A Framework for Practicing Medicine in a “forensically safe” way

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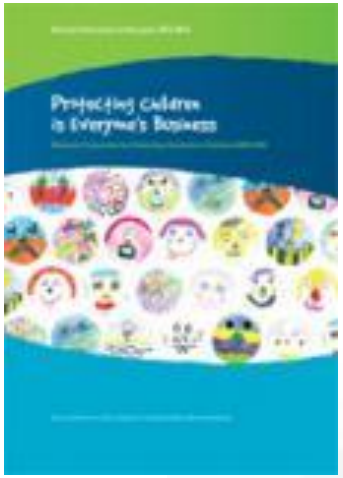
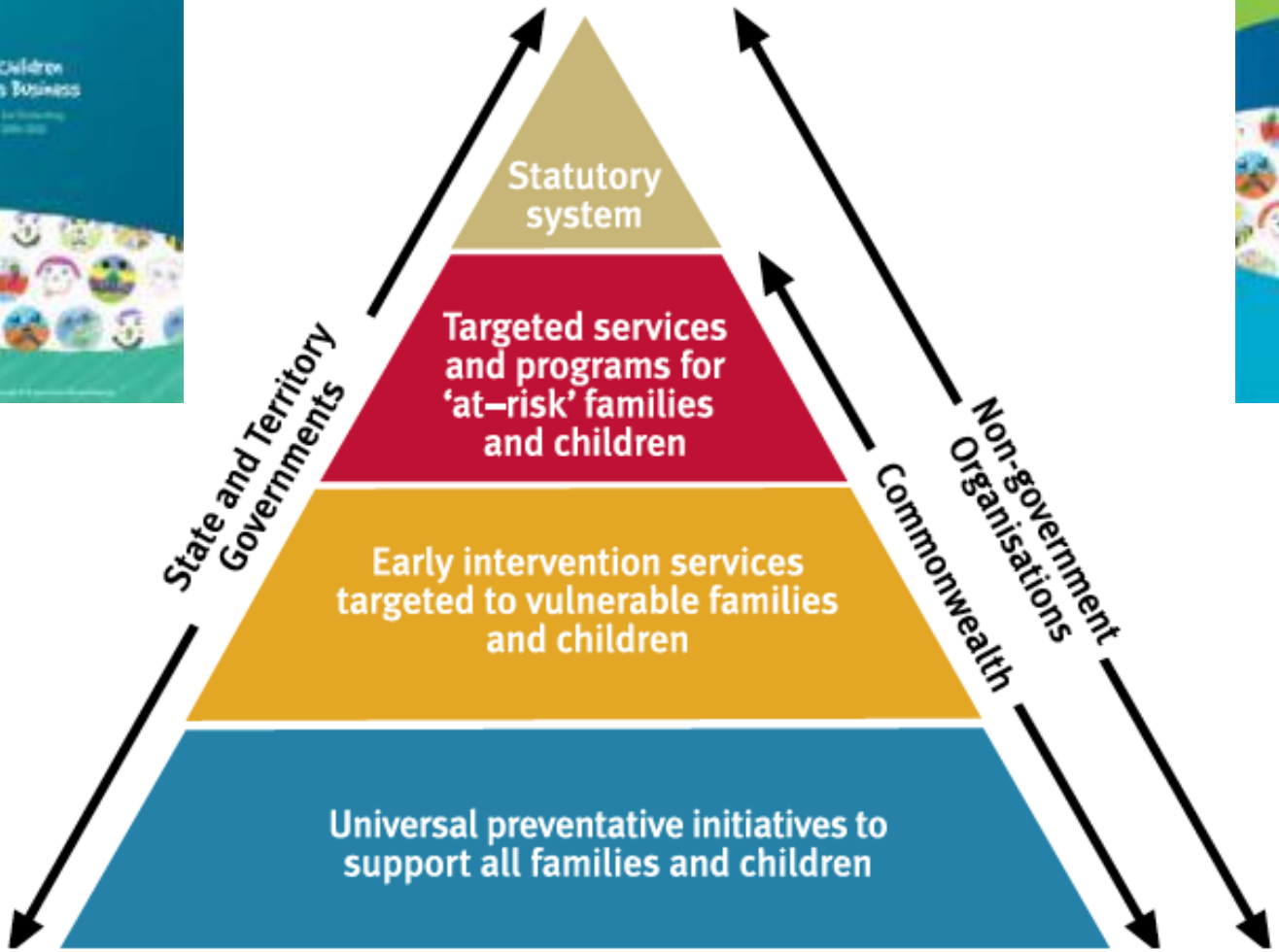
Next 45 minutes – 3 sections

