Karolinska Institutet and MSD

10 Years of Collaboration
2016–2026

Summary and Highlights from the Partnership

Karolinska Institutet

A decade of collaborative real-world evidence

The KI & MSD partnership was established to create a long-term collaborative research platform for generating patient-centered real-world evidence using high-quality Swedish healthcare data working with experts at Karolinska Institutet.

Research questions within the partnership are jointly defined by Karolinska Institutet and MSD, reflecting shared scientific interests and public-health relevance. Studies are conducted under agreed governance structures that support rigorous methodology, transparency, and appropriate delineation of roles and responsibilities.

The partnership is designed to evolve over time, allowing research focus areas to adapt to emerging scientific opportunities and healthcare needs.

The projects summarized in this report demonstrate how sustained, structured collaboration can translate data into actionable knowledge. Collectively, they highlight the burden of disease across the life course, identify unmet medical and societal needs, evaluate real-world treatment patterns and outcomes, and inform prevention strategies, clinical guidelines, and health system planning. Together, KI and MSD show how patient-centered research can generate lasting impact for patients and society.

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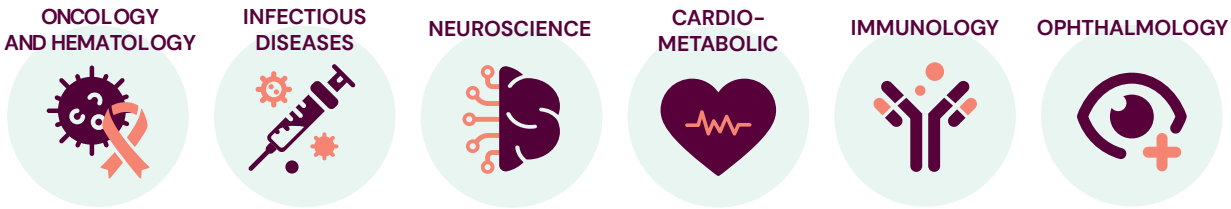
Partnership Focus

Advancing patient-centred evidence together

Improving public health requires more than innovation in isolation. It depends on long-term, trusted collaboration across sectors. Since 2016 KI and MSD have worked together in a patient-centered research partnership to generate evidence that reflects real clinical practice, real patients, and real societal needs.

Strategic areas of collaboration

At the heart of the collaboration lies a shared commitment to patient-centered, real-world evidence mainly but not limited to our focus areas. Across these areas, research addresses clinically relevant questions to support better patient outcomes, informed clinical decision-making, and evidence-based health policy.



Strenghtening impact through academia–industry partnership

By combining KI's world-leading academic expertise and access to high-quality Swedish healthcare data with MSD's scientific, clinical, and translational capabilities, the partnership aims to generate insights that can inform clinical decision-making, health policy, and future therapeutic development that neither organization could achieve alone.

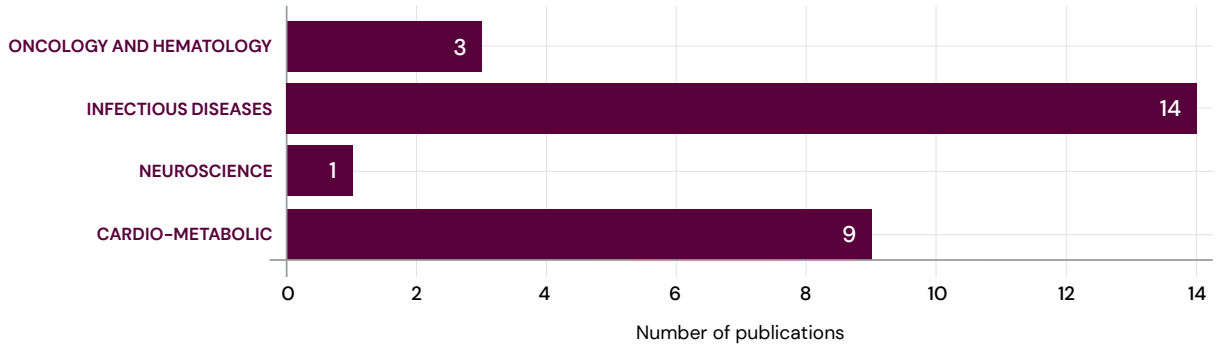
Partnership At A Glance

Breadth and scope of collaborative research

The studies address a broad range of research questions and challenges across multiple disease areas, reflecting the depth and scope of the collaboration.

Publications across all focus areas

To date, more than 20 peer-reviewed publications have been generated through the KI & MSD partnership, delivering patient-centered evidence that advances understanding of disease burden, treatment outcomes, and real-world clinical decision-making across indications.

