Furthering an Innovative Approach to Caring for the Frail Elderly

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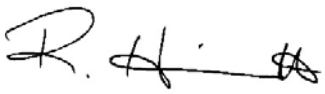
Acknowledgement and Endorsement

This report has been written by me and has not received any previous academic credit at this or any other institution.

I would like to thank Ms. Debra Boudreau, Administrator, Tideview Terrace for agreeing to provide Deloitte the opportunity to assess their readiness for adoption of the PATH care model and to Mr. Pat MacNeil, Director, Technology Consulting, Deloitte and Ms. Paula Gallagher, Partner, Consulting, Deloitte for their support in working with PATH Inc. in furthering the development of the PATH model of care.

I would also like to thank Connie Munroe and Priyanka Singh, my team members on this project, for their effort and input into the solution being devised for the informatics challenge discussed in this report.



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Executive Summary

People over the age of 65 (seniors) are the fastest growing demographic in Canada representing approximately 15% of the total national population in 2013 and expecting to grow to 24% by 2036 (Statistics Canada). The cost of caring for this seniors' population is disproportionately high at 45% of the healthcare spending. A significant driver of this cost is frailty, the progressive physiological decline in function, cognition, and mobility accompanied by a loss of physiological reserve and increased vulnerability to disease and death (Moorhouse, 2012).

The Palliative and Therapeutic Harmonization (PATH) model is an innovative approach to simplifying the process of caring for the frail elderly that is shown to produce a dramatic change in the cost of care and the quality of patient and family caregiver satisfaction with the healthcare system (Moorhouse, Mallery, 2012). The PATH model of care was developed by Drs. Mallery and Moorhouse who practice geriatric medicine at the QEII Hospital in Halifax, NS.

Deloitte has been working with PATH Inc. for over two years to support the adoption of the PATH model of care across Canada and beyond. As part of this adoption effort, Deloitte was engaged by the Tideview Terrace Long-term Care facility in Digby, NS to perform a PATH Implementation readiness assessment and to identify and recommend any preparatory actions that Tideview Terrace would need to undertake prior to implementing the PATH care model.

The author, along with a team of healthcare consulting professionals, planned and performed the readiness assessment and identified and presented 56 recommendations to the Tideview Terrace leadership. Through this process there were additional objectives that were addressed including the documentation of the approach, processes and tools used to complete the readiness assessment to enable repeatability of the process, as well as a detailed analysis of an identified implementation issue that has far reaching impacts beyond the current client environment.

This report details the author's work on the readiness assessment and resulting findings as well as the activities and analysis performed to support the secondary objectives of the project.

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1. Introduction

Seniors (people over the age of 65) are the fastest growing demographic in Canada. In 2013, seniors represented approximately 15% of the total population of Canada, and are expected to represent 24% of Canada's total population by 2036 (Statistics Canada). The trend in Nova Scotia is even more pronounced with seniors representing 18% of the population in 2013 and projected to be 28% in 2036 (Statistics Canada).

More healthcare dollars are spent on seniors than any other age group in Canada. In 2013, seniors accounted for 45% of the total provincial and territorial government healthcare expenditures (CIHI, 2013). In Nova Scotia, that amounts to nearly $1B of the NSHA budget this year (NSHA, 2015).

This disproportionately high use of the health system by seniors is largely a consequence of the cost of care in the final few months of life, as well as the costs associated with treating complex chronic conditions and co-morbidities (CIHI, 2013). Frailty is a progressive physiological decline in function, cognition, and mobility accompanied by a loss of physiological reserve and increased vulnerability to disease and death (Moorhouse, 2012).

Studies indicate that across the provinces and territories, between 20%-33% of Canadian seniors are clinically frail (Hoover, 2013; Song, 2010). Again, in Nova Scotia the situation is even more serious with 32% of the seniors' population being frail (Hoover, 2013). As the population continues to age and the frailty of the population continues to increase, policy-makers will be faced with the challenge of determining the best ways to enable access to sustainable care in frail older adults.

