

Article details: 2017-0055	
Title	Enhancing access to cervical and colorectal cancer screening for women in rural and remote northern Alberta: a pilot study
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Reviewer 1	Dr. Vandana Shailendra Jain (Dr. Jain, drmrsvandanajain@hotmail.com)
Institution	Department of Radiotherapy and Clinical Oncology, Pravara Rural University, Ahmednagar, India
General comments (author response in bold)	<p>1. Study is done for two screening protocols in one area of country only. That's correct. There were two service delivery models; both of them included a mobile breast cancer screening service (mammogram). One was enhanced to also provide colorectal and cervical cancer screening at the same visit, while the other only offered mammogram. These two service delivery models were offered in different communities across northern Alberta.</p> <p>2. Screening participation results outcome with long term patient compliance and false positive and negative results will be important for recommendation of such health screening schemes. We agree that it would be important to take into account patient compliance with screening across several years (i.e. clients may screen once, because it is a novel intervention and then stop screening). Screening test results are not reported in this study as we only focused on overall prevalence of "up-to-date" or compliance with provincial schedule. We agree that future studies could focus on screening test results of rural communities and the positive yield, in comparison with urban settings.</p> <p>3. Screening schedules frequency for same individuals in both the groups is not mentioned. Provincial screening guidelines apply to both groups in the same way. As per provincial guidelines, women at average risk are eligible for cancer screening as follows: Breast: Women 50-74 years are eligible for breast screening every 2 years http://www.topalbertadoctors.org/download/244/breast_cancer_summary.pdf?_20170714205206 Cervical: Women are eligible to begin screening three years after the first sexual activity or at age 25. Screening is recommended every three years, and can be discontinued at age 70 provided the client had at least three consecutive normal Pap tests. (Note that our study only included women 50-74 years of age, but we only report cervical cancer screening rates for women 50-70 because this is the population eligible for cervical cancer screening) http://www.topalbertadoctors.org/download/1958/Cervical%20Cancer%20Screening%20Summary.pdf?_20170714205407 Colorectal: Men and women 50-74 years of age are eligible for colorectal cancer screening with Fecal Immunochemical Test (FIT) every two years. (Note that in our study, only women were included) http://www.topalbertadoctors.org/download/301/colorectal_summary.pdf?_20170714210842 This has been addressed in the manuscript: Following provincial cancer screening guidelines (9), women with database records indicating a Pap test within three years of the study period were considered up-to-date with cervical cancer screening; and women with database records of receiving either FIT or FOBT within the two years were considered up-to-date with colorectal cancer screening.</p> <p>4. Total population of women in that age group in that area and incidence and prevalence of those cancers for which screening is planned is not mentioned. In 2012, in Alberta North Zone there were 49,255 women aged 50-74 who were eligible for breast cancer screening. Note that many of these women would live in towns where mammography is available and therefore they wouldn't be clients of Screen Test or Screen Test-EACS (the mobile mammography clinic only serves rural and remote communities) Alberta Cancer Screening Programs cover 3 cancer Screening programs – Breast, Cervical and Colorectal cancer screening: Breast: In 2012 in the North Zone, age standardized incidence and mortality rates for breast cancer were below the provincial average http://www.albertahealthservices.ca/assets/healthinfo/poph/hi-poph-surv-cancer-breast-2012.pdf (page 27-28) Colorectal: In the 2012 Report on Cancer Statistics in Alberta – Colorectal, page 36, you can see female colorectal cancer in North Zone is higher than the rest of Alberta. Also our FIT screening rates show that North Zone has a lower screening rate than the rest of Alberta. Colorectal Cancer Screening target age population is from 50-74, which is exactly the same as the Breast cancer Screening target age population. http://www.albertahealthservices.ca/assets/healthinfo/poph/hi-poph-surv-cancer-colorectal-2012.pdf Cervical: Cervical cancer affects females at a younger age. The 50-74 age group has a lower cervical cancer incidence rate, so there is no big concern for the cervical cancer. However, the cervical cancer screening rates in North Zone are lower than the rest of Alberta.</p> <p>5. Lot of overlapping between both the programs. Both programs overlapped in that both provided breast cancer screening (mammogram). In addition to that, the Screen Test-EACS program also offered cervical and colorectal cancer screening, which was not offered by Screen Test.</p>
Reviewer 2	Dr. Sunita Ghosh
Institution	University of Saskatchewan, Saskatoon, Sask.
General comments (author response in bold)	<p>The paper titled "Enhanced access to cervical and colorectal cancer screening in rural and remote northern Alberta: A pilot study" is very interesting read and contributes to the literature. Major edits:</p> <p>1) The method section needs to be elaborated. Detailed statistical analysis plan needs to be specified in the paper. It is not clear as to what statistical tests were used to compare the two groups. Chi square test for 2X2 table was used to compare the two groups (intervention/control, screened yes/no). P-value was calculated by Chi square test. The probability of being up-to-date with cancer screening test was assumed binomial distribution, and confidence intervals were calculated using binomial distribution.</p> <p>2) On page 7 of 18, line 40 onwards, "net increase", "repeated screening" and "excess screening" can be defined as formula instead of writing it down as it is easier to follow. We agree and have made the change in the manuscript</p> <p>3) The paper would benefit more if the study hypothesis is stated clearly.</p>

