UNIVERSITÄT
BERN

Annual Report 2020
Institute of Social and Preventive Medicine ISPM

Content

December 2020

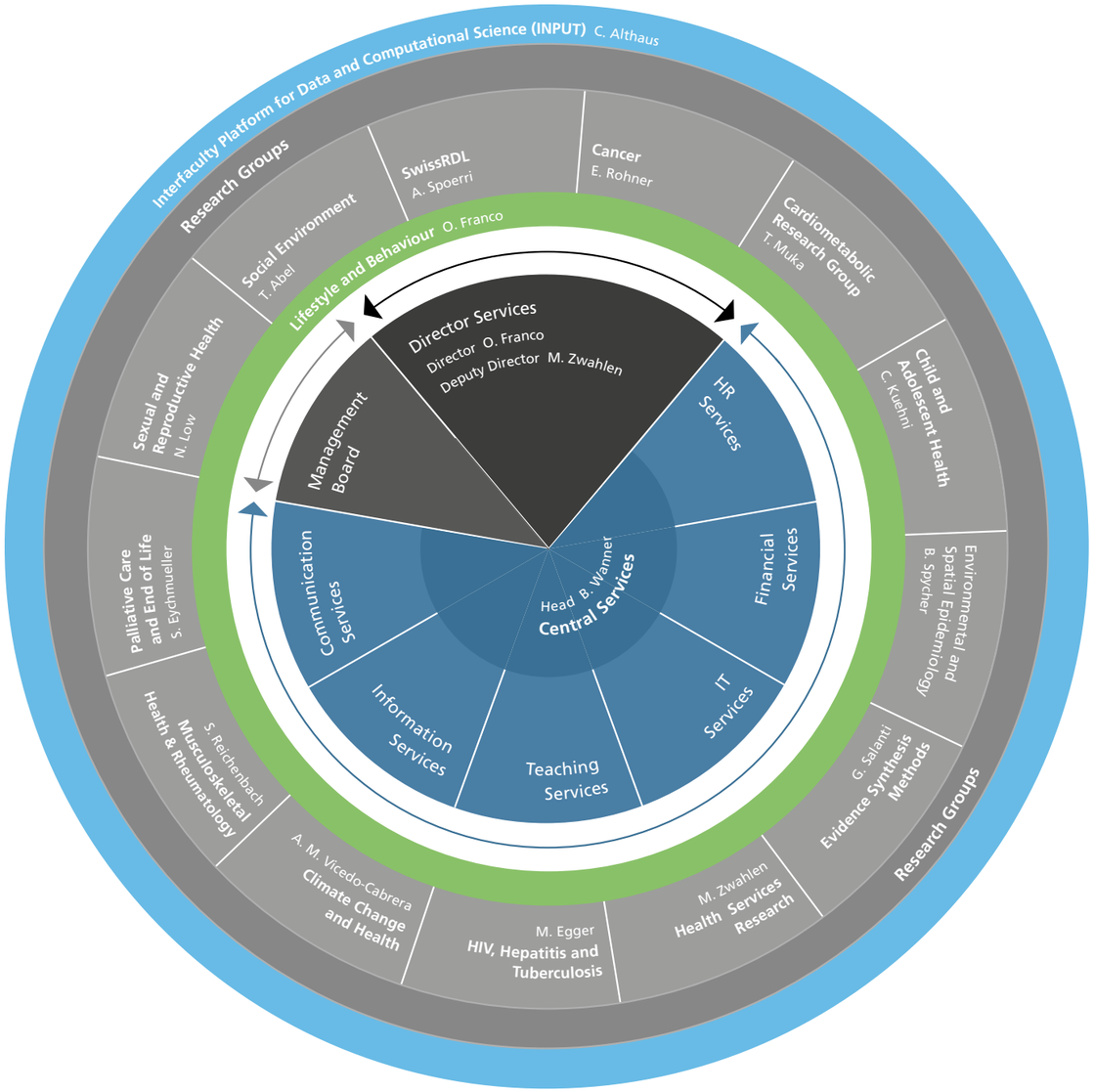
2020 is a year we will never forget. During this pandemic year, we worked from home, encountered uncertainty, learned much, and experienced a year of solidarity with everyone working at ISPM. As specialists with extensive public health experience in prevention, infectious disease epidemiology, and modelling, we are experts who have been sought from the very beginning – not only within Switzerland but also from around the world. All of us have contributed actively and worked very hard to help our colleagues and, above all, everyone who needed our expertise in and beyond the pandemic.

We also have seen how quickly research can become politicized, and how topics that simply were subjects of conversation can cloud debates or even become grounds for conflict. This situation will occupy us for some time to come. Communication of research among researchers, policy makers, and society at large has become more necessary than ever as new pathways for interacting have emerged. We anticipated and are proactively addressing this with a new translation and implementation tier at ISPM that will facilitate utilization and implementation of what we learn. Science, or rather findings from research – especially in public health – must not be ends in themselves but serve and be available to a broad public. We see this as a great responsibility at ISPM. The experience we have gained during this year of challenges will nurture and be incorporated into our capacity to prepare and contribute to a better future.

We look to that future with confidence. Our expertise and research will improve population health everywhere. Our experience and endurance will certainly grow as we transform both the paths toward our goals and obstacles along the way into the goals themselves. What we are learning will better serve the health of our planet and its population, and I personally thank you all for your efforts and commitment in this challenging year.

Oscar H. Franco

Organizational Chart



ISPM Facts and Figures

Our research profile covers health areas from cardio-metabolic to HIV, cancer, childhood and adolescents, NCDs to environmental influence, with the tiers of development of new methods and lifestyle and behavior reaching across all fields.

We actively participate in University teaching programs for students of medicine, biomedical engineering and biomedicine (including students from the University of Fribourg) and are engaged in PhD and postgraduate programs of the University of Bern and SSPH+.

Staff

Prof. Dr. med. Oscar Franco
Director

Prof. Marcel Zwahlen
Deputy Director

Staff members total	135
Research	119
PhD students	28
Admin, technics	16 (covering 3 institutes)
Nationalities	over 25
Research groups	15

Teaching

Total numbers

Course fees	CHF 987'136
Courses	94
Course attendees	1177
Undergarduate lectures	2123

Grants

Grants, new in 2020
6 SNSF (total of CHF 3’060’000)
2 Horizon 2020 (total of CHF 890’000)
21 various other projects (total of CHF 3’660’000)

3rd Party money spent

SNF	CHF 3’221'189
Other competitive	CHF 4’880'743
Non-competitive	CHF 276'729

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

Interuniversity Public Health Education
MPH, DAS, CAS

Medical Specialist in Prevention and Public Health
Certified training facility

Bern Lectures in Health Science
5 monthly seminars plus 7 special talks

Publications

Publications total	248

Reports from the Research Groups

Cancer

The overarching aim of the Cancer Research Group is to study the occurrence of and risk factors for cancer, and to inform cancer prevention programs. The group currently focuses on the epidemiology of HIV-related malignancies and the prevention of cervical cancer in sub-Saharan Africa.

Key scientific activities

In July 2020, after returning from a research fellowship at the University of North Carolina at Chapel Hill, Eliane Rohner took over leadership of the group from Julia Bohlius (who moved to Swiss TPH, Basel). The group continued to work on analysing data from the South African HIV Cancer Match (SAM) study, a record-linkage study based on 44 million laboratory records from the National Health Laboratory Services and cancer diagnoses from the National Cancer Registry in South Africa. One such analysis examined the association between CD4 cell counts and the incidence rates of various infection related and unrelated cancers among adults living with HIV. An update of the SAM study to include data through 2019 (with more than 90 million laboratory records in total) was also initiated. Katayoun Taghavi advanced her PhD work, which includes assessing the cervical cancer screening cascade at an antiretroviral therapy clinic in Zimbabwe and examining the diagnostic test accuracy of a portable colposcope for the detection of cervical intraepithelial neoplasia in Zambia. Though the study follow-up was suspended by the COVID-19 pandemic, the group initiated mathematical modelling work to evaluate the comparative effectiveness and cost-effectiveness of different cervical cancer prevention strategies in the high-HIV-burden region of Southern Africa.

Key academic activities

Teaching and tutoring of medical students at the University of Bern.

Internal and external collaborations

International epidemiology Databases to Evaluate AIDS – Southern Africa (IeDEA-SA), National Cancer Registry of South Africa, Swiss Tropical and Public Health Institute, sitem Insel, International Agency for Research on Cancer (IARC), Cervical Cancer Prevention Program in Zambia, University of North Carolina Gillings School of Global Public Health.

Key team members

Eliane Rohner, Katayoun Taghavi, Yann Ruffieux, Rowan Iskandar, Matthias Egger

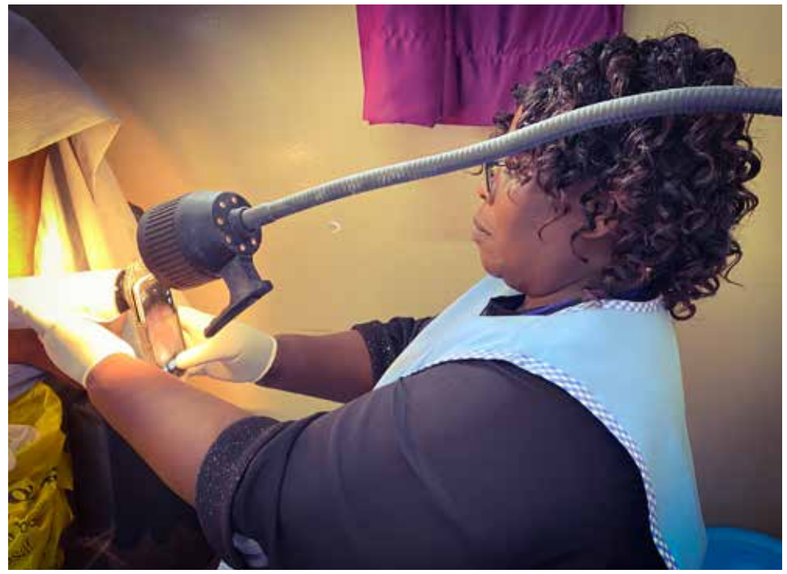
Selected publications

Immunodeficiency and Cancer in 3.5 Million People Living with Human Immunodeficiency Virus: the South African HIV Cancer Match Study. Y Ruffieux, M Muchengeti, M Egger, O Efthimiou, L Bartels, V Olago, M Davidović, T Dhokotera, J Bohlius, E Singh, E Rohner. Clinical Infectious Diseases, 2021.

Screening test accuracy of portable devices that can be used to perform colposcopy for detecting CIN2+ in low- and middle-income countries: a systematic review and meta-analysis. K Taghavi, E Rohner, P Basu, N Low, A Rutjes, J Bohlius. BMC Womens Health, 2020.

Strengthening global commitment to eliminating cervical cancer: What lessons from the past can we apply to the future? K Taghavi, M Moono, S Asangbeh, G Gillett, M Pascoe, A Manasyan. J Glob Health, 2020.

Screening test accuracy to improve detection of precancerous lesions of the cervix in women living with HIV: a study protocol. K Taghavi, M Moono, M Mwanahamuntu, P Basu, A Limacher, T Tembo, H Kapesa, K Hamusonde, S Asangbeh, R Sznitman, N Low, A Manasyan, J Bohlius. BMJ Open, 2020.



Study nurse in Zambia using the portable colposcope

Train the trainer course for the diagnostic test accuracy study in Zambia, January 2020

Cardiometabolic Research

Our research group puts epidemiologic principles into practice in clinical and public health settings to improve prevention and develop detection tools for cardiometabolic diseases. Our research focuses on understanding the role of risk factors and mechanisms underlying the development and prognosis of cardiometabolic diseases.

Key scientific activities

The research group studies the thyroid, diabetes, and cardiovascular disease. We explore the role of epigenetic markers in sex differences in cardiometabolic health and in mediating the diabetogenic effects of statins, and the role of thyroid function, glycemic status, and control of myocardial fibrosis. We have undertaken new studies of women's health to understand dynamic changes in intermediate cardiovascular risk factors for women across the reproductive stages, dietary changes before and after menopause, causality between age of menopause and blood pressure traits, and the role of iron in sex and menopausal differences in cardiometabolic diseases. Our further activities include assessing cardiometabolic profiles in spinal cord injury patients, the roles of micro-RNAs and inflammation in cardiac involvement in Chagas disease, and clinical phenotyping of patients with heart failure in a tertiary hospital.

