Appendix 1

Hello,

Thank you very much for your recent participation in the [redacted] Study. You are receiving this letter because you requested to receive a specific report detailing your individual results in the Feedback Request Form at your appointment.

Heart disease is the number one killer of women, including the number one cause of death for women over the age of 55. Yet, there has been limited attention focused on how heart disease presents in women and how to improve health outcomes in women.

Compared to a man, a woman runs a greater risk of dying following a heart attack or stroke. Women are less likely to be treated by a specialist and are less likely to be transferred to a specialized facility for treatment. We know that even when age and other health conditions are taken into consideration, a woman's risk of dying within the first thirty days after a heart attack is 16% higher than for a man. For stroke it is 11% higher. The reasons for this are unclear.

Currently, there are more questions than answers. The time has come to focus on women's heart health. Following wide consultation, review of available research and the completion of an independent needs assessment, the decision was made to establish a long-term initiative to address the critical issues in women's heart health: the Women's Heart Health Initiative. St. Boniface Hospital Foundation is committed to raise $10 million to create a Women's Cardiac Treatment and Research Centre at St-Boniface Hospital, housed in the I H Asper Cardiac Research Institute.

While the women's cardiovascular research and treatment centre will be implemented incrementally as funds are raised, research is underway to begin to improve women's health. The Happy Hearts Research study is conducting research to test a new approach for identifying people who are at risk for developing cardiovascular diseases before they develop major clinical complications. The cardiovascular health screening protocol we are now testing in Manitoba was initially developed in Minnesota. The original research on 5,000 participants at three sites in the U.S.A. demonstrated this cardiovascular health screening protocol to be a better approach for identifying individuals who have early stages of cardiovascular disease, when compared to traditional cardiovascular health screening methods. The Happy Hearts cardiovascular health screening protocol needs further assessment before it can be implemented in Canada because it is not known if the approach will have similar predictive value within the context of the Canadian health care system.

WOMEN'S HEART HEALTH INITIATIVE
A St. Boniface Hospital Program

[redacted]

Blood pressure at rest

Two numbers are recorded when measuring your blood pressure. The higher (systolic) number represents the pressure while the heart is beating; whereas, the lower (diastolic) number represents the pressure when the heart is resting between beats. For adults, a blood pressure of less than 120/80 is considered to be typical; whereas, 120-139/80-89 is considered the pre-hypertensive with the potential for the future development of high blood pressure (hypertension). Blood pressure of greater than 140/90 is considered to be hypertension for adults and is considered harmful. Your blood pressure can change from minute to minute, morning or night, with changes in posture, exercise or sleeping. Elevated blood pressure causes the heart to work harder than normal. That means both the heart and arteries are more prone to injury. High blood pressure increases the risk of heart attacks, strokes, kidney failure, damage to the eyes, congestive heart failure and atherosclerosis.

As part of your appointment, we measured your resting blood pressure. Your resting blood pressure reading was **x/x mm Hg**. This value is in the abnormal range for blood pressure readings, and would put you at increased risk of cardiovascular disease. As these scores are in the abnormal range, we recommend that you have your blood pressure checked by a primary care provider.

Blood pressure in response to exercise

As part of your appointment, we measured your systolic blood pressure response to exercise. The magnitude of rise in blood pressure during exercise may be an indication of early stiffening of the arteries even if the resting blood pressure is normal. In response to moderate intensity exercise, your systolic blood pressure went up to **x mm Hg**, which is a change of **x mm Hg** from your resting systolic blood pressure measure. This is a higher increase in blood pressure than would typically be seen in response to this intensity of exercise. We recommend that you discuss this value with your primary health care provider.

Arterial elasticity

The arteries, which are blood vessels that supply oxygen rich blood from your heart to your body, change in size to allow a constant flow of blood. Arteries need to be elastic to change in size. Arterial elasticity decreases with age, but is more prominently reduced with blood vessel abnormalities that place individuals at risk for heart attacks or strokes. As a result, our heart needs to work harder to provide oxygen rich blood to our body. Premature loss of elasticity may help predict risk of developing cardiovascular disease and may indicate a need for more specific diagnostic evaluation by a physician.

