

FORENSIC MEDICINE

Caution: *The content and pictures in the suggested resources are graphic in nature and may be considered offensive by some. HOSA Advisors should seek administrative and parental approval before allowing HOSA members to participate in this event.*

Purpose: To encourage Health Science students to analyze careers in forensic medicine and to work as a team to apply their knowledge and skills in creating a solution to a forensic medicine-related problem.

Description of Event: This event will involve two rounds of competition. Round One will consist of a written test to evaluate the team's understanding of forensic medicine. The top scoring teams will advance to Round Two and will be given a case study related to forensic medicine. Teams will have six (6) minutes to analyze a case study, which will include written information and may include physical evidence. Finally, teams will be given thirty (30) minutes to write their conclusions.

Dress Code: Competitors shall wear the HOSA uniform or proper business attire. Bonus points will be awarded in both rounds for proper dress. All team members must be properly dressed to receive bonus points.

- Rules and Procedures**
1. Competitors in this event must be active members of HOSA in good standing in the category in which they are registered to compete (Secondary or Postsecondary/Collegiate).
 2. Teams must be composed of two (2) members.
 3. Each team will be evaluated in Round One by a fifty (50) item multiple choice written test. Competitors will be given one hour to complete the test which will be administered during the event orientation session. **No proxies are allowed for this event.** Team scores will be added together to determine the top 24 Secondary and top 10 Postsecondary/Collegiate teams who will qualify for Round Two.

Round I: Written Test Plan

- Forensic Pathologist 8%
- Forensic Nursing 6%
- Investigation of Traumatic Deaths 8%
- Forensic Toxicology 10%
- Forensic Odontology 10%
- Forensic Anthropology 10%
- Forensic Taphonomy 8%
- Forensic Entomology 8%
- Identification of Blood, Bloodstains, Biological Fluids and Stains 8%
- Techniques of DNA Analysis 10%
- Forensic Psychology and Psychiatry 14%

4. All official references are used in the development of the written test.
 - Adelman, Howard C., M.D., *Forensic Medicine*. 2007 Infobase publishing, ISBN 0791089266
 - James, Stuart H and Jon J. Nordby. *Forensic Science*. 2005, CRC press, ISBN 0849327474

5. The Round Two order of competition will be pre-assigned on a random basis.
6. Each team will be asked to solve the same case study. The case study is a secret problem that is not disclosed until the event begins.
7. The Round Two case study is a secret topic. Professional ethics demand that competitors DO NOT discuss or reveal the secret topic until after the event has concluded. Competitors who violate this ethical standard will be disqualified. A holding room may be used.
8. No printed or recorded materials may be brought to the competition. Competitors will be provided with index cards for taking notes. They may keep these index cards with them throughout the event.
9. There will be two parts per section as follows:

Part #1	Case study analysis	6 minutes
Part #2	Written conclusion	30 minutes

Multiple rooms or one large room (ballroom) with multiple stations may be used. If one large room is used, there will be tables and chairs for multiple teams. The room will be large enough so that competitors will be able to discuss and prepare their conclusion without being overheard by other teams.
10. The section leader will announce when teams have one (1) minute remaining in each of the two parts by stating, "You have one minute remaining."
11. Case Study: Competitors will use the evidence and information they gather in Part #1 in order to develop a written conclusion.

Part #1 Analysis	This part of the event allows competitors to gather evidence/information about the death. There may be a written police report and/or other written information about the case. There may be physical evidence in the room for the competitors to analyze, including but not limited to a manikin, bones, dental x-rays, photos, or other physical evidence. There may also be a police officer, medical examiner and/or a witness in the room. Each team will see the same information/evidence. Copies of written information, including an autopsy, will be kept by team members to use during Part 2.
Part #2 Written Conclusion	Competitors will identify the time of death, immediate cause of death, manner of death and record their remarks (pertinent observations) about the case that explains why they came to the conclusions they reached.
12. The case study will be graded by a judge with expertise in forensic science.
13. Should a tie occur, the highest team score from the written test is used to break the tie.
14. Competitors must be familiar with and adhere to the "**General Rules and Regulations of the National HOSA Competitive Events Program.**"

