

MMed and DCH Lectures

Weekly by Zoom

Prof Trevor Duke

MMed and DCH Lectures

Recent trends in childhood diseases in PNG

July 13, 2020

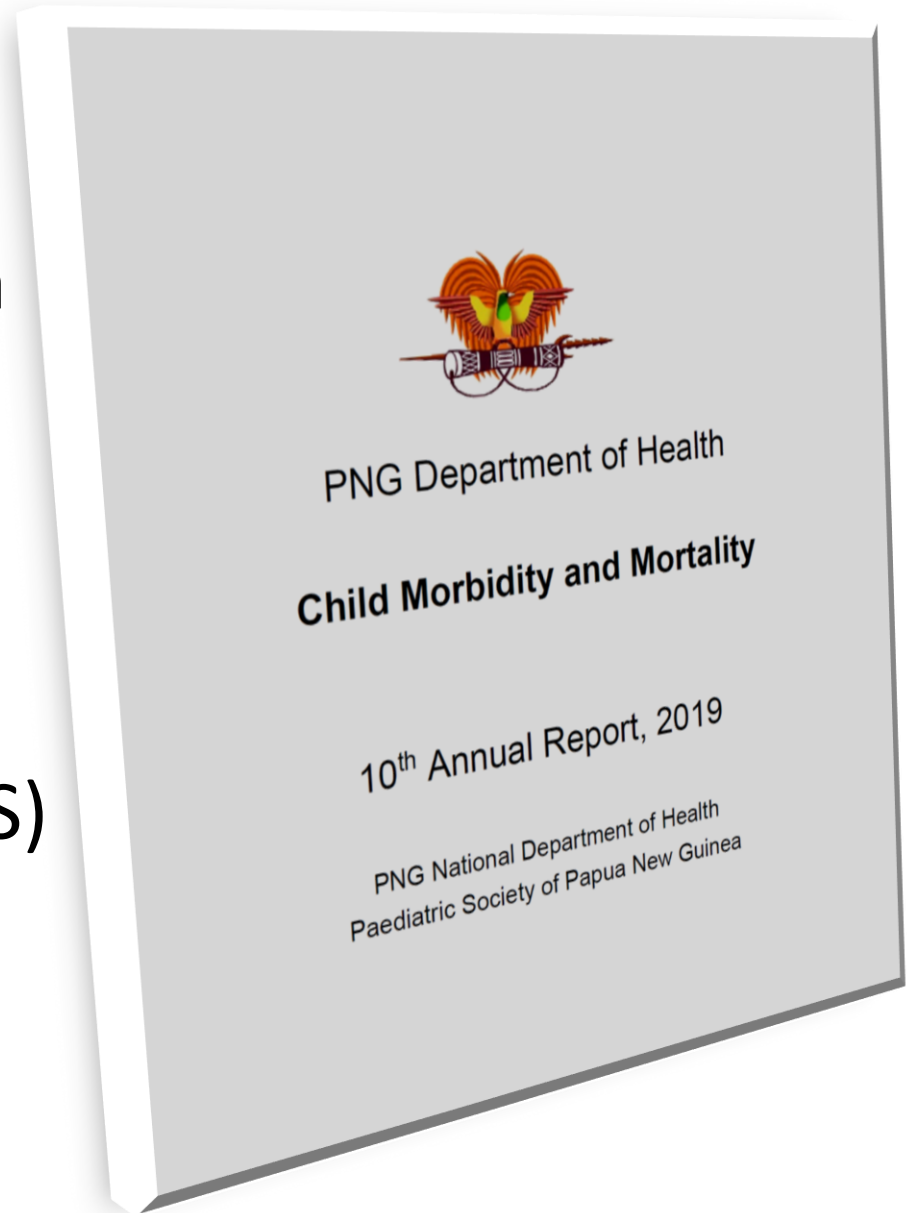
Prof Trevor Duke

Diseases of children and outcomes

- Neonatal / infant / child mortality rates:
 - Number of deaths up to 28 days / 12 months / 5 years
 - 1000 live births
- Common infections in children
- Common non-communicable diseases in children
- Determinants of outcomes

Sources of data

- Paediatric Hospital Reporting Program (PHR)
 - Clinical data from 20 hospitals
 - Annual Child Morbidity and Mortality Reports
- Demographic and Health Surveys (DHS)
 - Population-based data
 - Once every 10 years



