

Value of Diagnostics

The Covid-19 outbreak was a timely reminder that effective health care is based on accurate and reliable diagnostic tests. Diagnostic tests provide reliable information for decision-making regarding disease prevention, disease detection, and therapy monitoring. Although they account for a small share of overall health care spending, in vitro diagnostics (IVD) contribute significantly to the overall effectiveness and efficiency of health care systems.

What are in vitro diagnostics?

In vitro diagnostics (IVD; also called "laboratory-based tests") are tests to detect disease, conditions and infections from samples taken from the human body, such as blood, urine, or tissue. These samples are tested outside the human body, i.e., in vitro ("in glass test tubes").

In vitro diagnostics are an integral part of the continuum of care

In a patient journey, IVD testing is used in prevention as well as before, during, and after testing and treatment. The primary value of IVD testing is to improve clinical decision-making, targeted therapy selection, and promote safe and efficient monitoring. IVD is used in both non-communicable diseases, such as diabetes, as well as communicable diseases, such as SARS-CoV-2.

In vitro diagnostics in numbers

Reliable testing through product diversity
More than 4,000 IVD products are in use across the entire patient journey for reliable testing.¹



In vitro diagnostics are efficient and reliable
70% of all clinical diagnoses and therapeutic decisions are based on the results of laboratory diagnostics.²

Laboratory costs represent a small share of overall health care expenditure

Outpatient laboratory costs amount to about 2% of health care spending.³



The diagnostics industry is an important employer with a promising future

250 private and hospital laboratories perform diagnostic tests, 65 manufacturers and distributors produce, import, and supply laboratory diagnostic solutions, 14,300 people are employed in the Swiss diagnostics industry; of which 600 are in training.⁴



The added value of in vitro diagnostics lies in optimised clinical decision-making. As a result, diseases can be prevented, detected early, and targeted therapies can be initialised at an early stage. This improves public health and relieves the burden on the overall health care and social systems.

Added value of in vitro diagnostics

IVD adds value in many ways: it generates critical information for medical decision-making throughout the patient journey creating a direct health (clinical) benefit for patients. In addition, there is an emotional and social (non-clinical) benefit for patients and relatives; for example, reduced suffering as a result of accelerated and optimised decision-making. At the same time, a well-established IVD lowers the burden on our health care and social systems. Every disease that is avoided or more efficiently treated creates societal and economic benefits. (See figure overleaf.)

Quantitative value of in vitro diagnostic testing in medical practice

The examples presented here provide quantitative estimates of the benefits in prevented disease and treatment costs through IVD testing.

The value of biomarker testing in pregnancy care

One of the main causes of morbidity and mortality in expectant mothers across the globe, pre-eclampsia, is a common condition that causes high blood pressure in 3% to 5% of pregnant women. By using IVD for certain biomarkers, doctors can predict if a woman is at risk of pre-eclampsia. This reduces complications during pregnancy and results in a lower average cost of CHF 3,374 per hospitalised patient, leading to potential savings of CHF of 2.4 million per year for Switzerland as a whole.^{5,6}

3,374 CHF



Reduced costs per case

2.4 Mio. CHF



Savings per year

Benefits of SARS-CoV-2 diagnostic tests

A study conducted by Prognos Switzerland in 2022, which simulated various scenarios for the prevention of SARS-CoV-2 cases through early testing, resulted in an estimated 2.5 million avoided infections for 26 months (April 2020 to June 2022).⁷

35,000



Hospitalisations prevented

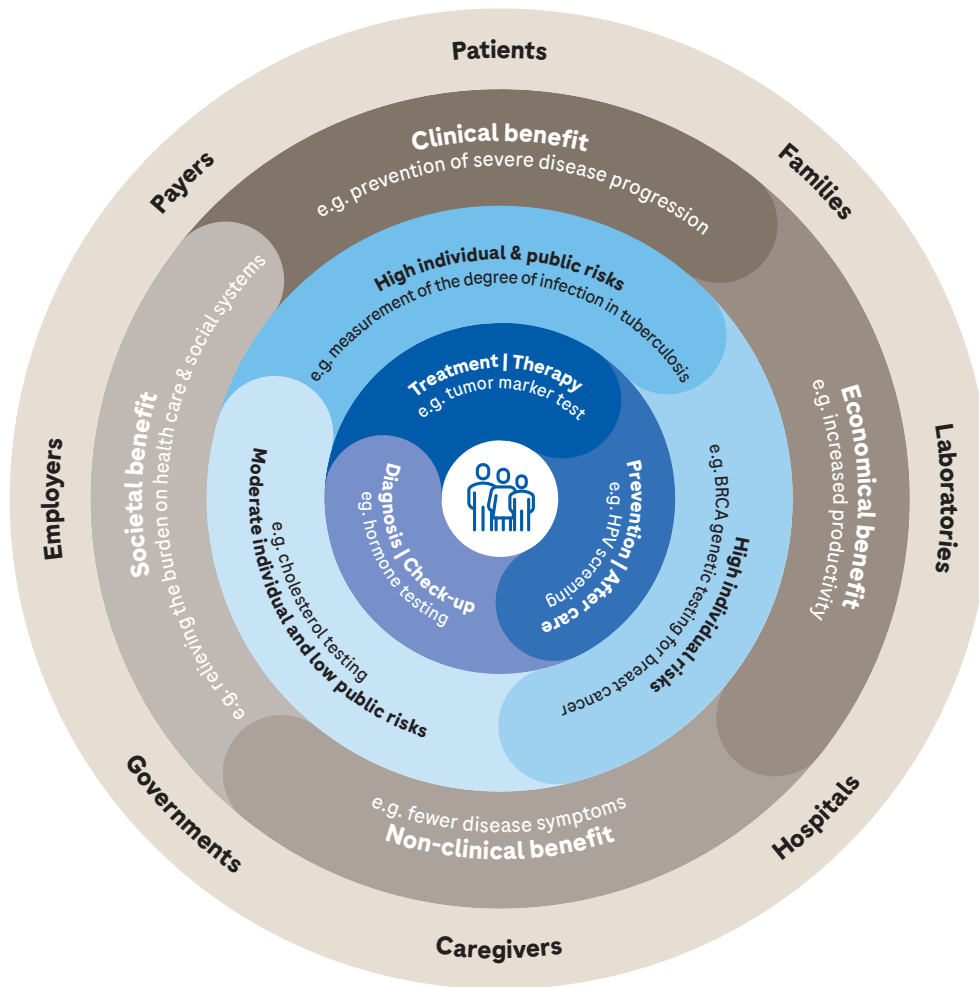
0.8 Mrd. CHF



Treatment costs avoided






Benefits of this magnitude require substantial investments in research and development. With its R&D expenditures, the diagnostics industry plays a vital role in Switzerland as an innovation and research leader.

A framework for measuring the value of in vitro diagnostics



Patient needs are at the centre of the framework. They are surrounded by the first circle, representing the patient journey of IVD testing: prevention, treatment, and follow-up consultations. The second circle shows the relevance of disease prevention through IVD tests, both for individuals and the public, whereby the relevance can vary greatly: from highly relevant for the risk of life-threatening diseases for individuals or the risk of potentially very large numbers of people affected (e.g., epidemics), to less relevant (e.g., vitamin D). The third circle represents the diverse range of benefits of IVDs. The outermost circle lists the stakeholders who benefit from IVDs.

Legend to framework

-  Centre: Patient needs
-  1. circle: Patient journey
-  2. circle: Risk-based classification
-  3. circle: Areas of benefit
-  Outer circle: Key stakeholder groups

Prerequisites for the successful development of in vitro diagnostics

The essential prerequisites for a successful development of IVDs include research-friendly and innovation-promoting political, economic, and social conditions as well as the corresponding regulations, especially in the areas of

licensing and monitoring. In addition, access to skilled professionals is urgently needed. The as yet unexploited potential of health data must be tapped in connection with IVD. To create these conditions, it is necessary to raise awareness and enter into constructive dialogue among all decision-makers.

¹ Rohr, U.-P. et al., 2016: The value of in vitro diagnostic testing in medical practice: a status report. *PLoS one* 11.3.

² The Modernisation of Pathology & Laboratory Medicine in the UK, 2008: Networking into the Future, *The Clinical Biochemist Reviews*, 29(1).

³ Bundesamt für Statistik, 2022: Kosten des Gesundheitswesens nach Leistungen. Anteil Laboranalysen an den Gesamtkosten des Gesundheitswesens.

⁴ Reuschling, M., Conrad, W., Korte, W., 2020: Pipette Branchenstudie – die Wertschöpfung der Schweizer IVD-Branche.

⁵ Hodel, M., Blank, P. R., Marty, P., Lapaire, O., 2020: Preeclampsia in Switzerland: A cost analysis in two hospitals, *Journal of Medical Economics*, S. 926-931.

⁶ Hodel, M., Blank, P.R., Marty, P., Lapaire, O., 2019: The economic impact of sFlt-1/PlGF ratio as a predictive test in women with suspected preeclampsia in Switzerland.

⁷ Prognos, 2022: Der Nutzen von Corona-Tests. Annahme: Effektstärke «Mittlerer Effekt».