

# Text of Presentations Given at the National Institute of Justice Summit on Forensic Science Services

May 18-19, 2004 • Washington, DC

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# National Institute of Justice Forensic Summit

## National Association of Medical Examiners

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### U. S. Deaths

- 2,800,000 deaths / year
- 15-20% fall under medicolegal jurisdiction

### Medical Examiner Cases

- Violent Death
  - Physical
  - Chemical
  - Environment
- Natural Death
  - Sudden, unexpected
  - Unattended
  - Unnatural conditions
- Community Welfare and miscellaneous
  - Contagious diseases
  - Work-related
  - Custodial
  - Cremation
  - Iatrogenic

### Death Investigation

## Examine

Circumstances  
Scene  
Body  
Ancillary tests

Correlate

Interpret

## Medicolegal Issues

- Cause of Death
- Mechanism of Death
- Manner of Death
- Identification
- Activity and survival
- Time
  - Death
  - Injury
- Injury
  - Type
  - Effects
  - Sequence

## U.S. Medicolegal Systems

- Medical Examiner
  - Appointed
  - Physician
    - Pathologist
    - Forensic Pathologist
- Coroner
  - Elected
  - Adult
    - +/- Medical training
    - +/- Physician

## Death Investigation Systems by State

Medicolegal System	States
State Medical Examiners, No Coroners [purple]	Connecticut, Delaware, District of Columbia, Iowa, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New Mexico, Oklahoma, Oregon, Vermont, Rhode Island, Tennessee, Utah, Virginia, West Virginia
District Medical Examiners, No Coroners [Purple stripe]	Florida
County Medical Examiners, No Coroners [Purple dots]	Arizona, Michigan
State Medical Examiner, Coroners In some counties [Green v stripes]	Georgia, North Carolina
Medical Examiners in some counties, Coroners in others [green]	Alabama, California, Illinois, Minnesota, Missouri, New York, Ohio, Pennsylvania, South Carolina, Texas, Washington, Wisconsin
State Medical Examiner, Coroners in every county [Green h stripes]	Arkansas, Kentucky, Mississippi, Montana
Coroners in every county or district [yellow]	Colorado, Idaho, Indiana, Kansas, Louisiana, Nebraska, Nevada, North Dakota, South Dakota, Wyoming,

### Medical Examiner Office Components

- Medical
- Investigative
- Administrative
- Technical Support
- (Laboratory)
  - Toxicology
  - Others

### Medical Staffing

- Board certified forensic pathologist
- Board certified “general” pathologist
- Non-board certified pathologist
- Non-pathologist physician

### Pathologist Training

- “General” Pathologist
  - Anatomic (2-3 years)

- +/- Clinical (2 years)
- Board examination
- Forensic Pathologist
  - Anatomic (2-3 years)
  - +/- Clinical (2 years)
  - Forensic (1-2 years)
  - Board examination

## Medicolegal Workload

Medicolegal Cases	
Natural	156,000
SIDS	2,000
Accident	102,000
Suicide	30,000
Homicide	17,000
Undetermined	4,500
Other	500
<b>TOTAL</b>	<b>312,000</b>

Medicolegal Autopsies	
Trauma (90% rate)	156,000
Natural (33% rate)	55,000
<b>TOTAL</b>	<b>195,000</b>

## Supply—Forensic Pathologists

- Current
  - 989 FPs
  - 600 part-time and full-time practicing FPs
  - 350-400 full time practicing FPs
  - Mean 225 autopsies/year
  - Mode 200 autopsies/year
  - 40% perform >250 autopsies/year
  - 9% perform >350 autopsies/year
- Number needed
  - ~800 full-time FPs
  - 250 autopsies/year
  - ~980 full-time FPs
  - 200 autopsies/year
- Distribution
- Current NAME recommendation: 250 autopsies/yr
  - No administrative responsibilities

## Pathologist Supply--Impediments

- Inadequate exposure during medical school and residency
  - “Non-medical” setting

- Salary
  - “General” private practice pathologist \$270K
  - Medical Examiner
    - Chief <150K
    - Other <120K
- Post-FP Training Retention
  - FP “graduates”—30/year
    - 1/3 practice part-time FP and part-time “general” pathology
    - 1/3 leave field within 10 years

## Death Investigators

- Usually non-physician
  - Medical background
  - Law enforcement background
  - Other background
- Training
  - In-house
  - Didactic courses