Key academic activities

Lectures in sex and gender-specific medicine, clinical epidemiology, public health, systematic reviews and meta-analysis, and GRADE assessment.

Grants

Ongoing:

Leading House for the Latin American Region, Switzerland: Circulating micro-RNA and cardiac biomarkers to detect and classify cardiac involvement and its prognosis in Chagas disease. Taulant Muka (PI), January 2020-December 2021, CHF 25'000.

Swiss National Science Foundation. (IZSTZ0_190277). Spirit grant, noncaloric sweeteners, microbiome, and cardiometabolic risk—a randomized clinical trial of Iranian women. Taulant Muka (co-PI), October 2020-October 2023, CHF 500'000.

Astra Zeneca. Prevalence of Heart Failure in Switzerland. Taulant Muka (PI), April 2020-October 2021, CHF 140'000.

New:

Swiss National Science Foundation (IZLIZ3_200256). Sex and menopausal differences in iron status/biomarkers as potential causative factor contributing to sex differences in cardiometabolic disease (IRONNES), Taulant Muka (PI), July 2021-June 2024, CHF 350'000

Angiology Department, Bern University Hospital. Genetic variants and unmasking disease pathways in peripheral artery disease. Taulant Muka, September 2020-August 2025, CHF 653'820.

Leading House for the Latin American Region, Switzerland. Predictive Value of Novel Circulating Biomarkers in Chagas Disease: the Brazilian Chagas Disease Cohort. Marija Glisic (PI), July 2021-July 2022, CHF 23'670

Two PhD Swiss Excellence Scholarships, Taulant Muka (supervisor).

Internal and external collaborations

Department of Cardiology, Inselspital, Bern; Department of Angiology, Inselspital, Bern; Department of Nuclear Medicine, University Hospital Zurich, Zurich; Swiss Paraplegic Research Center, Nottwil; CoLaus study, University of Lausanne, Switzerland; Imperial College London, London; Department of Epidemiology, Erasmus Medical Center, Rotterdam, the Netherlands; PREVEND Study, University of Groningen, the Netherlands, Institute of Community Medicine, University of Greifswald, Greifswald; Department of Public Health and Clinical Medicine, Umeå University, Sweden. McGill University, Canada.

Key team members

Taulant Muka, group leader; Oscar H. Franco, Director of ISPM; Arjola Bano, Jessica Laine Carmeli, Faina Wehrli, and Marija Glisic, postdocs; Jackie Buttia, research fellow; Dante Salvador Jr., Hamidreza Raeisi, Oche Adam Itodo, Peter Francis Raguindin, Valentina Gonzales, and Zayne Roa Diaz, PhD students.

Selected publications

Anemia and iron metabolism in COVID-19: a systematic review and meta-analysis. Taneri PE, Gomez-Ochoa SA, Llanaj E, Raguindin PF, Rojas LZ, Roa-Diaz ZM, et al. Eur J Epidemiol. 2020;35(8):763-73.

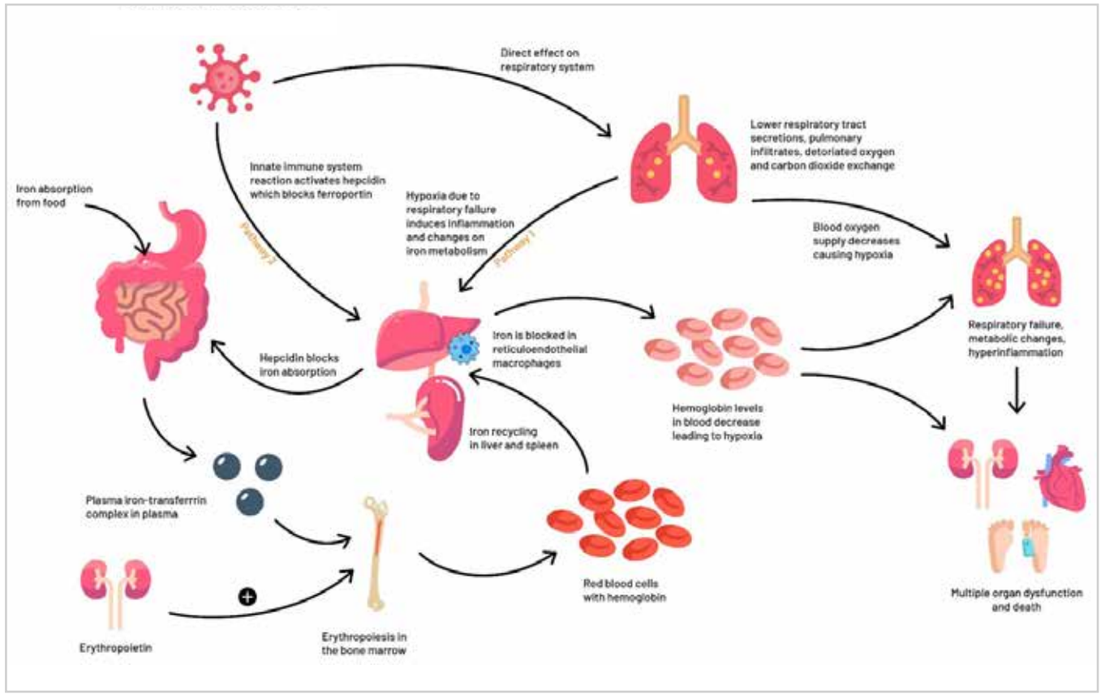
Effects of phytoestrogen supplementation on intermediate cardiovascular disease risk factors among postmenopausal women: a meta-analysis of randomized controlled trials. Wolters M, Dejanovic GM, Asllanaj E, Gunther K, Pohlabeln H, Bramer WM, et al. Menopause. 2020;27(9):1081-92.

Trajectories of BMI Before Diagnosis of Type 2 Diabetes: The Rotterdam Study. Nano J, Dhana K, Asllanaj E, Sijbrands E, Ikram MA, Dehghan A, et al. Obesity (Silver Spring). 2020;28(6):1149-56.

Epigenetic Link Between Statin Therapy and Type 2 Diabetes. Ochoa-Rosales C, Portilla-Fernandez E, Nano J, Wilson R, Lehne B, Mishra PP, et al. Diabetes Care. 2020; 43(4):875-84.

Sex and gender in cardiovascular medicine: presentation and outcomes of acute coronary syndrome. Haider A, Bengs S, Luu J, Osto E, Siller-Matula JM, Muka T, et al. Eur Heart J. 2020;41(13):1328-36.

SARS-CoV-2 infection



The potential role of red blood cell dynamics and iron homeostasis in the clinical presentation of COVID-19. The figure shows two potential pathways through which iron metabolism may be involved in the pathophysiology of COVID-19. Pathway 1: the virus inflicts hypoxia via direct deleterious effects on the respiratory system, altering the inflammatory response leading to anemia. Pathway 2: the innate immune system may aim to decrease the bioavailability of iron in order to prevent an expanding viral load in the acute-phase of the infection. This leads to the activation of hepcidin, sequestration of iron within cells, increased levels of ferritin and decreased hemoglobin, culminating in hypoxia.

Child and Adolescent Health

1. Paediatric Respiratory Epidemiology Group

The Paediatric Respiratory Epidemiology Group studies common and rare respiratory disorders during childhood and over the life course. 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 behavioural 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): The SPAC (https://spac-study.ch/) is a prospective observational national multicenter clinical cohort study, which includes over 2500 children referred to paediatric respiratory outpatient clinics due to wheeze, recurrent cough, exercise- and sleep-related respiratory problems. In 2020 the focus was on diagnosis of exercise-induced symptoms, the diagnostic accuracy of algorithms and objective tests in asthma, and factors driving adjustment of asthma treatment in children. We included new questions in the monthly follow-up online questionnaire related to COVID-19 and preventive measures such as social distancing to assess how these may have affected the number of respiratory symptoms and infections in this group of children.

Luftibus in the School is a population-based study on respiratory health in school-aged children in the Canton of Zurich. In 2020, the focus was on validation of reference values for lung function parameters and analyses related to chronic cough.

Swiss PCD survey: We developed a national survey nested in the Swiss PCD registry (CH-PCD) to study symptoms and health-related behaviours of PCD patients. The survey was based on the standardised FOLLOW-PCD patient questionnaire and had an excellent response rate (82%). Currently, we focus on analysing prevalence and severity of upper and lower respiratory symptoms and their associations with physical activity.

COVID-PCD: This online longitudinal participatory study follows people with PCD during the COVID-19 pandemic. It started recruitment on 30 May, is available in five languages, and uses weekly questionnaires to collect information about infections, symptoms, and health behaviours. In 2020, the cohort recruited more than 600 persons with PCD from over 40 countries. We study number of people with a SARS-CoV-2 infection, severity of disease, and number of people vaccinated against COVID-19. Results are published weekly on the study website (www.covid19pcd.ispm.ch).

Ear-Nose-Throat (ENT) Prospective International Cohort of PCD patients (EPIC-PCD): The EPIC-PCD is a multicenter cohort on characteristics and prognosis of upper respiratory disease in patients with PCD. Recruitment started in nine countries and already includes more than 100 patients.

Research priorities in PCD: This is a mixed-methods study combining qualitative and quantitative analysis approaches to determine future priorities for clinical and epidemiological research on PCD. In 2020 we held semistructured interviews with experts in the field. We will expand the study to patient representatives in Switzerland and the UK.

BEAT-PCD Clinical Research Collaboration: The BEAT-PCD Clinical Research Collaboration (CRC), a network of multidisciplinary researchers and clinicians, was funded in 2020 by the European Respiratory Society (ERS). The network is coordinating research from basic

science to clinical care to improve diagnosis and develop treatments that lead to better long-term outcomes of patients with PCD. Myrofora Goutaki cochairs the network, Claudia Kuehni is a member of the management committee, and Yin Ting Lam is a PhD representative at the advisory board.

We also participated in an ERS Task Force for the development of evidence-based guidelines for the diagnosis of childhood asthma (EA Gaillard, CE Kuehni, S Turner, et al. European Respiratory Journal, 2021)

Key academic activities

Students: During 2020, the group included 6 PhD candidates (of whom Carmen de Jong and Eva Pedersen defended their PhDs in February and March 2020) and two medical students working on their MD theses.

Organization of conferences: Co-organization of the inaugural meeting of the BEAT-PCD CRC (September 2020)

Fellowships/Prizes: Myrofora Goutaki was elected chair of the paediatric epidemiology scientific group of the ERS (2021-2024). Cristina Ardura-Garcia was selected as an early career editor for the European Respiratory Journal through its mentoring programme.

Teaching: Regular teaching with lectures and tutoring in undergraduate and postgraduate students (University of Bern, MPH program) by Claudia Kuehni, Myrofora Goutaki, Cristina Ardura-Garcia, Eva Pedersen.

Grants

Swiss National Science Foundation (SNSF 320030B_192804): Natural history, phenotypes and disease classification in primary ciliary dyskinesia (phase 2) (CHF 447'055; 05/2020-04/2023; PI: Claudia Kuehni)

Swiss National Science Foundation (SNSF 32003_182628): Phenotypes and prognostic modelling in childhood asthma moving towards clinical applications (Phase II) (CHF 904'000; 10/2018 – 09/2022; PI: Claudia Kuehni)

Swiss National Science Foundation (SNSF PZ00P3_185923 Ambizione): From the nose to the lungs: the importance of upper respiratory disease in Primary Ciliary Dyskinesia (CHF 950'341; 10/2019-09/2023; PI: Myrofora Goutaki)

Swiss Lung League: Predicting asthma attacks in Swiss children: SPAC-Attacks, a clinical cohort study (CHF 67'300; 07/2019-06/2021; PI Cristina Ardura-Garcia)

Internal and external collaborations

The Paediatric Respiratory Epidemiology Research Group has an extensive national and international multidisciplinary network of researchers, clinicians and scientists in the field of paediatric and rare respiratory diseases, through several collaborative projects, such as the BEAT-PCD CRC.

Key team members

Claudia Kuehni (group leader), Myrofora Goutaki (senior researcher), Cristina Ardura-Garcia (Postdoc), Eva Sophie Lunde Pedersen (Postdoc), Rebeca Mozun (PhD candidate), Maria Christina Mallet (PhD candidate), Yin Ting Lam (PhD candidate), Daria Berger (PhD candidate), Helena Koppe (Research assistant), Natalie Messerli, Gia Thu Ly (Research assistant).

