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**Putting your EMR to work for
you: how expert-built tools
can help you improve patient
care**

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Faculty / Presenter Disclosure

- **Faculty:** Jesse Lamothe, Quality Improvement Decision Support Specialist (QIDSS) HNHB LHIN FHTs
- Athina Perivolaris, Director, Medical Psychiatry Alliance & Collaborative Care, Centre for Addiction and Mental Health (CAMH)
- **Relationships with commercial interests:**
 - No relationships with commercial interests

Disclosure of Commercial Support

- This program has not received financial support or in-kind support from any organization
- **Potential for conflict(s) of interest:**
 - Jesse Lamothe has not received payment or funding from any organization supporting this program AND/OR organization whose product(s) are being discussed in this program.
 - Athina Perivolaris has not received payment or funding from any organization supporting this program AND/OR organization whose product(s) are being discussed in this program.

Mitigating Potential Bias

- There are no potential sources of bias.

Learning Objectives

1. Understand how four newly available EMR queries contribute to more reliable data for your practice.
2. Appreciate the relevance and meaningfulness of these expert-informed queries to your organization and your patients
3. Learn the difference between these queries and what you're currently using



Technical Team

- Brice Wong, QIDSS, Erie-St. Clair FHTs
- Charles Bruntz, QIDSS, North East LHIN FHTs
- Tom Sitter, QIDSS, East GTA FHTs

Communication Team

- Sara Dalo, Manage of Quality, Experience and Patient Safety, Windsor FHT
- Greg Mitchell, QIDS Knowledge Translation and Exchange Specialist, AFHTO
- Jesse Lamothe, QIDSS, Hamilton Niagara Haldimand Brant LHIN FHTs

AP Team Methodology

Step 1

Identify priority conditions



AP Team

Step 2

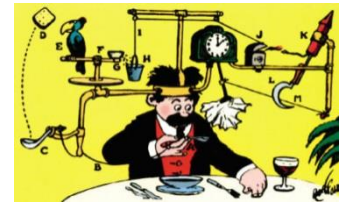
Leverage existing case definitions and collaborate with experts



AP Team

Step 3

Develop, test, and revise queries



AP Team

Step 4

Validate queries with confirmed diagnosis registries



afhto-member FHTs

Step 5

Retrieve queries from afhto



Practice Team

Step 6

Import the queries to your EMR



Practice Team

Step 7

Extract reliable and meaningful data



Practice Team

Step 8

Use the data for practical application



Practice Team

Collaborate with Experts

Step 2

Leverage existing case definitions and collaborate with experts



AP Team

- Consult subject matter experts for specific clinical information about each query
- Medication list review, typical diagnostic terms, common billing practices
- Example: Bipolar diagnostic coding and medications for depression query



St. Michael's
Inspired Care. Inspiring Science.



Query Use in Practice Teams

Step 5

Retrieve queries from afhto



Practice Team

Step 6

Import the queries to your EMR



Practice Team

Step 7

Extract reliable and meaningful data



Practice Team

Step 8

Use the data for practical application



Practice Team

- Data Cleanup
- Registry Development
- Missing Patients
- Physician review of narrowed list
- Evidence to support programs
- Building block for complex clinical dashboards

Query Criteria and Complexity

Simple (ideal for initial searches, ballpark figures)

- Common text diagnoses
- Demographics

Intermediate (registry development)

- Coded diagnoses
- Common medications

Complex (thorough patient identification, research)

- Comprehensive list of medications
- Lab results and other clinical metrics
- Conditional criteria
- Subject matter expert validation

What kind of queries are you using?

High-Level Query Criteria

Search Name: AHFD Diabetes PSS Frontend Search Final 201610

CPT Prob ICD-9 items start with 256.4
 and
 CPT Prob ICD-9 items start with 446.8
 and
 CPT Prob ICD-9 items start with 249
 and
 CPT Prob ICD-9 items start with 760.29
 and
 CPT Prob ICD-9 items start with 775.1
 and
 CPT Prob ICD-9 any item starts with 320
 or
 CPT Prob ICD-9 any item starts with 320
 or
 CPT Prob ICD-10 any item starts with E10
 or
 CPT Prob ICD-10 any item starts with E10
 or
 CPT Prob ICD-10 any item starts with E11