- Our Roles and Responsibilities
- The story – gathering information
- How to form a “forensic” opinion

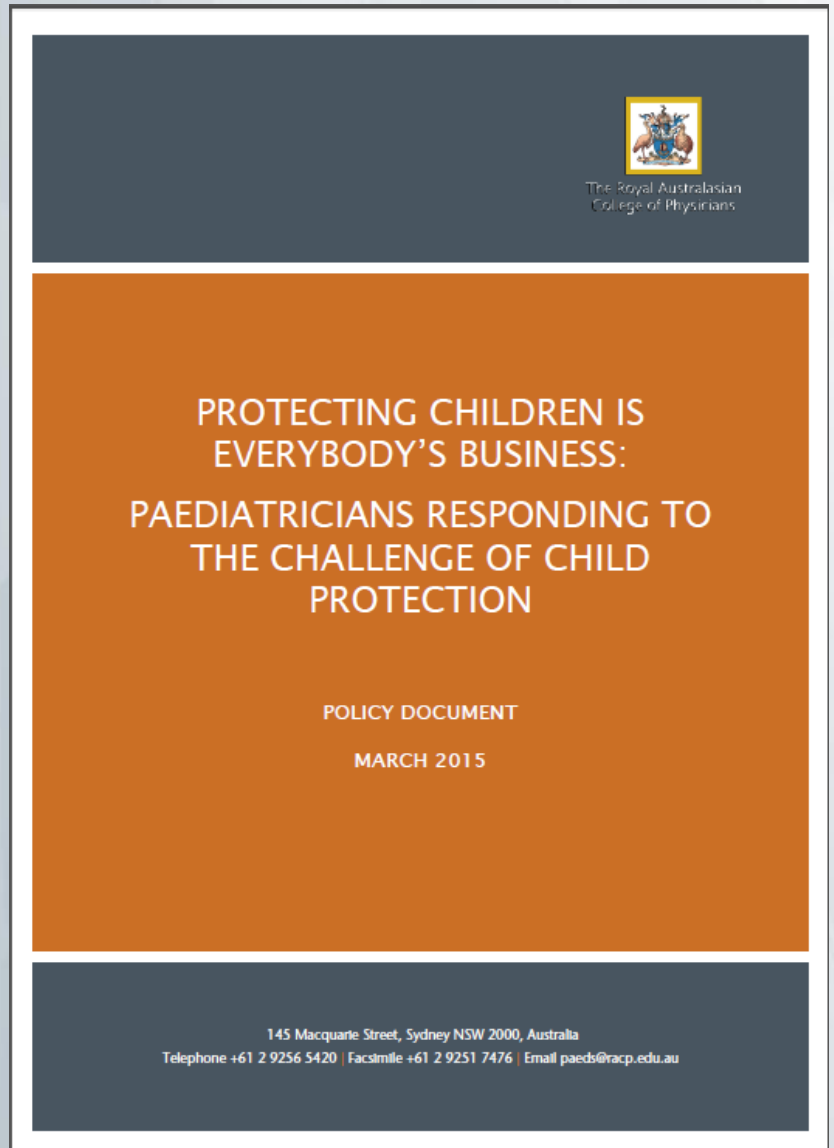
1. Roles and Responsibilities

Roles and Responsibilities .....all Australians





2015 revision of RACP Policy



The Royal Australasian College of Physicians
Paediatrics & Child Health Division

All Paediatricians

All children need protecting

Primary

- Promote great health and relationships
- Prevent abuse and neglect

Secondary

- Target services

Tertiary

- Recognise and Respond
- Remediate harms
- Collaborate to achieve justice
- Prevent recurrence

New Faculty of CFM RCPA (2015)

“Forensic” interface - medicine

Child protection law + criminal law + family law

Alleged assault / child abuse / neglect

Poisonings / ingestions / unexplained GCS

All Trauma (accident / assault / RTA)

- Preserve physical evidence
- Document thoroughly
- Communicate well with other professionals

Expert opinion

www.rch.org.au/vfpms/

The Royal Children's Hospital Melbourne

A great children's hospital, leading the way

Health Professionals | Patients and Families | Departments and Services | Research

Victorian Forensic Paediatric Medical Service

RCH > Division of Medicine > VFPMS > About VFPMS

In this section

- **About us**
- How to refer
- Rural and regional
- Training and education
- Guidelines and standards
- VFPMS tools and templates

About VFPMS

The **Victorian Forensic Paediatric Medical Service** (**VFPMS**) is a statewide coordinated medical service providing assessment and care for abused, assaulted and neglected children and young people.