Helena Koppe

Eva Sophie Lunde Pedersen

Carmen de Jong

Natalie Messerli

Maria Christina Mallet

Selected publications

COVID-PCD – a participatory research study on the impact of COVID-19 in people with Primary Ciliary Dyskinesia. ESL Pedersen, ENR Collaud, R Mozun, C Ardura-Garcia, YT Lam, A Harris, JS Lucas, F Copeland, M Manion, B Rindlisbacher, H Silberschmidt, M Goutaki, CE Kuehni. ERJ Open Research, 2020.

Cigarette, shisha, and electronic smoking and respiratory symptoms in Swiss children. The LUIS study. R Mozun, C Ardura-Garcia, CCM de Jong, M Goutaki, J Usemann, F Singer, P Latzin, CE Kuehni, A Moeller. Pediatric Pulmonology, 2020.

Standardised clinical data from patients with primary ciliary dyskinesia: FOLLOW-PCD. M Goutaki, JF Papon, M Boon, C Casaulta, E Eber, E Escudier, FS Halbeisen, A Harris, C Hogg, I Honore, A Jung, B Karadag, C Koerner-Rettberg, M Legendre, B Maitre, KG Nielsen, B Rubbo, N Rumman, L Schofield, A Shoemark, G Thouvenin, H Willkins, JS Lucas, CE Kuehni. ERJ Open Research, 2020.

Diagnosis of asthma in children: findings from the Swiss Paediatric Airway Cohort. CC de Jong, ESL Pedersen, R Mozun, D Müller-Suter, A Jochmann, F Singer, C Casaulta, N Regamey, A Moeller, C Ardura-Garcia, CE Kuehni. European Respiratory Journal, 2020.

Paediatric cohort studies on lower respiratory diseases and their reporting quality: systematic review of the year 2018. C Ardura-Garcia, R Mozun, ESL Pedersen, M Otth, MC Mallet, M Goutaki, CE Kuehni. European Respiratory Journal, 2020.

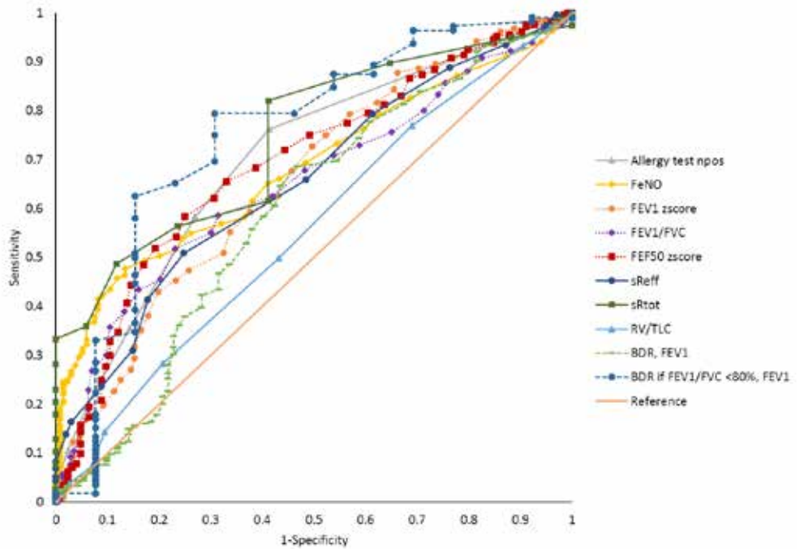


Figure 1:
Receiver operating characteristics (ROC) curve of clinical tests to diagnose asthma.

2. Paediatric Cancer

We host the national Childhood Cancer Registry (ChCR, section 2.a) and conduct research into the epidemiology of childhood cancer over the life course (section 2.b).

2.a Childhood Cancer Registry

Endowed with a mandate by the Swiss Confederation, we are the national centre for registering data on cancer occurring in young people up to 19 years of age in Switzerland. Physicians, hospitals, laboratories, and other health institutions are obliged to report to us all cases of cancer in children, adolescents, and young adults that they diagnose and treat.

Kinderkrebsregister
Registre du cancer de l'enfant
Registro dei tumori pediatrici
Childhood Cancer Registry

The registry collects a vast array of clinical data on cancer, including diagnoses, treatment, follow-up care, late effects, predispositions, previous diseases, and comorbidities. In coding the data, we adhere to international standards and national norms. Our longstanding collaboration with clinics caring for children and adolescents with cancer and many years of experience in cancer registration help to ensure the provision of comprehensive and high-quality data.

As part of our responsibilities for public health reporting, we regularly inform the public about the most recent trends in cancer incidence, prevalence, mortality, and survival among young people. Upon request, we carry out statistical analyses that provide researchers, public health authorities, media professionals, and many others with the information they need for their work.

The data we collect, process, make available and publish will help to help improve the understanding of cancer in young people. They will also help to improve quality of cancer prevention, screening, treatment, and care.

Key scientific activities

We conducted a survey to learn more about how healthcare professionals in clinics inform patients about cancer registration and report cases and the challenges they face in carrying out these activities.

We registered and coded new cases, updated information on registered cases, and conducted quality checks.

We migrated the data collected from 1976 to 2019 to the new register software.

We drafted a concept for public health reporting on cancer in 2024, 2027 and 2030 and defined the methods and means of publication of statistical analyses together with other stakeholders.

We conducted routine statistical analyses, with the results being published on the Federal Statistical Office web portal «Krebs bei Kindern» and our webpage «Figures: Incidence, survival, mortality».

We provided third parties with statistical analyses or data extractions.

Key academic activities
Conferences talks:
Wissenschaftliches Symposium 40 Jahre Deutsches Kinderkrebsregister: «Childhood Cancer Registry Switzerland – Facts, Plans, Challenges», talk by Verena Pfeiffer (January 24, 2020; Mainz)

Swiss Oncology and Haematology Congress (SOHC): «Ergebnisse Befragung der meldenden Personen & Herausforderungen Kinderkrebsregister», talk by Cornelia Stadter and Verena Pfeiffer (November 19, 2020; Zurich)

Grants
Swiss Federal Office of Public Health (FOPH): CHF 840'000

Internal and external collaborations
The ChCR collaborates closely with the Federal Office of Public Health, the National Agency for Cancer Registration, the Swiss Association of Cancer Registries, and the ISPM Paediatric Cancer Epidemiology Group.

Key team members
Verena Pfeiffer (co-director), Claudia Kuehni (co-director), Shelagh Redmond (head, registration & data quality), Ben Spycher (head, statistics), Meltem Altun (clinical data manager), Erika Brantschen Berclaz (clinical data manager, medical coder), Katharina Flandera (administrative assistant), Anna Glenck (statistical data manager), Christina Huf (data protection consultant), Erika Minder (medical coder), Eleftheria Michalopoulou (statistician), Anna Müller (IT system administrator), Ursina Roder (statistical data manager), Cornelia Stadter (coordinator)

Selected publications

Konzept für die Auswertung und Veröffentlichung von Krebsdaten im Rahmen des Bundesgesetzes über die Registrierung von Krebserkrankungen (Krebsregistrierungsgesetz, KRG). S Beer-Borst, E Aghayev, S Bader, S von Greyerz, E Roy, S Rossi, C Junker, A Feller, U Wagner, V Pfeiffer, F Belle und U Roder, 2020. Available from: file:///C:/Users/cs20o100/Downloads/20201215_Konzept%20Ver%C3%B6ffentlichung%20KRG-Daten_V1.0_D%20(6).pdf [accessed on March 25, 2021].

Sechs Monate Krebsregistrierungsgesetz: Ein Selbstgespräch als erste Bilanz des Kinderkrebsregisters. V Pfeiffer, C Kuehni. In: Stiftung Krebsforschung Schweiz, Krebsliga Schweiz (eds.). Forschung in der Schweiz, Bern, 2020, 39-41. Available from: Krebsforschung in der Schweiz (Ausgabe 2020) [accessed on March 25, 2021].

2.b Paediatric Cancer Epidemiology Group

The Paediatric Cancer Epidemiology Group studies the epidemiology of childhood cancer over the life course. Our main areas of interest relate to long-term outcomes after childhood cancer. This includes 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 cause-specific long-term mortality.

Key scientific activities
We conduct the following population-based clinical follow-up studies on long-term outcomes after childhood cancer:

Swiss Childhood Cancer Survivor Study (SCCSS): The SSCCS is a nationwide population-based questionnaire survey continuously including all childhood cancer patients registered in the Childhood Cancer Registry who survived >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 behaviours. Currently, we are contacting all survivors diagnosed between 2011-2015. SCCSS-Nutrition is a substudy of the SCCSS which collects dietary information via self-reported questionnaires and urine samples of survivors.

Cardiovascular Late Effects after Childhood Cancer (CardioOnco Study): The CardioOnco study is a prospective longitudinal multicentre study. It compares conventional echo-cardiography with speckle tracking echocardiography for the early detection of cardiac disease in childhood cancer survivors to try to understand the clinical determinants for the development of cardiac disease after childhood cancer. The study started in 2016 at the University Hospital in Bern and in 2021 will expand to four other centres in Switzerland.

Community-based screening program for hearing loss after childhood cancer: This prospective study evaluates access to novel, low-threshold hearing tests for former childhood cancer patients. We will invite childhood cancer patients at risk of hearing loss for a free hearing test in a local hearing aid shop. Results will improve our knowledge on the overall burden of hearing loss in childhood cancer survivors and relevant factors. We will use questionnaires, interviews, and group discussions with all stakeholders to evaluate the screening program.

Swiss Paediatric Haematology/Oncology Metabank (Biolink): The Metabank project builds a platform to combine data from the Childhood Cancer Registry and two biobanks, the Swiss germline DNA Biobank for Childhood Cancer and Blood Disorders (BISKIDS) and the Swiss Pediatric Hematology Oncology Biobank Network (SPHO) in a privacy cohering way. The Metabank facilitates project development through rapid assessment of available data and samples and links clinical data with biosamples. Biolink will enable in depth research in the fields of cancer predispositions, pharmacogenetics, and genetic modifiers of long-term complications after childhood cancer.

Genetic Risks for Complications in Children after Oncological Treatment in Switzerland (GECCOS): The aim of the GECCOS project is to find genetic risk factors of complications after childhood cancer. We have collected more than 500 germline DNA samples in the BISKIDS biobank. We extracted and sequenced DNA of Swiss childhood cancer patients to contribute to international research collaborations on second cancers. This will help us

better understand why some patients develop second cancers after childhood cancer and others not.

International Late Effects of Childhood Cancer Guideline Harmonization Group (IGHG; www.ighg.org): This initiative develops standardised recommendations for follow-up surveillance after childhood cancer. Our research group leads a guideline on pulmonary dysfunction and is involved in several other guidelines related to ototoxicity, metabolic syndrome, and psychosocial problems.

Key academic activities

Students: In 2020, the group included six PhD students. Christina Schindera defended her PhD in November 2020. One medical student completed her Master thesis.

Teaching: Regular teaching with lectures and tutoring in undergraduate and postgraduate students (University of Bern, MPH program) by Claudia Kuehni and Nicolas Waespe.

Grants

Swiss National Science Foundation (31BL30_185396): The Swiss Pediatric Hematology/ Oncology Metabank – a network for precision medicine research (CHF 593'638; PI Jean-Pierre Bourquin, co-PI Marc Ansari and Claudia Kuehni)

Swiss Cancer Research, Swiss Cancer League (KLS/KFS-4825-01-2019): Structural funding for Swiss Childhood Cancer Survivor Study (CHF 480'000; 01/2020-12/2022; PI Claudia Kuehni)

Swiss Cancer Research (KFS-4722-02-2019): Dietary intake, overweight, and late effects development in childhood cancer survivors (CHF 359'450; 07/2019-06/2022; PI Murielle Bochud, co-PI Claudia Kuehni)

Swiss Cancer Research (KFS-5027-02-2020): Early detection of heart disease after treatment for cancer during childhood (CHF 336'950; 01/2021-12/2023; PI: Nicolas von der Weid)

Swiss Cancer Research (HSR-4951-11-2019): Improving access to screening for hearing loss after childhood cancer - a novel community-based approach (CHF 247'850; 05/2020-04/2023; PI: Claudia Kuehni)

Kinderkrebshilfe Schweiz: The Swiss Childhood Cancer Survivor Study (SCCSS) (CHF 40'000; 01/2021-12/2021; PI: Luzius Mader)

Lung League Bern: Pulmonary function in long-term childhood cancer survivors after hematopoietic stem cell transplantation (CHF 33'570; 08/2020-02/2021; PI: Maria Otth)

Stiftung für krebskranke Kinder, Regio Basiliensis (2019-P012): Early detection of cardiac dysfunction in survivors of childhood cancer (01/2020-06/2020; CHF 28'773; PI Christina Schindera)

Internal and external collaborations

The Paediatric Cancer Epidemiology Research Group has an extensive national and international, multidisciplinary network with researchers and clinicians in the field of late effects of childhood cancer. In Switzerland, we collaborate with the nine paediatric oncology clinics of the Swiss Paediatric Oncology Group (SPOG). Internationally, we collaborate with PanCareSurFup (http://www.pancaresurfup.eu/) and PanCareLIFE (http://www.pancarelife.eu/). PanCareSurFup investigates the burden and risk factors of the most severe and life threatening late effects after childhood cancer, namely secondary neoplasms, cardiovascular disease, and premature death. PanCareLIFE focuses on hearing loss, infertility and quality of life.

