Temiskaming Hospital / Hôpital Temiskaming

Antimicrobial Stewardship Program

Fiscal Year 2020/2021 Report

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For Distribution to:
Medical Services Committee
Pharmacy and Therapeutics Committee
Medical Advisory Committee
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Executive Summary

Temiskaming Hospital's Antimicrobial Stewardship Program (ASP) completed its introductory year, being introduced in April 2020. It uses a collaborative and evidence-based approach to improve the quality of antimicrobial treatments. ASP helps to ensure that patients receive the right antibiotic, when they need them. The ASP follows evidence-based quality improvement methodology to pursue the best possible clinical outcomes for our patients.

FISCAL YEAR 2020/21 HIGHLIGHTS

Projects implemented:

1. **De-escalation**

Implementation	Strategy in place	Strategy to implement
Policies and guidelines for automatic switching from intravenous to oral route when specific criteria are met are developed and approved (+/- medical directives).		✔
For non-automatic switching, pharmacists manually review patient orders and identify candidates for intravenous to oral route conversion of antimicrobials and consult prescribers directly or use chart reminders to notify prescribers that conversion should be considered.	✔	

Manual assessment for IV to PO step-down and communication was implemented April 2020. Policy and medical directive deferred to subsequent year.

2. **Prospective Audit and Feedback**

Implementation	Strategy in place	Strategy to implement
Audits are conducted regularly by a pharmacist to assess antimicrobial use. Audits can vary in frequency (ex. daily to weekly)	✔	
Audit results and recommendations are communicated to prescribers (e.g. phone conversation, weekly stewardship rounds, consult notes in charts, etc.)	✔	

Prospective audits implemented April 2020. Audit recommendation implemented April 2020

3. **Dose Optimization**

Implementation	Strategy in place	Strategy to implement
Ideal dosage regimens and doses for different scenarios (e.g. recommended dose for obese patients) are integrated into guidelines, clinical pathways or order sets for specific conditions.		✔
Pharmacist reviews orders and recommends dosage adjustments to physicians.	✔	

Pharmacist gets a medical directive to optimize dosing based on disease and patient characteristics.		✔

Dose optimization strategy deferred to subsequent year.

ANTIMICROBIAL CONSUMPTION AND COSTS METRICS

Antimicrobial usage metrics are extracted from Temiskaming Hospital's health information system (HIS), Meditech. Metrics excludes data not input into the HIS system and, unless otherwise noted, outpatient treatments. Any future changes in data extraction methodology will be noted. Where possible, antibiotics are measured in Defined Daily Doses (DDD) to standardized analysis of usage. DDD are defined by the World Health Organization (WHO) as the assumed average maintenance dose per day for a drug used for its main indication in adults.

Complex or lengthy regimens may disproportionally alter antimicrobial usage statistics. For each unit, regimens totaling more than 25 DDD are outlined in the "Comments/Notes" section of each patient care area. An adjusted DDD/100 patient days has been calculated. This is performed to better represent overall trends and identify outliers.

Future reports will be published on a quarterly basis.

Note: Temiskaming Hospital reassigned room designations within the Complex Continuing Care and Medical Surgical unit due to the COVID-19 pandemic. Consequently, quarter-to-quarter comparison is not reliable from Q1 to Q2. An additional indicator, MES + CCC, was established to compare overall metrics between the reassigned room designations.

TABLE 1. SUMMARY OF FISCAL YEAR 2020/21 USAGE AND COSTS

Unit	Antimicrobial Usage	Antimicrobial Cost
MES	↓	↓
CCC	↑	↓
MES+CCC	↓	↓
SCU	↓	↓
HOSPITAL-WIDE	↓	↓

*Standardized per patient day
**Compared to 2019 Q4 statistics

Decreased compared to previous YTD	↓	Increase less than 10% compared to previous YTD	↑	Increase more than 10% compared to previous YTD	↑

New Business

MEMBERSHIPS

Temiskaming Hospital's ASP has partnered with the Public Health Agency of Canada's (PHAC) reporting program, the Canadian Nosocomial Infection Surveillance Program (CNISP). In addition to funding, CNISP provides the ASP with tools and contacts for sustained program improvement. Our active surveillance projects include:

- Antimicrobial Utilization Protocol
- Antibiogram Protocol
- COVID-19 and VRI Surveillance Protocol

OPERATIONAL PLAN 2021-2022

For the 2021/2022 fiscal year, Temiskaming Hospital's Antimicrobial Stewardship Program will continue the following strategies:

1. De-escalation
    - Including developing SOP
2. Prospective Audit and Feedback

In addition, the Antimicrobial Stewardship Program will aim to target the following strategies:

1. Dose Optimization
2. Prescriber Education

All strategies selected are evidence-based and level A or B priority as per Public Health Ontario.

