Annual Report 2022
Institute of Social and Preventive Medicine ISPM
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In 2022, the COVID-19 pandemic continued affecting our lives and many activities. Yet, even though the Omicron wave began in November 2021 and remained in full swing in the first months of 2022, most (academic) activities returned to “normal” during the second half of 2022.

2022 also started a 2-year transition phase for the Institute of Social and Preventive Medicine (ISPM). After ISPM’s 50th anniversary festivities in 2021, the medical faculty organized a process – expected to last until the first half of 2024 – to appoint new professors, possibly including ISPM’s new director.

2022 saw many exciting new developments at ISPM, such as

- Professor Annika Frahsa and Professor Sofia Zambrano and their research groups fully operational with expanded activities
- Professor David Schwappach starting mid-year with research and teaching activities focused on – mostly structural – aspects of patient safety
- Professor Matthias Egger with his team prepared the 2023 start of the new interfaculty PhD course program in Public Health Sciences and brought several faculties of the University of Bern on board.

I hope you enjoy reading ISPM’s 2022 Annual Report. It certainly illustrates the substantial diversity of various activities of Institute staff in research, teaching, and outreach.

I end by thanking all ISPM staff members for their work (of course!) and contributions to our multicultural, multi-interdisciplinary work environment – it regularly allows for surprising new insights and ways to move forward in our respective projects and teaching activities.

Marcel Zwahlen, Director
ISPM Facts and Figures
as of 31.12.2022

Our research profile covers a wide area of health-related topics across 16 research groups.

We actively participate in university teaching for students of medicine, pharmacy, biomedical engineering, and biomedicine, and we are engaged in courses for PhD students and participants in postgraduate training programs, such as advanced studies (CAS and MAS) as described on ISPM’s website.

People

Prof. Dr. Marcel Zwahlen Director a.i.
Staff members total 160
Research 140
PhD students 40
Admin, technics 20 (covering 3 institutes)
Nationalities over 30
Research groups 16

Education

Postgraduate courses
CAS Clinical Research in Health Care Organizations CAS Leadership in Health Care Organizations CAS Managing Medicine in Health Care Organizations MAS in Leading Learning Health Care Organizations Swiss Epidemiology Winter School

Inter University Public Health Education
MPH, DAS, CAS

Medical Specialist in Prevention and Public Health
Certified training facility

Bern Lectures in Health Science
10 monthly seminars plus 6 special talks

Grants

Grants, new in 2022
• Swiss National Science Foundation (SNSF): 1 Starting Grant, 2 project grants (320030_212519, 05SE0_213181), 1 Postdoc Mobility
• 1 Horizon Europe and 1 Secretariat for Education Research grant
• Swiss Cancer League, 4 Multidisciplinary Center for Infectious Diseases grants, 1 Swiss Personalized Health Network grant

3rd Party money spent
SNSF CHF 3’835’325
Other competitive CHF 5’625’849
Non-competitive CHF 3’110’159

Publications

Originals in house 107
Original collaborations 128
Reviews in house 8

Teaching

Total numbers
Courses 66
Course attendees 962
Undergraduate lectures 713
We study the occurrence of and risk factors for cancer, and we inform cancer prevention programs. The group currently focuses on the epidemiology of HIV-related malignancies and cervical cancer prevention, treatment, and survival in sub-Saharan Africa.

Key scientific activities
We continued our work analyzing data from the South African HIV Cancer Match (SAM) study – a record-linkage study based on laboratory records from the National Health Laboratory Service and cancer diagnoses from the National Cancer Registry in South Africa. The current SAM study database includes information about more than 5 million people living with HIV. We used data from the SAM study to examine the association of age and cancer risk among this population, and we enriched the SAM database by obtaining vital status information from the National Population Register for a subset of individuals.

We used a South African medical aid claims database to assess the impact of HIV status on cervical cancer survival. In Zambia, we followed up women who previously participated in a diagnostic test accuracy study of a portable colposcope for the detection of cervical intraepithelial neoplasia to examine human papillomavirus (HPV) and cervical disease dynamics over time for this cohort. In Zimbabwe, we worked on setting up a prospective cohort study on cervical pre-cancer treatment failure among women living with HIV.

Key academic activities

Teaching: We taught and tutored medical students at the University of Bern. Eliane Rohner coordinated the medical specialization program in prevention and public health at the Institute of Social and Preventive Medicine.

Conferences and Events: We participated in and contributed to the Steering Group Meeting of the International epidemiology Databases to Evaluate AIDS Southern Africa (leDEA-SA) from November 14–16, 2022 in Johannesburg, South Africa.

Scientific talks and presentations: Yann Ruffieux presented research results at 2 virtual conferences: the Conference on Retroviruses and Opportunistic Infections and the International Conference on Malignancies in HIV/AIDS. Yannick Turdo presented research results at the International AIDS Conference in Montreal, Canada.

Honors and Awards: Yannick Turdo obtained a scholarship to attend the International AIDS Conference in Montreal, Canada.

Grants
National Institute of Allergy and Infectious Diseases (Administrative Supplement to U01AI069924): Enriching the South African HIV Cancer Match study to include vital status information and an HIV-negative control cohort (PI: Matthias Egger; Project Lead: Eliane Rohner; 2022–2023).

Internal and external collaborations
In Switzerland, we collaborate with the Swiss Institute for Translational and Entrepreneurial Medicine (stem-inse); Rowan Iskandar; the Swiss Tropical and Public Health Institute (Julia Bohlius); and the Swiss HIV cohort study (Karoline Aebi-Popp). Internationally, we collaborate with the International epidemiology Databases to Evaluate AIDS – Southern Africa (leDEA-SA); the National Cancer Registry (Mazvita Muchengeti), South Africa; the University of Cape Town (Gary Maartens), South Africa; the World Health Organization’s International Agency for Research on Cancer (Partha Basu), France; the Newlands Clinic (Margaret Pascoe, Tarisai Kufa, Tinei Shamu), Zimbabwe; the Center for Infectious Disease Research (Albert Manasyan, Misirizo Moono), Zambia; and the Molecular Epidemiology Laboratory at the Queen Mary University (Belinda Nedjai), UK.

Key team members
John Andoh (PhD candidate); Matthias Egger (head of HIV, hepatitis, and tuberculosis research group); Nathalie Fernandez (research fellow); Eliane Rohner (head of research group); Yann Ruffieux (research associate); Katayoun Taghavi (postdoc); Yannick Turdo (research assistant).

Selected publications


Our research group puts epidemiologic principles into practice in clinical and public health environments. We aim to develop better prevention and detection tools for cardiometabolic diseases, such as type 2 diabetes and cardiovascular disease.

Our main research themes include 1) determining sex differences in cardiometabolic diseases; 2) understanding the link between diabetes and cardiovascular disease; and 3) quantifying the burden of cardiometabolic diseases in spinal cord injury (SCI).

Key scientific activities
Within women’s health, our research group showed women increase their levels of traditional cardiovascular risk factors as they grow older – a change similar across different reproductive stages. Although our genetic findings do not support the hypothesis that early onset of menopause is associated with higher blood pressure, they do suggest different ages of natural menopause-related genetic pathways could differently impact blood pressure. Preliminary data from our team shows iron biomarkers vary by sex and age; they can also partially mediate the levels of NT-proBNP – a prognostic marker for heart failure.

In the area of diabetes and cardiovascular disease, our research highlights people with diabetes possibly experiencing reduced recognition of atrial fibrillation symptoms, which may result in a delayed diagnosis of atrial fibrillation. Consequently, reduced recognition of atrial fibrillation symptoms also brings more complications, such as stroke. In addition, patients with diabetes may be more at risk of developing non-paroxysmal atrial fibrillation rather than paroxysmal atrial fibrillation.

Our SCI findings suggest 1) the level of injury as possibly an additional non-modifiable cardiovascular disease risk factor in chronic SCI (see reported distinct lipid profile, blood pressure, and body composition among individuals with tetra- as compared with para-plegia) and 2) the burden of cardiometabolic diseases among individuals with non-traumatic injury as possibly higher compared with traumatic injury.

Our Chagas disease research also recently showed a dehydroepiandrosterone sulfate (DHEA-S) and circulating MicroRNAs, such as miR-223-5p, possibly plays a prognostic role in Chagas cardiomyopathy.

From a lifestyle viewpoint, our research suggest high oat intake possibly improves several cardiometabolic risk markers, yet hard outcome evidence, such as for diabetes and cardiovascular disease, is limited. While buckwheat may have some beneficial effects on glucose, our research calls for large and better-quality studies to understand effects of buckwheat on cardiometabolic risk.

Key academic activities
Teaching: Lectures in Sex- and Gender-Specific Medicine, clinical epidemiology, public health, systematic reviews and meta-analyses, and grading of recommendations, assessment, development, and evaluation – GRADE – assessment.

Grants

Selected publications


1. Pediatric Respiratory Epidemiology Group

The Pediatric Respiratory Epidemiology group studies common and rare respiratory disorders during childhood and over the life-course. Our main areas of interest are asthma and other wheezing disorders, chronic cough, cystic fibrosis (CF), and primary ciliary dyskinesia (PCD). We look into the role of environmental and behavioral influences on the development of respiratory disorders, the prediction of clinical course, and phenotypes of diseases, such as asthma and PCD.

Key scientific activities

We conduct population-based and clinical cohort studies and registries.

Swiss Paediatric Airway Cohort (SPAC): SPAC is a prospective observational national, multi-center clinical cohort study, including more than 4,000 children referred to paediatric respiratory outpatient clinics for wheeze, cough, exercise, and sleep-related respiratory problems. In 2022, we studied phenotypes of cough among children; we reported facemask use did not lead to carbon dioxide retention when children exercise; we studied predictors of asthma control and asthma attacks; and we studied the utility of the Predicting Asthma Risk in Children (PARC) tool to predict outcomes among this population.

Luftibus in the School: Luftibus is a population-based study about respiratory health among school-aged children in canton Zürich. In 2022, we reported determining the prevalence of cough among children depends strongly on the question asked, and we studied phenotypical characteristics of children who cough at night.

National monitoring of newborn screening (NBS) for CF: NBS monitoring describes methods and results of CF in Switzerland. In 2022, we published a 10-year report, and we compared NBS programs across Europe.

Swiss PCD registry (CH-PCD): In 2022, we published information on the frequency of upper and lower respiratory symptoms and physical activity of people with PCD in Switzerland using patient-reported information. We also sent a new questionnaire to participants to study longitudinal changes in respiratory symptoms, assess frequency of neonatal problems, and evaluate treatments taken by people with PCD. Lastly, we wrote and circulated the first comprehensive report for registry participants.

COVID-PCD: COVID-PCD is an online longitudinal participatory study including more than 700 people with PCD of all ages from all over the world. Since recruitment started in May 2020, participants completed regular questionnaires. In 2022, we studied factors associated with incidence and severity of reported SARS-CoV-2 infections, and we studied vaccinations against COVID-19. We also investigated topics unrelated to COVID-19 and studied diagnostic testing and fertility counseling around the world.

Ear-Nose-Throat (ENT) Prospective International Cohort of PCD patients (EPIC-PCD): EPIC-PCD is a multi-center cohort study on characteristics and prognosis of upper respiratory disease among patients with PCD, which currently includes 466 participants from 13 centers in 10 countries. In 2022, we analyzed and presented data on frequency and characteristics of sinonasal and otologic patient-reported symptoms and results of ENT specialized examinations.

