Take your learning to the next Level

Pharmacy5in5.ca
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Presenter Disclosure

• We do not have any conflicts to declare

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Learning Outcomes

1. Describe the role of early and repeated user testing in the design process

2. Explain the use of immediate vs. delayed feedback

3. Identify how theories of gamification and persuasive design can be used in continuing education

4. Create a 5-point “take home” message to simplify understanding of a confusing or emerging practice issue
Aim of Pharmacy5in5.ca

To support pharmacists and technicians by:

1. Clarifying regulations, guidelines, clinical info
2. Using straight-from-practice examples
3. Teaching/reinforcing facts and practicing/modeling through cases
4. Providing quick tools to guide process
5. Staying relevant
Pharmacy 5in5
An online learning experience to help you stay up to date with pharmacy practice.
Example: Shana picked up an amoxicillin suspension for her son’s ear infection. He has taken 2 of 7 days. She just spilled the bottle. Can Susan renew the prescription to provide Shana with a new bottle to cover the remaining 5 days?
Can you?
Are you allowed?
Is (Susan the totally competent pharmacist you don't know) allowed?
Did a patient spill their liquid antibiotics? You can renew it for continuity of care!

Pharmacists can renew prescriptions in order to maintain continuity of care.
A module on managing drug-related risk factors for QT prolongation and torsades de pointes (Tdp).

**Quizzes**

- **Fast Facts: QT & Tdp**
  
  A short quiz reviewing QT prolongation.

  - Start

- **Josh assesses Tdp risk**
  
  Help Josh perform routine assessments for the risk of Tdp.

  - Resume
Immediate Feedback: Facts

**QT Prolongation**

**Fast Facts: QT & TdP**

1. A risk factor for torsades de pointes (TdP) is congenital long QT syndrome.
   - [ ] True
   - [ ] False

   *96% of people answered the same as you.*

   Correct! Previous TdP and congenital long QT are major risk factors for TdP.

2. Symptom of TdP are nausea and vomiting.
   - [ ] True
   - [ ] False
Delayed Feedback: Applied

QT Prolongation
Josh assesses TdP risk

3. Josh is processing a refill for a 55 year old male patient named MA. MA was seen in clinic last week and his blood pressure was 110/75 and heart rate was 49 beats per minute. MA is taking ramipril 5 mg and hydrochlorothiazide 25mg daily for hypertension, domperidone 10 mg QID for gastroparesis, and Vitamin D.

During his assessment, what medications should Josh identify as increasing the risk of TdP the most?

- Ramipril
- Hydrochlorothiazide
- Domperidone
- Vitamin D
1. Josh is a community pharmacist and is managing a patient’s medication. AB is a 69 year old male who has been diagnosed with pneumonia. The physician wants to prescribe clarithromycin 500mg BID for five days. Josh is asked by the physician to assess AB for the risk of QT prolongation.

Which of the following should Josh identify as a risk factor for torsades de pointes (TdP)?

- Male
- BP >140/90
- HR <60
- All options

2. Josh is doing a medication review for FW. FW is a 71 year old female who reports feeling faint. On assessment, Josh notes that FW’s heart rate is 51 beats per minute. She is taking metformin and atorvastatin to manage diabetes and cholesterol, nitrofurantoin for a recent UTI, and pimozide for schizophrenia.

In his review, what medications should Josh identify as increasing the risk of TdP?
What have you been doing?
a heart condition. Josh determines that NW could be at risk for QT prolongation due to the use of multiple QT prolonging drugs. Josh contacts the physician to suggest a baseline ECG and then a follow-up ECG 5 half lives after the dose increase.

NW's baseline QTc interval is 380 milliseconds. On the follow-up ECG, what is the threshold QTc increase that would make Josh concerned about TdP?

- 30 msec
- 40 msec
- 50 msec
- 60 msec

5. ES is a 69-year-old patient who was referred by her primary care physician to the new clinic because she has been experiencing diarrhea and weight loss. The doctor notes in the chart that she has been prescribed antibiotics and is self-medicated with probiotics. ES has a history of gastrointestinal issues. What is the most appropriate medication for ES to avoid potential drug interactions?

- Ciprofloxacin
- Amoxicillin

What about you?

Over the last 3 months, have you contacted a prescriber with a concern that a prescribed medication can prolong the QT?

- Yes
- No
- Doesn't apply to me
- Next
3. Josh is processing a refill for a 55 year old male patient named MA. MA was seen in clinic last week and his blood pressure was 110/75 and heart rate was 49 beats per minute. MA is taking ramipril 5 mg and hydrochlorothiazide 25mg daily for hypertension, domperidone 10 mg QID for gastroparesis, and Vitamin D.

