SUPPLEMENTARY MATERIALS

Appendix 1. Electronic medical record search query used to identify co-prescribed patients.

```
Rx Any Action; Name Contains... "clonazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains clonazepam
or
    Rx Any Action; Name Contains... "rivotril" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains rivotril
or
    Rx Any Action; Name Contains... "diazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains diazepam
or
    Rx Any Action; Name Contains... "valium" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains valium
or
    Rx Any Action; Name Contains... "ativan" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains ativan
or
    Rx Any Action; Name Contains... "lorazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains lorazepam
or
    Rx Any Action; Name Contains... "bromazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains bromazepam
or
    Rx Any Action; Name Contains... "lectopam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains lectopam
or
    Rx Any Action; Name Contains... "restoril" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains restoril
or
    Rx Any Action; Name Contains... "temazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains temazepam
or
    Rx Any Action; Name Contains... "xanax" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains xanax
or
    Rx Any Action; Name Contains... "alprazolam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains alprazolam
or
    Rx Any Action; Name Contains... "oxazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains oxazepam
or
    Rx Any Action; Name Contains... "flurazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains flurazepam
or
    Rx Any Action; Name Contains... "dalmane" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains dalmane
or
    Rx Any Action; Name Contains... "nitrazepam" months since latest <= 12
    and
    Rx/Meds/Treatments current meds contains nitrazepam
or
```

Rx Any Action; Name Contains... "mogadon" months since latest <= 12
and
Rx/Meds/Treatments current meds contains mogadon

or

Rx Any Action; Name Contains... "clorazepate" months since latest <= 12
and
Rx/Meds/Treatments current meds contains clorazepate

or

Rx Any Action; Name Contains... "tranxene" months since latest <= 12
and
Rx/Meds/Treatments current meds contains tranxene

or

Rx Any Action; Name Contains... "serax" months since latest <= 12
and
Rx/Meds/Treatments current meds contains serax

and

Rx Any Action; Name Contains... "duragesic" months since latest <= 12
and
Rx/Meds/Treatments current meds contains duragesic

or

Rx Any Action; Name Contains... "fentanyl" months since latest <= 12
and
Rx/Meds/Treatments current meds contains fentanyl

or

Rx Any Action; Name Contains... "hydromorph contin" months since latest <= 12
and
Rx/Meds/Treatments current meds contains hydromorph contin

or

Rx Any Action; Name Contains... "dilaudid" months since latest <= 12
and
Rx/Meds/Treatments current meds contains dilaudid

or

Rx Any Action; Name Contains... "oxycodone" months since latest <= 12
and
Rx/Meds/Treatments current meds contains oxycodone

or

Rx Any Action; Name Contains... "statex" months since latest <= 12
and
Rx/Meds/Treatments current meds contains statex

or

Rx Any Action; Name Contains... "acetaminophen-oxycodone" months since latest <= 12
and
Rx/Meds/Treatments current meds contains acetaminophen-oxycodone

or

Rx Any Action; Name Contains... "oxy-ir" months since latest <= 12
and
Rx/Meds/Treatments current meds contains oxy-ir

or

Rx Any Action; Name Contains... "oxyneo" months since latest <= 12
and
Rx/Meds/Treatments current meds contains oxyneo

or

Rx Any Action; Name Contains... "percocet" months since latest <= 12
and
Rx/Meds/Treatments current meds contains percocet

or

Rx Any Action; Name Contains... "endocet" months since latest <= 12
and
Rx/Meds/Treatments current meds contains endocet

or

Rx Started; Name Contains... "supeudol" months since latest <= 12
and
Rx/Meds/Treatments current meds contains supeudol

or

Rx Any Action; Name Contains... "hydromorphone" months since latest <= 12
and
Rx/Meds/Treatments current meds contains hydromorphone

