

Born that way....

“A review of birth defects among 1000 consecutive live births at Milne Bay Provincial Hospital between February and August, 2018.”

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MMed II
2019

Introduction



Introduction

8 MILLION BIRTH DEFECTS PER YEAR

(March of Dimes; global report on birth defects,2006)

94% OCCUR IN DEVELOPING COUNTRIES

(Congenital abnormalities: Fact Sheet #370; WHO,2012)

303, 000 NEONATAL DEATHS PER YEAR

(Child cause of deaths,2000-2015; WHO 2016)

2.3 MILLION CHILDREN BORN ANNUALLY WITH B.D. SURVIVE WITH LIFELONG DISABILITIES

(March of Dimes; global report on birth defects,2006)

25.3 – 38.8 MILLION D.A.L.Ys GLOBALLY

&

Ranked 17th in leading causes of global burden of illnesses (Murray, et al. 2012)

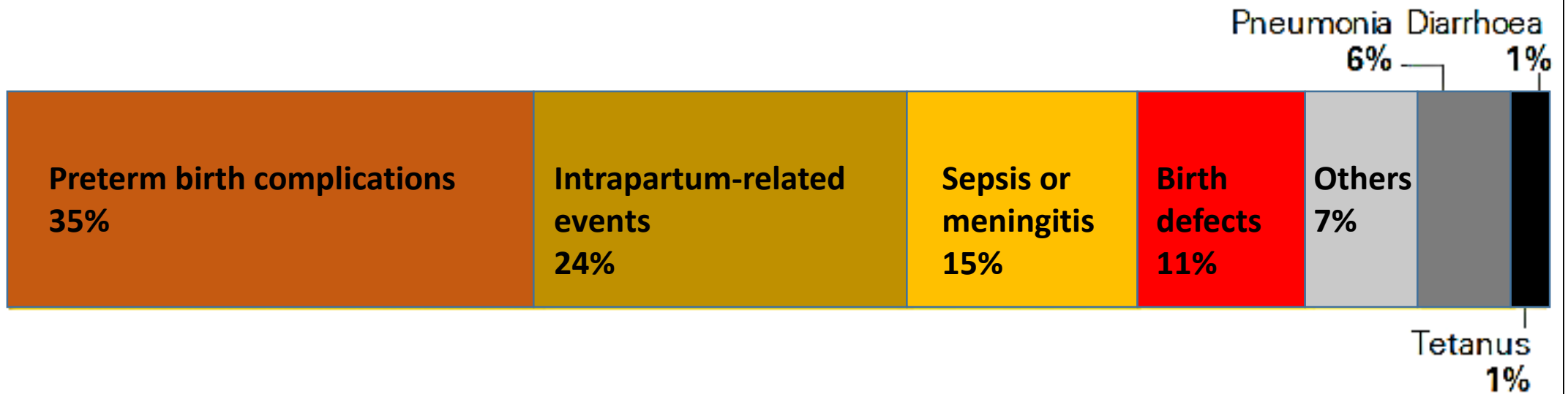
Introduction

Deaths among children aged 1–59 months (54%)

Neonatal deaths (46%)

