SUPPLEMENTAL DOCUMENTATION

In this document are summarized several pieces of information which may be relevant to understanding how the *LiST* model works. Section 1 describes additional information on the specific causes of death. Section 2 discusses other issues which may be relevant in special circumstances. Section 3 lists all of the effect sizes for each intervention. Section 5 includes all references for the different effect sizes. For any and all questions, please contact Ingrid Friberg at ifriberg@jhsph.edu.

Section 1. Maternal Causes of Death

MATERNAL – ANTEPARTUM HEMORRHAGE

MATERNAL – POSTPARTUM HEMORRHAGE

MATERNAL – HYPERTENSIVE DISEASES OF PREGNANCY

MATERNAL – SEPSIS/INFECTION

MATERNAL – ABORTION

MATERNAL – ECTOPIC PREGNANCY

MATERNAL – OBSTRUCTED LABOR

MATERNAL – OTHER DIRECT CAUSES

MATERNAL – MALARIA

MATERNAL – OTHER INDIRECT CAUSES

Section 2. Neonatal Causes of Death

NEONATAL – DIARRHEA

Diarrhea is a relatively uncommon cause of death in neonates. As such, it is likely to be caused by different pathogens and exposures than affect children older than 1 month of age. Because of this, it is assumed that traditional water and sanitation has less of an impact on neonatal diarrhea, which is built into the model. Similarly, there is no evidence available yet that zinc affects neonatal diarrhea, thus it also does not have an impact. Yet, standard ORS is likely to have an impact on neonatal diarrhea, just as it would on all other forms of diarrhea, as it does reduce the fluid loss from the child.

NEONATAL – SEPSIS PNEUMONIA

For the purposes of this model, this cause of death includes sepsis, pneumonia/ acute respiratory infection, meningitis, and severe infections of the neonatal period. Although many individual settings find that increasing facility deliveries increases the rate of infections, this is due to improper clean care. In *LiST*, we assume that all care given in a facility is being delivered with appropriate clean practices, including hand washing, sterile equipment and sterile blades. We do not model the impact of inappropriate care practices. Thus it may be necessary to adjust the coverage to reflect appropriate care practices as opposed to observed care practices.

NEONATAL – ASPHYXIA

Neonatal asphyxia is now known as intrapartum-related deaths and refers to term babies with neonatal encephalopathy, or death prior to onset of neonatal encephalopathy, and evidence of intrapartum injury. Activities to prevent intrapartum deaths require advanced skills and training and in many cases advanced equipment and supplies.

NEONATAL – PREMATURITY

Prematurity is considered to be the cause of death for children who are born prematurely, even if there is an additional direct cause, such as an infection.

NEONATAL – TETANUS

Neonatal tetanus is caused by a soil based bacteria which frequently results in death. Because it is soil based, it is impossible to eradicate this disease, but elimination can occur. The main tool for preventing tetanus is vaccination of mothers during pregnancy followed by clean delivery practices. These clean delivery practices include washing of hands by the birthing attendant, use of a sterile (new or boiled) cutting instrument for the cord and general hygiene. Essential newborn care practices which can reduce neonatal tetanus include the use of appropriate treatments for the newly cut umbilical stump, such as not putting dirt or other non-sterile materials on the stump. It is assumed that all deliveries with adequate clean practices confer the same benefit to neonates, whether in a home or in a facility.

NEONATAL – CONGENITAL ANOMALIES

Congenital anomalies incorporates many different genetic and congenital conditions. Currently the only intervention which affects these outcomes is periconceptional folic acid supplementation taken around the period of conception.

NEONATAL – OTHER

There are many additional causes of neonatal death that cannot be categorized as above. The vast majority of specific interventions may not have an impact on these unknown causes. However it can be assumed that there is a minor beneficial effect due to general supportive care in a facility.

Section 3. 1-59 month Causes of Death

DIARRHEA

Adjustment of effect sizes of Water and Sanitation interventions relating to direct Diarrheal Mortality effects and Indirect mortality effects.