Paediatric Hospital Reporting V12

Data entry

Pt List

New patient

<<

<

ID

2

>

>>

Home

Summary data

Export data

Print data form

Patient information

Respiratory

Gastro/Nutrition

Acute fever/Rash

Malaria

Neuro/Meningitis

Tuberculosis

Emergency/Surgical

Renal/Haematology/Endocrine

Heart disease

Cancer

HIV

Child protection

Admission date

Hospital

Name

Hospital no

Date of birth

Calculated Age

Estimated Age

Sex

M

F

Weight

kg

Readmission

Yes

No

Province

District

Village

Referred in

Yes

No

Referred from

SpO₂

%

Anaemia

Yes

No

HIV

Negative

Positive

Not tested

Immunised

Fully immunised for age

Partially immunised for age

Unvaccinated

Nutritional

Weight for age greater than -2 standard deviations (good weight)

Weight for age between -2 and -3 standard deviations (underweight)

Weight for age less than -3 standard deviations (severely underweight)

Mid Upper Arm Circumference

mm

Outcome

Survived to hospital discharge

Transferred out

Died

Absconded

Date of discharge / transfer / death

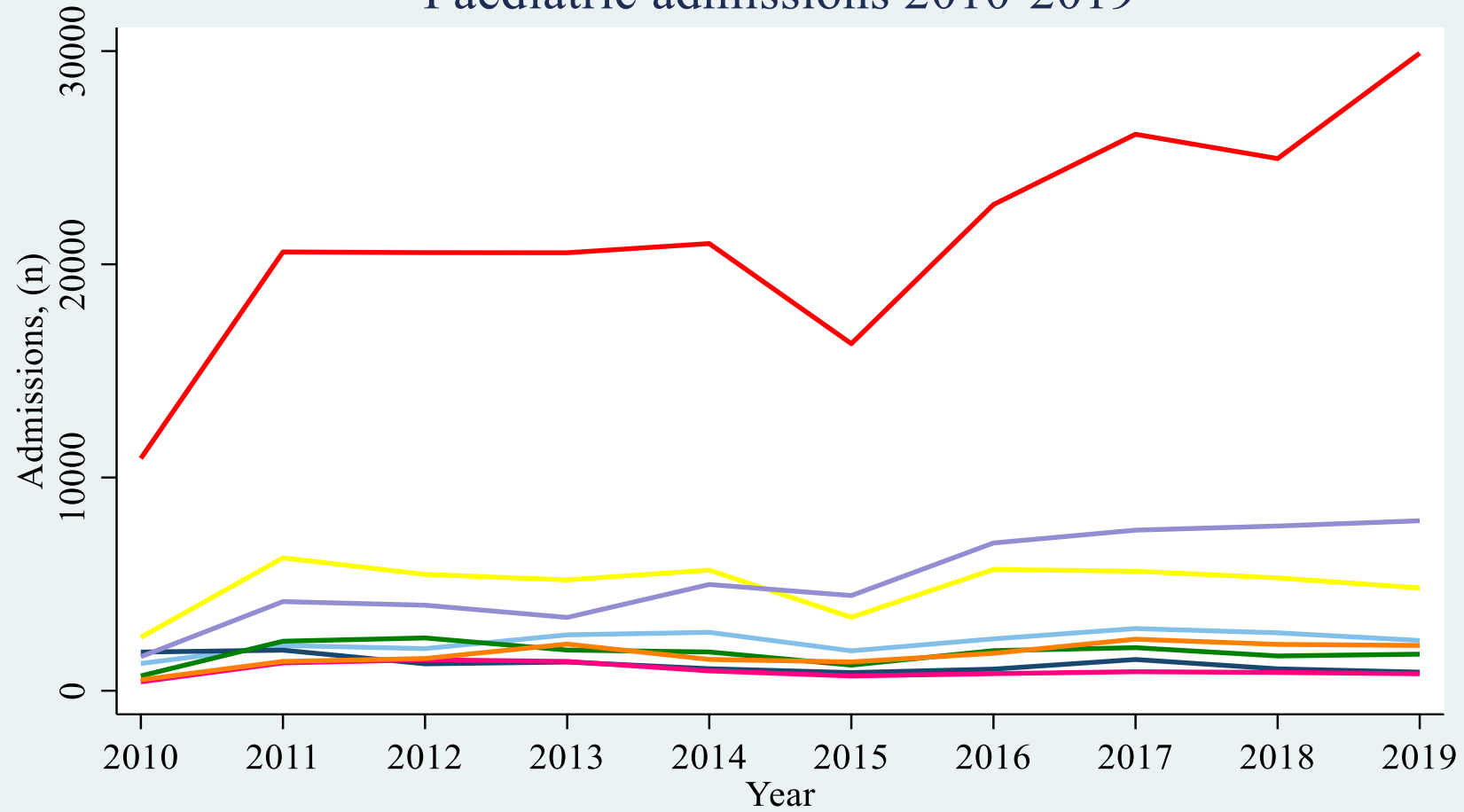
Complications

Hospital Acquired Infection

Intravenous complications

Complications other

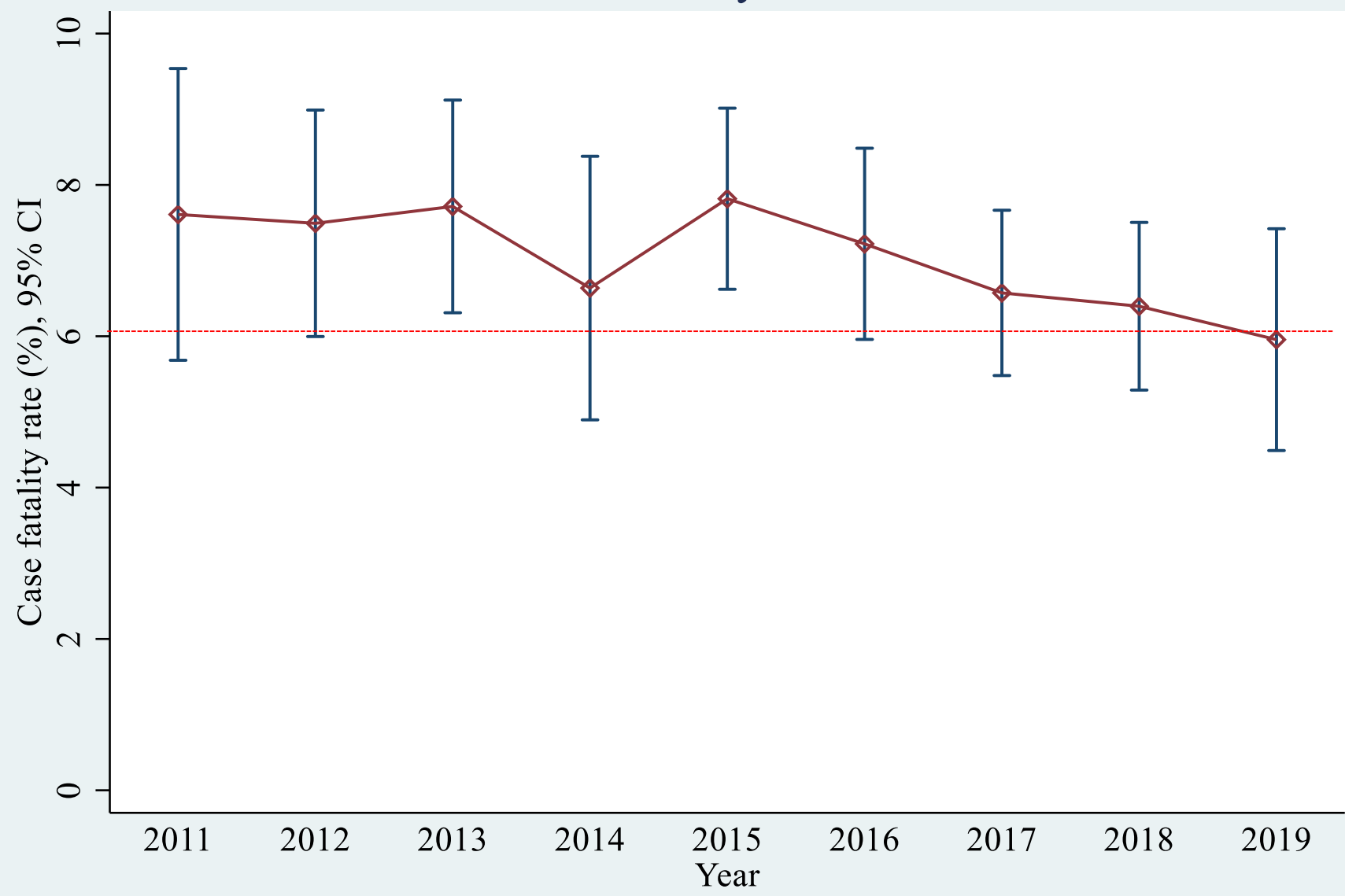
Paediatric admissions 2010-2019



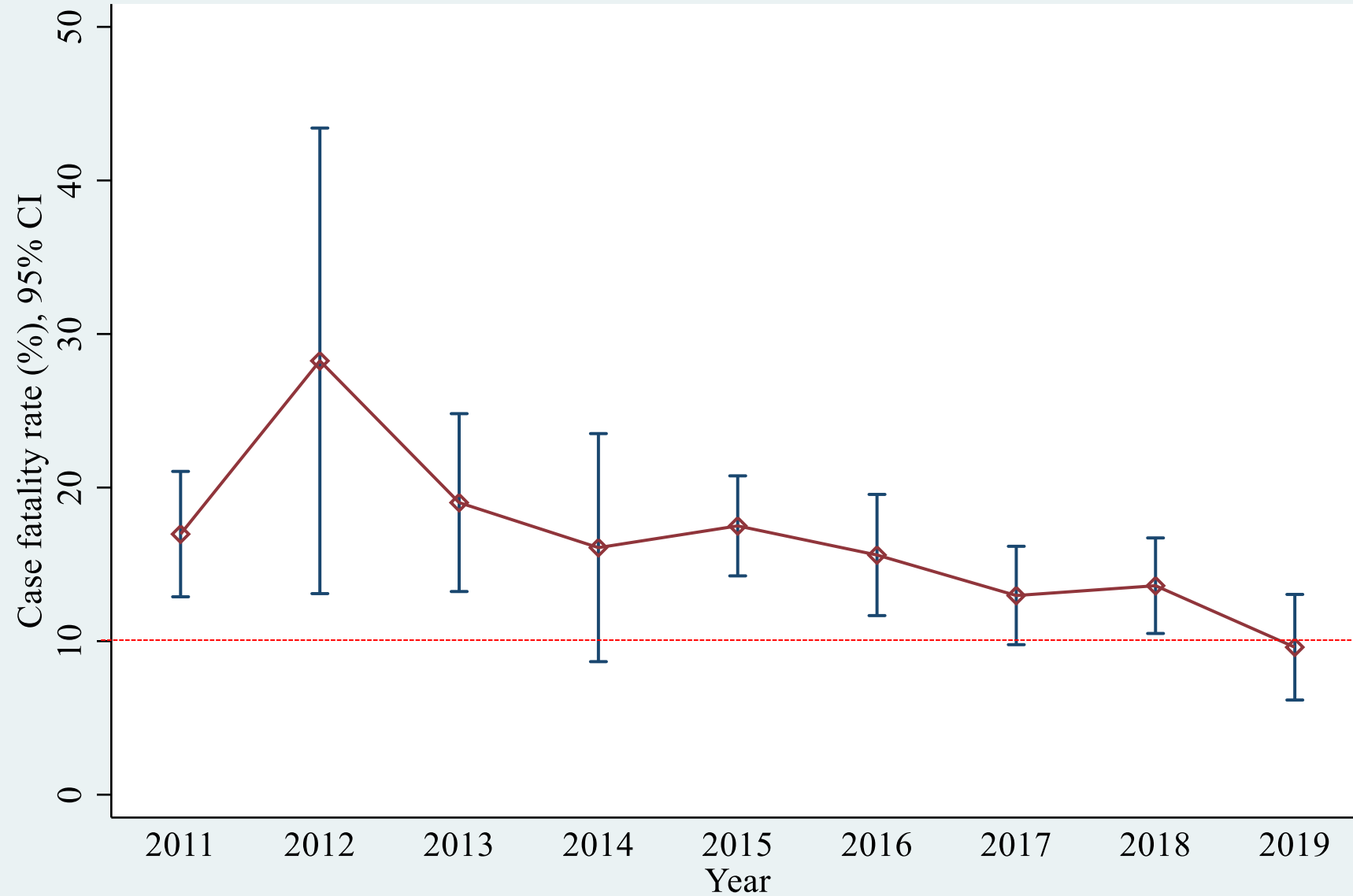
Total admissions	Diarrhoea	Malaria	Meningitis
Pneumonia	Severe pneumonia	Tuberculosis	Neonatal admissions

Diagnoses	Admissions 2019	Deaths 2019	Case fatality rate 2019 (%)
Pneumonia	4818	171	3.55
Severe pneumonia	1716	127	7.40
Neonatal conditions	7971	679	8.52
Diarrhoea	2358	124	5.26
Malaria	872	42	4.82
Severe malnutrition	2411	250	10.37
Tuberculosis	2125	173	8.14
Meningitis	795	115	14.47
HIV	389	48	12.34
Anaemia	2310	267	11.56
Rheumatic heart disease	116	15	12.9
Congenital heart disease	296	41	13.85
Measles	5	0	0.0
Cancer	139	39	28.1
Tetanus	10	2	20.00
Acute flaccid paralysis	46	1	2.2
Whooping cough	18	0	0.0
Child protection	148	25	16.9
Trauma and injuries	125	2	1.60
All paediatric admissions	29 901	1923	6.43