Fiscal Year 2020/21 Results

Hospital-Wide Usage Trends

Comments/Notes:

- DDD/100 patient days reduced from 33.16 to 25.10
- Overall antimicrobial cost-savings of $17,616 (35.9% cost reduction) from 2019/20 to 2020/21
- Antimicrobial cost($)/patient day reduced from 2.70 to 1.60

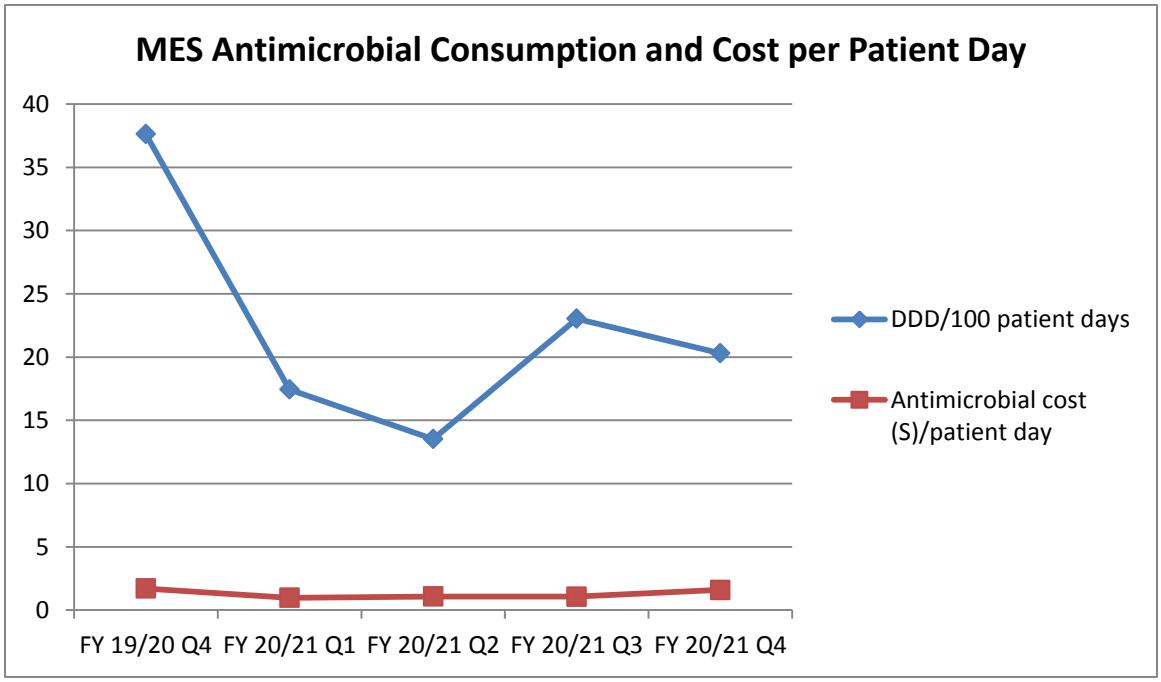
	FY 19/20	FY 20/21				
	Q4	Q1	Q2	Q3	Q4	YTD
Antimicrobial DDDs per 100 patient days	33.16	22.14	25.32	29.48	23.34	25.10
Systemic Antibacterials	15.42	10.42	14.67	15.75	11.13	13.32
Oral Antibacterials	17.74	11.72	10.65	13.73	12.21	11.78
Antimicrobial costs ($) per patient day	2.70	1.19	1.63	1.61	1.91	1.60

Fiscal Year 2020/21 Results

Medical Surgical Unit (MES)

Comments/Notes:

- Patient room reassignment with Complex Continuing Care in Q1/Q2. See Medical Surgical + Complex Continuing Care for overall trends.
- Q1 high usage data extraction:
  - 32 DDD cloxacillin regimen
  - Adjusted DDD/100 patient days: 16.51
- Q2 high usage data extraction:
  - 54 DDD doxycyline maintenance regimen
  - 26 DDD cefazolin regimen
  - 26 DDD cefazolin regimen
  - Adjusted DDD/100 patient days: 10.58
- Q3 high usage data extraction
  - None > 25 DDD
- Q4 high usage data extraction:
  - 75 DDD azithromycin maintenance regimen
  - 45 DDD ceftazidime regimen
  - 28 DDD moxifloxacin regimen
  - Adjusted DDD/100 patient days: 16.20



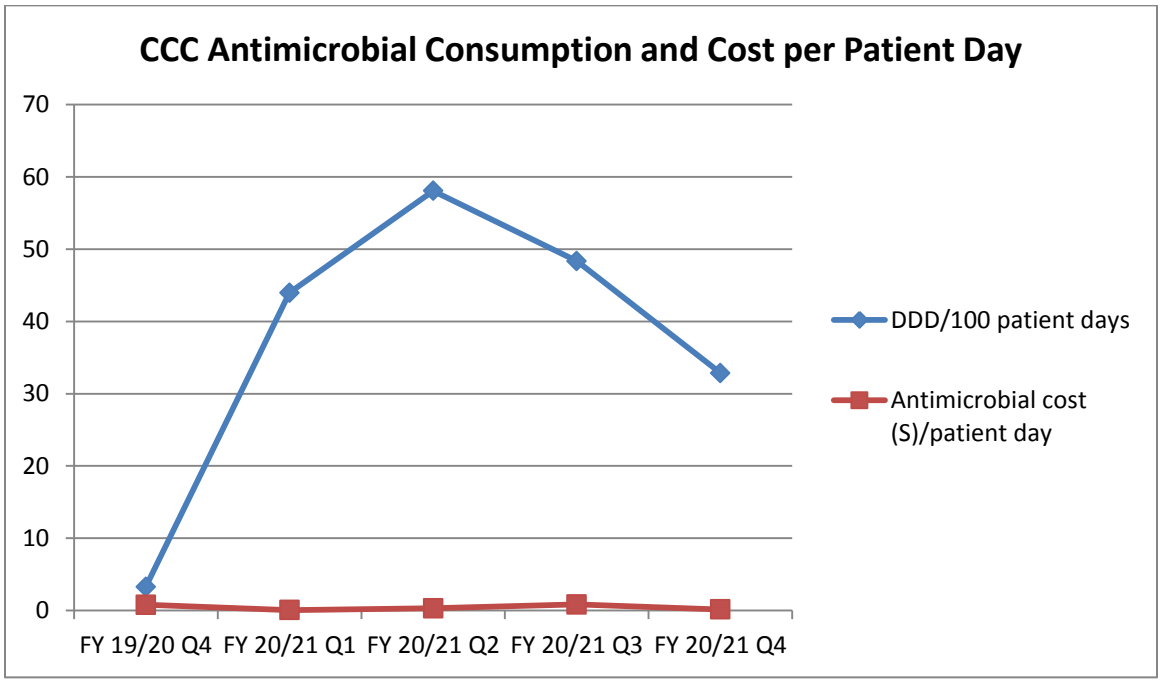
	FY 19/20	FY 20/21				
	Q4	Q1	Q2	Q3	Q4	YTD
Period DDD	1365.6	596.4	488.5	824.6	733.2	2642.7
Patient Days	3629	3419	3614	3581	3612	14226
Antimicrobial DDDs per 100 patient days	37.63	17.44	13.52	23.03	20.30	18.58
Systemic Antibacterials	15.97	5.62	4.84	7.79	7.81	8.01
Oral Antibacterials	21.66	11.83	8.68	15.24	12.49	10.56
Antimicrobial costs ($) per patient day	1.71	0.97	1.07	1.06	1.59	1.17

Fiscal Year 2020/21 Results

Complex Continuing Care Unit (CCC)

Comments/Notes:

- Patient room reassignment with Complex Continuing Care in Q1/Q2. See Medical Surgical + Complex Continuing Care for overall trends
- Charges to CCC differ based on method of drug distribution. To assess costing trends, refer to MES + CCC section
- Q1 high usage data extraction:
  - None > 25 DDD
- Q2 high usage data extraction:
  - None > 25 DDD
- Q3 high usage data extraction
  - 86 DDD cefazolin regimen
  - 57 DDD pencillin G regimen
  - 28 DDD clarithromycin regimen
  - Adjusted DDD/100 patient days: 27.13
- Q4 high usage data extraction:
  - None > 25 DDD