The Palliative and Therapeutic Harmonization (PATH) model is an innovative, award winning solution that is dedicated to simplifying the process of caring for the frail elderly. At its core, PATH is a family-led model that places frailty at the forefront of evidence-informed decision-making (PATH Inc., 2013). When the PATH model is applied, it coordinates and enhances the patient experience across the healthcare

continuum, resulting in a bold shift in our approach to the care of frail older adults. The result is a dramatic change in the cost of care and the quality of patient and family caregiver satisfaction with the healthcare system (Moorhouse, Mallery, 2012).

The current care environment uses tools such as the Comprehensive Geriatric Assessment and the RAI-Minimum Data Set to assess patients and to determine clinical and administrative needs. While these tools serve very specific purposes in their targeted care environments (e.g. Long-term care, Home Care, Ambulatory Geriatric Clinics, etc.) they exhibit clinical shortcomings when dealing with today's frail seniors' population. For example, gathering medical history from a patient with mild cognitive impairment may provide false or incomplete information that is used to base care decisions on.

The PATH model of care introduces new toolsets that more accurately assess frailty by engaging with family members or care givers that can collaborate the patient's information, thus ensuring the most accurate and comprehensive account of information is being gathered.

Organizations that adopt the PATH model of care enable the interdisciplinary care teams who care for these frail patients to more effectively gather, share and communicate clinical information and enhance the quality of care provided. As the PATH model of care represents a significant shift from the existing practice of specialist-based analysis and care planning, there is significant change management that is required to enable the successful transition to this operating model. To inform this process, a readiness assessment can be performed to analyze the current state of an organization, compare it to the target state for the PATH model of care, and identify pre-implementation activities that would better support the organizations transition to this model of care.

This readiness assessment and the associated recommendations and analysis formed the initial basis for the project for this internship.

2. Description of the Organization

a. Deloitte:

Deloitte is a global professional services firm with over 15,000 employees in the consulting practice world-wide. Deloitte is a leader in healthcare consulting and has over 150 consultants in Canada dedicated to working specifically with healthcare organizations of all sizes. The author performed the internship as a Healthcare Project Manager within the Deloitte Atlantic Healthcare Consulting Practice and was engaged by a Nova Scotia client to complete a PATH readiness assessment.

b. PATH

Path Inc. is an organization formed by two geriatricians, Drs. Laurie Mallery and Paige Moorhouse from Halifax, NS who practice geriatric medicine at the QEII Hospital. The PATH model of care was awarded the gold medal for public sector leadership in the healthcare category at the 2012 IPAC Awards (IPAC, 2012).

c. PATH-Deloitte Strategic Alliance

Path Inc. and Deloitte have entered into a strategic alliance to technology-enable the PATH toolsets and to expand the adoption of the PATH model of care across Canada and beyond. PATH Inc. and Deloitte have been working together for over two years, developing enhanced approaches to enable organizations to adopt PATH and to improve the clinical value of data that has been gathered on the patients that have been cared for with the PATH model to date.

d. Tideview Terrace:

Tideview Terrace in Digby, NS is a long-term care facility with capacity for 98 residents and 1 respite bed. The organization has adopted the EDEN philosophy which asserts that no matter how old we are or what challenges we live with, life is about continuing to grow and that care partner teams

strive to enhance well-being by eliminating the three plagues of loneliness, helplessness, and boredom (Eden Alternative, 2016).

Tideview Terrace is looking to adopt the PATH model of care to supplement its focus on the Eden Alternative and to improve resident care at their facility. They are currently an entirely paper-based organization for patient charts and care plans, admissions processes, and transfer and discharge documentation gathering. They are considering technology adoption to support PATH as well as their on-going operational activities. One impetus for this consideration is the possible future direction of the Nova Scotia Department of Health and Wellness to adopt the RAI-MDS (LTC) data collection tool as a provincial standard which would require electronic data capture and submission.

3. Description of the Work Performed

The author's internship work involved the design and development of a Readiness Assessment approach to identify key gaps in the current Tideview Terrace administrative and clinical operations that would negatively impact the successful adoption of the PATH model of care. The author worked with Connie Munroe, RN and Priyanka Singh, MHA and was supervised by Pat MacNeil, Director, Technology Consulting for the Atlantic Offices of Deloitte Canada.

