



## GLOBAL RAPID IDENTIFICATION TOOL SET

A biosurveillance application that enables infectious disease analysts to monitor non-traditional information sources for infectious disease threats.

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Partners: International Society for Infectious Disease,  
Kitware, ProMED, Epidemico

Project sponsor: Defense Threat Reduction Agency

GRITS analyzes textual data sources (e.g., online news outlets, ProMED reports, and blogs) by identifying, extracting and succinctly visualizing critical public health information and suggesting possible associated infectious diseases. Via the web-interface, infectious disease analysts can examine dynamic visualizations of GRITS' analyses, perform powerful queries of an index of over 250,000 infectious disease reports, and explore related historical infectious disease emergence events. The GRITS API can be used to continuously analyze information feeds and large collections of data and enables GRITS technology to be easily incorporated into larger surveillance systems. GRITS is a flexible and pluripotent tool that contains robust Natural Language Processing (NLP) and machine learning algorithms that can be modified to conduct sophisticated report triaging, expanded to include customized alert systems, or tailored to address other surveillance needs. In conjunction with human expertise, GRITS is a valuable tool for infectious disease surveillance.

Diagnostic dashboard view (below) showing the GRITS analysis of a report on an outbreak of Dengue Fever. The results of the GRITS disease classification are displayed in the top left. Here, Dengue fever has been identified as the disease the article is most like.

Diagnosis

Confidence

Disease

Characteristics

0.995

Dengue

0.995

Fever

Rediagnose

Feedback

Diseases

leukopenia

dengue

thrombocytopenia

Pathogens

dengue virus

vector

DENV

Symptoms

leukopenia

fever

petechiae

eye pain

abdominal pain

nausea

infection

vomiting

liver enlargement

thrombocytopenia

mass

rash

joint pain

lethargy

anorexia

muscle pain

headache

Hosts

common mosquito

larval

mosquito

pig

Modes of Transmission

vector

aedes

Case Counts

Choose View: Text

Dengue

Outbreak

Federated States of Micronesia

2012-2013

Weekly

July 19, 2013 / 62(28):570-573

On September 26, 2012, a woman aged 35 years from Kosrae in the Federated States of Micronesia (FSM) was hospitalized with fever, headache, muscle pain, vomiting, leukopenia, and thrombocytopenia. A rapid diagnostic test (RDT) (Dengue Duo, Standard Diagnostics Inc.) was positive for dengue virus (DENV) nonstructural protein-1 (NS1). During the next week, seven more persons with suspected dengue were tested with the RDT, of whom three were RDT-positive for NS1 or anti-DENV immunoglobulin M (IgM). During October, the Kosrae State Department of Health Services, with support from the FSM Department of Health and Social Affairs and the World Health Organization (WHO), responded to the outbreak with enhanced surveillance, training in clinical management, analysis of hospital surge capacity, a rapid mosquito survey to identify species and distributions, and control measures. By March 14, 2013, approximately 3.7% of Kosrae State residents had been hospitalized with suspected dengue. The outbreak consumed scarce medical and public health services, including outpatient, inpatient, and laboratory services, resulting in redirection of human and material resources from other important medical and public health activities. Because the health consequences of dengue can be substantial in resource-limited settings, Pacific Island nations might wish to consider preparedness measures for dengue outbreaks such as developing and testing outbreak response plans and ensuring adequate capacity for epidemiologic surveillance and laboratory testing.

