Healthcare Safety Award – Nomination Form
Nomination deadline: February 1, 2016

Nominations must be made by a member of the College.

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Team/Project Name: Antimicrobial Stewardship Analytics – Interprofessional Project Team

Nominator:
Prefix: Mrs.
Name: Maria Muia
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Please submit nominations to:
Cindy MacBride, Manager, Awards and Sponsorships
Canadian College of Health Leaders
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Summary for Publication

The Business & Clinical Informatics team at Baycrest, in collaboration with the Baycrest Pharmacy and interdisciplinary Antimicrobial Stewardship team, has launched a new "Medication Management & Analytics" online system. This advanced clinical intelligence tool is designed to assist in medication management, analysis, risk reduction and decision making.

Baycrest Health Sciences has implemented a centre-wide Antimicrobial Stewardship Program (ASP), in both its Apotex (long term care) and Hospital facilities, adapting key principles from literature in acute care, to suit the needs, capability and capacity of a long-term care setting. The Baycrest ASP ensures the most appropriate use of antibiotics for Baycrest clients. Along with improving and maintaining resistance, the program aims to improve client care and safety by reducing unnecessary antibiotic exposure, and therefore risks of the antibiotics themselves (e.g. risk of allergic reaction, side effects and Clostridium difficile diarrhea).

The scope of the Antimicrobial Stewardship Program (ASP) ensures the most appropriate use of antibiotics achieves the best patient outcomes, reduce or stabilize levels of antibiotic resistance, and promote patient safety. At Baycrest, the ASP core team consists of a pharmacist and two physicians, who develop and implement stewardship interventions. Infection Prevention and Control, and Informatics specialists also provide support.

The stewardship team uses a variety of interventions focusing on guideline and policy updates, education, prospective audits and feedback, antimicrobial usage analysis, information technology interventions, and formulary reviews.

Introduction

The objective with our Antimicrobial Stewardship (AMS) Analytics Portal is to have a central online location for all staff to access critical medication-related information.

The portal achieves this through an advanced analytics Antimicrobial Stewardship toolset which is fully integrated with its primary data source, the Meditech Electronic Health Record (EHR) system. This ensures accuracy and consistency between the AMS portal and our Meditech EHR data. Additional features of the portal are Medication Reconciliation indicator reports, Venous thromboembolism (VTE) indicator reports – which, identifies instances where the formation of blood clots in the vein – and, drug information resources. These new and innovative online tools enable better tracking, evidence-based clinical decision making, and ultimately improve the delivery of patient care while proactively reducing risk.

Scope of Initiative

Baycrest has implemented a centre-wide Antimicrobial Stewardship Program (ASP), adapting key principles from literature in acute care, to suit the needs, capability and capacity of a long-term care setting. The Baycrest ASP ensures the most appropriate use of antibiotics for Baycrest clients. Along with improving and maintaining resistance, the program aims to improve client care and safety by reducing unnecessary antibiotic exposure, and therefore risks of the antibiotics themselves (e.g. risk of allergic reaction, side effects and Clostridium difficile diarrhea).

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The stewardship team uses a variety of interventions focusing on guideline and policy updates, education, prospective audits and feedback, antimicrobial usage analysis, information technology interventions, and formulary reviews. Our Pharmacy team in collaboration with the eHealth team has launched a new "Medication Management & Analytics" site. This advanced clinical intelligence tool is designed to assist in medication management, analysis and decision making.

This includes a new eHealth Informatics tool for the Antimicrobial Stewardship Program (ASP) which provides Baycrest clinicians with real-time antimicrobial usage data and analytics. This joint effort between Informatics and Pharmacy has automated a previously manual data collection process. The new electronic process enhances workflow efficiency and data collection accuracy.