CPT Prob Description contains diabetes
 CPT Prob Description contains ICD
 CPT Prob Description starts with diab
 CPT Prob Description contains hidden
 CPT Prob Description contains diabetes

Hemoglobin A1C (Hb A1C) target value < 0.09
 Fasting Blood Sugar (FBS) target value < 5.5

RxMedx/Treatments current medication contains desogrelatin
 RxMedx/Treatments current medication contains Alogliptin
 RxMedx/Treatments current medication contains chlorzoxipride
 RxMedx/Treatments current medication contains Canagliflozin
 RxMedx/Treatments current medication contains Everolimus
 RxMedx/Treatments current medication contains Glimepiride
 RxMedx/Treatments current medication contains Glipizide
 RxMedx/Treatments current medication contains Glucagon

ICD and SnoMedCT Codes

Text Diagnoses

Medications

Lab Results

Prostate Cancer (father)...
 Colorectal Cancer (uncle)
 Breast Cancer (mother)
 Mother: Diabetes
 Father: Diabetes, Hypertension, Prostate Cancer...
 Hypertension
 gestational diabetes
 Gestational Diabetes

Asthma (needs inhaler)
 Obesity
 MDD Major depressive disorder
 ADHD Attention Deficit Disorder
 Amputation of Lower Limb
 Amputation of Upper Limb
 Generalized Anxiety Disorder

Acute Myocardial Infarction (MI)
 Lisinopril 10 mg every 24 hours
 Metoprolol 50 mg every 24 hours
 Quetiapine 30 mg 1 time daily for 30 days

Benzodiazepines
 never smoked

CCRN Lab Req SOAP BP Wt ODB Meds ICD9 Billing Dynafed Guidelines Lib Google Images Email Consent Granted false Date

Date	Code	Description	Units	Value	Ref
Dec 10, 2015	HR-HS22-PSD0RE	HR-HS22-PSD0RE	KBL		(10/12/15 16:20)
Dec 10, 2015	HR-Social Phobia Inventory (SPIN)	HR-Social Phobia Inventory (SPIN)	KBL		(10/12/15 16:20)
Dec 10, 2015	HRHT-Short PTSD Rating Interview (SPRINT)	HRHT-Short PTSD Rating Interview (SPRINT)	KBL		(10/12/15 16:20)
Dec 16, 2015			KBL		(16/12/15 09:56)
	HE: 150				
	HE: 160				
	HE: 170				
Jan 4, 2016		LUNG-COPD Assessment Test CAT	KBL		(10/02/16 13:08)
Jan 8, 2016		Reaction Record to: Benzodiazepines	KBL		(04/01/16 16:01)
Jan 4, 2016		Suspected Allergy	KBL		(04/01/16 16:07)
Jan 4, 2016		Start: Aspirin Arterial Therapy	KBL		(04/01/16 16:07)
Jan 4, 2016		Start: Aspirin Arterial Therapy	KBL		(04/01/16 16:07)
Jan 6, 2016		OT/PT-Auditory Divided Attention	KBL		(08/01/16 12:03)
Jan 6, 2016		Diabetes Voice	KBL		(08/01/16 12:03)
Jan 8, 2016		OT/PT-Auditory Divided Attention	KBL		(08/01/16 12:03)
Jan 11, 2016		zzz-ba-Dundas Patient Services Referral	KBL		(11/01/16 13:14)
Jan 11, 2016		zzz-ba-Dundas Patient Services Referral	KBL		(11/01/16 13:14)
Jan 11, 2016		RD Initial for (revised Aug 2016)	KBL		(10/02/16 13:08)
Feb 12, 2016		Start: ibesartan-hydrochlorothiazide 55 mcg every evening for 5 weeks	KBL		(12/02/16 13:32)

Managed warning(s) when prescribing:
 Possible Interaction with Current health problem: diabetes

Query Availability and Next Steps

Query	Telus PS Suite	QHR Accuro	OSCAR
Diabetes	Available	Available	Available
COPD	Available	Available	Available
CHF	Available	Available	Available
Depression	Available	Available	Available
Hypertension	In Development	In Development	In Development
Opioid Use	In Development	In Development	In Development

Obtaining the Queries

- TELUS Queries
 - Contact Greg
 - Visit TELUS Community Portal
- Accuro
 - Alert publisher within EMR
- OSCAR
 - Contact Greg