During your Happy Hearts appointment, your arterial elasticity was measured using computer analysis of the arterial pressure recorded from your wrist. This measure provided information on elasticity of both your large and small arteries. *Please note that the cut offs used in this report are based on research-informed cut offs, whereas, the ones that you were previously provided at your appointment were based on values given by the company that produced the instrument.*

As an example, a typical large arterial elasticity measure for a female 65 years of age or older would be a value greater than 9 mL/mmHg, while the value for someone under 65 tends to be a value greater than 10 mL/mmHg. Your large arterial elasticity value was **x mL/mmHg**. This measure is in the abnormal range for large artery elasticity, and would put you at increased risk of cardiovascular disease.

A typical small arterial elasticity measure for a female 65 years of age or older would be a value greater than 3 mL/mmHg, while the value for someone under 65 is a value greater than 4 mL/mmHg. Your small arterial elasticity value was **x mL/mmHg**. This measure is in the abnormal range for small artery elasticity, and would put you at increased risk of cardiovascular disease.

Arterial elasticity can be improved by adopting healthy lifestyle behaviour changes like a low-fat diet, increasing exercise, quitting smoking, decreasing alcohol consumption and losing weight.

Rasmussen Disease Score

Developed at the Center for Cardiovascular Disease Prevention at the University of Minnesota, the Rasmussen Disease Score (RDS) consists of a series of non-invasive procedures designed to detect early stages of cardiovascular disease for individual patients. The tests included in this measure are the resting blood pressure, blood pressure response to exercise, large artery elasticity, and small artery elasticity. Each of these tests are scored from 0-2 (0 = normal, 1 = borderline, 2 = abnormal) with a total RDS ranging from 0-8. Each individual is categorized based on risk (ie 0-2 = normal, 3-8 = abnormal). Please note that this scoring system is still only in the research stages and is not recognized as a diagnostic tool.

Based on the measures collected at your Happy Hearts appointment, your total Rasmussen Disease Score is **x**, putting you in the abnormal risk category. This score can be improved by lowering blood pressure and increasing arterial elasticity. Recommendations on how to improve these measures have been provided in each of their respective sections.

6 minute walking test

People who walk a longer distance during a six minute walking test have fewer adverse cardiovascular events than people who walk shorter distances. Therefore, we believe there is value in including the six minute walking test to the Happy Hearts protocol.

Walking a distance of over 543m during the six minute walking test indicates no increased relative risk for a cardiovascular event. During the six minute walking test at your appointment, you walked **x meters**. This score relates to a high level of risk for a cardiovascular event.

Performing more physical activity can help to achieve longer distances in the six minute walking test. Canada's physical activity guidelines state that adults should be doing at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week in bouts of at least 10 minutes. They also recommend muscle and bone strengthening activities at least twice per week.

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Cholesterol and triglycerides

Lower levels of high density lipoprotein (HDL or "good" cholesterol) have been associated with increased cardiovascular risk. During your Happy Hearts appointment, one of the blood samples collected was analyzed for this measure. Typical measures for HDL cholesterol should be greater than 1.3 mmol/L.

Your HDL was measured at **x mmol/L**. This value is considered in the abnormal range. We recommend that you have your cholesterol checked by a primary care provider. Research indicates that people can increase their HDL by: (1) maintaining a healthy body weight; (2) exercising regularly; and (3) stopping smoking if they are a smoker.

Higher levels of low density lipoprotein (LDL or "bad" cholesterol), total cholesterol and triglycerides are associated with increased cardiovascular risk. These measures were also analyzed using one of the blood samples collected during your Happy Hearts appointment. Typical measures for LDL cholesterol should be below 3.4 mmol/L, while typical measures for total cholesterol and triglycerides are below 5.2 mmol/L and 1.7 mmol/L respectively.