Research priorities in PCD: A mixed-methods study combining qualitative and quantitative analytical approaches to determine future priorities for clinical and epidemiological research on PCD. In 2022, we analyzed data from semi-structured interviews with experts in the field, interviewed people with PCD and parents of children with PCD from Switzerland and the United Kingdom, and started developing 2 surveys on research priorities based on our interview analysis results, which we plan to circulate widely among experts, participants, and participant families worldwide.

BEAT-PCD Clinical Research Collaboration: Since 2020 the European Respiratory Society (ERS) funds BEAT-PCD Clinical Research Collaboration (CRC) – a network of multidisciplinary researchers and clinicians. The CRC coordinates research from basic science to clinical care to improve diagnosis and develop treatments that lead to better long-term outcomes for patients with PCD. Myrofora Goutaki cochains the network, Claudia Kuehni is a member of the management committee, and Yin Ting Lam is a PhD student representative on the advisory board. Within the BEAT-PCD framework in 2022, we developed and progressed numerous research projects, and we applied for renewal of ERS support. The network also organized a successful international annual meeting and training school for early career researchers and co-organized the first international conference for people with PCD together with PCD support groups worldwide and the European Lung Foundation (ELF).

Key academic activities

Students: During 2022, the group included 7 PhD candidates and 2 masters students.

Teaching: Regular teaching with lectures and tutoring of undergraduate and postgraduate students (University of Bern, Master of Public Health program) by Claudia Kuehni, Myrofora Goutaki, and Eva Pedersen.

Conferences and Events: Co-organization of the annual meeting of BEAT-PCD CRC and BEAT-PCD training school in Barcelona (September 2022), the annual Swiss PCD meeting in Bern (November 2022), and the first online international PCD patient conference (December 2022).

Scientific Talks and Presentations: As invited speakers, Leonie Schreck and Yin Ting Lam presented their talk, “Studie COVID19-PCD – eine Studie von und für Menschen mit PCD – und weitere Forschungsprojekte” at the patient congress of the German support group for PCD (Kartagener Syndrom und Primäre Ciliäre Dyskiniese) on May 7, 2022, in Berlin, Germany.

During ERS BEAT-PCD annual meeting on September 3, 2022 in Barcelona, Spain, invited speakers Leonie Schreck and Yin Ting Lam presented their talk, “COVID-PCD study.”

At the annual meeting of Gesellschaft für Pädiatrische Pneumologie (GPP) on September 29, 2022 in Bern, Switzerland, Eva Pedersen delivered her invited talk, “Participatory research and [patient and public involvement] PPI: how to include patients into research? The example of COVID-PCD.”

Honors and Awards: In May 2022 in Luzern, Switzerland, Yin Ting Lam won the award for best oral presentation at the annual congress of the Swiss Society of Paediatric Pulmonology and Eva Pedersen won the award for best presentation by a young researcher from the Swiss Lung Association Research Fund.

In September 2022 at the annual ERS Congress in Barcelona, Spain, Myrofora Goutaki won the award for best abstract for the Paediatric Assembly and Eva Pedersen won the ELF-sponsored award for best abstract at patient-centered research.
Grants
Swiss National Science Foundation (320030B_192804): Natural history, phenotypes, and disease classification in primary ciliary dyskinesia (phase II). (CHF 447,055; PI: Claudia Kuehni; 05/2020–05/2023).

Swiss National Science Foundation (320030_212519): Using real-world data for diagnosis and prognosis of childhood asthma. (CHF 1.2 million; PI: Claudia Kuehni; 2022–2026).

Swiss National Science Foundation Ambizione (P2UPF3_185923): From the nose to the lungs: the importance of upper respiratory disease in Primary Ciliary Dyskinesia. (CHF 950,341; PI: Myrofora Goutaki; 2019–2023).

Swiss National Science Foundation: Measures for researchers from Ukraine for PhD student Taisiya Krasnova. (CHF 110,917; host: Claudia Kuehni; 2022–2024).

Swiss Lung League: Phenotypes of Primary Ciliary Dyskinesia and their association with genotypes and disease progression. (CHF 86,082; PI: Eva SL Pedersen; 2021–2024).

Johanna Dürmüller-Bol: Treatment burden of people with PCD in Switzerland. (CHF 12,646; PI: Myrofora Goutaki).


Internal and external collaborations
The Paediatric Respiratory Epidemiology group works with an extensive national and international multidisciplinary network of researchers, clinicians, and scientists in the field of paediatric and rare respiratory diseases. We also collaborate closely with patient associations and support groups through projects, such as SPAC and COVID-PCD, and research initiatives, such as BEAT-PCD CRC.

Key team members
Cristina Ardura-García (postdoc); Daria Berger (PhD candidate); Noah Forster (master student); Labinota Gjokaj (research assistant); Myrofora Goutaki (senior researcher); Daniela Knup (research assistant); Mirjam Koller (master student); Helena Koppe (research assistant); Tayisiya Krasnova (PhD candidate); Claudia Kuehni (head of research group); Ronny Makhoul (PhD candidate); Maria Christina Mallet (PhD candidate); Eva Sophie Lunde Pedersen (postdoc); Lara Pissini (research assistant); Meret Ryder (research assistant); Leonie Schreck (PhD candidate); Ibrahim Ssekalo (PhD candidate).

Selected publications


2. Paediatric Cancer

2.a Childhood Cancer Registry (ChCR)

The Cancer Registration Act (CRA) came into effect in Switzerland on January 1, 2020, which makes cancer diagnosis registration compulsory. The Federal Office of Public Health (FOPH) transferred the task to manage the national ChCR to the consortium of the Swiss Paediatric Oncology Group (SPOG) and the Institute of Social and Preventive Medicine (ISPM) at the University of Bern.

ISPM maintains and hosts the ChCR, reports national data, and collaborates internationally with data about cancer among children and adolescents in Switzerland.

ChCR registers diagnoses of cancer among children and adolescents under age 20 in Switzerland, monitors incidence of childhood cancers, quality of care and long-term outcomes. ChCR data support etiological, epidemiological, and outcome research. Further information is available on the ChCR website.

Key scientific activities

- The data from the ChCR build the basis for national evaluations, international monitoring, and benchmarking, as well as supporting childhood cancer research in Switzerland. For this reason, our team’s key tasks comprise registering, coding, and ensuring data quality (RCD).

- ChCR is also responsible for securely delivering registry data to international benchmarking and monitoring studies for childhood cancer cases. In 2022, the ChCR prepared data delivery for 5 requests from international childhood cancer organizations for registry data.

- The management change from the former Swiss Childhood Cancer Registry (SCCR; since 1976 on a voluntary basis) to the ChCR after CRA enforcement is still ongoing. The Federal Office of Information Technology, Systems, and Telecommunication continues the development of the new registration software.

- We began preparatory work for Public Health Report 2024 on the risk of secondary primary cancers.

- ChCR finalized the harmonized methodology documentation for national cancer reporting among adults, children, and adolescents together with the Federal Statistical Office (FSO) and the National Agency for Cancer Registration (NACR). The documentation includes a description of data sources and standards for routine statistical analyses and cancer reporting. We published the final document – Statistical Methods for Cancer Reporting in Switzerland – on our website.

- Our website includes routine analyses of ChCR data.
Key academic activities

Teaching: CHCR participated in teaching SPOG Clinical Research Coordinators during the annual 1-day teaching event.


Grants
Swiss Federal Office of Public Health: The Childhood Cancer Registry of Switzerland is mandated and completely funded by the FOPH.

Internal and external collaborations
At ISPM, we collaborate with the Child and Adolescent Health research group. Within Switzerland, we collaborate with FOPH; NACR; SPOG; Association Suisse des Registres du Cancer; and FSD.

Outside of Switzerland, we collaborate with the International Association of Cancer Registries; European Network of Cancer Registries; and German Childhood Cancer Registry.

Key team members
Valentin Bunjaku (assistant RCD); Christina Çinar-Kaufmann (registration and coding); Daniela Dyntar (head RCD quality); Katharina Flandera (administrative support); Zina Heg-Bachar (registration); Ursula Kühlner (executive coordinator); Claudia Kuehni (head of Childhood Cancer Registry); Eleftheria Michalopoulou (statistics); Erika Minder (registration and coding); Shelagh Redmond (data quality); Grit Sommer (head of data requests); Ben Spycher (head of statistics).

Selected publications

2. b Paediatric Cancer Epidemiology

The Paediatric Cancer Epidemiology group studies the effects of childhood cancer over the life-course. Our main areas of interest concern long-term outcomes after childhood cancer, including prevalence, incidence, and spectrum of somatic and psychosocial late effects, such as cardiac and pulmonary dysfunction, somatic health, mental health, educational and social outcomes, health-related quality-of-life, secondary neoplasms, and long-term mortality.

Key scientific activities

We conduct population-based clinical follow-up studies on long-term outcomes after childhood cancer.

Swiss Childhood Cancer Survivor Study (SCCSS): A nationwide population-based questionnaire survey continuously enrolling all patients with childhood cancer registered in the Childhood Cancer Registry who survive more than 5 years after their cancer diagnosis. We study the spectrum of somatic and psychosocial outcomes childhood cancer survivors experience, health-related quality-of-life, and health behaviors. In 2022, we contacted all survivors diagnosed between 2011–2015 and their siblings. We additionally conducted a follow-up survey of survivors who already participated in a previous survey to assess changes in health status over time. SCCSS-Nutrition is a sub-study which collects dietary information via urine samples and self-reported questionnaires from survivors.

Cardiovascular Late Effects after Childhood Cancer (CardioOnco) Study: A prospective longitudinal multi-center study. It compares conventional echocardiography with speckle tracking echocardiography for the early detection of cardiac disease among childhood cancer survivors and investigates clinical determinants for developing cardiac disease after childhood cancer. The study started in 2016 at the University Hospital of Bern, Inselspital and since 2021 it expanded to 4 other centers in Switzerland.

Community-based screening program for hearing loss after childhood cancer: A prospective study evaluating access to novel, low-threshold hearing tests for former patients with childhood cancer. We invite patients with childhood cancer at risk of hearing loss for a free hearing test in a local hearing aid shop. The study has a participatory approach through a stakeholder advisory group of former patients, physicians, and hearing experts. We use questionnaires, interviews, and group discussions with all stakeholders to evaluate the screening program.

Genetic risk for Complications in Children after Oncological Treatment in Switzerland (GECCOS): As a project to find genetic risk factors of complications after childhood cancer, we collected more than 500 germline DNA samples in the Biobank for Childhood Cancer and Blood Disorders. We extracted and sequenced DNA from participants with childhood cancer in Switzerland to contribute to international research collaborations on second cancers. GECCOS helps us better understand why some people develop second cancers after childhood cancer and others do not.

International Late Effects of Childhood Cancer Guideline Harmonization Group (IGHG): An initiative developing standardized recommendations for follow-up surveillance after childhood cancer. Our research group leads a guideline on pulmonary dysfunction, and we are involved in several other guidelines related to ototoxicity, metabolic syndrome, psychosocial problems, and health promotion.

Swiss Paediatric Haematology/Oncology Biobank (Biolink): A project providing a platform to combine data from the SCCSS and 2 biobanks in a privacy-preserving way: the Swiss germline DNA Biobank for Childhood Cancer and Blood Disorders and the Swiss Pediatric Haematology Oncology Biobank Network. The Metabank facilitates project development through the rapid assessment of available data and samples, then links clinical data with biosamples. Biolink enables in-depth research in the fields of cancer predispositions, pharmacogenetics, and genetic modifiers of long-term complications after childhood cancer.