Required Personnel (Per Section):

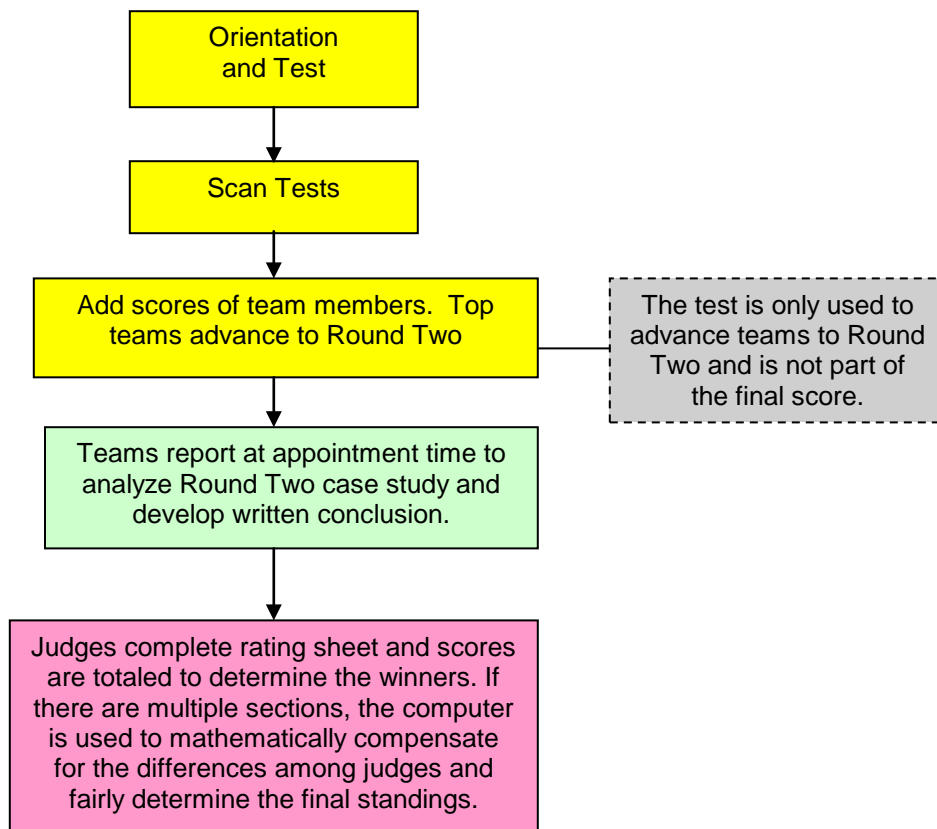
1. One Event Manager (Per Event)
2. One Section Leader per section
3. One - four judges per section (Judges should have experience in forensic science.)
4. Two Courtesy Corps members per section
5. One time-keeper per section (if necessary)
6. Witness or other actors for case study (if required in the scenario)
7. Victim(s) for case study (if required in the scenario)

Facilities, Equipment and Materials (Per Section):

1. Testing room with tables/chairs; or schoolroom desks/chairs for total number of competitors
- *** 2. Number 2 lead pencils with an eraser
3. Test packets which are pre-numbered and Scantron answer forms
4. Case study room(s) with table and chairs – If physical evidence is provided, then a minimum of two rooms are needed per section. Up to six (6) teams may share a large room when preparing the written conclusion.
5. Script (if a witness is part of the scenario)
6. Copy of secret problem, one for each team member and the judge
7. Index cards
8. Clip boards to be used by competitors during crime scene analysis (if needed).
- *** 8. Pencils/pens for competitors' use during the preparation
- *** 9. Competitors may bring and use highlighters during the preparation
- *** 10. Print copy of the event guidelines for the event orientation (one per team).