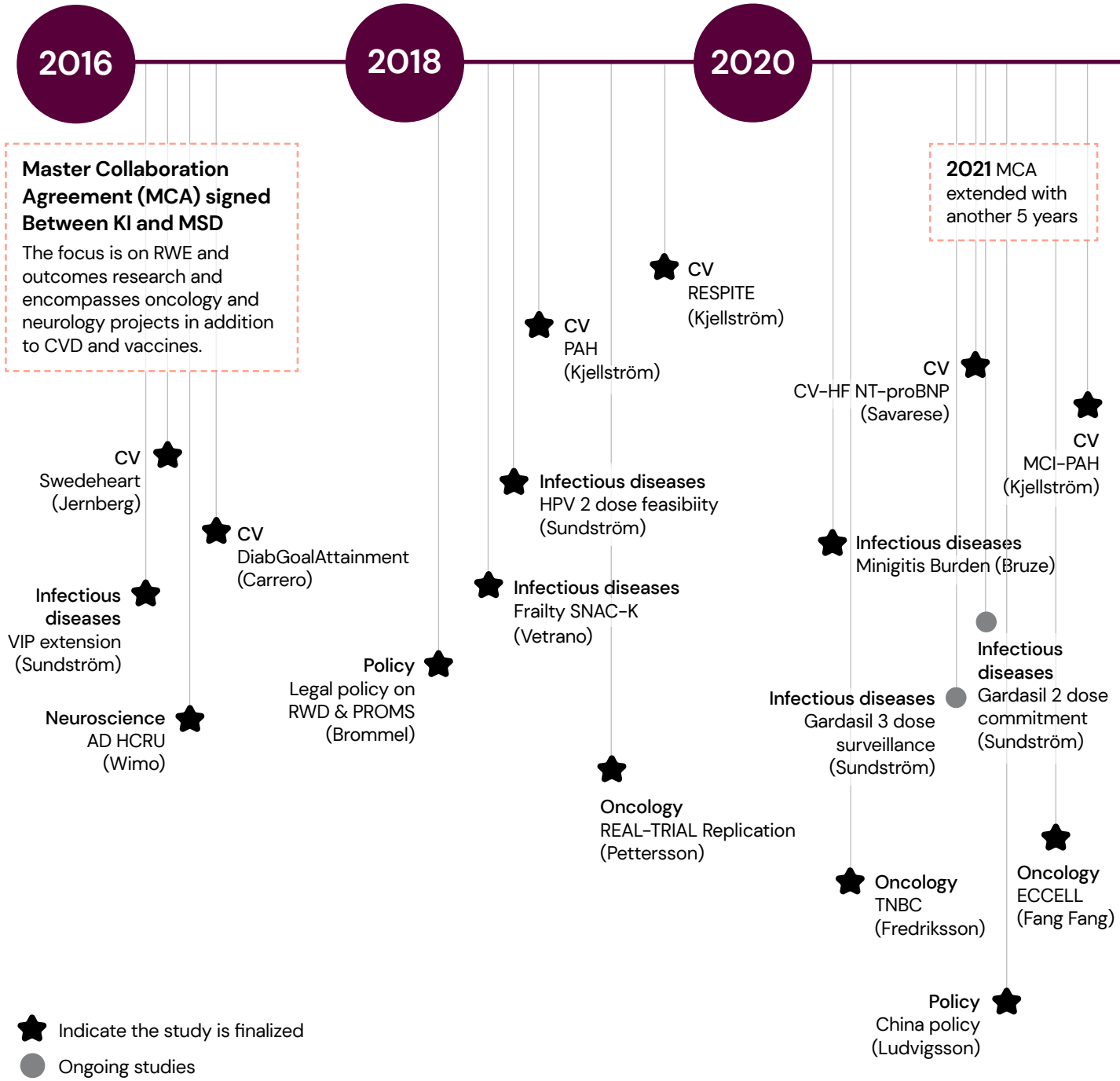


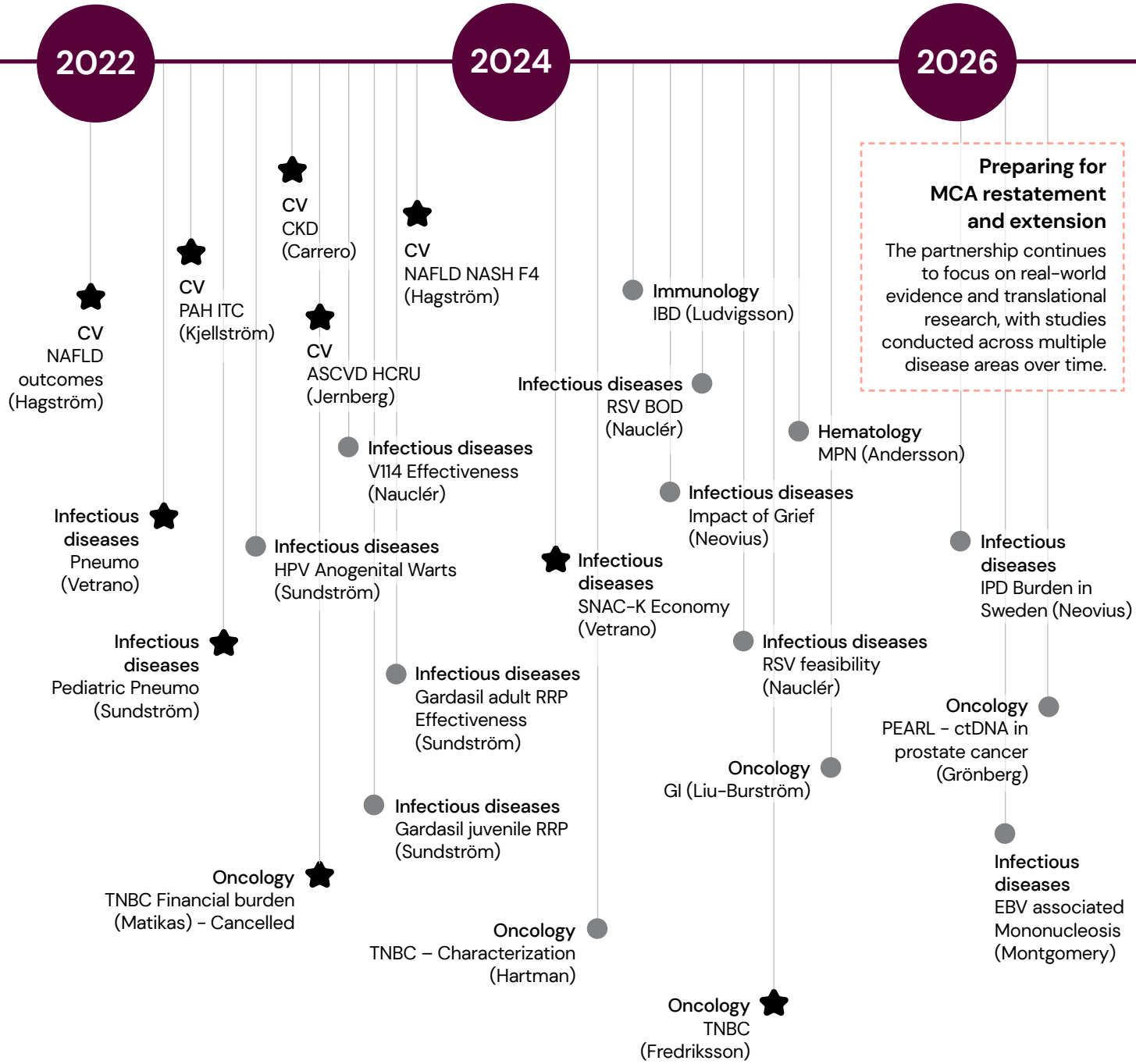
Research powered by extensive multi-registry data

The collaboration engages more than 10 KI departments and is powered by linked nationwide health registers and clinical cohorts, enabling comprehensive real-world evidence generation across the patient journey.

More than 75 researchers at KI and MSD have been involved and projects are powered by linked nationwide health registers and clinical cohorts, enabling comprehensive real-world evidence generation across the patient journey.

The Partnership Over Time




2022
2024
2026
CV
NAFLD outcomes (Hagström)
CV
PAH ITC (Kjellström)
CV
CKD (Carrero)
CV
NAFLD NASH F4 (Hagström)
CV
ASCVD HCRU (Jernberg)
Infectious diseases
V114 Effectiveness (Nauclér)
Infectious diseases
Pneumo (Vetrano)
Infectious diseases
HPV Anogenital Warts (Sundström)
Infectious diseases
Pediatric Pneumo (Sundström)
Infectious diseases
Gardasil adult RRP Effectiveness (Sundström)
Infectious diseases
Gardasil juvenile RRP (Sundström)
Oncology
TNBC Financial burden (Matikas) - Cancelled
Oncology
TNBC – Characterization (Hartman)
Immunology
IBD (Ludvigsson)
Infectious diseases
RSV BOD (Nauclér)
Infectious diseases
SNAC-K Economy (Vetrano)
Hematology
MPN (Andersson)
Infectious diseases
Impact of Grief (Neovius)
Infectious diseases
RSV feasibility (Nauclér)
Oncology
GI (Liu-Burström)
Oncology
TNBC (Fredriksson)
Preparing for MCA restatement and extension
The partnership continues to focus on real-world evidence and translational research, with studies conducted across multiple disease areas over time.
Infectious diseases
IPD Burden in Sweden (Neovius)
Oncology
PEARL - ctDNA in prostate cancer (Grönberg)
Infectious diseases
EBV associated Mononucleosis (Montgomery)

Projects finalized under the Partnership

Oncology and Hematology

Redefining Triple-Negative Breast Cancer: Evidence and Policy Shifts for ER-low/HER2-negative Patients

KI: Irma Fredriksson
MSD: Demet Sönmez

Publications: Acs et al 2024, Lancet Reg Health Eur

Acs B, Hartman J, Sönmez D, Lindman H, Johansson ALV, Fredriksson I. Real-world overall survival and characteristics of patients with ER-zero and ER-low HER2-negative breast cancer treated as triple-negative breast cancer: a Swedish population-based cohort study. Lancet Reg Health Eur. 2024 Mar 19;40:100886. doi: 10.1016/j.lanepe.2024.100886.

Situation: Breast cancer patients with ERlowHER2neg expression were excluded from the international definition of triple negative breast cancer (TNBC), creating inconsistency across specialists. Although the TNBC definition was revised in 2010 based on debated evidence, subsequent research has shown that ERlow tumors cluster biologically and clinically with ER negative disease. Increasing scientific consensus indicated a need for ERlowHER2neg patients to be considered and treated as TNBC.

Approach: The treatment guidelines before 2023 placed ERlowHER2neg patients at risk of suboptimal care, as they were not included in TNBC clinical trials and often received therapies that could be less effective or carry unnecessary toxicity. Although ERneg (<1%), ERlow (1–9%), and ERhigh (>10%) categories are biologically distinct, this small group-about 2% of all breast cancer cases worldwide-has been difficult to study, leaving major evidence gaps for clinical decision making.
A few countries, including Sweden, continued to classify ERlowHER2neg patients as TNBC, allowing an observational study to understand how these patients would do on treatments for early TNBC. This approach provided critically needed real-world insights for an overlooked population.

Results/Impact: The Swedish observational study showed that ERlowHER2neg breast cancer has characteristics and prognosis similar to TNBC when these patients are treated as TNBC. Its findings are consistent with other efforts to better define the TNBC population. Subsequent to its oral presentation at ESMO 2023 the ESMO guidelines for early breast cancer were updated and published in 2024 with a clear positioning of ER 1-9% tumors under the TNBC section. These insights have also informed revisions to clinical trial inclusion criteria, increasing the number of TNBC trials including ERlowHER2neg patients substantially, and related funding frameworks such as the Canadian algorithm.

