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Assessing the impact of physician prescribing feedback on antibiotic use for urinary tract infections

Submission date
21/11/2022

Recruitment status
No longer recruiting

Registration date
02/12/2022

Overall study status
Completed

Last Edited
01/08/2023

Condition category
Infections and Infestations

[_] Prospectively registered
[X] Protocol
[_] Statistical analysis plan
[X] Results
[X] Individual participant data

Plain English summary of protocol

Background and study aims
The discovery of antibiotics is one of the most important advancements in modern medicine. Antibiotics are regularly used to treat infections caused by bacteria. The emergence of bacteria resistant to antibiotics is a common phenomenon. As bacterial strains increase resistance to an antibiotic, the antibiotic becomes less effective. Incorrect or inappropriate antibiotic prescribing can lead to an increase in antibacterial-resistant bacteria. Knowledge translation initiatives are needed to reduce the misuse and overuse of antibiotics. The intervention in this study provided all active family physicians in the Canadian province of British Columbia with the Education for Quality Improvement in Patient Care (EQIP) program uncomplicated acute bacterial cystitis (UAC) Portrait. The aim of this study was to determine the impact of the personal prescribing feedback portraits on family physician prescribing of antibiotics for UAC.

Who can participate?
Adult females who visited a family physician during the study period, or one-year prior to the study period, for treatment of UAC

What does the study involve?
The intervention was a personalized prescribing ‘portrait’ of a physician's individual prescribing of antibiotics to women with uncomplicated acute cystitis. The portraits were developed using de-identified data provided by the British Columbia Ministry of Health. The data consisted of PharmaNet’s ClaimsHist prescription claims, Medical Services Plan physician visits, Discharge Abstract Database hospitalization records, and patient and physician demographic information. The portraits were generated using PL/SQL, SAS, and Jaspersoft’s iReport software. Physicians were sent a registration package several months before the portraits were mailed. The registration packages contained an information letter about the EQIP program and provided the physicians with the opportunity to opt-out of EQIP or agree to a paid follow-up interview.

What are the possible benefits and risks of participating?
The possible benefits of participating in the study are contributing to the science of audit and feedback and the ability to impact prescribing behaviour changes. Possible risks of participating

are minimal because the study uses secondary data from administrative databases. These data are patient-level and include anonymized information about demographics, physician billing codes, and prescription dispensing. These data will not include personally identifiable information. There is no risk of disclosure of data because the data include only encrypted identifiers, and are accessed only through the BC Ministry of Health's Secure Analysis Environment. Researchers will only use anonymous secondary data, in which individual identifiers have been encrypted by the Ministry of Health before we access the data, so the identities of patients will never be known. Results will only be reported at an aggregate or population level.

Where is the study run from?
The University of Victoria, British Columbia (Canada)

When is the study starting and how long is it expected to run for?
December 2010 to February 2013

Who is funding the study?
British Columbia Ministry of Health (Canada)

Who is the main contact?
Greg Carney, Gregory.Carney@ubc.ca (Canada)

Contact information

Type(s)
Scientific

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Additional identifiers

Clinical Trials Information System (CTIS)
Nil known

ClinicalTrials.gov (NCT)
Nil known

Protocol serial number
Evaluation Protocol_EQIP UTI_ver1.2_21Nov2022

Study information

Scientific Title
A randomized trial assessing the impact of personalized prescribing feedback to family physicians on antibiotic prescribing for outpatient uncomplicated acute cystitis

Study objectives
The personal prescribing feedback portrait will be associated with an increase in nitrofurantoin prescribing, and a decrease in ciprofloxacin and TMP-SMX prescribing, in the treatment of uncomplicated acute cystitis (UAC). No change in the proportion of patients receiving no drug therapy for a diagnosis of UAC.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 22/03/2010, Human Research Ethics Board, (Office of Research Services, University of Victoria, Administrative Services Building B202; +1 250 472 4545; ethics@uvic.ca), ref: none available

Study design
Interventional randomized controlled study

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Uncomplicated acute cystitis

Interventions
An interdisciplinary team with expertise in antimicrobial resistance, infection disease, primary care, pharmacoepidemiology, and public health developed an educational portrait aimed to improve the quality of antimicrobial prescribing for women with uncomplicated acute cystitis (UAC) in primary care.

