Osteoporosis or "thinning of the bones" affects 1 in 4 Canadian women and 1 in 8 Canadian men. Moreover, while the rates of osteoporosis among Canadians are stabilizing, worldwide the number of people afflicted with osteoporosis continues to rise. The most serious complication of osteoporosis is a broken bone or fracture. Fractures due to osteoporosis can result in long hospital stays, dependence on others, and premature death. While there are several medications that prevent osteoporosis they all have side effects. For example, postmenopausal women who take hormone replacement therapy (HRT) are at increased risk of breast cancer and heart disease. In addition, drugs to prevent osteoporosis are expensive and not available worldwide. Therefore, it is essential that researchers continue to identify and test new medications for the prevention of osteoporosis.

The purpose of our research is to determine if nitrates, a group of drugs that are widely available, inexpensive, and commonly used to treat chest pain or angina, can prevent osteoporosis in women. Our current study is based on previous research by our group in which we found that postmenopausal women with chest pain who take nitrates have higher bone mineral density than postmenopausal women not taking nitrates. Further research by our group revealed that otherwise healthy postmenopausal women given nitrates have less bone breakdown than women not given nitrates.
The next step in this research and the purpose of our current study is to determine if nitroglycerin ointment (applied every night at bedtime for 2 years) in addition to calcium and vitamin D gives a greater improvement in bone mineral density compared to calcium and vitamin D alone. There will be 6 visits to Women’s College Hospital in total. Blood and urine samples will be collected on 4 occasions, bone mineral density (BMD) testing and peripheral quantitated computed tomography (pQCT) testing will be done on 3 occasions. Both of these tests measure aspects of your bone. They are painless and non-invasive.

**Study Inclusion Criteria:**

- 50+ years of age
- Postmenopausal (no menses for at least three year)
- No current use of prescription medications for bone

Your care at your hospital will not be affected in any way if you do not participate in this study.

Your participation in this research study is completely voluntary, and you will be given as much time as necessary to decide whether you wish to participate in this study. If you choose not to participate in this study or if you decide to withdraw at any time, your and your family’s future medical care will not be affected in any way.

**If you have any other questions or concerns about this study, please feel free to contact Celeste Hamilton (The Nitrate and Bone Study Coordinator) at (416) 323-6400 x 4824.**

If you have any questions about your rights as a research participant, you may contact Dr. Ron Heslegrave, Chair, Research Ethics Board, Women’s College Hospital at (416) 351-3732 x 2535.