SHS + UHN

ASP ANTIMICROBIAL STEWARDSHIP PROGRAM

# Q4 REPORT

## FISCAL YEAR 2015 | 2016

Mount Sinai Hospital
Sinai Health System
Joseph & Wolf Lebovic Health Complex

UHN
Toronto General
Toronto Western
Princess Margaret
Toronto Rehab

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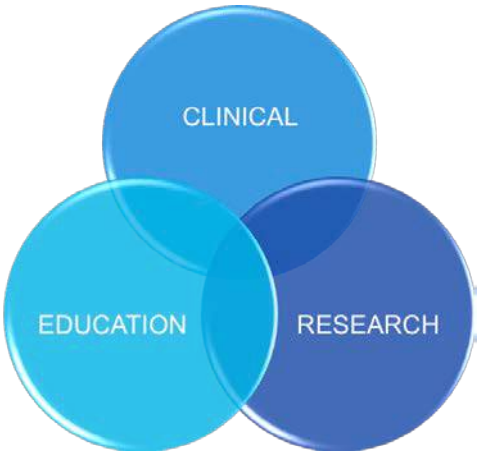
*"Getting patients the right antibiotics, when they need them"*

# EXECUTIVE SUMMARY

The Sinai Health System-University Health Network Antimicrobial Stewardship Program (SHS-UHN ASP) was established in 2009. The SHS-UHN ASP uses a collaborative and evidence-based approach to improve the quality of antimicrobial use by getting patients the right antibiotics when they need them. The ASP follows data-driven quality improvement methodology to pursue the best possible clinical outcomes for its patients.




The SHS-UHN ASP blends research, education, and clinical care to take a leadership role in antimicrobial stewardship and improving the quality of health care.

## ANTIMICROBIAL CONSUMPTION AND COSTS

The ASP continues to work with clinical teams across all five hospitals (Mount Sinai Hospital, Princess Margaret, Toronto General, Toronto Rehab, and Toronto Western). We have begun working with Bridgepoint Health now that it is part of Sinai Health System.

We have introduced a graphic of Defined Daily Doses (DDD) together with Days of Therapy (DOT). The metrics are extracted from the hospital pharmacy databases and the Provincial Critical Care Information System (CCIS). We continue to observe that these two metrics are closely related however, as stated previously, using lower or higher doses of antimicrobials will result in a corresponding change in DDD without any change in DOT (i.e. in patients with renal dysfunction, extremes of body mass, or central nervous system infections.)

There is a general trend of decreased consumption and costs in the MSH ICU, MSH NICU, and TGH CVICU, with an increase in consumption in the TGH ICU and TWH ICU respectively. The GIM wards (MSH and TGH), Leukemia service and Allo-BMT are also showing a decrease, with no significant increase in consumption and cost. There is an increase in antimicrobial consumption in GIM at TWH and a marginal increase in cost on the Leukemia service at Princess Margaret. There is a greater than 10% increase in consumption in MOT, attributable to an increase in antifungal consumption.

## Table 1: Summary of Antimicrobial Usage and Cost by Hospital/Unit

| Hospital/Unit | Antimicrobial Usage | Antimicrobial Cost |
|---|---|---|
| | | |
| **Mount Sinai Hospital: Medical Surgical ICU** | ↓ | ↓ |
| **Mount Sinai Hospital: Neonatal ICU** | ↓ | ↓ |
| **Toronto General Hospital: Cardiovascular ICU** | ↓ | ↓ |
| **Toronto General Hospital: Medical Surgical ICU** | ↑ | ↓ |
| **Toronto Western Hospital: Medical Surgical Neurosurgical ICU** | ↑ | ↓ |
| **Mount Sinai Hospital: General Internal Medicine** | ↓ | ↓ |
| **Toronto General Hospital: General Internal Medicine** | ↓ | ↓ |
| **Toronto Western Hospital: General Internal Medicine** | ↑ | ↓ |
| **Princess Margaret Cancer Centre: Leukemia Service** | ↓ | ↑ |
| **Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant** | ↓ | ↓ |
| **Toronto General Hospital: Multi-Organ Transplant Program** | ↑ | ↓ |

↓ Decrease compared to previous YTD ↑ Increase of < 10% compared to previous YTD ↑ Increase of > 10% compared to previous YTD

## FISCAL YEAR 15/16 Q4 HIGHLIGHTS

### Research – Published In This Quarter

The following articles were published or accepted for publication in peer-reviewed medical journals:

- So M, Yang D, Bell CM, Humar A, Morris AM, Husain S. Solid Organ Transplant Patients: Are There Opportunities for Antimicrobial Stewardship? *Clin Transplant*. 2016 May DOI: 10.1111/ctr.12733.http://onlinelibrary.wiley.com/doi/10.1111/ctr.12733/abstract

- Bai A, Showler A, Burry L, Steinberg M, Tomlinson G, Bell CM, Morris AM. Clinical prediction rules in Staphylococcus aureus bacteremia demonstrates the usefulness of reporting likelihood ratios in infectious diseases. *Eur J Clin Microbiol Infect Dis*. Epub ahead of print, June 29, 2016.
- Vallipuram J, Dhalla S, Bell CM, Dresser L, Han H, Husain S, Minden MD, Paul NS, So M, Steinberg M, Vallipuram M, Wong G, Morris AM. Chest CT Scans are Frequently Abnormal in Asymptomatic Patients with Newly Diagnosed Acute Myeloid Leukemia. *Leuk. Lymphoma*. [in press]

There are currently an additional four manuscripts that have been submitted to medical journals and are undergoing peer review.

## Best Practices

Several algorithms have been developed, including the **First Episode *Clostridium Difficile* Infection (CDI) Management Algorithm**, which was implemented into practice across UHN and SHS, along with electronic order sets to support the use of the algorithm. **The CDI algorithm was reformatted** based on clinician and project stakeholder feedback **and can be found** here on our ASP website. The revised formatting is based on Human Factors Engineering and will be easier to navigate and print for frontline clinicians.

**ASP nurse-focused initiative** aimed at reducing overtreatment of **Asymptomatic Bacteriuria**: Key deliverables of this initiative included an updated policy on urine cultures, audit, and feedback to pilot units and educational sessions and urine culture surveys to assess nurse behaviour and sentiment practices towards urine cultures. The updated policy was approved and is currently in practice. Educational sessions were provided to over 70% of nurses on pilot units, along with audit and feedback to support knowledge translation. All four units that took part in this initiative reduced unnecessary urine C&S utilization and reduced asymptomatic bacteriuria and/or antibiotic usage.

**Provincial and National Role**: Our team has partnered with Public Health Ontario in hosting an Ontario Antimicrobial Stewardship Roundtable. This roundtable meeting included a cross-section of experts in antimicrobial stewardship, including primary care, long-term care, acute care, and perspectives from the Assistant Deputy Minister, Health Systems Quality and Funding, and Strategy and Policy Advisor and Infectious Disease Policy and Programs Sections. The SHS-UHN ASP has also been working closely with HealthCareCAN, the National Collaborating Centre for Infectious Diseases (NCCID), and the Public Health Agency of Canada (PHAC) to inform our national health leaders and to organize a Pan-Canadian Action Round Table on Antimicrobial Stewardship and Resistance, which took place in Toronto on June 16 and 17, 2016. Details of the outcome of the Pan-Canadian Action Round Table in June will be addressed in our next quarterly report.

The SHS-UHN ASP continues to be a leader in antimicrobial stewardship and is currently working with, and providing expert guidance to, over 30 hospitals, as well as to SASS (Students for Antimicrobial Stewardship Society).

We continue to partner with **Accreditation Canada** in the development and delivery of an **online ASP course** and a series of interactive group webinars. The fourth cohort has completed the online course, and the course continues to be offered for 2016. Our program has also partnered with CHA Learning, the professional development branch of HealthCareCAN, to develop materials for a course in change leadership in the healthcare setting.

# FISCAL YEAR 15/16 Q4 RESULTS

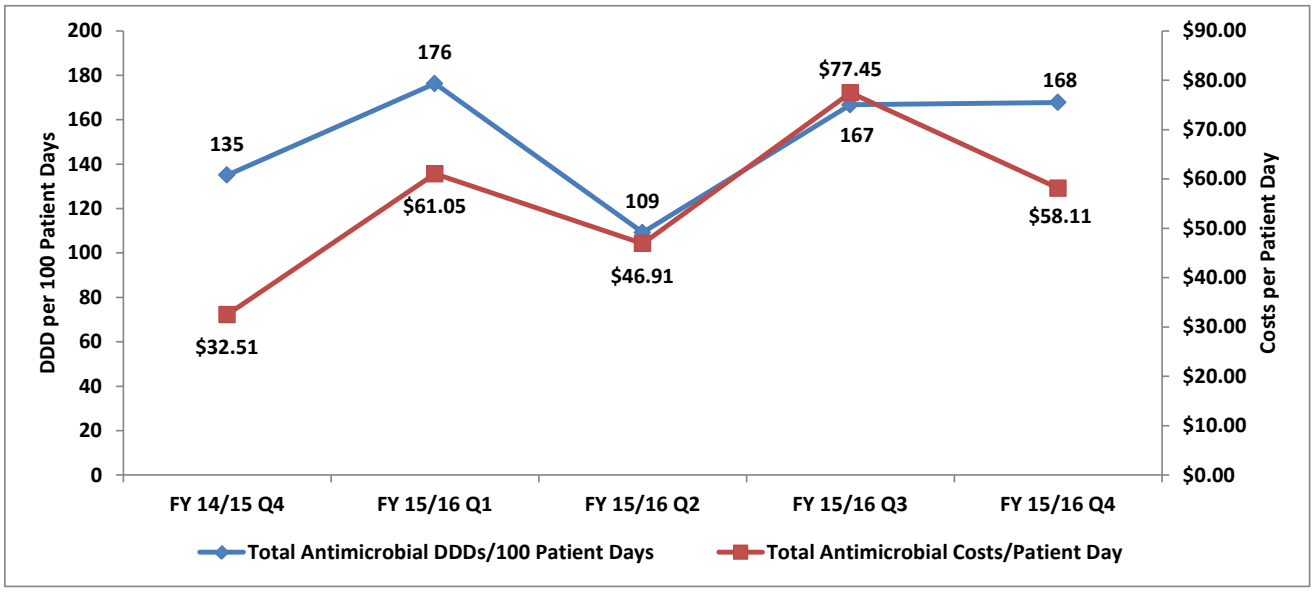
CRITICAL CARE

## Mount Sinai Hospital: Medical Surgical ICU

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 5.4% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 1.7% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 26.2% compared to YTD last year.
- Antifungal costs per patient day increased (↑) by 4.9% compared to YTD last year.
- NB: Princess Margaret patients accounted for 18% of patient visits and 74% of the antimicrobial costs.

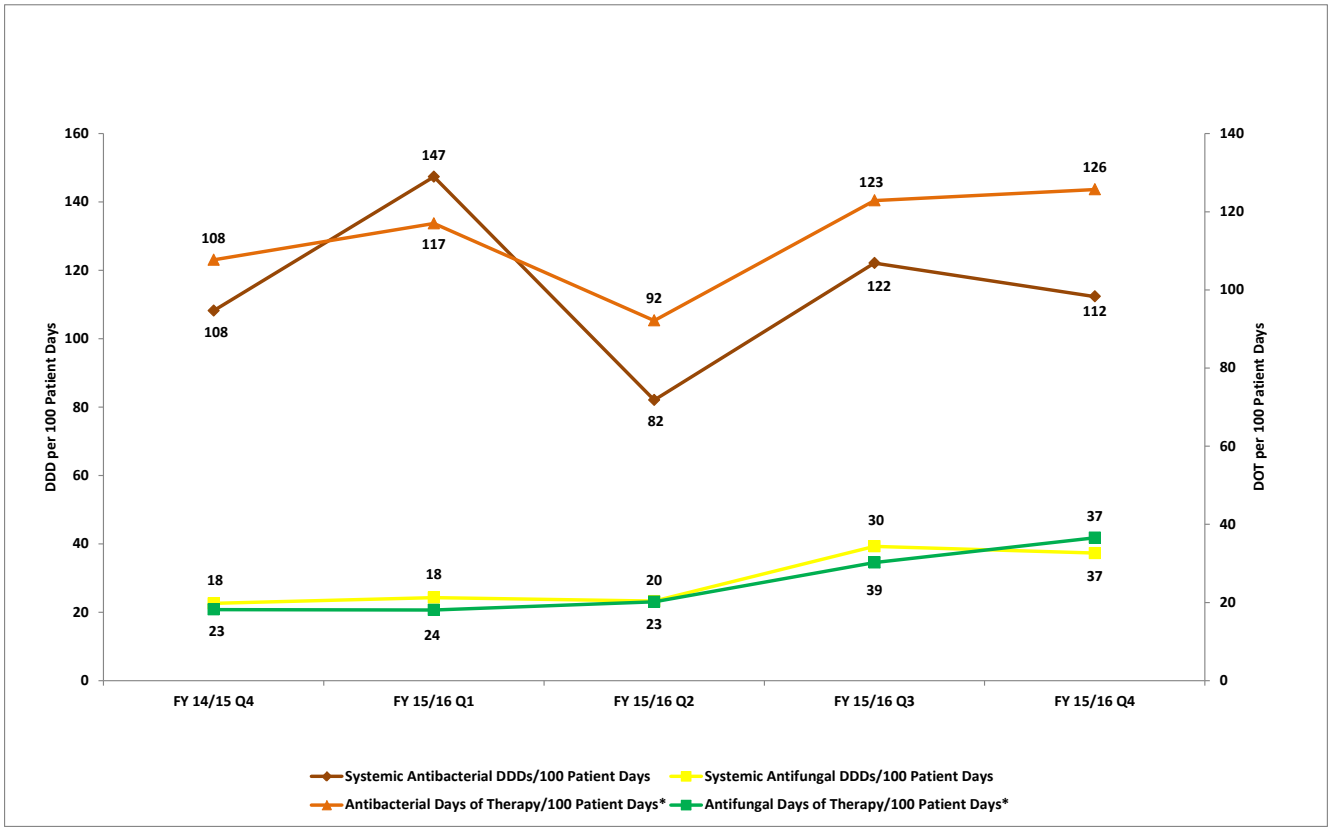
### Mount Sinai Hospital: Medical Surgical ICU
### Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 1: FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 Patient Days) and Expenditures by ICU Site**, please click **here**.

# Mount Sinai Hospital: Medical Surgical ICU
# Antimicrobial Consumption as Defined Daily Dose versus Antimicrobial Consumption as Days of Therapy

- Antibacterial Days of Therapy (DOT) per 100 patient days increased (↑) by 5.1% compared to YTD last year.
- Antifungal Days of Therapy (DOT) per 100 patient days increased (↑) by 30.6% compared to YTD last year.



# Table 2: Mount Sinai Hospital: Medical Surgical ICU

| Indicators | FY 08/09 (Pre-ASP) | FY 09/10 | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **177** | **171** | **144** | **167** | **170** | **167** | **164** | **176** | **109** | **167** | **168** | **156** | **164** |
| Systemic Antibacterial DDDs/100 Patient Days | 142 | 128 | 111 | 128 | 127 | 123 | 136 | 147 | 82 | 122 | 112 | 116 | 136 |
| Systemic Antifungal DDDs/100 Patient Days | 31 | 24 | 20 | 33 | 35 | 36 | 25 | 24 | 23 | 39 | 37 | 32 | 25 |
| **Total Antimicrobial Costs** | $332,724 | $285,975 | $193,129 | $279,859 | $291,470 | $422,634 | $232,814 | $60,318 | $49,492 | $95,416 | $69,031 | $274,258 | $232,814 |
| **Total Antimicrobial Costs/Patient Day** | **$69.01** | **$59.23** | **$40.95** | **$59.22** | **$62.37** | **$85.07** | **$62.54** | **$61.05** | **$46.91** | **$77.45** | **$58.11** | **$61.45** | **$62.54** |
| Systemic Antibacterial Costs | $174,339 | $142,134 | $95,773 | $125,339 | $134,811 | $108,886 | $92,928 | $20,746 | $14,673 | $17,262 | $15,566 | $68,246 | $92,928 |
| Systemic Antibacterial Costs/Patient Day | $36.16 | $29.44 | $20.31 | $26.94 | $28.85 | $21.92 | $20.71 | $21.00 | $13.91 | $14.01 | $13.10 | $15.29 | $20.71 |
| Systemic Antifungal Costs | $143,100 | $132,519 | $88,998 | $141,877 | $144,811 | $295,163 | $134,504 | $31,338 | $33,608 | $75,612 | $49,103 | $189,661 | $134,504 |
| Systemic Antifungal Costs/Patient Day | $29.68 | $27.45 | $18.87 | $30.50 | $30.99 | $59.41 | $40.53 | $31.72 | $31.86 | $61.37 | $41.33 | $42.50 | $40.53 |
| **Antibacterial Days of Therapy/100 Patient Days*** | n/a | n/a | n/a | n/a | n/a | 111 | 109 | 117 | 92 | 123 | 126 | 115 | 109 |
| **Antifungal Days of Therapy/100 Patient Days*** | n/a | n/a | n/a | n/a | n/a | 17 | 21 | 18 | 20 | 30 | 37 | 27 | 21 |
| **Patient Care Outcomes** | | | | | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 pt days) | NA | NA | NA | 5 (1.07) | 8 (1.71) | 4 (0.91) | 7 (1.59) | 1 (1.01) | 2 (1.9) | 1 (0.81) | 1 (0.84) | 5 (1.12) | 7 (1.59) |
| ICU Average Length of Stay (Days) | 5.84 | 5.57 | 5.67 | 5.51 | 5.24 | 6.10 | 5.26 | 3.71 | 3.7 | 5.61 | 4.86 | 4.45 | 5.26 |
| ICU Mortality Rate (as a %) | 20.1 | 17.6 | 16.3 | 16.5 | 17.04 | 15.3 | 13.9 | 14.5 | 13.2 | 16.2 | 13.2 | 14.2 | 13.9 |
| ICU Readmission Rate Within 48 Hrs (as a %) | 3.2 | 2.9 | 2.7 | 2.7 | 1.86 | 3.2 | 2.6 | 3.1 | 1.7 | 3.3 | 0.6 | 2.1 | 2.6 |
| ICU Ventilator Days | NA | 3286 | 2934 | 2677 | 2749 | 3069 | 2597 | 489 | 536 | 785 | 694 | 2504 | 2597 |
| ICU Multiple Organ Dysfunction Score (MODS) | 4.00 | 4.04 | 4.12 | 4.25 | 4.62 | 4.87 | 4.73 | 4.07 | 4.49 | 4.55 | 4.61 | 4.43 | 4.73 |

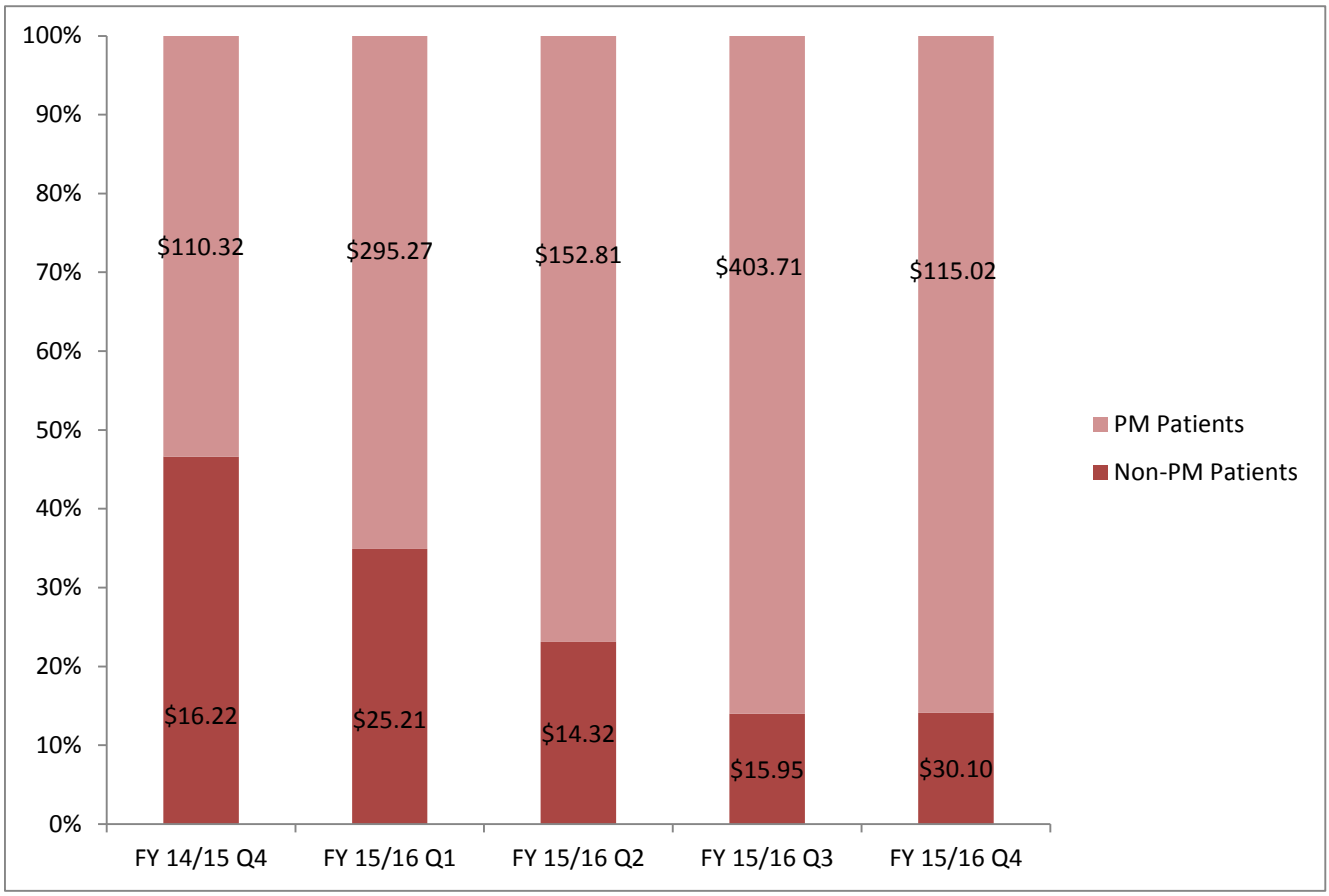
Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs + systemic antivirals; non-systemic antimicrobials are excluded. Data Sources: Antimicrobial DDD and Costs (PharmNet), C difficile (Infection Control Dashboards), Other ICU Patient Care Indicators (Critical Care Information System).