or

Rx Any Action; Name Contains... "ms contin" months since latest <= 12
and

Rx/Meds/Treatments current meds contains ms contin
or
Rx Any Action; Name Contains... "m-eslon" months since latest <= 12
and
Rx/Meds/Treatments current meds contains m-eslon
or
Rx Any Action; Name Contains... "kadian" months since latest <= 12
and
Rx/Meds/Treatments current meds contains kadian
or
Rx Any Action; Name Contains... "morphine" months since latest <= 12
and
Rx/Meds/Treatments current meds contains morphine
or
Rx Any Action; Name Contains... "codeine" months since latest <= 12
and
Rx/Meds/Treatments current meds contains codeine
or
Rx Any Action; Name Contains... "codeine contin" months since latest <= 12
and
Rx/Meds/Treatments current meds contains codeine contin
or
Rx Any Action; Name Contains... "tylenol with codeine no 2" months since latest <= 12
and
Rx/Meds/Treatments current meds contains tylenol with codeine no 2
or
Rx Any Action; Name Contains... "tylenol with codeine no 4" months since latest <= 12
and
Rx/Meds/Treatments current meds contains tylenol with codeine no 4
or
Rx Any Action; Name Contains... "tylenol with codeine no 3" months since latest <= 12
and
Rx/Meds/Treatments current meds contains tylenol with codeine no 3
or
Rx Any Action; Name Contains... "atasol-30" months since latest <= 12
and
Rx/Meds/Treatments current meds contains atasol-30
or
Rx Any Action; Name Contains... "atasol-15" months since latest <= 12
and
Rx/Meds/Treatments current meds contains atasol-15
or
Rx Any Action; Name Contains... "tylenol no. 1" months since latest <= 12
and
Rx/Meds/Treatments current meds contains tylenol no. 1
or
Rx Any Action; Name Contains... "lenoltec no 4" months since latest <= 12
and
Rx/Meds/Treatments current meds contains lenoltec no 4
or
Rx Any Action; Name Contains... "lenoltec no 3" months since latest <= 12
and
Rx/Meds/Treatments current meds contains lenoltec no 3
or
Rx Any Action; Name Contains... "lenoltec no 2" months since latest <= 12
and
Rx/Meds/Treatments current meds contains lenoltec no 2
or
Rx Any Action; Name Contains... "lenoltec no 1" months since latest <= 12
and
Rx/Meds/Treatments current meds contains lenoltec no 1
or
Rx Any Action; Name Contains... "codeine phosphate" months since latest <= 12
and
Rx/Meds/Treatments current meds contains codeine phosphate
or
Rx Any Action; Name Contains... "atasol-8" months since latest <= 12
and
Rx/Meds/Treatments current meds contains atasol-8

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Appendix 2. Themes for suggested improvements to the pharmacist intervention and examples of proposed suggestions from physician and patient interviews.

Type of Interview	Theme for suggested improvements to interventions	Example of proposed suggestions
Physician	Adjust the primary care pharmacist's approach to engagement with physicians	• Meet in person rather than electronically • Schedule dedicated time with physicians for patient reviews • Discuss all of a physician's co-prescribed patients with them in a single meeting • Inform physicians about the role of pharmacists (e.g. ability to meet with and educate patients)
	Foster primary care centre team relationship with pharmacist to encourage physician buy-in	• Pharmacist to attend team meetings to speak to the project and offer to schedule patient reviews • Pharmacist to present on therapeutic topics of physician's interest at team meetings and lunch & learns. Topics may be unrelated to opioids/benzodiazepines. • Pharmacist to be present at the primary care clinic on varying days of the week to increase visibility for physicians who only work certain days
	Maintain and further improve overall gains in proactive pharmacist review rates	• Present project updates and success to primary care team • Schedule yearly check-in to re-engage with physicians
Patient	Focus education on benefits of opioid taper and rotations that are meaningful to patients	• Discuss reduced pill burden as a benefit of rotating to long acting opioids • Counsel on tolerance and potential for better pain control as a benefit of rotating to new opioid agent
	Address common patient fears pertaining to opioid and benzodiazepine dose reduction	• Address fears of side effects and risk of overdose secondary to opioid rotations • Speak to concerns regarding withdrawal symptoms • Discuss apprehension due to fears of unmanaged pain or anxiety
	Provide information on alternative non-opioid pharmacotherapy and non-pharmacotherapy resources	• Provide information on community support groups • Provide education on medical marijuana

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Appendix 3. Primary care pharmacist's individual patient care plan development process.

1. Evaluate indication:
    a. Is drug therapy indicated? If not, can drug therapy be discontinued?
    b. Is drug therapy optimized? If not, why?
    c. Is additional drug therapy required?

2. Evaluate effectiveness:
    a. Is the patient taking the most appropriate drug therapy?
    b. Is the patient taking the drug therapy as prescribed?
    c. Is the dose appropriate for the patient? (low dose)

3. Evaluate safety:
    a. Is the patient experiencing adverse effects from drug therapy?
    b. Is the dose appropriate for the patient? (high dose)
    c. Is the patient at risk for drug interactions?

4. Evaluate cost and convenience:
    a. Is the drug therapy in the most appropriate dosage form for the patient?
    b. Is the schedule for administering the drug therapy appropriate for the patient?
    c. Is the patient able to pay for the drug therapy?

5. Develop a pharmacotherapy plan
    a. Document in patient's chart
    b. Discuss with physician
    c. Discuss with patient and provide patient education
    d. Monitor and provide follow-up