A Survey Assessing the Use of FIT and gFOBT by Physicians Across Newfoundland And Labrador: An Analysis Of Preliminary Data

Aswathi Asokan

Supervisor: Dr. Jerry McGrath, MD, FRCPC

Faculty of Medicine, Memorial University of Newfoundland

Authors do not have any competing interests.

A Survey Assessing the Use of FIT and gFOBT by Physicians Across Newfoundland And Labrador: An Analysis Of Preliminary Data

Abstract

Stool testing is currently the preferred method of screening for colorectal cancer (CRC), due to the relatively low risk (1). Currently, two main fecal tests are considered: the guaiac fecal occult blood test (gFOBT) and the fecal immunochemical test (FIT). Majority of the evidence states that FIT has superior performance characteristics compared to the gFOBT. Additionally, research suggests that gFOBT is used within hospital acute care settings as a diagnostic test, despite the lack of evidence supporting the use of stool-based tests outside of CRC screening (2-4). The objective of this research project was to determine the current practices within Newfoundland and Labrador regarding CRC screening and to determine under what context gFOBT and FIT are being used. An online survey was distributed to physicians in NL who are members of the Newfoundland and Labrador Medical Association (NLMA). Due to poor response rate, preliminary rudimentary statistical data analysis was completed on the responses. The conclusions are made based on limited responses. All of the family and internal medicine physicians recommend CRC screening within their practice. Additionally, the primary method of CRC screening, unanimously, was FIT and that a majority of the responders agree to discontinue gFOBT. The results showed that stool tests are currently being ordered for reasons other than CRC screening such as GI bleeding, anemia and iron deficiency investigations. The survey responses suggested that the stool testing protocols were being followed appropriately, although there is room for improvement.

Introduction

Colorectal cancer (CRC) is the second most common cancer in Canada, accounting for 13% of all cancers (5). Furthermore, Newfoundland and Labrador has the highest incidence rates of CRC in Canada (5). For individuals who are between the ages of 50-75 and at low risk, it is recommended that a stool test be completed at least every 2 years to screen for CRC (5, 6).

Colonoscopy has the highest sensitivity for identifying adenomas and CRC but also has the highest risk of complications, such as perforations and major bleeds (7, 8). Even though stool tests are less sensitive than colonoscopies, they are currently the preferred method of screening for CRC, due to the relatively low risk (1). Colonoscopies are usually only used as a method of screening for CRC for individuals at high risk and are performed when individuals test positive with a stool test (9, 8).

A literature review was conducted and found that the majority of the evidence states that FIT has superior performance characteristics compared to the gFOBT. Most research established that FIT has a higher sensitivity when compared to the gFOBT. More specifically, the FIT is more sensitive at detecting not only CRC, but also advanced neoplasia (10, 11). Additionally, screening with FIT was also more effective at reducing cancer and cancer-related deaths at lower costs annually when compared with gFOBT (7, 11-13). Currently in Newfoundland and Labrador, the gFOBT is being slowly being discontinued across the province. In November 2015, Western Heath discontinued the gFOBT from all laboratory test menus; FIT replaced the gFOBT as the primary method of CRC screening for low/normal risk asymptomatic individuals. The same trend is

continuing across Canada; currently the only other province using gFOBT as the primary method of CRC screening is Ontario.

Additionally, the gFOBT is used within hospital acute care settings as a diagnostic test, despite the lack of evidence supporting the use of stool based-tests outside of CRC screening (2-4). The sensitivity and specificity for stool-based tests for diagnosing anemias, gastrointestinal bleeds, and various other conditions have not been validated (3). Inappropriate use can lead to false positives, which then cause patients to undergo unnecessary endoscopies (3). There is also low adherence to the dietary and medication restrictions for gFOBT tests within this population, which decreases the effectiveness of the test (4). Cumulatively, this can increase stress and anxiety for patients, risk of complications, the length of stay, and health-care costs (2, 4). Moreover, out of the few studies that explore this area of research, the focus has been on investigating the appropriateness of the use of gFOBT for diagnostic tests, not FIT. Hence, if gFOBT is removed from laboratory test menus, the usage of FIT within acute hospital settings will need to be monitored in order to ensure that it is being used appropriately.