Projects finalized under the Partnership

Oncology and Hematology

Replicating Oncology Trial Outcomes with Swedish Registry Data: Feasibility, Gaps, and Insights

KI: Andreas Pettersson

MSD: Thomas Jemielita, Kai-Li Liaw

Publications: Jemielita et al. 2021 Pharmacology & Therapeutics

Jemielita T, Widman L, Fox C, Salomonsson S, Liaw KL, Pettersson A. Replication of Oncology Randomized Trial Results using Swedish Registry Real World-Data: A Feasibility Study. Clin Pharmacol Ther. 2021 Dec;110(6):1613-1621. doi: 10.1002/cpt.2424.

Situation: Time is precious when developing new treatment options in fatal diseases and several attempts to build on single-arm studies utilizing registries and databases have been made. Here the researchers tested whether national Swedish health registries, not using the more detailed disease-specific quality registries, could stand in for clinical trial control groups to assess how novel cancer drugs perform in routine care. After a feasibility assessment, researchers tried to replicate control arm outcome data of two prior phase III trials, for patients with advanced liver cancer and for newly diagnosed multiple myeloma.

Approach: The team used Swedish healthcare registries linked at the patient level to build cohorts that resembled the trial control arms. The primary endpoints of interest were overall-survival (OS) and time to treatment discontinuation (TTD), the latter could serve as a proxy for progression-free survival. Statistical analyses adjusted for baseline differences between registry and trial patients using standard methods (propensity scores, weighting, matching) and ran sensitivity checks (for example, changing how they define the end of treatment in pharmacy data and assessing by comorbidity level).

Results/Impact: Fewer than 10% of candidate trials could be reliably replicated using health registries. With or without adjustment for confounding, patients with liver cancer and myeloma lived for a shorter time in real-world settings than in clinical trials, while TTD was similar. Various key trial information was missing in the national registries, such as performance status, lab results, staging, and hospital-administered treatments, which likely explains much of the survival gap. The results further underscore the importance of developing frameworks for collection of relevant patient-level RWD, such that RWD can be reliably leveraged for clinical development.

Projects finalized under the Partnership

Oncology and Hematology

Patient-focused research: How Cervical Cancer and Endometrial Cancer Affects Mental Health in Women and Their Families

KI: Karin Sundström

MSD: Stina Salomonsson

Publications: Mental disorders and socioeconomic outcomes in women with cervical cancer, and their children and co-parents - PubMed

Wang J, Salomonsson S, Sönmez D, Nordqvist Kleppe S, Feldman AL, Andersson MS, Bencina G, Fang F, Sundström K. Mental disorders and socioeconomic outcomes in women with cervical cancer, and their children and co-parents. J Natl Cancer Inst. 2025 Sep 1;117(9):1825-1835. doi: 10.1093/jnci/djaf129.

Situation: A family member being diagnosed with cancer is impacting the patient and the full family. Prior evidence, mostly from smaller questionnaire studies, suggests increased psychological distress and financial strain in affected families but robust evidence was lacking. To address this gap and get a clearer picture of the magnitude of impact, the researchers conducted a nationwide, longitudinal register-based study in Sweden.

Approach: The researchers linked national health and socioeconomic registers to follow women with cervical and endometrial cancer respectively and matched the cohort with women in the general population without disease and separately tracked their children and co-parents over time.

Results/Impact: The study demonstrates a ripple effect of cancer across families over many years, beyond short-term, self-reported evidence. The large, matched cohorts and extended follow-up provide a strong basis for estimating new-onset mental health conditions, adverse financial outcomes as well as decreased educational level in children of diagnosed mothers with cervical cancer. Results were similar but less pronounced in families where the mother was diagnosed with endometrial cancer, a disease generally diagnosed later in life These insights can inform policies and support programs aimed at reducing psychological distress and financial hardship among affected families. The approach is adaptable to other diseases, offering a model for population-level studies of intergenerational health and economic impacts.

Projects finalized under the Partnership

Infectious diseases

Beyond the Acute Infection: Long-Term Healthcare Use and Mortality After Lower Respiratory Infections in Older Adults

KI: Davide Vetrano

MSD: Eleana Tsoumani

Publications: Abbadi et al 2024, Aging Clin Exp Res., Abbadi et al 2024, BMC Infect. Dis

Abbadi A, Gentili S, Tsoumani E, Brandtmüller A, Hendel MK, Salomonsson S, Calderón-Larrañaga A, Vetrano DL. Impact of lower-respiratory tract infections on healthcare utilization and mortality in older adults: a Swedish population-based cohort study. Aging Clin Exp Res. 2024 Jul 17;36(1):146. doi: 10.1007/s40520-024-02808-5.

Abbadi A, Beridze G, Tsoumani E, Brandtmüller A, Hendel MK, Salomonsson S, Calderón-Larrañaga A, Vetrano DL. Sex differences in the impact of lower respiratory tract infections on older adults' health trajectories: a population-based cohort study. BMC Infect Dis. 2024 Nov 1;24(1):1227. doi: 10.1186/s12879-024-10131-7.

Situation: Lower respiratory tract infections (LRTIs), including pneumonia, are a major cause of illness and death in older adults, but most evidence focuses on the immediate, acute period. These studies examined how a single LRTI episode affects longer-term outcomes, hospitalization, health-care use, and mortality, well beyond the initial infection, and whether these effects differ by background factors such as sex, age, or obesity.

Approach: Researchers ran a population-based matched cohort study utilizing the population-based SNAC-K cohort* linked with national hospital and death registers. Older adults with a first recorded LRTI episode were matched to similar peers without LRTI and then followed for up to 16 years using statistical methods to balance the groups and estimate differences over time.

Results/Impact: Older adults experienced excess health decline following LRTI diagnosis, with effects particularly pronounced in males, where negative outcomes may persist for up to 12 years. They were more likely to be hospitalized in the years that followed, with the excess risk being highest in the first year and gradually declining over 3 to 5 years. They spent more total days in the hospital, had more specialist visits and hospital admissions and were 45% more likely to die over 19 years than similar adults without LRTI. These findings support preventive strategies, such as vaccination and risk-factor management, timely treatment, and planning for longer-term follow-up to reduce downstream hospitalizations, resource use, and mortality in older adults.

Projects finalized under the Partnership

Infectious diseases

Societal Burden of Post-Meningitis Sequelae in Sweden

KI: Gustaf Bruze

MSD: Salini Mohanty

Publications: Mohanty et al 2024, JAMA Netw Open, Mohanty et al 2024, JAMA Netw Open

Mohanty S, Johansson Kostenniemi U, Silfverdal SA, Salomonsson S, Iovino F, Sarpong EM, Bencina G, Bruze G. Increased Risk of Long-Term Disabilities Following Childhood Bacterial Meningitis in Sweden. JAMA Netw Open. 2024 Jan 2;7(1):e2352402. doi: 10.1001/jamanetworkopen.2023.52402

Mohanty S, Johansson Kostenniemi U, Silfverdal SA, Salomonsson S, Iovino F, Bencina G, Tsoumani E, Bruze G. Adult Work Ability Following Diagnosis of Bacterial Meningitis in Childhood. JAMA Netw Open. 2024 Dec 2;7(12):e2445497. doi: 10.1001/jamanetworkopen.2024.45497.

Childhood Bacterial Meningitis: Lifelong Health, Education, and Work Impacts in Sweden

Situation: This initiative resulted in two nationwide Swedish cohort studies that examined the long-term consequences of bacterial meningitis diagnosed in childhood, first on neurological and sensory disabilities over decades, and then on adult work ability and education. Prior research had documented high short- and medium-term risks of sequelae but has often focused on a narrow set of outcomes, lacked matched population controls, or had limited follow-up, leaving the broader, lifelong burden under-characterized.

Approach: Using linked national registers tracking each individual through life, each child with a documented diagnosis of bacterial meningitis was matched on age, gender, and place of residence, and followed into adolescence and adulthood. The first study tracked seven disability domains (cognition, seizures, hearing, motor function, vision, behavioral/emotional disorders, and intracranial injuries) for up to 35 years. The second study assessed adult work outcomes (taxable earnings, work loss days from sick leave and disability pension) at age 28 or older and education attainment at age 30.

