

## Antimicrobial Stewardship (AMS) Program: FY 16/17 Quarter 2 Report Executive Summary

### Best Practices

There is ongoing work to develop and revise clinical tools, protocols and order sets. Items currently being developed/revised include:

- Intravenous to oral conversion for antimicrobials clinical practice standard –update (complete)
- Antimicrobial Dosing Guidelines for Adults clinical tool 2016 update (projected completion Jan 2017)
- Empiric Treatment of Common Infections in Adults clinical tool 2016 update (projected completion Jan 2017)
- Revision/regionalization of Sexual Assault Order set (projected completion Feb 2017)
- Creation/Regionalization of Chronic Obstructive Pulmonary Disorder (COPD) order sets (projected completion March 2017)
- Pharmacist Managed Pharmacokinetic Monitoring and Dosing of Vancomycin and Aminoglycosides clinical practice standard (projected completion March 2017)
- Intravenous to oral antimicrobial conversion order set (pilot project Dawson Creek)

Future project developments in active initial stages include:

- Revision of Outpatient IV Antimicrobial Therapy options; re-instatement of Cefazolin + Probenacid
- Regional Sepsis protocol revisions/updates
- Pharmacy Resident Research project – Gap analysis of outpatient IV antimicrobial therapy (OPAT) across NH
- Education Module and treatment algorithm development for Urinary Tract Infections (including catheter associated and asymptomatic bacteriuria)
- Education Module development for Community Acquired Pneumonia and Aspiration Pneumonia in Adults

### Antimicrobial Usage Metrics

It has recently come to light that there are some data collection discrepancies. We are working with IT and finance to solve this issue; therefore until the data integrity has been restored the AMS program will not be reporting on antimicrobial usage or overall costs.

### Clinical Service/Audit & Feedback

Variations of Prospective Audit and Feedback (A&F) of targeted antimicrobials continue to occur at UHNBC, GR Baker and Mills Memorial hospital. During quarter 2, review of patients on antimicrobials has also been started at Prince Rupert Regional Hospital, Bulkley Valley & District Hospital as well as Dawson Creek & District Hospital. Priority sites for this work are identified based on availability of on-site pharmacists. Over the quarter 874 patient cases were reviewed and 342 drug therapy problems were identified with a 40% resolution rate. The top 3 drug therapy problems encountered include, A. Unnecessary Antimicrobial Discontinued, B. Suboptimal or ineffective therapy and C. Converting IV antimicrobial to an oral agent.

Patient case reviews at St. John Hospital in Vanderhoof and Fort St. John hospital planned to commence January 30<sup>th</sup>, 2017 and March 7<sup>th</sup>, 2017, respectively.

## **Fiscal Year 16/17 Q2 Results**

### **Ongoing Program Initiatives**

- I. Clinical tools, standards, policies and education initiatives
- II. Regional Order Set development
- III. Prospective Audit and Feedback service including Outcome and Process Measures

#### **1. Clinical tools, standards, policies and education initiatives**

##### **1.1 Intravenous to oral conversion for antimicrobials clinical practice standard (CPS)**

This clinical practice standard has been available for guidance since January 2016. After being in use for at least 6 months, it was planned to do a review and update based on user feedback. Revisions included addition of 3 more medications with information on IV dosing and acceptable oral alternatives. Approval of revisions has been achieved and the CPS continues to reside on the Policies and Procedures page of OurNH.

##### **1.2 Antimicrobial Dosing Guidelines for Adults clinical tool 2016 update (projected completion Jan 2017)**

Ongoing annual revision and update to clinical tool is planned for publication and distribution to clinicians in each HSDA in January 2017.

##### **1.3 Empiric Treatment of Common Infections in Adults clinical tool 2016 update (projected completion Jan 2017)**

Ongoing annual revision and update to clinical tool is planned for publication and distribution to clinicians in each HSDA in January 2017.

##### **1.4 Pharmacist Managed Pharmacokinetic Monitoring and Dosing of Vancomycin and Aminoglycosides Clinical Practice Standard (projected completion March 2017)**

Creation of a new regional clinical practice standard is underway. This CPS will authorize pharmacists to provide monitoring and dosing of vancomycin and aminoglycosides (gentamicin, tobramycin and amikacin). In addition to this policy, there will be updates to pharmacists training of new staff as well as opportunity for current staff to be oriented to the standardized procedure for managing these medications.

## **2. Regional Order Set development**

### **2.1 Revision/Regionalization of Sexual Assault Order set**

Revision to UHNBC's currently existing order set has occurred. Stakeholder feedback has been collected. Revisions based on feedback currently occurring and approval for regional use will be sought once that is complete. Planned completion date in February 2017.

### **2.2 Creation/Regionalization of Chronic Obstructive Pulmonary Disorder (COPD) order sets**

Creation of a new order set for COPD was initiated by the Respiratory Therapy group. Working group feedback has been received and incorporation into the draft will occur prior to stakeholder engagement. Aim is for a regional document set. This order set contains admission orders, orders for 48 hours after admission as well as discharge orders which can be sent to a patient's community pharmacy. Goal of completion and implementation in March 2017.

