ISO accreditation for Bloodstain Pattern Analysis

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BLOODSTAIN PATTERN ANALYSIS (BPA)?

Bloodstain Pattern Analysis is the examination of the shapes, locations and distribution patterns of bloodstains in order to provide an interpretation of the physical events by which they were created

that is based on the premise that all bloodstains and bloodstain patterns are characteristic of the forces that have created them.

Troubles:

-Do we have an accepted list of the criteria of pattern identification?

-Do we really work following the steps defined?

WHY HAVING A METHOD IS IMPORTANT ?

Fix the robustness of our results

-Avoiding bias

-Avoiding human interpretation

-To be believed

Articulating our argumentation

-To be better understood

-To recheck easily the analysis

-To organize a better peer review

-To make easier the mentorship

NAS REPORT

The admission of Forensic Science Evidence in litigation (p. S-7) :

Two very important questions should underlie the law's admission of and reliance upon forensic evidence in criminal trials: (1) the extent to which a particular forensic discipline is founded on a reliable scientific methodology that gives it the capacity to accurately analyze evidence and report findings and (2) the extent to which practitioners in a particular forensic discipline rely on human interpretation that could be tainted by error, the threat of bias, or the absence of sound operational procedures and robust performance standards. These questions are significant. Thus, it matters a great deal whether an expert is qualified to testify about forensic evidence and whether the evidence is sufficiently reliable to merit a fact finder's reliance on the truth that it purports to support. Unfortunately, these important questions do not always produce satisfactory answers in judicial decisions pertaining to the admissibility of forensic science evidence proffered in criminal trials.

NAS REPORT

Recommendation 2:

The National Institute of Forensic Science (NIFS), after reviewing established standards such as ISO 17025, and in consultation with its advisory board, should establish standard terminology to be used in reporting on and testifying about the results of forensic science investigations. Similarly, it should establish model laboratory reports for different forensic science disciplines and specify the minimum information that should be included. As part of the accreditation and certification processes, laboratories and forensic scientists should be required to utilize model laboratory reports when summarizing the results of their analyses.

NAS REPORT

Recommendation 7:

Laboratory accreditation and individual certification of forensic science professionals should be mandatory, and all forensic science professionals should have access to a certification process. In determining appropriate standards for accreditation and certification, the National Institute of Forensic Science (NIFS) should take into account established and recognized international standards, such as those published by the International Organization for Standardization (ISO). No person (public or private) should be allowed to practice in a forensic science discipline or testify as a forensic science professional without certification. Certification requirements should include, at a minimum, written examinations, supervised practice, proficiency testing, continuing education, recertification procedures, adherence to a code of ethics, and effective disciplinary procedures. All laboratories and facilities (public or private) should be accredited, and all forensic science professionals should be certified, when eligible, within a time period established by NIFS.

NAS REPORT

Recommendation 8:

Forensic laboratories should establish routine quality assurance and quality control procedures to ensure the accuracy of forensic analyses and the work of forensic practitioners. Quality control procedures should be designed to identify mistakes, fraud, and bias; confirm the continued validity and reliability of standard operating procedures and protocols; ensure that best practices are being followed; and correct procedures and protocols that are found to need improvement.

NAS REPORT

Bloodstain Pattern analysis (p 5-39) :

dynamics. In general, the opinions of bloodstain pattern analysts are more subjective than scientific. In addition, many bloodstain pattern analysis cases are prosecution driven or defense driven, with targeted requests that can lead to context bias.