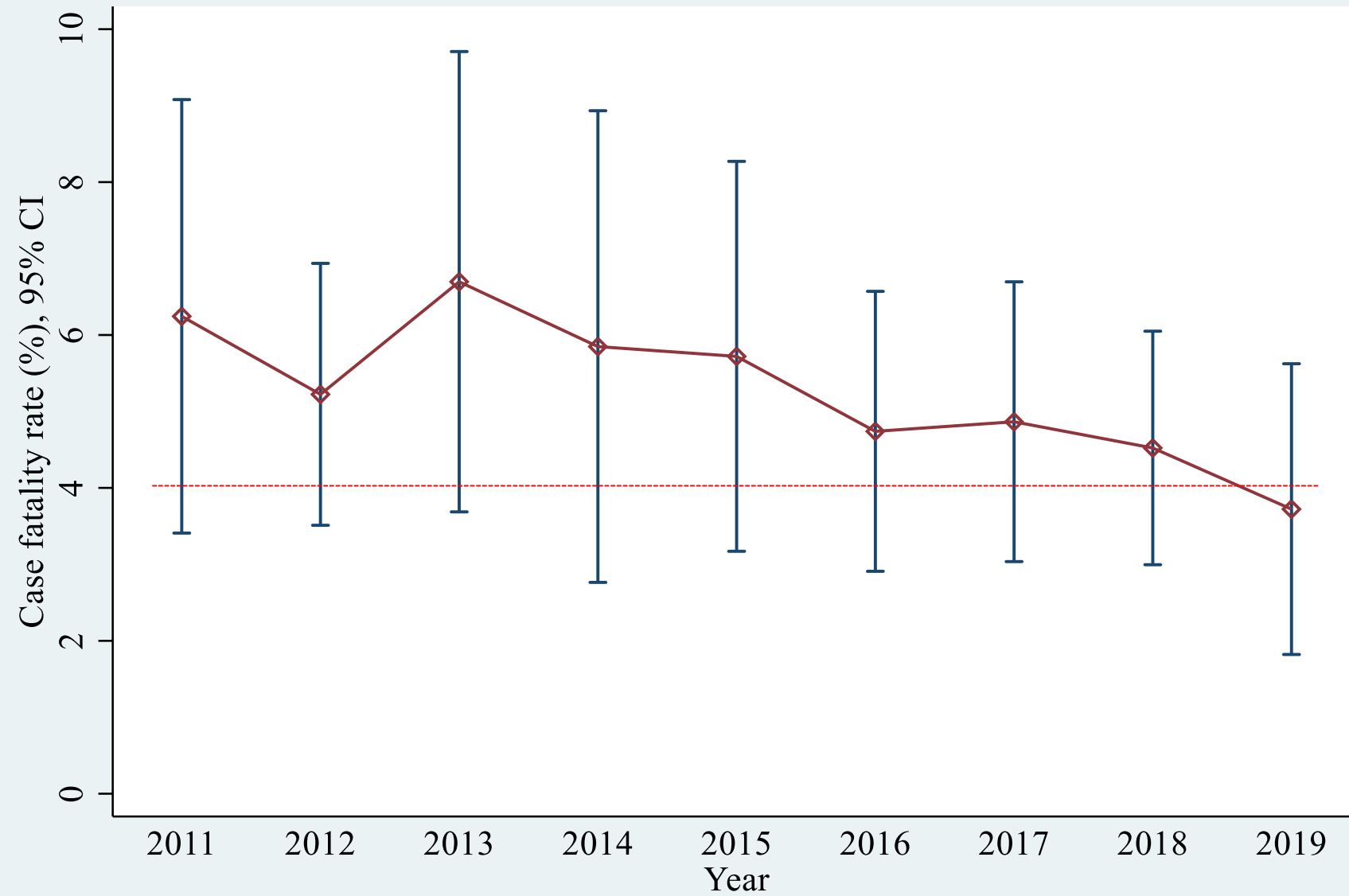
Overall case fatality rates 2011-2019