The author spent 3 weeks preparing the approach and activities that would include the following:

- Requesting and analyzing clinical and administrative documentation to compare to the PATH model toolset and processes
- Conduct a current state assessment through leadership and front-line staff interviews, and process observation reviews
- Review the processes and organizational readiness, comparing to the target model, and identify areas for improvement and required change

- Facilitate an opportunity workshop to discuss the change areas and plan next steps in preparation for training and implementation

The author's role was to manage the project and to review and finalize all project deliverables and documentation. This included responsibility for the executive leadership interviews and process observation with the on-site physician, Dr. John Black. Connie Munroe was responsible for the clinical interviews and process observation and Priyanka Singh was responsible for the administrative interviews and process observations.

Once the approach and templates were developed, the required documentation was requested, received, reviewed and analyzed for one week, determining gaps between the existing documentation content and the proposed PATH toolset, and redundancy and overlap in the existing documentation that was generating inefficiencies in the care process. In total, 14 assessments were reviewed and mapped to the PATH assessment toolsets and 15 additional documents (e.g, Strategic Plan, Organizational Plan, Approved Budget) were also reviewed to support change management planning. These additional documents provided further insights into resource capability, finances, external factors impacting organizational workflow, possible clinical transformation areas, and general effectiveness and efficiency.

Once the documentation review was completed, the team spent four full days onsite conducting the interviews and shadowing both the clinical and administrative activities and workflow. 15 interviews were conducted with representatives of leadership from various departments across the organization. This initiated the engagement process across leadership and key stakeholder groups. The Interviews focused on a series of questions to help identify potential issues that could affect organizational readiness. Questions were based on the following key implementation dimensions:

- Vision – Mission – Strategy
- Process and Policies

- Technology
- Change Management and Communication
- Human Resource
- Training and User Readiness

During the process observations, three key process areas were assessed:

- Physician workflow and rounding
- Daily nursing activities
- Administration processes

In addition to the process observation activities, two routine facility meetings were also observed:

- Multi-disciplinary case conference (clinical)
- Leadership Meeting (administrative)

These observations provided further insight into areas to achieve efficiencies with PATH as well as areas of alignment and misalignment with the target PATH processes.

All of the interview responses and process observation results were documented in previously defined templates that standardized the content from the team members (as much as possible) and would form the basis for the documentation which would enable consistent repetition of the process at future organizations.

The following three weeks were spent compiling the data gathered by the team and consolidating the results into a common set of information that supported the development of recommendations and a high-level implementation plan for Tideview Terrace. As multiple resources were interviewed and multiple team members observed the same processes being performed by different resources, there were often discrepancies in what was observed and/or documented. The team consolidated the

documentation and compared to the process documentation that was provided by Tideview Terrace prior to the onsite visit to establish a baseline for what was the most accurate current state.

This was than compared against the PATH target operating model and PATH toolsets to identify key gaps that would require resolution (in whole or in part) prior to a PATH implementation. In addition to the gaps, key alignments were also identified to enable the development of a change management plan that could leverage these strengths to support the adoption and sustainability of the new model of care.

The combination of these challenges and strengths were then used to develop a pre-implementation action plan as well as the high-level PATH implementation plan, with activities categorized by the amount of effort required (low, medium, high) and into the six key implementation dimensions identified above.

The compiled findings were then presented to the Tideview Terrace Leadership team during a 4 hour workshop where each recommendation was reviewed and discussed. This workshop identified a number of review or clarification questions that required follow-up and provision of additional detailed information that was gathered during the onsite visit. The week following the workshop was used to compile the requested information and provide clarifying content as requested.

Upon completion of the revised report with clarifying content, Debra Boudreau, Administrator, Tideview Terrace was in a position to make the decision as to whether the organization would proceed with the adoption of PATH, and if so, how and when they would proceed. Preliminary follow-up discussions have indicated that they are considering proceeding but it will likely be in the Fall of 2016 before the process begins.

Once the project work was completed for Tideview Terrace, the subsequent 4 weeks were spent on two key activities to enable the consistent repeatability of the Readiness Assessment process and to propose a solution to a key challenge that was identified during the analysis.

