PRIMARY HEALTH CARE TRANSITION FUND (PHCTF)

FINAL REPORT GUIDELINES for
PHCTF Operational Grants

Please use the following template to prepare the PHCTF Final Report. This report is comprised of the following 9 sections:

1. Grant Details
2. Executive Summary
3. Background and Rationale
4. Goals and Objectives
5. Activities
6. Outcomes and Results
7. Implications
8. Sustainability
9. PHCTF Program Objectives Checklist

The Final Report is to be double-spaced, using 12 point Times Roman font. Please do not exceed the maximum number of pages indicated for each section and respond with sufficient detail. All sections are to be completed.

During the completion of this report, please focus on how your initiative supported primary health care renewal, and how it sought to leverage change in the health care system.

Please submit an electronic copy of the final report to: phctf@moh.gov.on.ca

One original signed copy and two additional copies of the Final Report are to be sent to the Ontario Ministry of Health and Long-Term Care at the address below:

Primary Health Care Transition Fund
5700 Yonge Street, 3rd Floor
North York, Ontario
M2M 4K5

Attention: Vena Persaud, Manager
<table>
<thead>
<tr>
<th><strong>Section 1. Grant Details (please print clearly).</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
</tr>
<tr>
<td>Measuring Quality Improvements in Preventive Care Services in the First Two Family Health Networks in the Greater Toronto Area</td>
</tr>
<tr>
<td><strong>Grant Number:</strong></td>
</tr>
<tr>
<td>G03-05567</td>
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<tr>
<td><strong>Principal Investigator (PI) and Title:</strong></td>
</tr>
<tr>
<td>Ms. Janet Kasperski, Chief Executive Officer</td>
</tr>
<tr>
<td><strong>Co-Principal Investigator(s) and Title(s):</strong></td>
</tr>
<tr>
<td>Dr. Michelle Greiver, Lecturer, Department of Family &amp; Community Medicine – University of Toronto; Dr. Val Rachlis, Associate Professor, University of Toronto</td>
</tr>
<tr>
<td><strong>Project Website, Or Website With Information On The Project (if applicable):</strong></td>
</tr>
<tr>
<td><a href="http://www.ofcp.on.ca">www.ofcp.on.ca</a></td>
</tr>
<tr>
<td><strong>Phone (PI):</strong> (416) 867-9646</td>
</tr>
<tr>
<td>Fax (PI): 416-867-9990</td>
</tr>
<tr>
<td><strong>E-mail (PI):</strong> <a href="mailto:jk_oecfp@cfpc.ca">jk_oecfp@cfpc.ca</a></td>
</tr>
<tr>
<td><strong>Mailing Address (PI):</strong></td>
</tr>
<tr>
<td>Ontario College of Family Physicians</td>
</tr>
<tr>
<td>357 Bay Street, Mezzanine Level</td>
</tr>
<tr>
<td>Toronto ON M5H 2T7</td>
</tr>
<tr>
<td><strong>Sponsoring Organization (organization which managed the initiative on behalf of the Principal Investigator/collaborating partners):</strong></td>
</tr>
<tr>
<td>Ontario College of Family Physicians</td>
</tr>
<tr>
<td><strong>Address of Sponsor (if different from above):</strong></td>
</tr>
<tr>
<td><strong>Administering Organization(s) (those which collaborated in developing and carrying out the initiative, but not including third-parties who were contracted to undertake work, or organizations which were consulted or targeted by the initiative):</strong></td>
</tr>
<tr>
<td>North York Family Health Network, Fairview Family Health Network</td>
</tr>
<tr>
<td><strong>Agreement Start Date:</strong> 9/27/2004</td>
</tr>
<tr>
<td><strong>Agreement End-Date:</strong> 9/29/2006</td>
</tr>
<tr>
<td><strong>Approved Grant Amount:</strong> $ 165,318</td>
</tr>
<tr>
<td><strong>Suggested Contact After End-Date:</strong> Janet Kasperski</td>
</tr>
<tr>
<td><strong>Mailing Address &amp; Phone:</strong></td>
</tr>
<tr>
<td>Ontario College of Family Physicians</td>
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<tr>
<td><strong>Telephone:</strong> 416-867-9646 ext 27</td>
</tr>
<tr>
<td><strong>Signature of Principal Investigator:</strong> Report Date:</td>
</tr>
</tbody>
</table>
Background and rationale: The Family Health Network (FHN) template was developed in 2000/01 through a joint negotiation process between the Ontario Medical Association and the Ministry of Health & Long Term Care. The FHN template is a blended funding model that included capitation funding for most office-based services, fee-for-service for out of office services, access bonuses for after hour care and a “Pay-for-Performance” component for meeting targets for four preventive services; namely, influenza vaccinations for the elderly, screening mammograms, pap smears and children’s vaccinations. At the time that the template was developed, CIHI data from 1996-1997 was used to demonstrate that the percentage of Ontarians receiving the four services was relatively low. Given the relative annual cost of this program ($46 million if each comprehensive family doctor in the province reached his/her targets), more up-to-date and accurate data would have been useful in determining the need for the program; however, the template was offered to physicians without the information that would have been gleaned from the establishment of a baseline for the provision of these services in individual practices and without up-to-date province-wide data. The cost-benefit of the program was largely unknown at the time that the program was launched.

This project was developed to undertake a baseline data collection at the practice level prior to the introduction of the FHN template. Two FHNs in Toronto were chosen as our study practices; namely, the North York and Fairview FHNs.

Goals and Objectives:

1. To measure the baseline provision of the four preventive services in the practices of the eighteen family physicians in the first two FHNs in Toronto
2. To identify the effect of the incentives on the provision of these services
3. To identify the incremental impact of the introduction of Electronic Medical Records on the services.

Activities: This project employed a before and after research methodology. The main activities undertaken during the course of the research consisted of audits, feedback, surveys, focus groups, electronic audits, cost analysis, evaluation and dissemination. The project used a number of research methods to determine the impact of the FHN template on preventive services for eighteen community-based family physicians who are members of the first two FHNs in Toronto. The details regarding our main activities are as follows:

Chart Audits: Our audit process included the random selection of 6342 charts from the 18 physicians and represented patients of all ages. 3236 were chosen for our audit purposes before the incentives were in place and 3106 after.

Feedback to Physicians: Following each audit, feedback was provided to the physicians on their own performance. In addition, their performances compared to the aggregated results of their peers were also provided. Physicians used the feedback to individually and collectively improve performance.

Surveys: An intake survey was administered to determine physicians and practice demographics, as well as, their policies and practices in regards to preventive services. A follow-up survey was conducted at the end of the project to determine if practice changes made during the project were related to the incentives or to other factors.
**Focus Groups:** Two focus groups were conducted and the discussions were analyzed to explore physicians’ attitudes towards the “Pay-for-Performance” program and system changes made to improve the rates of preventive services amongst the physicians.

**Electronic Audits:** Specially designed software is being installed in the information technology system of the 18 physicians. The first aggregate electronic report on the provision of preventive services for the IT pilot practice has been completed. The same process will be used to audit the charts of all of the FHN physicians once they have completed their conversion to electronic charts. This audit will demonstrate the effectiveness of “Just-in-Time” reminders embedded in the EMR. Further support for planning of services on an annual basis is built into the program throughout the generation of lists.

**Cost Analysis:** Documentation of the average bonus received by each physician was undertaken at the end of the fiscal year 2005/06.

**Evaluation:** A biostatistician analyzed the results of our audits and generated the feedback data. The evaluation focused on changes in the rates of preventive services, the development of strategies to increase preventive services such as organized clinics, recall letters and phone calls and physician self-reports of changed practices.

**Dissemination:** A report on the project is being submitted for publications and the results are being presented in the fall at several conferences.