Our services are provided using the most efficient and effective aspects of the Health system. We work collaboratively with Victoria Police and Child Protection to ensure service integration.

VFPMS offers **24 hour** access to expert medical opinion regarding possible child abuse and neglect. We encourage early consultation as this may minimise complications and reduce any angst experienced by children and young people.

Our services are provided at The Royal Children's Hospital and Monash Medical Centre. Appointments can be arranged by calling **1300 66 11 42.**

CAN: Terms and Conditions

Are we talking about

- Circumstances
- Situations
- Events (acts or ommissions)
- Effects of above (harm)
- Combination - over time
  - Cumulative harm

How do we define

- Adverse situations and circumstances
- Abuse
- Assault
- Neglect
- Child Maltreatment

Underpinning principles

First do no harm (primum non nocere)
Be open minded
Seek the truth
Separate fact from fiction
Rely on data not dogma
Be a team player / Respect others' roles
Avoid duplication of effort
Be honest: Admit when you don't know

"Our legal department wants us to download their new software. It translates gobbledygook to mumbo jumbo."

2. The story

Is this (situation) child abuse?

CORE QUESTION

Could this be

- Abuse
- Accident
- Medical Condition confused with Abuse (a mimic)

- EXCLUDE abuse or assault

Why?
Why not?

Example Baby J.

Father brought 5 mo Baby J to ED

The story

- Earlier that evening ~ 2 hours ago
- Intruder tried to break into their home
- Father heard noise and with baby in arms went to investigate
- When disturbed, intruder pushed door open into father and baby
- Baby squeezed in father's arms when door swung open
- Intruder ran away

Seek more info

Baby J was mildly unwell with URTI

Previously healthy, normal development

Father denied Baby J had prior injuries

2 weeks previously a sibling had been diagnosed with whooping cough

Denied family history of bleeding / clotting problems

Questions re Baby J

What are the possible causes of facial petechiae?

Can whooping cough cause bruises?

What does bruising on different planes of body signify?

What does yellow colour in bruising signify?

What does swelling signify?

Why are Baby J's pupils unequal?

Injury evaluation: the process

Phase 1.	Information gathering
Phase 2.	Physical Examination
Phase 3.	Investigations & interpretation
Phase 4.	Collation & Synthesis
Phase 5.	Reasoning & Hypothesis testing
Phase 6.	Conclusion & Opinion

INJURY EVALUATION
Phase 1. Information gathering

The stories
- Witnesses
- Caregivers and relatives
- Health professionals
- Police
- Statutory agency / protective workers
- NGOs and others

Examination (FINDINGS + interpretation)
- Your physical examination findings & other specialists' findings

Medical Investigations (FINDINGS and interpretation)

Sharing information
- Police site investigations and interpretation
- Statutory agencies investigations and interpretation

Who provides the story?

- Child
- Parent
- Other parent or caregiver
- Relatives
- Child protection worker
- Police
- NGO / support person
- Health professional

Interviewer's attitudes and bias towards the story teller

Anamnesis

Mindset at the outset

Await the narrative

- Accepting / believing

Or

- Sceptical / disbelieving

Cautiously curious

Challenging when “things don’t fit”

Interview

Setting conducive to full and accurate account

- Time
- Privacy
- Rapport
- Seriousness of situation conveyed
- Consent

Open “nondirective” questions

Enquiring / curious approach

- Seek detail

Developmentally appropriate language

Consent

Must be valid (in legal sense)

For seeking information from others (& sharing)
For release of information in medico-legal report

Identify information NOT to be shared

Consider capacity of “mature minors”

In forensic medicine confidentiality is limited
Documents legally “discoverable”

The value of the narrative

Their story

Let them tell it their way.....

Verbatim comments

Emotional connection

Be aware of influence of EMR

Avoid leading questions

Categories of stories

Are all stories equal?

Truth

Importance

- Determine cause of injury
- Find other injuries
- Exclude medical conditions confused with abuse
- Predict sequelae

What frameworks might I use to evaluate the story?

How do I obtain information?