Pulmonary Late Effects after Childhood Cancer (Pulmo Study, SCCSS FollowUp): A prospective longitudinal multi-center study. It is embedded in the SCCSS FollowUp study that collects data from regular follow-up visits of pediatric childhood cancer survivors. The Pulmo Study compares conventional lung function tests with nitrogen multiple breath washout tests for early detection of pulmonary disease among childhood cancer survivors and to understand clinical determinants that lead to the development of pulmonary disease after childhood cancer. The study started in 2022 at Inselspital and University Children's Hospital of Basel, UKBB. Expansion to 2 additional centers in Switzerland is in progress.

Key academic activities

Students: During 2022, the group included 4 MD-PhD students and 2 MD-Master of Science (MSc) students. Marc-Andrea Heirzelmann and Seraina Uhligmann both successfully finished their MD-MSc thesis projects.

Teaching: Regular teaching with lectures and tutoring of undergraduate and postgraduate students (University of Bern) by Claudia Kuehni, Luzius Mader, Sven Strebel, and Tomáš Slama.

Conferences and Events: Our team visited the International Cancer Survivorship Symposium (ICSS) in Bern, Switzerland; the International Symposium on Late Complications after Childhood Cancer in Utrecht, The Netherlands; and the 54th Annual Congress of the International Society of Paediatric Oncology in Barcelona, Spain with several oral and poster presentation by team members.

Outreach and Representation: The SCCSS celebrated its 15th anniversary in 2022. For such an occasion, important stakeholders gathered and together we reflected on major achievements and planned future activities.

Honors and Awards: Sven Strebel won the Scientific Research Award for the best oral presentation at the ICSS in Bern (CHF 5,000).

Grants


Kinderkrebshilfe Schweiz: Swiss Childhood Cancer Survivor Study. (CHF 50,000; PI: Claudia Kuehni; 01/2012–12/2022).


Stiftung für krebskranke Kinder, Regio Basiliensis: Prospective Multicentre Cohort Study for Diagnosing Cardiac Dysfunction in Childhood Cancer Survivors. (CHF 70,000; PI: Christina Schindera).

Internal and external collaborations
The Paediatric Cancer Epidemiology group works with an extensive national and international multidisciplinary network of researchers and clinicians in the field of late effects after childhood cancer. In Switzerland, we collaborate with Swiss Paediatric Oncology Group’s 9 paediatric oncology clinics. Internationally, we are partners in several collaborative projects, such as PanCareSurFup and PanCareLIFE.

Key team members
Fabiën Belle-van Sprundel (postdoc); Katharina Fessler (research assistant); Philippa Jörger (PhD candidate); Claudia Kuehni (head of research group); Luzius Mader (research fellow); Selma Riedo (project coordinator); Christina Schindera (postdoc); Tomáš Sláma (PhD candidate); Sven Strebel (PhD candidate); Leah Weber (research assistant); Maša Žarković (PhD candidate); Andrea Zörjen (study nurse).

Selected publications


3. Paediatric and Rare Disease Registries

The Paediatric and Rare Disease Registries group hosts several medical registries and conducts studies in different areas of pediatric epidemiology, such as endocrinology, gastroenterology, nephrology, neurology, and rare diseases.

We collect data to better understand and treat certain diseases to improve patient quality-of-life. We help answer specific research questions, recruit patients for clinical studies, and coordinate post-marketing surveillance of drugs. We promote the usability of medical data for research in pediatrics and foster communication between researchers nationally and internationally and thus disseminate knowledge.

Key scientific activities

We coordinate platforms, national registries, and cohort studies.

SwissPedRegistry is a research platform for pediatric registries and also part of SwissPedNet – the Swiss research network of clinical pediatric hubs. We provide expertise and advice for the development and conduct of epidemiological and clinical registries collecting data on children or persons of any age. We develop regulatory frameworks, methodologies, and instruments for registries and participate in national discussions and meetings on registry-relevant issues. With our work, we are a driving force in infrastructure development for clinical research in pediatrics (see SwissPedHealth and SwissPed-Data).

Pediatric personalized research network Switzerland (SwissPedHealth) is a joint national data stream funded by Swiss Personalized Health Network (SPHN) and Personalized Health and Related Technologies (PHRT). SwissPedHealth is a collaboration between all 5 Swiss pediatric university hospitals and the 2 cantonal hospitals in Luzern and St. Gallen. It aims to make routine clinical data in pediatrics interoperable, standardized, quality-controlled, and ready for research. The project builds on SwissPedData – a national pediatric harmonized core dataset defined through a SPHN infrastructure development project. The harmonized dataset collected during routine inpatient and outpatient visits improves the quality of data collected during encounters with patients. It allows fast, almost real-time use of the data for high-quality research. Currently, the dataset is being implemented in clinics.

Swiss Rare Disease Registry (SRDR): SRDR is a national, population-based registry for children and adults with rare diseases. SRDR collects a core dataset from all people with rare diseases in Switzerland—approximately 500,000 people. The SRDR constitutes a platform for rare diseases, enabling clinical and epidemiological studies and facilitating patient participation in national and international trials. In 2022, we started collecting patient data. There are 3 methods for transmitting data into the SRDR. University and cantonal hospitals have the option either of automatically transferring patient data via an application interface or manually entering patient data via an online application. In addition, patients can self-register by filling out a paper form. To meet the needs of patients in an even more targeted manner, SRDR will soon complement the paper form with an online platform for self-registration.

Swiss Registry for Neuromuscular Disorders (Swiss-Reg-NMD): Swiss-Reg-NMD is a national registry of children and adults diagnosed with Duchenne-Becker muscular dystrophy (BMD/DM), spinal muscular atrophy (SMA), and LAMA2-related muscular dystrophy. The registry includes patients in current clinical trials and long-term follow-ups of people with these disorders. Medical data collected on SMA allows for ongoing post-marketing monitoring of new disease-modifying therapies. In 2022, SMA data was analyzed in depth for 2 of these therapies and showed both therapies as effective disease-modifying treatments for SMA in real-life conditions.

Swiss Cerebral Palsy Registry (Swiss-C-P-Reg): Swiss-C-P-Reg is a national registry investigating health-related issues among people with cerebral palsy (CP). It includes all individuals with CP born, treated, or living in Switzerland. The aim is to improve future care and the wellbeing of individuals with CP. In 2022, we conducted our first national survey study on concerns in the daily life of families with children and adolescents with CP. Together with orthopedic surgeons, we further developed the national hip surveillance program.

Pediatric Inflammatory Brain Disease Registry (Swiss-Ped-IBrainD): Swiss-Ped-IBrainD collects medical data about pediatric patients with inflammatory brain diseases. The dataset includes information on diagnosis, disease course, and treatment of inflammatory brain diseases. The registry promotes communication and collaboration between specialists through the Swiss-Ped-IBrainD task force. The working group consists of all local PIs involved in Swiss-Ped-IBrainD and additional specialists in the field. They implement acquired knowledge in the best interest of their patients. The registry aims to improve medical care and quality-of-life of children with inflammatory brain diseases.

Key academic activities

Students: At the end of 2021, 1 student completed her master’s degree within the Swiss-Reg-NMD. In 2022, 3 students completed their master’s degrees within the framework of the Swiss-CP-Reg at University Hospital of Bern, Inselspital.

Conferences and Events: Organized a field trip at the Institute of Social and Preventive Medicine (ISPM) for members of SwissPedNet to present the work of SwissPedRegistry and promote knowledge-exchange about pediatric registries (October 2022). Co-organized the Swiss Academy of Childhood Disability Research Day (January 2022).

Scientific Talks and Presentations: Participated and presented 2 posters at the European Conference on Rare Disease (June 2022, Michaela Fux, SRDR), invited speaking at the annual Duchenne Conference Schweiz (September 2022, Anne Ticheter, Swiss-Reg-NMD). Spoke at the Research Day of the Swiss Academy of Childhood Disability (January 2022, Sandra Hunziker, Swiss-CP-Reg), the Annual Congress of the Swiss Society of Paediatrics (June 2022, Sandra Hunziker, Swiss-CP-Reg), and the Annual Meeting of the Swiss society of Neuropediatrics (December 2022, Lorena Hulliger, Swiss-Ped-IBrainD and Sandra Hunziker, Swiss-CP-Reg).
Outreach and Representation: Representatives from the group attended national and international meetings with relevant stakeholders, participated in working groups, and represented the needs and interests of pediatric registries. We conducted science communication and outreach activities related to rare diseases in general and neuromuscular disorders in particular with various patient organizations and foundations, university and cantonal hospitals, and representatives of the pharmaceutical industry. We represented the interests of SwissPedNet within the political working group for the implementation of the motion 19.4119 “Erhöhung der Arzneimittelsicherheit in der Pädiatrie. Medikationsfehler durch E-Health reduzieren” or Motion Stöckli – a parliamentary motion to increase drug safety in pediatrics through e-health using a clinical decision support system.

Honors and Awards: Sandra Hunziker received the 3rd prize in the category “finalized studies” for “Prescription Practices of Medical Cannabinoids in Children with Cerebral Palsy – A Survey of the Swiss Cerebral Palsy Registry” at the Research Day of the Swiss Academy of Childhood Disability (January 2022).

Grants
SwissPedNet: SwissPedRegistry. (CHF 80,000 per year; PI: Claudia Kuehni; 1/2021–12/2024).
Swiss Federal Office of Public Health: Financial support for the Swiss Rare Disease Registry under article 24 of the national law on cancer registration. (CHF 250,000 per year; PI: Claudia Kuehni; 11/2020–10/2025).
Patient organizations and pharmaceutical companies: See Swiss-Reg-NMD for more information.
Swiss National Science Foundation (20030_212587): A mixed-methods study identifying barriers and facilitators for participation in children with cerebral palsy in Switzerland – a family perspective. (CHF 916,368; PI: Sebastian Grunt, co-PIs Anne Tscherter, Hubertus J.A. van Hedel, Christina Schulze; 2023–2026).
Schweizerische Stiftung für das Cerebral gelähmte Kind and Anna Mueller Grocholski-Stiftung: Swiss Cerebral Palsy Registry. (CHF 299,045; PI: Anne Tscherter; 2020–2024).
Swiss Multiple Sclerosis Society, Johanna Dürmüller-Bol Stiftung, Anna Mueller Grocholski-Stiftung and several pharmaceutical companies: Swiss-Ped-IBrainD. (CHF 603,555 peer and non-peer reviewed funding; PI: Sandra Bigi; 2020–2024).

Internal and external collaborations
At ISPM, we collaborate closely with medical registries and Data Linkage (SwissRDL), particularly for data linkage and software development. In Switzerland, we work with colleagues at university and cantonal hospitals, hubs of SwissPedNet, centers for rare diseases, the koisec –Coordination Rare Diseases Switzerland, patient organizations and others. Outside of Switzerland, we collaborate with Surveillance of CP in Europe and TREAT-NMD Neuromuscular Network.