**Key Results:** The two FHTs are associated with the North York General Hospital and actively involved in the family medicine residency program at that hospital. The baseline audits revealed that the practices were close to meeting targets before the “Pay-for-Performance” program was initiated:

<table>
<thead>
<tr>
<th>Preventive Services</th>
<th>Before Incentives (%)</th>
<th>FHN Target (%)</th>
<th>Above Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza Vaccinations</td>
<td>76.3</td>
<td>80</td>
<td>NO</td>
</tr>
<tr>
<td>Screening Mammograms</td>
<td>81.9</td>
<td>75</td>
<td>YES</td>
</tr>
<tr>
<td>Pap Smears</td>
<td>84.4</td>
<td>80</td>
<td>YES</td>
</tr>
<tr>
<td>Children’s Vaccinations</td>
<td>93.2</td>
<td>95</td>
<td>NO</td>
</tr>
</tbody>
</table>

While feedback after the baseline audit moved the rates closer to target, its main purpose was to encourage dialogue amongst the physicians to identify strategies they could implement to improve preventive service delivery in anticipation of activation of the FHN funding model.

Following a six months period after the activation of the FHN funding model, the results are as follows:

<table>
<thead>
<tr>
<th>Preventive Services</th>
<th>Before Incentives (%)</th>
<th>After Incentives (%)</th>
<th>% Increase</th>
<th>Odds Ratio</th>
<th>Above Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza Vaccinations</td>
<td>76.3</td>
<td>83.3</td>
<td>7.0</td>
<td>1.60 (S)</td>
<td>YES</td>
</tr>
<tr>
<td>Screening Mammograms</td>
<td>81.9</td>
<td>85.4</td>
<td>3.5</td>
<td>1.29 (S)</td>
<td>YES</td>
</tr>
<tr>
<td>Pap Smears</td>
<td>84.4</td>
<td>86.1</td>
<td>1.7</td>
<td>1.16 (NS)</td>
<td>YES</td>
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<tr>
<td>Children’s Vaccinations</td>
<td>93.2</td>
<td>95.7</td>
<td>2.5</td>
<td>1.61 (NS)</td>
<td>YES</td>
</tr>
</tbody>
</table>

The analysis of the data revealed that significant differences in the before and after results were reached in the provision of influenza vaccinations and mammograms. While the trend is in the right direction in regards to pap smears and children’s vaccinations, the odds ratio demonstrated that the changes were not significant.
The feedback loops provided physicians with opportunities to develop a more systematic approach to preventive services. In the case of influenza vaccinations, the physicians reported that they organized “Flu Shot Clinics” and mailed recall letters to the eligible patients (i.e. those over 65 years of age). Recall systems or other strategies were not developed by the physicians for the other three preventive services. They continued to rely on opportunistically checking to see if the presenting patient required the service or not. Since these services are provided at random times throughout the year, organized systems were seen as more difficult to implement. In those cases where recall letters and phone contacts were made, they were often not recorded. The data reflects charted recalls only.

The cost-analysis based on the audits revealed that the average payment per physician would have risen from an average of $7,535 (86% of the maximum target payment) to $8,103 per physician (92% of the target maximum). The time and effort to collect the data including the completion of the audits by the physicians themselves would have resulted in an increase on average of $568 per physician based on the before and after audits. The low rate of return on time invested may prove to be a disincentive for most practices. It was noted that knowledge regarding quality performance was an important variable in effecting change.

Implications: The physicians provided high rates of preventive services at baseline. According to the audit results, the Pay-for-Performance program resulted in significant increases in the provision of Influenza Vaccinations and Mammograms only. The trend was positive for pap smears and children’s vaccinations but was not significant. The high rates of preventive services in these two practices both before and after may not hold true in other settings and further research is needed in non-academic settings and in suburban and rural practices. If further research reveals baselines similar to these practices, the program may prove to be more expensive and be of less value than anticipated. In the United Kingdom, physicians using embedded decision-support tools in their EMRs attained a median of 97% of the possible points which was much greater than the expected 75% achievement rate. The higher than expected achievements is thought to be based on a miscalculation of baseline rates with payments made for achievements already in place prior to the Pay-for-Performance program.

The audits reveal an increase of $568 per physician after the program was in place. The payment model requires that the physicians generate a report for the MOHLTC or preventive services. To gather the data for the MOHLTC report, 33% of the physicians hired extra staff and 67% of the physicians reported that they had undertaken a review of their patient charts themselves since their staff did not have the time to undertake the extra work. Given their workload and the reality of the low rate of remuneration, the addition work to access the incentives may in by itself be a disincentive. To improve the incentive program in the future, there was a strong physician demand for a more fully populated list from the government with additional data from other sources such as public health, Ontario Breast Screening Program and the Cyptobase. Information technology was seen as essential to the long-term sustainability of incentive programs. The Pay-for-Performance program may prove to an incentive for physicians to undertake the implementation of EMRs.

The next phase of data collection after the EMR implementation should reveal further gains since the data will be easier to be collected and missing information on the paper charts should be captured by the software. Pay-for-Performance programs that are not supported by IT and linkages to other programs may not be sustainable. Pay-for-Performance programs that begin without a baseline data collection phase may be more expensive than anticipated and prove to be a disincentive if not carefully crafted.

Sustainability
The conversion to electronic audits will automate the process and allow for on-going collection of data on the provision of services. This will also allow for further research regarding the incremental effect of the introduction of Electronic Records after incentives. The two FHNs have agreed to volunteer their data to ICES for analysis when it is available and have been requested by CIHI to consider participating in country-wide project on Quality Indicators. Given the fact that these practices were close to the targets or above a baseline, further research is needed in a wider variety of practices to determine if the effects differ throughout the province and differ between academic and non academic practices.

In summary, Pay-for-Performance is becoming increasingly common in the health care systems in developed countries. There is evidence that they can improve the quality of care if the payment is large enough to produce change, the incentives are aligned with physicians values and the services are evidence-based. However, they are costly and sometimes are paying for improvements that have already been made. Moreover, individual physicians may not always have the means to make practice changes without electronic auditing systems, additional personnel and reduced attention to other aspects of patient care. This research provides cautions on all of these measures.
In Canada, major efforts to renew the primary care system began in the 1990s. International literature revealed that countries that invest heavily in primary care services have better health outcomes and reduced costs. The movement to implement a “primary health care” system included a focus on health promotion and prevention. Preventive care provides the best opportunity to reduce the incidence and severity of the leading causes of disease and disability in North America. Quality in health care systems is often measured by the provision of preventive services to populations. Although preventive services are core components of primary care, the assumption was made that the provision of preventive services was sub-optimal in Ontario; however, the variability in the reports from different organizations over time makes it difficult to determine the provincial averages. The percentage reached by individual physicians is virtually unknown.

<table>
<thead>
<tr>
<th></th>
<th>Flu Vaccine (%)</th>
<th>Pap Smears (%)</th>
<th>Mammograms (%)</th>
<th>Children’s Vaccination (%)</th>
</tr>
</thead>
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<tr>
<td>CIHI 96/97</td>
<td>60</td>
<td>83</td>
<td>74</td>
<td>85</td>
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<td>OFHN 2002</td>
<td>79</td>
<td>71</td>
<td>42</td>
<td>78</td>
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<td>PPrompt 2005</td>
<td>-</td>
<td>69</td>
<td>71</td>
<td>-</td>
</tr>
<tr>
<td>CCO 2006</td>
<td>-</td>
<td>80</td>
<td>56</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>69</td>
<td>81</td>
<td>75</td>
<td>60</td>
</tr>
<tr>
<td>FHN Target</td>
<td>80</td>
<td>75</td>
<td>80</td>
<td>95</td>
</tr>
</tbody>
</table>

In the early 2000s, the Ontario Medical Association and the Ministry of Health and Long Term Care worked together to develop the Ontario Family Health Network template. The capitation based funding model included incentives which were designed with the goal of improving access to services as well as the quality of care provided to patients. The template included incentives for preventive services. For the first time in Ontario, physicians were offered “Pay-for-Performance” incentives.

