

## Severe malaria in Canada, 2014-2022

Anne E McCarthy<sup>1</sup>, Mireille Desroches<sup>2</sup>, Julia Smith<sup>2</sup>, Christopher A Bell<sup>2</sup>, Katherine Plewes<sup>3,4,5</sup>

<sup>1</sup> Department of Medicine, University of Ottawa, ON, Canada, <sup>2</sup> Office of Travel Health, Centre for Border and Travel Health, Health Security and Regional Operations Branch, Public Health Agency of Canada, Ottawa, ON, Canada, <sup>3</sup> Department of Medicine, University of British Columbia, Vancouver, BC, Canada, <sup>4</sup> Mahidol Oxford Tropical Medicine Research Unit, Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand, <sup>5</sup> Nuffield Department of Medicine, Centre for Tropical Medicine and Global Health, University of Oxford, Oxford, United Kingdom

**Objectives:** The purpose of this study is to describe the epidemiology and clinical characteristics of travel-related severe malaria in Canada.

**Methods:** Data collected by the Canadian Malaria Network were used to describe patient characteristics and clinical outcomes of severe malaria diagnosed in Canada from January 2014 to December 2022.

**Results:** A total of 595 cases of severe malaria received parenteral therapy; patients received artesunate, quinine, or both (97.5%, 1.8%, and 0.7%, respectively). Of those who acquired malaria during travel in Africa (n=560), most were from West Africa (43.9%), followed by Central Africa (28.6%) and East Africa (21.3%); South Asia was the most common region in Asia (n=14/15, 93%). The majority of severe malaria was due to *P. falciparum* infection (n=519/595, 87%). The predominant reason for travel was visiting friends and relatives (n=321, 54%). In 2022, the number of severe malaria cases (n=83) was comparable to 2019 pre-pandemic levels (n=82). Adults (20 to 44 years) comprised the predominant age group affected (n=231, 39%). Among the 169 children aged 0 to 19 years, the highest proportion of cases was reported in those less than 10 years (n=107, 63%). Common complications included hyperparasitemia (n=150), jaundice (n=72), prostration (n=49), and impaired consciousness (n=46).

**Conclusion:** The overall incidence of imported malaria in Canada is poorly understood due to variable provincial reporting processes. Improved surveillance of malaria among returning travellers is needed to better understand those at the highest risk of infection and severe outcomes.