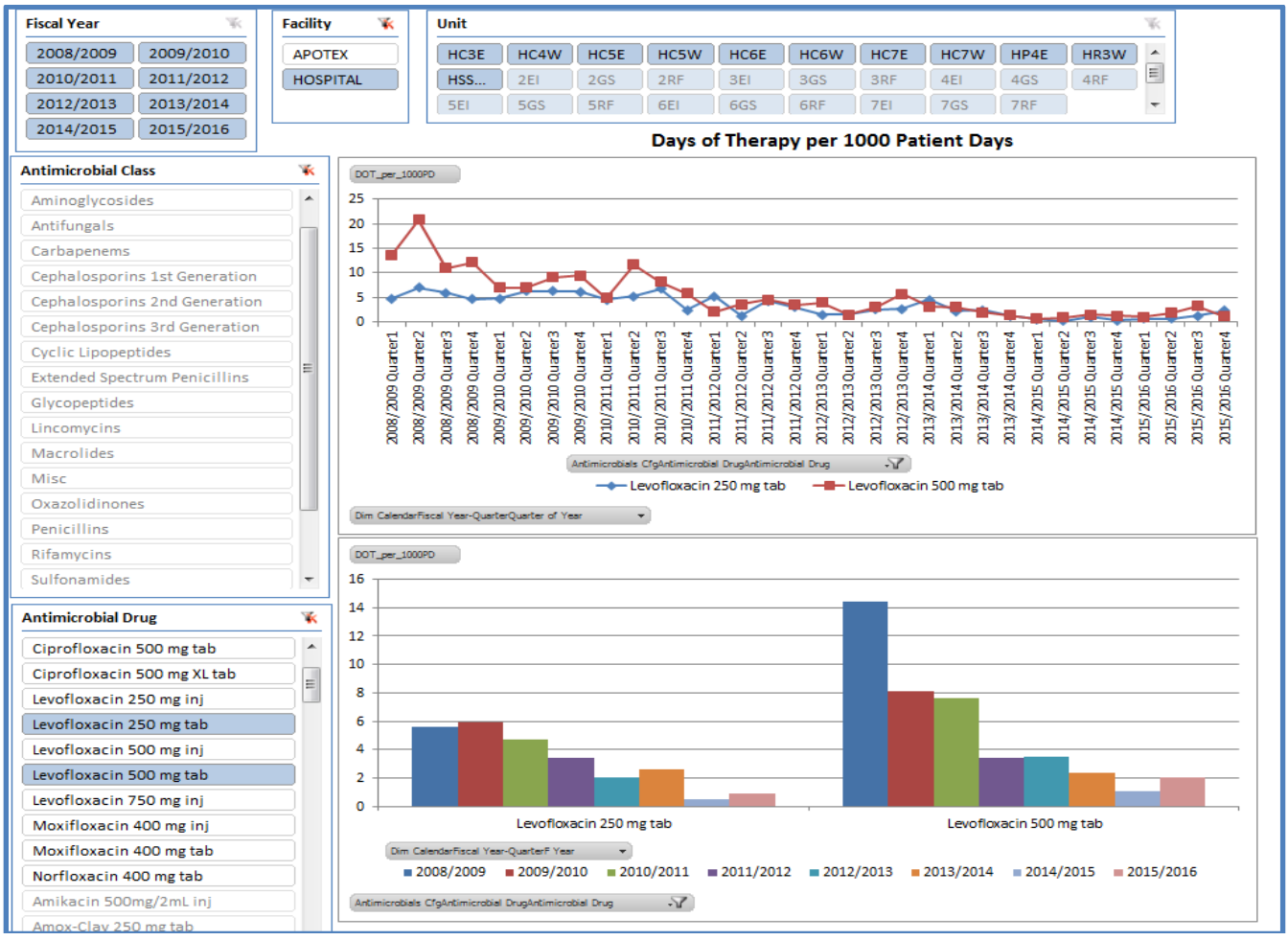
The Medication Management & Analytics site also includes other medication-related analytics, tools and resources, such as:

- Medication Reconciliation indicator reports
- VTE prophylaxis indicator reports
- Drug information resources

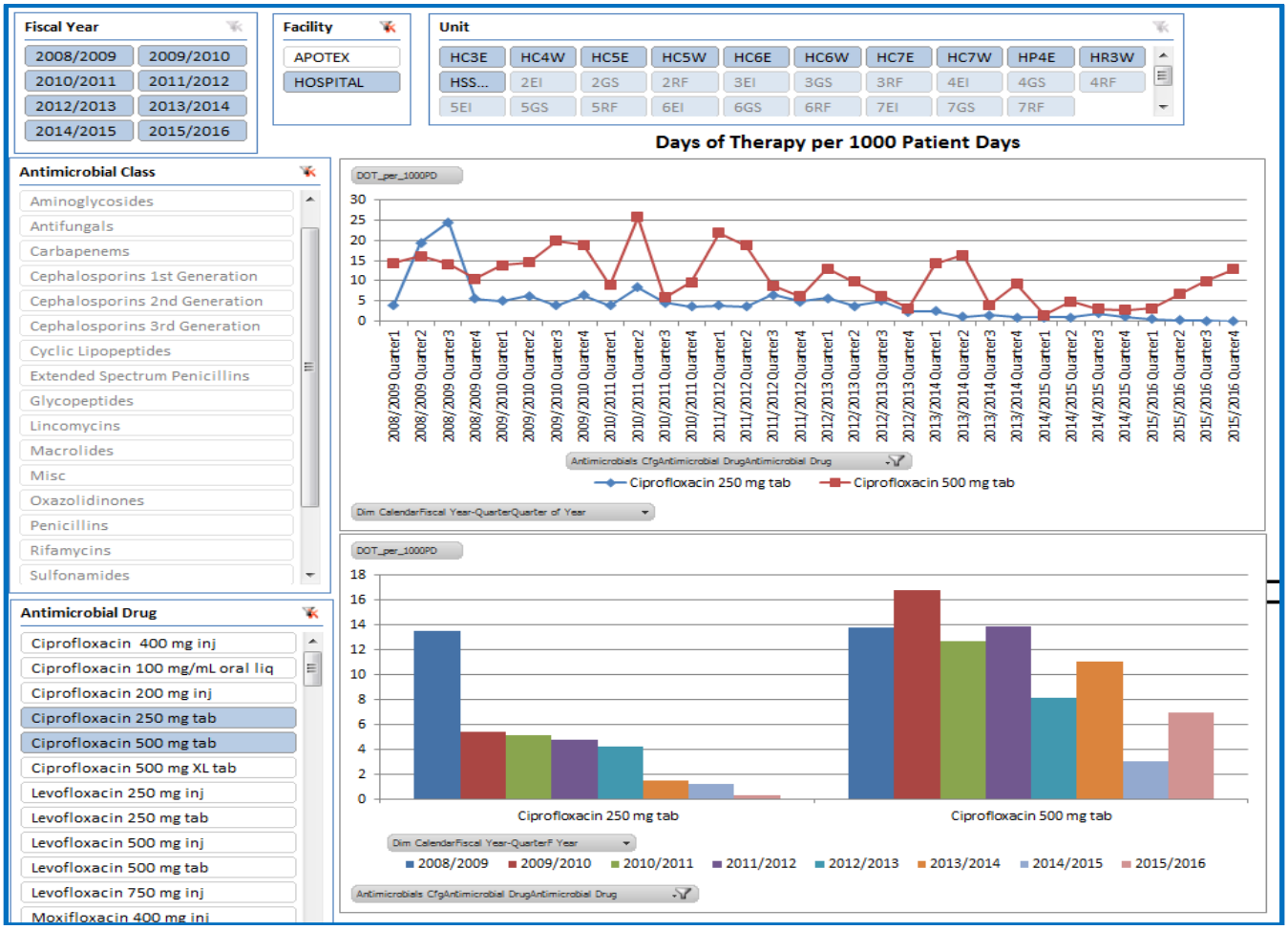
These new advanced electric tools not only enable Accreditation Canada requirements, but also to provide staff with access to critical medication-related information which will enable better tracking, decision making, and ultimately – improving the delivery of patient care while proactively identifying and reducing risk.

