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

National Coordinator: Anne E McCarthy
Research Coordinator: Stephanie (Carson) Joyce
Pharmacy Techs: Anne Marie Dugall and Susan Fetzer
Pharmacy ID Educator: Rosemary Zvonar

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
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