Quality of care children receive in the South African health system

A Child PIP Story

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Overview

- Prologue: Emmaus Hospital
- Chapter 1: Leaving Cape Town
- Chapter 2: Returning to PMB
- Chapter 3: Seeing South Africa
- Epilogue: Emmaus Hospital
Prologue: Emmaus Part 1
Chapter 1: Leaving Cape Town
25 year-old Evelyn’s ‘fresh stillbirth’

Labour = 30 Hours

Partogram 1

Partogram 2

Partogram 3

Undocumented failed forceps and vacuum “attempts”
What is “indifference”?

“... a strange and unnatural state in which the lines blur between light and darkness, dusk and dawn, crime and punishment, cruelty and compassion, good and evil...

... for the person who is indifferent, his or her neighbours are of no consequence. And therefore their lives are meaningless. Their hidden or even visible anguish is of no interest.”

Elie Wiesel April 1999
The power of mortality audit

Patrick ME. Perinatal mortality at Frontier Hospital, Queenstown – a 6-year audit using the Perinatal Problem Identification Programme (PPIP). South African Journal of Obstetrics and Gynaecology Volume 13 no.1, March 2007
Should we be concerned about child deaths?
75 000 children will die before turning five in South Africa this year

12 March 2008
World country distribution

http://www.worldmapper.org
World child death distribution

2011 estimate: 7.2 million deaths

3.5 million in Sub-Saharan Africa

Child deaths in Africa

From: Opportunities for Africa's Newborns, Lawn J et al
Child deaths in South Africa


Chapter 2: Returning to PMB
Should we be concerned about quality of care?
“Not seen on ward at all after admission; sats recorded as 66%; no oxygen given; sats never rechecked”

13 month old Thando with ARI
“LP considered, but not done. Diagnosis of meningitis delayed by 15 hours; antibiotic never started”

16 month old Sanele with meningitis
“No notes in child’s folder for three days prior to death; last note: ‘doing well’”

6 week old Ayanda with unknown cause of death
“Lift got stuck when intern called to patient. Patient already dead when she got there.” (Later in the day the intern slipped, running up the stairs, and broke her wrist)

2 month old Zweli with no identifiable cause of death
8 month old Sihle, admitted on Friday with a roaring meningitis, received no antibiotics until Monday

“How can this be...”
Can death auditing address quality of care?
A brief history of death ‘auditing’

- CPC: 1769
  - Morgagni: post mortem findings against symptoms and signs
    - Diagnose, treat and prognosticate
A brief history of death ‘auditing’

- Mortality Rates: 1880’s
  - Florence Nightingale
  - Semmelweiss
A brief history of death ‘auditing’
A brief history of death ‘auditing’

• Avoidable Mortality: 1976
  – Rutstein: Comparison to “gold standard”

Measuring the Quality of Medical Care — A Clinical Method
David D. Rutstein, M.D., William Berenberg, M.D., Thomas C. Chalmers, M.D., Charles G. Child, 3rd, M.D., Alfred P. Fishman, M.D., Edward B. Perrin, Ph.D., Jacob J. Feldman, Ph.D., Paul E. Leaverton, Ph.D., J. Michael Lane, M.D., David J. Sencer, M.D., and Carleton C. Evans, M.D.

• Avoidable factors: 1980
  – Donabedian: problems and solutions
A brief history of death ‘auditing’

• Modifiable Factors: 2000
  – Krug: problems and solutions
The idea...

• We care, therefore we reflect
• When we reflect we ask:

  “Is this the best I can do?”

...creates a need for a structure...

• To reflect on want we do
• For answering: “Is this the best we can do?”

...for making change happen!
The Child PIP structure

Child PIP provides a structure for assessing the quality of care children receive in the SA health system by...

- Ensuring all inpatient deaths are identified
- Determining the social, nutritional and HIV context of each child who dies
- Assigning a cause to each death
- Determining modifiable factors in the caring process for each child who dies

Data is analysed using Child PIP software.
Analysis of Child PIP data provides information about...