Summary Assessment

Scientific studies support some aspects of bloodstain pattern analysis. One can tell, for example, if the blood spattered quickly or slowly, but some experts extrapolate far beyond what can be supported. Although the trajectories of bullets are linear, the damage that they cause in

ISO PROPOSAL FOR FORENSIC SCIENCES

ISO 17020

Inspection

ISO 17025

Test &
Calibration

GENERAL REQUIREMENTS

ISO/IEC 17025

(competence of analytical testing laboratories)

Ability to consistently produce valid results

Technical requirements

Correctness and reliability of the tests and calibrations performed in laboratory

Managements requirements

Operation and effectiveness of the quality management system

ISO/IEC 17020

(competence of investigation services)

Ability to perform inspection

Technical requirements

Qualifications

Maintain of competences

Supervision

Impartiality, Independence, Integrity

Managements requirements

Operation and effectiveness of the quality management system

ISO/IEC 17025 vs 17020

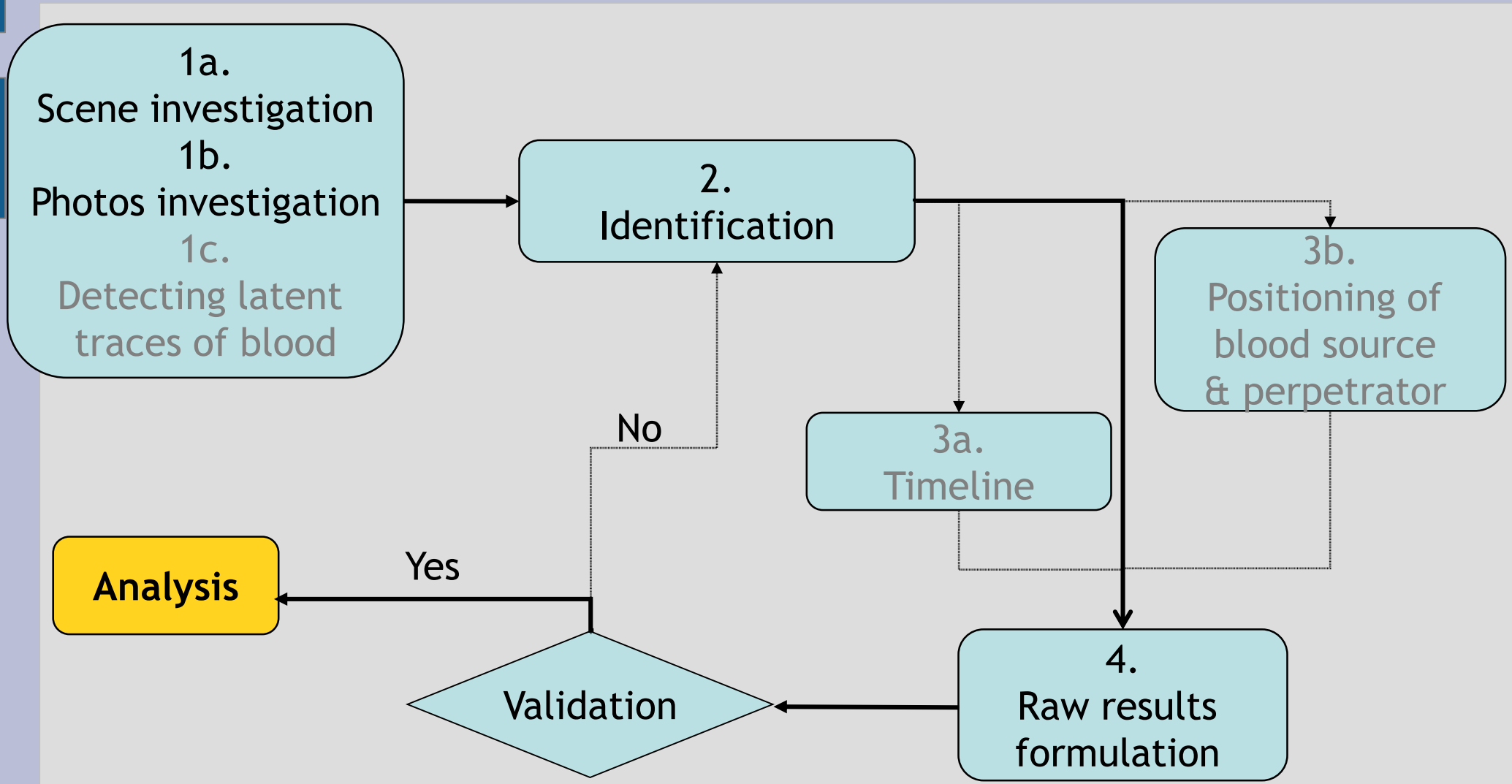
	17020	17025
Entities	Laboratories or units	Laboratories
Activities	a.Inspection-type operations, b.Comparisons between a trace and defined criteria or specifications,	a.Test and calibration using equipments to test for substances or materials
Independence	Categories A,B, C	Not stated
Goals	a.Inspection b.Pass/fail decision c.Conclusions based of professional judgement	a.Measurements results b.Pass/fail decision linked to the measurements

