Can Electronic Clinical Notes Identify Travelers with Zika?

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**BACKGROUND / OBJECTIVES**

Travel history can help differentiate a public health emergency from a travel-related infection by providing information on exposure. However, such information is often available only in unstructured clinical documents. We are not aware of existing work that has reported the feasibility of automatically extracting travel history, likely due to a need for annotated data and a process for selecting data. We aimed to assess feasibility of extracting past travel history mentions from the electronic health record in an automated fashion by first annotating a dataset and then developing a machine learning model to extract travel history locations from clinical documents.

**METHODS**

In collaboration with the National Biosurveillance Integration Center (NBIC), clinical notes were extracted from patient records for encounters with Zika, dengue, and chikungunya virus testing in the Department of Veterans Affairs.

- Extracted 4,584 snippets from a set of >250k using a semi-automated bootstrapping process to identify documents containing potentially relevant information using locations and phrases (see right).
- Manually annotated snippets for travel affiliation and locations visited including negation states (i.e., “pt denies travel to Puerto Rico”).
- However, time period of the travel (if stated) was not annotated.
- Trained a Conditional Random Field (CRF) model to extract affirmed travel locations outside of the continental US.

**ANNOTATION RESULTS**

**MODELING RESULTS**

**REFERENCES**


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