The FHN contract contains financial incentives based on the percentage of the patients in the practices of a group of physicians who received four designated preventive services. The targets are as follows:

- 80% of patients 65 and older will have received an influenza vaccine the previous fall.
- 75% of women 50-69 will have had screening mammograms within 30 months.
- 80% of women 35-69 will have had a pap smear within 30 months.
- 95% of children under two will have had all of their childhood vaccinations.
These measures are recommended by both the US and the Canadian Task Forces on the Preventive Health Care, with either A (good evidence for inclusion) or B (fair evidence for inclusion) level recommendation. The incentives have now been offered to all family physicians in “Patient Enrolment” models, representing the majority of physicians practicing comprehensive family medicine in Ontario. The FHN template contract also offers financial incentives for contacting patients due for the above preventive measures. There is evidence that patient reminders, either calls from a physician’s office, or letters, improve the provision of preventive services. What was unknown at the time was whether or not the incentives built into the template would improve rates to the degree that we could ascertain “value for money”. Baseline data was needed to determine the rate change in order to determine if the incentives were paying for change for rewarding past positive performance.

Relatively few studies were available to be used as a proxy baseline. A study in Hamilton, Ontario looked at the provision of preventive services provided to unannounced standardized patient. Results indicate that 66% of the Grade A (good evidence for inclusion) and only 31% of the Grade B (fair evidence for inclusion services were provided. A more recent study showed that only 55% of recommended services were provided to patients on average. In spite of a large body of evidence regarding preventive services in private family practices, “Pay-for-Performance” is quickly gaining momentum in several countries; however the results are mixed. The UK has recently reported results for the first year of their large national Pay-for-Performance initiative with high levels of achievement: family physicians met the quality indicator target for a median of 97.6% of patients. As a result, the program was more costly than expected. The authors also rightly noted that baseline data on performance was not available in the UK; thus, the funder may have been paying for improvements that had already occurred.

This project was developed to provide baseline data prior to the implementation of the FHN funding model to determine the impact of the incentives on the achievement of targets and the development of a system approach to preventive services (patient reminders by mail and through telephone calls, organized clinics, etc). In addition, we wanted to determine the impact of electronic medical records and decision-support tools on practice. As we began this project, we knew that further improving preventive services would improve the health of the population; however, the improvement methodologies needed to be effective and efficient. A better understanding of the effectiveness and value for money of the FHT template is needed as the basis for additional Pay-for-Performance initiatives. The data derived from this project was intended to assist with that process and to assess how physicians begin the process of working together to improve care and maximize funding opportunities.
Our objectives for this project were:

1. to measure the baseline provision of the four preventive services in the practices of the eighteen family physicians in the first two FHNs in Toronto

2. to identify the effect of the incentives on the provision of these services

3. to identify the incremental impact of the introduction of Electronic Medical Records on the services.

The goals and objectives did not change during the project; however, we were also able to estimate the cost of incentives to the funder, both at the baseline level, and after the introduction of incentives.

The roll-out of funding for information technology was slower than anticipated and the acquisition process more difficult. As a result, the IT arm of our project was delayed. The EMRs were introduced to a group of physicians who agreed to pilot the IT on behalf of the rest of the group. Specially designed software developed for this project was embedded in the EMR and preliminary data is available but incomplete since full data entry in the EMR is still underway. Most practices are unable to complete the transfer until 6-18 months after EMR software.

Our pilot practice demonstrated that the EMR is capable of collecting preventive services data. The test run reveals that the automatic collection of anonymized summary data is feasible. Collaboration with ICES is planned to collect and analyze data in the near future to finalize our review of the impact of IT on preventive services. An opportunity exists to complete the IT component of this project in conjunction with a quality indicator program in primary care being developed by CIHI.
Activities

Audit: This was a before and after observational study. 18 family physicians belonging to the first two Family Health Networks in Toronto participated in the research study. Ethics approval was received from the North York General Hospital’s Research Ethics Board. Random chart audits were undertaken to determine the rates of provision of four services for each of the two practices and their individual physicians. A minimum of 50 charts were audited per service, per physician before and after the introduction of incentives. Due to the low number of children in each physician’s practice (average of 13 children per physician), data was collected on the entire cohort of children.

The auditors also duplicated data collection for a 10% sample of charts, for data quality validation. We collected data on whether the service was provided within the qualifying time period, and whether the patient was recalled if the service was due in the near future. We also collected data on exclusion criteria, such as a history of hysterectomy for pap smears or a history of breast cancer for screening mammograms. A biostatistician analyzed all of these data.

Surveys: Two surveys were administered to participating physicians. The first survey collected data on physician and practice demographics and policies and practices prior to implementation. The second one asked about practice and policy changes towards the targeted preventive services after the incentive program was in place.

Focus Groups: Focus group meetings were held with each FHN to explore physician attitudes and opinions towards the incentives. The focus group format provided an opportunity to explore the changes that were implemented in their practices. Each focus group was transcribed verbatim and analyzed using qualitative methods.

Feedback to physicians: Feedback to the physicians was provided through reports to each physician on his/her performance and on the aggregated results for each practice and the two FHNs as a whole group.

Electronic audits: The EMR software company (myNightingale) has prepared sample reports of the preventive services for a pilot practice. These have been validated against the physician’s own data. This anonymized data will be used to follow the provision of these services over the long term.

Section 5. Activities (maximum of 4 pages).

- Please describe activities undertaken to achieve the project’s goals and objectives.
- Identify challenges and barriers to success, and highlight change management strategies to address them.
- Describe your evaluation plan and activities.
- Describe your dissemination plan and activities.
Challenges and barriers

It was difficult to identify eligible patients at the beginning of the project because family physicians could not generate lists of eligible patients. The Ministry provided a list of rostered patients which made this project possible. The rostering process identifies patients belonging to a primary care practice; this is crucial to similar studies in the future. The participating physicians have now started using a common EMR; generating lists of eligible patients will no longer be as challenging. The data abstractors sometimes had difficulties finding data in the written charts, as each physician entered data differently; the physicians and their staff helped by pointing out where data was located. Recalls were often undertaken by phone or mail but were not recorded in the chart. The data on this measure reflects the low rate of recordings and misses the efforts made by the physicians to encourage preventive care amongst their patients. It may be easier to locate data in Electronic Medical Records; however, that remains to be determined, and will also be the subject of on-going audits. It took the physicians longer than expected to choose and implement EMRs; as a result, electronic audits could not be completed; however, programming to enable the compilation of reports has now been completed.

Evaluation Plan and Activities

The evaluation of our project was built into our methodologies. A biostatistician analyzed data before and after the implementation of the FHN template using Chi-Squared statistical analysis. The process was used to provide evidence of the provision of the agreed-upon-deliverables. Comparisons were also completed on before and after recalls, the payments expected and received by physicians and the percentage of physicians who met the established targets. The focus groups also provided us with an opportunity to evaluate our process in attaining our deliverables. Following each focus group, three researchers analyzed the transcribed individually and coded them. The researchers compared findings and resolved any discrepancies through discussion and consensus to further validate the results and the focus groups, the findings were reviewed by several focus group members for validity.

The surveys were an important component of our evaluation process. Results of the surveys were collated and analyzed to provide further information before and after the introduction of the incentives. Our evaluation revealed that we completed a review of the impact of incentives on practice. Our review of the impact of IT on preventive
services is still outstanding and will be completed in the near future as each physician completes automation of the medical record.

