

# ANNUAL REPORT 2021



Norwegian  
Centre of  
Excellence









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**Cover:** Indian school girl in home schooling due to the COVID-19 pandemic. Credit: [istockphoto.com/Umesh Negi](https://www.istockphoto.com/Umesh-Negi)  
**This page:** Family on a train in the small railway station of Srimangal, Bangladesh. Credit: [istockphoto.com/Tarzan9280](https://www.istockphoto.com/Tarzan9280)

# NOTES FROM CISMAC'S MANAGEMENT

**I**n CISMAC's 2020 report, we expressed our hopes of a brighter year in 2021 and that our work would contribute to soften the severe blow that the Covid-19 pandemic had caused to mothers and children in LMICs. Unfortunately, also 2021 was severely affected by the pandemic. By the end of the year, the world saw over 240 million COVID-19 cases and at least 4 million deaths. Responses to the pandemic mitigated its impact but hardship and loss of lives, disruption of services and economic difficulties affected populations throughout the world on an unprecedented scale.

## Responding to the pandemic

CISMAC research advanced steadily throughout this troubled period. Of the 24 studies we supported to date, most were spared the worst effects of the pandemic without significant losses. Delays in data collection were impossible to avoid in a few projects but recruitment targets were reached for most, and excellent follow-up and data completeness of enrolled study participants were maintained. The partners' implementation experience, strong teams, problem-solving skills, and highly dedicated professionals were the basis for such admirable performance.

CISMAC, through its partners, responded to demands for pandemic-specific assistance. This included provision of epidemiological information and support as well as advice and clinical services.

We have sought to identify and make use of opportunities created by ongoing studies to address issues that the pandemic revealed as priorities – such as improving the understanding of the epidemiology of SARS-CoV-2 infections and COVID-19 related outcomes. Concretely, the infrastructure provided by our ongoing trial of early versus late BCG vaccination in HIV-exposed Ugandan infants was, with additional support from the Research Council of Norway, expanded to an intensive cohort study of SARS-CoV-2 infections and COVID-19 in these vulnerable babies and their mothers.

## Keeping a focus on small babies

We continue to grow our research portfolio. A CISMAC study published in the *Lancet* in 2019 demonstrated the benefits of community-initiated Kangaroo Mother Care for survival and growth of small babies. However, such babies continue to be at high risk of stunted growth and poor development throughout early childhood, and thus the identification of additional interventions is a high priority.

The funding of the “Small Babies” project, a new large CISMAC trial is described later in this report. It will examine a package of interventions to promote improved growth and development of babies born too small, either due to prematurity or intrauterine growth restriction. The study will advance our research agenda on newborn and infant health and development. We have also maximized the use of the rich datasets collected in completed studies,

to further explore mechanisms of intervention impact, and directly estimate the effect of interventions on, for example, maternal depression and catastrophic health expenditures.

## Fighting inequities

Most maternal and child health problems affect the disadvantaged more than those with enough resources. It is therefore important to investigate whether interventions developed by CISMACH and others enhance health inequities or, preferably, decrease them. Together with researchers from Bergen Centre for Ethics and Priority Setting (BCEPS), CISMACH researchers recently published an important paper showing that promoting community-initiated kangaroo mother care did not increase inequities in infant survival; rather, it tended to be even more effective among babies in disadvantaged families compared to in those better off. Inspired by this and other work by BCEPS, and reflecting a gradually evolving closer scientific collaboration between the two centres, CISMACH researchers contributed importantly to the development of an application for a Centre of Excellence, the Centre for Ethics and Priority Setting in Health, coordinated by Professor Ole F. Norheim.

## Supporting tomorrow's researchers

Strengthening research capacity is a key component of CISMACH's strategy. It brings immediate benefits for ongoing studies and supports our longer-term goal of promoting the sustainability of the gains created by the partnerships into the future. CISMACH's postgraduate training is most

importantly done as an integrated part of our research along with training components such as courses, which are described in-depth on pages 30 and 31 of this Annual report. Our webinar series sees high levels of participation throughout the year. In addition to efforts and resources spent for capacity strengthening at the central level, our partners have used of their own resources to strengthen the capacity of their staff. They have also used opportunities that were created by the association and networks activated by our partnership with other universities and research institutions and laboratories.

In our zeal to further marry our ongoing research projects with capacity strengthening in epidemiological study designs also beyond randomized controlled trials, CISMACH has scheduled two courses by world-renowned epidemiologists, the first by Professors Kenneth J. Rothman and Vera Ehrenstein, the second by Professor Matthew Fox, both to take place in April 2022.

## Looking Ahead

We approach 2022 with uncertainty, caution and concern for our project staff and participants but with a renewed hope of bright and productive days ahead. Important new projects are planned, analyses of our completed studies will result in impactful papers, new courses, and education activities will be implemented – all contributing to the achievement of our mission to promote global maternal and child health in the years and decades to come.



*Halvor Sommerfelt*  
Director



*Ingvild F. Sandøy*  
Deputy Director



*Jose Martinez*  
Scientific Coordinator



*Ane Straume*  
Administrative Leader

# RESEARCH INSIGHTS

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eRegQual:

# A DIGITAL REGISTRY TO IMPROVE MATERNAL CARE IN PALESTINE

Although the majority of CISMALC-supported studies have addressed child health, its priorities also include maternal health. An essential question in this area concerns how to improve and sustain the quality of care during pregnancy and around the time of childbirth. Improving quality of care promises a triple return on investment: improved health of the woman, of the baby she carries, and reduced risk of stillbirth. ►





Foto: WHO/PNIPH – pniph.org

Recognizing the enormous potential of digital health to optimize healthcare, the WHO released the first set of Guideline Recommendations for Digital Health Interventions for health systems strengthening in 2019. The Guidelines recommend digital tracking of clients with integrated clinical decision support as a strategy to improve the quality of healthcare. Such digital tools are being increasingly used in low- and middle-income countries, but evidence of effectiveness is scarce.

We conducted a study to assess the effect of a digital registry with clinical decision support compared to paper-based records on the quality of antenatal care in the West Bank, Palestine.

The eRegQual study was a cluster-randomized controlled trial, where clinics were allocated randomly to either receive the digital registry with clinical decision support or continue using paper-based records, as was practice at that time. We assessed the quality of care through two sets of outcomes – whether women are screened and managed for important conditions in pregnancy such as anemia, diabetes,

and hypertension, and whether there are changes to health outcomes of women and their babies.