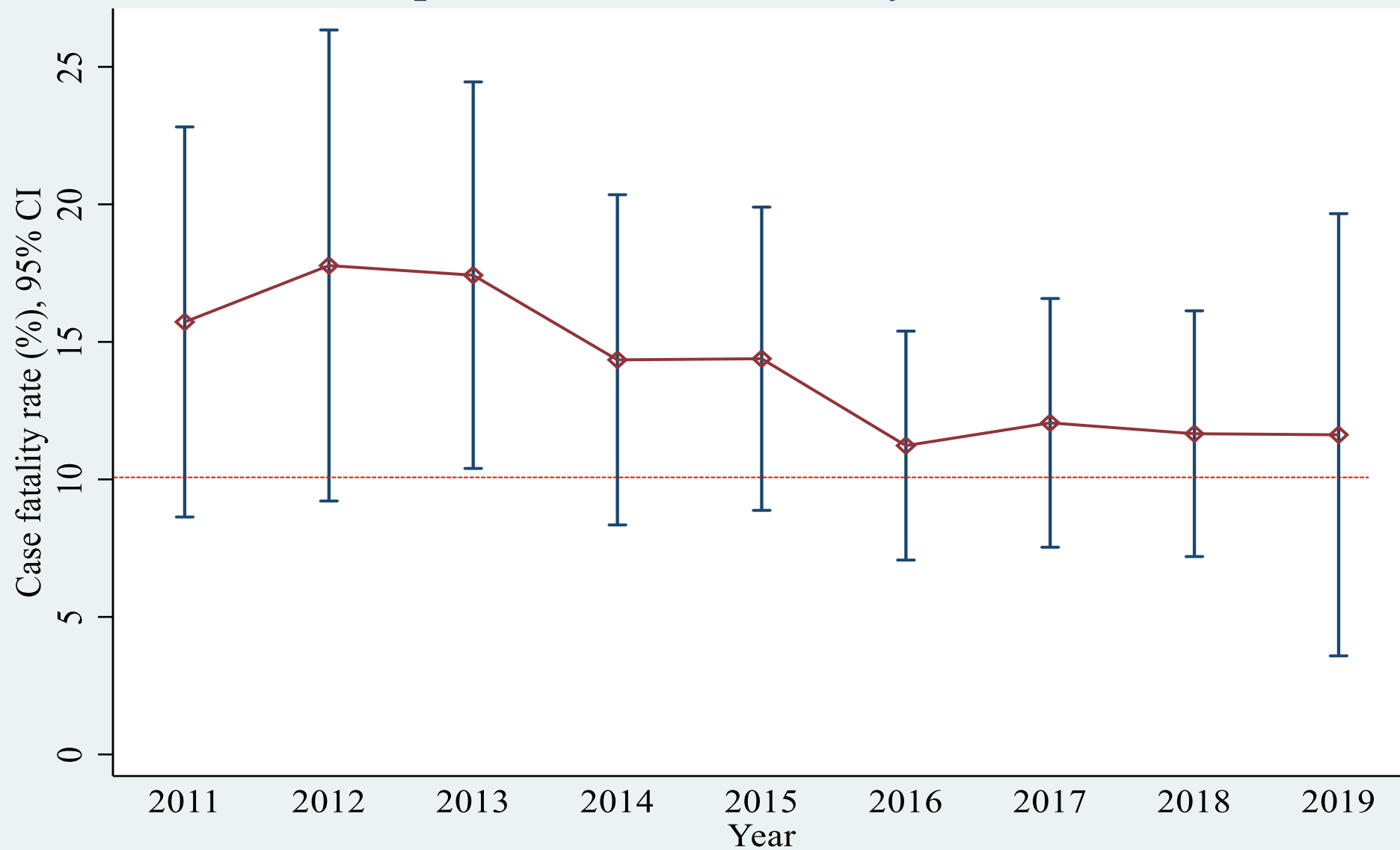
Severe malnutrition case fatality rates 2011-2019



