



11TH EUROPEAN CONGRESS ON TROPICAL MEDICINE AND INTERNATIONAL HEALTH

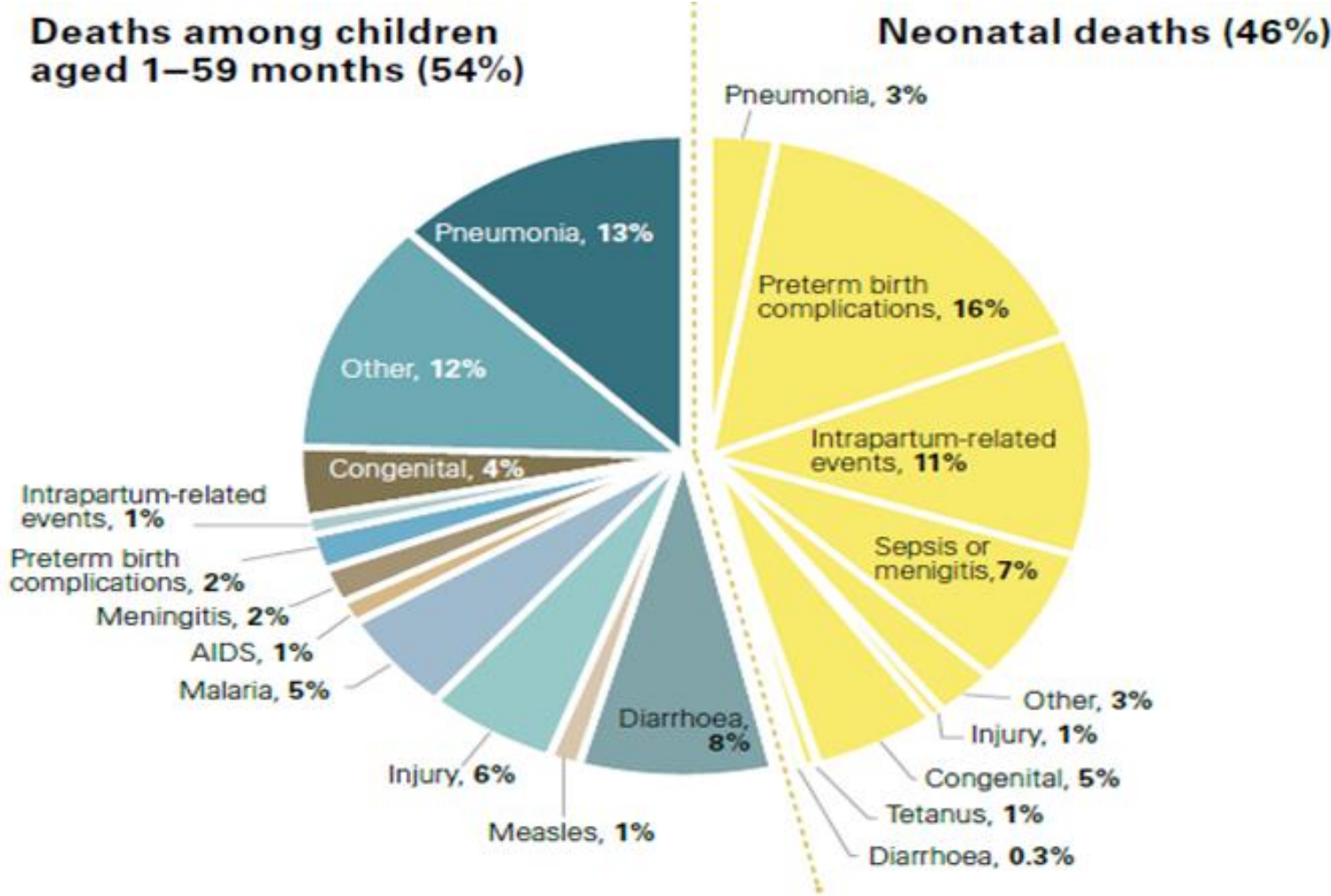
16-20 SEPTEMBER 2019
LIVERPOOL, UK

Burden of disease in neonatal units in Nigeria and Kenya

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19th September 2019

Causes of under 5 mortality



Aim

- To describe burden of disease among sick newborns in tertiary and secondary level neonatal units in Nigeria and Kenya.



