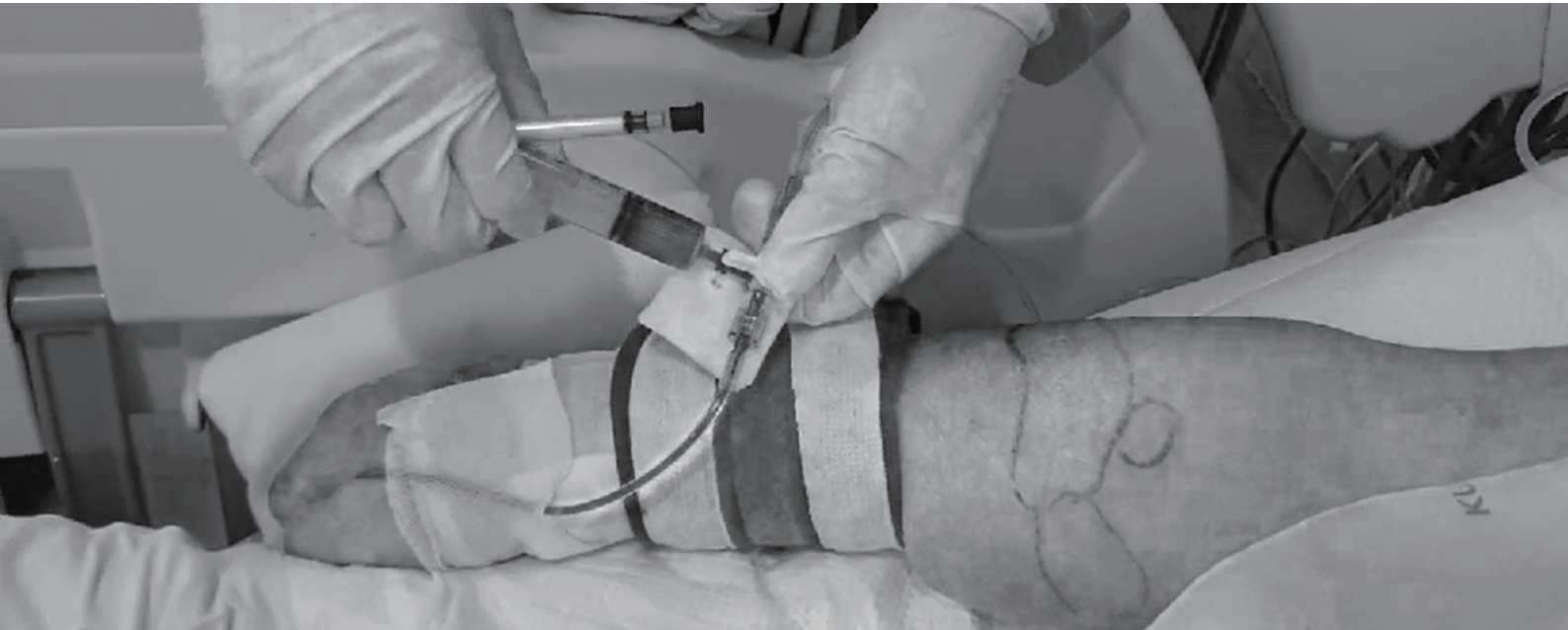


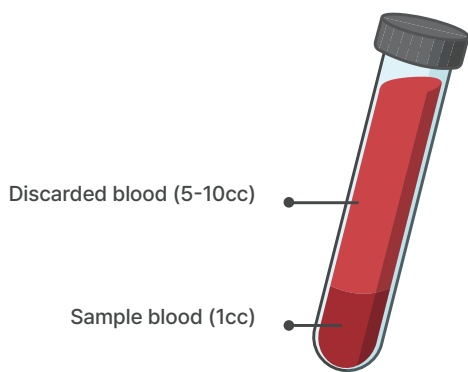
Safe and Effective Patient Blood Management (PBM) Solution



Arterial Blood Preservation and Automation,
LABline System.