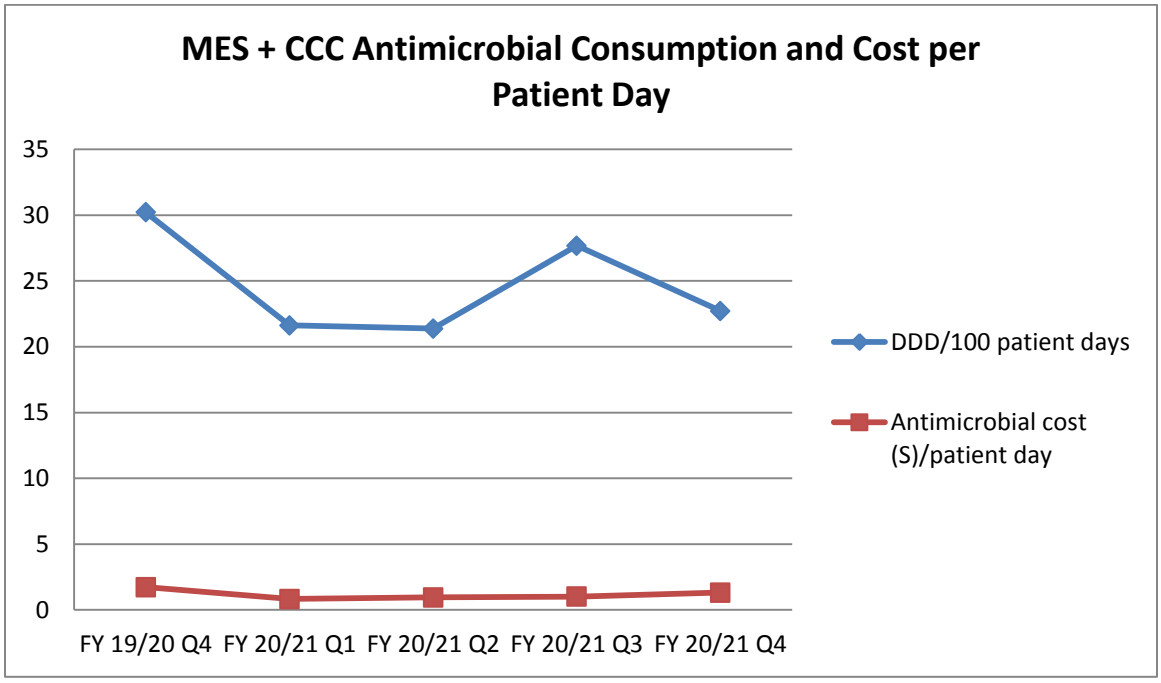
	FY 19/20	FY 20/21				
	Q4	Q1	Q2	Q3	Q4	YTD
Period DDD	32.8	282.1	450	389.7	284.1	1405.9
Patient Days	999	642	775	806	865	3088
Antimicrobial DDDs per 100 patient days	3.28	43.95	58.06	48.35	32.84	45.53
Systemic Antibacterials	0	28.37	40.08	39.10	22.66	29.85
Oral Antibacterials	3.28	15.58	17.98	9.25	10.19	15.68
Antimicrobial costs ($) per patient day	0.80	0.06	0.30	0.85	0.16	0.36

Fiscal Year 2020/21 Results

Medical Surgical + Complex Continuing Care Unit (MES+CCC)

Comments/Notes:

- Indicator added to compare total usage and costs due to room reassignment within MES and CCC in Q1/Q2.
- Q1 high usage data extraction:
  - 32 DDD cloxacillin regimen
  - Adjusted DDD/100 patient days: 20.82
- Q2 high usage data extraction:
  - 54 DDD doxycyline maintenance regimen
  - 26 DDD cefazolin regimen
  - 26 DDD cefazolin regimen
  - Adjusted DDD/100 patient days: 18.97
- Q3 high usage data extraction
  - 86 DDD cefazolin regimen
  - 57 DDD pencillin G regimen
  - 28 DDD clarithromycin regimen
  - Adjusted DDD/100 patient days: 23.78
- Q4 high usage data extraction:
  - 75 DDD azithromycin maintenance regimen
  - 45 DDD ceftazidime regimen
  - 28 DDD moxifloxacin regimen
  - Adjusted DDD/100 patient days: 19.42