### **Future project developments in initial stages:**

- Revision of Outpatient IV Antimicrobial Therapy options; re-instatement of Cefazolin + Probenacid
- Regional Sepsis protocol revisions/updates
- Pharmacy Resident Research project – Gap analysis of outpatient IV antimicrobial therapy (OPAT) across NH
- Education Module and treatment algorithm development for Urinary Tract Infections (including catheter associated and asymptomatic bacteriuria)
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## **3. Prospective Audit and Feedback**

Audit and Feedback (A&F) is an evidence-based practice of reviewing a patient's medical chart and diagnostic test results and engaging with prescribers to collaboratively optimize antimicrobial therapies. This practice involves the selection of the most appropriate, narrowest spectrum agent based on clinical status, indication, allergies, culture results, potential drug interactions and adverse effects, taking into account current clinical practice guidelines.

The A&F clinical service and evaluation efforts are focused on:

- optimizing empiric therapies
- targeting therapy based on additional diagnostic information
- optimizing antimicrobial dosing and treatment durations
- converting intravenous (IV) antimicrobials to oral formulations when appropriate to prevent the complications associated with IV agents

- providing education to prescribers on the clinical practice guidelines for the treatment of infections
- promoting consultation of infectious disease specialist when necessary

Efforts for bi-weekly to weekly review of patients on antimicrobials continue at UHNBC, GR Baker and Mills Memorial hospital. Sites added this quarter for regular patient reviews include Prince Rupert Regional Hospital, Bulkley Valley & District Hospital as well as Dawson Creek & District Hospital. Plans for St. John Hospital in Vanderhoof to commence reviews in January 2017 are underway. Incorporation of Fort St. John hospital for patient reviews will commence in spring 2017 once pharmacist clinical training is complete.

### 3.1 Outcome Measure Evaluation: Antibiotic Utilization across NH

Antibiotic utilization, measured in defined daily dose (DDD) per 100 patient-days, is calculated to track the utilization trend overtime. The DDD is the assumed average adult maintenance dose per day for a drug used for its main indication. The conversion of drug utilization amount to DDD units is performed to standardize utilization of different classes of antibiotics, allowing comparisons to be made across different facilities or patient groups (excluding pediatric populations). The trends in antibiotic utilization will be used to identify priority areas for A&F services and other AMS initiatives. Please note that due to recently discovered concerns with data integrity, the AMS program is re-evaluating how data is collected and analyzed. Therefore we are unable to report on antimicrobial consumption and costs across the health authority at this time. We hope to rectify this issue in time for the 3<sup>rd</sup> quarter report.

### 3.2 Process Measure Evaluation: Audit and Feedback Recommendations and Acceptance rates

Variations of prospective audit and feedback (A&F) of targeted antimicrobials are currently occurring at UHNBC, GR Baker, Mills Memorial, Bulkley Valley & District, Wrinch Memorial, Prince Rupert Regional and Dawson Creek & District Hospitals. This process involves assessment of patients on antimicrobial therapy evaluated against recommended therapies according to infectious disease resources and guidelines to ensure the optimal use of drug therapy. This strategy is employed after the drug has been initiated; currently reviews are being done on a weekly to biweekly basis for rural sites and 3 times a week for specific wards at UHNBC. Initiation of A&F at sites outside UHNBC is occurring in a stepwise approach (see Table 2).

Table 2

| Site                               | Date initiated |
|------------------------------------|----------------|
| GR Baker Memorial Hospital         | May 13, 2016   |
| Mills Memorial Hospital            | June 7, 2016   |
| Kitimat General Hospital           | June 9, 2016** |
| Bulkley Valley & District Hospital | July 6, 2016   |
| Wrinch Memorial Hospital           | July 6, 2016   |
| Prince Rupert Regional Hospital    | July 7, 2016   |
| Dawson Creek & District Hospital   | Sept 6, 2016   |

\*\*Due to absence of on-site pharmacist resources, reviews for Kitimat General Hospital have been put on hold

Patient case reviews at St. John Hospital in Vanderhoof and Fort St. John Hospital planned to commence January 30<sup>th</sup>, 2017 and March 7<sup>th</sup>, 2017, respectively.

Analysis of the cases reviewed, drug therapy problems identified and resolved was done collectively for all sites active at any point during quarter 2 (see Table 3).