In *LiST*, the five water and sanitation (WASH) interventions all have both direct and indirect effects on mortality. The direct effect is that each WASH intervention directly reduces diarrheal mortality. They also have indirect effects on mortality due to a reduction in diarrheal incidence. A reduction in diarrheal incidence reduces the risk of stunting, which in turn increases the relative risk of death for several causes of death. Therefore when one increases coverage of a WASH intervention, it not only has a direct impact in reducing diarrhea mortality, but also an indirect reduction on mortality due to measles, malaria, pneumonia and diarrhea via the indirect impact on diarrheal incidence and stunting.

The reviews of the impact of WASH interventions on diarrhea mortality were estimates of the impact of these interventions on severe morbidity. However, since the impact of WASH interventions on diarrheal incidence is also known, there is likely to be an effect of these interventions on diarrheal mobidity and thus stunting. As we do not have more direct evidence, we are applying the same effect sizes on both diarrheal mortality and diarrheal incidence. This means that the total impact of each of the water and sanitation interventions is greater than the direct impact. See the table below to see how this occurs. Note that there is an impact on measles, malaria and pneumonia deaths as well.

In addition it should be realized that improved water and household water connection are not independent. The value of an improved water source must always be equal to or greater than the value for household water connection. The direct effects of improved water are applied to the difference between household water connection and improved water (in essence, all improved water that is not a household connection) so that no double counting of impact occurs. The indirect effect is applied separately, thus the indirect effect of a household connection is the sum of the improved water and the household water impacts.

	Published	***LiST* Effects**		
Intervention	**Severe Morbidity**	**Diarrheal Mortality (Direct)**	**Diarrheal Incidence (Indirect)**	**Total % reduction in Diarrheal Mortality**
Improved water	.17*	.17	.17	17.85
Household water connection	.69**	.69	.627	70.23
Improved sanitation	.36*	.36	.36	37.37
Handwashing with soap	.48*	.48	.48	49.46
Hygienic disposal of children's stools	.20***	.20	.20	20.97

*Cairncross et al, Water, sanitation and hygiene for the prevention of diarrhoea. IJE *LiST* Supplement 2010, in press.

**Cairncross S, Valdmanis V. 2006. Water supply, sanitation and hygiene promotion. In: Jamison DT, Breman JG, Measham AR et al. (eds.) Disease Control Priorities in Developing Countries (2nd edition). Washington DC: The World Bank, Chapter 41, pp. 771-792. URL: www.dcp2.org/pubs/DCP

***Presented at CHERG June 2008 by S. Cairncross.

PNEUMONIA

Pneumonia refers to death due to an illness likely to be an acute respiratory illness. It excludes meningitis and other severe infections. It is known that several pathogens are responsible for pneumonia mortality and that the proportions of these pathogens are different in different countries. However, it is also clear that we do not yet have enough data at the country level on the specific causes of pneumonia mortality. Thus, for the pathogen specific vaccines, estimates of the overall effect on pneumonia mortality have been calculated rather than the pathogen specific effect which would require country level data on the disease proportions by pathogen.

Currently the vaccines are entering the model prior to the other preventive interventions in order to ensure that there is no underestimate of the impact of the vaccines. The pneumococcal vaccine effect was estimated using the 9- and 11-valent vaccines. If one has the values for the proportion of pneumonia deaths due to a specific pathogen, then it is possible to calculate a more specific estimate. Two additional pieces of data would be needed. 1) a pathogen-specific effect size from another source and 2) the proportion of pneumonia deaths due to that pathogen. The first value would replace the current vaccine effect while the second value would replace the current affected fraction.

For the vaccines which currently affect pneumonia, herd immunity or the indirect effects are not standard. If the vaccination level at which indirect effects can be calculated, then these should be entered in the herd immunity section of LiST. There are no default values in this section and some form of reference would be needed. It is likely that a herd effect for Hib will begin at levels close to 50 or 60% coverage. There is no data for the level at which the effect of pneumococcal vaccine would begin. If you have such data, please email me.