Key team members
Dominique Baumann (project manager Swiss-Reg-NMD); Natalie Bayard-Guggisberg (research assistant SRDR); Fabiën Belle-van Sprundel (project manager SwissPedHealth); Sandra Bigi (medical head Swiss-Ped-IBrainD); Katharina Fluss J. (assistant); Michaela Fux (project manager SRDR); Susanne Hofer (data manager Swiss-Ped-IBrainD, Swiss-Reg-NMD, Swiss-CF-Reg); Lorena Hulliger (project manager Swiss-Ped-IBrainD); Sandra Hunziker (research assistant Swiss-CF-Reg and SwissPedRegistry); Claudia Kuehni (head of research group, SwissPedRegistry, and SwissPedHealth); Nadine Löscher (data manager and assistant project coordination Swiss-Reg-NMD); Anne Tscherter (senior researcher, project lead SwissPedRegistry and Swiss-CP-Reg).


Climate Change and Health

The Climate Change and Health research group aims at advancing knowledge on the impact of climate change and other related environmental stressors on human health. Our main research lines develop along the intersection between epidemiology, public health, and climate sciences.

These include (1) health impact assessments of extreme weather events at different geographical scales under historical periods and future climate change scenarios; (2) identification of vulnerability profiles to climate-related health risks; (3) the impact of climate change on urban populations, modulating factors, and connections with existing challenges, such as social inequalities and aging in cities; (4) quantification of health impacts attributed to human-induced climate change; and (5) evaluation of health risks associated with compound and cascading weather events.

Key scientific activities
- Coordination of international collaborations within the Multi-country Multi-city Collaborative Research network to advance knowledge on the impact of weather-related factors on mortality.
- Leadership of several contributions on the impact of heat and cold on mortality, suicides and mental health in Switzerland.
- Development of a methodological framework to assess risks on a small geographical scale for application in a study on temperature-related risks in England and Wales.

Key academic activities
- **Students**: Supervision of 3 PhD students (Marvin Bundo, Evan de Schrijver, and Sidharth Sivaraj) and 2 two Master of Science (MSc) students (Vanessa Rippstein and Sujung Lee).
- **Teaching**: Lectures in the 1st year of medicine on climate change, planetary health, and sustainability (Mensch und Umwelt). Several lectures in the MSc in Climate Science (University of Bern), including 2 seminars and a full course on environmental epidemiology applied to climate sciences.
- **Conferences and Events**: National and international scientific events, such as the Annual Meeting of the International Society for Environmental Epidemiology and Swiss Public Health Conference.
- **Scientific Talks and Presentations**: Keynote at “Beat the Heat” workshop (Bern, Switzerland); invited speaker for the BC3 webinar series (Spain); invited speaker for the webinar “Fostering applications on Planetary Health to the Horizon Europe programs” (Global, Spain).
- **Outreach and Representation**: National and international scientific committees, such as the European Chapter of the International Society for Environmental Epidemiology and Environment and Health committee of the European Respiratory Society.

Grants
- **Medical Research Council’s Population and Systems Medicine Board**: Current and future temperature-related mortality and morbidity in the UK: a public health and climate change perspective. (GBP 519,950; Co-Applicant: Ana M. Vicedo-Cabrera; 10/2021–10/2024).

EU Joint Research Centre-Seville: Revisiting temperature-mortality associations using climate reanalysis data. (EUR 137,914; Collaborator: Ana M. Vicedo-Cabrera; 01/2021–08/2022).

Breitner-Fonds – Oeschger Centre for Climate Change Research: Revisiting heat stress: assessment of the combined effect of humidity and heat on health from an epidemiological perspective; funds cover a 3.5 year PhD position. (CHF 170,000; PI: Ana M. Vicedo-Cabrera; 02/2022–08/2025).

Internal and external collaborations
- **University of Bern collaborators**: Stefan Brönnimann (Climatology); Olivia Rompainen-Martius (Department of Geography); Thomas Müller (University of Bern); Sandra Eckert (Center for Development and Environment).
- **Swiss Tropical and Public Health Institute** (Martina Ragettli); ETH Zürich, Switzerland (David Brezch, Enrich Fischer, Saras Seneviratne); London School of Hygiene and Tropical Medicine, UK (Antonio Gasparinl, Sir Andy Haines); CICERO Oslo, Norway (Lana Siliman and Kristin Aunan); Norwegian Institute of Public Health (Shilpa Rao); University of Valencia, Spain (Carmen Iglesias); University of Bristol, UK (Dann Mitchell and Eunice Lo).

Key team members
- Marvin Bundo (PhD candidate); Evan de Schrijver (PhD candidate); Ana M. Vicedo-Cabrera (head of research group); Sidharth Sivaraj (PhD candidate).

**Selected publications**


Community Health and Health Care Systems

We apply theory-driven social science methodology to understand and explain contextual conditions of health, promote and improve community health, and apply the knowledge gained to influence social determinants of health and policymaking contributing to health equity and wellbeing.

Key scientific activities
Our research identified key tools and indicators to assess and monitor participatory multisectoral urban governance for health. We contributed to methodological advancement of cocreation approaches in health sciences. We researched organizational learning for physical activity promotion in nursing home contexts.

Key academic activities

**Students:** PhD candidates have been working on science-policy interaction (Sophie Meyer); migrant health and smoking (Kris Schürch); and health, illness, and societal division in pandemic contexts (Christopher Kobler Betancourt).

Three students finished their master theses and several students continue working on their Master and MD theses.

**Teaching:** We taught and tutored undergraduate and postgraduate students at the University of Bern, the University of Tübingen, Germany, and the University of Hannover, Germany.

**Conferences and Events:** Annika Frahsa co-organized the World Congress of Sociology of Sport: “Why does sociology matter? The role of sport sociology in interdisciplinary research” for the European Association of Sport Sociology and the International Organisation of Sport Sociology in Tübingen, Germany.

**Scientific Talks and Presentations:** Annika Frahsa gave invited keynotes on “Co-creating active communities: Insights from participatory health research on actors, approaches, and agendas” at the 25th Conference on the Commission on Health, German Society of Sport Science (DVS) in Tübingen, Germany and “Participatory approaches in health promotion programs” at the 69th European Organization for Caries Research congress in Cagliari, Italy.

Talks and posters by group members at the World Conference of the International Union for Health Promotion and Education, Montréal, Canada (online); World Congress for the International Sociology of Sport Association and the European Association of the Sociology of Sport in Tübingen, Germany; Swiss Public Health Conference in Bern; and the Sport Science University Conference by the German Association of Sport Science.

**Outreach and Representation:** Annika Frahsa consulted for the Federal Office of Public Health in a series of roundtables on psychosocial determinants of health and was an invited expert on the 6th interdisciplinary DVS expert workshop on physical activity in nursing homes, approx. EUR 1.0 million; co-PI: Annika Frahsa; 06/2019–06/2023.

**Honors and Awards:** For her master’s thesis “The Scientific Discourse on the Eligibility of Transgender Athletes and Athletes with Differences of Sex Development in Elite Sports – A Scoping Review” (supervisor: Annika Frahsa), Maike Dernbach won the Best Sport Science Thesis award from the alumni organization, Förderkreis des Instituts für Sportwissenschaft, at the University of Tübingen, Germany.

**Grants**
- **Multidisciplinary Center for Infectious Diseases and the Vinetum Foundation:** The pandemic society in Switzerland: Polarization and public health, (CHF 719,572; PI: Annika Frahsa; co-PI: Nicola Low; 04/2022–03/2025).
- **German Federal Ministry of Health Research (FKZ 251958114):** BaSAlt- Physical activity promotion in nursing homes, (approx. EUR 1.0 million; co-PI: Annika Frahsa; 06/2019–06/2023).

**Internal and external collaborations**
At the Institute of Social and Preventive Medicine, we closely collaborate with the Palliative Care and End of Life research group, particularly teaching and advancement of qualitative methods as well as with the group on Climate Change and Health on research related to aging, community health, and climate change. With the teams of Nicola Low at ISPM and Markus Freitag at the Institute of Political Science, we conduct research on societal polarization and COVID-19. At the University of Bern, we collaborate with the Institute of Sport Science on worksite health promotion.

Within Switzerland, we collaborate with Unisanté and Université de Lausanne in the pilot Swiss Health Study and research on geo-social embeddedness and health. Internationally, we collaborate with the University of Tübingen, Germany and Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany on physical activity among underserved groups and participatory approaches; Karlsruhe Institute of Technology, Germany on socio-ecological health models; the Department of Social Research at the University of Eastern Finland on capabilities and health. We also work with Matrix GmbH, Germany on regional health promotion structures.

We collaborate with the International Collaboration for Participatory Health Research standing committee on social participation in old age, PartNet—the network for participatory health research; and the World Health Organization’s Enhanced Wellbeing Unit in Geneva on urban governance for health. We also work with institutions based in the Global South, such as in the Philippines (Ateneo de Zamboanga University and Department of Health) and in Nepal (HERD International) for research on primary care, health workforce, and health policy and systems.

**Key team members**
Lucia Bühlmayer (research assistant); Andrea Flükiger (personal assistant); Annika Frahsa (research group leader); Nathalia Gonzalez-Laramillo (postdoc); Christopher Kobler Betancourt (PhD candidate); Marina Köhli (research assistant); Harry Joy Liwanag (postdoc); Sophie Meyer (PhD candidate); Kris Schürch (PhD candidate).
Research group retreat in Eriz, Switzerland in June 2022

Selected publications

Abel T, Tadesse L, Frahsa A, Sakarya, S. Integrating patient-reported experience (PRE) in a multistage approach to study access to health services for women with chronic illness and migration experience. Health Expect. 2022;26:237–44.


Environmental and Spatial Epidemiology

With a focus on cancer, we study potential effects of environmental exposures, such as ionizing radiation and traffic-related air pollution, on human health. We also explore spatial, spatio-temporal, and temporal variation in cancer incidence and mortality.

Key scientific activities
We published a study on determinants of exposure to background ionizing radiation based on measurements made from children wearing personal dosimeters. We found children’s exposure tended to be higher indoors and depended strongly on building materials. As part of the EU Horizon 2020 project RadoNorm, we are conducting a collaborative study with partners from Denmark, Finland, France, and Norway on exposure to natural background radiation and the risks of childhood leukemia and tumors of the central nervous system.

We also published 2 studies investigating childhood cancer risks in relation to traffic-related air pollution. Specifically, we looked at residential exposure to ambient air concentrations of nitrogen dioxide and benzene and residential proximity to petrol stations.

In a new study funded by the Federal Office for the Environment, we are evaluating different methodological approaches for detecting changes in cancer trends potentially resulting from increased exposure to non-ionizing radiation from mobile phone use.

We also started a new project funded by the Swiss Cancer League on cancers of adolescents and young adults (AYA). The project aims to provide a first detailed description of the epidemiology of cancers among AYA (ages 15–39) in Switzerland. We plan to investigate trends in incidence and mortality for different cancer types, proximity of survival, cause-specific mortality among cancer survivors, and life-time prevalence among the Swiss resident AYA population.

Key academic activities
Students: 2 medical students began their MD theses.

Teaching: Ben Spycher teaches courses in biostatistics for the medical faculty at the University of Fribourg and at Bern University of Applied Sciences. Lectures in environmental epidemiology and tutoring for first year medical students at the University of Bern by Ben Spycher and Christian Kreis.

Scientific Talks and Presentations: Oral presentations at the Childhood Cancer and Leukemia International Consortium Meeting (online, March, Ben Spycher); the Annual Congress of the Swiss Society of Paediatrics (Zurich, Switzerland; June, Ben Spycher and Claudia Kuehn); the Swiss Oncology and Hematology Congress (Basel, Switzerland; November, Ben Spycher); 7th International Workshop on the Causes of Childhood Leukemia (Munich, Germany; November, Ben Spycher).