This research project aims to determine the current practices within Newfoundland and Labrador regarding CRC screening, determine under what context gFOBT and FIT are being used, and if the necessary restrictions are followed when tests are ordered.

Methods

A survey (Appendix 1) that examined demographic information, usage of FIT and gFOBT in the physicians' practices and their views on the two tests were constructed.

The survey was distributed to the physicians in Newfoundland and Labrador who are members of the Newfoundland and Labrador Medical Association (NLMA) via email. The survey was offered on GoogleForms, in order to increase accessibility, and to promote a faster response rate. Furthermore, the questions were provided in a multiple-choice format to allow for easier and faster data analysis. By using an electronic distribution and survey method, the cost of administration is decreased, there is ease of delivery and, since raw data is automatically entered into a database, additional data entry is not required. Due to ease, a convenience sampling method will be used; this has low cost and high feasibility but will produce low to moderate generalizable data. Since this is a prospective study, this sampling method is appropriate. The survey was offered to the whole physician population, with aims of receiving more responses to the survey, and from physicians practicing in a variety of settings. The aim was to capture physicians working all across the province in order to compare views of physicians from Western Health (where gFOBT has been phased out) versus physicians working in areas such as Eastern Health where gFOBT is still being used for CRC screening. The scope of the research is also broadened to determine if the screening tools are being used appropriately. This is reflected in questions 9, 10, 11 and 12 of the questionnaire.

The survey was emailed to physicians as part of a NLMA newsletter and generated 4 responses. Due to poor response rate and time constraints, preliminary rudimentary statistical data analysis was completed on the 4 responses. Additionally, to ensure that the participants remain anonymous, an overall approach was used, and individual responses were not analyzed. If more responses are obtained, then a logistic or

ordinal regression model can be used to determine the effect of certain variables (such as clinical area, expertise and health region) on the usage of these tests.

Results

The survey was sent out to 2082 NLMA members, out of which, 1282 are practicing physicians. Out of this, four physicians completed the survey.

Demographics

The following demographic information was summarized based on the responses:

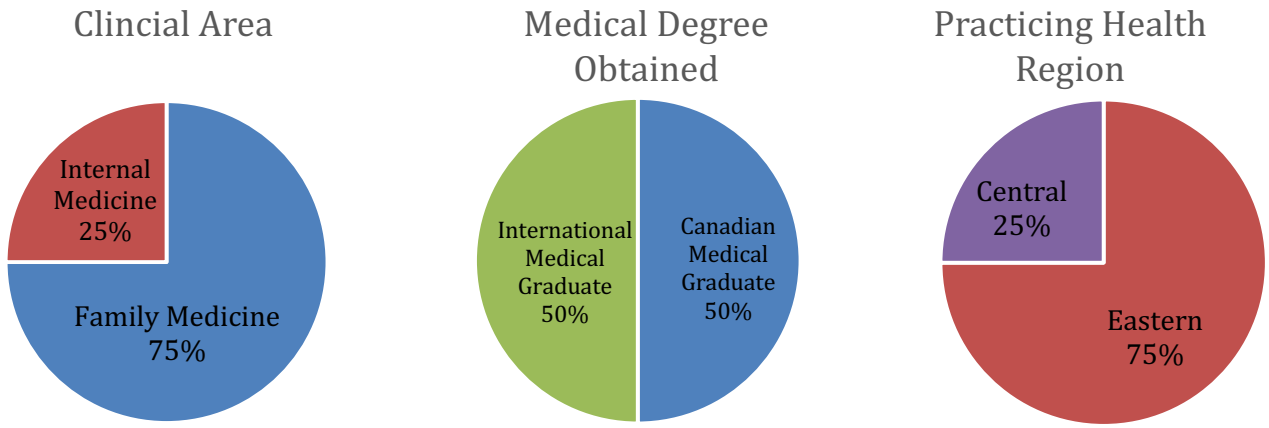

Figure 1: Participant demographics

A majority (three out of four) of the survey responders were in the field of family medicine, and there was one participant who was an internal medicine physician. There were equal number of international (IMG) and Canadian medical graduates (CMG). All survey participants have been practicing in Newfoundland and Labrador for less than five years, with a majority (three out of four) of physicians practicing in Eastern Health. There was one responder from Central Health who practices family medicine.

