The Risk with Risk Factors

Te Puaruruhau
Auckland District Health Board

Police Child Protection Team
(& Child Exploitation Team)

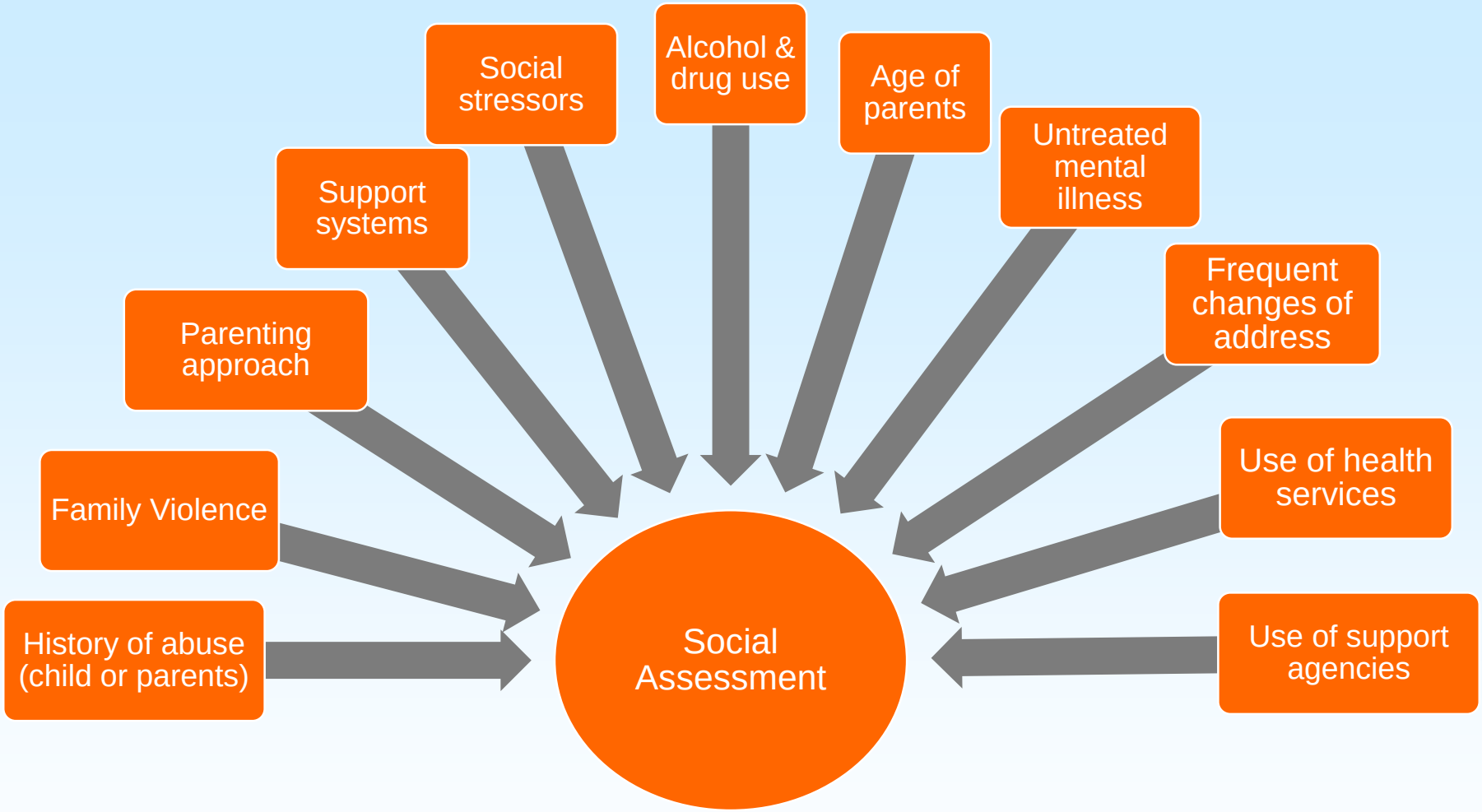
Specialist Services Unit
Child, Youth and Family