We also presented 3 posters at the Annual Conference of the International Society for Environmental Epidemiology (Athens, Greece; September, Eleftheria Michalopoulou, Christian Kreis, and Ben Spycher).

Outreach and Representation: Ben Spycher was appointed as a new member of the Scientific Council of the International Agency for Research on Cancer. Ben Spycher is a member of the academic board of Public Health Weiterbildung.

Grants
Swiss Cancer League (KLS-5432-08-2021). The epidemiology of cancer in adolescents and young adults in Switzerland. (CHF 337,400; PI: Ben Spycher; 01/2022–12/2024).

Multidisciplinary Center for Infectious Diseases. menobalance App: Use of [artificial intelligence] methods to design a personalised chronic and infectious disease management digital medical device (CHF 956,890; Co-Applicant: Ben Spycher; 01/2022–12/2024).


Internal and external collaborations
At the Institute of Social and Preventive Medicine, we collaborate with the Swiss National Cohort, Swiss Childhood Cancer Registry, the Child and Adolescent Health research group, and SwissRDL – Medical Registries and Data Linkage. Within Switzerland, we collaborate with Unisante, University of Lausanne, Swiss TPH Basel, and the Swiss Paediatric Oncology Group.

Internationally, we collaborate with University of Tampere, Finland; French National Institute of Health and Medical Research (INSERM); Danish Cancer Society Research Center; UCLA Fielding School of Public Health, USA; Institute for Occupational Safety and Health of the German Social Accident Insurance; MRC Centre for Environment and Health of Imperial College London, UK; and Unite INSERM Centre Léon Bérard, France.

Key team members
Christian Kreis (postdoc); Christophe Folly (postdoc); Eleftheria Michalopoulou (statistician); Jessica Laine Carmeli (postdoc); Ben Spycher (head of research group).

Selected publications


Evidence Synthesis Methods

The Evidence Synthesis Methods research group develops, applies, and disseminates methodology for synthesizing evidence from studies to answer important public health questions. We also work with prediction models to inform decision-making and support health technology assessments and guidelines.

Key scientific activities
The Mental Health during the COVID-19 Pandemic (MHCOVID) project concluded at the end of 2022. During the last 2 years, more than 100 researchers from around the world reviewed published studies to assess the trajectory of mental health symptoms during the first year of the pandemic and examined dose-response relations with characteristics of the pandemic and its containment.

We continued our work on models and application dose-effect meta-analyses. We developed dose-effect network meta-regression models to account for study-level covariates.

We applied our models to estimate optimal doses of 21 different antidepressants.

We also built a suite of models that combine individual participant data and aggregate data to allow for the inclusion of randomized controlled trials or non-randomized studies. We implemented the models in a new R package – crossnma – now available on The Comprehensive R Archive Network, CRAN.

We also continue our work on combining prognosis research and evidence synthesis methods.

Key academic activities
Teaching: Members of the group teach postgraduate courses at the University of Bern. We also participate in and organize international short courses.

Conferences and Events: In August, we co-organized the “Expert workshop on risks of bias and reporting of prevalence studies in epidemiology” funded by the Swiss National Science Foundation program, Scientific Exchanges.

Scientific Talks and Presentations: The MHCOVID team presented the project at the NRP78 COVID-19 conference in May and at the Congress of the German Association for Psychiatry, Psychotherapy, and Psychosomatics in November. We also presented technical aspects of MHCOVID at Bern Data Science Day 2022 in May.

Group members presented “Personalized predictions under several treatment options: An online tool for patients with relapsing-remitting multiple sclerosis” at the European Multiple Sclerosis Platform annual conference in April and “Ranking treatments on multiple outcomes and trade-off between benefit and harms” and “Measuring the performance of prediction models to personalize treatment choice” at the 43rd Annual Conference of the International Society for Clinical Biostatistics in August.

Outreach and Representation: The MHCOVID team presented their project and contributed with activities for lay audience during the “Nacht der Forschung” at the University of Bern in August.

Grants
Funding for our work continued from the European Commission (Horizon 2020 for HTx project), the Swiss National Science Foundation (project funding; NRP78; Ambizione), and the UK’s Wellcome Trust.

Internal and external collaborations
Within the Institute of Social and Preventive Medicine, we collaborate with Sexual and Reproductive Health, Mental Health, and HIV, Hepatitis, and Tuberculosis research groups. We have numerous collaborators around the globe from many universities, such as University of Oxford and University of York, UK; University of Kyoto, Japan; University of Oulu, Finland and many more.

Key team members
Konstantina Chalkou (PhD candidate); Virginia Chiochbia (PhD candidate); Orextis Efthimiou (PD, senior researcher); Matthias Egger (head of HIV, hepatitis, and tuberculosis research group); Tasnim Hamza (PhD candidate); Alex Holloway (computer scientist); Georgia Salanti (head of research group); Michael Seo (PhD candidate); Thomy Tonia (senior researcher); Chiara Gastaldon (senior researcher).

Selected publications


Our research group examines the clinical and public health epidemiology of HIV and coinfections, including hepatitis B/C and tuberculosis (TB), focusing on Southern Africa. We investigate antiretroviral therapy (ART) clinical outcomes and their impact on HIV transmission and coinfections. We conduct fieldwork, analyze large databases, develop mathematical models, and work on methodological issues.

Key scientific activities
In 2022, we contributed to more than 30 articles from the Southern African region of the International epidemiology Databases to Evaluate AIDS (IeDEA) and other papers focusing on COVID-19 in Switzerland and Europe. Several studies examined the impact of the COVID-19 pandemic on outcomes among people living with HIV (PLWH). Our analysis of Malawi’s national HIV/AIDS program showed a significant decline monitoring HIV viral load during COVID-19, yet unclear evidence the pandemic led to reduced virologic suppression of HIV (PhD project Thokozani Kalua). A survey of ART clinics providing TB services in Africa and Asia-Pacific showed the COVID-19 pandemic led to staff shortages, reduced access to TB care, and delayed follow-up visits for people with TB in both regions (Master of Public Health (MPH) thesis Mariana Marti).

We contributed to an analysis of historical dimensions of the COVID-19 pandemic in 3 European countries with reliable mortality data from more than 100 years. The study found the COVID-19 pandemic in 2020 led to the second largest infection-related excess mortality increase in Spain, Sweden, and Switzerland since the beginning of the 20th century during the 1918 influenza pandemic when excess mortality was higher. Another analysis examined regional differences in excess mortality in 5 European countries. With around 30%, Madrid, Castile-La Mancha, and Castile-León in Spain and Lombardy in Italy were regions with highest excess mortality. London and the West Midlands in England, Macedonia in Greece, and Ticino in Switzerland were also heavily affected with 15–20% excess mortality in 2020.

We used clinical data and data on patient movements, cough frequency, carbon dioxide levels, humidity, and TB genomes in the air in a modeling study to estimate transmission risks for patients attending a primary care clinic in Cape Town, South Africa. Ranging between 9% and 29%, the transmission risk was high. We found a more significant number of young adults attending the clinic – and higher relative humidity – increased transmission risk.

To promote client-centered care and relieve strain on health facilities, Zimbabwe adopted differentiated HIV care policies in 2015. We examined the availability, experiences, and perceptions of differentiated ART delivery in rural Zimbabwe following the policy adoption. We found delivery models widely available, yet only a few clinics offered fast-track refills of antiretroviral drugs – even though patients often mentioned it as desirable. We identified confidentiality, travel expenses, and client waiting times as key considerations when rolling out differentiated HIV care.

Loss to follow-up continues to be a major issue in HIV treatment and care programs in sub-Saharan Africa. Our analysis of children and youth on ART lost to follow-up and traced in Southern Africa estimated a high mortality of almost 10%. The study shows the need for tracing children and youth lost to follow-up for resuming care and reporting program mortality accurately.

We contributed to several multi-regional analyses of IeDEA data, such as studies of growth and CD4 cell counts of adolescents living with perinatally acquired HIV, delayed diagnosis of HIV among older individuals, and outcomes of HIV-exposed infants.

Key academic activities
Students: Mariana Marti defended her MPH thesis.

Teaching: We contributed to undergraduate and postgraduate teaching, including problem-based learning, critical appraisal of studies, the epidemiology book club, biostatistics for medical students, advanced statistical methods for physicists, and courses for PhD and MPH students.

Conferences and Events: In November 2022, we met with IeDEA collaborators for our biannual Steering Group Meeting in Muldersdrift, South Africa – near the Cradle of Humankind. Over 50 epidemiologists, clinicians, and health scientists convened during the 3-day meeting to discuss ongoing research and celebrate past achievements. Much of the meeting was dedicated to early career researchers and colleagues from collaborating centers.
Yann Ruffieux, Mazita Muchengeti, Victor Olago, Tafadzwa Dhoikesteru, Julia Bohlius, Matthias Egger, Elvira Singh, and Eliane Rohner presented the poster “Age and cancer incidence in 5.2 million people living with HIV in South Africa.”

Yann Ruffieux, Mpho Tlali, Anja Wettstein, Gary Maartens, John A. Joska, Morna Cornell, Leigh Johnson, Nicola Maxwell, Veronika Skrivanova Whitesell, Mary-Ann Davies, Matthias Egger, and Andreas Haas presented the poster “Excess life-years lost associated with hospitalisation for mental illness.”


Veronika Skrivanova Whitesell, Stefanie Hossman, Carole Dupont, Morna Cornell, Marie Bally, and Matthias Egger presented the poster, “Authorship inequalities in Global health research initiative.”

Jabulani Ncayiyana, Radoslaw Panczak, Per von Groote, and Matthias Egger presented the poster, “Fidelity of universal HIV test and treatment (UTT) implementation in South Africa.”


Outreach and Representation: As members of the Antimycobacterial Susceptibility Testing Group, we contributed to updated guidelines on susceptibility and resistance to anti-TB agents.

Honor & Awards: For her thesis “Tuberculosis among people living with and without HIV in lower-income countries: transmission, resistance, and mortality,” Kathrin Zürcher won the Graduate School for Cellular and Biomedical Sciences PhD student award.

Grants

National Institute of Allergy and Infectious Diseases (U01AI069924): International epidemiology Databases to Evaluate AIDS – Southern Africa (IeDEA-SA), (USD 16 million; PI: Matthias Egger; 2021–2026).

National Institute of Allergy and Infectious Diseases (R01AI152772): HIV-1 subtype, specific drug resistance in patients failing Dolutegravir-based 1st, 2nd or 3rd line regimens: the International epidemiological Databases to Evaluate AIDS – Southern Africa (IeDEA-SA), (USD 16 million; PI: Matthias Egger; 2021–2026).


Multidisciplinary Center for Infectious Diseases: Core activity BEready cohort, (PIs: Gilles Wandelener, Nicola Lowi).

Multidisciplinary Center for Infectious Diseases: Early detection for early action: integrating multiple data sources for monitoring the SARS-CoV-2 epidemic in near real-time, (Co-Applicant: Julien Riou).
Internal and external collaborations

In Switzerland, we work with colleagues at University of Zürich, ETH Zürich, the Swiss Tropical and Public Health Institute. Within the Institute of Social and Preventive Medicine, we collaborate with Cancer, Mental Health, Sexual and Reproductive Health, Interfaculty Platform for Data and Computational Science, and Evidence Synthesis research groups.

We collaborate with the Joint United Nations Program on HIV/AIDS and World Health Organization; the Centre for Infectious Disease Epidemiology and Research at the University of Cape Town, South Africa and many other collaborators within IeDEA. Other collaborators are based at the University of Kwa-Zulu Natal in South Africa and the London School of Hygiene and Tropical Medicine and University of Bristol, UK.

