

MSH + UHN

ASP ANTIMICROBIAL
STEWARDSHIP
PROGRAM



Q1-Q2 REPORT

FISCAL YEAR 2012 | 2013

MOUNT SINAI HOSPITAL
Joseph and Wolf Lebovic Health Complex



UHN

Toronto General
Toronto Western
Princess Margaret
Toronto Rehab

“Getting patients the right antibiotics, when they need them”

EXECUTIVE SUMMARY

The Mount Sinai-University Health Network Antimicrobial Stewardship Program (ASP) has been active since 2009. The MSH-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 PDSA (Plan-Do-Study-Act) quality improvement methodology to pursue the best possible clinical outcomes for its patients, relying heavily on patient-centred data.



The MSH-UHN ASP uses research and education (facilitated by Pfizer Canada’s financial support), alongside clinical care, to take a leadership role in increasing antimicrobial stewardship capacity and improving the quality of health care.

THE MSH-UHN ANTIMICROBIAL STEWARDSHIP TEAM

The MSH-UHN ASP team is a multi-disciplinary group comprised of physicians, pharmacists, microbiologists, project managers, data analysts and research coordinators.

PHYSICIAN TEAM

Andrew Morris, MD, MSc, FRCPC

Director, Antimicrobial Stewardship Program
 Mount Sinai Hospital/University Health Network
 Associate Professor, Department of Medicine
 University of Toronto

Chaim Bell, MD, PhD, FRCPC

CIHR/CPSI Chair in Patient Safety & Continuity of Care
 Mount Sinai Hospital
 Associate Professor, Institute of Health Policy, Management,
 & Evaluation, University of Toronto

Paul E. Bunce, MA, MD, FRCPC

Infectious Diseases and Internal Medicine
 University Health Network
 Assistant Professor, Department of Medicine
 University of Toronto

Shahid Husain, MD, MS

Director, Transplant Infectious Diseases
 Division of Infectious Diseases and Multi-Organ Transplantation
 University Health Network
 Associate Professor, Department of Medicine, University of Toronto

Susy Hota, MD, MSc, FRCPC

Infectious Diseases Specialist
 Hospital Epidemiologist
 Infection Prevention and Control
 University Health Network

Nisha Thampi, MD, MSc, FRCPC

Clinical Fellow
 Mount Sinai Hospital

PHARMACIST TEAM

Olavo Fernandes, PharmD

Director of Pharmacy – Clinical
 University Health Network
 Assistant Professor (Status), Leslie Dan Faculty of Pharmacy
 University of Toronto

Linda Dresser, PharmD, FCSHP

Pharmacotherapy Specialist – Antimicrobial Stewardship
 University Health Network
 Assistant Professor, Leslie Dan Faculty of Pharmacy
 University of Toronto

Kevin Duplisea, PharmD

Pharmacotherapy Specialist – Antimicrobial Stewardship
 University Health Network

Monique Pitre, B.Sc. Pharm, R.Ph., FCSHP

Manager, Pharmacy Clinical Informatics
 Infectious Disease Pharmacist
 University Health Network

Sandra Nelson, PharmD

Clinical Practice Leader – Infectious Diseases & Antimicrobial
 Stewardship
 Mount Sinai Hospital

Miranda So, PharmD

Pharmacotherapy Specialist – Antimicrobial Stewardship
 University Health Network

OPERATIONS TEAM

Tanaz Jivraj, RN, BScN, MBA

Project Manager, Antimicrobial Stewardship Program
 Mount Sinai Hospital

Marilyn Steinberg, RN

Research Coordinator, Antimicrobial Stewardship Program
 Mount Sinai Hospital

Melanie Thomson, BA, CHIM

Data Analyst, Antimicrobial Stewardship Program
 Mount Sinai Hospital

Yoshiko Nakamachi, RN, BScN, BA

Project Manager CAHO, Antimicrobial Stewardship Program
 Mount Sinai Hospital

Lopa Naik, BSc, MCA

Technical Analyst, Antimicrobial Stewardship Program
 University Health Network
On maternity leave

Stephanie Olegario

Administrative Assistant, Antimicrobial Stewardship Program
 University Health Network

KEY HIGHLIGHTS

✦ **ANTIMICROBIAL CONSUMPTION AND COSTS:** The ASP continues to work with the clinical teams across all 4 hospitals.

○ **Mount Sinai Intensive Care Unit:**

- FY 12/13 Q1-Q2 antimicrobial usage (using defined daily doses (DDDs) per 100 patient days) has decreased by 2% compared to the same period last year. FY 12/13 Q1-Q2 antimicrobial costs per patient day has increased by 7% compared to the same period last year.
- FY 12/13 Q1 PMH patients accounted for 11% of ICU patients and 67% of the antimicrobial costs.

MSH ICU Total Antimicrobial Costs (Antimicrobial Costs per patient day)				
	FY 10/11	FY 11/12	Q1 11/12	Q1 12/13
Non-PMH Patients	\$78,737 (\$21.14)	\$90,507 (\$26.17)	\$31,467 (\$34.69)	\$22,155 (\$23.95)
PMH Patients	\$114,392 (\$179.02)	\$189,340 (\$179.13)	\$46,757 (\$153.30)	\$44,328 (\$280.56)
Total	\$193,129 (\$44.26)	\$279,847 (\$61.97)	\$78,225 (\$64.54)	\$66,483 (\$61.39)

Note: Q2 data is still being coded by Health Records and will be available in a future report.

○ **Princess Margaret Cancer Centre (14A, 15B and 15C) Leukemia Service:**

- FY 12/13 Q1-Q2 antimicrobial usage (using defined daily doses (DDDs) per 100 patient days) has decreased by 16% compared to the same period last year.
- FY 12/13 Q1-Q2 antimicrobial costs per patient day has increased by 27% compared to the same period last year.
- A breakdown of antibacterial and antifungal by fiscal quarter in DDD per 100 patient-days and costs are provided in the Appendix.

○ **Toronto General Hospital Intensive Care Unit:**

- FY 12/13 Q1-Q2 antimicrobial usage (using defined daily doses (DDDs) per 100 patient days) has increased by 7% compared to the same period last year.
- FY 12/13 Q1-Q2 antimicrobial costs per patient day has decreased by 23% compared to the same period last year.

○ **Toronto General Hospital Cardiovascular Intensive Care Unit:**

- FY 12/13 Q1-Q2 antimicrobial usage (using defined daily doses (DDDs) per 100 patient days) has increased by 2% compared to the same period last year.
- FY 12/13 Q1-Q2 antimicrobial costs per patient day has decreased by 29% compared to the same period last year.

○ **Toronto Western Hospital Intensive Care Unit:**

- FY 12/13 Q1-Q2 antimicrobial usage (using defined daily doses (DDDs) per 100 patient days) has decreased by 4% compared to the same period last year.
- FY 12/13 Q1-Q2 antimicrobial costs per patient day has decreased by 5% compared to the same period last year.

Technical Note: Due to an error in the Centricity Pharmacy data, the ASP team has worked with Pharmacy to calculate usage and costs using the General Ledger for FY 11/12 Q4 and FY 12/13 Q1. Use of Centricity data resumed effective FY 12/13 Q2.