Key team members

Claudia Kuehni (group leader), Fabiën Belle (Postdoc), Luzius Mader (Postdoc), Christina Schindera (Postdoc), Nicolas Waespe (PhD candidate), Maria Otth (PhD candidate), Sven Strebel (PhD candidate), Tomas Slama (PhD candidate), Fabienne Luzi (PhD candidate), Selma Riedo (Research assistant), Cornelia Stadter (BioLink project manager)


Claudia Kuehni


Fabiën Belle-van Sprundel


Luzius Mader


Christina Schindera


Nicolas Waespe


Maria Otth


Sven Strebel


Tomas Slama


Fabienne Luzi


Selma Riedo


Cornelia Stadter

Selected publications

Transplant characteristics and self-reported pulmonary outcomes in Swiss childhood cancer survivors after hematopoietic stem cell transplantation-a cohort study. M Otth, C Schindera, T Güngör, M Ansari, K Scheinemann, FN Belle, P Latzin, N von der Weid, CE Kuehni & Swiss Pediatric Oncology Group (SPOG). Bone Marrow Transplantation, 2020.

Cancer predisposition syndromes as risk factor for early second primary neoplasms after childhood cancer – a national cohort study. N Waespe, FN Belle, S Redmond, C Schindera, BD Spycher, J Rössler, M Ansari, CE Kuehni. European Journal of Cancer, 2021.

Sodium and potassium intake and cardiovascular disease in childhood cancer survivors: the SCCSS-Nutrition study. FN Belle, C Schindera, I Guessous, M Beck Popovic, M Ansari, CE Kuehni, M Bochud. Nutrients, 2020.

Physical activity and screen time in children who survived cancer - A report from the Swiss Childhood Cancer Survivor Study. C Schindera, A Weiss, N Hagenbuch, M Otth, T Diesch, N von der Weid, CE Kuehni. Pediatric Blood Cancer, 2020.

Increased risk of cardiac ischaemia in a pan-European cohort of 36 205 childhood cancer survivors: a PanCareSurFup study. EAM Feijen, EC van Dalen, HJH van der Pal, RC Reulen, DL Winter, CE Kuehni, V Morsellino, D Alessi, RS Allodji, J Byrne, E Bardi, Z Jakab, D Grabow, S Garwicz, N Haddy, M Jankovic, P Kaatsch, GA Levitt, CM Ronckers, C Schindera, R Skinner, L Zalatel, L Hjorth, WJE Tissing, F de Vathaire, MM Hawkins, LCM Kremer; PanCareSurFup consortium. Heart, 2021.

3. Paediatric and Rare Diseases Registries Group

The Paediatric and Rare Diseases Registries Group hosts several medical registries and conducts studies in different areas of paediatric epidemiology such as endocrinology, gastroenterology, nephrology, neurology, and rare diseases. These registries collect data to better understand and treat certain diseases to improve the patients' quality of life. The registries help to answer specific research questions, to recruit patients for clinical studies, and coordinate the post-marketing surveillance of drugs. They foster communication between researchers nationally and internationally and thus disseminate knowledge.

Key scientific activities

The Paediatric and Rare Disease Registries Group coordinates platforms, national registries and cohort studies:

Swiss Rare Disease Registry (SRDR): The SRDR is a national, population-based registry for children and adults with rare diseases. The SRDR aims to collect a core data set from all people with rare diseases in Switzerland, approximately 500 000 people. The SRDR will constitute a platform for rare disease enabling clinical and epidemiological studies and facilitating patient's participation in national and international trials.
In autumn 2020, the Federal Office of Public Health (FOPH) approved funding under article 24 of the national law on cancer registration. This financial support allows the employment of a project manager and an IT staff member. Specific measures of data transfer from University Hospitals Children's Hospitals, and Centres for Rare Diseases to the SRDR are being implemented.

SwissPedRegistry is a research platform for paediatric registries. It is part of SwissPedNet (https://www.swisspednet.ch/de/willkommen/), the Swiss research network of clinical paediatric hubs. SwissPedRegistry provides expertise and advice for the development and conduct of epidemiological and clinical registries collecting data on children or persons of any age. It develops regulatory frameworks, methodologies and instruments for registries and participates in national discussions and meetings on registry relevant issues.

Swiss Registry for Neuromuscular Disorders (Swiss-Reg-NMD): The Swiss-Reg-NMD is a national registry of children and adults diagnosed with Duchenne-Becker Muscular Dystrophy, Spinal Muscular Atrophy, and LAMA2-related Muscular Dystrophy. The registry aims for the inclusion of patients in current clinical trials and the long-term follow-up of patients with these disorders. The Swiss-Reg-NMD completed a report on the effect of Nusinersen in treating SMA patients for the Federal Social Insurance Office.

Swiss Cerebral Palsy Registry (Swiss-CP-Reg): The Swiss-CP-Reg is a national registry that investigates health-related issues in people with cerebral palsy. It includes all children, adolescents, and adults who are diagnosed with cerebral palsy. The aim is to improve the future care and well-being of individuals with cerebral palsy.

Swiss Growth Study (SGS): The SGS is a national registry that evaluates efficacy and long-term effects of growth hormone treatment in Switzerland.

Swiss Pediatric Inflammatory Brain Disease Registry (Swiss-Ped-IBrainD): The Swiss-Ped-IBrainD collects medical data on paediatric patients with inflammatory brain diseases. The dataset includes information on the diagnosis, disease course, and treatments of inflammatory brain diseases. The registry promotes communication and collaboration between specialists who will implement the 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.

Swiss Primary Ciliary Dyskinesia Registry (CH-PCD): The CH-PCD is a national registry for people with primary ciliary dyskinesia (PCD), who are treated and resident in Switzerland. It studies disease course, health care, patient-reported symptoms, and health-related behaviours of PCD patients. In 2020, the CH-PCD sent a questionnaire to all registered people to collect info on reported symptoms and health-related behaviours of PCD patients in Switzerland.

SwissPedData: This project aims to harmonize the collection of health-related data in paediatric hospitals throughout Switzerland. A harmonized set of information collected during routine visits of in- and outpatients will improve the quality of data collected during patient encounters. It will also allow a fast, almost real-time use of the data for high-quality research. In 2020 we achieved a final consensus on a standard paediatric dataset among all collaborating clinics.

Key academic activities

Teaching: Regular teaching with lectures and tutoring in undergraduate and postgraduate students (University of Bern, MPH program) by Claudia Kuehni and Ben Spycher.

Grants

Swiss Federal Office of Health (FOPH): Financial support of the Swiss Rare Disease Registry under article 24 of the national law on cancer registration (CHF 250'000 per year; 11/2020–10/2025; PI: Claudia Kuehni)

Universität Zürich, Abteilung für Stoffwechselkrankheiten, Kinderspital Zürich: Setup of Swiss Rare Disease Registry (CHF 332'000; 07/2020-12/2020; PI: Claudia Kuehni)

SwissPedNet: SwissPedRegistry, a research platform for paediatric registries (CHF 284'000; 1/2017–12/2020; PI: Claudia Kuehni)

Schweizerische Stiftung für das Cerebral gelähmte Kind: Swiss Cerebral Palsy Registry: (CHF 200'000; 4/2020–6/2023; PI: Anne Tscherter)

Patient organisations (CHF 33'500 for 2020) and pharmaceutical companies (sponsored research agreements and unconditional grants: CHF 205'000 for 2020/21) support the Swiss-Reg-NMD.

Swiss-Ped-IBrainD received financial aid from the Swiss Multiple Sclerosis Society and the pharmaceutical industry (CHF 380'000 for 2020-2022).

Internal and external collaborations

Representatives of the Paediatric and Rare Diseases Registries Group attended national and international meetings with relevant stakeholders, participated in working groups, developed instruments, and represented the needs and interests of paediatric registries. The group collaborates closely with Swiss RDL, the medical Registries and Data Linkage centre at ISPM Bern, in particular for data linkage and software development.

Key team members

Claudia Kuehni (group leader, head of SwissPedRegistry, PI, SwissPedData), Ben Spycher (Co-PI SwissPedData), Anne Tscherter (senior researcher, project lead SwissPedRegistry and Swiss-CP-Reg), Dominique Baumann (project manager Swiss-Reg-NMD), Michaela Fux (Project manager, Swiss Rare Disease Registry), Grit Sommer (project manager Swiss

Growth Registry), Myrofora Goutaki (senior researcher, co-director of Swiss PCD Registry), Lorena Hulliger (Project manager Swiss-Ped-IBrainD), Milenko Rakic (postdoc, project manager SwissPedData and SwissPedRegistry), Nadine Lötscher (Data manager Swiss-Reg-NMD), Katharina Flandera (assistant)

Selected publications

Registries and collaborative studies for primary ciliary dyskinesia in Europe. C Ardura-Garcia, M Goutaki, SB Carr, S Crowley, FS Halbeisen, KG Nielsen, P Pennekam, J Raidt, G Thouvenin, PK Yiallouros, H Omra, CE Kuehni. ERJ Open Research, 2020.

Das Schweizer Cerebralparese Register: eine Forschungs- und Kommunikations-plattform. A Tscherter, CE Kuehni, S Grunt. Paediatrica, 2020.

Health behaviour of women with Turner Syndrome. M Santi, CE Flück, M Hauschild, B Kuhlmann, CE Kuehni, G Sommer G. Acta Paediatrica, 2021

Climate Change and Health

The Climate Change and Health group works to advance knowledge of the impact of climate change and related environmental stressors on health. The main lines of research include (1) quantification of impacts due to nonoptimal temperatures and evaluation of vulnerability patterns, (2) projections of health impacts under composite climate change scenarios, (3) intersection between urban environment and climate change, (4) assessment of etiological mechanisms explaining the association between temperature and specific health outcomes such as cardiovascular diseases and mental disorders, (5) the impact of changing environment on the elderly, in particular focusing on the link between healthy aging and climate change.

Key scientific activities

Coordination of international collaborations within the Multi-country Multi-city Collaborative Research network.

Participation in international meetings, such as the annual meeting of the International Society for Environmental Epidemiology (online), InDust workshop (COST action, Barcelona, January 2020).

Invited speaker in national and international meetings, such as the General Assembly of the Swiss Society for Meteorology and European Geoscience Union (November 2020).

Participation in the preparation of the 6th Assessment Report of the Intergovernmental Panel on Climate Change, as contributing author in Chapter 16.

Key academic activities

Lectures for medical students on climate change, planetary health, and sustainability (Mensch und Umwelt).

Participation with several lectures in the MSc Climate Science (University of Bern) including two seminars and a full course on «Environmental epidemiology applied to climate sciences.»

Supervision of two PhD students (Marvin Bundo, Evan de Schrijver), an MSc student (Christoph Kestenholz), and a doctoral thesis (Séverine Bärr).

Grants

As principal investigator:
Special COVID-19 Call for projects grants with China, Japan, South Korea and the ASEAN region – The Leading House for Bilateral Science and Technology Cooperation Programme – ETH Zurich: «Redefining Age-friendly and Resilient Cities: lessons from Swiss and ASEAN cities' responses to COVID». Role: PI. CHF 21'995. January 2021-December 2121.

As coapplicant or contributor (funded):
EU Joint Research Centre-Seville: «Revisiting temperature-mortality associations using climate reanalysis data». PI: Antonio Gasparrini (London School of Hygiene and Tropical

Medicine). Role: collaborator (funded through subcontract). EUR 137'914. Jan 2021-August 2022.