Pneumonia, 3%

Global distribution of deaths among newborns, by cause, 2016



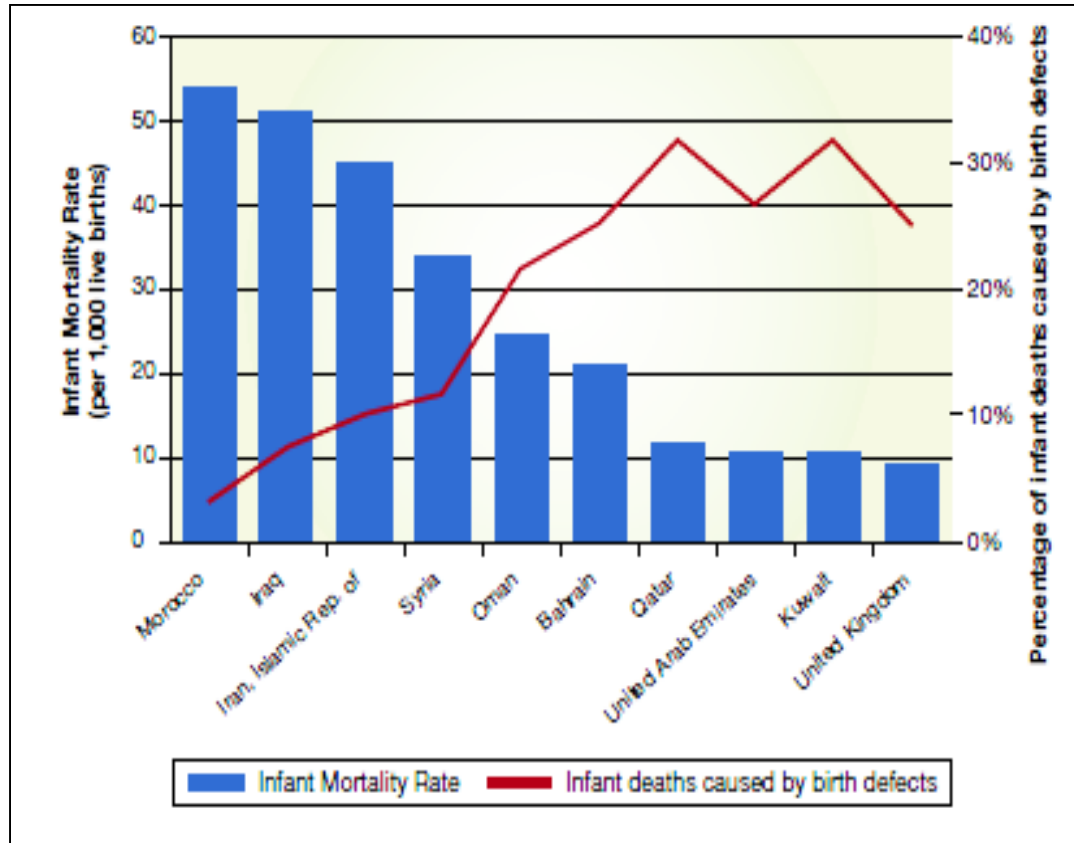
Measles, 1%

Tetanus, 1%

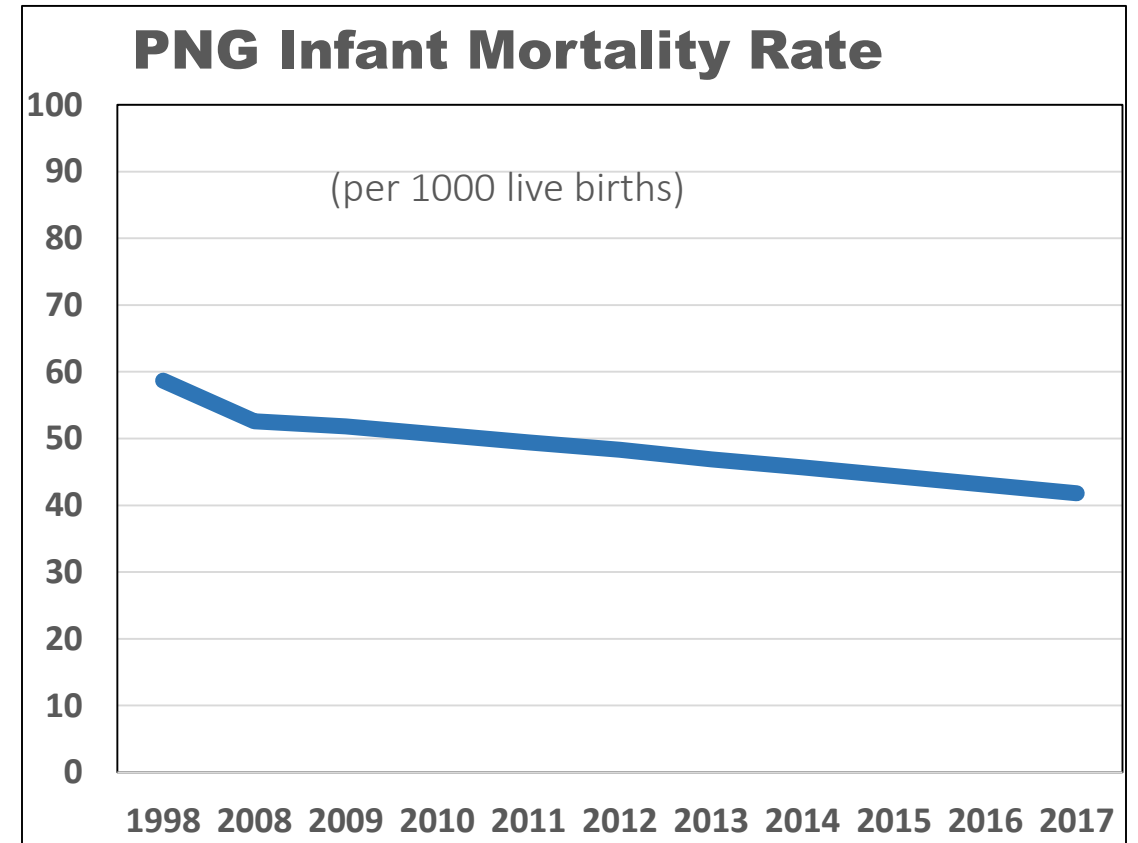
Diarrhoea, 0.3%

Source: WHO and Maternal and Child Epidemiology Estimation Group (MCEE) provisional estimates 2017

Introduction



Source: March of dimes global report on birth defects, 2006.



Source: Unicef Global Database, Infant Mortality Rates, 2017.