MENINGITIS

As of the most recent release of LiST, no effect sizes on the cause of death 'Meningitis' have been calculated. Thus some assumptions must be made which will be revised as soon as the data become available. Currently, it is assumed that only 2 vaccines will affect meningitis mortality. Both Hib and pneumococcal vaccines are being given the same effect as they have on pneumonia mortality. Most meningitis cases will not benefit from a simple antibiotic, but full supportive care will be needed. Thus there is no effect of antibiotics on meningitis. Similarly, there is no data available to suggest that there are additional risks to dying from meningitis if one is stunted or wasted. Thus they are not being built in. As with everything, if this data become available and per-reviewed article summarizes this data, using the same methodology as the rest of the reviews, it will be included.

MALARIA

There are three interventions in LiST directly relating to malaria. The selection of the related indicators as well as their effect sizes was done by Tom Eisele, Rick Steketee and their co-authors and members of the Malaria MERG. They were also generally agreed upon by consultation with members of CDC , including Alex Rowe, and WHO, including . The three interventions are: protection of a woman during pregnancy from malaria, household protection from malaria and prompt treatment of a child with fever in malaria endemic areas with an appropriate antimalarial.

Ideal coverage indicators

The following indicators were chosen because their effect on child mortality has been measured through randomized trials.

For household protection from malaria vectors, the ideal indicator is "Households either owning at least 1 insecticide treated bednet (ITN) or being effectively sprayed with indoor residual spraying (IRS)" . This ideal indicator was chosen because ITNs and IRS are both vector control strategies encouraged by the WHO. The effectiveness of ITNs has been demonstrated and measured through randomized control trials. IRS has been known to be effective in reducing malaria incidence since the early 1900s. IRS is assumed to have the same impact on child mortality as ITNs because they are similar vector control strategies. Although the LiST model predicts child mortality, the proportion of children sleeping under an ITN is not as good a coverage indicator for mortality as household possession of ITNs. This is due to a number of reasons including:

1. The community randomized trials testing the effectiveness of ITNs were all intention to treat analysis. They did not consider whether the children were sleeping under ITNs or not, but only measured in very small scales the proportion of net use.
2. Actual use of the ITN the night before is influenced by a variety of factors including climate and the presence of nuisance biting mosquitoes. As most household surveys are performed in the dry season when it is hotter and nuisance biting mosquitoes are fewer, the proportion of children using an ITN during the survey time period is likely to be an underestimate of the proportion of children using an ITN during the malaria transmission season.
3. ITNs have been shown to provide a protective effect for more than just the individual using the ITN. Children living in households with ITNs gain some benefit from the ITN whether or not they themselves are actually sleeping under them.

For protection of a pregnant woman during pregnancy, the ideal indicator is "Intermittent preventive treatment for pregnant women (IPTp) with 2 or more doses of sulphadoxine-pyrimethamine delivered at an ante-natal clinic or a pregnant woman sleeping under an ITN the night before". IPTp has been shown to reduce the percent of low birthweight infants in randomized trials in the context of growing SP resistance. Low birthweight is associated with a greater risk of mortality, and thus IPTp has been shown to reduce mortality indirectly. The event of neonatal mortality was too rare in these studies to show a direct effect on neonatal mortality from the randomized trials, but protective trends did exist. IPTp was not shown to add any benefit after controlling for ITN use, therefore either IPTp or using an ITN the night before is the chosen indicator.

For treatment of a child with suspected malaria, the ideal indicator is "prompt treatment with 48 hours of the onset of fever for children in malaria endemic areas with an effective anti-malarial". An effective anti-malarial is defined as an anti-malarial approved by the country for use in treatment. In most cases this is currently an artemisinin-combination therapy, currently artemether-lumefantrine or Coartem are the most common. It remains unclear how prompt effective treatment of children with fever affects child mortality, but effective anti-malarials have been shown to be 84% effective in preventing mortality in children with severe malaria and in clearing infection after 2 weeks.