During his assessment, what medications should Josh identify as increasing the risk of TdP the most?

- Ramipril
- Hydrochlorothiazide
- Domperidone
- Vitamin D

2% of people answered the same as you.

Incorrect. Domperidone causes dose-related QT prolongation. Domperidone doses ≥ 30mg/day can cause TdP. Other medications that cause dose-related QT prolongation include citalopram > 40mg/day and methadone > 100mg/day.
Did everyone else do this poorly?
3. Josh is processing a refill for a 55 year old male patient named MA. MA was seen in clinic today. His blood pressure was 110/75 and heart rate was 49 beats per minute. MA is taking hydrochlorothiazide 25mg daily for hypertension, domperidone 10 mg QID for gastrointestinal distress, and vitamin D.

During his assessment, what medications should Josh identify as increasing the risk of torsades de pointes (Tdp)?

- Ramipril
- Hydrochlorothiazide
- Domperidone
- Vitamin D

2% of people answered the same as you.

Incorrect. Domperidone causes dose-related QT prolongation. Domperidone doses of 40mg/day and methadone > 100mg/day can cause Tdp. Other medications that cause dose-related QT prolongation include cytochrome 3A4 inhibitors, quinidine, procainamide, and sotalol.
QT PROLONGATION

QT prolongation can cause a serious arrhythmia called Torsades de Pointes (TdP). Here are 3 steps for preventing TdP.

1. assess the patient:
   - Ask about history. Previous TdP and congenital long QT are major risk factors for TdP.
   - Other risk factors include bradycardia, structural heart disease, electrolyte abnormalities, female gender, and older age.
   - Ask about symptoms. Symptoms of TdP include heart palpitations and fainting.
   - If you're concerned, enquire about these symptoms at every refill.

2. assess the drug:
   - Check the treatment. Macrolides and quinolones can cause TdP in higher risk patients.
   - Safer options include beta lactams, cephalosporins, and tetracyclins. Other drugs to watch are methadone, olanzapine, ondansetron, and antipsychotics. See crediblemeds.org for a full list.
   - Check the dose. The risk of TdP tends to increase as higher doses are used (e.g., domperidone ≥30 mg/day).
   - Make sure the patient doesn't have any factors that can cause a higher than expected serum concentrations, such as a drug-drug interaction or renal impairment.
   - Check the ECG. An ECG is appropriate if the patient has multiple risk factors for TdP and is prescribed a drug that prolongs the QT interval.
     Order an ECG at baseline and after 5 half-lives when the drug has reached steady state.

3. take action:
   - Make a decision. Patients are at higher risk for TdP if the drug prolongs their QT interval by ≥450 for males and ≥460 for females, or if it prolongs their QT interval by ≥60 msec.
   - If this occurs, stop the drug if possible. If not, decrease the dose.
How we designed 5in5

• Theory-based design
  • Social cognitive theory (Bandura)
  • Behaviour change wheel (Michie)
• Persuasive design (Fogg)
  • Gamification principles, simplicity
• User-centred design
  • User testing
Individual: Self efficacy (believe you can do it)
Modelling: Watching others perform the new skill or behaviour
Behaviour Change (Michie et al 2011)
Gamification: "Use of game mechanics and experience design to digitally engage and motivate people to achieve their goals" (Burke 2014)
Persuasive design aims to influence people's behaviours and attitudes (Fogg 2011)
Persuasive Systems Design

Table 1. Postulates behind Persuasive Systems

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<table>
<thead>
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<tbody>
<tr>
<td>1.</td>
<td>Information technology is never neutral.</td>
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<td>2.</td>
<td>People like their views about the world to be organized and consistent.</td>
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<td>3.</td>
<td>Direct and indirect routes are key persuasion strategies.</td>
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<td>4.</td>
<td>Persuasion is often incremental.</td>
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<td>5.</td>
<td>Persuasion through persuasive systems should always be open.</td>
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<td>6.</td>
<td>Persuasive systems should aim at unobtrusiveness.</td>
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<tr>
<td>7.</td>
<td>Persuasive systems should aim at being both useful and easy to use.</td>
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Pharmacy5in5.ca To Date

• 2600+ registered users
  • Pharmacists 75%
  • Students 15%
  • Technicians 10%
  • 70% community pharmacy
  • 50% trained in Canada

• Top modules are QT prolongation, scope of practice, naloxone, serotonin syndrome
Create a 5-point Take Home

• Only include need to know, not nice to know
• Use patient friendly language where possible
• Guide pharmacists to focus on patients not drugs
• Ask experts, “Am I wrong?” not “What would you include?”
• Consult established sources (e.g., guidelines, monographs, regulations)
  • Consistency where appropriate
  • Explanations where you deviate
5 things everyone should know about constipation

• 1.
• 2.
• 3.
• 4.
• 5.
Cannabis 101
For recreational or medicinal use. Also known as marijuana, pot, bud, and weed.