Aim & Objectives

- ❑ Identification of current incidence and pattern of Birth Defects in a sample study in Papua New Guinea.
- ❑ Identify presence of possible risk factors of Birth Defects in the study sample.
- ❑ Highlight possible preventative measures from study's findings.

Methodology

□ SITE:

Milne Bay Provincial Hospital

□ TIME:

February 1st to August 31st 2018

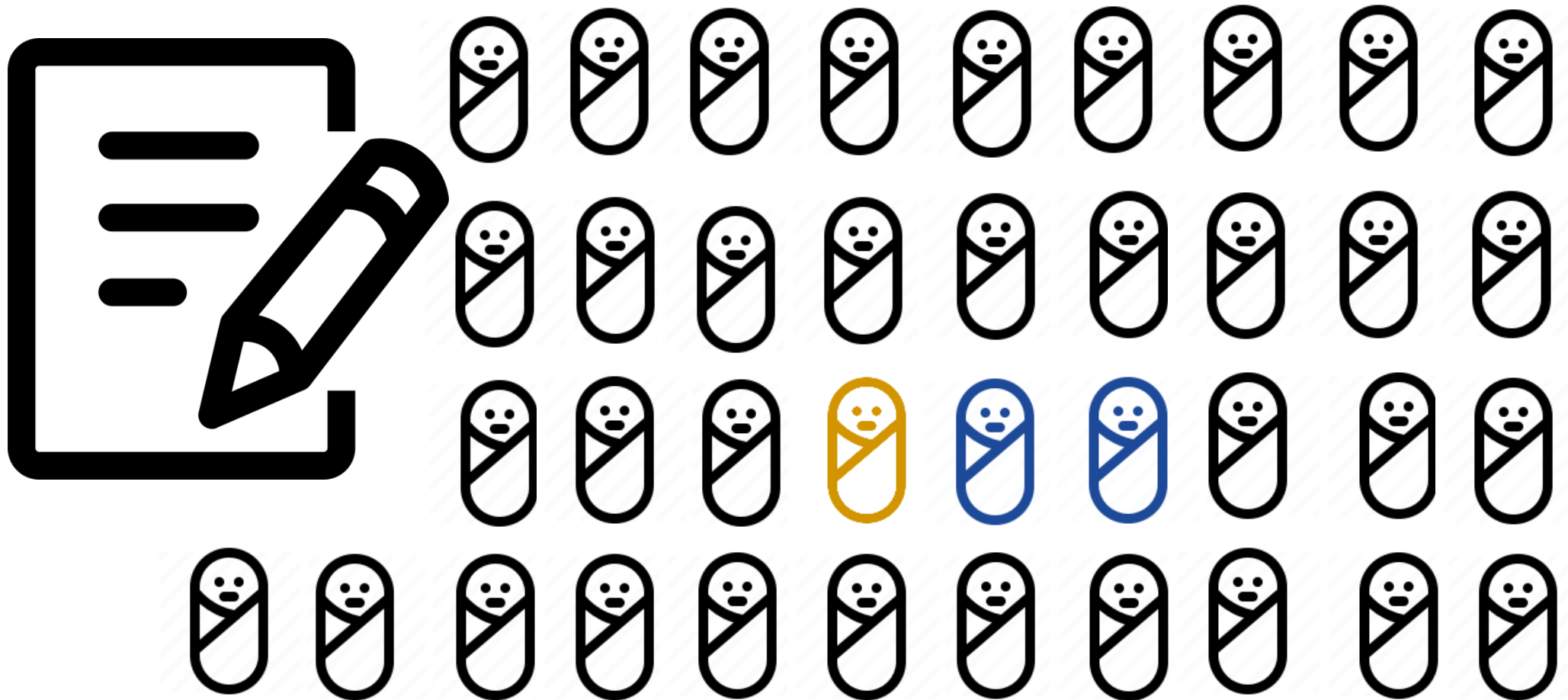
□ DESIGN:

Case control study

□ ETHICS:

Ethical approval from MBPHA Ethics and Research Committee & Informed consent from all participants

Methodology



Methodology

❑ DATA MANAGEMENT:

Excel – Microsoft Office 2010.

❑ PRIMARY OUTCOME:

Incidence of Birth Defects

Odds ratio of possible risk factors

❑ SECONDARY OUTCOMES:

Pattern of Birth Defects

Results

Incidence of Birth Defects:

28/1000 live births

Nervous System: 5/1000

Ear Nose & Throat: 4/1000

Genitourinary System: 4/1000

Musculoskeletal System: 4/1000

Gastrointestinal System: 3/1000

Most common births defects seen;

Hydrocephalus 4/1000

Cleft palate 3/1000

Congenital heart diseases 2/1000

Hydrocele 2/1000

Results

Factors likely linked to Birth Defects in the study;

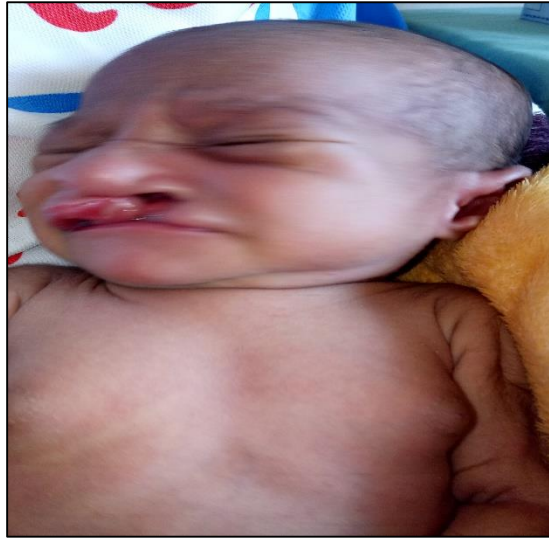
- Maternal age <19 (OR: 11.9; 95% CI: 1.3-108)
- Maternal smoking (OR: 3.8 ; 95% CI: 0.8-17.4)
- Lack of folate supplementation (OR: 3.5 ; 95% CI: 0.3-13.8)

Results

Factors likely linked top 5 Birth Defects in the study;

