The measure of life.
Transform the way you think and practice.

The heart is life’s vital pump, keeping the blood flowing.

Uscom’s unique non-invasive method of cardiac monitoring is a completely safe, painless and efficient way of measuring how well the heart is functioning. Uscom monitors allow doctors to quickly and accurately assess a patient’s condition and categorize the problem as either a cardiac or vascular abnormality.

This pioneering vision makes Uscom a global leader.
Uscom’s non-invasive method makes it unique. Previously, valuable hemodynamic information was only available through invasive means - rarely suitable for children, and decreasingly used in adults.
Safe

Unlike invasive methods, with the Uscom monitor there is no exposure to blood, and no associated risks of infection or complications. The examination may be performed as often as desired, with no risk to the patient. No sedation is required, making it suitable for all patients, saving on drug use and inherent complications.
The Uscom non-invasive cardiac output monitor uses state-of-the-art electronics, ultrasonics and signal processing to deliver a cutting edge solution to the challenge of accurately measuring cardiac flow. The continuous wave (CW) Doppler-based technique permits serial measurement of numerous hemodynamic parameters in infants, children, and adults. Applications in Emergency Care, Pediatrics, Intensive Care, Anesthesiology and Retrieval.

**Features**
- Compact and easily transportable, with a weight of only 5kgs (battery powered).
- No costly disposables, such as leads, electrodes or catheters.
- Intuitive touch screen user interface
- With a 40GB hard drive, the USCOM monitor can store thousands of patient files.
- Two-hour battery operation
- Provides accurate and rapid information for both left and right heart for the optimization of preload, cardiac function and afterload.

**Beat-to-beat data displayed for all parameters including:**
- CO (l/min) Cardiac Output
- CI (l/min/m²) Cardiac Index
- SV (ml/s) Stroke Volume
- SVI (ml/s/m²) Stroke Volume Index
- HR (bpm) Heart Rate
- SVR (d s cm⁻⁵) Systemic Vascular Resistance
- Vpk (m/s) Peak Velocity

“Uscom is the only truly **accurate, non-invasive system**”

-Peter R. Lichtenthal, M.D.
Professor and Director of Cardiovascular Anesthesia, University of Arizona College of Medicine
**Real results.**

**Case study**

**Response to fluid therapy measured by CVP and Uscom.**

**DR ROBERT BILKOVSKI**
Department of Emergency Medicine, Henry Ford Hospital, Detroit, Michigan, USA

**Presentation**

82 year old male. Septic shock with hypotension, tachycardia. Pneumonia infection.

Blood pressure maintained on vasopressors: noradrenaline (5.5 mcg/min) and norepinephrine (200 mcg/min)

**Observations**

Baseline observations

- HR = 130bpm; BP = 71/38mmHg (MAP = 45 mmHg) and CVP = 13 mmHg

**Baseline Uscom**

- HR = 150bpm; BP = 122/61mmHg, CD = 3.3l/min/m², CI = 1.4l/min/m², SVR = 853.

**Intervention**

The patient had an infusion of 250ml of albumin over 20 minutes in response to low CO, CI and SV, a high HR, and hypotension.

**Post Infusion Observations**

- HR = 110bpm, BP = 104/59mmHg (MAP = 76 mmHg) and CVP = 13mmHg (unchanged).

**Post Infusion Uscom**

- HR = 110bpm, BP = 136/76mmHg, CD = 4.3l/min/m², CI = 2.3l/min/m², SVR = 1141.

**Discussion**

CVP detected hemodynamic optimization goals of >12 mmHg were satisfied at rest with CVP of 11mmHg, suggesting no need for fluid infusion. Baseline CO, CI and SV were inadequate at rest BP, suggesting the need for fluid. Post fluid CVP was unchanged at 13mmHg, while objective flow measurements from Uscom were significantly increased. SV was increased by 43% and CD by 43%.

**Conclusion**

Uscom identified significant SV reserve and SV fluid responsiveness not detectable using invasive CVP hemodynamic, goals.

Appropriate assessment of cardiac output is improved by objective beat to beat understanding of the flow.

Invasive pressure measurements provide crude analogues of circulation. Uscom’s real time monitoring of the interplay of SV and HR at rest and during intervention optimizes such observation.

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**Doppler monitoring positions**

- **Aortic Access**
  - Suprasternal notch
  - Transducer positioned in the suprasternal fossa, soft tissue area directly above the sternum.

- **Pulmonary Access**
  - Parasternal
  - Transducer positioned on the left side of the sternum, between the second and fifth intercostal space and angled towards the head.

- **Suprasternal**
  - Transducer positioned in the suprasternal fossa area, above the patient’s clavicle, lateral to the sternal clavicular muscle of the neck.

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**Figure 1**
Baseline Uscom trace demonstrating regular uptake of 4 MHz pulse at SVR with a mean pressure SV of 120 mmHg and CO of 8.1 l/min.

