Forensics and PCAST Update

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National Commission for Forensic Science
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National District Attorneys Association Applauds Expiration of National Commission on Forensic Science

ARLINGTON, Virginia – The National District Attorneys Association (NDAA) supports the announcement this morning by United States Attorney General Jeff Sessions that he will not renew the charter for the National Commission on Forensic Science, allowing the Commission to officially expire. NDAA also appreciates the creation of a Subcommittee on Forensics as part of the Attorney General’s Task Force on Crime Reduction and Public Safety.

The Commission lacked adequate representation from the state and local practitioner community, was dominated by the defense community, and failed to produce work products of significance for the forensic science community. Very few of the recommendations from the Commission were adopted and signed by the previous Attorney General during its existence. Those that were signed, such as universal accreditation, had already begun to develop organically within the forensic science community.
NCFS, OSACs, SWGs, TWGs

• DOJ and NIST partnered to create the NCFS and OSACs
• NCFS was primarily DOJ run
• OSAC is primarily NIST run
• Scientific Working Groups and Technical Working Groups are going away (replaced by OSACs)
National Commission on Forensic Science

• Part of the US Department of Justice – objective is to provide recommendations and advice to the Department of Justice

• Commission is co-chaired by the Deputy Attorney General and the NIST Director and Under Secretary of Commerce for Standards & Technology

• Subcommittees develop work product, then receive public comment, then the Commission adopts the work product (which are policy recommendations)


• The AG can decide whether or not and how to implement each recommendation. The NCFS can also produce views documents that have no action attached - they are simply the opinion of the NCFS.

• Documents on Pretrial Discovery, Reporting Language, Judicial Vouching for experts, Documentation, Accreditation, Proficiency Testing, etc.
REPORTING AND TESTIMONY

Recommendations on Use of the Term “Reasonable Scientific Certainty” *(Adopted at NCFS Meeting #9 – March 22, 2016)*

Views Document on Use of the Term “Reasonable Scientific Certainty” *(Adopted at NCFS Meeting #9 – March 22, 2016)*

Views Document on Inconsistent Terminology *(Adopted at NCFS Meeting #6 – April 30 - May 1, 2015)*

Views Document on Pretrial Discovery of Forensic Materials *(Adopted at NCFS Meeting #7 – August 10-11, 2015)*

Views Document on Documentation, Case Record and Report Contents *(Adopted at NCFS Meeting #8 – December 7, 2015)*

Recommendation on Pretrial Discovery *(Adopted at NCFS Meeting #10 - June 21, 2016)*

Views Document on Judicial Vouching *(Adopted at NCFS Meeting #10 - June 21, 2016)*

Views Document on Notice and Demand Provisions *(Adopted at NCFS Meeting #10 - June 21, 2016)*

Recommendation on Documentation, Case Record and Report Contents *(Adopted at NCFS Meeting #11 - September 13, 2016)*

HUMAN FACTORS

Views Document on Ensuring that Forensic Analysis is Based Upon Task-Relevant Information *(Adopted at NCFS Meeting #8 – December 8, 2015)*

Views Document on Facilitating Research on Laboratory Performance *(Adopted at NCFS Meeting #11 - September 13, 2016)*

Views Document on Use of Checklists in Forensic Science *(Adopted at NCFS Meeting #12 - January 9, 2017)*

TRAINING ON SCIENCE AND LAW

Recommendation on Forensic Science Curriculum Development *(Adopted at NCFS Meeting #8 – December 8, 2015)*
Organization of Scientific Area Committees for Forensic Science (OSAC)

• Working to identify and promote technically sound, consensus-based, fit-for-purpose documentary standards that are based on sound scientific principles.

• This is achieved through the OSAC Registry.

• A standard or guideline that is posted on the Registry demonstrates that the methods it contains have been assessed to be valid by forensic practitioners, academic researchers, measurement scientists, and statisticians through a consensus development process that allows participation and comment from all relevant stakeholders.