## A trial in a large national implementation

The Norwegian Institute of Public Health partnered with the Palestinian National Institute of Public Health and the



Foto: WHO/PNIPH – pniph.org



World Health Organization in 2014 to design and implement a digital registry for maternal and child health. The digital transformation of the health system in Palestine presented a unique opportunity to evaluate digital tools in real-time and in a large number of clinics. The phased implementation started in 2016 in the West Bank, where primary care clinics in 5 districts received desktop computers and internet connection as part of the first phase. Care providers in these clinics were trained in using the eRegistry over several sessions. We included 60 randomly selected primary healthcare clinics in the intervention arm of the eRegQual trial, while 60 clinics continued to use paper-based documentation. The trial recruited 6367 women who received care in the clinics; they were followed up through pregnancy until they gave birth.

## A collaborative effort

Trial implementation was a result of close and sustained collaboration between several academic and non-academic partners over many years. The intervention was designed and customized based on the national guidelines of the health system in Palestine. Our team of implementers at the Palestinian and Norwegian institutes of public health along with a stakeholder group in Palestine reviewed and finalized the clinical guidelines for antenatal, postnatal, and newborn care. Each guideline was then translated to algorithms, which were coded into the [DHIS2 Tracker software](#) by the University of Oslo team at the Health Information Systems Program, in collaboration with the Palestinian Ministry of Health. At the same time, care providers, supervisors, and data managers were involved at every stage of the intervention design and trial implementation. The study achieved a 97% follow-up of pregnant women, and delivery information was obtained from public and private hospitals.

The study received funding from the European Research Council and the Research Council of Norway.

## Sharing results

Women in the intervention arm, where care providers used the digital registry with clinical decision support, received better quality care for anemia, diabetes, and hypertension. Thus, care providers in the intervention arm performed

## FACTS

**Study:** A digital health registry for improving the quality of antenatal care.

**Purpose:** To assess the effectiveness of the clinical decision support system in the maternal and child health eRegistry in improving the provision of timely and appropriate screening and management for important conditions in routine antenatal care, and pregnancy outcomes.

This is the first, large-scale trial of a WHO-recommended digital health intervention. The study demonstrates an improvement in the quality of antenatal care processes, critical to achieve better health for mothers and babies.



better in terms of screening for these conditions as well as managing those that needed additional care. However, health outcomes at delivery did not change. One reason for this could be that fewer pregnant women received care in a timely fashion than was originally assumed. The results of the study were published in the [Lancet Digital Health](#). Several aspects of the study and the findings have been presented in international conferences by PhD students, Postdoctoral Fellows, and members of the implementation team.

# SMALL BABIES TRIAL

In 2021, CISMAL launched a new large research project focusing on the growth and development of small and pre-term babies. The new project is led by partners at Society for Applied Studies (SAS) in Delhi, India. ▶









The community-initiated Kangaroo Mother Care (ci-KMC) trial supported by CISMAC in India and published by The Lancet in 2019 (394: 1724–36) confirmed the major survival benefit of promoting KMC for small babies, even when KMC is started at home. However, small babies surviving the neonatal period still face high risks of death, of growth failure and of neurodevelopmental deficits in later life. The identification of interventions to reduce these risks is a research priority for scientists and public health policy makers. Responding to this need, CISMAC is now funding a large randomized controlled trial to assess the efficacy of an integrated health, and nutrition, early child stimulation and responsive care intervention package delivered to preterm or term small for gestational age (SGA) babies on growth and neurodevelopment.

The proportion of babies born preterm or at term but SGA is higher in South Asia compared to other parts of the world. Within South Asia, India has the highest proportions of preterm (13.6%) and term SGA (36.5%) infants. These babies are vulnerable to serious infections and feeding difficulties. This contributes to increased risk of growth failure, death in early and later life, and neurodevelopmental deficits.

Research indicates that standalone interventions have modest and sometimes inconsistent effects on growth and development. The causes of postnatal growth restriction and impaired neurodevelopment are multifactorial: for greater impact, interventions may be needed in the domains of health, nutrition, and psychosocial care and support. Improving the mother's postnatal health, nutritional status, and psychological well-being are also important to support the adoption and practice of interventions promoting optimal growth and development of such babies. It is, therefore, a priority to investigate whether interventions in the above-mentioned domains, when delivered together as a package, have a more substantial impact on growth and neurodevelopment in these vulnerable preterm and term SGA infants than the benefits observed in trials of single interventions so that these infants not only survive but also thrive.

CISMAC's intervention trial will take place in Delhi, India, where small babies comprise 40 % of all live births and contribute to 65–70% of underweight, stunting and wasting during infancy.

The trial, to be led by the Society for Applied Studies, will be conducted in urban and peri-urban, low-to-mid socio-





## FACTS

**Study:** Small Babies Trial

**Location:** South Delhi, India

**Purpose:** To find interventions that better ensure the growth, development and good health of babies who are born preterm or with low birth-weight.

**Principal Investigators:** Ranadip Chowdhury (SAS, India) and Tor Strand (UiB, Norway).

economic neighbourhoods in South Delhi. It will examine the impact of an intervention package on attained weight and weight for age z score at 12 months of age.

Pregnancy surveillance will be established in the study area. If the woman and her family are willing to participate, the study team will take consent for a pregnancy-dating scan, and for contacting her during pregnancy, as well as for taking the weight of the baby within 72 hours of birth. The study will need gestational age assessment through dating scans in approximately 8000 pregnancies.

For all live births, the team will measure the weight of the baby within 72 hours of birth and screen them using inclusion and exclusion criteria. There will be two separate randomization lists for infants:

- born before 37 completed weeks of gestation (Preterm stratum)
- born at or after 37 completed weeks of gestation and small for gestational age (Term SGA stratum)

In each of the two strata, preterm and term SGA infants, 1300 infants will be enrolled and randomized to intervention or comparison arm.

The intervention package will encompass three domains namely health, nutrition, and early child stimulation-and-responsive care. Interventions included in the package have

been selected based on the evidence of their impact on growth and neurodevelopment, either affecting outcomes directly or by averting the risk factors during infancy. The package will be delivered by the intervention delivery team from enrolment (within first 14 days of birth) to 12 months of life. The infants in the comparison and in the intervention arm of the trial will receive routine home visits by government health staff.

