

## Immediate release

# Baby boys at higher risk of death and disability due to preterm birth

*Sub-Saharan Africa has the highest burden of neonatal mortality*

**November 15, 2013** – Groundbreaking global studies on preterm birth and disability carried out by almost 50 researchers at 35 institutions and launched in association with World Prematurity Day finds baby boys are at a higher risk of death and disability due to preterm birth than baby girls.

The six major papers in **Pediatric Research**, published by **Nature**, show that boys are 14 percent more likely to be born preterm than girls.

Broken down by region, most of the problems were reported in low-income countries in South Asia and sub-Saharan Africa, where 2.2 million newborns died, and more than 606,000 had some degree of impairment following newborn complications.

“Baby boys have a higher likelihood of infections, jaundice, birth complications, and congenital conditions but the biggest risk for baby boys is due to preterm birth. For two babies born at the same degree of prematurity, a boy will have a higher risk of death and disability compared to a girl. Even in the womb, girls mature more rapidly than boys, which provides an advantage, because the lungs and other organs are more developed,” says Professor Joy Lawn, M.D., PhD, a neonatologist and epidemiologist at the London School of Hygiene & Tropical Medicine (LSHTM) and team leader of the new research.

“One partial explanation for more preterm births among boys is that women pregnant with a boy are more likely to have placental problems, pre-eclampsia, and high blood pressure, all associated with preterm births.”

However, after the first month of life, in some societies where girls receive less nutrition and medical care, the girls are more likely to die than boys, despite this biological survival advantage for girls.

Yet experts say simple improvements in care could help many premature babies survive. “Using an essential package of care will prevent more than three-quarters of deaths amongst preterm babies without expensive, high-tech intensive care,” says Hussein Halane, East Africa Regional Director for Save the Children. “We need to get the message out that many of these babies can be saved. In addition, better access to family planning, particularly for adolescent girls, could save an estimated 230,000 babies, if family planning were scaled up to 60 percent coverage” added Halane.

A country-by country analysis in Africa with greatest numbers of preterm births shows that Nigeria leads with (831,100), Democratic Republic of the Congo (323,100), Ethiopia (305,900), Tanzania (210,300), Uganda (208,100), Kenya (183,600), Mozambique (153,600), Angola (113,400), Ghana (113,500), Côte d'Ivoire

(100,000), Cameroon (99,200), Zimbabwe (72,600), Burkina Faso (71,500), Senegal (49,600), Burundi (48,800).

These studies, based on more than 1,000 data sources, reveal significant data gaps, especially in most low-income and many middle-income countries. For instance, basic information on the number of preterm births and deaths is missing in areas where many babies are delivered at home. Follow-up information does not exist for much of the world, a crucial deficiency because many disabilities -- cerebral palsy and learning difficulties among them -- may not be apparent for several years.

In a new report released on World Prematurity day, *Born Too Soon*, over one third of Tanzania's nearly 40,000 annual newborn deaths are due to complications of prematurity. Tanzania is among the few African countries declared to have been achieved the MDG 4 for child survival. However, a growing proportion of child deaths are taking place in the first month of life, the neonatal period. Preterm complications account for the second leading cause of child death, after pneumonia. Nearly 114,000 premature boys were born in 2012, compared to 97,000 premature girls in Tanzania. It ranks 12th worldwide and fourth in Africa in the number of babies born prematurely.

Ethiopia is one of the top ten countries with the greatest numbers 305,900 of preterm births in 2012. Complications from prematurity also account for 37% of newborn deaths, making preterm birth the leading cause of newborn mortality. Some 31,300 preterm babies die in Ethiopia annually.

The findings also expose the need for more research to find ways to prevent preterm birth and improve the long-term outlook for all survivors of preterm birth. "We need research to inform us about what we don't understand, such as what causes preterm labor, and to find other things to improve the outcome for survivors," says Edward R.B. McCabe, M.D., Chief Medical Officer of the March of Dimes Foundation and a pediatrician. "But we also need to use what we know already so we can prevent more preterm births."

Two low-cost interventions that are very effective, but are not commonly used in the highest burden countries include:

**Antenatal corticosteroids given to mothers in preterm labour:** These are injections of dexamethosone, a steroid used to treat asthma, which helps speed up the development of the baby's lungs. At a cost of about US\$1, two shots can help stop premature babies from going into respiratory distress when they are born. If widely used, corticosteroid injections could prevent half of Tanzania's preterm deaths.