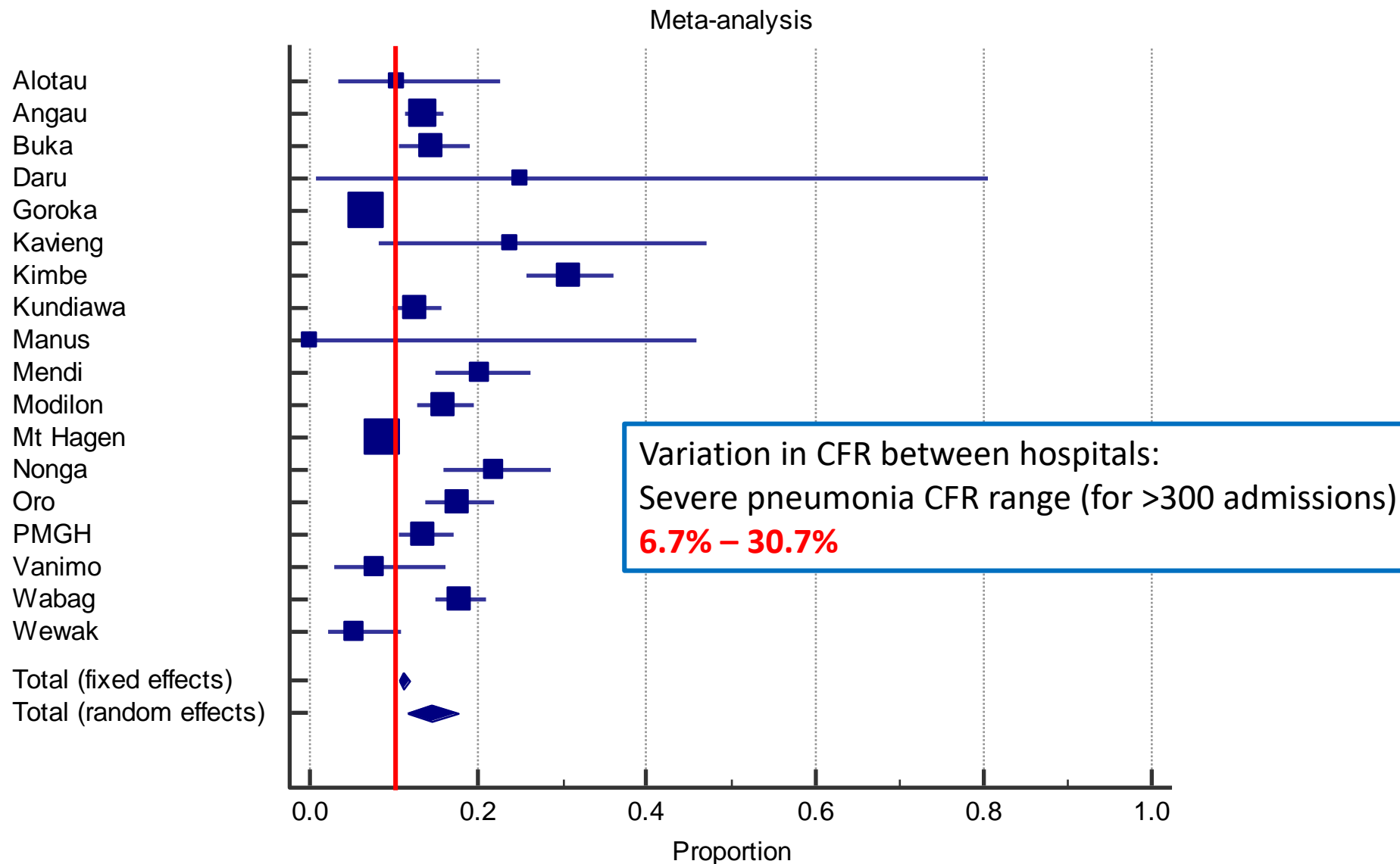
Pneumonia case fatality rates 2011-2019



Severe pneumonia case fatality rates 2011-2019

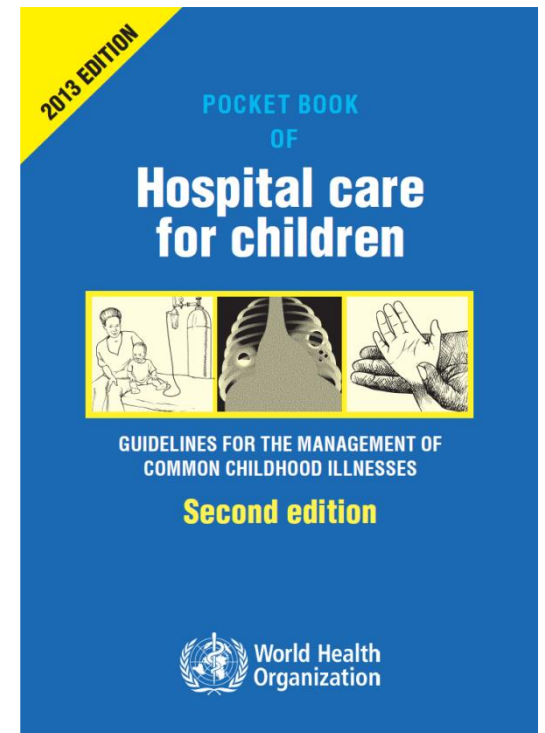


Case fatality rate for severe pneumonia n=10,744



CFR variation between hospitals

- Patient-based factors
 - Case mix
 - Disease outbreaks (RSV, influenza)
 - Comorbidities (HIV, anaemia, malnutrition)
 - Illness severity at presentation
- Quality of care
 - Skilled staff available to manage seriously ill children
 - Triage and systems of care
 - Oxygen, antibiotics
 - Management, leadership, financing and support



