

# ISDS Public Health Practice Problem Definition

## USE- CASE/PROBLEM TITLE

Negation in Chief Complaints and Triage Notes

## CONTACT INFORMATION

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## PROBLEM DESCRIPTION

### Summarize the problem:

False positive syndrome hits are created when a syndromic classification process cannot properly identify negated terms. For example, a visit is classified into a fever syndrome when the chief complaint or triage note says “denies fever.”

NC DETECT’s current approach is to use a combination of Emergency Medical Text Processor (EMT-P) (available at <https://www.ibridgenetwork.org/#!/profiles/6065458510418/innovations/33/>) and NegEx (available at <http://toolfinder.chpc.utah.edu/content/contextnegex>). This approach works for the majority of negation in triage notes.

Challenges appear, however, when negation is complex and/or doesn’t follow set rules. In addition, some EHRs are generating triage note text through the use of templates. Templates can speed up data entry for clinicians but can result in text that is difficult to process for negation using current NLP approaches.

### Example 1 --

EMERGENCY DEPARTMENT TRIAGE NOTE Travel Screen: TRAVEL SCREEN: Have you had recent travel outside the US to a country with wide-spread Ebola transmission? OR Have you been exposed to someone who has travelled to Ebola affected region in the past 21 days? No

**Problem:** this record will be included in NC DETECT’s Ebola syndrome because the “no” at the very end of the triage note cannot be identified as negating the preceding text.

### Example 2 --

Chief Complaint: Cough; Pain Addressed: Y - ; Hearing Impaired: N; Context: Hx asthma; Hx Diphtheria, Pertussis, Tetanus Vaccination: Y - ; Nausea / vomiting: N - ; Breathing is : Unlabored; Renal; Voiding WNL; Notes: P/t d/c from ED ambulatory with family.

**Problem:** NC DETECT’s current negation processing does NOT identify nausea and vomiting as being negated.

**North Carolina and the other jurisdictions listed in this use case can provide additional negation examples upon request.**

## SOLUTION REQUIREMENTS

**Describe the type of solution you are seeking (e.g., anomaly detection, signal validation, data quality characterization):**

Data processing step to identify negated terms. For example:

- 1) Pre-process the free text as needed (change misspellings, abbreviations, synonyms into standard terms)
- 2) Identify the negation term
- 3) Identify the terms that are negated and mark them as terms not to be used for syndromic classification (NC DETECT's current approach is to delete the negation term and any terms identified to be associated with that negation term and then to use this modified text in syndromic classification)

**Describe what type of solution would enable you to implement it in your practice setting (e.g., Do you need an algorithm? Do you need code? If you need code, does it have to be written in any particular programming language?).**

Code – language can vary but should be able to run in a Windows environment

**Describe who will use the solution. For example, how many users will there be and what level of skill do the users have? Are the users all within a single jurisdiction/organization?**

This solution would have value across multiple jurisdictions

**Note any other constraints:**

## VALIDATION

**Does a gold standard exist with which to validate the proposed solutions?**

- Gold standard exists within the provided data set (e.g., an outbreak signal nested within baseline data)
- Gold standard exists in a separate data set, which can be provided to the workgroup (e.g., laboratory data to validate ED data)
- Gold standard exists but cannot be furnished
- Gold standard does not exist
- Sample Data can be provided for testing and development purposes

## INPUT DATA

**List the minimum data elements that can be provided to address the problem:**

Chief complaints and triage notes

**How much historical data can be provided?**

This isn't necessary for this particular problem. The data set can be generated to include as many negation challenges as possible.

**Describe any restrictions for sharing the data:** None

**Note any other relevant data characteristics:**

## OUTPUT DATA

A column with the raw triage note data and a column with processed triage note data that has negated terms removed.

## NOTES