**Kangaroo Mother Care**, a technique where the infant is held skin-to-skin on the mother's chest, keeps the baby warm and facilitates breastfeeding. Keeping preterm babies warm is especially important because tiny bodies lose heat rapidly, making these babies highly vulnerable to illness, infection and death.

Leading researchers and global health organizations issued a new call-to-action on a comprehensive research agenda to address preterm birth. This "Solution Pathway" was developed by more than 30 scientific experts at a meeting convened by the Bill & Melinda Gates Foundation; the Eunice Kennedy Shriver National

Institute of Child Health and Human Development; the Global Alliance to Prevent Prematurity and Stillbirth (GAPPS) and the March of Dimes Foundation.

“With this comprehensive, priority research agenda, we have the roadmap to advance discovery, find new solutions to the problem of preterm birth, and evaluate effective strategies to scale up what we know can save lives of newborns,” says Eve Lackritz, M.D., a pediatrician and a researcher at GAPPS.

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**Notes to Editors:**

- World Prematurity day is celebrated annually, 17<sup>th</sup> November
- The report being released to coincide with the third annual **World Prematurity Day** on Sunday, November 17. In addition to **Pediatric Research** papers, the journal **BMC Reproductive Health** will release six papers based on **Born Too Soon: The Global Action Report on Premature Birth**, developed by March of Dimes, Save the Children, PMNCH and WHO, with more than 50 organizations involved. **The Lancet** will release a comment from national leaders in Brazil, Uganda and the UK entitled “Caring for preterm babies is a test of how we respond to our most vulnerable citizens.”

**Key facts**

On a global basis, preterm birth is the leading cause of newborn mortality and the second-leading cause of all deaths of children under age five, after pneumonia.

- Preterm birth accounts for more than 1 million deaths each year. More than 75% of those lives could be saved without access to high technology care.
- Preterm birth rates are increasing in almost all countries with reliable data.

**More than 75 percent of preterm babies could be saved without high technology care**

- Two priority low-cost effective interventions save many lives, such as steroid injections and Kangaroo Mother Care, which if scaled up to universal coverage could save 430,000 and 450,000 premature lives respectively. Both are not widely used in developing countries despite proven effectiveness.
- Babies who have difficulty breathing need immediate attention and resuscitation, if required. Rapid recognition and treatment of infections with antibiotics is critical. Training of frontline staff to deliver quality interventions is essential.
- Equity matters. Universal access to lifesaving drugs and care can protect the most vulnerable.

**Prevention of preterm birth must be accelerated**

- Family planning, and increased empowerment of women, especially adolescents, plus improved quality of care before, between and during pregnancy can help to reduce preterm birth rates.
- We need to know more on how to prevent preterm births and strategic investments in innovation and research are required to accelerate progress.
- On a global basis, preterm birth is the leading cause of newborn mortality and the second-leading cause of all deaths of children under age five, after pneumonia.
- Preterm birth accounts for more than 1 million deaths each year. More than 75% of those lives could be saved without access to high technology care.
- Preterm birth rates are increasing in almost all countries with reliable data.

• **Table 1: World Prematurity Data for 2012**

Countries and territories	Preterm birth rate (<37 weeks)	Rank for preterm birth rate (<37 weeks) (highest to lowest)	Number of preterm livebirths (<37 weeks)	Rank for number of preterm births (<37 weeks) (highest to lowest)	Number of extremely preterm babies <28 weeks	Number of preterm boys (<37 weeks)	Number of preterm girls (<37 weeks)
Afghanistan	11.5	67	118,900	22	6,200	65,100	53,800
Albania	9.0	111	3,900	142	200	2,100	1,700
Algeria	7.4	146	73,700	39	3,900	40,200	33,600
Angola	12.5	45	113,400	26	5,900	61,200	52,100
Antigua and Barbuda	5.8	175	90	185	<5	40	40
Argentina	8.0	127	56,400	50	3,000	30,600	25,800
Armenia	11.0	75	4,600	136	240	2,600	2,000
Australia	7.6	140	24,200	81	1,300	13,200	11,000
Austria	10.9	76	8,900	109	470	4,900	4,000
Azerbaijan	8.5	121	14,500	95	760	8,300	6,300
Bahamas	9.5	102	580	170	30	320	260
Bahrain	14.0	20	2,900	145	150	1,600	1,300
Bangladesh	14.0	20	435,500	7	22,800	237,100	198,400
Barbados	8.9	113	320	172	15	180	150
Belarus	4.1	185	4,300	138	230	2,400	2,000
Belgium	7.9	131	10,300	105	540	5,600	4,700
Belize	10.4	90	810	164	40	440	370
Benin	10.6	84	37,900	64	2,000	20,600	17,300
Bhutan	10.2	93	1,500	158	80	820	690
Bolivia (Plurinational State of)	9.0	111	23,700	82	1,200	12,900	10,800
Bosnia and Herzegovina	7.9	131	2,600	147	140	1,400	1,200
Botswana	15.1	11	7,300	115	380	4,000	3,400
Brazil	9.2	107	266,500	11	13,900	145,200	121,300
Brunei Darussalam	12.1	53	750	166	40	410	340