**Dissemination Plan and activities**

The results of the initial (pre-incentive) audits were presented at the Trillium Research Conference, University of Toronto, June 2005, as well as at the North American Primary Care Research Group’s conference in October 2005. The final results will be presented at the North American Primary Care Research Group’s conference, October 2006. As well, they will be presented at the Ontario College of Family Physician’s Annual Scientific Assembly, November 2006. We are submitting a journal article to Canadian Family Physician for publication. A copy will be sent to the Ontario Medical Association and the MOHLTC for information purposes. Results will be disseminated back to the participating family physicians, and will be presented to the Department of Family and Community Medicine, North York General Hospital.
Outcomes and Key Results

This study was undertaken with the belief that baseline preventive services would be lower than the targets set in the FHN template. We also understood that the system for providing preventive services at baseline was dependent upon patients booking appointments with their family doctors. The services were provided based on opportunistic follow up with FHN template provided funding for recalls and incentives built with the contact, the expectation for improvements was high.

The 18 participants are all community-based family physicians in North Toronto, with a range of 13 to 31 years in practice. Each FHN is composed of 9 physicians. Practice organization ranges from 2 solo physicians, several 2 physician practices, a 3 physician practice, and a 6 physician group practice. There was 1 pharmacist (as part of a University project) in the 6-physician practice. Nine (9) of the physicians reported having a practice nurse but no other allied health professionals worked within the practices. The physicians reported working in their practices an average of 44 hours per week (range 32 to 60). Each provides after-hour services and participates in the hospital’s Networks of Care. Prior to EMR implementation, there were 5 different billing software packages used; a single EMR system has now been implemented for all 18 physicians, with a common database at the North York General Hospital. There were no tracking systems for preventive services prior to the lists provided by MOHLTC as part of the incentives program. MOHLTC began to provide physicians with lists of rostered patients which helped the physicians to identify patients in the various age/sex programs needing preventive services. Information from the Ontario Breast Screening Program and the Cyptobase (pap smears) was not provided to physicians during the project period of time and are important sources of information and represent lost income for the physicians since missing data reduces the potential of physicians meeting their targets.

Results of The Chart audits:

Influenza vaccinations

Of the 4185 eligible patients; 982 charts were audited before the incentives and 950 after.
Patients after intervention are **60% more likely to get flu shots** compared to before intervention (Odds Ratio=1.60; 95% CI=1.32 – 1.96; p<0.0001); however, the baseline prevalence of influenza vaccination is high; the odds ratio may be inflated because of this. Using a Poisson Regression, **Odds Ratio=1.10**; 95% CI=1.06 – 1.15, p<0.0001.

Eight physicians met the 80% target before incentives (44%) and fourteen (78% after).

During the focus groups, the participants told us that the influenza vaccinations were the easiest service to organize (flu shot clinics, mass recall letters). Following the baseline feedback loops, flu clinics were organized and recall letters were sent to eligible patients. The results confirm an improvement in services based on these system changes. Although the physicians reported that recalls were done, they were seldom documented in the charts. We recorded documented recalls only and this is reflected in the low rates of recalls both before and after.

**Mammograms (excluding patients with breast cancer)**

Of the 6,004 women between the ages of 50 and 69; 972 charts were audited prior to incentives and 961 after.

<table>
<thead>
<tr>
<th></th>
<th>Before (%)</th>
<th>After (%)</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammograms</td>
<td>81.0</td>
<td>85.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Recalls</td>
<td>0.5</td>
<td>3.6</td>
<td>2.1</td>
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<tr>
<td>% Billing Recall Code</td>
<td>NA</td>
<td>8.0</td>
<td>-</td>
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</tbody>
</table>

There was a significant increase in mammography after intervention. **Odds Ratio=1.29**; 95%CI=1.03 – 1.63; p=0.0258. Similar to the findings regarding the influenza vaccinations, the baseline provision of mammography was high. Adjusting using Poisson regression leads to **OR=1.05**; 95% CI 1.006 – 1.10, p=0.0250. Fourteen physicians (78%) met the 75% target before the incentives and sixteen (89%) after.

The focus groups and the survey, revealed that an organized recall system was not in place. 78% of physicians reported opportunistically checking the list of patients; this was usually the sole strategy used. The chart audits documented very few recalls before or after incentives.

**Pap smears (excluding hysterectomies)**

There were 10,913 women age 35 to 70; we audited 1048 charts before incentives 1054 after.
### Pap Smears before incentives: 84.4%

### Pap Smears after incentives: 86.1%; 1.7% increase

Odds Ratio=1.16; 95%CI=0.89 – 1.51; p=0.2584; **not significant**

Similar to mammograms, no organized recall was in place. The focus groups and surveys found that the main recall method was opportunistically checking the list (78% of physicians).

We found no recorded recalls before or after incentives.

**Children’s vaccinations**

There are only 234 patients (13 patients per FP; range 3 to 31) eligible in the initial audit, and 141 (8 per FP; range 0 to 32) in the post-incentives audit. All charts were audited.

### Overall Before and After Results

<table>
<thead>
<tr>
<th>Target (%)</th>
<th>Before (%)</th>
<th>After (%)</th>
<th>Significant Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flu Vaccine</strong></td>
<td>80</td>
<td>76.3</td>
<td>83.3</td>
</tr>
<tr>
<td><strong>Mammograms</strong></td>
<td>75</td>
<td>81.9</td>
<td>85.4</td>
</tr>
<tr>
<td><strong>Pap Smears</strong></td>
<td>80</td>
<td>84.4</td>
<td>86.1</td>
</tr>
<tr>
<td><strong>Children Vaccines</strong></td>
<td>95</td>
<td>93.2</td>
<td>95.7</td>
</tr>
</tbody>
</table>
Documented Recalls

<table>
<thead>
<tr>
<th></th>
<th>Before (%)</th>
<th>After (%)</th>
<th>Significant Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flu Vaccine</td>
<td>0.5</td>
<td>2.5</td>
<td>NO</td>
</tr>
<tr>
<td>Mammograms</td>
<td>0.5</td>
<td>3.6</td>
<td>NO</td>
</tr>
<tr>
<td>Pap Smears</td>
<td>0.0</td>
<td>0.0</td>
<td>-</td>
</tr>
<tr>
<td>Children Vaccine</td>
<td>12.5</td>
<td>33.3</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Surveys and focus groups**

The payment model required a report to the MOHLTC on preventive services. To gather the data, 67% of the physicians reported during the exit survey that they were undertaking the audits themselves since their staff did not have time to undertake the extra work. While a few physicians hired students to conduct audits for them, the most common strategy revealed during the surveys and focus groups for providing evidence of preventive service delivery is by physician auditing. Given their workload and the relatively low of remuneration, this is major unforeseen consequence. Feedback and incentive funding only work if the data for both is readily available. The additional work to access the incentives may be a disincentive. To improve the incentives program in FHNs and FHGs in the future, there was strong physician demand (92% of respondents) for a more fully populated list from the government (i.e. with additional data from OBSP or Cyptobase) to reduce the work of auditing. 75% of physicians thought the EMR would help them organize their preventive care, 67% wanted the MOHLTC lists provided electronically, 50% wanted the audits to be a group function (i.e., the FHN organizes the audits for all members) and 25% wanted a provincial agency to help. Billing the recall code ($6.86) was common for influenza vaccination (77% of physicians), but rare for the other services (8% billed for paps and mammograms, 17% for children’s vaccines). Influenza vaccination was the only measure that benefited from an organized approach: 69% of physicians reported running a clinic to give influenza vaccines, and 62% reported sending out a recall letter. Neither approach was common for any of the other preventive services; the commonest approach reported was opportunistic (i.e. checking the list when the patient was in), for an average of 73% of physicians. The physicians told us that, unlike the flu shots, these services were intermittent and therefore more difficult to track and organize.

**Electronic Medical Records**
Both FHNs have now started to implement an Electronic Medical Record. Their common server is at North York General Hospital. A pilot practice has set up an electronic reporting system, with aggregate results available. The data is obtained directly from the chart, and has been compared for mammograms and pap smears. The EMR implementation began in spring 2006, prior to the 2006 influenza vaccination season and therefore, data on influenza vaccination is not available. Data on children’s vaccinations will likely not be available until the first cohort of children has vaccination data entered in the system (two years from now). A system has been set up to document recalls (both phone calls and letters) within the EMR, and has been tested in a pilot practice. We plan on sharing on-going anonymized data with ICES and participating in a CIHI study.