"About 17% of blood loss in ICUs is due to diagnostic testing"



ICU Arterial Line and Iatrogenic Blood Loss

Maximum Daily Discarded Blood Volume	About 240ml
Hb Level reduction rate	11.11%
Anemia Incidence after 7 days of ICU hospitalization.	97%

PBM(Patient Blood Management) is implemented throughout countries such as U.S, Australia, and Germany.

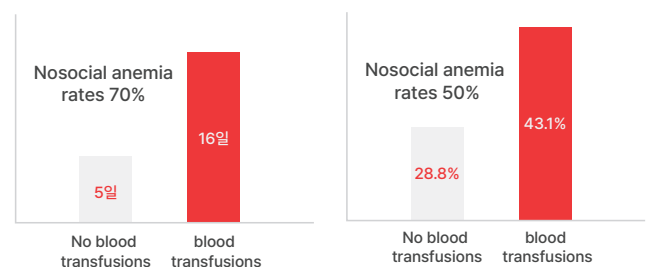
The necessity for appropriate and safe transfusions

Results of a cohort study of 4,892 U.S. patients

Patients in the transfusion group due to anemia had an average hospitalization date of 16 days, 70% higher than those in the non-transfusion group, and patient deaths were 50% higher at a 43.1% death rate.

(Average patient hospitalization period)

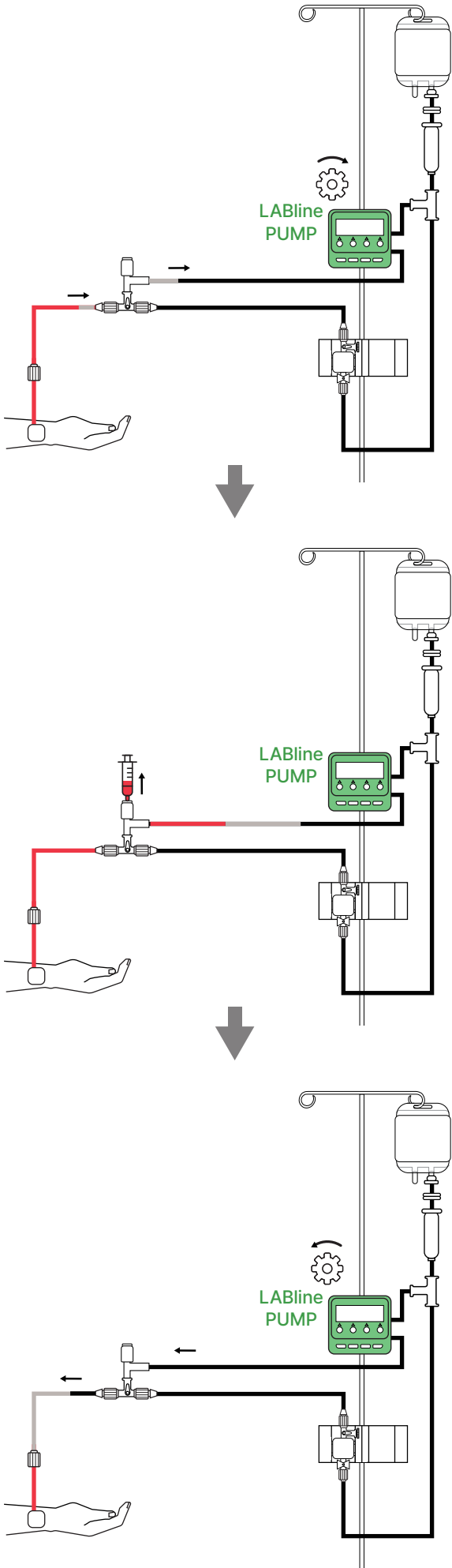
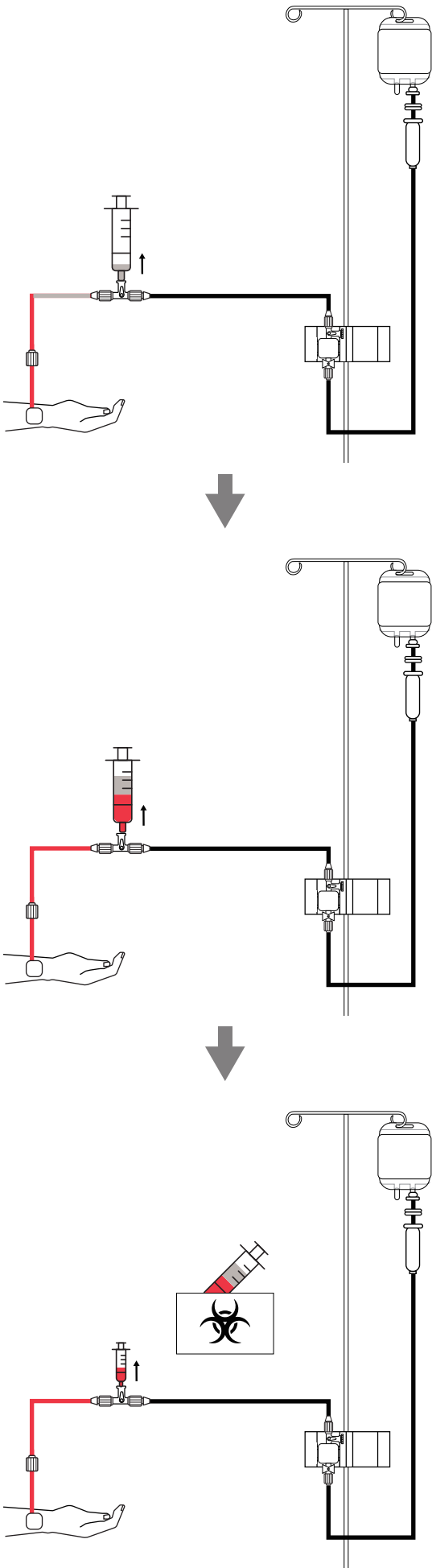
(Patient death rate)