Key team members

Nanina Anderegg (statistician); Marie Ballif (postdoc); Nicolas Banholzer (postdoc); Carole Dupont (scientific and administrative assistant); Drestis Efthimiou (research fellow); Matthias Egger (head of research group); Lukas Fenner (senior research scientist); Nathalie Fernandez (research fellow); Chiara Gastaldon (postdoc); Andreas Haas (head of mental health research group); Anthony Hauser (research fellow); Stefanie Hossmann (project manager); Rowan Iskandar (adjunct researcher); Cam Ha Dao Ostinelli (clinical data manager); Radoslaw Pancerzak (postdoc); Julien Riou (postdoc); Eliane Rohner (head of cancer research group); Yann Ruffieux (research associate); Tiana Schwab (PhD candidate); Lilian Smith-Wirth (project coordinator); Kathrin Zürcher (postdoc); Marcel Zwahlen (director a.i.).

Selected publications


The Interfaculty Platform for Data and Computational Science (INPUT) is a collaboration between the Institute of Social and Preventive Medicine (ISPM) and the Center for Space and Habitability (CSH). We foster interdisciplinary research at the interface of statistics, data science, and computational science with applications in epidemiology, medicine, and the natural sciences. We apply statistical and machine learning to large data sets and use high-performance computing for simulation-based inference. A major focus of our research is infectious disease modeling and outbreak analysis.

Key scientific activities
In 2022, we completed the CoMix study in Switzerland – a longitudinal social contact survey among representative panels of individuals in terms of age, gender, region of residence, and occupation. The groundbreaking CoMix study allowed study of social mixing patterns between different age groups during the COVID-19 pandemic in real-time. We also investigated socioeconomic characteristics associated with vaccination uptake and asked participants about their awareness, attitudes toward vaccination, and behaviors in response to COVID-19.

We started our Multidisciplinary Center for Infectious Diseases (MCID) project integrating multiple data sources for monitoring the SARS-CoV-2 epidemic in near real-time. After ethics protocol approval, we began analyzing hospital data from the University Hospital of Bern, Inselspital to determine indicators and early warning signals for predicting epidemic dynamics of SARS-CoV-2 and future pandemic threats. Furthermore, we developed improved methods to estimate time-dependent transmission rates of SARS-CoV-2 for advancing evidence-based policy making during the post-pandemic period.

Our collaborators in South Africa identified the new SARS-CoV-2 Omicron variant in late 2021. INPUT was part of a large international effort to describe Omicron’s genomic profile and early transmission dynamics. Using a mathematical model, we described how Omicron’s strong immune evasion led to its rapid spread – findings critical for informing the global public health response to Omicron waves in 2022.

Together with researchers from the KPM Center for Public Management, we wrote a position paper on behalf of the Federal Office of Public Health as input for the current revision of the Swiss Epidemics Act (EpidA). The existing EpidA in Switzerland defines a three-stage escalation model with normal, special, and extraordinary epidemic situations. We made 6 recommendations for further developing the escalation model. Considering our recommendations for revising EpidA ideally facilitates applying the escalation model, significantly improves its utility, and thus enables timely decision-making and early control of communicable diseases.

Key academic activities
Students: Martina L. Reichmuth successfully passed her mid-term evaluation at the Graduate School for Cellular and Biomedical Sciences and Martin Wohlflender started with his PhD project supported by MCID.

Teaching: Lectures on infectious disease epidemiology and modeling at bachelor and master levels at the University of Bern; course on infectious disease modeling at the Swiss Epidemiology Winter School in Wengen.

Conferences and Events: Emma B. Hodcroft was in the organizing committee of the 29th International Dynamics & Evolution of Human Viruses in San Diego, United States. Scientific Talks and Presentations: Invited talks at Collegium Generale, Bern Data Science Day, and the Symposium for Emerging Viral Diseases in Geneva, Switzerland; oral presentations at the 29th International Dynamics & Evolution of Human Viruses in San Diego, United States.

Outreach and Representation: Organized Twitter Spaces on mpox; pandemic game at Nacht der Forschung; talk at NZZ Standpunkte; advisory board of CH+-; interviews in major national newspapers.

Honors and Awards: Emma B. Hodcroft won the 2022 Johanna Dürmüller-Bol Department for BioMedical Research Award for her project “The pandemic impact on circulation and diversity of a respiratory virus.”

Grants

Horizon 2020 (10103688): EpIPose - Epidemic intelligence to minimize 2019-nCoV’s public health, economic and social impact in Europe. [EUR 513,304 (of total 4,548,391) awarded to ISPM; Co-PI: Christian L. Althaus, Nicola Low; 03/2020–04/2023].


Internal and external collaborations
INPUT continues as a collaboration between ISPM and CSH focusing on developing and applying computational methods in epidemiology, medicine, and the natural sciences. Within MCID, we collaborate with the Bern University Hospital (G. Beldi, A. Leichtle), the Institute for Infectious Diseases (A. Ramette), and the KPM Center for Public Management (C. Schlaufer, F. Sager). At ISPM, we collaborate with members of the following research groups: Climate Change and Health; HIV, Hepatitis, and Tuberculosis; Sexual and Reproductive Health; Community Health and Health Care Systems; and Health Services Research.

Internationally, we worked intensively with Nextstrain, our European partners from the EpIPose and ESCAPE projects, and the Centre for Epidemic Research, Response and Innovation in South Africa on investigating the spread of new SARS-CoV-2 variants and other COVID-19-related research.

Key team members
Christian L. Althaus (head of research group); Judith A. Bouman (postdoc); Simon L. Grimm (research fellow); Emma B. Hodcroft (postdoc); Martina L. Reichmuth (PhD candidate); Selina Wegmüller (project manager); Martin Wohlflender (PhD candidate).


By taking a transdisciplinary and life-course approach, the Lifestyle and Behaviour group aims to understand complex associations between modifiable lifestyle factors and major non-communicable diseases in the context of healthy aging. The main research streams over the past year focused on identifying (i) potential causal pathways underlying lifestyle-related chronic diseases and (ii) the role of lifestyle in rehabilitation and health maintenance after neurotrauma.

Key scientific activities
We published important papers discussing the role of physical activity and nutrition preventing cardiovascular disease. We performed a meta-analysis including more than 30,000 individuals showing the importance of preserving or adopting active lifestyles among individuals with coronary heart disease. In another paper focused on benefits of physical activity and exercise among people with spinal cord injury (SCI), we emphasized changing the current “exercise as much as possible as long as possible according to your abilities to remain healthy” paradigm with updated evidence-based exercise guidelines for the prevention and management of cardiovascular diseases, post-injury.

We also successfully completed a pilot trial exploring the feasibility of probiotic and prebiotic interventions among elite para-athletes with SCI and established a basis for promoting a microbiome research agenda beyond gastrointestinal health. Through a large collaborative effort, we published the most comprehensive overview and analysis of the theoretical models of healthy aging and its associated normative terms and definitions to-date.

Our group collaborated with Swiss Paraplegic Research in Nottwil by leading development of the SCI NutriTool – a short, multilingual paper and online instrument for evaluating diet quality among individuals with SCI. Importantly, the project quickly screens and identifies people needing further nutrition counseling for improved diet. Accessible everyday clinical practice or time-sensitive settings, a paper version of the tool quickly facilitates implementation into routine practice as a quick and easy reference tool and clinical decision aid for nutrition professionals managing SCI. The website platform also provides nutrition education and promotes healthy lifestyles for vulnerable populations, globally.

Key academic activities
Students: 3 PhD candidates successfully completed their PhD studies: Giorgia Grisotto, Zayne Milena Roa Díaz, and Nathalia González.

Oche Adam Itodo interned at UNESCO CHAIR for sexual health and human rights in Paris, France. He managed and produced massively open online courses on Rights, Sex, and Education with the aim of sensitizing French and international communities to sexual health prevention strategies, accessing sexual health services, and developing sexual rights awareness within the context of public health prevention.

Since Magda Gamba won first place in 2021 SSPH+ ScienceFlashTalk contest, she represented the Institute of Social and Preventive Medicine and the University of Bern during Health Week in 2022 at the Dubai Expo 2020. Marilyne Menassa was a visiting researcher at Amsterdam University Medical Center in the Department of Public and Occupational Health for the Healthy Life; she also interned at the Rijksinstituut voor Volksgezondheid en Milieu in The Netherlands, working on lifestyle and healthy aging.
Selected publications


The Mental Health research group focuses on 4 main areas of study: 1) the epidemiology of mental illness; 2) the relationship between mental and physical health conditions; 3) the provision of mental health services; and 4) the influence of mental illness on the treatment of physical comorbidities.

Key scientific activities
People with mental illness experience reduced life expectancy. In South Africa, the magnitude of the mortality gap and contribution of natural and unnatural causes of death to excess mortality among those with mental health issues remain unknown.

In a cohort study of over 1 million beneficiaries of a large South African medical insurance scheme, we found life expectancy reduced by 3.8 years for men and 2.2 years for women with mental health diagnoses. We found most life-years lost attributable to natural causes. Among people with bipolar or substance use disorder, a considerable number of life-years lost were attributable to unnatural causes.

In further cohort studies, we investigated the causal pathways leading to excess mortality among persons with mental illness. For example, we showed among people with post-traumatic stress disorder, incidence of major cardiovascular events was approximately 20% higher when compared with persons without mental health complications.

Additionally, we performed a causal mediation analysis to break down the average total effect of major depression on mortality into indirect effects through physical comorbidities. We found the higher incidence of HIV, tuberculosis, cardiovascular disease, chronic respiratory disease, chronic kidney disease and cancer among persons with depression—when compared with those without—accounted for almost 50% of the excess mortality observed in persons with depression. In further cohort studies, we examined associations between mental illness and adverse HIV treatment outcomes, the management of opioid use disorder, and post-partum depression in South Africa.

Key academic activities
Students: Raphael Lienhard completed his MD thesis. Raphael studied adherence to antiretroviral therapy and viral suppression among adolescents and adults living with HIV and mental health complications in South Africa. Cristina Mesa-Vieira is in the final year of her PhD studies. Cristina investigates psychosocial risk factors of cardiovascular disease.

Teaching: Teaching medical students at the University of Bern.

Grants
National Institute of Allergy and Infectious Diseases (U01AI069924): International epidemiology Databases to Evaluate AIDS – Southern Africa (iDEA-SA), USD 16 million; PI: Mattias Egger; 2021–2026).

Swiss National Science Foundation (193381): Pathways from mental disorders to the burden of disease: Causal mediation analysis of big data from South Africa, (CHF 924,952; PI: Andreas Haas; 2021–2025).

Internal and external collaborations
We collaborate with several Institute of Social and Preventive Medicine research groups: HIV, Hepatitis, and Tuberculosis; Cancer; and Evidence Synthesis Methods.

Selected publications


The Musculoskeletal Health and Rheumatology research group is involved in research projects on musculoskeletal disorders, especially osteoarthritis, giant cell arteritis, and osteoporosis. Our research includes studies on prevalence, incidence, diagnosis, and natural history, as well as systematic reviews and randomized controlled trials (RCT). We collaborate with the Clinic for Rheumatology and Immunology at the University Hospital of Bern, Inselspital.

Key scientific activities
We established a new collaboration with the Institute for Biomechanics at ETH Zürich. Our goal includes establishing new biomechanical treatment options for knee osteoarthritis by influencing the knee load with personalized orthotic footwear.