MEASLES

Measles is a highly contagious disease which historically killed millions of children each year. Since the 1960s, use of the measles vaccine in the first or second year of life has been responsible for the dramatic and successful reduction in measles deaths worldwide. Since the 1990s, a second dose of vaccine was introduced for children 4-6 years of age in many developed countries to counteract the effect of high transmission probability, waning immunity and non-responders to the vaccine. Recently, WHO has recommended this second dose for all countries

Because of the highly contagious nature of the measles virus, a very high level of coverage is needed to introduce an adequate level of herd immunity which will result in a reduction/elimination of transmission of the virus so that unprotected children can avoid the illness. This only occurs at very high levels of coverage. This model defaults to have herd immunity occur at coverage levels greater than 95%, however, it can be altered through use of the herd immunity tool (see page 11).

In countries where a second dose of measles vaccine has not yet been introduced, the default values in *LiST* are appropriate. However, if a second dose of measles vaccine has been suggested, additional data is required that is not standard in *LiST*.

1) The effect of measles vaccine needs to be altered from .85 (for 1 dose) to .98 (for 2 or more doses).
2) The effective coverage of measles vaccine needs to be estimated and entered into *LiST*. (See below.)
3) The herd immunity effect needs to be turned off or shifted to affect the appropriate coverage levels, if data is available.

Calculations for effective coverage of measles vaccine

If you only have coverage (in percent of children) for 1 or more doses, then you should use the effect associated with 1 dose (.85). If you have the coverage of 2 or more doses of vaccine, then you can use that effect with the .98 effect size. However, if you have both 1+ dose coverage and 2+ dose coverage, then you must convert your coverage to the 'effective 2 dose coverage value'. To use this formula, you must have the values in the format of 1 or more doses of MCV and 2 or more doses of MCV. Thus, MCV1+ must always be equal to or greater than MCV2 +.

	MCV1+	MCV2+	Calculation	Effective MCV2 Coverage
Example 1	85	0	(85-0)*(.85/.98)+0	73.7
Example 2	50	50	(50-50)*(.85/.98)+50	50
Example 3	75	20	(75-20)*(.85/.98)+20	67.7

Other notes

Currently in the model, measles vaccine is directly prevented with measles vaccine and treated with Vitamin A. Stunting is assumed to increase the risk of children dying, thus all effects on stunting, indirectly affect measles mortality. In addition, it should be noted that the MCV1+ coverage typically refers to children 12-23 months of age, as an indicator for all young children. The MCV2+ indicator typically could apply to all children 1-5 years of age, or even older, confounding the above calculations. Finally, since there is no age specificity of the postneonatal causes of death, it is necessary to apply the effect of the vaccine (as all vaccines in the model) to children younger than 6 months of age. This is a reasonable solution as the model assumes a linear age group for cause of death. Thus it assumes (incorrectly) that the measles deaths occur in all ages. By applying the vaccine coverage estimate to all ages, we are actually protecting against the appropriate numbers of deaths.

HIV/AIDS

All of the modelling related to HIV is done in the AIM module of Spectrum. This module was developed by the Futures Institute in conjunction with UNAIDS at the World Health Organization. Every two years, they generate, with country cooperation, a projection of the trends relating to HIV/AIDS. This includes updated country specific information on prevalence and epidemiology as well as scientific information on transmission patterns, effectiveness of regimens, and diagnostics etc. For more information on the most current inputs in this module, see the manual which can be accessed at www.jhsph.edu/iip/list or www.healthpolicyinitiative.com/index.cfm?id=software&get=Spectrum.