The CRIT Study: Anemia and blood transfusion in the critically ill--current clinical practice in the United States.

Existing Method

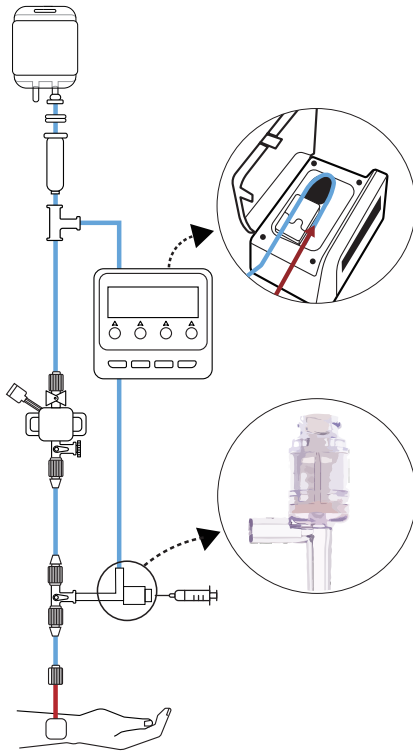
LABline Method



Labline's Strengths

Safe Blood Sampling for Patients

- Closed System to minimize infection and blood waste
- Automated to easily manage and flush the system, and to be user friendly



Use of **peristaltic pumps** that do not directly contact the patient's blood.

Reduce the use of needles through the use of needleless ports and **control infection** through the formation of closed systems.