Results/Impact: Children who survived bacterial meningitis had higher long-term risks across all seven disability domains, with nearly one in three developing at least one disability and risks were particularly elevated when the causative pathogen was Streptococcus pneumoniae or when diagnosis occurred at younger ages. These elevated risks persisted beyond the early post-illness years, underscoring both acute and lasting effects. In adulthood, those with childhood meningitis earned about 4% less on average, were less likely to be employed, and had lower odds of completing high school and post-secondary education, with the greatest disadvantages again seen after pneumococcal meningitis and younger age at diagnosis. Together, the studies demonstrate that childhood bacterial meningitis has substantial, durable impacts on health, education, and economic participation, translating into long-term costs for individuals and society. The findings support strengthening prevention (especially pneumococcal vaccination), early detection and follow-up for less visible disabilities, and targeted support to improve educational and work outcomes for survivors.

Projects finalized under the Partnership

Infectious diseases

Vaccine impact and effectiveness and understanding data systems

KI: Karin Sundström
MSD: Wei Wang (Vivian), Joseph Tota

Publications: Wang et al 2022 Expert Rev Vaccines

Wang W, Kothari S, Baay M, Garland SM, Giuliano AR, Nygård M, Velicer C, Tota J, Sinha A, Skufca J, Verstraeten T, Sundström K. Real-world impact and effectiveness assessment of the quadrivalent HPV vaccine: a systematic review of study designs and data sources. Expert Rev Vaccines. 2022 Feb;21(2):227-240. doi: 10.1080/14760584.2022.2008243.

Measuring Real-World Benefits of the Quadrivalent HPV Vaccine: What Designs and Data Work Best

Situation: Once human papillomavirus (HPV) vaccines are introduced into public programs, their benefits must be assessed in real-world settings, where data, outcomes, and implementation vary widely. This systematic review examined how studies have measured the quadrivalent HPV vaccine's real-world effectiveness (individual-level protection) and impact (population-level effects) across multiple outcomes beyond the cervix, including HPV infections, anogenital warts, precancerous lesions, and juvenile-onset recurrent respiratory papillomatosis (RRP; a condition caused by HPV types 6/11 that leads to recurrent benign growths in the airway). The goal was to map which study designs and data sources have been used, where, and with what methodological safeguards against bias.

Approach: The authors systematically reviewed observational studies published from 2007 to March 2020 that evaluated quadrivalent HPV vaccine effectiveness or impact across cervical and non-cervical endpoints. They catalogued designs), outcome and exposure data sources, and strategies used to reduce bias and confounding, and summarized trends by country income level and outcome type.

Results/Impact: This study is the first to systematically review, appraise, and offer recommendations on designing HPV vaccine effectiveness and impact studies, demonstrating that robust methodology and strong healthcare data infrastructure are essential to evaluate vaccination programs. To generate robust evidence, researchers must address methodological challenges posed by the complexity of HPV-related disease and the need for well-validated data sources. Study designs and methods should be chosen case by case, especially in resource-limited settings. With careful attention to methods and data, studies can demonstrate and track the protective effects of HPV vaccines across multiple disease outcomes.

Projects finalized under the Partnership

Infectious diseases

Nordic Country HPV Surveillance study

KI: Karin Sundström

MSD: Kai-Li Liaw

Publications: Published in Vaccine 2018, Cancer Medicine, 2019, Hum. Vaccines Immunother. 2020 (all 3 publications are summarized separately below)

Dillner J, Nygård M, Munk C, Hortlund M, Hansen BT, Lagheden C, Liaw KL, Kjaer SK. Decline of HPV infections in Scandinavian cervical screening populations after introduction of HPV vaccination programs. Vaccine. 2018 Jun 18;36(26):3820-3829. doi: 10.1016/j.vaccine.2018.05.019.

HPV Vaccine Programs and Population-Level Infection Declines in Scandinavian Screening Cohorts

Situation: Denmark, Norway, and Sweden introduced organized HPV vaccination programs between 2008 and 2012. The study asked whether HPV infections declined among women participating in routine cervical screening, especially in younger women most likely to have been vaccinated.

Approach: Researchers conducted two large, comparable cross-sectional surveys of women under 50 attending cervical screening: one before vaccination rollout and one after. Identical enrollment and laboratory genotyping methods were used to compare HPV prevalence by age group and country.

Results/Impact: This population-based study of more than 12,000 women in cervical screening across three Nordic countries, before and after rollout of organized HPV vaccination, showed a clear decline in HPV infections among younger women. The decline was most evident in Denmark and Norway, where programs began in 2008–2009, suggesting that organized HPV vaccination programs reduce circulation of HPV types in the general population.

Pre-Vaccine Baseline of HPV in Nordic High-Grade Lesions and Cancer: How Much Can Vaccination Prevent?

Publications: Dovey de la Cour C, Guleria S, Nygård M, Trygvadóttir L, Sigurdsson K, Liaw KL, Hortlund M, Lagheden C, Hansen BT, Munk C, Dillner J, Kjaer SK. Human papillomavirus types in cervical high-grade lesions or cancer among Nordic women-Potential for prevention. Cancer Med. 2019 Feb;8(2):839-849. doi: 10.1002/cam4.1961.

Situation: Before HPV vaccination, the HPV type mix causing serious cervical precancers and cancers in the Nordics was not consistently documented, limiting clear estimates of vaccine-preventable disease. This study established a population-based baseline to quantify prevention potential with current and broader vaccines.

Projects finalized under the Partnership

Infectious diseases

Approach: Consecutive cervical specimens from women with high-grade precancers and cancers across Denmark, Norway, Sweden, and Iceland in the pre-vaccination period were centrally genotyped. Analyses considered lesion severity, cancer histology, age, and modeled the fraction of disease preventable by vaccines targeting core versus additional oncogenic HPV types.

Results/Impact: HPV was present in the vast majority of high-grade precancers and cancers, with single-type infections most common. The most frequent types in precancers and cancers were those targeted by current vaccines, and the cancer profile varied by histology (for example, adenocarcinoma had more of the vaccine-targeted types). Vaccination against the core cancer-causing types was estimated to prevent over half of the most severe precancers and nearly two-thirds of cancers; adding protection against more types raised the preventable fraction substantially further. These pre-vaccine baselines enable robust surveillance of impact and highlight the added preventive potential of broader-valent vaccines in the Nordic setting.

Which HPV Types Matter Most for Screening? Type-Specific Risks and Predictive Values Before Vaccination

Publications: Nygård M, Hansen BT, Kjaer SK, Hortlund M, Tryggvadóttir L, Munk C, Lagheden C, Sigurdardottir LG, Campbell S, Liaw KL, Dillner J. Human papillomavirus genotype-specific risks for cervical intraepithelial lesions. Hum Vaccin Immunother. 2021 Apr 3;17(4):972-981.

Situation: As vaccination reshapes which HPV types circulate, screening tests should focus on the types most predictive of serious disease. This study measured how common each HPV type was and how strongly each was linked to low- and high-grade cervical abnormalities in Nordic screening cohorts before vaccination, to guide future screening strategies.

Approach: Using residual samples from routine screening in over 8,300 women (2006–2009), the team genotyped HPV alongside registry-confirmed cytology. They estimated type-specific prevalence, risk (odds ratios) for low- and high-grade abnormalities, and positive predictive values, including grouped analyses aligned with vaccine targets and commonly used screening panels.

Results/Impact: High-risk HPV is the necessary trigger for cervical cancer, so screening is shifting from Pap smears to HPV tests. As women vaccinated in adolescence against HPV16/18 reach screening age, this study shows that many non-vaccine HPV types detected by broad panels are common but mainly associated with mild, transient changes. Prioritizing the high-risk types covered by the 9valent vaccine in screening should better identify clinically significant lesions and reduce unnecessary follow-ups. Because type-specific oncogenicity varies by region (e.g., HPV58 in parts of Asia), programs should tailor test panels and policies locally, adopt age-appropriate screening intervals, and continue research to optimize benefits and minimize harms.