# Table 3: Mount Sinai Hospital: Medical Surgical ICU Total Antimicrobial Costs

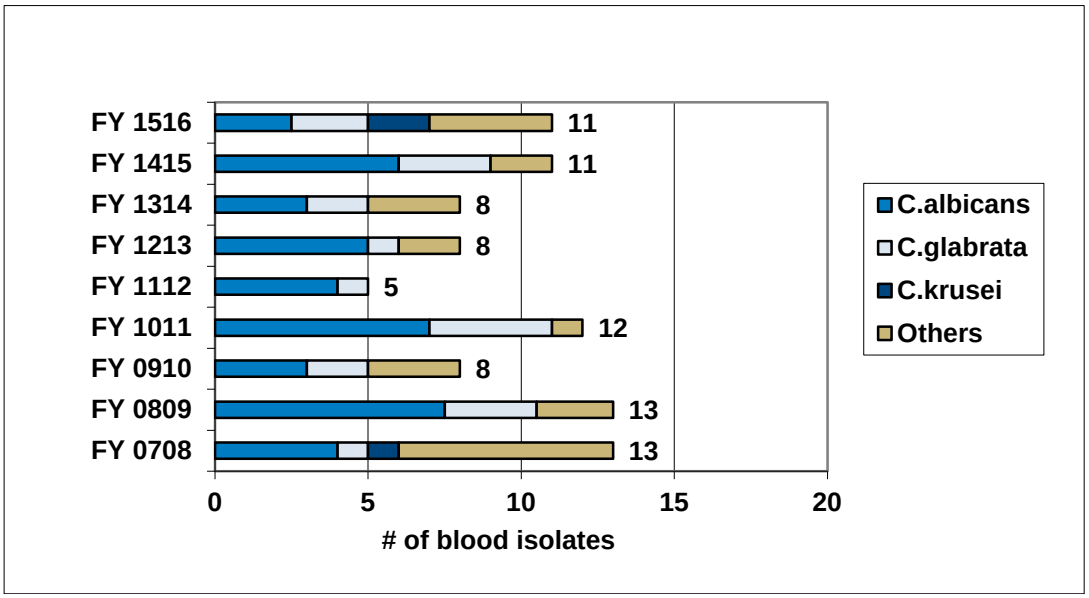
| MSH ICU Total Antimicrobial Costs (Antimicrobial Cost per Patient Day) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY 15/16 Q1 | FY 15/16 Q2 | FY 15/16 Q3 | FY 15/16 Q4 | FY 15/16 YTD | Previous YTD |
| Non-PM Patients | $78,737 ($21.14) | $87,931 ($25.42) | $109,283 ($31.77) | $149,877 ($37.54) | $135,395 ($36.40) | $21,047 ($25.21) | $11,443 ($14.32) | $13,463 ($15.95) | $25,555 ($30.1) | $71,509 ($21.49) | $135,395 ($36.40) |
| PM Patients | $114,392 ($179.02) | $191,928 ($181.58) | $182,188 ($249.91) | $272,757 ($317.16) | $97,419 ($135.68) | $39,271 ($295.27) | $38,048 ($152.81) | $81,953 ($403.71) | $43,476 ($115.02) | $202,749 ($210.54) | $97,419 ($135.68) |
| Total | $193,129 ($44.26) | $279,859 ($61.97) | $291,470 ($69.91) | $422,634 ($87.11) | $232,814 ($52.46) | $60,318 ($62.31) | $49,492 ($47.22) | $95,416 ($91.13) | $69,031 ($56.26) | $274,258 ($63.93) | $232,814 ($52.46) |

Note: 15/16 is open year data; totals and cost per day may change based on coding changes. Antimicrobial costs from PharmNet; ICU visits and patient days from CIHI DAD Database.

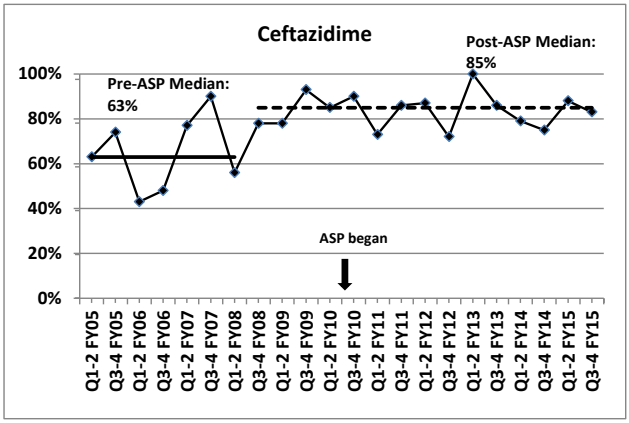
## Mount Sinai Hospital: Medical Surgical ICU
## Antimicrobial Costs Per Patient Day for PM and Non-PM Patients

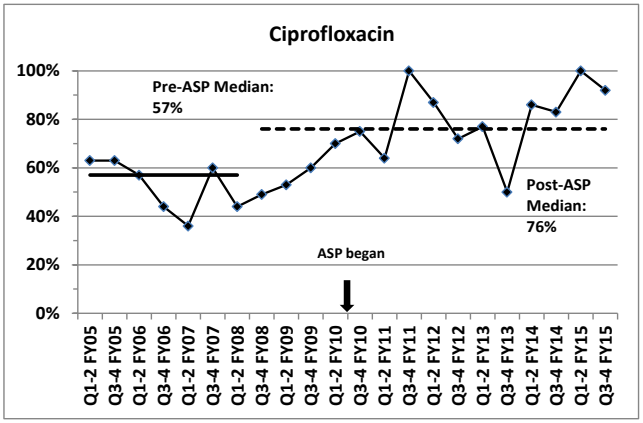


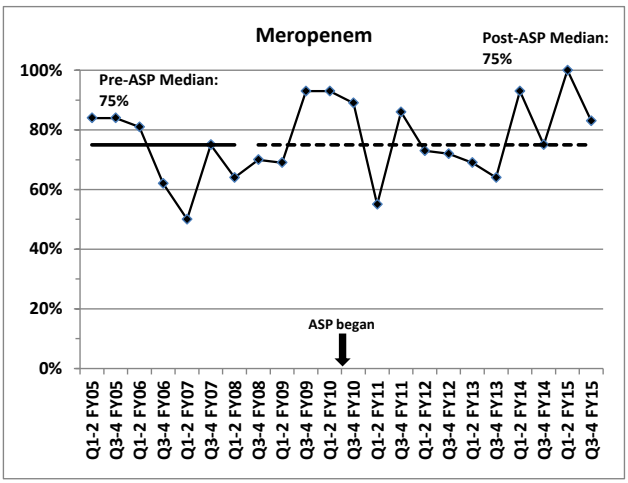
## Table 4: Yeast Species Isolated in Blood – Mount Sinai Hospital: Medical Surgical ICU

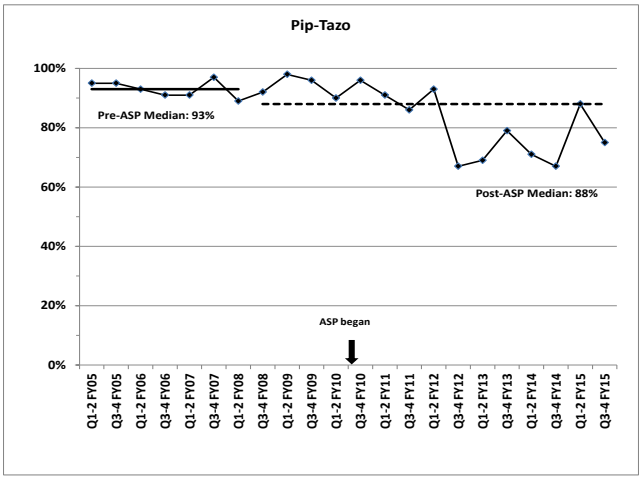


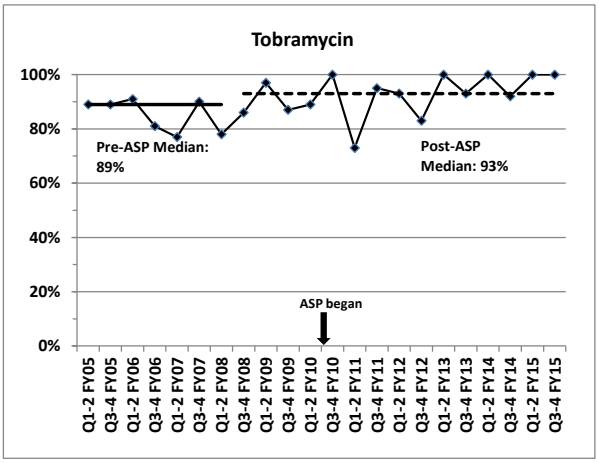
# MSH ICU Pseudomonas Susceptibility



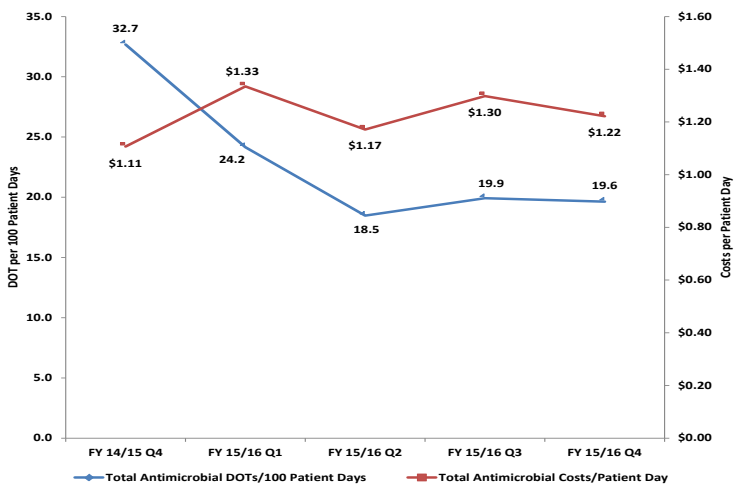



## Mount Sinai Hospital: Neonatal ICU

Currently there are no active ASP rounds in the NICU, however, we have continued to collect data. Specifically, days of therapy (DOT) is our metric for antimicrobial consumption, which is considered to be the standard for neonates. FY 15/16 Q4 highlights include:

- Antimicrobial days of therapy (DOT) per 100 patient days decreased (↓) by 38.5% compared to YTD last year.
- Antimicrobial costs per patient day have decreased (↓) by 0.2% compared to YTD last year ($1.26 for both).

### Mount Sinai Hospital: Neonatal ICU
### Antimicrobial Consumption and Costs Per Patient Day




### Table 5: Mount Sinai Hospital: Neonatal ICU

| Indicators | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | | |
| **Total Antimicrobial DOTs/100 Patient Days** | **67.3** | **55.4** | **49.4** | **33.5** | **24.2** | **18.5** | **19.9** | **19.6** | **20.6** | **33.5** |
| Systemic Antibacterial DOTs/100 Patient Days | 65.1 | 53.5 | 48.7 | 32.7 | 23.3 | 17.6 | 19.1 | 19.3 | 19.9 | 32.7 |
| Systemic Antifungal DOTs/100 Patient Days | 2.2 | 1.8 | 0.7 | 0.8 | 0.8 | 0.8 | 0.8 | 0.3 | 0.7 | 0.8 |
| **Total Antimicrobial Costs** | $16,415 | $17,682 | $26,162 | $21,371 | $5,858 | $5,041 | $5,312 | $5,021 | $21,232 | $21,371 |
| **Total Antimicrobial Costs/Patient Day** | **$1.31** | **$1.51** | **$2.17** | **$1.26** | **$1.33** | **$1.17** | **$1.30** | **$1.22** | **$1.26** | **$1.26** |
| Systemic Antibacterial Costs | $14,783 | $16,505 | $25,290 | $20,516 | $5,830 | $4,871 | $5,091 | $5,012 | $20,804 | $20,516 |
| Systemic Antibacterial Costs/Patient Day | $1.18 | $1.41 | $2.10 | $1.21 | $1.33 | $1.13 | $1.24 | $1.22 | $1.23 | $1.21 |
| Systemic Antifungal Costs | $1,632 | $1,177 | $872 | $855 | $27 | $170 | $221 | $9 | $428 | $855 |
| Systemic Antifungal Costs/Patient Day | $0.13 | $0.10 | $0.07 | $0.05 | $0.006 | $0.04 | $0.05 | $0.00 | $0.03 | $0.05 |

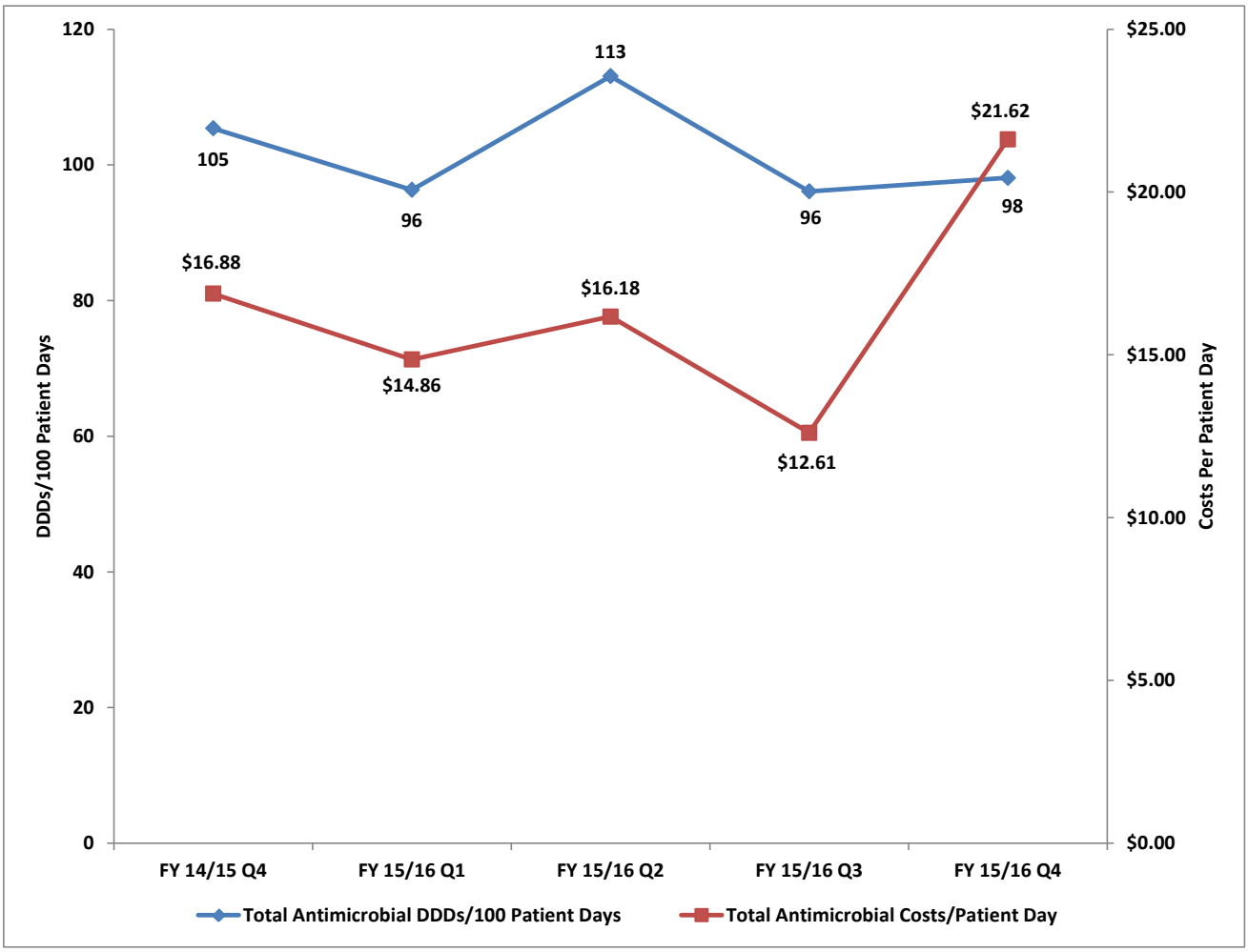
Notes: Effective January 15, 2014, the NICU changed to a mixed-acuity model of care. Prior to this, ASP reported level 3 pharmacy data only. As of January 15, pharmacy data includes both level 2 and level 3 usage and cost. Patient days include both level 2 and 3 days; January level 2 days were determined by dividing the total days for the month by 2, since the change occurred midway through the month.
Days of Therapy (DOT) was used as the metric for antimicrobial consumption, which is considered to be the standard for neonates.

## Toronto General Hospital: Cardiovascular ICU

FY 15/16 Q4 highlights include:

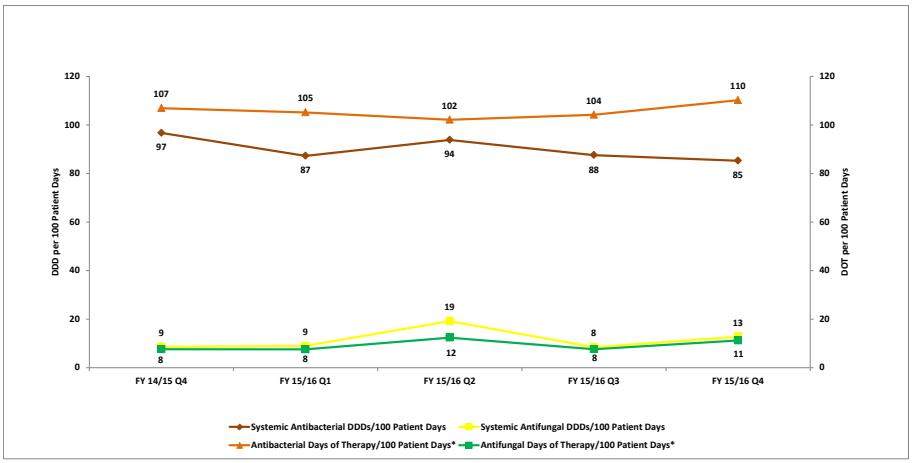
- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 1.3% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 20.1% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 12.8% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 37.6% compared to YTD last year.

### Toronto General Hospital: Cardiovascular ICU
### Antimicrobial Consumption and Costs Per Patient Day



# Toronto General Hospital: Cardiovascular ICU
# Antimicrobial Consumption as Defined Daily Dose Versus Antimicrobial Consumption as Days of Therapy

- Antibacterial Days of Therapy (DOT) per 100 patient days decreased (↓) by 18.3% compared to YTD last year.
- Antifungal Days of Therapy (DOT) per 100 patient days decreased (↓) by 64.8% compared to YTD last year.