The Education for Quality Improvement in Patient Care (EQIP) program UAC portrait contained individualized physician prescribing data with evidence-based messages based on E.coli resistance rates published by the British Columbia (BC) Centre for Disease Control. The key message stated that “nitrofurantoin is now the first-line treatment for uncomplicated acute cystitis”.

A paired community design was used to study 4,833 family physicians in British Columbia. Physicians were sent a registration package several months before the portraits were mailed. The registration packages contained an information letter about the EQIP program and provided

the physicians with the opportunity to opt-out of the EQIP project. An article was published in the British Columbia Medical Journal in November 2010 informing family physicians that they would soon receive a confidential portrait of their prescribing of antibiotics for urinary tract infections. Communities were paired according to the number of physicians in the community and geographic location (rural versus urban), with one community of each pair randomly assigned to early intervention (n=2417) or delayed control group (n=2416). The early intervention group received their personalized EQIP portraits by mail on December 03, 2010, and again on February 28, 2011. The delayed control group physicians were mailed their personalized EQIP portraits on February 10, 2012. The delayed control group physicians were also invited to complete a reflective activity form in exchange for continuing medical education credit.

The EQIP portrait was a two-page personalized color document containing:
1. A vignette describing a common clinical encounter
2. E.coli resistance rates for ciprofloxacin, nitrofurantoin, and TMP-SMX in BC patients which supported nitrofurantoin as first-line therapy
3. A horizontal bar graph depicting each physician's personalized first-line prescribing for cystitis in the prior year compared with the BC average and the evidence-based target
4. References and a detailed explanation of how the portrait was developed

The prescribing data portraits were delivered to physicians using a method that preserved patient and physician privacy:
1. Data analysts who prepared the portraits for each physician had access to only encrypted physician identifiers
2. Separate individuals sealed the portraits with encrypted identifiers into envelopes
3. Administrative staff with access to physician names and addresses had access to portraits only after they had been sealed in envelopes
4. The British Columbia Mail Service places the sealed portraits into a second envelope and applied names and addresses by way of an address-matching key

Intervention Type
Other

Primary outcome(s)
Proportion of acute cystitis patients prescribed nitrofurantoin as first-line treatment, using BC Ministry of Health administrative data on physician visits and dispensed medications at community pharmacies, in the 12-month period post-intervention

Key secondary outcome(s))
Proportion of acute cystitis patients prescribed ciprofloxacin, TMP-SMX, or no treatment, using BC Ministry of Health administrative data on physician visits and dispensed medications at community pharmacies, in the 12-month period post-intervention

Completion date
09/02/2013

Eligibility

Key inclusion criteria
Female patients who visited a family physician during the study period where the primary diagnosis code on the Medical Services Plan billing record was coded as 595.x (Cystitis).

Reversed billing claims were excluded:
1. Female patients only
2. Extract Medical Service Plan claims where the first 3 digits of the ICD-9 diagnosis code are 595 (acute cystitis)
3. Aged 18 years old and over

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Sex
Female

Total final enrolment
23446

Key exclusion criteria
1. Reversed medical services billing claims from above.
2. Males
3. Aged <18 years
4. Episodes that meet “complicating” factors

Date of first enrolment
03/12/2010

Date of final enrolment
09/02/2012

Locations

Countries of recruitment
Canada

Study participating centre
The University of Victoria
210-1110 Government Street
Victoria
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Sponsor information

Organisation
British Columbia Ministry of Health

Funder(s)

Funder type
Government

Funder Name
Ministry of Health, British Columbia

Alternative Name(s)
British Columbia Ministry of Health, B.C. Ministry of Health

Funding Body Type
Government organisation

Funding Body Subtype
Local government

Location
Canada

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study will be stored in a non-publicly available repository through a 3rd party provider: Population Data BC (https://www.popdata.bc.ca/). Restrictions apply to the availability of these data, which were used under licence for the current study, and so are not publicly available. Participant consent was not required as only secondary anonymized administrative claims data is used. All patient and physician identifiers are anonymized. See popdata.bc.ca for ethical and legal restrictions.

IPD sharing plan summary
Stored in non-publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		31/07/2023	01/08/2023	Yes	No
Dataset	Data for primary outcome		01/08/2023	No	No

Participant information sheet	Participant information sheet version 1.2	11/11/2025	11/11/2025	No	Yes
Protocol file		21/11/2022	29/11/2022	No	No