Bulgaria	7.5	143	5,200	129	270	2,900	2,400
Burkina Faso	10.9	76	71,500	42	3,700	38,900	32,600
Burundi	11.4	70	48,800	57	2,600	26,400	22,400
Cambodia	10.5	86	38,000	63	2,000	20,700	17,300
Cameroon	12.6	42	99,200	30	5,200	53,600	45,600
Canada	7.8	135	31,400	73	1,600	17,200	14,300
Cape Verde	11.2	72	1,100	161	60	610	520
Central African Republic	12.6	42	18,900	88	990	10,200	8,700
Chad	13.1	36	72,700	40	3,800	39,300	33,400
Chile	7.1	154	17,500	89	920	9,500	8,000
China	7.1	154	1,315,000	2	68,800	752,400	562,600
Colombia	8.8	115	80,500	35	4,200	43,800	36,600
Comoros	16.7	2	4,200	140	220	2,300	1,900
Congo	16.7	2	27,100	78	1,400	14,600	12,500
Costa Rica	13.6	28	9,900	107	520	5,400	4,500
Côte d'Ivoire	14.0	20	100,000	29	5,200	53,800	46,200
Croatia	5.5	180	2,500	148	130	1,400	1,100
Cuba	6.4	164	6,500	121	340	3,600	3,000
Cyprus	14.7	13	2,000	153	100	1,100	900
Czech Republic	7.3	149	8,700	110	450	4,700	3,900
Dem People's Republic of Korea	10.7	81	37,100	66	1,900	20,200	16,900
Dem Republic of the Congo	11.9	59	323,100	9	16,900	174,500	148,600
Denmark	6.7	158	4,300	137	230	2,400	2,000
Djibouti	11.9	59	2,800	146	150	1,500	1,300
Dominica	11.9	59	130	184	5	80	50
Dominican Rep	10.8	79	23,200	83	1,200	12,600	10,500
Ecuador	5.1	184	16,500	93	870	9,000	7,500
Egypt	7.3	149	140,700	20	7,400	76,700	64,100
El Salvador	12.8	41	17,400	90	910	9,500	7,900
Equatorial Guinea	16.5	5	4,200	139	220	2,300	1,900
Eritrea	12.2	50	27,000	79	1,400	14,600	12,400
Estonia	5.7	178	800	165	40	440	360
Ethiopia	10.1	95	305,900	10	16,000	165,200	140,700
Fiji	9.9	98	1,800	154	100	1,000	820
Finland	5.5	180	3,400	144	180	1,800	1,500
France	6.7	158	53,100	53	2,800	28,900	24,100
Gabon	16.3	7	8,500	111	440	4,600	3,900
Gambia	14.0	20	10,400	104	550	5,600	4,800
Georgia	8.8	115	5,400	127	280	3,000	2,400
Germany	9.2	107	64,400	44	3,400	35,200	29,200
Ghana	14.5	14	113,500	25	5,900	62,000	51,500
Greece	6.6	163	7,600	114	400	4,200	3,400
Grenada	10.3	92	220	179	10	120	100
Guatemala	7.7	138	35,900	69	1,900	19,500	16,300