The interventions within AIM which affect HIV include PMTCT, Cotrimoxazole for children and ART for children. PMTCT includes several different parts, including 4 different treatment regimens and two different breast feeding patterns. All children who are HIV positive at the time of death are considered to have died of HIV. Thus even though the use of pneumococcal vaccine can prolong the life of a child testing positive for HIV, it will not ultimately save the child's life. Only interventions which directly affect the HIV will affect these children.

INJURY

Currently in the LIST model, no interventions which affect injury as a cause of death have been modelled. This will hopefully be done in a future version of LiST. However, it will depend on many factors including the ability to understand exposures to messages and the impacts on specific causes of injury, such as drowning or road accidents.

OTHER

Currently in the LIST model, no interventions which affect other causes of childhood death as a cause of death have been modelled. In a future research version of LiST there will be the ability to add in additional causes of death and therefore look at the effects on those causes which have been subsumed under other.

Section 4. Other issues

HERD IMMUNITY / INDIRECT EFFECTS

First the direct effect of the vaccine (or ITNs) is applied. Thus all children whose immune system responds to the vaccine are protected directly. Once that effect is applied, the herd effect is applied to all remaining deaths. Thus, if the herd effect is 75%, then three quarters of the children who would otherwise have died from the disease would be saved. See the table below for details. Thus in age groups where there is no direct effect, an indirect effect can save a portion of lives.

Examples of the direct and indirect effects of vaccine coverage.*

	1	2	3	4
	No Vaccination	60% Coverage, No Herd	60% Coverage, 50% Herd	60% Coverage, 75% Herd
No Vaccination	1423	1423	1423	1423
Effect Size	.85	.85	.85	.85
Vaccine Coverage Level	0	.60	.60	.60
Lives Saved	0	726	726	726
Remaining Deaths	1423	697	697	697
Herd Effect	0	0	.5	.75
Herd Deaths Saved	0	0	349	523
Final Deaths	1423	697	348	174

*It is assumed that at baseline no vaccine is delivered in any of the examples.

Formulas to explain lives saved table above. Numbers match example 3.

Formula 1: Lives Saved=Deaths * Effect * Coverage
Ex. Lives Saved = 1423*.85 * .60 = 726
Formula 2: Remaining Deaths: Base Deaths – Lives Saved
Ex. Remaining Deaths = 1423 – 726 = 697
Formula 3: Herd Deaths Saved = Remaining deaths * Herd Effect
Ex. Herd Deaths Saved = 697 * .5 = 349
Formula 4: Final deaths = Remaining Deaths – Herd Deaths Saved
Ex. Final Deaths = 697 – 349 = 348

Table of indirect effect associated by coverage value.

	Exact Coverage Value									
Age	0-50	55	60	65	70	80	85	90	95	100
<1	0	0	0	0	0	0	0	0	1	1
1-5	0	0	0	0	0	0	0	0	1	1
6-11	0	0	0	0	0	0	0	0	1	1
12-23	0	0	0	0	0	0	0	0	1	1
24-59	0	0	0	0	0	0	0	0	1	1

The indirect effect associated with coverage values between the two shown values will be interpolated. Thus, in the default measles vaccine scenario, there is no indirect effect through and including 90% coverage. Between 90 and 95% coverage, the herd effect increases linearly until, at exactly 95% coverage, the indirect effect covers all children and elimination of all cases occurs.

Section 5. Effect Sizes

Maternal Effect Sizes

Cause of Death	Intervention	Effect
Antepartum Hemorrhage	Basic Emergency Obstetric Care	.2
	Comprehensive Emergency Obstetric Care	.8
Postpartum Hemorrhage	Active management of the third state of labor	.27
	Basic Emergency Obstetric Care	.65
	Comprehensive Emergency Obstetric Care	.95
Hypertensive diseases	Calcium supplementation	.20
	Magnesium sulfate for pre-eclampsia	.59
	Magnesium sulfate for eclampsia	.41
	Comprehensive Emergency Obstetric Care	.96
Infections	Antibiotics for pPRoM	.26 (.1)
	Clean practices and immediate essential newborn care (home)	.1 (.5)
	Essential care for all women and immediate essential newborn care (facility)	.1 (.5)
	Basic Emergency Obstetric Care	.5
	Comprehensive Emergency Obstetric Care	.7
	Sepsis case management (BEmOC level)	.68
	Sepsis case management (CEmOC level)	.83
Note: All affected fractions are equal to 1 unless otherwise stated. All numbers in parentheses are the relevant affected fractions		