Repeatability can be achieved by the documentation of the approach and processes combined with pre-defined templates and tools for completing the processes. This concept, referred to within Deloitte as a "Playbook" is a common practice for sharing established processes between teams and enabling the expanding of key processes beyond the team that has developed it.

The potential for the adoption of the RAI-MDS toolset by the province (as is in place in many Canadian provinces) has raised the issue of how to minimize the amount of data collection while maximizing clinical value without compromising administrative value. This challenge and the health informatics solution proposed for it is the selected problem and solution defined below in this report.

4. Discussion on How Work Relates to Health Informatics

As broad as the course content in the Master of Health Informatics program is, elements of almost every course have been brought to the forefront through this internship project.

The sub-context of the pending decision by Tideview Terrace to adopt technology to support the potential RAI implementation and whether that could be aligned with the technology to support the PATH implementation is informed significantly by the Information Systems course trio of Flow and Use (HINF 6101), Flow and Standards (HINF 6102), and Systems and Issues (HINF 6110), as well as the HSA elective course of Information Systems in Health Care (HESA 5335). All of the concepts of environmental considerations for how systems interact and share information within the provincial healthcare system, the access and security that is required to enable that shared access and the responsibility of the system users to manage the data generation process to produce quality healthcare system data all weigh on the decision makers at Tideview Terrace as to whether to move forward at this time or not, and the potential support that they would require. As a result, the activities and recommendations that were developed for Tideview Terrace must also have considered these same factors in order to be of value, which was the case.

The process of shadowing healthcare professionals interacting with patients and with each other is a critical skillset and the knowledge and concepts learned through the Fundamentals of Clinical Care for Non-clinicians (HINF 6120) was invaluable. Prior understanding of the concepts of clinical diagnosis, medication management, care planning and assessment for interventions, and chronic disease management were essential to being able to converse with the healthcare providers and to understand that conversations that were being had. Engaging with physicians and nurses that are actively caring for patients cannot be done unprepared or demonstrate lack of fundamental knowledge as the capacity for explanations and detailed review simply doesn`t exist in this environment.

Moving to the other end of the informatics spectrum and engaging with the data and information gathered through the project activities highlights a totally different set of knowledge requirements. The skills and understanding developed through the Statistics (HINF 6030), Data Mining (HINF 6210) and Knowledge Management (HINF 6230) courses enabled the analysis of the data collection tools being used (e.g. Comprehensive Geriatric Assessment (CGA), Kardex, Braden Scale for Pressure Ulcers, Mini-mental state exam, etc.) and the comparison at a data element level against replacement tools being proposed (PATH Toolset, RAI-MDS). Understanding how data is collected, how it is used for analysis, and how merging datasets affects the quality and of the resulting data are all critical concepts when developing solutions for data management as was performed in this internship project.

Supporting this analysis and the use of the results is change management. Change management planning (HESA 5315) and general project management (HINF 6300) are fundamental activities in the successful use of the results of health informatics activities. Without adoption and sustainability, healthcare organizational transformation does not occur, and the value of the project is lost or significantly marginalized.

All of these aspects were present and utilized in this brief 13 week project of planning and analysis. This knowledge and these skills would be even more critical in larger projects that actually included healthcare system implementation or detailed outcomes analytics outputs. As these are the desired follow-on activities from this project, it is clear that health informatics fundamentals are pervasive along the healthcare project continuum.

5. Health Informatics Problem and Solution

a. Problem and Analysis

As a result of the documentation analysis performed for Tideview Terrace, the revelation of the potential provincial direction to adopt the RAI-MDS toolset for administrative use in Nova Scotia, and the feedback from PATH implementations in other provinces where the RAI-MDS is already in use, a specific challenge has been identified to understand how the two tools (RAI and PATH) can efficiently and effectively co-exist within the clinical environment.

It is understood from existing and prospective PATH clients in Ontario and British Columbia that completing the RAI-MDS long-term care (LTC) and home care (HC) assessments takes approximately 3 hours, and provides extensive administrative value but only moderate clinical value for care planning. This documentation is typically completed every 90 days or when a patient experiences a health crisis. Completing the assessment requires dedicated focus from a nurse or other healthcare professional and is typically not done in the presence of the patient.

