Uscan
Advanced Ultrasound for Bladder Care

signostics
From Scanning to Seeing

BENCH TESTING AND REAL-WORLD EXPERIENCE PROVE

USCAN SETS THE STANDARD FOR ACCURACY

PEERLESS ACCURACY IN THE PALM OF YOUR HAND

Uscan, a breakthrough in bladder care, belongs in a class all its own. It acquires up to 256 slices of the bladder and applies algorithms from the science of computer vision to actively recognize the 3D contours of the bladder. The result is an unprecedented accuracy of ±10% or ±10 mL (whichever is larger), far superior to current industry standard of ±15% or ±15 mL. Our results were based on measuring bladder phantoms in a range of known volumes from 32 mL to 713 mL.

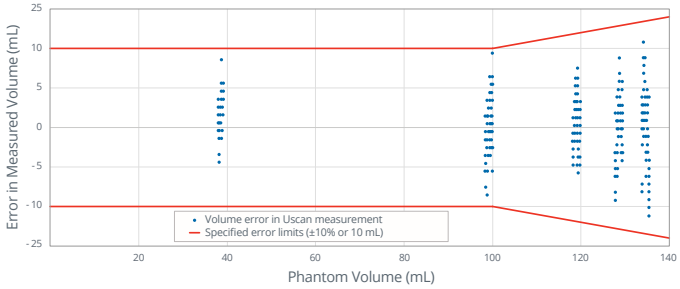

Figure 1. **Uscan measurement errors conform to technical specifications, ranging from 0% to 7.9% at volumes greater than 100 mL, and 0 mL to 9 mL for volumes below 100 mL.**

CLINICAL VALIDATION

What about accuracy in the real world? A representative clinician group (student nurses with little or no bladder scanning experience) measured bladder volumes in volunteers with Uscan. Measurements were compared with actual volumes for accuracy and analyzed for sensitivity and specificity.

Uscan clinical accuracy exceeded all predefined acceptance targets (95% or 75%, assigned to accuracy measures of high or moderate clinical importance, respectively). In particular, we measured the ability of our system to diagnose two important clinical conditions: adequate void and bladder retention.

An adequate void leaves <100 mL of residual urine in the bladder. Bladder retention, reflecting an inability to void, results in >400 mL of retained urine. The specificity of a system to detect adequate void and the sensitivity to detect bladder retention are of vital clinical importance, because misdiagnosis may result in bladder distension and long-term damage.

As can be seen from Fig 2, both of these metrics are very high for Uscan: 99% and 97%, respectively.

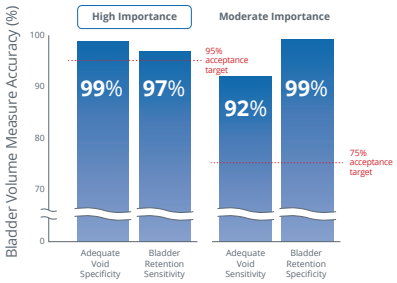

Figure 2. **Uscan accuracy measures, stratified by clinical importance.**

Adequate Void Specificity – Percentage of bladders not voiding adequately that are correctly identified by Uscan. High specificity here is especially important, as failure could lead to inappropriate discharge from care of a patient not voiding adequately.

Bladder Retention Sensitivity – Percentage of all patients with bladder retention who are correctly identified by Uscan. High sensitivity here is especially important, as failure could delay recognition of bladders in urgent need of in-out catheter drainage to prevent distension.

Adequate Void Sensitivity – Percentage of all patients voiding adequately who are correctly identified by Uscan. High sensitivity here is moderately important, as failure could prompt a duplicative but low-risk repeat scan in a patient who voids adequately.

Bladder Retention Specificity – Percentage of bladders that do not have retention that are correctly identified by Uscan. High specificity here is moderately important, as failure could prompt premature or unnecessary, but low-risk, use of an in-out catheter.

Scan accuracy matters Accuracy translates to measurable results not only in quality of patient care but also the bottom line. In a quality-based reimbursement environment, accurate differentiation between patients voiding normally and abnormally is essential. This is especially true when it comes to reducing the risks and costs of unnecessary catheterization and of not promptly treating patients who have problems voiding. And higher efficiencies achieved through accurate, reliable bladder volume measurement can help increase overall billable patient capacity.

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