The hypothesis is that providing a "one stop shop" service delivery model increases cancer participation in rural communities. We agree and have made the change in the manuscript

4) The figures and tables are presented with the statistical comparison, the statistical tests should be clearly explained and also the tables and figures should include the statistical tests as well.

As per our answer to question 1, Chi square test for 2X2 table was used to calculate p-value. If p-value is less than 0.05, the difference is significant. Also, confidence interval for screening rate was calculated by binomial method. If confidence interval is above the other rate, then the results are considered statistically significant. We agree and have made the change in the manuscript

5) On page 9 of 18, line 32 onwards, the number provided in the parantheses needs reference and explanation. Increase in participation in cervical and colorectal cancer were compared. Need to provide where are these numbers coming from.

The numbers were rounded; we have made reference to the table where the data comes from. Changes in the manuscript are as follows:

The pilot was successful in increasing participation in cervical (10.09 vs. 27.45%) and colorectal (10.88 vs. 22.46%) cancer screening among women who received a mammogram through the mobile vans (Table 2). Increased uptake resulted in an improved overall prevalence of women up-to-date with cervical (52.49 vs. 62.94%) and colorectal (37.27 vs. 48.71%) cancer screening (Table 2).

6) Table 1 provides the age groups, the paper states that 50-74 years women were included in the study. What happened to the <50 and >75 years? Were they included in the analysis, if yes, then the method section needs to be updated to include. If not, then these needs to be removed from the table.

We agree with the reviewer's observation and have now removed from the table the break down for women <50 and 75 and older. These were not included in the study. The reason why we included them initially was to give the readers a sense of the demographics of Screen Test and Screen Test-EACS clients (most of who were between 50 and 74 years of age, and thus included in the study).

7) Table 2, shows bolded text, not sure what it represents. The p-value compares what? Needs to be clarified. Add the statistical tests used to compare.

