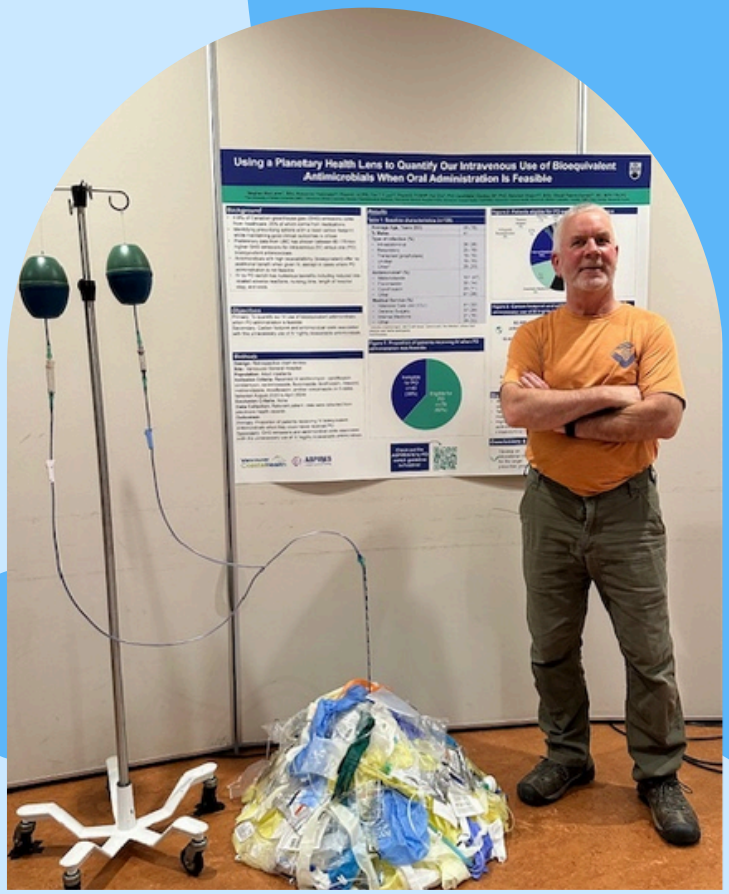
MAR 2026

Vancouver Coastal Health

ASPIRES smart prescribing

Let's Go, PO!



Artist Peter Clarkson and his artwork "**More than a drip**" he created for the VGH World Antimicrobial Resistance Awareness Week 2024. This installation represents a small portion of the waste generated from IV administration of antimicrobials.

IV to PO switch research team in front of Science World that was lit blue for World Antimicrobial Resistance Awareness Week 2025. From left to right: Dr. Anthony Pookpun, Dr. Tony Bi, Dr. Rosanne Thalakada, Dr. Shaqil Peermohamed, Shirley Zhu, Meghan MacLaren, Dr. Tim Lau

Intravenous to Oral Antimicrobial Switch: A win for patients and the planet

- Reduces line-related adverse effects (e.g. clots, line infections), workload, hospital length of stay, cost, waste and related carbon emissions.
- Planetary Health is one of the four VCH strategic framework pillars with the goal of reducing health care emissions and achieving zero unnecessary waste.

Planetary Health

POP QUIZ

1. **What proportion of Canadian healthcare emissions come from medications?**
   A) 5% B) 10% C) 25% D) 50%

2. **What is the difference in carbon footprint between ciprofloxacin 400mg IV q12h x 1 week vs. ciprofloxacin 500mg PO BID x 1 week?**
   A) IV ~10 times higher than PO
   B) IV ~25 times higher than PO
   C) IV ~50 times higher than PO
   D) IV greater than 100 times higher than PO

3. **Which of the following antimicrobial(s) have high oral bioavailability?**
   A) Ciprofloxacin B) Fluconazole C) Metronidazole
   D) Trimethoprim-sulfamethoxazole E) All of the above

4. **How much nursing time is estimated to be saved per dose by switching from IV to PO?**
   A) 5 minutes B) 10 minutes C) 15 minutes
   D) Over 20 minutes