1. Mortality rates (IHMR)
   - Child PIP: in-hospital mortality rate (IHMR) = deaths per 100 admissions

2. the health profile of children who die in hospital
   - social, nutritional and HIV context
   - cause of death

3. the quality of care given by those entrusted with caring for them
“The paediatric mortality review process seeks to improve the quality of care that children receive in the South African health system”
Chapter 3: Seeing South Africa
2005 (n=21)
2008 (n=78)
2009 (n=102)
### Participating hospitals in 2010

<table>
<thead>
<tr>
<th>Hospital level</th>
<th>Total (N) in SA</th>
<th>Child PIP sites (n)</th>
<th>% of hospitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>District</td>
<td>259</td>
<td>82</td>
<td>32</td>
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<tr>
<td>Regional</td>
<td>53</td>
<td>21</td>
<td>40</td>
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<tr>
<td>Provincial Tertiary</td>
<td>14</td>
<td>6</td>
<td>43</td>
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<tr>
<td>National Central</td>
<td>13</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>339</strong></td>
<td><strong>114</strong></td>
<td><strong>34</strong></td>
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### Provinces & hospital sites

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<th>Province</th>
<th>2005</th>
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<td>3</td>
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<td>11</td>
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<tr>
<td>Total</td>
<td>21</td>
<td>31</td>
<td>51</td>
<td>78</td>
<td>102</td>
<td>116</td>
</tr>
</tbody>
</table>
What Child PIP tells us

- The study population
  - All dying in children’s wards, annually, in participating hospitals

- Period
  - 2005 to 2010

- Method
  - The Child PIP audit process was used to determine:
    - in-hospital mortality rate
    - social, nutritional, and HIV context
    - causes of death
    - modifiable factors in the care provided
Number of deaths
Totals: 2005-2010

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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<tr>
<td>Total Admissions</td>
<td>485,881</td>
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<tr>
<td>Tallied Deaths</td>
<td>23,488</td>
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<tr>
<td>In Hospital Mortality Rate</td>
<td>4.8</td>
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<tr>
<td>Audited Deaths</td>
<td>25,160</td>
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<tr>
<td>Audited U5 Deaths</td>
<td>20,599</td>
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</table>
## Core Data

<table>
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<tr>
<th></th>
<th>2005</th>
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<th>2008</th>
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<th>2010</th>
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</thead>
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<td>Admissions</td>
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<td>63377</td>
<td>110066</td>
<td>138668</td>
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<tr>
<td>Tallied Deaths</td>
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<td>2391</td>
<td>3201</td>
<td>5521</td>
<td>5833</td>
<td>4992</td>
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<td>IHMR</td>
<td>6.5</td>
<td>5.9</td>
<td>5.1</td>
<td>5</td>
<td>4.2</td>
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<tr>
<td>Audited Deaths</td>
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<td>2873</td>
<td>3829</td>
<td>5659</td>
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<tr>
<td>U5 Audited Deaths</td>
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<td>2353</td>
<td>3175</td>
<td>4762</td>
<td>4739</td>
<td>4260</td>
</tr>
</tbody>
</table>

20599 deaths 1-59 months
Deaths audited per year: SA

![Graph showing the number of sites and deaths over time. The graph has two lines: one for (Total) Deaths and another for Sites. The x-axis represents the years from 2005 to 2010, and the y-axis represents the number of deaths and sites. The graph shows an increase in both deaths and sites over the years.](image-url)
What do these deaths tell us about children
Nutrition: 2005-2010
(n=20,599)

Severe malnutrition, 7,468, 36%

Unknown, 1,292, 6%

>3rd Centile, 5,901, 29%

UWFA, 5,938, 29%
Nutrition and HIV

(n=20 599)

- Negative
- Exposed
- Infected
- Unknown

- > 3rd Centile
- UWFA
- Severe Manutrition
- Unknown
HIV: 2005-2010
(n=20,599)

- Unknown, 6,674, 32%
- Infected, 5,393, 26%
- Exposed, 5,113, 25%
- Negative, 3,419, 17%
HIV: 2005-2010
(n=20 599)