Conclusions

**Goal 1:** the baseline provision of preventive services was high, with the majority of physicians already meeting targets for pap smears and mammograms, but not for influenza vaccination or children’s vaccines. Based on the audits, the average payment per physician at baseline would have been **$6453 (73% of maximum)**.

**Goal 2:** the financial incentives resulted in significant improvement in the provision of influenza vaccinations and screening mammograms, but not pap smears or children’s vaccinations. Based on the audits, the average payment per physician after incentives is **$7535 (86% of maximum)**. As of April 1st 2006, there were 6,267 family physicians in Patient Enrollment Models in Ontario; this would translate into payments of $47,221,845 yearly for the four services. Organized recall systems (other than the mass letters sent out before flu shot season) were rare; this did not change significantly after the introduction of incentives. In the UK, physicians attained a median of 96.7% of possible points, much greater than the expected 75% achievement.

**Goal 3:** this study provides a unique opportunity to study the incremental impact of EMRs after incentives. Due to the timing of EMR introduction in the two FHNs, we cannot yet report on this component of the study since practice data is currently being entered in the information systems. However, the EMR will allow ongoing prospective collection of this data. Key results and the focus groups revealed the strong beliefs and the physicians that the EMR would be key to further improvements in the rates of preventive services in the long term. While the physicians were willing to undertake the audits themselves in the short term, the lack of a straightforward method
for identifying service provision is seen as a handicap in the process and, indeed, may be a disincentive to preventive service provision.
Importance of project in the context of primary health care renewal

Pay-for-Performance is becoming increasingly common in several jurisdictions, including the UK and large health care organizations in the US. There is evidence that this approach can improve quality of care, provided that the payments are large enough to produce change, that the incentives align with physicians’ values, and that the services are evidence-based. However, these projects can be costly, and they sometimes pay for quality improvements that have already occurred. Individual physicians may not always have the means to deliver improvements, which can require electronic systems for audits, additional personnel, and changes in the organization of care.

The first large Pay-for-Performance project in Ontario has recently been implemented, and has been extended to the majority of family physicians practicing comprehensive care. The preventive services are evidence-based, and align with physicians’ values; however, it may have resulted in payments for services already provided in the absence of incentives.

This project provided baseline data on the provision of four preventive services in community practices and compared it with rates of provision after the implementation by the Pay-for-Performance. The data were used to identify the costs associated with the program. The results from the program are of importance to the MOHLTC and OMA in their planning process for further Pay-for-Performance program.

The physicians in this study billed the MOHLTC an average of 86% of the maximum. In the UK which has invested heavily in EMRs, physicians attained a median of 96.7% of the possible points. Retrospectively, there are concerns in the UK that the physicians were meeting targets before the program was implemented. Further concerns have been documented regarding the impact on the quality and accessibility of services that have not been the target of incentives.

Our project also provides evidence regarding the system changes that physicians find feasible to implement in their practices. In addition, we will soon be able to provide information on the incremental effect of Electronic Medical Records combined with the incentives. The incentives themselves may promote the use of EMRs. Our focus groups and survey results reveal that conducting audits without embedded data captured in the EMR may not be sustainable. Similarly, organizational changes that improve services, such as organized recall systems are difficult to implement and manage using paper records. This research project confirms the recommendations in both the Kirby and Romanow Reports regarding Electronic Medical Records as a key component of health care reform and vital to enhancing the quality and efficiency of primary care/family practices.
Key Learnings

1. The quality of family physicians’ care was high at baseline. This may affect the total cost of the Ontario Pay-for-Performance programs. Conducting audits of family physicians’ charts may represent a more accurate estimate of services than other methods, and may help to inform policy-makers about the actual costs of programs. Because of the already high provision of services, a ceiling effect may be present.

2. A benefit of primary care renewal is the identification of practice rosters. These rosters can be used to advance knowledge through research.

3. The physicians in this project lacked support to conduct practice audits resulting in physicians conducting the audits themselves. This helped with acceptance of EMR as a method of decreasing and simplifying the work of audits. Pay-for-Performance programs which involve practice audits; may have ancillary benefits, by promoting usage of electronic records.

4. Practice change to improve quality can occur as a result of incentives; however, given physician and office staff workloads changes, will usually begin with the services that are easier to implement (influenza vaccination). Whether other changes (systematic on-going audits and recalls) will be organized when the EMR is full functioning, remains to be seen.

Tools and resources for the future

1. Electronic audits are being developed; these will allow on-going collection of data. The same tools can be extended to other quality indicators should Pay-for-Performance programs be expanded.

2. The electronic audits need to be linked with existing databases, such as billing data and hospital Discharge Abstract Database to enable research on broader aspects of the Health Care System. This must be done with appropriate privacy and security safeguards; we will forward our data to ICES for such linkages. The physicians in the two FHNs have agreed to volunteer their data for this. Further work with CIHT may advance this work as well.
The researchers have ongoing strong linkages with all the physicians in the two FHNs, and they have agreed to support the continuation of the project by volunteering their data for an ICES project to collect data from the electronic records. A project to incorporate audits indication in primary care practices is being undertaken by CIHI in the upcoming year. Discussions are underway to include the project physician practices in the CIHI study.

In addition, we have maintained a very good relationship with the software company, and will work with them to continue and extend the electronic data collection.

Maintaining and extending the changes achieved by this project will depend on sustained Pay-for-Performance funding. We have demonstrated that physicians will take the lead in changing their practices to improve quality, but that further changes will require additional effort; Electronic Records are likely to be a key component, and we look forward to seeing the effects of EMR implementation.
Section 9: PHCTF PROGRAM OBJECTIVES CHECKLIST

Please enter the Project Title and Project Number of your project.

<table>
<thead>
<tr>
<th>Project Number:</th>
<th>G03-05567</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Measuring Quality Improvements in Preventive Care Services in the First Two Family Health Networks in the Greater Toronto Area</td>
</tr>
</tbody>
</table>

Instructions:

- All projects are requested to complete Section A (PHCTF common objectives).
- Please be succinct in highlighting how your initiative addressed the relevant objective(s).

SECTION A: PHCTF COMMON OBJECTIVES

Note: Some projects will address all five objectives, and some may address only one.

<table>
<thead>
<tr>
<th>PHCTF objective</th>
<th>Check if applicable</th>
<th>If yes, please explain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the proportion of the population having access to Primary Health Care (PHC) facilities accountable for the planned provision of a defined set of comprehensive services to a defined population</td>
<td></td>
<td>[e.g. How many additional people do the facilities serve?]</td>
</tr>
<tr>
<td>Increase emphasis on health promotion, disease and injury prevention, and management of chronic diseases</td>
<td>✔</td>
<td>[e.g. How was this emphasis increased?] We measured the impact of financial incentives on the provision of preventive care. These incentives have recently been expanded to include colo-rectal cancer screening. We have now started electronic audits.</td>
</tr>
<tr>
<td>Expand 24/7 access to essential services</td>
<td></td>
<td>[e.g. What services are provided 24/7?]</td>
</tr>
<tr>
<td>Establish interdisciplinary primary health care teams of providers, so that the most appropriate care is provided by the most appropriate provider</td>
<td></td>
<td>[e.g. Number and composition of teams?]</td>
</tr>
<tr>
<td>Facilitate coordination and integration with other health services, e.g. in institutions and in communities</td>
<td></td>
<td>[e.g. What linkages were established with other parts of the health care system, and how?]</td>
</tr>
</tbody>
</table>
Appendix A

FHN Contract
Re: Preventive Care Management
Service Enhancement Codes
Appendix A_1

