

Behind the numbers

PREVENTABLE CHILD DEATHS

By choosing Preventable Child Deaths as a community indicator, the FCFC is calling attention to one of the most significant conclusions of the Montgomery County Child Fatality Review Board:

For every three child deaths in Montgomery County, at least one could have been prevented.¹

As we say on page 33, this indicator “...focus(es) attention on the vulnerability of our children and the effectiveness of our efforts to keep them safe.”

How vulnerable are they? The Child Fatality Review Board has determined that 113 of the deaths of children occurring between 2001 and 2004 were preventable. During those four years there were 320 child deaths, meaning that at least 35% of them (113/320) were preventable. We say “at least” because it could be higher – two more deaths were considered somewhat preventable, and for another 109 deaths (34% of the total) the Review Board was unsure about preventability. (Fig.1)

Using these data to increase “the effectiveness of our efforts to keep them safe” begins with some common sense. A large majority of the 113 preventable child deaths (71, or 63%) were due to accidents. As the Review Board pointed out, “(a)ccidents involve many dangers – from bathtubs to motor vehicles – but one recurring theme is the lack of supervision at the time of the accident.” Our common sense tells us that constant, responsible supervision is essential. In fact, partly because of the vital role that parents and guardians play in either providing or ensuring this supervision, the Preventable Child Death indicator is grouped under the Stable Families outcome.

While accidents are the leading *manner* of preventable child deaths, it is instructive to ask “at what *age* do the highest number of preventable child deaths occur?” The answer is “during infancy;” **40% of the preventable child deaths (45 out of 113) occurred before the child’s first birthday.**

As it turns out, the vast majority of **all** child deaths – whether preventable or not – occur in infancy. In fact, infant mortality rates are so devastatingly high in developing regions of the world that special data analysis approaches have been introduced by the world health community. These tools are intended to jumpstart efforts at reducing infant mortality. One of the most powerful is the “Perinatal Periods of Risk” (PPOR) approach.² The overall intent of the PPOR approach is to develop a simple method based on a strong conceptual framework that can be used by communities to mobilize and prioritize prevention efforts.³ *In other words, the PPOR approach can help prevent preventable child deaths.*

By collecting just two pieces of information for each death, birthweight and age at death, a PPOR map with four regions (Fig.2) can be constructed. Once a community has created a map of its own statistics, it can compare itself to a pre-defined reference group (with best outcomes) and determine in which region(s) of the map it suffers “excess” mortality.

But how does making these maps lead to prevention strategies? It is because each region of the map can be given a name that suggests what the primary focus of prevention efforts should be for deaths in that region. For example, all deaths where the birthweight was considered to be very low (below 1,500 grams) – regardless whether it was a fetal death

PREVENTABILITY OF CHILD’S DEATHS 2001-2004

- Preventable
- Not Preventable
- Somewhat Preventable
- Unsure

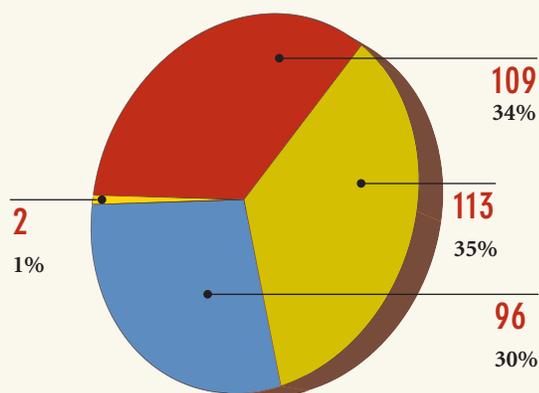


Fig.1

Only 30% of child deaths were determined to be not preventable. When just *infant* deaths are considered, 22% are considered preventable, 29% not preventable, and 49% unsure.

BIRTHWEIGHT	PREVENTION STRATEGIES	
500 – 1,499 grams	MATERNAL HEALTH/PREMATUREITY	
1,500 grams and above	MATERNAL CARE	AGE OF DEATH Fetal [†]
	NEWBORN CARE	< 28 days old
	INFANT HEALTH	28 – 364 days old

Fig.2

A version of the basic PPOR map. The reason that each region has the indicated name is described in the article.



Go to page 33 for more data analysis

or the death of an infant – can best be prevented by addressing **maternal health** issues and by preventing and treating **prematurity**. For higher birthweight-related deaths, fetal deaths can best be prevented by providing **maternal care**; neonatal deaths (less than 28 days old), by providing **newborn care**; and post-neonatal deaths (28 – 364 days old), by improving **infant health**.

So what does our local map look like? **Fig.3**, using data from a recent four-year period⁵ in which there were 278 fetal-infant deaths that met the criteria for the PPOR approach, shows that the Maternal Health/Prematurity region has the highest number of deaths.

It is difficult to interpret this map without knowing what the numbers “should” be. Research has shown that in the United States some of the best pregnancy outcomes (healthy babies that live through infancy) are achieved by white non-Hispanic mothers, greater than 20 years of age and with more than

12 years of education. Therefore, we can identify that group of mothers within our local data and apply the PPOR approach to them (called the reference group) in order to get a sense of what the numbers “should” be. The final step is to convert all the numbers to a rate per 1,000⁶ in order to make comparisons and to determine what the PPOR approach calls the “excess” rate of death.

The result of all of this is shown in **Fig.4**. The first observation is that the excess rate of death for our community is 1.9. In other words, if the entire population were achieving the pregnancy outcomes of the reference group, the fetal-infant mortality rate would be 1.9/6.5 or 29% lower.

