

Birth of „Echoscapy“ – The EFSUMB Point of View

Thanks to the miniaturization provided by the rapid evolution of information technology, in recent years it has become possible to reduce the size of ultrasound scanners to hand-held battery-supplied devices, which easily fit in the pocket of white coats. EFSUMB has questioned about the use and role of such scanners (see also EFSUMB case of the month July 2012 at www.efsumb.org). Despite the relatively high quality, clearly the size of the screen is smaller than that of conventional scanners and the resolution limited with less options for changing the type of probes. Nonetheless, the advantages of such miniaturized scanners are clear and straightforward. They can easily be used bedside to extend the physical examination, to integrate or replace the stethoscope.

Prior to this maximum miniaturization of scanners, over the last decade it became possible to utilize portable scanners, namely scanners that can be utilized with battery power also including all conventional and Doppler ultrasound features and occasionally offering contrast-enhanced technology with high quality. These equipments may be utilized as hand-held, but are better managed with small wheel cars to be brought bedside. Such equipments are easily utilized in emergency settings, since they can be very quickly switched on and utilized bedside, differently from top quality big scanners. The advent of such portable scanners, which can be easily utilized in clinical settings such as the emergency unit or clinical divisions, opened the way to the concept of point-of-care ultrasound, namely „ultrasonography performed bedside and interpreted directly by the clinician.“ (C. Moore, J Copel. *NEJM* 2011; 364: 749–57). Direct performance of ultrasonography by the clinician in charge of the patient has the added value to more rapidly follow new diagnostic hypothesis and support immediate therapeutic decisions. Point-of-care ultrasonography is not aimed at replacing comprehensive ultrasonography, but at giving the physicians immediate access to clinical problems for rapid and direct solutions. Point-of-care ultrasonography requires adequate knowledge of ultrasonography by the operator for the respective clinician situations and a scanner capable for this setting.

However, it is important to point out that a certain number of issues that can be solved bedside are easy to be clarified and do require neither comprehensive knowledge of ultrasonography by the operator or high-performing scanners. To definitively and clearly distinguish these two situations, EFSUMB hereby proposes to utilize two different names for the two settings. In the first one, usually termed echography or ultrasonography, either performed bedside or in the ultrasound lab, an assessment of the region related to the suspected disease is performed to search for pathology, usually assessing more than one organ (e.g. various abdominal organs, or assessment of the thorax, or the neck, etc). A full report of the examination is always required and images of all examined organs are normally collected. In the second instance, termed Echoscapy, only one answer, usually in the terms of yes or no, is required to solve a specific clinical question (please see table below). The answer can be reported in the clinical journal of the patients as an extension of the physical examination and does not require a full report, provided that it is specified that the exam was an Echoscapy performed bedside. To this aim pocket-sized ultrasound scanners are well suited, like also bigger and non-portable equipment. Some of the most common clinical scenarios which can be solved bedside

with a basic level of ultrasound knowledge and with pocket size scanners, and which thus fall under the definition of Echoscapy according to the EFSUMB point of view, are the following: **Table 1.** The advantage of Echoscapy is that it can become easily accessible to most or all clinicians, to solve problems during their rotations in any clinical ward, since the ultrasound approach to all these instances can be learned in a rather short time and pocket size scanner can be made available to all of them even during nighttime duties. Such scanners do not require to be locked inside the ultrasound office, but can be kept in the clinical wards or in the pocket of the doctors. It is important to clarify, that the operator performing an ultrasound examination, defines whether this is an Echography or an Echoscapy, according to his / her skills and to the level of the ultrasound scanner available on that occasion and defines the clinical question to be answered.

To summarize EFSUMB envisions three levels of mobile ultrasound that can be performed at the bedside (in which any of the superior includes the previous inferior level):

1. Echoscapy with any marketed ultrasound scanner, pocket size ones included
2. Point of care ultrasound
3. Comprehensive advanced ultrasound with high-end equipment, moved on wheels to the bedside.

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Table 1

Clinical Situation	Clinical Question	Echoscopic answer
Abdominal enlargement. Obesity or ascites?	Free abdominal fluid?	YES or NO
Area of Pulmonary dullness at percussion	Presence of pleural effusion?	YES or NO
Tachycardia, low cardiac tones, low voltages on EKG	Pericardial effusion?	YES or NO
Pulsating mass in epigastrium at palpation	Aortic aneurysm?	YES or NO
Marked decrease or lack of urinary bladder output	Bladder overdistension?	YES or NO
Worsening of renal function	Hydronephrosis?	YES or NO
Jaundice	Dilated intrahepatic biliary tree?	YES or NO
Suspected mass at abdominal palpation	Mass confirmed?	YES or NO
Fluid aspiration required	Fluid confirmation and location prior to aspiration / drainage	Choice of the puncture site
Reduction of urinary output in patients with urinary catheter	Catheter correctly placed in the urinary bladder?	YES or NO
Enlarged spleen?	Measure spleen length, longer than normal?	YES or NO
Suspected cholecistitis	Large gallbladder stones?	Yes or NO