Guinea	13.9	25	57,500	49	3,000	31,500	26,000
Guinea-Bissau	11.2	72	6,700	119	350	3,600	3,100
Guyana	13.2	32	2,100	151	110	1,100	960
Haiti	14.1	19	37,400	65	2,000	20,400	17,000
Honduras	12.2	50	25,200	80	1,300	13,700	11,500
Hungary	8.6	120	8,400	113	440	4,600	3,800
Iceland	6.5	164	320	173	15	170	150
India	13.0	37	3,277,200	1	171,500	1,805,700	1,471,600
Indonesia	15.5	9	748,500	5	39,200	407,800	340,700
Iran	12.9	38	192,800	14	10,100	105,100	87,800
Iraq	6.5	164	66,200	43	3,500	36,300	29,900
Ireland	6.4	164	4,800	134	250	2,600	2,100
Israel	8.0	127	12,700	99	670	6,900	5,800
Italy	6.5	164	36,800	68	1,900	20,200	16,600
Jamaica	10.2	93	5,500	126	290	3,000	2,500
Japan	5.9	175	64,100	45	3,400	35,000	29,100
Jordan	14.4	14	28,900	76	1,500	15,700	13,100
Kazakhstan	8.8	115	30,300	74	1,600	16,600	13,700
Kenya	12.3	48	183,600	15	9,600	99,200	84,500
Kiribati	9.6	101	230	178	10	140	90
Kuwait	10.6	84	7,200	116	380	3,900	3,300
Kyrgyzstan	10.4	90	15,600	94	820	8,600	7,100
Lao People's Dem Rep	10.8	79	20,900	85	1,100	11,400	9,500
Latvia	5.3	183	1,100	160	60	620	520
Lebanon	7.9	131	4,700	135	250	2,600	2,100
Lesotho	11.9	59	6,900	118	360	3,700	3,200
Liberia	13.9	25	20,400	86	1,100	11,100	9,300
Libyan Arab Jamahiriya	8.3	122	10,700	103	560	5,800	4,800
Lithuania	5.7	178	2,000	152	100	1,100	910
Luxembourg	8.1	123	510	171	25	280	230
Madagascar	14.2	18	109,200	28	5,700	58,900	50,300
Malawi	18.1	1	111,700	27	5,800	60,300	51,400
Malaysia	12.3	48	61,900	47	3,200	33,900	28,000
Maldives	7.9	131	630	169	35	350	290
Mali	11.6	65	77,800	36	4,100	42,400	35,400
Malta	6.4	164	270	176	15	150	120
Marshall Islands	11.5	67	170	183	10	100	70
Mauritania	15.4	10	19,600	87	1,000	10,700	8,900
Mauritius	12.6	42	1,700	155	90	910	770
Mexico	7.3	149	166,200	16	8,700	90,600	75,600
Micronesia	10.5	86	250	177	15	140	110
Mongolia	13.5	30	9,000	108	470	4,900	4,100
Montenegro	9.2	107	710	167	35	390	320
Morocco	6.7	158	50,000	55	2,600	27,400	22,700

Mozambique	16.4	6	153,600	19	8,000	82,900	70,600
Myanmar	12.4	46	115,500	24	6,000	62,400	53,100
Namibia	14.4	14	8,500	112	440	4,600	3,900
Nepal	14.0	20	80,500	34	4,200	43,900	36,600
Netherlands	8.0	127	13,700	96	710	7,500	6,200
New Zealand	7.6	140	4,900	133	260	2,700	2,200
Nicaragua	9.3	106	13,200	98	690	7,200	6,000
Niger	9.4	104	77,700	37	4,100	42,400	35,400
Nigeria	12.2	50	831,100	3	43,500	454,600	376,500
Norway	6.0	173	3,900	141	210	2,100	1,800
Oman	14.3	17	10,800	102	560	5,900	4,900
Pakistan	15.8	8	757,900	4	39,700	412,900	345,000
Panama	8.1	123	6,100	125	320	3,300	2,800
Papua New Guinea	6.5	164	13,600	97	710	7,500	6,100
Paraguay	7.8	135	12,200	100	640	6,700	5,600
Peru	7.3	149	43,400	60	2,300	23,700	19,800
Philippines	14.9	12	343,400	8	18,000	187,900	155,500
Poland	6.7	158	28,600	77	1,500	15,700	13,000
Portugal	7.7	138	7,000	117	370	3,900	3,200
Qatar	10.5	86	2,300	149	120	1,200	1,000
Rep of Korea	9.2	107	46,900	59	2,500	26,100	20,800
Rep of Moldova	11.9	59	5,300	128	280	2,900	2,400
Romania	7.3	149	16,600	92	870	9,100	7,500
Russian Federation	7.0	156	116,400	23	6,100	63,700	52,700
Rwanda	9.5	102	42,100	61	2,200	22,500	19,600
Saint Lucia	11.1	74	320	174	15	170	150
Saint Vincent and Grenadines	11.8	64	220	180	10	120	100
Samoa	5.5	180	280	175	15	160	130
Sao Tome and Principe	10.5	86	670	168	35	360	310
Saudi Arabia	6.0	173	33,600	71	1,800	18,100	15,400
Senegal	9.7	100	49,600	56	2,600	26,800	22,800
Serbia	6.7	158	6,200	124	320	3,400	2,800
Seychelles	11.6	65	170	182	10	100	70
Sierra Leone	10.0	97	21,200	84	1,100	11,400	9,800
Singapore	11.5	67	6,400	122	340	2,600	3,800
Slovakia	6.3	172	3,700	143	200	2,000	1,700
Slovenia	7.5	144	1,600	156	90	900	750
Solomon Islands	12.4	46	2,100	150	110	1,200	940
Somalia	12.0	55	53,400	52	2,800	28,800	24,500
South Africa	8.0	127	88,300	32	4,600	47,700	40,600
South Sudan*	13.2	32	50,900	54	2,700	27,800	23,100
Spain	7.4	146	37,000	67	1,900	20,300	16,700
Sri Lanka	10.7	81	40,900	62	2,100	22,200	18,700