We consolidated our collaboration with the primary and secondary health care system-based registry on osteoporosis and giant cell arteritis. In addition, we now host the new cohort on Takayasu arteritis – a Swiss registry.

We continue to analyze and publish results from the 10-year follow-up of the inception cohort study (Sumiswald cohort) to understand the role of femoroacetabular impingement in the development of osteoarthritis of the hip; we also continue to publish secondary analysis from the multi-center RCT comparing arthroscopic hip surgery to physiotherapy-led care for femoroacetabular impingement (Australian FASHIoN trial). We are analyzing long-term follow-up results on the rapid induction of remission with high-dose glucocorticoids among patients with giant cell arteritis (GUSTO trial).

Key academic activities
Students: 2 students received Medical Doctor degrees and 2 students finished their master theses.

Teaching: Regular teaching activities at the undergraduate and postgraduate levels, including seminars and talks.

Conferences and Events: Group members are invited regularly to national and international conferences for talks and presentations.

Scientific Talks and Presentations: Group members presented posters and talks at the 2 large Rheumatology conferences: the European League Against Rheumatism and the American College of Rheumatology.

Outreach and Representation: Stephan Reichenbach is board member for the Foundation of Physical Therapy Science, Switzerland.

Grants

Selected publications


Palliative Care and End of Life

The Palliative Care and End of Life research group explores topics such as clinician wellbeing and emotions, communication, community care, and cost analyses. Through a double affiliation with the Institute of Social and Preventive Medicine (ISPM) and the University Centre for Palliative Care (Centre) at University Hospital of Bern, Inselspital, our interdisciplinary group combines clinical and methodological expertise in qualitative and quantitative methodologies to undertake clinical, psychosocial, and health services research.

Key scientific activities
Our key research activities focused on 1) advancing the definition of a core outcome set for the care of dying people; 2) evaluating telemedicine in palliative care; 3) developing and testing a communication model for medical students about approaching death; 4) developing an advance care planning course with and for older adults and caregivers; 5) evaluating and establishing societal model procedures for proactive planning for the end-of-life; and 6) consolidating Eccellenza projects on physician emotions and communication.

Key academic activities
Teaching: We continue to teach all lectures and seminars on palliative medicine for medical students in years 4–6, covering areas such as symptom assessment and management, as well as psychosocial aspects, such as grief, communication about dying and death, and ethical aspects including euthanasia in older age and self-determination.

For the first time, we also conducted communication training for assistant physicians (internal medicine) on the topic of “talking about dying.” Since 2017, our Centre is responsible for the postgraduate certificate of advanced studies in Interprofessional Specialized Palliative Care at the University of Bern.

Furthermore, through our research we are developing and evaluating innovative teaching models for medical students, healthcare professionals, and the general Swiss population.

Conferences and Events:
We organized the National Research Day Palliative care (August); the Jubiläumsanlass 10 Jahre Palliativzentrum (February); the book presentation Das Lebenende und ich (June); and a public event about “stories around the end-of-life” (June).

We co-organized the 7th International Public Health Palliative Care Conference (September); the yearly Compassionate City Bern event (November); and the pop-up exhibit, “dying at home” (November).

Scientific Talks and Presentations:
Sofía Zambrano was invited keynote speaker at the National Research Day Palliative Care (August) and Sibylle Felber and Steffen Eychmüller at the 15th Palliative Medicine Forum in Berlin, Germany (November).

We also gave oral presentations at the International Conference on Communication in Healthcare (September); the Public Health Palliative Care International Conference (September); Internationale Syfer Palliativtage (March); Swiss Oncology and Hematology Congress (November); and 19 other professional talks and 5 poster presentations at medical or scientific events.

Outreach and Representation:
Together with “Bärn tret,” we performed a variety of outreach activities to increase public knowledge and awareness of end-of-life and healthcare challenges, including an annual palliative care movie festival in Bern; book readings on dying, death cafes; and other open activities.

Bärn tret aims for sustainable development of Bern as a compassionate city. Compassionate City Bern is a community palliative care network that disseminates evidence-based knowledge to the public. In 2022, we were elected as the host city for the 8th Public Health International Palliative Care Conference (October 22–25, 2024).

Sibylle Felber was elected as national representative for the International Association for Communication in Healthcare.

Hons and Awards:
Sibylle Felber and Steffen Eychmüller won the Gesellschaft für Medizinische Ausbildung e.V/GMA-Preis für innovative Lehrprojekteid 2022 for the “Compassion Training – through self-exposure towards more understanding for patients.”

Marina Maier was nominated for best abstract with “Sense of security with specialized palliative homescare: Experiences from multiple perspectives” at the National Research Day Palliative Care in Bern in August.

Grants
Swiss Academy of Medical Sciences (KZS 15/22): The sources and impact of moral distress on Swiss junior physicians: A mixed-methods study to develop a framework to foster resilience, ethical competence, and wellness in junior physicians. (CHF 95,994; PI: Sofía Zambrano; 04/2023–10/2024).

Swiss National Science Foundation (PCEFP1-194177): Eccellenza Professorial Fellowship: The risks and benefits of integrating emotions in end-of-life communication. (CHF 1,826,322; PI: Sofía Zambrano; 11/2021–11/2026).

Lindenhofer Foundation, Bern: Plattform Palliative Care (CHF 1.48 million; PI: Steffen Eychmüller; 09/2020–08/2023).

Horizon 2020 (B25731): lIVE: Living well, dying well. A research programme to support living until the end. (Work Package Lead: Steffen Eychmüller; Sofía Zambrano) (EUR 394,750 [of 4,017,817] awarded to University of Bern; 01/2019–01/2023).


Swiss National Science Foundation (33IC30_207041): DigiPALL: a randomized controlled trial of digital patient-reported outcomes and biomarker monitoring in palliative care. (CHF 704,038; Co-PI Steffen Eychmüller; 08/2022–08/2026).

Swiss National Science Foundation (10531G_212822): The risks and benefits of integrating emotions in end-of-life communication. (CHF 374,964; PI: Sissel Guttormsen; Co-Applicants: Steffen Eychmüller and Sofía Zambrano; 04/2019–04/2022).

Swiss Academy of Medical Sciences (KZS 15/22): The sources and impact of moral distress on Swiss junior physicians: A mixed-methods study to develop a framework to foster resilience, ethical competence, and wellness in junior physicians. (CHF 95,994; PI: Sofía Zambrano; 04/2023–10/2024).

Swiss National Science Foundation (PCEFP1-194177): Eccellenza Professorial Fellowship: The risks and benefits of integrating emotions in end-of-life communication. (CHF 1,826,322; PI: Sofía Zambrano; 11/2021–11/2026).

Lindenhofer Foundation, Bern: Plattform Palliative Care (CHF 1.48 million; PI: Steffen Eychmüller; 09/2020–08/2023).

Horizon 2020 (B25731): lIVE: Living well, dying well. A research programme to support living until the end. (Work Package Lead: Steffen Eychmüller; Sofía Zambrano) (EUR 394,750 [of 4,017,817] awarded to University of Bern; 01/2019–01/2023).


Swiss National Science Foundation (33IC30_207041): DigiPALL: a randomized controlled trial of digital patient-reported outcomes and biomarker monitoring in palliative care. (CHF 704,038; Co-PI Steffen Eychmüller; 08/2022–08/2026).

Swiss National Science Foundation (10531G_212822): The risks and benefits of integrating emotions in end-of-life communication. (CHF 374,964; PI: Sissel Guttormsen; Co-Applicants: Steffen Eychmüller and Sofía Zambrano; 04/2019–04/2022).
Gesundheitsförderung Schweiz: Projekt «Co-Lab» Compassionate city. (CHF 125,000 [of total 300,000] awarded to University of Bern; PI: Claudia Michel; Steffen Eychmüller; 1/2020–12/2022).


Internal and external collaborations
We conduct research in collaboration with an extensive network of local, regional, national, and international partners from a diverse range of areas and sectors. As an example, the ILive consortium is composed of 14 health and research institutions from 13 countries, including 11 European countries, Australia, New Zealand, and Argentina.

Within the Eccellenza, we collaborate internally with Berner Institute für Hausarztmedizin (BIHAM) and Institut für Medizinische Lehre (IML) at the University of Bern. In Switzerland, we collaborate with Zürich University Hospital and University of Fribourg. Outside of Switzerland, we collaborate with Vrije Universiteit Brussel, Belgium; Duke University, USA; Stanford University, USA; and University of Rochester, USA.

Key team members
Barbara Affolter (research collaborator); Jelena Baumann (research assistant); Andri Christen (research coordinator); Andreas Ebneter (research collaborator); Martina Egloff (research assistant); Steffen Eychmüller (adjunct professor); Luca Emmenegger (research collaborator); Sibylle Felber (research collaborator); Monica Fliedner (postdoc); Monika Hagemann (research collaborator); Valentina González (postdoc); Anna Lange (PhD candidate); Maud Maessen (senior postdoc); Marina Maier (research assistant); Katrien Moens (PhD candidate); Maya Monteverde (research collaborator); Robert Staeck (PhD candidate); Cornelia Stähli (research assistant); Sofia Zambrano (head of research group).

Selected publications


Public Health and Primary Care Library

The Public Health and Primary Care Library team provides services primarily for researchers and PhD students at the Institute of Social and Preventive Medicine (ISPM), CTU Bern, and the Institute of Primary Health Care (BIHAM). As embedded librarians, we offer tailored and immediate research support and work closely with research teams on their projects.

Our main expertise lies in creating comprehensive literature searches for all kinds of evidence synthesis research, providing support during the publishing process of research findings, monitoring ISPM, CTU, and BIHAM research output and open access compliance, and teaching systematic literature searching for Master of Public Health (MPH) and PhD students.

Key scientific activities
Following the Cochrane Handbook for Systematic Reviews, we create high-quality, state-of-the-art search strategies for information resources to ensure the accuracy and completeness of evidence used for literature reviews. As co-authors on several resulting papers, we take responsibility for correctly reporting the search process according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses – or PRISMA – guideline. Additionally, to ensure international quality standards, we offer peer-review for search strategies built by the researchers themselves. We perform our peer-review following the Peer-Review of Electronic Search Strategies – or PRESS 2015 – guideline.

In our role as expert searchers on systematic review teams, we strive to unburden the systematic review process from time-intensive, repetitive tasks, such as removing duplicate records from searching databases with overlapping content. Therefore, we initiated the development of a fully-automated deduplication tool, Deduklick. It is based on an artificial intelligence algorithm created by Risklick – a University of Bern spin-off.

Our joint efforts resulted in the publication of a peer-reviewed article, a conference presentation, workshops, and rising interest from researchers and information specialists all over the world. Together with the Risklick team, we continually work on improving the functionalities and creating new features to save valuable time for researchers, as well as information specialists, during the systematic review process, while also ensuring reliable performance.

Key academic activities
Teaching: We taught systematic literature search methods in modules of the MPH program, as well as the Swiss Schools of Public Health (SSPH+). A PhD program. We built a curated, constantly updated collection of (self-)learning materials for conducting systematic literature searches in medical and health sciences on ILIAS – the central teaching and learning platform of the University of Bern. It is publicly accessible and intended to serve students, course participants, and other interested people.

Conferences and Events: We participated in the European Association for Health Information and Libraries (EAHIL) annual conference in Rotterdam, The Netherlands – the main European platform for meeting other expert searchers and medical information specialists. Throughout the year, we enlarged and updated our professional knowledge and skills by attending online webinars and workshops.