Greg Mitchell

greg.mitchell@afhto.ca

Thanks to our Partners in Development



EMERALD



Query Use for Programs



- Diabetes query referenced in the HQO Primary Care Practice Report (PCPR) as an additional tool to manage EMR diabetes data



- Query case definition criteria is being used for OntarioMD dashboard specifications
- EMR queries to be the foundation for teams to contribute to D2D 5.0 EMR Data Quality Indicator. The composite score requires teams to report on the % of coded patients for DM, COPD, CHF and Depression





OPTIMUM

Optimizing Depression
Treatment in Older Adults

camh

Centre for Addiction and Mental Health

pcori

PATIENT-CENTERED OUTCOMES RESEARCH INSTITUTE

**To Refer a Patient:
Call OPTIMUM
Recruitment Line
1-866-539-3510**

REB REF #086/2016

A depression query has been developed and is used for identifying patients in the EMR with treatment-resistant depression. The OPTIMUM project team would like to collaborate with teams using the query to help providers and their patients who are hard to treat.

Patient Oriented Research

- Older adults with depression in primary care may be difficult to manage (Ex. Diagnosis and treatment)
- Older adults often have many other co-morbid conditions
- Lack of access to geriatric psychiatry
- Virtual teams can assess, recommend and follow up patients for good response and side effects



What is OPTIMUM?

OPTIMUM is a treatment study for adults age 60 + with treatment resistant depression

This research adds to usual clinical care:

- Participants receive new treatment options and additional psychological support

Measurement-based care guides treatment recommendations

Patient-centered assessments are used to measure outcomes that patients have described as “very important”

Patients will be randomized to one of three open **evidence-based** medication strategies

Results can help the care of other patients



How OPTIMUM Works

1 How to refer your patients?

Contact us.

Providers will first go through a brief informed consent process and will become a provider participant in the study.

We will screen patients you refer to us and confirm that they are eligible.

Inclusion

- ✓ Age 60+
- ✓ Treatment Resistant Depression, defined by:
 - Major depression
 - PHQ-9 \geq 6
 - 2 or more failed antidepressant trials



Exclusion

- ✗ Dementia
- ✗ Unstable medical illness
- ✗ Unable to take the OPTIMUM medications

How OPTIMUM Works

2 What can you expect?

We will ask you to prescribe a study medication at a specific dose. **You prescribe it.**

You are at the center of this study!

- **Patients** stay with their own provider
- **Study team** monitors and supports patients. They recommend treatment steps to you.
- **Provider** prescribes medication



We are
there to
support both
patient and
provider!

How OPTIMUM Works

3 How is the medication managed?

We'll call your patient every two weeks to ask them about:

- Symptoms
- Side effects
- Adherence

The study geriatric psychiatrist then recommends that you stay the course, raise or lower the dose, or change the medication(s).

If the patient has a side effect or problem, we will follow-up. The study psychiatrists will also provide clinical recommendations based on safety labs and drug monitoring.



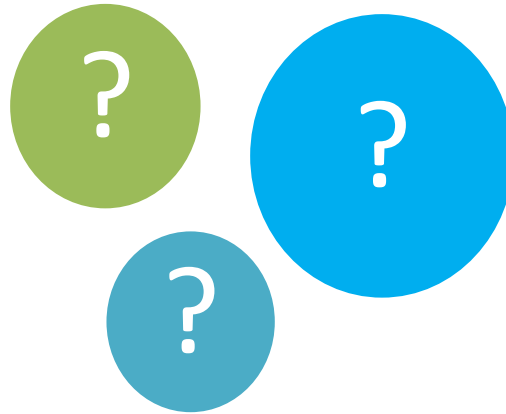
How OPTIMUM Works

4 What is in it for you and your practice?

- **Improved outcomes** for depressed older patients
- **State-of-the-science** prescribing practices
- **Decision support** from geriatric psychiatrists specific to each patient
- **Treatment recommendations** and mental health referrals for ineligible patients
- A partnership: **we compensate you or your practice** for your time and effort. Providers will receive \$300 per participant randomized. Participants will also be compensated for their time.