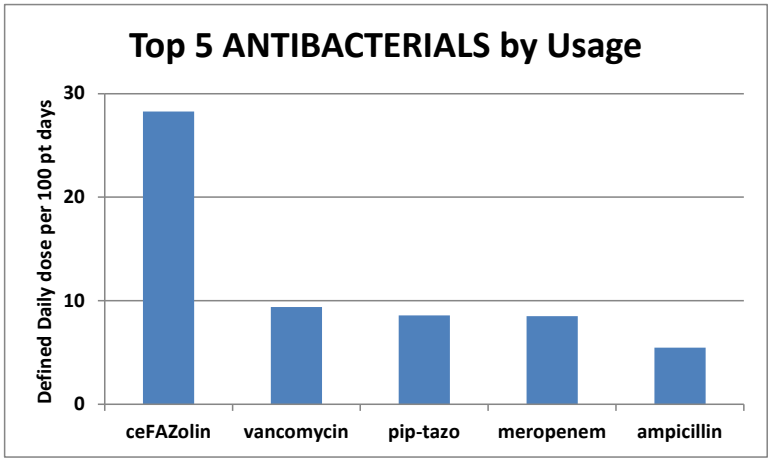


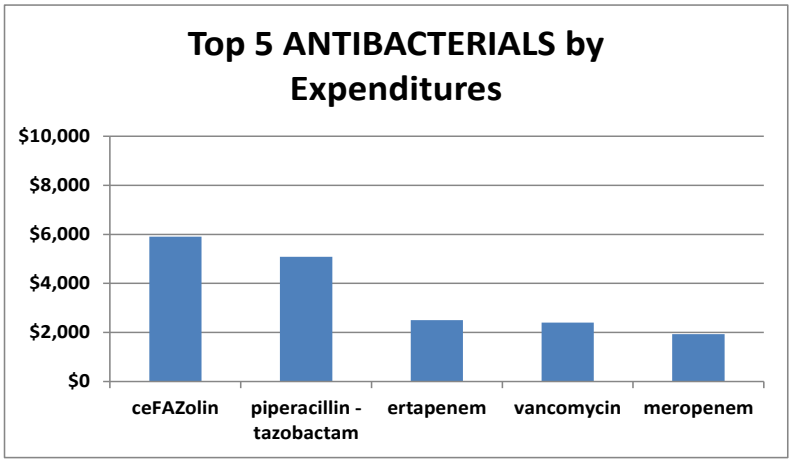

## Table 6: Toronto General Hospital: Cardiovascular ICU

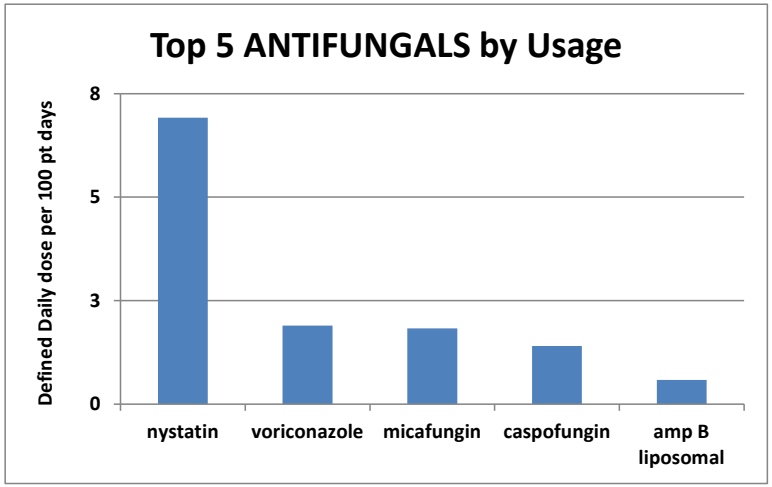
| Indicators | FY 10/11 (Pre-ASP) | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **105** | **98** | **102** | **97** | **102** | **96** | **113** | **96** | **98** | **101** | **102** |
| Systemic Antibacterial DDDs/100 Patient Days | 95 | 86 | 89 | 86 | 93 | 87 | 94 | 88 | 85 | 89 | 93 |
| Systemic Antifungal DDDs/100 Patient Days | 10 | 12 | 13 | 11 | 9 | 9 | 19 | 8 | 13 | 13 | 9 |
| **Total Antimicrobial Costs** | $108,172 | $108,464 | $85,916 | $100,736 | $129,314 | $25,464 | $29,230 | $19,917 | $36,105 | $110,716 | $129,314 |
| **Total Antimicrobial Costs/Patient Day** | **$18.20** | **$19.06** | **$14.99** | **$17.00** | **$20.46** | **$14.86** | **$16.18** | **$12.61** | **$21.62** | **$16.34** | **$20.46** |
| Systemic Antibacterial Costs | $100,375 | $99,261 | $74,232 | $80,204 | $91,366 | $22,633 | $24,310 | $17,933 | $20,468 | $85,343 | $91,366 |
| Systemic Antibacterial Costs/Patient Day | $16.89 | $17.44 | $12.95 | $13.54 | $14.45 | $13.20 | $13.45 | $11.35 | $12.26 | $12.60 | $14.45 |
| Systemic Antifungal Costs | $7,797 | $9,204 | $11,684 | $20,532 | $37,948 | $2,832 | $4,921 | $1,984 | $15,637 | $25,373 | $37,948 |
| Systemic Antifungal Costs/Patient Day | $1.31 | $1.62 | $2.04 | $3.47 | $6.00 | $1.65 | $2.72 | $1.26 | $9.36 | $3.75 | $6.00 |
| Antibacterial Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | 129 | 105 | 102 | 104 | 110 | 105 | 129 |
| Antifungal Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | 28 | 8 | 12 | 8 | 11 | 10 | 28 |
| **Patient Care Outcomes** | | | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 pt days) | 2 (0.34) | 5 (0.88) | 6 (1.05) | 7 (1.18) | 7 (1.11) | 1 (0.58) | 4 (2.21) | 0 (0.00) | 2 (1.2) | 7 (1.03) | 7 (1.11) |
| ICU Average Length of Stay (days) | 3.12 | 2.95 | 2.97 | 3.20 | 3.46 | 3.27 | 3.8 | 3.44 | 3.3 | 3.45 | 3.46 |
| ICU Mortality Rate (as a %) | 3.5 | 3.0 | 3.0 | 4.6 | 4.6 | 3.6 | 4.5 | 4.47 | 3.59 | 4.0 | 4.6 |
| ICU Readmission Rate Within 48 Hrs (as a %) | 1.6 | 2.2 | 1.8 | 2.2 | 2.4 | 1.2 | 0.3 | 2.6 | 2.34 | 1.6 | 2.4 |
| Central Line Infection Rate (per 1000 pt days) | 0.73 | 0.17 | 0.34 | 0.16 | 0.15 | 0.5 | 0.00 | 1.25 | 0.00 | 0.53 | 0.15 |
| Ventilator-Associated Pneumonia Rate (per 1,000 pt days) | 2.99 | 2.80 | 1.91 | 1.73 | 2.81 | 1.05 | 0.86 | 0.00 | 0.53 | 0.94 | 2.81 |
| ICU Multiple Organ Dysfunction Score (MODS) | 6.22 | 6.07 | 5.51 | 5.77 | 5.60 | 5.41 | 6.06 | 5.96 | 5.88 | 5.83 | 5.60 |
| ICU Ventilator Days | 3015 | 3571 | 3676 | 4049 | 3925 | 952 | 1168 | 1061 | 1058 | 4239 | 3925 |

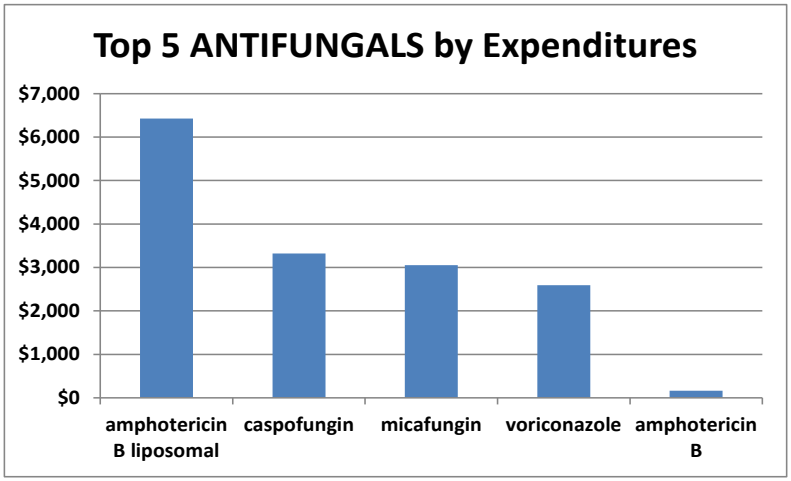
Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.
Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.

## Table 7: TGH CVICU FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient-days) and Expenditures

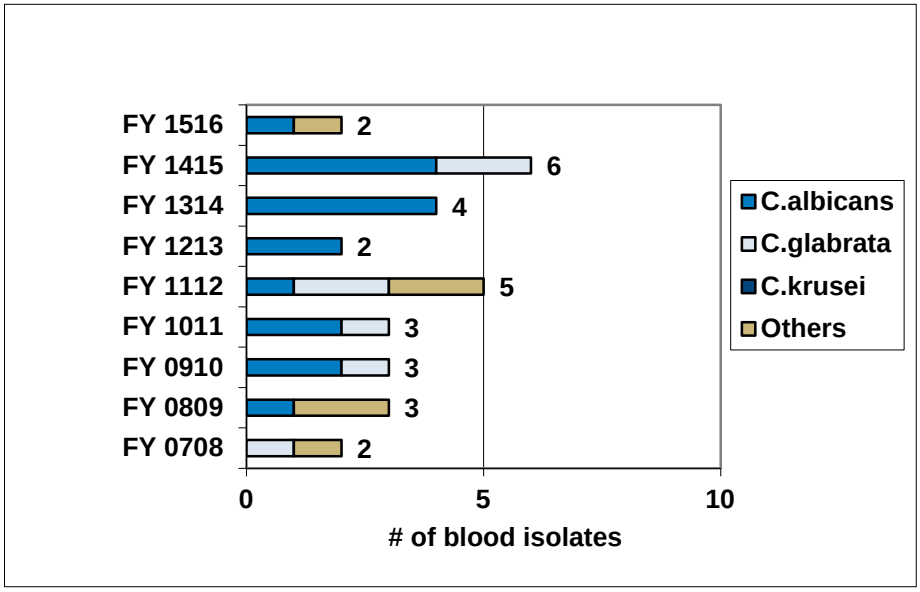


## Table 8: Yeast Species Isolated in Blood – Toronto General Hospital Cardiovascular ICU

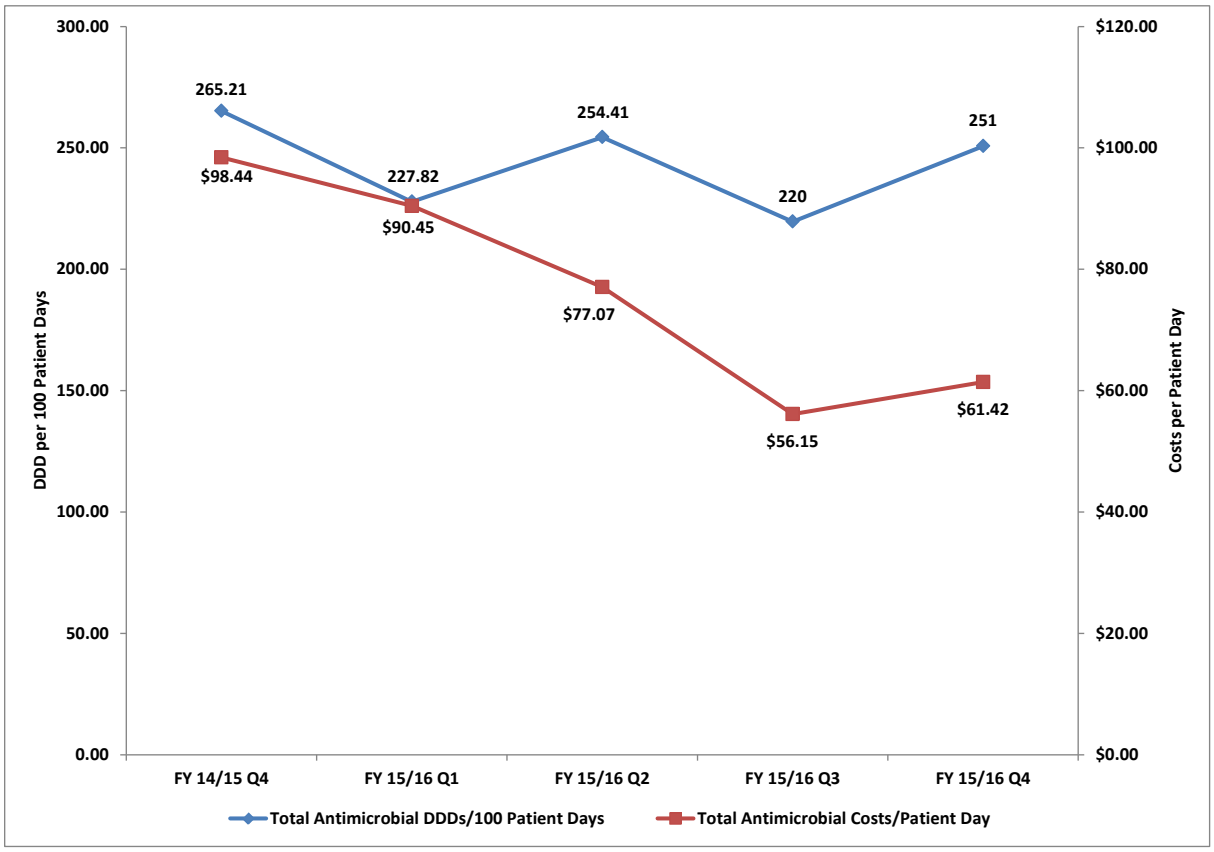


## Toronto General Hospital: Medical Surgical ICU

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) increased (↑) by 1.5% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 15.0% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 13.9% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 15.9% compared to YTD last year.

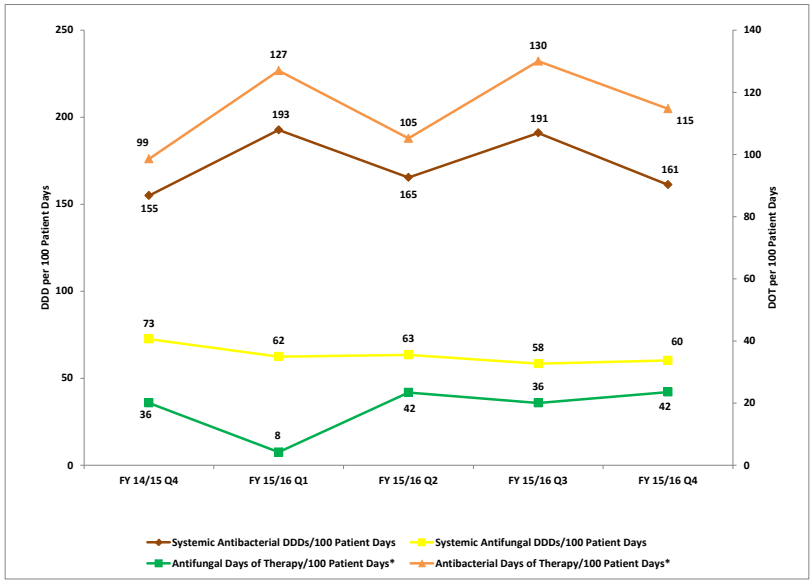
### Toronto General Hospital: Medical Surgical ICU
### Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 1: FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 Patient Days) and Expenditures by ICU Site**, please click **here**.

# Toronto General Hospital: Medical Surgical ICU
# Antimicrobial Consumption as Defined Daily Dose Versus Antimicrobial Consumption as Days of Therapy

- Antibacterial Days of Therapy (DOT) per 100 patient days increased (↑) by 9.7% compared to YTD last year.
- Antifungal Days of Therapy (DOT) per 100 patient days increased (↑) by 10.7% compared to YTD last year.

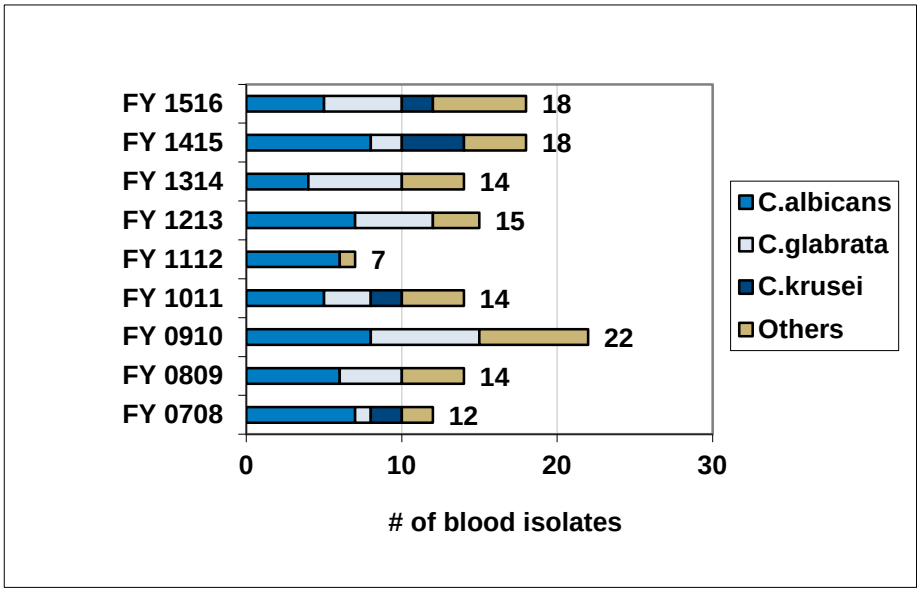



## Table 9: Toronto General Hospital: Medical Surgical ICU

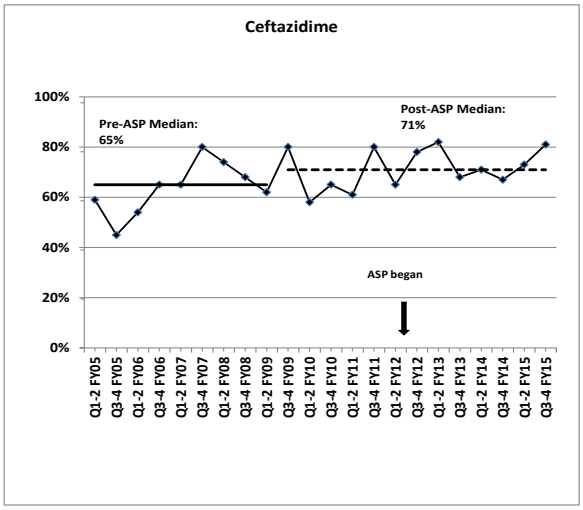
| Indicators | FY 09/10 (Pre-ASP) | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY 15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | 266 | 209 | 199 | 213 | 217 | 235 | 228 | 254 | 220 | 251 | 239 | 235 |
| Systemic Antibacterial DDDs/100 Patient Days | 184 | 155 | 143 | 159 | 156 | 175 | 165 | 191 | 161 | 191 | 178 | 175 |
| Systemic Antifungal DDDs/100 Patient Days | 82 | 55 | 55 | 54 | 61 | 60 | 62 | 63 | 58 | 60 | 61 | 60 |
| **Total Antimicrobial Costs** | $701,451 | $629,472 | $567,532 | $473,613 | $584,018 | $686,577 | $175,744 | $167,702 | $113,867 | $130,638 | $587,950 | $686,577 |
| **Total Antimicrobial Costs/Patient Day** | $102.52 | $84.06 | $76.93 | $63.75 | $75.71 | $83.65 | $90.45 | $77.07 | $56.15 | $61.42 | $71.06 | $83.65 |
| Systemic Antibacterial Costs | $390,209 | $375,436 | $292,355 | $231,171 | $225,557 | $293,126 | $67,443 | $76,357 | $47,762 | $62,829 | $254,392 | $293,126 |
| Systemic Antibacterial Costs/Patient Day | $57.03 | $50.14 | $39.63 | $31.12 | $29.24 | $35.71 | $34.71 | $35.09 | $23.55 | $29.54 | $30.75 | $35.71 |
| Systemic Antifungal Costs | $311,242 | $254,036 | $275,176 | $242,443 | $358,461 | $393,451 | $108,301 | $91,344 | $66,104 | $67,809 | $333,559 | $393,451 |
| Systemic Antifungal Costs/Patient Day | $45.49 | $33.93 | $37.30 | $32.63 | $46.47 | $47.94 | $55.74 | $41.98 | $32.60 | $31.88 | $40.31 | $47.94 |
| Antibacterial Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | n/a | 107.9 | 102 | 130 | 115 | 125 | 118 | 108 |
| Antifungal Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | n/a | 34.1 | 30 | 42 | 36 | 42 | 38 | 34 |
| **Patient Care Outcomes** | | | | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 pt days) | 10 (1.46) | 10 (1.33) | 11 (1.49) | 11 (1.48) | 12 (1.56) | 10 (1.22) | 4 (2.06) | 2 (0.92) | 2 (0.99) | 2 (0.94) | 10 (1.21) | 10 (1.22) |
| ICU Average Length of Stay (days) | 8.24 | 8.61 | 8.85 | 7.79 | 8.22 | 8.08 | 7.32 | 7.31 | 8.02 | 7.86 | 7.62 | 8.08 |
| ICU Mortality Rate (as a %) | 16.2 | 15.7 | 16.3 | 16.0 | 17.8 | 17.2 | 19.3 | 15.4 | 20.3 | 14.1 | 17.2 | 17.2 |
| ICU Readmission Rate Within 48 Hrs (as a %) | 3.8 | 4.4 | 4.4 | 2.8 | 3.5 | 3.0 | 3.5 | 3.5 | 1.68 | 3.1 | 3.4 | 3.0 |
| ICU Ventilator Days | 5399 | 6256 | 6507 | 6458 | 24620 | 7330 | 1679 | 1910 | 1710 | 1749 | 7048 | 7330 |
| Apache II Score | n/a | n/a | 16.1 | 15.775 | 15.9 | 15.1 | 15.3 | 15.2 | 15.9 | 15.3 | 15.4 | 15.1 |

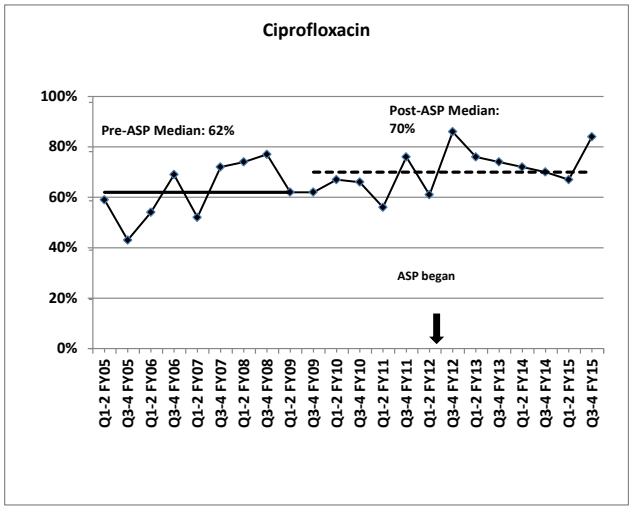
Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.
Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.
Due to a calculation error in Centricity, Antifungal and Total DDD/100pt days for Q3 and FYTD have been corrected.

