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Welcome to the NAME 2014 Annual Meeting!

Dear Colleagues and Friends,

Welcome to the National Association of Medical Examiners 2014 Annual Meeting. The NAME Annual Meeting provides an international forum for discussion of a broad range of issues covering death investigation and related topics. This year we have much to discuss and a wonderful host city in which to discuss it all.

Meeting Highlights
This year’s annual meeting is being held from Friday, September 19th through Tuesday, September 23rd, 2014 at the Portland Marriott Downtown Waterfront. Portland has long been a desirable destination for a NAME meeting, and now we are here, in a city that can make legitimate claim as the best and brashest eating town in the United States.

Our meeting will feature presentations and posters that cover a broad range of topics, including snake bite, rabies, media interactions, maintenance of certification in forensic pathology, and conducted electrical weapons and sudden death. Representatives of the National Center for Health Statistics, Centers for Disease Control and Prevention, National Institute of Standards and Technology, the National Institute of Justice, and the Federal Aviation Administration will present on electronic death registration, the Organization of Scientific Area Committees (OSAC), research funds for forensic projects, and investigation of transportation deaths. All these matters pertain to NAME and its members, evidence of the increased visibility of NAME and the practice of forensic pathology. I encourage you to seek out the speakers to discuss their presentations with them, so that we will have a vigorous exchange of information.

The scientific field trip on Sunday afternoon will consist of a visit to the Oregon Health and Science University’s Oregon National Primate Research Center, one of the eight non-human primate research centers in the nation. The center conducts research in aging, AIDS, depression, infectious diseases, substance abuse, and obesity. Having talked with a director of a primate center, I assure you that the work done at these centers is astonishing. As you may imagine, the Primate Research Centers guard access to their laboratories as diligently as we guard access to our morgues, so this is a unique opportunity.

The advance program and other information are available on NAME’s website at http://www.asip.org/name/2014/program.cfm.

Social Events
The meeting begins with our annual Friday evening welcoming reception and dinner to be held at the Portland Marriott Downtown Waterfront. Our exciting menu selection this year will feature 100% ingredients sourced from the bounty of the North West within 100 miles of Portland: Mountain, valley and sea! Also, please help us welcome all international attendees during their international attendees’ reception that occurs prior to Friday’s welcome dinner. On Saturday evening there is an optional dinner cruise on the Willamette Star, which features local cuisine. A resident and fellow reception will be held Saturday, early evening, right after the scientific sessions and just before the dinner cruise.

The Rigor Run/Dead Man’s Walk will take place early Sunday morning. The Cadaver Open Golf Tournament will be held Sunday afternoon following the morning scientific sessions.

The NAME Business Meeting will be held at the Portland Marriott Downtown Waterfront on Monday morning before the scientific sessions begin for the day. The business meeting will include discussion of matters of interest to all NAME members; I urge you to attend so that you may add your voice and vote to
the decision NAME makes at its business meeting. The NAME Luncheon and Award Ceremony will take place at the hotel on Tuesday afternoon. Having made outstanding contributions to the development and improvement of medicolegal investigations in the United States, NAME looks forward to presenting Dr. Randy L. Hanzlick, MD, with the exceptional Milton Helpnern Laureate Award.

Special Acknowledgements
Dr. Giancarlo Di Vella and I gratefully acknowledge all who have provided so much input and effort into the planning and implementation of the meeting, especially the Members and Chairs of the Education, Program and Publications Committees. Thank you to our speakers for their contributions to the program and to our colleagues who have been appointed to moderate sessions. We would not even be able to meet without the contributions of the American Society for Investigative Pathology (ASIP), which serves as meeting manager, and of course our Executive Director, Dee McNally. In particular, please thank Tara Snethen, CMP, CAE, and Ally Kachman, CMP from the ASIP team and Dee McNally when you see them!

Finally, the leadership and members of NAME wish to acknowledge the gracious support from our vendors and sponsors, without whom the meeting would be impossible. We hope that the scientific program organized by the Program Committee will meet your highest expectations. The leadership of NAME asks all members to guarantee future successful meetings and the overall success of NAME by actively participating in the organization by joining one of our many committees and by also completing the online meeting survey that will be sent to all participants at the end of the meeting.

As the 2014 NAME President, I welcome both our established and new colleagues and look forward to your active participation, which is so crucial to the success of this meeting. I hope that our new colleagues will consider joining our association as members to take advantage of the year-round interactions that our current members enjoy!

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The ASCP designates this “live” educational activity (“NAME 2014 Annual Meeting”) for a maximum of 22.0 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

Educational Objective/Target Audience
The objective of the NAME 2014 Annual Meeting is to increase basic and applied pathology knowledge, focusing on autopsy and forensic pathology. The NAME 2014 Annual Meeting is designed to meet the participants’ education needs in the physician competency area of Medical Knowledge, as defined by the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS), and to support participants’ lifelong learning towards a goal of promoting patient safety and improving patient care and is specifically targeted to forensic pathologists, medical examiners, coroners, death investigators, forensic administrators and forensic scientists.

At the completion of the NAME 2014 Annual Meeting, participants should be able to:
1. discuss medico-legal death investigation protocols;
2. describe regulations and competencies for medical examiners;
3. discuss the forensic investigation of accident- and trauma-related death;
4. discuss forensic science approaches to investigation of domestic violence and homicides; and
5. discuss forensic science approaches to sudden death in children and adult populations.

Disclosure of Financial Relationships and Resolution of Conflicts of Interest:
In order to ensure balance, independence, objectivity and scientific rigor in all its educational activities, and in accordance with ACCME Standards, the ASCP requires that all individuals in a position to influence and/or control the content of the physician competency area of Medical Knowledge, as defined by the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS), and to support participants’ lifelong learning towards a goal of promoting patient safety and improving patient care and is specifically targeted to forensic pathologists, medical examiners, coroners, death investigators, forensic administrators and forensic scientists.

In the primary purpose of this “live” CME activity is educational and the comments, opinions, and/or recommendations expressed by the faculty or authors are their own and not those of ASCP or NAME.

Planning Committee Disclosures: The Education, Program and Publications (EPP) Planning Committee members and staff of this CME activity have no relevant financial relationships with commercial interest to disclose. The members of the NAME 2014 EPP Planning Committee are:
Faculty Disclosures: All invited faculty of CME-designated sessions have been asked to disclose any relationships that, in the context of their presentation, could be perceived by some as a real or apparent conflict of interest. None of the faculty have disclosed any relevant relationships that could be perceived by some as a real or apparent conflict of interest; no faculty will be discussing any off-label or investigational use of drugs/devices. They are:

Marie Abate
Thomas Andrew
Fernando Antelo
Kumiko Asakura
Daniel Atherton
Alfarena Ballew
Susan Ballou
Melissa Blessing
Melanie Bois
Leah Bush
Carlo Campobasso
Sally Anne Collis
Carri Cottengim
Jeremy Daniels
Donald Dawes
Andrea De Nicolò
Stephanie Dean
Adam Denmark
Francisco Diaz
Mary Dudley
Deiter Duff
Grace Dukes
Emily Duncanson
Lauren Edelman
Yekaterina Eichel
Peter Ellis
Nicole Ellis
Kim Fallon
Amanda Fisher-Hubbard
David Fowler
Beth Frost
Jon Gates
Zhanna Georgievskaya

Jason Graham
Kathryn Haden-Pinneri
Patrick Hansma
Randy Hanzlick
Gregg Hastings
Kino Hayashi
Grant Hrndon
Christy Hileman
Rebecca Irvine
Carolyn Isaac
Khalid Jaber
Christopher Johnson
Michelle Jorden
Meghan Kessler
Laura Knight
Michael Kroll
Alison Krywanczyk
Stephen Lenfest
Larry Lewman
Ling Li
Dianne Little
Brett Lockyer
Barry Logan
Kevin Lougee
Deborah Mash
Amanda Maskovyak
Edward Mazuchowski
Jerri McLemore
Danielle McLeod-Henning
Marcos Melo
Sarah Meyers
Rebecca Millius
Roger Mitchell

Paul Morrow
Ken Obenson
Sara Ohanessian
Takahisa Okuda
Sherry Okun
Tiffany O'Neill
Maneesha Pandey
Brian Peterson
Varsha Podduturi
Donna Price
William Rodriguez
Monika Seltenhammer
Elizabeth Severson
Marcella Sorg
Thomas Sozio
Jay Stahl-Herz
Michael Stump
Krista Timm
Lee Tormos
Annie Vesterby
Gregory Vincent
Yen Van Vo
Caitlyn Waldrop
Alfredo Walker
Margaret Warner
Dollett White
Rebecca Wilcoxon
Karl Williams
Aimin Xue
Mingchang Zhang
H. Ronald Zielke
**ADDITIONAL INFORMATION**

**How to Apply for CME Credit:**
CME application forms will be available online at [www.asip.org/name/2014CME.cfm](http://www.asip.org/name/2014CME.cfm) by September 19, 2014 and must be submitted no later than December 31, 2014. You will receive your CME certificate within two weeks of successful submission of your online application. The American Society for Investigative Pathology (ASIP) is assisting NAME as Meeting Manager for the 2014 Annual Meeting and will be handling your CME application according to ASCP procedures. Should you have questions about your CME application (or do not receive your certificate within the timeframe explained above), contact the ASIP Education Office (phone 301-634-7440; fax 301-634-7990; email cme@asip.org or write to ASIP Education Office, 9650 Rockville Pike, Bethesda, MD 20814).

Please refer to the NAME 2014 Annual Meeting CME Workbook for a consolidated list of sessions that are eligible for *AMA PRA Category 1 Credit(s)*™. Visiting exhibits is *not* an approved continuing medical education activity because of ACCME standards that are designed to prevent commercial bias. A maximum of 1.75 hours can be credited for viewing posters. The meeting program lists those events that are *not* a continuing medical education activity (such as social events, committee meetings, and meals) with the designation “NOT CME.” There will also be signs outside of sessions that are not eligible for *AMA PRA Category 1 Credit(s)*™. If you have any questions about CME eligibility of a session, please ask at the registration desk.

**Self Assessment Module (SAMs):** NAME is approved by the American Board of Pathology as a provider of SAM credits. ASIP is assisting NAME as Meeting Manager for the 2014 Annual Meeting and will be handling SAM credits. To receive SAM credits, you must successfully complete (achieve a passing score of 80%) by December 31, 2014 a SAM examination that will be available online ([www.asip.org/name/2014CME.cfm](http://www.asip.org/name/2014CME.cfm)). The SAM examination will be available by September 19, 2014 and consists of questions based on oral presentations during the meeting. Upon achieving a passing score on the SAM examination, you will be prompted to complete a SAM Credit Request Form, which should be submitted by December 31, 2014 to the ASIP Education Office (fax 301-634-7990; email cme@asip.org or write to ASIP Education Office, 9650 Rockville Pike, Bethesda, MD 20814). You will receive your SAM certificate within two weeks of successful submission of your SAM Credit Request Form.
NOTES
THURSDAY – SEPTEMBER 18

COMMITTEE MEETING [NOT CME]:
8:00 AM – 5:00 PM Executive Committee Meeting (Invitation Only)
Pearl Room, Level 2

FRIDAY – SEPTEMBER 19

GENERAL INFORMATION [NOT CME]:
10:00 AM – 4:00 PM Pre-Registration (Exhibitors & Attendees)
Registration Desk, Lower Level 1
10:00 PM – 4:00 PM Installation of Exhibits
Exhibit Hall A, Lower Level 2
4:30 PM – 6:30 PM Grand Opening of Exhibits
Exhibit Hall A, Lower Level 2
4:30 PM – 6:30 PM Welcome Reception (Pre-Paid Registrants/Ticket Holders Only)
Exhibit Hall A, Lower Level 2
5:30 PM – 6:30 PM International Attendee Reception
Pearl Room, Level 2
6:30 PM – 9:00 PM Welcome Dinner (Pre-Paid Registrants/Ticket Holders Only)
Salons F-I, Lower Level 1

COMMITTEE MEETINGS [NOT CME]:
6:45 AM – 8:00 AM Foundation and Board of Directors Meeting & Continental Breakfast
Salon E, Lower Level 1
7:00 AM – 8:00 AM Foundation Meeting
Salon E, Lower Level 1
8:00 AM – 4:00 PM Board of Directors Meeting
Salon E, Lower Level 1
12:00 PM – 1:00 PM Board of Directors Lunch
Salon A, Lower Level 1
1:00 PM – 4:00PM I&A Committee Training
Salons CD, Lower Level 1
3:00 PM – 5:00 PM SAM/MOC Subcommittee Meeting
Eugene Room, Lower Level 1
3:00 PM – 5:00 PM Ad Hoc Study of Quality Improvement by Peer Review in the ME Office
Salem Room, Lower Level 1
4:00 PM – 5:00 PM NAME Foundation Business Meeting
Salon A, Lower Level 1
4:00 PM – 5:00 PM Forensic Pathology Training Subcommittee Meeting
Medford Room, Lower Level 1
4:00 PM – 6:00 PM Ad Hoc Meeting on Organ and Tissue Procurement
Salon B, Lower Level 1
SATURDAY – SEPTEMBER 20

*Indicates the following:
*John Smialek Best Resident Paper/Poster Competition
**Mary Fran Ernst Best Affiliate Paper/Poster Competition
***Susan P. Baker Public Health Impact Award
****Best Student Paper/Poster Competition

GENERAL INFORMATION:

6:45 AM – 8:00 AM Buffet Breakfast (Pre-Paid Registrants/Ticket Holders Only) [NOT CME]
Salons F-I, Lower Level 1

7:00 AM – 5:20 PM Registration [NOT CME]
Registration Desk, Lower Level 1

8:00 AM – 4:00 PM Exhibits [NOT CME]
Exhibit Hall A, Lower Level 2

12:00 PM – 5:20 PM Posters
Exhibit Hall B, Lower Level 2

5:20 PM – 6:20 PM Resident/Fellow Reception [NOT CME]
Pearl Room, Level 2

6:45 PM – 9:30 PM Dinner Cruise (Optional) [NOT CME]
*Additional Payment Required*
Offsite *(Transportation Not Provided)*

COMMITTEE MEETINGS [NOT CME]:

7:00 AM – 8:00 AM International Relations Committee Meeting
*All International Attendees Welcome to Attend*
Columbia Room, Main Lobby

12:30 PM – 2:00 PM Past Presidents’ Committee Meeting and Lunch
Pearl Room, Level 2

12:30 PM – 2:00 PM Ethics Committee Meeting and Lunch
Medford Room, Lower Level 1

12:30 PM – 2:00 PM Journal Subcommittee Meeting
Mount Hood Room, Level 2

PROGRAM INFORMATION:

8:00 AM – 9:50 AM SESSION 1: SPECIAL CHALLENGES
Moderator: Daniel S. Atherton, MD, University of Alabama at Birmingham, Birmingham, Alabama, USA
Salons A-E, Lower Level 1

8:00 AM – 9:00 AM 1.1 The Role of the Medical Examiner in Support of Transportation Accident Investigations – An End-User’s Perspective
Christy R. Hileman, MBA, RHIA, BS, Federal Aviation Administration, Oklahoma City, Oklahoma, USA; Russell Lewis, PhD, Federal Aviation Administration (FAA), Oklahoma City, Oklahoma, USA; Mary Pat McKay, MD, National Transportation Safety Board (NTSB), District of Columbia, Washington, D.C., USA; Cheryl McNeil, RHIA, Federal Aviation Administration (FAA), Oklahoma City, Oklahoma, USA; Nicholas Webster, MD, National Transportation Safety Board (NTSB), District of Columbia, Washington, D.C., USA

9:00 AM – 9:40 AM 1.2 The Recovery of the Fallen – The Investigation of WW1 Mass Graves at Fromelles in Northern France
Peter Ellis, MA, MB, BChir, FRCPA, FACLM, FFFLM, Queensland Health Forensic and Scientific Services, Buderim, Queensland, Australia
9:40 AM – 9:50 AM Questions & Answers

9:50 AM – 10:30 AM BREAK/VISIT EXHIBITS [NOT CME]
Exhibit Hall A, Lower Level 2

9:50 AM – 10:30 AM VISIT POSTERS
Exhibit Hall B, Lower Level 2

10:30 AM – 12:30 PM SESSION 2: AROUND THE WORLD IN 120 MINUTES
Moderator: Beth Ellen Frost, DO, University of Kentucky College of Medicine, Lexington, Kentucky, USA
Salons A-E, Lower Level 1

Karl E. Williams, MD, MPH, Office of the Medical Examiner of Allegheny County, Pittsburgh, Pennsylvania, USA

10:45 AM – 10:55 AM 2.2 The Design of a New Mortuary and Medical Examiner Facility in Abu Dhabi
Adam Denmark, AIA, LEED, AP, BD+C, SmithGroupJJR, Phoenix, Arizona, USA

William C. Rodriguez III, PhD, Office of the Chief Medical Examiner State of Maryland, Baltimore, Maryland, USA

11:15 AM – 11:25 AM 2.4 An Unrecognized Patricide: A Representative Case of the Italian Death Investigation System
Carlo P. Campobasso, MD, PhD, University of Molise, Campobasso, Italy

11:25 AM – 11:40 AM 2.5 “Razors Pain You...Nooses Give:” Lessons From the Planned Complex Suicide of a Surgeon
Rebecca Ann Irvine, MD, FRCPA, Department of Forensic Medicine Sydney, Glebe, NSW, Australia

11:40 AM – 12:05 PM 2.6 Death and the Art of Frida Kahlo: Illustrations of Forensic Pathology
***Fernando Antelo, MD, Los Angeles County Department of Medical Examiner-Coroner, Los Angeles, California, USA

12:05 PM – 12:15 PM 2.7 Snake Bite Deaths in South East Queensland, Australia
Dianne Little, MBBS, FRCPA, Queensland Health Forensic and Scientific Services, Health Services Support Agency, Southport, Queensland, Australia

12:15 PM – 12:30 PM Questions & Answers

12:30 PM – 2:00 PM LUNCH (ON YOUR OWN) [NOT CME]

12:30 PM – 2:00 PM VISIT EXHIBITS [NOT CME]
Exhibit Hall A, Lower Level 2

12:30 PM – 2:00 PM VISIT POSTERS
Exhibit Hall B, Lower Level 2
2:00 PM – 3:20 PM  
**SESSION 3: FOR YOUR CONSIDERATION I**

**Moderator:** Lauren A. Edelman, MD, Santa Clara County Medical Examiner Office, San Jose, California, USA

*Salons A-E, Lower Level 1*

- 2:00 PM – 2:15 PM  
  **3.1 Drug Deaths and Autopsy Access: A Potential Missing Link in Public Health Surveillance**
  
  ***Sarah Meyers, MD, University of North Dakota, Grand Forks, North Dakota, USA***

- 2:15 PM – 2:25 PM  
  **3.2 MDMA Use, Intercourse and Aneurysm Rupture**
  
  *Patrick Hansma, DO, William Beaumont Hospital, Royal Oak, Michigan, USA*

- 2:25 PM – 2:35 PM  
  **3.3 Quality Assurance of Manner of Death Classification Via Benford’s Law: How to Practically Apply**
  
  *Jeremy P. Daniels, MD, BASc, McMaster University, Hamilton, Ontario, Canada*

- 2:35 PM – 2:45 PM  
  **3.4 SUID: How Multidisciplinary Collaboration Can Inform Diagnosis and Prevention**
  
  ***Kim Fallon, BS, New Hampshire Office of Chief Medical Examiner, Concord, New Hampshire, USA***

- 2:45 PM – 2:55 PM  
  **3.5 Spectrum of Coronary Artery Pathology in Pediatric Hospital Autopsy Practice**
  
  ****Zhanna Georgievskaya, MD, MBA, Children’s Hospital of Pittsburgh of UPMC, Pittsburgh, Pennsylvania, USA****

- 2:55 PM – 3:10 PM  
  **3.6 Pushing the Frontiers of Forensic Toxicology – What to Do When Your Mass Spec is No More Valuable Than a Paper Weight**
  
  *Elizabeth R. Severson, DO, MS, State of Maryland Office of the Chief Medical Examiner, Baltimore, Maryland, USA*

- 3:10 PM – 3:20 PM  
  **Questions & Answers**

3:20 PM – 4:00 PM  
**BREAK [NOT CME]**

*Sponsored by our Corporate Partner, Lodox NA LLC*

*Exhibit Hall A, Lower Level 2*

- 3:20 PM – 4:00 PM  
  **VISIT EXHIBITS [NOT CME]**
  
  *Exhibit Hall A, Lower Level 2*

- 3:20 PM – 4:00 PM  
  **VISIT POSTERS**
  
  *Exhibit Hall B, Lower Level 2*

4:00 PM – 5:20 PM  
**SESSION 4: FOR YOUR CONSIDERATION II**

**Moderator:** Beth Ellen Frost, DO, University of Kentucky College of Medicine, Lexington, Kentucky, USA

*Supported by an unrestricted educational grant from Lodox NA LLC*

*Salons A-E, Lower Level 1*

- 4:00 PM – 4:10 PM  
  **4.1 Acute Coronary Artery Thrombosis Associated with Synthetic Cannabinoid Intoxication**
  
  *Stephanie A. Dean, MD, Maryland Office of the Chief Medical Examiner, Baltimore, Maryland, USA*

- 4:10 PM – 4:20 PM  
  **4.2 Suicide By Shotgun in Southeastern Minnesota**
  
  *Melissa M. Blessing, DO, Mayo Clinic, Rochester, Minnesota, USA*
4:20 PM – 4:35 PM 4.3 The Effect of the Great Recession on Medical Examiner Workload
**David R. Fowler, MD, MB.CHB., M.Med., FCAP, FAAFS, Office of the Chief Medical
Examiner, Baltimore, Maryland, USA

4:35 PM – 4:45 PM 4.4 Postmortem Opioid Levels, Co-Intoxicant Presence, and Decedent Characteristics in
Accidental, Single-Opioid Deaths in West Virginia and Northern New England
***Marcella H. Sorg, PhD, University of Maine, Orono, Maine, USA

4:45 PM – 5:00 PM BREAK [NOT CME]

5:00 PM – 5:10 PM 4.6 Evaluating the Utility of Urine Dipsticks as a Postmortem Triage Modality
*Jon R. Gates, MD, Cook County Medical Examiner, Chicago, Illinois, USA

5:10 PM – 5:20 PM 4.7 Accidental Carbon Monoxide Poisoning While Driving: A Case Report with Review
of the Literature
*Amanda Owen Fisher-Hubbard, MD, University of Michigan, Ann Arbor, Michigan,
USA

5:20 PM – 6:20 PM Resident/Fellow Reception [NOT CME]
Pearl Room, Level 2

6:45PM – 7:00PM Board Dinner Cruise [NOT CME]

7:00 PM – 9:30 PM Dinner Cruise (Optional) [NOT CME]
*Additional Payment Required*
Offsite (Transportation Not Provided)

SUNDAY – SEPTEMBER 21

GENERAL INFORMATION:
6:30 AM – 8:20 AM Rigor Run/Walk (Optional) [NOT CME]
*Additional Payment Required*
Main Entrance, Main Lobby

6:30AM – 8:20AM Affiliate Business Meeting [NOT CME]
Columbia Room, Main Lobby

6:45 AM – 8:20 AM Buffet Breakfast (Pre-Paid Registrants/Ticket Holders Only) [NOT CME]
Salons F-I, Lower Level 1

7:00 AM – 1:00 PM Registration [NOT CME]
Registration Desk, Lower Level 1

8:00 AM – 1:15 PM Exhibits [NOT CME]
Exhibit Hall A, Lower Level 2

8:00 AM – 6:00 PM Posters
Exhibit Hall B, Lower Level 2

1:00 PM – 5:00 PM Cadaver Open Golf Tournament (Optional) [NOT CME]
*Additional Payment Required*

1:15 PM – 5:00 PM Scientific Field Trip: Oregon National Primate Research Center
Offsite (Transportation Provided)
*Limited Availability (You must register for the field trip with full registration)*

4:00 PM – 6:00 PM Registration [NOT CME]
Registration Desk, Lower Level 1

4:00 PM – 6:00 PM Poster Presenters at Posters
Exhibit Hall B, Lower Level 2

7:00PM – 10:00PM NAME Mac Users Group Meeting [NOT CME]
Eugene, Lower Level 1
**COMMITTEE MEETING [NOT CME]:**
12:45 PM – 5:45 PM Strategic Planning Committee Meeting  
   *Eugene Room, Lower Level 1*

**PROGRAM INFORMATION:**

**SESSION 5: FOR YOUR CONSIDERATION III**  
**Moderator:** Melissa M. Blessing, DO, Mayo Clinic, Rochester, Minnesota, USA
**Salons A-E, Lower Level 1**

8:20 AM – 8:35 AM 5.1 Uncommon Complications of Dental Surgery Seen in Forensic Pathology  
   *Lauren A. Edelman, MD, Santa Clara County Medical Examiner Office, San Jose, California, USA*

8:35 AM – 8:50 AM 5.2 Comparison of the Distribution of Skull Fractures by Mechanism of Formation  
   *Daniel S. Atherton, MD, University of Alabama at Birmingham, Birmingham, Alabama, USA*

8:50 AM – 9:05 AM 5.3 The Rabies Autopsy: Beyond the Brain  
   ***Kathryn Haden-Pinneri, MD, Harris County Institute of Forensic Sciences, Houston, Texas, USA***

   ***Roger Mitchell, Jr., MD, Office of the Chief Medical Examiner, District of Columbia, Washington, D.C., USA***

9:20 AM – 9:35 AM 5.5 Mortality Surveillance, Electronic Death Registration, and the Medical Examiner  
   **Margaret Warner, PhD, National Center for Health Statistics, Centers for Disease Control and Prevention, Hyattsville, Maryland, USA***

9:35 AM – 10:00 AM 5.6 Short Delay in Collapse Following Impact in Fatal Traumatic Basal Subarachnoid Haemorrhage  
   *Christopher Paul Johnson, BSc, MBChB, MD, FRCPath, DMJ, Royal Liverpool University Hospital, Liverpool, Merseyside, United Kingdom*

9:50 AM – 10:00 AM Questions & Answers

10:00 AM – 10:40 AM BREAK [NOT CME]  
   *Sponsored by our Corporate Partner, Lodox NA LLC*  
   *Exhibit Hall A, Lower Level 2*

10:00 AM – 10:40 AM VISIT EXHIBITS [NOT CME]  
   *Exhibit Hall A, Lower Level 2*

10:00 AM – 10:40 AM VISIT POSTERS  
   *Exhibit Hall B, Lower Level 2*

**SESSION 6: WORKING WELL WITH OTHERS**  
**Moderator:** Jeremy P. Daniels, MD, BASc, McMaster University, Hamilton, Ontario, Canada  
**Salons A-E, Lower Level 1**

10:40 AM – 11:40 AM 6.1 Sustaining and Saving Life – Understanding Organ and Tissue Recovery  
   *Michelle Anna Jorden, MD, Santa Clara County Medical Examiner, San Jose, California, USA*

11:40 AM – 12:10 PM 6.2 The Do’s and Don’ts of Working with the Media  
   *Gregg Hastings, Oregon State Police, Milwaukie, Oregon, USA*
12:10 PM – 12:20 PM  6.3 The Medical Examiner’s Office as a Potential Source of a Wide Range of Disorders Needed for Medical Research  
  *H. Ronald Zielke, PhD, University of Maryland School of Medicine, Baltimore, Maryland, USA*

12:20 PM – 12:30 PM  6.4 Medical Examiner Systems: Medical Reserve Corps Volunteers – Force Multipliers During Mass Fatality Events  
  *Donna H. Price, Virginia Office of the Chief Medical Examiner, Norfolk, Virginia, USA*

12:30 PM – 12:40 PM  Questions & Answers

12:40 PM – 1:15 PM  LUNCH (ON YOUR OWN) [NOT CME]

12:40 PM – 1:15 PM  VISIT EXHIBITS [NOT CME]  
  *Exhibit Hall A, Lower Level 2*

12:40 PM – 1:15 PM  VISIT POSTERS  
  *Exhibit Hall B, Lower Level 2*

1:15PM – 1:30PM  Load Buses for Scientific Field Trip (Pre-Paid Registrants, Ticket Holders Only)  
  *Limited Availability (You must register for the field trip with full registration)*  
  [NOT CME]

2:00 PM – 5:00 PM  Scientific Field Trip: Oregon National Primate Research Center  
  (Pre-Paid Registrants/Ticket Holders Only)  
  *Limited Availability (You must register for the field trip with full registration)*  
  [NOT CME]

4:00 PM – 6:00 PM  Poster Presenters at Posters  
  *Exhibit Hall B, Lower Level 2*

7:00PM – 10:00PM  NAME Mac Users Group Meeting [NOT CME]  
  *Eugene, Lower Level 1*

**MONDAY – SEPTEMBER 22**

**GENERAL INFORMATION:**

6:45 AM – 8:00 AM  Buffet Breakfast (Pre-Paid Registrants/Ticket Holders Only) [NOT CME]  
  *Salons F-I, Lower Level 1*

7:00 AM – 6:00 PM  Registration [NOT CME]  
  *Registration Desk, Lower Level 1*

8:00 AM – 3:40 PM  Exhibits [NOT CME]  
  *Exhibit Hall A, Lower Level 2*

8:00 AM – 4:00 PM  Posters  
  *Exhibit Hall B, Lower Level 2*

12:00 PM – 1:20 PM  Femme Fatale Luncheon (Optional) [NOT CME]  
  *Additional Payment Required*  
  *Mount Hood Room, Level 2*

6:30 PM – 8:30 PM  Board of Directors Reception (Invitation Only) [NOT CME]  
  *Mount Hood Room, Level 2*
PROGRAM INFORMATION:
8:00 AM – 9:50 AM  NAME Business Meeting [NOT CME]
Salons A-E, Lower Level 1

9:50 AM – 10:30 AM  BREAK/VISIT EXHIBITS [NOT CME]
Exhibit Hall A, Lower Level 2

9:50 AM – 10:30 AM  VISIT POSTERS
Exhibit Hall B, Lower Level 2

10:30 AM – 12:00 PM  NAME Business Meeting [NOT CME]
Salons A-E, Lower Level 1

12:00 PM – 1:20 PM  LUNCH (ON YOUR OWN) [NOT CME]

12:00 PM – 1:20 PM  VISIT EXHIBITS [NOT CME]
Exhibit Hall A, Lower Level 2

12:00 PM – 1:20 PM  VISIT POSTERS
Exhibit Hall B, Lower Level 2

12:00 PM – 1:20 PM  Femme Fatale Luncheon (Optional) [NOT CME]
*Additional Payment Required*
Mount Hood Room, Level 2

1:20 PM – 3:00 PM  SESSION 7: PLANNING AHEAD
Moderator: Stephanie A. Dean, MD, Maryland Office of the Chief Medical Examiner,
Baltimore, Maryland, USA
Salons A-E, Lower Level 1

1:20 PM – 1:50 PM  7.1 NIST Organization of Scientific Area Committees (OSAC): Input Received and
Proposed Plan Development
Susan Ballou, MS, NIST, Gaithersburg, Maryland, USA

1:50 PM – 2:20 PM  7.2 Maintenance of Certification (MOC) for the Forensic Pathologist
Laura D. Knight, MD, Onondaga County Medical Examiner’s Office, Syracuse, New
York, USA

2:20 PM – 2:35 PM  7.3 The Sudden Death in the Young Registry
Carri Cottengim, MA, DB Consulting Group Inc. for CDC, Chamblee, Georgia, USA

2:35 PM – 2:50 PM  7.4 Synthetic Cannabinoid Drugs as a Cause or Contributory Cause of Death
Barry K. Logan, PhD, NMS Labs, Willow Grove, Pennsylvania, USA

2:50 PM – 3:00 PM  Questions & Answers

3:00 PM – 3:40 PM  BREAK [NOT CME]
Sponsored by our Corporate Partner, Lodox NA LLC
Exhibit Hall A, Lower Level 2