Study questions or concerns?



www.OPTIMUMstudy.org

TOGETHER, WE CAN FIND A BETTER TREATMENT

To refer a patient
call:

1-866-539-3510
optimum@camh.ca

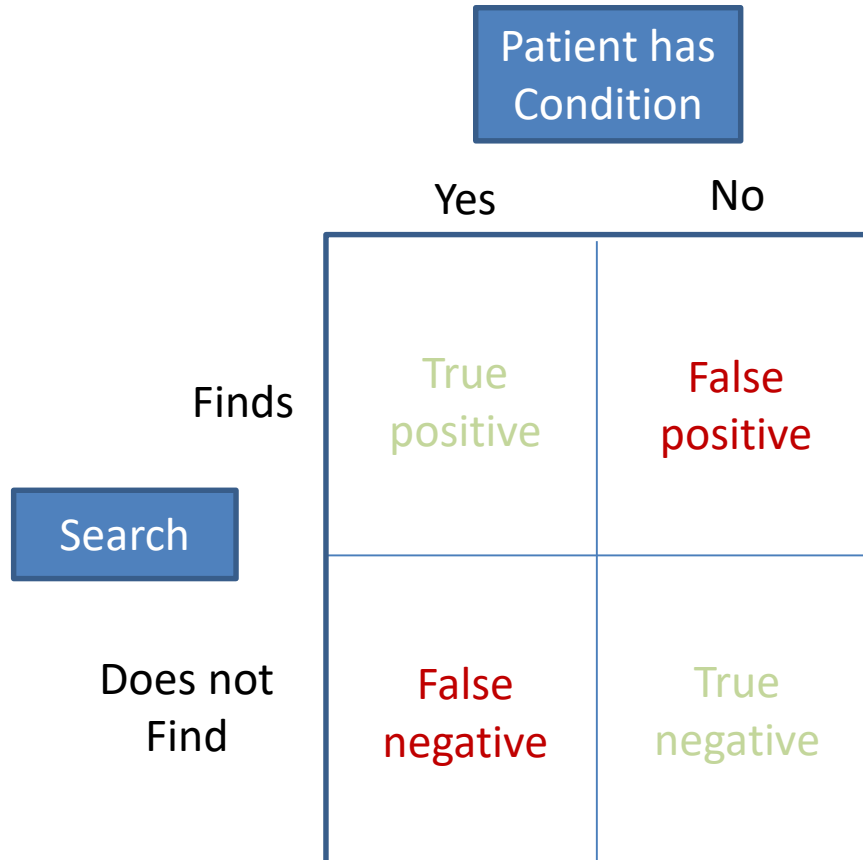
Medical questions about study patients and
treatment:

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Diagram for Term Definitions



Technical Note – Positive Predictive Value (PPV) and Sensitivity

The definitions for PPV and Sensitivity are based on the terms defined as follows:

- True Positive: A patient who has the condition and is found in the search results.
- False Positive: A patient who does not have the condition but is found in the search results.
- True Negative: A patient who does not have the condition and is not found in the search results.
- False Negative: A patient who has the condition but is not found in the search results.

- **PPV:** ratio of true positives divided by the sum of the true positives and the false positives.

Example 1: we run the AFHTO diabetic search on a Physician's Practice. If 80 patients have diabetes and are found in the search results, and 20 patients don't have this condition but are found in the search results, then the PPV in this hypothetical scenario is 80%.

The PPV is used to indicate the probability that the patient really has the specified disease when it is found in the search results.

Sensitivity: ratio of true positives divided by the sum of the true positives and false negatives.

Example 2: Same search results as in example 1. Now, we learn that 80 additional patients have this condition in this Physician's Practice but are not found in the search results: The sensitivity in this hypothetical scenario would be 50%.

The sensitivity indicates the proportion of people who are found in the search results for the disease among those who have the disease.

Condition	Gold Standard		AP EMR Testing
COPD	CPCSSN	Sensitivity: 41%	Sensitivity: 80%
		PPV: 80%	PPV: 59%
Diabetes	CPCSSN	Sensitivity: 100%	Sensitivity: 80%
		PPV: 95%	PPV: 88%
CHF	EMRALD	Sensitivity: 83%	Sensitivity: 61%
		PPV: 46%	PPV: 74%
Depression	CPCSSN	Sensitivity: 39%	Sensitivity: 96%
		PPV: 79%	PPV: 62%