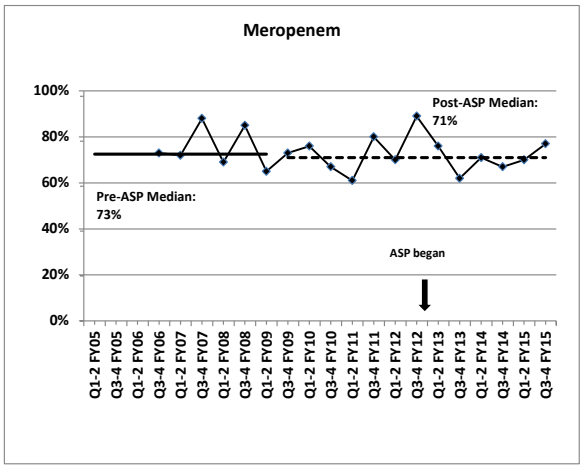
## Table 10: Yeast Species Isolated in Blood – Toronto General Hospital: Medical Surgical ICU

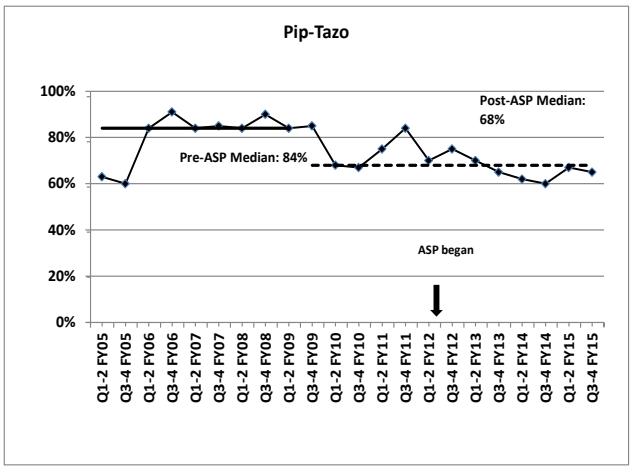


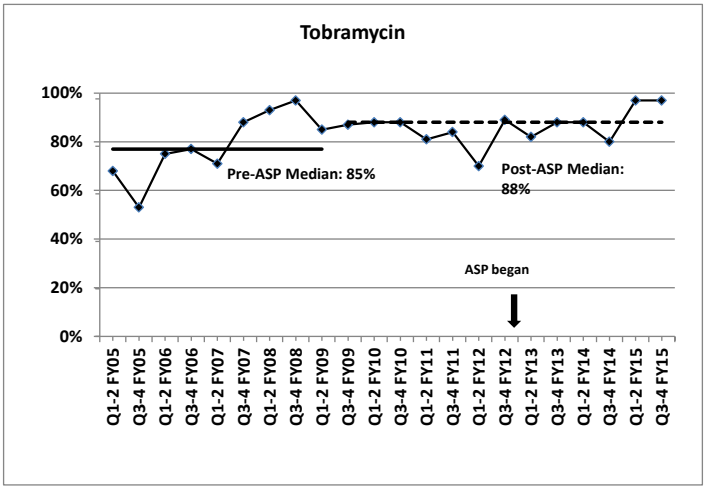
# TGH MSICU Pseudomonas Susceptibility



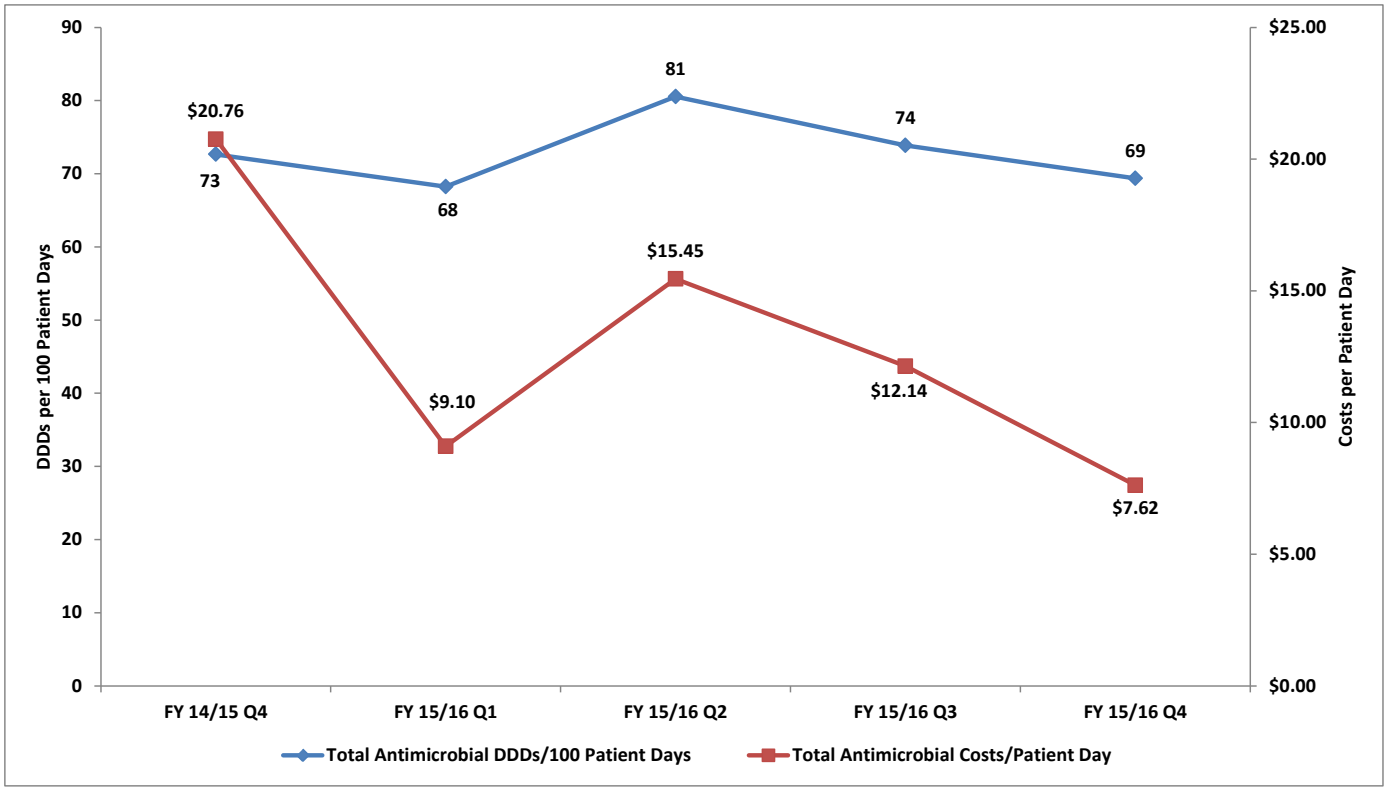



## Toronto Western Hospital: Medical, Surgical, and Neurosurgical ICU

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) increased (↑) by 9.1% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 7.3% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 15.8% compared to YTD last year.
- Antifungal costs per patient day increased (↑) by 8.4% compared to YTD last year.

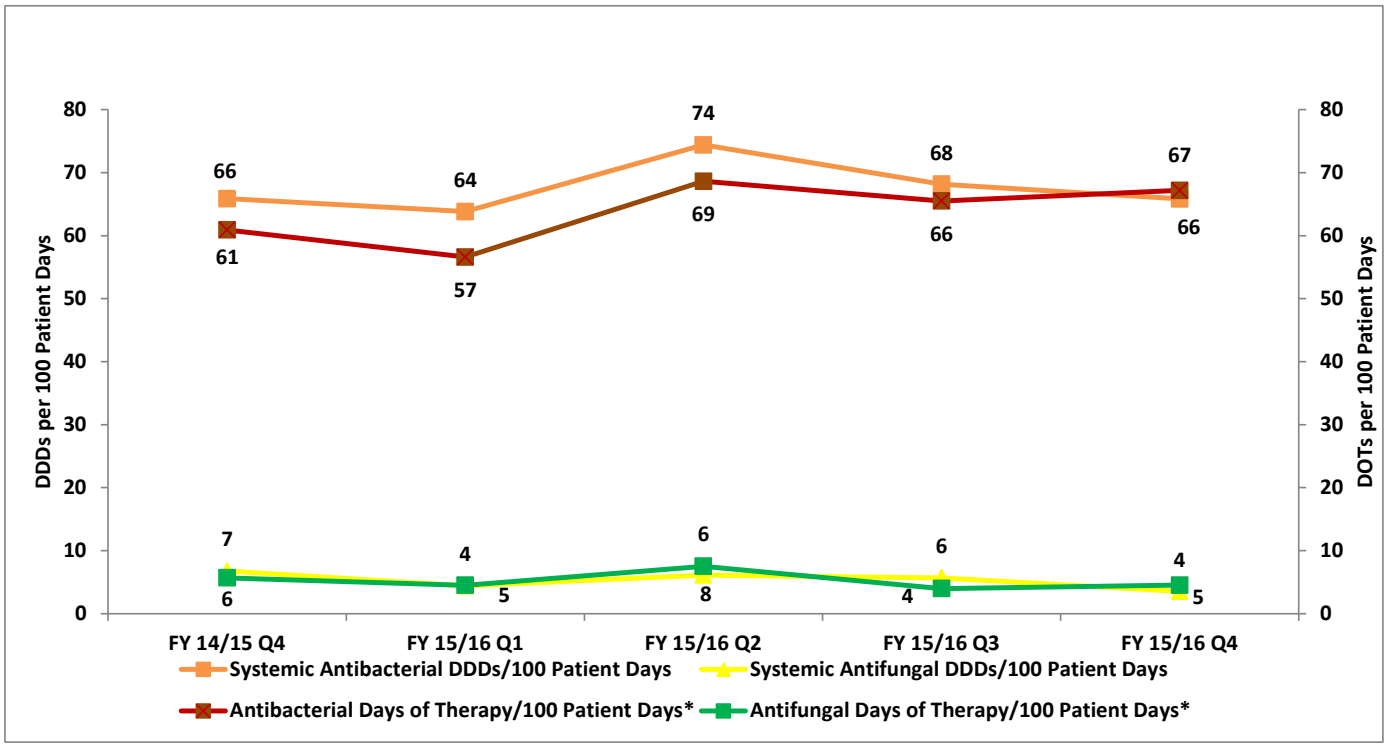
### Toronto Western Hospital: Medical, Surgical, and Neurosurgical ICU Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 1: FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 Patient Days) and Expenditures by ICU Site**, please click **here**.

# Toronto Western Hospital: Medical, Surgical, Neurosurgical ICU Antimicrobial Consumption as Defined Daily Dose Versus Antimicrobial Consumption as Days of Therapy

- Antibacterial Days of Therapy (DOT) per 100 patient days increased (↑) by 8.4% compared to YTD last year.
- Antifungal Days of Therapy (DOT) per 100 patient days increased (↑) by 15.1% compared to YTD last year.

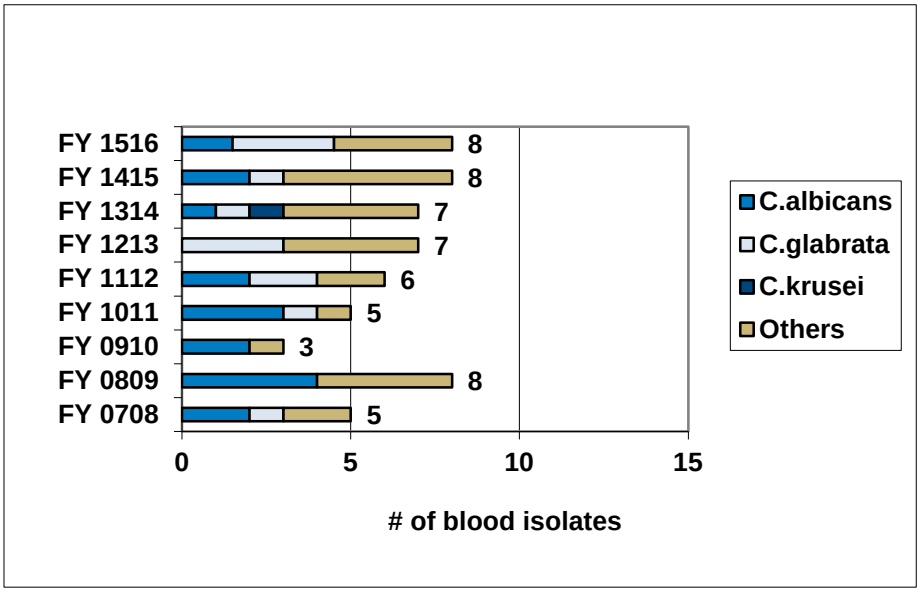


# Table 11: Toronto Western Hospital: Medical, Surgical, and Neurosurgical ICU

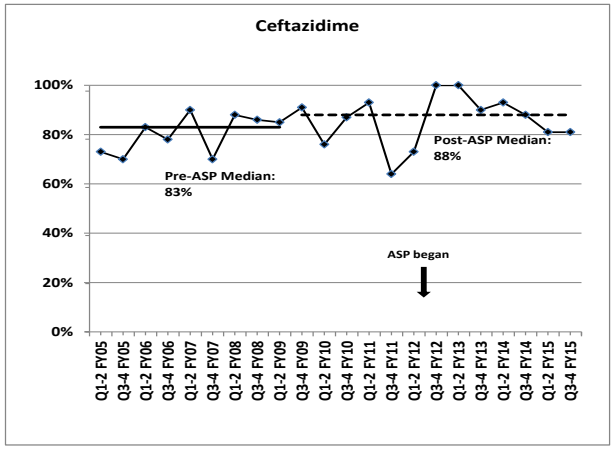
| Indicators | FY 08/09 (Pre-ASP) | FY 09/10 | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **99** | **88** | **79** | **83** | **83** | **92** | **67** | **68** | **81** | **74** | **69** | **73** | **67** |
| Systemic Antibacterial DDDs/100 Patient Days | 92 | 78 | 73 | 77 | 78 | 86 | 62 | 64 | 74 | 68 | 66 | 68 | 62 |
| Systemic Antifungal DDDs/100 Patient Days | 6 | 10 | 6 | 6 | 5 | 6 | 5 | 4 | 6 | 6 | 4 | 5 | 5 |
| **Total Antimicrobial Costs** | $136,758 | $100,408 | $101,191 | $105,899 | $102,978 | $120,538 | $138,014 | $25,558 | $47,105 | $31,930 | $22,700 | $127,293 | $138,014 |
| **Total Antimicrobial Costs/Patient Day** | **$18.16** | **$13.24** | **$13.17** | **$13.60** | **$13.37** | **$13.49** | **$11.97** | **$9.10** | **$15.45** | **$12.14** | **$7.62** | **$11.10** | **$11.97** |
| Systemic Antibacterial Costs | $123,314 | $87,445 | $79,280 | $89,784 | $70,099 | $85,916 | $89,382 | $17,708 | $23,589 | $16,621 | $16,959 | $74,877 | $89,382 |
| Systemic Antibacterial Costs/Patient Day | $16.37 | $11.53 | $10.32 | $11.53 | $9.10 | $9.61 | $7.75 | $6.30 | $7.74 | $6.32 | $5.69 | $6.53 | $7.75 |
| Systemic Antifungal Costs | $13,444 | $12,963 | $21,911 | $16,115 | $32,879 | $34,623 | $48,631 | $7,850 | $23,516 | $15,309 | $5,741 | $52,416 | $48,631 |
| Systemic Antifungal Costs/Patient Day | $1.79 | $1.71 | $2.85 | $2.07 | $4.27 | $3.87 | $4.22 | $2.79 | $7.72 | $5.82 | $1.93 | $4.57 | $4.22 |
| Antibacterial Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | n/a | n/a | 60 | 57 | 69 | 66 | 67 | 65 | 60 |
| Antifungal Days of Therapy/100 Patient Days* | n/a | n/a | n/a | n/a | n/a | n/a | 4 | 5 | 8 | 4 | 5 | 5 | 4 |
| **Patient Care Outcomes** | | | | | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 pt days) | 6 (0.79) | 9 (1.18) | 4 (0.52) | 13 (1.66) | 5 (0.65) | 12 (1.34) | 10 (1.16) | 1 (0.36) | 4 (1.31) | 2 (0.76) | 2 (0.67) | 9 (0.78) | 10 (1.16) |
| ICU Average Length of Stay (days) | 8.39 | 7.44 | 10.68 | 9.71 | 7.98 | 7.68 | 8.7 | 8.2 | 6.8 | 6.6 | 11.4 | 8.0 | 8.7 |
| ICU Mortality Rate (as a %) | 19.6 | 19.9 | 18.1 | 17.0 | 16.4 | 17.1 | 19.0 | 15.7 | 15.5 | 22.1 | 18.3 | 17.9 | 19.0 |
| ICU Readmission Rate Within 48 Hrs (as a %) | 3.9 | 4.7 | 4.9 | 3.21 | 3.00 | 3.85 | 3.40 | 1.14 | 3.72 | 2.48 | 2.17 | 2.54 | 3.40 |
| ICU Ventilator Days | 4617 | 6305 | 5960 | 5578 | 4947 | 5523 | 5180 | 1132 | 1578 | 1295 | 1409 | 5414 | 5180 |
| ICU Apache II Score | 15.0 | 14.7 | 13.7 | 13.8 | 12.9 | 12.8 | 13.2 | 12.0 | 13.0 | 13.7 | 13.2 | 13.0 | 13.2 |

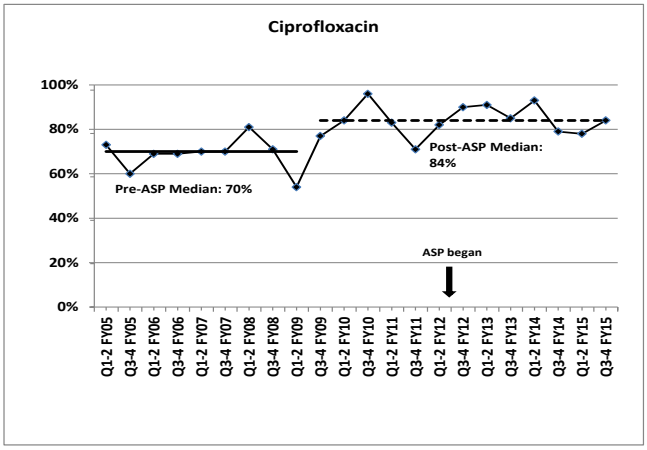
Notes: Q4 13/14 data consists of MSNICU patients (including eight ICU II patients).
Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.
Data Sources: Antimicrobial DDD and Costs (Centricity) *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.
Due to a calculation error in Centricity, Antifungal and Total DDD/100pt days for Q2 and FYTD have been corrected.

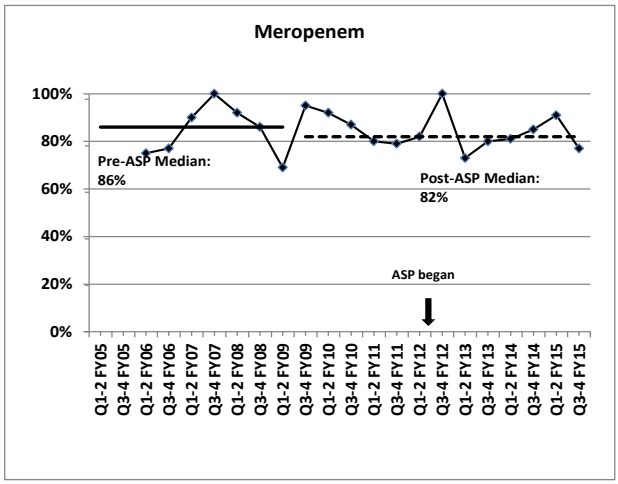
## Table 12: Yeast Species Isolated in Blood – Toronto Western Hospital: Medical, Surgical, and Neurosurgical ICU

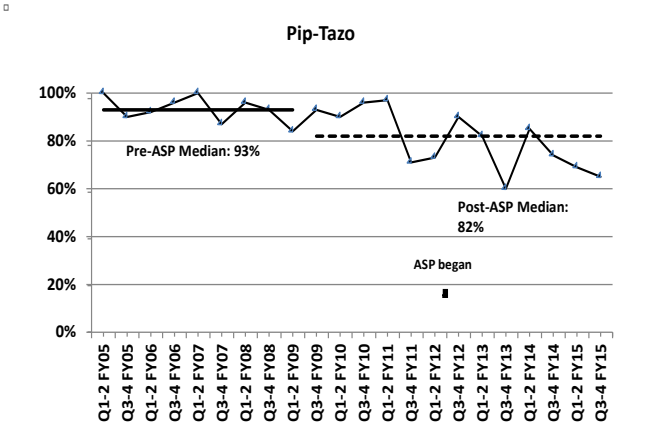


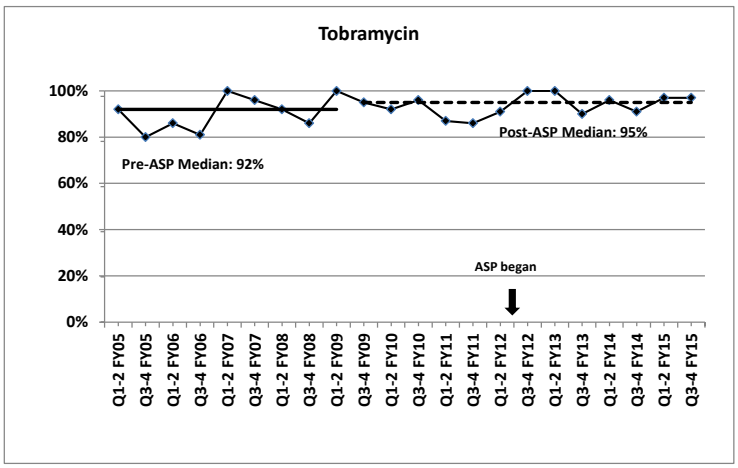
# TWH ICU Pseudomonas Susceptibility



EMERGENCY DEPARTMENT

## Mount Sinai Hospital: Emergency Department

FY 15/16 Q4 highlights include:

Sepsis Project

SNAP (Sepsis Now A Priority) Project: The SNAP algorithm continues to be effectively utilized in the Mount Sinai Emergency Department. Algorithm-related interventional times continue to be monitored and reported back to frontline staff via monthly SNAP scorecards. Reporting of the SNAP scorecard is successfully being managed by the Emergency Department. To view **Appendix 3: FY 15/16 Q4 SNAP Scorecard**, please click **here**.

Most recently, Dr. Christine McDonald has been collecting and analyzing pre- and post-algorithm data on patients from the SNAP protocol. A manuscript detailing the results will be submitted for publication in the coming months.