## Equipment and Facilities

- Inadequate size
- Outdated
  - Facility (average facility age—20 years)
  - Technology
  - Safety
    - Infectious diseases
      - >1/3 lack design/airflow systems to control pathogens
      - Many cannot function at Bio-safety level 3
- Under-equipped

## Toxicology

- Screening / Clinical
  - Present / absent
    - Assess use or likely clinical agent
- Death Investigation
  - Present / absent
  - Quantitation
  - Acute / chronic use
  - Potential effects

## Postmortem Toxicology

- Issues
  - Interpretation
- Specimens

- Types
  - Sampling sites
- Analyses
- **Current**
  - In-house (37%)
  - State/police laboratory
  - Hospital /clinical laboratory
  - Private toxicology laboratory
- **Recommended**
  - In-house toxicology laboratory

## Professionalism

- Forensic Pathologists
  - Basic competency and adequate practice
  - Board certification
  - (professional performance parameters)
  - Continuing education
  - Availability
  - Cost
- Death Investigators
  - Basic competency
  - Required training
  - NIJ-sponsored death scene investigation guidelines (1998)
  - ABMDI certification
  - ~800 registered
  - Continuing education
  - Availability
  - Cost

## Accreditation

NAME (1975)

- ME facility's operation and practice
  - Total ME facilities—465
  - Accredited ME facilities—40
  - Population served by accredited facilities—23%

## Impediments to Accreditation

- Inadequacies
  - Staff
  - Facility
  - Equipment
  - Operation
  - Resources
    - Time consuming

- Potentially costly
- Lack of incentive
  - Voluntary
  - Difficult
  - +/- Tangible benefits
  - +/- Repercussions

## Federal / Non-Federal Medical Examiner Resources

- Federal medical examiner and support resources
  - Armed Forces Medical Examiner
  - (Disaster Mortuary Response Team—DMORT)
- Civilian medical examiner resources
  - Data
  - Civilian jurisdiction cases of federal “interest”
  - General
  - Special situations
  - FAA, NTSB
  - Consultation

## ME/Federal Agency Collaboration

- Criminal Justice
  - NIJ
    - Institute of Medicine Workshop
    - Death Scene Investigation Guidelines
- Public Health
  - CDC
    - MECISP
    - National violent death reporting system (pilot)
- Homeland Security and Mass Fatality Incidents
  - DHS
- Data Sharing
- Research
  - NIH

## Recommendations

- Full funding of Paul Coverdell (National Forensic Science Improvement) Act
- Federal government active interest in medicolegal death investigation
- Designate lead agency assignment
- Federal support for adequately supported and professionally staffed FP-based death investigation systems covering all of U.S.
- Recommendations
- HHS should establish policies and programs to
- Encourage and enable more physicians to enter FP and pursue practice in ME systems



- Retain currently practicing FPs
- Federal support for NAME accreditation program and development of professional performance parameters for medicolegal death investigation
- Recommendations
- Medical examiners should be designated as homeland security “first responders”, eligible for first responder funds
- Establish a federal medical examiner’s liaison office with DHS
- Develop and fund a system of information-sharing between ME offices and relevant federal government agencies
- Sponsor research and policy discussions on forensic pathology and medicolegal death investigation issues

# The American Society of Crime Laboratory Directors

National Institute of Justice  
Summit on Forensic Science Services  
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## ASCLD

A professional organization of crime laboratory managers

- 550 members
- Representing 245 local, state, federal and private US forensic laboratories
- Members from 30 forensic laboratories outside the US
- US and International academic affiliates

## ASCLD

- Trace Evidence
- Controlled Substances
- Biological Screening/Serology
- Fire Debris/Arson Analysis

## Authors

- Past President Susan Johns
- President Roger Kahn
- Ex-Officio Board member Don Wyckoff
- Board members Linda Erdei, Jan Johnson
- ASCLD member Cynthia Shannon
- Many others in support of this project

## Section I—Equipment and Manpower Needs

- Dr. Peterson's BJS Survey described
- Full report published later in 2004
- Data available for final NIJ report
- We agreed to omit data from ASCLD report

### RECOMMENDATION:

Establish a reliable, on-going system to monitor needs of the forensic community

## Section II – Training and Education

### Education

Goal to ensure that scientists in crime laboratories have the education to...

