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

Anne Smith
Director VFPMS
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
PROTECTING CHILDREN IS EVERYBODY’S BUSINESS:
PAEDIATRICIANS RESPONDING TO THE CHALLENGE OF CHILD PROTECTION

POLICY DOCUMENT
MARCH 2015

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)

Faculty of Clinical Forensic Medicine

Established in 2014, the RCPA Faculty of Clinical Forensic Medicine was founded to be the representative and training body for doctors working in the field of Clinical Forensic Medicine. Our objectives are to foster the highest standards in the provision of clinical forensic medicine.

Clinical Forensic Medicine is that branch of medicine concerned with the provision of forensic medical services primarily to the living and the collection and interpretation of information for the purposes of civil and criminal law, the judiciary and the police. It is that branch of clinical medicine that deals with both the medical and legal aspects of patient care.

News and Media Releases

- PITUS Update newsletter (issue 4) now available
- RCPA Vacancy Survey Summary 2015
- Ironing out deficiencies
- Oral pathology - Ghaftly gums
- Confusion over HbA1c test rules
- Gleason days are numbered
“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
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 omissions)
• 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
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 (i.e., 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 POSSIBLE 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 ad 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:
  
  Diagnosis of child abuse

  Presence of injuries judged to have been inflicted

  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
1\textsuperscript{st} 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

Education and debate: Simple tools for understanding risks: from innumeracy to insight
Gerd Gigerenzer, director1, Adrian Edwards, reader2
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......

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. Daves for comments on earlier versions of this article and John VanVlear for help in collecting data.
† Program in Social Ecology, University of California, Irvine. Correspondence should be sent to William C. Thompson, Program in Social Ecology, University of California, Irvine, California 92717.
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

- \( P(I|E) = \frac{P(E|I) \times P(I)}{P(E)} \)
- \( P(I|E) \) = probability of innocence given the evidence
- \( = \frac{P(E|I)}{P(E)} \) = 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%

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
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."