Cause of Death	Intervention	Effect
Abortion	D&C anesthesia	.95
	Vacuum aspiration	.99
	Medical abortion	.99
	Post abortion case management (BEmOC level)	.90
	Post abortion case management (CEmOC level)	.95
Obstructed labor	Basic Emergency Obstetric Care	.08
	Comprehensive Emergency Obstetric Care	.99
Ectopic pregnancy	Ectopic pregnancy case management (BEmOC level)	.3
	Ectopic pregnancy case management (CEmOC level)	.9
Malaria	IPTp	.4
	Case management of malaria (health center)	.84
	Case management of malaria (hospital)	.84
Other indirect causes	Tetanus toxoid immunization	.98 (.005)

Neonatal Effect Sizes

Cause of Death	Intervention	Effect
Diarrhea	ORS[1]	0.93
Sepsis Pneumonia	Syphilis detection and treatment	0.025
	Antibiotics for pPRoM[3]	0.08
	Essential care for all women and immediate essential newborn care	0.25
	Basic emergency obstetric care	0.25
	Comprehensive emergency obstetric care	0.25
	Clean practices and immediate essential newborn care (home)	0.20
	Preventive postnatal care (healthy practices & illness detection)	0.31
	Oral antibiotic case management of severe infection	0.42
	Injectable antibiotic case management of severe infection	0.68
	Case management of severe infection with full supportive care	0.83
Asphyxia	Essential care for all women and immediate essential newborn care	0.25
	Basic emergency obstetric care	0.40
	Comprehensive emergency obstetric care	0.80
	Neonatal resuscitation (institutional)	0.30
	Neonatal resuscitation (home)	0.20
	Case management of severe infection with full supportive care	0.05
Prematurity	Antenatal corticosteroids for preterm labor[2]	0.53
	Antibiotics for pPRoM[3]	0.12
	Essential care for all women and immediate essential newborn care	0.10
	Basic emergency obstetric care	0.10
	Comprehensive emergency obstetric care	0.10
	Neonatal resuscitation (institutional)	0.10
	Neonatal resuscitation (home)	0.05
	Preventive postnatal care (healthy practices & illness detection)	0.35
	Kangaroo mother care[4]	0.51
	Case management of severe illness with full supportive care	0.28
Tetanus	Tetanus toxoid[5]	0.94
	Essential care for all women and immediate essential newborn care	0.36
	Basic emergency obstetric care	0.36
	Comprehensive emergency obstetric care	0.36
	Clean practices and immediate essential newborn care (home)	0.30
Congenital anomalies	Periconceptual Folic Acid[6]	0.35
Other	Case management of serious neonatal illness	0.10

Note: All affected fractions are equal to 1.

Additional Neonatal Effects

Risk Factor	Intervention	Effect
On IUGR	IPT malaria during pregnancy (IPTp)	0.35
	Balanced energy supplementation	0.32
	Multiple micronutrient supplementation	0.09

The affected fraction for IPTp is the proportion of 1st and 2nd pregnancies exposed to malaria. The affected fraction for balanced energy supplementation is the proportion of the population living under the poverty line, or $1 per day. The affected fraction for multiple micronutrient supplementation is 1.