Unknown, 11787, 57%

Infected, 5393, 26%

Negative, 3419, 17%
Deaths by HIV status per year
Deaths by HIV status per year

- Negative
- Infected
- Exposed
- Unknown
Deaths by HIV status per year
Cause of Death
Cause of death
(n = 20 599)

- Sepsis: 17%
- DD: 23%
- ARI: 22%
- PCP: 9%
- TB: 6%
- Other: 23%
Stats SA cause of death: 1-4 years
(n=14 782)

- Ill-defined: 16%
- HIV/AIDS: 6%
- ARI: 18%
- DD: 24%
- Sepsis & meningitis: 3%
- Other: 21%
- Birth defects: 1%
Cause of death: HIV contribution 1

(n = 20 599)

51% of deaths
HIV exposed or infected
Causes of death: HIV contribution 2

(n = 20 599)

‘AIDS’ = Lab category ‘Infected’

- AIDS: 26%
- ARI: 16%
- PCP: 6%
- DD: 18%
- Sepsis: 15%
- TB: 3%
- Other: 16%

'AIDS' = Lab category 'Infected'
Acute diarrhoea deaths: HIV status

- Total diarrhoea deaths: 2005 to 2010
- Negative: 2005 to 2010
- Infected: 2005 to 2010
- UNKNOWN: 2005 to 2010
- Number: 2005 to 2010
What does Child PIP tell us about US?
Modifiable factors: Who?
(n = 76,045)

Caregiver 32%
Administrator 14%
Clinical Personnel 54%
Modifiable factors: Where?

(n = 76,045)

- Home: 33%
- Clinic: 14%
- Transit: 2%
- Ward: 27%
- A&E: 24%
Admissions and Emergency

**Critical illness**
- Inadequate history taken
- Inadequate investigations (blood, x-ray, other)
- Inadequate physical examination
- Inadequate assessment of shock
- Appropriate antibiotics not prescribed

**Sepsis**
- Appropriate antibiotics not prescribed at A&E
- Inadequate investigations (blood, x-ray, other) at A&E
- Inadequate history taken at A&E
- Inadequate physical examination at A&E
- Blood glucose not monitored in child with danger signs at A&E
Was the death avoidable?

(n = 20,599)

- No: 24%
- Not sure: 36%
- Unknown: 12%
- Yes: 28%
So...
Health profile

• For the 20,599 children who died
  – Infections
  – HIV rampant, and imprecisely quantified
  – Malnutrition is a serious co-morbidity
Quality of care

• For the 20 599 children who died
  – Basics
  – Clinical personnel
The audit information tells us that children need

- Decent **infrastructure**
  - Buildings, equipment, consumables, transport
- Decent **staffing**
  - Quality and quantity
- Decent **record keeping**
- Decent **clinical care**
- Decent **quality control**
... the ‘service delivery triangle’...
Pietermaritzburg Resource Package

- clinical guidelines
- a comprehensive record keeping system
- quality improvement tools
- disease notification
- outreach programme information

The Child Health Resource Package
Epilogue: Emmaus Part 2
Dear Paediatric Ward Staff,

The last few months have been incredibly interesting. We have seen a lower mortality rate than ever—amazing work from truly amazing people. Thank you.

However, it has also been a difficult month. It is not easy watching children die—it is not easy to hold the sadness and helplessness of watching someone suffering. Yet, you have cared for them with much kindness, patience, and love. To witness this has been very humbling.

We cannot save all our children—much is beyond what we have control over or can change. And this is something we need to remember. We try to learn from our mistakes—so that they are not repeated. And to remember that caring and kindness are part of what makes the Paeds ward team such a great one! It is a real privilege to work with you all.

Thank you again for the amazing work that you do in the circumstances we find ourselves in.
There can be no keener revelation of a society’s soul than the way in which it treats its children.

-Nelson Mandela
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We have been an incredibly interesting month - we have lowest mortality rate ever - incredible work from truly amazing people. Thank you.

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Emmaus Hospital In-Hospital Mortality Rate
Acknowledgements

The hundreds of nurses and doctors involved in the Child PIP mortality review process around the country

Bob Pattinson
Angelika Krug
Cindy Stephen
Mphele Mulaudzi
Neil McKerrow
Cathy Bezuidenhout