Ask
Listen
Record
Seek detail
Challenge discrepancies

Aim to fully understand
mechanism of injury
circumstances surrounding the injury

‘the so-called EXPLANATION’ (postulated mechanism of injury)

Sometimes this is

nonexistent

“ I have no idea” “It is a mystery!”

offered only after a search or suggestion ***

“maybe it happened last Thursday when…”

clearly stated impression or belief but not witnessed

“I heard a bang then the baby cried. I reckon his brother hurt him”

clearly stated and witnessed

“I saw him roll off the bed”

clearly stated and witnessed by more than 1 person

“we all saw him kick her”

The story
‘The postulated mechanism’
in this case – is it

an allegation?

a witness statement?

a hypothesis?

a comment that someone else interprets as suggesting or inferring or indicating a proposition (ie, there could be varying levels of confidence that the inference is valid)?

Example Baby M

Both parents at home with 4 month old boy

Ambulance call – distressed Dad

Found boy in bassinet. Boy limp and not breathing

Resuscitation attempted while awaiting arrival of ambulance

Ambulance officers successfully resuscitate boy and transport him to hospital

Parents tell all health professionals /ambulance officers “he was OK when we put him down 3 hours earlier”

Concordance

Does the story “fit” the observed injury?

Discordance between story and examination findings can arouse suspicion about validity of story - Is the story fabricated?

Concordance

- Might be truthful
- Might be an alibi (plausible lie)

Concordant story and findings

5 year old's mother tells Dr that yesterday, child's father spanked child's bottom

Child's bottom extensively bruised, sparing natal cleft.

Story concordant and indicative of assault

Concordant story and findings

Toddler arrives in ED via ambulance

Parent reports that toddler was wriggling out of straps in high chair when she toppled out.

Straps caught her left leg and she was momentarily upside down tangled in the straps as she fell.

Xrays reveal spiral fracture of left femur.

Concordant story and findings

BUT other causes of these findings are possible

Discordant story and findings

14 year old half sister is carrying 2 month old infant when 14 year old trips and falls. Infant lands on the floor.

14 yo sister tells no-one.

Infant subsequently noticed to have scalp swelling (subgaleal haematoma)

Xrays reveal single linear parietal skull #

Drs question parents and half sister who say “no idea” how trauma might have occurred

Discordant story and findings.

Changing stories

Discrepancies between informants

- He said X
- She said Y

Same informant over time

- With rational explanation (additional information came to light)
- Without apparent explanation

The story

What is the strength of the assertion?

- Is it a witnessed account?
- Is it a proposition?
- Is it merely a suggestion?

Is the story

- plausible?
- possible?
- probable? Likely – if so, how likely?

Categorise information

Fact	something that has really occurred or is the case
Circumstances	the 5 “Ws” and “H”
Speculation	conjectural consideration of a matter

FACTS = known to be true

Most things are NOT absolute or certain

- Assumptions can be either hidden or declared
- Tests vary in sensitivity and specificity
- Systematic reviews & meta-analysis pool dissimilar subjects
- Baysian analysis & probability theory MUST be understood
- Levels of evidence must be understood
- Generalisations vary in capacity to transfer to specific & differing situations
- N=1 cases prove something is possible (but this might be of very little probative value in a new situation)

3. Forensic Opinion

An introduction

Tomorrow = Report writing and Court testimony

Forensic Opinion

- What is a “forensic opinion”?
- How do I “create” one?

Is it all of these?

- Verbal “off the cuff” comment – diagnosis and prognosis
- Verbal – Case conference /case formulation
- Written – Medical record (UR/EMR)
- Written – Report for court
- Verbal - Testimony in court

Forensic Opinion
3 key questions

- Mechanism (the cause)
- Forces
- Timing

Likelihood

- Abuse
- Accident or
- Medical condition

Outcome / consequences

What do we want to know?

- What type of injury exists? (What pattern/type)
- How did it happen? (mechanism)
- When mechanical forces - What forces are likely to have caused it/them? (force)
- When did it happen? (timing)
- What will happen long term?

What do we also want to know?

- Are there other injuries? (Bone / otherwise)
- Does the ‘explanation’ account for the injury?
- If not, why not? What might better explain it?
- ASSAULT, CHILD ABUSE OR… NEGLECT?
  - Or there an innocent explanation
- ACCURACY >>>> ADVOCACY

MUST CONSIDER ALL POSSIBILE CAUSES

- Rare causes must be considered
- Demonstrate reasoning and logic
- Present an argument for WHY you reached your conclusions
  - Why this… not that…or that…

Beware fallacies of logic

a fallacy is a technical flaw which makes an argument unsound or invalid.

