2017-2018 TRIALS ON POCUS

part one

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Title	Journal	PMID	Authors	DOI	Abstract
When to incorporate point-of-care ultrasound (POCUS) into the initial assessment of acutely ill patients: a pilot crossover study to compare 2 POCUS-assisted simulation protocols.	Cardiovasc Ultrasound	30200973	Bennett CE;Samavedam S;Jayaprakash N;Kogan A;Gajic O;Sekiguchi	2018 Sep 11	RESULTS: Seven providers completed 14 assessments (7 sequential and 7 parallel). The median (IQR) total NASA-TLX score was 30 (30-50) in the sequential and 55 (50-65) in the parallel protocol (P = .03), which suggests a significantly lower workload in the sequential protocol. When individual components of the NASA-TLX score were evaluated, mental demand and frustration level were significantly lower in the sequential than in the parallel protocol (40 [IQR, 30-60] vs 50 [IQR, 40-70]; P = .03 and 25 [IQR, 20-35] vs 60 [IQR, 45-85]; P = .02, respectively). The time needed to complete the assessment was similar between the sequential and parallel protocols (8.7 [IQR, 6-9] minutes vs 10.1 [IQR, 7-11] minutes, respectively; P = .30). **CONCLUSIONS: A sequential POCUS-assisted protocol posed less workload to POCUS operators than the parallel protocol.**
The role of point of care ultrasound in prehospital critical care: a systematic review.	Scand J Trauma Resusc Emerg Med	29940990	Botker MT;Jacobsen L;Rudolph SS;Knudsen	2018 Jun 26	3264 studies published from 2012 to 2017. Of these, 65 studies were read in full-text for assessment of eligibility and 27 studies were ultimately included and assessed for quality by SIGN-50 checklists. CONCLUSION: Prehospital POCUS is feasible and changes patient management in trauma, breathing difficulties and cardiac arrest, but it is unknown if this improves outcome. **Expertise in POCUS requires extensive training by a combination of theory, hands-on training and a substantial amount of clinical examinations - a large part of these needs to be supervised.**
Prehospital point-of-care emergency ultrasound: a cohort study.	Scand J Trauma Resusc Emerg Med	29914554	Scharonow M;Weilbach	2018 Jun 18	RESULTS: A total of 99 (18.1%) emergency ultrasound examinations were performed during 546 callouts. The most common indications for prehospital emergency ultrasound were dyspnoea (n = 38; 38.4%), during cardiac arrest (n = 17/17.2%), fall (n = 12/12.1%) and high-speed trauma (n = 11/11.1%). **CONCLUSIONS: Emergency ultrasound was as often used in the prehospital situation as it is in hospital. The ultrasound findings correlated well with in-hospital diagnostic results. Significant pathology changed patient-management, without prolonging the mission time.**
Accuracy and outcome of rapid ultrasound in shock and hypotension (RUSH) in Egyptian polytrauma patients.	Chin J Traumatol	29784591	Elbaih AH;Hosseini AM;Khalifa ME	2018 Jun	RESULTS: The most diagnostic causes of unstability in polytrauma patients by RUSH are hypovolemic shock (64%), followed by obstructive shock (14%), distributive shock (12%) and cardiogenic shock (10%) respectively. RUSH had 94.2% sensitivity in the diagnosis of unstable polytrauma patients; the accuracy of RUSH in shock patients was 95.2%. **CONCLUSION: RUSH is accurate in the diagnosis of unstable polytrauma patients; and 4% of patients were diagnosed during follow-up after admission by RUSH and pan-CT.**
Bedside ultrasound to detect central venous catheter misplacement and associated iatrogenic complications: a systematic review and meta-analysis.	Crit Care	29534732	Smit JM;Raadsen R;Blans MJ;Petjak M;Van de Ven PM;Tuinman P	2018 Mar 13	RESULTS: We included 25 studies with a total of 2548 patients and 2602 CVC placements. Analysis yielded a pooled specificity of 98.9 (95% confidence interval (CI): 97.8-99.5) and sensitivity of 68.2 (95% CI: 54.4-79.4). US examination was feasible in 96.8% of the cases. The prevalence of CVC malposition and pneumothorax was 6.8% and 1.1%, respectively. The mean time for US performance was 2.83 min (95% CI: 2.77-2.89 min) min, while chest x-ray performance took 34.7 min (95% CI: 32.6-36.7 min). US was feasible in 97%. Further analyses were performed by defining subgroups based on the different utilized US protocols and on intra-atrial and extra-atrial misplacement. Vascular US combined with transthoracic echocardiography was most accurate. **CONCLUSIONS: US is an accurate and feasible diagnostic modality to detect CVC malposition and iatrogenic pneumothorax. Advantages of US over chest x-ray are that it can be performed faster and does not subject patients to radiation. Vascular US combined with transthoracic echocardiography is advised. However, the results need to be interpreted with caution since included studies were often underpowered and had methodological limitations. A large multicenter study investigating optimal US protocol, among other things, is needed.**