3:00 PM – 3:40 PM  VISIT EXHIBITS [NOT CME]
Exhibit Hall A, Lower Level 2

3:00 PM – 3:40 PM  VISIT POSTERS
Exhibit Hall B, Lower Level 2
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
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</table>
| 3:40 PM – 6:10 PM | **SESSION 8: COOPERATION IS GOOD!**
                   | Moderator: Amanda Owen Fisher-Hubbard, MD, University of Michigan, Ann Arbor, Michigan, USA  |
| 3:40 PM – 4:40 PM | 8.1 NIJ Programs to Support the Forensic Pathology Community: Strategies for Stronger Proposals in a Competitive Environment  |
|                | Danielle McLeod-Henning, MFS, National Institute of Justice, Washington D.C., USA  |
| 4:40 PM – 4:50 PM | 8.2 Who Are the Medical Experts – The Medico-Legal Council?  |
|                | Annie Vesterby, MD, DMSc, Aarhus University, Aarhus N, Aarhus, Denmark  |
| 4:50 PM – 5:05 PM | 8.3 An Enhanced Tissue Recovery Donor Referral Program for Non Hospital Deaths  |
|                | Maneesha Pandey, MBBS, Lucas County Coroner’s Office, Toledo Ohio, Toledo, Ohio, USA  |
| 5:05 PM – 5:20 PM | 8.4 National Neurobiobank Tissue Sharing Consortium: Networking with Medical Examiners  |
|                | Deborah C. Mash, PhD, University of Miami, Miami, Florida, USA  |
| 5:20 PM – 5:35 PM | 8.5 An Investigative Tool for Detecting Elder Abuse  |
|                | **Carolyn Isaac, PhD, Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, Michigan, USA  |
| 5:35 PM – 5:50 PM | 8.6 Ketamine-Induced Nephropathy: A Case Report and Review of Current Abuse-Related Pathology  |
|                | Jay Stahl-Herz, MD, New York City Office of Chief Medical Examiner, New York, New York, USA  |
| 5:50 PM – 6:00 PM | 8.7 The Utility of Touch DNA Evidence Collection From Decedents at the Harris County Institute of Forensic Sciences  |
|                | Kathryn Haden-Pinneri, MD, Harris County Institute of Forensic Sciences, Houston, Texas, USA  |
| 6:00 PM – 6:10 PM | Questions & Answers  |
| 6:30 PM – 8:30 PM | Board of Directors Reception (Invitation Only) [NOT CME]  |
|                | Mount Hood Room, Level 2  |

**TUESDAY – SEPTEMBER 23**

**GENERAL INFORMATION [NOT CME]:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:45 AM – 8:00 AM</td>
<td>Buffet Breakfast (Pre-Paid Registrants/Ticket Holders Only)</td>
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<td>Salons F-I, Lower Level 1</td>
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<tr>
<td>7:00 AM – 4:10 PM</td>
<td>Registration</td>
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<td></td>
<td>Registration Desk, Lower Level 1</td>
</tr>
</tbody>
</table>
PROGRAM INFORMATION:

8:00 AM – 9:45 AM  **SESSION 9: WE SEE AMAZING THINGS**

**Moderator:** Meghan S. Kessler, DO, Penn State University Hershey Medical Center, Hershey, Pennsylvania, USA

*Salons A-E, Lower Level 1*

8:00 AM – 8:15 AM  **9.1 NAME Trivia 2014**

Randy Hanzlick, MD, Fulton County, GA, Emory University School of Medicine, Atlanta, Georgia, USA

8:15 AM – 8:25 AM  **9.2 Antemortem, Perimortem, or Postmortem Change? A Case of Fascinating Fossorial Forensics**

Brian L. Peterson, MD, Milwaukee County Medical Examiner’s Office, Milwaukee, Wisconsin, USA

8:25 AM – 8:55 AM  **9.3 Fatal Religion Based Child Abuse in Oregon**

Larry V. Lewman, MD, Oregon State Medical Examiner’s Office, Clackamas, Oregon, USA

8:55 AM – 9:10 AM  **9.4 Extension of Perimesencephalonic Nonaneurysmal Subarachnoid Haemorrhage: A Cause of Nontraumatic Basal Subarachnoid Haemorrhage**

Paul Lowell Morrow, MD, National Forensic Pathology Service, New Zealand, Auckland, New Zealand

9:10 AM – 9:25 AM  **9.5 Propofol Related Infusion Syndrome (PRIS) – A Cause for Sudden Unexplained Deterioration on the ICU**

Brett E. Lockyer, BM, BSc (Hons), The Royal Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, Merseyside, United Kingdom


Rebecca M. Wilcoxon, MD, Hennepin County Medical Examiner’s Office, Minneapolis, Minnesota, USA

9:40 AM – 9:50 AM  **Questions & Answers**

9:50 AM – 10:10 AM  **BREAK [NOT CME]**

_Sponsored by our Corporate Partner, Lodox NA LLC_

*Ballroom Lobby, Lower Level 1*

10:10 AM – 11:40 AM  **SESSION 10: FUN BEFORE LUNCH**

**Moderator:** Rebecca A. Millius, MD, University of Arizona, Tucson, Arizona, USA

*Salons A-E, Lower Level 1*

10:10AM – 11:05AM  **10.1 Establishing a Multidisciplinary Network for the Workup of Sudden Cardiac Death**

Raed Abdelhadi, MD, Minneapolis Heart Institute Foundation, Abbott Northwestern Hospital, Minneapolis, Minnesota, USA; Andrew Baker, MD, Hennepin County Medical Examiner’s Office, Minneapolis, Minnesota, USA; Emily R. Duncanson, MD, Jesse E. Edwards Registry of Cardiovascular Disease, Saint Paul, Minnesota, USA; Kate Lynch, MS, Gene Dx, Gaithersburg, MD, Invitae, San Francisco, California, USA; Shannon Mackey-Bojack, MD, Jesse E. Edwards Registry of Cardiovascular Disease, St. Paul, Minnesota, USA
11:05 AM – 11:20 AM 10.2 Fatal Entrapment of the Basilar Artery in a Longitudinal Fracture of the Clivus Due to Head Injury: A Case Report and Review of the Literature
*Alfredo Eugene Walker, MB, BS, FRCPATH, DMJ (Path), The Ottawa Hospital General Campus, Ottawa, Ontario, Canada*

11:20 AM – 11:30 AM 10.3 Fibromyalgia: The Nature of Its Involvement in Death
*Francisco J. Diaz, MD, Wayne County Medical Examiner’s Office/University of Michigan, Detroit, Michigan, USA*

11:30 AM – 11:40 AM Questions & Answers

12:00 PM – 2:00 PM *NAME Luncheon & Award Ceremony (Pre-Paid Registrants/Ticket Holders Only) [NOT CME]*
*Milton Helpern Laureate Award will be presented to Randy L. Hanzlick, MD, Fulton County, GA and Emory University School of Medicine, Atlanta, Georgia, USA*  
Salons F-I, Lower Level 1

2:00 PM – 4:15 PM **SESSION 11: DRUGS, ETC.**
Moderator: Sherry D. Okun, MD, Medical University of South Carolina, Charleston, South Carolina, USA  
Salons A-E, Lower Level 1

2:00 PM – 2:10 PM 11.1 Draft Best Practices Guide for Medical Examiner/Coroner Involvement with the National Violent Death Reporting System
*Randy Hanzlick, MD, Fulton County, GA and Emory University School of Medicine, Atlanta, Georgia, USA*

2:10 PM – 2:30 PM 11.2 Using Postmortem Drug Levels as a Tool in Distinguishing Between Non-Accidental and Accidental Fatal Drug Ingestions
*Thomas J. Sozio, DO, Marion County Coroner’s Office, Indianapolis, Indiana, USA*

2:30 PM – 2:40 PM 11.3 Characterization of Diphenhydramine-Related Overdose Deaths
*Marie A. Abate, BS, PharmD, West Virginia University, Morgantown, West Virginia, USA*

2:40 PM – 2:55PM 11.4 Fatal NBOMe Intoxication: Toxidrome, Autopsy Findings, Detection and Legal Challenges
*Thomas Anthony Andrew, MD, Office of Chief Medical Examiner, Concord, New Hampshire, USA*

2:55PM – 3:05PM BREAK [NOT CME]

3:05PM – 3:15PM 11.5 Comparison of Drug/Metabolite Stability in Specimens Transported in Ambient Temperature Versus on Dry Ice
*Jerri McLemore, MD, Wake Forest School of Medicine, Winston-Salem, North Carolina, USA*

3:15PM – 3:25PM 11.6 Feedback to the Field: Incorporating Postmortem Computed Tomography in the Evaluation of Trauma Care
*Edward L. Mazuchowski II, MD, PhD, Armed Forces Medical Examiner System, Dover AFB, Delaware, USA*

3:25 PM – 3:40 PM 11.7 Medical Examiner Collection of Comprehensive, Objective Medical Evidence For Conducted Electrical Weapons and Their Temporal Relationship to Sudden Arrest
*Mark W. Kroll, PhD, FACC, University of Minnesota, Minneapolis, Minnesota, USA*
NAME 2014 Annual Meeting & Exhibits
Portland Marriott Downtown Waterfront – Portland, Oregon, USA

3:40PM – 4:05PM  11.8 Silent But Deadly: HazMat Implications of Lethal Off Gassing in a Suicidal Aluminum Phosphide Poisoning
Leah L.E. Bush, MS, MD, Virginia Commonwealth University, Richmond, Virginia, USA

4:05 PM – 4:15 PM  Questions & Answers

4:15 PM  Program Adjourns

POSTER PRESENTATIONS:
Please note posters must be on the assigned board by Saturday, September 20, at 12:00PM and remain posted until Monday, September 22, at 4:00PM. It is required that presenters are to stand by their posters during the presentation time for discussion of their posters with meeting attendees that will occur on Sunday, September 21, 4:00PM - 6:00PM.

Exhibit Hall B, Lower Level 2

P1 Clozapine Induced Gastrointestinal Hypomotility Causing Acute Colonic Pseudo-Obstruction (Ogilvie’s Syndrome) in an 18 Year Old with Schizophrenia
Krista Timm, MD, Cuyahoga County Medical Examiner’s Office, Cleveland, Ohio, USA

P2 Acquired Angioedema: A Case of an Unexpected Death and Review of Literature
*Yekaterina Eichel, MD, Medical University of South Carolina, Charleston, South Carolina, USA

P3 A Case of Fatal Hemoperitoneum Due to Liver Cyst Rupture in User of Anabolic Steroids
*Patrick Hansma, DO, William Beaumont Hospital, Royal Oak, Michigan, USA

P4 Characteristics of Homicide-Suicide Cases in Shanghai from 2001 to 2011
Shen Yiwen, MD, PhD, School of Basic Medical Sciences, Fudan University, Shanghai, China

P5 Fatal and Nonfatal Acetaminophen Poisoning
Mary H. Dudley, MD, MS, RN, Jackson County Medical Examiner Office, Kansas City, Missouri, USA

P6 Fatal Myocarditis of an Immunocompetent Child Following Seasonal Influenza Vaccination with Concurrent Parainfluenza Infection
***Kanayo Tatsumi, MD, University of Vermont/Fletcher Allen Health Care, Burlington, Vermont, USA

P7 Sudden Death By Pulmonary Thromboembolism Due to a Large Uterine Leiomyoma
*Varsha Podduturi, MD, Baylor University Medical Center, Dallas, Texas, USA

P8 Sudden Death in a Bathtub in Japan
**Takahisa Okuda, Nippon Medical School, Bunkyo-ku, Tokyo, Japan

P9 Sudden Asphyxial Death Due to Primary Tracheal Small Cell Carcinoma
*Amanda Maskovyak, MD, Cleveland Clinic, Cleveland, Ohio, USA

P10 Agonal Thrombi at Autopsy
*Patrick A. Hansma, DO, Beaumont Health System, Royal Oak, Michigan, USA

P11 Two Autopsy Cases of Undiagnosed Liposarcoma
Kino Hayashi, MD, PhD, Tokyo Medical Examiner’s Office, Tokyo, Japan

P12 Death By Flare Gun: An Unusual Case of Suicide
*Fernando Antelo, MD, Los Angeles County Medical Examiner-Coroner, Los Angeles, California, USA
P13 Accidental Death From Recreational Use of Methylhexanamine (DMAA) in Northwestern Oregon: A Case Report  
*Rebecca A. Millius, MD, University of Arizona, Tucson, Arizona, USA

P14 Rupture of the Left Atrial Appendage Due to Trauma: A Case Report  
**Aimin Xue, MD, PhD, Fudan University, Shanghai, China

P15 A Case of Gastrointestinal Bullet Migration  
*Kevin M. Lougee, DO, University of Arizona, Tucson, Arizona, USA

P16 A Review of Characteristics of Sharp Force Injuries in Homicide and Suicide  
Alison R. Krywanczyk, MD, Vermont Office of the Chief Medical Examiner, South Burlington, Vermont, USA

P17 Gastrocardiac Fistula After Esophagectomy: A Deadly Complication of a Gastric Pull-Through  
Grant Herndon, DO, Cleveland Clinic Foundation, Cleveland, Ohio, USA

P18 Utilization and Clinical Significance of Autopsy Service in a Pediatric Hospital  
****Zhanna Georgievskaya, MD, MBA, Children’s Hospital of Pittsburgh of UPMC, Pittsburgh, Pennsylvania, USA

P19 Preserved Human Brain Tissue After 17 Years In Manure Pit  
****Caitlyn Waldrop, Indiana University, Hillsdale, Indiana, USA

P20 Sudden Unexpected Death Due to Oxytocin Intoxication From Treatment of Sickle Cell Disease in a Pediatric Patient: A Preventable Death due to Medical Error  
Ling Li, MD, Office of the Chief Medical Examiner, State of Maryland, Baltimore, Maryland, USA

P21 Sudden Death Due To Retroperitoneal Hemorrhage -25 Years Experience at The Los Angeles County Department of Medical Examiner  
Nicole Ellis, DO, Los Angeles County Office of Medical Examiner-Coroner, Los Angeles, California, USA

P22 Sickle Cell Trait, a Benign Disorder? Spectrum of Microscopic Findings in a Case of Hemoglobin S Trait  
Dollett T. White, MD, District 6 Medical Examiner’s Office, Largo, Florida, USA

P23 Utility of Postmortem Cultures in Infant Deaths: Retrospective Study of Infant Deaths Falling Under Medical Examiner Jurisdiction  
Dollett T. White, MD, District 6 Medical Examiner’s Office, Largo, Florida, USA

P24 Fulminant Hepatic Failure Due to Dietary Supplementation for Weight Loss and Muscle Building with Complications Resulting in Death  
*Meghan S. Kessler, DO, Penn State University Hershey Medical Center, Hershey, Pennsylvania, USA

P25 Detecting Extreme Stable Cumulative ~35-37kD Isoforms of ΔFosB in Postmortem Human Tissue Samples of the Nucleus Accumbens (NAc) of Chronic Drug Addicts  
**Monika Heidemarie Seltenhammer, PhD, Medical University of Vienna, Vienna, Austria

P26 Death From Invasive Mucinous Adenocarcinoma of the Lung Masquerading as a Mild Pneumonia  
Sherry D. Okun, MD, Medical University of South Carolina, Charleston, South Carolina, USA

P27 Forensic Epidemiology of Child Homicide Deaths by Their Mother’s Partner: How Soon After "First Contact" Do These Deaths Most Often Occur?  
Ken Obenson, MD, Saint John Regional Hospital, Saint John, New Brunswick, Canada

P28 Prescription Drug-Related Deaths in Missouri  
**Deiter J. Duff, MD, University of Missouri-Columbia, Columbia, Missouri, USA
P29 What is a Sinus of Valsalva Aneurysm?
Kumiko Asakura, MD, PhD, Tokyo Medical Examiner’s Office, Tokyo, Japan

P30 Morphological and Compositional Modifications of Gunshot Residues on Organic Tissues Exposed to High Temperature
Andrea De Nicolò, MD, University of Turin, Turin, Torino, Italy

P31 DMAA (1,3-dimethylamylamine) Use Resulting in Cardiotoxicity and Death of the World’s Strongest Man
*Sara E. Ohanessian, MD, Penn State University Hershey Medical Center, Hershey, Pennsylvania, USA

P32 Amnestic Somnambulism and Nocturnal Eating Disorder Associated with Zolpidem Use as a Contributing Factor in Accidental Death
Michael Samuel Stump, MD, Medical University of South Carolina, Charleston, South Carolina, USA

P33 Transorbital Brain Sampling for Toxicologic Analysis in Decomposed Bodies
Jason Graham, MD, NYC Office of Chief Medical Examiner, New York, New York, USA

P34 An Unusual Complication of a Shotgun Wound
SallyAnne Collis, MBChB, BN, The Royal Liverpool and Broadgreen University Hospitals NHS Trust, Liverpool, Merseyside, United Kingdom

P35 Survival After Gunshot Wound to the Heart: A Case Report
Marcos E. B. Melo, MD, Instituto de Medicina Legal Leonidio Ribeiro, Goiania, Goias, Brazil

P36 Sudden Unexpected Death of an Asymptomatic 23 Year Old Male with Primary Cardiac Ewing Sarcoma/PNET and Multifocal Metastases
*Stephen Lenfest, MD, Wake Forest Baptist Health, Winston Salem, North Carolina, USA

P37 Arthrogryposis in an Infant Autopsy: A Cue to Pursue a Further Explanation
Tiffany O’Neill, DO, Medical University of South Carolina, Charleston, South Carolina, USA

P38 Suicide in Individuals Less Than 18 Years Old - A Retrospective Study
Lee Marie Tormos, MD, Medical University of South Carolina, Charleston, South Carolina, USA

P39 Patterns of Drug Use in a Suicide Population Including Assessment of Common Therapeutic, Abused, and Novel Psychoactive Drugs
Alfarena Ballew, MBA, Marion County Coroners Office, Indianapolis, Indiana, USA

P40 The Effect of Body Mass Index on Effectiveness for TASER Conducted Electrical Weapons
Donald M. Dawes, MD, Lompoc Valley Medical Center, Santa Barbara, California, USA

P41 Recreational Use of Exploding Targets
Melanie Bois, MD, Mayo Clinic, Rochester, Minnesota, USA

P42 Venous Barium Intravasation and Embolism Following Barium Enema: A Rare Complication with a High Mortality
*Beth Ellen Frost, DO, University of Kentucky College of Medicine, Lexington, Kentucky, USA

P43 Forensic Toxicology Training for Forensic Pathologists - Beyond the Numbers
Gregory A. Vincent, MD, City of New York Office of Chief Medical Examiner, Brooklyn, New York, USA

P44 Natural Progression of Cervical Carcinoma: A Rare Cause of Death
Grace D. Dukes, MD, University of Kentucky, Lexington, Kentucky, USA
P45 Unusual Diastatic Separation of the Sagittal Sinus of a Stillbirth: Avoiding Potential Confusion with Inflicted Head Trauma  
Ken Obenson, MD, Saint John Regional Hospital, Saint John, New Brunswick, Canada

P46 An Autopsy Case Report of First Documented Fatal Methoxetamine Intoxication in the US  
Emily K. Hansen, MD, Medical College of Wisconsin, Milwaukee, Wisconsin, USA

P47 Accessory Cranial Suture Mistaken for Head Trauma in a 30 Day Old Infant  
William C. Rodriguez III, PhD, Office of the Chief Medical Examiner State of Maryland, Baltimore, Maryland, USA

See you next year in Charlotte, North Carolina  
October 2 – 6, 2015  
The Westin Charlotte Hotel
**EXHIBIT SCHEDULE**

Portland Marriott Downtown Waterfront, Exhibit Hall A, LL2

**Exhibit Dates**: September 19-22, 2014

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<td>Friday, September 19</td>
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<td>Friday, September 19</td>
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<th><strong>Exhibit Dates and Overall Hours</strong></th>
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<tr>
<td>Friday, September 19</td>
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<td><strong>Opening Reception/Exhibits Opens</strong></td>
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*The Exhibit Hall is open throughout the day; it’s recommended that you have at least one booth personnel at your booth during the overall exhibit hours. It is understood that booths staffed by one person will be vacant as necessary for meals and scientific sessions. Absence of personnel at the booth during published visiting hours will result in the company being penalized a free or being prohibited from participating in future NAME events.*

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<th><strong>Dismantling of Exhibits</strong></th>
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<td>Monday, September 22</td>
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**Enjoy exhibiting at the NAME Annual Meeting!**
Exhibitor Descriptions

Aegis Sciences Corporation (Booth #41)
Aegis is a federally certified (SAMHSA) laboratory that provides Drug-Free Workplace services to businesses and Drug-Free testing to justice systems. We specialize in customized services to meet a broad range of needs: including routine drug testing and our unique Zero-Tolerance Drug Testing® program.
For more information visit: www.aegislabs.com

AIT Laboratories (Booth #29)
AIT Laboratories (AIT) is a nationally recognized leader of forensic toxicology testing, using state-of-the-art technology, and providing standard customized testing for hundreds of clientele. AIT’s clients include medical examiners, coroners, leading reference laboratories, federal, state and local law-enforcement agencies, government, attorneys, courts of law, pharmaceutical firms, hospitals, and physicians. AIT’s toxicologists, certified by the American Board of Forensic Toxicology, provide expert consultation and interpretation on the most complex cases. AIT provides timely, cost effective and relevant testing, as well as other services to assist clients in determining cause and manner of death.
For more information visit: www.aitlabs.com

ANSI-ASQ National Accreditation Board (Booth #28)
A non-profit, non-governmental organization that provides accreditation services to public and private sector organizations in the areas of management systems, laboratories, medical test labs, medical examiners, inspection bodies, reference material producers, and proficiency test providers. The Company is jointly owned by the American National Standards Institute (ANSI) and the American Society for Quality (ASQ).
For more information visit: www.anab-aclass.org

Association of Organ Procurement Organizations (Booth #1)
The Association of Organ Procurement Organizations (AOPO) is a non-profit, national organization representing all federally-designated organ procurement organizations (OPOs). The association represents and serves OPOs through advocacy, support and the development of activities that will maximize the availability of organs and tissues and enhance the quality, effectiveness and integrity of the donation process. OPOs are federally-designated non-profit organizations that are responsible for coordinating organ and tissue donation across the United States, bridging the gap between the generous donation of organs and tissues and the thousands in need of these gifts.
For more information visit: www.aopo.org

Bone Clones, Inc. (Booth #31)
Bone Clones, Inc. manufactures detailed, high-quality osteological reproductions of skeletal elements. In addition to producing specimens exhibiting trauma and pathology, we have an extensive range of skulls and skeletons providing age, sex, and ancestry differences. Our durable replicas obviate the need for a dedicated teaching collection of real human remains.
For more information visit: www.boneclones.com

CRC Press/Taylor & Francis (Booth #24)
CRC Press, part of the Taylor & Francis Group, is the premier publisher of textbooks, reference books, and ebooks on Investigative Pathology. Stop by our booth to view our latest titles and take advantage of our SPECIAL CONFERENCE DISCOUNT. And, if you’re interested in writing a book, you can speak with our editor, Mark Listewnik, about your idea.
For more information visit: www.crcpress.com

Crime Lab Design (Booth #10)
Crime Lab Design delivers integrated architectural, engineering, laboratory planning, and equipment solutions for modern forensic facilities…Experts well-versed in the specialized considerations and unique challenges of medical examiner and crime lab facilities: proper ventilation, changing technologies/methodologies, evidence control, accreditation criteria, security, and health & safety…Locations in Chicago, Detroit, Saint Louis, Philadelphia, Atlanta, San Diego, Los Angeles and San Francisco.
For more information visit: www.crimelabdesign.com
CSI/Jewett (Booth #43)
For more than 150 years, CSI/Jewett has developed equipment; an extensive line of Morgue, Autopsy and Laboratory Equipment. CSI/Jewett provides an integrated system of equipment to enhance work flow, improve space utilization and maximize the efficiently and ease of cadaver handling. From fast and efficient high-volume processing, to customized traditional installations, CSI/Jewett has the best equipment and technical support to meet your needs.
For more information visit: www.csi-jewett.com

The Dodge Company (Booth #42)
The Dodge Company is the world’s leading supplier to death care professionals and the medical forensic field. Dodge manufactures and distributes a wide array of quality supplies, disinfectants, instruments, personal protective and autopsy equipment. Please register at our new web store, http://shop.dodgeco.com, and visit the Health Care section displaying products for the forensic and anatomical field.
For more information visit: www.shop.dodgeco.com

Elsevier (Booth #9)
ELSEVIER is a leading publisher of health science publications, advancing medicine by delivering superior reference information and decision support tools to doctors, nurses, health practitioners and students. With an extensive media spectrum – print, online and handheld, we are able to supply the information you need in the most convenient format.
For more information visit: www.elsevierhealth.com

Forensic Advantage Systems (Booth #38)
Forensic Advantage® is an innovative, easy-to-use solution that optimizes how medical examiners and coroner offices are managed and operated. The product line ensures immediate access to data, improves productivity, increases quality and enhances the ability to collaborate throughout the lifecycle of a case. On premise and cloud based options provide flexibility and efficiency of deployments.
For more information visit: www.forensicadvantage.com

Foster & Freeman (Booth #11)
We will demonstrate Foster & Freeman’s unique range of Crime-lite alternate light sources. Bench-mount and hand-held designs are available in a variety of wavebands to suit different applications. A new infrared option with camera reveals invisible evidence such as blood, tattoos and gunshot residue. Please visit our booth to try them yourself, and for details on our other products.
For more information visit: www.fosterfreeman.com

Intrasense (Booth #5)
Myrian® by Intrasense is the first comprehensive imaging solution for medical forensics. It performs 3D virtual autopsy, 2D/3D measurements, digital pathology visualization, and provides dedicated protocols and powerful reporting tools: save costs on autopsies; standardize protocols; get powerful documented reports with 3D and digital pathology images; and improve processes, reduce errors, and increase productivity.
For more information visit: www.intrasense.net

LifeNet Health (Booth #37)
LifeNet Health helps save lives and restore health for thousands of patients each year. We are the world’s most trusted provider of transplant solutions, from organ procurement to new innovations in bio-implant technologies and cellular therapies - a leader in the field of regenerative medicine, while always honoring the donors and healthcare professionals that allow the healing process.
For more information visit: www.lifenethealth.org

LifeSign, LLC (Booth #27)
LifeSign is a medical diagnostic company delivering rapid point of care testing solutions to caregivers in critical care, physicians’ offices, criminal justice and more. LifeSign’s line of products is used worldwide for the detection of Infectious Disease, Women’s Health, Drugs of Abuse, and Cardiac Markers. Our products are developed and manufactured under ISO, FDA cGMP, and CE mark guidelines.
For more information visit: www.lifesignmed.com
Lodox NA LLC (Booth #2)

Lodox Critical Imaging Technology...A SHIFT in digital radiology

Full-body, high-speed digital radiology with low radiation emission and scatter. Lodox provides a time-saving, low-dose investigation of the entire body in less than 5 minutes. Institutions across the U.S. and around the World benefit in multiple applications such as major Trauma centers, ER’s, Mass Casualty, Pediatric imaging, Bariatric imaging, Bone Scans, and Forensic Medical Investigations.

For more information visit: www.lodox.com

MWL Architects (Booth #40)

With projects worldwide and over 20 years in the industry, McClaren, Wilson & Lawrie, Inc. is the proven recognized leader in architecture specializing in the forensic sciences and law enforcement. Services provided include master plans, needs assessments, site feasibility studies, budget development, and design. Planning Your Future – Right From the Start!

For more information visit: www.mwlarchitects.com

MOPEC, Inc. (Booth #18)

MOPEC provides American-made equipment and laboratory products to the pathology, histology, necropsy, autopsy, and mortuary industries. Founded in 1992, Mopec solutions are among the very best as demonstrated by the vast number of installations in America’s top healthcare institutions and facilities. Our reputation, which continues to grow worldwide, is built on superior customer service, design consultation, customization and manufacturing.

For more information visit: www.mopec.com

Mortech Manufacturing Inc. (Booth #30)

Mortech Manufacturing has been providing premium quality anatomy equipment and instruments to a wide range of post-mortem facilities since 1985 including: pathology, autopsy, necropsy, veterinary, morgue and mortuary. From the beginning, it has been our commitment to furnish and fabricate quality products at affordable prices. Mortech has been setting the standard as the market-leader in superior customer service with high-grade, quality equipment. Mortech Manufacturing is product to be an ISO 9001:2008 certified company since November 2005. ISO 9001:2008 is an International Standard for quality management systems that establishes good practices and ensures consistent quality of our products.

For more information visit: www.mortechmfg.com

Mortuary Response Solutions (Booth #13)

Mortuary Response Solutions®, an affiliate of Worldwide Disaster Response Group, is the leading manufacturer in mass fatality response equipment and offers on-site training and facility evaluation to ensure efficient response to a mass fatality incident. Product lines include the Mortuary Enhanced Remains Cooling System (MERCSystems®), portable morgue units, indemnification and processing equipment and complete mass fatality response solutions.

For more information visit: www.wwdrg.com

The Musculoskeletal Transplant Foundation (Booth #3)

The Musculoskeletal Transplant Foundation (MTF) changes lives by connecting donors with surgeons and transplant recipients. As a non-profit service organization, MTF, is dedicated to providing quality tissue through a commitment to excellence in education, research, recovery and care for recipients, donors and their families. Visit www.mtf.org to follow us on Facebook and Twitter, and to watch our YouTube clips.

For more information visit: www.mtf.org

The NAME Foundation (Booth #39)

The NAME Foundation, a not-for-profit 501c3 corporation, has been created to foster the intellectual development and leadership of young forensic pathologists, advance the forensic sciences through financial support of research, and to fund humanitarian projects which will bring our expertise as medical examiners and public health physicians to underserved communities. The NAME Foundation accepts donations from individual and corporate donors and to receive funds from grants in order to promote excellence in forensic science. The Foundation will focus on sustaining recruitment into the field, promoting education and leadership, and funding research in forensic pathology and death investigation. The Foundation will also support efforts designed to preserve the history and follow the progress of the forensic sciences and NAME.

For more information visit: www.thename.org
National Center for Health Statistics/Centers for Disease Control and Prevention (Booth #20)
Description Not Provided

National Institute of Justice (Booth #12)
NIJ is the research, development, and evaluation agency of the U.S. Department of Justice and is dedicated to researching crime control and justice issues. NIJ provides objective, independent, evidence-based knowledge and tools to meet the challenges of crime and justice, particularly at the State and local levels.
For more information visit: www.nij.gov

NICHD Brain and Tissue Bank (Booth #32)
The NICHD Brain and Tissue Bank for Developmental Disorders was established in 1991 to serve as a tissue resource center with the goals of collecting, storing and distributing human tissue for medical research, with a special focus on autism. The Bank works with medical examiners, individuals, support groups and researchers to offer hope and life to future generations.
For more information visit: www.btbank.org

NJ Sharing Network (Booth #4)
NJ Sharing Network is a non-profit, federally designated organ procurement organization responsible for the recovery of organs and tissue for New Jersey residents currently awaiting transplantation, and is part of the national recovery system. NJ Sharing Network is committed to saving and enhancing lives through the miracle of organ and tissue donation and transplantation.
For more information visit: www.njsharingnetwork.org

NMS Labs (Booth #36)
NMS Labs is an international forensic and clinical reference laboratory that is unsurpassed in its scope of toxicology tests, accuracy of results, scientific expertise, and innovation. The state-of-the-art headquarters includes clinical, forensic and research facilities, a dedicated and secure crime laboratory, and is staffed by more than 200 highly trained professionals. NMS Labs is passionate about promoting public health and safety.
For more information visit: www.nmslabs.com

RTI Donor Services (Booth #16)
RTI Donor Services is a not-for-profit tissue recovery network dedicated to serving donor families and the donation community in perpetuating the circle of life. In addition to offering families the option of tissue donation, RTI Donor Services supports their wishes as a responsible steward of human donated tissue gifts, provides family services, and offers community information and awareness.
For more information visit: www.rtidonorservices.org

SADS Foundation (Booth #23)
The Sudden Arrhythmia Death Syndromes (SADS) Foundation is a leader in education, research and advocacy for families and children with genetic heart arrhythmias that can cause sudden death. Our mission is to save the lives and support the families of children and young adults who are genetically predisposed to sudden death due to heart rhythm abnormalities.
For more information visit: www.sads.org

Salam International (Booth #26)
Description Not Provided

Statlab Medical Products (Booth #15)
StatLab Medical Products has been supplying the anatomic pathology laboratory for over 30 years. StatLab’s Purpose is to enable our customers to deliver optimal patient care through timely and accurate diagnoses.
For more information visit: www.statlab.com
The SUDC Foundation (Booth #22)
The SUDC Foundation’s mission is to eliminate the tragedy of sudden unexpected and unexplained death in childhood. A centralized resource for SUDC, it is dedicated to supporting grieving families worldwide by developing support and advocacy programs specific to their needs. It works with families, professional and the general public to share accurate information, advance medical research and advocate for issues relative to SUDC. For more information visit: www.sudc.org

Summit Medical Specialties (Booth #25)
Summit Medical Specialties, Inc. has been a leader specializing in affordable OEM quality repairs on Autopsy Saws for Medical Examiners across the United States. We also offer a full line of high quality Autopsy Saw Blades at affordable rates.
For more information visit: www.summitmedic.com

TASER International (Booth #14)
Our industry leading Conducted Electrical Weapons (CEWs) are used worldwide by law enforcement, military, correctional, professional security, and personal protection markets. TASER CEWs use proprietary technology to incapacitate dangerous, combative, or high risk subjects who pose a risk to law enforcement/correctional officers, innocent citizens, or themselves in a manner that is generally recognized as a safer alternative to other uses of force. TASER technology protects life, and the use of TASER devices dramatically reduces injury rates for law enforcement officers and suspects.
For more information visit: www.taser.com

Thermo Scientific (Booth #8)
The Thermo Scientific brand includes the most complete line of anatomical pathology equipment and consumables, form specimen collection and grossing to advanced staining. From cadaver handling to storage, Thermo Scientific offers a comprehensive range of post-mortem examination products and services for laboratories, morgues, medical examiners, medical schools, research, and veterinary facilities.
For more information visit: www.thermoscientific.com/pathology

Tissue Techniques Pathology Labs (Booth #21)
Histology Services, Beyond Acceptable to Exceptional. Cost conscious services plus quick turn time while giving High Quality/High Definition H&E slides plus Immunohistochmeistry & Special Stain. All services are provided by certified histotechnicians. Consultation services can also be provided.
For more information visit: www.tissuetechpathology.com

Totalpost Security Systems (Booth #44 & 45)
Introducing FLATSCAN DF-80, the NEW digital forensic imaging system that will, INCREASE YOUR EFFICIENCY AND LOWER YOUR COST. Safe for your personnel; Fast/Easy to use; Superb image quality; Variable generator power settings; Mobile/No special radiology room required; No advanced technician required; Low maintenance…All that, and more, at a cost to defy all budgets and make your Administrator smile!
For more information visit: http://www.totalpostusa.com/forensic-screening/

Transgenomic, Inc. (Booth #17)
The Transgenomic FAMILION Postmortem Tests detect genetic mutations that cause cardiac channelopathies and cardiomyopathies, including Long QT Syndrome (LQTS), Brugada Syndrome (BrS), and Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC). Genetic testing can help determine the cause of death for autopsy-negative sudden unexpected death cases and provide an important opportunity to identify at-risk surviving family members.
For more information visit: www.transgenomic.com/labs

VertiQ Software (Booth #35)
CME Case Management Software is an Internet-enabled, customizable, integrated system for case and workflow management with both in-house and hosted solutions available. CME records, tracks, reports demographic data of deceased persons and others associated with a case; creates autopsy, investigative and toxicology reports; links digital images and documents; tracks body, evidence and property intake and release via bar codes.
For more information visit: www.vertiq.com
OPTIONAL/SPECIAL PROGRAMS

OPTIONAL INSPECTION AND ACCREDITATION TRAINING SESSION
[NOT CME]
Date: Friday, September 19, 2014  
Time: 1:00 PM – 4:00 PM

Attendance at a NAME Inspection and Accreditation Training Session is REQUIRED for all those NAME members desiring to be a certified inspector. Pre-registration is required; however, there is NO charge for this Training Session.

