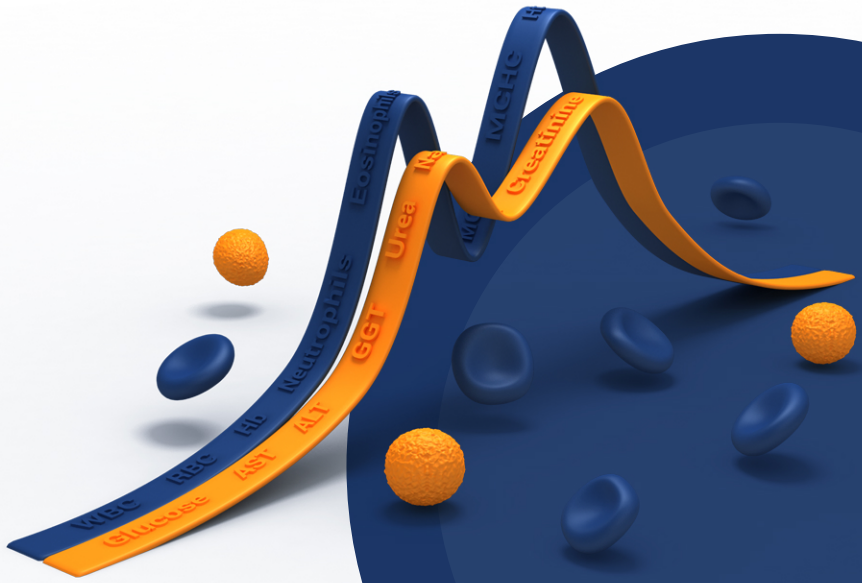
Smart Blood Analytics

Empowering differential diagnosis

Smart Blood Analytics Swiss (SBAS) uses advanced machine learning algorithms to provide different clinical decision support systems for predicting the most probable diagnoses based solely on an individual's blood test results.



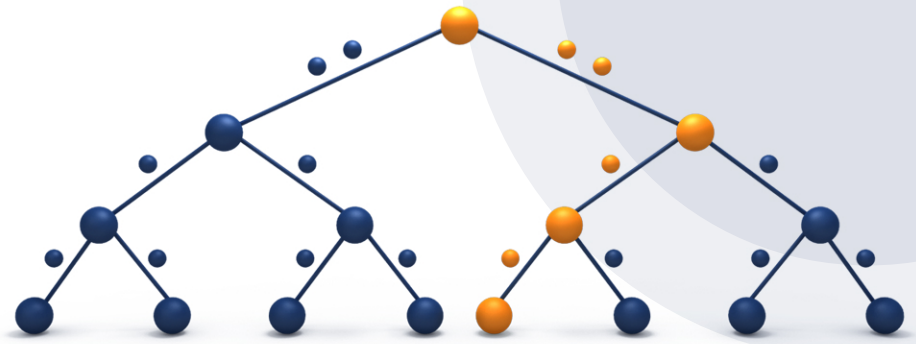
CE MD

SBAS Software

The SBAS Software is a **clinical decision support system** (CDSS) that interprets blood test results and expands differential diagnostics. It provides a physician with a list of the ten most probable diseases or medical conditions based only on blood test results, biological sex, and age. The SBAS Software does not make a final diagnosis and is not meant to be a substitute for physicians but instead aims to empower and guide them to make faster and more accurate decisions, resulting in better patient outcomes.

The SBAS Software uses advanced machine learning algorithms to provide several different models. The models use complex decision-making approaches, which simultaneously consider available blood parameters, biological sex and age, and their ratios to suggest a disease. Such models can detect even subtly correlated deviations in blood parameters that are significant for a good prediction.

Before using the SBAS Software, a physician determines the scope of the blood analysis and the required parameters based on **international diagnostics procedures**. Summarizing the patient's **anamnesis**, **symptoms** as well as **signs** and having obtained the blood test results, the physician decides which model can best be used to interpret the blood test results and thus expand the **differential diagnosis** of a patient.



Intended medical indications

The use of the SBAS Software is recommended for interpreting data of adult patients (older than 18 years old), both (non-pregnant) female and male patients with acute and/or chronic conditions in the fields of:

- Rheumatology
- Hematology
- Nephrology
- Gastroenterology
- Cardiology
- Toxicology
- Endocrinology
- Neurology
- Pulmonology

Intended User Profile

The SBAS Software should only be used by:

- Physicians (with a Doctor of Medicine degree and a completed residency) from different fields of medicine
- Medical professionals, when supervised by a physician

Contraindications for use

The SBAS Software is contraindicated for use in:

- Children
- Pregnant women
- Patients who are taking drugs that interfere with the results of laboratory blood tests

Benefits & Risks

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- Greatly improves the diagnostic process by enabling doctors to make **more accurate** and **quicker decisions**
- **Better outcomes** for patients
- **Reduced costs** for the healthcare system

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- By its inherent design, the SBAS Software does not provide information that by itself could be used to confirm or discard any specific health condition, since it always provides a list of the ten most likely diseases. By providing information in such a format, it enables the physician to naturally consider multiple options.