• NIST (National Institute of Standards and Technology) and ASTM (American Society for Testing and Materials) are participating in the standards development process.
https://www.nist.gov/topics/forensic-science/osac-approved-registry-documents

• **ASTM E2329-14 Standard Practice for Identification of Seized Drugs** (January 27, 2016)
  [In Revision: ASTM WK53625]
  Joint OSAC FSSB and NIST Statement on ASTM Standard E2329-14 (July 5, 2016)


• **ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories** (September 27, 2016)
  [In Revision: ISO/IEC CD 17025]


https://www.nist.gov/sign-e-mail-updates - monthly OSAC newsletter
www.nist.gov/osac - view updates from OSAC public meetings in Feb. 2017
“With the exception of nuclear DNA analysis, no forensic method has been rigorously shown able to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source.” (p. 7)
Findings

• "The potential for conflicts of interest between the needs of law enforcement and the broader needs of forensic science are too great." – p. 17

• "In sum, the committee concluded that advancing science in the forensic science enterprise is not likely to be achieved within the confines of DOJ." – p. 18

• “Recently, the field of forensic science has come under acute scrutiny on a nationwide basis. When articulating the right of a criminal defendant under the Sixth Amendment of the United States Constitution to confront forensic analysts as witnesses at trial, the Supreme Court of the United States in Melendez-Diaz v. Massachusetts was quick to recognize the significance of a landmark report issued in 2009 by the National Academy of Sciences.”

• Trial court abused its discretion by allowing S.A. Allcox to identify evidence as a controlled substance based on visual inspection
REPORT TO THE PRESIDENT
Forensic Science in Criminal Courts:
Ensuring Scientific Validity
of Feature-Comparison Methods

Executive Office of the President
President’s Council of Advisors on
Science and Technology

September 2016
Poll

Go to www.menti.com and use the code 87 88 72
PCAST Report

• PCAST Report:
  https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf

• PCAST Addendum:
  https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensics_addendum_finalv2.pdf
NAS Recommendation 3:

Research is needed to address issues of accuracy, reliability, and validity in the forensic science disciplines. (NAS p. 190)
Are there additional steps on the scientific side, post-2009 NAS Report, that could help ensure the validity of forensic evidence used in the Nation’s legal system?
What is the PCAST Report?

• PCAST did a year-long study
• Compiled and reviewed a set of more than 2,000 papers from various sources
• Educated itself on factual matters relating to the interaction between science and the law
• Obtained input from forensic scientists and practitioners, judges, prosecutors, defense attorneys, academic researchers, criminal-justice-reform advocates, and representatives of Federal agencies.
• Made recommendations directed at the National Institutes of Standards and Technology (NIST), the White House Office of Science and Technology Policy (OSTP), the Federal Bureau of Investigation (FBI) Laboratory, the Attorney General, and the judiciary
Findings regarding scientific validity

• Only single source samples of DNA and fingerprints are scientifically validated.
• Firearms has one study establishing its validity (need 2!)
• Bitemark, shoeprint, hair comparison, interpretation of mixtures of DNA – not validated, some even are invalid.
PCAST Recommendation 7:

• Where there is no meaningful information about the accuracy of a forensic feature-comparison method, US DOJ attorneys and examiners should not offer testimony based on the method.

• In testimony, examiners should always state clearly that errors can and do occur, due to similarities in features and due to human mistakes in the lab.
Poll

Go to www.menti.com and use the code 87 88 72
NDAA response

• “The PCAST position regarding the use of forensic science is scientifically irresponsible. Adopting any of their recommendations would have a devastating effect on the ability of law enforcement, prosecutors and the defense bar, to fully investigate their cases, exclude innocent suspects, implicate the guilty, and achieve true justice at trial.”

• “Notwithstanding the lack of qualifications, PCAST has taken it upon itself to usurp the Constitutional role of the Courts and decades of legal precedent and insert itself as the final arbiter of the reliability and admissibility of the information generated through these forensic science disciplines.”
Thanks, but no thanks.
US DOJ Response

• Attorney General Loretta Lynch said in a statement to The Wall Street Journal, “While we appreciate their contribution to the field of scientific inquiry, the department will not be adopting the recommendations related to the admissibility of forensic science evidence.”
DEBBIE

DOWNER
What is it good for?
As a scalpel, not a cleaver
How to use it

- To precisely craft your 702 challenge
  1. To show the technique is not foundationally valid
  2. To show the technique is not valid as applied
- In discovery motions
- To formulate cross-examination questions
- To understand the status of the research/attack testimony that says, “there’s a study that says X”
Rule 702 – Testimony by experts

(a) If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion, or otherwise, if all of the following apply:

   (1) The testimony is based upon sufficient facts or data.