The PATH assessment tool is clinically focused on providing value to patient care and the care planning process, but does not gather the extensive administrative data found in the RAI. The PATH assessment gathers additional detail in some of the areas of the RAI clinical data set but only covers about 70% of the total RAI question set. In addition, the answers provided in the PATH assessment cannot be directly mapped to the RAI answer set and vice versa for about half of that 70%. The

PATH assessment is however completed with the direct input from the patient and a family member or caregiver that is able to provide collateral information on the patient's health status and requires only 80-90 minutes to complete.

The informatics challenge that needed to be solved was to understand two critical questions:

1. Can the PATH assessment be changed to capture sufficient data to populate a RAI-MDS assessment for a patient, without negatively affecting the clinical value that it is providing?
2. Can the resulting assessment be performed with equivalent or less effort than the RAI-MDS process?

Question 1 Analysis:

The initial question required a detailed assessment, not only at the individual question level but also of the individual answer to each question. The format of both assessments are essentially multiple choice or rated/ranked answers but with specific meanings for the scales. Each of these answers was assessed for consistent meaning between the two assessment tools which resulted in approximately 30% of the answers being deemed directly transferrable from the PATH assessment into the RAI assessment (category 1).

Further analysis showed that approximately another 40% of questions were highly similar in both assessments but the answers available in each assessment were either more detailed/less detailed than the other, or had additional answers that did not exist in the other (category 2).

The remaining non-similar questions (30%) were based on content that was either not relevant or not addressed within the other assessment tool (category 3). These questions and answers would require completely additional questions and answers to be added to the PATH assessment to incorporate the content.

Based on the analysis and the resulting three categories of questions and answers, it was deemed that the answer to the first question was negative, and that the PATH assessment could not be changed in such a manner as to incorporate all the content to enable an automated process to populate the RAI data set from the PATH data set without significantly affecting the clinical value of the tool.

Given this result, the secondary question was then modified as follows:

Revised Question 2: Could a revised PATH assessment be developed that, when performed in combination with the portion of the RAI-MDS assessment that could not be pre-populated from the PATH assessment, could be performed with equivalent or less effort than the original RAI-MDS process by itself?

Question 2 Analysis:

As the opportunity to actually observe the completion of a RAI-MDS assessment in clinical practice was not available, some estimates based on question complexity and the defined average completion time of 3 hours were used to generate an estimate for resulting total completion time for both assessment tools under the following conditions:

A. PATH assessment would be modified to incorporate category 2 questions and answers, and
B. RAI-MDS assessment effort would be the category 3 questions not transferable from the completed PATH assessment which would populate category 1 and 2 answers.

Based on these criteria, an estimation of effort that would be required to complete the enhanced PATH assessment was performed using pro-rated effort factors from the previous 80-90 minute timeframe for the original full PATH assessment completion. This was then added to the pro-rated effort estimate for the RAI assessment effort based on the category 3 questions only.

In addition, an estimate to complete the one-time PATH assessment enhancements was also calculated to understand the investment required to achieve the desired outcome, and to enable estimations for the other care context versions of the PATH toolset (e.g. home care, acute care, rehabilitation, etc.).

The objective was to understand if there was an optimal combination of PATH toolset changes and integration solution from PATH to RAI to enable maximum data capture in minimal time frame.