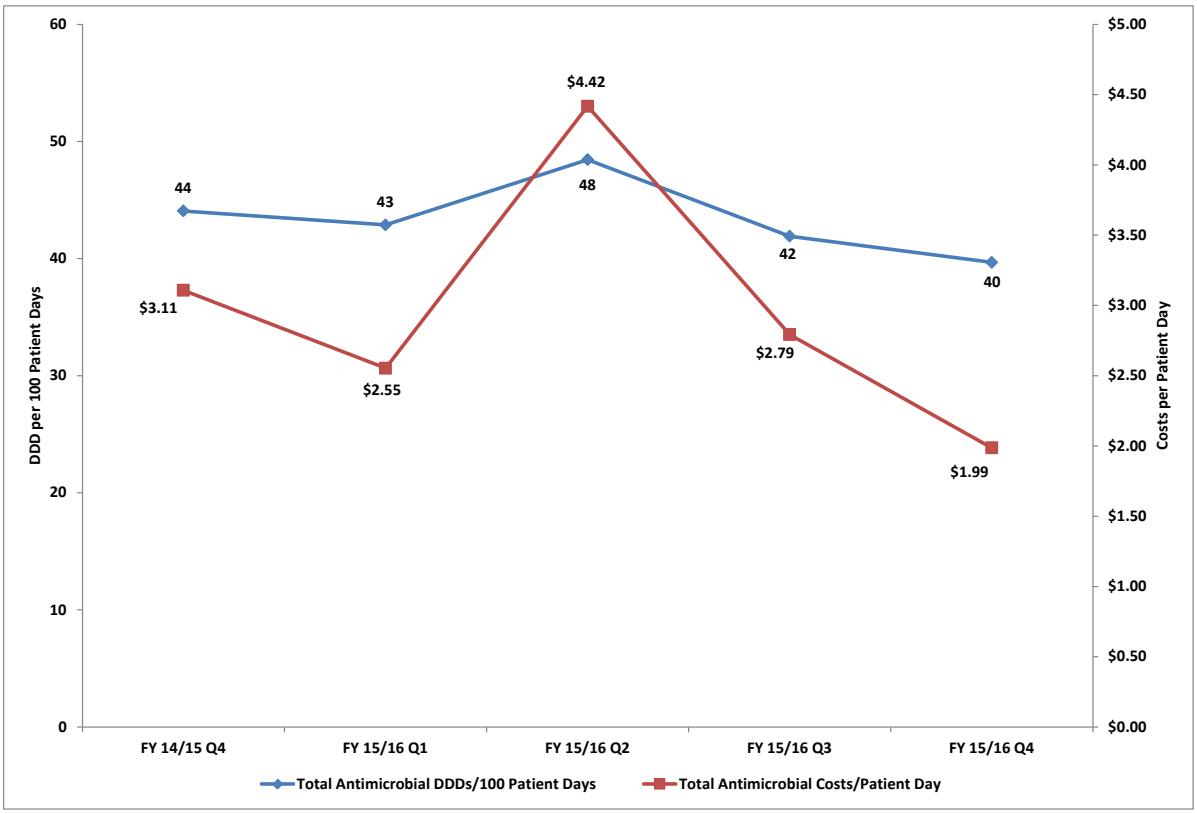
GENERAL INTERNAL MEDICINE

## Mount Sinai Hospital: General Internal Medicine

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 10.6% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 19.5% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 21.9% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 5.0% compared to YTD last year.
- Note: Usage data calculated for patients admitted by admission to GIM medical service at MSH.

### Mount Sinai Hospital: General Internal Medicine Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 2: General Internal Medicine FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures**, please click **here**.

# Table 13: Mount Sinai Hospital: General Internal Medicine

| Indicators | FY 12/13 (Q2-4) | FY 13/14 | FY 14/15 | FY15/16 Performance Q1 | Q2 | Q3 | Q4 | YTD | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Usage and Costs** | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **58** | **45** | **48** | **43** | **48** | **42** | **40** | **43** | **48** |
| Systemic Antibacterial DDDs/100 Patient Days | 53 | 41 | 43 | 39 | 43 | 38 | 34 | 39 | 43 |
| Systemic Antifungal DDDs/100 Patient Days | 3 | 3 | 3 | 3 | 4 | 3 | 1 | 3 | 3 |
| **Total Antimicrobial Costs** | $125,012 | $123,737 | $128,661 | $24,453 | $39,014 | $24,829 | $18,222 | $106,518 | $128,661 |
| **Total Antimicrobial Costs/Patient Day** | **$5.74** | **$3.76** | **$3.63** | **$2.55** | **$4.42** | **$2.79** | **$1.99** | **$2.92** | **$3.63** |
| Systemic Antibacterial Costs | $105,621 | $99,731 | $104,822 | $22,675 | $30,481 | $16,765 | $14,251 | $84,173 | $104,822 |
| Systemic Antibacterial Costs/Patient Day | $4.85 | $3.03 | $2.96 | $2.37 | $3.45 | $1.89 | $1.55 | $2.31 | $2.96 |
| Systemic Antifungal Costs | $15,422 | $20,153 | $16,352 | $1,132 | $6,390 | $7,868 | $593 | $15,983 | $16,352 |
| Systemic Antifungal Costs/Patient Day | $0.71 | $0.61 | $0.46 | $0.12 | $0.72 | $0.88 | $0.06 | $0.44 | $0.46 |
| **Patient Care Outcomes** | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 patient days) | 16 (0.64) | 8 (0.32) | 7 (0.27) | 2 (0.31) | 1 (0.16) | 3 (0.49) | 1 (0.16) | 7 (0.28) | 7 (0.27) |

Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs + systemic antivirals; non-systemic antimicrobials are excluded.

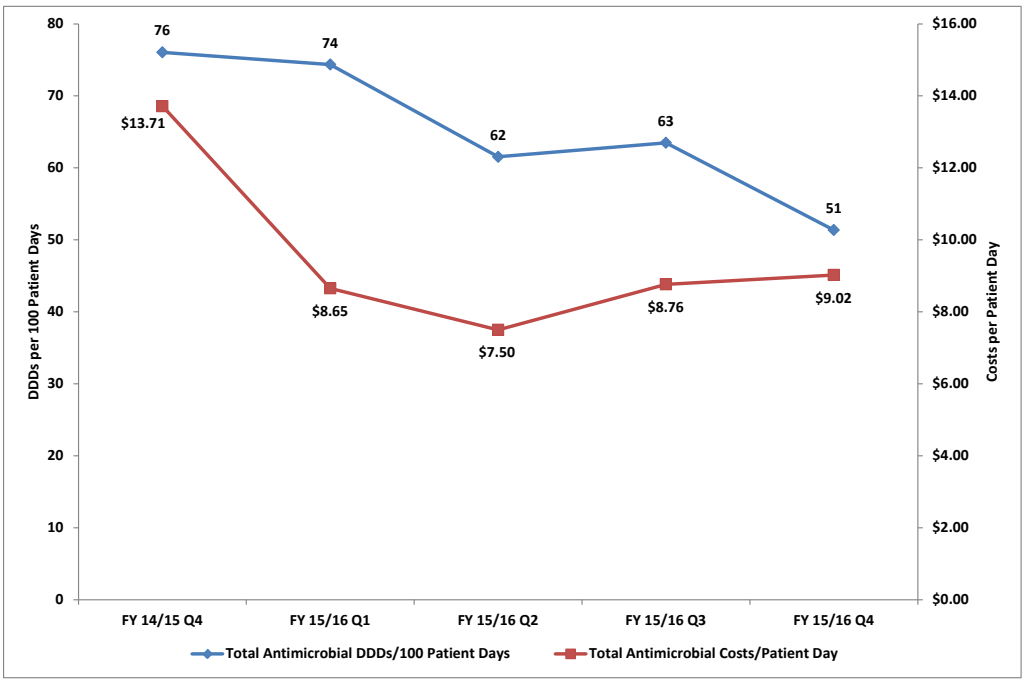
Data Sources: Antimicrobial DDD and Costs (PharmNet), C difficile (Infection Control Dashboards).

## Toronto General Hospital: General Internal Medicine

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 12.1% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 26.0% compared to YTD last year for TGH.
- Antibacterial costs per patient day decreased (↓) by 24.2% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 29.1% compared to YTD last year.
- Note: Usage data calculated for patients admitted to primary GIM units at TGH.

### Toronto General Hospital: General Internal Medicine Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 2: General Internal Medicine FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures**, please click **here**.

# Table 14: Toronto General Hospital: General Internal Medicine

| Indicators | FY 12/13 (Q2-4) | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **87** | **83** | **71** | **74** | **62** | **63** | **51** | **63** | **71** |
| Systemic Antibacterial DDDs/100 Patient Days | 77 | 70 | 63 | 66 | 54 | 53 | 47 | 55 | 63 |
| Systemic Antifungal DDDs/100 Patient Days | 11 | 13 | 8 | 9 | 8 | 10 | 5 | 8 | 8 |
| **Total Antimicrobial Costs** | $279,644 | $471,342 | $352,036 | $79,814 | $69,837 | $82,673 | $81,140 | $313,464 | $352,036 |
| **Total Antimicrobial Costs/Patient Day** | **$14.10** | **$18.05** | **$11.47** | **$8.65** | **$7.50** | **$8.76** | **$9.02** | **$8.48** | **$11.47** |
| Systemic Antibacterial Costs | $171,817 | $225,491 | $221,389 | $56,660 | $51,035 | $50,783 | $43,534 | $202,012 | $221,389 |
| Systemic Antibacterial Costs/Patient Day | $8.67 | $8.64 | $7.21 | $6.14 | $5.48 | $5.38 | $4.84 | $5.47 | $7.21 |
| Systemic Antifungal Costs | $107,827 | $245,851 | $130,647 | $23,154 | $18,802 | $31,890 | $37,607 | $111,452 | $130,647 |
| Systemic Antifungal Costs/Patient Day | $5.44 | $9.42 | $4.26 | $2.51 | $2.02 | $3.38 | $4.18 | $3.02 | $4.26 |
| **Patient Care Outcomes** | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 patient days) | 15 (0.76) | 16 (0.61) | 15 (0.68) | 2 (0.22) | 3 (0.32) | 1 (0.11) | 8 (0.89) | 14 (0.6) | 15 (0.68) |

Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.

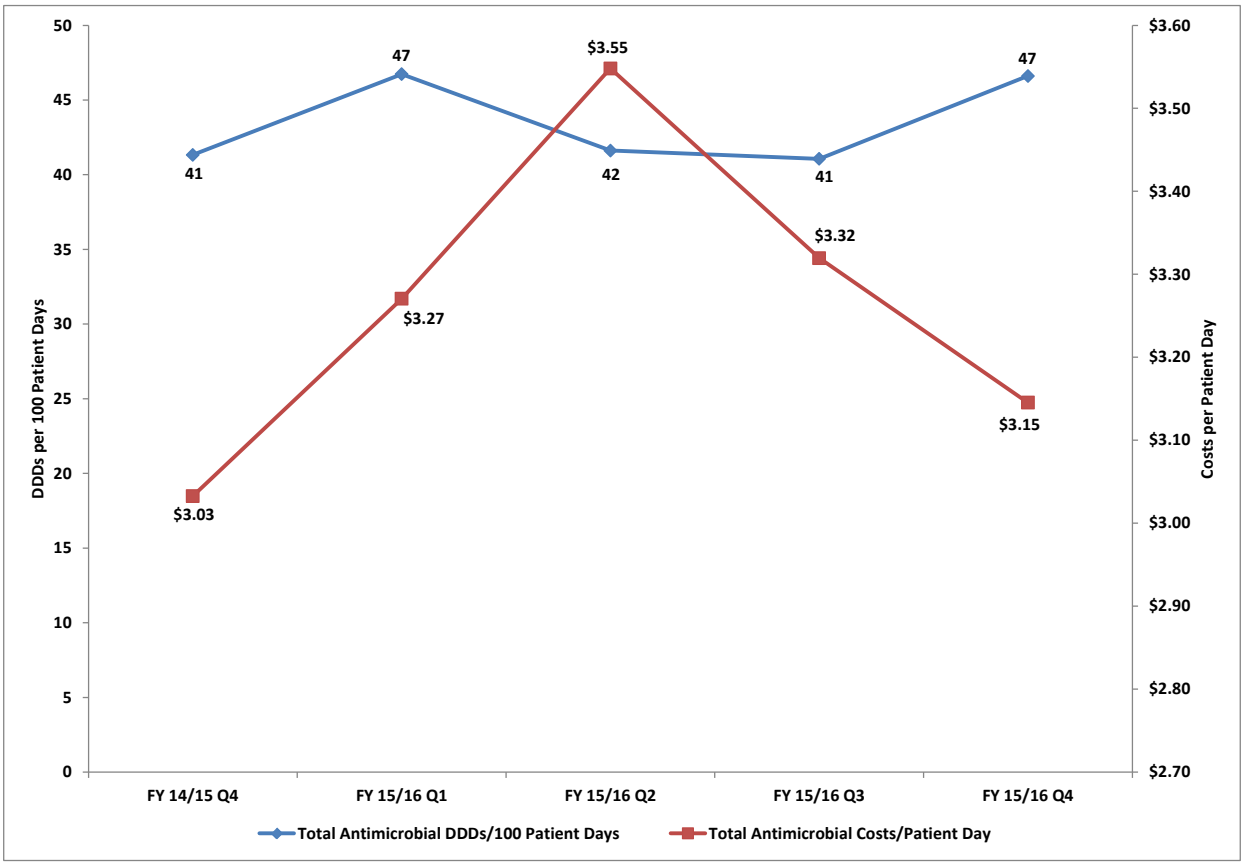
Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.

## Toronto Western Hospital: General Internal Medicine

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) increased (↑) by 3.7% compared to YTD last year.
- Antimicrobial costs per patient day remained the same (↕) compared to YTD last year.
- Antibacterial costs per patient day increased (↑) by 4.8% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 62.5% compared to YTD last year.
- Note: Usage data calculated for patients admitted to primary GIM units at TWH.

### Toronto Western Hospital: General Internal Medicine Antimicrobial Consumption and Costs Per Patient Day




To view **Appendix 2: General Internal Medicine FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures**, please click **here**.

# Table 15: Toronto Western Hospital: General Internal Medicine

| Indicators | FY 12/13 (Q2-4) | FY 13/14 | FY 14/15 | FY15/16 Performance | | | | | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Q1 | Q2 | Q3 | Q4 | YTD | |
| **Antimicrobial Usage and Costs** | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **44** | **47** | **42** | **47** | **42** | **41** | **47** | **44** | **42** |
| Systemic Antibacterial DDDs/100 Patient Days | 41 | 44 | 40 | 44 | 39 | 39 | 43 | 42 | 40 |
| Systemic Antifungal DDDs/100 Patient Days | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 |
| **Total Antimicrobial Costs** | $74,737 | $115,919 | $110,889 | $26,397 | $29,042 | $26,991 | $26,182 | $108,612 | $110,889 |
| **Total Antimicrobial Costs/Patient Day** | **$4.36** | **$5.01** | **$3.32** | **$3.27** | **$3.55** | **$3.32** | **$3.15** | **$3.32** | **$3.32** |
| Systemic Antibacterial Costs | $60,999 | $93,779 | $103,080 | $26,180 | $28,670 | $25,759 | $25,136 | $105,744 | $103,080 |
| Systemic Antibacterial Costs/Patient Day | $3.56 | $4.05 | $3.09 | $3.24 | $3.50 | $3.17 | $3.02 | $3.23 | $3.09 |
| Systemic Antifungal Costs | $13,738 | $22,140 | $7,810 | $217 | $372 | $1,232 | $1,046 | $2,868 | $7,810 |
| Systemic Antifungal Costs/Patient Day | $0.80 | $0.96 | $0.23 | $0.03 | $0.05 | $0.15 | $0.13 | $0.09 | $0.23 |
| **Patient Care Outcomes** | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 patient days) | 7 (0.41) | 14 (0.6) | 11 (0.33) | 1 (0.12) | 4 (0.49) | 0 (0.00) | 2 (0.24) | 7 (0.21) | 8 (0.32) |

Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.

Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.

Due to a calculation error in Centricity, Antifungal and Total DDD/100pt days for Q4 and FYTD have been corrected.

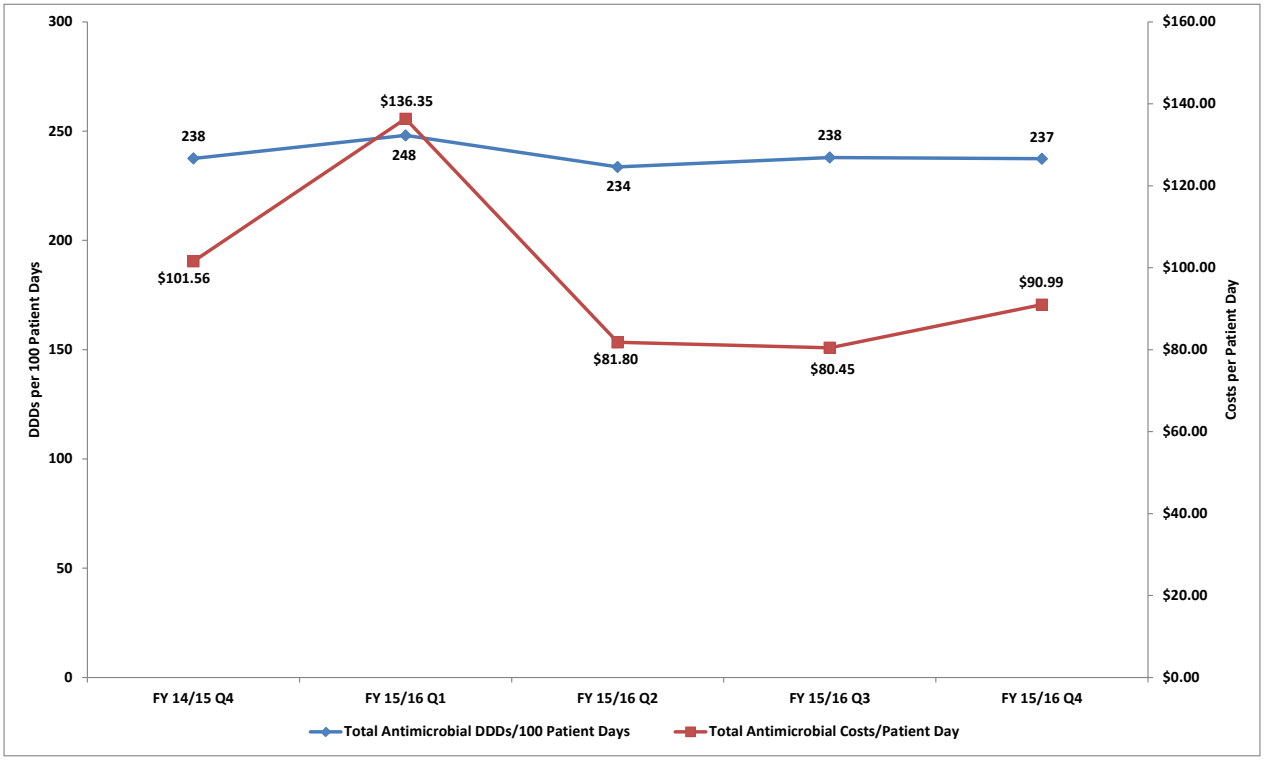
IMMUNOCOMPROMISED HOST

## Princess Margaret Cancer Centre: Leukemia Service

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 1.8% compared to YTD last year.
- Antimicrobial costs per patient day increased (↑) by 0.5% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 17.8% compared to YTD last year.
- Antifungal costs per patient day increased (↑) by 9.8% compared to YTD last year.