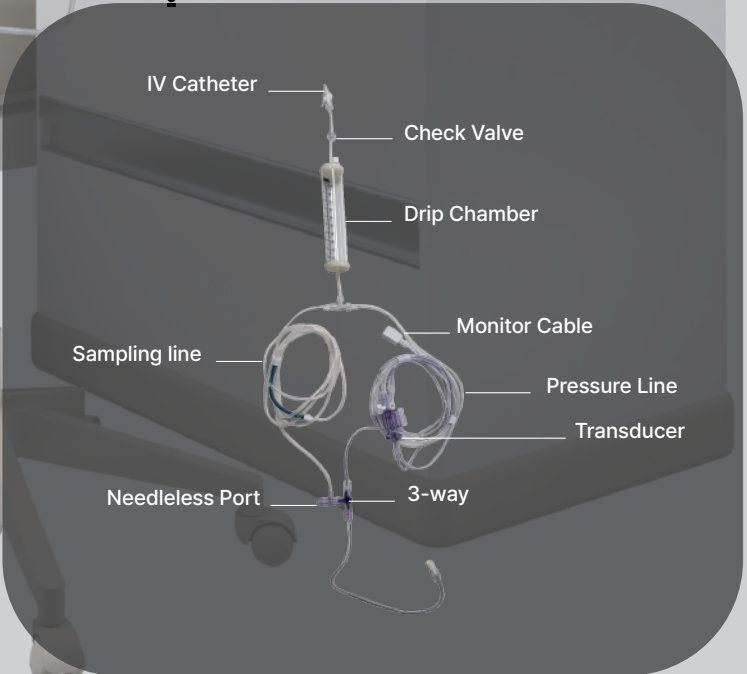
Optimized for hospital environment

- Small device size
- Similar structure with existing pressure monitoring kit (Ease of use)
- (In case of South Korea) Same price applied compared to existing pressure monitoring kit

Strength compared to existing "Closed line blood sampling systems"

- Clot management with non reservoir structure and continuous blood flow
- Automated to be user friendly
- Non invasive solution for unaffected pressure accuracy

LABline Diagrams

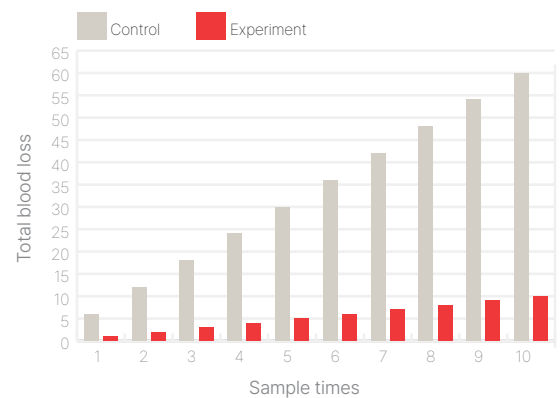


LABline Development Status



Validation of Effectiveness with non-clinical studies

- Compare the blood test results of the control group (existing blood sampling method) and the experimental group LABline blood collection) by connecting the arterial lines to both femoral arteries, and analyze the equivalence of the results of each ABGA (arterial blood gas analysis) and electrolyte test results.
- The results of the blood tests are equivalent as a result of comparative analysis of intraclass correlation coefficient (ICC), proving the effectiveness of blood collection through LABline while simultaneously minimizing blood loss.



	ICC(2, 1)	95% CI	p-value
pH	0.990	0.982-0.994	<0.001
pCO2	0.984	0.971-0.991	<0.031
pO2	0.987	0.977-0.992	<0.031
Base excess	0.890	0.806-0.938	<0.031
Bicarbonate	0.928	0.874-0.959	<0.001
Total CO2	0.912	0.846-0.950	<0.031
Lactate	0.998	0.995-0.999	<0.001
Sodium	0.913	0.846-0.950	<0.001
Potassium	0.986	0.975-0.992	<0.001
Chloride	0.648	0.380-0.800	<0.031
Ionized calcium	0.988	0.979-0.993	<0.001
Glucose	0.993	0.988-0.996	<0.001
BUN	0.997	0.994-0.998	<0.001
Creatinine	0.988	0.978-0.994	<0.001
Hematocrit	0.965	0.939-0.980	<0.001
Hemoglobin	0.955	0.922-0.975	<0.001
Anion gap	0.719	0.506-0.840	<0.001

BUN: blood urea nitrogen

- A join development with Division of Accute Care Surgery, Korea University's Anam Hospital compares the results of a total of five major animal tests and 50 blood samples.
- Research article regarding the result of animal studies are currently published to Scientific Reports
Lee, H., Lee, Jm. Hematic auto-management and extraction for arterial line (HAMEL), a blood-preserving arterial line system: an animal study. Sci Rep 13, 6845 (2023). <https://doi.org/10.1038/s41598-023-33539-8>

