\(^{(1)}\)
- 75% of ED and EMS screened
- IHED: 52% (171/327) (IC 95% [46; 58])
- PHED: 9% (25/278) (IC 95% [5; 13])

Step 2: Dec 2015 – June 2016\(^{(2)}\)
- 75% of ED and EMS screened
- IHED: 74% (171/327) (IC 95% [46; 58])
- PHED: 24% (25/278) (IC 95% [5; 13])

Long story...
Evidences...
<table>
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<th>Studies</th>
<th>n</th>
<th>Sens (%)</th>
<th>Spe (%)</th>
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<td>Coley et al, 2000</td>
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<td>38</td>
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<td>Total</td>
<td>6286</td>
<td>74.5</td>
<td>97.5</td>
<td>93.4</td>
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</table>

Alex Ng. The FAST examination. How good is FAST? trauma.org, 2001


International Liaison Committee on Trauma Ultrasound (ILC-TUS) for International Consensus Conference on Trauma Ultrasound (ICC-TUS). International evidence-based recommendations for point-of-care ultrasound in trauma: part I trunk trauma. In Process,
One-day (May 20, 2014), prospective, observational study

Institutional review board and Paris Ethical Committee approval

French in- and prehospital ED with permanently available US systems and trained physicians

All POCUS* exams

* Point Of Care UltraSound

Justification...

Echoday

- 50 Emergency departments
- 4671 patients (total per day)
- 192 (4%) POCUS*
- 229 (5%) US exams
  - 32 (14%) out-of-hospital
  - 197 (86%) in-hospital

* Point Of Care UltraSound

**Justification...**

**Echoday**

OR = 2.1 [1.3–3.4] : p = 0.001

Percentage of use (%)

- **Echocardiography**: 30% [24–36]
- **FAST**: 14% [10–19]
- **Urinary tract**: 14% [10–19]
- **Lung**: 11% [7–15]
- **Biliary tract**: 9% [5–13]
- **DVT**: 7% [4–11]

Most frequent POCUS sites. FAST: focused assessment with sonography for trauma. DVT: deep venous thrombosis.
4671 patients

229 POCUS (5%) for 192 patients (4%)

Procedural guidance 0 POCUS
Diagnosis 229 POCUS

Diagnosis impact 82% (188)
Therapeutic impact 47% (107)
Orientation impact 85% (193)
Imagery change 44% (101)

Confirmation 62% (141)
Change 20% (47)
New treatment 34% (76)
Stop treatment 63% (13)
Modification 7% (16)
Confirmation 58% (134)
Change 27% (59)
Avoided 19% (43)
Added 30% (68)

Overall clinical value: at least one impact or imagery change
217 POCUS (95%) for 181 patients (94%)
POCUS paradigm...
Education and training...
Toward an ultrasound curriculum for critical care medicine

Luca Neri, MD; Enrico Storti, MD; Daniel Lichtenstein, MD

Accurate assessment and rapid decision-making are essential to save lives and improve performance in critical care medicine. Real-time point-of-care ultrasound has become an invaluable adjunct to the clinical evaluation of critically ill and injured patients both for pre- and in-hospital situations. However, a high level of quality is necessary, guaranteed by appropriate education, experience, credentialing, quality control, continuing education, and professional development. Although educational recommendations have been proposed by a variety of nonimaging specialties, to date they are still scattered and limited examp of standards for critical and intensive care professionals. The challenge of providing adequate specialty-specific training, encouraged by major medical societies, is made even more difficult by the diversity of critical care ultrasound utilization among various subspecialties in a variety of settings and numerous countries. In order to meet this educational challenge, a standardization must be established in the training of ultrasound image interpretation and image-guided procedures in critical care medicine. This paper aims to outline a comprehensive ultrasound curriculum for critical care professionals to achieve this objective.
Integration in medical reasoning...

1. **“ABCDE” PRIMARY ASSESSMENT** (Vital signs, anomalies, detectable causes, responses, complications)

   - **AIRWAY**: Airway patency & obstructive causes
   - **BREATHING**: Respiratory performance & dyspnea/hypoxemia causes
   - **CIRCULATION**: Haemodynamics & shock /hypotension causes
   - **CERVICAL US**
   - **LUNG US**
   - **ECHOCARDIO**
   - **VASCULAR US**
   - **ABDOMINAL US**

   - **VENTILATION**: Emphysema
   - **Pneumothorax**
   - **Pleural fluid**
   - **Atelectasia**
   - **Dyaphr. lesions**
   - **Multiple fractures**
   - **Heart performance** (rythm, contractility, volume, ratio)
   - **MIocard. failure**
   - **Pericardial fluid/tamponade**
   - **Acute dilatation**
   - **Valvular lesions**
   - **Pulm. embolism**