Central
Auckland Video
Unit

ADHB/SHINE
Family Violence
Intervention Team

Shaken Baby
Prevention
Programme

- What are social risk factors for child abuse and neglect?
- NZ Research on risk factors
- Case studies – Stephen and Millie
- Missed cases
- Risk factors for children
- Conclusion and Questions


Social stressors
Alcohol & drug use
Age of parents
Support systems
Untreated mental illness
Parenting approach
Frequent changes of address
Family Violence
Use of health services
History of abuse (child or parents)
Social Assessment
Use of support agencies

Perinatal Risk and Protective Factors for Pediatric Abusive Head Trauma: A Multicenter Case-Control Study

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Objective To estimate associations between factors recorded in pregnancy and the first week of life and subsequent abusive head trauma.

Study design Multicenter, retrospective case-control study of perinatal records from 142 cases of abusive head trauma and 550 controls, matched by date and hospital of birth from 1991 to 2010. Multiple logistic regression assessed the relationship between perinatal exposures and abusive head trauma.

Results The risk of abusive head trauma decreased with increasing maternal age (OR, 0.91 per year; 95% CI 0.85-0.97) and increasing gestational age at birth (OR 0.79 per week; 95% CI 0.69-0.91). Mothers of cases were more likely to be Māori (OR 4.61; 95% CI 1.98-10.78), to be single (OR 5.10; 95% CI 1.83-14.23), have recorded social concerns (OR 4.29; 95% CI 1.32-13.91), and have missing data for antenatal care, partner status, social concerns, and substance abuse (OR 13.53; 95% CI 2.39-76.47). Case mothers were more likely not to take supplements in pregnancy (OR 3.53; 95% CI 1.30-9.54), to have membrane rupture longer than 48 hours before delivery (OR 13.01; 95% CI 2.84-59.68), and to formula feed (OR for mixed breast and formula feeding 6.06; 95% CI 2.39-15.36) before postnatal discharge (median 3 days).

Conclusions Factors associated with subsequent abusive head trauma can be identified from routine perinatal records. Targeted interventions initiated perinatally could possibly prevent some cases of abusive head trauma. However, any plans for targeted prevention strategies should consider not only those with identified risk factors but also those for which data are missing. *(J Pediatr 2017;187:240-6).*

Pediatric abusive head trauma is defined as "an injury to the skull or intracranial contents of an infant or young child (<5 years of age) because of inflicted blunt impact and/or violent shaking," often in the first months of life.[1,2] Despite acknowledged underestimation of the true incidence,[3] abusive head trauma is the leading cause of traumatic death and disability in infancy.[1,4]

Infant crying is an important trigger for abusive head trauma, and perinatal healthcare may provide an opportunity for prevention.[5] One program educating parents of all newborns about the dangers of shaking and ways to handle persistent infant crying described a reduction in the incidence of abusive head trauma,[5] but it has not been possible to replicate these results elsewhere.[6]

Other programs focus on families perceived to be "at risk" of a range of adverse outcomes. Best-known are the Nurse-Family Partnership and Healthy Families America.[7,8] The former is targeted at low income first-time mothers, who enroll early in pregnancy and receive home visits until the child is 2 years old.[7] The latter uses a 2-stage protocol to assess risk within 1 week of birth. Perinatal records are screened for 15 items. If this screen is positive or data are missing, a follow-up interview is conducted using the Family Stress Checklist. Depending on the risk assessment, paraprofessionals visit the home for up to 5 years.[8]

All newborn babies in New Zealand have access to a system of universal nurse-led home visiting, introduced first in 1907.[7,9] From 1998, a variety of paraprofessional programs loosely modeled on Healthy Families America were added, but are available in only 30 of 74 counties.[10] Although criteria for acceptance into these programs are similar to Healthy Families America, there is no systematic screening of health records and referrals are made ad hoc.[10] Recently, attention has focused on the possibility that such programs might be targeted better by predictive risk modeling using "big data" held by government agencies.[11]