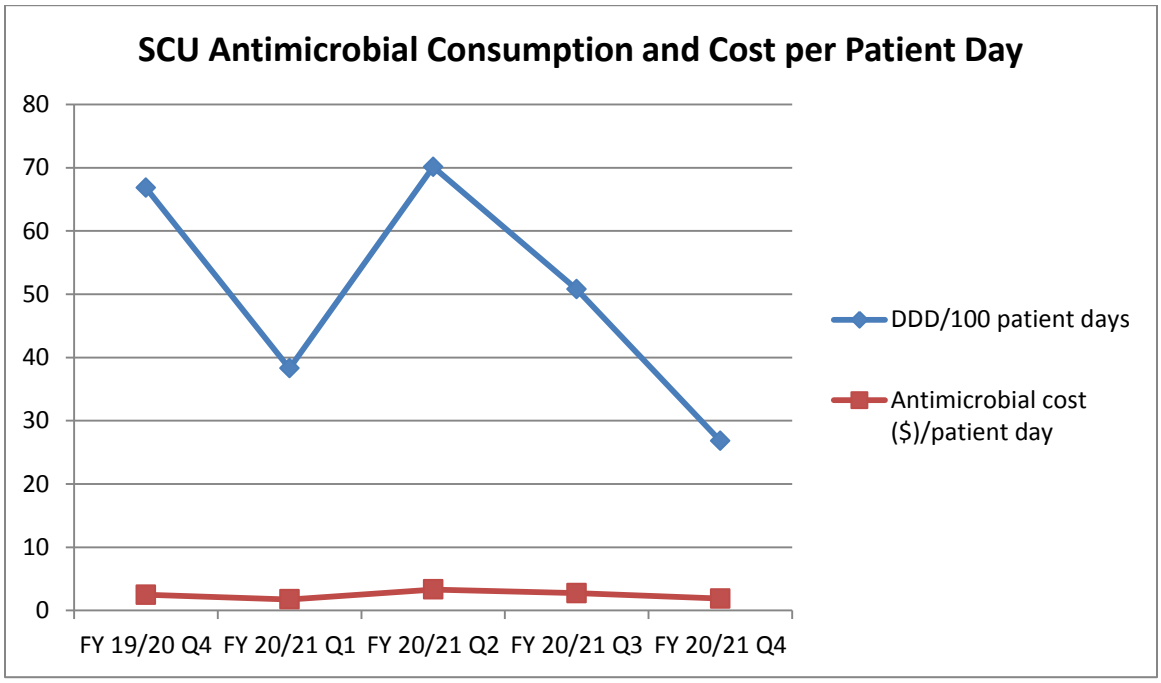
	FY 19/20	FY 20/21				
	Q4	Q1	Q2	Q3	Q4	YTD
Period DDD	1398.4	877.5	938.5	1214.3	1017.3	4047.6
Patient Days	4628	4061	4389	4387	4477	17314
Antimicrobial DDDs per 100 patient days	30.22	21.63	21.38	27.68	22.72	23.38
Systemic Antibacterials	12.52	9.21	11.06	13.54	10.68	11.91
Oral Antibacterials	17.69	12..42	10.32	14.14	12.04	11.48
Antimicrobial costs ($) per patient day	1.73	0.83	0.95	1.01	1.31	1.03

Fiscal Year 2020/21 Results

Special Care Unit (SCU)

Comments/Notes:

- Q1 high usage data extraction:
  - None > 25 DDD
- Q2 high usage data extraction:
  - None > 25 DDD
- Q3 high usage data extraction
  - None > 25 DDD
- Q4 high usage data extraction:
  - None > 25 DDD



	FY 19/20	FY 20/21				
	Q4	Q1	Q2	Q3	Q4	YTD
Period DDD	329.5	125.1	272	195.5	132.6	725.2
Patient Days	493	327	388	385	495	1595
Antimicrobial DDDs per 100 patient days	66.83	38.26	70.11	50.77	26.79	45.47
Systemic Antibacterials	41.31	28.63	52.54	36.11	13.03	27.52
Oral Antibacterials	25.52	9.62	17.57	14.66	13.76	17.95
Antimicrobial costs ($) per patient day	2.47	1.74	3.32	2.72	1.86	2.19