1. Reductio ab absurdum

2. Fallacies of relevance

3. Fallacies of presumption

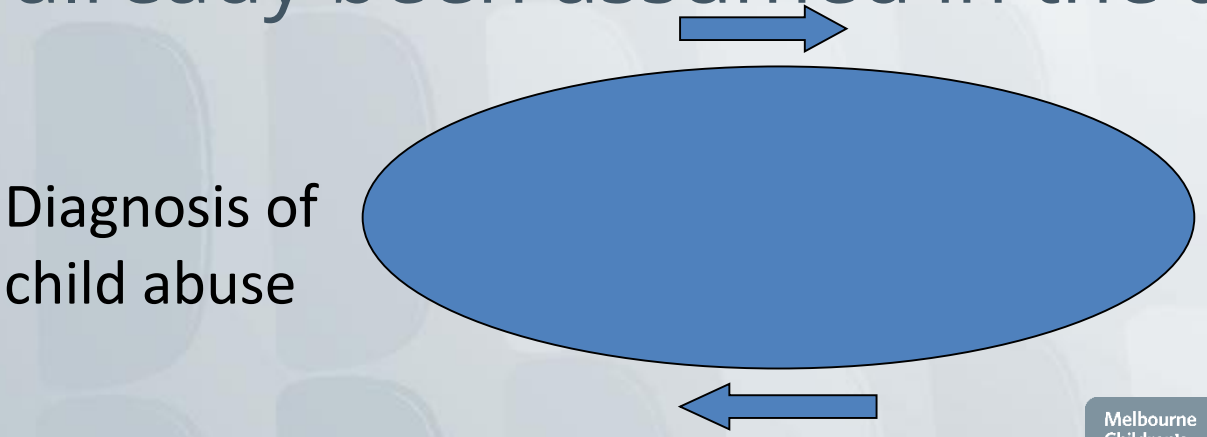
4. Fallacies of ambiguity

A particular "begging the question"

fallacy of using the conclusion of an argument as one of the premises offered in its own support.

Circular argument

- A **circular argument** makes a conclusion based on material that has already been assumed in the argument:



If such actions were not illegal, then they would not be prohibited by the law.

AVOID / MINIMISE BIAS

Huge topic in itself

Multiple types of bias recognised

Forensic medicine = high risk for bias

- Confirmatory bias
- Contextual bias

Examples of Cognitive Bias

People apply a high evidential standard ("Must I believe this?") to unpalatable ideas & a low standard ("Can I believe this?") to preferred ideas

Excessive drive for consistency is another potential source of bias because it may prevent people from neutrally evaluating new, surprising information

People can only focus on one thought at a time, so find it difficult to test alternative hypotheses in parallel.

People can overlook challenges to their existing beliefs

Assumptions & ‘medical truisms’

If you hear hoof-beats think of horses not zebras
- Common things occur commonly (and conversely…)

Occham’s razor

The rule of parsimony (all symptoms are due to one complaint)
If a test result surprises you, repeat the test before taking action
If a test result is unlikely to change the management of a patient, don’t do the test.
Rare manifestations of common diseases > common manifestations of rare diseases
1st priority in DDX = diseases you cannot afford to miss

Values and bias – eg, People are inherently ‘good’
sometimes poverty makes people do bad things…

How useful are systematic reviews
when evaluating a particular child’s situation?

CAUTION: Few doctors understand statistics!

- Single event probabilities
  - Eg Prozac has a 30-50% chance of sexual dysfunction
  - Many doctors do NOT understand risk for their patient
  - Solution to improve understanding of relative risk : Reference class or only use frequency statement
- Conditional probabilities
  - Sensitivity
  - Specificity
  - Positive predictive value
- Relative risks

BMJ 2003;327:741-744 (27 September), doi:10.1136/bmj.327.7417.741
Education and debate: Simple tools for understanding risks: from innumeracy to insight **Gerd Gigerenzer**, *director*[1], **Adrian Edwards**, *reader*[2]

BEWARE

- Prosecutor's fallacy
- Defense Attorney's fallacy
- Conditional probability fallacy / confusion of the inverse
- Base rate fallacy

GET IT RIGHT
OR DON'T GO THERE……

Law and Human Behavior, Vol. 11, No. 3, 1987

Interpretation of Statistical Evidence in Criminal Trials

The Prosecutor's Fallacy and the Defense Attorney's Fallacy*

William C. Thompson† and Edward L. Schumann†

In criminal cases where the evidence shows a match between the defendant and the perpetrator on some characteristic, the jury often receives statistical evidence on the incidence rate of the "matching" characteristic. Two experiments tested undergraduates' ability to use such evidence appropriately when judging the probable guilt of a criminal suspect based on written descriptions of evidence. Experiment 1 varied whether incidence rate statistics were presented as conditional probabilities or as percentages, and found the former promoted inferential errors favoring the prosecution while the latter produced more errors favoring the defense. Experiment 2 exposed subjects to two fallacious arguments on how to interpret the statistical evidence. The majority of subjects failed to detect the error in one or both of the arguments and made judgments consistent with fallacious reasoning. In both experiments a comparison of subjects' judgments to Bayesian norms revealed a general tendency to underutilize the statistical evidence. Theoretical and legal implications of these results are discussed.