FIT/gFOBT Usage

Three out of four physicians do not order the gFBOT, while one physician orders gFOBT for anemia investigations. 100% of the physicians order FIT for CRC screening,

with two out of four physicians ordering FIT for additional reasons such as gastrointestinal (GI) bleeding, anemia and/or iron deficiency investigations.

Use of FIT/gFOBT in CRC screening

All four survey participants recommend CRC screening in their practice and use FIT as the primary method of screening.

General consensus is that that gFOBT is not an effective test for CRC screening, with an average rating of 2.75 on a five-point scale. Contrastingly, responders believe that FIT is an effective test for CRC screening with an average rating of 4.5 on a five-point scale.

The majority (three out of four) of the responders correctly identified the age range of patients that they should recommend CRC screening testing to. Most of the responders offer CRC testing for average risk patients starting at age 50 to 75 years old. All of the responders correctly identified the criteria of an "average CRC risk patient" such as patients with no CRC family history and those with only second- or third-degree relatives with CRC. It is also to be noted that one participant chose an additional option that did not fit the criteria for an average CRC risk individual. All participants correctly selected the re-screen time for a FIT test for average CRC risk patients – which was two years.

There was a variety of answers for the survey question that was aiming to determine the knowledge of factors that influence the gFOBT. The summary of responses can be seen in Figure 2. The majority (three out of four) participants chose diet and medications as the factors affecting the gFOBT results. One responder, in addition to the

two responses mentioned above, also selected colour of stool as a factor, and another responder only selected the other option, and did not provide any reasons as to why.

