Antibiotic stewardship in a remote health region: signs of success

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BACKGROUND

Despite 23 000 annual American deaths from antibiotic-resistant infections,[1] antimicrobials are still used inappropriately in up to 50% of antibiotic prescriptions.[2] Antimicrobial stewardship programs (ASPs), which are now required by Accreditation Canada, reduce antimicrobial use, *Clostridium difficile* infections and antibiotic resistance.[3–5] However, developing an ASP can be daunting for rural hospitals, which generally lack personnel, expertise and other resources to establish such programs.[5]

Fig. 1. Labrador–Grenfell Regional Health Authority.

Labrador–Grenfell Regional Health Authority
Other regional health authorities

N

Happy Valley–Goose Bay
Beds: 25
Pharmacists: 3

Labrador

St. Anthony
Beds: 50
Pharmacists: 1

Labrador City
Beds: 14
Pharmacists: 1

Newfoundland

Canada

0   75   150   300 Kilometers

Oliver Hurley

Staffed primarily by family physicians with limited pharmacy support, the hospitals in the Labrador–Grenfell Health Authority (LGH) in Newfoundland and Labrador are no exception (Fig. 1). We do not have infectious disease specialists, medical microbiologists or infectious disease pharmacists, who traditionally lead ASPs. Although we can consult these specialists at our referral centre, which is outside of LGH, they are not mandated to establish or lead our ASP.

The literature on ASPs is also primarily about hospitals far larger than ours with specialty services that are unavailable to us locally.[3–7] Searching for a practical, meaningful ASP, our family physician– and pharmacist-led ASP team learned of a hospitalist-led ASP called Time Out (T-Out).[8,9] They decided to implement it at LGH for the following reasons:

- It is based on interaction between pharmacists and generalists, which already occurs at our hospital sites.
- Our family physicians are similar to hospitalists in that they provide inpatient care.
- Our pharmacists are involved with inpatient prescriptions.
- Our hospitals have regular rounds in which inpatients are discussed.
- We could embed it into existing practices.

WHAT IS A T-OUT?

T-Out is a delayed review of antibiotics 48–72 hours after initiation to determine whether they are still necessary and if the drug, dose, route and duration remain appropriate. At initiation of antibiotic therapy, the clinical situation may be unclear and clinicians are hesitant to
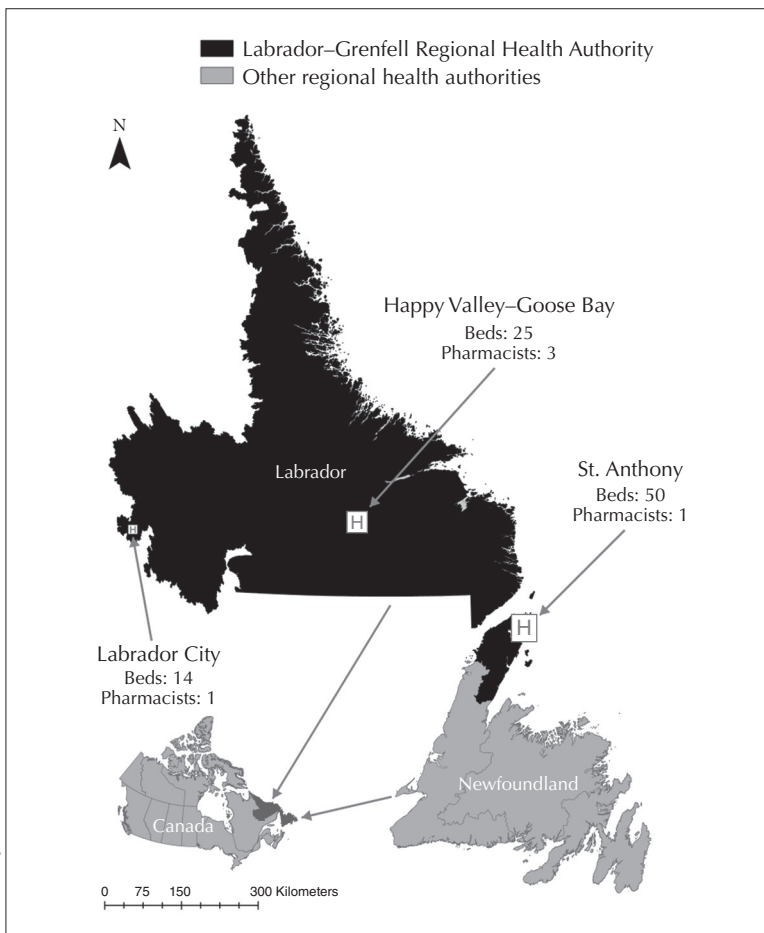
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withhold antibiotics owing to the devastating consequences if a treatable infection is missed. After 48–72 hours, culture results and a clearer clinical picture make this a better time to review the antibiotic.

IMPLEMENTATION OF THE T-OUT

T-Out operates at the Goose Bay and Labrador City hospitals, with slight variation to accommodate existing processes at each, according to these steps:

1. A pharmacist immediately enters the medications into our hospital medical records system (Meditech) once they are prescribed to an inpatient.
2. If an antibiotic is identified, the pharmacist reviews it for drug interactions and dosing, records the patient's initials and antibiotic on a data sheet and flags them for a T-Out.
3. After 48–72 hours, the pharmacist reviews the antibiotic in the context of culture results and the clinical situation (T-Out). Using *Bugs & Drugs: an antimicrobial/infectious diseases reference*,[10] as a primary reference, the pharmacist makes a recommendation in 1 of 4 categories: stop antibiotic, change antibiotic, change from intravenous to oral administration or change duration/dose.[11]
4. The pharmacist makes the recommendation directly to the physician (who also references *Bugs & Drugs*[10]), and together they decide on the most appropriate course of action. If the decision requires specialized advice, the local physician consults an infectious disease specialist.
5. Pharmacists record every prescription reviewed, whether a recommendation was made, the recommendation itself and whether the recommendation was accepted.

SIGNS OF SUCCESS

We deduced that if antibiotic prescriptions were reviewed, recommendations were made and most recommendations were accepted, we would be optimizing our antibiotic use and, hence, patient outcomes. Except for a small gap at the Labrador City site while they were relocating the hospital, recommendations were made each month at both sites from September 2014 to March 2015 (69% of recommendations accepted). In addition, an initial survey of physicians at our Happy Valley–Goose Bay hospital with a response rate of 57% (8/14) showed that all 8 physicians felt that the process was useful. Seven out of 8 physicians reported that they made a change based on the T-Out discussion. Our program received approval from Accreditation Canada in April 2015.

A RURAL ASP: NOT SO REMOTE?

It has been challenging but not impossible for LGH to implement an ASP with limited resources and supports. T-Out is operating at 2 sites with signs of success, such as local engagement of physicians and pharmacists, incorporation of T-Out into existing processes and adjustment of T-Out to meet professionals' needs. We are exploring options to expand to our third hospital in St. Anthony. We must now maintain our momentum by ensuring consistent reviews and collecting more comprehensive outcome data (e.g., *C. difficile* rates). Sustained monitoring will show whether changes to antibiotic prescriptions continue and whether these changes have an effect on overall antibiotic usage or rates of *C. difficile*. We will happily share our tools with readers to facilitate the process of ASP implementation at other sites.

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