Projects finalized under the Partnership

Infectious diseases

Fostering healthy aging: the interdependency of infections, immunity and frailty

KI: Davide Vetrano

MSD: Stina Salomonsson

Publications: Vetrano et al, Ageing Res Rev, 2021

Vetrano DL, Triolo F, Maggi S, Malley R, Jackson TA, Poscia A, Bernabei R, Ferrucci L, Fratiglioni L. Fostering healthy aging: The interdependency of infections, immunity and frailty. Ageing Res Rev. 2021 Aug;69:101351. doi: 10.1016/j.arr.2021.101351. Epub 2021 May 7

Fostering Healthy Aging: How Infections, Immunity, and Frailty Reinforce Each Other and What To Do About It

Situation: This study examines the two-way relationship between common infections (influenza, pneumonia, shingles), frailty, and age-related immune changes. Focus is how infections drive functional decline and frailty, and how frailty shapes vaccine responses in older adults—an urgent question highlighted by COVID-19.

Approach: The authors synthesized a longitudinal population-based cohort on two themes: (1) how influenza, pneumonia, and shingles affect physical/cognitive decline and frailty; and (2) how frailty modifies immune responses to influenza, pneumococcal, and shingles vaccines. Findings are organized within a unified framework of mechanisms, gaps, and public health implications.

Results/Impact: Infections, especially pneumonia and shingles, consistently worsen physical and cognitive function, key facets of frailty. Frailty dampens vaccine responses most clearly for pneumococcal vaccines. The review highlights a reinforcing cycle: frailty increases infection risk; infections accelerate decline and immune aging; frailty further weakens vaccine effectiveness. Results argues for life-course prevention, prioritizing vaccination in frail adults, and focused research on biomarkers, newer vaccines in frail populations, and combined exercise–nutrition strategies.

Projects finalized under the Partnership

Infectious diseases

A novel ethical, legal and organizational framework on RWD and patient empowerment

KI: Mats Brommels
MSD: Stina Salomonsson

Publications: Hager et al. 2021. J Med Internet Res.

Hager A, Lindblad S, Brommels M, Salomonsson S, Wannheden C. Sharing Patient-Controlled Real-World Data Through the Application of the Theory of Commons: Action Research Case Study. J Med Internet Res. 2021 Jan 19;23(1):e16842. doi: 10.2196/16842.

A commons-based model for sharing patient-controlled real world data in chronic care

Situation: Digital tools allow patients to generate and share health data, but routine utilization of this data is hindered by privacy, control, and governance gaps. This study proposes a practical, rights-based model for sharing patient controlled real world data in chronic care in ways that support both individual and population health while protecting patient autonomy.

Approach: Using an action research case in cystic fibrosis care in Sweden, the authors designed and implemented a national system that enables patients and families to collect and share their own data via a patient support app, integrate these with clinic systems and a national quality registry, and coordinate multi-stakeholder evaluation of new therapies. The work was structured with the "knowledge commons" framework, specifying technical/legal property rights for three arenas: the patient world (private sphere), the clinical microsystem (frontline clinics), and a round table (multi-stakeholder learning network).

Results/Impact: The model assigns clear "who can do what" rights, so patient-generated data can be shared safely and purposefully. Patients decide access and use; clinicians can import and use data for care and improvement under audited, predefined rules; and deidentified aggregates support national, multi-stakeholder evaluation of therapies. This turns patient data into a trustworthy, reusable resource that improves individual care, speeds safe adoption of innovations, and enables population-level learning without sacrificing privacy or autonomy. The approach is transferable to other chronic conditions.

Projects finalized under the Partnership

Neuroscience

Quantifying and describing the natural history of Alzheimer's disease

KI: Anders Wimo, Maria Eriksdotter, Bengt Winblad
MSD: Christopher Black

Publications: Wimo et al 2020, J Alzheimers Dis.

Wimo A, Handels R, Winblad B, Black CM, Johansson G, Salomonsson S, Eriksdotter M, Khandker RK. Quantifying and Describing the Natural History and Costs of Alzheimer's Disease and Effects of Hypothetical Interventions. J Alzheimers Dis. 2020;75(3):891-902. doi: 10.3233/JAD-191055. Erratum in: J Alzheimers Dis. 2021;80(2):905. doi: 10.3233/JAD-219002.

Modeling the Lifetime Burden of Alzheimer's and the Potential Value of Early Disease Modifying Treatment

Situation: This study uses a simulation to estimate lifetime progression, costs, and quality of life for people at a pre-dementia stage linked to Alzheimer's disease (mild cognitive impairment due to Alzheimer's, AD-MCI). It also explores "what-if" scenarios for a future disease-modifying treatment (DMT) that could slow disease progression to gauge potential cost-effectiveness if such therapies become available.

Approach: Using Swedish registry data to parameterize disease transitions, mortality, and costs, the authors built a Markov model following a virtual cohort of 100,000 people with AD-MCI from age 60 for up to 40 years. The base case represents natural history without DMT; scenario analyses introduce a hypothetical DMT that slows progression by 25% during AD-MCI and mild Alzheimer's, with sensitivity tests varying effect size, start age, mortality, and costs.

Results/Impact: A long-horizon Swedish simulation indicates Alzheimer's disease drives very high lifetime societal costs, with most years lived in dementia. A hypothetical DMT that slows clinical progression would delay onset, shift time away from moderate/severe stages toward earlier stages, and be generally cost effective at typical willingness-to-pay thresholds, though not cost saving, because longer survival raises total care costs. Starting treatment earlier (at prodromal AD/MCI stage) and slowing disease progression more effectively improves the treatment's overall value. But to generate net cost savings, the drug price would need to be substantially reduced. Overall, early effective therapies could reduce time in severe dementia and deliver good value even if total spending increases.

Projects finalized under the Partnership

Cardio-Metabolic

Lipid goal attainment in Sweden using the national registry Swedeheart

KI: Tomas Jernberg
MSD: Stina Salomonsson

Publications: Published in European Heart Journal - Quality of Care & Clinical Outcomes, 2021

Allahyari A, Jernberg T, Lautsch D, Lundman P, Hagström E, Schubert J, Boggs R, Salomonsson S, Ueda P. Low-density lipoprotein-cholesterol target attainment according to the 2011 and 2016 ESC/EAS dyslipidaemia guidelines in patients with a recent myocardial infarction: nationwide cohort study, 2013-17. Eur Heart J Qual Care Clin Outcomes. 2021 Jan 25;7(1):59-67. doi: 10.1093/ehjqcco/qcaa016.

LDL cholesterol target attainment after myocardial infarction under 2011 and 2016 ESC/EAS dyslipidaemia guidelines

Situation: Lowering LDL cholesterol (LDL-C) after myocardial infarction reduces recurrent cardiovascular risk. This study assessed how often patients meet guideline LDL-C goals early after discharge and at one year and described prevailing treatment patterns.

Approach: Using nationwide Swedish registers, the study followed adults with recent myocardial infarction and measured LDL-C at two routine follow-ups. It summarized statin intensity and ezetimibe use, quantified target attainment under the 2011 and stricter 2016 guidelines and compared results before and after the 2016 guideline release.

Results/Impact: Most patients received high-intensity statins, with limited ezetimibe use. Many met the older (2011) target, but far fewer achieved the stricter (2016) target, and a substantial share were still meaningfully above goal. After the 2016 guidelines, combination therapy and target attainment improved but remained insufficient. Overall, the findings highlight persistent gaps and the need for broader use of combination therapy and, when necessary, PCSK9 inhibitors, supported by systematic follow-up to ensure patients reach LDL-C goals.

Projects finalized under the Partnership

Cardio-Metabolic

Treatment pattern and treatment goal attainment in patients with pulmonary hypertension (PAH) in Sweden using the national registry SPAHR

KI: Barbro Kjellström
MSD: Rogier Klok

Publications: ESC Heart Failure, 2021

Bouzina H, Rådegran G, Butler O, Hesselstrand R, Hjalmarsson C, Holl K, Jansson K, Klok R, Söderberg S, Kjellström B. Longitudinal changes in risk status in pulmonary arterial hypertension. ESC Heart Fail. 2021 Feb;8(1):680-690. doi: 10.1002/ehf2.13162.

How PAH Risk Changes over Three Years and Why the First Year Matters: Evidence from the Swedish Registry

Situation: In pulmonary arterial hypertension (PAH), patients are classified at each visit, in alignment with ESC/ERS guidelines, as low, intermediate, or high risk based on symptoms, exercise capacity, biomarkers, imaging, and hemodynamics; low risk is linked to better survival. This study asked how those risk categories change over the first three years after diagnosis and whether treatment intensity matches risk, with separate analyses for younger patients with few comorbidities and for older/more comorbid patients.