Canadian Institutes of Health Research (CIHR): «Climate change-related health inequalities in Canada: How hot temperatures affect vulnerable groups living in large urban centres». PI: Piotr Wilk. Role: Co-applicant. $489,600. Oct 2020-Sept 2024.

Internal and external collaborations

Internal:
Jakob Zscheischler (Climate and Environmental Physics, University of Bern), Stefan Brönnimann (Climatology, University of Bern), Thomas Müller (Psychology unit, University of Bern).

External:
Swiss Tropical and Public Health Institute (Martina Ragettli), ETH Zurich (David Bresch, Erich Fischer), London School of Hygiene and Tropical Medicine (Antonio Gasparrini, Sir Andy Haines), Yale University (Kai Chen), CICERO Oslo (Jana Sillman and Kristin Aunan), Norwegian Institute of Public Health (Shilpa Rao), University of Valencia (Carmen Iñiguez), University of Bristol (Dann Mitchell and Eunice Lo).

Key team members

Ana M. Vicedo-Cabrera (head), Evan de Schrijver (PhD student), Marvin Bundo (PhD student), Christoph Kestenholz (MSc Student), Séverine Bär (doctoral student).


Ana Maria Vicedo-Cabrera


Evan de Schrijver


Marvin Bundo


Christoph Kestenholz


Séverine Bär

Selected publications

Projections of Ambient Temperature- and Air Pollution-Related Mortality Burden Under Combined Climate Change and Population Aging Scenarios: a Review. K Chen, AM Vicedo-Cabrera, R Dubrow. Current Environmental Health Reports. 2020; 7(3):243–55.

A Satellite-Based Spatio-Temporal Machine Learning Model to Reconstruct Daily PM2.5 Concentrations across Great Britain. R Schneider, AM Vicedo-Cabrera, F Sera, P Masselot, M Stafoggia, K de Hoogh, I Kloog, S Reis, M Vieno, A Gasparrini. Remote Sensing. 2020 Nov;12(22):3803.

Air Conditioning and Heat-related Mortality: A Multi-country Longitudinal Study. F Sera, M Hashizume, Y Honda, E Lavigne, J Schwartz, A Zanobetti, A Tobias, C Iñiguez, AM Vicedo-Cabrera, M Blangiardo, B Armstrong, A Gasparrini. Epidemiology. 2020 Nov; 31(6):779–87.

Short term association between ozone and mortality: global two stage time series study in 406 locations in 20 countries. AM Vicedo-Cabrera, F Sera, C Liu, B Armstrong, A Milojevic, Y Guo, S Tong, E Lavigne, J Kyselý, A Urban, H Orru, E Indermitte, M Pascal, V Huber, A Schneider, K Katsouyanni, E Samoli, M Stafoggia, M Scortichini, M Hashizume, Y Honda, CFS Ng, M Hurtado-Diaz, J Cruz, S Silva, J Madureira, N Scovronick, R Garland, H Kim, A Tobias, C Íñiguez, B Forsberg, C Åström, MS Ragettli, M Röösli, Y Guo, BY Chen, A Zanobetti, J Schwartz, M Bell, H Kan, A Gasparrini. BMJ. 2020 Feb 10;368:m108.

Sex differences in the temperature dependence of kidney stone presentations: a population-based aggregated case-crossover study. AM Vicedo-Cabrera, DS Goldfarb, RE Kopp, L Song, GE Tasian. Urolithiasis. 2020 Feb;48(1):37–46.

Environmental and Spatial Epidemiology

We study potential effects of environmental exposures on human health with a focus on cancer by exploring both spatial and temporal variation in cancer incidence and mortality.

Key scientific activities

In an SNF-funded project on low-dose ionizing radiation and childhood cancer, we developed a map of terrestrial gamma radiation in Switzerland based on an extensive dataset of airborne gamma-spectrometry measurements. Linking this map to data from the Swiss National Cohort study and the Childhood Cancer Registry, we investigated associations between incidence of childhood cancers and external background radiation. As part of the EU-funded project RadoNorm, we initiated a multinational collaborative study of natural background radiation and the risks of childhood leukemia and tumors of the central nervous system together with partners in Finland, Denmark, Norway, and France. We published results of simulation studies comparing methods for Bayesian spatial modelling and disease mapping. Using these methods, we investigated the spatial distribution of childhood cancer incidence in Switzerland for different cancer types and the extent to which this variation was explained by previously studied environmental factors. We also published results of a study on parental occupational exposure to pesticides and the risk of childhood cancer in Switzerland.

Key academic activities

We give lectures in environmental epidemiology and health effects of nonionizing radiation for medical students; Ben Spycher coteaches a postgraduate SSPH+ course on applied logistic regression, and he is a member of the academic board of Public Health Weiterbildung. We presented results of our research at a symposium on the environment and cancer organized by the Swiss Cancer League at the Swiss Public Health Conference, and at the symposium of the Graduate School for Health Sciences.

Grants

European Commission H2020 (900009): RadoNorm. (Ben Spycher subtask leader, 9/2020-8/2025, CHF 271'700 for subtask).

Swiss National Science Foundation (No. 320030_176218): Low dose ionising radiation and the risk of childhood cancer. (Ben Spycher PI, 1/2018-12/2021, CHF 572'000).

Swiss Cancer Research (KLS-4592-08-2018): Residential and occupational exposure to UV radiation and haematological malignancies. (Ben Spycher PI, 1/2019-12/2021, CHF 336'250)

Swiss National Science Foundation (Spark grant: CRSK-3_190801): Better Science Through SIMulation (BESTSIM): A tool for simulating scientific discovery. (Ben Spycher PI; 3/2020-2/2021, CHF 99'915).

Internal and external collaborations

Internal:
Swiss National Cohort (SNC), Swiss Childhood Cancer Registry (SCCR), Child and Adolescent Health Group, SwissRDL – Medical Registries and Data Linkage.

External:
Unisanté, Université de Lausanne; Swiss TPH Basel; University of Tampere, Finland; French National Institute of Health and Medical Research (INSERM); Danish Cancer Society Research Center; UCLA Fielding School of Public Health; Swiss Paediatric Oncology Group (SPOG); Swiss Federal Nuclear Safety Inspectory (ENSI); Paul Scherrer Institute (PSI); Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA); MRC Center for Environment and Health of Imperial College London; Unité INSERM Centre Léon Bérard, Lyon.

Key team members

Ben Spycher, group leader; Christian Kreis and Astrid Coste, postdoctoral researchers; Antonella Mazzei and Christophe Folly, PhD student


Ben Spicher


Astrid Coste


Christoph Folly


Christian Kreis


Antonella Mazzei

Selected publications

Parental occupational exposure to pesticides and risk of childhood cancer in Switzerland: a census-based cohort study. Coste A, Bailey HD, Kartal-Kaess M, Renella R, Berthet A, Spycher BD. BMC Cancer. 2020 Aug 28;20(1):819. doi: 10.1186/s12885-020-07319-w.

Bayesian spatial modelling of childhood cancer incidence in Switzerland using exact point data: a nationwide study during 1985-2015. Konstantinoudis G, Schuhmacher D, Ammann RA, Diesch T, Kuehni CE, Spycher BD. Int J Health Geogr 2020; 19(1):15. doi: 10.1186/s12942-020-00211-7

Epidemiological studies of natural sources of radiation and childhood cancer: current challenges and future perspectives. Mazzei-Abba A, Folly CL, Coste A, Wakeford R, Little MP, Raaschou-Nielsen O, Kendall G, Hémon D, Nikkilä A, Spix C, Auvinen A, Spycher BD. J Radiol Prot. 2020 Mar;40(1):R1-R23. doi: 10.1088/1361-6498/ab5a38

Discrete versus continuous domain models for disease mapping. Konstantinoudis G, Schuhmacher D, Rue H, Spycher BD. Spat Spatiotemporal Epidemiol 2020; 32(100319. doi: 10.1016/j.sste.2019.100319

ESTHER Switzerland

Network for the promotion of Institutional Health Partnerships

Our work at ESTHER Switzerland coordinates institutional health partnerships (IHP) between organizations in Switzerland and low- and middle-income countries (LMIC). At ESTHER Switzerland, we regard long-term international collaboration as an opportunity for healthcare institutions to share best practices and learn from each other.

https://www.esther-switzerland.ch/

ESTHER Switzerland brings many benefits to its partners, both nationally and internationally. LMIC's gain experience in health service management and develop clinical and leadership skills. Partners from Switzerland learn to work in more resource efficient ways and learn about healthcare issues, which they normally do not encounter at home. Both partners contribute to and may benefit from implementing research.

A distinctive difference between ESTHER-funded partnerships and more traditional development projects is that ESTHER breaks down conventional roles and power structures in favor of peer-to-peer partnerships, which enables collaborative needs assessment, shared accountability, and mutual learning. ESTHER Switzerland applies the IHP approach developed by the World Health Organization (WHO) called the Twinning Partnerships for Improvement (TPI) initiative. ESTHER Switzerland is the only official partner of the WHO's TPI in Switzerland.

Through ESTHER, long-term, mutually beneficial collaborations between healthcare institutions are made possible, which contribute to the goal of Universal Health Coverage.

Key activities

The year 2020 has been marked by the COVID-19 pandemic. Nevertheless, we launched the call for proposals. The newly composed Steering Committee selected five full proposals and five start-up proposals with partners in Tanzania, Madagascar, Mozambique, Zambia, South Africa, Guinea Conakry, Uganda, Malawi, Bangladesh, and Uzbekistan.

We developed a clear strategic direction for ESTHER Switzerland, as well as a more attractive web appearance, and a clearer communication style.

Throughout 2020, we shared best practices from ESTHER Switzerland through three main channels: a new website, online events, and a WHO learning hub.

Grants

Swiss Agency for Development and Cooperation:
https://www.esther-switzerland.ch/partnerships/ f

Internal and external collaborations

ESTHER Switzerland members actively contributed to several online events throughout the year, including events that provided opportunities to promote the approach of IHPs for Swiss and international partners, such as the Tropical Health and Education Trust (THET) and ESTHER Alliance conference «Partnerships in a Time of COVID-19» on April 25, 2020 and the ESTHER Alliance's «Health Partnerships during the Pandemic: Contributions and Lessons» on August 28, 2020 (with participation by Olimjon Saidmamatov from the 20SU06 start-up partnership).

ESTHER Switzerland also participated in an online event that provided an opportunity to hear about partnerships funded by other ESTHER country programmes, interact with other ESTHER country members, and promote ESTHER Switzerland's new strategic direction during ESTHER Ireland Partnerships Forum's «A Bright Future for Health Partnerships» on November 11, 2020.

The joint ESTHER Alliance-WHO live webinar event, «Improving Health Service Quality through Health Partnerships» on December 2, 2020, was the first event organized together with the WHO – an important partner in promoting ESTHER standards among Swiss and international institutions.

Key team members

Dörte Petit (head of programme), Oscar H. Franco (chair),
Luc Guex (head of finance and controlling), Christian Wyniger (web master),
Judith Safford (communications and fundraising).


Dörte Petit


Oscar H. Franco


Luc Guex


Christian Wyniger


Judith Safford

Evidence Synthesis Methods

The Evidence Synthesis Methods research group develops advances, applies, and disseminates methodology for synthesizing evidence from studies of the efficacy and safety of healthcare interventions. We work on pairwise and network meta-analysis, and we do research on methods to address publication bias, the role of nonrandomized studies in evidence synthesis, multivariate meta-analysis models, and methods to synthesize data about rare safety outcomes.

Key scientific activities

In a systematic review and network meta-analysis, we showed that alcoholic formulations of 4–5% alcoholic chlorhexidinegluconate are safe and twice as effective as povidone-iodine solutions in preventing infection after clean surgery in adults. (The Comparative Efficacy of Chlorhexidine Gluconate and Povidone-iodine Antiseptics for the Prevention of Infection in Clean Surgery. doi: 10.1097/SLA.0000000000004076)

Using data from a mega-trial in depression, we developed a machine-learning algorithm for personalizing the choice of antidepressant therapy. (Can personalized treatment prediction improve the outcomes, compared with the group average approach, in a randomized trial? Developing and validating a multivariable prediction model in a pragmatic mega trial of acute treatment of major depression. doi.org/10.1016/j.jad.2020.05.141)

We explored the level of agreement of the treatment hierarchies from different ranking metrics in network meta-analysis. We found that the pairwise agreement was high for all rankings and it decreased when there are imprecise estimates or large imbalances in the variance estimates, though such networks were rare in practice. (Agreement between ranking metrics in network meta-analysis: an empirical study. doi.org/10.1136/bmjopen-2020-037744)

We proposed a hierarchical dose-response meta-analysis model in a Bayesian framework. We compare our approach to the one-stage dose-response meta-analysis model in a simulation study. We also illustrate the method by reanalyzing an antidepressant dataset. (A Bayesian Dose-Response Meta-Analysis Model: Simulation Study and Application. doi.org/10.1177/0962280220982643)

We examined the relative contribution of network paths of different lengths to estimates of treatment effects. We found that on average one-third of evidence comes from direct effects and another half from paths of length 2. (In network meta-analysis, most of the information comes from indirect evidence: empirical study. doi.org/10.1016/j.jclinepi.2020.04.009)

Key academic activities

Members of the team teach CAS and SSPH+ postgraduate courses and contribute to undergraduate teaching at the University of Bern. We also participate and organize international short courses.