✦ **BEST PRACTICE GUIDELINES & ALGORITHMS:** A VAP algorithm developed by a multi-disciplinary Working Group was introduced at MSH ICU in November 2011, TGH ICU in June 2012 and TWH ICU in July 2012. Algorithms for community-acquired pneumonia (CAP) and skin and soft tissue infections for ER use are being developed under the auspices of the Toronto Central LHIN ER group. A revised **Febrile**

Neutropenia (High Risk) Protocol was approved by the Oncology Pharmacy & Therapeutics Subcommittee (via electronic voting) and subsequently by UHN Pharmacy and Therapeutics Committee on Dec 3.

✦ **RESEARCH:** Dr. Chaim Bell, a long-standing member of our ASP team, has now joined the staff of MSH as a clinician scientist, and will have expanded responsibilities with the ASP to expand its research mandate. Multiple research projects continue, with many important projects nearing completion and being prepared for submission to key medical journals.

- Paper by Drs. Andrew Morris and Allan Detsky published: Coburn B, Morris AM, Tomlinson G, Detsky AS. Does this adult patient with suspected bacteremia require blood cultures? JAMA. 2012;308(5):502-11. Epub 2012/08/02.
- Paper by C. Katsios, et al. published: Katsios C, Burry L, Nelson S, Jivraj T, Lapinsky SE, Wax RS, Christian M, Mehta S, Bell CM, Morris AM. An antimicrobial stewardship program improves antimicrobial treatment by culture site and the quality of antimicrobial prescribing in critically ill patients. Critical Care.
- Paper by A. Hurford, et al. accepted for publication: Hurford A, Morris AM, Fisman D, Wu J. Linking antimicrobial prescribing to antimicrobial resistance in the ICU: before and after an antimicrobial stewardship program. Epidemics (in press).

Our work was showcased in poster presentations at the U of T Patient Safety Symposium and at the Critical Care Canada Forum in Toronto.

- A Survey to Evaluate Critical Care Trainees Perceptions of Antimicrobial Stewardship Programs in Intensive Care Units. L. Dresser, M. Steinberg, M. So, C. Bell, D. Scales, A. Morris.
- A Point Prevalence Study to Evaluate Clinical Compliance with a Ventilator Associated Pneumonia Algorithm in the Intensive Care Unit. Q. Mohiuddin, S. Nelson, M. Steinberg, T. Jivraj, C. Harris, L. Burry, L. Varga, S. Lapinsky, A. Morris.
- Effect of Prospective Audit and Feedback as part of an ICU Antimicrobial Stewardship Program on Antimicrobial Sensitivity to Pseudomonas aeruginosa. K. Duplisea, T. Jivraj, S. Poutanen, S. Nelson, L. Dresser, M. Steinberg, N. Lazar, S. Lapinsky, J. Singh, C. Bell, A. Morris.
- Impact of Antimicrobial Stewardship Program Prospective Audit and Feedback Program on Fungemia in the Intensive Care Unit. L. Dresser, T. Jivraj, M. Steinberg, K. Duplisea, S. Nelson, S. Poutanen, J. Singh, N. Lazar, S. Lapinsky, A. Morris.
- Evaluation of antimicrobial stewardship program on leukemia service through prospective audit and feedback. M. So, L. Pivnick, M. Steinberg, T. Jivraj, S. Lapinsky, A. Morris, S. Husain

In addition, the safety and efficacy of the new **Febrile Neutropenia (High Risk) Protocol** will be evaluated as an ASP research project. A research proposal is being developed and will be submitted for REB approval in the near future.

✦ **EDUCATION:** All of the clinical members of the ASP play a role in stewardship education, giving one-on-one advice to healthcare providers, having teaching sessions within the hospitals, supervising trainees, giving rounds with Infectious Diseases colleagues, and developing education curricula.

✦ **PROVINCIAL ROLE:** The MSH-UHN ASP continues to assist the academic hospitals throughout the province in implementing a stewardship program in their ICUs under the CAHO ASP Initiative. Five ICUs: Sick Kids, The Ottawa Hospital, CVICU at TGH, St. Joseph's Healthcare Hamilton, and the NICU at MSH have implemented their ASP, and eight additional ICUs are scheduled to implement an ASP within the next six months under this CAHO ASP project. The MSH-UHN team has also partnered with the Critical Care Secretariat whereby 3 new antimicrobial indicators will be added to the Critical Care Information System in the new year.

✦ **NATIONAL LEADERSHIP:** The MSH-UHN ASP website (www.antimicrobialstewardship.com) was completed in summer and has been mentioned and referenced in Accreditation Canada webcasts regarding the new Required Organization Practice for Antimicrobial Stewardship Programs for the upcoming Accreditation cycle.

APPENDIX

MOUNT SINAI HOSPITAL ICU

Indicators	FY 08/09 (Pre-ASP)	FY 09/10	FY 10/11	FY 11/12	FY12/13 Performance					YTD of Previous Year
					Q1	Q2	Q3	Q4	YTD	
Antimicrobial Usage & Costs										
Total Antimicrobial DDDs/100 Patient Days	177	171	144	162	155	175			164	167
Systemic Antibacterial DDDs/100 Patient Days	142	128	111	128	122	123			123	129
Systemic Antifungal DDDs/100 Patient Days	31	24	20	27	24	45			34	33
Total Antimicrobial Costs	\$332,724	\$285,975	\$193,129	\$279,847	\$66,483	\$89,645			\$156,129	\$141,411
Total Antimicrobial Costs/Patient Day	\$69.01	\$59.23	\$40.95	\$60.24	\$52.35	\$79.76			\$65.22	\$61.05
Systemic Antibacterial Costs	\$174,339	\$142,134	\$95,773	\$125,376	\$31,853	\$41,372			\$73,225	\$62,746
Systemic Antibacterial Costs/Patient Days	\$36.16	\$29.44	\$20.31	\$26.98	\$25.08	\$36.81			\$30.59	\$27.09
Systemic Antifungal Costs	\$143,100	\$132,519	\$88,998	\$141,865	\$30,446	\$44,706			\$75,152	\$73,885
Systemic Antifungal Costs/Patient Days	\$29.68	\$27.45	\$18.87	\$30.54	\$23.97	\$39.77			\$31.39	\$31.90
Patient Care Outcomes										
Hospital acquired C. difficile cases (rate per 1,000 pt days)	NA	NA	NA	5 (1.08)	3 (2.36)	TBD			3 (2.36)	1 (0.82)
ICU Average Length of Stay (days)	5.84	5.57	5.67	5.51	5.79	5.08			5.43	5.99
ICU Mortality Rate (as a %)	20.1	17.6	16.3	16.5	16.5	16.7			16.6	17.0
ICU Readmission Rate within 48 hrs (as a %)	3.2	2.9	2.7	2.7	0.8	2.4			1.6	1.4
ICU Ventilator Days	NA	3286	2934	2677	757	609			1366	1443
ICU Multiple Organ Dysfunction Score (MODS)	4	4.04	4.12	4.25	4.49	4.67			4.58	3.83