References
NAPCRG Abstract:
Context: In Ontario, only 65% of preventive services with good evidence for inclusion, and 31% of services with fair evidence are provided. Recently, financial incentives were introduced to improve the provision of those services. Objectives: To measure changes in the provision of preventive services in Toronto, Ontario; to explore changes in practice organization related to those services. Design: Retrospective before and after study using chart audits; focus group interviews and surveys to identify changes in practice policies. Setting: Practices of community family physicians in Toronto. Participants: 18 community-based family physicians. Intervention/Instruments: Random chart audits of patients eligible for the preventive services. The eligible services are: Influenza vaccination for the elderly; pap smears for women age 35 to 70; mammograms for women age 50 to 70; Completed vaccinations for children under 30 months. Other interventions: focus group interviews with physicians and surveys. Main and Secondary Outcome Measures: Main outcome: Change in the proportion of eligible patients receiving each of the preventive services. Secondary outcome: changes in office practices and policies (letters, phone calls, and systems set up by practices). Results: for influenza vaccination, odds ratio for the provision of the service after incentives is 1.60; 95% CI=1.32 – 1.96; p<0.0001; for mammograms OR=1.29; 95% CI=1.03 – 1.63; p=0.0258; for paps OR=1.16; 95% CI=0.89 – 1.51; p=0.2584, NS; for children’s vaccinations OR=1.61; 95% CI=0.61 – 4.22; p=0.3347, NS. Changes in office practices and policies were reminder letters in early fall for influenza vaccinations, and organized influenza vaccination clinics. Organizational changes for other services were mostly limited to chart-based reminders such as sticky notes. Conclusions: financial incentives resulted in a large and significant increase in influenza vaccination, and a smaller increase in mammograms. There was no change in the provision of pap smears or children’s vaccinations. Changes in practice organization were largely related to influenza vaccinations.
Appendix B

1. Baseline Survey
2. Examples of the Data Collection Sheets
3. Exit Survey for Family Physicians
Appendix D

Contract with Nightingale to Develop Preventive Service Capture Software
Nightingale Consulting Services Agreement

This Consulting Services Agreement ("Agreement") is made as of ___________________ ("Effective Date") by and between Nightingale Informatix Corporation ("Nightingale"), a company incorporated under the laws of Ontario and having a principal place of business at 3760 Fourteenth Avenue Markham, ON L3R 3T7, and Ontario College of Family Physicians ("Customer"), having a principal place of business at 357 Bay Street, Mezzanine, Toronto, ON M5H 2T7.

The parties agree as follows:

1. **Services Provided by Nightingale.** Nightingale shall provide Customer with consultation services as specified in a Statement of Services ("SOS") executed by the parties ("Services"). This Agreement in combination with each SOS individually comprises a separate and independent contractual obligation from any other SOS. A breach by Nightingale under one SOS will not be considered a breach under any other SOS.

2. **Fees, Expenses, and Payment.** For all Services performed pursuant to an SOS or otherwise, Customer shall: (i) pay Nightingale at the rates set forth in each SOS or, if not set forth in such SOS, at the Nightingale standard consulting rates in effect at the time the Services are rendered; and (ii) pay Nightingale within thirty (30) calendar days after the date of each invoice. All payments must be in Canadian dollars and are nonrefundable. Customer is responsible for all taxes, duties, and customs fees concerning the Services performed, excluding taxes based on Nightingale's income. All past due amounts will bear interest at the lesser of eighteen percent (18%) per annum or the highest interest rate allowable under applicable law.

3. **Nightingale Obligations.** Nightingale shall perform or cause to be performed the Services outlined in the SOS. Customer acknowledges and agrees that Nightingale’s ability to perform the Services is conditioned upon Customer’s timely performance of its obligations, and the assumptions described in the applicable SOS, and the performance of such Customer Obligations is material to Nightingale’s ability to commence and/or proceed with the Services. For each SOS, Nightingale will designate one (1) Nightingale point of contact who shall be responsible for responding to Customer’s questions and issues relating to the Services. Customer understands and agrees that Nightingale may subcontract with third parties to perform all or part of the Services.

4. **Customer Obligations.** Customer shall perform its obligations as set forth in the applicable SOS, as well as the following obligations (collectively referred to as "Customer Obligations"): 

   (a) designate and provide for each SOS one (1) Customer point of contact who shall be responsible for responding to Nightingale’s questions and issues relating to the Services;


(b) provide sufficient, qualified, knowledgeable personnel capable of: (i) performing Customer Obligations set forth in this Agreement and each SOS; (ii) making timely decisions necessary to move the Services forward, (iii) participating in the project and assisting Nightingale in rendering the Services; and (iv) facilitating development, testing and implementation of Nightingale software, if applicable;

(c) perform such other duties and tasks as set forth in the applicable SOS to facilitate Nightingale’s and its subcontractors’ performance of the Services set forth thereunder; and

(d) not hire the employees or representatives of Nightingale who have been associated with the provision of Services hereunder for a period of six (6) months commencing on the date of completion of such Services. If Customer fails to comply with this provision, Customer agrees to pay Nightingale fifty percent (50%) of the annualized salary of the employee or representative hired or retained by Customer, payable within fifteen (15) days of Customer's hire or retention of such employee or representative.

5. Change Procedures. If the applicable SOS provides a fixed list of deliverables, Customer may modify the scope of the Services, at any time during the term of this Agreement; provided, however, that if such modifications would require Nightingale to provide services materially in excess of the Services or in addition to its obligations under this Agreement or an SOS, or extend the time needed to complete the Services, the parties shall comply with the following procedures:

(a) Customer shall submit to Nightingale a written request for any change ("Change Request").

(b) As soon as reasonably possible Nightingale shall provide Customer with a written statement offering to perform consistent with the Change Request, proposing modifications to the Change Request, or rejecting such request. Nightingale’s statement will include detailed information as to (i) the availability of Nightingale’s personnel and resources, and (ii) the impact, if any, on the completion of Services, the delivery of any deliverable items and/or the cost of the Services.

(c) If Customer desires to implement a Change Request, Customer shall provide written authorization to Nightingale to proceed with such Change Request upon the terms set forth therein or as modified by Nightingale in its response pursuant to Section 6 (b). Customer’s authorization of the Change Request as modified by Nightingale’s response thereto may modify the terms of this Agreement, and will modify the terms of the SOS, the cost for the Services and/or the completion date, as specified in the Change Request or in Nightingale’s response thereto.
Upon receipt of such written authorization from Customer, Nightingale shall promptly commence performance in accordance with the Change Request as modified by Nightingale’s response thereto.

Each Change Request, as modified by Nightingale’s response thereto, which is duly authorized in writing by Customer shall constitute a formal modification to, shall be deemed incorporated into and shall become a part of the applicable SOS. In no event shall the SOS, and/or any other obligations of Nightingale to provide Services be deemed amended except through a Change Request approved by Nightingale and Customer in accordance with the provisions of this Section 6.

6. **Confidential Information.**

6.1 During the course of the parties’ relationship, they may have access to Confidential Information of the other. Confidential Information of Nightingale includes, but is not limited to, this Agreement, any and all SOS(s), and the terms, conditions and pricing contained herein. Confidential Information shall not be disclosed, orally or in writing, to any third party without the prior written consent of the owner of such information.

6.2 Nightingale shall protect Customer’s Confidential Information with at least the same degree of care and confidentiality, but not less than a reasonable standard of care, which Nightingale utilizes for similar Nightingale information which it does not wish disclosed to the public. Nightingale may provide access to and use of Customer’s confidential information only to those third parties that: (a) provide services to Nightingale concerning Nightingale’s use of Customer’s Confidential Information; (b) have a need to use and access Customer’s Confidential Information; and (c) have agreed to substantially similar non-disclosure obligations as those contained herein.

6.3 Customer shall protect Nightingale’s Confidential Information, with at least the same degree of care and confidentiality, but not less than a reasonable standard of care, which Customer utilizes for Customer’s information that it does not wish disclosed to the public.

