Multiple Sclerosis and Geology in Nova Scotia: Is there a correlation?
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INTRODUCTION
Multiple Sclerosis (MS) is a chronic inflammatory disease of the Central Nervous System (CNS)1. It is more prevalent in patients of European descent2 and is relatively common in Europe, United States, Canada, New Zealand and parts of Australia3 (Figure 3). It is thought to be multifactorial and though genetic predisposition may be a contributing factor, it does not explain the change in incidence in migrants, suggesting there may be an environmental cause 4,5.

RATIONALE FOR STUDY
High incidence and prevalence of MS may be related to some carboniferous aged coal bearing or evaporite regions of Nova Scotia (NS) (Figure 4)7.

OBJECTIVES
To conduct a review of the medical and geological literature to assess the feasibility of further data collection and analysis of MS in specific geological areas of Nova Scotia.

METHODS AND SOURCES OF INFORMATION
A systematic review was performed using the following options • Dalhousie library search engines. • PubMed. • Google scholar and Google.com search engines. • The Nova Scotia multiple sclerosis integrated database (NS MSID) Project • NS has almost double the national average rate of MS • Founded in 1979, and may be one of the longest running databases • Assistance from Kellogg and Killam libraries re government documents

RESULTS
• There was no evidence showing a definitive etiologic link between MS and geology including coal mining areas.
• The risk of developing MS was representative of the place of birth and early development rather than the present place of residence if different from the birth place 8.
• A correlation between latitude and MS is well documented 1
• An inverse correlation between MS and Vitamin D serum has been shown 10

Discussion
Reports correlating MS with geology appeared in the literature as far back as 1948, when Limburg proposed a connection between the mean annual temperature and hence latitude11. There was interest in an etiologic link between the two based on articles in the 1950's and 1960's but there has not been new information. Recent evidence points to a correlation between MS and latitude and by extension exposure to sunlight and Vitamin D 9,10.

Some reports 12 could not find a clear connection to specific minerals that may be associated with geological rock types such as radon and lead, but other reports have suggested further study based on results of minerals found in soil 13,14. There was no overlap associated with geological rock types such as radon and lead, but other reports have 15. Nova Scotia Canada, Environment (2013). Retrieved on June 25, 2013 from http://www.gov.ns.ca/nse/water/waterquality.natural.water.contaminants.asp

LIMITATIONS
• Difficult to obtain information online about incidence and prevalence rates at sub-provincial levels in Canada. Therefore it is difficult to identify clusters or areas of higher concentration and correlate this with the geology of the area.

Recommendations
• Collaborate with MS medical specialist.
• Examine data on MS cases from the NS MSID including place of residence by county, town or postal code.
• Design and implement questionnaire to identify the place of birth and childhood (up to age 15) if different from present residence for patients confirmed to have MS.
• Compare the incidence and prevalence of MS in different provinces and correlate with the geology.

References
11. 77, 175-188
17. Coal Mining in Cape Breton () Retrieved from http://members.kos.net/sdgagnon/sydb.html