- understand their scientific responsibilities
- provide quality work product
- communicate effectively

#### Recommendations:

- Forensic science educational programs should be accredited
- NIJ should continue to assist FEPAC
- The NIJ should continue to support graduate programs by providing research funding for the forensic sciences
- A program to forgive student loans for graduates employed full time in forensic science institutions should be considered.
- The forensic community needs to explore ways to increase collaborations with academia

### FORENSIC SCIENCE TRAINING

- Initial Training
- Continuing Professional Development

#### Recommendations

- ASCLD should accredit forensic training programs and institutions with funding from NIJ or FRN
- ASCLD should provide training for managers with continued support from NIJ or FRN
- Develop alternate delivery systems for forensic science training
- Regional training centers

### Section III –Professionalism & Accreditation Standards

- The ASCLD supports accreditation for forensic laboratories. We recommend a one-time allocation of funding be provided to promote accreditation
- \$10,000 per laboratory to train laboratory directors and QA personnel for the accreditation project and to bring mentors on-site to conduct pre-accreditation assessment
- A one-time request to pay for an initial accreditation inspection
- A one-time request to cover all proficiency testing during the one year prior to the accreditation

#### Peer Certification

- Certification should be supported once funding has been identified
- Forensic certification programs credentialed by FSAB or a program based on recognized standards
- A mechanism to provide funding for the accreditation of certification programs
- A mechanism for funding certification programs that have appropriate credentials

### RESEARCH, INNOVATION and TECH TRANSFER

- Identify research needs for forensic science with input from both practitioners and academics
- Fund forensic research; encourage university and forensic laboratory partnerships
- Fund laboratories putting new technology on-line
- Forensic Resource Network should continue working with ASCLD on collaboration and resource sharing

#### **Section IV –Collaboration of Federal, State, Local Labs**

- Federal labs should provide leadership to state and local laboratories but formal mechanisms, such as advisory boards or focus groups, should be established to facilitate communication
- Ongoing support for national SWGs
- Mechanism to develop consensus on SWG recommendations with community-based vetting
- Ability to obtain interactive information SWGs on technical issues

# International Association for Identification (IAI)

## 180 Day Study – Final Report

### IAI Report

- Fingerprint Identification
- Footwear/Tiretrack Identification
- Crime Scene Investigation
- Bloodstain Pattern Analysis
- Digital Evidence

### Manpower and Equipment Needs

#### Fingerprint Identification

- Most fingerprint work (66%) not done in crime labs
- Lack of qualified, certified personnel
- Issues of Accreditation and Certification
- Significant backlog in larger agencies
  - Range from several hundred to 1,000
  - Large agency turnaround average: 166 days
  - Total large agency backlog: 5,147 cases
  - Equipment, personnel and training are key issues
- AFIS – Most larger agencies have AFIS but not all
- IAFIS capability badly needed
  - IAFIS badly underutilized
  - Manpower intensive entry process – need enter once, search many capability
  - Faster network
  - Increased accessibility to ULF (Universal Latent Workstations)
- Suspect cases take precedence so non-suspect cases, the real “workhorse” of the system underutilized
- Research into scientific basis of latent fingerprint identification

#### Footwear/Tiretrack

- Underutilized
- Need training

#### Crime Scene Investigation

- Largely done outside crime labs
- Need to reach that community
- Great need for equipment and training
  - Alternate Light Sources

- Vehicles
- Photo equipment
- “Coverdell type” needs
- WMD/Terrorism/Mass Casualty Concern
  - Crime Scene Investigators WILL be one of the first responders
- Florida – sent to suspected anthrax incident with dust masks
- Need to be included in first responder training & exercises
- Federal level policies need to recognize crime scene/crime lab personnel as first responders

**“We will be the canaries in the cage...”**

## Bloodstain Pattern Analysis

- Great need for more training beyond the basic level
- Increased awareness by crime scene personnel
- Technical skill
- Relatively little backlog

## Digital Evidence

- Forensic Imaging
- Forensic Video Analysis
- Digital Evidence – computers and other digital equipment including acoustical analysis
- Discipline is now ASCLD-LAB accredited
- Some DE in Crime Labs but most lodged in law enforcement agencies similar to fingerprint, footwear etc. units
- Great need for training and equipment
- Analysis technology is very expensive
  - Coverdell type needs

## Continuing Education/Training

- Training was the most often cited need in survey
- Technology is advancing, more complicated; training diminishes with \$\$ shortfall
- FBI withdrawal from training is sorely missed
- Training in Daubert issues badly needed
- Training almost completely lacking for mass casualty, terrorism incidents