6.4 This Agreement imposes no obligation upon either party ("Recipient") with respect to the other party's ("Discloser's") confidential information which Recipient can establish by legally sufficient evidence: (a) was in the possession of, or was rightfully known by Recipient without an obligation to maintain its confidentiality prior to receipt from Discloser; (b) is or becomes generally known to the public without violation of this Agreement; (c) is obtained by Recipient in good faith from a third party having the right to disclose it without an obligation of confidentiality; or (d) was required to be disclosed by applicable law, provided that Recipient notifies Discloser of such requirement prior to disclosure, and provided further that Recipient makes diligent efforts to limit disclosure.

7. **Indemnity.**

7.1 **Nightingale Indemnity.** Provided the License Agreement has not been terminated, Nightingale shall indemnify Customer against any claims that the Work
Product (as defined in Section 12 below) delivered to Customer pursuant to an SOS infringes any Canadian third party intellectual property right provided that Nightingale is given prompt written notice of such claim and is given information, reasonable assistance, and the sole authority to defend or settle such claim. In the event of a threatened claim, Nightingale shall, in its reasonable judgment, at its sole obligation, and at its option and expense: (i) obtain for Customer the right to continue using the Work Product; (ii) replace or modify the Work Product so that it becomes noninfringing; or (iii) terminate the license for the Work Product and return only the Services fees paid by Customer for such portion of the Work Product which is allegedly infringing, prorated over a five (5) year term from the date of delivery of such portion of the Work Product. The fulfillment of the obligations set forth in this Subsection 9.1 shall constitute Customer's sole and exclusive remedy.

Nightingale shall have no obligation to indemnify or defend Customer to the extent: (i) the alleged infringement is based on information, software code or other material furnished by Customer; (ii) the alleged infringement is the result of a modification made by anyone other than Nightingale or the result of software provided to Nightingale by Customer, its agents or representatives; (iii) such claim would have been avoided but for the combination or use of the Work Product, or portions thereof, with other products; or (iv) Customer uses the Work Product other than in accordance with this Agreement or the License Agreement. Notwithstanding anything contained herein, Nightingale shall have no obligation hereunder with respect to those portions of Work Product that embody Customer's confidential information, software code, or ideas including, without limitation, any portion of Work Product that is developed pursuant to Customer's specifications.

7.2 Customer Indemnity. Customer shall indemnify and hold Nightingale harmless against any claims that those portions of Work Product that embody Customer's Confidential Information, software code, or ideas, including, without limitation, any portion of Work Product that is developed pursuant to Customer's specifications infringe any third party intellectual property right, provided that Customer is given prompt written notice of such claim and is given information, reasonable assistance, and the sole authority to defend or settle such claim.

7.4 Entire Liability. THE FOREGOING PROVISIONS OF THIS SECTION 9 STATE THE ENTIRE LIABILITY AND OBLIGATIONS OF NIGHTINGALE, AND THE EXCLUSIVE REMEDY OF CUSTOMER, WITH RESPECT TO ANY ACTUAL OR ALLEGED INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THE SERVICES AND THE DEVELOPMENT AND/OR USE OF THE WORK PRODUCT.

8. Limited Warranty.
8.1 Nightingale Warranty. Nightingale warrants that the Services will be performed consistent with generally accepted industry standards. No specific result from provision of the Services is assured or guaranteed. NIGHTINGALE DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT
LIMITED TO THE WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.

8.2 Remedies. Customer’s sole remedy and Nightingale’s sole obligation in the event of a breach of the warranty contained herein is, at Nightingale’s sole option: (i) to reperform the Services, or (ii) to refund the amounts paid by Customer for the Services which were not as warranted, provided Nightingale has received notice from Customer within ninety (90) days of the completion of the Services which Customer alleges were not performed consistent with the warranty in Section 10.1.

9. Limitation of Liability. EXCEPT IN RESPECT OF VIOLATIONS OF NIGHTINGALE’S INTELLECTUAL PROPERTY RIGHTS, NEITHER PARTY SHALL BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST DATA, LOST PROFITS OR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, HOWEVER ARISING, EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. EXCEPT IN RESPECT OF NIGHTINGALE’S OBLIGATIONS PURSUANT TO SECTION 9.1 WHICH SHALL BE UNLIMITED, NIGHTINGALE’S LIABILITY FOR DAMAGES ARISING OUT OF, RELATING TO OR IN ANY WAY CONNECTED WITH THE RELATIONSHIP OF THE PARTIES, THIS AGREEMENT, ITS NEGOTIATION OR TERMINATION, OR THE PROVISION OR NONPROVISION OF SERVICES OR SOFTWARE (WHETHER IN CONTRACT OR TORT) SHALL IN NO EVENT EXCEED THE AMOUNT RECEIVED BY NIGHTINGALE FROM CUSTOMER UNDER THE APPLICABLE SOS, AND IF SUCH DAMAGES RESULT FROM SPECIFIC SERVICES, SUCH LIABILITY SHALL BE LIMITED TO FEES PAID FOR THE SERVICES GIVING RISE TO THE LIABILITY FROM WHICH THE CLAIM AROSE. THE PARTIES AGREE TO THE ALLOCATION OF LIABILITY SET FORTH IN THIS SECTION. CUSTOMER ACKNOWLEDGES THAT WITHOUT ITS AGREEMENT TO THE LIMITATIONS CONTAINED HEREIN, THE PRICE CHARGED FOR THE SERVICES WOULD BE HIGHER.

10. Rights to Work Product. ”Work Product” means any expression of Nightingale’s findings, analyses, conclusions, opinions, recommendations, ideas, techniques, know-how, designs, programs, enhancements, source and object code, software, and other technical information. All Work Product is the property of Nightingale and is licensed nonexclusively to Customer, at no additional license fee, pursuant to the terms of the license for software contained in the License Agreement and subject to the terms hereof. To the extent Customer acquires any rights in the Work Product, Customer hereby assigns those rights to Nightingale.

11. Independent Contractor Status. Nightingale performs its obligations pursuant to this Agreement as an independent contractor, not as an employee of Customer. Nothing in this Agreement is intended to create or be construed as the existence of a partnership, joint venture, or agency relationship between the parties.
12. Notice. All notices shall be in writing and sent by regular mail, registered mail, overnight mail, courier, transmitted by facsimile or delivered personally to the addresses indicated on the first page of this Agreement, or such other address as either party may indicate by at least ten (10) business days prior written notice to the other party. Notices to Nightingale will be addressed to Nightingale's General Counsel. Notices to Licensee will be addressed to Licensee's legal department. Notices made pursuant to this Section shall be effective on the date shown on the receipt evidencing delivery or the facsimile confirmation, or if sent by regular mail or where there is no written evidence of delivery, on actual receipt.

13. Termination. This Agreement shall continue in effect, unless terminated sooner pursuant to the conditions contained in this Agreement, until Nightingale completes the Services described hereunder and the Customer has notified Nightingale and given final approval and acceptance of the Services. If the Customer terminates this Agreement prior to the completion of the Services, the Customer will be obligated to submit compensation, pro rata, the amount due for Services acceptably performed and approved and accepted by the Customer. The Customer acknowledges that Nightingale’s contractual obligations expire with the project completion date as specified and agreed upon in the Schedule, unless otherwise documented and agreed upon by Nightingale and Customer. Nightingale will provide technical support which covers any error/bug fixes regarding contract deliverables for 90 days following official site launch.

14. Separate Agreements. Customer acknowledges that it may license Nightingale’s software without utilizing Nightingale’s consulting services and that it could utilize consulting services of third parties. Customer agrees that this Agreement including any SOS, is a separate and independent contractual obligation from the License Agreement. Customer shall not withhold payments that are due and payable under this Agreement or any SOS because of the status of any software licenses or schedules, nor shall Customer withhold payments that are due and payable pursuant to the License Agreement or schedules thereto because of the status of services performed under this Agreement or any SOS. If there is any conflict between the terms of this Agreement and the License Agreement, the terms of this Agreement will control.