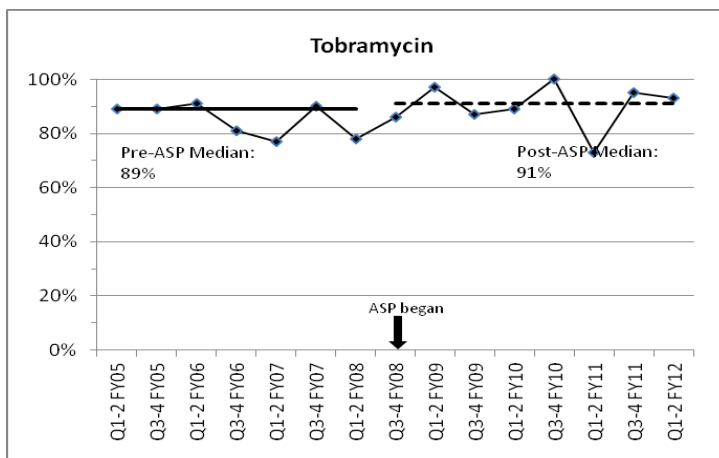
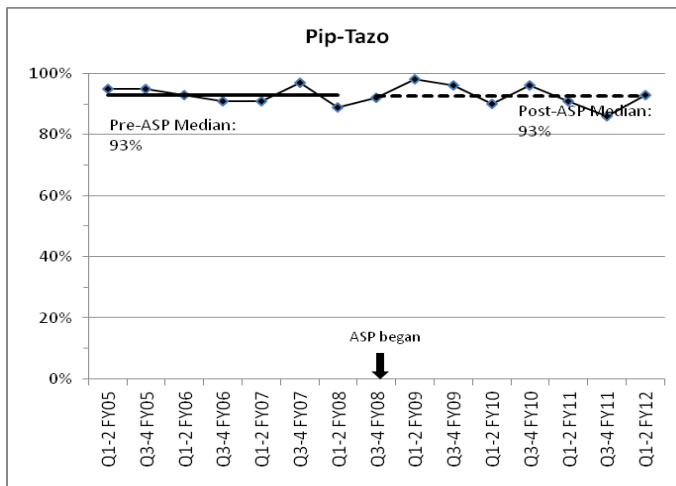
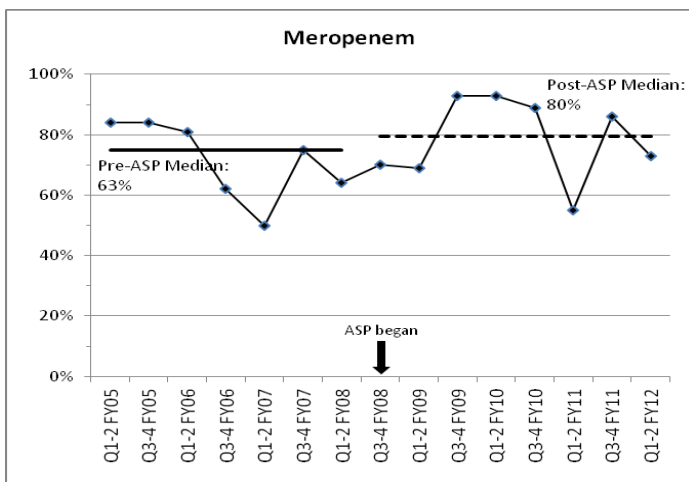
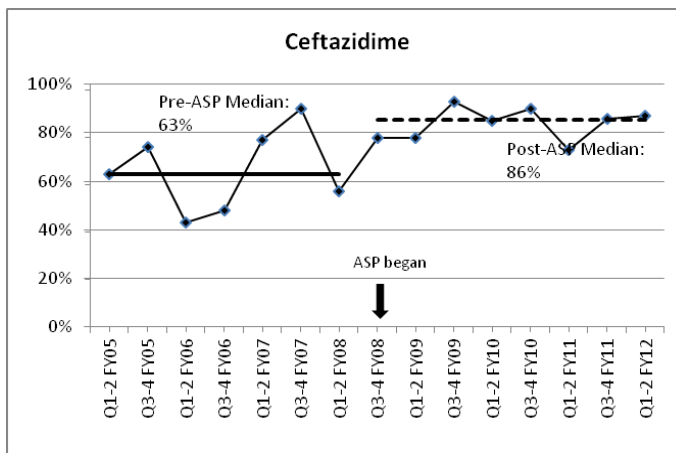
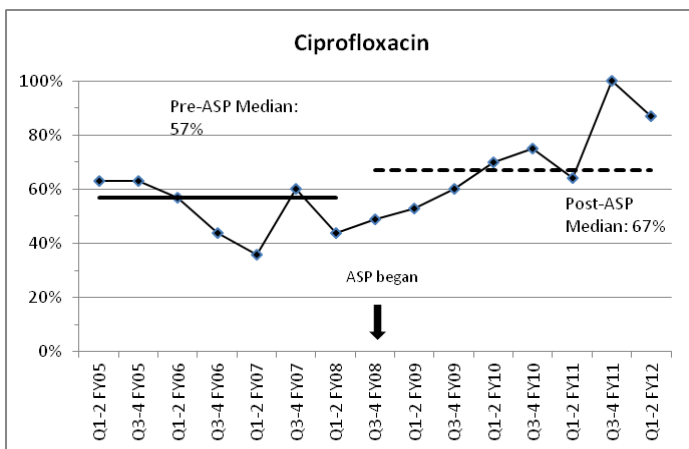
Notes: Defined Daily Dose (DDD) is an internationally accepted method to measure and compare antimicrobial usage (World Health Organization, http://www.whooc.no/atc_ddd_index/)

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)

Antimicrobial Susceptibility and Pathogen Surveillance

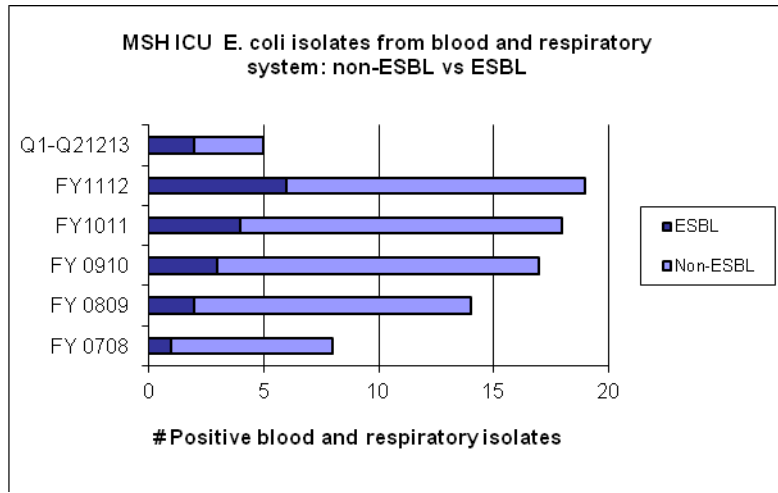
Pseudomonas Susceptibility – MSH ICU



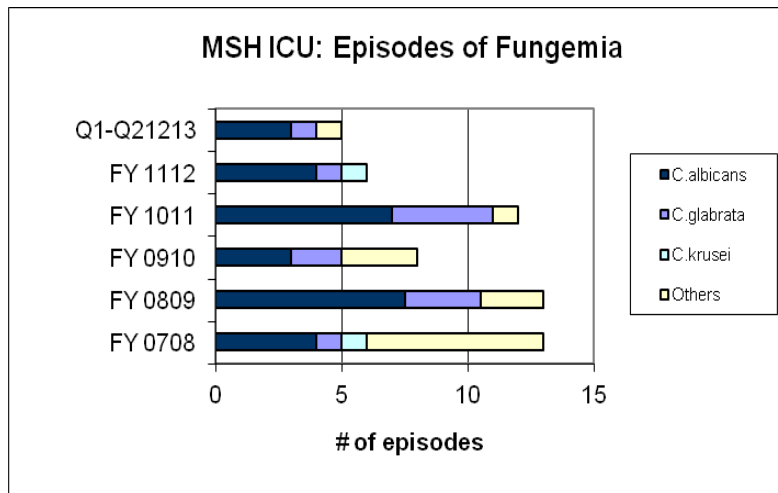
Note: Antimicrobial susceptibility data updated bi-annually

Antimicrobial Susceptibility and Pathogen Surveillance cont.

