Technical Rapid Response Team

IYCF-E TRRT

USAID
FROM THE AMERICAN PEOPLE

Infant and Young Child Feeding in Emergencies

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Session Objectives

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By the end of this session, you will be able to:

- Describe the impact of disasters in the context and how that affects IYCF-E
- Specify links between morbidity, mortality, nutritional status and IYCF
- Explain the importance of breastfeeding and disadvantages of artificial feeding
- Understand the difference between IYCF and IYCF-E

Considerations for Yemen

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- Escalating conflict since March 2015
- Estimated 18.8M people in need of humanitarian assistance
- Estimated 17M people (60% of population) food insecure (10.2 M IPC Phase 3, 6.8M people IPC Phase 4)
- Economic status of 78% of HH worse than in pre-crisis period
- High levels of malnutrition, both chronic and acute
- 14.5 M people need support to meet basic WASH needs
- 14.8 M people require assistance to ensure adequate access to healthcare and only 45% of health facilities functional (from 16 governorates surveyed)

HNO 2016 and IPC (March-July 2017)

What do we mean by optimal IYCF?

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BREASTFEEDING:

- Breastfeeding immediately after birth (first hour)
- Exclusive breastfeeding for 6 months

COMPLEMENTARY FEEDING:

- Timely (introduced at 6 months, 180 days)
- Adequate in energy and nutrients
- Hygienically prepared, stored and used
- Appropriate frequency, feeding method, active feeding
- Continued breastfeeding up to 24 months or beyond

IYCF Practices Yemen

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DHS 2013

Exclusive Breastfeeding 10%

Timely Introduction of Complementary Food 65%

Bottle Feeding 44%

KAP 2015 (UNICEF)

14% believes that a baby should not be breastfed within the first 24 hours after birth

10% believes that the first food a baby should receive is water and sugar

BUT

Continued breastfeeding rates at 1 year were estimated to be between 54% (Al Baidah) and 88% (Hajjah Lowland) during nutrition surveys in 2015-2016

WHY IS IYCF-E IMPORTANT?

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Young Infants are Particularly Vulnerable

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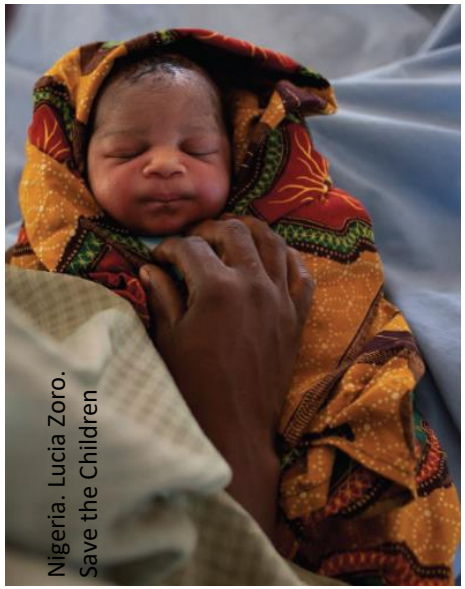
A. Maclaine. Philippines, 2009