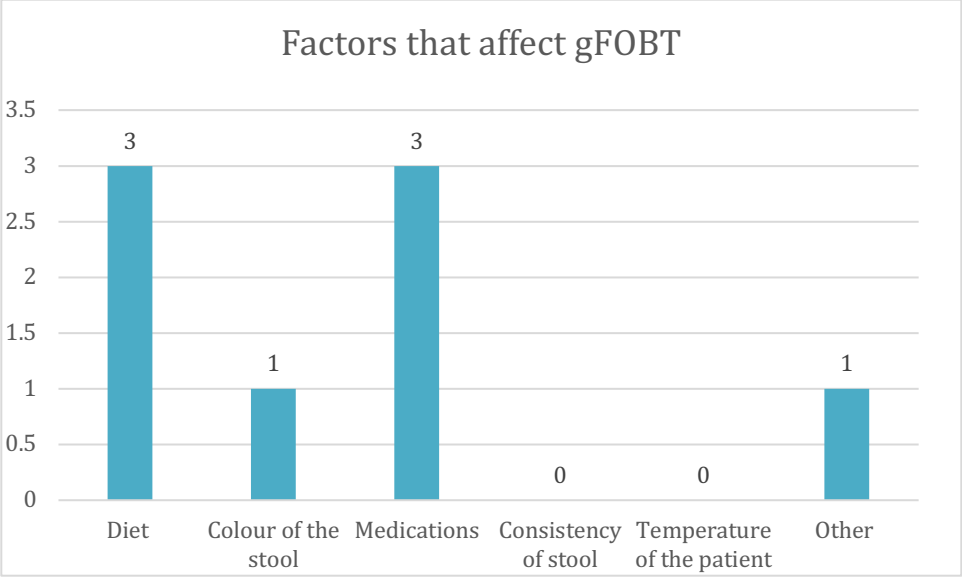

Figure 2: Survey responses for patient factors affecting gFOBT results

Physician Preference of CRC Screening Methods

All participants agree that FIT is a better test than gFOBT. Furthermore, the majority of responders either agreed or strongly agreed that gFOBT should be discontinued across the province with an average rating of 4.25 on a five-point scale. There was one physician that gave a rating of three out of five for the above-mentioned question, and then responded that gFOBT should still be available. The remaining participants all stated that gFOBT should not be available on laboratory test menus. A comment box was also provided to justify the participant's choices for the question. We received the following two responses: "[gFOBT] may have some clinical usefulness in frail elderly / LTC patients etc. who would not be appropriate for more invasive testing - in anemia work up etc." and "[For] Pts younger than 50 with mild sx that u want to exclude GI bleeding."

Interpretation

Overall, 100% of the participants rated FIT to be a superior test and use it as the primary method of CRC screening. The majority of participants are aware of the usage restrictions of the stool tests and was able to identify the average CRC risk patient. There is a general consensus that gFOBT was not an effective test for CRC screening, but only 50% of responders strongly agree to remove gFOBT from lab test menus. Two responders (50%) provided situational examples where they believe gFOBT would be useful. More responses are required to determine if these are common beliefs among physicians across Newfoundland and Labrador.

Although the generalizability of this data is very low due to its low sample size, it may be of interest to note that both the CMGs do not order gFOBT and uses FIT for CRC screening only while both the IMGs use stool tests for reasons other than asymptomatic CRC screening such as GI bleeding, anemia and iron deficiency investigations. It is difficult to ascertain where these responses are outliers, or the common trend; such conclusions cannot be made with this small of a sample size. But, identification of such trends allows us to focus our analysis when more survey responses are gathered.

Limitations

This study suffers from several weaknesses. As previously stated, due to the lack of responses only rudimentary analysis could be completed. Therefore, no correlations or generalizable conclusions can be made. The trends identified here are only preliminary and further survey responses are needed to validate them.

Additionally, no responses were obtained from physicians practicing in Western Health. Hence, no comparisons could be made between a population where gFOBT has

been discontinued (Western Health) to areas where gFOBT is still available (Eastern, Central and Labrador Health).

Conclusions

Even though the response rate was low, the following conclusion are made based on the four responses. All of the family and internal medicine physicians recommend CRC screening within their practice. Additionally, the primary method of CRC screening, unanimously, was the FIT. The results showed that stool tests are currently being ordered for reasons other than CRC screening such as GI bleeding, anemia and iron deficiency investigations. More data is needed in order to illicit the rationale behind this. A majority of survey responses suggested that the stool testing protocols were being followed appropriately, although there is room for improvement. Additional data could provide insight to determine if educational information needs to be distributed to the whole population. Lastly, with these limited responses, there is 100% agreement that FIT is a superior test to gFOBT. It appears that a majority of the responders agree to discontinue gFOBT. But more valid conclusions can only be made by accumulating more survey responses and thus increasing the sample size.

Future Direction

More recruitment is ongoing. The aim is to have not only more responses, but also to have responses from various health regions especially Western Health. If more responses are received, this research project will allow us to gather preliminary data regarding current CRC screening practices in Newfoundland and Labrador. Furthermore, the views physicians have regarding the two stool tests can be obtained; this will aid in determining the best policies and practices to put in place. It will also help determine the

amount of educational strategies and training that needs to be put in place before a change is implemented. Further survey responses will also allow us to determine how effectively the stool tests are being used by physicians in NL and determine if they are using them appropriately.