Changing disease patterns

1. **Acute infectious diseases** and changes within these (pneumonia, diarrhoea, malaria)
2. **Chronic infectious conditions** (TB and HIV) and changes within these
3. **Chronic non-communicable diseases** (asthma, epilepsy, cerebral palsy, cancer, cardiac disease)
4. **Impacts of poverty and environment** such as malnutrition, enteropathy and child neglect
5. **Adolescent health concerns** including mental health, self-esteem, nutrition, substance abuse, sexual health
6. And with increasing survival from acute and chronic diseases, the **complications which impact on development, growth and quality of life**

Changing disease patterns

- Changing epidemiology *within* diseases
 - “Pneumonia” following the conjugate vaccine
 - More viruses, less bacterial pneumonia
 - Tuberculosis - TB in the HIV era, rise of MDR TB
 - Bacterial sepsis and antibiotic resistance
 - Neonatal sepsis
 - ESBL producing Gram negative bacteria (Enterobacter, Klebsiella)
 - MRSA in the community
 - Resistant *Shigella flexneri* (dysentery)

Changing childhood disease burdens in 2020

- Increasingly, patients in paediatric wards and in clinics have *chronic conditions* - communicable and non-communicable
 - Tuberculosis, HIV, rheumatic heart disease, congenital heart disease, asthma and other chronic lung diseases, cerebral palsy, epilepsy, renal disease, cancer, ex-premature babies, developmental and mental health problems
- Often they are *complex* chronic conditions, with more than one system involved

Issues in chronic conditions in children

- The population involved (a higher proportion of school-aged and teens)
- Feasible goals of treatment and individualised treatment plans
- How to achieve optimal development
- Quality of life
- Adherence to medications
- Continuity of care
- School attendance
- Parental understanding of the condition and how they can contribute to care
- Children's understanding of the condition and how they can help themselves
- Issues of prognoses, ethical issues and sometimes end-of-life care
- Sometimes child safety and protection issues
- Transition to adult services

Demographic and Health Survey (DHS)

	1991	1996	2006	2016-18
Under 5 mortality rate	133	94	75	49
Infant mortality rate	82	69	57	33
Neonatal mortality rate		30	29	20

Vaccine coverage DHS

Vaccine	Coverage (%) at 12-23 months		
	1996	2006	2016-18
BCG	90.7	89.5	69.4
OPV3	46.5 #	68.3	42.2
DTP3	46.5 #	66.8	41.7
Hep B3	57.4	64.5	57.5
Measles	75.6 *	81.5	58.7 **
All vaccines	39	52	35

OPV3 and DTP3 reported together in 1996

* One dose of measles vaccine in 1996

** First dose of measles vaccine = 58.7%; second dose coverage = 40.1%

Care seeking for diarrhoea

	1996	2006	2016-18
Prevalence of diarrhoea in the previous 2 weeks	16.5% (320 / 1968)	4.5% (176 / 3893)	14% (184 / 1315)
Prevalence of bloody diarrhoea	1.6%	0.3%	-
If diarrhoea, % taken to health facility	32.7%	30.1%	38.4%
If diarrhoea, % given ORS	16.7%	8.0%	30.0%
If diarrhoea, recommended home remedy	21.9%	7.4%	-
If diarrhoea, % given zinc	-	-	7.3%

Social gradient: DHS 2016-18

- Every health statistic had a strong social gradient
- Children from families that are **poor, rural or whose mothers are poorly educated** have less access to all basic health services, and worse health outcomes.
- The social, rural and educational gap is not new, seen in 2006 and 1996 DHS.
- It is also virtually universal - common in all countries - but it is key to understanding where further progress will be made

Domestic violence DHS 2016-18

- The first DHS in PNG that included questions regarding domestic violence
- 59% of women surveyed had been victims of physical or sexual violence
- 43% of 15-19 year old girls.
- 72% of women sought help from family members
- 10% of women who experienced physical or sexual violence sought help from police.

New models of care: 2020-2030

- Community and hospital paediatrics
- Quality and continuity of care
- Specialist services linked to primary / district health care
- Greater involvement of allied health, social welfare, schools
- Focus on adolescent health, development, chronic illness
- Goals of treatment and management plans
- More paediatricians and paediatric nurses
- Health systems focus