How it’s Used
- Inhaled starts working within 10 min and effects last 2-4 h (but can be up to 24 h)
- Edibles start working at around 1 h and effects last 4-6 h (but can be up to 24 h)
- Vaping and edibles likely safer than smoking

When to Avoid
- Pregnancy and breastfeeding
- Personal/family history of psychosis
- Several hours before driving
- Allergy to cannabis
- Under age 25

Tetrahydrocannabinol (THC)
- Makes some people high
- Stimulates appetite
- More cognitive side effects than CBD (e.g., confusion, drowsiness)

Cannabidiol (CBD)
- Does not make people high
- Many potential medicinal uses

* Cannabis has hundreds of other ingredients with unknown effects

What to Watch For
Side effects are higher for cannabis than most prescription medicines

Very common (10-30%)
- Intensely happy/uneasy
- Sedation/relaxation
- Difficulty sleeping
- Numbness
- Disconnected thoughts
- Muscle twitching
- Changes in heart rate/blood pressure

Common (1-10%)
- Impaired memory, confusion
- Blurred vision/visual hallucination
- Loss of touch with reality/self
- Problematic cannabis use (e.g., difficulty cutting down, continued use, despite harm)

Uncommon but serious (<1%)
- Intense/prolonged vomiting
- Loss of motivation

Long term side effects largely unknown

Reduce Harm
- Avoid driving for several hours after use
- Vaporizing/edibles preferred over smoking
- Keep away from children, especially edibles
- Delay age of first use as long as possible

Reasons for Use
- Most evidence is from pharmaceutical cannabinoids
- May help in chronic nerve pain, palliative care, nausea and vomiting from chemotherapy, and spasticity from multiple sclerosis
- May help drug-resistant seizure disorders in kids
- Very little evidence to support use for anxiety, general nausea/vomiting, or other pain conditions

Prescribing for Medical Use
- Try pharmaceutical cannabinoids first (nabiximols)
- Don’t need to feel high for effective symptom management

Avg use is 1.5-3 g of herbal cannabis/day
1 joint = 0.5 g of cannabis

Dosing Medical Marijuana
- Effects vary considerably based on strain
- Start with lower THC, limit to <9%
- Inhaled: start with 1 puff and wait 10 min to assess effect, repeat as needed
- Edible: start with 1 small bite and wait 1 hour to assess effect, repeat as needed

Managing Side Effects
- Reduce dose (frequency, potency, amount) or stop
- Reduce THC if cognitive side effects
- Tolerance may develop over weeks to months
- Stop if signs of problematic cannabis use
- Withdrawal symptoms include intense anxiety/fatigue 1-2 days after stopping

Cannabis Drug Interactions
- Smoke cannabis induces CYP1A2 (e.g., may decrease effect of oxazepam, chloropropamazine)
- Inhibitors of CYP3A4 (e.g., ketoconazole) may result in more effects from THC or CBD
- Inducers of CYP3A4 (e.g., rifampin, St. John’s wort, phenytoin) may result in less effects from THC or CBD
- Clinical importance of other interactions unclear

Content by Kelly Grinfeld, MSc, PharmD; Michael Brzezny, BSc, PharmC. Design by Adrian Poon, BEd

Practical Tips for Medical Cannabis
Includes medical marijuana and pharmaceutical cannabinoids

Inhaled
- Plant/oil that is smoked or vaporized
- Onset of effect: 5-10 min
- Peak effect: 10-20 min
- Duration of effect: 2-4 h (up to 24 h)
- Can impair driving: Yes

Edible
- Plant/oil added to food/drink
- Onset of effect: Up to 60 min
- Peak effect: 2-4 h
- Duration of effect: Adults: 4-6 h (up to 24 h); Kids: 6-12 h (up to 36 h)
- Can impair driving: Yes

Pharmaceutical Cannabinoids
- Nabilone, nabiximols
- 1-2 h
- 12 h (up to 24 h)
- Yes

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Cannabis making a chronic pain patient feel too anxious? Try decreasing the THC.

It is believed that THC induces more anxiety than CBD.
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