The strength of the PPOR approach is its ability to focus on specific regions of the map in order to help policy makers and practitioners set priorities for prevention efforts. Another look at **Fig.4** reveals that the highest excess rates of death are in two areas, Maternal Health/Prematurity

¹Report to the Community 2003-2004, Montgomery County Child Fatality Review Board, released Jan. 25, 2006.

²Developed by Dr. Brian McCarthy from the W.H.O. (World Health Organization) Perinatal Collaborative Center at the Centers for Disease Control and by other W.H.O. colleagues.

³The PPOR approach is more fully explained in the Report to the Community 2003-2004 from the Montgomery County Child Fatality Review Board. Much of this discussion is based on that Report.

⁴Information on some fetal deaths (24 or more weeks of gestation) is included in order to get a comprehensive picture of maternal health.

⁵Several years’ worth of data are needed in order to make statistically reliable conclusions.

⁶During the four-year time period being studied there were 43,035 fetal deaths and live births in Montgomery County hospitals so (for example) the Maternal Health/Prematurity rate = $(104/43,035) \times 1,000 = 2.4$. Note also that this particular PPOR analysis includes more than just Montgomery County residents and excludes county residents who gave birth outside of a county hospital.

MATERNAL HEALTH/PREMATUREITY	104
MATERNAL CARE	68
NEWBORN CARE	54
INFANT HEALTH	52

Fig.3

The local PPOR map reveals that the Maternal Health/Prematurity region has the highest number of deaths.

LOCAL	6.5	-	REFERENCE GROUP	4.6	=	EXCESS RATE OF DEATH	1.9
MATERNAL HEALTH/PREMATUREITY	2.4		MATERNAL HEALTH/PREMATUREITY	1.6		MATERNAL HEALTH/PREMATUREITY	0.8
MATERNAL CARE	1.6		MATERNAL CARE	1.7		MATERNAL CARE	-0.1
NEWBORN CARE	1.3		NEWBORN CARE	0.9		NEWBORN CARE	0.4
INFANT HEALTH	1.2		INFANT HEALTH	0.4		INFANT HEALTH	0.8

Fig.4

The local map (left) represents the data from Figure 3 expressed as a rate per 1,000 in order to make a comparison with the reference group (center). The “excess” map is the result of subtracting the reference group values from the local values. The numbers at the top of each map are the totals of the four regions within each map, for example, $6.5 = 2.4 + 1.6 + 1.3 + 1.2$.

Outcomes

($2.4 - 1.6 = 0.8$) and Infant Health ($1.2 - 0.4 = 0.8$). The conclusion is that addressing these two strategic prevention areas should be the highest priority in an effort to reduce the local death rate.

By a similar analysis the strategic prevention area of Newborn Care should be the next priority. Note that the remaining strategic prevention area, Maternal Care, has the second highest rate of death (1.6) but the lowest excess rate of death (actually a *negative* number, -0.1).

As the Child Fatality Review Board pointed out in its Report, prevention efforts in the area of Maternal Health/Prematurity may need to focus on preconceptional health, unintended pregnancy, smoking, drug abuse, and specialized perinatal care. Prevention efforts in the area of Infant Health may need to focus on SIDS prevention activities such as sleep position education or breast-feeding promotion, improved access to medical care and injury prevention.

The Child Fatality Review Board also highlighted the fact that infant mortality rates (IMR) in the black population are more than twice as large as they are in

the white population. This is true locally and all across the country. Accordingly, the Review Board prepared a PPOR analysis for the local black population. (Fig.5)

The result is that, while Maternal Health/Prematurity and Infant Health remain as the two highest priorities for prevention efforts for all women, an additional priority for black women might be Maternal Care. Prevention efforts in this area may need to focus on early continuous prenatal care, referral of high risk pregnancies, good medical management of diabetes, seizures, postmaturity (babies born after the normal length of a pregnancy) and other medical problems.

As we have said in the past, the FCFC indicator data are intended to fuel conversations about conditions in the community and about actions we can take, both individually and collectively, to improve those conditions. The data analyzed here show us that some child deaths can be prevented and that infant mortality can be reduced. The Child Fatality Review Board has started those conversations, and we all need to respond.



HEALTHY PEOPLE

Everyone makes choices—for themselves or for those entrusted to their care—which promote better health. Everyone gets the information and support they need to avoid preventable health problems. Both physical and mental wellness are valued. Everyone has access to an adequate level of health care, including prenatal care, from birth through death.

Pg

LOW BIRTHWEIGHT	22
CHILDHOOD IMMUNIZATIONS	23
ACCESS TO HEALTH CARE	24
PREMATURE MORTALITY	25
<i>(formerly Years of Potential Life Lost)</i>	

LOCAL (BLACK)	12.7	-	REFERENCE GROUP	4.6	=	EXCESS RATE OF DEATH	8.1
MATERNAL HEALTH/ PREMATURITY	5.0		MATERNAL HEALTH/ PREMATURITY	1.6		MATERNAL HEALTH/ PREMATURITY	3.4
MATERNAL CARE	3.5		MATERNAL CARE	1.7		MATERNAL CARE	1.8
NEWBORN CARE	1.7		NEWBORN CARE	0.9		NEWBORN CARE	0.8
INFANT HEALTH	2.6		INFANT HEALTH	0.4		INFANT HEALTH	2.2

Fig.5

The PPOR approach applied to the local black population suggests that Maternal Care should be an additional priority for prevention efforts.