

Region Uppsala

Health Impact Bond

Fact sheet: Description of the initiative

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Summary

The Health Impact Bond is a new way to work with liquidity-based financing and risk-sharing within the field of preventive care in Region Uppsala. The Health Impact Bond finances an innovative screening and treatment initiative for early detection and treatment of people with high blood pressure (hypertension) and several other underlying and related cardiovascular risk factors such as high blood lipids, impaired kidney function, and high blood sugar.

Hypertension and its underlying and related cardiovascular risk factors rarely cause symptoms, but are often discovered when serious complications occur, such as stroke and heart attack. Therefore, screening to detect hypertension may be a suitable method for identifying these disease states. If these risk factors are discovered in time, there are effective and potentially life-saving treatments, mainly with medications. Additionally, hypertension and its complications are among the most costly medical conditions for healthcare.

The initiative has been designed and will be project-managed by two experienced specialist doctors in cardiology and vascular surgery at the Uppsala University Hospital. During the initiative, it is estimated that 9,000 treatments can be initiated to combat high blood pressure and/or related risk factors such as high cholesterol, impaired kidney function and high blood sugar. The initiative will be implemented over five years.

For Region Uppsala, the project enables the implementation of an innovative screening method to avoid major cardiovascular events and death (MACE¹). By finding and offering these people life-saving treatment, Region Uppsala calculates to be able to prevent 650 serious cardiovascular events over a ten-year period and avoid healthcare costs of approximately SEK 160 million. The project's total budget amounts to SEK 80 million.

The project is financed through a bond that involves risk sharing with an external investor, where the return is linked to project success. The financial bond model has been developed by Region Uppsala together with Skandinaviska Enskilda Banken AB (SEB) and the health insurance company Skandia Mutual Life Insurance Company. The bond has been fully subscribed by Skandia.

Background to the Health Impact Bond

¹ Acronym for Major Adverse Cardiovascular Events, i.e. serious adverse cardiovascular event. Comprehensive cardiovascular death, as well as non-fatal myocardial infarction, stroke or heart failure.

Healthcare is facing several challenges, both in Sweden and globally, with an aging population, new treatment methods, and the need for new ways to make health care more efficient. This implies demand on the healthcare system to produce more care with less resources. Today, the majority of the healthcare resources go to caring for those who are already ill, while a smaller portion is spent on preventive measures to reduce the influx of new patients.

Increased focus on preventive initiatives can, over time, reduce Region Uppsala's healthcare costs and thereby release resources that can be used for other healthcare purposes. However, cost savings from preventive healthcare work always come with a delay, which makes them difficult to justify financially in the short term when resources are scarce. Innovative financial solutions are needed to enable large-scale preventive initiatives in healthcare, which in the long term can both save costs and reduce human suffering.

The Health Impact Bond finances an innovative screening and treatment initiative focused on high blood pressure, where the return on the bond is linked to how successful the initiative is. The purpose of the initiative is to avoid cases of serious cardiovascular events and death, as well as to realize cost savings for the region in both the short and long term.

What is a Health Impact Bond?

The Health Impact Bond is a bond that is issued on the financial market, in this case with SEB as sole lead manager. The proceeds will be used to finance a preventive screening and treatment initiative in Uppsala County. The bond has been subscribed in its entirety by Skandia.

Region Uppsala finds that there are several conditions that need to be met for an initiative to be suitable for financing with external funds through a Health Impact Bond. Some of these prerequisites are:

- The health condition is currently causing, or at risk of causing in the future, human suffering and high healthcare costs.
- The target group must be identifiable.
- There are evidence-based initiatives with good prospects for preventing the health condition.
- The result of the initiative is likely to appear within the contract period.
- Patient outcomes and savings, the avoidable costs, occur within a reasonable time horizon.
- There is an uncertainty about how well the initiative will turn out and risk sharing is therefore desirable.

Because the Health Impact Bond's return depends on how well the project turns out, Region Uppsala gets a desired risk sharing in the model. As with all innovative and preventive processes, there is an uncertainty on what the result will be and the treatment effects that will be achieved, as well as the financial effects for Region Uppsala. The risks that the lender in the bond shares with Region Uppsala include finding relevant individuals through the screening and ensuring those with high-risk conditions agree to be included in the screening. Additionally, there is the risk that individuals who have been diagnosed may not initiate and adhere to their drug treatment.