Scientific Talks and Presentations: Together with Nikolay Bonissav – Risklick team member and Deduklick developer – we presented our new deduplication tool at the EAHIL annual conference. We highlighted Deduklick’s features from the user perspective, while Nikolay

Bonissav explained the technical side and performance. Our new tool attracted much interest from people working with big collections of records from around the world.

Internal and external collaborations
At the University of Bern, we collaborate with the Research Support Services team at the Medical Library (Systematic Review Services); the Open Science/Open Access team (Publishing Support); and the Risklick team (Deduklick).

We are in close contact with other expert searchers in the medical field, exchanging knowledge and ideas at international meetings organized by EAHIL and Arbeitsgemeinschaft für medizinisches Bibliothekswesen – AGMB – and via specialized mailing lists and book clubs.

Key team members
Doris Kopp-Heim (medical information specialist); Beatrice Minder (medical information specialist).

Selected publications


Sexual and Reproductive Health

We examine questions about etiology, epidemiology, prevention and control, diagnosis, and social and cultural aspects of sexually transmitted infections (STI) and emerging infectious disease threats in Switzerland and internationally. With commitments to living evidence and open science, our studies include field epidemiology, synthesis of published evidence, and methodological research. In 2022, 2 pandemics dominated the agenda and activities of the Sexual and Reproductive Health research group – severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and mpox (formerly known as human monkeypox).

Key scientific activities
To support researchers internationally, our research on SARS-CoV-2 maintained the coronavirus disease 2019 (COVID-19) Open Access Project database of living evidence through March 1, 2022; it contains more than 314,000 publications. Our updated living systematic review of the occurrence and transmission potential of asymptomatic SARS-CoV-2 infection found most infections did not remain asymptomatic and people with asymptomatic infections were less infectious than those with symptomatic infections. We started a new update on asymptomatic infections caused by SARS-CoV-2 variants of concern and contributed to the Mental Health in COVID project – led by the Evidence Synthesis research group. Our epidemiological and phylogenomic investigation of a large SARS-CoV-2 outbreak in Wengen, Switzerland (2020–2021) revealed several separate introductions of the alpha variant of concern as well as non-variant of concern infections (MD project Christian Kosok).

We started work to establish the “Bern, get ready” (BEready) cohort – a future resource for Multidisciplinary Center for Infectious Diseases (MCID) members to investigate infectious diseases and enhance pandemic preparedness in Switzerland. We invited 15,000 residents in the Canton of Bern to answer an online survey about the willingness of themselves and their household members (including pets) to take part in BEready.

Our completed systematic review series of the etiological role of STI and genital mycoplasmas in adverse pregnancy outcomes shows potential associations with preterm birth, yet a need to improve the certainty of evidence with larger studies that control for confounding. We completed our research on accelerated partner therapy for contact tracing of chlamydia infections (with Christian L. Althaus and the UK-led Limiting Undetected Sexually Transmitted Infections to Reduce Morbidity program).

Key academic activities
Students: Our group included 3 PhD students and 1 MD student.
Teaching: Our group contributed to teaching for undergraduates in medicine and biomedical sciences and PhD students and postgraduates studying for certificates of advanced studies. Teaching subject areas include writing for publication and protocol development, gender studies, infectious disease epidemiology, public health ethics, and global health.
Conferences and Events: We conducted a workshop on reporting prevalence studies and evaluating their risk of bias as part of Diana Buitrago-Garcia’s PhD project (August 2022).

We continue to investigate the impact of STI during pregnancy through primary research studies and systematic reviews, such as the Women and Newborn Trial of Antenatal Intervention and Management (WANTAIRM, meaning “together”) in Papua New Guinea and a cohort study (Philani N’diphile, meaning “be healthy, and I will be healthy”) in South Africa (MD-PhD project, Ranjana Gigi).
We conducted an international interdisciplinary meeting to discuss our policy analysis findings and burden of disease estimation qualitative research about the global political prioritization of STI.

**Research Groups**

- **Scientific Talks and Presentations**: Invited keynote speaking and presentations at International Union against STI World Congress; presentations at the Society for Research Synthesis Methods and Papua New Guinea Medical Symposium.
- **Outreach and Representation**: Nicola Low was co-chair of the public health expert group of the Swiss COVID-19 Science Task Force (until March 2022) and vice-chair of the International Health Regulations emergency committee on the multi-country outbreak of mpox. For MCID, we contributed to science communication events on the SARS-CoV-2 Omicron variant of concern and mpox, and we organized a meeting for stakeholders in the BÉready cohort study.

**Grants**

- **European Commission Horizon Europe (101095619): ESCAPE.** (EUR 3.2 million; Co-Applicants: Nicola Low, Christian L. Althaus, Emma Hodcroft; 01/2023–12/2026).
- **Multidisciplinary Center for Infectious Diseases (core activity): The BÉready cohort.** (CHF 1.8 million; PI: Nicola Low with Gilles Wandeler; 01/2022–12/2024).
- **Swiss National Science Foundation (320030_197831): Influence of sexually transmitted infections, genital tract infections and the vaginal microbiome on preterm birth.** (CHF 720,000; PI: Nicola Low; CHF 720,000; 10/2021–09/2025).
- **European Commission Horizon 2020 (101003688): Epidemic intelligence to minimize COVID-19’s public health, economic and social impact in Europe.** (EUR 2.9 million; Co-Applicants Nicola Low, Christian L. Althaus; 03/2020–03/2023).
- **Swiss National Science Foundation (20720_16090/1): r4d project: Improving neonatal and infant outcomes using point-of-care tests for STI in high prevalence settings.** (CHF 488,000; PI: Nicola Low; 03/2016–12/2022).
- **Swiss National Science Foundation (320030_176233): Zika virus: Causality, open science and risks of emerging infectious diseases.** (CHF 700,000; PI: Nicola Low; 10/2017–12/2022).
- **Swiss Network of International Studies (19/63): Political prioritisation of the prevention and control of sexually transmitted infections: A global challenge.** (CHF 246,000; PI: Nicola Low; 01/2020–07/2023).

**Internal and external collaborations**

At the Institute of Social and Preventive Medicine, we collaborate with the Cancer; Child and Adolescent Health; Community Health and Health Care Systems; HIV, Hepatitis, and Tuberculosis; Interfaculty Platform for Data and Computational Science; and Evidence Synthesis research groups. We work with MCID and elsewhere in Switzerland, with colleagues at the University of Zürich.

We work internationally with the Foundation for Professional Development, South Africa; Papua New Guinea Institute of Medical Research; University of New South Wales and University of Melbourne, Australia; Hasselt University, Belgium; University College London, UK; London School of Hygiene and Tropical Medicine, UK; Shenzhen University, China; and the World Health Organization.

**Key team members**

Diana Buitrago-García (candidate); Ranjana Gigi (PhD candidate); Leonie Heron (postdoc); Eva Maria Hodel (project manager); Hira Imeri (research assistant); Christian Kosok (MD student); Aziz Mert Ipekçi (PhD candidate); Nicola Low (head of research group); Gilles Wandeler (co-PI).

**Selected publications**


SwissRDL – Medical Registries and Data Linkage

SwissRDL is a research and service unit covering all activities in the field of medical registries. Our work includes planning, setting up, operating, and maintaining small regional, national, and international medical registries. To ensure high data quality, we offer support through monitoring visits and central data monitoring. Registry success is shown in detailed reports, statistical analyses, and publications.

In collaboration with external partners, such as medical associations and foundations, we develop, implement, operate, and maintain national and international medical registries and multi-center outcome studies. We ensure high-quality, secure data in our center by applying strict validation rules, monitoring data regularly, and monitoring on site.

Our support team offers help for registry issues and data entry by phone, email, and webinars, and we are in contact with more than 180 hospitals in Switzerland. We also develop and offer full-range support for patient-recorded outcome measures on tablets and websites. Our statisticians and project managers create regular high-quality reports for registries, such as quarterly reports for hospitals, annual scientific reports, operator-specific reports, implant reports for industry, and summaries for the public.

Another core area of SwissRDL excellence is data linkage. We have longstanding experience building up large cohorts, where data are linked using probabilistic record linkage methodology. Our experience led to our expertise linking data without available unique identifiers when simple merging is not possible. We also developed and apply privacy-preserving methods for record linkage. Record linkage procedures are also used to link registry data with federal mortality data.

**Key scientific activities**

SwissRDL creates high-quality scientific reports, such as the report of the national hip and knee registry. Additionally, we produce benchmark reports for clinics, which allow comparison of core outcomes between hospitals using funnel plots. To support ongoing quality measures in health care, we create outlier reports for surgeons and the implant industry. For medical device suppliers, we offer implant reports for specific products. Furthermore, our data managers and statisticians analyze data for scientific publications and posters.

We support national and international projects with our expertise in record linkage. We also participate in several research projects analyzing registry data and supporting the linkage of additional data. For example, we have been involved in several data linkage projects in Africa, such as one linking HIV data with cancer registry data.

Additionally, we built up a comprehensive implant library which allows identifying and categorizing implants, such as hip, knee, and shoulder. SwissRDL also supports barcode scanner-based data entry and web services for direct data transfer from hospitals.

**Key academic activities**

**Teaching:** Adrian Spörri regularly teaches undergraduate and postgraduate students about medical statistical software, medical registries, and probabilistic record linkage methodology at the University of Bern and for international partner organizations. Christian Brand is involved in undergraduate teaching of biostatistics.

**Research Groups**

**Conferences and Events:** We participate in International Society of Arthroplasty Registries meetings and conferences.

**Outreach and Representation:** Through implant registries, we are in touch with medical device suppliers and offer scientific support for reports and studies. We are members of expert committees for the Swiss National Association for Quality Development in Hospitals and Clinics.

**Grants**


**Internal and external collaborations**

Within Switzerland, SwissRDL supports researchers at University Hospital of Bern, Inselspital to create and operate medical registries.

Additionally, we collaborate with medical associations and foundations to operate and maintain their registries, such as the SIRS foundation and their national hip and knee implant registry with more than 150 hospitals and Swissnoso for surgical site infections with more than 170 hospitals delivering data to SwissRDL.

We also collaborate with the Swiss National Association for Quality Development in Hospitals and Clinics. Supporting data management and reporting for more than 200 Spitex organizations, SwissRDL oversees the Home Care Data platform from Spitex Schweiz.

New registries include the Swiss Cardiology Registry and the Swiss Heart Surgery Registry. We also developed different projects for cantonal health administrations and for hospital groups.

Outside of Switzerland, we are in close contact with international registry providers, such as the National Joint Registry, UK and the Endoprothesenregister Deutschland, Germany.

**Key team members**

Suada Abukar (IT assistant); Tarja Aegerter (project manager and monitor); Camille Blochet (project manager and monitor); Liliana Bolliger (project manager and monitor); Andreas Boss (project manager and statistician); Christian Brand (statistician); Nathanael Cotton (senior software engineer); Martin Drees (head of development); Cyrille Dubray (senior software engineer); Milena Kovatsch (project manager and IT assistant); Marco Mörgler (co-head of SwissRDL); Anna Müller (system administrator); Stefanie Paerschke (administration); Kurt Schmidlin (senior research fellow); Adrian Spörrı (co-head of SwissRDL); Ebru Ünlü (project coordinator); Deborah Zulian (research and project assistant).

**Selected publications**