E.Coli isolates: Blood, Respiratory



Yeast Species Isolated in Blood – MSH ICU



PRINCESS MARGARET HOSPITAL

Indicators	FY 09/10	FY 10/11	FY 11/12	FY12/13 Performance					YTD of Previous Year
				Q1	Q2	Q3	Q4	YTD	
Antimicrobial Usage & Costs									
Total Antimicrobial DDDs/100 Patient Days	295	274	282	251	253			252	300
Systemic Antibacterial DDDs/100 Patient Days	191	167	164	139	148			144	190.6
Systemic Antifungal DDDs/100 Patient Days	104	107	105	112	105			108	108.6
Total Antimicrobial Costs	\$1,768,317	\$1,641,331	\$1,310,857	\$464,766	\$465,192			\$929,958	\$600,665
Total Antimicrobial Costs/Patient Day	\$167.12	\$154.32	\$115.13	\$141.74	\$141.44			\$141.59	\$111.36
Systemic Antibacterial Costs	\$659,034	\$609,747	\$663,175	\$178,406	\$185,554			\$363,961	\$272,965
Systemic Antibacterial Costs/Patient Days	\$62.28	\$57.33	\$58.24	\$54.41	\$56.42			\$55.41	\$50.61
Systemic Antifungal Costs	\$1,109,283	\$1,031,584	\$647,637	\$286,360	\$279,638			\$565,998	\$327,699
Systemic Antifungal Costs/Patient Days	\$104.84	\$96.99	\$56.88	\$87.33	\$85.02			\$86.18	\$60.75
Patient Care Outcomes									
Hospital acquired C. Difficile cases (rate per 1,000 patient day)	6 (0.56)	7 (0.65)	14 (1.17)	2 (.61)	1(.30)			3 (.46)	7 (1.30)

Notes:

* Due to an error in the Centricity Pharmacy data we are unable to provide accurate DDD data and utilization cost for PMH for the 1st quarter of fiscal 12/13. Use of Centricity data resumes effective 2nd quarter of fiscal 2012/13

** FY 12/13 Q1 Total Antimicrobial, Total Antibacterial and Total Antifungal Costs are taken from the estimated Centricity cost, which is 95% of the GL cost. Defined Daily Dose (DDD) is an internationally accepted method to measure and compare antimicrobial usage (World Health Organization, http://www.whooc.no/atc_ddd_index/)

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 (Centricity) Q4 (i.e. January to March 2012) contains 15C data

* FY 12/13 Q1 Total Antimicrobial, Total Antibacterial and Total Antifungal Costs are taken from the estimated Centricity cost, which is 95% of the GL cost.

Q1 Top 5 ANTIBACTERIALS by DDD per 100 patient-day and cost

ANTIBACTERIAL	DDD PER 100 PATIENT-DAYS
Meropenem	34.84
Piperacillin-tazobactam	32.26
Ciprofloxacin	20.15
Vancomycin	16.74
Gentamicin	9.13

ANTIBACTERIAL	COST
Meropenem	\$111,683.71
Piperacillin-tazobactam	\$37,800.10
Vancomycin	\$12,603.69
Linezolid	\$6,893.92
Colistimethate	\$2,340.82

Q2 Top 5 ANTIBACTERIALS by DDD per 100 patient-day and cost

ANTIBACTERIAL	DDD PER 100 PATIENT-DAYS
Meropenem	43.083
Piperacillin-tazobactam	30.00505
Ciprofloxacin	17.44299
Vancomycin	16.17133
Gentamicin	10.54728

ANTIBACTERIAL	COST
Meropenem	\$120,168.95
Piperacillin-tazobactam	\$33,808.20
Vancomycin	\$12,029.42
Linezolid	\$4,877.00
Gentamicin	\$3,412.10

Q1 Top 5 ANTIFUNGALS by DDD per 100 patient-days and cost

ANTIFUNGAL	DDD PER 100 PATIENT-DAYS
Fluconazole	63.57
Voriconazole	19.6
Caspofungin	14.79
Posaconazole	4.9
Micafungin	4.71

ANTIFUNGAL	COST
Caspofungin	\$93,836.86
Voriconazole	\$76,973.14
Liposomal amphotericin B	\$63,361.20
Posaconazole	\$30,222.92
Micafungin	\$15,437.50

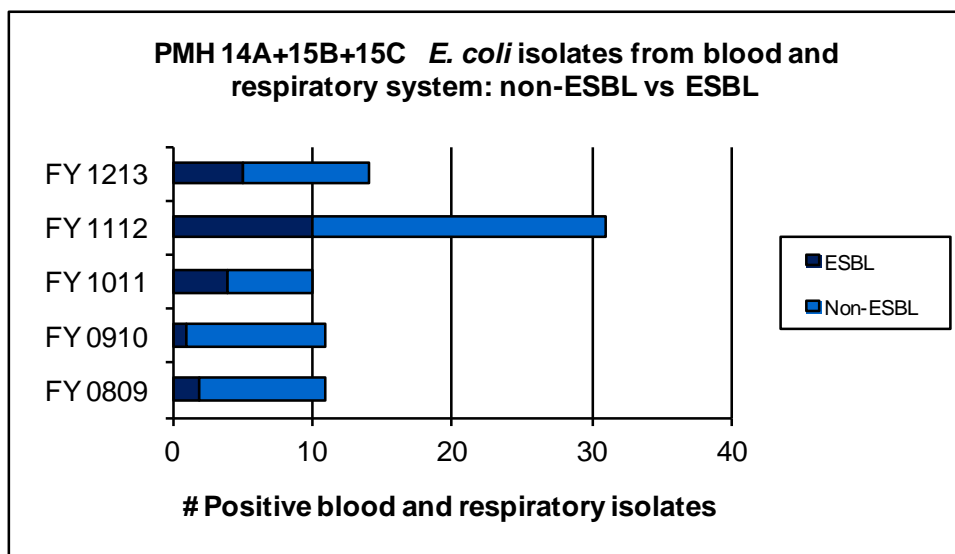
Q2 Top 5 ANTIFUNGALS by DDD per 100 patient-days and cost

ANTIFUNGAL	DDD PER 100 PATIENT-DAYS
Fluconazole	54.857
Voriconazole	22.07
Caspofungin	13.037
Micafungin	6.8258
Liposomal amphotericin B	3.5495