Approach: Researchers analyzed 503 incident patients with PAH diagnosed 2008-2019 from the Swedish national PAH registry (SPAHR). They applied the SPAHR risk assessment model at diagnosis and at 1, 2, and 3 years, and described PAH-targeted therapy at each time point (monotherapy, dual, triple). Patients were split into a ≤75 years cohort with fewer than three comorbidities (n=340) and a >75 years cohort with three or more comorbidities (n=163).

Results/Impact: Most patients did not reach or maintain low-risk status over three years. Risk at one year set the long-term trajectory: patients who were low risk at one year largely stayed low risk, while those remaining intermediate or high risk rarely improved and had poor outcomes. Despite this, many non–low-risk patients stayed on monotherapy, indicating opportunities for earlier, guideline-directed treatment escalation. In older and more comorbid patients, low-risk status was uncommon and mortality high. Overall, the first year after diagnosis is pivotal; achieving low risk early is linked to better outcomes, underscoring the need for proactive escalation when low-risk targets are not met

Projects finalized under the Partnership

Cardio-Metabolic

Longitudinal changes in risk status in relation to treatment approaches, age and comorbidity burden in pulmonary arterial hypertension

KI: Barbro Kjellström
MSD: Rogier Klok

Publications: Published in Pulmonary Circulation, 2020

Hjalmarsson C, Butler O, Hesselstrand R, Holl K, Jansson K, Klok R, Rådegran G, Söderberg S, Kjellström B. Poor outcome of patients with pulmonary arterial hypertension with insufficient response to phosphodiesterase-5 inhibitors alone or in combination with other specific therapy: a registry-based study. Pulm Circ. 2020 Sep 28;10(3):2045894020958557. doi: 10.1177/2045894020958557.

Outcomes of PAH Patients Not Meeting Treatment Goals on PDE-5 Inhibitors: Real-World Evidence from the Swedish Registry

Situation: Pulmonary arterial hypertension (PAH) is widely treated with Phosphodiesterase-5 inhibitors (PDE5i), often with add-on therapy. However, a substantial subset of patients does not reach guideline-recommended treatment goals. This study followed newly diagnosed patients who, after about 3 months on PDE5i, still missed goals for symptoms, exercise capacity, and cardiac biomarkers.

Approach: Using the Swedish national PAH registry (SPAHR), investigators identified adults treated with PDE5i for at least 90 days who met predefined “insufficient response” criteria at an index visit. Symptoms were then reassessed 6–18 months later, exercise capacity, NTproBNP, WHO FC and SPAHR risk assessment model, while describing concurrent treatment patterns. Riociguat users were excluded.

Results/Impact: Most patients who were off-target after ~3 months on PDE5i remained at intermediate risk with little clinical improvement, indicating that failing to reach low-risk targets early often leads to unfavorable trajectories unless therapy is proactively intensified.

Projects finalized under the Partnership

Cardio-Metabolic

Achievement of multiple components of improvement (MCI) and its association with outcomes in individuals with pulmonary arterial hypertension (PAH)

KI: Barbro Kjellström
MSD: Tanvee Thakur

Publications: Hjalmarsson et al 2025 J Heart Lung Transplant

Hjalmarsson C, Thakur T, Weiss T, Björklund E, Papageorgiou JM, Rådegran G, Söderberg S, Wåhlander H, Lautsch D, Kjellström B. Risk assessment models and survival in pulmonary arterial hypertension: A SPAHR analysis. J Heart Lung Transplant. 2025 Nov;44(11):1787-1797. doi: 10.1016/j.healun.2024.10.029.

Situation: Timely and accurate follow up on risk stratification is recommended to guide therapy and forecast outcomes in pulmonary arterial hypertension (PAH). This study evaluated three risk assessment models: Multicomponent Improvement (MCI), European Society of Cardiology/European Respiratory Society (ESC/ERS) 4-strata risk (4SR) assessment, and the French Risk Score (FRS), and assessed their performance across age and comorbidity.

Approach: Using data from the Swedish national PAH registry (SPAHR), prognostic value of MCI, 4SR, and FRS for predicting survival of patients with PAH in Sweden (n=411). All risk prediction models are based on 3 parameters: WHO-FC, 6 min walked distance and NTproBNP. The models were assessed at 6 months and stratified by age (<65 and ≥65 years) and linked to transplant free survival.

Results/Impact: All models were found to have prognostic relevance for transplant free survival. Risk prediction was incremental with the number of low-risk criteria met, while improvements in only one of 6MWD, NT-proBNP, or WHO-FC showed a modest association with survival. The risk assessment tools predicted outcome in patients across both age categories. Older patients had higher baseline risk, less improvement at 6 months, and worse survival. Reduced kidney function was a strong independent prognostic factor. Applying these simplified 6-month assessments can reliably forecast outcomes, support timely treatment escalation when low risk targets are not reached, and serve as pragmatic surrogate endpoints in trials.

Projects finalized under the Partnership

Cardio-Metabolic

Six Month Risk Status Also Predicts "Event Free" Time: Fewer Hospitalizations and Less Need for Advanced Therapy

KI: Barbro Kjellström
MSD: Tanvee Thakur

Publications: Hjalmarsson et al 2025 Pulm. Circ

Hjalmarsson C, Thakur T, Rådegran G, Björklund E, Wåhlander H, Nisell M, Papageorgiou JM, Söderberg S, Lautsch D, Kjellström B. Risk Assessment Models and Event-Free Survival in Pulmonary Arterial Hypertension. Pulm Circ. 2025 Jul 18;15(3):e70132. doi: 10.1002/pul2.70132.

Situation: Event-free survival (EFS) and absence of pulmonary arterial hypertension (PAH) related hospitalizations, may represent clinically meaningful disease stability beyond mortality in patients with PAH. This study aimed to investigate the relationship between risk status at 6 months after diagnosis and EFS, by three risk models: Multicomponent Improvement (MCI), ESC/ERS 4-Strata Risk (4SR), and noninvasive French PH Registry Score (FRS).

Approach: In a retrospective study using data from the Swedish national PAH registry (SPAHR), incident adults (n=411) with complete baseline and 6-month data were risk stratified at 6 months for assessing MCI (longitudinal change), 4SR (point in time), and the FRS (count of low-risk criteria). Records were linked to national hospitalization and prescription registries.

Results/Impact: Event free survival was higher in patients who: (1) achieved two or three MCI criteria compared to one or no MCI criterion; (2) were assessed as 4SR low, intermediate-low, or intermediate-high compared to high risk or (3) fulfilled one, two, or three low-risk FRS criteria, compared to no low-risk criterion. Performing a risk assessment 6 months after diagnosis effectively predicts the likelihood of EFS in the studied population, highlighting its prognostic value.

Projects finalized under the Partnership

Cardio-Metabolic

NT-proBNP in HFrEF in clinical practice

KI: Lars Lund, Gianluigi Savarese

MSD: Dominik Lautsch

Publications: Ferrannini et al 2024, ESC Heart Failure

Ferrannini G, Benson L, Lautsch D, Dahlström U, Lund LH, Savarese G, Carrero JJ. N-terminal pro-B-type natriuretic peptide concentrations, testing and associations with worsening heart failure events. ESC Heart Fail. 2024 Apr;11(2):759-771. doi: 10.1002/ehf2.14613.

NTproBNP Testing in Heart Failure: Utilization Patterns and Links to Worsening Events in RealWorld Practice

Situation: NTproBNP is recommended in heart failure care for diagnosis, risk stratification, and monitoring, yet how routinely it is used and how test results relate to worsening heart failure events (hospitalizations for heart failure) in clinical practice is not well characterized. This study assessed testing trends, patient factors associated with being tested, real-world NTproBNP level distributions, how levels change over time, and how those levels and changes relate to subsequent worsening events.

Approach: Using linked Swedish registries, investigators analysed adults in the Swedish Heart Failure Registry (SwedeHF) residing in Stockholm and with laboratory data captured in the SCREAM database (2011–2018). The study examined who gets NTproBNP testing, how levels are distributed and change over 6-month windows around the first registry entry, and how level patterns relate to heart failure hospitalization.