Your LDL was measured at **x mmol/L**. This value is considered in the abnormal range. We recommend that you have your cholesterol checked by a primary care provider.

Your total cholesterol was determined to be **x mmol/L**. This value is considered in the abnormal range. We recommend that you have your cholesterol checked by a primary care provider.

Your triglycerides were measured at **x mmol/L**. This value is considered in the abnormal range and it is recommended that you discuss this value with your physician. To lower your level of triglycerides, limit alcohol, limit foods high in sugar, follow a low fat high fibre diet, and get regular exercise and lose weight if you are overweight.

Blood glucose

Your fasting blood sample was analyzed for glucose (sugar) concentration. Higher levels of glucose in the blood can increase the risk for developing diabetes. Typical measures for fasting glucose rest between 3.9 and 5.5 mmol/L. Your fasting glucose was measured at **x mmol/L**. This value is considered in the abnormal range. We recommend that you have your blood glucose checked by a primary care provider.

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Fried questionnaire

Frailty has been found to be associated with higher risk for adverse health outcomes. Fried et al. (2001) define frailty as having at least three of the following: unintentional weight loss, self-reported exhaustion, weakness, slow walking speed and low physical activity levels. All of these measures were assessed during your Happy Hearts appointment.

Your accumulated Fried frailty score was **x**, meaning that you fit all of the frailty characteristics listed above. This puts you in the frail category, which suggests you are at higher risk for adverse health outcomes.

CANHEART

The CANHEART health index scoring is scored based on the following factors: non-smoker (or former who quit > 1 year ago), physically active (>30 mins/day), >=5 fruits/veggies per day, BMI <25, non-diabetic, and non-hypertensive. An ideal score would have a participant fitting into all six of these criteria, giving them a score of 6. Health index scoring decreases as less of these criteria are met.

Your CANHEART health index score was measured by using information you entered in the questionnaire at your Happy Hearts appointment. Your health index score was **x**, meaning that you did not meet any of the criteria above. This score would be considered in the poor range, meaning that you are not meeting most of ideal criteria for the different cardiovascular health factors outlined in the index.

International Physical Activity Questionnaire (IPAQ)

The International Physical Activity Questionnaire was created as a means of assessing physical activity and inactivity. During your appointment you filled out an abbreviated IPAQ as an assessment of whether or not you were meeting Canada's Physical Activity Guidelines. Canada's physical activity guidelines state that adults should be doing at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week in bouts of at least 10 minutes.

According to your questionnaire that you filled out at your appointment, you are not meeting Canada's physical activity guidelines. This means that you are not performing enough physical activity to attain health benefits and improved functional ability as outlined by Canada's Physical Activity Guidelines.

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Patient Health Questionnaire 9

During your Happy Hearts appointment you completed the Patient Health Questionnaire 9. The PHQ-9 is a multiple choice self-report measure used for screening and diagnosing depression. The questionnaire consists of 9 different questions, each scored from 0-3 with a score of 27 being the highest.

Your total PHQ-9 score was **x**, indicating severe depression. Based on this, we recommend that you seek the advice of a healthcare provider. Health care providers are trained to assist those with depressive symptoms.

Framingham Risk Score

The Framingham Risk Score is a calculation based on age, gender, cholesterol levels, blood pressure and lifestyle behaviours that is used to estimate 10 year risk of developing coronary heart disease. This is the traditional risk assessment measure that we are comparing our new measure against.

Based on the measures we collected during your Happy Hearts appointment, your Framingham Risk Score was **x**. This indicates a high level of risk for coronary heart disease and a **x%** chance of developing heart disease in the next 10 years. Based on this Framingham Risk Score calculation, your heart/vascular age is **x**. We recommend that you bring this score to your health care provider's attention so that they can provide guidance on how to manage the different factors (systolic blood pressure, diabetes, HDL cholesterol levels and total cholesterol levels) involved in this calculation.