Orestis Efthimiou was appointed honorary member of the Psychiatric Department of Oxford University.

New members joined our team: Jacqueline Kolb, Thomy Tonia and Alex Holloway.

Adriani Nikolakopoulou received an SNF postdoc travel fellowship and went to Freiburg.

Grants

Georgia Salanti received a grant from NRP 78 «Covid-19» for the MHCOVID project for a continuously updated meta-ecological study of the effects of the COVID-19 pandemic on mental health, alcohol/substance abuse, and violence in the general population. https://mhcovid.ispm.unibe.ch

Internal and external collaborations

We collaborate with the Sexual and Reproductive Health and the HIV, Hepatitis, and Tuberculosis teams from ISPM. We have numerous collaborators around the globe in different universities: the University of Oxford, the University of Kyoto, Monash University of Sydney, the University of Oulu.

Key team members

Georgia Salanti, Konstantina Chalkou, Virginia Chiocchia, Orestis Efthimiou, Tasnim Hamza, Jacqueline Kolb, Theodoros Papakonstantinou, Michael Seo, Thomy tonia


Georgia Salanti


Konstantina Chalkou


Virginia Chiocchia


Orestis Efthimiou


Tasnim Hamza


Jacqueline Kolb


Theodoros Papakonstantinou


Michael Seo


Thomy Tonia

Selected publications

Comparing methods for estimating patient-specific treatment effects in individual patient data meta-analysis. M Seo, IR White, TA Furukawa, H Imai, M Valgimigli, M Egger, M Zwahlen, O Efthimiou. Statistics in Medicine, 2020.

Agreement between ranking metrics in network meta-analysis: an empirical study. V Chiocchia, A Nikolakopoulou, T Papakonstantinou, M Egger, G Salanti. BMJ Open, 2020.

CINeMA: An approach for assessing confidence in the results of a network meta-analysis. A Nikolakopoulou, JPT Higgins, T Papakonstantinou, A Chaimani, C Del Giovane, M Egger, G Salanti PLOS Medicine 2020 17 1-19

In network meta-analysis, most of the information comes from indirect evidence: empirical study. T Papakonstantinou, A Nikolakopoulou, M Egger, G Salanti. J Clin Epidemiol, 2020

HIV, Hepatitis and Tuberculosis

Our research group engages the clinical and public health epidemiology of HIV and coinfections with hepatitis B/C and tuberculosis in sub-Saharan Africa. We focus on the long-term outcomes of antiretroviral therapy (ART), the impact of ART on HIV transmission and coinfections, mathematical modelling, and methodological aspects of the analysis of longitudinal data.

We conduct analyses for international organizations such as UNAIDS, the Clinton Health Access Initiative, the World Health Organization, the Gates Foundation, UNITAID, the World Bank, and other external partners. We also collaborate closely with international partners as well as ISPM's own research groups.

Key scientific activities

The TB genomics project came to the end of a successful 8-year international collaboration with partners in the International epidemiology Databases to Evaluate AIDS (IeDEA) and others in the USA, Peru, Ivory Coast, Nigeria, Kenya, Tanzania, DRC, South Africa, Thailand, and Switzerland. The project combined classical epidemiology, microbacteriology, and next generation sequencing technology to answer clinical questions about the impact of underdiagnosed drug-resistant TB on mortality. This ambitious, transdisciplinary project led to eight high level publications.

Key academic activities

PhD: Nanina Anderegg, «People living with HIV worldwide: from start of ART to retention in care and death.»

Postdoc: Andreas Haas, SNF Ambizione 2021-2024, «Pathways from mental illness to the burden of disease: Causal mediation analysis of big data from South Africa.»

Teaching (seminars, and book clubs): Marie Ballif, Kathrin Zürcher, Catrina Mugglin, Andreas Haas, Gilles Wandeler; problem-based learning, epidemiology/critical appraisal, epidemiology book club, Repetitorium Klinische Epidemiologie, Herz und Lunge.

Grants

National Institute of Allergy and Infectious Diseases (NIAID), U01AI069924 (2016-2021): International Epidemiology Databases to Evaluate AIDS – Southern Africa (IeDEA-SA), ($14'000'000, PI Egger)

Internal and external collaborations

ISPM research groups:
Cancer, Sexual and Reproductive Health, Climate Change and Health

External:
CTU Bern, University of Bern; Center for Development and Environment, University of Bern; University of Geneva; University of Zürich; Swiss TPH; Swiss School of Public Health (SSPH+); International epidemiology Database to Evaluate AIDS (IeDEA) network; World Health Organization.

Key team members

Matthias Egger (group leader), Nanina Anderegg (statistician), Marie Ballif (postdoctoral research fellow), Simon Bertschinger (research assistant), Felix Cuneo (research Fellow), Cam Ha Dao Ostinelli (clinical data manager), Carole Dupont (scientific and administrative assistant), Andreas Haas (senior research scientist), Anthony Hauser (PhD student), Catrina Mugglin (PhD student), Radoslaw Panczak (research fellow), Martina Reichmuth (research fellow), Julien Riou (postdoctoral research fellow), Yann Ruffieux (statistician), Lilian Smith-Wirth (project assistant), Per von Groote (program manager IeDEA-SA), Gilles Wandeler (clinical research fellow), Elizabeth Zaniewski (project manager/epidemiologist IeDEA-WHO collaboration), Kathrin Zürcher (research assistant), Marcel Zwahlen (deputy director ISPM).

Selected publications

Trends in CD4 and viral load testing 2005 to 2018: multi-cohort study of people living with HIV in Southern Africa. E Zaniewski, CH Dao Ostinelli, F Chammartin, N Maxwell, M-A Davies, J Euvrard et al. Journal of the International AIDS Society, 2020.

International epidemiology databases to evaluate AIDS (IeDEA) in sub-Saharan Africa, 2012-2019. F Chammartin, CH Dao Ostinelli, K Anastos, A Jaquet, E Brazier et al. BMJ Open, 2020.

Excess mortality associated with mental illness in people living with HIV in Cape Town, South Africa: a cohort study using linked electronic health records. AD Haas, Y Ruffieux, LL van den Heuvel, C Lund, A Boulle et al. The Lancet Global Health, 2020.

Screening test accuracy of portable devices that can be used to perform colposcopy for detecting CIN2+ in low- and middle-income countries: a systematic review and meta-analysis. K Taghavi, E Rohner, P Basu, N Low, A Rutjes et al. BMC Women's Health, 2020.

Novel approach to estimate tuberculosis transmission in primary care clinics in sub-Saharan Africa: protocol of a prospective study. K Zürcher, C Morrow, J Riou, M Ballif, AS Koch et al. BMJ Open, 2020

Immuno-Epidemiology

Our research concerns how the population biology of infectious diseases is affected by environmental changes, dynamic patterns of host immunity, or public health interventions. We use mathematical and computational modelling in combination with data analyses to obtain a better understanding of the interactions between pathogens, their hosts and the environment. This creates unique insights into the ecological and evolutionary principles of infectious disease dynamics, and is of great relevance for improving public health.

Key scientific activities

In 2020, members of our research group have made significant contributions to the understanding of the SARS-CoV-2 pandemic:

- We published one of the first estimates of the basic reproduction number and on superspreading of SARS-CoV-2 which considerably impacted the global discourse on the risk for a pandemic (ref. 1).
- We collaborated on the first epidemiological assessment of digital contract tracing for SARS-CoV-2 worldwide, demonstrating that digital contact tracing reaches exposed contacts, who then test positive for SARS-CoV-2 (ref. 2).

Key academic activities

- Member of the Swiss National COVID-19 Science Task Force (C. Althaus)
- Science communication and outreach activities related to the COVID-19 pandemic at various organizations, academic institutes and the media

Christian Althaus

Emma Hodcroft

Martina Reichmuth

Grants

Horizon 2020: EpiPose - Epidemic intelligence to minimize 2019-nCoV's public health, economic and social impact in Europe, € 2'933'913 (€ 505'593 to ISPM), Co-PI: C. Althaus (with N. Low)

Swiss National Science Foundation (SNSF): Tracking the COVID-19 epidemic in Switzerland: phylogenetics and epidemiological modeling, CHF 295'487, PI: C. Althaus

Internal and external collaborations

We strengthened our collaboration with the Center for Space and Habitability (CSH) on topics related to mathematical modelling and simulation-based inference (refs. 3-4), which led to the creation of the Interfaculty Platform for Data and Computational Science (INPUT). INPUT aims at developing and applying computational methods in epidemiology, medicine and the natural sciences, and will officially launch in 2021 with various activities. In addition, we had successful collaborations on mathematical modelling with members of the following research groups: Cardiometablic Health, Sexual and Reproductive Health, and HIV, Hepatitis and Tuberculosis.

Key team members

PD Dr. Christian L. Althaus (head of research group)
Dr. Emma B. Hodcroft (postdoc since November 2020)
Martina L. Reichmuth, M.Sc. (PhD student since December 2020)
Dr. Maurane Riesen (PhD student until January 2020)

Selected publications

Pattern of early human-to-human transmission of Wuhan 2019 novel coronavirus (2019-nCoV), December 2019 to January 2020. Riou J, Althaus CL. Euro Surveill. 2020 Jan;25(4):2000058.

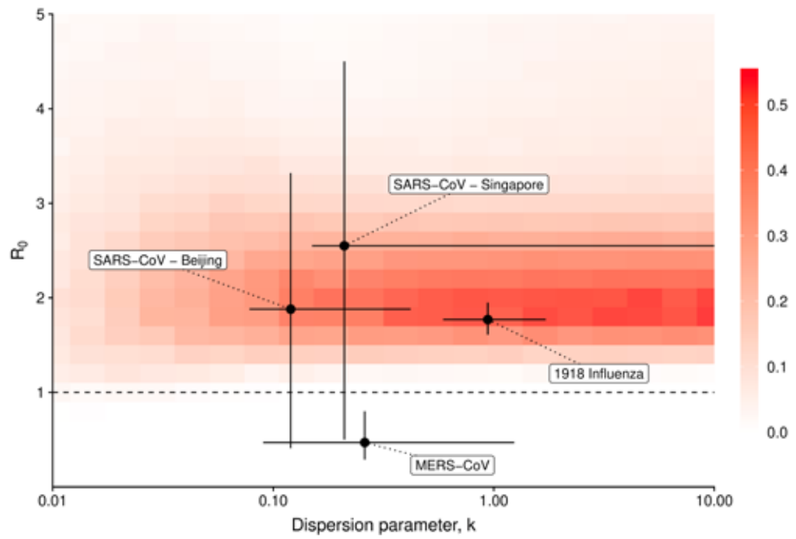
Early evidence of effectiveness of digital contact tracing for SARS-CoV-2 in Switzerland. Salathé M, Althaus CL, Anderegg N, Antonioli D, Ballouz T, Bugnon E, Čapkun S, Jackson D, Kim SI, Larus J, Low N, Lueks W, Menges D, Moullet C, Payer M, Riou J, Stadler T, Troncoso C, Vayena E, von Wyl V. Swiss Med Wkly. 2020 Dec 16; 150:w20457.

Dynamic interventions to control COVID-19 pandemic: a multivariate prediction modelling study comparing 16 worldwide countries. Chowdhury R, Heng K, Shawon MSR, Goh G, Okonofua D, Ochoa-Rosales C, Gonzalez-Jaramillo V, Bhuiya A, Reidpath D, Prathapan S, Shahzad S, Althaus CL, Gonzalez-Jaramillo N, Franco OH; Global Dynamic Interventions Strategies for COVID-19 Collaborative Group. Eur J Epidemiol. 2020 May;35(5):389-399.