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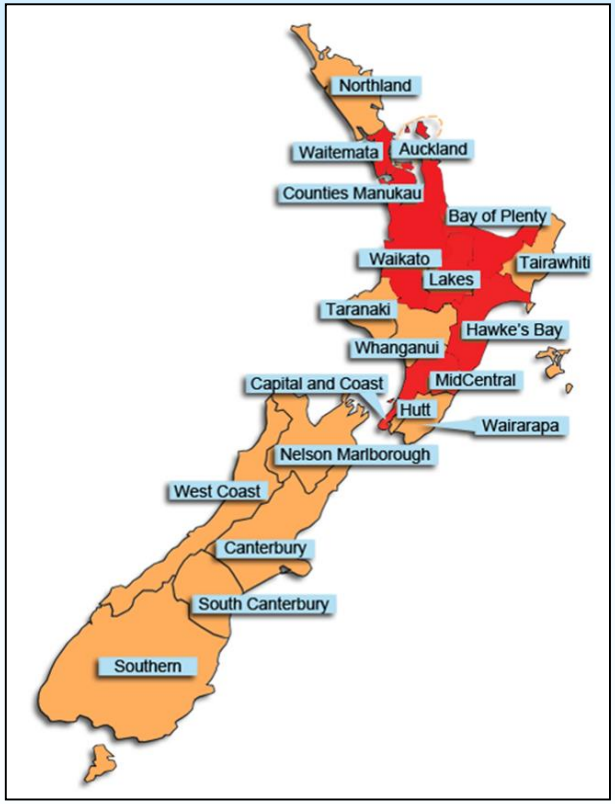
AUC	Area under the receiver operator characteristic curve
DHBs	District Health Boards
IPV	Intimate partner violence

Risk Factors: NZ Study

142 cases of abusive head trauma
550 controls
1991 to 2010



Starship Children's Health

Te Puaruruhau "The sheltering of the bud"

Stephen

- Six month old baby referred to child protection team by Starship ED
- Spiral fracture of the right humerus
- Sunday – Tuesday: Three ED `s and a Whitecross
- Examination
- Social situation – assessment
- Outcome

Millie

- Eight month old baby referred by ED with a healing clavicle fracture.
- Hx: Two weeks previous noted shoulder pain following unsettled night
- GP – Osteopath – GP – Hospital ED – outpatient X-Ray arranged - fracture identified - Starship
- Social Hx

"But look at me ?! "

The “lovely family”

- Was management of these cases influenced by how these families look, sound, act, and their lack of social risk factors ?

Missed cases

- Jenny C et al. 1999 . 175 cases
  - 31% were missed on first presentation
  - 28% were re-injured. Five died, 4 possibly preventable

  – **Missed diagnosis: younger, white or intact families, non-specific symptoms** (irritability, vomiting, no breathing problem, no seizures)

Jenny C et al. Analysis of missed cases of abusive head trauma. JAMA 1999;281:621-626. Kemp A, Coles L. The role of health professionals in preventing NAI. Child Abuse Review 2003;12:374-383. Sanders T et al. Factors affecting clinical referral of young children with SDH to CP agencies. Child Abuse Review 2003;12:358-373

Kemp Study (2003)

- 48% had been admitted to Hospital previously “In retrospect, nearly all of them had symptoms that were relevant to a diagnosis of SBS.”
- 60% present with symptoms consistent with many normal childhood illnesses
- In 32% (21) of the families, there was a history of concerns of previous child abuse.
- **“30% of cases in our study had no known social risk factors”**