Ultrasound detection of diaphragm position in the region for lung monitoring by electrical impedance tomography during laparoscopy.	Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub	29467544	Buzkova K;Muller M;Rara A;Roubik K;Tyll	2018 Mar	RESULTS: The diaphragm was shifted cranially during capnoperitoneum. The diaphragm detection rate rose by 10% during capnoperitoneum at the fifth intercostal space, from 55% to 65% and by 10% from 0% at mid-sternal level compared to mechanical ventilation without capnoperitoneum. **CONCLUSION: The diaphragm was detected in the area contributing to the creation of the thoracic EIT image. Considering the cranial shift of diaphragm caused by excessive intra-abdominal pressure, the impedance changes in the abdomen and the principle of EIT, we assume there could be a significant impact on EIT image of the thorax acquired during capnoperitoneum. For this reason, for lung monitoring using EIT during capnoperitoneum, the manufacturer's recommendation for electrode belt position is not appropriate.**
Semi-automated ultrasound guidance applied to nasogastrojejunal tube replacement for enteral nutrition in critically ill adults.	Biomed Eng Online	29415733	Li Y;Ye Y;Mei Y;Ruan H;Yu	2018 Feb 7	RESULTS: All the patients were treated with enteral nutrition via nasogastrojejunal tube, and the whole procedure was under the guidance of semi-automated ultrasonography. The end of the feeding tube is attached to the surface of the stomach with a greater curvature, which can be bent on account of a no gastric peristalsis squeeze function, and thereby were prevented from entering into the antrum and pylorus locations. After this procedure, the mental thread was taken out, and the tube was pushed forward by a 'drift' approach in order to allow it to enter into the intestine. The total nursing service satisfaction of patients was 90.24%, and the total incidence of adverse reactions was 17.07%. **CONCLUSIONS: In summary, the application of saline can be taken as sound window, and the metal wire as the tracking target, the bedside nasogastrojejunal tube guided by semi-automated ultrasound is an effective feeding tube placement method, with relatively good clinical application value in medical engineering.**
Ultrasound-assessed diaphragmatic impairment is a predictor of outcomes in patients with acute exacerbation of COPD undergoing NIV	Crit Care	29703214	Marchioni A;Castanier I;Tonelli R;Fantini R;Fontana M;Tabbi L;Viani A;Giaroni F;Ruggieri V;Cerri S;Clini	2018 Apr 27	METHODS: A population of 75 consecutive patients with AECOPD with hypercapnic acidosis admitted to our respiratory intensive care unit (RICU) were enrolled. Change in diaphragm thickness (DeltaTdi) < 20% during tidal volume was the predefined cutoff for identifying DD+/- status. **CONCLUSIONS: Early and noninvasive US assessment of DD during severe AECOPD is reliable and accurate in identifying patients at major risk for NIV failure and worse prognosis.**
Predictive Value of Cranial Ultrasound for Neurodevelopmental Outcomes of Very Preterm Infants with Brain Injury.	Chin Med J (Engl)	29664051	Zhang XH;Qiu SJ;Chen WJ;Gao XR;Li Y;Cao J;Zhang J	2018 Apr 20	Background: Compared with full-term infants, very preterm infants are more vulnerable to injury and long-term disability and are at high risk of death. The predictive value of ultrasound and imaging on the neurodevelopment is one of the hot topics. Results: The consistency rate between cUS and MRI was 88%. **Conclusions: Very premature infants with GMH Grades 3 and 4, short hospitalization duration, and low weight have low survival rates and poorly developed brain nerves. Cerebral palsy can result from severe cerebral hemorrhage, moderate and severe hydrocephaly, and extensive c-PVL. The sustained, inhomogeneous echogenicity of white matter may suggest subtle brain injury.**