The Baycrest Clinical Performance Portal – MyScore, is an advanced online analytics application through which the antimicrobial stewardship performance monitoring tool was developed to monitor antimicrobial usage in real-time to clinicians and pharmacists. This assists in time efficient decision making with respect to antibiotic treatment, days of therapy and daily dosages. This tool enables clinicians to better understand the usage and seek alternatives to therapy allowing for better patient outcomes and reducing antimicrobial resistant organisms. Through this portal, the following analytics is accessible, and may be used to monitor usage, identify concerns, guide decisions, and ultimately course-correct and improve care:

***Example A**: Usage of Levofloxacin is reduced in accordance with the ASP goal*



Example B: *Usage of Ciprofloxacin is reduced in accordance with the ASP goal*

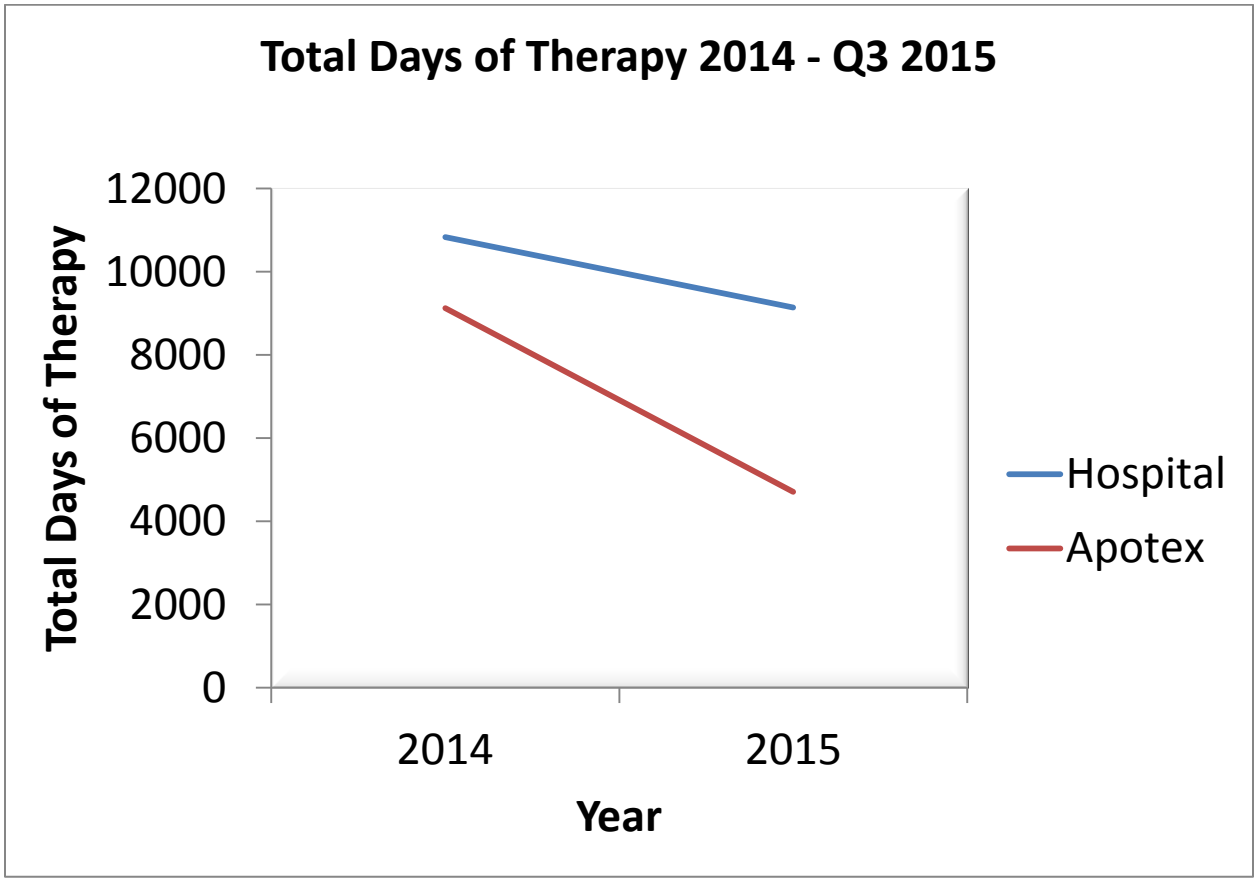


Demonstrations:

1) Reduction in Total Days of Therapy:

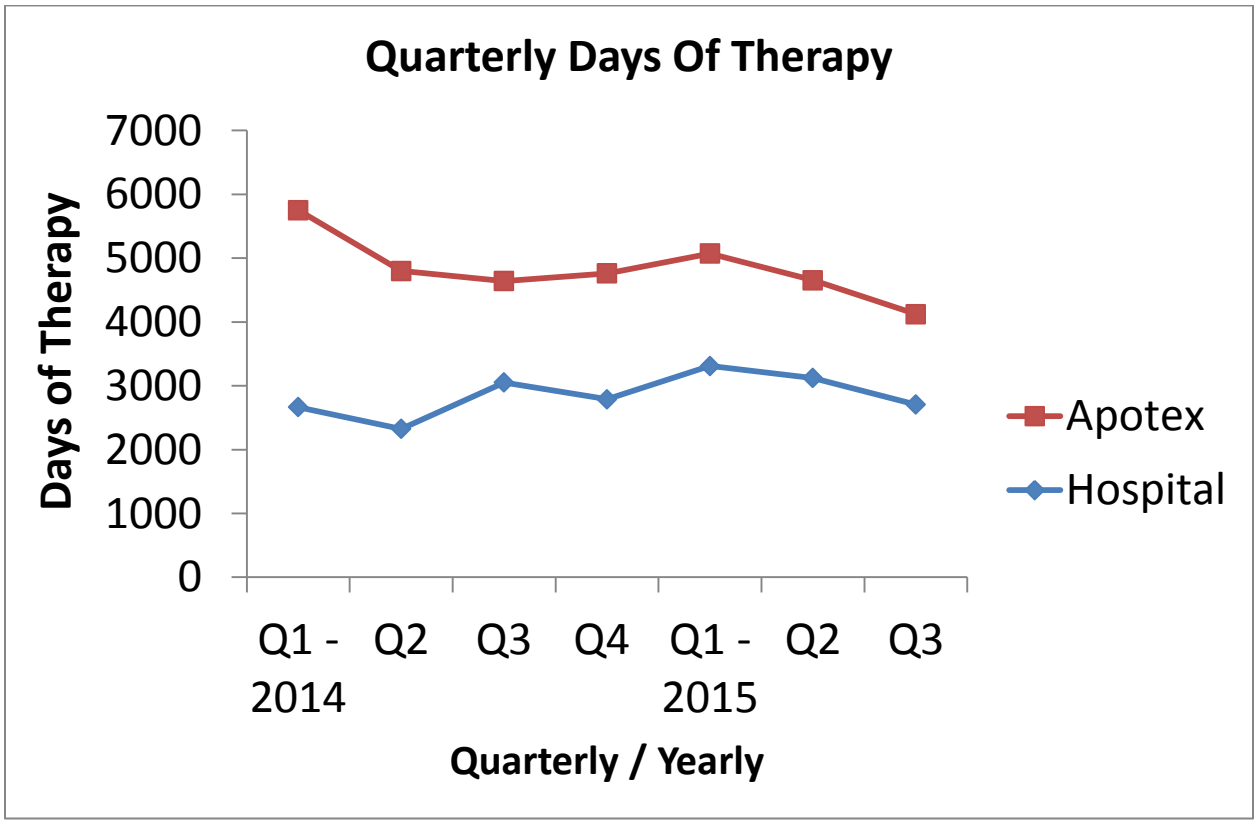
The development of the scorecard enabled the data to be available to the ASP team. The significant decrease in total days of therapy substantiates that having this tool in real-time enables clinicians to assess the total number of days that specific antimicrobials are used throughout the organization.

Baycrest Apotex/Long Term Care (LTC): Total DOT's has decreased 48.4% since 2014
Baycrest Hospital: Total DOT's has decreased 15.6% since 2014



2) Decrease in Quarterly Days of Therapy – Q4 2014 and Q1 2015:

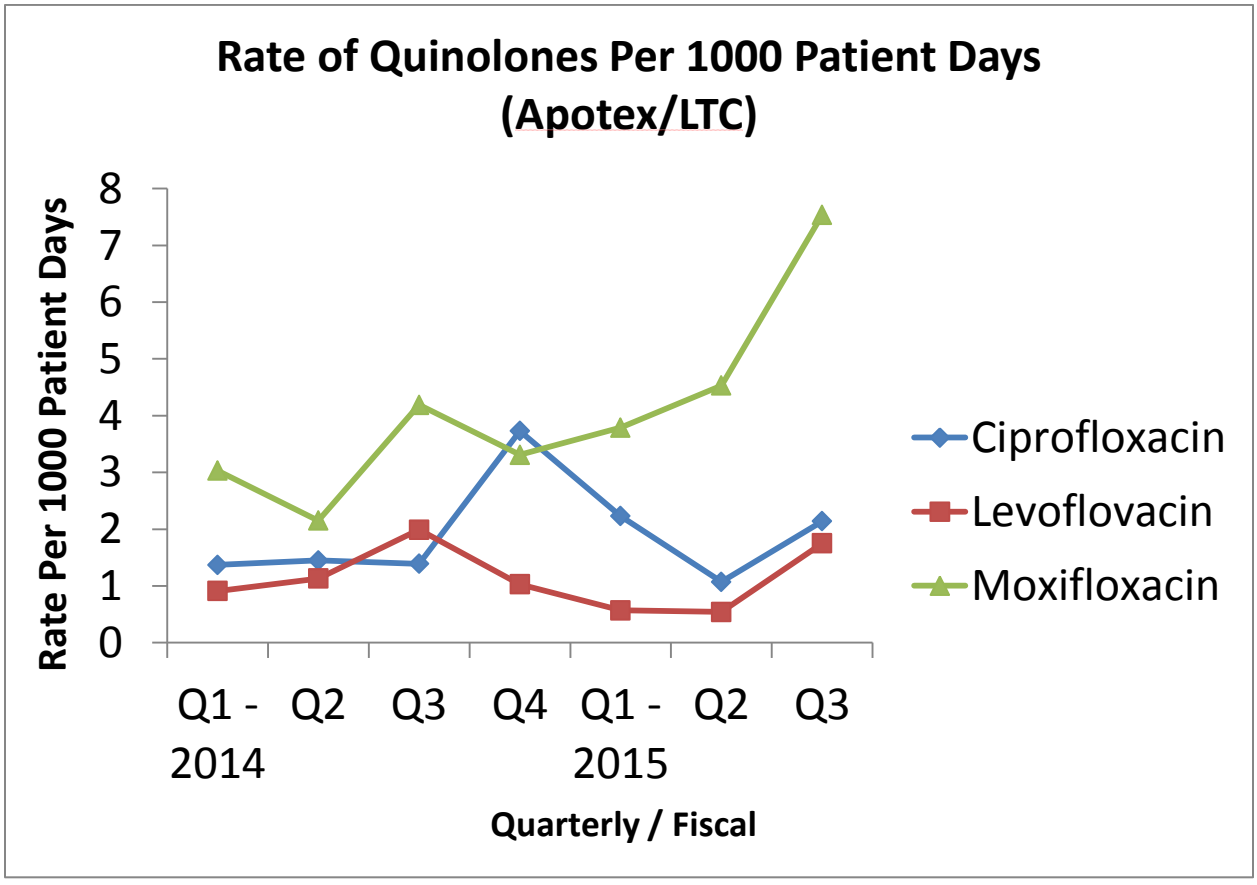
The scorecard was available to the ASP team in March. The downward slope demonstrates the supports the impact the scorecard has had on antimicrobial management at Baycrest with the overall goal to reduce antimicrobial resistant organism and improve patient care and safety



3) Quinolones Rates:

There is a significant decrease in the rate of quinolone usage per 1000 patient days. Usage seems to peak in Q4 in 2014 which may represent the Winter months where common colds and influenza infections are prevalent which could result in respiratory infections requiring antibiotic treatment. All three quinolones measured had a decrease in usage between Q4 2014 and Q2 2015. There is a significant increase in Moxifloxacin in the LTC facility. The entire organization practices within the same standards and guidelines with respect to antimicrobials prescriptions. Having this collaborative practice and technology is expected to enable more specific targeting of administration, according to more specific population requirements.

Since the implementation of the scorecard there is increased compliance within the LTC for quinolone usage and this demonstrates a possible standard practice variation as the usage of Ciprofloxacin and Levoflovacin slightly increase. The increase could illustrate that between Q3 and Q4 as the winter season approaches, the need for antimicrobials increases to help treat infectious organisms. This initiative and the tools, practices and technologies around it, will enable more detailed follow up and action plans to address these variations.

