

Severe Malaria in Canada 2014-2017: Report from Canadian Malaria Network

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Possible through support of Public Health Agency of Canada

Background - Malaria in Canada

- Imported malaria remains principle, preventable life-threatening infection among Canadians travelling abroad
- Estimate more than million travellers at risk annually
- 400-1000 cases annually, lots of under-reporting

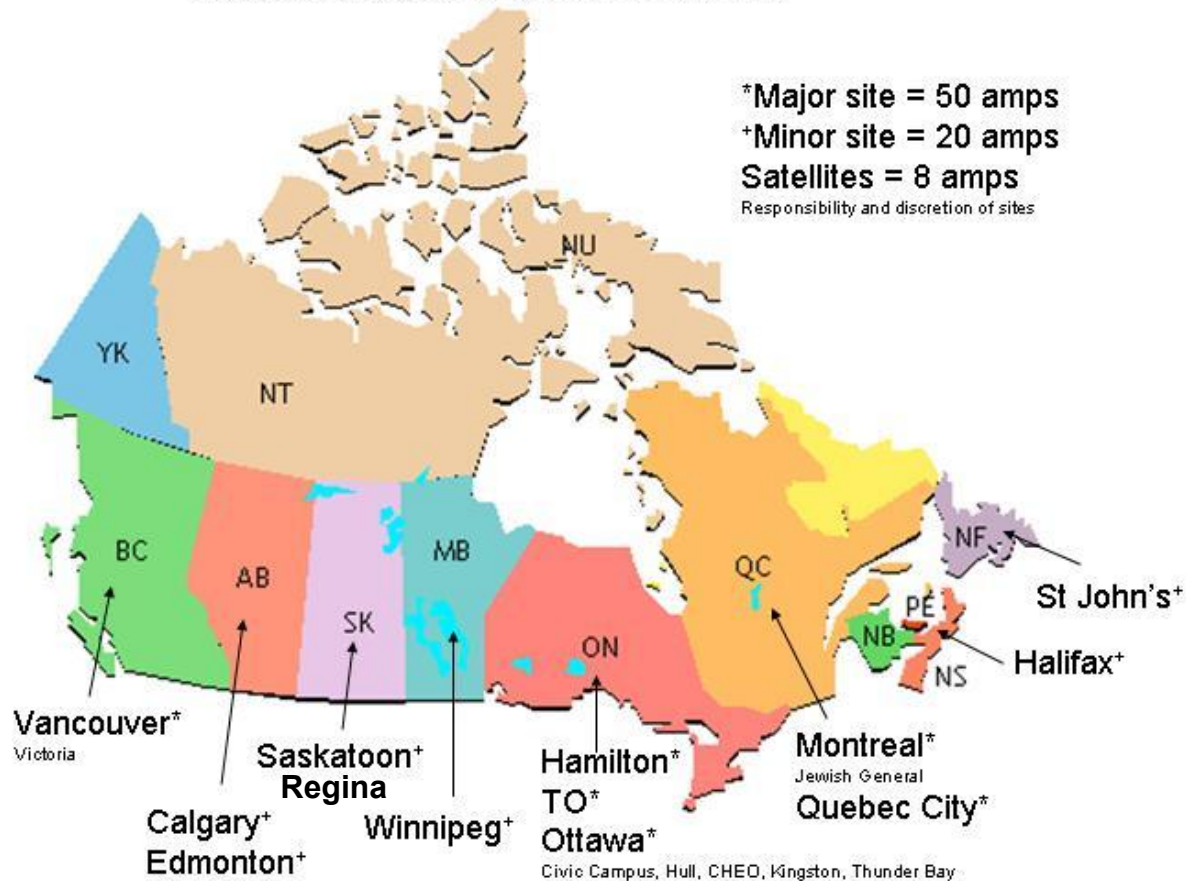
No artemesinin drugs licenced and readily available in Canada

Background Canadian Malaria Network

- Established 1990s to distribute IV Quinine for treatment of severe malaria
- Expanded to include artesunate end 2009 - from generous collaboration with US WRAIR, and over past two years through purchase of Guilin product
- Special access - special process for CMN

- **Goal** to make safe, effective parenteral therapy readily available across the country
- Surveillance information collected with distribution of drug - D1 and D7
 - Patient characteristics
 - Risk factors for malaria and severe malaria
 - Clinical outcomes
- Collect information on severe adverse events