Bedside ultrasound diagnosis of a malpositioned central venous catheter: A case report.	Medicine (Baltimore)	29642224	Song F;Huang D;Chen Y;Xiao Z;Su K;Wen J;Guo W;Wang Z;Wu Y;Wang S;Qin	2018 Apr	PATIENT CONCERNS: An 88-year-old male with severe diabetic peripheral neuropathy secondary to type 2 diabetes mellitus was admitted for further treatment. DIAGNOSES: We cannulated a single-lumen CVC via the right subclavian vein, and the tip ended up in the internal jugular vein on the same side. With bedside ultrasound, we discovered the malposition though it was mistaken by aspiration of venous blood. Later, CXR revealed malposition of the tip once again. OUTCOMES: After the inserted catheter was removed, we attempted a new CVC through the left internal jugular vein. After the procedure, bedside ultrasound and CXR confirmed the correct position of CVC. Following successful replacement of the central catheter, no further complications were observed. **LESSONS: Bedside ultrasound offers safety and effectiveness during insertion of CVC. It also exhibits promptness and accuracy compared to post-intervention radiological imaging.**
Combined short- and long-axis ultrasound-guided central venous catheterization is superior to conventional techniques: A cross-over randomized controlled manikin trial.	PLoS One	29216331	Takeshita J;Nishiyama K;Beppu S;Sasahashi N;Shime	2017	RESULTS: Six resident physicians (30%) performed both approaches successfully, while 12 (60%) performed the SLA approach, but not the SA, successfully. Those who performed the SA approach successfully also succeeded with the SLA approach. Two resident physicians (10%) failed to perform both approaches. The SLA approach had a significantly higher success rate than the SA approach (P < 0.001). The median (interquartile range) procedure duration was 59.5 [46.0-88.5] seconds and 45.0 [37.5-84.0] seconds for the SLA and SA approaches, respectively. The difference of the duration between the two procedures was 15.5 [0-28.5] seconds. There was no significant difference in duration between the two approaches (P = 0.12). **CONCLUSIONS: Using the SLA approach significantly improved the success rate of internal jugular vein puncture performed by novice physicians on a manikin model, without increasing procedural duration. Further clinical trials are warranted to confirm the procedure's utility in actual patients.**
Different effects of cardiac and diaphragm function assessed by ultrasound on extubation outcomes in difficult-to-wean patients: a cohort study.	BMC Pulm Med	29191205	Luo L;Li Y;Chen X;Sun B;Li W;Gu W;Wang S;Zhao S;Lv Y;Chen M;Xia J;Sui F;Mei X;Shi H;Tong	2017 Dec 1	METHODS: We designed a cohort study to preform diaphragm ultrasound and TTE before and after the spontaneous breathing trial (SBT) in difficult-to-wean patients. **RESULTS:** Among 60 patients, 29 cases developed respiratory failure within 48 h, and 14 cases were re-intubated or died within 1 week, respectively. Multivariate logistic regression analysis showed that E/Ea (average) after SBT [odds ratio (OR) 1.450, 95% confidence intervals (CI) 1.092-1.926, P = 0.01] and left ventricular ejection fraction were associated with respiratory failure. The AUC of E/Ea (average) after SBT was 0.789, and a cut-off value >/= 12.5 showed the highest diagnostic accuracy with a sensitivity and specificity of 72.4% and 77.4%, respectively. Furthermore, in the respiratory failure subgroup only DE (average) after SBT was associated with re-intubation (OR 0.690, CI 0.499-0.953, P = 0.024). The AUC of DE (average) after SBT was 0.805, and a cut-off value </= 12.6 mm showed the highest diagnostic accuracy with a sensitivity and specificity of 80% and 68.4%, respectively. **CONCLUSIONS: E/Ea (average) after SBT could help predict respiratory failure within 48 h. However, DE (average) after SBT could help predict re-intubation within 1 week in the respiratory failure subgroup.**