Investigation and Results

Kosrae, with a population of 6,600, is a small (42 square miles [109 square kilometers]) volcanic island that forms most of the land mass of Kosrae State, one of the four states of FSM. Kosrae has four municipalities, of which Lelu is the administrative center and home of 33% of the state's residents and the 40-bed Kosrae State Hospital. The only previously documented DENV transmission on Kosrae was an outbreak of dengue virus serotype 2 (DENV-2) in 1999 (1). During October 2012, the number of dengue cases continued to increase, and in late October an epidemiologist from WHO was deployed to provide technical assistance to the Kosrae State Department of Health Services outbreak response team. Six serum specimens were submitted for reference laboratory testing by reverse transcription-polymerase chain reaction (RT-PCR) and anti-DENV IgM enzyme-linked immunosorbent assay (ELISA) to the Queensland Health Forensic and Scientific Services, Australia. Five of the six specimens were tested with RT-PCR using a novel dried-stra-on-filter-paper surveillance technique at the Institut Louis Malardé, French Polynesia. (2). DENV-4 was detected by RT-PCR in one specimen at both laboratories, and four specimens had detectable anti-DENV IgM antibody, of which two were specific for DENV-4 (3). Thus, DENV infection was confirmed in five (83%) of six suspected dengue cases.

A modified WHO 2009 dengue case definition (4) was used to identify suspected dengue cases with fever plus at least two of the following: anorexia and nausea, rash, aches and pains (headache, eye pain, muscle pain, or joint pain), leukopenia (white blood cells <4,000/mL), or a warning sign (abdominal pain, or tenderness, persistent vomiting, mucosal bleed or widespread petechiae, lethargy, restlessness, clinical fluid accumulation, or liver enlargement >2 cm). The case definition for an RDT-positive case was any suspected dengue case that tested NS1-positive or IgM-

Find articles with...

Any of these diseases:

Fever

Dengue

Add

Any of these keywords:

leukopenia

fever

dengue

thrombocytopenia

common mosquito

larval

pig

vector

aedes

dengue virus

vector

DENV

leukopenia

fever

petechiae

eye pain

abdominal pain

nausea

infection

vomiting

thrombocytopenia

joint pain

lethargy

anorexia

headache

Add

All of these keywords:

mosquito

village

Add

In one of these countries:

Add

Approximate Document Counts:

India : 32 reports

Philippines : 14 reports

Page 0 Previous - Next 10 of 111 Results | Sorted By: Relevance | View: List View

Search Results:

Fiji dengue case count now 68: Report - Outbreak News Today

Thu Jan 29 2015

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

Relevance: 0.29527107

Spike in dengue cases alarm health officials - Catanduanes Tribune

Mon Aug 18 2014

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

Relevance: 0.25013065

Spike in dengue cases alarm health officials - Catanduanes Tribune

Mon Aug 18 2014

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

Relevance: 0.24769199

Navi Mumbai village blames NMMC for rise in dengue cases - India.Com Health

Mon Oct 21 2013

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

Relevance: 0.20560725

Navi Mumbai village blames NMMC for rise in dengue cases - India.Com Health

Mon Oct 21 2013

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: headache, viral infection, adults, muscle aches...

Relevance: 0.20393844

Navi Mumbai village blames NMMC for rise in dengue cases - India.Com Health

Mon Oct 21 2013

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

Relevance: 0.20220508

PRO/SOAS: Dengue - India (11): (Odisha)

Wed Oct 01 2014

HealthMap Disease Label: Dengue

Diseases Diagnosed: Fever, Dengue

Counts: No counts identified

Distinct Keywords: None

GRITS search (above). Keywords identified in the submitted text are displayed in the left column. Histograms of the countries and dates associated with the search results are displayed below the keywords. Detailed diagnosis report (below) showing the relative contributions of different keywords to a disease classification. The disease being classified in this example is Crimean-Congo Hemorrhagic Fever.

Disease	animal bite	bleeding	contact with infected	crimean congo hemorrhagic fever	endemic	exposure	hemorrhagic fever	infected animal	rash	risk	surveillance	tick	tickborne	ticks	turkey	veterinarians	viral	virus	
Crimean-Congo Hemorrhagic Fever	0.059	0.168	0.179	0.032	0.44	0.161	0.035	0.046	0.293	0.037	0.074	0.034	0.427	0.022	0.194	0.057	0.063	0.2110	0.09