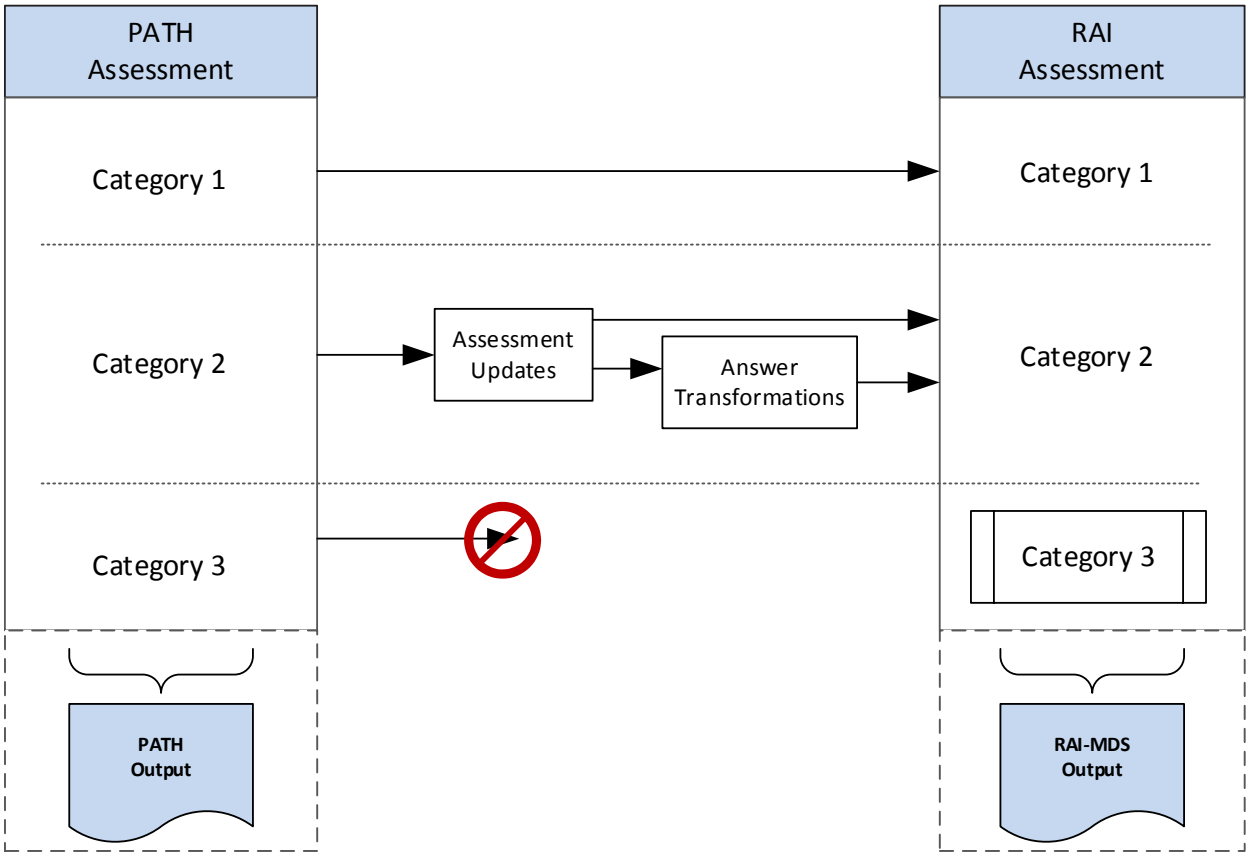
b. Design of a Solution

As there was insufficient time during the internship to actually develop the solution, the initial focus was on the problem analysis and then the high-level design of a proposed solution.

Question 1 Solution:

The data comparison and analysis showed the three categorizations of questions and answers that existed in the PATH assessment tool. The resulting requirements to support auto-population of the RAI data set using this data resulted in the design concept shown below.

Category 1 data is completely transferable and can be auto-populated directly from PATH answer content. Category 2 data requires updates or changes to the PATH assessment (either questions or answers) and a portion of the updated answers can be directly transferred, while a portion of the answers require additional transformation logic to be developed that would enable auto-population of the associated RAI answers. Category 3 questions are not completed in the PATH assessment and are completed directly in the RAI assessment tool. The desired PATH output can then be gathered from the PATH assessment and the desired RAI-MDS data can be gathered directly from the final RAI multi-step process.



To confirm the validity of the design, the team RN was consulted to confirm that the category 2 questions in the PATH assessment could have their answers altered or added to, without reducing the clinical value, to enable direct transferability or transformation to the RAI assessment.

Question 2 Solution:

The completion effort estimates based on the analysis defined above resulted in a slightly positive time savings with the PATH assessment expected to require an additional 30 minutes to complete on average (from 80-90 minutes to 110-120 minutes) and the RAI-MDS assessment process of validating the pre-populated category 1 and 2 answers and completing the category 3 questions to take 40-50 minutes (previously 180 minutes).