OPTIONAL SATURDAY PRIVATE DINNER CRUISE ON THE WILLAMETTE STAR
[NOT CME]
Date: Saturday, September 20, 2014
Board Time: 6:45 PM – 7:00PM  
Cruise Time: 7:00 PM – 9:30 PM  
Cost: $100.00 per person

Show-Stopping Views and Fantastic Cuisine
Please join us on the Willamette Star for an evening of dining on a two level, 98 foot vessel that has been custom built with elegance and style. The event is a 2½ hour evening private cruise with 15 minutes of boarding time. The Cruise includes a full on-board galley, a full service bar and two climate controlled decks. With exceptional service staff, Portland Spirit will provide you with fresh northwest cuisine and the best river cruise you have ever been on!

Our boarding location will be at the Salmon Springs Boarding Location at 1000 SW Naito Parkway. The boarding location is within walking distance of the Portland Marriott Downtown Waterfront (0.2 mi, 5 minutes; See Map https://goo.gl/maps/v3ghB).

Transportation to the dock will NOT be provided for this event. If you need special accommodations (ie: wheelchair) please contact Dee McNally, Executive Director, directly at name@thename.org.

NOTE: All passengers 18 years of age and older must present Photo Identification at Boarding, carry-on bags are subject to inspection, and passengers may be photographed at boarding.

Dinner Includes:
- Entree (Beef, Chicken, Salmon, Vegetarian)
- Dessert
- 2 drink tickets per person redeemable for non-alcoholic beverages including beer and house wine

Registration deadline is September 5, 2014. Tickets will not be sold at the door.

OPTIONAL SUNDAY RIGOR RUN/WALK
[NOT CME]
Date: Sunday, September 21, 2014  
Time: 6:30 AM  
Cost: $20.00 per person

The NAME Rigor Run/Walk will be approximately 3 miles. The route will start and end at the meeting hotel. Registrants for the Rigor Run/Walk will receive a terrific t-shirt, a route map, and a bottle of water. Runners and walkers can go to the Sunday morning continental breakfast after returning to the hotel. Note: T-shirts will be available on a first come first serve basis. There will be shirts in sizes S, M, L and XL.

Map - http://www.gmap-pedometer.com/?r=6280346

OPTIONAL SUNDAY CADAVER OPEN GOLF TOURNAMENT
[NOT CME]
Date: Sunday, September 21, 2014  
Time: 1:00 PM  
Cost: $63.00 per player

The tournament will take place at Heron Lakes “The Great Blue Course.” The links-style Great Blue Course opened in 1992 and became an immediate favorite among low handicap golfers in the area. The Great Blue features small, undulating greens and rambling fairways that carve through fescue style grass and Scottish mounds. The 6,902 yard, par-72 layout challenges accomplished golfers and beginners alike with more than 80 bunkers and abundant water hazards. You may view additional information at http://www.heronlakesgolf.com/sites/courses/template.asp?id=1420&page=89603
SCIENTIFIC FIELD TRIP: OREGON
NATIONAL PRIMATE RESEARCH CENTER –
LIMITED AVAILABILITY (You must register for
the field trip with full registration)
Date: Sunday, September 21, 2014
Bus Boarding: 1:15PM – 1:30PM
Time: 2:00 PM – 5:00 PM
Cost: $45 (Included in Full Registration)
*Transportation is Provided

The Oregon National Primate Research Center is one
of the eight National Primate Research Centers in the
United States. The Center is to provide Nonhuman
Primate (NHP) resources for the very best scientific
programs, both within the Oregon Health & Science
University community and beyond.

Oregon Health & Science University is proud to be
home to one of the nation's eight national primate
research centers. The Federal government
established the centers within the National Institutes
of Health to conduct critical research aimed at treating
and curing disease. The highly regulated primate
centers are located throughout the country so that
health researchers in the United States and around the
world can collaborate to obtain important data aimed
at battling diseases, such as AIDS, Parkinson's,
Alzheimer's and other brain disorders, cardiovascular
disease, schizophrenia, and the country's alarming
obesity epidemic. In addition, studies conducted at
the country's primate centers are greatly advancing
stem cell and gene therapy methods to treat patients
suffering from a wide range of diseases.

NOTE: The Scientific Field Trip is eligible for up to
1.0 AMA PRA Category 1 Credit(s)™ for registered
CME participants. Physicians should only claim
credit commensurate with the extent of their
participation in the activity.

OPTIONAL FEMME FATALE LUNCHEON
[NOT CME]
Date: Monday, September 22, 2014
Time: 12:00 PM – 1:20 PM
Cost: $65.00 per person

Femme Fatales (Ladies) - Plan to join your forensic
colleagues for lunch and get acquainted. This is a
luncheon for all forensic femme fatales! Register
early as space is limited!

To register for any optional events or
special programs, please contact Dee
McNally, Executive Director, directly at
name@thename.org.
MILTON HELPERN LAUREATE AWARD

THE NATIONAL ASSOCIATION OF MEDICAL EXAMINERS

The National Association of Medical Examiners began, as many great organizations do, from the dreams, ideas and wisdom of a few farsighted, socially conscious individuals. Back in 1965, Milton Helpern recognized the need for the nation’s Medical Examiners to share their knowledge, expertise and experience in order to improve the medicolegal investigation of death in this country.

He discussed this concept with Richard Childs, the Executive Director of the National Municipal League, and a group of his close colleagues, Ali Hameli, Chief Medical Examiner, State of Delaware, Leslie Lukash, Chief Medical Examiner, Nassau County, New York, and Joseph Spellman, Chief Medical Examiner, City of Philadelphia. In the spring of 1966, these individuals formed a planning committee in order to bring Doctor Helpern’s concept to reality. This group became the foundation and heard of what was later to become the National Association of Medical Examiners.

Through the dedication and efforts of these five men, N.A.M.E. was incorporated in August, 1966. Subsequently they invited Chief Medical Examiners throughout the country to meet in Doctor Helpern’s Office. As a result of that meeting, an interim steering board was formed which later paved the way for the first annual membership meeting held at the Knickerbocker Hotel in Chicago in February, 1968.
The Executive Committee and Board of Directors of the National Association of Medical Examiners is extremely pleased to present the Milton Helpern Laureate Award to Randy L. Hanzlick, M.D. who has made outstanding contributions to the development and improvement of medicolegal investigations in the United States; who is highly respected by his colleagues for the highest excellence in forensic pathology, education, research, consultation and administration; and who has attained and is a living example of the principles, standards, and goals of the National Association of Medical Examiners.

Randy Hanzlick was born and raised in Salem, Ohio, and graduated from Salem High in 1970. He received his BA degree (1973) and his MD degree (1976) from Ohio State University where he also completed a general pathology residency program. After moving to Atlanta, Dr. Hanzlick began a forensic pathology fellowship and became a board certified forensic pathologist in 1985. He has worked as a forensic pathologist and medical examiner since, becoming Chief Medical Examiner of Fulton County, Georgia in 1998. In addition he is a Professor of Forensic Pathology at Emory University School of Medicine in Atlanta. He also worked with the CDC’s Medical Examiner/Coroner Information Sharing Program in the 1990s.

Dr. Hanzlick has authored several textbooks, multiple book chapters, and hundreds of articles which have appeared in medical and scientific journals. In 2001, he served as President of the National Association of Medical Examiners (NAME). In 2007, he received NAME’s Lifetime Service Award. Dr. Hanzlick was also honored as a Distinguished Fellow of the American Academy of Forensic Sciences (AAFS) at the AAFS Annual Meeting in Denver in 2009.

Dr. Hanzlick’s professional interests include improving the certification of death, analysis and improvement of medicolegal death investigations systems, forensic pathology practice guidelines and
standards, and forensic pathology training. He is the forensic pathology fellowship training director for
the Emory School of Medicine’s Forensic Pathology Fellowship Program, and has been involved in the
training of more than 30 physician forensic pathology fellows over the past three decades. He has also
served on multiple federal panels and working groups and is currently Vice-Chair of the Scientific
Working Group for Medicolegal Death Investigation (SWGMDI).

Dr. Hanzlick’s major professional delights have related to working on numerous NAME surveys and data
projects involving forensic pathology training, the history of forensic pathology and death investigation,
cause and manner of death determination, and guidelines for scene investigation and investigation of
infant deaths. He also helped develop the NamUs system for unidentified and missing persons. It is his
opinion that becoming involved in NAME was the best thing he ever did professionally because of
friends gained, lesson learned, and projects accomplished.

Dr. Hanzlick and his wife, Mary, reside in Atlanta. They have two children, Caitlin and Marinna. The
Hanzlicks enjoy spending time in the North Georgia mountains and boating and fishing at Lake Blue
Ridge, Georgia.

We are honored to recognize Dr. Hanzlick this year as the Milton Helpern Laureate of the National
Association of Medical Examiners. He is only the ninth recipient of this highest award in the 48 years of
the Association.
National Association of Medical Examiners

Abstracts of the 2014 Annual Meeting

September 19-23, 2014

Portland Marriott Downtown Waterfront, Portland, Oregon

ORAL PRESENTATIONS

1.1 Workshop: The Role of the Medical Examiner in Support of Transportation Accident Investigations – An End-User’s Perspective
C. R. Hileman¹, N. L. Webster¹, M. P. McKay², R. J. Lewis³, C. A. McNeil⁴
¹Federal Aviation Administration, Oklahoma City, OK; ²National Transportation Safety Board, Ashburn, VA.

The mission of the Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) is to advance aviation and transportation safety. As part of that mission, medical professionals at the FAA and NTSB are charged with investigating whether medical conditions or their treatment contributed to the cause of accidents. The detailed autopsies and toxicological analyses we receive from medical examiners supply critical data in support of these investigations. In addition, the described injury patterns are used to improve vehicles’ crashworthiness and reduce the risk of death or injury when an accident happens. This panel presentation will review current practices and protocols used by the FAA and the NTSB during medical investigations. The panel will discuss challenges medical examiners may face while assisting transportation accident investigators and present cases highlighting the essential role medical examiners play in transportation accident investigations. FAA and NTSB presenters will cover: Autopsy coordination: The legal “nuts and bolts” of transportation autopsies, how the FAA autopsy program assists investigators with coordinating autopsies and obtaining autopsy reports. Pilot medical case review: Physician review of FAA medical certification records and sharing of known, pre-mortem medical conditions with medical examiners. Toxicology: The role of the FAA’s Toxicology Laboratory in transportation accidents, why the FAA/NTSB conducts a separate analysis, issues with the TOXBOX, and common toxicological findings in fatal transportation accidents. Autopsy data and the probable cause: The autopsy as an investigative tool, critical details beyond the manner and cause of death; determination of underlying natural disease that may have incapacitated a pilot or degraded his or her judgment or cognitive skills: such as acute coronary events and hemorrhagic stroke. Autopsy data and crashworthiness: The role of autopsy data in assessing aircraft safety system design: the effectiveness analysis of crash-worthy fuel systems in various helicopters. These presentations will describe current practices and demonstrate to medical examiners how their work continues to enable improvements in transportation safety. This panel discussion will also be an excellent opportunity to discuss what the FAA/NTSB can do to help medical examiners and how medical examiners can assist FAA/NTSB investigators.

1.2 The Recovery of the Fallen - The Investigation of WW1 Mass Graves at Fromelles in Northern France
P. S. Ellis
Queensland Health Forensic and Scientific Services, Buderim, Australia.
The battle of Fromelles in July 1916 was responsible for the single largest loss of life in one day in the history of the defense of Australia. Following a disastrous attempt to divert the Germans from the front line at the Somme, several brigades of British and Australian soldiers were slaughtered by German artillery and machine gun fire. To this day, many bodies of the dead Allied soldiers have never been recovered. In 2008 after an exhaustive investigation by private and university-based archaeologists and military historians, the site of several mass graves was identified in the village of Fromelles, near Lilles in northern France. In the following year, with support of the Commonwealth War Graves Commission, these graves were examined and excavated and the bodies of the soldiers that had been interred in them were exhumed. This presentation will describe how the graves were identified and examined and will outline the process by which the skeletal remains were removed. The project team used full forensic archaeological techniques so that as many of the dead as possible could be identified before being re-buried in marked grave sites in an adjacent brand-new Commonwealth War Cemetery. A temporary mortuary was constructed close to the site of the mass graves and this mortuary incorporated facilities for radiology, processing of the skeletal remains, photography, and examination of forensic artefacts as well as full anthropological analysis. Forensic samples were taken from each set of remains and were subjected to DNA comparison with reference samples that had been collected from various family members, many of whom were several generations removed from the deceased. 250 individual bodies were exhumed from the graves, most of whom were found by direct or indirect means to have been Australian. Although the excavation has been completed, the identification program has been continuing since 2009 as more families come forward to volunteer DNA for comparison. As at 2013, 124 bodies have been fully identified and 98 further identified as being Australian but without individual names. The program will be finalized in mid 2014.

K. E. Williams¹, M. D. Freeman²
¹Office of the Medical Examiner of Allegheny County, Pittsburgh, PA; ²Oregon Health & Science University, Portland, OR.
Deaths due to drug overdose crisis in the United States have increased significantly over the past 20 years and now exceed the number of deaths each year from traffic crashes. Such deaths can occur in temporal and geographic clusters because of variations in the toxicity and distribution of the various types of illicit and licit drugs that are abused. Two barriers to the rapid identification of an “outbreak” of overdose deaths are 1) the lack of a standardized and sensitive methodology for outbreak identification and investigation, and 2) a delay between a suspected overdose death and complete toxicology results due to administrative and/or physical separation of toxicology and drug chemistry section of crime laboratories. We report here on an outbreak of combined fentanyl and heroin overdose deaths in Allegheny County, Pennsylvania. First, the recognition of a potential outbreak was apparent from the excess number of overdose deaths occurring in the timeframe of interest. Next, evidence was collected and categorized in a shared spreadsheet, including: the toxicological data from the overdose deaths and the chemical analysis of drugs seized from both death scenes and by law enforcement entities, demographic and geographic distribution of the deaths, and other relevant information. In this instance the offending agent was rapidly revealed to consist of a distinctive pure white powder comprised of an equal mixture of fentanyl and heroin. A categorical comparison of frequencies was made for all of the significant information in order to identify meaningful patterns among the deaths. The results were as follows: 14 overdose deaths occurring over a 12 day period. The drug mixture was contained in small glassine envelopes known as “stamp bags.” These stamp bags were...
either supplied to end users by drug dealers or seized by law enforcement and submitted to the Drug Chemistry section of the laboratories. Although more than 20 varieties of stamp bags were commonly found in the community at the time of the outbreak, the distinct fentanyl/heroin mixture was only found in 2 types of the bags. The methods described in this investigation are standard practices employed in the epidemiologic investigation of the outbreak of food and blood borne illness described here could be standardized for use on a wider basis nationally. Given adequate resources the experience could be developed into a continually updated data analysis that might both follow trends in overdose deaths as well as detect developing threats.

2.2 The Design of a New Mortuary and Medical Examiner Facility in Abu Dhabi

A. Denmark1, D. R. Fowler2

1. SmithGroupJJR, Phoenix, AZ; 2. Office of the Chief Medical Examiner, Baltimore, MD.

Abu Dhabi is the wealthiest of the seven emirates that make up the state known as the United Arab emirates. Currently the death investigation system is extremely limited with no forensic pathologists in the emirate. Last calendar year 36 autopsies were performed in an antiquated facility which is a reffitted cafeteria. While this emirate is predominantly Muslim, nine out of 10 of the individuals living within the emirate are foreign workers. This provides a rich and diverse cultural and religious population. The present mortuary is under the control of the Abu Dhabi police department. They, in conjunction with the health department, have formed a mortuary committee to construct a new facility and establish a modern western based medical examiner system. In Abu Dhabi there are no private funeral homes. It is considered a state function to prepare the body for appropriate disposition. This may vary from traditional Muslim washing and shrouding and rapid burial to full embalming an international transportation for a non-citizen. These tasks will also be undertaken in the same mortuary facility as the medical examiner system. There is no death investigation infrastructure on which to base scientific criteria for a new facility. Extensive study was done into the population makeup, growth and applying modern medical examiner criteria recommendations were made to the mortuary committee for a new facility. This paper will describe the overview and study process, an overview of the present medicolegal death investigation system, the unique additional facility requirements for a Muslim country. Additional discussion on the project location, program elements and early conceptual diagrams will be presented.

2.3 Case Resurrected - Justice Unserved: The Investigation into the Death of LCpl Billy Joe Wyatt, USMC: Vietnam War 1968

W.C. Rodriguez
Office of the Chief Medical Examiner State of Maryland, Baltimore, MD.

The case to be presented involves the death of LCpl Billy Joe Wyatt, USMC who died during the Battle for LZ Torch (Quang Tri Province of Vietnam) on the morning of 11 June 1968. The case of LCpl Wyatt was brought to the attention of NCIS (Naval Criminal Investigative Service) in 2009 by Michael Hoskins, writer and former Marine, while conducting research for an article he was writing entitled "The Battle for LZ Torch." Interviews of two US marines who were present at the Battle for LZ Torch, revealed that they witnessed their commanding officer, a Marine Lt, draw his issued .45 caliber sidearm and shoot LCpl Wyatt. In 2010 the author received a request from NCIS HQ to review the case file of LCpl Wyatt and to opine as to whether there was sufficient evidence to warrant the exhumation and examination of the remains, some 42 years after his death. After a review of the case file the author informed NCIS that an exhumation was warranted, and that recovery of pertinent forensic evidence may be possible, even though the remains most likely will be in a skeletonized state and poorly preserved. In December of 2010 the exhumation of LCpl Wyatt took place, at which time it was discovered that LCpl Wyatt had been buried within a heavy steel dome vault rather than the typical concrete vault. Once the coffin was breached it exposed a full length glass plate with a reinforced steel frame which had been welded to the top of the casket. Through the glass cover, to our amazement, one could see the uniformed and immaculately preserved body of LCpl Wyatt, appearing as he did on the day of death. Detailed examination of the body including CT and standard radiographic imaging revealed evidence of a single bullet wound which entered the left cheek fracturing the base of the mandibular ramus and passing downward through the neck into fracturing the fifth, sixth and seventh cervical vertebra. At the terminal point of the bullet tract, located within the right shoulder just above the scapula, a .45 caliber copper jacketed bullet was recovered. At the present time the investigation has stalled, which may be a politically motivated example of not opening "a past war time incident" as it would be an embarrassment to the military and detrimental to the reputation of an aged but highly decorated Marine officer.

2.4 An Unrecognized Patricide: A Representative Case of the Italian Death Investigation System

C.P. Campobasso1, D. Laviole2, L. Strada2, A. Addante3, A. S. Del'Era2

1. University of Molise, Campobasso, Italy; 2. University of Bari, Bari, Italy.

Patricide (killing the father) is one of the most heinous crimes and a rare form of homicide. Usually the assaults occur at home in the absence of witnesses and adult sons are frequently involved. This presentation will show a case of patricide originally misclassified as accident because of the death investigation not run professionally and performed only by external body examination with relevant discrepancies about interpretation between minor external trauma lesions and manner of death. The story begins when the body of a 60 year old lady was found on the bloody floor of her stationary store. At autopsy cause of death was related to stab wounds to the neck and blunt injuries to the head with skull fractures as the result of multiple blows with a hammer. The murder suspect was her son-in-law, a 40 year old man who first discovered the corpse and called the emergency service. Based on the evidence collected by blood pattern analysis on the scene and on the blood-stained clothing worn by the suspect, the man was found guilty. But the investigation raised also the possibility that an additional victim could have been killed by the suspect. In fact, this was the second time the man found a cadaver. Three years before, the suspect found his 70 year old father dead at the bottom of a bloody basement stairwell at home. The day after death, a preliminary external body examination recorded several stab wounds to the right side of the neck and thorax and a forensic autopsy was requested. Surprisingly the Prosecutor requested an additional external body examination without subsequent autopsy. This second survey performed by a general practitioner certified that all the injuries were consistent with a blunt trauma occurred falling down stairs. Therefore, the case was ruled as accident. Only the exhumation of the father, performed years later, confirmed the diagnostic hypothesis raised by the first physician. The elderly man had received multiple stab wounds to the neck and thorax. The 40 year old son was finally condemned to life in prison for double murder. He never confessed to the crimes. This is a representative case of the Italian death investigation system commonly performed by individuals with no specific training where most of the medico-legal investigations (especially for deaths resulted from trauma) are restricted to an external body examination without subsequent autopsy.

2.5 "Razors pain you,...Nooses Give": Lessons From the Planned Complex Suicide of a Surgeon

R. A. Irvine
Department of Forensic Medicine Sydney, Glebe, Australia.

A 60 year old male paediatric maxillofacial surgeon, facing imminent indictment and loss of licence in a sexual offense matter, apparently committed suicide by near-simultaneous full-suspension hanging and a lethally-situated single stab wound of the chest. This represents a planned complex suicide, the definition and significance of which will be discussed. The true extent of the planning was apparent at autopsy, and will no doubt be identified by the astute attendee of the presentation. This case is
unusual as a suicide but also unusual within the context of suicide by physicians in terms of method and presumed risk factors, which will be briefly explored. Another issue raised by this case was unexpected positivity for HIV infection on screening. The significance of this in a medical practitioner who necessarily performs exposure-prone procedures, the role of the autopsy in light of this finding, and the potential benefit (and logistical complications) of neuropathological examination in this situation will be discussed. DNA cross-contamination is a concern in all forensic institutions. The investigation into how the deceased’s DNA profile emerged on a wrist swab of a homicide victim who was autopsied almost a week later will be presented.

2.6 Death and the Art of Frida Kahlo: Illustrations of Forensic Pathology

F. Antelo
Los Angeles County Department of Medical Examiner-Coroner, Los Angeles, CA.

The Mexican painter Frida Kahlo (1907-1954) endured various health problems in her lifetime. She confronted the fragility of her health early in life when she contracted the poliomyelitis virus at six years of age. Although the physical sequelae of the poliovirus caused her much embarrassment, the observations of her disease helped to initiate an interest in biology and medicine. Having survived poliomyelitis, Kahlo wanted to become a physician and pursued premedical coursework as a teenager. A near fatal streetcar accident at eighteen years of age, however, changed her outlook on life and she decided to no longer pursue a career in medicine. While recovering from her traumatic injuries, Kahlo began to paint and an interest in art quickly emerged. In addition to her self-portraits, Kahlo is recognized for paintings that depict her physical and mental pain. To illustrate her struggles with pain, Kahlo utilized medical imagery and juxtaposed themes of life and death. In a number of her works, Kahlo focused on the event of death and even shared visions of her own death. Closer examination of her works reveals that Kahlo illustrated each of the categories of death recognized by American medical examiners and coroners: natural, accident, suicide, homicide, or undetermined. By portraying the categorical multiplicity of death in her paintings, Frida Kahlo created a collection of artwork that reflects the post-mortem cases encountered in forensic pathology.

2.7 Snake Bite Deaths in South East Queensland, Australia

D. Little
Queensland Health Forensic and Scientific Services, Health Services Support Agency, Southport, Australia.

Australia is home to many venomous snakes, including some of the most poisonous species in the world. Although found predominantly in bushland areas, some species also invade urban areas with resultant increased risk of snake bite to humans. Fortunately, due to good medical treatment, including the use of anti-venom, fatalities are rare and frequently due to unusual circumstances. Two fatal snake bites cases which occurred in South East Queensland during the summer of 2013 are reported. The first case was 72 year old man in a semi-rural area who was bitten by a snake, subsequently identified as a brown snake. Following a delay in seeking medical treatment, he was admitted to hospital with severe coagulopathy which did not respond to anti-venom and blood products. He developed an intracerebral hemorrhage which was ultimately fatal. The second case was a 64 year old man who was initially admitted to hospital following a traffic collision in which he sustained chest injuries. He was found to have a severe coagulopathy and was subsequently diagnosed as having suffered envenomation by reptile from the tiger snake group. He was unable to receive anti-venom due to prior sensitisation, but was given blood products. He developed multi-organ failure and died several days later from a combination of direct complications from the snake bite and excessive hemorrhage from his chest injuries. The clinical and pathological features of snake envenomation will be discussed with specific reference to these cases.
3.3 Quality Assurance Of Manner of Death Classification Via Benford’s Law: How to Practically Apply?

J. P. Daniels1, J. Fernandes1, J. P. Alperin2, A. Lytwyn1, J. Hamid1

1McMaster University, Hamilton, Canada; 2Stanford University, Palo Alto, CA.

Introduction: It is essential to ensure that information in a forensic database is valid. Benford’s Law is a statistical principle applied to count data and has been used to identify inconsistencies in accounting, physical science, and medical databases. Counts are composed of digits. Benford’s Law predicts the expected frequency distribution of numerals at a specified digit or digit range in count data. Objective: The objective was to determine if Benford’s Law could be used for quality assurance purposes for manner of death classification in forensic pathology.

Methods: Monthly counts for manner of death were collected from Hamilton General Hospital Forensic Pathology database for 35 months from January 2011 to November 2013. The chi-squared test was used to examine deviation from the expected Benford’s Law frequency distribution for the first and second digit of manner of death counts, and the first 2 digits together. Testing was conducted for monthly and semi-annual bases. Results: There were 2352 decedents in the study. The first digit of the monthly counts did not deviate significantly from the Benford’s Law distribution for all manners of death together on monthly (p=0.83) or on a semi-annual basis (p=0.60), nor for each manner of death individually on a per month basis (p values 0.28-0.95). The second digit of the monthly counts did not deviate significantly from the Benford’s Law distribution for cumulative manners of death on a monthly (p=0.99) or semi-annual basis (p=0.66), nor for individual manners on a monthly basis (p values 0.93-0.99), except for manner of death Undetermined which deviated significantly from the expected frequency distribution (p=0.005). Testing of the second digit of manner of death Homicide could not be conducted because no months had Homicide counts with double digits. The first 2 digits together deviated significantly from the Benford’s Law distribution for both the monthly and semi-annual bases (p<0.001 and p<0.0001, respectively). Conclusion: Manner of Death reporting in this Regional Forensic Pathology Unit appeared, overall, to follow Benford’s Law. First and second digit applications of Benford’s Law may be useful for quality assurance, with the second digit application showing closer adherence to the expected distribution. Further analyses of larger forensic databases are needed to ascertain these findings. If successful, Benford’s Law be may be used to identify inconsistencies that warrant further investigations as to cause.

3.4 SUID: How Multidisciplinary Collaboration Can Inform Diagnosis and Prevention

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Attendees will learn how a medical examiner’s office and a public health agency can collaborate to: 1) Evaluate sudden unexpected infant deaths in a timely manner; 2) Collect quality data that will assist in making consistent diagnoses; 3) Provide data to the Centers for Disease Control and Prevention’s (CDC) Sudden Unexpected Infant Death (SUID) Case Registry initiative to monitor trends and characteristics associated with SUID; and 4) Develop actionable prevention strategies through multidisciplinary case review. The New Hampshire Office of Chief Medical Examiner (OCME) in partnership with the Department of Health and Human Services’ Maternal and Child Health (MCH) Section, is one of nine grantees funded by CDC to participate in the National Center for the Review and Prevention of Child Deaths’ web-based data registry, a public health surveillance system that collects information regarding the circumstances and events surrounding sudden unexpected infant deaths. Cause and manner of death can be classified various ways on death certificates. SIDS, unknown, undetermined and suffocation can be listed as the cause of death of infants who die in similar sleep environments. Manners range from natural to undetermined to accident. Inconsistent terminology hinders the ability to monitor national trends. OCME provided investigators with dolls and training in order to have doll reenactments of the death scene. In several subsequent infant death cases, the investigator’s interpretation of the caregiver’s verbal description of the scene did not match the caregiver’s doll reenactment of the scene. Digital images of the doll reenactment have impacted the pathologist’s determination of cause and manner of death in some cases. Grant funding provided by the CDC has allowed for the hire of a SUID Project Data Clerk, who is based at OCME. The data clerk reviews the infant’s and mother’s medical records, the birth certificate, and police reports and inputs that data, as well as information from the death investigator’s report and the autopsy report, into the case registry. The MCH project manager coordinates meetings that bring a multidisciplinary group of professionals together to review the circumstances of each death with the goal of using the findings to take action to prevent other deaths. A list of recommendations is generated for each case and the progress of the recommendations is reviewed at subsequent meetings. Data will be reviewed annually to identify and monitor risk factors, and develop focused strategies.