References

1. Chiu, H. M., Chang, L. C., Hsu, W. F., Chou, C. K., & Wu, M. S. (2015). Non-invasive screening for colorectal cancer in asia. Best Practice & Research.Clinical Gastroenterology, 29(6), 953-965. doi:10.1016/j.bpg.2015.09.015 [doi]
2. Ip, S., Sokoro, A. A., Buchel, A., Wirtzfeld, D., Konrad, G., Fatoye, T., & Singh, H. (2013). Use of fecal occult blood test in hospitalized patients: Survey of physicians practicing in a large central canadian health region and canadian gastroenterologists. *Canadian Journal of Gastroenterology = Journal Canadien De Gastroenterologie, 27*(12), 711-716.
3. Mosadeghi, S., Ren, H., Catungal, J., Yen, I., Liu, B., Wong, R. J., & Bhuket, T. (2016). Utilization of fecal occult blood test in the acute hospital setting and its impact on clinical management and outcomes. *Journal of Postgraduate Medicine, 62*(2), 91-95. doi:10.4103/0022-3859.180553 [doi]
4. Narula, N., Ulic, D., Al-Dabbagh, R., Ibrahim, A., Mansour, M., Balion, C., & Marshall, J. K. (2014). Fecal occult blood testing as a diagnostic test in symptomatic patients is not useful: A retrospective chart review. *Canadian Journal of Gastroenterology & Hepatology, 28*(8), 421-426. doi:16335 [pii]
5. Canadian Cancer Society's Advisory Committee on Cancer Statistics (2016) Canadian Cancer Statistics 2016. Toronto, ON: Canadian Cancer Society.
6. Leddin, D. J., Enns, R., Hilsden, R., Plourde, V., Rabeneck, L., Sadowski, D. C., & Signh, H. (2010). Canadian association of gastroenterology position statement on screening individuals at average risk for developing colorectal cancer: 2010.

7. Heitman, S. J., Hilsden, R. J., Au, F., Dowden, S., & Manns, B. J. (2010). Colorectal cancer screening for average-risk north americans: An economic evaluation. PLoS Medicine, 7(11), e1000370. doi:10.1371/journal.pmed.1000370 [doi]
8. Lin J.S., Piper M.A., Perdue L.A., Rutter C., Webber E.M., O'Connor E., Smith N., & Whitlock E.P. (2016). Screening for Colorectal Cancer: A Systematic Review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 135. AHRQ Publication No. 14-05203-EF-1. Rockville, MD: Agency for Healthcare Research and Quality.
9. Daly, J. M., Bay, C., & Levy, B. T. (2013). Use of fecal immunochemical tests in the iowa research network. Journal of Cancer Education : The Official Journal of the American Association for Cancer Education, 28(3), 397-401. doi:10.1007/s13187-012-0439-8 [doi]
10. Robertson, D. J., Lee, J. K., Boland, C. R., Dominitz, J. A., Giardiello, F. M., Johnson, D. A., . . . Rex, D. K. (2016). Recommendations on fecal immunochemical testing to screen for colorectal neoplasia: A consensus statement by the US multi-society task force on colorectal cancer. The American Journal of Gastroenterology, doi:10.1038/ajg.2016.492 [doi]
11. Schreuders, E. H., Grobbee, E. J., Spaander, M. C., & Kuipers, E. J. (2016). Advances in fecal tests for colorectal cancer screening. Current Treatment Options in Gastroenterology, 14(1), 152-162. doi:10.1007/s11938-016-0076-0 [doi]

12. Armaroli, P., Villain, P., Suonio, E., Almonte, M., Anttila, A., Atkin, W. S., . . . Segnan, N. (2015). European code against cancer, 4th edition: Cancer screening. Cancer Epidemiology, 39 Suppl 1, S139-52. doi:10.1016/j.canep.2015.10.021 [doi]

13. El Zoghbi, M., & Cummings, L. C. (2016). New era of colorectal cancer screening. World Journal of Gastrointestinal Endoscopy, 8(5), 252-258. doi:10.4253/wjge.v8.i5.252 [doi]

Appendix 1

A Survey: The use of FIT/gFOBT by physicians across Newfoundland and Labrador

This survey is only for physicians that administer FIT andg FOBT tests.