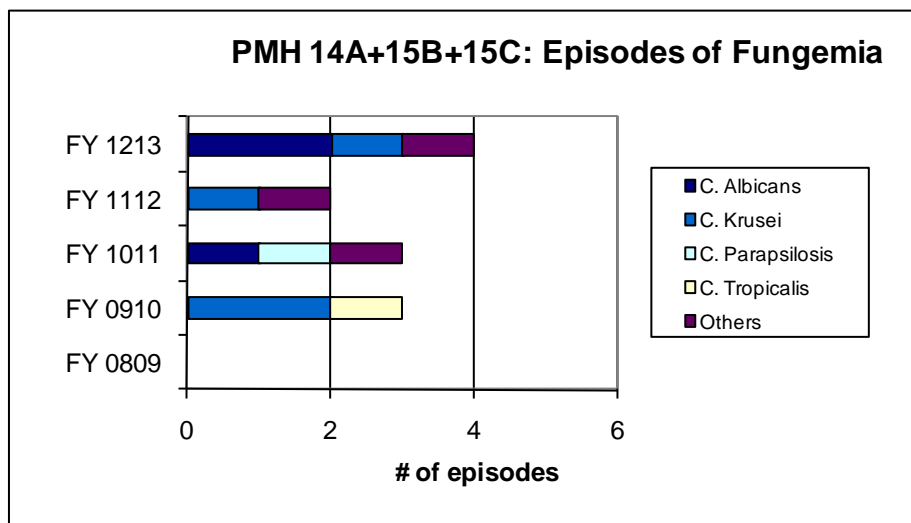
ANTIFUNGAL	COST
Voriconazole	\$92,546.61
Liposomal amphotericin B	\$85,806.00
Caspofungin	\$62,735.75
Micafungin	\$22,450.00
Posaconazole	\$12,844.00

Antimicrobial Susceptibility and Pathogen Surveillance

E.Coli isolates: Blood and Respiratory



Yeast Species Isolated in Blood – PMH



TORONTO GENERAL HOSPITAL: ICU

Indicators	FY 09/10 (Pre-ASP)	FY 10/11	FY 11/12	FY12/13 Performance					YTD of Previous Year
				Q1	Q2	Q3	Q4	YTD	
Antimicrobial Usage & Costs									
Total Antimicrobial DDDs/100 Patient Days	268	208	200	179	266			224	210
Systemic Antibacterial DDDs/100 Patient Days	184	153	141	137	196			168	153
Systemic Antifungal DDDs/100 Patient Days	82	55	55	41	70			56	57
Total Antimicrobial Costs	\$701,451	\$627,540	\$572,443	\$85,182	\$170,194			\$255,376	\$354,587
Total Antimicrobial Costs/Patient Day	\$102.52	\$83.81	\$77.60	\$50.28	\$93.36			\$72.61	\$94.63
Systemic Antibacterial Costs	\$390,209	\$373,504	\$288,775	\$50,733	\$82,839			\$133,572	\$157,928
Systemic Antibacterial Costs/Patient Days	\$57.03	\$49.88	\$39.15	\$29.95	\$45.44			\$37.98	\$42.15
Systemic Antifungal Costs	\$311,242	\$254,036	\$275,176	\$34,448	\$87,356			\$121,804	\$196,658
Systemic Antifungal Costs/Patient Days	\$45.49	\$33.93	\$37.30	\$20.34	\$47.92			\$34.63	\$52.48
Patient Care Outcomes									
Hospital acquired C. difficile cases (rate per 1,000 pt days)	10 (1.46)	10 (1.33)	11 (1.49)	4 (2.36)	3 (1.65)			7 (1.99)	3 (0.80)
ICU Average Length of Stay (days)	8.24	8.61	7.83	7.44	6.97			7.22	7.93
ICU Mortality Rate (as a %)	16.2	15.7	16.4	14.5	16.4			15.3	9.9
ICU Readmission Rate within 48 hrs (as a %)	3.8	4.4	4	2.6	3.9			3.2	tbd
ICU Ventilator Days	5399	6256	5975	1394	1567			2961	2858
Apache II score	n/a	n/a	tbd	15.0	16.3			15.7	tbd

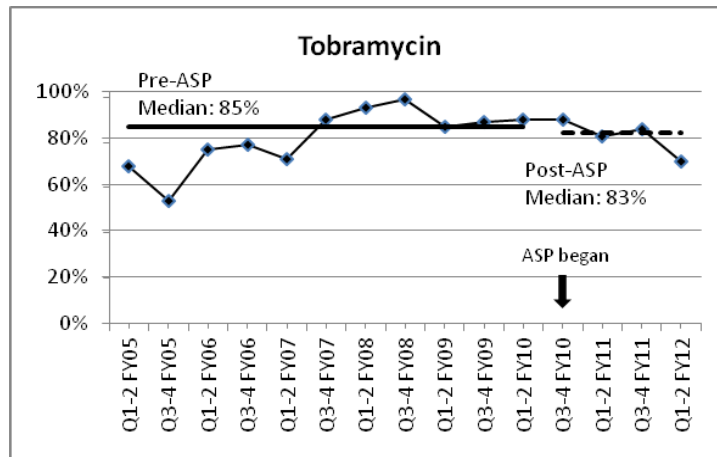
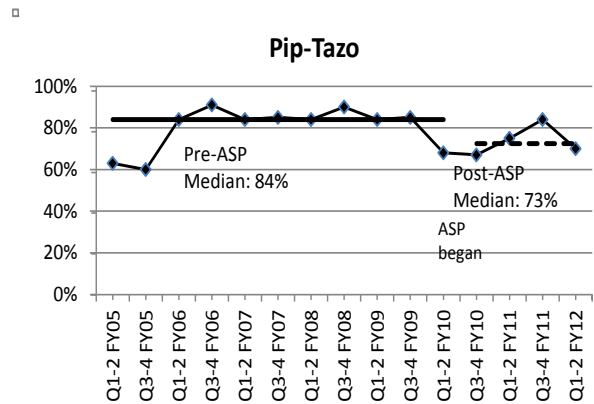
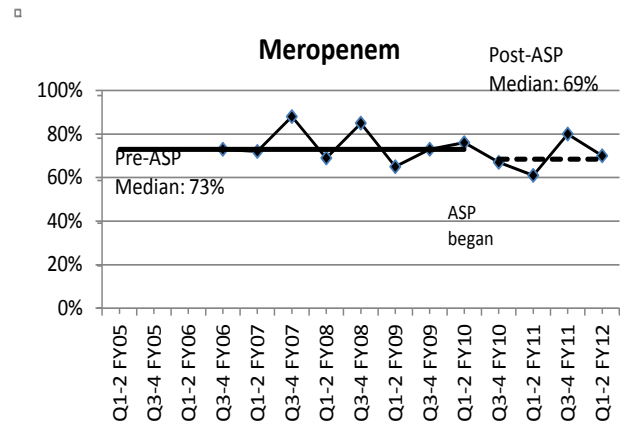
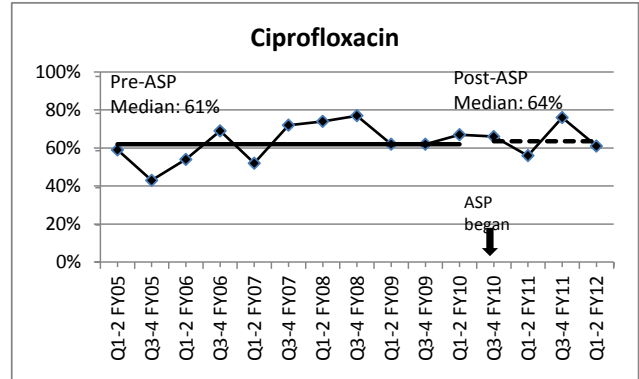
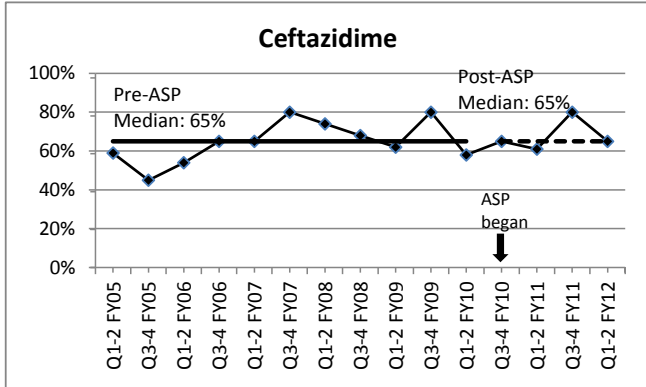
Notes:

* Due to an error in the Centricity Pharmacy data we are unable to provide accurate DDD data and utilization cost for the TGH ICU for the 1st quarter of fiscal 12/13. Use of Centricity data resumes effective 2nd quarter of fiscal 12/13. FY 12/13 Q1 Costs and DDD are taken from the estimated Centricity cost, which is 95% of the GL cost.

Defined Daily Dose (DDD) is an internationally accepted method to measure and compare antimicrobial usage (World Health Organization, http://www.whocc.no/atc_ddd_index/). 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 (Centricity)

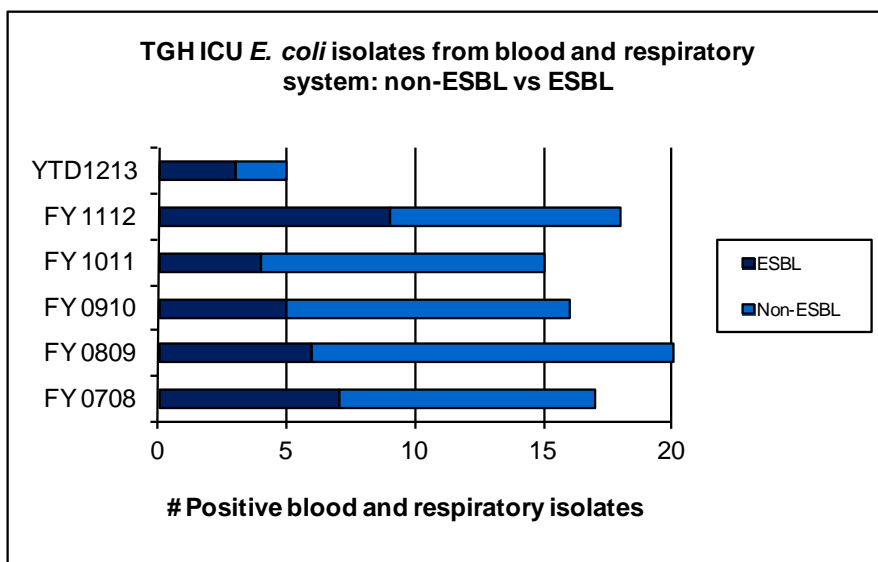
Antimicrobial Susceptibility and Pathogen Surveillance

Pseudomonas Susceptibility – TGH ICU

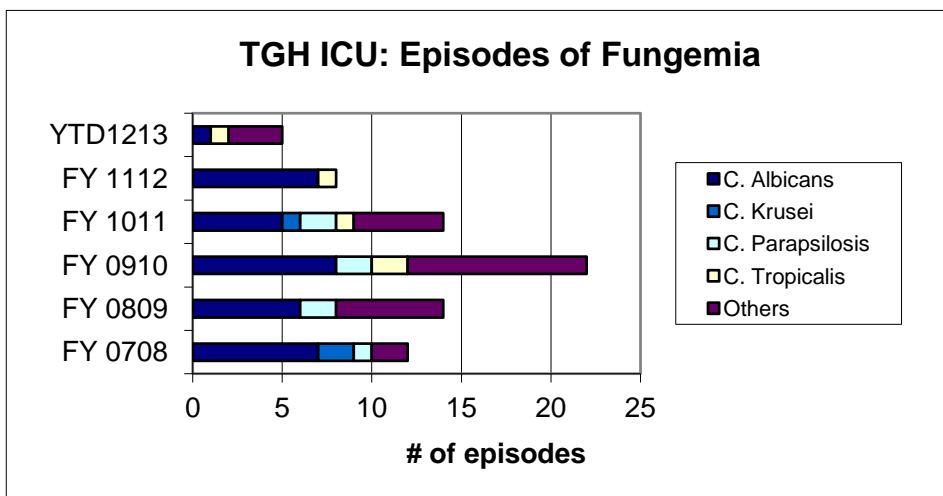


Antimicrobial Susceptibility and Pathogen Surveillance

E.Coli isolates: Blood and Respiratory



Yeast Species Isolated in Blood – TGH ICU



TORONTO GENERAL HOSPITAL: CVICU

Indicators	FY 10/11 (Pre-ASP)	FY 11/12	FY 12/13 Performance					YTD of Previous Year
			Q1	Q2	Q3	Q4	YTD	
Antimicrobial Usage & Costs								
Total Antimicrobial DDDs/100 Patient Days	115	98	100	110			105	103
Systemic Antibacterial DDDs/100 Patient Days	104	86	87	98			92	87
Systemic Antifungal DDDs/100 Patient Days	11	12	13	12			13	16
Total Antimicrobial Costs	\$117,356	\$107,795	\$21,718	\$21,066			\$42,784	\$65,053
Total Antimicrobial Costs/Patient Day	\$19.75	\$18.94	\$14.86	\$15.76			\$15.29	\$21.63
Systemic Antibacterial Costs	\$109,110	\$98,591	\$18,169	\$18,433			\$36,601	\$56,870
Systemic Antibacterial Costs/Patient Days	\$18.36	\$17.32	\$12.43	\$13.79			\$13.08	\$18.91
Systemic Antifungal Costs	\$8,246	\$9,204	\$3,550	\$2,633			\$6,183	\$8,183
Systemic Antifungal Costs/Patient Days	\$1.39	\$1.62	\$2.43	\$1.97			\$2.21	\$2.72
Patient Care Outcomes								
Hospital acquired C. difficile cases (rate per 1,000 pt days)	2 (0.34)	5 (0.88)	0 (0.0)	3(2.24)			3 (1.07)	2 (0.66)
ICU Average Length of Stay (days)	tbd	tbd	3.03	2.81			2.92	tbd
ICU Mortality Rate (as a %)	tbd	tbd	3.8	2.6			3.2	tbd
ICU Readmission Rate within 48 hrs (as a %)	tbd	tbd	1.6	3.3			2.4	tbd
ICU Ventilator Days	tbd	tbd	944	818			1762	tbd

Notes:

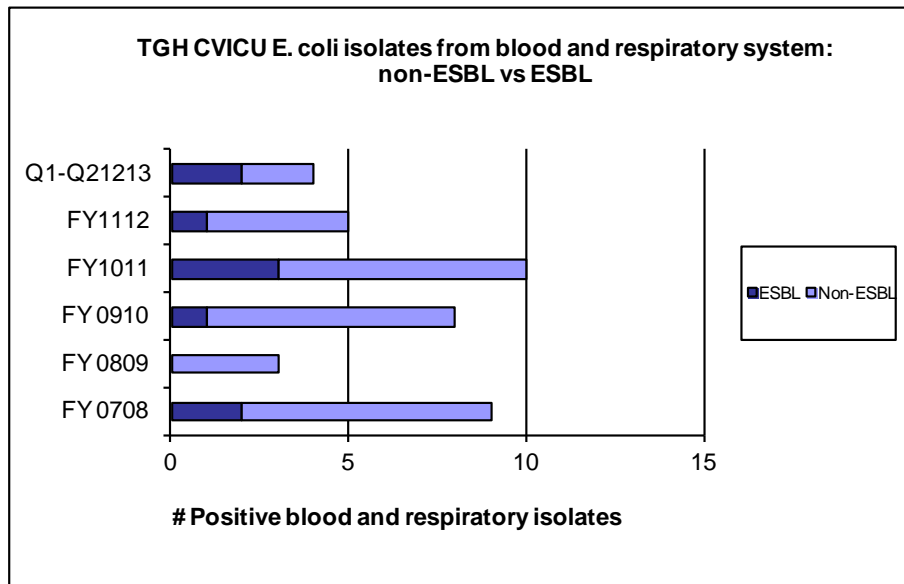
* Due to an error in the Centricity Pharmacy data we are unable to provide accurate DDD data and utilization cost for the CVICU for the 4th quarter of fiscal 11/12 and 1st quarter of fiscal 12/13. Use of Centricity data resumes effective 2nd quarter of fiscal 12/13.

** FY 11/12 Q4 and FY 12/13 Q1 Total Antimicrobial, Total Antibacterial and Total Antifungal Costs and DDD are taken from the estimated Centricity cost/DDD, which is 95% of the General Ledger (GL) cost/DDD.

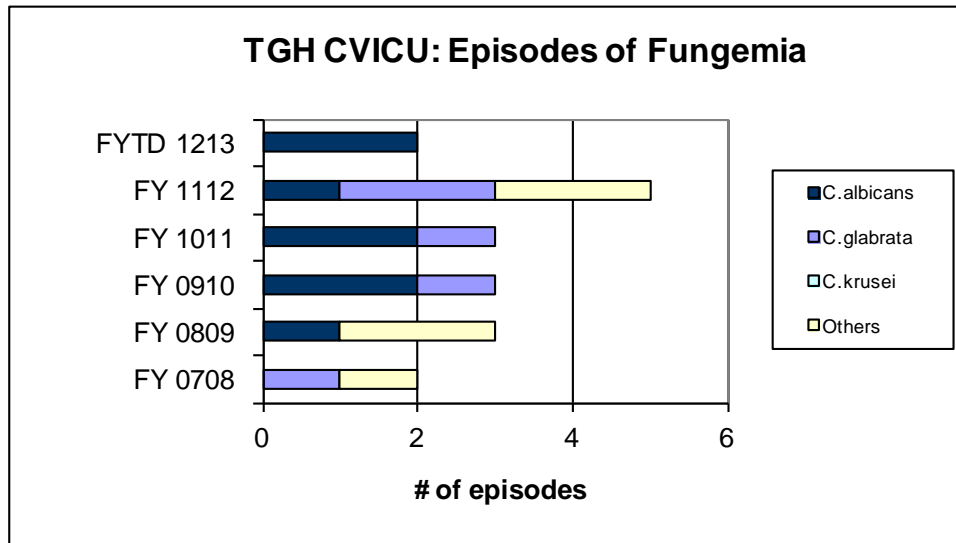
Defined Daily Dose (DDD) is an internationally accepted method to measure and compare antimicrobial usage (World Health Organization, http://www.whooc.no/atc_ddd_index/). Total Antimicrobial DDDs is the sum of systemic antibacterial DDDs + systemic antifungal DDDs; non-systemic antimicrobials are excluded. Data Sources: Antimicrobial DDD and Costs (Centricity)

Antimicrobial Susceptibility and Pathogen Surveillance

E.Coli isolates: Blood and Respiratory



Yeast Species Isolated in Blood – TGH CVICU



TORONTO WESTERN HOSPITAL: ICU

Indicators	FY 08/09 (Pre-ASP)	FY 09/10	FY 10/11	FY 11/12 **	FY 12/13 Performance					YTD of Previous Year
					Q1***	Q2	Q3	Q4	YTD	
Antimicrobial Usage & Costs										
Total Antimicrobial DDDs/100 Patient Days	101	88	79	83	56	99			78	81
Systemic Antibacterial DDDs/100 Patient Days	94	78	73	77	54	95			75	75
Systemic Antifungal DDDs/100 Patient Days	6	10	6	6	2	4			3	6
Total Antimicrobial Costs	\$138,502	\$100,408	\$101,191	\$105,899	\$13,632	\$23,470			\$37,102	\$40,615
Total Antimicrobial Costs/Patient Day	\$18.39	\$13.24	\$13.17	\$13.60	\$7.49	\$12.65			\$10.10	\$10.61
Systemic Antibacterial Costs	\$123,278	\$87,445	\$79,280	\$89,784	\$12,337	\$22,434			\$34,771	\$34,812
Systemic Antibacterial Costs/Patient Days	\$16.37	\$11.53	\$10.32	\$11.53	\$6.78	\$12.09			\$9.46	\$9.10
Systemic Antifungal Costs	\$13,444	\$12,963	\$21,911	\$16,115	\$1,295	\$1,037			\$2,332	\$5,803
Systemic Antifungal Costs/Patient Days	\$1.79	\$1.71	\$2.85	\$2.07	\$0.71	\$0.56			\$0.63	\$1.52
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)	2 (1.10)				2 (1.10)	1 (0.56)
ICU Average Length of Stay (days)	8.39	7.44	10.68	9.77	7.76	7.91			7.76	10.81
ICU Mortality Rate (as a %)	19.6	19.9	18.1	19.3	18.5	13.7			18.4	16.79
ICU Readmission Rate within 48 hrs (as a %)	3.9	4.7	4.9	4.9	1.3	2.1			1.3	4.1
ICU Ventilator Days	4617	6305	5960	5621	1114	1171			2285	2773
ICU Apache II Score	14.98	14.65	13.73	13.78	13.1	13.0			13.1	13.65

Notes: Yellow highlight = to be updated

* Due to an error in the Centricity Pharmacy data we are unable to provide accurate DDD data and utilization cost for the TWH ICU for the 4th quarter of fiscal 2011 and 1st quarter of fiscal 12/13. Use of Centricity data resumes effective 2nd quarter of fiscal 2012/13