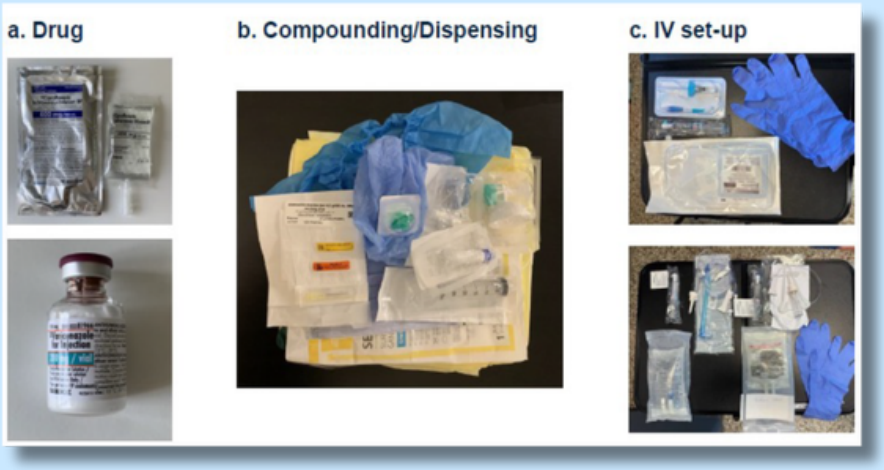
Answers on next page

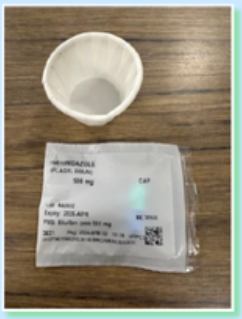
IV vs. PO

MAR 2026

MacLaren M, Thalakada R, Zhu H, Lau T, Shajari S, Bi X, et al. Using a planetary health lens to quantify intravenous use of bioequivalent antimicrobials when oral administration is feasible. JAMMI. 2026 Feb 12;0(0). doi:10.3138/jammi-2025-0029_MacLaren

WASTE





GREENHOUSE GAS EMISSION

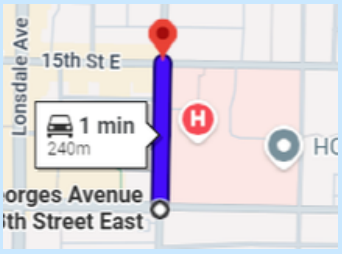
(EQUIVALENTS IN KM DRIVEN BY A GAS-POWERED CAR)

ciprofloxacin 400mg IV Q12H x 7 days

LGH to Porteau Cove

43 km

ciprofloxacin 500mg PO BID x 7 days



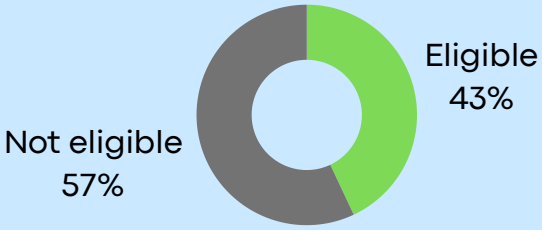
13th St to 15th St

0.2 km

COASTAL DATA FOR REFLECTION

When IV order initially placed...

Proportion of patients eligible for PO



Top bioequivalent antimicrobial eligible for PO switch...

metronidazole 69%

Pop Quiz Answers: 1. C) 2. D) 3. E) 4. D)

ASPIRES
smart prescribing

PO = per os (by mouth)
IV = intravenous

October 6, 2025

Let's GO, PO!

The problem:

IV antimicrobials have a significantly higher carbon footprint versus PO

- The Canadian healthcare system contributes directly to climate change
- IV antimicrobials produce a significant amount of waste versus oral (PO)
- Patients are often ordered IV antimicrobials when PO options can be safely used

The solution:

Use oral antimicrobials preferentially whenever clinically appropriate for the patient*

Benefits for healthcare:

- ✓ Easier for patients to take
- ✓ Avoids patient adverse effects from IV catheter (i.e., clots, line infections)
- ✓ Reduces healthcare staff workload
- ✓ Reduces length of stay and hospital costs

Benefits for the planet:

- ✓ PO has a significantly lower carbon footprint compared to IV
- ✓ The average greenhouse gas emissions savings per patient per day from switching IV to PO is 1014 g CO_2-eq

That's like driving your gas-powered car from Stanley Park to Capilano Suspension Bridge (about 5km)!

Say this: **Let's GO, PO!**

Check out our IV to PO switch guideline in Firstline!

*PO is only contraindicated when the patient is unable to take oral, has a poorly functioning gastrointestinal tract, is at risk of septic shock, has significant drug-drug or drug-enteral formulation interactions that may alter absorption, or has an infection that requires IV route only.

Highly bioavailable antimicrobials: Azithromycin†, ciprofloxacin, clindamycin, fluconazole, linezolid, levofloxacin, metronidazole, moxifloxacin, sulfamethoxazole-trimethoprim, voriconazole. †Azithromycin has reduced bioavailability which is compensated by high tissue penetration and a long half-life.

References:
Ramirez JA, Bordon J. Early switch from intravenous to oral antibiotics in hospitalized patients. Arch Intern Med 2001; 161:848–50.
Rojo D, Pinedo A, Clavijo E, Garcia-Rodriguez A, Garcia V. Analysis of risk factors associated with nosocomial bacteraemias. J Hosp Infect 1999; 42:135–41.
Sevinc F, Prins JM, Koopmans RP, et al. Early switch from intravenous to oral antibiotics: guidelines and implementation. J Antimicrob Chemother 1999; 43:601–6.
Mertz D, Koller M, Haller P, et al. Outcomes of early switching from intravenous to oral antibiotics on medical wards. J Antimicrob Chemother 2009; 64:188–9.