### Princess Margaret Cancer Centre: Leukemia Service Antimicrobial Consumption and Costs Per Patient Day

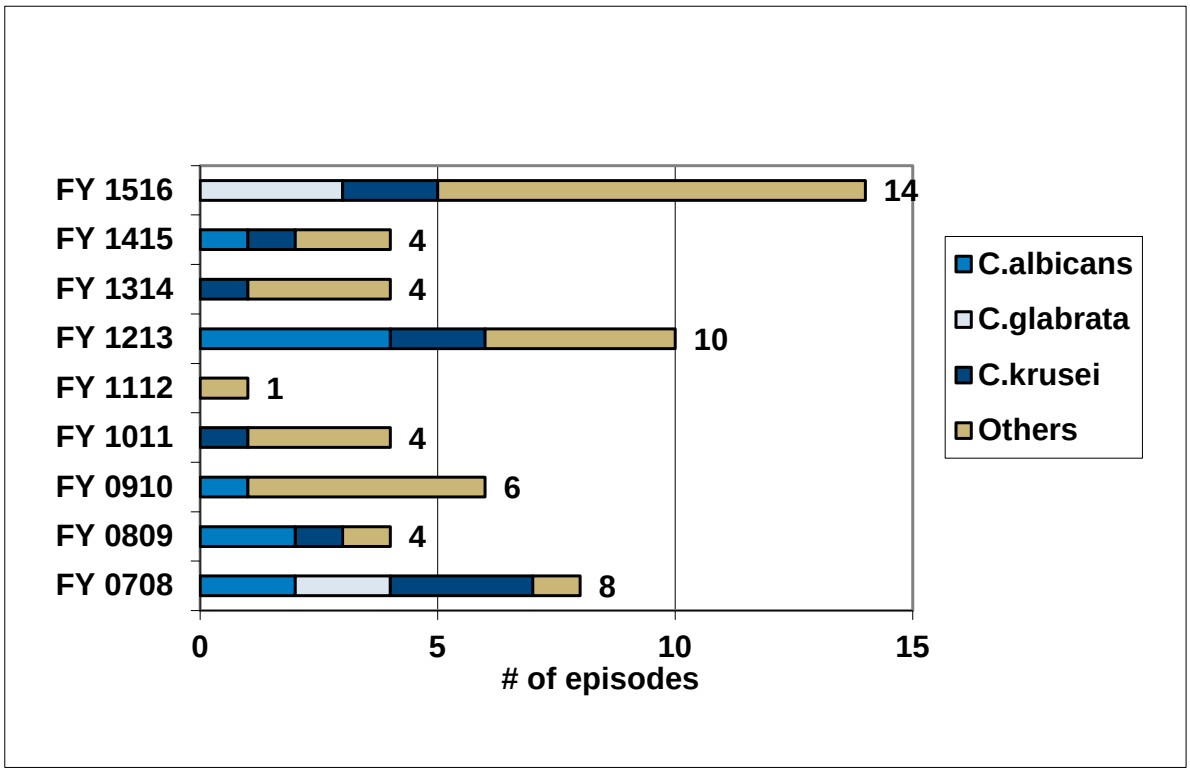


# Table 16: Princess Margaret Cancer Centre: Leukemia Service

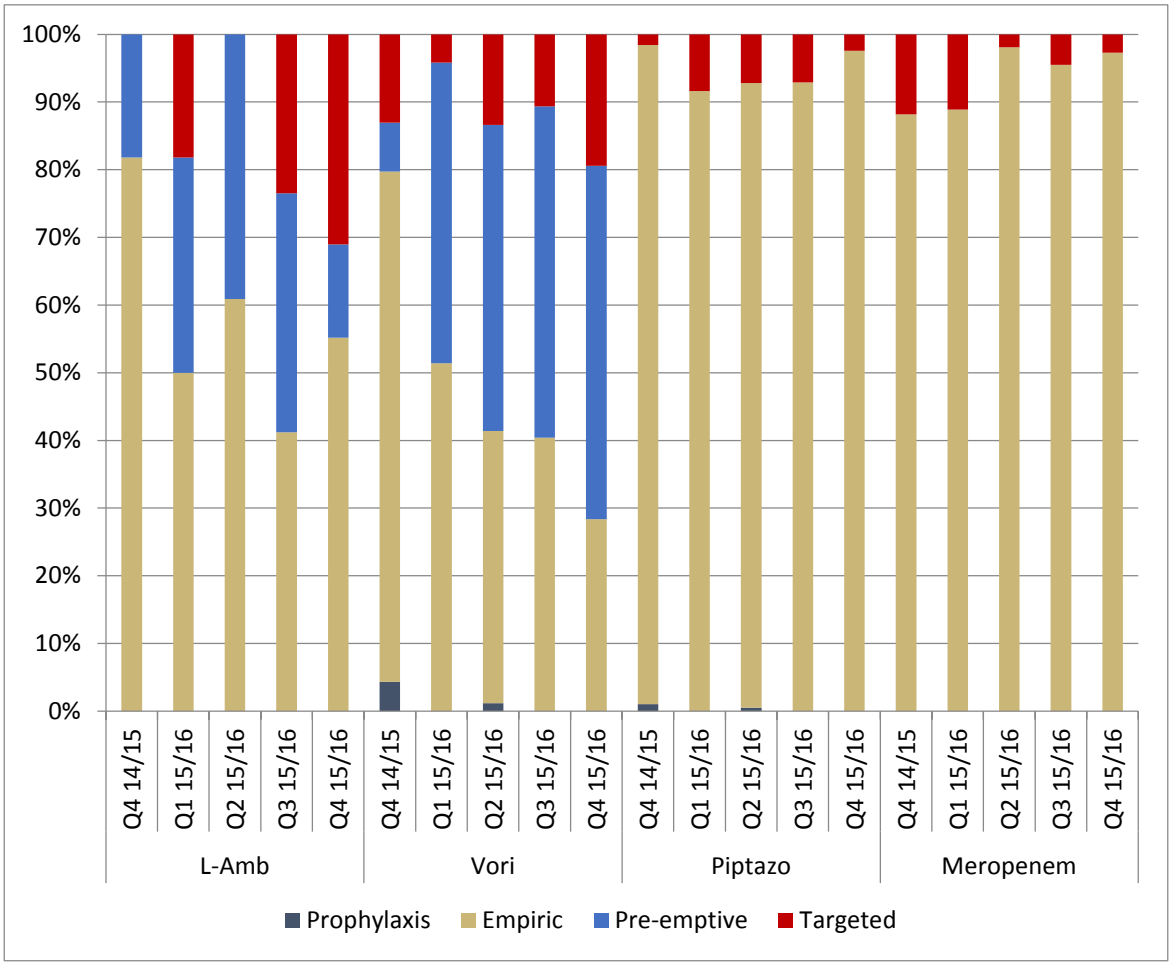
| Indicators | FY 09/10 | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 | FY 14/15 | FY15/16 Performance Q1 | Q2 | Q3 | Q4 | YTD | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Usage and Costs** | | | | | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **295** | **270** | **239** | **250** | **255** | **244** | **248** | **234** | **238** | **237** | **239** | **244** |
| Systemic Antibacterial DDDs/100 Patient Days | 191 | 163 | 134 | 146 | 138 | 136 | 141 | 139 | 135 | 138 | 138 | 136 |
| Systemic Antifungal DDDs/100 Patient Days | 104 | 107 | 105 | 104 | 117 | 108 | 107 | 94 | 103 | 99 | 101 | 108 |
| **Total Antimicrobial Costs** | $1,768,317 | $1,641,331 | $1,310,857 | $1,695,539 | $1,534,499 | $1,412,805 | $499,995 | $302,479 | $316,572 | $360,057 | $1,479,103 | $1,412,805 |
| **Total Antimicrobial Costs/Patient Day** | **$167.12** | **$154.32** | **$115.13** | **$128.91** | **$117.10** | **$96.46** | **$136.35** | **$81.80** | **$80.45** | **$90.99** | **$96.98** | **$96.46** |
| Systemic Antibacterial Costs | $659,034 | $609,747 | $663,175 | $422,438 | $485,263 | $471,597 | $129,491 | $101,119 | $83,729 | $89,059 | $403,399 | $471,597 |
| Systemic Antibacterial Costs/Patient Day | $62.28 | $57.33 | $58.24 | $45.85 | $37.03 | $32.20 | $35.31 | $27.34 | $21.28 | $22.51 | $26.45 | $32.20 |
| Systemic Antifungal Costs | $1,109,283 | $1,031,584 | $647,637 | $1,092,448 | $1,049,236 | $941,208 | $370,504 | $201,360 | $232,843 | $270,998 | $1,075,705 | $941,208 |
| Systemic Antifungal Costs/Patient Day | $104.84 | $96.99 | $56.88 | $83.06 | $80.07 | $64.26 | $101.04 | $54.45 | $59.17 | $68.49 | $70.53 | $64.26 |
| **Patient Care Outcomes** | | | | | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 patient days) | 6 (0.56) | 7 (0.65) | 14 (1.17) | 5 (0.51) | 11 (0.84) | 13 (0.89) | 4 (1.09) | 5 (1.35) | 2 (0.51) | 3 (0.76) | 14 (0.92) | 13 (0.89) |

Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.
Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.

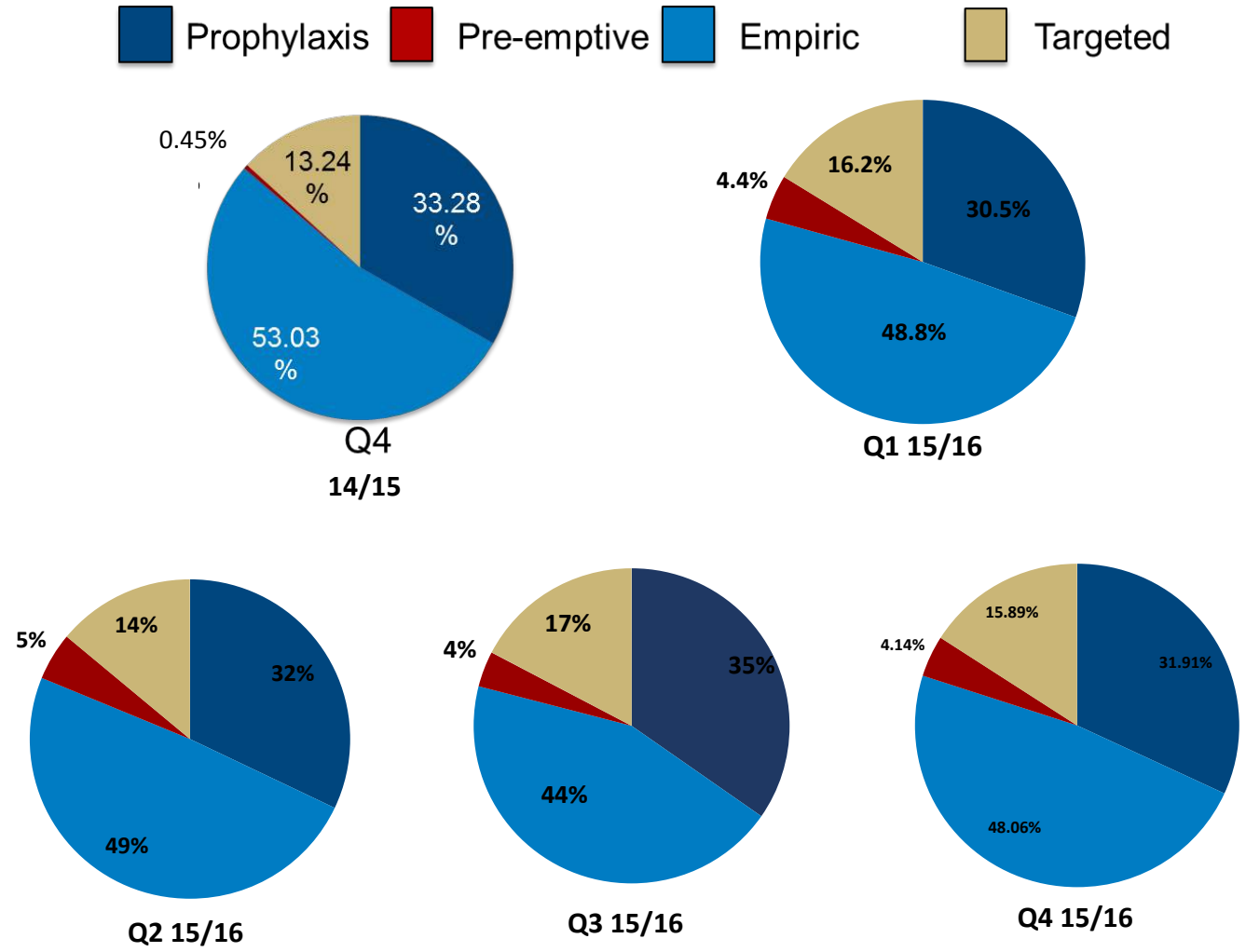
# Table 17: Yeast Species Isolated in Blood – Princess Margaret Cancer Centre: Leukemia Service



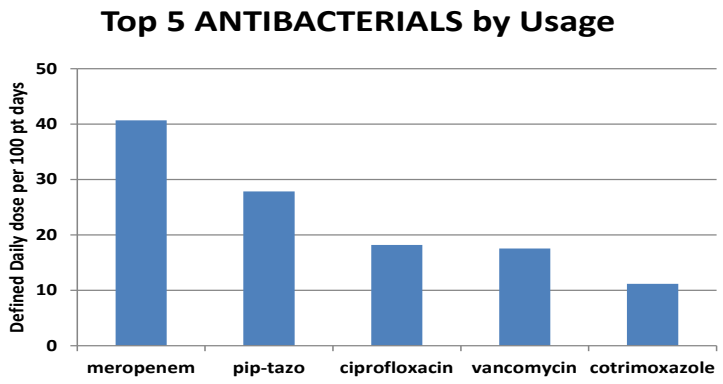
## Table 18: Princess Margaret Cancer Centre: Indications for Select Antimicrobials Used in Febrile Neutropenia in Five Rolling Quarters: 14/15 Q4 and 15/16 Q1-4

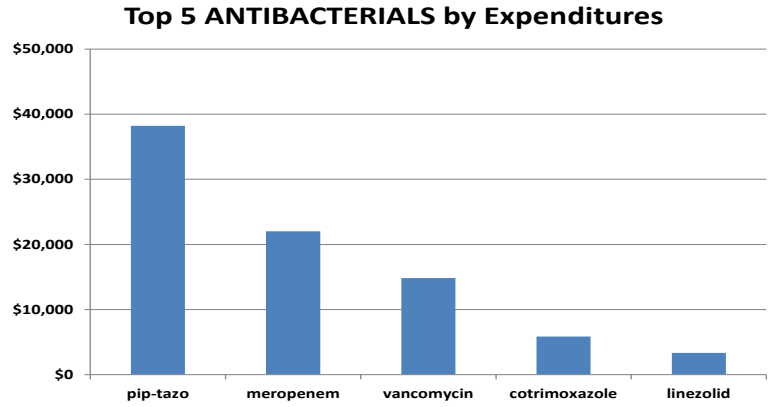


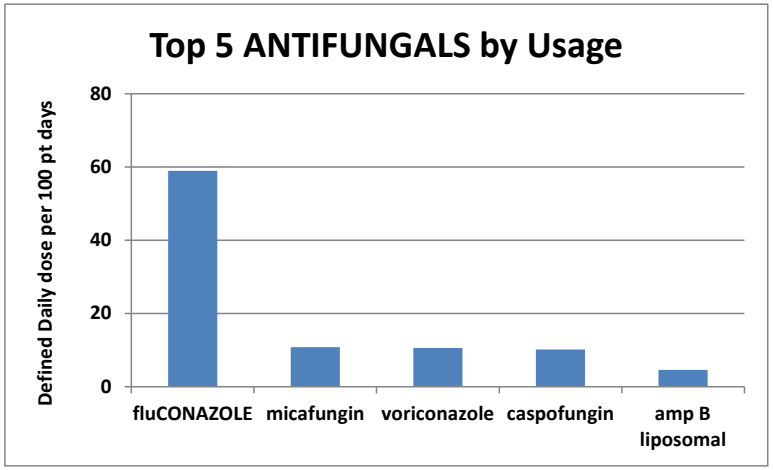
## Princess Margaret Cancer Centre: Indications for All Antimicrobials in Five Rolling Quarters: 14/15 Q4 – 15/16 Q1-4

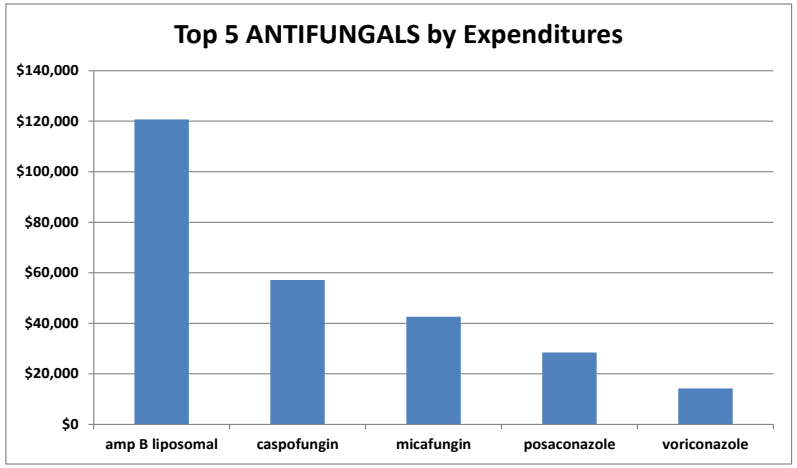


# Table 19: Princess Margaret Cancer Centre: Leukemia FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures



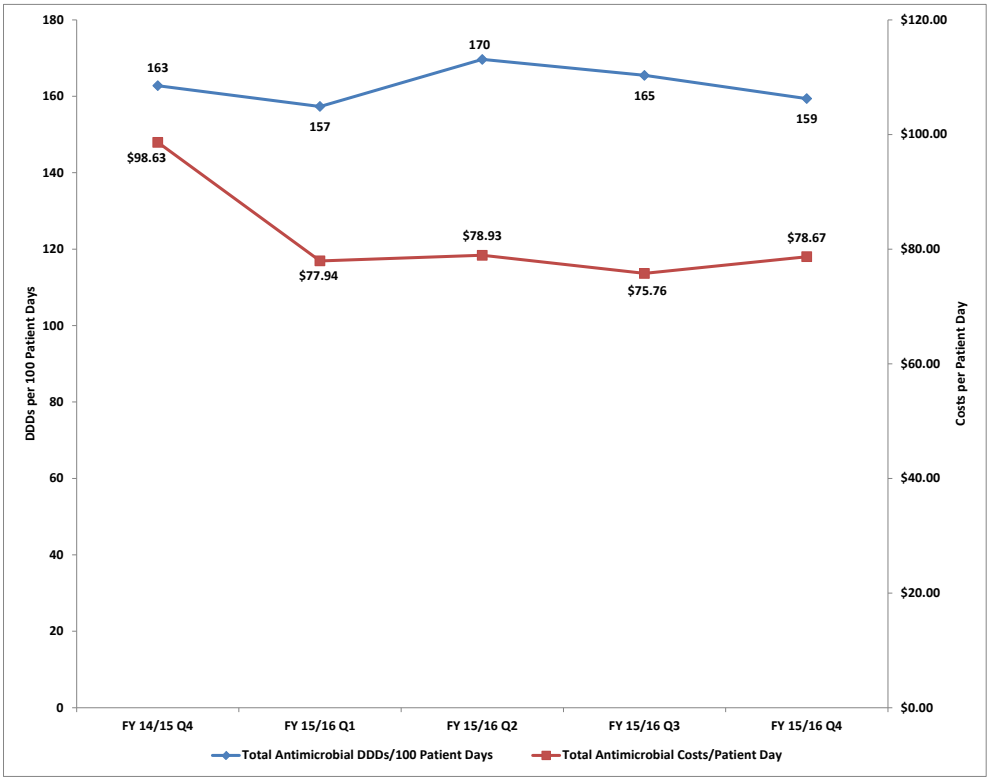



## Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant

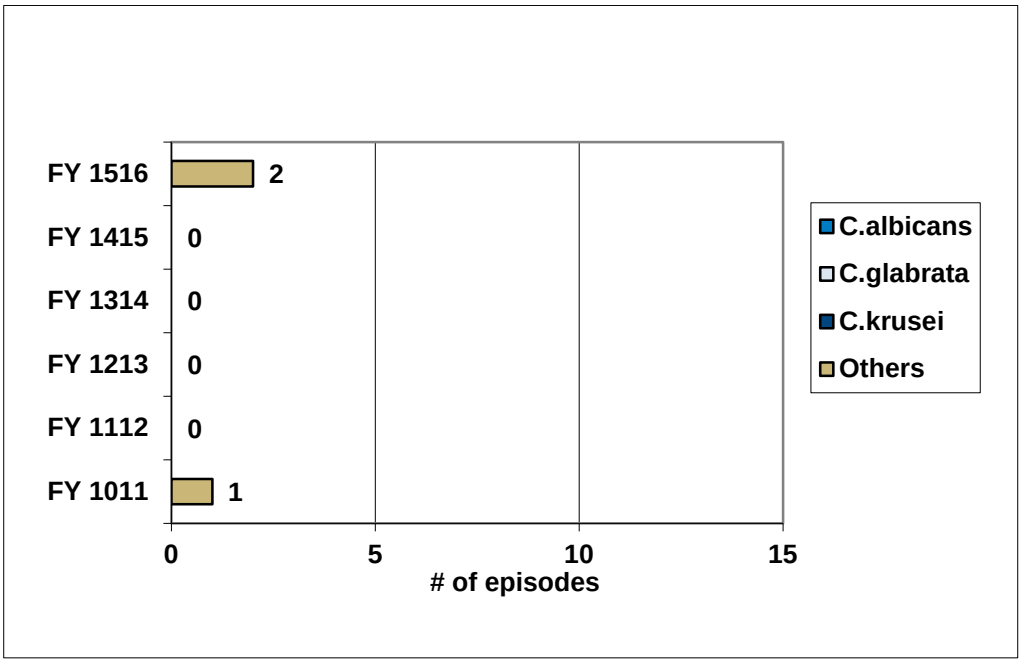
FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) decreased (↓) by 5.0% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 26.9% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 24.4% compared to YTD last year.
- Antifungal costs per patient day decreased (↓) by 27.3% compared to YTD last year.

### Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant Antimicrobial Consumption and Costs Per Patient Day



## Table 20: Yeast Species Isolated in Blood – Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant



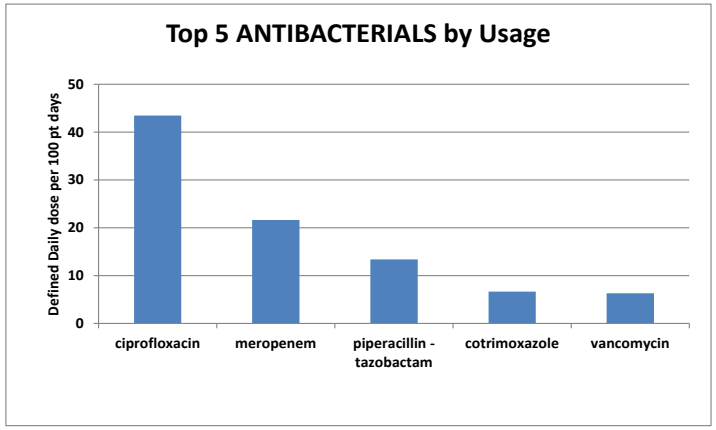

## Table 21: Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant

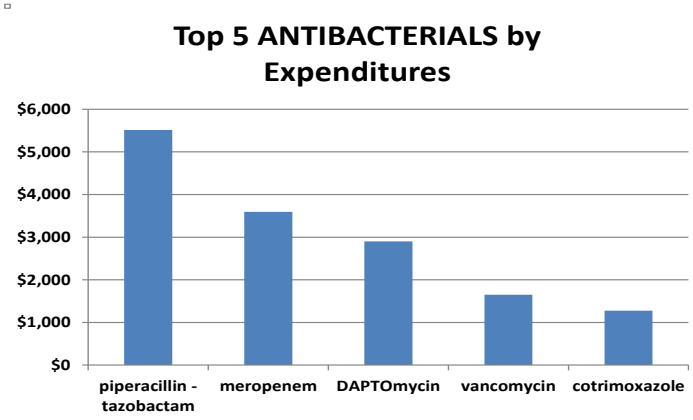
| Indicators | FY 13/14 | FY 14/15 | FY15/16 Performance Q1 | Q2 | Q3 | Q4 | YTD | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Usage and Costs** | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **172** | **171** | **157** | **170** | **165** | **159** | **163** | **171** |
| Systemic Antibacterial DDDs/100 Patient Days | 114 | 104 | 102 | 113 | 106 | 107 | 107 | 104 |
| Systemic Antifungal DDDs/100 Patient Days | 59 | 67 | 55 | 57 | 60 | 52 | 56 | 67 |
| **Total Antimicrobial Costs** | $416,614 | $512,300 | $93,217 | $99,133 | $94,250 | $95,033 | $381,633 | $512,300 |
| **Total Antimicrobial Costs/Patient Day** | **$85.65** | **$106.13** | **$77.94** | **$78.93** | **$75.76** | **$78.67** | **$77.62** | **$106.13** |
| Systemic Antibacterial Costs | $75,219 | $78,038 | $12,487 | $16,325 | $13,665 | $17,612 | $60,088 | $78,038 |
| Systemic Antibacterial Costs/Patient Day | $15.46 | $16.17 | $10.44 | $13.00 | $10.98 | $14.58 | $12.22 | $16.17 |
| Systemic Antifungal Costs | $341,395 | $434,261 | $80,730 | $82,809 | $80,585 | $77,421 | $321,545 | $434,261 |
| Systemic Antifungal Costs/Patient Day | $70.19 | $89.97 | $67.50 | $65.93 | $64.78 | $64.09 | $65.39 | $89.97 |
| **Patient Care Outcomes** | | | | | | | | |
| Hospital-Acquired C. difficile Cases (rate per 1,000 patient days) | 4 (0.82) | 12 (2.49) | 0 (0.00) | 5 (3.98) | 2 (1.61) | 0 (0.00) | 7 (1.42) | 12 (2.49) |

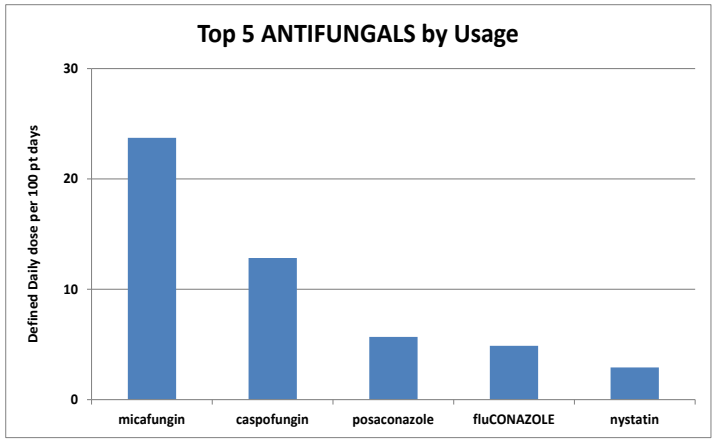
Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials and antivirals are excluded.

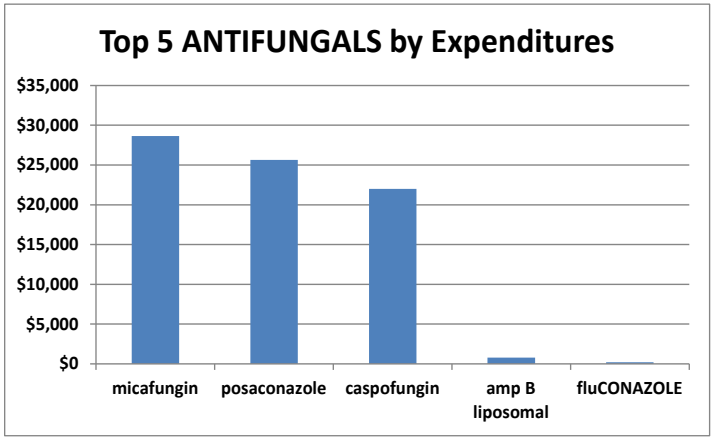
Data Sources: Antimicrobial DDD and Costs (Centricity). *An error in DDD calculation for Pip-tazo was detected in Q3 2013; all historical data prior to this was rerun, resulting in minor changes to antibacterial DDDs.

# Table 22: Princess Margaret Cancer Centre: Allogeneic Bone Marrow Transplant 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures



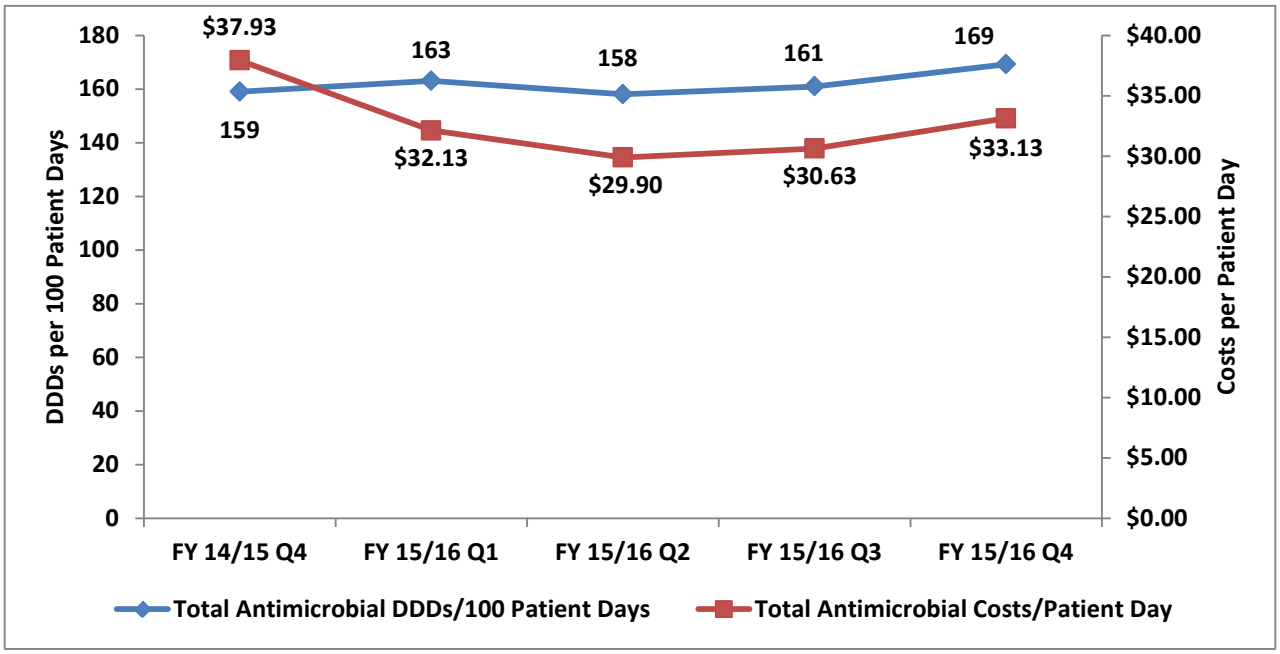



## Toronto General Hospital: Multi-Organ Transplant Program (MOTP)

FY 15/16 Q4 highlights include:

- Antimicrobial consumption (using defined daily doses (DDDs) per 100 patient days) increased (↑) by 14% compared to YTD last year.
- Antimicrobial costs per patient day decreased (↓) by 3.7% compared to YTD last year.
- Antibacterial costs per patient day decreased (↓) by 11.2% compared to YTD last year.
- Antifungal costs per patient day increased (↑) by 4.4% compared to YTD last year.

### Toronto General Hospital: Multi-Organ Transplant Program (MOTP) Antimicrobial Consumption and Costs Per Patient Day



# Table 23: Toronto General Hospital: Multi-Organ Transplant Program (MOTP)

| Indicators | FY 13/14 | FY 14/15 | FY15/16 Performance Q1 | Q2 | Q3 | Q4 | YTD | YTD of Previous Year |
|---|---|---|---|---|---|---|---|---|
| **Antimicrobial Usage and Costs** | | | | | | | | |
| **Total Antimicrobial DDDs/100 Patient Days** | **136** | **143** | **163** | **158** | **161** | **169** | **163** | **143** |
| Systemic Antibacterial DDDs/100 Patient Days | 93 | 98 | 113 | 115 | 113 | 107 | 112 | 98 |
| Systemic Antifungal DDDs/100 Patient Days | 43 | 45 | 51 | 43 | 48 | 62 | 51 | 45 |
| **Total Antimicrobial Costs** | $837,263 | $725,411 | $180,235 | $168,569 | $171,497 | $189,592 | $709,892 | $725,411 |
| **Total Antimicrobial Costs/Patient Day** | **$39.16** | **$32.69** | **$32.13** | **$29.90** | **$30.63** | **$33.13** | **$31.47** | **$32.69** |
| Systemic Antibacterial Costs | $327,831 | $379,748 | $102,244 | $88,979 | $77,314 | $74,404 | $342,941 | $379,748 |
| Systemic Antibacterial Costs/Patient Day | $15.33 | $17.11 | $18.23 | $15.78 | $13.81 | $13.00 | $15.20 | $17.11 |
| Systemic Antifungal Costs | $509,433 | $345,664 | $77,991 | $79,590 | $94,183 | $115,188 | $366,951 | $345,664 |
| Systemic Antifungal Costs/Patient Day | $23.82 | $15.58 | $13.90 | $14.12 | $16.82 | $20.13 | $16.26 | $15.58 |
| **Patient Care Outcomes** | | | | | | | | |
| Hospital-Acquired C. Difficile Cases (rate per 1,000 patient days) | 14 (0.65) | 18 (0.81) | 4 (0.71) | 2 (0.35) | 2 (0.36) | 3 (0.52) | 11 (0.49) | 18 (0.81) |

Due to a calculation error in Centricity, Antifungal and Total DDD/100pt days for Q3, Q4 and FYTD have been corrected.

# BEST PRACTICE GUIDELINES AND ALGORITHMS

- Dr. Shahid Husain and Miranda So are drafting the ASP MOT Common Infections Management Guidelines For Solid-Organ Transplant Patients. The guidelines will undergo consultative reviews by content experts in MOT and Transplant Infectious Diseases in the coming months.
- Dr. Shahid Husain and Miranda So began prospective audit and feedback rounds for the MOT units in November after consulting key stakeholders on their plan to implement antimicrobial stewardship interventions. Nurse Practitioners, clinical pharmacists, transplant infectious diseases fellows, and kidney transplant fellows are active participants at ASP rounds. Preliminary feedback from the group has been positive. Participants reported ASP rounds enhance their knowledge and decision making skills in antimicrobial use.
- The ASP-Allogeneic BMT Working Group was formed to update the antimicrobial prophylaxis guideline for allogeneic bone marrow transplant recipients. The Working Group had a kick-off meeting in October with support from Judy Costello, Dr. Andre Schuh, and Dr. Hans Messner, and the working group will continue to meet over the next few months.
- Miranda So is the recipient of the Canadian Society of Hospital Pharmacists Ontario Branch Information Technology Award, for the interactive High-Risk Febrile Neutropenia Protocol and the Solid Tumor Febrile Neutropenia Protocol.
- Clinical summaries continue to be available on the ASP website and on mobile device web browsers for a series of common and important conditions. Whiteboard animation videos continue to be available on our program's YouTube channel.
- The ASP collaborated with the Emergency Department to complete the MSH Emergency Department sepsis recognition and management algorithm. The algorithm was implemented into the Emergency Department and was effortlessly taken on by frontline clinicians and incorporated into their daily practice.
- The ASP collaborated with multiple key stakeholders across MSH and UHN on standardizing care related to the diagnosis and management of patients with *Clostridium Difficile* infection (CDI). The algorithm was launched and involved extensive consultation, development, and revision with interdisciplinary stakeholders. An e-learning module was developed, as well as electronic order sets to support the algorithm. The CDI algorithm was reformatted based on clinician and project stakeholders' feedback and can be found here on our ASP website. The revised formatting is based on Human Factors Engineering and will be easier to navigate and print for frontline clinicians.

# RESEARCH

Multiple research projects continue, with many important projects nearing completion and being prepared for submission to key medical journals.

Publications

The following articles were published or accepted for publication in peer-reviewed medical journals:

- So M, Yang D, Bell CM, Humar A, Morris AM, Husain S. Solid Organ Transplant Patients: Are There Opportunities for Antimicrobial Stewardship? *Clin Transplant*. 2016 May DOI: 10.1111/ctr.12733.http://onlinelibrary.wiley.com/doi/10.1111/ctr.12733/abstract
- Bai A, Showler A, Burry L, Steinberg M, Tomlinson G, Bell CM, Morris AM. Clinical prediction rules in Staphylococcus aureus bacteremia demonstrates the usefulness of reporting likelihood ratios in infectious diseases. *Eur J Clin Microbiol Infect Dis*. Epub ahead of print, June 29, 2016.
- Vallipuram J, Dhalla S, Bell CM, Dresser L, Han H, Husain S, Minden MD, Paul NS, So M, Steinberg M, Vallipuram M, Wong G, Morris AM. Chest CT Scans are Frequently Abnormal in Asymptomatic Patients with Newly Diagnosed Acute Myeloid Leukemia. *Leuk. Lymphoma*. [in press]

There are currently an additional four manuscripts that have been submitted to medical journals and are undergoing peer review.

Abstracts

The following abstracts were presented at national and international meetings by ASP team members:

- Dresser L, Steinberg M, Duplisea K, Nelson S, So M, Bell CM, Morris AM. Developing and Evaluating an Educational Intervention to Guide in the Implementation of Antimicrobial Stewardship Programs in Community Hospitals. Facilitated poster presentation at Canadian Society of Hospital Pharmacists Professional Practice Conference, Jan 30-Feb 3, 2016; Toronto, ON.
- So M, Yeats B, Lu S, Bell CM, Morris AM, Husain S. Compliance to a Febrile Neutropenia Protocol for Leukemia Patients Based on Antimicrobial Stewardship Principles and Human Factors Engineering. Poster presentation at Canadian Society of Hospital Pharmacists Professional Practice Conference, Jan 30-Feb 3, 2016; Toronto, ON.
- Dresser L, Hughes J, McIntyre M, Nelson S, Ferguson N, Lapinsky S, Lazar N, Mehta S, Burry L, Singh J, Bell CM, Morris AM. Antimicrobial stewardship programs reduce daily prescribing variability in academic ICUs. Oral presentation at AMMI Canada, March 30-Apr 2, 2016. Vancouver, BC
- Valbuena V, Bai A, Showler A, Burry L, Steinberg M, Bell C, Morris AM. Clinical Outcomes of *Staphylococcus aureus* Bacteremia Following Introduction of Mandatory Infectious Disease Specialist Consultation. Poster presentation at AMMI Canada, March 30-Apr 2, 2016. Vancouver, BC
- Hughes J, Hurford A, Patrick D, Finley R, Morris A, Wu J. Monitoring the net clinical impact of resistance: composite indices show improvement in our ability to cover severe device-associated infections in an academic ICU since 2000. Poster presentation at AMMI Canada, March 30-Apr 2, 2016. Vancouver, BC

Research Studies

The following are our grant-funded studies:

- ARTIC CHILL – Community Hospital ICU Local Leadership. Council of Academic Hospitals of Ontario (CAHO) Adopting Research To Improve Care (ARTIC) Spread Project. Principal Investigator: Andrew Morris. Co-investigators: Yoshiko Nakamachi, Sarah West, Chaim Bell
- Building Capacity to Improve and Sustain Antimicrobial Stewardship Programs in ICUs. Canadian Institutes of Health Research, Knowledge to Action. Principal Investigators: Lianne Jeffs, Andrew Morris. Co-investigators: Chaim Bell, Madelyn Law, Jonathan Mitchell, Susan Straus
- FRAMING-LTC: Frailty and Recognizing Appropriate Medications IN Geriatrics and Long-Term Care. Technology Evaluation in the Elderly Network (TVN). Principal Investigator: Andrew Morris. Co-Investigators: Chaim Bell, Susan Bronskill, Colleen Maxwell, Lianne Jeffs
- Designing an Effective Outpatient Antimicrobial Stewardship Program to Reduce Unnecessary Antibiotic Use in Primary Care using a Mixed-Methods Collaborative Model. AHSC AFP Innovation Fund. Principal Investigators: Warren McIsaac, Andrew Morris. Co-investigators: Chaim Bell, Lianne Jeffs, Jeff Bloom, David Tannenbaum
- Development of an Antimicrobial Resistance Diversity Index (ARDI) to guide initiatives and investment in public health, antimicrobial stewardship and infection control. CIHR NSERC Grant. Principal Investigators: Jainhong Wu, Andrew Morris. Co-investigators: Troy Day, Amy Hurford, Allison McGeer, David Patrick, Gerry Wright.
- Evaluation of a Province Wide Roll-out of Antimicrobial Stewardship Programs in Critical Care Units: A Prospective, Stepped-wedge Observational Study. Physicians Services Incorporated Health Research Grant. Principal Investigator: Andrew Morris. Co-investigators: Chaim Bell, Lisa Burry.

In addition to these funded projects, multiple unfunded research projects continue, led by various members of the SHS-UHN ASP team.

# EDUCATION

- As part of our General Internal Medicine (GIM) initiative, the ASP team has been providing ongoing education and support to GIM Pharmacists at both MSH and UHN. The ASP team provides education to physicians and medical trainees through several means, including ASP/ID case-based noon rounds, ASP pocket cards for medical trainees, and a mobile ASP web application (m.antimicrobialstewardship.com) to provide efficient access to resources.
- Twice a month the ASP team meets with all Nurse Practitioners from the Malignant Hematology programs for case rounds.
- The Leslie Dan Faculty of Pharmacy at the University of Toronto is the first institution to offer an elective in Antimicrobial Stewardship in the Entry-to-Practice Doctor of Pharmacy Curriculum. Miranda So (ASP Pharmacist) is the course coordinator, with contribution from other ASP team members.

# PROVINCIAL ROLE

ASP ARTIC CHILL Project

The ASP was awarded a grant for its ASP ARTIC CHILL (Community Hospital ICU Local Leadership) project, which will build on the successful implementation of ASPs in academic hospitals, led by the SHS-UHN ASP team during the two-year provincial CAHO ASP ICU ARTIC project (2012–2014). The goal of the ASP ARTIC CHILL project is to establish fully functional Antimicrobial Stewardship Programs (ASPs) within community hospital ICUs using a Hub/Spoke model to allow for a provincial ASP Community of Practice. The site leaders (Hubs) will act as coaches and mentors for ASP implementation at local community sites (Spokes). The aim is to optimize the use of antimicrobials in ICUs, specifically supporting the establishment of an ASP, ensuring each Spoke is able to report results on antimicrobial use and *C. difficile* infection rates and meet Accreditation Canada's requirements. Project work has involved securing four Council of Academic Hospitals of Ontario (CAHO) ASP Hub site leads – London Health Sciences Centre, Hamilton Health Sciences, Lakeridge Health, and Children's Hospital of Eastern Ontario – who in turn guided eight hospitals with ASP implementation within their ICUs.

The Hub leads worked with the Spoke sites in assisting them with their chosen ASP interventions based on their local context. The SHS-UHN ASP team also conducted on-site visits post-implementation to evaluate the interventions.

Expert Consultation

The ASP continues to provide expert advice and consultation to various hospitals throughout the province. We are currently assisting Huron Perth Healthcare Alliance (Clinton Public Hospital, St. Mary's Memorial Hospital, Seaforth Community Hospital, and Stratford General Hospital), and Alexandra Marine and General Hospital.

Our team has also partnered with Public Health Ontario and hosted an Ontario Antimicrobial Stewardship Roundtable to share learnings from our work with hospitals across the province. This roundtable meeting included a cross-section of experts in antimicrobial stewardship, including primary care, long-term care, acute care, and perspectives from the Assistant Deputy Minister, Health Systems Quality and Funding, and Strategy and Policy Advisor and Infectious Disease Policy and Programs Sections.

The ASP team has also been providing expert guidance to SASS (Students for Antimicrobial Stewardship Society) to create awareness and promote antimicrobial stewardship principles to the next generation of prescribers. SASS is now a national initiative, with chapters in eight medical schools and one pharmacy school.

# NATIONAL ROLE

Accreditation Canada

The SHS-UHN ASP has partnered with Accreditation Canada to assist hospitals across Canada in setting up an ASP. The partnership involves the development and delivery of an on-line course and a series of interactive group webinars. The fourth cohort has completed the on-line course, and the course continues to be offered for 2016.

HealthCareCAN

The SHS-UHN ASP has been working closely with HealthCareCAN, the National Collaborating Centre for Infectious Diseases (NCCID), and the Public Health Agency of Canada (PHAC) to inform our national health leaders and to organize a Pan-Canadian Action Round Table on Antimicrobial Stewardship and Resistance, which will took place in Toronto on June 16 and 17, 2016. Dr. Andrew Morris and Yoshiko Nakamachi are members of both the Steering Committee and Program Committee for this national initiative.

Our program has also partnered with CHA Learning, the professional development branch of HealthCareCAN, to develop materials for a course in change leadership in the healthcare setting.

Public Health Agency of Canada

Dr. Andrew Morris is an invited member of EAGAR (Expert Advisory Group on Antimicrobial Resistance), chaired by the Federal Chief Medical Officer of Health, Dr. Gregory Taylor.