The approximately universal shapes of epidemic curves in the Susceptible-Exposed-Infectious-Recovered (SEIR) model. Heng K, Althaus CL. Sci Rep. 2020 Nov 9;10(1):19365.

Understanding the spread of de novo and transmitted macrolide-resistance in Mycoplasma genitalium. Cadosch D, Garcia V, Jensen JS, Low N, Althaus CL. PeerJ. 2020 Apr 7;8:e8913.

Transmission characteristics of SARS-CoV-2 in Wuhan, China, in comparison to SARS-CoV, MERS-CoV and the 1918 pandemic influenza



Musculoskeletal Health and Rheumatology

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

Key scientific activities

Peter Villiger and Stephan Reichenbach together with the CTU Bern set up the CORON-ACT trial, a double-blind, randomized, controlled phase II trial on the efficacy and safety of tocilizumab in the treatment of coronavirus induced disease (COVID-19). The multicenter study also included the University Hospitals of Zurich, Lausanne, and Lugano, and it started on 28 April (NCT04335071, https://clinicaltrials.gov/ct2/show/NCT04335071?term=Reichenbach+Stephan&draw=2&rank=3).The primary outcomes were ICU admission, intubation, and death. Through the end of the first epidemic wave, six persons had been included.

We are performing a 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. All original 1080 participants were mailed a validated self-reported questionnaire focusing on the development of hip pain and any surgical procedures performed during the previous 10 years. All participants initially evaluated with MRI were asked to undergo repeat clinical examination and MRI.

We are evaluating the morphological changes on hip X-ray within the framework of a multicenter, randomised controlled trial comparing arthroscopic hip surgery to physiotherapy-led care for femoroacetabular impingement (the Australian FASHIoN trial).

We are conducting a clinical trial on rapid induction of remission with high-dose glucocorticoids in patients with giant cell arteritis (GUSTO trial).

We are establishing a register of patients with giant cell arteritis at the University Hospital Bern and within the Swiss Clinical Quality Management in Rheumatic Diseases Registry (SCQM).

Key academic activities

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

Grants

Swiss National Science Foundation 32473B_160153

Internal and external collaborations

University Hospital of Bern (Inselspital)
Swiss Institute for Translational and Entrepreneurial Medicine, Bern (sitem-insel AG)
CTU Bern, University of Bern
University of Toronto, Canada (Prof. Peter Jüni)
University of Sydney, Australia (Prof. David Hunter)
Boston University, Massachusetts, USA (Prof. David Felson)

Key team members

Stephan Reichenbach, Roger Hilfiker, Christian Bangerter, Zina Heg-Bacher

Selected publications

Effect of biomechanical footwear on knee pain in people with knee osteoarthritis: the BIOTOK randomized clinical trial. S Reichenbach, DT Felson, CA Hincapié, S Heldner, L Bütikofer, A Lenz, BR da Costa, HM Bonel, RK Jones, GA Hawker, P Jüni. JAMA. 2020.

Diagnostic accuracy of clinical tests for cam or pincer morphology in individuals with suspected FAI syndrome: a systematic review. R Caliesch, M Sattelmayer, S Reichenbach, M Zwahlen, R Hilfiker. BMJ Open Sport & Exercise Medicine. 2020.

A Single Infusion of Zoledronate in Postmenopausal Women Following Denosumab Discontinuation Results in Partial Conservation of Bone Mass Gains. J Everts-Graber, S Reichenbach, HR Ziswiler, U Studer, T Lehmann. J Bone Miner Res. 2020

Treatment of severe periodontitis may improve clinical disease activity in otherwise treatment-refractory rheumatoid arthritis patients. B Möller, P Bender, S Eick, S Kuchen, A Maldonado, J Potempa, S Reichenbach, A Sculean, A Schwenzer, PM Villiger, A Wong, KS Midwood. Rheumatology (Oxford). 2020

Palliative Care and End of Life

As the number of older people with chronic and complex conditions increases, the need for research in end-of-life palliative care has never been greater. An estimated 19 million people are in need of specialised palliative care worldwide each year. Therefore, finding what works best to provide relief from symptoms for persons near the end of life and offer support to those close to them has become essential.

Because human beings with physical, social, and spiritual needs are at the center of such research, the priority is less fighting disease than it is preserving quality of life, dignity, and self-determination. Research in palliative care thus requires a multidimensional, interdisciplinary approach to open up unimagined possibilities.

The Covid-19 pandemic only reinforces the importance of many aspects of palliative care, which include symptom treatment at the end of life, decision-making and advance care planning, and support for relatives.

Key scientific activities

The University Centre for Palliative Care (UZP) is a well-connected regional, national, and international center for specialised palliative care. The research group of the UZP, which also is affiliated with ISPM, studies end-of-life and palliative care with a research focus on advance care planning, care for the dying, and community/primary palliative care. The research activities range from the determination and definition of an international core outcome set of care at the end of life, primarily defined by patients themselves and their relatives, to the evaluation and establishment of model societal procedures in proactive planning for the end of life.

Key academic activities

Teaching: The UZP covers all topics related to palliative and end-of-life care in medical school years four to six. Since 2016, our center has been responsible for the postgraduate CAS in specialised interprofessional palliative care at the University of Bern. In addition, the center increasingly supervises master's theses and dissertations, and participates in postdoctoral programs.

Academic achievements: Steffen Eychmüller was appointed associate professor at the University of Bern on 1 May, 2021, and Sofia Zambrano was awarded the SNSF Eccellenza Professorial Fellowship in 2020. She will start her position as an assistant professor in October, 2021.

Grants

Lindenhof Foundation, Bern (09/2020 – 08/2023): Platform Palliative Care, (CHF 1'480'000, Eychmüller)

Horizon 2020 (01/2019-01/2023): I-LIVE: Living well, dying well. A research programme to support living until the end (Grant agreement no: 825731) (Total EUR 4'017'817 of which Bern EUR 394'750, Eychmüller and Zambrano)

Swiss National Science Foundation (02/2018-07/2022): PROAKTIV: A cluster trial of palliative needs assessment and care in general practice (SNF 407440_167501) (CHF 559'431, Maessen, Eychmüller)

Swiss National Science Foundation (04/2017-03/2020): Determinants of End of Life discussions in Non-Malignant Illness: An International, Multicentre, Qualitative Study to Understand the Key Perspectives of Bereaved Families and Medical Specialists (10001C_169887/1) (CHF 57'602, Zambrano)

Swiss Cancer Research (04/2019-04/2021): Communication with cancer patients and their families about approaching death: Scaffolding conceptual and practical learning for health professionals. (CHF 374'964, Eychmüller, Guttormsen, Zambrano)

Gesundheitsförderung Schweiz, (1/2020 - 31.12.2022): Projekt «Co-Lab» Compassionate city (Total CHF 300,000 of which CHF 125'000 for PCEOL-research group, (Eychmüller; Lead, Dr. Claudia Michel).

Internal and external collaborations

Rotterdam (+12 countries including Argentina and New Zealand) in iLIVE (Horizon 2020); Brisbane, San Francisco (SNF); Geneva, Zurich

Key team members

Maud Maessen, Sofia Zambrano, Monica Fliedner, Barbara Affolter, Marina Maier, Jelena Baumann, Monika Hagemann, Martina Egloff, Valentina Gonzalez, Steffen Eychmüller, Andreas Ebneter, Andri Christen


Maud Maessen


Sofia Zambrano


Monica Fliedner


Barbara Affolter


Marina Maier


Jelena Baumann


Monika Hagemann


Martina Egloff


Valentina Gonzalez


Steffen Eychmüller


Sibylle Felber


Andri Christen

Selected publications

Does Time for (in)Direct Nursing Care Activities at the End of Life for Patients With or Without Specialized Palliative Care in a University Hospital Differ? A Retrospective Analysis. MC Fliedner, M Hagemann, S Eychmüller, C King, C Lohrmann, RJG Halfens, JMGS Schols. Am J Hosp Palliat Care, 2020

Unmet device reprogramming needs at the end of life among patients with implantable cardioverter defibrillator: A systematic review and meta-analysis. V Gonzalez-Jaramillo, P Sobanski, JA Calvache, LF Arenas-Ochoa, OH Franco, L Hunziker, S Eychmüller, M Maessen. Palliat Med. 2020

Using the Term «Palliative Care»: International Survey of How Palliative Care Researchers and Academics Perceive the Term «Palliative Care». SC Zambrano, C Centeno, PJ Larkin, S Eychmüller. J Palliat Med. 2020

Which Cost Components Influence the Cost of Palliative Care in the Last Hospitalization? A Retrospective Analysis of Palliative Care Versus Usual Care at a Swiss University Hospital. M Hagemann, SC Zambrano, L Bütikofer, A Bergmann, K Voigt, S Eychmüller. J Pain Symptom Manage. 2020

Sexual and Reproductive Health

In 2020 the key objective of the sexual and reproductive health research group was to contribute to prevention of and research about coronavirus disease 2019 (COVID-19) and the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) while maintaining our involvement in sexual and reproductive health research.

We also aimed this year to make sure that everyone felt safe and supported while working.

Key scientific activities

COVID-19

Living Evidence (https://ispmbern.github.io/covid-19/, @evidencelive) was a major achievement for 2020. We started, out of interest, a systematic search for scientific publications on 17 January, 2020, when 19 publications about the novel coronavirus 2019 had been indexed. We expected to see a trend similar to what we had seen with Zika virus infection. Our Zika Open Access Project had found about 60 publications per week. For SARS-CoV-2/COVID-19 (figure – see below), as of 21.05.2021 we had indexed 173'095 publications – 2'000 per week. The COVID-19 Open Access database is updated daily, is searchable, and is helping us and others with systematic reviews and living systematic reviews. The latest results of our living systematic review of asymptomatic SARS-CoV-2 infection (Buitrago-Garcia et al.) suggest that a minority of people with SARS-COV-2 will remain asymptomatic throughout the course of their infection, and that asymptomatic infections are about one-third as transmissible as symptomatic infections. Michel Counotte, Hira Imeri, Mert Ipekci, Dianne Egli-Gany, and Diana Buitrago-Garcia worked on this project with a crowd of volunteers (see photo), with support from the EpiPose project (Horizon2020) and the Swiss National Science Foundation.

We also contributed to systematic reviews of the accuracy of diagnostic testing for SARS-CoV-2 infections with partners in the Cochrane Collaboration and in mental health (Buitrago-Garcia, Low).

The science of prevalence

Prevalence, as a measure of the frequency of a condition, is deceptively simple and under-appreciated. In her PhD project, Diana Buitrago-Garcia is investigating numerous biases in the measurement of prevalence and deficiencies in reporting in individual studies and systematic reviews.

Sexually transmitted infections

The Women and Newborns Trial of Antenatal Intervention and Management (WANTAIM, meaning ‹together› in Tok Pisin) is a cluster-randomised crossover trial in two provinces in Papua New Guinea investigating the effect of point-of-care testing for curable sexually transmitted infections. Our substudy examines newborn infections and development. With a target of 2'000, we had enrolled 1,824 newborn babies by April 2021. The first analyses are due in the second half of 2021. Dianne Egli-Gany worked on this project, with support from the Swiss National Science Foundation.

Philani Ndiphile (Be healthy and I will be healthy). An individually randomised controlled trial in Eastern Cape province in South Africa, this trial also investigates point-of-care testing for curable sexually transmitted infections. For her MD-PhD, Ranjana Gigi will conduct a cohort study within the main trial to examine the influence of the vaginal microbiome and other vaginal and sexually transmitted infections on preterm birth, with support from the Swiss National Science Foundation. The study plans enrolment starting in March 2021.

Systematic reviews of associations between reproductive tract and sexually transmitted infections. We have completed reviews for Neisseria gonorrhoeae, Mycoplasma genitalium, and other genital mycoplasmas. We are still doing the review for vaginal yeast infections.

Antimicrobial resistance in Neisseria gonorrhoeae. We are investigating the emergence of resistance to antimicrobials used to treat gonorrhoea. Ceftriaxone is the last antimicrobial that is recommended as a first-line treatment worldwide. Julien Riou led the development of a mathematical model which we fitted to data from England. Soushieta Jagadesh joined this project to extend the model to data from South Africa and to investigate how strategies for diagnostic testing will affect the timing of emergence of ceftriaxone resistance, with support from the Foundation for Innovative Diagnostics.

