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A Systematic Review of Mosquitoes Aboard International Conveyances



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INTRODUCTION

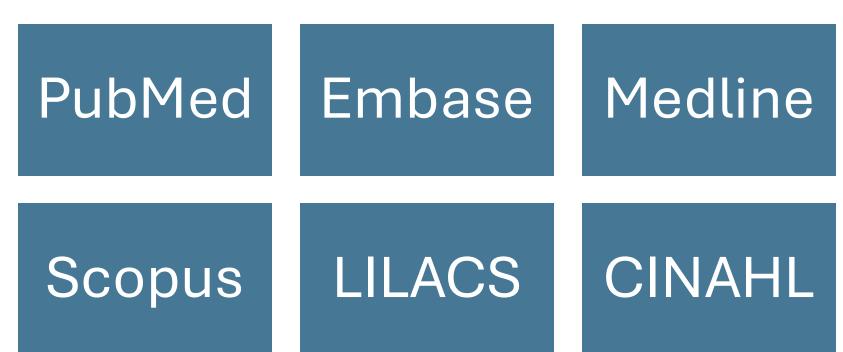
- Vector borne disease can be disseminated globally via aircraft, marine vessels, rail cars, and other ground conveyances.
- Recent data on the threat of mosquitoes aboard conveyances is limited. To address this, we conducted a systematic review of studies reporting mosquito detections on international conveyances.

METHODS

Inclusion	Exclusion
all studies reporting on the identification of mosquitoes on or in a conveyance.	 conducted in putative models of conveyances that did not fully replicate the conveyance environment (e.g., non-pressurized shed as a model of an aircraft cabin). Epidemiological studies of airport malaria where the mechanism of transmission was not unequivocally aircraft related epidemiological studies reporting only on larval surveillance activities as a proxy for vector-competent adult mosquitoes.

Table 1: Inclusion and exclusion criteria

DATABASES



Searched from inception to May 31, 2024 without language restriction

RESULTS

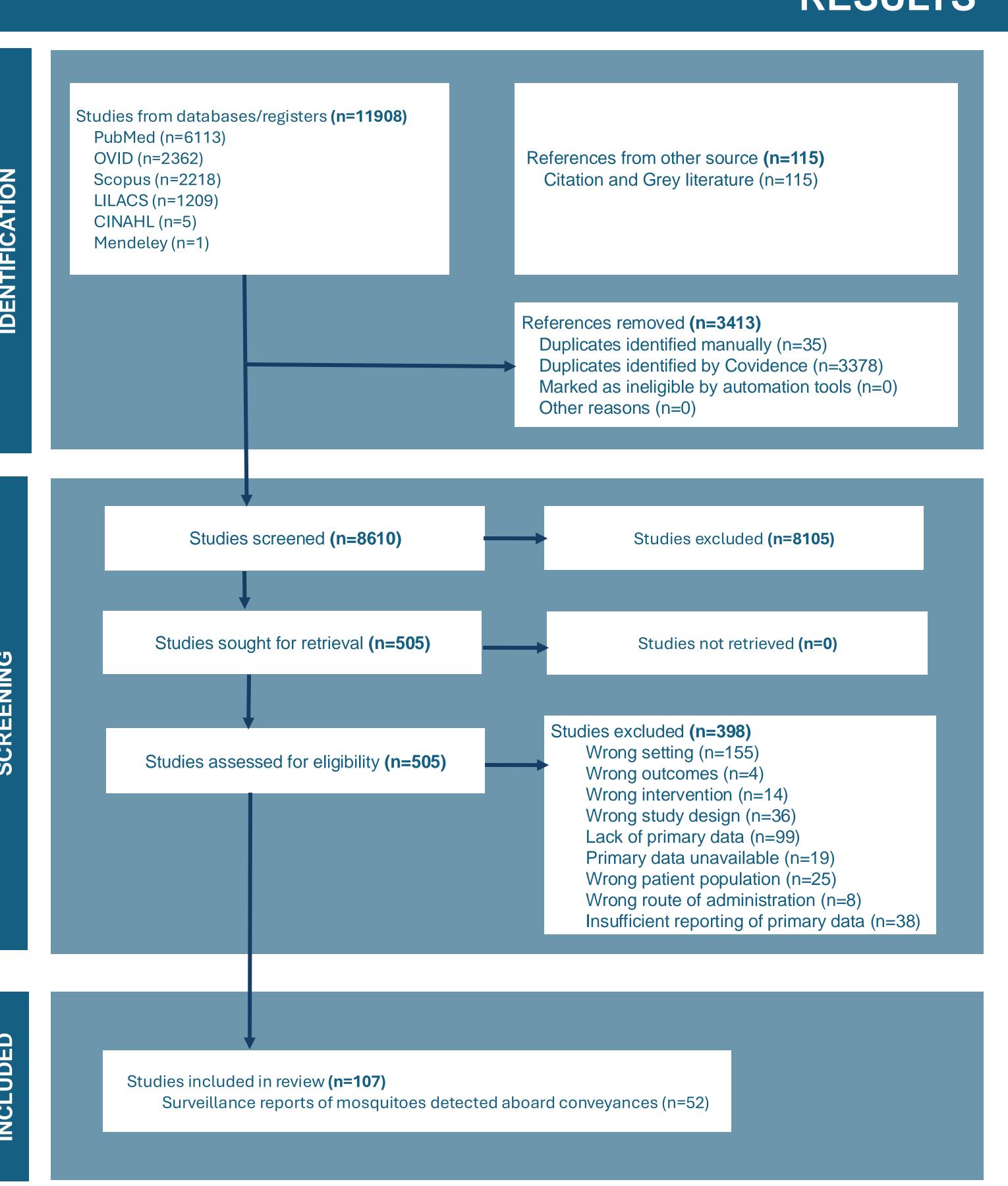


Figure 1: PRISMA Flow Chart with modification

Key Findings



one report of airplane malaria with a clear link to airplane exposure



Studies surveying air land and sea conveyances report vector competent species such as: Aedes, Anopheles, Culex, and other genera



Notable detections of Aedes aegypti aboard aircraft in non-endemic regions (e.g., Japan, UK, Belgium, Germany) highlight the global risk of vector transport.



The novel detection of Aedes albopictus and Aedes japonicus aboard ships in New Zealand highlights the risk of marine conveyance of exotic species.



Detection of adult mosquitoes aboard spacecraft

CONCLUSION

- The compiled literature strongly supports surveillance of aircraft and marine vessels for adult mosquitoes.
- This should be expanded to include systematic, large-scale screening for pathogen carriage.

REFERENCES

1. WHO aircraft disinsection methods and procedures, 2nd ed. Geneva: World Health Organization; 2023 (https://iris.who.int/handle/10665/374318)