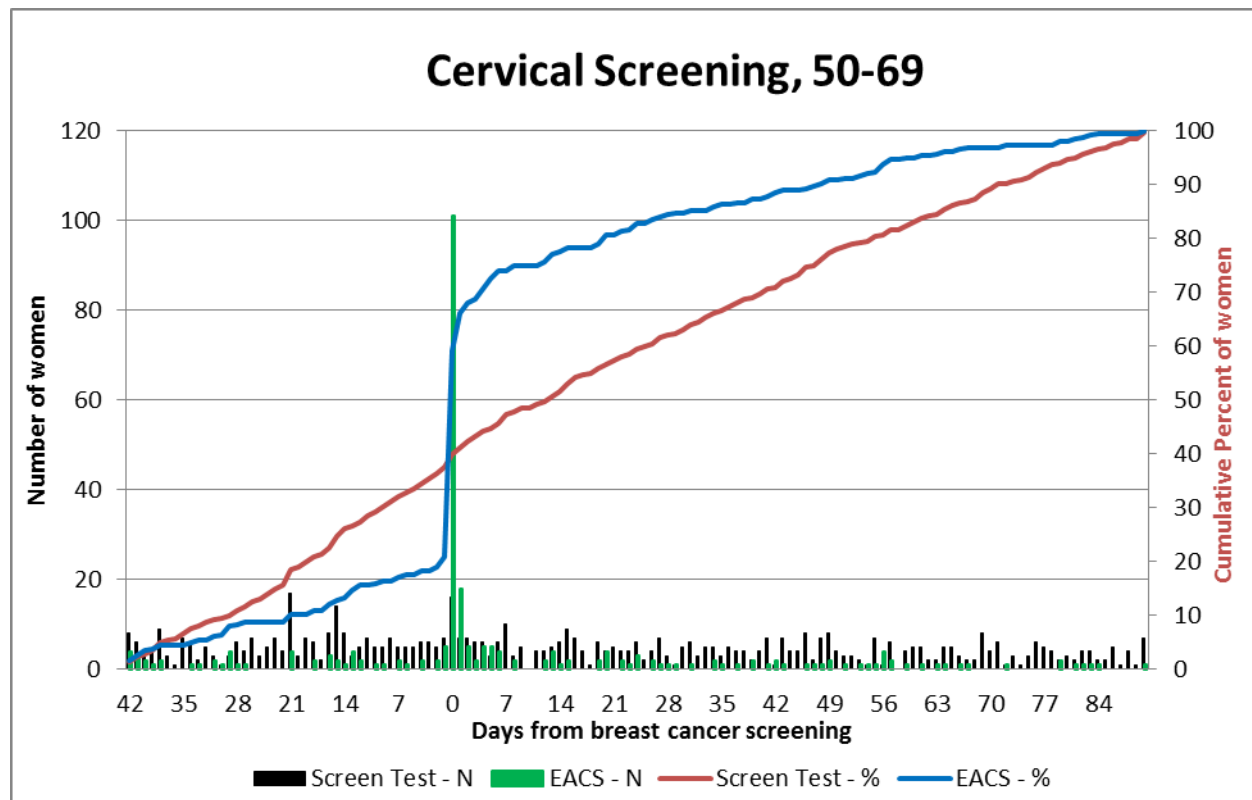
We have removed the bolded text, it represented significant difference. P-value is compared to 0.05 significant level. If p-value is less than 0.05, then the EACS group has a significant higher screening rate than the other group. This is now noted as a footnote on the tables.

8) How were the 95% CI calculated in Table 3?

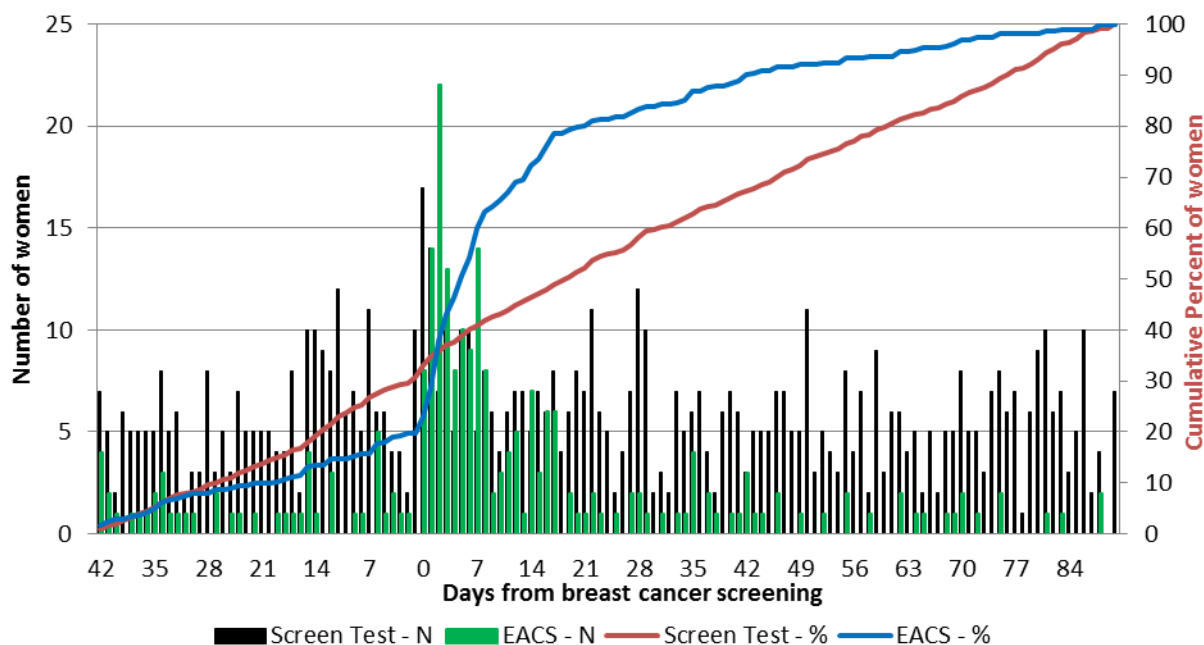
Binomial distribution method was used to calculate the 95% CI for screening rates in Table 3. This is now noted as a footnote on the tables.