All infants in both intervention and comparison arms will be visited at home by an independent outcome ascertainment team at ages 1, 3, 6, 9 and 12, months. At each visit, the workers will measure weight, length, and mid-upper arm circumference (MUAC), assess infant care practices, occurrence of any illness in the previous 2 weeks and care seeking for illness, and hospitalizations since the last visit. The team will also measure weight and MUAC of mothers at 6 months post-partum.

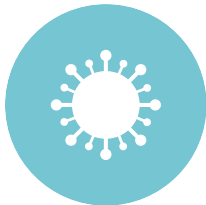
Neurodevelopmental assessment will be conducted by trained psychologists. They will assess cognitive, motor, language, and socio-emotional development at 12 months of age. The child's home environment will be assessed by a specially trained field team.

Preparations for implementation are underway. Recruitment is due to start in early 2022.

# RESEARCH PROJECTS

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COMAC



cKMC

+2



BCG

+2



CCF instead of RCT?



RISE

+1



Zinc-Sepsis

+1



Chlorhexidine



Girl Power

B<sub>12</sub> in pregnancy

eRegistry and care



SCALE-8



The CAP trial

Child B<sub>12</sub> Follow-up

eRegQual



SAFEZT



NeoSupra



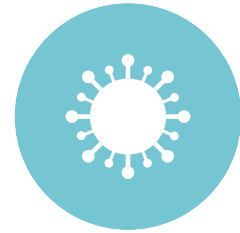
Small babies



ePOSIT

## COMAC

Since March 2020, Uganda has in several waves been facing the brutal reality of the COVID-19 pandemic. A high urban population density and extensive and necessary social interaction along with challenging hygienic conditions represent major impediments to the country's battle against COVID-19. The COMAC study seeks to understand the spread and impact of the COVID-19 pandemic on vulnerable groups in Uganda. The project will have a particular focus on HIV-1 positive women and their babies.



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Principal Investigators: Victoria Nankabirwa and Halvor Sommerfelt

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## RISE

In Zambia, approximately one third of young girls in rural areas have given birth by the age of 18. Adolescent pregnancies pose significant risks to both mothers and their babies. The Research Initiative to Support the Empowerment of girls (RISE) aims to measure the effect of interventions that include economic support, education and reproductive health programmes on early childbearing in rural Zambia. Nearly 5 000 7th grade girls from 157 rural schools are enrolled in the 5-year study.



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Principal Investigator: Ingvild Fossgard Sandøy / Co- Principal Investigator: Patrick Musonda

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## Cost-Benefit RISE

Adolescent pregnancy is one of the greatest development challenges facing low- and middle-income countries, not only because it represents a danger to mother and child, but also because of its profound social and economic consequences. It is a particular challenge in rural Zambia. This study investigates the short- and long-term benefits of providing cash support to adolescent girls and their guardians / parents, as well as community dialogue in CISMAC's RISE trial to delay pregnancy and childbearing to an appropriate age.

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Principal Investigators: Patrick Musonda, Ingvild Sandøy / Study Lead: Amani Thomas Mori

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## B<sub>12</sub> in Pregnancy

Worldwide, vitamin B<sub>12</sub> deficiency is common, affecting people of all ages. It can lead to a wide variety of health problems and can, without prompt treatment, result in permanent damage. In this study, we measure the effect of giving daily oral vitamin B<sub>12</sub> supplements to pregnant women and during a 6-month period after they have given birth on the neurodevelopment and growth of their children. The results may help revise dietary guidelines for South Asian women, and could lead to improved pregnancy outcomes as well as improved child neurodevelopment.



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Principal Investigators: Ram Krishna Chandyo, Laxman Prasad Shrestha / Co- Principal Investigator: Tor A Strand

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## Child B<sub>12</sub> Follow-up

Vitamin B<sub>12</sub> deficiency is common and can occur at all ages. This study follows up children who participated in a placebo-controlled randomized trial in Nepal, assessing effects on child growth and neurodevelopment, one and two years beyond supplementation with vitamin B<sub>12</sub> to infants. If persistent improvements in growth and development are found, our results will guide international nutrition recommendations and can potentially improve the well-being of many children.




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Principal Investigator: Tor Strand / Co-Principal Investigators: Laxman Shrestha, Prakash S Shrestha

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## cKMC

Nearly 80% of infant deaths occur in babies born with low birth weight (LBW). According to hospital-studies, up to 40% of these deaths could be prevented with Kangaroo Mother Care (KMC), where the baby is kept for several hours every day on the mother's chest, giving them warmth and access to life-saving breast milk. Almost all evaluations of KMC have been carried out in health facilities. This study evaluated KMC initiated in the homes, also called community-initiated KMC (cKMC). The study took place in India, where over one quarter of babies are born with LBW, and included 8 402 LBW babies. Promotion of and support for cKMC increased the survival chances of infants with 25%.




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Principal Investigators: Sarmila Mazumder, Sunita Taneja / Co-Principal Investigator: Halvor Sommerfelt

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## Biological effects of cKMC

Training mothers in community initiated Kangaroo Mother Care (cKMC) may be an effective way to reduce mortality and morbidity of low birth weight babies (LBW). The current study is a sub-study of CISMACH's main cKMC trial and investigates some of the pathways with which cKMC can improve infant health and survival.

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Principal Investigator: Bireshwar Sinha / Co-Principal Investigators: Nita Bandahari, Halvor Sommerfelt

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## Poverty and Equity cKMC

As an extension of the completed trial on the survival benefits of promoting Kangaroo Mother Care at home to low birth weight babies (cKMC), this equity study evaluates the impact on fairness outcomes such as survival benefits for the poorest vs. the less poor and the prevention of catastrophic health care expenditures among the poor in two districts in North India.

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Principal Investigators: Sarmila Mazumder, Kjell Arne Johansson, Tarun Shankar Choudhary

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## Zinc-Sepsis

Severe infections, including sepsis and severe pneumonia, contribute to almost one quarter of the deaths in infants up to two months of age. Widely accessible and very cheap, a daily dose of zinc given to young infants under antibiotic treatment for probable serious bacterial infection was shown to increase the success of treatment by 43%. These encouraging results have prompted us to do a much larger study in almost 4 000 infants under two months of age to estimate the efficacy of the treatment to prevent death. The study involves a hospital in Nepal and four hospitals in New Delhi, India.