Cause of Death	Risk Factor	Odds Ratio
Diarrhea	IUGR/Low birth weight	2
	Not IUGR/Low birth weight	1
Sepsis/Pneumonia	IUGR/Low birth weight[7]	2
	Not IUGR/Low birth weight	1
Asphyxia	IUGR/Low birth weight[7]	2.3
	Not IUGR/Low birth weight	1
Diarrhea	Exclusive breastfeeding[7]	1
	Partial breastfeeding	2.28
	Predominant breastfeeding	4.62
	Not breastfeeding	10.53
Sepsis/Pneumonia	Exclusive breastfeeding[7]	1
	Partial breastfeeding	1.75
	Predominant breastfeeding	2.49
	Not breastfeeding	15.13

Risk Factor	Risk Factor/ Intervention	Odds Ratio
On stunting	IUGR/Low birth weight	21.6
	Not IUGR/Low birth weight	1
	Diarrhea (per episode)[8]	1.025
	No Diarrhea	1
On appropriate breastfeeding	Breastfeeding promotion	4
	No promotion	1

Post Neonatal Effect Sizes (and relevant affected fractions) by Age Category

Cause of Death	Intervention	1-6 months		6-12 months		12-23 months		24-59 months	
		Effect	AF	Effect	AF	Effect	AF	Effect	AF
Diarrhea	Use of improved water source within 30 minutes[9]	.17	1	.17	1	.17	1	.17	1
	Use of water connection in the home[10]	.69	1	.69	1	.69	1	.69	1
	Improved excreta disposal (latrine/toilet) [9]	.36	1	.36	1	.36	1	.36	1
	Hand washing with soap[9]	.48	1	.48	1	.48	1	.48	1
	Hygienic disposal of children's stools†	.20	1	.20	1	.20	1	.20	1
	Vitamin A for prevention	0	1	0.31	1	0.31	1	0.31	1
	Zinc for prevention	0	1	0.13	1	0.13	1	0.13	1
	Rotavirus vaccine[11]	.74	0.39	0.74	0.39	0.74	0.39	0.74	0.39
	ORS[1]	0.93	0.95	0.93	0.95	0.93	0.95	0.93	0.95
	Antibiotics for dysentery[12]	0.99	0.05	0.99	0.05	0.99	0.05	0.99	0.05
	Zinc for treatment[13]	0.23	1	0.23	1	0.23	1	0.23	1
Pneumonia	Zinc for prevention	0	1	0.15	1	0.15	1	0.15	1
	Hib vaccine*[14]	0.18	1	0.18	1	0.18	1	0	1
	Pneumococcal vaccine*[14]	0.24	1	0.24	1	0.24	1	0.24	1
	DPT vaccination	0.1	1	0.1	1	0.1	1	0.1	1
	Case management of pneumonia (oral antibiotics)[15]	0.7	1	0.7	1	0.7	1	0.7	1
Measles	Measles vaccine**[16]	.85	1	0.85	1	0.85	1	0.85	1
	Vitamin A for measles treatment[16]	0.62	1	0.62	1	0.62	1	0.62	1
Malaria	Insecticide treated materials/indoor residual spraying[17]	0.55	1	0.55	1	0.55	1	0.55	1
	Antimalarials[17]	0.84	1	0.84	1	0.84	1	0.84	1

*The effect size for Hib vaccine has been adjusted to .204 and for pneumococcal vaccine to .27 to account for non-overlapping impacts. These will be adjusted back in the next version of *LiST* which will assume this fact. **See the measles disease page for a more complete explanation of this effect. †Presented at CHERG Meeting.

Risk Factor	Intervention	1-6 months		6-12 months		12-23 months		24-59 months	
		Effect	AF	Effect	AF	Effect	AF	Effect	AF
On diarrhea incidence	Improved water source[9]	0.17	1	0.17	1	0.17	1	0.17	1
	Water connection in the home[10]	0.627	1	0.627	1	0.627	1	0.627	1
	Improved excreta disposal[9]	0.36	1	0.36	1	0.36	1	0.36	1
	Hand-washing with soap[9]	0.48	1	0.48	1	0.48	1	0.48	1
	Hygienic disposal of stools†	0.20	1	0.20	1	0.20	1	0.20	1

†Presented at CHERG Meeting.