9) Figure 2 comparing screen test and screen-test EACS should be combined into one figure along with the p-value. Similarly, the figure can be combined for colorectal cancer as well.

We agree with the reviewer and have created the combination of tables. Please see below:



Colorectal Screening, 50-74



Reviewer
3

Mr. Jimmy Tam Huy Pham

Institution

Arizona College of Osteopathic Medicine, Midwestern University, Livonia, MI

General
comments
(author
response
in bold)

Thank you for the opportunity to review your manuscript. Following are some suggested revisions:

1. page 1, lines 25-27: what is the reason for this low participation?

One of the reasons for the low participation in cancer screening in rural and remote communities in Alberta is that service providers are not available near the home. There are many small communities across northern Alberta with a limited number of primary care physicians and nurse practitioners. Therefore, accessing preventive services may be difficult for residents in those communities. The Screen Test mobile was created in the 1990s to improve access to breast cancer screening (which requires a mammogram). Screen Test-EACS enhanced Screen Test by also creating capacity and improving access to cervical and colorectal cancer screenings.

2. Page 2, lines 22-26 (In addition...are eligible for): please revise this sentence to be more succinct.

We have reviewed that paragraph in the manuscript:

In addition, we use an integrated measure of participation across cancer screenings (11), namely, the proportion of women up-to-date for all cancer screenings they are eligible for.

3. what are some confounding factors in this study?

We have amended the second last paragraph of the discussion to make study limitations more clear:

Limitations include that communities were not randomly selected to participate and therefore the study cannot account for confounding factors such as socioeconomic status or cultural background of participating women.

However, one of the main criteria for selecting communities for Screen Test-EACS were the lack of other cancer screening resources and the presence of traditionally hard-to-reach women. Finally, Screen Test communities were not blinded to promotional efforts of Screen Test-EACS clinics. Promotion of Screen Test-EACS clinics could have confounded the results by increasing overall participation in cervical and colorectal cancer screening in Screen Test communities as well, which would have ultimately underestimated the true effect Screen Test-EACS.

4. what is the significance of conducting this study? how would this study change clinical practice?

The significance of conducting this study is that mobile mammogram clinics, a common strategy in rural areas, could act as a "one stop shop" to cancer screening. This is because women eligible for breast cancer screening are also eligible for other population-based cancer screenings (colorectal and cervical). We advise caution with this approach however; as there are risks (and costs) involved from over-screening (i.e. false positives may lead to unnecessary worry and medical interventions such as biopsies, etc.). We have included the following paragraph:

In summary, the enhanced Screen Test-EACS was more effective than the Screen Test group at increasing the percentage of women up-to-date with cervical and colorectal cancer screening. This study suggests that an enhanced mobile program that provides client centered "one stop shop" breast, cervical and colorectal cancer screening services is effective in increasing uptake. This is likely due to increased awareness through promotional efforts, and the removal of geographic and administrative barriers. The benefits of increased participation in cancer screening need to be balanced with the risks and costs of over-screening.

5. please offer discussion for why Screen Test-EACS is more effective than Screen Test group?

We describe the enhancement of Screen Test-EACS in comparison to Screen Test. In a nutshell, these are improving access and promotion of cancer screening. We have made this clearer in the manuscript by including this sentence in the discussion:

This is likely due to increased awareness through promotional efforts, and the removal of geographic and administrative barriers.

6. Figure captions need to be more descriptive ('stand-alone' captions where the readers do not need to refer back to text

and can still understand the figure).

We have included a brief description of the table/figure main findings next to the caption.

7. the study focuses more on the female population, however, the title fails to mention this.

Great observation. We have modified the title the manuscript to reflect that the study focuses on women.

8. explains why this study focuses more on only female populations?

Great point. We could have included men, anecdotally we heard that women were attending the clinics accompanied by their husbands, and these were agreeing to getting screened for colorectal cancer. However, in this study we only included women because the population is clients of a mobile mammography service. We have included a sentence to reflect this: Future studies should focus the on weighing the benefits of increased participation in cancer screening against the risks and costs of over-screening; and the impact of mobile clinics on male participation in colorectal cancer screening.