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Principal Investigators: Sudha Basnet, Nitya Wadhwa / Co- Principal Investigator: Tor A Strand

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## Zinc Equity

Low-cost health care interventions that prevent impoverishment and catastrophic health expenditures can be valuable national health initiatives. Zinc Equity is a sub-study of the ongoing zinc-sepsis trial. It evaluates the health and economic consequences for families of zinc given as an adjunct to standard treatment in young infants (age 3-59 days) hospitalized with “clinical severe infection”. Zinc may shorten the length of stay and the demand for expensive intensive care for these infants. Comparing the two-arms of the trial will provide information about socio-economic inequalities in infant deaths, cost-effectiveness and financial risk protection.

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Principal Investigators: Nitya Wadhwa, Kjell Arne Johansson  
/ Co- Principal Investigator: Debjani Ram Purakayastha

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## eRegistry and care

The Norwegian Institute of Public Health and the World Health Organization have developed a framework and series of tool kits to make it easier for low- and middle-income countries to improve their collection and use of health information to the benefit of women's and children's health. This study is the first of its kind to assess the benefits of this type of programme in improving the quality of care in rural Bangladesh where major gaps remain, despite the progress made in reducing maternal and child mortality over the last decade.



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Principal Investigator: J. Frederik Frøen / Co- Principal Investigator: Anisur Rahman

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## eRegQual

eRegistries are designed to increase the availability and timely use of routine maternal and child health (MCH) data. The Palestinian National Institute of Public Health, in close collaboration with the Ministry of Health in Palestine, is currently rolling out a nationwide MCH eRegistry. With support from CISMACH, the Norwegian Institute of Public Health is carrying out randomized controlled trials with 120 health center clusters in Palestine to assess if the eRegistry and its interactive checklists and clinical decision support can improve the quality of antenatal care.



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Principal Investigator: J. Frederik Frøen / Co- Principal Investigator: Buthaina Ghanem

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## BCG

The Bacillus Calmette-Guérin (BCG) vaccine may have non-specific effects in infants, with protection beyond its ability to prevent tuberculosis (TB). In addition, some evidence suggests that giving BCG later in infancy may enhance its effects. This may be particularly important for HIV-1 exposed children who have an increased risk of severe infections. This study randomizes 3 500 HIV-1 exposed Ugandan (expandable to 4,500) infants to receive BCG either within 24 hours of being born or at 14 weeks of age. The results may impact policies concerning timing of BCG administration.




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Principal Investigator: Victoria Nankabirwa / Co- Principal Investigator: Halvor Sommerfelt

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### BCG Immunology

The BCG immunology study is a sub-study of the larger BCG trial. The study seeks to provide additional information of the optimal timing of BCG vaccination among the growing population of HIV-1 exposed infants. Concretely, the substudy will describe possible immunological mechanisms of early vs late BCG vaccination in order to improve protection from infectious diseases in these vulnerable babies. The results will also be important for upcoming studies of new vaccines against tuberculosis in which CISMACH is also engaged.

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Principal Investigators: Kurt Hanevik, Victoria Nankabirwa

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### EcoTime BCG

There is still uncertainty pertaining to when it is best to give the BCG vaccine to babies born to mothers infected with HIV-1. This study evaluates and compares the cost-effectiveness of giving the BCG vaccine to Ugandan HIV-1-exposed babies at birth or at 14 weeks of age. Combined with possible treatment benefits assessed in the main study, the cost implications of the two vaccination strategies will generate information important for vaccine programme development and implementation.

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Principal Investigator: Victoria Nankabirwa / Co-Principal Investigator: Bjarne Robbestad /  
Master student: Steve Kabanda

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## Chlorhexidine

Infection of the umbilical cord stump (omphalitis) can lead to life threatening illness in the first 28 days of life. The risk of omphalitis is high in low- and middle-income countries. This trial takes place in Uganda and involves nearly 5 000 babies of mothers who are not infected with HIV-1. It assesses the effect of a single cleansing of the umbilical cord stump with an antiseptic solution of 4% chlorhexidine in birth facilities on the risk of omphalitis and severe newborn infections.




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Principal Investigator: Victoria Nankabirwa / Co- Principal Investigator: Halvor Sommerfelt

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## SCALE-8

More than 250 million children living in low- and middle-income countries do not achieve their full development potential. This study follows a previous project assessing the effectiveness, feasibility and cost of integrated early stimulation and nutrition interventions delivered by a government community-based health service in Pakistan. It has re-enrolled children at 8 years of age from 80 population clusters to determine which beneficial effects may have endured to school age. The study will identify risks and protective factors that influence outcomes and will inform the development of improved interventions for child development.



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Principal Investigator: Muneera A Rasheed / Co- Principal Investigator: Aisha K Yousafzai

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## SAFEZT

This three-year project examines global and national policy discourses surrounding fertility control and abortion, as well as local practices and moralities related to these issues among adolescents in Ethiopia, Zambia and Tanzania. The dynamics between the law, policies and access to fertility control and safe abortion services differ between these countries. The project aims to generate comparative knowledge of the interplay between policy, legislation and socio-cultural conditions framing girls' and women's reproductive choices.



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Principal Investigator: Astrid Blystad / Co- Principal Investigator: Getnet Tadele

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## CCF instead of RCT?

This study evaluates whether a novel observational epidemiological study design, the case-control with follow-up (CCF), could be an efficient alternative to randomized controlled trials (RCTs), case-control (CC) studies and cohort studies for investigating the association between exposures and rare outcomes. To find out, we did a CCF and a CC study in parallel with the recently completed RCT in Uganda that measures the association between cleansing of the umbilical cord stump with chlorhexidine on the day of birth and the risk of subsequent severe illness in the newborns.



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Principal Investigator: Victoria Nankabirwa / Co-Principal Investigator: Hans Steinsland

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## Girl Power

Lack of reproductive health information and lack of economic opportunities may contribute to a high proportion of girls in low- and middle-income countries becoming pregnant at a young age. This study investigates how reproductive health information and entrepreneurship training affect the decision-making of girls when it comes to postponing pregnancy and engaging in economic activities. More than 3 400 Tanzanian school girls drawn from 80 schools across four regions of Tanzania are involved in this now completed cluster randomized controlled trial.