INTRODUCTION

Crime laboratories often play an important role in the identification of criminal suspects (Saferstein, 1977; Schroeder, 1977; Giannelli, 1983). Laboratory tests

* This research was supported by grants to the first author from the National Science Foundation (No. SES 86-05323) and the UCI Academic Senate Committee on Research. The authors wish to thank Karen Rook and Robyn M. Dawes for comments on earlier versions of this article and John VanVlear for help in collecting data.

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Prosecutors fallacy

A piece of evidence that would implicate a random person in the population = probability that it implicates the defendant.

Eg DNA evidence (and Meadow's law)

1 in 3 million chance that a random person has this particular DNA profile is (wrongly) attributed / equated to 1 in 3 million chance that this person is innocent

Defence attorney's fallacy

1 in a million chance of a match.

Test 10 million, ->10 matches.

The defendant is merely one of the 10.

Thus my client has 90% chance of innocence!

- Eg OJ Simpsons blood at crime scene matched 1 in 400 other LA citizens. In a LA football stadium a number of other "matches" possible

Conditional probability

- P(I|E) = P(E|I) x P(I) / P(E)
- P (I |E) = probability of innocence given the evidence
- = P (E|I) probability of false positive
- TIMES
- Probability of Innocence independent of test result
- Divided by Probability that evidence would be observed regardless of innocence

Base rate fallacy

Prior probability = base rate probability

CIA example: Vietnam war

- US pilot identifies strafing aircraft as Cambodian
- Under experimental conditions (50% Cambodian 50% Vietnamese) pilot correct 80% erred 20%
- BUT field conditions : 85% of aircraft are Vietnamese, only 15% are Cambodian
- Thus 68 of 85 Vietnamese aircraft (80%) correctly identified, and 17 incorrectly identified as Cambodian
- And 12 of 15 Cambodian aircraft correctly identified (3 incorrectly identified as Vietnamese
- 17 incorrectly identified as Cambodian (actually Vietnamese) + 12 correctly identified as Cambodian = 29
- Therefore probability he is correct is actually 12 / 29 = 41%

www.cia.gov/library/center-for-the-study of intelligence/csi-publications/book

Dos and don’ts for doctors

Do be quiet and listen
Do diligently record verbatim comments
Do explore all possible scenarios
Do seek detail about injury mechanism
Do demonstrate your reasoning

Don’t close your mind to any possibility
Don’t hide anything
Don’t ever suggest to caregivers /others a possible explanation for an injury (Don’t speculate)

AVOID these words

Disclosure

Assumes the statements are factual

"He disclosed that she hurt him"

Victim

Assumes something bad happened to this person

"The victim wept after the alleged assault"

Offender

Perpetrator / Offender = prejudicial term.

Offence

Assumes crime has been committed

"She said that the perpetrator raped her"

Communication with others

Attitude

Be objective and accurate.

Account for ALL information sources (where and how did you get information)

Be impartial

Be honest

Keep within the confines of your expertise

Tips

Don’t say or write ANYTHING that you would not defend under cross-examination in court.

Don’t hesitate to seek advice (early)

Don’t allow yourself to be bullied or influenced to provide a biased opinion in a report

Always question your own judgement and review the evidence on which your opinion is based

If in doubt, perhaps more particularly when you are in NO doubt…have a colleague review & edit report

VFPMS

Melbourne Children's
Excellence in clinical care, research and education

The Royal Children's Hospital Melbourne

Murdoch Childrens Research Institute

The University of Melbourne

Templates and Proformas

Quick

Easy

Experts built them – good starting point

Less risk of missing something / forgetting

Structure “looks good” thus increases your credibility & weight given to your opinion

USE THEM!

Tomorrow

- Report writing
  - For Child Protection
  - For Children's Court
  - For the Criminal Justice system
- Court testimony

"It's 'the truth, the whole truth, and nothing but the truth.' It's not a multiple choice question."