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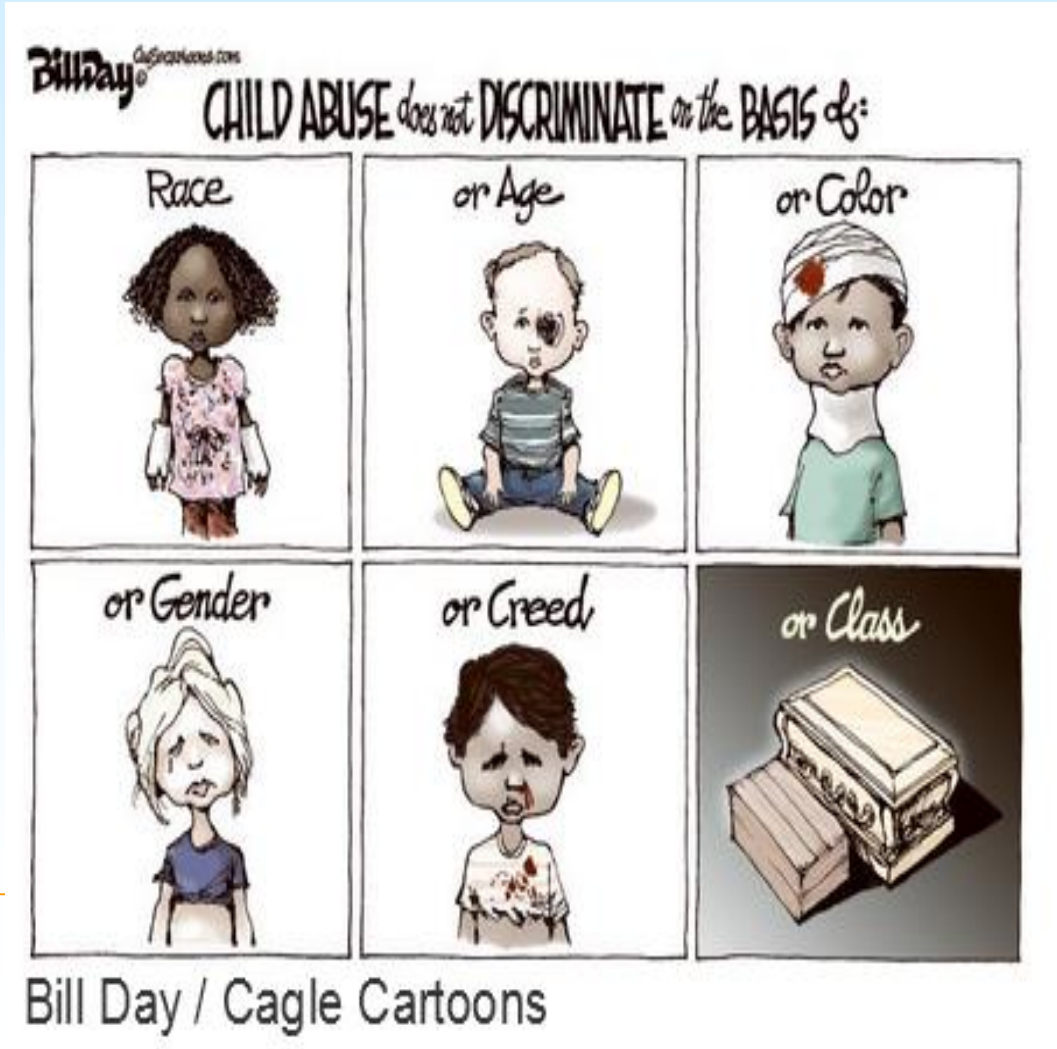
Barriers to Recognition

- Failure to consider
- Desire to believe
- ED setting
- Personal biases



Tiyyagura et. al. 2015.

Starship
Children's Health

Consider the Diagnosis

- ANY injury can be inflicted
- Sometimes abused children have NO signs.
- Sometimes injured children have non-specific signs
- No validated screening tool
- Trust your judgement
- Taking a detailed history is crucia

What Google says…..