HYDROCEPHALUS	CLEFT LIP & PALATE	CONGENITAL HEART DISEASE	HYDROCELE
Single mother OR 5 (95% CI: 0.4-57.2)	Maternal comorbidity OR 19.8 (95% CI: 1.2-318.5)	Maternal age < 19yrs OR 15.4 (95% CI: 0.8-284.3)	Illness in pregnancy OR 10.7% (95% CI: 0.6-190.5)
Primiparity OR 4.7 (95% CI: 0.1-10)	Drugs in pregnancy OR 6.3 (95% CI: 0.5-79.2)	Maternal smoking OR 10.7 (95% CI: 0.6-190.5)	No folate supplementation OR 9.3 (95% CI: 0.5-162.5)
No folate supplementation OR 3 (95% CI: 0.2-32.3)	Maternal smoking OR 5.3 (95% CI: 0.4-65.9)	No folate supplementation OR 9.3 (95% CI: 0.5-162.5)	Past still birth OR 6.5 (95% CI: 0.4-110.9)
Paternal smoking OR 2.2 (95% CI: 0.2-20.6)	Illness in pregnancy OR 5.3 (95% CI: 0.4-65.9)		

Results



- ☐ Deaths: 4 (CFR: 14.2%)
- ☐ Simple defects: 6 (21%)
- ☐ Major defects: 22 (78.6%)

Discussion

		Global data	Dryden, 1985	Kapanambo (1987-1996)	Current (2018)
BD incidence		5.5%	1.16%	0.73%	2.8%
Top 5 Birth defects	1	Congenital heart disease 0.08%	Talipes 0.2%	Talipes	Hydrocephalus 0.04%
	2	Neural tube defects 0.06%	Ear defects 0.1%	Imperforated anus	Cleft palate 0.03%
	3	Hb. disorders 0.05%	Congenital heart defects 0.09%	Cleft lip and palate	Congenital heart disease 0.02%
	4	Down syndrome 0.03%	Hydrocephalus 0.08%	Neural tube defects	Hydrocele 0.02%
	5	G-6PD deficiency 0.03%	Cleft lip and palate 0.07%		

Discussion

RISK FACTORS

- ❑ Congenital Hydrocephalus
folate deficiency as an important factor in developing hydrocephalus (Ryan, Wang and Warf, 2016).
- ❑ Cleft palate
multifactorial risk profile, yet genetics, drug use and maternal smoking (Rimion et al, 2002) plays a role.
- ❑ Congenital heart disease
Maternal smoking, alcohol use, obesity, diabetes mellitus and folate deficiency are known risk factors (DHIR Factsheet-01/2017) for congenital heart disease.

CURRENT STUDY FINDING

- ❑ Congenital Hydrocephalus
lack of folate supplementation had a 3 times higher odds of hydrocephalus
- ❑ Cleft lip/palate
Maternal smoking and drug use had 5.3 and 6.3 times more likely of resulting in cleft lip palate defect respectively in the sample.
- ❑ Congenital heart disease
This study showed maternal smoking, lack of folate supplementation and teen pregnancy as positive factors for having congenital heart defects.

Discussion

Preconception Care

1. Family planning
2. Preconception screening and counseling
3. Optimize women's diet
4. Prevent and treat teratogen induced infections
5. Optimize preconception maternal health

Pregnancy Care

1. Antenatal screening
2. Prenatal diagnosis
3. Fetal treatments

Newborn infant and Child Care

1. Newborn examination
2. Newborn screening
3. Medical treatment
4. Surgery
5. Rehabilitation and Palliation

Source: World Health Assembly Report on Birth Defects; WHO, 2010.

Discussion

Strengths

- Current study on incidence of birth defects in Papua New Guinea
- First study looking at risk factors for birth defects in Papua New Guinea

Weaknesses

- Analysis sample small hence wide ranges in 95% CI
- Recall bias present
- Sample from only one setting in Papua New Guinea
- Only reporting obvious birth defects from mostly physical examination

Discussion

SUMMARY

- ❑ Birth defects appear to be rising in Papua New Guinea with current incidence of 2.8%.
- ❑ Complex and major birth defects with high morbidity and mortality dominate the defects seen.
- ❑ Maternal and adolescent health strategies and nutritional support appear important for Papua New Guinea in prevention of birth defects.
- ❑ More can be done to address birth defects in Papua New Guinea.

References

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Staff of Pediatric and O&G Unit Milne Bay Provincial Hospital

Patients and guardians



not Born that way....

Thank You
Q & A
Comments