Hemorrhagic cardiac tamponade complicated by acute type A aortic dissection: A case report with critical care ultrasound findings.	Medicine (Baltimore)	29245234	Guo R;Feng YM;Wan	2017 Dec	RATIONALE: Acute type A aortic dissection (AAAD) is a potentially fatal clinical crisis. Hemorrhagic cardiac tamponade due to the rupture of an ascending aortic root dissection is extremely dangerous and often lacks timely clinical evidence. We report sudden death in a patient diagnosed with AAAD and in whom critical care ultrasound highly indicated hemorrhagic cardiac tamponade. PRESENTING CONCERNS: A 75-year-old man was admitted to our emergency department with a complaint of chest pain for 8 hours. Computed tomography angiography findings indicated AAAD with a wide range of lesions. During the preoperative preparation process, he suddenly lost consciousness with a pulseless femoral artery. Diagnoses: Cardiopulmonary resuscitation was initiated and critical care ultrasound revealed hemorrhagic cardiac tamponade, strongly indicating the rupture of an ascending aortic root dissection. INTERVENTIONS: However, family members refused further surgical interventions. **OUTCOMES: The etiology could not be reversed and the patient died. LESSONS: Critical care ultrasound is an important skill that intensivists should master for fast screening of life-threatening complications in patients with AAAD.**

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Functional assessment of the diaphragm by speckle tracking ultrasound during inspiratory loading.	J Appl Physiol (1985)	28522757	Oppersma E; et al.	2017 Nov 1	NEW & NOTEWORTHY Transdiaphragmatic pressure using esophageal and gastric balloons is the gold standard to assess diaphragm effort. However, this technique is invasive and requires expertise, and the interpretation may be complex. We report that speckle tracking ultrasound can be used to detect stepwise increases in diaphragmatic effort. Strain and strain rate were highly correlated with transdiaphragmatic pressure, and therefore, diaphragm electric activity and speckle tracking might serve as reliable tools to quantify diaphragm effort in the future.
High frequency ultrasound sacral images in the critically ill: Tissue characteristics versus visual evaluation.	Intensive Crit Care Nurs	28274684	Grap MJ; et al.	2017 Oct	CONCLUSIONS: We found no association among dermal density, dermal thickness and visual examination of changes in sacral HFUS images for any day-to-day comparison. The use of sacral HFUS as a screening tool for the development of tissue injury is in its infancy. Additional comparative studies should be conducted to identify its future clinical usefulness.
Could the use of bedside lung ultrasound reduce the number of chest x-rays in the intensive care unit?	Cardiovasc Ultrasound	28903756	Brogi E;Bignami E;Sidoti A;Shawar M;Gargani L;Vetrugno L;Volpicelli G;Forfori	2017 Sep 13	RESULTS: A total of 4134 medical records were collected from January 2010 to December 2014. We divided our population into two groups, before (Group A, 1869 patients) and after (Group B, 2265 patients) the introduction of a routine use of LUS in July 2012. Group A performed a higher number of CXRs compared to Group B (1810 vs 961, P = 0.012), at an average of 0.97 vs 0.42 exams per patient. The estimated reduction of costs between Groups A and B obtained after the introduction of LUS, was 57%. No statistically significant difference between the outcome parameters of the two groups was observed. **CONCLUSIONS: Lung ultrasound was effective in reducing the number of CXRs and relative medical costs and radiation exposure in ICU, without affecting patient outcome.**
Dynamic changes and prognostic value of pulmonary congestion by lung ultrasound in acute and chronic heart failure: a systematic review.	Eur J Heart Fail	28557302	Platz E; et al	2017 Sep	Of 1327 identified studies, 13 (25-290 patients) met the inclusion criteria. **CONCLUSIONS: Lung ultrasound findings change rapidly in response to HF therapy. This technique may represent a useful and non-invasive method to track dynamic changes in pulmonary congestion. Furthermore, residual congestion at the time of discharge in acute HF or in ambulatory patients with chronic HF may identify those at high risk for adverse events.**

Ultrasound-guided central venous catheter placement: a structured review and recommendations for clinical practice.	Crit Care	28844205	Saugel B;Scheeren TWL;Teboul J	2017 Aug 28	For clinical practice, we recommend a six-step systematic approach for US-guided central venous access that includes assessing the target vein (anatomy and vessel localization, vessel patency), using real-time US guidance for puncture of the vein, and confirming the correct needle, wire, and catheter position in the vein. **To achieve the best skill level for CVC placement the knowledge from anatomic landmark techniques and the knowledge from US-guided CVC placement need to be combined and integrated.**