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Principal Investigator: Bertil Tungodden

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## The CAP trial

Low dietary intake of calcium increases the risk of pre-eclampsia and eclampsia, which are serious hypertensive disorders in pregnancy that are dangerous for mother and baby. Although calcium supplementation is recommended by WHO from 20 weeks of pregnancy, no research has evaluated whether starting it before pregnancy can reduce the risk among women with previous pre-eclampsia. This multi-center randomized trial in South Africa, Argentina and Zimbabwe estimated the effect of calcium supplementation before and in the first half of pregnancy on the risk of re-current pre-eclampsia.




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Principal Investigator: Justus Hofmeyer

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## NeoSupra

Globally, many babies are born too exhausted to breathe spontaneously after birth. Such babies need immediate assistance – otherwise they die. At Mulago Hospital, Kampala, Uganda, we conducted a randomized controlled trial to see if the use of a supraglottic airway device instead of a facemask, which is commonly used for ventilation, can reduce the risk of dying of brain damage in newborns who did not breathe after birth. The now published results are important for low- and middle-resourced settings where many such deaths occur.




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Principal Investigators: Thorkild Tylleskär, Josaphat Byamugisha

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## Small babies

Babies who are born preterm or at term but small-for-gestational age face high risks of death, of growth failure and of neurodevelopmental deficits in infancy and in later life. The identification of interventions to promote their early catch-up growth and reduce health and development risks is a research priority for scientists and public health policy makers. Responding to this need, CISMALC supports a large randomized controlled trial in India to assess the impact of an integrated health, nutrition, early child stimulation and responsive care intervention package on growth and neurodevelopment.




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Principal Investigators: Ranadip Chowdhury, Tor Strand

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## ePOSIT

Antenatal care (ANC) is a cornerstone for promoting maternal and child health. Together with the WHO we have identified two priority research questions: 1. How can digital health interventions (DHIs) support ANC scale-up?; 2. Can Uganda's currently recommended 4 ANC visits be doubled? ePOSIT will study the implementation of DHIs in ANC and undertake a cluster-randomized trial to evaluate the impact of 8 versus 4 ANC visits in the district of Mukono in Uganda.




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Principal Investigators: J. Frederik Frøen / Co- Principal Investigator: Victoria Nankabirwa

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# **BUILDING FOR THE FUTURE**

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# Opening the Development Learning Lab: **A RESEARCH AND LEARNING CENTER FOR BETTER RESULTS**

Governments, NGOs and other donors invest huge sums and efforts in development programmes. But how effective are the programmes and do they bring the expected results?

Last year's annual report presented the new collaborative initiative; The Development Learning Lab (DLL). The DLL is a collaboration between CMI, the Norwegian School of Economics, UiB (coordinated by CISMAL) and the Norwegian School of Economics (coordinated by FAIR). In September 2021 the DLL was officially opened. The Norwegian Minister of International Development, Dag Inge Ulstein, and Stefan Dercon, policy advisor to the Foreign, Commonwealth and Development Office (FCDO) in the UK government and Professor of economic policy at the University of Oxford, were among the influential speakers participating at the grand opening in Bergen's University Aula.

## **Responding to needs**

Ahead of the opening, Espen Villanger, DLL Director and research director at CMI explained:

“DLL responds to a clear need in the development community. We often do not know whether development programmes work or not. Many practitioners do not use research-based evidence when they develop policies and programmes. DLL will make sense of the relevant research literature on what works and offer thematic Learning Arenas for researchers and practitioners to come together and learn from the evidence and each other.”

The main idea behind DLL is to contribute to more learning about how development objectives can be achieved. This ambitious goal is achieved through close collaboration

with research partners in the global South, development practitioners and policy makers.

## **Working with development organizations**

“DLL works jointly with development organizations to conduct research on their programmes to find out what works. We contribute to the design of development programmes in ways that enables the research to foster learning and spur innovation. We apply scientific methods to reliably



The DLL is a joint effort between CMI, NHH, UiB and the Centre for applied research at NHH, here represented by CMI director Ottar Mæstad and rector at NHH, Øystein Thøgersen, signing the cooperation agreement.

Photo: Cecilie Bannow



(Fl) Ingvild Fossgard Sandøy (Professor at UiB), Ottar Mæstad (Director at CMI), Kjetil Bjorvatn (Professor at NHH and Centre for applied research (SNF)), Espen Villanger (Research Director at CMI) and Hilde Selbervik (Research Director at CMI) have developed the Development Learning Lab concept. Photo: Eivind Senneset

measure and evaluate results and to understand the reasons for success and failure”, says Villanger.

“Knowledge gaps and needs are identified in a continuous dialogue with the partners, and the researchers will establish rapid feedback loops to make sure that any important findings can be taken into account along the way and influence the way practitioners work”, says Villanger.

**“I am very pleased that three leading research institutions are joining forces in the fight against poverty. This is a job we cannot do unless we know what works”**

Dag-Inge Ulstein

The knowledge generated with the partners must be supplemented with knowledge generated from other relevant

projects and research. Rapid systematic reviews are crucial. However, this is often not possible for practitioners.

“Development practitioners rarely have time to delve into the research literature. DLL can provide a better understanding of existing research, and also of how it can be relevant for future projects”, says Villanger. “We assist in reviewing the research literature, assessing its reliability and relevance, and drawing lessons for practical use.”

However, simply collecting and analysing the existing research does not guarantee actual learning.

## Setting up learning arenas

DLL will establish Learning Arenas where the development community can come together to learn from the evidence in a systematic way. The learning arenas will consist of both digital and physical venues in which researchers, policymakers and practitioners working on specific topics can share knowledge and experiences in a safe environment.



## Excellent collaborating partners.

A rigorous approach to research methods, and the research partners' extensive experience in development research, ensures trustworthy results. The initiative originates in research milieus with an impressive track record in development research and evaluations. CMI has scored high in evaluations of its research and impact, and FAIR (NHH) and CISMAL (UiB) have both been awarded Centre of Excellence status.

"I am very pleased that three leading research institutions are joining forces in the fight against poverty. This is a job we cannot do unless we know what works", said Dag-Inge Ulstein, Minister of International Development at the time, at the grand opening of the Development Learning Lab (DLL) initiative.

Ulstein was one of several distinguished guests who emphasized the importance of basing development policies and programmes on research and evidence. "I am so happy that the Development Learning Lab is finally born".

