



WHITE PAPER

Single-use flexible
Broncho with Sampler

BAL SAMPLING REIMAGINED: HOW AMBU IS IMPROVING SAFETY, WORKFLOW AND OUTCOMES

For decades, bronchoalveolar lavage (BAL) and bronchial wash (BW) procedures have been standard diagnostic tools in intensive care units (ICUs) and bronchoscopy suites.¹ But despite their clinical value, these procedures are often hampered by workflow inefficiencies, equipment variability and contamination risks.



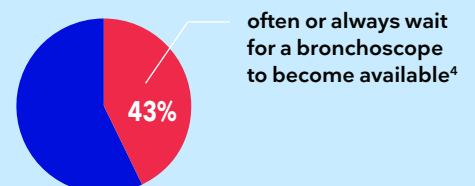
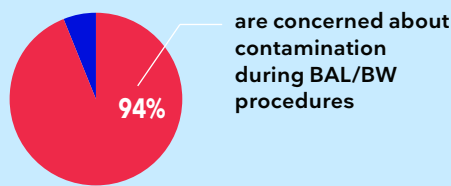
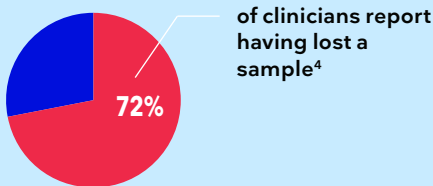
Ambu has reimagined the BAL sampling process with its Ambu® aScope™ 4 Broncho Sampler Set and Ambu® aScope™ 5 Broncho Sampler Set— a closed-loop, sterile, all-in-one system that improves safety, streamlines workflow and enhances performance. It provides a bronchoscope and sampler packaged together. And now, clinical data confirms what early adopters already recognized: **Ambu’s system leads the market in performance and usability, ranking #1 in a recent peer-reviewed study comparing six leading single-use bronchoscopes for BAL procedures.**²

This paper explores the clinical need, workflow pain points – and Ambu’s innovative solution that is transforming the BAL sampling standard.

A Snapshot of The Problem

BAL and BW are considered fast, minimally invasive procedures that support early diagnosis and appropriate treatment – especially for conditions like ventilator-associated pneumonia (VAP), one of the most common ICU infections.^{1,3} Despite widespread use, there’s no consistent guidance on equipment or workflow, leading to inconsistent setups and potential trade-offs in clinical outcomes.

Ambu surveyed 116 US and UK physicians to identify workflow challenges.⁴ Findings: Cumbersome setups, open containers and inefficient suction.



Potential risks:

- Lost or contaminated samples may delay diagnosis and treatment
- Staff safety issues from fluid exposure
- Disinfected reusable bronchoscopes, can harbor microbial residue⁵

A Complex Workflow with Too Much Margin for Error

Here's what a typical BAL/BW workflow looks like:⁶

- 1) Pre-procedure setup: Items needed; bronchoscope, sampling accessories, monitor and saline
- 2) Preparation: Establish sterile area, open packs, prepare suction and patient
- 3) In-room procedure: Insert scope, inspect bronchi, wedge scope, inject saline, collect fluid, switch containers
- 4) Post-procedure: Flush suction channel, dispose of waste, split/label samples, clean up, document

Every step presents opportunities for delays, contamination or fluid loss – especially when reprocessing or assembling generic parts. The widespread use of the Lukens trap, a decades-old device, adds to the complexity with poor sealing and open collection that can lead to leakage and exposure.⁷

Ambu's Innovation: A Breakthrough 50 Years in the Making

Ambu responded to these challenges with the Broncho Sampler Set, the first significant innovation in sampling in over half a century. This all-in-one system simplifies and safeguards every step of the BAL/BW process:

- Closed-loop collection minimizes contamination
- Pre-assembled, sterile, single-use design eliminates the need for cleaning or matching parts
- Single-clinician use supports fast, safe deployment in even the most time-strained environments and staff shortages

Paired with the Ambu® aScope™ 5 Broncho HD – known for high-quality imaging and superior handling – the system represents a leap forward in end-to-end respiratory care.