Sudan*	13.2	32	161,200	17	8,400	88,000	73,200
Suriname	8.8	115	830	163	45	460	370
Swaziland	13.9	25	5,100	130	270	2,800	2,400
Sweden	5.9	175	6,500	120	340	3,600	3,000
Switzerland	7.4	146	6,200	123	320	3,400	2,800
Syrian Arab Republic	10.9	76	58,300	48	3,100	31,800	26,600
Tajikistan	10.7	81	28,900	75	1,500	15,700	13,100
Thailand	12.0	55	83,900	33	4,400	46,000	37,900
The former Yugoslav Rep of Macedonia	6.8	157	1,500	159	80	830	680
Timor-Leste	12.1	53	5,100	131	270	2,800	2,300
Togo	13.3	31	31,700	72	1,700	17,000	14,700
Tonga	7.5	145	200	181	10	110	90
Trinidad and Tobago	8.1	123	1,600	157	80	860	730
Tunisia	8.9	113	16,900	91	890	9,200	7,700
Turkey	12.0	55	154,500	18	8,100	84,200	70,300
Turkmenistan	9.8	99	10,200	106	530	5,500	4,600
Uganda	13.6	28	208,100	13	10,900	112,400	95,700
Ukraine	6.5	164	34,500	70	1,800	18,900	15,600
United Arab Emirates	7.6	140	10,900	101	570	5,900	5,000
United Kingdom	7.8	135	63,200	46	3,300	34,400	28,700
United Rep of Tanzania	11.4	70	210,300	12	11,000	113,600	96,700
United States	12.0	55	497,600	6	26,000	271,000	226,600
Uruguay	10.1	95	5,000	132	260	2,700	2,300
Uzbekistan	8.7	119	54,900	51	2,900	29,900	25,000
Vanuatu	12.9	38	910	162	50	500	410
Venezuela	8.1	123	48,500	58	2,500	26,400	22,100
Viet Nam	9.4	104	132,400	21	6,900	72,100	60,300
Yemen	13.2	32	95,900	31	5,000	52,300	43,700
Zambia	12.9	38	75,100	38	3,900	40,600	34,500
Zimbabwe	16.6	4	72,600	41	3,800	39,100	33,600
<b>TOTAL</b>			<b>15,104,290</b>		<b>790,400</b>	<b>8,277,580</b>	<b>6,827,470</b>

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- \*\*South Sudan is assumed to have the same preterm birth rate as Sudan
- Sources:
  - Preterm birth rates and numbers of babies born at <28 weeks gestation, from Blencowe H, Cousens S, Oestergaard M, Chou D, Moller AB, Narwal R, Adler A, Garcia CV, Rohde S, Say L, Lawn JE. National, regional and worldwide estimates of preterm birth, **The Lancet**, June 2012
  - Livebirths from UNPOPDiv.
  - Male:Female ratio at birth from IHME.
- Number of male and female preterm babies from: Blencowe H, Lee AC, Cousens S, Bahalim A, Narwal R, Zhong N, Chou D, Say L, Modi N, Katz J, Vos T, Marlow N, Lawn JE. Preterm birth associated neurodevelopmental impairment estimates at regional and global level for 2010. **Pediatric Research** 2013. Applied to 2012 livebirths.
- \*Number of deaths from direct complications of preterm birth in 2012 were calculated assuming no change in the relative proportion of deaths by cause since 2010. Source: Liu L, Johnson HL, Cousens S, Lawn JE et al. 2012. Global, regional, and national causes of child mortality in 2000–2010: an updated systematic analysis. **The Lancet**, Jun 9; 379 (9832):2151-61 doi:10.1016/S0140-



6736(12)60560-1.

- Numbers are rounded as follows: Any number less than 50, round to the nearest 5. For ones less than 5, say <5 instead of 0. Numbers from 50-999 round to the nearest 10 Numbers over 1000 round to the nearest 100.