**Figure 2**
Uscom trace post fluid bolus demonstrating increased SV and CO and a decreased HR.

**Figure 3**
Uscom trace post fluid bolus demonstrating increased SV and CO and a decreased HR.

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**See figure for full caption.**
When every second is critical

Reduce risk. Minimize cost. Improve care.

A second could be the difference between life and death in an emergency situation. It can also mean avoidable contraindicated therapies, which not only put the patient under extreme trauma and increased risk, but the hospital bears unnecessary expense.

Below are clinical illustrations demonstrating efficiency in time and money when Uscom monitors are utilized in the Emergency Department.

Lucy Kwong*, 35 years
Confused with no clear history.
Arrived semi-conscious by ambulance.
Hypotensive, normal pulse rate, sweaty with a raised temperature.
A high output, low resistance state was found by hemodynamic monitoring and treated with vasopressors.

Benefits of using Uscom within an Emergency Care Unit
- Simple application of goal directed therapy
- Optimize fluids
- Monitor and titrate drug therapy
- Manage septic shock
- “Smart Resuscitation”

Steven Jackson*, 70 years
Rushed from the scene of a rural car accident with presentation of severe central chest pain, breathlessness and sweating. Diagnosis of an acute myocardial infarction (AMI).
Due to the lack of a CCU bed, Steven spent an extended time in the Emergency department.
Hemodynamic monitoring and treatment was performed in the ED.

Benefits to Patient
- Hemodynamic information obtained making goal directed therapy possible.
- Appropriate treatment in a timely manner.
- Permitting best possible outcome.
- Steven’s life is saved.

Hospital saving 38%
Time saving 17%

Hospital saving 47%
Time saving 48%

* Names are fictitious for patient privacy.

Reduce risk. Minimize cost. Improve care.
Under the supervision of Dr K. Knobloch, Hannover University Hospital, Germany, the Uscom monitor was used to determine hemodynamic parameters in a helicopter emergency medical service. The Uscom allows clinicians to gain crucial information rapidly, to diagnose and treat patients at the scene and during transport.
Meet Ally. 6 years.

Up until now, it would have been impossible to accurately diagnose and treat her critical condition during retrieval; other cardiac monitoring is not feasible due to complications.

With the revolutionary Uscom non-invasive monitor, doctors could reliably assess her hemodynamic status, saving her life.

The hemodynamics of children is complex and difficult to assess accurately by clinical examination or by simple measures such as blood pressure.

Under precision flow probe testing, the Uscom device exactly agreed with measured flow velocities from -1.6 to 1.6 metres per second, the accurate range of the simulator.

Uscom has been proven at five stages of validation. Historical evidence shows the accuracy and reliability of CW Doppler. Independent testing, studies and assessment, comparing Uscom to Flow probes, FICK and the clinical “gold standard” pulmonary artery catheter method, demonstrates accuracy in measuring flow. Evidence confirms Uscom’s usefulness in clinical practice.

"These results suggest that Uscom is an accurate for measurement of neonatal CO as conventional echo and may be more sensitive for detection of hemodynamic change."

R. PHILIPS
University of Queensland, Brisbane, Australia

"The hemodynamic patterns of fluid-resistant septic shock on presentation are distinct depending on etiology. The consistency of this finding suggests that cardiovascular responses to severe sepsis are determined more by the immediate clinical scenario than by genetics."

DR J. BRIERLEY
PICU, Great Ormond St Hospital, London, UK

"Scatterplot of mean CO values from standard methods against Uscom demonstrating good linear agreement of values with no outstanding disagreement associated with any particular method."

P. LICHTENTHAL
Anesthesiology, University of Arizona, Tucson, Arizona, USA

Proven to be accurate
“This machine is saving lives”

Associate Professor BRENDAN SMITH
Specialist in Anesthetics and Intensive Care, Bathurst Base Hospital, Bathurst, NSW, Australia.

We want to equip you with the best tool possible - can you afford not to?

For further information, call us on +61 2 9247 4144, or visit www.uscom.com.au
## Technical specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product ID</strong></td>
<td>USCOM 1A</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>12.1&quot; TFT LCD (800x600)</td>
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<tr>
<td><strong>Interface</strong></td>
<td>Resistive Touchscreen</td>
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<td><strong>CPU</strong></td>
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<td><strong>Transducer Frequency</strong></td>
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<td>FlowTracer fully automated</td>
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<td><strong>Battery</strong></td>
<td>2 hour life with fastcharge</td>
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<td><strong>Power Supply</strong></td>
<td>Universal voltage with medical isolation</td>
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<tr>
<td><strong>Dimensions</strong></td>
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<tr>
<td><strong>Weight</strong></td>
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<tr>
<td><strong>Construction</strong></td>
<td>Molded plastic with metal chassis</td>
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<tr>
<td><strong>GUI</strong></td>
<td>Web based protocols</td>
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<tr>
<td><strong>Communications Ports</strong></td>
<td>Serial, USB, Ethernet</td>
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