## Professionalism & Accreditation Standards

- Definitions
- What is a crime lab?
  - ASCLD: approx 400
  - ASCLD-LAB: approx 2,000
- Raise awareness of quality systems in non-crime lab units

- Individual Competency
  - Radar operators must be certified
  - Intoxilizer operators must be certified
  - No requirement that forensic scientists be certified
- Move toward mandatory certification

## Collaboration between Federal Labs and State & Local Labs

- Very different framework between federal and state and local labs
  - State and locals service all those who “walk in the door”
  - Federal labs typically service their own agency
- Federal labs formerly serviced many state and local needs but today that is almost non-existent – (Exception: FBI, MTDNA analyses)
- Federal labs have access to funding streams not available to state and locals
- US VISIT program – need to use ten print fingerprint systems rather than two

## Final Recommendations:

1. Identify all forensic service providers
2. Raise level of awareness of state and local assistance those organizations identified in #1
3. Explore ways to provide more training
4. Increase number of access terminals (ULF) to raise the number of latent fingerprints searched through IAFIS
5. Require interoperability among AFIS systems
6. Conduct research into scientific foundation of fingerprint evidence
7. Encourage the FBI to reinstitute its forensic science training programs
8. Increase federal assistance to state and local forensic service providers to deal with terrorism or mass casualty incidents
9. Explore mandatory accreditation and certification
10. Work with US VISIT Program to use 10 fingerprint AFIS searches rather than 2 prints
11. Create a Forensic Science Commission
12. Continue/Increase Coverdell Funding to address issues such as fingerprint backlog. Better inform all forensic providers of funding opportunities – many identified needs: perfect fit for Coverdell
13. Continue support and funding for DNA

# 180 Day Study on the Needs of Forensic Science

## American Academy of Forensic Sciences

### AAFS Representatives

#### **Ronald L. Singer, MS**

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Tarrant County Medical Examiner's Office  
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#### **Edmund R. Donoghue, MD**

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Office of the Medical Examiner for Cook County  
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#### **Barry A. J. Fisher, MS, MBA**

AAFS Past-President, 1998-99

Los Angeles County Sheriff's Department  
Los Angeles, CA

### AAFS Sections

- Anthropology
- Criminalistics
- Engineering
- General
- Jurisprudence
- Odontology
- Pathology/Biology
- Psychiatry and Behavioral Sciences
- Question Documents
- Toxicology

### Survey instrument

- Insufficient time to develop quantifiable data.
- Results are largely the opinions from practitioners in local, state and federal forensic science labs.
- QD and firearms examiners responded well to the questionnaire; however, only one toxicologist returned a completed survey.

### Areas surveyed

- Firearms and Toolmarks
- Forensic Toxicology
- Question Documents



**Disclaimer: The following quotes from survey respondents are edited from the material received from forensic science practitioners.**

## Survey Questions

### Question 1

Question #1 asked for the respondent's name and affiliation and the area he/she was responding about.

### Question2

Question #2 asked for appropriate professional organizations that should be contacted to nominate individuals to serve on a forensic science commission (should one be established).

### Question #3

In your opinion, what are the three biggest challenges facing your discipline. Please provide as much information as possible. If you can provide a source of data to substantiate a point please do so. Anecdotal information is useful too. Congress specifically is asking for information about (1) manpower and equipment needs, (2) continuing education policies, (3) professionalism and accreditation standards, and (4) the level of collaboration needed between Federal forensic science labs and State/local forensic science Labs for the administration of justice.)

#### Summaries of responses to Question #3

- Training is a perpetual limitation ...
- Currently, there are no minimum training requirements for examiners ...
- There are some very good continuing education seminars and meetings available. The problem is getting enough money to attend.
- In some labs, the backlog of cases is great and turnaround time is very excessive. This deters law enforcement agencies from using and pursuing forensic evidence in those areas.
- ... due to budget problems we have a lack of fully trained personnel in firearms and toolmark examinations.
- minimum ... standards should be established in terms of equipment, techniques, training, and documentation, ...
- we need to be able to explain ... how and why firearms and toolmark examination is a science as it relates to Daubert / Frye hearings.
- Currently manpower is our biggest concern.
- Most pressing need is for 1. Trained practitioners to replace those who are retiring or moving to another laboratory, 2. Funding for continuing education, seminar attendance, and 3. Staffing and funding to support Quality Assurance Program for Accreditation.
- Research money to support and improve the scientific foundations of questioned documents and firearms/toolmarks examinations.
- Training, training, training in all areas.