Results/Impact: NT-proBNP testing in heart failure increased over time but was still performed in only about half of patients by 2018. Testing clustered around clinical deterioration and, importantly, persistently high or rising NT-proBNP levels were independently associated with heart failure hospitalization. These findings indicate underuse of a guideline-recommended biomarker and support broader, systematic implementation of NT-proBNP testing in routine care to improve risk assessment and identify patients entering a vulnerable phase.

Projects finalized under the Partnership

Cardio-Metabolic

Long-term major adverse liver outcomes in noncirrhotic NAFLD and prognostic performance of invasive versus noninvasive fibrosis assessment

KI: Hannes Hagström

MSD: Xiao Zhang, Tongtong Wang

Publications: Long-term major adverse liver outcomes in 1,260 patients with non-cirrhotic NAFLD - ScienceDirect

Akbari C, Dodd M, Stål P, Nasr P, Ekstedt M, Kechagias S, Vessby J, Rorsman F, Zhang X, Wang T, Jemielita T, Fernandes G, Engel SS, Hagström H, Shang Y. Long-term major adverse liver outcomes in 1,260 patients with non-cirrhotic NAFLD. JHEP Rep. 2023 Sep 25;6(2):100915. doi: 10.1016/j.jhepr.2023.100915.

Long-term risk of serious liver outcomes in non-cirrhotic NAFLD and the prognostic performance of invasive vs. non-invasive fibrosis assessment

Situation: Clinicians need robust, long-term estimates of progression risk in non-cirrhotic non-alcoholic fatty liver disease (NAFLD) and clarity on whether non-invasive fibrosis tests can substitute for biopsy for prognostication. Long-term outcome data are scarce; this study provides updated, population-linked estimates over decades and compares the prognostic performance of the non-invasive tools versus biopsy on long-term outcomes.

Approach: A nationwide Swedish cohort of adults with noncirrhotic NAFLD was linked to national registries and matched to the general-population reference. Baseline fibrosis (F0–F3) was assessed by clinical methods including biopsy, elastography, or FIB-4. Outcomes included cirrhosis and related complications. The study compared long-term event rates across fibrosis stages, , and evaluated the prognostic performance of non-invasive tools (e.g., FIB-4) versus biopsy.

Results/Impact: Progression risk rose steeply by fibrosis stage: F3 had substantially higher long-term cirrhosis risk than F0–F2 (20-year cumulative incidence of major adverse liver outcomes: 35% for F3 vs ~3% for F0; 2% for reference). Non-invasive scores (FIB-4) predicted outcomes comparably to biopsy (C-indices: 0.72–0.73), though overall discrimination was modest. Findings support broader use of non-invasive fibrosis assessment and fewer routine biopsies, while underscoring the need for improved risk-stratification.

Projects finalized under the Partnership

Cardio-Metabolic

Real world outcomes and predictors in MASLD related cirrhosis – a nationwide Swedish study (2001–2020)

KI: Hannes Hagström

MSD: Xiao Zhang

Publications: Characteristics and Clinical Outcomes in Patients With Cirrhosis due to MASLD in Sweden - PMC

Shang Y, Widman L, Zhang X, Fernandes G, Melaragno MG, Engel SS, Vessby J, Ekstedt M, Hagström H. Characteristics and Clinical Outcomes in Patients With Cirrhosis due to MASLD in Sweden. Liver Int. 2026 Feb;46(2):e70487. doi: 10.1111/liv.70487.

Situation: There is limited real- world data on the prognosis of patients with cirrhosis due to metabolic fatty liver disease (MASLD); prior studies are often small or from specialist centres and may not reflect routine care.

Approach: National Swedish health registers (2001–2020) identified 3,657 people with MASLD related cirrhosis (compensated n = 2,318; decompensated n = 1,339). Outcomes were first liver complication (ascites, encephalopathy, or variceal bleeding), liver transplant, or all cause death. Results were compared with those in a hospital cohort (293 patients) with lab data and standard liver scores (MELD, Child–Pugh, FIB 4).

Results/Impact: Median age was 71 years overall (compensated: 70; decompensated: 72). Type 2 diabetes was present in 88.7% of compensated and 86.0% of decompensated patients. The composite outcome (first decompensation, transplant, or death) occurred in 33.5% at 1 year and 65.1% at 5 years among compensated patients. In the decompensated group, 44.0% had died or received a transplant by 1 year. The cumulative incidence estimates were similar in the clinical cohort. Higher MELD and worse Child–Pugh scores predicted worse outcomes. Having type 2 diabetes was associated with about 1.8 times the risk of progressing to a severe liver event compared with patients without type 2 diabetes, after adjustment for age, sex, calendar year, body mass index and other covariates in the model. This study describes the clinical characteristics and the natural history of patients with MASLD-cirrhosis by compensation status in Sweden, providing estimates for important outcomes that are useful for patient prognostication and clinical trial design.

Projects finalized under the Partnership

Cardio-Metabolic

Longitudinal biomarker levels, not their rate of change, predict major adverse liver outcomes in non-cirrhotic MASLD

KI: Hannes Hagström
MSD: Xiao Zhang

Publications: Association between longitudinal biomarkers and major adverse liver outcomes in patients with non-cirrhotic metabolic dysfunction-associated steatotic liver disease - PubMed

Shang Y, Akbari C, Dodd M, Zhang X, Wang T, Jemielita T, Fernandes G, Engel SS, Nasr P, Vessby J, Rorsman F, Kechagias S, Stål P, Ekstedt M, Hagström H. Association between longitudinal biomarkers and major adverse liver outcomes in patients with non-cirrhotic metabolic dysfunction-associated steatotic liver disease. Hepatology. 2025 May 1;81(5):1501-1511. doi: 10.1097/HEP.0000000000001045

Situation: It is unclear whether repeated measurements or the rate of change of noninvasive biomarkers (FIB 4, AST, platelet count) improve prediction of major adverse liver outcomes (MALOs) in patients with non cirrhotic MASLD; prior studies mostly used single values or simple category changes.

Approach: Pooled cohort of 1,260 adults with non cirrhotic MASLD from three Swedish university hospitals (diagnoses 1974–2020; 71.7% biopsy proven). Baseline clinical and lab data were collected and patients followed (median 12.2 years) for MALOs (composite of cirrhosis, hepatic failure, transplant, HCC, MELD ≥15, or liver related death). Individual biomarker trajectories were estimated with mixed effects models and linked to time to event models to test whether the current biomarker level or its rate of change predicted MALOs; models adjusted for age, sex, BMI, diabetes, hyperlipidemia and baseline fibrosis.

Results/Impact: Median age 52 years; 59% male; 31.7% had stage F2–F3 fibrosis. Over 18,657 person years, 111 (8.8%) developed a MALO. The most recent (time varying) values of FIB 4, AST and platelet count were strongly associated with MALO risk (e.g., doubling FIB 4 ≈2.6 fold higher adjusted hazard), while the slope (rate of change) of these biomarkers was not predictive after adjustment. Baseline diabetes, hyperlipidemia, older age, and higher fibrosis stage also increased risk. These findings support using repeated absolute biomarker values for risk stratification in non cirrhotic MASLD and demonstrate the potential prognostic value of these biomarkers as surrogate endpoints in clinical trials.

Ongoing projects under the Partnership

In addition to completed studies, the partnership supports a portfolio of ongoing projects across multiple therapeutic areas.