The utilization of critical care ultrasound to assess hemodynamics and lung pathology on ICU admission and the potential for predicting outcome.	PLoS One	28806783	Yin W;Li Y;Zeng X;Qin Y;Wang D;Zou T;Su L;Kang	2017	CONCLUSION: CCUS examination on ICU admission which performed by the experienced physician provide valuable information to assist the caregivers in understanding the comprehensive outlook of the characteristics of hemodynamics and lung pathology. **Those key variables obtained by CCUS predict the possible prognosis of patients, hence deserve more attention in clinical decision making.**
Modified B-ultrasound method for measurement of antral section only to assess gastric function and guide enteral nutrition in critically ill patients.	World J Gastroenterol	28811717	Liu Y;Gao YK;Yao L;Li	2017 Jul 28	RESULTS: In healthy subjects, there was a good correlation among gastric emptying time, antral contraction frequency and antral motility index between the two groups (r = 0.57, 0.61 and 0.54, respectively). The study on critically ill patients also revealed that a better effect of EN was achieved in the modified B-ultrasound method group, in which patients had shorter ICU stay and hospitalization time and higher levels of serum prealbumin and albumin. The Kaplan-Meier survival analysis revealed that the improved B-ultrasound method was associated with significantly fewer EN complications (P = 0.031). **CONCLUSION: The modified B-ultrasound method can provide a good real-time assessment of gastric function and has a better effect than the traditional method in guiding EN in critically ill patients.**
Ultrasound non-invasive measurement of intracranial pressure in neurointensive care: A prospective observational study.	PLoS Med	28742869	Robba C; et al	2017 Jul	METHODS AND FINDINGS: This was a prospective, single-cohort observational study of patients admitted to a tertiary neurocritical care unit. Patients with brain injury requiring invasive ICP monitoring were considered for inclusion. nICP was assessed using optic nerve sheath diameter (ONSD), venous transcranial Doppler (vTCD) of straight sinus systolic flow velocity (FVsv), and methods derived from arterial transcranial Doppler (aTCD) on the middle cerebral artery (MCA): MCA pulsatility index (PIa) and an estimator based on diastolic flow velocity (FVd). A total of 445 ultrasound examinations from 64 patients performed from 1 January to 1 November 2016 were included. **CONCLUSIONS: Of the studied ultrasound nICP methods, ONSD is the best estimator of ICP. The novel combination of ONSD ultrasonography and vTCD of the straight sinus is a promising and easily available technique for identifying critically ill patients with intracranial hypertension.**

Intravascular catheters-an ultrasound imaging based observational study of position and function.	Anaesth Intensive Care	28673221	Hebbard PD;Flinn	2017 Jul	Peripheral intravenous and intra-arterial catheters often block with movement of the limb in which they are inserted. Although the cause of this blockage is commonly attributed to a valve or other structure within the vein, evidence for this is lacking. We used ultrasound to assess the cause of blockage on movement, and degree of tip movement, of 62 venous and 21 radial arterial catheters. In both venous and arterial catheters, blockage was predominantly caused by impingement of the catheter on the vessel wall, with catheter kinking and spasm of the vessel also seen. **Mean potential tip movement was 12.3 mm and 5.7 mm in hand and forearm venous catheters respectively and 9.5 mm in radial artery catheters. There was a significantly lower rate of blockage for forearm (20%) compared to dorsal hand venous catheters (83%, P <0.001) and 52% of radial artery catheters showed damping and blockage on wrist flexion. This study emphasises the advantages of placement of venous catheters in the straight veins of the forearm.**