- Daubert related concerns as first and foremost and the lack of quality continuing education as well as manpower and equipment needs, ...
- Standardized identification criteria that can be utilized nationwide.
- Satisfy the Daubert criteria ...
- Not enough trained practitioners. Standardized training programs are needed to produce more examiners meeting a standard that includes testing to confirm minimum competency.
- I feel the three most important challenges facing the Questioned Document discipline are lack of trained personnel, certification, and the need for funding for continuing education.
- The declining number of qualified experts available ...
- Standardized training programs are needed to produce more examiners meeting a standard that includes testing to confirm minimum competency.

#### Survey Question #4

Recognizing that the Federal Government's role is not to fund operational aspects of forensic science, what are appropriate things the government should do for forensic science?

- Summaries of responses to Question #4
- ... the Federal Government could set minimum training and continuing education standards for forensic experts that testify...
  - Grants for equipment: comparison microscopes, capturing devices and grants for continuing education or training academies.
  - Fund scientific research initiatives through scientific agencies (like NSF, NAS, NIH) and operational initiatives through operational agencies (like NIJ and DHS).
  - There is an east coast ATF training academy. Funding for a central or west coast academy would be helpful. It would not have to be an ATF program. California CCI is set up to do training as well.
  - Federal guidelines to set minimum requirements for forensic science laboratories.
  - The Federal Government could make grant money available for continuing education travel and training, for procurement of equipment for supplies and research.
  - Federal funding to enable state and local agencies to send their practitioners to training conferences, and expansion of courses presented by the FBI, ATF & DEA.
  - Establish a regional forensic science training and research system, possibly modeled after the FBI Academy concept but more accessible to regional areas with increased capacity to accept students. Technology-based educational delivery methods should be strongly considered.
  - Funding for validation studies performed by Universities, and tuition funding to encourage enrollment in University forensic science degree programs.
  - ... standards for training, testing and certification ...
  - More easily accessible grants for validation of forensic sciences is critical for the substantiation and reliability of forensic disciplines.

- Provide more funding for grants for validation studies of aspects of forensic science that would be challenged in Daubert, Frye, etc. hearings, particularly whether basic principles have been tested, error rates, and standards of procedure.
- I feel that the federal government's most vital role with respect to forensic science is in providing financial resources and funding for equipment, research, and personnel.

### Survey Question #5

Do you see a relationship between Homeland Security or Weapons of Mass Destruction (WMD) issues and your discipline? For example, are best practices needed for handling possibly contaminated evidence or for crime lab personnel assisting at crime scenes?

#### Summaries of responses to Question #5

- Law enforcement and legal forensics are generally not an appropriate instrument for combating WMD or terrorism issues. Certainly the techniques could be employed in aid of those activities but the vast majority of the two endeavors do not overlap.
- I can see where immigration people need to be better trained to spot counterfeit travel documents.
- Firearms and toolmark examinations can relate to the marks left on the components used to assemble WMD, or improvised explosive devices, linking a tool and thus an individual, to a crime. However, at a local level, we are not prepared or trained to handle evidence that has been extensively contaminated with nuclear or biological agents.
- Every crime scene is potentially "contaminated" either biologically or chemically (clandestine drugs labs, for example). DHS has an abiding interest in these scenes because going in, you don't know if it is a terrorist cell or a drug lab. Potentially every crime scene is a matter of Homeland Security. Best practices are particularly needed for crime scenes and are particularly difficult for individual agencies to handle because of the scope of the potential problem.
- A recent ATM burglary ring in this area was linked to domestic terrorists, and tool mark identification linked the suspects to the burglary. Crime lab personnel will inevitably be involved in any criminal investigation in our service area.
- It is conceivable that, after initial emergency response, forensic scientists will be called upon to provide forensic analysis for prosecution purposes. To date no training in the safe handling of evidence contaminated with potential biological and chemical WMDs has been received.
- The anthrax contaminated letters, the Unabomber case, and others point to the need for standardization in the forensic document field on critical case issues.
- The need for Best practices for handling evidence at crime scenes should not even be in question.