3.5 Spectrum of Coronary Artery Pathology in Pediatric Hospital Autopsy Practice

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Background: Atherosclerosis is a predominant coronary artery (CA) pathology seen in adults. Although atherosclerotic coronary artery disease (ACAD) occurs in the young, there is a variety of interesting congenital (CCA), infectious, and inflammatory pathology that can be encountered in pediatric patients. Some pediatric CA diseases are relatively benign; others have an increased risk of sudden death. The aim of this study was to determine the incidence of ACAD and non-coronary CAD (NCAD) diagnosed at autopsy at a pediatric tertiary hospital. Methods: A search was done for autopsy cases in patients (age <22 years) from January 1999 to January 2014 (n=543) performed at our institution. Cases with complex congenital heart defects, cardiac explants, and recent surgical complications were excluded. Results: Over the 15-year period, 27 cases of 543 total cases showed NCAD/ACAD (5 %) diagnosed at autopsy. There were 11 males, 16 females, ranging in age from 13 days to 22 years (mean 11.4 years). Coronary emboli and thrombi were present in 8 (29.6%) cases, including major coronary thrombosis (n=2), infective emboli (n=1), microthrombi (n=1), and postinfectious ostial stenosis (n=1). It was the most common pathology leading to myocardial infarction in five of these cases. An intramyocardial coronary artery course was seen in 3 (11.1%) cases. In one of these cases the myocardial bridge was associated with severe LCA stenosis (contributing to cause of death). Systemic vasculopathy was seen in 3 (11.1%) cases in patients with Hurter syndrome (n=1) and William’s syndrome (n=1). In addition, one case of systemic vasculopathy of unknown type was described in a patient with Robert’s syndrome. Two (7.4%) cases of CCA anomalies: LCA originating from RCA (n=1) and anterior and leftward displaced RCA (n=1), were classified as “safe” anatomical variants without alteration of the blood flow and not contributing to the cause of death. Accelerated ACAD was present in 2 (7.4%) cases with a history of chemotherapy for osteosarcoma and morbid obesity in a patient with Prader-Willi syndrome. Mild intimal changes were described in 9 (33.3%) cases and were associated with a wide range of underlying non-cardiac pathology. Conclusion: The majority of the cases have mild changes, not contributing to the cause of death. In children major coronary thrombi not associated with ACAD but rather attributable to septic emboli and microvascular thrombi and are associated with MI and cardiac death. Unusual systemic vasculopathies with severe coronary involvement were encountered in children with genetic and metabolic conditions.
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Background: Medical examiners frequently rely upon postmortem toxicology testing to determine cause and manner of death. A quandary exists when local and reference toxicology labs are unable to isolate the drugs or toxins relevant to a particular case. Case Report: In August 2013, a severely decomposed body was found partially submerged in a creek in a wooded area by several hikers. Postmortem examination revealed saponified soft tissues and asserted skeletal elements without evidence of ante- or perimortem trauma. Anthropological and dental evidence identified the decedent as a 31-year-old male who had been reported missing approximately 2 months prior after a suicide note was found at his residence. A search of the area where the body was found revealed a nearby camp site in which was a bag of brown fibrous seeds. Further investigation indicated the decedent had purchased Cerbera seeds from the internet prior to his disappearance. The fruits of the Cerbera tree, commonly referred to as the “suicide tree,” contain the toxin cerberin, a potentially lethal cardiac glycoside, which can induce heart block and lethal arrhythmias. Discussion: With a forensic toxicologist revealed difficulty in confirming the presence of cerberin within the remains. Extensive putrefaction of the tissues complicated postmortem toxicology testing. In addition, the rarity of cerberin poisoning in the United States meant that reference standards were not readily available (i.e. even if the decedent were not decomposed, confirmation of cerberin poisoning would be difficult). Due to the unusual circumstance, the seeds were sent to a research botanist at the United States Department of Agriculture who identified the seeds as Cerbera manghas L. of the plant family Apocynaceae. Based on these findings, the cause of death was determined to be Cerberin Poisoning. Conclusion: We report a case of suicidal ingestion of Cerbera seeds obtained via the internet. We are not aware of previously reported cases of cerberin poisonings within the United States, even though its use for suicidal and homicidal means has been well documented in eastern Asia and the Indian Ocean regions. The relative ease of obtaining these seeds through the internet may result in deaths anywhere in the world due to cerberin poisoning. This case highlights the difficulties in identifying putative toxins in postmortem samples when unusual and exotic poisons are used. Use of atypical consultants, a botanist in this particular case, may allow appropriate determination of the cause and manner of death.

4.1 Acute Coronary Artery Thrombosis Associated with Synthetic Cannabinoid Intoxication
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Background: Synthetic cannabinoids (commonly referred to as K2 or spice) are designer drugs created by spraying chemicals structurally similar to THC onto herbs that create a cannabis-like high when smoked. The drugs first went on sale in the early 2000s and have been growing in popularity due to easy availability and the fact that they will not be detected on routine urine drug screens. Although cannabis is generally not thought to cause severe adverse cardiovascular effects, three cases of myocardial infarction within days to 1 week after smoking synthetic cannabinoids were reported in previously healthy teenagers (Mir et al., 2011). Case Report: A 57-year-old male had a long history of drug abuse, including daily use of synthetic cannabinoids for the prior two years. He had no additional past medical history. After smoking three packs of “Scooby Snax” (K2) with a friend, he began to complain of chest pain and then fell in the bathroom. The friend helped him into bed and went out to buy medications for the decedent’s indigestion and chest pain. When the friend returned a short time later, the decedent was unresponsive and not breathing. Autopsy revealed an obese white male with no evidence of injury. Gross examination of the heart revealed severe triple vessel coronary artery atherosclerosis. Multiple microscopic sections of the coronary arteries revealed: severe luminal narrowing by thin-capped fibroatheroma; a healed plaque rupture site; and focal complete occlusion of the left anterior descending coronary artery by an acute fibrin and platelet rich thrombus. Although an acute plaque rupture site was not identified, it is likely that limited sampling precluded identification of such an area. Routine toxicology testing was negative. However, based on the history, heart blood sent to an outside lab for directed testing of synthetic cannabinoids was positive (XLR-11 and UR-144 detected). Conclusion: To our knowledge, the current case is the first documented report of death due to acute coronary artery thrombosis associated with synthetic cannabinoid intoxication. This case supports the previously reported association of synthetic cannabinoids to myocardial infarctions. Public education as to the risks that these drugs pose is warranted; in particular, children and adults should be made aware that synthetic cannabinoids may pose an increased risk for sudden death not generally associated with cannabinoids. This case highlights the need for heightened suspicion of these drugs in the medical examiner population as they are not detected on routine postmortem drug screens.

4.2 Suicide by Shotgun in Southeastern Minnesota
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Background: Suicide by shotgun is a common method of suicide, yet little literature describes their characteristics. Shotgun wounds (SGW) are distinct from other firearm wounds and may present challenges to medical examiners/coroners (ME/C) unfamiliar with shotgun wounds. Shotgun suicides may have distinct risk factors and demographic characteristics. In order to better characterize these features, we examined 75 suicides due to shotgun wounds in southeastern Minnesota. Methods: A database search was performed for gunshot wound (GSW) cases autopsied at Mayo Clinic between January 1, 1994 and December 31, 2013. Suicides due to handguns and rifles were excluded. All available case information, including autopsy and scene report, photographs, and postmortem imaging were reviewed for demographic data, wound characteristics, medical and psychiatric history, firearm type, ammunition type, number of gunshot wounds, projectiles recovered, wound location, survival period, and postmortem toxicology. Results: Of 238 GSWs over 20 years, 75 (32.9%) were SGWs. All were suicides and contact range. Ages ranged from 14 to 92 years old (mean 45.9 years); 97% were men. Four cases involved multiple GSWs. Fifty four (72%) involved the head; 20% involved the chest, 6.6% the neck, and 1.3% the abdomen. Of wounds involving the head, the entrance was intra-oral in 48%; under the chin in 27%; temporal in 15%. The majority (88%) of ammunition was buck shot; wadding was recovered in 16 (21.3%) cases. Six (8%) had a survival period (range: 1 hour to 10 days). The predominant directionality of shotgun wounds of the head was upward (73%) and backward (73%); in the chest, backward (94%) and downward (65%). Most suicides (53%) took place at home. Seventy one percent had a known psychiatric history including a history of depression, substance abuse or other psychiatric illnesses. Thirty five percent had positive postmortem toxicology, defined as the presence of alcohol, an illicit drug (or metabolite), or prescription pain medication in blood. Conclusions: Suicides by shotgun occur predominantly in men, in a wide age range and are often associated with a history of psychiatric illness and substance abuse. In this study, all shotgun suicides were contact range. The majority of wounds involved the head (72%) and chest (20%). In the head, the most common location was intra-oral (48%) and directionality was predominantly upward and backward; in the chest, backward and downward. A small percentage of shotgun suicides involved multiple wounds (maximum 2); six were associated with a survival period.
4.3 The Effect of the Great Recession on Medical Examiner Workload
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For the years leading up to the start of the Great Recession, the Office of the Chief Medical Examiner for the State of Maryland was seeing an annual increase of between 50 and 125 autopsies each year. The average number of autopsies for the five years preceding the start of the Great Recession is 4111 (2003-2007). The first year of the Great Recession in 2008 showed a significant decrease in the number of autopsies performed in the office. The total number of autopsies performed dropped to 3871. This appeared to be a national trend, and information available online for several medical examiner offices reveals a similar pattern. The categories showing significant decreases in the number of autopsies performed from 2007 to 2013 include motor vehicle accidents, a decrease from 507 to 356. Homicides decreased from 579 to 424. Drug related deaths decreased from 886 in 2007 to 702 in 2011, then peaked again to 872 in 2013 with the economy slowly emerging from the recession. This paper will discuss some of the sociological and correlative factors shaping these numbers, which appear to be reversing as the nation has partially recovered from the Great Recession. The risk of death in a motor vehicle collision is directly related to the number of miles driven. Miles driven during a recession decline because fewer people are working. People have less disposable income and a lack of consumer confidence which results in a reduced likelihood of fatal motor vehicle accidents. The latest report from the Department of Transportation’s Federal Highway Commission entitled Traffic Volume Trends reveals a substantial decline in miles driven from 2007 to 2013. The number of individuals entering drug treatment programs was reported to have increased significantly over the study period. The adverse economic climate is perhaps a motivating force behind individuals seeking treatment rather than purchasing drugs on the street. The number of homicides decreased correspondingly to the number of drug deaths. Death by suicide was the only category that showed a reverse trend with an increase from 514 in 2007 to 570 in 2013.

4.4 Postmortem Opioid Levels, Co-Intoxicant Presence, and Decedent Characteristic in Accidental, Single-Opioid Deaths in West Virginia and Northern New England
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Despite the frequency of polydrug deaths, there has been little research addressing the complex interrelationships among co-intoxicant drugs, and medical examiners differ in how they certify polydrug deaths. A project funded by the West Virginia Injury Control Research Center (ICRC) and the Centers for Disease Control utilized the Forensic Drug Database (FDD) developed at West Virginia University to capture comprehensive data from all drug-related deaths and expand coverage to include northern New England states. We report a study of 1556 accidental deaths involving single opioids with co-intoxicants in West Virginia, Maine, New Hampshire and Vermont, 2007-2011. We modeled the relationships between opioid levels and the presence (as determined by the death certificate and verified by toxicology) of co-intoxicant benzodiazepines, alcohol, tricyclic antidepressants (TCA), selective serotonin reuptake inhibitor (SSRI) antidepressants, and diphenhydramine, along with additional covariates of state, age, body/mass index (BMI), and gender. Single-opioid deaths included those caused by oxycodone (N=497), methadone (N=662), hydrocodone (N=189), and fentanyl (N=208). Co-intoxicant benzodiazepines were present in 715 deaths, alcohol was present in 281 deaths, TCAs were present in 63 deaths, SSRIs in 102 deaths, and diphenhydramine in 72 deaths. For each of the four opioids examined, a multiple regression model was applied to the log-transformed opioid concentrations in order to estimate the association of each co-intoxicant or covariate, adjusting for all other variables. Benzodiazepine presence was associated with significantly lower levels of hydrocodone (p=0.05) but methadone (p=0.03), but was not significantly related to either fentanyl (p=0.12) or oxycodone (p=0.91) concentrations. Alcohol presence was associated with significantly lower concentrations of hydrocodone (p=0.02), methadone (p<0.0001), and oxycodone (p=0.002). TCA presence was associated with significantly lower levels of oxycodone (p<0.0001). Older age was associated with significantly higher levels of methadone (p=0.0004). On average, males had significantly lower levels of fentanyl (p=0.03) and methadone (p=0.01). Higher BMI, SSRI presence and diphenhydramine presence were not significantly associated with the toxicology levels of any of the four opioids. In summary, certain factors, particularly gender, age, and the presence of alcohol, benzodiazepines or a TCA, appear to significantly and differentially affect the concentrations of one or more of the opioids studied.

4.5 WITHDRAWN

4.6 Evaluating the Utility of Urine Dipsticks as a Postmortem Triage Modality
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Background: Urine dipsticks are an inexpensive, rapid tool for detecting common drugs of abuse (cocaine, oxycodone, methamphetamine, morphine, and benzodiazepines) in postmortem urine samples. For urine dipsticks to be useful as a triage modality, it is important that dipsticks have high sensitivity, specificity, positive predictive value, and negative predictive value. We tested the performance of urine dipsticks as compared with toxicological analysis of postmortem blood as the gold standard. Methods: Urine dipsticks were performed for 198 cases for at least one of the five drugs of abuse during a 5 month period at the Office of the Medical Examiner of Cook County, Illinois. Toxicological screening with ELISA and confirmation with gas chromatography/mass spectrometry (GC/MS) was then performed on postmortem blood samples. The results were compared to find the sensitivity, specificity, positive predictive value, and negative predictive value of the urine dipstick screens. Results: Urine dipsticks were performed for cocaine (n=178). There was one false positive (i.e. cocaine/benzoylecgonine detected in urine but absent in blood) result and one false negative (i.e. cocaine benzoylecgonine absent in urine but present in blood) dipstick result. The sensitivity (98.0%), specificity (99.2%), positive predictive value (98.0%) and negative predictive value (99.2%) were all in the 98.0% to 99.2% range. Urine dipsticks were also performed for morphine (n=186). Of these 186 dipsticks, there was one false positive result and two false negative dipstick results. The sensitivity (97.9%), specificity (98.9%), positive predictive value (98.9%) and negative predictive value (97.8%) were all in the 97.8% to 98.9% range. Urine dipsticks were performed for oxycodone (n=47), benzodiazepines (n=45), and methamphetamine (n=44). For all 3 of the drugs, there were no false positive or false negative dipstick results. The sensitivities, specificities, positive predictive values and negative predictive values were all 100%. Discussion: For 5 common drugs of abuse (cocaine, morphine, oxycodone, benzodiazepines, and methamphetamine) the sensitivity, specificity, positive predictive value, and negative predictive value of the urine dipsticks all exceeded 97%. Urine dipsticks are an accurate and reliable screening tool for drugs of abuse. This inexpensive screen may be used to triage cases to autopsy or external examination in cases where the differential includes natural disease versus drug-related death.
4.7 Accidental Carbon Monoxide Poisoning While Driving: A Case Report with Review of the Literature
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Carbon monoxide may be the cause of a significant percentage of fatal poisonings in many countries. It is known that fatalities resulting from carbon monoxide poisoning are underreported and/or misdiagnosed. Carbon monoxide exposure while driving can occur due to faulty exhaust systems, defective ventilation systems, emission from other vehicles, and even cigarette smoking. We report the case of a 23-year-old woman who was involved in a low-speed motor vehicle collision and was found unresponsive in her vehicle. The woman was the restrained driver of a four-door sedan that crashed into a house in the early morning hours. While she was driving, she spoke to her mother on the phone. She mentioned that she was having car trouble and that she might need to be picked up. The collision caused minor damage to the vehicle and the airbag did not deploy. Law enforcement and emergency medical services responded to the scene, extracted the woman, and conveyed her to the hospital. She suffered minor non-fatal trauma. Her laboratory results were significant for a carboxyhemoglobin level of 44.9% and blood ethanol concentration of 104 mg/dL. A neurological evaluation revealed anoxic brain injury. She remained in the hospital for five days. Due to her poor prognosis, her family withdrew care. An autopsy demonstrated minor abrasions on the face, chest, and back, as well as a contusion on the left arm. There were no internal injuries. The brain was diffusely edematous. Sections of the hippocampus demonstrated anoxic-hypoxic neuronal injury. There was an acute pontine hemorrhage. Subsequent evaluation of the vehicle by a mechanic revealed a broken bolt in the exhaust manifold, as well as an absent exhaust clamp. There were several rusted holes in the undercarriage of the vehicle that allowed exhaust fumes into the passenger compartment. There were rusted holes in the top of the muffler, as well as a large rusted hole in the trunk directly above the muffler. These defects lead directly to the carbon monoxide poisoning of the driver. The prevalence of accidental fatal carbon monoxide exposure while driving is rare in the recent era of catalytic convertors. A review of the literature revealed approximately thirty articles regarding carbon monoxide poisoning while driving, few of which are similar to this case.

5.1 Uncommon Complications of Dental Surgery Seen in Forensic Pathology
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Dental manipulation is an extremely rare cause of cerebral abscess or meningitis with fewer than sixty reported cases in the literature. Sudden death arising from these complications is even rarer. We report an additional case for the forensic literature of an odontogenic cerebral abscess with concomitant anaerobic bacterial meningitis, confirmed with cultures and special studies. The patient was a 53-year-old male with a history of a recent dental extraction 8 weeks prior to death who was complaining of residual jaw pain with new onset nausea and vomiting prior to his sudden death. Mobility of teeth and periodontal disease was noted at autopsy. The prior tooth extraction surgical site was unremarkable. The remainder of the autopsy confirmed the decedent’s medical history of hypertension. The neuropathologic examination revealed purulent meningitis with ventriculitis and cerebral abscess of the right temporal lobe, located on the same side as the previous dental extraction. Cultures of the leptomeninges and a gram stain of histological sections revealed organisms consistent with Peptostreptococcus and Fusobacterium nucleatum – known oral cavity pathogens. We report a most unusual case of a cerebral abscess in which the dental site is implicated. In this case, the cultures of the leptomeninges around the cerebral abscess in addition to special stains performed of the cerebral abscess identified organisms consistent with dental origin. Our case report appears to be the first in the literature to isolate both Peptostreptococcus and Fusobacterium nucleatum from a cerebral abscess causing death weeks after the prior tooth extraction. Our findings are further supported by the medical literature reporting delayed-onset infections after impacted molar extraction in which the organisms isolated from these infections are the same organisms we observed on cultures and special studies. The decedent’s sub-acute clinical presentation is consistent with the microorganisms of dental origin being responsible for the delayed-onset infection. Our case underscores the necessity of a careful neuropathic and oral cavity examination to associate the patient’s sub-acute dental manipulation and infection with the resulting meningitis and temporal lobe abscess to determine cause of death.

5.2 Comparison of the Distribution of Skull Fractures by Mechanism of Formation
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Introduction: Different mechanisms can cause bone fractures. Fractures occur when a blunt object impacts more force on a bone than it can withstand. Fire can fracture bone by uneven expansion from uneven heating of different parts of a bone. We hypothesize that base of skull fractures are rare in deaths caused by fires compared to fractures sustained in a motor vehicle collision (MVC). This retrospective study considers whether the distribution of skull fractures can help distinguish the mechanism by which fractures formed. Methods: The data are from two sources. (1) Cases obtained from the Jefferson County Coroner/Medical Examiner archives, with 256 autopsy reports reviewed of MVC deaths and 55 autopsy reports for deaths in fires. Cases were reviewed for the presence or absence of cranial fractures and distribution of any fractures. (2) Information on fatal MVCs from 2000 through 2012 obtained from the National Automotive Sampling System Crashworthiness Data System (NASS/CDS), a nationally representative sample of police-reported MVCs; only occupants with autopsy data were selected. Results: Cranial fractures were documented in 78 of 256 cases (30%) of MVC deaths. Fractures were restricted to the base of the skull in 35 of 78 cases (45%) and involved both base and vault in 41 of 78 (52.6%) cases. In 2 of 78 cases (3%) fracture was confined to the cranial vault. Cranial fractures were documented in only 2 of 55 cases (4%) of deaths involving fire – one fracture involved both the cranial vault and base of the skull and the other involved only the cranial vault along a suture line. The NASS/CDS data (n=31,911) are similar, with fracture involving only the base of the skull in 40.9% of cases, both base and vault in 42.3% of cases, and vault only in 16.8% of cases. The NASS/CDS data was stratified by presence or absence of a major fire. Cranial fractures among occupants in fire-related MVCs were more likely to involve the vault only (31.5% vs. 16.9%) and less likely to involve the base and vault (36.4% vs. 45.0%), or base only (32.1% vs. 38.1%). Conclusions: Most (>90%) cranial fractures related to MVCs involve the base of the skull. Few deaths caused by fires are associated with cranial fracture (<4%). In circumstances where alternate mechanisms for fracture exist, such as a vehicle catching fire after a collision, fracture of the base of the skull implicates the collision as the likely mechanism of fracture.

5.3 The Rabies Autopsy: Beyond the Brain
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The rabies virus is a mammalian RNA virus belonging to the Rhabdoviridae family. The virus is transmitted when a person or animal is directly exposed to infected material from a rabid animal. Human infection typically occurs after an animal bite; although rare cases of human-to-human transmission have occurred in organ and tissue transplant recipients. The fear and risk of infection are typically deterrents to performing an autopsy on an individual infected with the rabies virus. The
The Wendt Center for Loss and Healing, Washington, DC. Since 1999 the Wendt Center has offered the grief support during the identification process at the OCME. The Wendt Center therapists were instrumental in next-of-kin notifications alongside FBI personnel as well as visual identifications performed at the OCME. Overall, the DC Office of the Chief Medical Examiner’s response was well done including the successful implementation of the fatality management plan, the timely identification and release of decedents, and the tireless commitment and professionalism of the OCME staff.

5.5 Mortality Surveillance, Electronic Death Registration, and the Medical Examiner

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With the advent of electronic death registration (EDR) and increasing modernization of traditional, paper-based death registration systems, many advances in the timeliness as well as the utility of death certificate data to identify emerging, transitional, and on-going health threats are being realized. Pilot projects assessing the capacity for near-real time mortality surveillance using death registration systems have shown the tremendous potential for state and national monitoring of certain causes of death. A few notable examples include surveillance of seasonal influenza; surveillance of natural disasters such as tornadoes and hurricanes; and early identification and confirmation of deaths due to rare vaccine preventable diseases. This presentation will describe the current capacity for using death registration systems to conduct mortality surveillance with a special emphasis on the application to sudden unexpected deaths. In addition, the presentation will explore opportunities to further integrate death registration systems with the operations and data collection processes within medical death investigation offices. Success stories with EDR for mortality surveillance, such as with natural disasters, have involved cooperation between vital records, health departments and offices of medical examiners and coroners. Currently over three-quarters of the states have some form of EDR and others are in the planning or development phase. As the EDR systems mature, the ability to extend beyond simple data input will enhance the ease of use of these systems and facilitate conducting research and collaborative projects. Medical examiners, coroners, and forensic pathologists play a critical role in the timely collection of complete and accurate information on the cause and manner for all sudden and unexpected deaths. Active discussion and input by this community on functional features and processes to facilitate interaction with EDR systems are needed. The existing capacity of the vital statistics system to monitor mortality across causes of death, places of death, and geo-political boundaries regardless of certifier allows real-time monitoring and analysis of new and emerging threats. Use of these systems can potentially result in faster dissemination of information and quicker preventive actions taken to save lives.

5.6 Short Delay in Collapse Following Impact in Fatal Traumatic Basal Subarachnoid Haemorrhage

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The investigation of a death caused by traumatic basal subarachnoid haemorrhage (TBSAH) is often problematic. The pathologist needs to quickly recognise the nature of the death and approach the postmortem examination in a way that captures the key evidence that will be required for any subsequent medicolegal process. This includes identifying the likely site of impact, the level of applied force and the source of the traumatic bleeding that is vital implement within the epi-subarachnoid system. When the circumstances of the altercation introduce the possibility of more than one assailant landing a blow to the head or neck, then the pathologist will need to consider which impact precipitated the fatal bleeding. This is especially important when joint enterprise between the assailants cannot be demonstrated. Although rare examples are reported where bleeding has been delayed for a period of hours or days...
after impact, it is generally accepted that collapse and unconsciousness is immediate. With this in mind, careful consideration of the eye witness accounts can sometimes confidently identify the individual who struck the victim just prior to collapse and was responsible for a death. This paper presents three cases of TBSAH in which a definite very short delay occurred between the landing of a final blow and subsequent fatal collapse within the incidents. In two of the cases, the delay was in the order of 10-15 seconds during which both the victims remained standing and in the third, the exact delay was unclear but was very probably less than 30 seconds. During this interval period the victim was able to speak to a witness. These observations indicate that the traditional concept of immediate collapse following impact in TBSAH is not always the situation and that some victims can at least stand or talk, albeit for a very short period, prior to collapse. Given the possibility of the existence of a short delay in collapse within an incident, it is obviously important not to necessarily attribute the fatal bleeding to the last documented blow or impact to the head and neck, without a careful study of the entire case circumstances.

6.1 Sustaining and Saving Life – Understanding Organ and Tissue Recovery


1Santa Clara County Medical Examiner, San Jose, CA; 2Commonwealth of Virginia Local Medical Examiner, Virginia Beach, VA; 3Polk County Medical Examiner, Des Moines, IA; 4District 12 Medical Examiner’s Office, Tampa, FL; 5LifePoint Organ and Tissue Donation Services for South Carolina, Charleston, SC; 6Association of Organ Procurement Organizations, Vienna, VA; 7American Association of Tissue Banks, McLean, VA.

Innovative uses for tissues, both life-enhancing and life-saving, have led to a surge of growth in tissue recovery and transplantation. Forensic pathologists and death investigators play a pivotal role in the success of transplantation as the majority of eligible donors fall under medical examiner/coroner jurisdictions. Designing cooperative policies and procedures to accommodate organ, tissue and cornea recovery will become an increasing aspect of the forensic pathology workflow.

Forensic pathologists and death investigators need to have more than a basic understanding of donation but unfortunately, many do not. This two hour workshop will attempt to resolve some of the basic knowledge gaps that exist. First, leading representatives of the American Association of Organ Procurement Organizations (AOPO), American Association of Tissue Banks (AATB), and the Eye Bank Association of America (EBAA) will speak about the transplant process as a whole to include regulatory aspects, challenges, and the future. Second, an overview of the science of transplantation - how it works, the scope of illnesses that can be treated, and the benefit to using human tissues and organs compared to other options will be discussed. Recovery time restrictions, organ versus tissue recovery, possible recovery induced artifacts and available ancillary studies which can be provided, if one knows to ask, are but a few of the important aspects to be discussed. The most advanced, and innovative medical uses of tissue will also be highlighted. Finally, forensic case scenarios that have been solicited from the NAME listserv will be presented in a panel discussion. Actual cases will serve to illustrate real outcomes for donor agencies, death investigators, and donor families while hypothetical cases invite solutions for the future. Many recovery denials by forensic pathologists and death investigators are based on the perceived potential loss of crucial information needed to determine or document cause and manner of death. The hope is for participants to share and understand how common cases are handled quite differently by various forensic pathologists without untoward outcome. Building trusting relationships and cooperation by a mutual understanding of each parties’ needs are crucial to sustaining the availability of allografts for patients, while maintaining the integrity of forensic case investigations. The demand for donated organs, tissues, and corneas will continue. Because donation and transplantation has enormous public support and political impact, it will only benefit death investigation systems to be educated and proactive in order to achieve mutually beneficial outcomes.

6.2 The Do’s and Don’ts of Working with the Media

G. Hastings1, S. Tomlinson2

1Oregon State Police, Milwaukie, OR; 2The Oregonian Newspaper, Portland, OR.

Not everything goes right when dealing with the media. Having a clear understanding of how to work effectively with the media from issuing a press release to handling bad press is essential to the smooth operation of a medical examiner’s office. Keys to successful media relations such as timeliness, accuracy and throughness will be discussed. Tips for avoiding such common pitfalls as ignoring questions, not understanding the workings of the press and favoritism will be covered. The importance of quickly handling “bad press” through dissemination of facts, assessing responsibility and contacting partners will be explained.

6.3 The Medical Examiner’s Office as a Potential Source of a Wide Range of Disorders Needed for Medical Research

H. Zielke1, M.G. Ripple2, D. Fowler2, L. Li3

1University of Maryland School of Medicine, Baltimore, MD; 2Office of the Chief Medical Examiner, Baltimore, Baltimore, MD.

The NICHD Brain and Tissue Bank (NICHD BTB) has worked closely with the Office of the Chief Medical Examiner (OCME) in Baltimore since 1991. The project is under the supervision of the IRB of the University of Maryland School of Medicine and the Maryland Department of Health and Mental Hygiene. The role of the NICHD BTB is to inform families of the need of tissue donation for research, obtain consent, recover tissue after the autopsy is completed, store and evaluate the quality of the tissue, and make it available to the international research community. The total number of donors to NICHD Brain and Tissue Bank that were under the supervision of the OCME was 1124. Of these, 714 cases were designated as controls, meaning that 410 had a disorder that affected the brain. The control cases may have had disorders not involving the brain such as cardiac disease, etc. Although the OCME is the sole source of control tissue for researchers supported by the NICHD BTB, there are several disorders that can only be obtained through the cooperation of the OCME because a complete autopsy is required before diagnoses can be assigned. The following disorders fall in this category: Sudden Unexpected Infant Death (SUID), Sudden Infant Death Syndrome (SIDS) and Unexpected Death in Epilepsy (SUDEP). Brain and other tissues have been donated from individuals with approximately 50 disorders by relatives of individuals scheduled for autopsies at the OCME. The disorders represent SIDS (164), chromosomal disorders (25), autism spectrum disorder (24), and epilepsy (23). Additional rare disorders at the OCME that have filled the needs of researchers are: Angelman syndrome, cerebral palsy, Huntington’ disease, neurofibrromatosis, Prader-Willi syndrome, Tourette Syndrome, tuberous sclerosis, Williams syndrome, Zellweger’s syndrome, etc. Psychiatric disorders also contribute to the case load at medical examiners: schizophrenia, depression, Alzheimer’s disease, bipolar disorders, ADHD, and drug abuse. Some of these are not the focus of the NICHD BTB, but are for other brain and tissue banks. These data indicate that the office of medical examiners is not only the only reliable source of control tissue but is also vital to supporting research on many disorders, especially autism, sudden deaths in children, adults with epilepsy. The National Institutes of Health actively supports brain and tissue banks, all of which depend on collaboration with medical examiners offices to advance medical research. Key words: Brain banks, control brains, sudden death, autism, epilepsy.
6.4 Medical Examiner Systems: Medical Reserve Corps Volunteers – Force Multipliers During Mass Fatality Events

D. H. Price
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This presentation will address a unique, locally available force multiplier during a mass fatality event. During mass fatality events, medical examiner and coroner offices have an immediate, rapid need to increase available staff to assist with phone calls, documenting clothing and personal effects, obtaining x-rays, moving body bags, and assisting the pathologists, dentists and anthropologists with workflow. Prior training and planning allows these offices to have a trained and ready force that has been fingerprinted, has already passed background checks, and has been trained to assist the medical examiner/coroner. This talk will present information on the cooperative and collegial partnership, under the Virginia Department of Health umbrella, between the Office of the Chief Medical Examiner and statewide/local health department Medical Reserve Corps units. MRC volunteers may require additional supervised training in confidentiality, the National Incident Management structure, Psychological First Aid, Responder Readiness, etc. MRC volunteers will need in-house courses to introduce them to the Medical Examiner/coroner system, to teach them how to complete Family Assistance Center forms and handle information resources, collect DNA samples, be custodians of evidence, and to expose them to autopsy procedures. The scope of training considerations should be planned prior to the project’s onset. Additional training in autopsy technician skills awareness may be taught using anatomical donors. Funding for training may be included in local health department, MRC or medical examiner/coroner office budgets. The OCME can provide much of the in-house training for little to no additional expense beyond staff time. Creative grant requests, such as will be discussed in this presentation, may provide funding for training. This discussion of the Virginia OCME program will provide an example of how a successful Medical Reserve Corps volunteer training program can be planned out, funded, and managed to provide a reliable force multiplier in the event of a mass fatality.

7.1 NIST Organization of Scientific Area Committees (OSAC): Input Received and Proposed Plan Development

S. Ballou
NIST, Gaithersburg, MD.

The development of a quality infrastructure for forensic science was a key component of some of the reforms anticipated in the National Academy of Sciences (NAS) report. In response to the report, the National Institute of Standards and Technology (NIST) and the US Department of Justice signed a bilateral agency Memorandum of Understanding (MOU) in March 2013 which specified the establishment of “Guidance Groups” now termed Scientific Area Committees (SACs). NIST created the Organization of Scientific Area Committees (OSAC) model to promulgate NIST’s responsibility to administer and coordinate support for the discipline-specific SACs. In September 2013, NIST issued in the Federal Register a Notice of Inquiry (NOI) to obtain national and international input on the establishment and structure of governance models. Eighty-two submissions were received in response to the NOI. NIST envisions uniform administration of development, promulgation and adoption of standards through the OSAC as well as supporting communication flow between the SACs and the forensic science community. The plan design intends to bring structure, scientific rigor and increased communication among forensic scientists, research scientists, academicians, statisticians, attorneys, managers and quality assurance specialists. On January 29, 2014, NIST briefed the NAME President on the OSAC model and possible affects to the NAME organization. Modifications to the model and current activities will be presented.

