Environmentally Informed Prescribing in Kidney Care: An environmental impact scan of a provincial kidney formulary

Methods

111 medications from British Columbia Renal Formulary were evaluated.

Carbon Footprint (CFP)
by Medicine Carbon Footprint (MCF) Formulary

Persistence (P), Bioaccumulation (B), and Toxicity (T) in aquatic environments by Janusinfo database

Results

24.3% medications - high or very high CFP. CFP was dose-dependent

26.1% Persistence (P)

4.5% bioaccumulation (B) in adipose tissue of aquatic organisms

12.6% High toxicity (T)
4.5% Very high toxicity (T)

Medication-specific findings

- ✓ Lower B, T, and CFP for ACE-inhibitors vs angiotensin receptor blockers
- ✓ Amlodipine had lower P, B, & CFP than other calcium channel blockers
- ✓ Lanthanum had highest CFP among phosphate binders
- ✓ Sodium bicarbonate (capsules) & potassium citrate had very high CFP
- ✓ Among cytotoxic agents:
  - Cyclophosphamide was only agent with P
  - Cyclosporine had highest B potential & high CFP
  - Mycophenolate had high T & CFP

*Data was unavailable for many formulary medications

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Conclusion: Consideration of pharmaceutical carbon footprint and their persistence, bioaccumulation, & toxicity in aquatic environments can aid environmentally informed prescribing. Local usage data & regulations for manufacturers to provide environmental impact data universally are needed.

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