### Survey Question #6

Because the study deals specifically with "...continuing education policies, professionalism and accreditation standards, and the level of collaboration needed

between Federal forensic science labs and State/local forensic science Labs for the administration of justice...”, are there any other comments you may wish to add concerning these areas?

#### Summaries of responses to Question #6

- Federal forensic laboratories and agencies fill a much-needed gap in terms of continuing education and training for state and local laboratories. They provide the training, instructors, facilities, and funding to keep individuals current on techniques and procedures needed to perform forensic examinations. Without them, many agencies would not be able to provide competent service to the criminal justice system. This practice needs to continue and be enhanced if possible.
- Training and continual professional development needs to be multi-agency, educationally accredited, and broad-based. Education, certification, qualification, and proficiency are the key areas of need in forensic science.
- The NIJ/FBI should continue working with the Scientific Working Groups and generate standards in all aspects of each field and then see that federal, state and municipal jurisdictions implement them.
- Some excellent hands-on training has been provided at the FBI Academy in Quantico. I would like to see more of that training, with more opportunities for state examiners to be able to attend those classes. In that it is a drain on manpower for the FBI to provide all of the teachers, it may be helpful to have the Secret Service or Postal Inspection Service assist, or provide some classes themselves.
- The FBI has long been a preeminent source of training in the various disciplines of Forensic Science. I believe it’s imperative that they have the resources and personnel to continue in dispensing of quality training. The training made available for my discipline has been extremely limited and sporadic in recent years.
- Need for research to further address technology issues which are being utilized to further criminal activity.
- Collaboration between state/federal agencies. The FBI is notoriously paranoid and historically reluctant to share information with other federal of state law enforcement laboratories.

#### Survey Question #7

Is there anything else you would like to add that might be useful to this congressional study of the needs of forensic science beyond DNA?

#### Summaries of responses to Question #7

- Forensic science disciplines other than DNA need to become an accepted and recognized practice within the criminal justice system. DNA results are considered almost absolutely conclusive of guilt or innocence based on the perception of the criminal justice system, the public, and the media. The remaining disciplines need to advance their quality and performance to achieve this, or demonstrate why they should already have it. Conversely, they must be

able to show why their results are not best described by probability statistics, yet still convey the same conclusive result.

- It has been my observation that there has been a neglect of forensic science in the national scientific scene. The recent decision by the National Academy of Science Committee on the Assessing the Feasibility, Accuracy and Technical Capability of a National Ballistics Database not to include any AFTE member on this committee is an unfortunate example of this neglect.
- What are the needs of forensic science beyond DNA? They center on the issues of Daubert and the removal of junk science from the courtroom ... As a profession, we recognized there were some tasks we needed to do in order to address legitimate criticisms and the Daubert criteria. I believe the other comparative sciences will face the same criticisms in the future as most of the other disciplines have not subjected themselves to validation testing or task at hand reliability testing. The NIJ desires the truth in justice and due to the implementation of Daubert, a few of the forensic sciences have not documented what is needed to address the four criteria ... NIJ or other Federal funding is sorely needed and is more than justified with the current legal climate surrounding Daubert, accreditation, and research.

## Recap of issues

- There is a critical need for continuing education programs.
- Many public forensic science organizations face serious budget challenges which result in long turnaround times.
- Forensic science practitioners need help to fight off Daubert related challenges relating to the reliability of certain classifications of forensic cases work.
- Standardization of training and practice was raised by a number of responders.
- Forensic science related issues about terrorism and WMD is an oft stated concern.
- Federal forensic labs should survey State and local labs to assess whether they are meeting their constituent's needs.
- Federal agencies need to do more to assist State and local forensic science needs.

## Recommendations

- Greater attention must be given to forensic science needs beyond DNA.
- A national forensic science commission is a step to define the problems facing the nation's forensic science delivery system.
- A funded, in depth study of the status and needs of forensic science including all forensic disciplines and medical examiners is needed.
- Research in pattern evidence (question documents, fingerprints, firearms evidence, etc.) is needed to contend with Daubert challenges.
- While "terrorism" and "WMD" may not be Department of Justice issues at the present time, appropriate federal agencies must be advised that State and local crime labs view these issues as areas of concern.

High quality, accessible continuing education courses to train the next generation of forensic scientists is essential to any national forensic science strategy.

Forensic science organizations wish help develop policies and practices to enhance the quality and timeliness of the nation's forensic science delivery system.