7.2 Maintenance of Certification (MOC) for the Forensic Pathologist

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The American Board of Pathology (ABP) began issuing time-limited certificates in 2006. New diplomates since that time must participate in the ABP program of Maintenance of Certification (MOC) in order to maintain board certification. MOC consists of 4 parts: I) Professional Standing (medical licensure and scope of practice); II) Lifelong Learning and Self-Assessment (required CME and SAM [Self Assessment Module] credits); III) Cognitive Expertise (a mandatory re-certification exam at the ABP testing center); and IV) Evaluation of Performance in Practice (laboratory accreditation, performance improvement and quality assurance at laboratory level and at individual level, peer attestations, and patient safety). The Part IV requirements have grown since the inception of MOC, with the requirement of the patient safety module mandated by the ABMS. Toward the end of each 10-year MOC cycle, anytime in the 7th through 10th years but before the 10-year certificate expiration date, a re-certification exam is required (MOC part III, Cognitive Expertise). One forensic pathologist sat for and passed the first offering of the FP subspecialty recertification exam in March 2014; at least 8 forensic pathology subspecialty-boarded individuals are currently registered to take the fall 2014 re-certification exam. While 5600 diplomates of the ABP are required to participate in MOC currently, only 298 (5.3%) of those diplomates have a forensic pathology certificate. The forensic pathology practice environment is often much different than that of the hospital pathologist, and the implementation of some MOC requirements potentially more challenging. This presentation from three MOC-participating forensic pathologists (the Chair of the NAME SAM/MOC subcommittee, another member of the committee, and the first forensic pathologist to pass the re-certification exam), will offer a primer on MOC specifically for the forensic pathologist, including strategies for meeting the requirements of all four parts of MOC, and will address misunderstandings and rumors that may persist about MOC requirements and the re-certification exam. The information presented is based on current guidelines published by the ABP as well as information gathered by the presenters from ABP representatives regarding forensic pathology-specific points of inquiry. Of particular interest to those diplomates facing their first re-certification exam will be a discussion of the structure and scoring of the exam, options for maintaining primary and subspecialty certificates vs. subspecialty only, and differing viewpoints on the merits of each of those options.

7.3 The Sudden Death in the Young Registry

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Background: Sudden Death in the Young (SDY) has a devastating impact on families, care providers, and the community, and attracts significant public and media attention. The most common diagnoses that increase risk for SDY include hypertrophic cardiomyopathy, coronary artery anomalies of wrong sinus origin, ion channelopathies, and genetic forms of epilepsy such as Dravet Syndrome. Sudden cardiac death in the young (SCDY) has been documented at all ages and may be associated with competitive athletics. However, in up to 30% of cases of SCDY no specific diagnosis is found on autopsy (autopsy negative). Similarly, sudden unexplained death in epilepsy (SUDEP) and Sudden Infant Death Syndrome (SIDS) cases can present as autopsy negative cases but upon further investigation may be due to ion channelopathies. Objectives: National policy development in the area of screening and prevention is currently limited by the lack of prospectively defined epidemiological data, including incidence rates and etiology for SDY. To address this
knowledge gap, the Centers for Disease Control and Prevention (CDC), along with federal partners the National Heart, Lung, and Blood Institute (NHLBI) and the National Institute of Neurological Disorders and Stroke (NINDS) at the National Institutes of Health (NIH) have developed a surveillance system, the SDY Registry, to prospectively monitor these cases, especially those deaths attributable to SCDY and SUDEP. The SDY Registry will maximize resources to develop a comprehensive, prospective, population-based surveillance system by building on CDC’s Sudden Unexpected Infant Death (SUID) Case Registry and the activities of existing local and state child death review teams. Methods: Like CDC’s SUID Case Registry, the SDY Registry will include data from death certificates, medical records, death scene investigations, and pathology reports. In addition, for cases that meet the SDY Registry case definition an autopsy protocol specific to the registry will be followed and a biospecimen for DNA extraction will be collected. The SDY Registry will also include an advanced review process which will include pathologists, cardiologists, electrophysiologists, and neurologists. Death investigators will be an integral part of the SDY process by informing the death investigation and advanced review. The SDY Registry will provide the opportunity to estimate incidence more precisely than any previous study and to establish an infrastructure for future expanded use.

*Acknowledgement* - SDY Registry Steering Committee: NIH, NHLBI and NINDS; CDC, National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP); Michigan Public Health Institute (MPHI)

7.4 Synthetic Cannabinoid Drugs as a Cause or Contributory Cause of Death
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Synthetic cannabinoid drugs have specific binding at the cannabinoid CB1 receptor, and produce marijuana—like effects including, euphoria, relaxation, tachycardia and hypertension as well as evidence of anxiety, paranoia and panic, not typically associated with marijuana. To date, three deaths associated with synthetic cannabinoids have been reported including a coronary ischemic event, a suicide due to anxiety, and a fatal acute overdose from MAM-2201. We report a case series in which synthetic cannabinoids were cited as a cause or contributory cause of death. Participants were recruited through the NAME list serve. As of May 5th, 2104, 19 cases had been submitted. The cases date from April 2010 to the present, and include 3 females, 16 males, mean/median age 33/29, range 17-55. All cases included had toxicological confirmation of synthetic cannabinoid use. The specific substances detected were AM-2201 (n=7), JW-122 (n=6), XLR-11 (n=4), JW-210 (n=4), JW-018 (n=2), UR-144 (n=1). Most of the subjects had some known drug use history. Only 3 cases also had indicators of THC from botanical marijuana use. Synthetic cannabinoids frequently were found with other drugs including opiates, methadone, MDMA, amphetamines, hydrocodone, but none of the other substances were present in more than 2 cases each. Most of the subjects were found in proximity to packaged synthetic cannabinoid materials, or drug smoking paraphernalia, suggesting that many of these deaths occurred proximate to the time of use, however a caveat is that since the drugs are not routinely detected in routine drug testing procedures (either immunoassay or chromatographic), other cases without the scene information may have been missed. Of the nineteen cases, five were attributed specifically to synthetic cannabinoid toxicity, in the absence of other causes or drugs. Three cases were attributed to mixed drug intoxication, where the other drugs included THC, opiates and amphetamines. An observed seizure was recorded in one case. Falls or jumps from a height were recorded in two cases. In the remaining cases there was also significant natural disease especially obesity, significant coronary artery disease and myocardial infarction. This preliminary case series represents the largest group of cases where synthetic cannabinoids have been determined to be a significant cause or contributory cause of death. The drugs hypertensive effects, behavioral toxicity, ability to trigger seizures, and other unknown toxic mechanisms represent important investigative information in determining cause and manner of death.

8.1 NIJ Programs to Support the Forensic Pathology Community: Strategies for Stronger Proposals in a Competitive Environment
D. McLeod-Henning, A. Spanbauer, C. Heurch
National Institute of Justice, Washington, DC.

There are various types of Federal funding opportunities, and generally speaking, they can be broken down into two types: competitive and non-competitive. Non-competitive funding can come in the form of formula grants or sole-source grants/contracts. Competitive funding is just that: competitive. This workshop will focus on competitive funding opportunities issued by the National Institute of Justice (NIJ) for research or direct service assistance related to forensic pathology and medical examiner/coroner services. This workshop will discuss four programs issued by the NIJ that support the forensic pathology community: Paul Coverdell Forensic Science Improvement Grants Program, Using DNA to Identify the Missing Program, National Missing and Unidentified Persons System (NamUs), and Research and Development in Forensic Science for Criminal Justice Purposes Program. The NIJ Program Managers for each of these programs will discuss the specifics of each, to include purpose, eligibility, and emphasis on how to write to the selection criteria. Common mistakes and best practices will be reviewed. Requirements including, but not limited to, the program narrative and budget documents will be discussed. A brief overview of NIJ’s current forensic pathology research and development and assistance portfolio will also be provided.

The goal of this workshop is give attendees an overview of the current NIJ programs that support the forensic pathology community and to provide attendees with the knowledge and skills to write stronger grant proposals responsive to these programs. Learning Outcomes: 1) Learn about NIJ Programs that support the forensic pathology/medical examiner/coroner community. 2) Learn how to read an NIJ solicitation and what key areas to focus on. 3) Learn how to write a stronger competitive proposal.

8.2 Who are the Medical Experts - The Medico-Legal Council?
A. VeNaby, M. Gregersen
Aarhus University, Aarhus, Denmark

A second medical expert opinion is in Denmark provided by the National Medico-Legal Council (MCL) in court proceedings of criminal and civil cases. The MLC was established by law more than 100 years ago, and its statutes have remained almost unchanged since then. According to this law, the MLC has to give a written secondary medical evaluation free of charge in court proceedings involving the legal rights of an individual. The medical evaluation is based on statements by other medical doctors having examined the patient or the deceased. Usually, three highly scientifically qualified experts within different medical disciplines are appointed by the chairman of the council to reevaluate the case. Each medical expert gives his or her opinion in writing to the MLC before a final written report based on the opinion of the medical experts is submitted by the chairman of the council to the court. Thus, the court avoids having to call another second medical expert. The voting member of a case may from time to time be called to give testimony and to explain the opinions given by the voting members on a specific case. The second medical expert opinion given by the MLC has a high esteem in Danish courts, and it is very seldom overruled, as it is also unusual for Danish judges to allow the defense attorney to call another medical expert to give testimony in
the individual case. A case of death in police custody will illustrate the way the council works and the weight the court puts on the opinion of the council. It is recommended to look at this organization when an objective second opinion from medical experts is needed.

8.3 An Enhanced Tissue Recovery Donor Referral Program for Non Hospital Deaths
M. Pandey1, J. R. Patrick1, D. Kozierski2
1Lucas County Coroner’s Office, Toledo, OH; 2Community Tissue Services, Northwest Ohio Branch, Toledo, OH.

The ability of Organ and Tissue procurement agencies to meet the demand of those in need is a growing concern. Potential organ recovery cases are easily identified as the death occurs in a hospital. Conversely, tissue/cornea recovery may occur up to 24 hours after death and many of these deaths occur outside the hospital. Benefits of internal organs and corneas recovery are well known, but the importance of tissue recovery needs to be emphasized. Tissue donation may include skin for burns and wound care, bones and tendons for orthopedic surgeries, and pericardium for dental surgeries. Tissue recovery from one body may touch 50 lives or more. In order to increase potential donors Lucas County Coroner’s Office, Toledo Ohio and Community tissue services Northwest Ohio Branch tissue bank (CTS NWT) have formed a unique collaboration between the two agencies. Lucas County Coroner’s Office performs autopsies for 19 Northwest Ohio Counties. Approximately 1000 autopsies and about 200 external examinations (by four board certified forensic pathologists) are performed annually. The Northwest Ohio branch (CTS NWT) of Community Tissue Services (full service tissue bank headquartered in Dayton Ohio) works with approximately 28 hospitals and healthcare facilities in 18 different counties around Toledo, Ohio area with approximately 250-300 donors recovered annually. Last year (2013) there were a total of 112 referrals sent to tissue bank (CTS NWT) from the Coroner’s Office. Consent was obtained for 29 (45%) eligible referrals, of these 10 cases (34%) were actual tissue and cornea donors.

The enhanced donor referral program for non hospital deaths was established to ensure that the tissue bank received timely referral of potential eligible donors. As part of the program, Coroner’s investigators automatically send information on the deceased to the tissue bank upon death notification of non hospital Lucas County and contracting counties cases. Prior authorization by the contracting County Coroners allows referral of all out of county cases. Tissue bank would then assess the donor eligibility and approach the Coroner’s office for pre autopsy permission for recovery to maximize donation and reduce contamination. Pre autopsy tissue recovery has not been found to interfere with determining cause and manner of death, provided proper documentation is done and both agencies work closely together.

There has already been a marked increase in the number of referrals to tissue bank (CTS NWT) since the programs recent inception.

8.4 National NeuroBioBank Tissue Sharing Consortium: Networking with Medical Examiners
D. C. Mash1, F. M. Benes2, R. M. Nagra1, V. Haroutunian1, D. A. Lewis3
1University of Miami, Miami, FL; 2McLean Hospital, Boston, MA; 3VA Greater Los Angeles Healthcare System, Los Angeles, CA; 4Mount Sinai School of Medicine, New York City, NY; 5University of Pittsburgh, Pittsburgh, PA.

To expedite research on brain disorders, the National Institutes of Health is coordinating a resource for sharing post-mortem brain tissue that is donated for research. Under a NIH NeuroBioBank initiative, five brain banks began collaborating in 2013 under a federated archived brain and tissue-sharing network to support the neuroscience community. The new brain banks are located at the Mount Sinai School of Medicine, New York City; Harvard University in Cambridge, Mass., the University of Miami Miller School of Medicine; Sepulveda Research Corporation, Los Angeles; and the University of Pittsburgh. These brain and tissue repositories accept brain donations, store the tissue, and distribute it to qualified researchers seeking to understand the causes of and identify treatments and cures for brain disorders, such as schizophrenia, multiple sclerosis, depression, epilepsy, Down syndrome and autism. Although the project seeks brain tissue from people with brain disorders and non-affected individuals of any age who register before death as potential donors, next-of-kin can also give permission for donation of tissue from children with or without brain disorders and those affected adults who have not registered before death. Post-mortem consents for brain and tissue donation for research often occur in a medical examiner jurisdiction. Medical examiners and coroners play a vital role in organ and tissue procurements for transplantation. Coroners and medical examiners may allow donation of brain for research to occur and still fulfill their medicolegal responsibilities, but the practical guidelines and working relationships need to be better established. The balancing of the interests and responsibilities of the medical examiner can be met while supporting the activities of the brain donation programs, through the NeuroBioBanks sharing information on the results of the neuropathology examination and providing detailed written documentation of gross pathology with photographs of brain, serology and supplemental brain toxicology tests. Donated specimens are stored in a biorepository that tracks chain-of-custody for specimens that are cryopreserved or placed in formalin. Tracking chain-of-custody is important not only for the research projects that received brain specimens, but also ensures that these tissues are retained and are available if the medical examiner or coroner requires their return for presence of disease, or cause or manner of death determination.

8.5 An Investigative Tool for Detecting Elder Abuse
C. Isaac, J. Cornelison, J. de Jong
Western Michigan University Homer Stryker M.D. School of Medicine, Kalamazoo, MI.

Elder abuse has been estimated to affect one in ten individuals sixty years of age and older and has been found to significantly increase the risk of mortality. However, no clear data exists on the number of deaths that result from elder abuse or neglect. The potential contribution of abuse and neglect to the death of an elder is rarely investigated, as natural deaths are expected with advancing age. Elder individuals are often reliant on others for care and activities of daily living making them a population vulnerable to abuse and neglect. Although the deaths of other vulnerable populations, including children and those in the care of law enforcement, are routinely investigated, no protocols for elder death investigation have been implemented. In this presentation, we propose using an investigative tool to assess the elder decedent and the decedent’s residence for indicators of abuse or neglect. Information gathered assists in differentiating between self-neglect and caretaker neglect. Observations of the decedent include: evidence of injuries, personal hygiene, malnutrition and/or dehydration, decubitus ulcers, evidence of restraint, vaginal or anal bleeding. In addition, determining whether reports filed with Adult Protective Services suggest a history of neglect or abuse. A proposed method to differentiate between self-neglect and caretaker neglect includes an assessment of the level of dependence on others for activities of daily living and the level of involvement of the caretaker. Medicolegal death investigators should also take note of the decedents living conditions and caregivers, including whether the decedent was subject to forced isolation; lack of food, water or utilities; soiled clothing and/or bedding; filthy or unsafe living conditions; and inappropriate administration of medications. With proper training, Medical Examiners can easily implement these protocols into practice. Such information is extremely valuable for determining whether further investigation and examination of the decedent is warranted.
8.6 Ketamine-Induced Nephropathy: A Case Report And
Review Of Current Abuse-Related Pathology
J. Stahl-Herz
New York City Office of Chief Medical Examiner, New York, NY.
Ketamine is employed clinically as a dissociative anesthetic. Ketamine abuse is a growing problem in East Asian countries. This presentation reports a case of death due to renal failure from chronic ketamine abuse. The decedent was a chronic ketamine abuser who was found dead at home. Significant autopsy findings included shrunken, scarred kidneys and bilateral hydropnephrosis. Microscopically, the kidneys demonstrated features of end-stage renal disease with a component of chronic interstitial nephritis. The bladder examination was limited but had features consistent with long term ketamine abuse. Toxicology revealed a low level of Ketamine and venous electrolyte testing confirmed renal failure. The certification of this death, a review of ketamine-related pathology and the growing public health problem of ketamine abuse in East Asia are also reviewed.

8.7 The Utility of Touch DNA Evidence Collection from
Decedents at the Harris County Institute of Forensic Sciences
K. Haden-Pinneri, R. Williams, D. Wolf, P. Gumpeni, R. Kahn
Harris County Institute of Forensic Sciences, Houston, TX.
Cells containing DNA are transferred from skin to skin or from skin to objects during contact. When an assailant touches a victim, the victim’s clothing, or objects used to bind a victim, cells containing the assailant’s DNA are transferred, referred to as touch DNA. It is the experience of the Harris County Institute of Forensic Sciences (HCIFS) that when properly collected, touch DNA can be detected at an unexpectedly high rate. The recovered DNA can be used to identify individuals involved in the crime and/or link crimes committed by the same person(s). Proper collection techniques and the successes over the years will be illustrated in this presentation. Over the last decade, the HCIFS has developed policies and procedures to optimize the collection of foreign DNA from decedents. We employ a team of twelve qualified DNA analysts who are on call to attend death scenes to collect trace amounts of DNA from decedents. Initially, the team was focused on the collection of traditional trace materials such as hairs and fibers found on decedents. As DNA technology improved, the team shifted to the collection of DNA. We now find foreign DNA in up to 80% of the cases that are tested and this DNA is frequently linked to a suspect or an individual of interest in the case. The results have been tracked over several years and the presence of foreign alleles has increased dramatically over time, assisting homicide investigators in identifying a potential suspect in over 50 homicide cases. During the transportation of the decedent from the crime scene to the morgue, trace amounts of DNA, as well as visual indications of stains, may be obscured by blood and other body fluids. When the decedent is bound, has been dumped or moved, or involved in a close contact altercation, an HCIFS Touch DNA Evidence Collection Team Analyst will be dispatched along with the medicolegal death investigator to collect DNA and other trace evidence from the decedent at the crime scene. The analyst will collect samples directly from the body or other objects associated with the body (clothing, bindings, ligatures, weapons remaining in the body) and release this evidence to the law enforcement agency assigned to the investigation.

9.1 NAME Trivia 2014
R. Hanzlick
Fulton County, GA, Emory University School of Medicine, Atlanta, GA.
This brief presentation is a continuation of a traditional annual presentation in which trivia is presented about NAME, its activities, and its members. It is meant to be educational but also light-hearted, offering a look at NAME which is not usually addressed in other presentations or forums at NAME meetings.

9.2 Antemortem, Perimortem, or Postmortem Change? A
Case of Fascinating Fossorial Forensics
B. L. Peterson
Milwaukee County Medical Examiner's Office, Milwaukee, WI.
A case in which the cause of death was clear was referred for consideration of additional injuries. Possibilities included antemortem torture, perimortem mutilation, and postmortem destruction of portions of the body. Discussion of this case will include analysis of injury pattern, description of potential mechanisms, and appropriate conclusions. The role of the consulting forensic pathologist will be discussed, with attention to the appropriateness of a Wisconsin-based consultant for this particular case.

9.3 Fatal Religion Based Child Abuse in Oregon
L. V. Lewmar², G. D. Homer², R. Swant², M. Hass³
¹Oregon State Medical Examiner’s Office, Clackamas, OR; ²Clackamas County District Attorneys Office, Oregon City, OR; ³Chalmers Health is a Legal Duty (C.H.I.L.D.), Lexington, KY; ⁴Oregon State Senate, Salem, OR.
Several religious denominations reject medical treatment in favor of prayer, the most well-known being the Christian Scientists. There are many other smaller religious organizations throughout the USA, some of which have cult-like belief in the power of prayer for healing. The Followers of Christ and Church of the Firstborn are such organizations in Oregon. The Followers are concentrated in Clackamas County, Oregon near Portland. They are a small, closed community governed by a board. They treat illness by anointing with oil and community prayer. Up until 2011, Oregon religious shield law allowed prayer as treatment for illnesses in children to the exclusion of traditional medicine. The Oregon State Medical Examiner’s Office and Clackamas County Medical Examiner’s Office investigated a number of preventable natural deaths in children belonging to the Followers of Christ church. Numerous Followers were routinely present at death scenes and increased in number as the severity of illness increased and death approached. No contact with emergency personnel or traditional medicine was considered. The number of deaths and the suffering of these children resulted in conversations between medical examiners, law enforcement, district attorneys and eventually the public as these deaths were reported in the news media. The consensus was that parents had a duty to provide medical care for their children beyond prayer regardless of the choices they made for themselves. In Oregon, medical examiners, district attorneys and law enforcement were joined by a national organization, C.H.I.L.D. (Children’s Health is a Legal Duty), to promote the repeal of Oregon’s religious shield law. After two attempts (first in 1999), they were successful in 2011. Oregon is now one of only six states without some form of religious shield law. The difficulties in prosecuting those failing to seek medical care for their children will be discussed by the prosecutor in four recent Oregon cases. Finally, the panel will discuss the steps taken to change the statute in Oregon, which required two law changes and years of effort from C.H.I.L.D., medical examiners, prosecutors, law enforcement, news media and legislators.

9.4 Extension of Perimesencephalic Nonaneurysmal
Subarachnoid Haemorrhage: A Case of Nontraumatic Basal
Subarachnoid Haemorrhage
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Berry aneurysms are the most common cause of acute nontraumatic subarachnoid haemorrhage causing sudden death. In approximately 10% of cases no aneurysm is identified. It is often assumed in such cases that an aneurysm has been missed or destroyed during the process. Radiologically about 10% of subarachnoid haemorrhage is said to fall into the relatively benign category of perimesencephalic nonaneurysmal subarachnoid haemorrhage (PNSH) (1). The cause of PNSH is unknown, in part because it is a relatively benign condition in which few patients die and come to autopsy. However, based on radiological studies it is
hypothesized that the source of haemorrhage in these cases may be venous. We present three cases of basal subarachnoid haemorrhage in which no aneurysms were identified but that we believe represent extension of PNSH into fatal basal subarachnoid hemorrhage. In one case the source of haemorrhage was demonstrated to be a large cerebellar vein in the pineal region. Focal acute perivenous inflammation was identified and there were hemosiderin macrophages suggestive of earlier episodes of bleeding. In the second case hemorrhage appeared to be associated with a cluster of arterial and venous vessels in the region of the pineal gland, suggesting an arteriovenous malformation (AVM). In the final case the source of subarachnoid haemorrhage was not identified, but the concentration of blood in the basal cisterns, the lack of intraventricular hemorrhage in the fourth ventricle despite proximity to the major concentration of bleeding, and the relatively prolonged clinical course (24 hours) strongly suggest extension of PNSH into fatal basal subarachnoid hemorrhage. Furthermore, we believe that one of our cases is the first pathological confirmation of a venous source of PNSH, which has been hypothesized on radiological grounds only. Forensic pathologists should be aware or this entity when they encounter nontraumatic basal subarachnoid hemorrhage in which they fail to indentify a berry aneurysm. (1) van Gijn J. Kerr RS, and Rinkel JE. "Subarachnoid Haemorrhage", The Lancet, vol 369:306-318, 2007.

9.5 Propofol Related Infusion Syndrome (PRIS) – A Cause for Sudden Unexplained Deterioration on the ICU

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We present three young head injury patients who were admitted to the specialist neurological intensive care unit for stabilisation and management. The first patient was a 23 year old female who was admitted to the unit following a road traffic collision after being struck by a motorbike whilst walking along the pavement. The second was a 19 year old male who was admitted following blunt force trauma to the head and face induced by kicking. The third patient was a 23 year old male who had been admitted from a neighbouring hospital having been found with a head injury caused by kicking and punched to the head, followed by head impact with the ground. As part of the care regime, all three were prescribed and administered a propofol infusion. Propofol is pre-prepared by the manufacturer and sealed in vials, being administered by continuous infusion often by an electronic volumetric pump. The solution is available as a 1 or 2% solution and the higher dose preparation was used on the units where these patients were managed. All three patients died after apparently initially stabilising from the head trauma, following development of refractory broad complex cardiac dysrhythmias, worsening metabolic acidosis, high creatinine kinase indicating rhabdomyolysis, and hyperkalaemia. Propofol (2,6-diisopropylphenol) is a common sedating and hypnotic drug employed on ICUs. The drug has shown neuroprotective and anti-epileptic effects, therefore being useful in the management of patients with acute intracranial pathology. Common side effects which often limit its use include profound hypotension due to cardiac depression and vasodilation. Other side effects including hypertensive crisis and hypoglycaemia have been reported but these effects are often dose- and time-dependent. A rare complication is Propofol-Related Infusion Syndrome (PRIS) first described in 1992 initially in children and those with head injury. The complications of this syndrome which carry a very high mortality include severe metabolic acidosis, rhabdomyolysis, acute kidney injury, hyperkalaemia, lipoaemia, hepatomegaly and cardiovascular collapse. The syndrome is thought to occur when high dose propofol infusion is administered over a prolonged period of time, but these patients received doses within the recognised maximum infusion rate of 5 milligrams per kilogram bodyweight per hour. PRIS is almost certainly under recognised and therefore it is important to actively consider this diagnosis in forensic practice in any head-injured patient with a history of rapid unexplained deterioration on the ICU.


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Hypothermia deaths are frequently accidental and associated with impairment by alcohol, injuries or natural disease. Hypothermia as a method of suicide is unusual, with only rare case reports in the literature. In the early months of 2014, during one of the coldest Minnesota winters on record (ninth coldest since 1873), the Hennepin County Medical Examiner’s office (HCME) investigated and certified two cases of suicide by hypothermia. Both individuals were young (29 and 46 years old) white females with histories of depression and making suicidal statements that they wanted to wander out in the cold, lay down, and “freeze to death” in specific locations. Both were found in outdoor scenic locations very close to their residences. Neither exhibited the paradoxical undressing that is frequently seen with hypothermia deaths; both were appropriately dressed for the cold with multiple layers. Autopsies showed minor blunt force injuries of the extremities with no significant life-threatening injury or disease. Wirschnewski's gastric ulcers were seen in both cases; vitreous glucose was 37 mg/dL in one case (vitreous not available in the other).

Blood toxicology tests were remarkable for alcohol (0.182 g/dL) combined with zolpidem (450 ng/mL) in one case and elevated levels of fluoxetine and metabolite (3900 and 2400 ng/mL) in the other. The deaths were certified as “hypothermia complicated by alcohol and zolpidem toxicity” and “hypothermia complicating acute fluoxetine toxicity,” respectively, depression was a contributing factor. Manners of death were certified as suicide. A search of all cases investigated by HCME from 1991-April 2014 resulted in 146 cases in which “hypothermia” or “environmental cold exposure” was listed as a cause of death, contributing condition, or mechanism of injury. In these cases the manner of death was certified as follows: 116 accident (79.4%), 15 undetermined (10.3%), 8 suicide (5.5%), 6 natural (4.1%), and 1 homicide (0.7%). Of the 8 suicide cases: half were female and half were male, most were young with only one above 50 years of age, 4 were associated with drug toxicities, 5 were associated with additional self-inflicted injuries (blunt force, sharp force, and gunshot wounds), and none of them exhibited paradoxical undressing. It is important for medicolegal death investigating professionals to recognize that, while rare, hypothermia deaths may represent intentional injury and suicide as a manner of death should be considered in all cases. This report and review highlights the rarity of these cases and some of their salient features.

10.1 Establishing a Multidisciplinary Network for the Workup of Sudden Cardiac Death

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Background: Sudden cardiac death (SCD) often falls under the jurisdiction of the medical examiner (ME), requiring the ME to recognize potentially inheritable conditions and make appropriate clinical referrals for evaluation of surviving family members. A recently published expert consensus statement recommends cardiac evaluation for all first degree blood relatives of an individual with sudden unexplained death and supports the referral of these family members to a multidisciplinary inherited arrhythmia clinic; however, most MEs lack the appropriate clinical network for a more specific referral, and at-risk family members are often lost to follow up. A multidisciplinary approach is necessary for
appropriate evaluation of these families. Methods: A multidisciplinary sudden cardiac death referral network was established in one metropolitan area to identify and screen SCD families. Results: The Jesse E. Edwards Registry of Cardiovascular Disease, a referral cardiac pathology laboratory, has long been in collaboration with regional MEs. In 2009, we in turn collaborated with cardiologists at the Genetic Arrhythmia Center of the Minneapolis Heart Institute (GAC), a regional referral center specializing in familial cardiac conditions, to form a regional SCD network. This network comprises electrophysiologists, cardiac imaging, genetic counselors, cardiac pathologists and medical examiners. The cardiac pathologists and MEs have established protocols for appropriate specimen retention in accordance with the NAME position paper on postmortem DNA collection, and for referring families to the GAC for clinical evaluation, which will be presented. The expertise of a Genetic Counselor has been essential to the evaluation of these families in coordinating appropriate genetic testing and assisting with the identification of at-risk family members in extended pedigrees. Since its inception in 2007, the GAC has identified and treated over 500 individuals, many of whom were referred by MEs in the SCD network. Conclusion: This SCD network uses a multidisciplinary approach for referral of family members for screening and treatment of sudden cardiac death risk and represents an important resource for MEs. Development of similar networks across the country would lead to a more uniform approach to sudden cardiac death follow-up and a more efficient use of clinical resources. This type of network has the potential to save thousands of lives. The ME’s role is essential to this process in establishing the correct diagnosis, collecting and retaining appropriate specimens from the decedent, and instigating the referral of at-risk family members to appropriate clinical and genetic specialists.

10.2 Fatal Entrapment of the Basilar Artery in a Longitudinal Fracture of the Clivus due to Head Injury: A Case Report and Review of the Literature

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Death from Verteobasilar Artery trauma is most commonly encountered in the setting of Traumatic Basal Subarachnoid Hemorrhage that develops in intoxicated individuals who receive a blow to either the jaw or upper neck which causes rotation of the head with hyperextension of the neck, such that tearing of the ipsilateral vertebral artery with the resultant basal subarachnoid hemorrhage occurs. Cases of infarction of the posterior cerebral artery circulation as a result of entrapment of the basilar artery in a fracture of the clivus have been reported in the clinical medical literature but to date, no case of entrapment of the basilar artery in a fracture of the clivus has been reported in the forensic pathology literature. We present a case of an elderly alcoholic woman who was witnessed to fall down three stairs and hit her head. She was comatose at the scene (GCS 3) but exhibited some transient improvement on arrival at the ER. Her admission blood alcohol was 198 mg/100 ml. CT and MR scans of the brain with angiography revealed: a) Non-visualisation of the mid basilar segment consistent with entrapment by the fractured clivus; b) Acute pontine infarcts in he left PICA territory; c) Possible dissection of the left vertebral artery beyond C2 with thrombosis of the left intracranial vertebral artery and PICA; d) Areas suspicious of intracranial dissection of both vertebral arteries; and e) Subtle fracture of the C5 spinous processes. Postmortem examination revealed a large subgaleal bruise of the right side of the frontal scalp and a hemorrhagic vertical fracture along the clivus with entrapment of the mid segment of the basilar artery that correlated with the radiological finding. There was a transverse anterior fracture of the body of the C5 vertebra that did not involve the spinal canal or cervical spinal cord. Examination of serial sections of the decalcified, excised cervical spine did not reveal any evidence of dissection of the extra-cranial vertebral arteries. Neuropathological examination of the formalin-fixed brain revealed that the cerebellum exhibited softening in the left PICA territory. The brain stem exhibited a triangular shaped infarct of the midline and paramedian vascular territories of the upper and mid pons. Longitudinal clival fractures associated with entrapment of the vertebobasilar arteries is unusual. Occlusion of the vertebobasilar arteries can occur via physical pinching, thrombosis or dissection but other deaths have been the result of direct brainstem trauma or systemic complications.

10.3 Fibromyalgia: The Nature of its Involvement in Death

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Fibromyalgia is a relatively new disease with its clinical diagnosis arising in 1980. The American College of Rheumatology provided classification criteria a decade later and its current incidence in the general population in the US is estimated to be about 2-5%. We introduce a retrospective study of decedents that came to our office with a medical history of Fibromyalgia. We reviewed the demographics, medical history, cause and manner of death, toxicology, co-morbidities, and autopsy findings of one hundred cases and are going to present this data with comparison and contrast to current clinical studies.

11.1 Draft Best Practices Guide for Medical Examiner/Coroner Involvement with the National Violent Death Reporting System

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In September, 2013, NAME received a contract from the CDC to develop a draft best practices guide concerning medical examiner/coroner involvement with the National Violent Death Reporting System (NVDRS) which at the time of the contract, had state-based violent death reporting systems in 18 states. In general, the NVDRS collects data from medical examiner/coroner offices for cases involving homicide, suicide, and unintentional firearms deaths or firearms deaths of undetermined manner. NAME leadership assigned the project to its ad hoc data committee. The goal was to have a draft guide prepared for presentation at the Portland NAME meeting and provision to the CDC by the end of September 2014. During the past year, the committee reviewed numerous reports about the NVDRS system and also collected information and thoughts from forensic pathologist in NVDRS states as well as NVDRS principal investigators and program managers in those states. Multiple emails were exchanged during the year among committee members to review data as it accrued. At the time this abstract was prepared, the draft best practices guide was planned to contain recommended best practices focused on the following areas: 1) medical examiner and coroner participation and data provision; 2) Data issues such as data items and format; 3) Funding and Support; 4) Communication and Cooperation; 5) Within-State Program Management; and 6) NVDRS Policy and Procedure. This presentation will highlight the recommendations which are most directly of interest to medical examiners and coroners. Members of the NAME ad hoc data committee include Christopher Boden, Steve Clark, Tracey Corey, Karen Gunson, Kathryn Haden-Pinneri, Randy Hanzlick, Joseph Prahlow, Erin Presnell, and Linda Szymanski.

11.2 Using Postmortem Drug Levels as a Tool in Distinguishing between Non-Accidental and Accidental Fatal Drug Ingestions

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Prescription drug abuse has risen to epidemic proportions in the United States. This shift has caused an increase in both the number of accidental and non-accidental drug-related deaths. The distinction between an accidental and suicidal overdose has always been a challenge in America’s medicolegal death certification system. In addition to the standard scene investigation, medical history, and past
psychological history, the toxicology report has become one of the most important tools in distinguishing a non-intentional overdose from an intentional overdose. This retrospective study looks at the postmortem drug concentrations as an additional tool to help in the decision making process between a suicide and an accidental drug overdose. A 4 year (2009-2012) retrospective review of drug concentrations in suicides, accidental overdoses, and undetermined deaths from the Marion County Coroner’s Office in Indianapolis was compiled and compared to standard therapeutic drug ranges. For all suicide cases, the top five most frequent drugs/chemicals identified were hydrocodone, ethanol, alprazolam, amitriptyline/nortriptyline, and acetaminophen. For all accident cases, the top five most frequent drugs/chemicals identified were heroin/morphine/associated metabolites, ethanol, alprazolam, hydrocodone, and cocaine/metabolites. Suicides showed statistically significant higher drug concentration(s) when compared to accidental drug overdoses. The average number of times that a drug was elevated over the upper limit of its therapeutic range in suicides was just under 9 times. In contrast, the average in accidental overdoses is just under 2.5 times. The average number of total drugs positive in a suicide cases was 4.06 compared to 2.45 drugs seen with accidents. The percentage of cases where ethanol was identified in suicides was 27.54% which is very similar to accidents at 25.91%. Assigning a definitive manner of death (accident, suicide, and undetermined) in fatal drug ingestion cases where subjective variables play a significant role is challenging and the possible use of a stratification system (i.e. Undetermined, favor accident) may allow for more accurate reporting of drug related deaths.

11.3 Characterization of Diphenhydramine-Related Overdose Deaths


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The database currently includes findings from Maine, Vermont and New Hampshire to the FDD. The database currently includes findings from Maine, Vermont and New Hampshire to the FDD. A project subsequently funded by the WV Injury Control Research Center and CDC added findings from Maine, Vermont and New Hampshire to the FDD. The database currently contains drug-related death data from January 2005 through most of 2011. The present study compared characteristics of unintentional DPH-induced deaths to those deaths not involving DPH. Of the 4,709 drug-induced deaths in the FDD, 3,703 (82.5%) were unintentional. Of 276 total DPH-induced deaths, 181 (65.6%) were unintentional. These 181 DPH deaths were compared to the 3,703 unintentional non-DPH deaths. There were no statistically significant differences (p<0.05) between the DPH and non-DPH deaths for age and BMI distributions, or in the proportions of cases with co-intoxicant benzodiazepines (~42% of deaths overall) or opioids present (~68% of deaths overall). In linear regression analyses, DPH presence was not significantly associated with fentanyl, hydrocodone, methadone, or oxycodone concentrations, with and without adjustment for the presence of alcohol, benzodiazepines, TCAs, and SSRIs and age, sex and BMI covariates, although individual sample sizes were small. Several characteristics differed significantly (p<0.005 for each) between DPH and non-DPH deaths. Decedents with DPH present were more likely to be female (57.5% females in DPH deaths vs. 31.5% females in non-DPH deaths). The number of co-intoxicants present differed significantly between groups (55.8% of DPH deaths had > 3 other co-intoxicants present vs. 20.1% of non-DPH deaths). Median diphenhydramine concentrations decreased slightly from 0.25 mcg/ml with 1 other co-intoxicant present to 0.16 mcg/ml with 4+ other co-intoxicants identified. Alcohol was significantly less likely to be present in DPH compared to non-DPH deaths (13.3% vs. 22.5%), and antidepressants (TCAs and SSRIs) were significantly more likely to be present in DPH compared to non-DPH deaths (26.5% vs. 11.2%, respectively). Methadone was the most frequently identified drug in DPH overdose deaths when only 1 or 2 other co-intoxicants were present; diazepam and alprazolam were most frequently identified drugs in DPH deaths with > 3 other co-intoxicants. Identifying factors that characterize DPH-related deaths is important when assessing the possible role of DPH in unintentional deaths.

11.4 Fatal NBOMe Intoxication: Toxidrome, Autopsy Findings, Detection and Legal Challenges

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NBOMe, a “2C” designer drug is known to be a potent 5HT2A agonist. Originally synthesized in 2003 as a research agent, this drug has recently appeared as a drug of abuse, first in Europe, then in the United States. It is typically sold as a liquid or on blotter papers, the latter form frequently represented by dealers as LSD. Two fatal cases are reported; a 17-year-old female who had a seven day hospitalization following her acute presentation and a 19-year-old male who died at the scene of ingestion of the drug. Toxidromes in both cases showed similarities to one another as well as to the small number of cases of both fatal and non-fatal NBOMe intoxication reported in the literature. The initial history of “LSD” ingestion led to fruitless toxicological searches for this agent in both currently reported cases, but ultimately directed analysis revealed the true nature of the intoxications. Both cases underwent autopsies by forensic pathologists who reached differing conclusions as to the cause and manner of death in their respective cases. Autopsy findings in both are presented as well as a discussion of the ultimate detection of the agent in question in postmortem blood. In the case of the 17-year-old female, no arrests or other legal action has ensued. In the case of the 19-year-old male, one of his companions the night of the intoxication was arrested and charged with second degree murder by strangulation. The author, who performed the autopsy of the female in his own jurisdiction, was a defense expert in another jurisdiction in the trial of the youth charged in the death of the male decedent. Prosecutors raised a number of objections to testimony regarding NBOMe that shall be reviewed in this presentation. Forensic pathologists must remain vigilant for the emergence of an increasingly wide variety of synthetic intoxicants, many available legally, in their jurisdictions. A thorough investigation of the circumstances and accoutrements of the intoxication, detailed description of the symptoms observed in the decedent and working knowledge of how such agents may cause death ensure accuracy in death certification and may have profound impact on the adjudication of cases involving this burgeoning public health problem.

11.5 Comparison of Drug/Metabolite Stability in Specimens Transported in Ambient Temperature Versus on Dry Ice

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Many coroner and medical examiner offices do not have on-site toxicology laboratories and must transport postmortem specimens by some type of courier system to their lab of choice for testing. Various modes of transportation are used and may include a dedicated courier service traveling by car, overnight transportation via a commercial transport such as FedEx or UPS, or through the US Postal Service. The temperature and humidity may fluctuate widely during transport due to these variable modes of transportation and regional temperature differences, which may lead to fruitless toxicological searches for this agent in both currently reported cases, but ultimately directed analysis revealed the true nature of the intoxications. Both cases underwent autopsies by forensic pathologists who reached differing conclusions as to the cause and manner of death in their respective cases. Autopsy findings in both are presented as well as a discussion of the ultimate detection of the agent in question in postmortem blood. In the case of the 17-year-old female, no arrests or other legal action has ensued. In the case of the 19-year-old male, one of his companions the night of the intoxication was arrested and charged with second degree murder by strangulation. The author, who performed the autopsy of the female in his own jurisdiction, was a defense expert in another jurisdiction in the trial of the youth charged in the death of the male decedent. Prosecutors raised a number of objections to testimony regarding NBOMe that shall be reviewed in this presentation. Forensic pathologists must remain vigilant for the emergence of an increasingly wide variety of synthetic intoxicants, many available legally, in their jurisdictions. A thorough investigation of the circumstances and accoutrements of the intoxication, detailed description of the symptoms observed in the decedent and working knowledge of how such agents may cause death ensure accuracy in death certification and may have profound impact on the adjudication of cases involving this burgeoning public health problem.

NAME Abstracts

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lead to degradation of drugs/metabolites during transport. Specimens may be shipped to the laboratory on dry ice to minimize potential analyte instability; however, this may be cost prohibitive for many offices. We evaluated whether specimen transport conditions significantly affected drug/metabolite stability in postmortem femoral blood. Two femoral blood samples were simultaneously collected from the inguinal region of 112 decedents. One sample was immediately refrigerated at 4 degrees C until transport and then packaged in a Styrofoam shipping container and sent to the laboratory at ambient temperature. The other femoral blood specimen was immediately frozen and kept at -20 degrees C. This specimen was packaged like the first specimen except dry ice was included to maintain a frozen state until delivery to the laboratory. Both specimens were transported using an overnight commercial carrier.

Temperatures were not regulated in the storage area of the carrier planes and could range from near freezing to over 32 degrees C during the transport. Upon arrival to the laboratory, the specimens were analyzed for drugs/metabolites included in a comprehensive test panel according to laboratory protocol. The frozen specimen delivered on dry ice was thawed prior to testing. Statistical differences between drug/metabolite concentrations in the two specimens were evaluated using a paired T test (p<0.05). Seventy-eight different drugs and/or their metabolites were detected. The most commonly detected analytes were alprazolam, 7-aminoclonazepam, morphine, oxycodone, ethanol, diphenhydramine, citalopram, delta-9-tetrahydrocannabinol, and methadone. Significant differences were observed in 3 analytes; delta-9-carboxy-THC, 2-thyldiene-1,5-dimethyl-3,3-diphenylpyrrolidine (methadone metabolite), and amphetamine concentrations were significantly lower when compared to the specimen shipped in ambient temperature. This suggests that multiple freeze-thaw cycles may significantly affect the stability of certain analytes; however, the majority of analytes were unaffected by differences in shipping conditions in overnight transport.

**11.6 Feedback to the Field: Incorporating Postmortem Computed Tomography in the Evaluation of Trauma Care**

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**Background:** All medical intervention used during resuscitative efforts should remain in place after death for examination during the medicolegal death investigation. Observations of the use and placement of medical intervention can be used to provide feedback to relevant medical personnel at multiple levels of the trauma care system, particularly first responders. **Methods:** Postmortem computed tomography (CT), performed as part of the forensic pathology examination, allows for detailed visualization of medical devices used during resuscitative efforts. Presence of medical devices such as needle thoracentesis catheters, airway devices, intravenous needles, and tourniquets was assessed from CT images and findings confirmed during the autopsy portion of the forensic pathology examination. Information believed to be medically important and relevant to trauma care, such as rate of proper placement of tibial intravenous infusion devices, was incorporated into an electronic communication and distributed to medical providers and instructors at multiple levels of the trauma care system. **Results:** Over a five year period, sixteen “Feedback to the Field (FT2F)” electronic communications were distributed covering the following topics: airway management (5); needle thoracentesis (1); infusion devices (4); hemorrhage control (5); and pelvic stabilization (1). Responses from those receiving these communications documented FT2F’s applicability to the improvement of trauma care and training of medical personnel. **Conclusion:** Observations about the presence and placement of medical devices used in resuscitative efforts derived from CT images and the autopsy can be expediently relayed to multiple levels of the trauma care system through electronic communications. These communications can be used to improve trauma care and reinforce training protocols for medical personnel.

**11.7 Medical Examiner Collection of Comprehensive, Objective Medical Evidence for Conducted Electrical Weapons and Their Temporal Relationship to Sudden Arrest**

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**Background:** The use of conducted electrical weapons (CEW) is now a common law enforcement force practice. Use of these devices is rarely temporally associated with the occurrence of sudden arrest-related deaths (ARD). Because such deaths are uncommon, few Medical Examiners (MEs) ever encounter one, and even fewer offices have established comprehensive investigative protocols. Without adequate data collection, the scientific assessment of the role, if any, played by a CEW in any given case is largely supplanted by conjecture. The purpose of this presentation is to provide MEs with a comprehensive evidence-based checklist to assist in the assessment of CEW-ARD cases. **Methods:** PUBMED and Sociology/Criminology data bases were queried to find all medical, scientific, electrical, modeling, engineering, and sociology/criminology peer-reviewed literature for mentions of CEW or synonymous terms. Each paper was then individually reviewed to identify those that discussed possible bioelectrical mechanisms relating CEW to ARD. A Naranjo-type pharmacovigilance algorithm was also employed, when relevant, to identify and quantify possible direct CEW electrical myocardial stimulation. Additionally, CEW operational manuals and training materials were reviewed to allow incorporation of CEW-specific technical parameters. **Results:** Relevant PUBMED mentions were surprisingly few (<250), and reports of death quite rare. Much relevant information was available from Sociology/Criminology data bases. Once the relevant published papers were identified, and reviewed, we compiled an annotated checklist of data that we consider critical to a thorough CEW-involved death investigation. **Conclusion:** We have developed an evidenced-based checklist that can be used by MEs and their staffs to assist them in identifying, collecting, documenting, maintaining, and objectively analyzing the role, if any, played by a CEW in any specific case of sudden death temporally associated with the use of a CEW. Even in cases where the collected information is deemed by the ME as insufficient for formulating an opinion or diagnosis to a reasonable degree of medical certainty, information collected as per the checklist will often be adequate for other stakeholders to use as a basis for informed decisions.

**11.8 Silent but Deadly: HazMat Implications of Lethal Off Gassing in a Suicidal Aluminum Phosphide Poisoning.**

L. L. Bush, R. Sikora

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The presentation illustrates the importance of early cooperation between state, local, and private entities when managing a case of chemical suicide. Aluminum phosphide is a highly toxic, low cost rodenticide used in other countries to protect food supplies. When exposed to water, it releases phosphine gas that effectively kills pests but leaves food edible after the phosphine gas dissipates. It is readily available overseas, usually in tablet form, and can easily be brought into the U.S. where is not widely sold. Since the early 1980’s, it has been frequently used as a suicidal agent in the Middle East and Asia. A female foreign national admitted to intentionally ingesting tablets of aluminum phosphide when she was found vomiting in the bathroom by her adult son who called 911. EMS responded and transported her to a local hospital Emergency Department where she was initially treated with IVs, cardiac monitoring, NGET intubation and mechanical ventilation in a critical care treatment room. After an hour, ED staff complained of burning eyes and skin so the patient was moved to a negative air flow isolation room and local HazMat was called. HazMat responded with phosphate monitors, recommended hospital staff don Level 3 PPE and erected a secure, decontamination tent in the EMS parking area outside the ED. The patient was moved into the
Conditions causing acute colonic distention include toxic megacolon, intestinal ischemia without inflammation, granulomas, crypt distortion or may be secondary to medications, including narcotics and potent dilatation without a mechanical cause. It is often right sided, may extend to the terminal ileum and red-brown liquid contents. Perforation or discoloration of the serosa and flattened, dusky, mucosa with granularity had a distended (14 cm diameter), thin walled colon with dark purple signs of disseminated intravascular coagulopathy and sepsis. She also witnessed her arrest, called emergency personnel with unsuccessful resuscitative efforts. She complained of crampy abdominal pain, dizziness, shortness of breath and inability to have a bowel movement the day prior. Their symptoms were treated with over-the-counter remedies. There were no reported previous similar episodes, recent travel or sick contacts. Her past medical history included schizophrenia, depression, epilepsy and lupus. Her medications included clozapine, keppra, lamictal and oxybutynin. At autopsy, she had a rigid, distended abdomen with signs of disseminated intravascular coagulopathy and sepsis. She also had a distended (14 cm diameter), thin walled colon with dark purple discoloration of the serosa and flattened, dusky, mucosa with granularity in the terminal ileum and red-brown liquid contents. Perforation or mechanical obstruction was not identified. Histologically, there was diffuse intestinal ischemia without inflammation, granulomas, crypt distortion or other evidence of inflammatory bowel disease; the granular areas corresponded to residual Peyer’s patches. Toxicology testing revealed therapeutic levels of clozapine and oxybutynin in antemortem blood. Conditions causing acute colonic distention include toxic megacolon, mechanical obstruction and acute colonic pseudo-obstruction (Ogilvie’s Syndrome). Toxic megacolon is a complication of inflammatory or infectious bowel disease and is more common in ulcerative colitis than Crohn’s disease. Mechanical obstructions may be extraluminal (adhesions, abdominal/pelvic tumors or volvulus) or intraluminal (tumors, feces or foreign bodies). Ogilvie’s Syndrome is acute massive colonic dilatation without a mechanical cause. It is often right sided, may extend to the rectum and is diagnosed mainly in hospitalized, debilitated patients or may be secondary to medications, including narcotics and potent anticholinergics. Gastrointestinal hypomotility is a known complication of pertinent literature. Family confirmed the use of oral stanozolol for several years.

clozapine, an anticholinergic, though may be overlooked while monitoring its better known side effects, agranulocytosis and seizures. Clozapine, an atypical antipsychotic, is used for treatment resistant schizophrenia. It binds to serotonergic and dopamine receptors and is thought to induce gastrointestinal hypomotility by its anticholinergic and antiserotonergic effects. Evidence suggests an increased risk of gastrointestinal hypomotility with higher doses and use with other anticholinergics. In the absence of conditions causing toxic megacolon or mechanical obstruction, her cause of death was determined to be acute colonic pseudo-obstruction (Ogilvie’s Syndrome) secondary to gastrointestinal hypomotility from clozapine therapy for treatment of her schizophrenia. Oxybutynin, also an anticholinergic, was included as a contributing factor. In the setting of acute colonic distention, consider medications, and their side effects when determining cause of death.

P2 Acquired Angioedema: A Case of an Unexpected Death and Review of Literature
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Angioedema is a rapid swelling of the deep layers of skin including dermis, subcutaneous tissue, mucosa, and submucosa. It results from rapid release of inflammatory mediators which increase the permeability of capillaries and venules through mechanisms involving mast cells or bradykinin. It can be classified as allergic, drug induced, hereditary, acquired, and idiopathic. Acquired angioedema occurs when the C1 esterase inhibitor, which plays a role in downregulating the complement system, is absent or defective. Diagnosis of this disorder should be considered in any patient presenting with episodes of swelling affecting cutaneous tissues and mucous membranes in or beyond the fourth decade of life, without a family history of angioedema. While the disorder can occur in isolation, the majority of patients have an underlying lymphoproliferative disorder or other malignancy. The clinical course of acquired angioedema is often unpredictable and attacks can range from minor swelling to unexpected death. The following case report describes a fatality due to acquired angioedema in a man with an underlying monoclonal gammapathy of undetermined significance. A thorough review of the medical and family history, antemortem laboratory values, autopsy examination, and postmortem serum tryptase levels were all used to make the diagnosis and rule out other forms of angioedema. This case is presented, along with a review of other causes of death involving angioedema, in order to aid forensic pathologists in working up and certifying these deaths.

P3 A Case of Fatal Hemoperitoneum due to Liver Cyst Rupture in User of Anabolic Steroids
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Fatal hemorrhagic rupture of a liver cyst is a rare occurrence with only a handful of cases reported in the literature. We present the case of a twenty-two-year old male who suddenly collapsed. Autopsy disclosed massive hemoperitoneum as a result of a liver cyst. We will present the gross, microscopic findings of the cyst and liver and a review of the suspect and the victim and the relational between them, situation factors and social-cultural contexts. 97 homicide-suicides cases were collected from 2001 to 2011. 207 persons were involved, 98 were suspect (2 suspects in one case) and 109 were victims (2 victims in one case and 3 victims in another case). Among the 98 suspects, 80 were male (81.8%) and 18 were female (18.4%). Among the 109 victims, 26 were male (23.9%) and 83 were female (76.1%). The suspects age ranged from 5 years old to 76 years old, average 40.5. The victims age ranged from 35 days to 75 years old, average 37.4. The group from 18 to 59 were most common both among the victims (81) and the suspects (90). The relationship of the victims and the suspects was clear among 41 cases, most (36 cases) were immediate family, including 18 between parents and
kit, 15 cases between spouse, and the gender was always opposite in the same case. In 63 cases (64.9%) the scenes of homicide and suicide were at the same place and 59 (68.8%) cases occurred indoors, 4 cases were outdoors. In 33 cases homicide and suicide occurred at different place, homicide indoor and suicide outdoor at the same building in 20 cases, and two places were very close in 13 cases. The causes of death (COD) were different between homicide and suicide in 81 cases. The most common COD of the victim was manual strangulation (23 cases), followed by stab wound (22 cases), then chop wound, blunt instrument injury (both were 11 cases), poisoning (10 cases, 9 were carbon monoxide poisoning and 1 was chlorpromazine ). 13 victims were killed by two methods (most were manual strangulation combined by chop wound and blunt instrument injury). The most common COD of the suspects was hanging (26 cases), followed by fall from high (24 cases), and poisoning (20 cases). 2 suspects killed themselves by two methods. The cause was the same between the victims and the suspects among 16 cases, poisoning 8 cases, stab wound 6 cases and fall from height 2 cases.

P5 Fatal and Nonfat Acetaminophen Poisoning


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Introduction: Acetaminophen is the antipyretic-analgesic drug most frequently encountered by the toxicology laboratory in the United States. We present two cases of acetaminophen overdose to show the range of liver damage that can occur. Case Reports: The first subject was a 49-year-old white male with a history of a recent suicide attempt with acetaminophen. He vomited the pills and recovered. A week later, he sustained a self-inflicted gunshot wound of the head. The liver demonstrated geographic necrosis. The necrosis was centrilobular, the periporal zone intact. Toxicological studies were negative. The second subject was a 28-year-old white woman who ingested an overdose of acetaminophen. She was admitted to the hospital, where she died. Diffuse injury of the hepatocytes was noted. The centrilobular hepatocytes were necrotic, with injury of the periporal hepatocytes. Toxicological studies were positive for acetaminophen in antemortem blood, 45.5 mg/mL. Discussion: The intermediate metabolite of acetaminophen, N-acetyl-p-benzoquinone imine (NAPQI), is toxic to hepatocytes. The centrilobular hepatocytes have more cytochrome P-450 than elsewhere in the liver, and are the first to produce NAPQI. Laboratory studies show elevated alanine aminotransferase or aspartate aminotransferase activity that can exceed 100 times the upper limit of normal. Renal failure may also occur. The liver findings of acetaminophen overdose typically show fulminant coagulative necrosis with damage to all hepatocytes, as demonstrated in Case 2. If the damage is not fulminant, but maintains a centrilobular pattern as seen in Case 1, acetaminophen overdose becomes the prime suspect for the cause of hepatotoxicity.

P6 Fatal Myocarditis of an Immunocompetent Child Following Seasonal Influenza Vaccination with Concurrent Parainfluenza Infection

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Vaccinations remain one of the most successful means of preventative medicine and public welfare. Throughout time however, misconceptions have arisen regarding morbidity and mortality related to vaccines, causing significant public health concerns. All persons over 6 months of age, with few exceptions, are recommended for annual vaccination against influenza. Despite efforts to increase awareness and access to influenza vaccinations, more than 200,000 people each year in the US are hospitalized from seasonal flu-related complications. Over 100 influenza-associated pediatric deaths are reported annually, many of which could have been prevented. The burden is on health-care professionals to clarify misconceptions with factual information to promote the effectiveness and benefits of vaccinations. We report a case of fatal myocarditis in a previously healthy 7 year-old child, three days following receipt of a trivalent inactivated influenza vaccine injection. She had waxing and waning fever, malaise and body aches that worsened over time. En route to the pediatrician, she suffered increased dyspnea, became unresponsive and, despite resuscitative efforts, was pronounced deceased shortly after arrival at the hospital. Autopsy demonstrated myocarditis with multifocal myocyte necrosis with phagocytosis, composed predominantly of mononuclear cells with scattered eosinophils and neutrophils. Additionally, there was evidence of a systemic inflammatory response throughout the conducting airways, lungs, liver, and gastrointestinal tracts, characterized by moderately dense infiltrates of lymphocytes and eosinophils. Post-mortem nasopharyngeal swab, blood and tissue samples were sent for microbiologic studies for which various pathogens were investigated, including influenza virus A and B. Real time RT-PCR yielded detection of parainfluenza virus type 1 (PIV-1) in multiple tissue samples. Understandably, the death of a healthy young child, especially one in close temporal association with a vaccination, attracts significant public attention. Reports linking her death to the vaccine instilled fear and confusion in the public at large, raising concerns about more parents opting out of immunizations for their children and/or themselves. The etiology of the fatal myocarditis in this case is unclear and suggests a multifactorial process. Though the temporal association of a vaccine, designed to elicit an immune response, cannot be ignored, neither can the concurrent PIV-1 infection in the setting of systemic inflammation. Further, fatal myocarditis caused by influenza vaccination, to our knowledge, has not been reported. This case illustrates the value of thorough investigation to differentiate causation from association, especially in the setting of vaccinations, to prevent dissemination of misinformation.

P7 Sudden Death by Pulmonary Thromboembolism Due to a Large Uterine Leiomyoma

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Deep vein thrombosis (DVT) and pulmonary thromboembolism (PE) are culpable for many deaths annually in the United States; however DVT as a complication of uterine leiomyomata has rarely been reported. We present the clinical, pathologic, and autopsy findings of a fatal case of a large uterine leiomyoma causing pelvic venous stasis, DVT, and PE. A 57-year-old African American woman with poorly controlled hypertension, congestive heart failure, and polysubstance abuse (including crack-cocaine) presented after one month of progressive nonproductive cough and dyspnea. She was admitted to the hospital and a nasal swab was positive for H1N1 Influenza virus by PCR. Her clinical course continued to worsen, and she required mechanical ventilation. Fourteen days into her hospital stay, she experienced cardiac arrest and died. Autopsy found a normally developed, moderately obese woman. The uterus had a 1275 gram, 14.8 X 14.2 X 9.4 cm pedunculated tan-white tumor extending from the fundus and filling the entire pelvis with extension into the lower abdominal cavity. A vein from the surface of the tumor anastomosed with an adjacent mesenteric vein. Cut sections of the nodule were whorled and tan-white with areas of hyalinization. Multiple laminated and partially adherent intravascular thrombi were present in all lung lobes and bilateral posterior tibial veins of the legs. Microscopically, the mass consisted of focally hyalinized smooth muscle bundles surrounded by large vascular channels. No coagulation necrosis or mitotic figures were identified within the tumor; and this mass was classified as a leiomyoma. Microscopic sections of leg veins and lungs found laminated thrombi with focal endothelial organization. Additional autopsy findings included cardiomegaly (475 grams), atherosclerotic and hypertensive cardiovascular disease, and diffuse alveolar damage. The pathophysiology of venous thrombosis is classically attributed to alterations in one or more components of Virchow’s triad: hypercoagulability, stasis, and damage to the vascular endothelium. Furthermore, identifying the underlying cause of fatal thromboembolism may have profound implications for manner of death certification. For example, post traumatic venous thrombosis and thrombo-embolism could potentially result in accident or homicide as the manner of death. Therefore, fatal pulmonary thromboembolism requires a careful forensic
analysis, including leg dissection and microscopic examination. Also, the clinical implications of the association of large pelvic masses with venous thrombosis is important, since prophylactic surgery could be life-saving.

P9 Sudden Asphyxial Death due to Primary Tracheal Small Cell Carcinoma
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Sudden natural asphyxial death in adults due to airway obstruction is an unusual cause of death. A variety of etiologies can cause airway obstruction including benign or malignant tumors and soft tissue swelling from asthma, infections, or anaphylaxis. Malignant tracheal neoplasms are exceedingly rare with a reported incidence of approximately 2/1,000,000 and the small cell carcinoma subtype accounts for <10% of these tumors. We present a case of a 55-year-old female smoker who was found dead at home. At autopsy an obstructing lesion of the proximal trachea was identified which showed the characteristic cytomorphology of small cell carcinoma. No primary pulmonary lesions were identified. The cause of death was determined to be obstruction of the trachea by small cell carcinoma and the manner natural.

P10 Agonal Thrombi at Autopsy
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Background: Clots and thrombi identified at autopsy are generally classified as antemortem or postmortem. The current general pathology, forensic, and autopsy textbooks and articles support this approach. Literature from the 1960s or earlier often contains descriptions of a third category—the agonal thrombus. Although agonal thrombi were understood to arise by their own particular mechanism (while the patient was dying), have their own morphology (combined features), and indicate particular circumstances surrounding the death (slow death), these agonal thrombi were still summarily treated as equivalent to postmortem thrombi—likely to avoid confusion with antemortem thromboemboli directly implicated in causing death. Chicken fat was inconsistently described as either agonal or postmortem. Methods: We reviewed current and historic textbooks as well as articles in the English literature using key search words: clot, clots, thrombus, thrombi, antemortem, postmortem, agonal, agonal thrombi. We collected 238 autopsy cases including 80 rapid/sudden deaths by violence and 21 (including one pediatric) deaths from acute pulmonary emboli. Then we analyzed the gross and microscopic features of clots and thrombi with particular consideration to the circumstances surrounding the deaths. Results: Agonal thrombi were identified in 122 cases (89% of cases of “slow” death). Agonal thrombi were not identified in cases of sudden death. We found that a comprehensive description of the macroscopic features was key to understanding the histology. Agonal thrombi have smooth to finely granular surfaces, rubbery consistency, do not fill the entire lumen, and range from dark red to yellow/white. Microscopically, they may focally show lines of Zahn and hemosiderin-laden macrophages. Organization does not occur. The gross and microscopic features of agonal thrombi/chicken fat support their hybrid nature. Conclusion: The dichotomous classification of clots and thrombi seems to be founded on assumptions of clinical significance but is perhaps oversimplified. Agonal thrombi are a distinct class of thrombus which, though not clinically significant as an immediate cause of death, arise by their own mechanisms and have their own morphology. Chicken fat is best classified as an agonal thrombus, not postmortem. It is advisable to avoid classifying agonal thrombi as mere postmortem clots because in forensic cases they may help support an argument against sudden death. To harmonize nomenclature with antemortem and postmortem thrombi/clots we suggest that agonal thrombi be understood to arise as the patient is dying—that is, in articulo mortis.

P11 Two Autopsy Cases of Undiagnosed Liposarcoma
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Introduction: Liposarcoma can occur anywhere in the body, but more than half of liposarcoma cases involve the thigh. Primary liposarcoma outside thighs is rare. This paper presents two forensic autopsy cases of clinically undiagnosed primary liposarcoma, which originated from the mediastinum in case 1 and the omentum in case 2. Case 1: A 68-year-old thin male who worked as a part-time driver had a swelling around the neck and a cough with sputum without medical treatment for a year. He died suddenly at home after severe coughing. An autopsy revealed a large yellowish well-circumscribed tumor (850 g, 23 × 20 × 10 cm) in the superior mediastinum. Microscopic examination of the tumor showed mature fat cells with fibrous tissue and lipoblasts. This tumor was diagnosed as a well-differentiated liposarcoma. Case 2: A 53-year-old thin female was found dead in her room. She could not work because of extreme weight loss without medical care for a few months prior to the death. An autopsy revealed a large reddish-brown well-circumscribed tumor (approximately 10 kg, 40 × 25 × 11 cm) in the abdominal cavity. This tumor originated from the omentum and could be easily separated from the intestines and pelvic organs. Cross-section of this tumor showed whitish solid and reddish polycystic areas. A liver metastasis (1 cm in diameter) was also found. Microscopic examination of the primary tumor
revealed fibrous tissue and pleomorphic lipoblasts. This tumor was diagnosed as a pleomorphic liposarcoma. Conclusion: The cause of death in case 1 was airway occlusion by the liposarcoma; that in case 2 was cachexia. Symptoms of ormental tumors typically include painless and progressive abdominal distention. Macroscopic and microscopic findings are discussed.

P12 Death by Flare Gun: An Unusual Case of Suicide
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Suicides by multiple gunshot wounds and multiple handguns are unusual. This presentation reports a 58-year-old man who sent a suicide note by text message. He was found dead in the shower with two handguns near his feet. One of the guns was a revolver and the other was a modified flare gun. The flare gun contained an insert in the barrel enabling the flare gun to fire .410 shot shells. Autopsy showed a contact gunshot wound to the left chest involving the left lung and aorta. The left chest cavity contained 1300 cc of blood. The bullet was recovered from the subcutaneous tissue of the back. Another wound was present at the back of the pharynx, with abundant surrounding soot. Portions of a shot shell were recovered from the pharyngeal soft tissue. X-ray showed four projectiles in the head. Four pellets were recovered deep to the scalp tissue. We conclude that the decedent first shot himself in the chest with the revolver, followed shortly afterward by discharge of the modified flare gun in the mouth.

P13 Accidental Death from Recreational Use of Methylhexanamine (DMAA) in Northwestern Oregon: A Case Report
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Introduction: Methylhexanamine, an aliphatic alkaloid with sympathomimetic and stimulant properties, is also commonly known as DMAA, 1,3-dimethylamylamine or “geranium extract.” It causes vasoconstriction, hypertension and bronchoconstriction. Originally marketed as a nasal decongestant until the 1980s, it was voluntarily removed from the market due to reported adverse effects. Methylhexanamine has been marketed in dietary supplements for weight loss and increased athletic performance, and as a recreational substance. There have been published reports of cerebral vascular accident or death after use of recommended doses of methylhexanamine, raising concerns and initiating sales restrictions worldwide. The US military has banned sales of DMAA containing substances in its exchange stores since 2010 and initiating sales restrictions worldwide. The use of postmortem radiographs to aid in the retrieval of projectiles from the bodies of gunshot wound victims is common practice in the postmortem forensic examination. This search for projectiles can be infrequently complicated by the rare phenomenon of a bullet embolism. Intravascular migration is well documented in the literature and more common than gastrointestinal, respiratory, urinary tract, and intracranial migration. We present a unique case of gastrointestinal bullet migration following a single penetrating gunshot wound to the right upper back of a 22-year-old male who was a passenger in a pick-up truck when shot. Upon arrival to the emergency department, radiographic imaging showed multiple small bullet fragments in the upper cervical vertebra. A series of chest and abdominal radiographs identified a large bullet fragment in the left upper quadrant of the abdomen. A subsequent exploratory laparotomy showed no evidence of abdominal injury and no projectiles were recovered. He was pronounced brain dead four days after admission and permission for organ and tissue procurement was granted. Radiographs taken just prior to autopsy revealed small projectile fragments in the neck, a larger fragment in the right abdomen, and evidence of organ and tissue procurement. Postmortem examination identified the entrance wound on the right upper back with a wound pathway passing through the right upper back, right neck, and esophagus. Notable injuries included comminuted fractures of the vertebral bodies of C3 and C4, and a 2.0 x 1.0 cm esophageal defect filled in by yellowish-tan granulation tissue. A single small fragment was recovered from the neck. Due to the disrupted anatomy of the abdomen after recovery of the liver, kidneys, pancreas and sections of small intestine, the large projectile fragment was eventually located in the cecum. The bullet likely came to rest within the esophageal lumen allowing peristalsis to carry the bullet through the gastrointestinal tract to the cecum. Penetrating gunshot injuries where the bullet ends within a hollow viscous and migrates are rare and seldom reported in the literature. This case demonstrates the importance of full body radiographs in gunshot wound cases, as well as the value of reviewing the complete medical record along with the organ and tissue procurement procedures to interpret antemortem and postmortem imaging.

P14 Rupture of the Left Atrial Appendage Due to Trauma: A Case Report
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Blunt traumatic cardiac rupture is very rare and associated with a high mortality rate. The left atrial appendage (LAA) rupture as a cause of cardiac rupture is exceedingly rare, while anatomical injury affecting the right side is most common. Furthermore most blunt traumatic cardiac ruptures are caused by motor vehicles accidents, falls, crush or blast injuries. Here we report a case of a 30-year-old man who died from LAA rupture after assault with minimal cervical and thoracic injury. Computed tomography examination revealed hemo-pericardium. On autopsy examination, the pericardial cavity was filled with bright red blood because of rupture of the LAA which led to cardiac tamponade. The possible mechanisms was identified as cardiac blood pressure suddenly increased, and the non-fixed LAA swung like a pendulum while the anatomically fixed left atrium was dilated at the moment of assault.

P15 A Case of Gastrointestinal Bullet Migration
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The use of postmortem radiographs to aid in the retrieval of projectiles from the bodies of gunshot wound victims is common practice in the postmortem forensic examination. This search for projectiles can be infrequently complicated by the rare phenomenon of a bullet embolism. Intravascular migration is well documented in the literature and more common than gastrointestinal, respiratory, urinary tract, and intracranial migration. We present a unique case of gastrointestinal bullet migration following a single penetrating gunshot wound to the right upper back of a 22-year-old male who was a passenger in a pick-up truck when shot. Upon arrival to the emergency department, radiographic imaging showed multiple small bullet fragments in the upper cervical vertebra. A series of chest and abdominal radiographs identified a large bullet fragment in the left upper quadrant of the abdomen. A subsequent exploratory laparotomy showed no evidence of abdominal injury and no projectiles were recovered. He was pronounced brain dead four days after admission and permission for organ and tissue procurement was granted. Radiographs taken just prior to autopsy revealed small projectile fragments in the neck, a larger fragment in the right abdomen, and evidence of organ and tissue procurement. Postmortem examination identified the entrance wound on the right upper back with a wound pathway passing through the right upper back, right neck, and esophagus. Notable injuries included comminuted fractures of the vertebral bodies of C3 and C4, and a 2.0 x 1.0 cm esophageal defect filled in by yellowish-tan granulation tissue. A single small fragment was recovered from the neck. Due to the disrupted anatomy of the abdomen after recovery of the liver, kidneys, pancreas and sections of small intestine, the large projectile fragment was eventually located in the cecum. The bullet likely came to rest within the esophageal lumen allowing peristalsis to carry the bullet through the gastrointestinal tract to the cecum. Penetrating gunshot injuries where the bullet ends within a hollow viscous and migrates are rare and seldom reported in the literature. This case demonstrates the importance of full body radiographs in gunshot wound cases, as well as the value of reviewing the complete medical record along with the organ and tissue procurement procedures to interpret antemortem and postmortem imaging.
A Review of Characteristics of Sharp Force Injuries in Homicide and Suicide
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The case of a 48 year old man found dead in his home with a single stab wound in his abdomen presented to our institution. While investigators held suspicion for homicide, circumstances of the scene and statements of potential witnesses were found to be inconsistent and unreliable. The question was thus posed as to whether the wound could have potentially been self-inflicted. The distinction between self-inflicted versus other-inflicted sharp force injury can be very difficult, and previous authors have examined multiple factors with varying results. We performed a review of self-inflicted and other-inflicted sharp force injuries in the past 10 years at this institution to examine the common characteristics of such wounds. Information was gathered pertaining to the age and sex of victims, the presence of other injuries, toxicology results, location and number of sharp injuries, injury to bone and cartilage, presence and absence of hesitation marks, presence and absence of defensive injuries, damage to clothing, whether injury was sustained in the home, recent parasuicidal behavior by the victim, and presence of a suicide note. Our findings were compared with those of other authors, and to the initial case presented.

Gastrocardiac Fistula After Esophagectomy: A Deadly Complication of a Gastric Pull-Through
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A 73-year-old male presented to the emergency room with hematemesis. Sixteen years prior, he had undergone a near total esophagectomy and gastric pull-through for esophageal carcinoma. Despite radiographic and endoscopic procedures, no source of bleeding was identified and the patient died approximately 36 hours after initial presentation. At autopsy, the anterior wall of the gastric conduit was found to be firmly adhered to the posterior pericardium at the site of a 2-cm gastric ulcer. The base of this ulcer was in direct communication with the chamber of the left ventricle, just inferior to the posterior mitral leaflet. Histologic examination revealed a benign gastric ulcer colonized by bacterial and fungal elements. Gastrocardiac fistulae are vanishingly rare and most commonly associated with prior surgery, infection, radiation therapy, malignancy, or ischemia. Superimposed bacterial and fungal infections are common. Treatment of gastrocardiac fistulae have been successful, though mortality rate is extremely high and they are often diagnosed at autopsy. Even in a time replete with advanced imaging and diagnostic technology, this case serves to illustrate the continued utility of autopsy in the modern medical era.

Utilization and Clinical Significance of Autopsy Service in a Pediatric Hospital
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Objective: The utilization of the hospital autopsy service continues to declining nationwide. Autopsies serve as an educational and quality-control for overall clinical diagnoses, and improve accuracy of death certificates. Our objective was to assess the current value of pediatric autopsy in providing additional information to families and healthcare professionals. Materials and Methods: Cases with complete or near-complete autopsies performed at the Children’s hospital of Pittsburgh in 2011-13 were reviewed. Antemortem clinical diagnoses were compared with corresponding autopsy findings. Brain-only autopsies and consult cases were excluded from this analysis. Discrepancies between antemortem diagnoses and autopsy findings were categorized and graded using the "Preliminary Autopsy Review Checklist" form. Results: Of the 95, the death certificate was reviewed, and correction was suggested in 11 (16.7%). Of these 95 cases, in 41 (43.2%) antemortem diagnoses were discrepant from the corresponding autopsy diagnoses (autopsy deemed correct). Many of these discrepancies were not of clinical significance, and were assigned Grade 3 (23 of the total cases; 24.2%). The clinical error rate considering only the clinically relevant discrepancies categorized as Grade 1 (change in management could have prolonged survival) or Grade 2 (missing major diagnosis, no change in management) was 2.1% and 16.8% respectively. Conclusion: Our results show that even now patients sometimes die with undiagnosed or misdiagnosed diseases. In rare cases, an appropriate diagnosis could result in change in management and prolonged survival. Clinical interpretations with missing minor diagnosis were consistently identified in a significant number of cases. This reconfirms autopsy as helpful for the families, rendering complete information regarding causes of death, including all major and minor findings. This information can help clinician to sharpen their skills in interpreting clinical pictures and issuing correct death certificates, a function especially important to emphasize in a teaching hospital.

Preserved Human Brain Tissue After 17 Years In Manure Pit
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In December of 1996, a businessman went missing in rural Indiana. A suspect was convicted and jailed even though the body was never recovered. In June of 2013, the suspect revealed the site where the body could be found, in hopes of negotiating a plea agreement. He indicated that he had disposed of the body in a hog manure pit. Local authorities, accompanied by a forensic anthropologist recovered human remains from the vacant hog farm by sifting through the manure. The pit was approximately ten feet long, 6 feet wide, and 3 feet deep. The team was able to recover the large bones simply by sifting, but the small bones required pumping the manure from the pit. Two gunshot wounds were found in the base of the skull with separation of the calvarium. When the skull was opened, a large piece of intact brain matter was discovered. Factors associated with the preservation of soft tissues in anaerobic midden environments are discussed.

Sudden Unexpected Death due to Oxycodone Intoxication from Treatment of Sickle Cell Disease in a Pediatric Patient: A Prepreventable Death due to Medical Error
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Sickle cell disease (SCD) is one of the most common genetic disorders worldwide. The disease is characterized by changes of the red cell membrane and abnormally shaped red blood cells, resulting in chronic hemolytic anemia, as well as acute and chronic complications. The hallmark of intractable problem encountered by children with SCD is recurrent, unpredictable, intense, painful vaso-occlusive episodes. The standard treatment protocol for painful episodes has been rest, rehydration, and analgesia. Narcotic drugs, such as codeine, hydrocodone, and oxycodone have been widely prescribed by physicians to manage severe pain in children with SCD at home. We report a sudden unexpected death due to oxycodone intoxication from treatment of SCD. A 9-year-old African American girl with history of SCD was found unresponsive in bed at home two hours after she took her prescribed oxycodone medication for severe pain. Autopsy was performed the next day because her death was sudden and unexpected. Histological examination revealed that there was diffuse intravascular red cell sickling of almost all the internal organs. But postmortem toxicological analysis showed an extremely high concentration of oxycodone in her blood (2.5 mg/L). Initially, the medical examiner thought that she took too much...
medication. Further investigation revealed that when she had an episode of intense pain, she was prescribed Oxycodeone HCL. Her physician prescribed an adult dose of 20mg/ml, 120 ml in total with instruction to take 3 ml orally, every 4 hours, as needed. She ingested 3ml of 20mg/ml which contained 60mg oxycodeone two hours prior to her death. Her usual dose of oxycodeone was 1mg/1ml, 3ml of oxycodeone orally, every 4 hours, as needed. She died of acute oxycodone intoxication due to a medical error by her physician in prescribing the wrong drug dosage. The detailed history and autopsy findings are described. In addition, the literature related to the treatment of SCD is reviewed, and the importance of medico-legal death investigation including forensic toxicology in cases of sudden unexpected deaths is discussed.

P21 Sudden Death Due To Retropéritoortal Hemorrhage – 25 Years Experience At The Los Angeles County Department Of Medical Examiner

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Introduction: Retropéritoortal hemorrhage is a rare cause of sudden unexpected death. It is frequently unsuspected clinically. There have been case reports on death due to retropéritoortal hemorrhage from various causes, however there is no systematic review on this topic. The incidence is unknown. We have studied deaths due to retropéritoortal hemorrhage in our office over the last 25 years. Various causes, autopsy findings, and clinical features were reviewed. Materials and Methods: We have reviewed cases of deaths due to retropéritoortal hemorrhage from 1998 to 2013 at the Los Angeles County Medical Examiner’s Department. Available medical records were also reviewed. Results: 39 cases of deaths due to retropéritoortal hemorrhage were identified. 25 of those deaths were certified as accidental with the remaining 14 natural. Of the accidental deaths, 14 were females and 11 were males with an age range of 10 days to 85 years old. 6 cases were related to vascular catheterization, 2 were related to spinal surgery, 1 was related to cesarean section and the remaining were due to various procedures or complications due to trauma. Of the natural deaths, 6 were females and 8 were males with an age range of 42 to 84 years old. The most common cause of retropéritoortal hemorrhage was due to abdominal aortic aneurysm rupture (8 cases). Discussion: Retropéritoortal hemorrhage is frequently unsuspected clinically. In only 10 of the 39 cases, hemoglobin and hematocrit tests were ordered. Symptoms reported by patients prior to death included pain, abdominal distention and restlessness. Ruptured abdominal aortic aneurysm was a common cause for retropéritoortal hemorrhage. It was also caused by other diseases. It commonly occurred in elderly individuals with underlying medical conditions such as coagulopathy, arteriosclerotic cardiovascular disease, and certain renal, pancreatic and liver diseases. Cardiac catheterization is a common procedure that resulted in retropéritoortal hemorrhage. Other medical procedures included aortograms, kidney biopsies, and spinal surgery. Rarely, retropéritoortal hemorrhage can result from cesarean section. A review of recent literature identified other causes of retropéritooral hemorrhage including percutaneous coronary artery intervention and trauma.

P22 Sickle Cell Trait, a Benign Disorder? Spectrum of Microscopic Findings in a Case of Hemoglobin S Trait

District Six Medical Examiner's Office, Largo, FL

Sickle cell trait is commonly considered by medical professionals and the general public as a benign disorder since most people affected have minimal symptoms with an average life span. However, sickle cell trait can be associated with complications documented in the medical literature to include ischemic stroke, acute chest pain, rhabdomyolysis, splenic infarction, and renal medullary cancer. Sickle cell trait is also associated with sudden death under particular circumstances including strenuous activity, high altitude, and dehydration. Not addressed in the literature is the pathologic correlation to the clinical findings. We present the case of a 21 year old black male with no reported medical history who had a sudden collapse while playing basketball. The decedent had been playing strenuously during a 45 minute game on a 5 person team. The decedent collapsed from a standing height and had observed seizure-like activity. The decedent then rose to a standing height, staggered, and collapsed again this time remaining unresponsive. When emergency responders arrived he had no respirations, pulse, or cardiac rhythm. Despite resuscitative efforts, he was pronounced dead in the emergency room. The external examination revealed a 160 pound, 71 inch young man with good muscular development reflecting an active lifestyle. The face and extremities had lacerations, abrasions, and contusion consistent with his terminal event. Gross examination revealed a leptomeningeal fibrosis at the base of the brain, a 440 g heart with pale subendocardium, pulmonary congestion, and a 310 g spleen. Microscopic examination showed prominent aggregation of sickled red blood cells in the lungs and spleen. Remarkable for his age, chronic ischemic change was readily appreciated with perivascular infaracts and hemosiderin-laden macrophages in the brain; infarcts of the cerebral cortex; and large regions of fibrosis in the heart. Hemoglobin electrophoresis revealed Hgb A1 – 60%, Hgb S – 36.7 %, Hgb A2 – 3.3 %, Hgb F – 0.8% and genomic sequencing identified a heterozygous beta 6 mutation of GAG to GTG. No beta thalassemia mutations were identified. Vitreous electrolytes were consistent with a dehydration pattern. The cause of death was complications of sickle cell trait with a contributory condition of fluid and electrolyte imbalance. This case illustrates the need for further studies on the true nature of sickle cell trait, the delineation of which population of affected individuals is at increased risk for complications, and how to counsel such individuals in order to mitigate that risk.

P23 Utility of Postmortem Cultures in Infant Deaths: Retrospective Study of Infant Deaths Falling Under Medical Examiner Jurisdiction

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According to the Centers for Disease Control and Prevention over 20,000 infants die each year of various causes. In approximately one-third of those deaths, an autopsy will be performed. In most jurisdictions, the medical examiner will investigate the sudden unexpected death of an infant. In addition to an autopsy ancillary testing such as radiology and histology are commonly performed and advocated as a matter of routine practice in the evaluation of these cases. Microbiologic studies are requested at the discretion of the medical examiner; however it is common practice in some offices to perform microbiology tests in most infant deaths routinely. This study was undertaken to examine the utility of microbiology in infant deaths in the setting of forensic pathology and forensic medicine. A public records request was submitted to all Florida district medical examiners regarding infant deaths less than 1 year old during a calendar year, exclusive of homicides. Autopsy reports, investigative reports, and the results of all ancillary testing performed were requested. Records were received for 276 infant deaths which fulfilled the basic criteria for this study; of which 190 (69%) had some form of verifiable microbiologic study performed on tissue or fluid from various sites with 136 (72%) of the those autopsies having at least one positive microbiology test. 622 total cultures were performed with 275 (44%) yielding a positive result for at least one microorganism. The majority of the testing was for bacterial organisms. The most common organisms identified as a single growth, which occurred in approximately 1/3 of the tests, were coagulase negative Staphylococcus, Klebsiella pneumoniae, and viridans Streptococcus. Review of the histology revealed 49 cases with inflammation of which 17 cases implicating an inflammatory condition in the cause or contributory cause of death. Only 5 cases named a specific organism in the cause of death. Four of these cases had a preceding illness or hospitalization while the fifth had aspiration pneumonia due to Staphylococcus species. As with any laboratory test, useful results are more likely to be obtained if performed in the background of the correct clinical setting. The more prudent use of resources supported by this study is the performance of microbiology in cases with a history of recent illness or symptoms, physical signs suggesting an inflammatory contribution, and directed culture from a
grossly abnormal lesion. In these cases, microbiology findings are more likely to be significant to cause of death.

**P24** Fulminant Hepatic Failure Due to Dietary Supplementation for Weight Loss and Muscle Building with Complications Resulting in Death

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OxyElite Pro is a dietary supplement marketed for weight loss and muscle building. It was recalled in October 2013 after the FDA was alerted to multiple cases of fulminant hepatic failure after the manufacturer modified the formulation to contain aegeline. As of February 2014, the FDA linked 97 cases resulting in 47 hospitalizations, 3 liver transplantations, and 1 death. We present a case of an additional death related to use of this supplement. The patient presented with jaundice, light colored stools, and dark urine. He had a history of OxyElite Pro supplement consumption and moderate alcohol use. Liver biopsy showed panlobular necrosis. Laboratory values at presentation included: total bilirubin of 33mg/dL (normal: 0.2-1.3 mg/dL), AST of 1107 units/L (normal: 15-46 units/L), and ALT of 1753 units/L (normal: 13-69 units/L). Hepatitis serologies, CMV, EBV, HIV, and RPR were negative. The FDA and CDC defined criteria for acute onset hepatitis after use of a non-prescription weight loss or muscle building supplement. The patient met these criteria to implicate OxyElite Pro in producing his fulminant liver failure. The patient underwent liver transplant and histology of his explant showed panlobular necrosis with large foci of complete loss of hepatocytes and bile ductular proliferation with collapsed stroma. Uninvolved liver parenchyma showed minimal fibrosis and mild steatosis, decreasing the likelihood of alcohol as a contributing factor. Post transplant, the patient developed a markedly drug-resistant infection by carbapenem-resistant Enterobacteriaceae. Further complications included an intra-abdominal bleed due to dehiscence of his hepatic arterial anastomosis, multiple exploratory laparotomies with hepatic segmentectomies, wound debridements, and abdominal washouts. Pathology of the allograft segmentectomies showed massive necrosis, hemorrhage, cholestasis, and bacterial colonization. The patient expired and a chest and abdomen autopsy was completed. Grossly, there was an extensive intra-abdominal exudative infection and large abscesses within the liver. Histologic examination showed septic acute liver injury comprised of confluent necrosis, parenchymal collapse, and massive cholestasis. There was microabscess formation within the myocardium and focal sepsis related infarctions of the spleen and pancreas. There was reactive splenomegaly and hypercellular bone marrow with granulocyte hyperplasia. This case highlights the pathology, clinical course, and autopsy findings resulting from carbapenem-resistant Enterobacteriaceae infection after liver transplant due to acute fulminant liver failure after use of OxyElite Pro dietary supplement.

**P25** Detecting Extreme Stable Cumulative ~35-37kD Isoforms of ΔFosB in Postmortem Human Tissue Samples of the Nucleus Accumbens (NAC) of Chronic Drug Addicts


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The stimulation of the ~33kD Mr (molecular mass) transcription factor ΔFosB, a Fos family protein, in the acute phase and then its shift to stable ~35-37kD Mr isoforms due to chronic exposure to several inducements including stress, different drugs and other psychoactive substances leads to a consistent accumulation of highly stable ΔFosB isoforms in the nucleus accumbens (NAC), the reward center of the cerebric. These extraordinary stable ~35-37kD Mr ΔFosB derivatives insistently persist in the brain for several weeks or even longer following cessation of the chronic stimulus - a major fact that seems to be responsible for the development of sustained neuronal plasticity. In case of chronic drug abuse, it ultimately leads to addictive behavior and at the same time represents a source of high relapse rates. With this in mind, we demonstrate for the first time the presence of accumulated ~35-37kD Mr ΔFosB isoforms in the NAC of chronic human drug addicts with pronounced long-term opioid abuse history. The detection was even after a postmortem interval (PMI) of 8.47± 2.61 days possible, albeit under specific conditions including a distinct modification of protein purification. As expected, no ~33kD Mr ΔFosB, the rather unstable isoform, could be detected via immunoblotting. Our results once again emphasize the remarkable high stability of this phosphorylated transcription factor. The data confirm the strong impact of ΔFosB and its downstream transcriptional targets with regard to long-term biological consequences for and potentially fatal adaptations of the brain leading to addictive behavior and high relapse rates in response to chronic opioid abuse.

**P26** Death from Invasive Mucinous Adenocarcinoma of the Lung Masquerading as a Mild Pneumonia

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We report a rare case of sudden death from invasive mucinous adenocarcinoma of lung in a previously healthy 52 year old male who presented to an urgent care clinic with symptoms of mild bronchopneumonia of two days duration. Chest x-ray showed consolidation bilaterally consistent with pneumonia, and he was sent home with antibiotics. The following day he was found dead in bed. At autopsy, the lungs were heavy (2630 g, combined) with diffuse consolidation and abundant tan gray purulent-appearing exudates bilaterally. Punctate approximately 0.1 cm nodules were scattered beneath the visceral pleurae. Remaining organs and tissues were unremarkable. These findings seemed to correlate and support the given history of pneumonia and the preliminary cause of death was determined to be acute pneumonia. Microscopically, however, the lungs showed diffuse invasive mucinous adenocarcinoma with a mixed lepidic, acinar and solid growth pattern with copious mucin production throughout. The tumor cells displayed abundant intraalveolar spread as well as lymphatic and vascular invasion. The tumor was negative for TTF-1 and positive for both CK7 and CK20 immunostains. No pneumonia was present. Invasive mucinous adenocarcinoma, formerly mucinous bronchioloalveolar carcinoma (BAC), represents 2 to 5% of lung carcinomas. This type of adenocarcinoma differs from other non-small carcinomas of the lung clinically by frequently remaining asymptomatic. The process usually produces one or more mass lesions but infrequently may present as pneumonic type consolidation with bilateral diffuse ground glass opacities on CT scan. The alveoli often become diffusely filled by mucin produced by the tumor. Typically, a lepidic growth pattern predominates, however, papillary, micropapillary, acinar, and solid patterns can also be seen. The majority of the lung parenchyma is involved, often resulting in ill defined tumor borders and thus may mimic an infectious pneumonia both clinically and radiographically. This lesion propagates by diffuse aerogenous intrapulmonary spread. Unlike other other types of primary lung adenocarcinoma, immunohistochemical staining is usually positive for both CK7 and CK20 and negative for TTF-1. KRAS mutations are frequently present, while epidermal growth factor receptor (EGFR) mutations are not detected. As seen in the current fatal case, the disease process most frequently remains limited to the lungs despite extensive and diffuse intrapulmonary spread. This case exemplifies how the preliminary determination of the cause of death can be biased secondary to clinical history, and also exemplifies the rarely reported death of a previously healthy man from invasive mucinous adenocarcinoma of the lung masquerading as pneumonia.
P27 Forensic Epidemiology of Child Homicide Deaths By Their Mother's Partner: How Soon After "First Contact" do these Deaths Most Often Occur?
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Objective: The social and environmental circumstances linked to a higher risk of child homicides caused by non-biologic or social fathers is well documented. However studies predicting the period of greatest risk to the child, or a "homicide window," are lacking. The objective of this study is to examine if indeed a homicide window exists. Materials and Methods: The Marion County Coroners Office database was queried for records of child homicides from which victim/mother/perpetrator epidemiologic data, cause of death, and Child Protective Services (CPS) data was recovered. CPS data included history of prior CPS contact, length of time from "first contact" till death and whether legal action was taken against the mother.
"First contact" was defined as the time when the perpetrator first met or moved in with the child. Results: Over a period of 14 years, 79 cases of child homicides were recovered. In 15 cases victim, perpetrator and CPS data were available. Each victim was killed by a single perpetrator. Blunt force trauma to the head was the cause of death in 13 of 15 cases. A. Victims: There were 12 males and 3 females, aged 2 to 61 months with a median of 22 months. Ten (10) were white, 4 black, and 1 Hispanic. B. Perpetrators: They were aged 18 to 34 years with a median age of 28 years. Ten (10) were white, 4 black, and 1 Hispanic. All were charged with or convicted of some form of homicide. C. Mothers: They were aged 16 to 30 years with a median age of 22.5 years. Eleven (11) were white, 2 were black, 1 biracial, and 1 Hispanic. Six mothers were charged with neglect, 1 scheduled to be charged as an accessory, 1 of unknown disposition while seven were not charged. D. CPS data: The time interval from first contact to death ranged from 14 to 240 days with a median of 75 days. Approximately 80% were killed within 90 days of first contact. Just over one third (6/15) of the cases had prior CPS contact. Conclusion: Children killed by a non-biologic or social father are most often dead within 3 months of first contact. CPS personnel called to investigate such deaths should be encouraged to collect additional information regarding the duration of the mothers relationship. The additional data could be sufficiently predictive of a possible "homicide window" during which CPS intervention may be life saving.

P28 Prescription Drug-Related Deaths in Missouri
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The Medical Examiner's Office (MEO) is located on the University of Missouri-Columbia campus and provides death investigation and forensic pathology services for most of Mid-Missouri, much of Southwest Missouri (Greene-County, Springfield area), and several other counties throughout the State. Most of these counties are rural, though the office also serves some larger population centers (Columbia and Springfield). As of the time of this writing, Missouri is the only remaining State that does not have legislation for a statewide prescription drug monitoring program. The Missouri House of Representatives recently passed House Bill 1133 to begin a monitoring program, which has been reported to the Senate, though some doubt it will be passed this year. Some, therefore, currently consider Missouri as the "doctor shopping capital." We reviewed cases from 2010-2012 in our office to gather data on prescription drug-related deaths. During this time, the MEO brought in 1,843 cases. Of these, 44% were accidents, 36% natural deaths, 12% suicides, 5% homicides, 2% undetermined, and <1% were not specified. Remarkably, 19% of cases had a prescription drug-related cause of death, where a prescription drug was listed as a cause or a contributing factor in death. Of these, 94% were accidents, 5% were suicides, and less than 1% were undetermined or natural deaths (drugs listed as a contributing factor). Of the prescription drug-related deaths, opiates are by far the most common drug, accounting for 91% of cases. Benzodiazepines, a distant second, were found in 29% of cases. Prescription-drug related deaths, particularly involving opiates and benzodiazepines remain a sizeable problem in Missouri, as in other states.

P29 What is a Sinus of Valsalva Aneurysm?
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Sinus of Valsalva aneurysm (SVA) rarely occurs; its incidence is 0.14%–0.96% in patients undergoing an open heart surgery. Most SVAs arise from the right sinus of Valsalva. Ruptured SVAs may cause cardiac failure and cardiac tamponade, whereas most unruptured SVAs are asymptomatic. This paper presents three forensic autopsy cases with SVA. They are as follows: Case 1: A 68-year-old thin male was found dead in his room. An autopsy revealed a non-coronal SVA ruptured to the right atrium. Thrombus had occluded the cavity of rupture. Microscopically, the aneurysm was located between the interventricular septum and origin of aorta. Case 2: An 80-year-old male died of a paralytic ileus. An autopsy revealed an unruptured right SVA and there was a fissure at bottom of aneurysm. Although the elastic fibers at fissure were slightly degenerated, there were no defects and degenerations of the elastic lamina at the aneurysm. Case 3: A 30-year-old male collapsed at the station. Although the patient underwent pericardiostomy and received percutaneous cardiopulmonary support, he died the next day. The clinical diagnosis was a cardiac tamponade of the ruptured sinus because of a Valsalva aneurysm. An autopsy revealed giant dilation at the right sinus of Valsalva. Microscopic examination revealed an almost total loss of the medial elastic lamina at the dilated area of the aneurysm. However, there were no degenerations of the elastic fibers within a few centimeters from the annulus. SVAs are thought to result from idiopathic disconnection between the aortic media and annulus fibrosus. This study strengthened this theory. However, Case 2 indicates the possibility of another etiology. The pathological and anatomical differences between SVAs and other types of aortic root dilation, such as annulaoertic ecasia, ascending aortic aneurysm, are discussed in this presentation.

P30 Morphological and Compositional Modifications of Gunshot Residues on Organic Tissues Exposed to High Temperature
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As known, the gunshot residue (GSR) particles left on organic tissues can be found even after being exposed to heat. The experimental study analyzed modifications in shape and composition after the exposure to increasing temperatures. Experimental shotguns were made on bovine scapulae (still bearing soft tissues) from a 10 cm distance with a semi-automatic gun .22 Long Rifle. We used gun cartridges provided with the classic lead, barium and antimony primer. With an oscillating saw we directly placed in the variable pressure scanning electron microscope LEO 1430/VP coupled with energy dispersive X-ray analysis (SEM-EDX) equipped with a microanalysis LINK ISIS and supplied with a program for automatic elements mapping "Cameo™". Samples were examined immediately after the shot and after heat exposure in a stove at different temperatures. Immediately after the shot we observed a great number of GSR. After exposure to 200 °C the GSR particles show no evidence of significant changes in their morphological structure and composition. After exposure to 500 °C GSR particles which are particularly rich in lead show substantial morphological changes and variation in the surface disposition of elements, while GSR particles rich in barium remain essentially unchanged. Microanalytic spectra are superimposable to those of GSR particles examined on bones which have not undergone combustion as regards lead, barium and antimony levels; however, we found calcium and phosphorus probably passed from the bone to the metallic particles due to the heat. After exposure to 1000 °C, GSR particles basically maintain a spheroidal shape, but their surface appears very uneven and irregular. We observed a nearly total disappearance of lead and a simultaneous high increase of calcium, phosphorus and sulphur. Therefore the triple composition of lead, barium and antimony characteristic of GSR particles is missing, while a large number of extraneous elements are present (as...
walking, eating, and even more complex activities such as house-cleaning. Associated with Zolpidem Use as a Contributing Factor in Accidental P32 Amnestic Somnambulism and Nocturnal Eating Disorder


Penn State University Hershey Medical Center, Hershey, PA; Dauphin County Coroner’s Office, Harrisburg, PA.