Association of Medical Microbiology and Infectious Diseases Canada

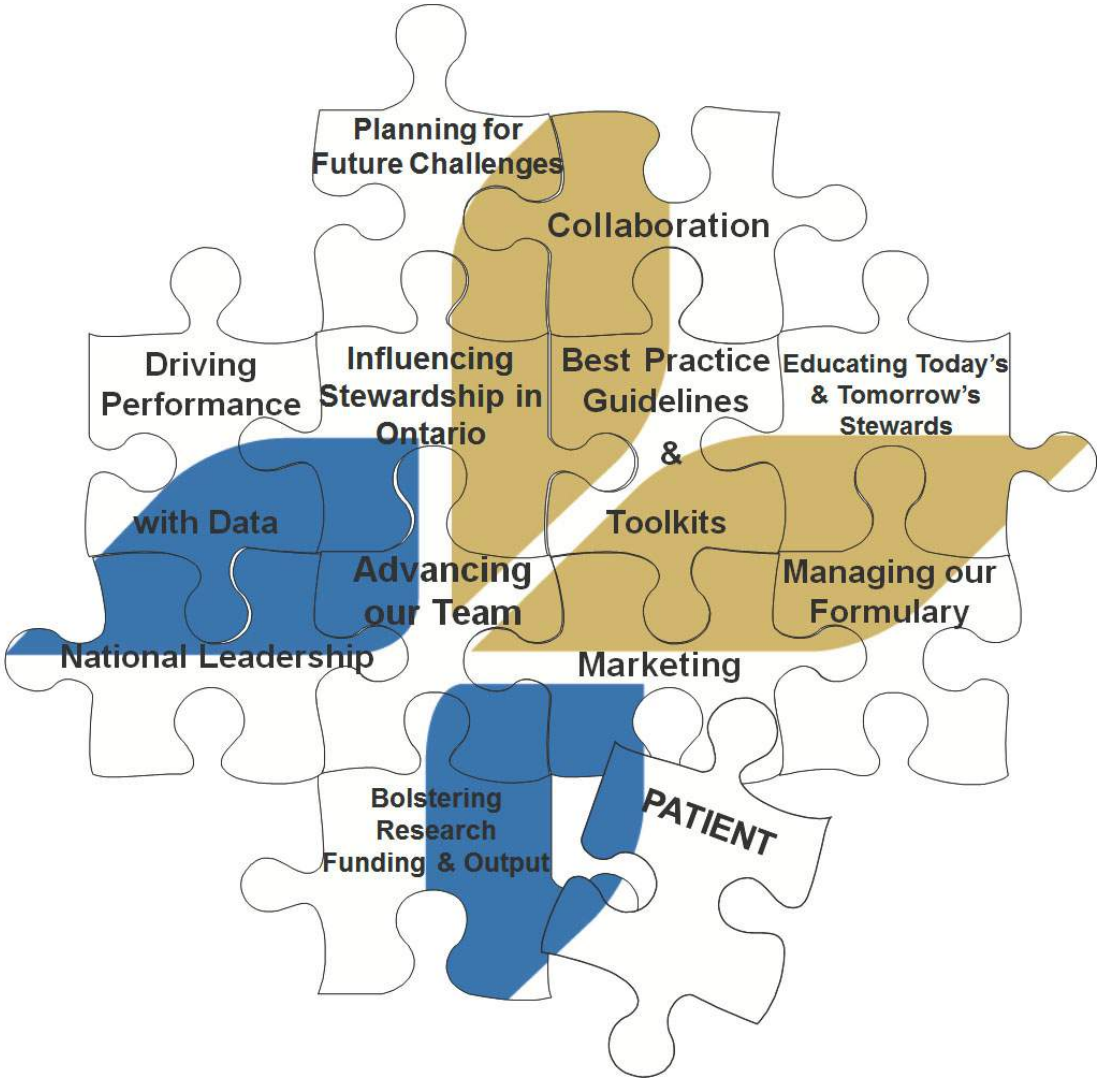
Dr. Andrew Morris is the chair of AMMI Canada's Antimicrobial Stewardship and Resistance Committee.
Dr. Linda Dresser is a pharmacist member of this committee.

ASP Rotations at SHS and UHN

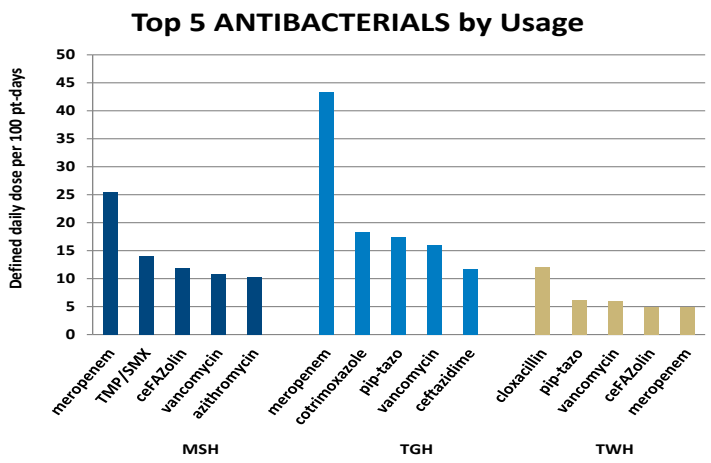
The SHS-UHN ASP continues to receive multiple requests for ASP rotations from residents and fellows across the country and internationally.

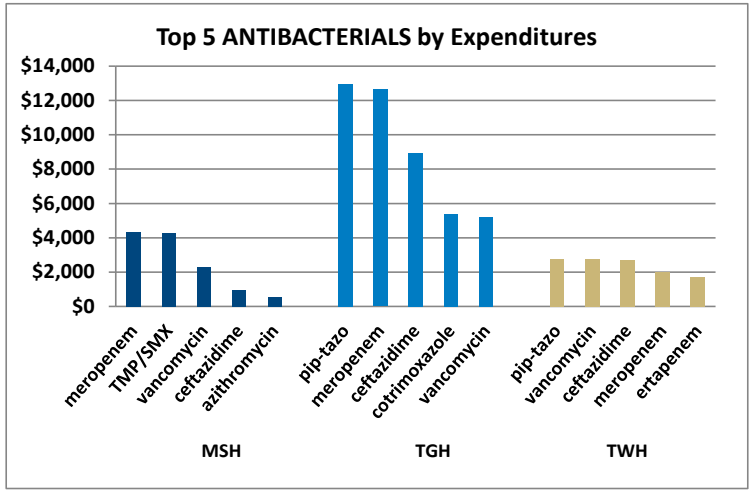
# STRATEGIC PLANNING

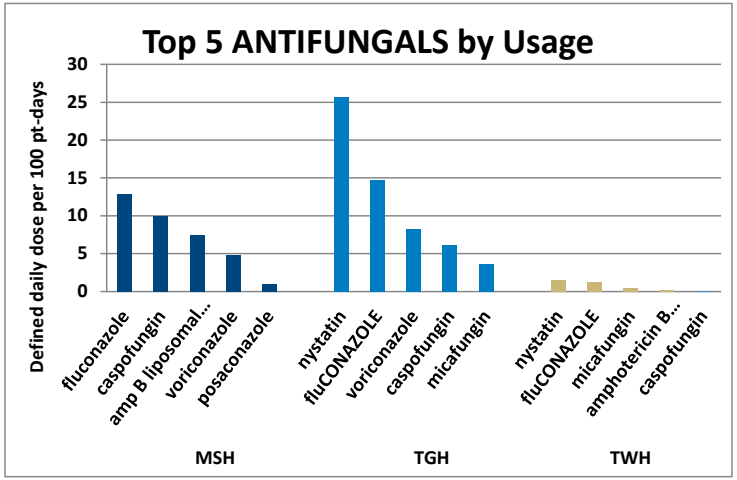
The ASP team developed the SHS-UHN ASP Strategic Plan 2013-2016. Please contact Yoshiko Nakamachi (Yoshiko.Nakamachi@uhn.ca) if you would like a copy.

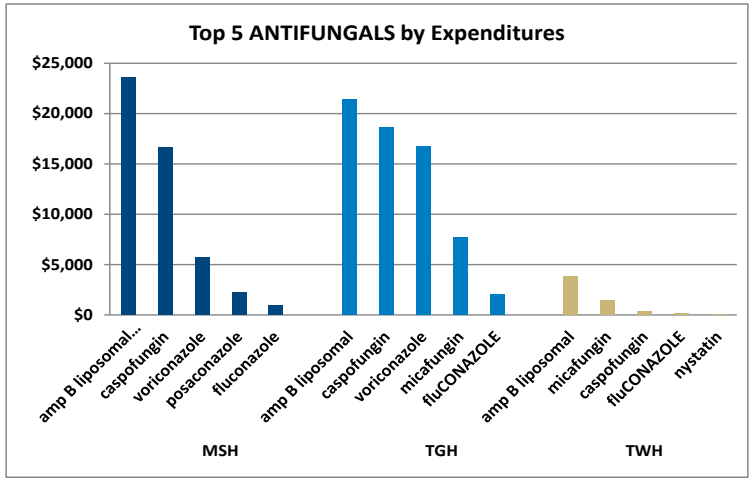


## Appendix 1: FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 Patient Days) and Expenditures by ICU Site

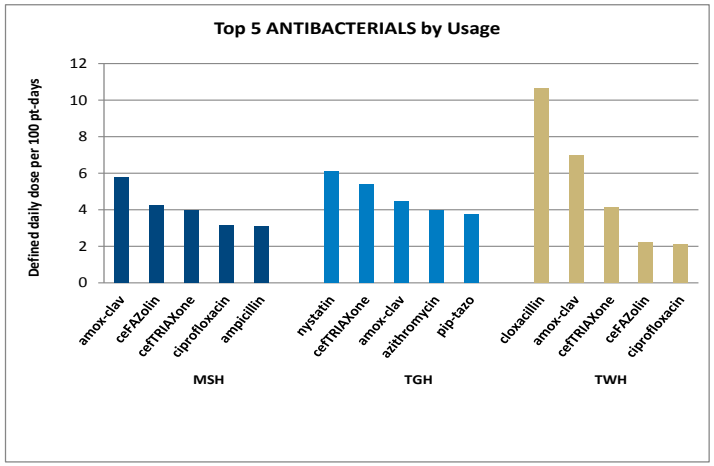


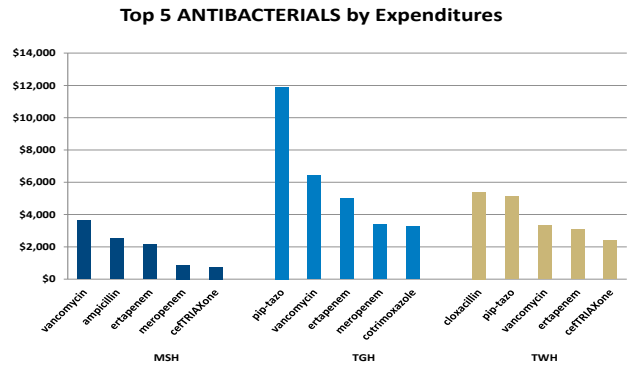



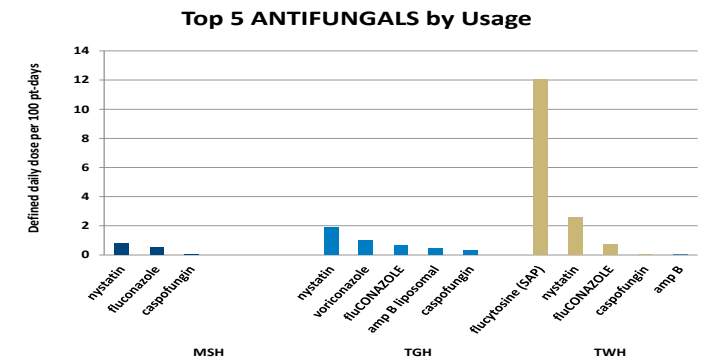



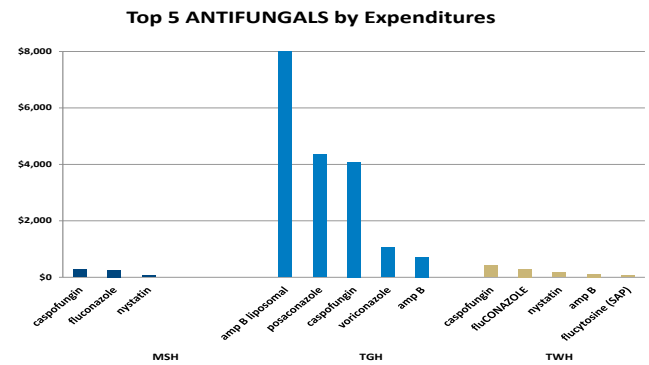



## Appendix 2: General Internal Medicine FY 15/16 Q4 Top 5 Antimicrobials by Usage (DDDs per 100 patient days) and Expenditures



# Appendix 3: SNAP Scorecard: January-March 2016

## SNAP SCORE CARD

For the Month of January 2016

| | | | | | |
|---|---|---|---|---|---|
| 5-35 minutes | 5 - 35 minutes | 5-35minutes | 5-35minutes | 5-35 minutes | 35-65minutes |
| 36-40 minutes | 36-40 minutes | 36-40minutes | 36-40minutes | 36-40minutes | 36-70minutes |
| > 40 minutes | >40mintues | >40minutes | >40minutes | >40minutes | >70minutes |

| Time to MD Assessment | Time to RN Assessment | Time to Blood Culture | Time to Lactate | Time to 1st Bolus | Time to Antibiotic |
|---|---|---|---|---|---|
| 0:52 | 0:52 | 1:01 | 0:38 | 0:00 | 0:36 |
| 1:08 | 0:28 | 0:00 | 0:00 | 0:50 | 1:40 |
| 0:04 | 0:00 | 0:46 | N/A | 0:25 | 1:13 |
| 0:00 | 0:00 | 0:40 | 0:31 | 0:45 | 1:55 |
| 0:14 | 0:09 | 0:05 | 0:00 | 0:10 | 1:20 |
| 0:00 | 0:00 | N/A | N/A | N/A | N/A |
| 0:00 | 0:01 | 0:00 | 0:00 | N/A | N/A |
| 0:00 | 0:00 | 0:29 | 0:22 | 0:15 | 0:50 |
| 1:04 | 0:00 | 0:37 | 0:16 | 0:36 | 3:25 |
| 0:00 | 0:00 | 0:00 | 0:00 | 0:05 | 2:11 |
| 0:08 | 0:02 | 0:10 | 0:00 | 0:45 | N/A |
| 1:45 | 0:50 | N/A | 0:54 | N/A | 0:40 |
| 0:00 | 0:00 | 0:22 | 0:00 | 0:00 | 0:24 |
| 1:00 | 0:40 | 0:00 | N/A | N/A | 1:00 |
| 0:22 | 0:00 | 0:38 | 0:26 | 0:20 | 0:58 |
| 0:00 | 0:00 | 0:22 | 0:00 | N/A | N/A |
| 0:00 | 0:00 | 0:30 | 0:04 | 1:25 | 1:43 |
| 0:00 | 0:00 | 0:48 | 0:43 | 1:27 | 2:39 |
| 0:00 | 0:00 | 0:24 | 0:04 | 0:07 | N/A |
| 0:18 | 0:48 | 0:00 | N/A | 0:00 | 0:30 |
| 0:00 | 0:00 | 1:08 | 0:17 | 0:55 | N/A |
| 0:34 | 0:19 | 0:40 | 0:17 | 0:45 | 0:30 |
| 0:00 | 0:00 | 5:23 | 1:22 | 2:26 | N/A |
| 0:06 | 0:00 | 0:24 | 0:01 | 0:32 | 1:05 |
| 0:41 | 0:41 | 1:10 | 0:55 | 0:15 | 1:15 |
| 0:00 | 0:00 | 0:31 | 0:23 | 1:15 | 156:00 |
| 1:20 | 1:00 | 0:35 | 0:29 | 0:23 | 1:20 |
| 0:11 | 0:05 | 0:33 | 0:25 | 0:05 | 4:12 |
| 0:51 | 0:35 | 0:29 | 0:12 | 0:41 | 0:24 |

| | |
|---|---|
| TOTAL NUMBER OF CASES | 29 |
| TOTAL NUMBER OF CASES CANCELLED | 3 |
| TOTAL PATIENTS DISCHARGED FROM ED | 7 |
| TOTAL PATIENTS TRANSFERRED TO FLOOR | 22 |

*Note: 0:00 time means that pertinent assessments or interventions were started before SNAP algorithm was assigned.*

# SNAP SCORE CARD

For the Month of February 2016

| | | | | | |
|---|---|---|---|---|---|
| 5-35 minutes | 5 - 35 minutes | 5-35minutes | 5-35minutes | 5-35 minutes | 35-65minutes |
| 36-40 minutes | 36-40 minutes | 36-40minutes | 36-40minutes | 36-40minutes | 36-70minutes |
| > 40 minutes | >40mintues | >40minutes | >40minutes | >40minutes | >70minutes |

| Time to MD Assessment | Time to RN Assessment | Time to Blood Culture | Time to Lactate | Time to 1st Bolus | Time to Antibiotic |
|---|---|---|---|---|---|
| 0:41 | 0:01 | 0:16 | 0:06 | 0:00 | N/A |
| 0:00 | 0:01 | 0:00 | 0:00 | 0:05 | 2:50 |
| 0:00 | 0:00 | 0:30 | 0:21 | 1:00 | 0:52 |
| 0:00 | 0:00 | 2:01 | 0:50 | 0:00 | 171:30 |
| 0:00 | 0:00 | 0:42 | 0:37 | 0:50 | 1:40 |
| 0:00 | 0:00 | 0:34 | 0:28 | 0:20 | 0:51 |
| 0:17 | 0:00 | 0:28 | 0:17 | 1:20 | 0:37 |
| 1:00 | 0:50 | N/A | 0:44 | 0:50 | N/A |
| 0:17 | 0:00 | 0:18 | 0:11 | 0:22 | N/A |
| 0:00 | 0:00 | 0:37 | 0:28 | 1:14 | 2:25 |
| 0:24 | 0:00 | 0:05 | 0:00 | 0:10 | 0:21 |
| 0:00 | 0:00 | 0:34 | 0:06 | 0:30 | N/A |
| 2:00 | 0:00 | 0:38 | 0:25 | 2:22 | 1:16 |
| 3:40 | 0:50 | 0:00 | 0:00 | 0:00 | N/A |
| 1:53 | 0:00 | 0:19 | 0:13 | 0:16 | N/A |
| 0:26 | 0:29 | 0:00 | 0:00 | N/A | N/A |
| 1:14 | 0:00 | 0:11 | 0:06 | 0:00 | 2:30 |

| | |
|---|---|
| TOTAL NUMBER OF CASES | 17 |
| TOTAL NUMBER OF CASES CANCELLED | 2 |
| TOTAL PATIENTS DISCHARGED FROM ED | 8 |
| TOTAL PATIENTS TRANSFERRED TO FLOOR | 9 |

*Note: 0:00 time means that pertinent assessments or interventions were started before SNAP algorithm was assigned.*

SHS + UHN ASP ANTIMICROBIAL STEWARDSHIP PROGRAM

# SNAP SCORE CARD

For the Month of Mar 2016

| | | | | | |
|---|---|---|---|---|---|
| 5-35 minutes | 5 - 35 minutes | 5-35minutes | 5-35minutes | 5-35 minutes | 35-65minutes |
| 36-40 minutes | 36-40 minutes | 36-40minutes | 36-40minutes | 36-40minutes | 66-70minutes |
| > 40 minutes | >40mintues | >40minutes | >40minutes | >40minutes | >70minutes |

| Time to MD Assessment | Time to RN Assessment | Time to Blood Culture | Time to Lactate | Time to 1st Bolus | Time to Antibiotic |
|---|---|---|---|---|---|
| 0:02 | 0:07 | 0:02 | 0:00 | 0:00 | 1:55 |
| 0:30 | 0:00 | 0:26 | 0:18 | 0:20 | 0:31 |
| 1:17 | 0:32 | 0:00 | 0:00 | 1:35 | 0:50 |
| 0:00 | 0:00 | 0:53 | 0:00 | 1:03 | 1:34 |
| 0:00 | 0:00 | N/A | N/A | N/A | N/A |
| 2:19 | 0:00 | 0:45 | 0:02 | 0:40 | N/A |
| 0:00 | 0:00 | 0:13 | 0:05 | 0:00 | N/A |
| 0:24 | 0:14 | 0:20 | 0:07 | 0:30 | 0:40 |
| 0:17 | 0:00 | 0:44 | 0:18 | 0:40 | 1:10 |
| 0:18 | 0:36 | 0:00 | 0:00 | 0:09 | 4:58 |
| 0:00 | 0:00 | 3:09 | 0:30 | 1:15 | 2:34 |
| 0:00 | 0:00 | 1:17 | 0:22 | 1:30 | 1:40 |
| 1:27 | 0:07 | 1:29 | 0:19 | 0:24 | 0:27 |
| 0:51 | 0:00 | 0:02 | 0:00 | 0:15 | 0:14 |
| 0:20 | 0:24 | 0:02 | 0:00 | 0:00 | N/A |
| 0:35 | 0:00 | 0:35 | 0:09 | 1:43 | 0:58 |
| 0:41 | 0:38 | 0:25 | 0:00 | 0:54 | 0:51 |
| 0:00 | 0:00 | 0:30 | 0:00 | 0:20 | 0:44 |
| 0:00 | 0:00 | 0:33 | 0:00 | 0:45 | 0:57 |
| 0:00 | 0:00 | 0:44 | 0:31 | 0:49 | 0:38 |
| 0:00 | 0:00 | 0:00 | 0:05 | 0:32 | 0:57 |
| 0:09 | 0:15 | 0:17 | 0:01 | 0:14 | N/A |
| 0:00 | 0:05 | 0:00 | 0:00 | 0:06 | 3:33 |
| 0:33 | 0:00 | 0:07 | N/A | 0:10 | N/A |

| | |
|---|---|
| TOTAL NUMBER OF CASES | 24 |
| TOTAL NUMBER OF CASES CANCELLED | 2 |
| TOTAL PATIENTS DISCHARGED FROM ED | 8 |
| TOTAL PATIENTS TRANSFERRED TO FLOOR | 16 |

*Note: 0:00 time means that pertinent assessments or interventions were started before SNAP algorithm was assigned.*



Mount Sinai Hospital Sinai Health System Joseph & Wolf Lebovic Health Complex

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab