

Human Medicine

HUMAN MEDICINE AT THE UNIVERSITY OF BERN

Human medicine studies the continuum between health and disease in humans. As an academic discipline, its main pillars are the prevention, diagnosis, and treatment or alleviation of diseases. At the University of Bern, the Human Medicine study programme is divided into thematic modules spanning different subjects. The modules are based on the didactic principle of problem-based learning (PBL) as well as on the "GP teaching system", which includes student internships in the first, third, and fifth years of study. To help transform knowledge into action, teaching takes place in small groups and at the point of treatment, for example in hospitals and clinics.

How is human medicine linked to sustainable development, and how has this influenced practice?

It has become clear that human health is affected by climate change and other environmental crises, such as rapid biodiversity loss or pollution. The scientific journal *The Lancet* describes climate change as the greatest threat to global health in the 21st century [1]; since 2015 it has been annually evaluating the consequences of climate change on health in the *Lancet Countdown on Health and Climate Change* [2]. Changes in climate and the natural environment are causing an enormous global burden of disease by affecting human health both directly (e.g. through extreme weather events or air pollution) and indirectly (e.g. through the spread of pathogens/infectious diseases, or through allergies) [3]. Swiss umbrella organizations for medical students and professionals – FMH [4], swisma [5], and vsao [6] – agree that there is a great need for action.

The new health narrative known as **planetary health** addresses the links between human health and the social, economic, political, and natural systems of our planet [3]. It recognizes the impacts of human activities on our environment and demands that we take responsibility for them. Planetary health uses synergy effects. For example, measures to protect and restore natural resources can simultaneously serve to improve livelihoods, stabilize the climate, protect health, and promote a sustainable economy.

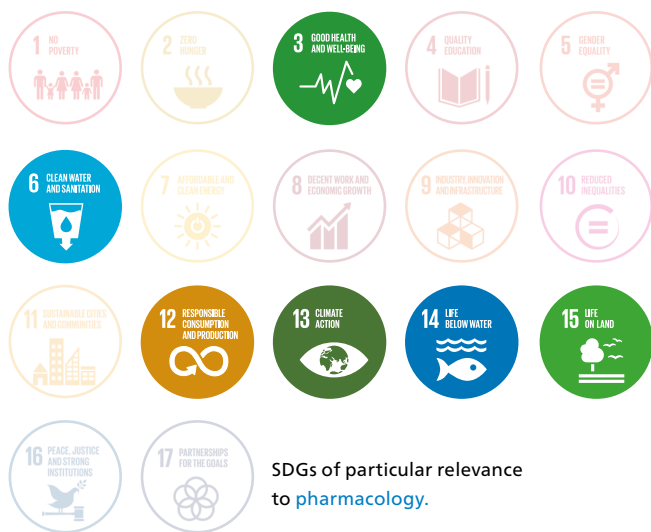
Health professionals act as health advocates and are thus key figures for transformative change. To prepare medical students for this role, it is crucial to expand teaching around planetary health. In addition to learning about the links between human and planetary health, students should be able to identify and actively use opportunities for action. This includes developing social and communication skills that will allow them, as practitioners, to better inform patients and the population about health-related issues and thus to effect change. The internationally recognized *CanMEDS Physician Competency Framework* defines seven roles of doctors – including "health advocate" and "communicator". For each of them, it sets out educational objectives and competencies that students must achieve by the end of their basic medical training [7].

The health sector is a major contributor to greenhouse gas emissions [8]. Medical students should be empowered to quantify and minimize the environmental footprint of clinical practice and to transform global healthcare supply chains for sustainability. The purchasing power of the healthcare industry can be used as a lever for transformation.

Example: Planetary health thinking in medical specialties

In the field of pharmacology, the relevance of sustainability is evidenced by the CO₂ footprint of medicines. Anaesthetic gases, for example, are extremely harmful to the climate. More environmentally friendly options include switching to intravenous anaesthesia or reducing the use of desflurane and laughing gas. There is a similar debate around asthma medication and the carbon footprint of metered dose inhalers and dry powder inhalers [9]. Furthermore, there are many co-benefits to health, the environment, and climate of adopting an economical approach to prescriptions (**SDG 3** and **SDG 12**) [10].

Disposing of medicines sustainably, i.e. at a pharmacy instead of in household waste or down the drain, helps to protect water, oceans, and terrestrial ecosystems (**SDG 6**, **SDG 14**, and **SDG 15**). The topic of correct disposal is also an opportunity to educate patients about these interlinkages and encourage environmentally responsible behaviour (**SDG 12** and **SDG 13**) [11].



Further topics, such as the health impacts of meat-heavy diets or how our health system needs to adapt to climate change, can be found in the [teaching guidelines on planetary health](#) (available in German only) [12].

How does the University of Bern's Faculty of Medicine incorporate the topic of sustainable development into research and teaching?

"Health, prevention, and environment" is a research focus of the Strategy 2030 at the University of Bern's Faculty of Medicine [13]. The "Climate Change and Health" research group, based at the [Institute of Social and Preventive Medicine \(ISPM\)](#), investigates temperature-related health risks, in particular the effect of heat islands in urban areas. The group works closely with the University's [Oeschger Centre for Climate Change Research](#) and is part of the [Multi-Country Multi-City \(MCC\) Collaborative Research Network](#). Other research groups at the ISPM also study environmental impacts on human health, for example the [Environmental and Spatial Epidemiology](#) group.

In teaching, the topic of planetary health is currently introduced in a first-year module titled "Humans in relation to their environment". Two elective practicals are in planning for the second year of study: one on planetary health in general, and the other on sustainability at the GP level. For the third year, an in-depth seminar focusing on "green hospitals" is being planned in collaboration with the sustainability department of the *Inselspital*, Bern's University Hospital.

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