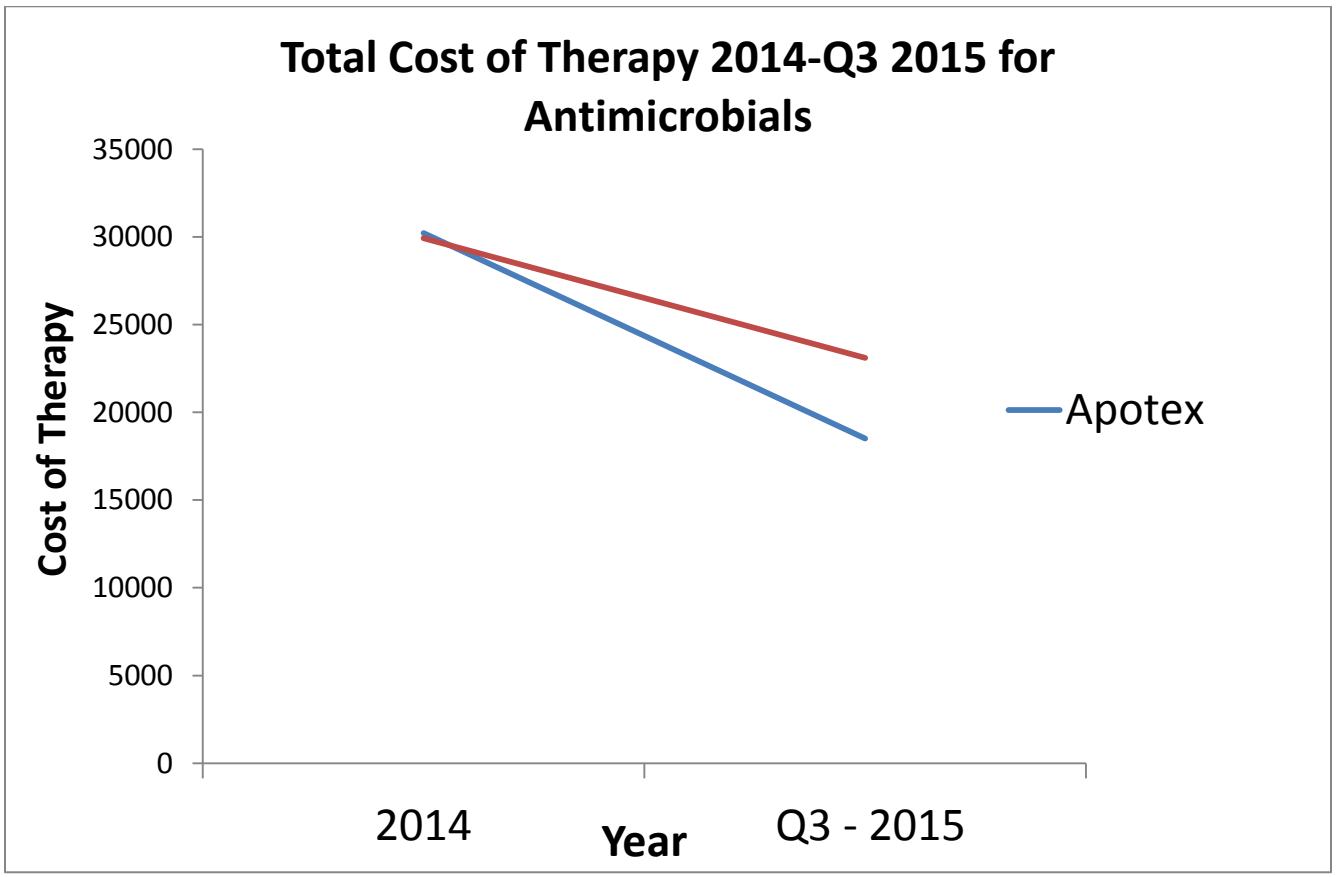


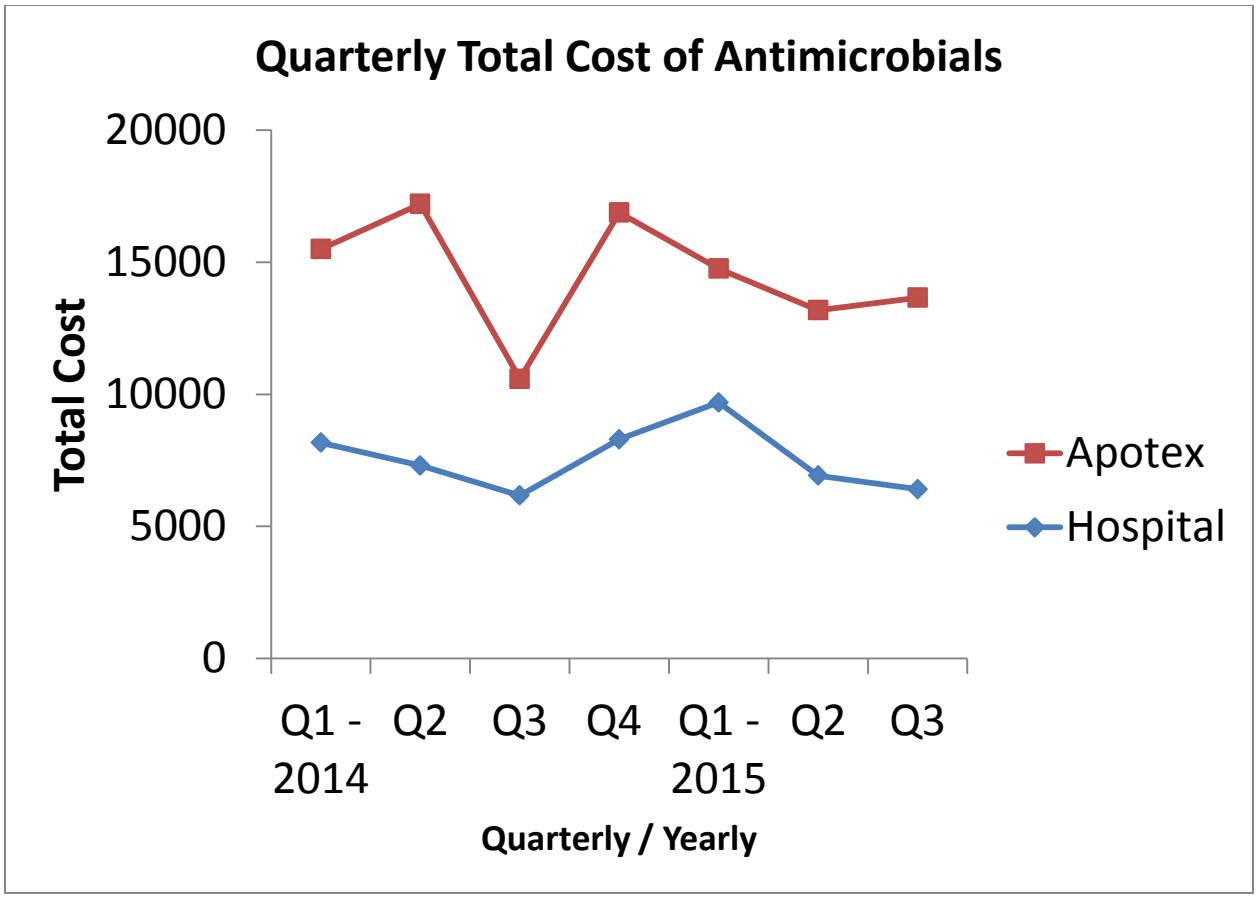
4) Cost of Therapy:

Since the implementation of the scorecard the total cost of therapy in both the Apotex and the Hospital has decreased and appears to be continually decreasing overall. This reflects the total cost of 18 Antimicrobials used at Baycrest.