   (2) The testimony is the product of reliable principles and methods.

   (3) The witness has applied the principles and methods reliably to the facts of the case.
Rule 702 – Testimony by experts

(a) scientific scientific scientific scientific scientific scientific scientific scientific scientific scientific scientific relevant scientific scientific relevant relevant relevant relevant scientific scientific scientific scientific relevant relevant relevant scientific, if all of the following apply:

(1) testimony facts sufficient data data facts data.
(2) reliable reliable reliable scientific reliable method.
(3) method reliable fact fact reliable reliable scientific facts method reliable case.
Rule 702 – Testimony by experts

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In Materials

• See Buzzard Sample Voir Dire Questions
• See Ann Oschner Memorandum of Law
• See Whitehurst Motion in Limine and Brief
Rule 702 – Testimony by experts

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(1) The testimony is based upon sufficient facts or data.

(2) The testimony is the product of reliable principles and methods. (IS IT FOUNDATIONALLY VALID?)

(3) The witness has applied the principles and methods reliably to the facts of the case. (IS IT VALID AS APPLIED?)
Foundational Validity

Is it the product of reliable principles and methods? (Prong 2)
Foundational Validity

Yes
- DNA – single source samples
- Fingerprints

No
- DNA – complex mixtures
- Firearms (almost there)
- Footwear
- Hair (invalid)
- Bitemark (invalid)

Don’t know
Digital evidence, GSR testing, Blood spatter, Retrograde analysis, DRE opinions, Child Abuse opinions, Handwriting, Autopsies, Drug chemistry, Toxicology, mtDNA analysis, Y-STR DNA analysis
What is foundational validity? (PCAST Ch. 4)

1. A reproducible and consistent procedure for identifying, comparing, and determining similarity between features in two samples

2. Empirical measurements from multiple independent studies of (a) the method’s false positive rate and (b) the method’s sensitivity

Requirements for studies:

- Sufficiently large
- Use samples that are representative of casework
- Neither the examiner or the subject should know the correct answer (double blind)
- The protocol must be specified in advance
- Study administrator should have no stake in the outcome
- Data should be reviewable
- Multiple research groups should reach the same conclusion.
From Buzzard’s sample voir dire questions

20. Use of formulas/tests
   • Where did you get this testing from
   • Who invented this
   • How has it been tested over time
   • Has it ever been modified/updated/changed
   • Has anyone been critical of the validity or reliability of this testing
   • What treatises/journals document that this is a reliable test
   • Is it peer reviewed
   • What is the error rate
   • Where/how was the error rate determined
   • Have you ever published any of your results of this testing
     • Why not
Valid as applied

Was the technique used reliably in this case? (Prong 3)
What is validity as applied? (PCAST Ch. 4)

1. The examiner must have been shown to be capable of reliably applying the method and must have actually done so.
2. Reporting must be scientifically valid.
What is validity as applied?

1. The examiner must have been shown to be capable of reliably applying the method and must have actually done so.
   - Proficiency testing? Was it blind? Was it representative?
   - Does the lab have adequate written procedures?
   - Was the analyst exposed to biasing information? (Contextual bias)
   - Did the analyst use linear rather than circular analysis? (Confirmation bias)

2. Reporting must be scientifically valid.
   - How are results documented?
   - Is the reporting language adequate?
“Easy tests are favored by the community.”

• Christopher Czyryca, the president of Collaborative Testing Services, Inc., the leading proficiency testing firm in the U.S., has publicly stated that “Easy tests are favored by the community.” August 2015 meeting of the National Commission on Forensic Science, a presentation at the Accreditation and Proficiency Testing Subcommittee. P. 47

www.justice.gov/ncfs/file/761061/download
Figure 1: Sufficiency Graph (see section 5.3.1.5.). This graph does not suggest or endorse the use of minutiae counts as the sole criteria for a decision threshold.
What is validity as applied?