In the event of a successful outcome of the preventive project, the investor will receive a return that is slightly higher than what organizations with a corresponding credit risk pay for ordinary

borrowing on the capital market. If, on the other hand, the initiative is not successful, the lender will receive a negative return, that is, get back less than the 80 million that was initially lent.

Region Uppsala's objective

According to scientific studies, hypertension is the number one risk factor for death globally. However, up to half of those with hypertension are not aware of their health condition, which means that there is a potential for detecting hypertension with screening. Antihypertensive drug treatment provides a relative risk reduction of cardiovascular morbidity and death of up to 20 percent in clinical trials, and this relative risk reduction is also estimated to apply to hypertension detected by screening. In addition, hypertension and its sequelae are some of the medical conditions that cost healthcare the most.

For Region Uppsala the project enables the implementation of an innovative screening method with a high potential to avoid cases of serious cardiovascular disease and death in the population. Based on these avoidable conditions, Region Uppsala is estimated to be able to save lives, human suffering, and future healthcare costs as a result of preventing these conditions. One avoided cardiovascular event has been estimated to cause savings of SEK 250,000 for Region Uppsala. In addition to the cost savings for Region Uppsala, there are large societal and personal savings when cardiovascular events are avoided. These cost savings are not included in the estimated resource savings of SEK 250,000. By offering life-saving treatment to people with these risk conditions, Region Uppsala estimates that this initiative will be able to prevent approximately 650 serious cardiovascular events over a ten-year period and avoid healthcare costs of approximately SEK 160 million.

This is the preventive care initiative

To detect high blood pressure and adjacent cardiovascular risk factors mentioned above, Region Uppsala will annually select 15,000 new individuals from the population register in Uppsala County. The selection takes place among those who reach the ages of 50, 55, 60, 65, 70, and 75 years.

- These individuals are randomly assigned into a screening group or a control group. Both groups are then followed up in registry data and compared regarding cardiovascular disease events and death.
- Region Uppsala will send an invitation letter by post to the individuals selected for invitation to screening. The goal is to invite 30,000 people over 3 years. The number of invitation letters that are sent out will initially be 1,000 per month, starting in the first quarter of 2025. The response rate will be followed up by a project board.
- All those who agree to the screening receive three components sent home:
 - A digital questionnaire to answer at home, mapping lifestyles, risk factors and relevant previous illnesses.
 - A blood pressure monitor for structured blood pressure measurement.
 - A blood test kit with lancet and filter paper, for self-sampling of capillary blood, where you drop a few drops of blood on a filter paper and send back.

People who are found in the screening to have risk factor levels amenable to treatment undergo a confirmatory examination at a special screening clinic. Persons that are diagnosed with high blood

pressure, high blood lipids, high blood sugar, and/or high kidney values are offered standardized drug treatment according to European guidelines.

The innovation in the initiative is to be able to reach a group that usually does not participate in clinical trials or screening, by having most of the screening and sampling to take place at home. This also relieves work from the health care system that can instead be carried out by the citizens themselves.

The initiative has been designed and will be project managed by two experienced specialist doctors in cardiology and vascular surgery at Uppsala University Hospital.

This is how we measure the success of the initiative

The outcome measure that will be followed and determine the success of the initiative over time is the number of initiated treatments, where the patient has retrieved at least 80 percent of the prescribed medication after six (6) months. It is also according to this definition that adherence to medication is followed up in the initiative.

The initiative is carried out in the form of a scientific study, in collaboration with Uppsala University. If the initiative turns out well, there will hence also be scientific evidence for a completely new screening for hypertension and related conditions. A scientific evaluation of the highest standard is required to be able to decide whether an initiative like this should be made permanent, scaled up, and spread, not only in Sweden, but worldwide.

Follow-up and reporting of the initiative will take place on a quarterly basis, consisting of:

- Evaluation in the drug register of treatment intensity and treatment adherence to medication. Each patient's treatment adherence is followed up six months after initiated treatment.
- Evaluation in the patient registry of cardiovascular events and death.
- Evaluation of blood pressure of those who have the blood pressure monitor at home.

Estimated number of initiated treatments is 9,000.

Of which:

- 4,500 for high blood pressure.
- 3,000 for high blood lipids.
- 1,200 for high kidney values.
- 300 for high blood sugar.