LABline Product Details



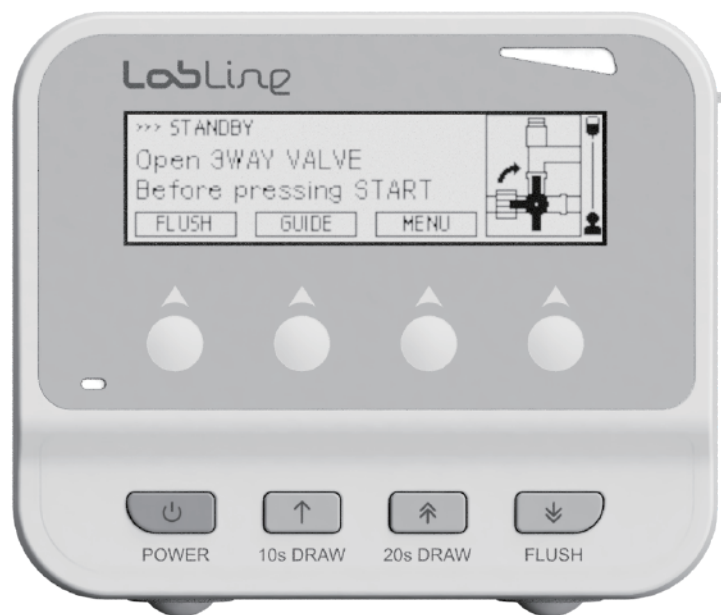
Product name	LABline Pump
Dimensions	10.0 x12.5 x 9.0 (cm)
Weight	676g
Flow rate	1.1ml/s, 0.3ml/s(±5%)
Alarm	Obstruction, air, door, power
Manufacture	MUNE Corp.



Product name	LABline AB set
Dimensions	Refer to diagram
Measurement range	-50 ~ + 300 mmHg (±3%)
Humidity	10 ~ 90% RH
Operational Temperature	-20 ~ + 60 °C
Pressure range	-500 ~ +5000mmHg
Period of Protectin	3 year
Manufacturer	MUNE Corp.

Reference

1. HHS Protect Public Data Hub, 20220607
2. Mitchell L. Iatrogenic anemia, The American Journal of Surgery, Volume 151, Issue 3, 1986, Pages 362-363, ISSN 0002-9610, doi: 10.1016/0002-9610(86)90468-X.
3. DENNIS, R. C. et al, (1985). Effect of sample dilutions on arterial blood gas determinations. Critical Care Medicine, 13(12), 1067-1068. doi:10.1097/00003246-198512000-00018
4. 장영진 et al. 혈액 제거량과 사강용적 (dead space) 변화에 따른 동맥혈 가스분석 수치의 변화, 대한마취과학회지 2005; 49: 602~5
5. Durila M. et al, (2009). Discard volume necessary for elimination of heparin flush effect on thromboelastography. Blood coagulation & fibrinolysis :21. 192-5.10.1097/MBC.0b013e3283338c0d.
6. Lippincott Williams & Wilkins, Best Practices: Evidence-based Nursing Procedures, page 197
7. Akbaş T. Long length of stay in the ICU associates with a high erythrocyte transfusion rate in critically ill patients. J Int Med Res. 2019;47(5):1948-1957. doi:10.1177/0300060519832458
8. Rawal G, Kumar R, Yadav S, Singh A. Anemia in Intensive Care: A Review of Current Concepts. J Crit Care Med (Targu Mures). 2016;2(3):109-114. Published 2016 Aug 10. doi:10.1515/jccm-2016-0017
9. Muñoz M. et al. "Pre-operative anaemia: prevalence, consequences and approaches to management." Blood transfusion = Trasfusione del sangue vol. 13,3 (2015): 370-9. doi:10.2450/2015.0014-15
10. Patrick D. Carroll, MD, Nonpharmacological, Blood Conservation Techniques for Preventing Neonatal Anemia—Effective and Promising Strategies for Reducing Transfusion, doi: 10.1053/j.semperi.2012.04.003



LabLine

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