

San Joaquin County Science Olympiad
Division A2
DISEASE DETECTIVES 2010

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EVENT DESCRIPTION:

A TEAM OF UP TO: 2

APPROXIMATE TIME: 50 minutes

EVENT PARAMETERS: Calculators supplied by the event manager are the only calculators allowed. No reference materials may be brought into the competition.

THE COMPETITION: Please refer to the event as described in *Elementary Coaches Manual and Rules, 5th Edition*. The San Joaquin County tournament competition will be conducted as follows:

1. Teams will rotate through stations. A station consists of a binder with test questions about a picture, a table, a graph, a diagram, or narrative information.
2. The students will be asked multiple-choice questions.
3. Answers must be recorded on the Scantron form provided. There is only one correct answer.
4. Calculators and pencils will be provided
5. After a specified time period, teams will rotate to the next station. They will not be allowed to return to a previous station.

SCORING (differs from the manual): Each answer is worth one point. The highest number of correct answers determines the winner. There is no penalty for wrong answers. Pre-selected questions are used as tiebreakers. If there is a tie after the first tiebreaking question, those teams progress to the second tiebreaker, etc.

STUDY AREAS

1. **Influenza pandemics from the past and present, with an emphasis on the present 2009 H1N1 pandemic**
2. **Infectious disease epidemiology and control:** Disease identification, agent, occurrence, reservoir, mode of transmission, incubation period, period of communicability, susceptibility and resistance, and methods of control. Students should understand general principles and be able to apply them to the influenza virus. Recommended reference: *Control of Communicable Diseases Manual*, 19th edition, ISBN 978-0-87553-189-2.
3. **Outbreak investigation:** The topic is the 2009 H1N1 pandemic influenza virus.

Note: It is highly recommended that students be aware of all H1N1 issues in the media.

November 5, 2009

Outbreak Investigation Step-by-Step

Note: Only the bolded topics are included in Division A2

Step 1: Verify the diagnosis.

Step 2: Confirm epidemic.

Step 3: Identify and count cases.

Step 4: Tabulate and orient data: DESCRIPTIVE EPIDEMIOLOGY

Person, Time (epidemic curves), Place
Display of information (line listing, tables, graphs, maps, etc.)
Measures of Central Tendency
Attack Rates
Prevalence
Incidence

Step 5: Take immediate control measures.

Step 6: Initiate surveillance.

Step 7: Formulate and test hypothesis.

Formulate the hypothesis.

Test the hypothesis:

Environmental data

Laboratory tests

STUDY DESIGN

Experimental

Observational

Cross-sectional

Cohort study

Case-control study

Analyze the results of the study: **ANALYTIC EPIDEMIOLOGY**

2 x 2 tables

Measures of Association

Relative Risk (RR)

Odds Ratio (OR)

Tests of significance

95% Confidence Interval

p-values

Step 8: Refine hypothesis.

Step 9: Plan and execute additional studies.

Step 10: Implement and evaluate control measures.

Step 11: Communicate findings.