Lung ultrasound as a diagnostic tool for radiographically-confirmed pneumonia in low resource settings.	Respir Med	28610670	Ellington LE; et al.	2017 Jul	RESULTS: Final clinical diagnoses included 453 children with pneumonia, 133 with asthma, 103 with bronchiolitis, and 143 with upper respiratory infections. In total, CXR confirmed the diagnosis in 191 (42%) of 453 children with clinical pneumonia. A consolidation on lung ultrasound, which is our primary endpoint for pneumonia, had a sensitivity of 88.5%, specificity of 100%, and an area under-the-curve of 0.94 (95% CI 0.92-0.97) when compared to radiographically-confirmed clinical pneumonia. When any abnormality on lung ultrasound was compared to radiographically-confirmed clinical pneumonia the sensitivity increased to 92.2% and the specificity decreased to 95.2%, with an area under-the-curve of 0.94 (95% CI 0.91-0.96). **CONCLUSIONS: Lung ultrasound had high diagnostic accuracy for the diagnosis of radiographically-confirmed pneumonia. Added benefits of lung ultrasound include rapid testing and high inter-rater agreement. Lung ultrasound may serve as an alternative tool for the diagnosis of paediatric pneumonia.**

The feasibility and efficacy of implementing a focused cardiac ultrasound course into a medical school curriculum.	BMC Med Educ	28558692	Kobal SL;Lior Y;Ben-Sasson A;Liel-Cohen N;Galante O;Fuchs	2017 May 30	METHODS: Thirty-one medical students in their first clinical year participated in the study. All were novices in the use of cardiac ultrasound. The training consisted of 4 hours of frontal lectures and 4 hours of hands-on training. Students were encouraged to use PUD for individual practice. Finally, the students' proficiency in the acquisition of ultrasound images and their ability to recognize normal and pathological states were evaluated. RESULTS: Sixteen of 27 (59%) students were able to demonstrate all main ultrasound views (parasternal, apical, and subcostal views) in a six-minute test. The most obtainable view was the parasternal long-axis view (89%) and the least obtainable was the subcostal view (58%). Ninety-seven percent of students correctly differentiated normal from severely reduced left ventricular function, 100% correctly differentiated a normal right ventricle from a severely hypokinetic one, 100% correctly differentiated a normal mitral valve from a rheumatic one, and 88% correctly differentiated a normal aortic valve from a calcified one, while 95% of them correctly identified the presence of pericardial effusion. **CONCLUSIONS: Training of medical students in cardiac ultrasound during the first clinical year using a short, focused course is feasible and enables students with modest ability to acquire the main transthoracic ultrasound views and gain proficiency in the diagnosis of a limited number of cardiac pathologies.**
Diagnostic Accuracy of Central Venous Catheter Confirmation by Bedside Ultrasound Versus Chest Radiography in Critically Ill Patients: A Systematic Review and Meta-Analysis.	Crit Care Med	27922877	Ablordeppey EA; et al	2017 Apr	DATA SYNTHESIS: Fifteen studies with 1,553 central venous catheter placements were identified with a pooled sensitivity and specificity of catheter malposition by ultrasound of 0.82 (0.77-0.86) and 0.98 (0.97-0.99), respectively. The pooled positive and negative likelihood ratios of catheter malposition by ultrasound were 31.12 (14.72-65.78) and 0.25 (0.13-0.47). The sensitivity and specificity of ultrasound for pneumothorax detection was nearly 100% in the participating studies. Bedside ultrasound reduced mean central venous catheter confirmation time by 58.3 minutes. Risk of bias and clinical heterogeneity in the studies were high. **CONCLUSIONS: Bedside ultrasound is faster than radiography at identifying pneumothorax after central venous catheter insertion. When a central venous catheter malposition exists, bedside ultrasound will identify four out of every five earlier than chest radiography.**
Inferior Vena Cava Measurement with Ultrasound: What Is the Best View and Best Mode?	West J Emerg Med	28435502	Finnerty NM;Panchal et al.	2017 Apr	**CONCLUSION: Inter-rater reliability of the IVC by EPs was highest for B-mode LA and poorest for all M-Mode IVC collapsibility indices (IVCCI). These results suggest that B-mode LA holds the most promise to deliver reliable measures of IVC diameter. Future studies may focus on validation in a clinical setting as well as comparison to a reference standard.**