Partner notification. We are part of the Limiting Undetected Sexually Transmitted Infections to Reduce Morbidity (LUSTRUM) programme. In 2020 the cluster-randomised crossover trial to evaluate accelerated partner therapy (APT) for people with chlamydia completed enrolment, a new classification of sexual partner types was completed, and the mathematical model that will be used to evaluate the long-term impact and cost-effectiveness of APT was published as a preprint. Nicola Low and Christian Althaus lead the LUSTRUM work package on mathematical modelling.

Global political prioritisation of sexually transmitted infections. Funded by the Swiss Network of International Studies, we continued investigating the burden of disease due to sexually transmitted infections in a collaboration with the World Health Organization and Institute of Health Metrics and Evaluation. We are also examining points of view about the importance of sexually transmitted infections from the grassroots to global stakeholders. The spread of SARS-CoV-2 has, however, delayed our qualitative fieldwork in Papua New Guinea and Zambia.

Key academic activities

Vaccines against sexually transmitted infections. Nicola Low, Julien Riou and Christian Althaus have been part of a World Health Organization global consultation on vaccines for gonorrhoea.

Swiss National COVID-19 Science Task Force. Nicola Low joined the public health expert group.

Grants

Schweizerischer Nationalfonds zur Foerderung der Wissenschaftlichen Forschung. 2020-10 to 2025-09 GRANT_NUMBER: 320030_197831: Influence of sexually transmitted infections, genital tract infections and the vaginal microbiome on preterm birth.

Foundation for Innovative Diagnostics. 2020-10 to 2021-12: Mathematical modelling of the development and spread of antimicrobial-resistant Neisseria gonorrhoeae and the impact of new diagnostics and treatments in South Africa.

European Commission. 2020-03 to 2023-03. GRANT_NUMBER: 101003688: Epidemic intelligence to minimize 2019-nCoV's public health, economic and social impact in Europe (EpiPose).

Internal and external collaborations

At ISPM, the Sexual and Reproductive Health group collaborates closely with the Immunoepidemiology, HIV, and Evidence Synthesis research groups.

LUSTRUM consortium (Limiting Undetected Sexually Transmitted Infections to Reduce Morbidity, https://www.lustrum.org.uk/), led by Professor Claudia Estcourt, from Central & North West London NHS Trust and University College London. LUSTRUM is a five-year programme of research funded by the National Institute for Health Research under its Programme Grants for AppliedResearch.

EpiPose consortium (Epidemic intelligence to minimize 2019-nCoV's public health, economic, and social impact in Europe, https://www.uhasselt.be/epipose). EpiPose aims to provide urgently needed answers about the epidemiological characteristics of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

WANTAIM study (Women and Newborns Trial of Antenatal Interventions and Management, http://wantaim.org/), led by Professor Andrew Vallely of the Kirby Institute, University of New South Wales, Australia and Papua New Guinea Institute of Medical Research.

Key team members

Nicola Low, research group lead
Diana Buitrago Garcia, PhD student
Ranjana Gigi, PhD student
Hira Imeri, research assistant
Soushieta Jagadesh, postdoc
Julien Riou, postdoc

Selected publications

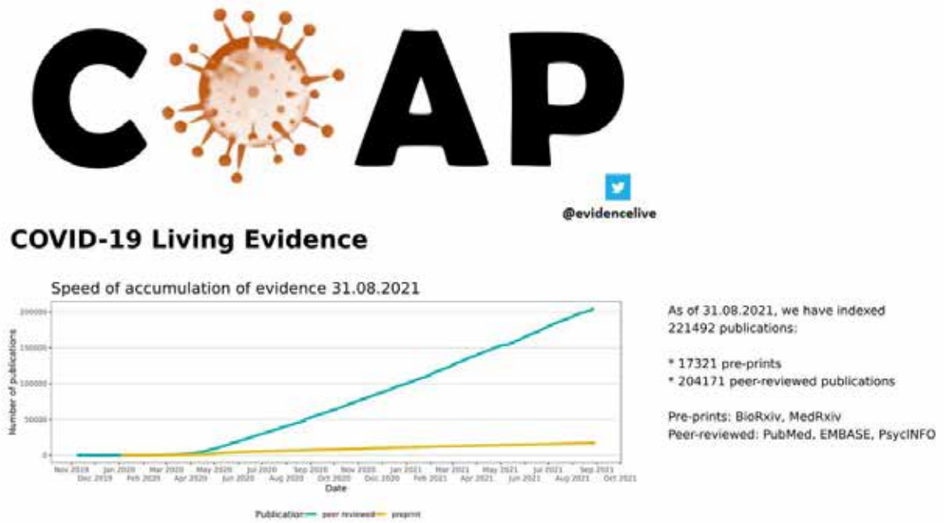
Occurrence and transmission potential of asymptomatic and presymptomatic SARS-CoV-2 infections: A living systematic review and meta-analysis. Buitrago Garcia D, Egli-Gany D, Counotte MJ, Hossmann S, Imeri H, Ipekci AM, Salanti G, Low N. PLOS Medicine, 2020 DOI: 10.1371/journal.pmed.1003346

False-negative results of initial RT-PCR assays for COVID-19: A systematic review. Arevalo-Rodriguez I, Buitrago-Garcia D, Simancas-Racines D, Zambrano-Achig P, Del Campo R, Ciapponi A, Sued O, Martinez-García L, Rutjes AW, Low N, Bossuyt PM, Perez-Molina JA, Zamora J. PLOS ONE, 2020 DOI: 10.1371/journal.pone.0242958

Estimation of SARS-CoV-2 mortality during the early stages of an epidemic: A modeling study in Hubei, China, and six regions in Europe. Hauser A, Counotte MJ, Margossian CC, Konstantinoudis G, Low N, Althaus CL, Riou J. PLOS Medicine, 2020 DOI: https://doi.org/10.1371/journal.pmed.1003189

Accelerated partner therapy (APT) partner notification for people with Chlamydia trachomatis: protocol for the Limiting Undetected Sexually Transmitted infections to RedUce Morbidity (LUSTRUM) APT cross-over cluster randomised controlled trial. Estcourt CS, Howarth AR, Copas A, Low N, Mapp F, Woode Owusu M, Flowers P, Roberts T, Mercer CH, Wayal S, Symonds M, Nandwani R, Saunders J, Johnson AM, Pothoulaki M, Althaus C, Pickering K, McKinnon T, Brice S, Comer A, Tostevin A, Ogwulu C, Vojt G, Cassell JA. BMJ Open, 2020 DOI: 10.1136/bmjopen-2019-034806

Rise and fall of the new variant of Chlamydia trachomatis in Sweden: mathematical modelling study. Smid JH, Althaus CL, Low N, Unemo M, Herrmann B. Sexually Transmitted Infections, 2020 DOI: 10.1136/sextrans-2019-054057



Screenshot, 31 August 2021, from https://ispmbern.github.io/covid-19/

Social Environment

Innovative contributions to theory and data in social inequality and health research.

Key scientific activities
Theory and measurement development, mostly in the areas of social determinants of health, cultural capital and health, health literacy, and health care utilization.

Key academic activities
Research, internal and external teaching, expert activities: research evaluation and assessment, advisory boards, and public health consultancy services.
Establishing a new professorship for community health at ISPM.

Grants
NFP 74 Gesundheitsversorgung (04/2017–08/2020): Migrant Women's Health Care Needs for Chronic Illness Services in Switzerland (MIWOCA) (Projekt-Nr. 167428) (CHF 485'879)

Internal and external collaborations
Geneva, Zug (YASS consortium); Geneva, Tübingen, Istanbul (Miwoca);Vancouver (Cultural capital), Atlanta, Montreal, Jyväskylä

Key team members
Thomas Abel, Richard Benkert, Sophie Meyer, Romaine Farquet


Thomas Abel


Richard Benkert


Sophie Meyer

Selected publications

Critical health literacy in pandemics: the special case of COVID-19. Abel, T., & McQueen, D.V. (2020). Health promotion international. 10.1093/heapro/daaa141

The Social Determinants of Health: Time to Re-Think? Frank, J., Abel, T., Campostrini, S., Cook, S., Lin, V.K., & McQueen, D.V. (2020). International journal of environmental research and public health, 17(16). 10.3390/ijerph17165856

Experiences with Health Care Services in Switzerland among Immigrant Women with Chronic Illnesses. Frahsa, A., Farquet, R., Bayram, T., De Araujo, L., Meyer, S., Sakarya, S., Cattacin, S. & Abel, T. (2020). Front. Public Health 8:553438. doi: 10.3389/fpubh.2020.553438

Heavy energy drink consumption is associated with risky substance use in young Swiss men. Benkert, R., & Abel, T. (2020). Swiss Medical Weekly, 150, w20243.

COVID-19: The forgotten priorities of the pandemic. Mesa Vieira, C., Franco, O. H., Gómez Restrepo, C., & Abel, T. (2020). Maturitas, 136:38-41.

SwissRDL – Medical Registries and Data Linkage

SwissRDL is a research and service unit offering all-round support to medical registries that includes the planning, set-up, operation, and maintenance of small regional, national, and international medical registries. To ensure high data quality, we provide monitoring visits and central data monitoring, and detailed reports, statistical analyses, and publications that demonstrate registry success.

Key objectives

In collaboration with external partners that include medical associations and foundations, SwissRDL develops, implements, operates, and maintains national and international medical registries and multicenter outcome studies. We ensure high quality data in a secure data center applying strict validation rules and regular, on-site monitoring.

The support team is in contact with more than 180 hospitals in Switzerland to offer help with registry issues and data entry via phone, email, and webinars. We have installed a comprehensive implant library for the identification and categorization of implants such as those for hips and knees, and support barcode-scanner-based data entry and web services for direct data transfer from hospitals.

SwissRDL offers full-range support for patient-reported outcome measures (PROMs) on tablets and websites, and a team of statisticians and project manager regularly creates quarterly hospital reports and comprehensive annual reports.

A further SwissRDL core excellence is data linkage. Longstanding experience in building large cohorts such as the Swiss National Cohort (www.swissnationalcohort.ch), in which large datasets were linked using probabilistic record linkage methodology, led to our expertise in linking data for which no unique identifier is available and simple merging is not possible. We also have developed and applied privacy preserving methods for record linkage.

Key scientific activities

SwissRDL creates high quality scientific reports such as the annual report of the national hip and knee registry (www.siris-implant.ch). Additionally, we produce benchmark reports for clinics, which allow comparison of core outcomes between hospitals using funnel plots. SwissRDL participates in several research projects analysing registry data, and supports the linkage of additional data. For medical device suppliers we offer implant reports for specified products, and our data managers and statisticians analyze data for scientific publications and posters.

SwissRDL supports national and international record linking projects and in Africa, for example, has linked HIV data with cancer registry data.

Key academic activities

Dr. Adrian Spörri regularly teaches medical statistical software, medical registries, and probabilistic record linkage methodology to undergraduate and postgraduate students at the University of Bern and to international partner organizations. Dr. Christan Brand is involved in undergraduate teaching in biostatistics.

Grants

SNF 2019-2021: The Swiss Pediatric Hematology/Oncology Metabank – a network for precision medicine research, Federal Office of Public Health: Swiss Rare Disease Registry

BAG 2020-2024: Schweizerisches Register für seltene Erkrankungen

Internal and external collaborations

SwissRDL supports researchers at at the University of Bern and the University Hospital of Bern, Inselspital, to create and operate medical registries. Additionally, we collaborate with medical associations and foundations to operate registries such as the SIRIS foundation (www.siris-implant.ch) for the national hip and knee implant registry, with more than 150 hospitals involved, and Swissnoso (www.swissnoso.ch) for surgical site infections, with more than 170 hospitals delivering data to SwissRDL. We collaborate with the Swiss National Association for Quality Development in Hospitals and Clinics ANQ (https://www.anq.ch/en/) and offer support as members of expert committees. SwissRDL is in charge of the Home Care Data platform of Spitex Schweiz (www.spitex.ch) supporting data management and reporting for close to 100 Spitex organizations. Internationally, we are in close contact with registry providers that include the National Joint Registry in UK and the Endoprothesenregister Deutschland, and participate in meetings and conferences of the International Society of Arthroplasty Registries. Through implant registries we are in touch with medical device suppliers and offer scientific support for reports and studies.

Key team members

Dr. Adrian Spörri, head of SwissRDL
Dr. Christian Brand, statistician
Dr. Kurt Schmidlin, statistician and record linkage
Dr. Andreas Boss, project manager and record linkage
Martin Drees, head of development team, programmer
Lilianna Bolliger, project manager, monitoring and support
Stefanie Paerschke, project management support

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