Apotex (LTC) total cost of therapy decreased by 38.7% in the 3rd quarter of 2015 since Q1 2014
Hospital total cost of therapy has decreased by 22.8% in the 3rd quarter of 2015 since Q1 2014

The slight increase in cost of antimicrobials in Q3 of 2015 aligns with the rate of antimicrobials increasing in the same quarter. Q3 in 2014 and Q3 in 2015 appear to be parallel at same cost. This could identify the normal variance within the antimicrobial usage at Baycrest. It reflects the total cost of 18 Antimicrobials used at Baycrest.





Measurable and Sustainable Improvements:

The graphs, charts and tools shown, represent the level to which all aspects of this initiative are approached in a measurable and sustainable manner, as well as the success realized so far.

1. Collaboration at all levels within the organization; including senior management exist throughout this process. When targets are not met, they are automatically flagged by the information system, alerting pharmacists and clinicians to the situation. Pharmacy and clinical areas collaborate to address and inform senior leadership of the concerns. Recommendation are made to address the shortfalls, issues or concerns identified through the technology, and senior leadership then approves and enforces the changes in practice which are required across all disciplines affected. This leads to process improvement and better results aligned with targets.

2. Antimicrobial stewardship benefits include improvements to a number of aspects which ultimately lead to improved patient care and reduced risk. These aspects which realize benefits include:

i. Improved multi-disciplinary communication, teamwork and collaboration
ii. Heightened clinical awareness and engagement at all levels
iii. Ability to meet regulatory performance requirements related to antimicrobial administration.
iv. Ability to meet regulatory reporting requirements in a more time-sensitive and accurate manner.
v. Preservation of effective antimicrobial medication treatment and the ability to treat disease without concern of infectious bacteria becoming immune to antibiotics.
vi. Reduction in cost and waste of antibiotic medication.
vii. Advancing the uptake and adoption of useful technology, incorporating it into clinical practice, decision making and results.
viii. Improved workflow efficiencies related to documentation, analysis and reporting.
ix. Better understanding of specific patient population needs, with a more targeted approach to patient care and treatment.
x. Reduced medication administration errors.

3. This practice was highlighted and promoted as a leading practice during accreditation.

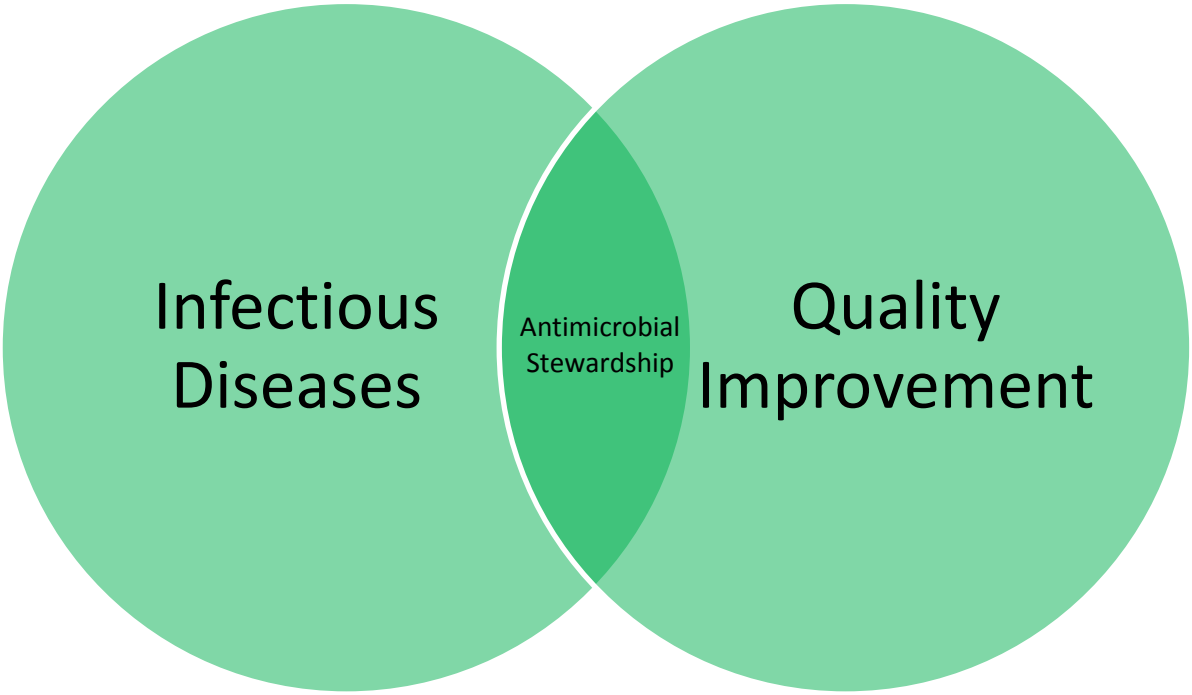
4. The reduction in cost/waste through this initiative provided a solid business case to continuously invest in sustaining and improving the process through advanced, ongoing clinical intelligence technologies, clinical education, and leading clinical practices.