*** This is the only equipment to be brought to event by competitors.

Event Flow Chart



Sample Case Study

Police Report

A 911 call was made from the home of John Doon at 11:08 pm on Monday, May 28, 2007 by Jack Doon, age 16, son of the owner of the home.

Upon arrival at the home, police find victim Dona Kare lying at the bottom of the stairs, on her side. The victim is unresponsive and not breathing.

Jack Doon states that he and his girlfriend, Dona, were babysitting his infant brother since 3 pm on May 28. No other persons entered or left the house from 3 pm until the time of the accident. Jack states Dona said she did not feel well and went downstairs to get something to drink. Minutes later, Jack heard her scream, followed by banging noises on the stairs. When he ran to see what happened, he saw Dona lying at the bottom of the stairs. When he could not get her to respond, he called 911.

Investigation of the scene is negative for drug paraphernalia and alcohol. It was noted that the sheets, bedspread and pillow cases on the bed in Jack Doon's room were freshly laundered, and that moisture was noted in the washing machine. The inside of the dryer was warmer than room temperature.

Medical Examiner's Report (onsite)

Monday, May 28, 2007, 11:58 p.m. - Victim is lying on the right side. Violet-colored lividity on dorsal surface of the body blanches when pressure is applied. Rectal temperature is 94⁰F. Rigor mortis present in all extremities. No apparent skeletal fractures, although misalignment of neck suggests cervical fracture. Cyanosis is present on the face. There is light bruising on the face and cheeks. Needle track marks are noted on the left antecubital fossa.

Scenario Note: *The case study may include photos and/or a manikin instead of a written medical examiner's report and/or external examination.*

SUMMARY REPORT OF AUTOPSY

Name: Dona Kare	Coroner's Case #: 87654
Date of Birth: 12/30/84	Age: 22
Race: White	Sex: F
Date of Death: 05/28/2007	Body Identified by: Boyfriend

EXTERNAL EXAMINATION:

The autopsy is begun at 11:30 A.M. on May 29, 2007. The body is presented in a black body bag. The victim is wearing a white tank top shirt and blue shorts. Jewelry included one gold ring on right hand, index finger. Also a black digital watch was located on left wrist.

The body is that of a normally developed white female measuring 64 inches and weighing 110 pounds, and appearing generally consistent with the stated age of twenty-two years. The body is cold and unembalmed. Lividity is fixed on the dorsal surface of the body. The hair is light brown and 8 inches in length.

The eyes are closed. The irises are blue and corneas are cloudy. Minimal petechial hemorrhaging is present in the conjunctival surfaces of the eyes. The pupils measure 0.3 cm. Cyanosis is present on the face. There is light bruising on the face and cheeks. There are no ligature marks anywhere on the body.

There are multiple needle puncture marks in the left antecubital fossa.

INTERNAL EXAMINATION:

HEAD--CENTRAL NERVOUS SYSTEM: Subsequent autopsy shows a broken axis bone. The brain weighs 1,303 grams and within normal limits.

SKELETAL SYSTEM: Fx C2

RESPIRATORY SYSTEM--THROAT STRUCTURES: The oral cavity shows no lesions. Petechial hemorrhaging is present in the mucosa of the lips and the interior of the mouth. Otherwise, the mucosa is intact. Small lacerations on lips and areas inside the mouth.

There is no obstruction of the airway. The mucosa of the epiglottis, glottis, piriform sinuses, trachea and major bronchi are anatomic. No injuries are seen and there are no mucosal lesions.

The lungs weigh: right, 355 grams; left 362 grams. Petechial hemorrhaging is present in the lungs.

CARDIOVASCULAR SYSTEM: The heart weighs 253 grams, and has a normal size and configuration. No evidence of atherosclerosis is present.