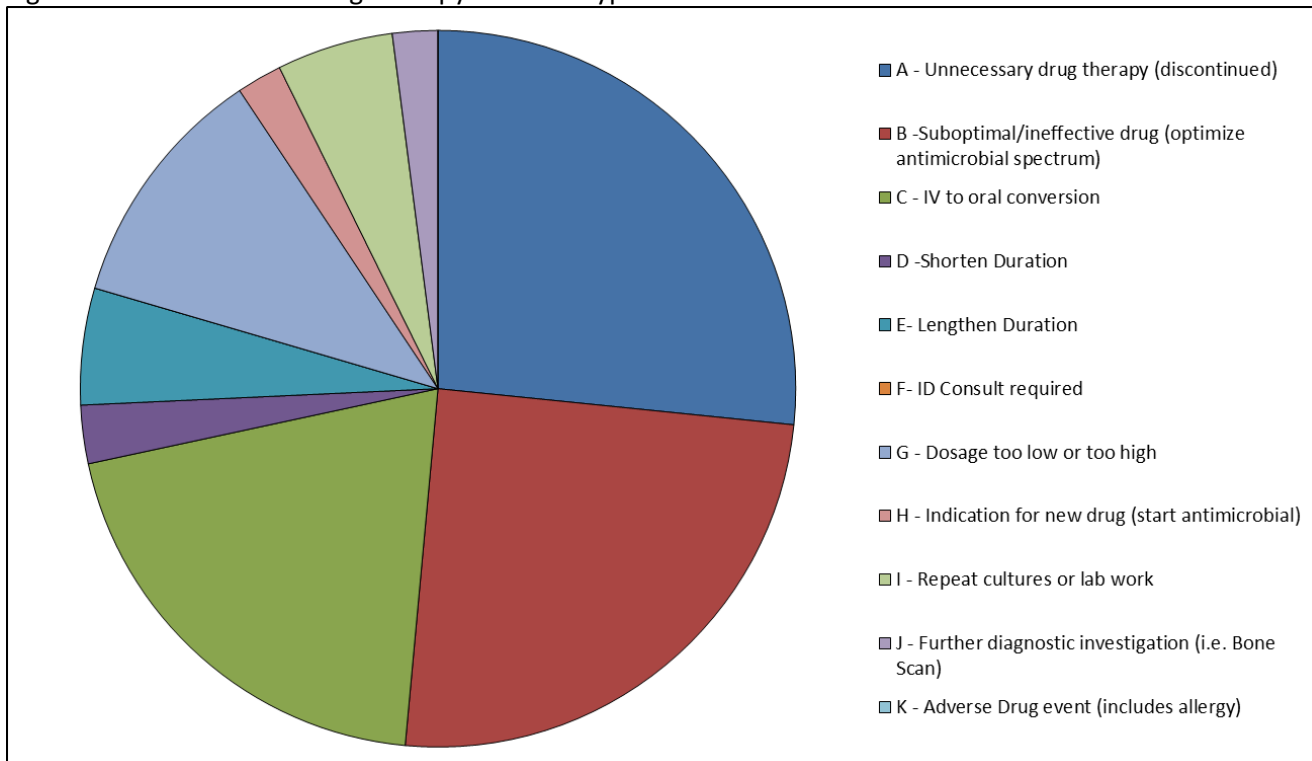
Table 3 - Audit and Feedback antimicrobial drug therapy problem resolutions; (June 17 – Sept 8, 2016)

| Measure  | Number of Patients  |
|--|---------------------|
| Patient Chart Reviewed                         | 874                 |
| Antimicrobial therapy problems identified      | 342                 |
|  | Resolution Rate (%) |
| Antimicrobial therapy recommendations resolved | 40                  |

Antimicrobial therapy recommendations resolved, captures problems that the pharmacist resolved on their own (i.e. dose optimization, ordering necessary blood work for monitoring etc.) or recommendations made to the appropriate physician which were accepted. At this time we have not captured the rate of issues which go unresolved because the pharmacist is unable to follow through due to workload issues or situations where patient was discharged before the issue was rectified. Break down of the unresolved issues will be looked at in subsequent quarters. The resolution rate (referred to as acceptance rate in previous reports) is stable from last quarter, but shows room for improvement.

There are a variety of types of antimicrobial therapy problems: This quarter we were able to capture the various types of drug therapy problems **identified**.

Figure 10 - Antimicrobial Drug Therapy Problem Types



The top 3 drug therapy problems encountered include:

- A. Unnecessary Antimicrobial Discontinued
- B. Change in therapy to optimize microbial spectrum
- C. Converting IV therapy to an oral agent.

**Note:** these proportions do not reflect resolved drug therapy problems.

The AMS program will continue to provide quarterly updates to ensure tracking of antimicrobial usage (once data integrity restored) and resolution rates of drug therapy problems identified during A&F. For any questions regarding this report or the AMS program please contact the program coordinator (Alicia Ridgewell) at 250-565-5956 or via email [alicia.ridgewell@northernhealth.ca](mailto:alicia.ridgewell@northernhealth.ca).

#### **Acknowledgements for work done in the AMS Program**

The Antimicrobial Stewardship Working Group (AMSWG) is an inter-disciplinary working group, mandated as a sub-committee of the NH Medication Safety & Quality Committee (NHMSQC).

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