Additional Post-Neonatal Effects, by Age Category

Risk Factor	Intervention	Odds Ratio			
		1-6 mo.	6-12 mo.	12-23 mo.	24-59 mo.
On Stunting	Not stunted at previous age cohort	1	1	1	1
	Stunted at previous age cohort	12.4	21.4	30.3	46.2
	Food secure with promotion	1	1	1	1
	Food secure without promotion	1	1.43	1.43	1
	Food insecure with promotion and supplementation	1	1.6	1.6	1
	Food insecure without promotion or supplementation	1	2.39	2.39	1
	Diarrhea (per episode)[8]	1.025	1.025	1.025	1.025
	No diarrhea	1	1	1	1
	Zinc supplemented	1	1	1	1
	Not zinc supplemented	1	1.18	1.18	1.18
On appropriate breastfeeding	Breastfeeding promotion	3.5	1.6	1	1
	No promotion	1	1	1	1

Cause of Death	Risk Factor	Odds Ratio			
		1-6 mo.	6-12 mo.	12-23 mo.	24-59 mo.
Diarrhea	> -1Z HAZ[7]	1	1	1	1
	> -2Z HAZ	1.2	1.2	1.2	1.2
	> -3Z HAZ	1.6	1.6	1.6	1.6
	<= -3Z	4.6	4.6	4.6	4.6
Pneumonia	> -1Z HAZ[7]	1	1	1	1
	> -2Z HAZ	1	1	1	1
	> -3Z HAZ	1.3	1.3	1.3	1.3
	<= -3Z	3.2	3.2	3.2	3.2
Measles	> -1Z HAZ[7]	1	1	1	1
	> -2Z HAZ	1	1	1	1
	> -3Z HAZ	1.7	1.7	1.7	1.7
	<= -3Z	2.8	2.8	2.8	2.8
Malaria	> -1Z HAZ[7]	1	1	1	1
	> -2Z HAZ	1	1	1	1
	> -3Z HAZ	1.35	1.35	1.35	1.35
	<= -3Z	2.1	2.1	2.1	2.1
Diarrhea	Exclusive breastfeeding[7]	1	1	1	
	Partial breastfeeding	2.28	1	1	
	Predominant breastfeeding	4.62	1	1	
	Not breastfeeding	10.53	2.83	2.83	
Pneumonia	Exclusive breastfeeding[7]	1	1	1	
	Partial breastfeeding	1.75	1	1	
	Predominant breastfeeding	2.49	1	1	
	Not breastfeeding	15.13	1.52	1.52	

Cause of Death	Risk Factor	Odds Ratio			
		1-6 mo.	6-12 mo.	12-23 mo.	24-59 mo.
Diarrhea	> -1Z WHZ[7]	1	1	1	1
	> -2Z WHZ	1.2	1.2	1.2	1.2
	> -3Z WHZ	2.9	2.9	2.9	2.9
	<= -3Z WHZ	6.3	6.3	6.3	6.3
Pneumonia	> -1Z WHZ[7]	1	1	1	1
	> -2Z WHZ	1.6	1.6	1.6	1.6
	> -3Z WHZ	4.2	4.2	4.2	4.2
	<= -3Z WHZ	8.7	8.7	8.7	8.7
Measles	> -1Z WHZ[7]	1	1	1	1
	> -2Z WHZ	1.8	1.8	1.8	1.8
	> -3Z WHZ	3.7	3.7	3.7	3.7
	<= -3Z WHZ	6.0	6.0	6.0	6.0
Malaria	> -1Z WHZ[7]	1	1	1	1
	> -2Z WHZ	1	1	1	1
	> -3Z WHZ	3.0	3.0	3.0	3.0
	<= -3Z WHZ	3.0	3.0	3.0	3.0

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