1. The examiner must have been shown to be capable of reliably applying the method and must have actually done so.
   - Proficiency testing? Was it blind? Was it representative? (CTS quote)
   - Does the lab have adequate written procedures?
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2. Reporting must be scientifically valid.
   - How are results documented?
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What is validity as applied?

1. The examiner must have been shown to be capable of reliably applying the method and must have actually done so.
   ✓ Proficiency testing? Was it blind? Was it representative? (CTS quote)
   ✓ Does the lab have adequate written procedures?
   ✗ Did the analyst use linear rather than circular analysis? (Confirmation bias)
   ✗ Was the analyst exposed to biasing information? (Contextual bias)

2. Reporting must be scientifically valid.
   ✗ How are results documented?
   ✗ Is the reporting language adequate?
Linear analysis (fingerprint)

• Examiners complete and document their analysis of a latent print before looking at any known fingerprint
• Must document any changes made during the comparison process
Compare The Prints
What is validity as applied?

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   - Does the lab have adequate written procedures?
   - Did the analyst use linear rather than circular analysis? (Confirmation bias)
   - Was the analyst exposed to biasing information? (Contextual bias)

2. Reporting must be scientifically valid.
   - How are results documented?
   - Is the reporting language adequate?
Example – contextual bias

• Itiel Dror 2006 study (PCAST p. 98)
• 5 fingerprint examiners were given fingerprints to compare
• The prints they were given were prints they had compared 5 years ago and had determined were a “match”
• They were told that the prints were the ones from the Mayfield case
• 4 out of 5 examiners no longer judged the prints to “match”
What can labs do about confirmation and contextual bias?

• Require documentation of linear analysis and any deviations from linear analysis
• Employ an evidence screener who receives evidence from law enforcement
• Examiner can review the evidence blindly
• Screener can provide additional information as needed (“sequential unmasking”)
• Document what information is given and when
• Houston Forensic Science Center, Johnson County (KS) Sheriff’s Department, Minnesota Bureau of Criminal Apprehension and other labs are employing evidence screeners and blind verification
From Buzzard’s sample voir dire questions

14. Investigation

• What date did you get? From whom? When?
• Did you personally gather any data
• what are all the sources of your information other than what was sent to you by the DA’s office? By SBI? By law enforcement?
• What, if any testing did you do and what were the results?
• How did you document your testing? How did you document the results?
• Was anyone else present during testing
• Did you make any notes at any time about facts/investigation?
• Where are they?
What is validity as applied?

1. The examiner must have been shown to be capable of reliably applying the method and must have actually done so.
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2. Reporting must be scientifically valid.
   - How are results documented?
     - Is the reporting language adequate?
Statements must be empirically supported

Courts should never permit scientifically indefensible claims such as:

• “zero,” “vanishingly small,” “essentially zero,” “negligible,” “minimal,” or “microscopic” error rates
• “100 percent certainty” or proof “to a reasonable degree of scientific certainty”
• identification “to the exclusion of all other sources”
• a chance of error so remote as to be a “practical impossibility.” (p. 19)
How do Daubert factors fit in to 702?

702 (a) If scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion, or otherwise, if all of the following apply:

1. The testimony is based upon sufficient facts or data.
2. The testimony is the product of reliable principles and methods.
3. The witness has applied the principles and methods reliably to the facts of the case.

Daubert Factors:

- whether the expert’s scientific technique or theory can be, or has been, tested
- whether the technique or theory has been subject to peer review and publication
- the known or potential rate of error of the technique or theory when applied
- the existence and maintenance of standards and controls
- whether the technique or theory has been generally accepted in the scientific community
Additional factors courts may consider

• See Materials – “Buzzard Factors Approved for 702 Analysis” for additional factors that courts have found may be considered

• Read through list and if one of these factors is an issue in your case, Tony has the case cite for arguing that the court can consider this factor (Ex. Subjective nature of the analysis (Kumho), actual inspection of a piece of evidence (Kumho), etc.)

• Fit it into Rule 702 – show the court how one of the prongs is not satisfied
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