BLOODSTAIN PATTERN ANALYSIS

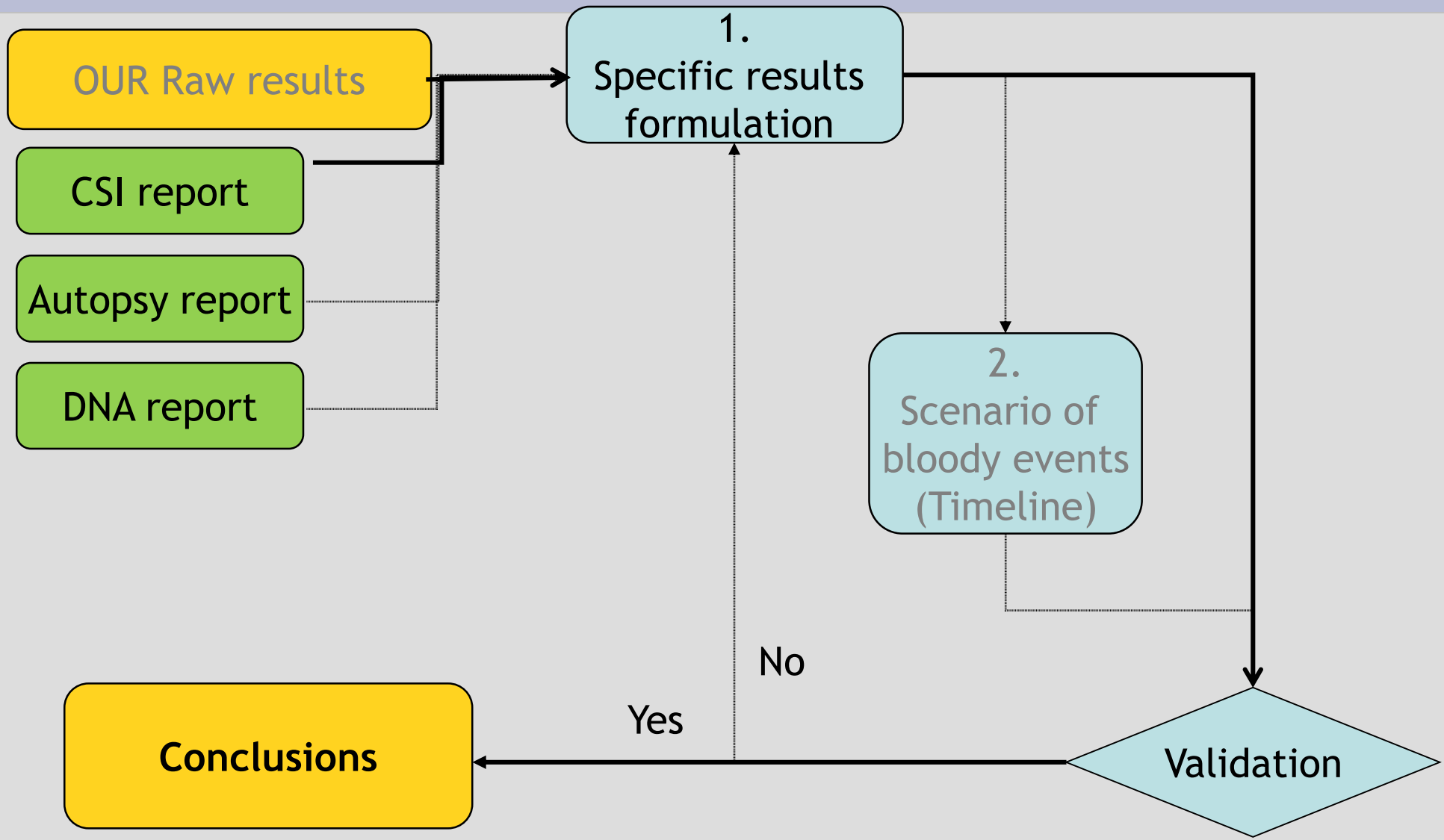
Publications developping methodologies for BPA in the last years:

- **Jeffrey Saviano**: *Articulating consice scientific methodology for bloodstain pattern analysis*, JFI 55 (4), 2005: pp. 461-470
- **Ross M. Gardner**: *Defining a methodology for Bloodstain Pattern Analysis*, JFI 56 (4), 2006: pp. 549-557
- **Holly M. Latham**: *Reasoning, the scientific method, and bloodstain pattern analysis - Assuring that the question are being answered correctly*, JFI 61 (4), 2011: pp. 333-340
- **Holly M. Latham**: *Using and articulating the scientific method, in bloodstain pattern analysis*, JFI 61 (5), 2011: pp. 487-494

BLOODSTAIN IDENTIFICATION



BLOODSTAIN ANALYSIS



ANALYSIS REPORT

REPORT INFORMATION

Report identifier

Name of the requester

Information about the case
(Victim & Suspect names if known)

Name of the expert

CASE INFORMATION

Information about the **requester**

Scan of the request

Information about **the analysts**

Who is the **expert** (name, Justice approvals)
Who helped the expert (qualification)

ANALYSIS REPORT

BPA RAW RESULTS

Identification of seal

Conditions of the analysis

Morphologic criteria allowing the identification of each pattern

Events related to the identify patterns

RESULTS SPECIFIC TO THE CASE

Information about **previous investigations**

Information about **Autopsy** if known

Information about **Genetics** if known

These information allow to **complete BPA** results as follows :
(e.g. type of injury consistent with spatters studied…)

ANALYSIS REPORT

CONCLUSION

1.WHO is the expert
2.WHEN has he done analyzes
3. WHAT are the **BPA results** related to the case
4. **Statements** are complaint or not compliant with the results

No morphological information can help me to established that all the stains are consistent with the facts (some of them could be older)

Date & Signature

APPENDICES

ANALYSIS REPORT

APPENDICE 1

Identification linked to morphological criteria

PICTURES

Morphological criteria

Identification

DEFINITION

1

APPENDICE 2

If needed

Interactions identified allowing scenario

PICTURES

Identification of the characteristics allowing me to say this pattern is previous than this other