Stefan Dercon, Policy advisor to the Foreign, Commonwealth and Development Office (FCDO) in the UK government and professor of Economic Policy Oxford was invited to hold the keynote speech. He concluded his speech by stating that "DLL is really going to make a difference by helping policy makers judge the body of evidence and by creating trustful relationships with organisations who are willing to learn"

## DEVELOPMENT LEARNING LAB

The Development Learning Lab (DLL) is a joint effort by CMI, the Norwegian School of Economics (NHH), the University of Bergen (UiB) and the Centre for applied research at NHH (SNF). It aims to fill the knowledge gaps and increase the success of development programmes.



Dag-Inge Ulstein, Minister of International Development, said that there is a strong willingness to learn among development practitioners.

Photo: Cecilie Bannow



# PARTNERS IN GLOBAL HEALTH

Strong partners are essential to the fulfillment of CISMAC's mission of creating and supporting a sustainable global network of institutions and individuals who carry out high-quality research. In this section, we introduce the Society for Applied Studies in India, a partner that influenced the creation of the research consortium and has contributed admirably to its success.

The Society for Applied Studies (SAS) is a not-for-profit organization in Delhi, the Capital city of India. Dr. Nita Bhandari, Director SAS, is an eminent researcher with global recognition, committed to the long-term vision of creating a world with healthier babies, children, mothers, and families through solutions from research through policy and to practice. Along with a core team, comprising of medical as well as other project coordinators and support staff, she has vast experience of conceptualising, designing, implementing and managing large population-based trials and studies. The research that SAS conducts is not only of world class quality but synchronizes well with local, Indian and global public health needs.

## Creating SAS

The establishment of SAS dates back to early 2000s when Dr. Bhandari, a scientist working with the late Dr. M.K. Bhan along with fellow colleagues moved out of the All India Institute of Medical Sciences (AIIMS), New Delhi. From a group of young, enthusiastic and passionate physician scientists, under the able mentorship of Dr. M.K. Bhan, stationed initially in a garage, and then in the basement of a residential unit, SAS has now grown to be one of the most acknowledged and valued research organizations in India that perform outstanding research of global public health importance in maternal and child health. Throughout its journey SAS was fortunate to have unrelenting support from several national and international organisations, notably from the World Health Organization (WHO), Geneva (Drs. José Martinez and Rajiv Bahl). WHO granted SAS its first research strengthening grant and funded its first study. Fuelled by the unfathomable proclivity for scientific research and visionary leadership that Dr. Bhan had, SAS research domains expanded over the years to encompass

maternal and child nutrition, infectious diseases epidemiology, vaccine efficacy, maternal mental health, cognitive development of children, and health economics.

## Friends and Family

“There are friends, there is family and then there are friends that become family” - this is how the relationship between SAS and CISMAC, Norway cemented. What started as a formal academic association in the 1990s between Dr. M.K. Bhan and his team, stationed at AIIMS, New Delhi and Drs. Halvor Sommerfelt and Tor A. Strand from the University of Bergen, Norway (both of them engaged with Dr. Bhan for their PhD assignment) developed into a strong professional commitment over the years with many seminal



Dr. M.K Bhan along with the first batch of PRERNA young investigators  
Credit: Society for Applied Studies



CISMAT team with members from UiB, SAS (India), Tribhuvan University (Nepal), Makerere University (Uganda), University of Zambia and CMI (Norway) during the opening of CISMAT in 2013. **Credit: Kim Andreassen**

projects being done together. Some of the landmark studies that resulted from this collaboration include trials on the effect of zinc supplementation on the risk of diarrhoea and lower respiratory tract infections and the effect of Kangaroo Mother Care in low-birth-weight babies on their survival. SAS is one of the core partners in CISMAT and shares its vision of promoting equitable improvements in maternal, newborn and child health and development in low- and middle-income countries (LMICs).

**“There are friends, there is family and then there are friends that become family”**

### Investing in young researchers

While attracting research funding through competitive grants was not a problem for SAS, there was a growing realization within the group of the importance to invest in capacity strengthening and expansion. The intention was to create a pool of highly trained investigators who could conceptualize, design and lead research independently. Under the mentorship of Dr. M.K. Bhan, a consortium of three eminent research groups from India (Christian Medical College, Vellore; King Edward Memorial Hospital Research Centre, Pune; and SAS, New Delhi) – the PRERNA (The Platform for Research Excellence Related to National Aims) funded by the Bill and Melinda Gates Foundation (BMGF) was set up in 2014. This platform served as a launchpad to promote and strengthen capacity

for improved, innovative and impactful research on maternal and child health and development. The Young Investigator (YI) program, an integral component of PRERNA, brings together institutions which have overlapping, but different research skill sets, experiences and collaborations. The programme allowed SAS and its two PRERNA partners to recruit a group of young investigators. The YIs are exposed to a much wider range of research areas and expertise than they would have encountered in a single institution.



SAS members Sunita Taneja, Nita Bhandari and Sarmila Mazumder during CISMAT opening 2013. **Credit: Anne Sidsel Herdlevær**





A study team at SAS, India. Credit: Society for Applied Studies

As a result of the YI program, the skill base within SAS expanded and diversified and it also led to a meteoric rise in the number of research proposals developed and funded as well as high-quality scientific papers.

The pool of YIs enhanced the existing skills within the SAS, ranging from designing of complex trials, securing competitive grants from prestigious funding bodies (e.g., Bill and Melinda Gates Foundation, Thrasher Foundation, Indian Council of Medical Research, World Health Organization and the Research Council of Norway), implementation of large community-based trials, advanced statistical analysis and high-quality scientific writing. Three out of the four first generation YIs from SAS were recently selected for the highly competitive and prestigious India Alliance Wellcome Trust Fellowship. The fourth one was selected for a fully funded PhD position, after a competitive process, at the UiB.