ONCOLOGY AND HEMATOLOGY

- Patient Demographics, Clinical Characteristics, and Biomarker Profiles in Gastric, and Gastroesophageal Junction Cancers

  KI: Lisa Liu Burström
  MSD: Vivek Khurana

- Patient characteristics and outcomes in patients with MPN generally, with focus on essential thrombocythemia in Sweden 2006–2021

  KI: Anna Ravn-Lindtblom, Therese Andersson
  MSD: Xioqin Yang

- Characterization and Molecular Profiling of HER2neg and ERneg, ERlow or ERhigh Breast Cancer Tumor Samples

  KI: Johan Hartman
  MSD: Demet Sönmez

- PEARL- Prevalence of AR-LBDm in post-ARPI mCRPC patients treated in European Academic Centers performing ctDNA

  KI: Henrik Grönberg
  MSD: Rituparna Bhattacharya and Ping Du

IMMUNOLOGY

- Prevalence of ulcerative colitis (UC) patients who experience fibrotic complications and association to comorbidities and death

  KI: Jonas Ludvigsson
  MSD: Gui Liu

INFECTIOUS DISEASES

- Respiratory Syncytial Virus (RSV) Disease Outcomes Validation in Healthcare Databases

  KI: Pontus Nauclér
  MSD: Neil Murphy

- Burden of RSV hospitalization in infants in Sweden

  KI: Pontus Nauclér
  MSD: Weijia Wang

- Effectiveness of V114 in Preventing IPD in Sweden

  KI: Pontus Nauclér
  MSD: Jessica Weaver, Nicole Cossrow

- Mental and economic burden in parents after death of a child in Sweden

  KI: Martin Neovius
  MSD: Goran Bencina

- Impact of 4vHPV/9vHPV on prevalence of Anogenital Warts in swedish men and women

  KI: Karin Sundström
  MSD: Vivan Wang

- Gardasil 3-dose Nordic Country Surveillance – Sweden, VIP Ext Ext study
  – Impact and effectiveness, database studies, follow up HPV cohort in Sweden, Denmark and Norway

  KI: Karin Sundström
  MSD: Ya-Ting Chen, Joseph Tota

- Gardasil 2-dose impact/effectiveness

  KI: Karin Sundström
  MSD: Susanne Hartwig

- Population Based Nested Case-Control Study Evaluating Effectiveness of Gardasil Vaccination Against RRP in Sweden AND Population Based Nested Case-Control Study Evaluating Effectiveness of Gardasil Vaccination Against juvenile RRP in Sweden

  KI: Karin Sundström
  MSD: Ya-Ting Chen, Joseph Tota

- Evaluating the short-term clinical and economic burden of Epstein Barr Virus-associated infectious mononucleosis, and the impact of an IM diagnosis in adolescence on subsequent physical and mental health, education, and socioeconomic status

  KI: Scott Montgomery
  MSD: Susan Hariri

- Long-term Burden of Invasive Pneumococcal Disease in Sweden

  KI: Martin Neovius, Gustaf Bruze
  MSD: Salini Mohanty

Words from the Partnership Team

Richard Cowburn

Head of the External Engagement Office at KI

"Successful collaboration between academia and industry has the potential to create something truly powerful for patients and society. Within this partnership, researchers from Karolinska Institutet and MSD have been able to pose new questions to data and jointly generate knowledge that can be translated into clinical development and improved care. The most valuable collaborations are those that are given time to mature. After ten years, we see how initiatives that began as individual analyses have evolved into a long-term exchange of knowledge between academic and industry researchers."

Cecilia Aulin

Alliance Manager for the Partnership at KI

"As an Alliance Manager, I have had the privilege of supporting collaborative projects across different therapeutic areas within the partnership. Seeing how collaboration brings out more from both organizations than could be achieved independently has been particularly rewarding. Managing expectations and facilitating open dialogue are essential to making the collaboration work. This is truly a collaborative partnership, and I am proud to support research that generates meaningful benefits for patients."

Photos: Liza Simonsson, Andreas Andersson and MSD.

Stina Salomonsson

Executive Director, Outcomes Research at MSD

"We initiated the collaboration with the ambition to focus on research questions of shared interest to both Karolinska Institutet researchers and MSD, building on the unique Swedish register infrastructure. Early on, we recognized that the potential extended far beyond individual projects, offering the opportunity to develop a long-term research platform. The mutual interest and benefits of collaborating is encouraging expansion and we are continuously exploring new indications and areas of overlapping interests with the ambition to initiate impactful studies."

Nina Zisko

Alliance Manager for the Partnership at MSD

"From an alliance management perspective at MSD, the collaboration with Karolinska Institutet is highly valued across the organization. KI's scientific excellence and the strength of the Swedish healthcare data environment allow us to address research questions with a depth and credibility that would be difficult to achieve on our own. The partnership supports open dialogue, shared learning, and mutual trust, and it consistently demonstrates how close collaboration with academia strengthens both the quality and the impact of our research."

List of Publications

Abbadi et al 2024, Aging Clin Exp Res.,
Abbadi A, Gentili S, Tsoumani E, Brandtmüller A, Hendel MK, Salomonsson S, Calderón-Larrañaga A, Vetrano DL. Impact of lower-respiratory tract infections on healthcare utilization and mortality in older adults: a Swedish population-based cohort study. Aging Clin Exp Res. 2024 Jul 17;36(1):146.

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Abbadi A, Beridze G, Tsoumani E, Brandtmüller A, Hendel MK, Salomonsson S, Calderón-Larrañaga A, Vetrano DL. Sex differences in the impact of lower respiratory tract infections on older adults' health trajectories: a population-based cohort study. BMC Infect Dis. 2024 Nov 1;24(1):1227.

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Acs B, Hartman J, Sönmez D, Lindman H, Johansson ALV, Fredriksson I. Real-world overall survival and characteristics of patients with ER-zero and ER-low HER2-negative breast cancer treated as triple-negative breast cancer: a Swedish population-based cohort study. Lancet Reg Health Eur.

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Akbari C, Dodd M, Stål P, Nasr P, Ekstedt M, Kechagias S, Vessby J, Rorsman F, Zhang X, Wang T, Jemielita T, Fernandes G, Engel SS, Hagström H, Shang Y. Long-term major adverse liver outcomes in 1,260 patients with non-cirrhotic NAFLD. JHEP Rep. 2023 Sep 25;6(2):100915.

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Allahyari A, Jernberg T, Lautsch D, Lundman P, Hagström E, Schubert J, Boggs R, Salomonsson S, Ueda P. Low-density lipoprotein-cholesterol target attainment according to the 2011 and 2016 ESC/EAS dyslipidaemia guidelines in patients with a recent myocardial infarction: nationwide cohort study, 2013-17. Eur Heart J Qual Care Clin Outcomes. 2021 Jan 25;7(1):59-67.

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Bencina G, Sabale U, Morais E, Ovcinnikova O, Oliver E, Shoel H, Meiwald A, Hughes R, Weston G, Sundström K. Burden and indirect cost of vaccine-preventable cancer mortality in Europe. J Med Econ. 2024 Apr;27(sup2):30-40

Bouzina et al ESC Heart Failure, 2021
Bouzina H, Rådegran G, Butler O, Hesselstrand R, Hjalmarsson C, Holl K, Jansson K, Klok R, Söderberg S, Kjellström B. Longitudinal changes in risk status in pulmonary arterial hypertension. ESC Heart Fail. 2021 Feb;8(1):680-690

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Ferrannini G, Benson L, Lautsch D, Dahlström U, Lund LH, Savarese G, Carrero JJ. N-terminal pro-B-type natriuretic peptide concentrations, testing and associations with worsening heart failure events. ESC Heart Fail. 2024 Apr;11(2):759-771.

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Hjalmarsson C, Butler O, Hesselstrand R, Holl K, Jansson K, Klok R, Rådegran G, Söderberg S, Kjellström B. Poor outcome of patients with pulmonary arterial hypertension with insufficient response to phosphodiesterase-5 inhibitors alone or in combination with other specific therapy: a registry-based study. Pulm Circ. 2020 Sep 28;10(3):2045894020958557.

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Hjalmarsson C, Thakur T, Weiss T, Björklund E, Papageorgiou JM, Rådegran G, Söderberg S, Wåhlander H, Lautsch D, Kjellström B. Risk assessment models and survival in pulmonary arterial hypertension: A SPAHR analysis. J Heart Lung Transplant. 2025 Nov;44(11):1787-1797.

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Shang Y, Akbari C, Dodd M, Zhang X, Wang T, Jemielita T, Fernandes G, Engel SS, Nasr P, Vessby J, Rorsman F, Kechagias S, Stål P, Ekstedt M, Hagström H. Association between longitudinal biomarkers and major adverse liver outcomes in patients with non-cirrhotic metabolic dysfunction-associated steatotic liver disease. Hepatology. 2025 May 1;81(5):1501-1511.

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Partnership Report – Karolinska Institutet and MSD
Produced by the Office of Research Support and External Relations at Karolinska Institutet 2026
Cover photo: Liza Simonsson
Graphics: The Noun Project

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