Published toxicology related articles of the month (March) from BC

Emergency Department Protocol for Patients With Presumed Fentanyl Overdose

Among 1,009 uncomplicated presumed fentanyl overdoses, median length of stay was 173 minutes.

Authors concluded "patients with uncomplicated presumed fentanyl overdose-typically after injection-deterioration, admission, mortality, and post-discharge complications appear low; the majority can be discharged after brief observation. Patients with normal triage vital signs are unlikely to require ED naloxone." (Scheuermeyer et al. 2018)

--- See more at Ann Emerg Med. 2018 Mar 9

Language of Overdose Prevention

"Language has significant implications for how we view and respond to public health issues. Conventional moralistic messaging around drug use stigmatizes people who use drugs and inhibits the implementation of evidence-based harm reduction interventions that do not condemn drug use." (Collins et al. 2018)

"Reframing overdose prevention to highlight the imperative to address the ongoing public health emergency is an important first step in implementing urgently needed response strategies." (Collins et al. 2018)

--- See more at Int J Drug Policy

Fentanyl and heroin contained in seized illicit drugs and overdose-related deaths in British Columbia, Canada: An observational analysis

Fentanyl is increasingly being found combined with other opioid and non-opioid illicit drugs.

Authors showed that a strong positive relationships exists between

- The number of seized fentanyl samples and total overdose deaths (R2 = 0.97)
- The number of seized fentanyl and fentanyl-detected overdose deaths (R2 = 0.99)
- The number of seized heroin samples and total overdose deaths (R2 = 0.78) (Baldwin et al. 2018)

--- See more at Drug Alcohol Depend

Inflammatory Health Effects of Indoor and Outdoor Particulate Matter; Review

More than 90% of young adults who use drugs in *Rhode Island* reported willingness to use rapid test strips regardless of having ever overdosed. (Giles et al. 2018) [contributor from BC]

This findings suggest that rapid fentanyl testing is an acceptable harm reduction intervention among young people.

--- See more at Harm Reduct J.

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US deaths from lead exposure 10 times higher than thought; 412,000 deaths in the US attributed to lead contamination

A new study in the lancet public health reveals that Low-level lead exposure and mortality in US adults are correlated. (Lanphear et al.)

Researchers studied 14,289 adults with a geometric mean concentration of lead in blood of 2·71 µg/dL (geometric SE 1·31).

Among them, and during median follow-up of 19·3 years (IQR 17·6–21·0), 4422 people died, 1801 (38%) from cardiovascular disease and 988 (22%) from ischaemic heart disease.

Investigators showed that an increase in the concentration of lead in blood from 1·0 µg/dL to 6·7 µg/dL (0·048 µmol/L to 0·324 µmol/L) that is the 10th to 90th percentiles, was associated with

- All-cause mortality (hazard ratio 1·37, 95% CI 1·17–1·60),
- Cardiovascular disease mortality (1·70, 1·30–2·22), and
- Ischaemic heart disease mortality (2·08, 1·52–2·85).

The population attributable fraction of the concentration of lead in blood was for

- All-cause mortality 18·0% (95% CI 10·9–26·1), which is equivalent to 412 000 deaths annually.
- 28·7% (15·5–39·5) for cardiovascular disease mortality, which correspond to 256 000 deaths
- 37·4% (23·4–48·6) for ischaemic heart disease mortality, which correspond to 185 000 deaths a year from ischaemic heart disease.

Low-level environmental lead exposure is an important, but largely overlooked, risk factor for cardiovascular disease mortality.

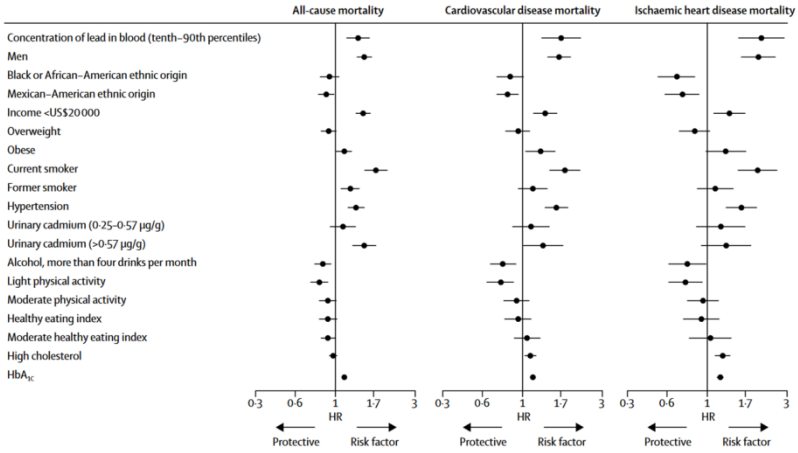

Figure 1. Risk factors for all-cause mortality, cardiovascular disease mortality, and ischaemic heart disease mortality Adjusted hazard ratios (HRs) are shown as dots and 95% CIs as horizontal lines. HRs for cholesterol and glycated haemoglobin (HbA1c) refer to an IQR-sized increase (56 mg/dL and 0·7%, respectively). HRs for age represents a 10-year increase. Figure adopted from (Lanphear et al.)

BCTOX --- Implication for BC:

Extrapolate the rates for BC based on population size would not be accurate as concentrations of lead in blood are likely to be somewhat lower in British Columbia. --- If it is done so, frequency of attributed deaths would be in thousands!

--- See more at The Lancet Public Health

Exercising in diesel exhaust does not adversely affect blood pressure

Exercising in diesel exhaust did not adversely affect plasma NOX, endothelin-1, FMD and blood pressure.

"Therefore, recommendations for healthy individuals to moderate or avoid exercise during bouts of high pollution appear to have no acute protective effect." (Giles et al. 2018)

--- Se more at PLoS One

Inflammatory Health Effects of Indoor and Outdoor Particulate Matter; Review

All combustion-derived particulate matters (PMs) is inflammatory to some extent in the lungs. A significant portion of the cardiopulmonary disease burden associated with these exposures. (Wu, Jin, and Carlsten 2018)

Recommendations are:

- Reduce particulates at the source,
- Decrease the inflammatory potential of PM output,
- If exposure is unavoidable, administer anti-inflammatory treatment

--- See more at J Allergy Clin Immunol

Aquatic Noise on Fish Behavior A Meta-Analysis

Anthropogenic or environmental noise pollution of the aquatic environment are important and on rise. The most predominate responses include: (Cox et al. 2018)

- Foraging ability,
- Predation risk,
- Reproductive success
- Increase the hearing thresholds
- Increase the cortisol levels
- Affect complex movements and swimming abilities

--- See more at Glob Chang Biol

Disruption of the gut microbiota early in life results in exacerbation of immune responses that cause acute vascular rejection

In this study, short-term treatment of mice for only the first 3 weeks of life with an antibiotic cocktail (ampicillin, vancomycin, metronidazole, neomycin sulfate) in drinking water has disrupted gut microbiota (reduced total bacterial content in the intestine and disrupted the bacterial composition) in graft recipients.

"Disruption of the gut microbiota early in life results in exacerbation of immune responses that cause acute vascular rejection." (Rey et al. 2018)

--- See more at Transplantation

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