The number of invitation letters sent will initially amount to 1,000 per month. The number will be adjusted during the project depending on the response rate achieved, with the goal of initiating 9,000 treatments. The response rate will be followed up by the project board.

A project board will be formed and led by Region Uppsala. The board consists of representatives from Region Uppsala, Skandia and SEB. The project board will convene quarterly, and will then, among other things, be informed about how the project is proceeding. The project board also serves as an advisory and supporting function to Region Uppsala in matters related to the initiative.

The financial return model in the bond

To ensure that the total cost of the project and the financial costs for borrowing do not exceed the financial effects that the outcome of the project provides for Region Uppsala, the outcomes described above have been modeled to determine a probable savings potential.

The savings potential, limited to 10 years, is the basis for the amount to be paid back to the lender.

Region Uppsala's borrowed funds through the Health Impact Bond are SEK 80 million. The bond proceeds are only used to finance the investment. The structure of the Health Impact Bond is a combination of a fixed underlying five-year bond with a zero-coupon structure, as well as an outcome-based part whose return depends of the initiative's achievement of the number of initiated treatments, where the patient has retrieved at least 80 percent of the prescribed medication after six (6) months.

The total number of cardiovascular events avoided in the project over ten years is estimated to be 650. Each avoided cardiovascular event has an estimated avoidable cost for Region Uppsala of SEK 250,000. The calculation is based on an average cost for newly diagnosed stroke (Ghatnekar and Steen Carlsson, 2012)². The cost items that are included in Region Uppsala's calculation are inpatient care, ambulance, outpatient care and prevention. The latter item also includes pharmaceutical costs. The costs have been adjusted to present price levels by the price index with quality-adjusted wages for regions (LPIK)³.

The number of avoided cardiovascular events due to the initiative is dependent on two factors. First, the number of treatments initiated. Second, the compliance to treatment, as described above. The goal is to initiate 9,000 treatments with a compliance to treatment of 80 percent. When the reimbursement amount is to be determined, the actual number of initiated treatments and actual compliance to treatment will be compared to the target values, thereby determining how well the goal of avoiding 650 MACEs has been achieved. This final and probable number of avoided MACEs is then multiplied by the avoidable cost, to get the probable savings potential for Region Uppsala. It is the savings potential that determines how large the repayment amount will be.

If the goals of 9,000 initiated treatments with 80 percent compliance to treatment are reached, a savings potential of approximately SEK 160 million is reached over 10 years. In this case, the investor gets back the entire amount invested as well as an annual interest rate of 5.4 percent. At the same time, Region Uppsala has created savings that are roughly 50 percent higher than the costs of the initiative and the financial fees.

In the financial return model, the upside of the return is limited by a ceiling which is reached at an estimated cost saving for Region Uppsala, attributable to healthcare costs due to hypertension and other diagnoses that constitute risk factors for MACE of SEK 200 million. At the ceiling, the total annual return amounts to 7.1 percent. At this level, Region Uppsala has created savings that are 80 percent higher than the costs of the initiative and the financial fees.

In the same way, the downside in the return model is limited by a floor, which is reached at an estimated cost saving for Region Uppsala for the healthcare costs of SEK 80 million. At the floor, the outcome-based, annual return amounts to -1.9 percent. This corresponds to no interest at all and only 91 percent of the invested amount being repaid. If the cost savings fall outside the floor/ceiling, the entire under/over performance falls to Region Uppsala.

² Ghatnekar, O. & Steen Carlsson, K. (2012). Costs of illness in Stroke. IHE (2012:12) [IHE-RAPPORT-2012_2.pdf \(PROTECTED\)](#)

³SKR (2023) Table appendix wage and price changes, time series 2007 – 2022.

<https://skr.se/skr/ekonomijuridik/ekonomi/prognoserplaneringbudget/prisindex/lpilpik.1332.html>

No payments are made during the term of the bond without repayment of the nominal amount, and the normal interest rate and the outcome-based return (positive or negative) occurs at maturity, i.e. after years five.

Participating Parties

- Region Uppsala, Uppsala University Hospital (Akademiska sjukhuset), in collaboration with Uppsala University
- Skandia Mutual Life Insurance Company
- Skandinaviska Enskilda Banken AB (SEB)

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