The estimated combined process effort was 150-170 minutes, a potential savings of 10-30 minutes. With a target value of 0 minutes or neutral change, any potential effort savings is determined to be a positive value proposition. Based on this a decision was made to perform further analysis on the design and to develop a prototype tool to support the auto-population process.

Initial design estimates of this process include 50 hours of effort to update / enhance the PATH assessment tool to incorporate the additional RAI content for the category 2 questions or answers, and an additional 350 hours to design and develop the automated interface to transfer category 1 and 2 questions, and to develop the transformation logic for the category 2 questions that require it.

While this may seem like a significant effort for a single interface, the potential savings for a client that performs 800-1,000 RAI assessments / year is 130-500 hours annually.

6. Conclusion

a. Readiness Assessment results

For Tideview Terrace's readiness assessment, there were 30 pre-implementation and 26 implementation readiness activities that were identified across the six implementation dimensions. For the pre-implementation activities, 33% are estimated to be low effort and could be completed within 8 weeks, 43% require moderate effort and would take 2-4 months to complete and 23% require significant effort and would take greater than 4 months to complete. While all of these activities do not have to be completed prior to a PATH implementation, each completed task would increase the likelihood of success and sustainability of the transformation.

Overall the organization was deemed to currently have a medium level of risk based on the PATH implementation approach with the key implementation dimension challenges being in the Technology and Process and Policy dimensions.

The technology adoption decision is still pending by Tideview Terrace but the required network infrastructure to support the implementation is available and in place. Only additional or upgraded local system hardware (e.g. laptops, desktops, tablets) would be required.

b. RAI-PATH results

Mapping of the PATH data elements to the RAI-MDS data elements and the resulting solution analysis has shown that while the desired results of a total mapping of data elements from the PATH assessment to the RAI assessment is not feasible, there does seem to be an alternative solution which still achieves the objective of maintaining the administrative value of the RAI assessment and the clinical value of the PATH assessment but reducing the original effort required for just the RAI assessment process. To determine the actual viability of the solution, an investment will be required to enable a prototype assessment form and data transformation process based on the proposed design that would allow a sample time study to be performed and compared to the original actual effort expenditure.

7. Recommendations

a. How to Repeat the Process

The development of a full PATH Implementation Playbook is in progress with the Readiness Assessment process defined and documented as a result of the Tideview Terrace project. Detailed steps and supporting documentation templates were developed and compiled into a defined process that will enable other teams within the Deloitte National Healthcare Consulting Practice to be trained on how to complete the process. Tailoring of the templates and the approach can be performed based on the care environment being assessed (e.g. long-term care, home care, acute care, etc.) and will be documented and added to the Playbook with the completion of each subsequent PATH project.

In addition to the Readiness Assessment documentation supporting other teams, the team members that were engaged with the Tideview Terrace project are already engaging with additional care facilities in Newfoundland, Ontario, Alberta and British Columbia to propose the same Readiness Assessment process with the same team members to further refine the existing processes and tools.

b. How to Improve the Process

While the Readiness Assessment process is typically the first step in the PATH implementation process, some organizations prefer to leap right into the transformation and are seeking to capitalize on the financial and efficiency benefits that PATH can produce. Completion of the PATH data migration tool to populate the RAI-MDS data elements for each care environment will be a key next step in improving both the Readiness Assessment process and the subsequent planning and implementation activities. Building on the proposed design and existing assessment analysis information to incorporate other common assessments will offer even greater value, both clinically and administratively to interested organizations.

The next step will be to further the use of the PATH data that is collected. Currently, there is a manually populated PATH outcomes database that is being used to analyze the financial impact within the different care segments as well as to understand the clinical impact that the PATH care model has on patient outcomes. Detailed design of enhancements to the PATH outcomes database will better facilitate analytics and data mining activities to identify linkages between health profiles and intervention outcomes, enabling significantly greater clinical decision support for specialists and geriatricians.

This clinical decision support model with detailed linkages between patient health profiles, current clinical practice guidelines based on the specialist model of care, and resulting frail patient

outcomes will offer a wealth of care planning knowledge to PATH teams and the patients that they care for. This ability to enhance patient outcomes has always been the ultimate goal of the PATH model of care and the tools and processes that are being put in place currently will greatly support this meaningful journey over the coming years.

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