## **CISMAC and SAS; strengthening each other**

CISMAC has played an important role in training of the early career investigators and capacity strengthening within SAS. Through regular conduct of scientific meetings, epidemiology courses, data analysis workshops, opportunities for PhD training, provision of seed grants and study funding, CISMAC has consistently invested in the research capacity within SAS. Vice versa, SAS has contributed very importantly to the academic development of CISMAC and the Centre for International Health at the University of Bergen (UiB). To encourage use of available datasets and promote a culture of high-quality publications, CISMAC annually provides grants to early career researchers from its partner institutions to conceptualize new analyses of data from previous studies to answer priority questions





and publish the findings in high-impact journals. Through encouragement and support of CISMALC, the early career researchers recruited at SAS have been persuaded to apply and register in PhD programs, particularly at the UiB. In pursuit of expanding its collaborative research networks to bring more skill sets, perspectives, and dynamism, SAS also invests in fostering relationships with other world-class institutions. This has led to a strong network, both within and outside India.

## A Sustainable Future

Ensuring sustainability and creating opportunities for continuous capacity strengthening is one of the prime focuses within SAS. The second generation of YIs have now been recruited and are in the process of being trained. The mechanisms set up by CISMALC and UiB, Norway will be utilized to ensure that they get enrolled in PhD programs and continue with their further development. As part of their intense and multi-dimensional training at SAS, the YIs have been involved in systematic reviews and meta-analysis commissioned by WHO, Geneva to inform recommendations around nutrition of low-birth-weight infants. Further, they are involved in various aspects of the ongoing SAS trials such as implementation, data analysis and writing sub-grants. They are also encouraged to develop new standalone proposals and apply for funding. An innovative and transparent bottom-up mentorship model exists within SAS where the early career investigators participate actively in their goal setting and nurturing their needs and aspirations is given priority.



Administration of Rotavirus Vaccine. Credit: Society for Applied Studies.

Being a not-for-profit organization and in the absence of sustained core funding, it is challenging for SAS to sustain an increasing pool of researchers and early career investigators. However, the hope is that the enthusiasm within the team, the presence of rich and diverse skill sets and the thorough commitment that exists will help in garnering research projects of scientific value and importance to the global public health audience. SAS is a strong proponent of nurturing the excellent team it hosts and continues to look for new talents. This is possibly the best way the legacy of fundamentally strong and sincere scientific research could be passed on to future generations. Building upon existing research partnerships and seeking new collaborations may help pave the way to sustainability. The collaboration of SAS with the UiB that grew with CISMALC augurs continuing mutually enhancing partnerships to realize the common vision of both institutions.

# CISMAC Webinars and Courses 2021: PANDEMIC CHALLENGES AND DIGITAL OPPORTUNITIES

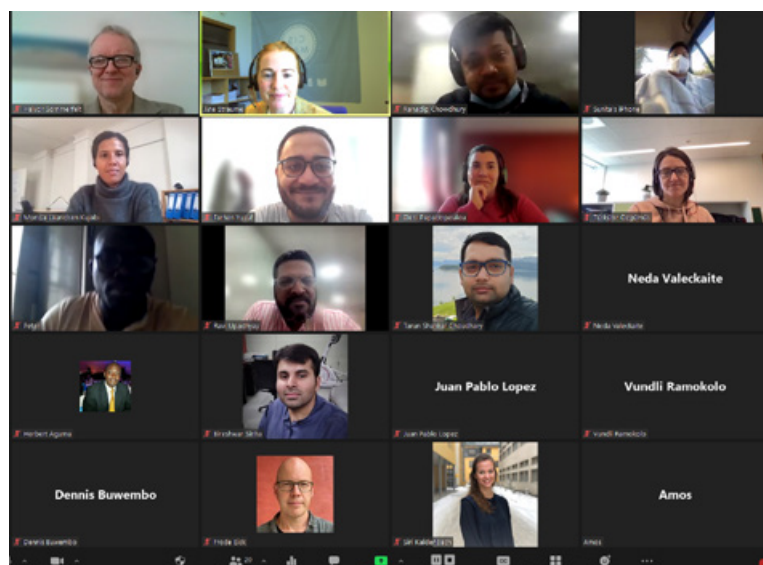
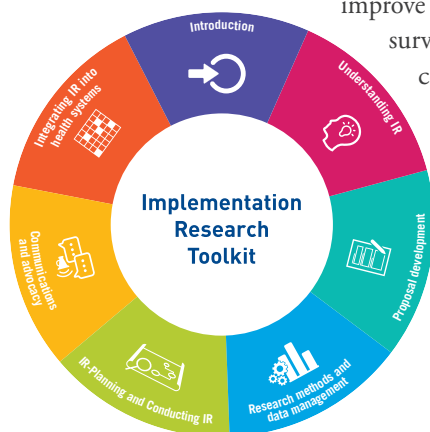
Running an international consortium during a pandemic is a challenging task. We missed in-person collaboration and visiting one another as well as engaging freely with the participants in our research projects. An important focus for CISMAC during this period has been to sustain and strengthen our research capacity through course work and discussions, in particular for our young researchers. The digital opportunities made available during this time have been essential and we have maximized their benefits.

## Webinars

Since 2018, CISMAC has run monthly webinars for our researchers and others interested in the field of maternal and child health. This has been an important arena both for established and young scholars alike. Our young researchers have been particularly engaged, both to present their own work as well as to participate in the webinars when senior scholars have been presenting. Although the pandemic has made certain types of collaboration difficult it has given us time and opportunities to engage with each other's work through digital means such as our webinar series which were implemented with high levels of participation through the year.