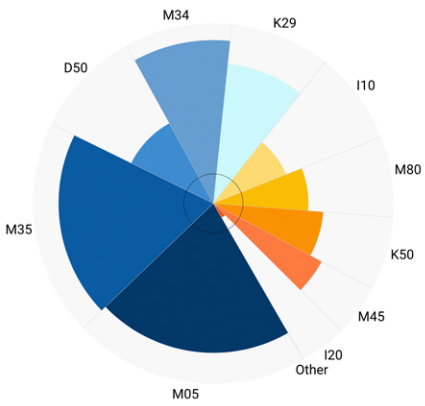
Special warning and precautions

- The use of the SBAS Software is not advised without considering the **symptoms** of the patient and their **medical history**. The SBAS Software should also **not** be used for **screening purposes**.
- The SBAS Software can only be used if biological sex, age and a minimum of **30 blood test parameters** from the List of blood parameters are available.
- The SBAS Software can only predict the diseases that are available in its database.

Representation of the results

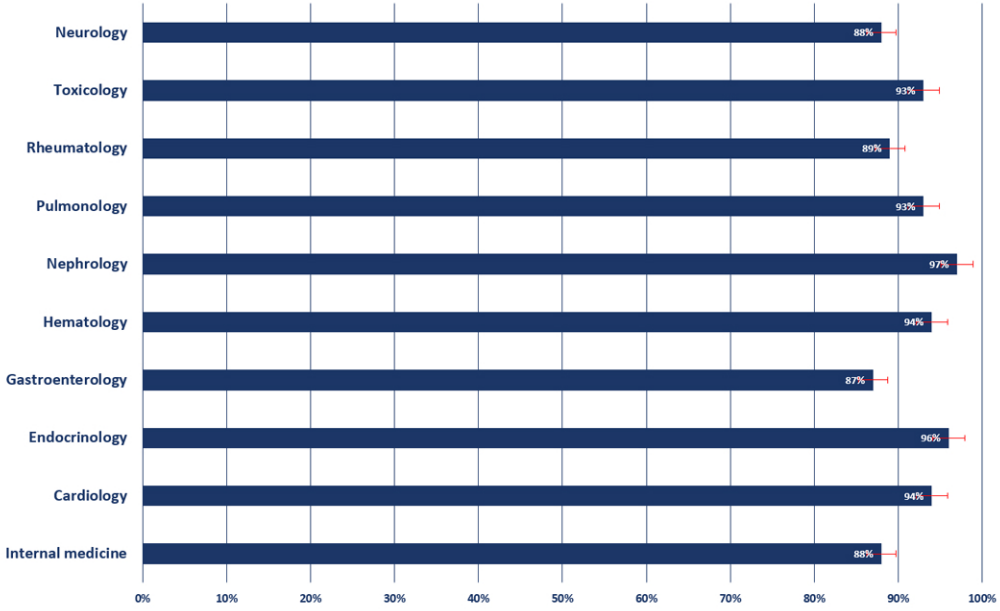
The SBAS Software uses a novel approach for visualizing the results of a machine learning model. Based on the blood test results and the chosen model, the report includes a table with the list of the ten most likely diseases, the corresponding ranking factors and parameter evidence, as well as an intuitive multilevel pie-chart presenting the same information.

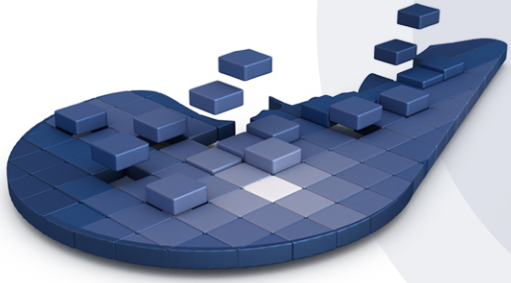
	ICD	Ranking Factor	Parameter Evidence	Description
	M05	21.17	4.05	Seropositive rheumatoid arthritis
	M35	19.42	4.23	Other systemic involvement of connective tissue
	D50	9.74	2.09	Iron deficiency anaemia
	M34	9.64	4.52	Systemic sclerosis
	K29	9.01	3.74	Gastritis and duodenitis
	I10	8.34	1.64	Essential (primary) hypertension
	M80	7.24	2.21	Osteoporosis with pathological fracture
	K50	6.62	2.72	Crohn's disease [regional enteritis]
	M45	4.63	3.15	Ankylosing spondylitis
	I20	4.19	-0.81	Angina pectoris



Models Accuracy

The accuracy of the SBAS Software for a specific model varies from 85 % for the Internal medicine model which covers all fields of internal medicine to 96 % for specific Endocrinology and Nephrology models.





About the Company

Smart Blood Analytics Swiss SA is Swiss-based company established in 2016. The team behind Smart Blood Analytics Swiss is comprised of professionals from the fields of medicine, machine learning, laboratory biomedicine and chemistry.

A small part of our work (hematology, neurology, COVID-19) was published in January 2018, October 2019, and May 2021 with Springer Nature in Scientific Reports. The latest article VIRUS vs. BACTERIA was published in April 2024 in Heliyon. These articles have already been cited more than 250 times. Our research article COVID-19 diagnosis by routine blood tests using machine learning received more than 24k article accesses in 2021, placing it as one of the top 100 downloaded papers for Scientific Reports in 2021.

The SBAS Software offers wide possibilities for additional research and development. For example, the most important (fundamental) blood parameters for diagnosing various diseases can easily be identified or determined.

Contact

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