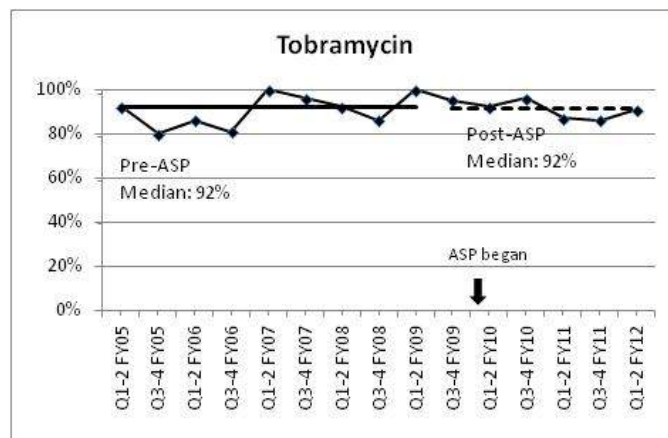
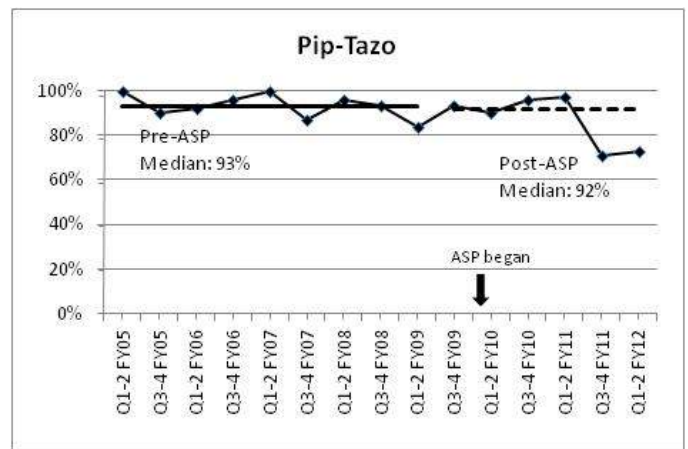
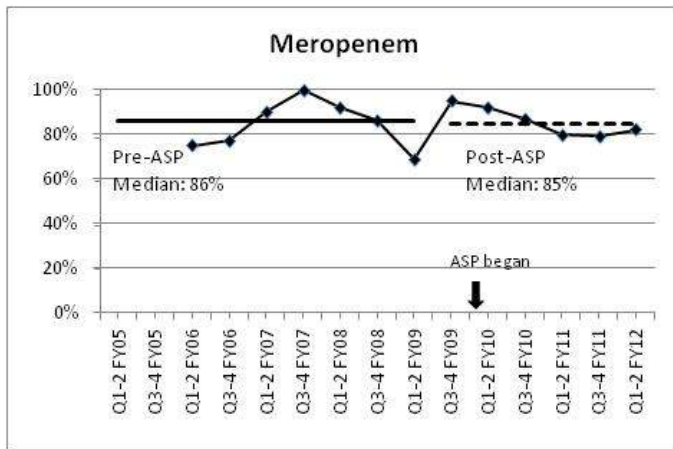
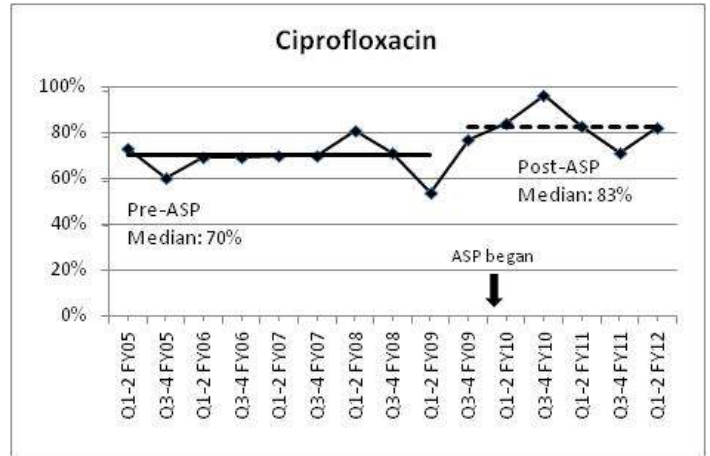
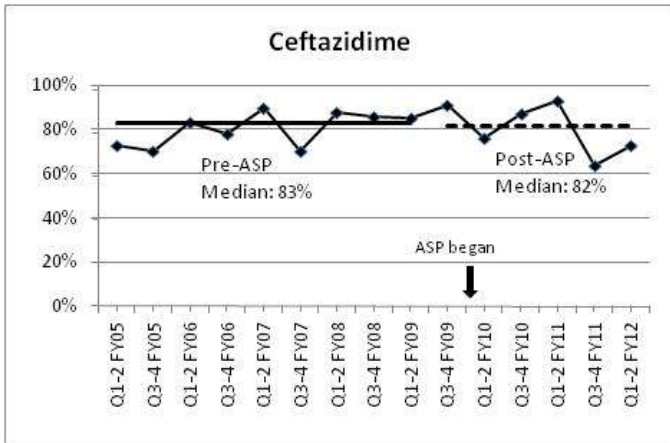
** FY 11/12 Q4 Total Antimicrobial, Total Antibacterial and Total Antifungal Costs and DDD are taken from the estimated Centricity cost/DDD, which is 95% of the General Ledger (GL) cost/DDD.

*** FY 12/13 Q1 Total Antimicrobial, Total Antibacterial and Total Antifungal Costs are taken from the estimated Centricity cost, which is 95% of the GL cost.

Defined Daily Dose (DDD) is an internationally accepted method to measure and compare antimicrobial usage (World Health Organization, http://www.whooc.no/atc_ddd_index/). 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 (Centricity)

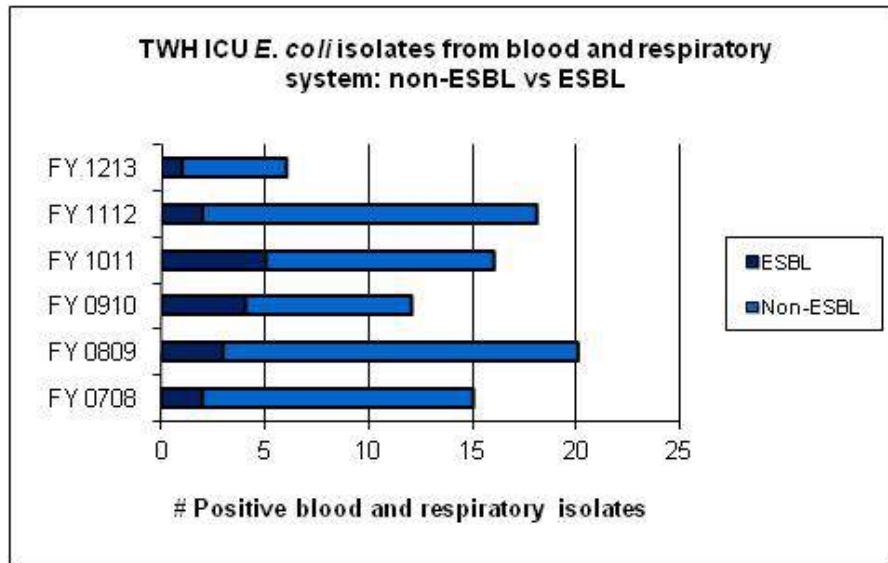
Antimicrobial Susceptibility and Pathogen Surveillance

Pseudomonas Susceptibility – TWH ICU



Antimicrobial Susceptibility and Pathogen Surveillance

E.Coli isolates: Blood and Respiratory



Yeast Species Isolated in Blood – TWH ICU