General Demographics

1. What is your clinical area?
    a. Family Medicine
    b. Internal Medicine
    c. Gastroenterology
    d. Emergency Medicine
    e. General Surgery
    f. Pediatrics
    g. Other (please specify)
2. How long have you been practicing in Newfoundland and Labrador?
    a. 0-5 years
    b. 5-10 years
    c. 10-20 years
    d. 20+ years
3. Did you receive your medical education in Canada?
    a. Yes
    b. No
4. Which health region do you work in?
    a. Eastern
    b. Central
    c. Western
    d. Labrador

FIT/FOBT Usage:

5. In your practice, what are the main reasons for ordering gFOBT? Select all that apply
    a. CRC screening
    b. GI bleeding investigation
    c. Anemia Investigation
    d. Iron Deficiency (with or without anemia)
    e. Overt GI Blood loss
    f. Non-bloody Diarrhea
    g. IBD, Colitis
    h. Haemorrhoids
    i. Obscure GI bleeding
    j. I do not order gFOBT
    k. Other (please specify)

6. In your practice, what are the main reasons for ordering a FIT. Select all that apply.
    a. CRC screening
    b. GI bleeding investigation
    c. Anemia Investigation
    d. Iron Deficiency (with or without anemia)
    e. Overt GI Blood loss
    f. Non-bloody Diarrhea
    g. IBD, Colitis
    h. Haemorrhoids
    i. Obscure GI bleeding
    j. I do not order FIT
    k. Other (please specify)

Use of FIT/FOBT in CRC Screening

7. Do you currently recommend CRC screening to your patients in your practice?
    a. Yes
    b. No
8. Which test do you use for CRC screening?
    a. gFOBT
    b. FIT
    c. Colonoscopy
    d. Other (please specify)
9. On a scale of 1-5, how useful is the gFOBT test in detecting CRC?
    a. 1 (Not Useful)
    b. 2 (Somewhat Not Useful)
    c. 3 (Neutral)
    d. 4 (Somewhat Useful)
    e. 5 (Very Useful)
10. On a scale of 1-5, how useful is the FIT test in detecting CRC (?
    a. 1 (Not Useful)
    b. 2 (Somewhat Not Useful)
    c. 3 (Neutral)
    d. 4 (Somewhat Useful)
    e. 5 (Very Useful)
11. What age bracket do you recommend CRC testing (check all that apply)
    a. Less than 40 years
    b. 40-49 years
    c. 50-59 years
    d. 60-69 years

    e. 70-75 years
    f. More than 75 years
12. With CRC screening, under what circumstances do you recommend the stool test? (Check all that apply)
    a. Patients with no CRC family history
    b. Patients with first degree relative with CRC, under 60
    c. Patients with more than one first degree relatives with CRC
    d. Patients with 2nd or 3rd degree relative with CRC.
    e. Patients with IBD
    f. Patients who have had a colonoscopy within the last year
    g. Patients who have had a colonoscopy within the last 5 years
13. How often do you recommend an average risk patient get a FIT test done?
    a. Every 10 years
    b. Every 5 years
    c. Every 3 years
    d. Every 2 years
    e. Every year
14. If you are using the gFOBT, is there any factors that you are aware of, that may affect the test?
    a. Diet
    b. Medications
    c. Temperature of the Patient
    d. Color of the Stool
    e. Consistency of the Stool
    f. Other
15. In your opinion, which is a better test?
    a. FIT
    b. FOBT
16. On a scale of 1-5, should FOBT be discontinued across the province (specify for CRC screening?)?
    a. 1 (Strongly Disagree)
    b. 2 (Moderately Disagree)
    c. 3 (Neutral)
    d. 4 (Moderately Agree)
    e. 5 (Strongly Agree)
17. There is no evidence to suggest gFOBT is useful as a diagnostic test. It was predominantly studied as a test for CRC screening. Given that FIT is a superior test for CRC screening, do you feel like gFOBT should still be available?
    a. Yes
    b. No

18. If you answered yes to the above question, under what circumstances would you use the gFOBT?
    a. Comment box
19. Please include any additional comments below.