2

ANALYSIS REPORT

APPENDICE 3

If needed

Localization of individuals linked to limiting angles

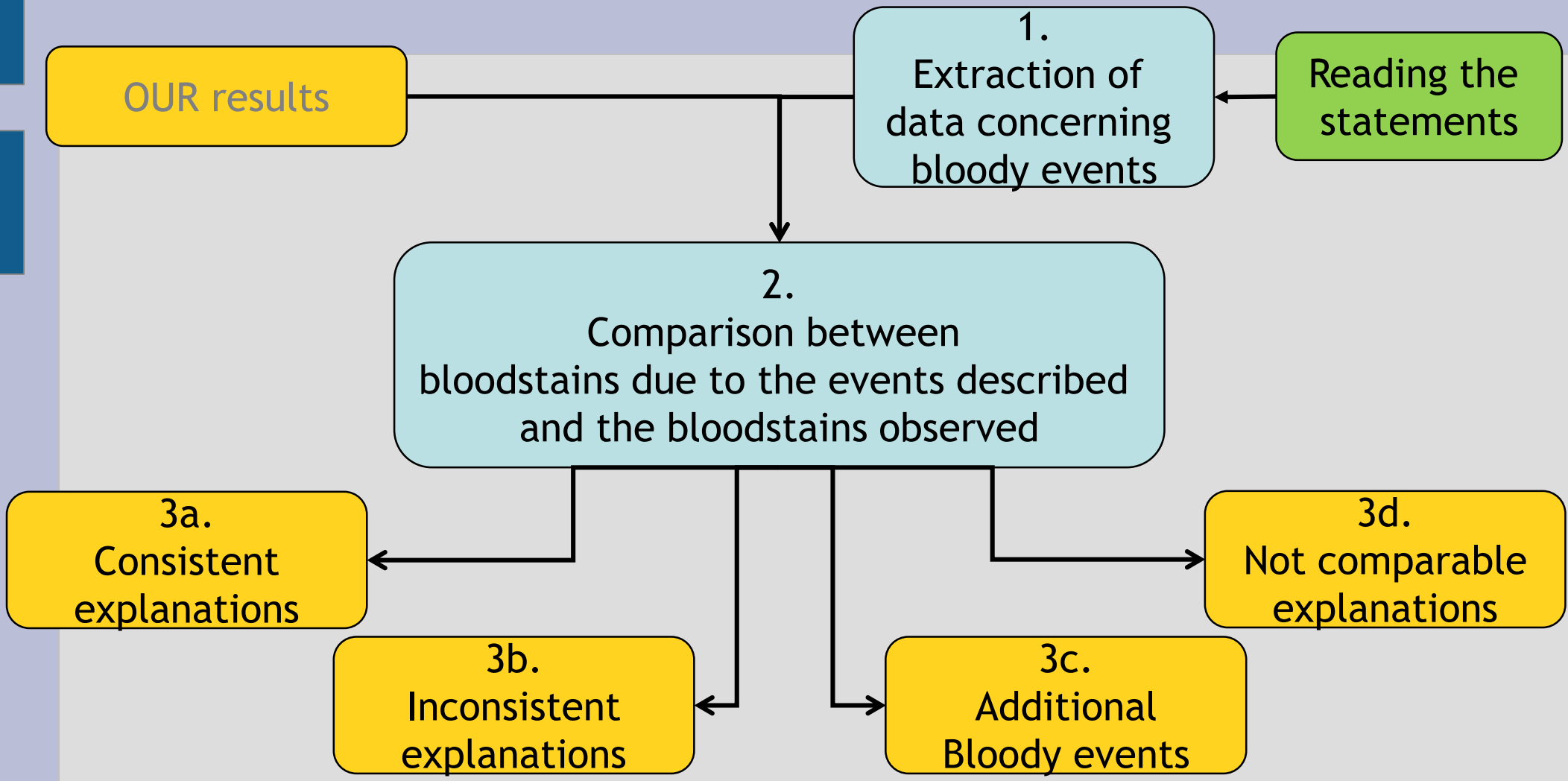
Source of blood :
Limiting angles method

Perpretrator :
Cast-off lines
Bloodspatter cones distribution

APPENDICE 4

Methodologies (SOP) used

BLOODSTAIN ANALYSIS vs STATEMENTS



COMPATIBILITY REPORT

COMPATIBILITY REVIEW

Scan of **part of the statement related to bloody event**

What kind of pattern and where we should found based on statements

YES/NO

a.Compliant elements
b.Not comply elements
c.Additional elements
d.Non-comparable elements

CONCLUSION

Using the 17020 ISO standard in Bloodstain Patten Analysis allows:

-To fix the **robustness of our results** following objective argumentation

-To present the **steps of our argumentation**

-**To be trusted by the Justice** (demonstration of bias-free method)

-To organize a better mentorship & peer review

International Association for Identification

99th International Educational Conference

Minneapolis, Minnesota - August 10-16, 2014

theiai.org

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L.A.C. Laboratoire d'Analyses Criminalistiques

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