   - **Caival vein asset** (volume, responsiv.)
   - **Deep venous thrombosis** (limbs, iliac, subclavian)

   - **Peritoneal fluid** (FAST, abdominal)
   - **Haematomas ++** (parenchymal, sub-capsular, pre- & retro-peritoneal spaces, retro-placental)
   - **Large haematomas** (chest and abdominal wall, limbs, pelvis, perineum)
   - **Peripheral pulse**

   - **Optic nerve enlarg. Pupilla reflexes**
   - **Midline shift**
   - **Neonatal/Infant assessment**
   - **Preventing missed life-threatening lesions**

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**ULTRASOUND ENHANCED CRITICAL MANAGEMENT CYCLE:**

1) Primary “ABCDE” Assessment
2) Resuscitation
3) Secondary “Head-to-toe” Assessment
4) Intensive / Definitive Care
5) Continuing Follow Up

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**DISABILITY**: Neurologic status & coma/focal signs causes

**EXPOSURE**: Exclude missed findings

**CRANIAL US**

**SOFT TISSUE US**

**Miscellanea**
2. "ABCDE" RESUSCITATION (Electric, Fluid/Drug, Interventional)

- Airway device management: naso/oro/tracheal intub., crico-tyroid., tracheo-tomy, tracheo-stomy
- Needle toracho-centesis
- Thoracotomy
- Pericardio-centesis
- Diagnostic paracentesis
- DPL/Mini-laparotomy
- Laparotomy (intra/post-operative)
- Central & peripheral vascular puncture, venous cutdown, intraosseous puncture (confirmation)*
- Nasogastric tube insertion, Urinary catheterization/ Cistocentesis, Pre/intra/post-operative applications...
- Fluid therapy management (input, output)
- Drug therapy management (inotropes, thrombolitics, diuretics, antidots)
- Defibrillation (recovery, PEA vs pseudo-PEA)
- Pacing (mechanical capture, intra-venous guidance)

3. "HEAD-to-TOE" SECONDARY ASSESSMENT

4. INTENSIVE / DEFINITIVE CARE

- Pre/intra/post-operative applications
- Loco-regional anaesthesia
- Foreign body detection / extraction ... Others
- +/- "ABCDE" applications
- +/- "LEVEL 2" applications
- Skull fractures
- Maxillar haemosenus
- Transcranial Doppler
- Ocular lesions
- Lung contusions
- Rib, sternum fractures
- Dyaphalis fractures
- Muscular lesions ++
- Articular fluid
- Haematomas ++
- Liver, spleen, kidney, dyaphragmatic lesions
- Pneumoperitoneum
- Retroper. haematomas
- Ileum, Intest. Ischemia
- Scrotal Trauma
- +/- "ABCDE" evaluation
- +/- "LEVEL 2" evaluation

5. CONTINUING FOLLOW UP

- Serial examinations & monitoring

Assess vital functions, failures, lesions, causes, and anathomic areas - Address electric, fluid/drug and interventional resuscitation
Provide pre/intra/post- procedural/operative guidance - Evaluate and monitor treatment efficacy - Detect and treat complications - Re-assess

http://www.youtube.com/watch?v=CgLp97N2Kfc
Patient's pathway and waiting time

1. Patient's arrival
2. Medical management
3. Medical conclusion and orientation
4. Home discharge (no specific transportation)
5. Discharge: Transfer or hospitalization or home discharge with specific transportation

**Key Points:**
- **Waiting time before medical management**
- **Length of staying**
- **Time between end of management in ED and orientation towards hospitalization ward**
Clinical applications...
- **Airway**  larynx & trachea
- **Breathing**  lungs & veins
- **Circulation**  heart & abdomen
- **Disability**  Central nervous system
- **Exposure**  From head to toe (peripheral lesions & others)
• **Airway**
• **Airway**
• Breathing
• Breathing
• Breathing
• Breathing
• Breathing
• Circulation

Zones déclives
• Circulation
• Circulation
• Circulation
• Circulation
• Disability
• Exposure
• **Exposure**
• Venous access (central +++)
• Arterial access
• Verification (tip, needle and catheter)
- Venous access (central +++)
- Arterial access
- Verification (tip, needle and catheter)
Questions?
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Thanks, to go further...

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You are not yet equipped?
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international@sonoscanner.com

⇒ « 4 days ago, a Friday, a patient came with phlebitis suspicion. I would have love
to already have my ultrasound then! », Dr Marsaudon