15. Survival. The terms of Sections 8. (Confidential Information), 9. (Indemnity), 11. (Limitation of Liability), 12. (Rights to Work Product), 14. (Notice), 16. (Separate Agreements), 17. (Survival) and 18. (General) shall survive the termination of this Agreement.

16. General. This Agreement is made in and shall be governed by the laws of the Province of Ontario, without regard to its choice of law principles. Jurisdiction and venue shall be in Toronto, Ontario. The section headings herein are provided for convenience only and have no substantive effect on the construction of this Agreement. No purchase order or other ordering document that purports to modify or supplement the printed text of this Agreement or any SOS thereto shall add to or vary the terms of this Agreement. All such proposed variations or additions (whether submitted by
Nightingale or Customer) are objected to and deemed material unless otherwise agreed to in writing. Except for Customer’s obligation to pay Nightingale and to pay taxes, duties and customs fees in relation to the Services, neither party shall be liable for any failure to perform due to causes beyond its reasonable control. If any provision of this Agreement is held to be unenforceable, this Agreement shall be construed without such provision. The failure by a party to exercise any right hereunder shall not operate as a waiver of such party's right to exercise such right or any other right in the future. Except for actions for non-payment or breach of Nightingale's proprietary rights in the Work Product, no action, regardless of form, arising out of this Agreement may be brought by either party more than three years after the cause of action has accrued. This Agreement, including any and all SOSs, constitutes the entire agreement between the parties concerning the subject matter contained herein. This Agreement replaces and supersedes any prior verbal or written understandings, proposals, quotations, communications, and representations between the parties relating to the subject matter hereof. This Agreement may be amended only by a written document executed by a duly authorized representative of each of the parties. Except as otherwise specifically stated herein, remedies shall be cumulative and there shall be no obligation to exercise a particular remedy. The parties have agreed that this Agreement be drafted in English. Les parties ont convenu à ce que ce Contrat soit rédigé en anglais.

The undersigned represent and warrant that they are authorized as representatives of the party on whose behalf they are signing to sign this Consulting Services Agreement and to bind their respective party thereto.

ONTARIO COLLEGE OF FAMILY PHYSICIANS

Authorized Signature

Jan Kasperski, Executive Director & CEO

Printed Name and Title

NIGHTINGALE INFORMATIX CORPORATION

Authorized Signature
This Statement of Services ("SOS") is made as of _________________ ("Effective Date") by and between Nightingale Informatix Corporation ("Nightingale") and Ontario College of Family Physicians ("Customer"). This SOS incorporates by reference the Consulting Services Agreement between the Parties ("Agreement") dated _________________. In the event of a conflict in terms between this SOS and the Agreement, the terms of this SOS shall prevail. All capitalized terms not otherwise defined herein shall have the same meaning as in the Agreement. Any specification, design, user requirements document, installation checklist, etc., attached hereto and explicitly referenced herein shall be part of this SOS, provided such documents are in writing and signed by an authorized representative of each party.

1. General Information:

Nightingale Professional Services Manager

Name:
Address:
Phone:
Fax:

Customer Project Manager

Name: Michelle Greiver
Address:
Phone:
Fax:
E-mail:

Services to be Provided: Provided Customer fulfills the Customer Obligations and its other obligations hereunder, Nightingale shall provide Customer with the following Services:

General:

Customer's stated project objective is to implement a Data Mining Tool to compare the number of patients recalled and serviced for Ontario’s 4 Health Maintenance procedures (Pap Smears, Mammograms, flu Vaccines and Children’s immunizations) by an EMR physician practice to a paper based physician practice.

Scope of study:
Participating physicians: 18 FHN physicians

Report Criteria:
- Number of eligible patients per doctor per Health Maintenance procedure
- Number of Recalled patients including total of contact attempts per form of contact per doctor
- Number of patients that received the procedure per doctor
- Number of patients that didn't receive the procedure; number of patients who refused; number of patients who otherwise failed to get procedure

Profile Criteria:
- Pap Smear: Rostered female patients between the age of 35 and 70 and at risk of cervical cancer (no history of total hysterectomy). The service is provided biennially.
- Mammogram: Rostered female patients between the ages of 50 and 70 and at risk of breast cancer (no history of breast cancer). The service is provided biennially.
- Flu vaccine: Rostered patients age 65 and over. The service is provided annually.
- Children’s Immunization: Rostered children between the age of 18 months and 2 years who have completed these five vaccinations: 4 Pentacels and 1 measles/mumps/rubella vaccine

Development requirement:
The Nightingale application shall:
1. create the required cohorts per profile
2. Assemble EMR data pertaining to that cohort
3. Provide a pseudonymous key
4. Remove identifying fields and export as a study file using a delimited text file or common exchange formats.
5. The system should additionally support the creation of summary reports based on the defined Report criteria above.

Sample Report:

<table>
<thead>
<tr>
<th>Doctor: John Smith</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Maintenance Profile: Pap smear</td>
</tr>
<tr>
<td>Profile Criteria: Rostered female patients; Age 35 – 70; No history of Hysterectomy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>refused</th>
<th>other</th>
<th>total #pts contacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letters</td>
<td>Telephone</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>350</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

Financial Summary
All tools, services and associated fees are depicted in the following table. 50% Fees for software development are payable in advance, balance due upon completion (March 31st, 2006)

<table>
<thead>
<tr>
<th>SOFTWARE-DEVELOPMENT FEES</th>
<th>Units</th>
<th>Unit Price</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Anonymizer” Data Mining Tool – (Phase 1)</td>
<td>1</td>
<td></td>
<td>$41,000</td>
</tr>
<tr>
<td>“Anonymizer” Data Mining Tool – (Phase 2- Additional functionality)(contingent on research funds availability for this study)</td>
<td>1</td>
<td></td>
<td>$24,000</td>
</tr>
<tr>
<td>TOTAL SOFTWARE FEES</td>
<td></td>
<td></td>
<td>$65,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Plus applicable tax</td>
</tr>
</tbody>
</table>

Terms & Conditions:

1. Except as noted above, all pricing is valid for 30 days.
2. Provincial taxes and GST are extra as applicable.
3. While not required, any third party tools utilized will be at an additional cost.

Proposed Schedule:

Estimated completion date: March 31st, 2006.

11th November, 2005________ Design – Meeting with Ali Mourtada, Peter Tyson.

December 30, 2005________ Application configuration.

January/February, 2006 ______ Configuration, set-up and data mapping.

March 31, 2006 _____________ Integration testing of the configured application.

June 30, 2006 _____________ Validation.

Both parties will use commercially reasonable efforts to meet the proposed schedule.
Expiration of Offer: The offer set forth in this SOS and in the Agreement is valid only through 23rd December, 2005 and in the event such documents are not fully executed by such date, the offer is rescinded, and all terms are null and void.

The undersigned represent and warrant that they are authorized as representatives of the party on whose behalf they are signing to sign this Statement of Services and to bind their respective party thereto.

CSA Effective Date:

CUSTOMER CORPORATION

Authorized Signature

Printed Name and Title

NIGHTINGALE INFORMATIX CORPORATION

Authorized Signature

Printed Name and Title
This Agreement shall continue in effect, unless terminated sooner pursuant to the conditions contained in this Agreement, until Nightingale completes the Services described hereunder and the Customer has notified Nightingale and given final approval and acceptance of the Services. If the Customer terminates this Agreement prior to the completion of the Services, the Customer will be obligated to submit compensation, pro rata, the amount due for Services acceptably performed and approved and accepted by Customer. The Customer acknowledges that Nightingale’s contractual obligations expire with the project completion date as specified and agreed upon in the Schedule, unless otherwise documented and agreed upon by Nightingale and Customer. Nightingale will provide technical support which covers any error/bug fixes regarding contract deliverables for 90 days following official site launch.