Risk factors for a child

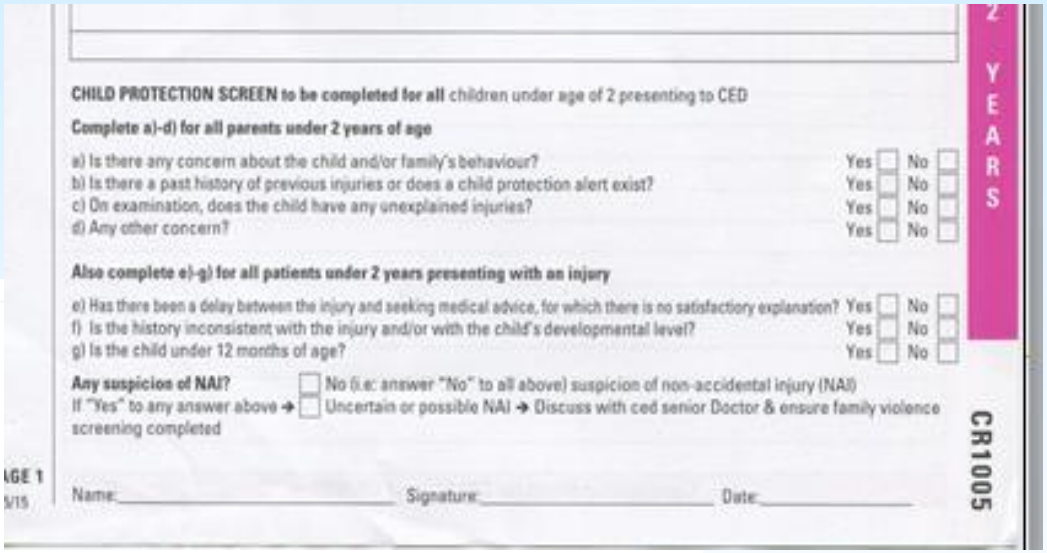
- What do Millie and Stephen have in common?

Fatal Child Abuse in NZ

Age Specific Rates (per 100,000 people per year) for Abuse and Neglect Deaths

AGE	Total New Zealand population 2009-15		CAN deceased n=56			
	n	%	n	%	rate	95% CI
< 1 year	428,400	1	20	36	4.67	2.85-7.21
1-4 years	1,753,790	6	25	45	1.43	0.92-2.10
5-9 years	2,103,340	7	6	11	0.29	0.11-0.62
10-19 years	4,291,430	14	5	9	0.12	0.04-0.27

ED Checklist



CHILD PROTECTION SCREEN to be completed for all children under age of 2 presenting to CED

Complete a)-d) for all parents under 2 years of age

a) Is there any concern about the child and/or family's behaviour? Yes No
b) Is there a past history of previous injuries or does a child protection alert exist? Yes No
c) On examination, does the child have any unexplained injuries? Yes No
d) Any other concern? Yes No

Also complete e)-g) for all patients under 2 years presenting with an injury

e) Has there been a delay between the injury and seeking medical advice, for which there is no satisfactory explanation? Yes No
f) Is the history inconsistent with the injury and/or with the child's developmental level? Yes No
g) Is the child under 12 months of age? Yes No

Any suspicion of NAI? No (i.e: answer "No" to all above) suspicion of non-accidental injury (NAI)
If "Yes" to any answer above → Uncertain or possible NAI → Discuss with ced senior Doctor & ensure family violence screening completed

Name: Signature: Date:

2 YEARS

CR1005

Child Protection Screen Required

- Patient less than 2 years old: Yes
- a. Is there any concern about the child and/or family's behaviour?: No
- b. Does a child protection alert exist?: No
- c. On examination, does the child have any unexplained injuries?: No
- d. Any other concern?: Yes
- e. AGE: Is the child under 12 months of age?: No
- f. DELAY: Was there delay between injury and seeking medical advice with no satisfactory explanation?: No
- g. INCONSISTENT: Is the history inconsistent with the injury and /or with the child's developmental level?: Yes
- h: INJURY HISTORY: Is there a past history of previous injuries?: Yes
- If answer "Yes" to any of the above, consider family violence screening, and: Discussed with CED Senior Doctor named: Dr Jamison

Some conclusions

- Risk assessment is unreliable
- Babies with serious injuries can look OK
- Normal babies don't bruise
  - Until they're independently mobile
  - Every bruise demands an explanation
- Social support is not a panacea
  - Never make assumptions
- Vigilance and rigour of approach is needed
  - A safe approach is difficult and time-consuming
  - Working together is crucial

Connections and Questions