GASTROINTESTINAL SYSTEM: The mucosa and wall of the esophagus are intact and gray-pink, without lesions or injuries. The gastric mucosa is intact and pink without injury. Approximately 125 ml of partially digested semisolid food is found in the stomach. The mucosa of the duodenum, jejunum, ileum, colon and rectum are intact.

URINARY SYSTEM: The kidneys weigh: left, 115 grams; right, 113 grams. The kidneys are anatomic in size, shape and location and are without lesions.

TOXICOLOGY: Sample of right pleural blood and bile are submitted for toxicologic analysis. Stomach contents are saved.

SEROLOGY: A sample of right pleural blood is submitted in the EDTA tube. Routine toxicologic studies were ordered.

LABORATORY DATA

Drug Screen Results:

Ethanol: 0 gm/dl, Blood (Heart)

Ethanol: 0 gm/dl, Vitreous

TOXICOLOGY DATA

Urine screen {Immunoassay}

Acetaminophen	Positive	Codeine	Neg.
Amphetamine	Trace	Opiate Screen	Trace
Cannabinoids	Neg.	Methadone	Neg.
Cocaine metabolite	Neg.	Dihydrocodeine	Neg.
Alcohol (Ethanol)	Neg.	6 – MAM	Neg.

FORENSIC MEDICINE JUDGE'S RATING SHEET

Section # _____

Level _____ SS PSC

Team # _____

Judge's Signature _____

Items Evaluated	Points Possible					Points Allocated
	Superior	Excellent	Good	Fair	Poor	
1. Time of Death	10		6			
2. Immediate Cause of Death	10		6			
3. Manner of Death	10					
4. Remarks						
• Accurately connects evidence to conclusions.	10	8	6	4	2	
• Accurately applies knowledge of human anatomy and physiology and forensic science in evaluating the death.	10	8	6	4	2	
• Explanations are clear and to the point.	5	4	3	2	1	
• Remarks are neat, concise*, and words are spelled correctly.	5	4	3	2	1	
Total Points	60					

Time of Death: Indicates the date and approximate time of death. A correct response will earn 10 points. A close approximation of the correct answer will earn 6 points.

Immediate Cause of Death: Accurately identifies the medical cause of death. A correct response will earn 10 points. A close approximation of the correct answer will earn 6 points.

Manner of Death: Accurately identifies the manner of death as either:

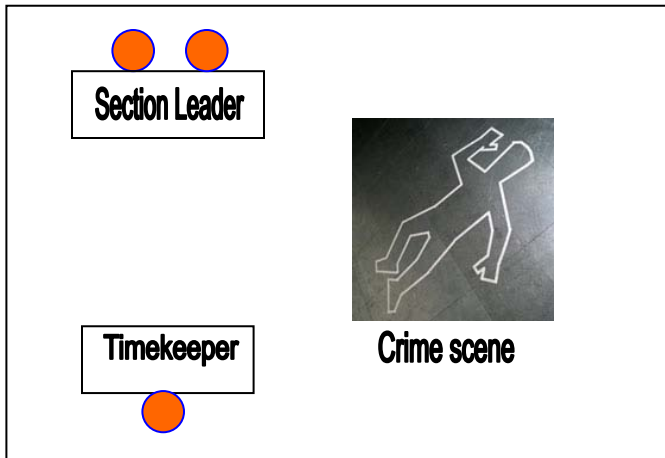
1. Natural
2. Accident
3. Suicide
4. Homicide
5. Undetermined

Remarks: This section is used to explain the physical evidence that led to the conclusions drawn about the time, cause and manner of death. * A concise remarks section is 100 words or less, counting all words that are 4 or more letters in length.

Forensic Medicine Room Arrangement

* Sample room set. Actual room set may vary.

Smaller Room – Case Study “Analysis” Room



Written Conclusion Room (Example shows one large room with 6 stations. Another option would be to use multiple small rooms for the written conclusion. A separate room is used for judging.)