5. Next Steps – further metrics will be developed not only focussing on the improvement of antimicrobial stewardship care, safety and risk reduction, but also to monitor and control the supporting pillars of the initiative, such as keeping technology updated, continuous communication and education, recognition of areas which meet and exceed targets, and return on investment tracking. Also, the intention is to eventually conduct correlation analysis between improved antimicrobial administration, and other key performance indicators, such as transfers, emergencies room visits, adverse events, and life expectancy.

Other Considerations:

An Antimicrobial Stewardship Program was recognized by Accreditation Canada as a leading practice. It is a critical component is that is rapidly becoming a global initiative. This graph as identified by Boucher *CID* 2009; 48:1–12, the antibiotic advancements and supply has decreased significantly since the 80's. Hence, the attention to the program and the quality initiative by Baycrest to implement this program within Long-Term Care. The aging population are identified as a vulnerable group to antibiotic resistance organisms.

http://www.idsociety.org/uploadedFiles/IDSA/Policy_and_Advocacy/Current_Topics_and_Issues/Advancing_Product_Research_and_Development/Antimicrobials/Statements/76be6c147e7d4b6a891d7c2b860349fd3.pdf



Conclusion:

Our goal with the Medication Management and Analytics Portal was to create an EHR-integrated, one-stop shop in which all staff can access critical medication-related information.

The portal includes a new eHealth Informatics component for the Antimicrobial Stewardship Program (ASP), as well as Medication Reconciliation indicator reports, VTE prophylaxis indicator reports and drug information resources.

These new online tools will enable better tracking, decision making, and ultimately improve the delivery of patient care while proactively reducing risk and setting the stage for the next steps for measurable and sustainable improvements as mentioned above.

It is a powerful step forward in the advancement of intelligent business & clinical reporting and analysis tools, which enable evidence based decision making, leading to improved patient outcomes, more efficient workflow and reduced patient risk.

Baycrest

February 1st, 2016

To: Cindy MacBride, Manager, Awards and Sponsorships
Canadian College of Health Leaders
292 Somerset Street West
Ottawa, ON, K2P 0J6

Re: CCHL Healthcare Safety Award – Letter of Nomination

I am delighted to nominate the interprofessional teams of Business & Clinical Informatics, Pharmacy, Medical Services and Infection & Prevention Control, for the CCHL Healthcare Safety Award. As Executive Director e-Health and Information Technology I oversee the Business and Clinical Informatics Team responsible for creating the tools that enabled successful completion of the inter-professional antimicrobial stewardship project.

This collaborative effort has resulted in improved patient care through advanced analytics technology, ensuring appropriate use of antibiotics. It has reduced and stabilized levels of antibiotic resistance and promoted patient safety. The larger Antimicrobial Stewardship team includes physicians, a pharmacists, Infection Prevention and Control, and eHealth Informatics specialists.

I am in full support of this award. The technology and clinical best practice will undoubtedly continue to improve patient outcomes and reduce risk. Without reservation, I recommend the above collaborative team and their leadership, for this award.

Sincerely,

Maria Muia, MHSc, BHA, CHE, CHIM
Executive Director e-Health and Information Technology
Baycrest Health Sciences
416-785-2500, ext. 3443
mmuia@baycrest.org

Baycrest

February 1st, 2016

To: Cindy MacBride, Manager, Awards and Sponsorships
Canadian College of Health Leaders
292 Somerset Street West
Ottawa, ON, K2P 0J6

Re: CCHL Healthcare Safety Award – Letter of Support

I am delighted to support the inter-professional teams of Business & Clinical Informatics, Pharmacy, Medical Services and Infection & Prevention Control, for the CCHL Healthcare Safety Award. As Executive Vice President, Clinical Programs and Chief Nursing Executive, I oversee the nursing and professional practice areas who often work closely and collaboratively with the eHealth group at Baycrest Health Sciences.

This collaborative effort has resulted in improved patient care through advanced analytics technology, ensuring appropriate use of antibiotics. It has reduced and stabilized levels of antibiotic resistance and promoted patient safety. The larger Antimicrobial Stewardship team includes physicians, a pharmacists, Infection Prevention and Control, and eHealth Informatics specialists.

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Sincerely,

Carol Anderson, CHE
Executive VP, Clinical Programs and Chief Nursing Executive
Baycrest Health Sciences
416-785-2500, ext. 3443
canderson@baycrest.org

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Baycrest

February 1, 2016

Ms. Cindy MacBride, Manager, Awards and Sponsorships
Canadian College of Health Leaders
292 Somerset Street West
Ottawa, ON K2P 0J6

Dear Ms. MacBride,

Re: CCHL Healthcare Safety Award – Letter of Support

I am delighted to support the inter-professional teams of Business & Clinical Informatics, Pharmacy, Medical Services and Infection & Prevention Control for the Canadian College of Health Leaders Healthcare Safety Award. As Vice President, Innovation and Chief Technology Officer at Baycrest, I am responsible for encouraging and promoting innovation across the Centre as well as overseeing technology and information services.

This collaborative effort has resulted in improved patient care through advanced analytics technology, ensuring appropriate use of antibiotics. It has reduced and stabilized levels of antibiotic resistance and promoted patient safety. The larger Antimicrobial Stewardship team includes physicians, a pharmacist, Infection Prevention and Control staff, and eHealth Informatics specialists.

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Sincerely,

Ron Riesenbach
Vice President Innovation & Chief Technology Officer

- Geriatric Health Care System
- Research Centre for Aging and the Brain
- Kunhippi Foundation on Aging
- Baycrest Foundation

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Baycrest is an academic health sciences centre fully affiliated with the University of Toronto