Objectives

- To develop a shared anonymised database of key clinical variables across the Network.
- To characterise the population and burden of disease in all 7 neonatal unit admissions.
 - Identify research priorities
 - Basis for quality improvement

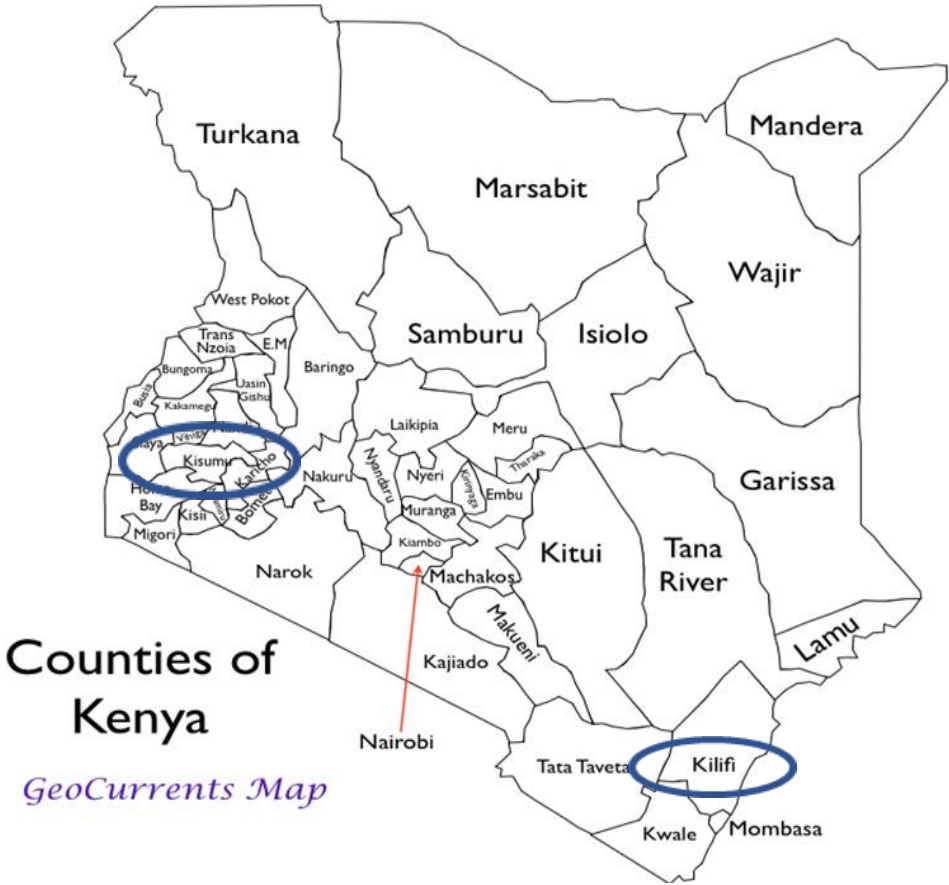


Location of Neonatal Units

NMR 33



NMR 21



Regional workshops

MRC Neonatal Nutrition Network Project in collaboration with Nigerian Society of Neonatal Medicine (NISONM) Invites you to a 2 day workshop:

"Critical issues in Low Birthweight infants"
 Date: 5th – 6th March 2018
 Le Ville Hotel and Suites, Opposite the National Museum, Alalubosa GRA, Ibadan.



As well as hearing about this new network established with colleagues at the Liverpool School of Tropical Medicine, UK and Kenya, there will be expert / state-of-the-art presentations in:

- Feeding the preterm/growth retarded infant
- Neonatal sepsis
- Early origins of respiratory disease
- Risk factors for impaired neurological development
- Development of core outcomes for common neonatal problems

There will also be an opportunity for you to present your own research and clinical audits.

Speakers include:

Dr Nick Emberton Neonatal Paediatrician, Newcastle Hospital, UK Chair, multi-disciplinary UK Neonatal Nutrition Network	Prof. Steve Allan Liverpool School of Tropical Medicine, UK Chair of the Joint BRONCH/NIHR/UK Children Gastroenterology Respiratory and Nutrition Research Working Group
Dr Melissa Gladstone Senior Lecturer in Paediatric Neurosciences University of Liverpool, UK	Dr Ian Sinha Consultant Paediatrician University of Liverpool, UK
Dr Walter Otiara Centre for Clinical Research, US Army Medical Research Unit, Kenya	Dr Alison Talbert Consultant Paediatrician, PKEMR - Wellcome Trust, Kenya

Logistics
 Non Residential; Refreshments provided
Fee: Free
 Limited spaces available (No onsite registration please!)