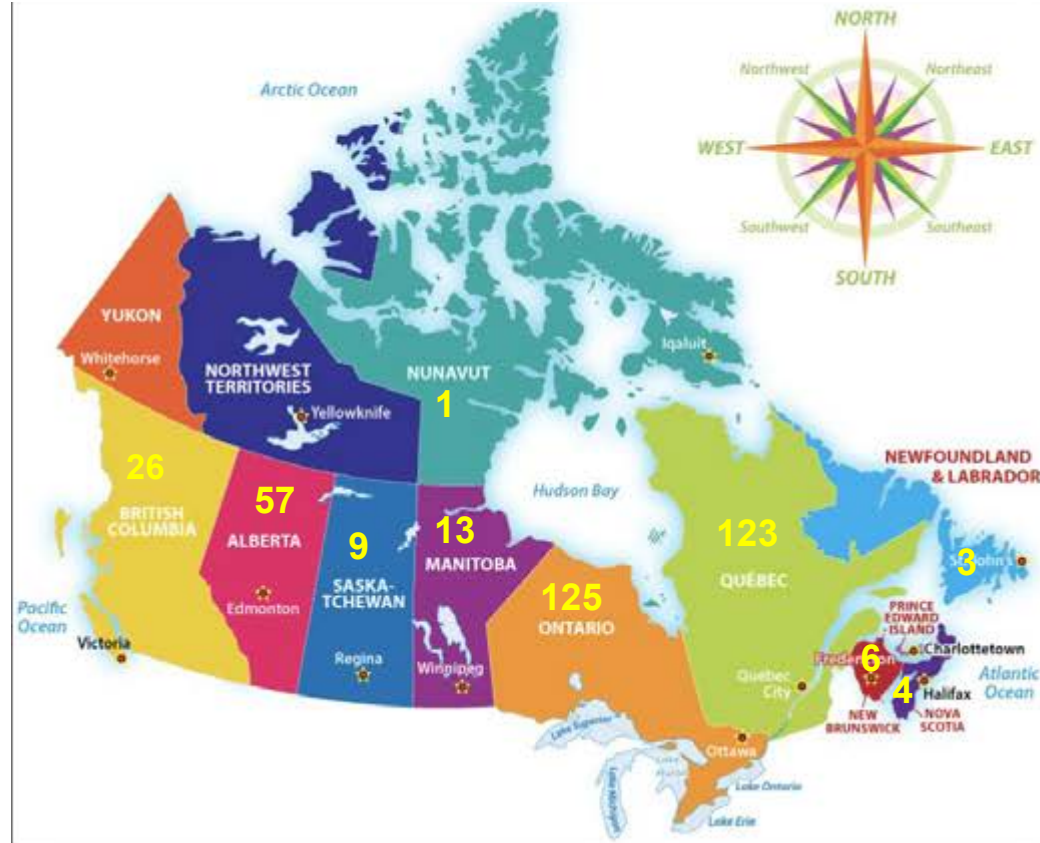
CMN Sites and Satellites Across Canada



NOTE All sites and satellites have supply of artesunate and quinine

Canadian Malaria Network 2014-2017

- 367 cases
 - 2014 - 61; 2 quinine
 - 2015 - 82; 1 both
 - 2016 - 100; 2 quinine, 3 both
 - 2017 - 124; 6 quinine, 1 both
- 248 (67.5%) presented in Ontario and Quebec
 - Largest populations
 - Majority of migrants



Canadian Malaria Network 2014-2017

- Canadian citizens 212 (58%)
 - Only 19% were Canadian born
 - 54% African born
- Mean age 33.4 years
 - Children (<18 y) 103 (28%) - mean 7 years
 - Pregnant 13
- Region of exposure
 - 279 (76%) Africa 279; 14 Asia; 6 Americas (4 DR, 1 Haiti) 1 Afghanistan; 44 unknown

Canadian Malaria Network 2014-2017

- Reason for travel
 - Visiting friends and relatives (VFR) 161; 43%
 - Migration 72, 20%; business 42; vacation 24; volunteer 20; educ 5
 - Children account for 22% all VFR travellers and 71% of all recent migrants
- Chemoprophylaxis use
 - Reported use in only 11% (41)
 - Most did not use or adhere to appropriate drug (4% overall)
 - ATVPG 17, CQ 4 (AFR), Doxy 5, MQ 5, other 10

Adverse events with Artesunate (10)

Post Artesunate Delayed Hemolysis

- Required 1 unit of blood 1 week post discharge
- Hemolysis- Serious complication
- Readmitted to hospital HG 60
- Headaches and possible PADH
- Patient on follow up and has hemolytic anemia and acute renal failure.
- 9 days following discharge patient presented to the ER and was readmitted with severe delayed hemolysis with Hgb 76g/L.

Other hematologic abnormalities

- Anemia and leukopenia
- Neutropenia - 8 days post d/c AMA on Nov 18th Blood cultures found neutrophils .24 and repeats BC on Nov 21st found neutrophils back up to 2.9 - spontaneously resolved.
- Responded well to artesunate for treatment of malaria, however 2 days after the start of IV therapy pt. developed Neutropenia. ? Concurrent dengue or inappropriate prophylaxis (Quinine)

Delays and Hospital stays

Time from symptoms to visiting health care on average 3.65 days (max 22 days)

Hospitalization - 9 NOT hospitalized

Average hospital stay 4.8 days; ICU 1.3 days

Lessons Learned

- Worthwhile to have drug stationed throughout country
- Appropriately used
- Vast majority of delays - patient delays
- Need to be diligent for drug related AEs - 4 weeks

- **Need to educate, especially new and more distant migrants - of malaria risk, prevention and management of symptoms**

QUESTIONS?

Special thanks to all the volunteers within the Canadian Malaria Network

Tropical Medicine/Infectious Diseases Physicians across country; hospitals; pharmacies

Public Health Agency of Canada

Health Canada - Special Access Program