Clinically Validated: Ambu Rated #1

In a recent peer-reviewed study comparing six single-use bronchoscopes and their BAL/BW collection method, including the Ambu® aScope™ 4 and aScope 5 Broncho HD, clinicians evaluated systems across performance, sampling and usability.²

Results:

- Ambu's aScope 5 Broncho HD with Sampler Set earned the highest overall performance score: 4.47 out of 5
- It also received the highest sampling score: 4.40 out of 5
- Statistically superior to all other tested systems²

Physicians specifically cited:²

- Better image quality
- Easier maneuverability
- Simplified suction and sampling
- Reduced fluid loss
- Lower risk of contamination

These clinical advantages don't just make the procedure easier – they increase the reliability of results and reduce risks in treatment delays.

Built for ICU Efficiency and Clinical Safety

In today's healthcare environment, solutions must support both clinical excellence and operational efficiency. Ambu's system is designed for the realities of modern care:

- Intuitive setup reduces training time and procedure prep
- Single-use construction eliminates cross-contamination and turnaround delays⁵
- Portability ensures access at the bedside or in a bronchoscopy suite
- EMR/PACS integration supports streamlined documentation and decision-making

Whether used during routine monitoring or in time-critical respiratory emergencies, Ambu's Sampler Set accelerates time to care while protecting patients and staff.²

Why Clinicians Are Moving Away from the Lukens Trap

The Lukens trap, while historically standard, is increasingly viewed as outdated and inefficient for today's healthcare demands. Clinicians are switching to Ambu's closed-loop solution because it:

- Prevents sample waste through sealed collection
- Offers better control during suction and retrieval
- Protects against fluid exposure
- Saves time in both prep and post-procedure cleanup



Conclusion: Elevating Standards, Empowering Care

Ambu is not only innovating single-use endoscopy – it's changing how clinicians think about BAL/BW sampling. By addressing long-standing workflow challenges and validating its performance in peer-reviewed studies, Ambu is empowering respiratory teams to deliver safer, faster and more effective care.

Other companies may attempt to copy the concept, but only Ambu delivers the complete, field-tested, clinician-preferred solution that improves outcomes at every step.

About Ambu

Since 1937, Ambu has been rethinking medical solutions to save lives and improve patient care. Millions of patients and healthcare professionals worldwide depend on the efficiency, safety and performance of our single-use endoscopy, anesthesia, and patient monitoring solutions.

In the past, we provided a way to maintain or restore breathing in any environment with the world's first self-inflating resuscitator, the Ambu® Bag™, which is still in use today. More recently, we responded to a need for an endoscopy solution that is always available. The result? The Ambu® aScope™, the world's first sterile, single-use flexible endoscope.

Today, we continue to collaborate with leading medical experts to deliver innovations that make a real difference to healthcare professionals and their patients.

At our headquarters near Copenhagen, Denmark, and around the world in Europe, North America and the Asia Pacific, 4,500+ team members keep Ambu moving forward.

For more information, please visit ambuUSA.com.

REFERENCES

1. King TE et al. Basic principles and technique of bronchoalveolar lavage. <https://www.uptodateonline.ir/contents/UTD.htm?24/41/25239/abstract/1>
2. Wagh A, Hoffman D, Cool C, Schwalk A. Single-use flexible bronchoscope evaluation for bronchoalveolar lavage. *J Thorac Dis* 2025;17(4):2186-2193. doi: 10.21037/jtd-2024-2118
3. American Thoracic Society; Infectious Diseases Society of America. Guidelines for the management of adults with hospital-acquired, ventilator-associated, and healthcare-associated pneumonia. *Am J Respir Crit Care Med*. 2005; 171(4):388-416
4. Ambu. Conjoint Analysis Report. 2019
5. Ofstead CL, Hopkins KM, Quick MR, Eiland JE, Wetzler HP. Outbreaks and contamination associated with flexible endoscopes and endoscope reprocessing practices in the United States: A systematic review. *Am J Infect Control*. 2021;49(2):234-240. doi:10.1016/j.ajic.2020.08.008
6. American Thoracic Society. Bronchoalveolar Lavage. Available at: [An Official American Thoracic Society Clinical Practice Guideline: The Clinical Utility of Bronchoalveolar Lavage Cellular Analysis in Interstitial Lung Disease | American Journal of Respiratory and Critical Care Medicine](#)
7. Stocks J. Bronchoscopy and Bronchoalveolar Lavage. [Bronchoscopy and Bronchoalveolar Lavage | Respiratory Therapy](#)