If interested, please contact
 khang02@yahoo.com or abimbola_12@yahoo.com
 or before 23rd February 2018

Ibadan, Nigeria

MRC Neonatal Nutrition Network Project Maseno University Symposium

Date: 5th June 2018
 Venue: Wigot Gardens Kisumu, Kenya



Reviews and presentations from the Experts will include:

- Feeding practices for LBW new-borns
- Issues in feeding LBW newborns, risks/morbidity and the Gut microbiome
- Kenya government and partners strategy for feeding low birth weight infants
- Early origins of respiratory disease
- Critical issues in feeding LBW infants
- Neonatal sepsis
- Early origins of impaired development
- Growth outcomes of low birth weight infants
- Developing of core outcome sets for neonatal

The symposium speakers will include:

Prof Stephen Allan (Chair in Paediatrics, Liverpool School of Tropical Medicine, UK and honorary consultant paediatric gastroenterologist, Alder Hey Children's hospital, Liverpool, UK)

Prof Graham Devereux (Professor of Respiratory Medicine, Liverpool School of Tropical Medicine/Alder Hey Hospital, UK)

Dr Walter Otiara (Senior Research Paediatrician, Maseno Medical School, Kenya)

Dr Okukemi Tongo Dr Okukemi Tongo (Senior Lecturer and Consultant Paediatrician, College of Medicine, University of Ibadan, Ibadan, Nigeria)

Dr Nick Emberton (Neonatal Paediatrician, Royal Victoria Infirmary, Newcastle, UK and Chair Multi-Disciplinary Neonatal Nutrition Network UK)

Dr Abimbola Akinbolale (Paediatrician, University of Ibadan, College of Medicine, Ibadan, Nigeria)

Dr Melissa Gladstone (Senior Clinical Lecturer in Paediatric Neurosciences, University of Liverpool, UK)

Dr Ian Sinha (Consultant Respiratory Paediatrician, Alder Hey Children's Hospital Liverpool, UK)

Dr Alison Talbert (Clinical researcher/ epidemiologist and co-PI for KIR, Kenya)

Dr Martha Mwangangi (Post-doctoral scientist researches nutrition - EDNR - Wellcome Trust, KIR, Kenya)

Dr Helen Ndabwera (Senior Clinical Research Associate, Liverpool School of Tropical Medicine, UK and honorary consultant paediatrician, Alder Hey Children's Hospital, UK)

Please contact the symposium coordinators for assistance:
 Dr Pauline Andeng'o (Dean of Public Health, Maseno University, Kenya) Mobile +254-728 485 729 and
 Dr Emily Teshome (Consultant, Nutrition and public health, Kenya) Mobile +254-786 401 886/0741 403 055

Kisumu, Kenya



Study design

- Multi-centre cross-sectional study.
- 7 neonatal units in sub-Saharan Africa (2 secondary level, 5 tertiary level hospitals).
- Period of 6 months.



Study population

- All admissions to the neonatal units over a 6 months period.
- August 2018- May 2019: timing ethics approval varied across the Network units.
- Inclusion criteria:
 - < 48 hours of admission.



Data collection

- Manual data collection:
 - Case report form
 - Diagnostic criteria for common neonatal conditions:
 - Neonatal sepsis
 - Birth asphyxia
 - Respiratory conditions
 - Abdominal conditions



Data management and analysis

- Research Electronic Data Capture (REDCap) database.
- Data manually entered into database by data clerks at respective units.
- Data Manager LSTM reviewed data for errors and liaised with units on queries.
- Stata version 15.0 .
- Logistic regression to determine predictors of mortality.



Maternal details

Demographics

- Mean maternal age, 29 years (SD 6.2)
- Majority married, 2568 (93%)
- Unemployed/ housewife, 1018 (37%)
- Completed tertiary level education, 997 (37%)

Health

- Attended <4 antenatal clinics, 915 (34%)
- HIV positive, 136 (5%)
- Hep B positive, 37 (3%)
- Syphilis, 3 (<1%)
- Pregnancy induced hypertension, 408 (15%)
- Antepartum haemorrhage, 171 (6%)
- Gestational diabetes, 38 (2%)



Birth details

- Most births were facility-based 2613 (91%).
- Vaginal unassisted deliveries, 1596 (56%).
- Median gestation, 37 weeks (IQR 33, 39).
- Mean birth weight was 2.4 kg (SD 0.9).
- Low birth weight infants (<2.5kg), 1292 (50%).