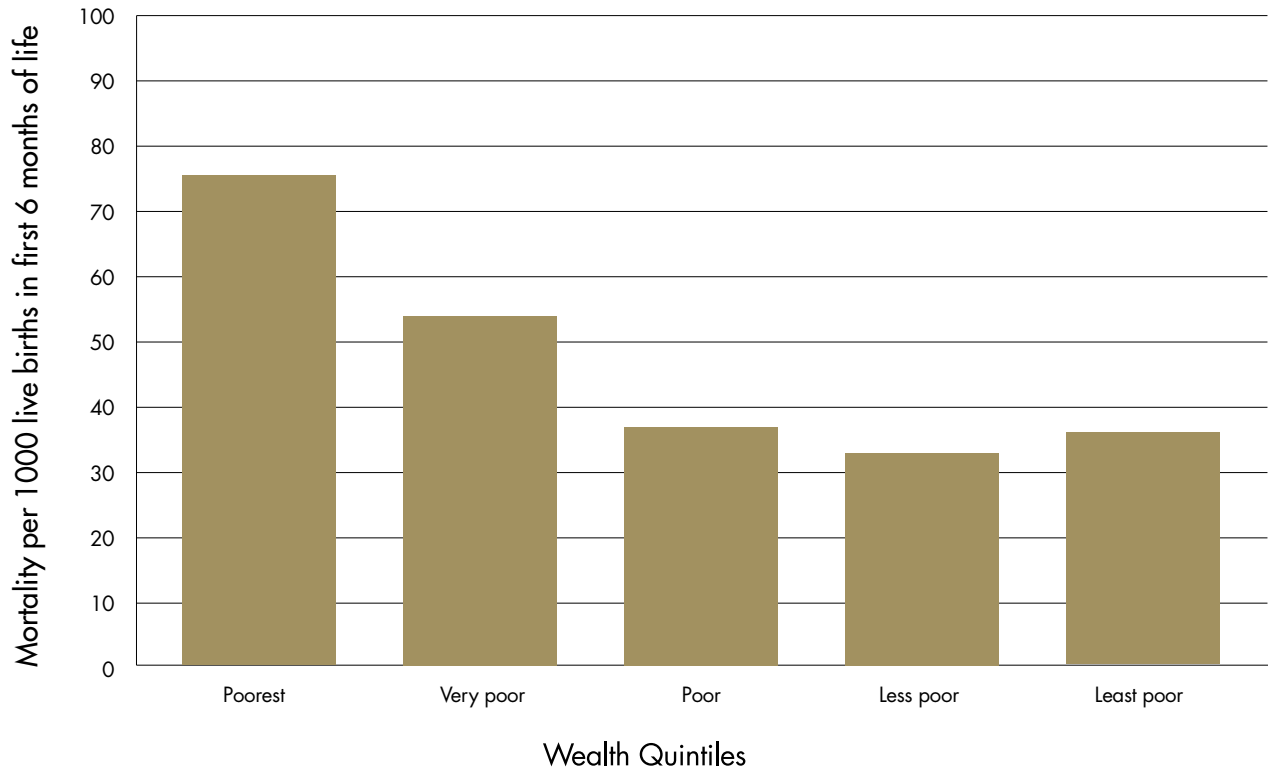
## Implementation science

Along with our webinar series, we maintained relevant training activities which also resulted in several high-level courses. A considerable part of CISMAC's research evaluates interventions that, when put to scale, can substantially improve maternal and child health, survival, and development. To contribute to get research into policy and practice, we have engaged in implementation research. To further strengthen our capacity in implementation science,



CISMAC webinar on Epidemiology.

CISMAC recently organized a course on this facilitated by Anna Bergström and Leif Eriksson from Uppsala University. The course aimed to give a comprehensive introduction to implementation science in global health with a particular focus on challenges in low- and middle-income countries. Course leaders noted that the accumulation of knowledge and its underutilization in practice has become of increasing concern. In this course both the understanding of evidence-based implementation and approaches to studying implementation were discussed and explored. The course familiarized students with concepts and methods and taught them how to apply theories, models and frame-



Bar graph showing the relationship between poverty and mortality in the first 6 months of life among low birth weight babies in Haryana, India ([Choudhary et al. 2021](#)).

works to develop and better understand reports from Global Health implementation science projects. The course was highly appreciated and attended by many of CISMAC's PhD candidates and researchers.

## Quantitative Methods for Studying Equity and Poverty impact in Health

The topic of equity in health is another important focus in CISMAC's research, and several of our large trials have seen sub-studies with such a focus. In 2021, CISMAC collaborated with researchers from Bergen Centre for Ethics and Priority Setting (BCEPS) to offer a new course on quantitative methods for studying equity and poverty impact in health. The course was taught by Professor Kjell Arne Johansson, CISMAC PhD candidate Tarun Shankar Choudhary and CISMAC's Director Halvor Sommerfelt, among others. The course taught students about equity

analysis, financial risk protection, poverty impact, and how to build on cost-effectiveness analysis to describe distributional equity objectives, such as giving priority to the severely ill, reducing inequality in health, and promoting equal access to health services.

Our webinar series in 2021 ended with the launch of a webinar series on epidemiology. The series not only provides an engaging and detailed insight into epidemiology, but also serves as preparation for two CISMAC courses to be held in April 2022. We are now happy to announce that world-renowned epidemiologists will hold these courses in Bergen, courses which will also be live-streamed to those of our CISMAC researchers who need to stay back in their home countries to look after the day-to-day running of our studies. The first course will be held by Professors Kenneth J. Rothman and Vera Ehrenstein, the second by Professor Matthew Fox. We look forward to welcoming lecturers and course participants students to these courses.



# PEOPLE & PUBLICATIONS

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# CISMAC MANAGEMENT AND ADMINISTRATION



**Halvor Sommerfelt**  
Director



**Ingvild F Sandøy**  
Deputy Director



**Jose Martines**  
Scientific Coordinator



**Ane Straume**  
Administrative Leader



**Olga Shangina Williams**  
Economy



**Anne Berit Kolmanskog**  
Project administration



**Gunhild Koldal**  
Project administration



**Elinor Bartle**  
Web & communication

# LIST OF SCIENTIFIC PUBLICATIONS IN 2021

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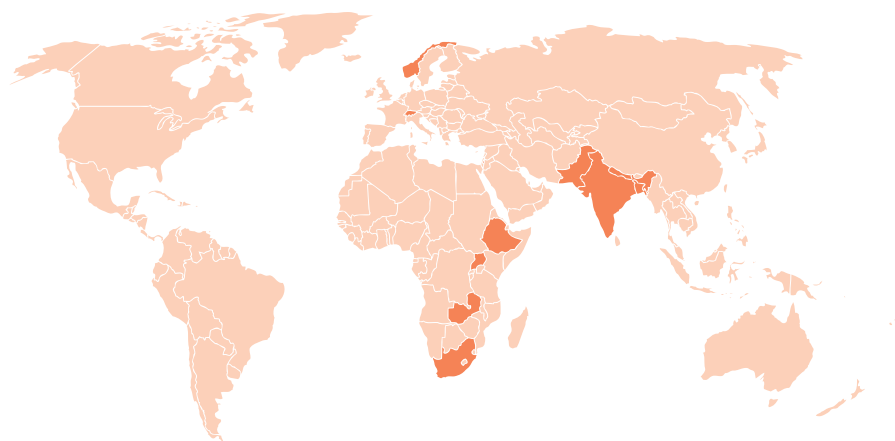
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