Zolpidem is a selective GABA receptor modulator used commonly in the treatment of insomnia. It is effective at initiating sleep and has primary effects similar to benzodiazepines. Zolpidem has gained some notoriety in the treatment of insomnia, with a scanning electron microscopy in the analysis of carbonized findings, in consideration of the deep morphological and above all structural changes undergone by gunshot residues after exposure to high temperatures, in order to avoid serious mistakes in interpretation and evaluation. The study also confirms the supremacy of the variable pressure scanning electron microscope in performing quick and non-disruptive analysis on organic and inorganic samples.

P31 DMAA (1,3-dimethylamylamine) Use Resulting in Cardiotoxicity and Death of the World’s Strongest Man


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DMAA (1,3-dimethylamylamine), a compound sold in nutritional supplements, is structurally similar to amphetamines with stimulant properties via the promotion of catecholamine release. It had been marketed under the trade names OxyElite, Jack3d and Flordarene as a “natural stimulant” and has been implicated in multiple deaths. The FDA has since issued a warning concerning the drug, and it has been banned by the US military and the World Anti-Doping Agency. Pentosan polysulfate is a low molecular weight heparin-like drug which is excreted in the urine and used for the treatment of interstitial cystitis. Its anticoagulant and fibrinolytic properties are also used in equine racing as an anti-inflammatory and anti-arthritic providing increased blood flow to joints when given to horses intramuscularly. Pentosan is now used by bodybuilders for the same osteoarthritits or tendonitis relief purposes with intramuscular or intra-articular injection preparations. We present a case of a 31 year old, 400 pound man who was competing on the World’s Strongest Man circuit and owned a cross-fit gym. Prior to competition, a routine physical exam revealed an asymptomatic, enlarged heart. He was witnessed to suddenly collapse at home and was taken to the Emergency Department in cardiac arrest where he was pronounced deceased. Multiple vials presented to EMS were turned over to the investigating deputy coroner. Seven vials labeled with “pentosan”, “prop”, or “For Animal Treatment Only” contained substances the decedent would inject into his buttocks per his wife. A full post-mortem examination revealed cardiomegaly with a heart weight of 844 grams (normal 290-500 grams), biventricular dilatation, symmetrical hypertrophy (left ventricle measures 2.4 cm; right ventricle measures 1.2 cm), and biatrial enlargement without coronary atherosclerosis. Congestive changes were noted within the lungs and liver. Three injection sites of the left buttocks were examined and showed hemorrhage. Pentosan polysulfate currently has no method of detection. DMAA may trigger a positive amphetamine screen and then be identified via confirmatory toxicology testing, pentosan polysulfate currently has no method of detection. Pentosan polysulfate is a low molecular weight heparin-like drug which is excreted in the urine and used for the treatment of interstitial cystitis. Its anticoagulant and fibrinolytic properties are also used in equine racing as an anti-inflammatory and anti-arthritic providing increased blood flow to joints when given to horses intramuscularly. Pentosan is now used by bodybuilders for the same osteoarthritits or tendonitis relief purposes with intramuscular or intra-articular injection preparations. We present a case of a 31 year old, 400 pound man who was competing on the World’s Strongest Man circuit and owned a cross-fit gym. Prior to competition, a routine physical exam revealed an asymptomatic, enlarged heart. He was witnessed to suddenly collapse at home and was taken to the Emergency Department in cardiac arrest where he was pronounced deceased. Multiple vials presented to EMS were turned over to the investigating deputy coroner. Seven vials labeled with “pentosan”, “prop”, or “For Animal Treatment Only” contained substances the decedent would inject into his buttocks per his wife. A full post-mortem examination revealed cardiomegaly with a heart weight of 844 grams (normal 290-500 grams), biventricular dilatation, symmetrical hypertrophy (left ventricle measures 2.4 cm; right ventricle measures 1.2 cm), and biatrial enlargement without coronary atherosclerosis. Congestive changes were noted within the lungs and liver. Three injection sites of the left buttocks were examined and showed hemorrhage. Pentosan polysulfate currently has no method of detection. DMAA may trigger a positive amphetamine screen and then be identified via confirmatory toxicology testing, pentosan polysulfate currently has no method of detection. DMAA is known to have sympathomimetic and vasoconstrictive properties with cardiovasicular effects including myocardial infarction, arrhythmia, increased arterial blood pressure, and tachycardia. After forensic cause of death, the cause of death was deemed to be complications of cardiomyopathy.

P32 Anomestic Somnambulism and Nocturnal Eating Disorder Associated with Zolpidem Use as a Contributing Factor in Accidental Death

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Zolpidem is a selective GABA receptor modulator used commonly in the treatment of insomnia. It is effective at initiating sleep and has primary effects similar to benzodiazepines. Zolpidem has gained some notoriety for its association with rare, but unusual side effects of compulsive nocturnal activity with anterograde amnesia. Review of the literature documents zolpidem associated nocturnal activities, which include walking, eating, and even more complex activities such as house-cleaning or driving. During these events, the sleeper may be able to converse and generally appear normal to an observer, but has limited, if any, recollection of the event. Case studies have demonstrated an association of this behavior to zolpidem, with initiation or cessation of this behavior coinciding with initiation or cessation of Zolpidem use, respectively. Other literature reviewing zolpidem-related deaths, hospital admissions, and falls found a high rate of concurrent alcohol and / or other drug use than when using zolpidem alone. We present a case of a 67-year-old woman with a history of somnambulism and amnestic eating during the night after using Zolpidem. She was found outside in the morning, deceased on the pavement below her opened 2nd story bedroom window. Hand marks were visible in the dust on the 2nd story window sill. Autopsy revealed nonocclusive food substances in her airways and head and neck trauma, consistent with a fall from the 2nd story window. Toxicological analysis of peripheral blood revealed zolpidem 69 ng/mL, pseudoephedrine 150 ng/mL, citalopram/escitalopram 400 ng/mL and caffeine. Blood and vitreous ethanol concentrations were 194 mg/dL and 160 mg/dL, respectively. Given the decedent’s nocturnal activity history associated with Zolpidem, the possibility of zolpidem combined with ethanol use may be considered contributory to her death.

P33 Transorbital Brain Sampling for Toxicologic Analysis in Decomposed Bodies

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Obtaining biological samples for toxicology testing from decomposed bodies may sometimes be difficult without performing an autopsy or making incisions in the body. Many of these decedents may not otherwise need an autopsy. In other cases, autopsies may be precluded for a variety of possible reasons such as legally protected objections to autopsy for example, depending on jurisdiction. In non-autopsied decomposed cases needing toxicology testing, samples are most commonly obtained using trocar or biopsy type needles to access body cavities or organs. Typically, putrefactive fluid from the chest, blood from the heart or urine from the bladder may be obtained using these implements. In many cases, however, inadequate or no such samples are able to be retrieved despite multiple attempts. We present a technique for obtaining putrefied brain samples via a transorbital approach using the same basic equipment. Liquefaction of the brain as a function of putrefaction allows this technique to be utilized successfully with relative ease. The transorbital brain sampling technique provides an ideal specimen for toxicologic testing either alone or in conjunction with testing of other biological samples. Significant differences have been seen between drug levels in brain versus other postmortem samples such as putrefactive chest fluid, for example, in decomposed cases. This additional tissue sampling allows for more meaningful interpretation of toxicology results in determining cause and manner of death. This simple technique provides a reliable option to the forensic pathologist for obtaining brain samples for toxicologic testing in decomposed bodies without performing an autopsy or making incisions in the body.

P34 An Unusual Complication of a Shotgun Wound

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Aberdeen, United Kingdom (Great Britain); Salford Royal Hospital NHS Foundation Trust, Salford, United Kingdom (Great Britain).

A 34 year old male was found collapsed in the street having been shot in the face with a shotgun from a range of between 7 and 20 m. He was taken to the Emergency Department in an agitated state with multiple pellet wounds to the head, face, neck and chest. Once in the ED he was sedated and ventilated and a subsequent CT scan showed bilateral ocular globe rupture, intracerebral injuries and suspicion of carotid artery injury. Pellets were seen lodged in the brain and skull base. In the hours that followed the deceased developed a cerebral infarct and with increasing intracranial pressure, further treatment was considered futile. The postmortem examination identified pellet defects clustered over the head, neck and upper chest areas. The distribution of defects and findings from...
noted in the right orbital plate, with associated damage to the dura. 

Detailed neuropathological examination confirmed the presence of direct shotgun pellet injury to the brain with associated swelling and haemorrhage. A shotgun pellet was found lodged within the lumen of the right middle cerebral artery, with associated thrombus, causing obstruction ('shotgun pellet embolism') of the artery resulting in a large territorial right hemispheric infarct. The pellet was considered to have accessed the right middle cerebral artery via the damaged right internal carotid artery in the base of the skull as a result of the facial injuries. The secondary thrombosis associated with the pellet had caused expansion of the initial stroke and further oedema. Thrombus was also identified in the pulmonary artery branches supplying the right lower lobe possibly due to pellet embolism. No pre-existing natural disease was identified which would have made a significant contribution to death. Toxicology detected medications appropriate for a sedated patient in intensive care. Bullet embolisation is an uncommon but recognised complication of gunshot injuries; however, embolisation to the brain is unusual. Although the pellets had resulted in direct parenchymal damage it was the embolised pellet causing occlusion of the right middle cerebral artery and subsequent secondary thrombosis that had resulted in the large hemispheric infarct; an element which had not been appreciated clinically.

M. E. Melo, J. G. Andrade
Instituto de Medicina Legal Leonildo Ribeiro, Goiania, Brazil.

Cases of survival after intra-cardiac injuries among victims of gunshot wound to the heart are rare, and only a few cases have been reported in the scientific literature. Here we report an additional case of patient survival for eleven days after a gunshot wound to the heart. The deceased had a total of five gunshot wound entries throughout the body, with a particular apparently fatal one right in the sternal region. A chest x-ray showed a radiopaque projectile on the cardiac silhouette. As we opened the pericardial cavity, we noticed an entrance hole on the right atrium and found the missile loose close to the apex, without evidence of major bleeding. The cause of death was pneumonia secondary to infection of the wounds. Therefore, this unusual case attests to the possibility of a bullet in the heart not being the direct cause of death and reinforces the possibility of survival of these patients after heart injury.

P36  Sudden Unexpected Death of an Asymptomatic 23 Year Old Male with Primary Cardiac Ewing Sarcoma/PNET and Multifocal Metastases
S. Lenfest, D. Jason, R. Mott, M. Pettenati
Wake Forest Baptist Health, Winston Salem, NC.

Primary cardiac tumors are rare with a reported incidence of 0.001-0.28%. Wake Forest Baptist Medical Center's experience with primary cardiac tumors is reviewed. A 23 year-old male patient suffering from various musculoskeletal complaints presented with a cardiovascular condition on routine echocardiogram. The patient had no prior symptoms or significant cardiac history. The initial diagnosis was a primary cardiac Ewing sarcoma/PNET. The tumor directly invaded and occluded the distal portion of the obtuse marginal artery. Metastatic disease involved 2 hilar lymph nodes, both lungs, and the right adrenal gland. Histopathological examination of the lesions revealed loosely cohesive, infiltrating nests of small, round, hyperchromatic neoplastic cells with readily identifiable mitotic figures. Immunohistochemistry demonstrated patchy positive reaction with cytokeratin. Desmin, myogenin, synaptophysin, chromogranin, and S100 were all negative. Fluorescence in situ hybridization (FISH) studies were performed for several gene rearrangements including specific probes for the FOX01 gene and EWSR1 gene region. The FOX01 (13q14) gene, most commonly associated with rhabdomyosarcoma, was not disrupted. The EWSR1 gene region of 22q12 revealed that 72% of the examined cells had a split of the EWSR1 gene. Additional FISH studies were performed looking for specific translocations involving the FLI1 (11q23) and ERG (21q22) genes. These probes did not reveal a significant number of fusion signals. However, the EWSR1 gene region still revealed 76% and 56% of the cells with a split of the EWSR1 gene. The most likely interpretation is that a chromosome rearrangement exists involving EWSR1, but the specific cytogenetic abnormality was not identified. The combined histopathologic, immunohistochemical, and cytogenetic findings make a final diagnosis of primary cardiac Ewing sarcoma/PNET with metastases most likely.

P37  Arthrogryposis in an Infant Autopsy: A Cue to Pursue a Further Explanation
T. O'Neill, S. E. Presnell, M. Caplan
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Arthrogryposis, defined as multiple congenital joint contractures, may result when there is lack of fetal movement in utero (fetal akinesia). Affected infants will exhibit extension or flexion contractures of the knees and elbows, dislocated hips, and clubfoot. Arthrogryposis is not a disease in itself, but, rather, a clinical finding that should prompt an investigation for an underlying cause. Of the myriad etiologies, some of the more common classifications include external deformations, skeletal, connective tissue or skin diseases, and acquired myopathic and neuropathic diseases. We present a case of a 7-day-old infant (born at 33 1/7 weeks' gestation) with arthrogryposis, muscle atrophy, club feet, and a high arched palate. Skeletal muscle biopsies were obtained at autopsy and revealed focal absence of myofibrils and presence of cytoplasmic bodies within some of the muscle fibers by electron microscopy. Whole genome sequencing testing revealed a homozygous pathogenic mutation in the gene KLHL40, which, in combination with the physical findings, led to the diagnosis of a nemaline myopathy. The importance of postmortem muscle biopsy in infants presenting with arthrogryposis and muscle atrophy is highlighted in the present case as it may assist in establishing the diagnosis of rare genetic congenital myopathies, such as nemaline myopathy, and aid in genetic counseling for families. Furthermore, awareness of the pathophysiological sequence involving arthrogryposis is potentially important to forensic pathologists who may encounter such a case in the setting of an unexplained infant, neonatal, or fetal death.

P38  Suicide in Individuals Less Than 18 Years Old - A Retrospective Study
L. M. Tomos, C. A. Schandl
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Suicide is one of the leading causes of death for adolescents nationwide, generally ranking third as a cause of mortality in pediatric patients aged 10-18 years old. Accidents are the leading cause of death in all age groups, followed by natural disease in the 10-14 age range and homicide in the 15-18 age range. This retrospective review spans all forensic cases referred by surrounding county coroner offices to the Medical and Forensic Autopsy Section of the Department of Pathology and Laboratory Medicine at the Medical University of South Carolina from January 1, 1998 to December 31, 2013, a 15 year period. All cases of individuals who are less than 18 years of age and whose manner of death certification was ruled a suicide will be included in this study. This report updates the previously gathered and published data spanning January 1998 to January 1998, when the Charleston County Medical Examiner's Office was located at the Medical University of South Carolina Forensic Pathology Section, and is intended to complete a 25 year retrospective review of suicides in individuals less than 18 years of age in eastern South Carolina. Initial data shows that firearm use and hanging are the two most common methods used, and the vast majority of pediatric suicides are in the 15-17 age range, consistent with the national data. The discussion will include suicide methods and demographic information and will be analyzed for trends over the past 25 years. Such trends may be useful to
clinicians and others who provide care to adolescents at risk. In addition, these findings may allow better understanding and improved investigation of suicide cases in adolescence, where the investigation may be complicated by social stigma and lack of forthcoming information from family members or other caretakers. Suicide is a public health problem that requires an evidenced-based approach to prevention, and we aspire to help define the populations and risk factors so that early, effective prevention can be implemented.

P39 Patterns of Drug Use in a Suicide Population Including Assessment of Common Therapeutic, Abused, and Novel Psychoactive Drugs
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Given the prevalence of drugs in various death investigations populations and limited budgets for testing, a structured decision matrix for when to apply resources for toxicological testing is critical. Practices vary widely with respect to drug testing in traumatic deaths, motor vehicle fatalities, homicides, fire deaths and suicides. In this study a series of suicide cases were comprehensively tested for drugs, including the use of emerging designer drugs i.e. novel psychoactive substances (NPS). Blood samples were collected between 2012 and 2013 from 145 sequential death investigation cases determined by the Marion County Coroner’s office, Indiana, to have been suicidal deaths. The subjects ranged from 13 to 95 years old (mean= 44.8 and median=44). Four of the subjects were minors under the age of 18 with the youngest being 13 years old, 80.7% were males. Blood samples were tested using headspace gas chromatography (HS-GC) for alcohol content, and liquid chromatography-time-of-flight mass spectrometry (LC-TOF) for therapeutic and abused drugs, and an NPS screening panel for emerging and novel recreational stimulants and hallucinogens. The LCTOF method tested for 305 commonly encountered drugs and their metabolites. The scope did not include tetrahydrocannabinol (THC) or the synthetic cannabinoids. The results were evaluated for patterns and relative frequencies of drug use within different causes of death, and according to race, sex, and age. GSW was the most common cause of death with 71 cases (49%), 59.2% of which contained drugs. Within the GSW category, the most frequently encountered drugs were oxycodone (n=7), hydrocodone (n=7), and diazepam (n=6). Asphyxial deaths were the second most common with a total of 36 cases (25%), with 58.3% containing drugs. Within the deaths by asphyxia, the most frequently encountered drugs were amphetamine (n=5) and bupropion metabolites (n=3). Drug interaction/OD/toxic chemicals made up 24 cases (16.6%), with 95.8% of the cases containing drugs, the other two cases involved the ingestion of toxic chemicals. The most prevalent drugs in this category included alprazolam (n=6), dhydrocodeine/ hydrocodol (n=6), and hydrocodone (n=6). The only NPS confirmed in this data set was DMAA, a nutritional supplement with psychoactive properties. The study showed that there is a high prevalence of drug use within suicide cases, which although they may not have been the cause of death, particularly in traumatic deaths, their contribution to the decedent state of mind and motivation are important determinants in the circumstances of death.

P40 The Effect of Body Mass Index on Effectiveness for TASER Conducted Electrical Weapons
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Introduction: The mechanism by which TASER® conducted electrical weapons (CEW) operate is through the electrical stimulation of motor neuron axonal projections to skeletal muscles. Motor neurons within sufficiently strong electric fields established by the wire-tethered probes are stimulated at a sub-threshold rate leading to involuntarily fused muscle contractions and incapacitation of the activated muscle groups. The TASER X26 has an arcing voltage of 50,000 V in order to overcome the resistance of air, clothing, skin, and subcutaneous fat. Maximally, the arcing distance is 40 mm, but can be as low as 23 mm depending on wire contact and crossing. Anecdotally, a decreased effectiveness of the CEWs for some obese subjects has been reported. In this meta-analysis, we combine data from several studies using the X26 and utilizing a task-driven, highly motivated human subject model to preliminarily examine effects of body mass index and percent body fat on CEW effectiveness. Methods: Data have been pooled from three studies previously carried out in our model. In these studies, subjects had probes placed into the skin in either the front or back at variable spreads and received two TASER X26 exposures while attempting to advance on a dummy with a training knife. Subjects were “motivated” by the instruction that the exposure would terminate when they got to the dummy. Overall 77 valid X26 exposures are included in this data set. All subjects reported were males. Results: Across all exposures, subjects averaged 227.6 lbs. (ranging from 116 to 305 lbs.), height of 70.6 inches (65 to 77 inches), a BMI of 32.2 (18.8 to 43.9), and percent body fat of 31.0 (8.7 to 43.3). For spreads of 4, 6, 9, and 12 inches, no clear effect of BMI or percent body fat could be seen for back exposures. For front exposures with intermediate spreads of 6 and 9 inches, a trend is apparent where high BMI or percent body fat correlates with some decrease in both ipsilateral (to the probes) and contralateral capture of the lower extremities. Large spreads of 12 inches or more tended to yield high capture effectiveness for both lower extremities regardless of BMI or percent body fat. Very small spreads of 4 inches showed decreased capture effectiveness independent of body type. Conclusions: While this meta-analysis is limited, an effect of high BMI and percent body fat in subjects appears to exist for intermediate X26 probe spreads with frontal exposures.

P41 Recreational Use of Exploding Targets
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Exploding targets enhance firearm practice by detonating upon high velocity impact. They are marketed for their ability to indicate when a target has been hit at long-range. The Internet has popularized the recreational use of these targets outside of the scope of their intended design. A popular misuse of exploding targets uses the concussive force of the explosion to accelerate objects into the air under the directional guidance of a cylinder. We present a case of a 47-year-old man who was a bystander during the recreational use of exploding targets. A .300 Winchester Magnum rifle was used to detonate an exploding target, on top of which was placed a fire extinguisher inside an aluminum pipe. Despite standing behind the shooter, the decedent was struck in the abdomen by a fragment of the aluminum cylinder and rapidly collapsed. Emergency efforts were begun immediately at the scene and despite resuscitative efforts he was pronounced dead at a local Emergency Department. Scene investigation revealed several pieces of malformed aluminum pipe scattered throughout the blast radius and an intact fire extinguisher. External examination revealed an entry wound of the left side of the mid-abdomen. Postmortem x-ray examination failed to reveal any evidence of shrapnel or other retained projectile. The autopsy findings included a hemoperitoneum due to transection of the right common iliac artery and inferior vena cava as well as multiple bowel injuries. An 8.8 cm, 10.6 gram irregularly-shaped fragment of aluminum was recovered from within the abdomen. This case illustrates a dangerous misuse of exploding targets that has been popularized in the media. The case also exemplifies a potential pitfall of a negative radiograph, despite the presence of metal shrapnel, because of the radiolucency of aluminum.

P42 Venous Barium Intravasation and Embolism Following Barium Enema: A Rare Complication with a High Mortality
B. E. Frost1, G. D. Dukes1, V. Graham2, G. J. Davis1
1University of Kentucky College of Medicine, Lexington, KY; 2Office of the Associate Chief Medical Examiner, Commonwealth of Kentucky, Frankfort, KY.

We report a case of 69 year old female with barium emboli to multiple organs secondary to barium venous intravasation during barium enema procedure. Two weeks prior the patient received a colonoscopy for mild
anemia, abdominal pain and distention. At that time she was noted to have diverticuli in the sigmoid colon and a loss of submucosal vasculature. That procedure was stopped prematurely due to poor bowel prep, and a barium enema was recommended. After balloon placement and upon instillation of barium, the perirectal vessels were observed to fill with barium on fluoroscopic imaging, and the patient coded and died suddenly shortly thereafter. Post-mortem radiographic imaging showed accentuation of perirectal vessels. Gross examination of the body revealed a pink milky substance (barium) in the rectum, peri-rectal vasculature, left common iliac vein, right atrium, bilateral pulmonary arteries and renal vasculature. The rectal mucosa was edematous. Microscopic findings showed embol of refractile brown material in the heart, lungs, and kidneys in addition to the rectal submucosa, small perirectal vessels and perirectal muscle and fat. The authors will discuss the possible mechanisms and incidence of this rare entity.

P43  Forensic Toxicology Training for Forensic Pathologists – Beyond the Numbers
G. A. Vincent¹, A. O. Fisher-Hubbard², M. F. Rieders², B. K. Logan³, R. A. Middleberg³
¹City of New York Office of Chief Medical Examiner, Brooklyn, NY; ²The University of Michigan Health System, Ann Arbor, MI; ³NMIS Labs, Willow Grove, PA.

It is estimated that toxicology plays a role in over 20% of deaths unrelated to natural causes. Drugs are estimated to be found in approximately 50% of performed forensic autopsies. Given the role of toxicology in forensic pathology, understanding by forensic pathologists of the effects of pre-analytical and analytical variables on reported results is critical for interpretive purposes. While specific knowledge regarding forensic toxicology is available to the forensic pathologist via on-the-job training, professional meetings, journal articles, and other non-formal means, none of these methods involve classic didactic processes. In order to fill this latter void, a discipline-specific training program in forensic toxicology was developed and initiated for forensic pathology fellows and residents entering a forensic pathology fellowship. The program is minimally one week in length, but up to one month, with a core curriculum of analytical and interpretive toxicological lectures and seminars common to both programs, and more extensive assignments to different stations in the laboratory, a research paper, and toxicologist job shadowing in the extended program. Training in all aspects of toxicological testing occurs through laboratory rotations and one-on-one interactions with board-certified toxicologists. Each physician begins their orientation in specimen processing, gaining an appreciation for problems with specimen submissions, e.g., leakage, clotting, labeling, etc. Training in the analytical processes begins with screening methods (ELISA, immunoassay, etc.) followed by more advanced instrumental techniques, including HPLC, GC, GC-MS, ICP-MS, LC-MS/MS, and LC-TOF. During each rotation, participants learn the purpose of each technique, its capabilities and limitations, what information it provides and sample preparation techniques. Lastly, participants spend one-on-one time with board certified forensic toxicologists observing the case assessment and review process, assessment of analytical data and synthesis of case history, data and findings into useful, case-specific conclusions. The program is designed to be interactive with the pathologist also providing useful information to the analysts and toxicologists, thus promoting an environment of mutual learning. Feedback on the value of the program is assessed via questionnaire to the participant after a period of return to normal practice. This feedback can be used to strengthen the program for future attendees and to understand how such training benefits the attendee. The program has been successful in better orienting attendees to the critical importance of forensic toxicology in death investigation, and giving them confidence in ordering testing and interpreting toxicology reports.

P44  Natural Progression of Cervical Carcinoma: A Rare Cause of Death
G. D. Dukes, B. E. Frost, C. M. Roll, G. J. Davis
University of Kentucky, Lexington, KY.

Death resulting from the natural progression of cervical cancer is seldom identified at autopsy. The case described in this report is that of a well-nourished 38-year-old white woman with pulmonary emboli from deep venous thrombosis of the pelvic veins as a complication of widely metastatic poorly differentiated carcinoma of the uterine cervix. The patient collapsed at her home and underwent resuscitation efforts by emergency personnel until she arrived at the Emergency Department where she was found to be pulseless and pronounced dead. Coroner investigation revealed a four-month history of bloody vaginal discharge, unintentional 40 pound weight loss over a six month period, anxiety, depression, bilateral lower extremity pain and swelling, and the absence of medical care for 13 years. Postmortem examination revealed an infiltrating neoplasm in the uterus, vagina, left ovary, and lower uterine wall with metastatic nodules in the lungs, liver, and pelvic lymph nodes. While cervical cancer is the third most common malignancy in women worldwide, it is not even among the top ten causes of cancer-related deaths in developed countries. The authors will discuss the epidemiology and unusual presentation of this now-rare cause of death.

P45  Unusual Diastatic Separation of the Sagittal Sinus of a Stillbirth: Avoiding Potential Confusion with Inflicted Head Trauma
K. Obenson
Saint John Regional Hospital, Saint John, Canada.

Introduction: Skull fractures due to blunt force trauma are a common cause of death in infants. In stillbirths such fractures are typically associated with assisted deliveries. The case presented involves a fetus for which there was no evidence of foul play although there were initial concerns of extraabdominal abusive trauma. Clinical information is as follows. The mother presented at 40 weeks amenorrhea with a history of not feeling fetal movements for 24 hours. Her last antenatal visit 72 hours prior revealed a healthy fetus. She was obese (BMI of 40) and smoked. There were no clotting factor anomalies and serologic screens were negative. Ultrasound performed on admission revealed no cardiac activity or extremity movement. Labour was induced with oxytocin gel after rupture of membranes and delivery occurred spontaneously and vaginally 11 hours later. No instruments were employed. The fetus weighed 3.8 kg and was moderately macerated. There was no history of cord round the neck or other placental anomaly. The mother denied any history of fall or trauma. Autopsy was performed 30 hours later and was significant for marked galea and subgaleal scalp hematoma with slight occipital molding. Skull xrays did not show any fracture lines. There was wide diastatic separation of the sagittal sinus more significant posteriorly. The brain, which weighed 366 gms was appropriately developed for age and covered with congested meninges. No epidual, subdural or subarachnoid hemorrhages were seen. Cut sections of the brain were unremarkable. Histologic examination of the eyes showed congested retinae. It was concluded that the hemorrhages and separation were due to maceration. Conclusion: Skull sutural distortions may mimic diastatic fractures in a new born even without an instrument delivery. While this case was resolved based on complete clinical information, radiologic and autopsy study, a similar situation in an abandoned infant could present significant difficulties in the determination of the cause and manner of death.

P46  An Autopsy Case Report of First Documented Fatal Methoxetamine Intoxication in the US
Y. D. Vo, S. Schreiber, R. Schneider, W. Tomak, E. K. Hansen
Milwaukee County Medical Examiners Office, Milwaukee, WI.

Background: Recent emergence of synthetic drugs of abuse have created a public health challenge as health care providers struggle to identify, recognize and treat the intoxication of these compounds. One such compound, methoxetamine, 2-(3-methoxyphenyl)-(2-ethylamino-cyclohexanone), is a synthetic ketamine analog marketed by online distributors as a legal alternative to ketamine. With effects such as a euphoria, perceptual distortion, and hallucination, methoxetamine has
been widely abused in Europe. Methoxetamine use has emerged in the US and is gaining in popularity. Here, we present a case of fatal methoxetamine intoxication, which to our knowledge has not been previously documented in the US. Design: We report a case of a 23-year-old male with history of polysubstance abuse found unresponsive following a house party. Interviews with fellow partygoers yielded reports of possible ketamine usage. An unrestricted forensic autopsy was performed using the Virchow approach. Formalin-fixed tissue samples were sent for histologic processing. Postmortem subclavian blood, iliac blood, vitreous fluid, and urine were obtained for routine toxicological analysis. Results: External and internal examinations at autopsy revealed cardiomegaly and pulmonary edema. Blood ethanol and drug screen identified ethanol at a level of 0.11 gm% W/V, and delta-9-carboxy tetrahydrocannabinol at a level of 65 nanograms per milliliter. Drug screen by basic extraction and gas chromatography-mass spectrometry identified a peak with fragmentation pattern tentatively identified as methoxetamine, which was confirmed and quantified at a concentration of 3.5 milligrams per liter. Conclusion: In this autopsy case, the perimortem narrative and high postmortem iliac blood concentration of methoxetamine indicate fatal accidental acute methoxetamine intoxication with contribution of ethanol. As its use becomes more prevalent in the US due to unregulated distribution, awareness and knowledge of methoxetamine is important. At present, there is a lack of information in the scientific literature and formal studies are necessary to further characterize the effects and toxicity of methoxetamine.

P47 Accessory Cranial Suture Mistaken for Head Trauma in a 30 Day Old Infant
W. C. Rodriguez, P. A. Aronica, D. R. Fowler
Office of the Chief Medical Examiner State of Maryland, Baltimore, MD.
The case to presented is that of a thirty day old Negroid female whose preliminary findings at autopsy indicated trauma to the occiput of the head resulting in the presence of pooled blood in both the fontal and occipital cavities of the skull in addition to what appeared to be a focal point of subdural hemorrhage overlying a horizontal linear fracture. The notation of the cranial fracture which elevated the case immediately as suspect for child abuse was made by the reviewing radiologist who examined the radiographs and CT scans just prior to autopsy. Upon opening of the skull the reported cranial defect was clearly observed in addition to the previously noted hemorrhage and pooling of blood. Consultation was sought from the author to examine the skull. Upon close inspection the author noted that defect was actually that of an accessory suture of the occipital bone. In past radiological literature there have been reports documenting the mis-identification of accessory cranial sutures as linear fractures in young infants. Accessory sutures/sutures present at birth typically obliterate via ossification by the first or second year of life, however in a small percentage of individuals they can exist up into adulthood. Accessory sutures can be present on the parietals as well as the occipital bone. The occipital bone exhibits the greatest propensity for the presence of an accessory suture as a result of its six ossification centers which includes remnant of the midline occipital fissure, two interparietal ossification centers, a single supraccoxial center and two exoccipital centers. Radiographic characteristics of a linear skull fracture reveal a sharp well defined lucency along the fracture site in addition to mild soft tissue swelling. In contrast, an accessory suture exhibits a sclerotic border with irregular interdigitations. If carefully prepared the removal of adhering tissues from the suspected cranial site can reveal (under magnification) he micro patterning associated with suture interlacing. Neuropathological examination revealed the presence of a chronic subdural hygroma, old cavitary lesions and fresher unilateral retinal hemorrhage. Although the birth of this child was reported as absent of complications, it appears that the injuries noted may have possibly been the result of old birth trauma. The presence of an accessory suture in a young infant may be a rare occurrence; however knowledge of their presence, respective locations, and their morphological characteristics both radiologically and visually can prevent their misinterpretation as fracture trauma.
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