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Clinician-Performed Bedside Ultrasound in Improving Diagnostic Accuracy in Patients Presenting to the ED with Acute Dyspnea.	West J Emerg Med	28435488	Papanagnou D;Seckom M;Gullett J;Stone M;Zehtabchi	2017 Apr	RESULTS: A total of 115 patients were enrolled (median age: 61 [51, 73], 59% female). The most common diagnosis before US was congestive heart failure (CHF) (41%, 95%CI, 32-50%), followed by chronic obstructive pulmonary disease (COPD) and asthma. CHF remained the most common diagnosis after US (46%, 95%CI, 38-55); COPD became less common (pre-US, 22%, 95%CI, 15-30%; post-US, 17%, 95%CI, 11-24%). Post-US clinical diagnosis matched the final diagnosis 63% of the time (95%CI, 53-70%), compared to 69% pre-US (95%CI, 60-76%). Fifty percent of providers changed their leading diagnosis after US (95%CI, 41-59%). Overall confidence of providers' leading diagnosis increased after US (7 [6, 8]) vs. 9 [8, 9], p: 0.001). **CONCLUSION: Bedside US did not improve the diagnostic accuracy in physicians treating patients presenting with acute undifferentiated dyspnea. US, however, did improve providers' confidence with their leading diagnosis.**
Use of real-time ultrasound for locating tip position in neonates undergoing peripherally inserted central catheter insertion: A pilot study.	Indian J Med Res	28749401	Telang N;Sharma D;Pratap OT;Kandraju H;Murki	2017 Mar	RESULTS: In this study, PICC line tip could be identified by bedside RTUS in 94 per cent of line insertions. Standard X-ray identified the tip in all cases. RTUS has been shown to have good diagnostic utility in comparison with X-ray with sensitivity and specificity being 96.55 and 100 per cent, respectively. In our study, majority of malpositions were identified and manipulated by RTUS, thus second X-rays were avoided. **INTERPRETATION & CONCLUSIONS: The result of this pilot study shows that RTUS may be a reliable and safe bedside tool for determining the tip of PICC lines. However, studies with large sample size need to be done to confirm these findings.**
Three-dimensional transoesophageal echocardiography for cardiac output in critically ill patients: A pilot study of ultrasound versus the thermodilution method.	Arch Cardiovasc Dis	28017278	Hammoudi N;Hekimian G;Laveau F;Achkar M;Isnard R;Combes	2017 Jan	METHODS: Fifteen ICU patients on mechanical ventilation prospectively underwent PiCCO catheter implantation and 3D-TOE. **CONCLUSIONS: Noninvasive estimation of CO by 3D-TOE is feasible in ICU patients. This new semi-automated modality is an additional promising tool for noninvasive haemodynamic assessment of ICU patients. However, the wide limits of agreement with thermodilution observed in this pilot study require further investigation in larger cohorts of patients.**
Optic Nerve Sheath Diameter Ultrasound Evaluation in Intensive Care Unit: Possible Role and Clinical Aspects in Neurological Critical Patients' Daily Monitoring.	Biomed Res Int	28421189	Toscano M; et al	2017	Background. The increase of the optic nerve sheath diameter (ONSD) is a reliable, noninvasive sonographic marker of intracranial hypertension. Aim of the study was to demonstrate the efficacy of ONSD evaluation, when monitoring neurocritical patients, to early identify malignant intracranial hypertension in patients with brain death (BD). **Conclusions. ONSD is a reliable marker of intracranial hypertension, easy to be performed with a minimal training. Routine ONSD daily monitoring could be of help in Intensive Care Units when invasive intracranial pressure monitoring is not available, to early recognize intracranial hypertension and to suspect BD in neurocritical patients.**
Lung ultrasound for the diagnosis of pneumonia in adults: A meta-analysis.	Medicine (Baltimore)	28099332	Long L;Zhao HT;Zhang ZY;Wang GY;Zhao H	2017 Jan	RESULTS: Twelve studies containing 1515 subjects were included in our meta-analysis. The SEN and SPE were 0.88 (95% CI: 0.86-0.90) and 0.86 (95% CI: 0.83-0.88), respectively. The pooled negative likelihood ratio (LR) was 0.13 (95% CI: 0.08-0.23), the positive LR was 5.37 (95% CI: 2.76-10.43), and the DOR was 65.46 (95% CI: 29.24-146.56). The summary receiver operating characteristic curve indicated a relationship between sensitivity and specificity. The area under the curve for LUS was 0.95. **CONCLUSION: LUS can help to diagnose adult pneumonia with high accuracy.**