Morbidity and mortality according to birth weight and gestation

Birth weight/admission weight (g)	Morbidity n (%)					Mortality N (%) N ₅ =478
	Total (%)	Birth asphyxia N ₁ =593	Sepsis (1 or more episodes) N ₂ =1205	Abdominal signs N ₃ =85	Respiratory problems N ₄ =847	
<1000	113 (4)	15 (3)	45 (4)	7 (8)	67 (8)	86(18)
1000-<1500	384 (13)	29 (5)	173 (15)	17 (20)	197 (23)	143 (30)
1500-<2500	795 (28)	101 (17)	275 (23)	22 (26)	246 (29)	75 (16)
2500-4000	1201 (42)	356 (60)	526 (44)	23 (27)	302 (36)	113 (24)
4000-<5500	76 (3)	20 (3)	27 (2)	0	17 (2)	6 (1)
Missing data	299 (10)	72 (12)	140 (12)	16(19)	18 (2)	55 (11)
Total	2868	593 (21)	1205 (42)	85 (3)	847 (30)	478 (17)
Gestation (weeks)						
<28	122 (4)	15 (3)	49 (4)	2 (2)	62 (7)	86 (18)
28-<32	379 (13)	31 (5)	170 (14)	24 (28)	200 (24)	118 (24)
32-<37	764 (27)	94 (16)	288 (24)	22 (27)	251 (30)	107 (22)
37-<42	1435 (50)	393 (66)	615 (51)	35 (41)	282 (33)	138 (29)
42-<45	94 (3)	40 (7)	39 (3)	1 (1)	34 (4)	12 (3)
Missing data	74 (3)	20 (3)	44 (4)	1 (1)	18 (2)	17 (4)
Total	2868	593 (21)	1205 (42)	85 (3)	847 (30)	478 (17)



Predictors of neonatal mortality

Predictors	Adjusted OR	P	95% CI
<i>Maternal occupation</i>			
Unemployed or housewife	1		
Petty trader/ labourer	1.04	0.855	0.69, 1.57
Junior schools teachers/drivers	0.74	0.278	0.43, 1.27
Intermediate public servant/senior school teachers	0.38	0.035	0.16, 0.94
Senior public servant/ professionals/ large scale traders	0.36	0.041	0.13, 0.96
Antenatal clinic visits	0.92	0.026	0.87, 0.99
Birth weight <1.5 kg	4.42	<0.001	2.71, 7.20
Length on admission	0.91	<0.001	0.86, 0.95
Congenital anomalies	2.49	0.011	1.23, 5.01
Asphyxia morbidity	3.45	<0.001	2.26, 5.27
Respiratory conditions morbidity	1.58	0.015	1.09, 2.30
Abdominal condition morbidity	3.41	0.001	1.62, 7.19

Abbreviation: OR, odds ratio; 95%CI, confidence intervals; AUC, area under the curve.



Conclusion

- There is a high burden of neonatal (and maternal) illness.
- Nearly half of very low birth weight infants (<1500g) died before discharge.
- The very low frequency of abdominal signs suggests feeds could be introduced earlier which may improve outcomes.



Limitations

- Predominantly tertiary level units:
 - ❑ may not be accessible to disadvantaged members of the community,
 - ❑ may have identified the sickest neonates who would have been referred for tertiary level care and therefore not generalisable to lower levels of care for hospitalised neonates in these contexts.
- Not able to establish definitive cause-effect relationships.



Next steps

- Facilitated design of context-relevant nutrition intervention feasibility studies.
- Opportunities for quality improvement in clinical care.
- Continue to build research capacity in child health research.
- Expanding Neonatal Nutrition Network to other sub-Saharan African countries.
- Collaboration with maternal health.



Principal and co-investigators at neonatal units



Prof Chinyere Ezeaka



Dr Zainab Imam



Dr Kemi Tongo



Dr Abimbola Akindolire



Dr Dominic Umoru



Dr Isa Abdulkadir



Dr Pauline Andang'o



Dr Walter Otieno



Dr Grace Nalwa



Dr Martha Mwangome



Dr Alison Talbert



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- Dr Ian Sinha
- Dr Melissa Gladstone
- Ms Dingmei Wang
- Mr Ismaela Abubakar

Nigeria

- Professor Akinyinka
- Prof Chinyere Ezeaka
- Dr Kemi Tongo
- Dr Abimbola Akindolire
- Dr Zainab Imam
- Dr Isa Abdulkadir
- Dr Dominic Umoru

Kenya

- Dr Pauline Andang'o
- Dr Walter Otieno
- Dr Grace Nalwa
- Dr Martha Mwangome
- Dr Alison Talbert