Nigeria. Lucia Zoro. Save the Children


Asad Zaidi, Unicef,

Illness
Morality
Malnutrition

MORTALITY HIGHEST for YOUNGEST

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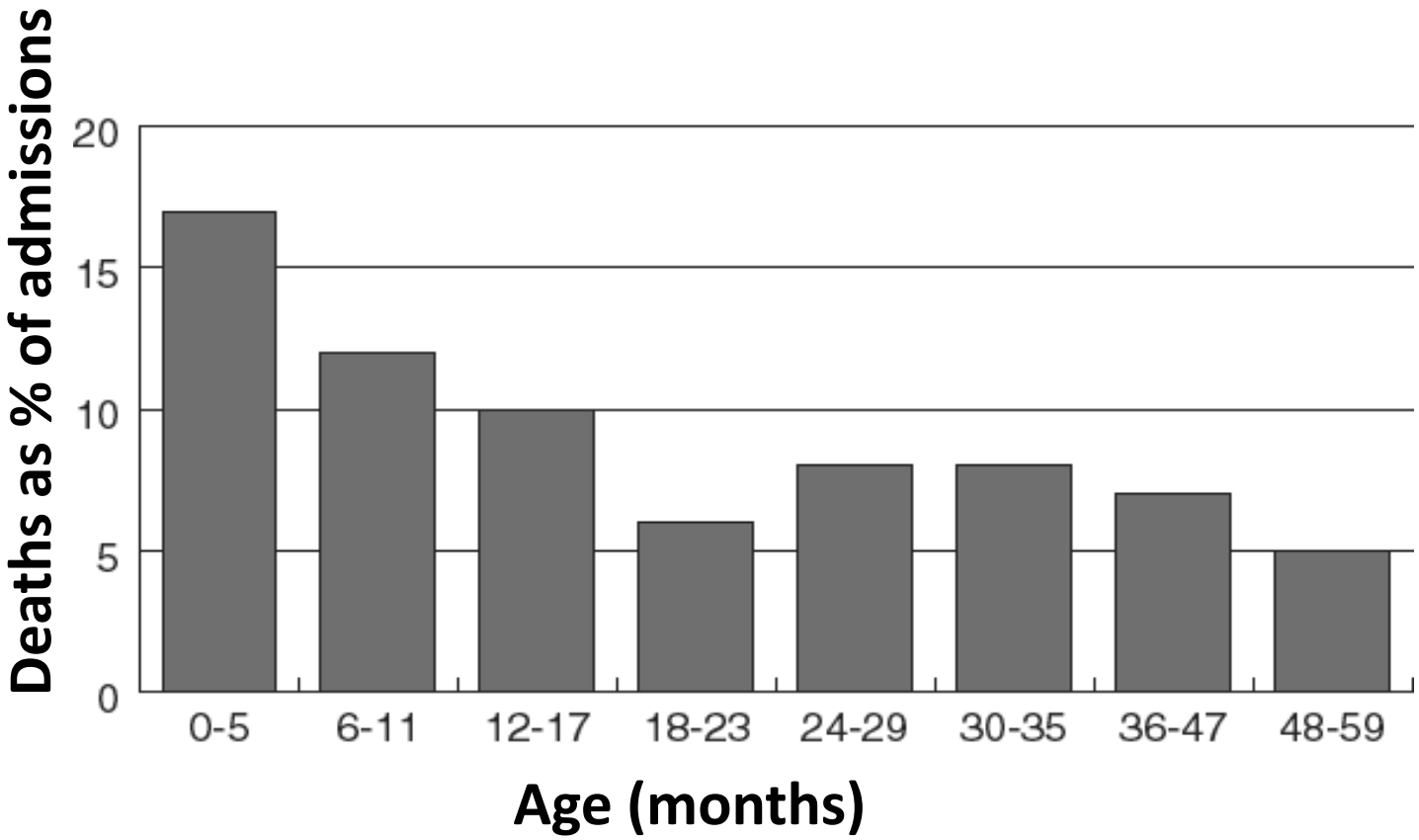
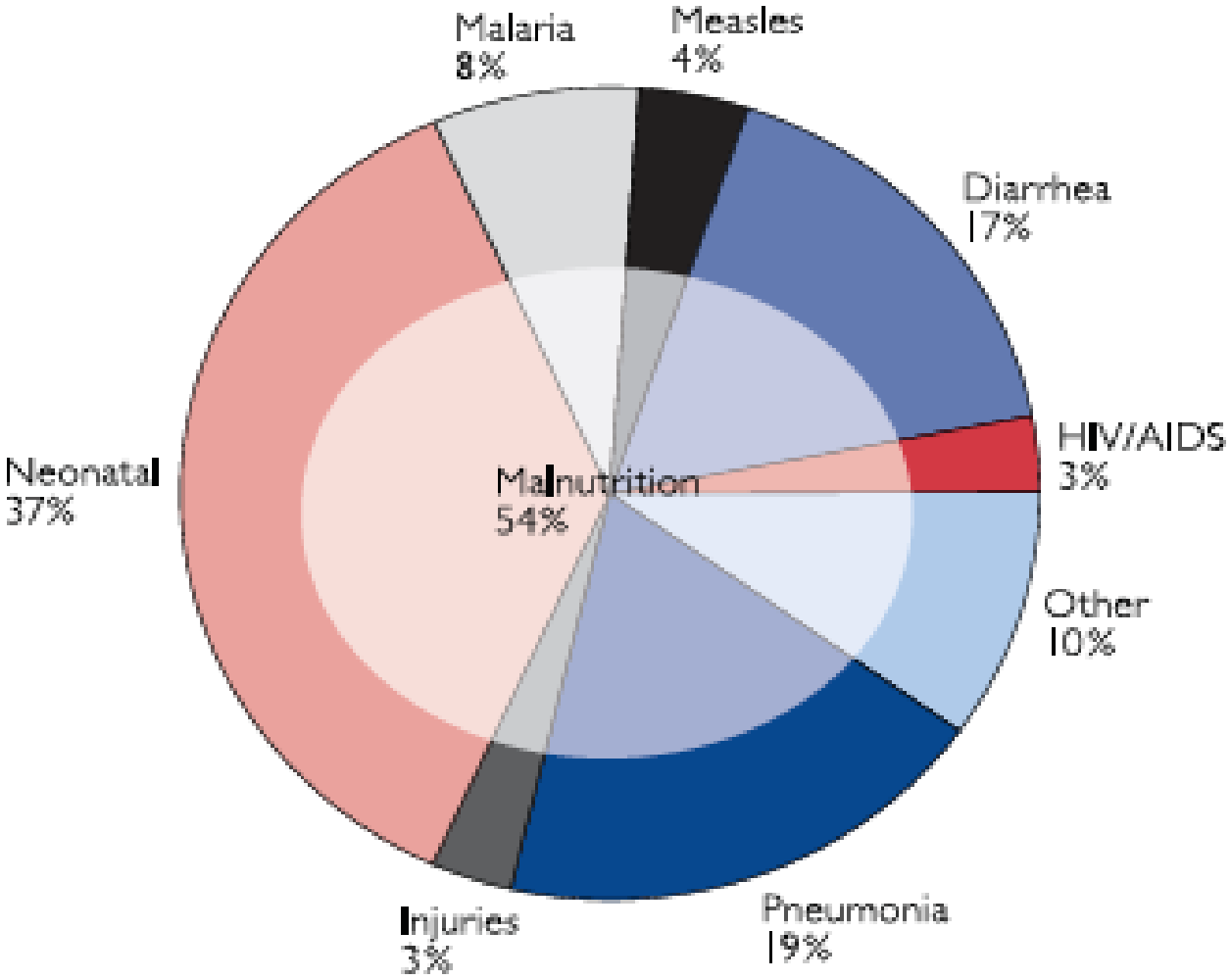


Golden M. Comment on including infants in nutrition surveys: experiences of ACF in Kabul City. Field Exchange 2000;9:16-17

IYCF-E and MORTALITY



Note: Percents do not total 100 due to rounding.
Source: Adapted from "WHO estimates of the causes of deaths in children." (2005). The Lancet 365:1147-1152.

The YOUNGER the infant, the more VULNERABLE if not breastfed

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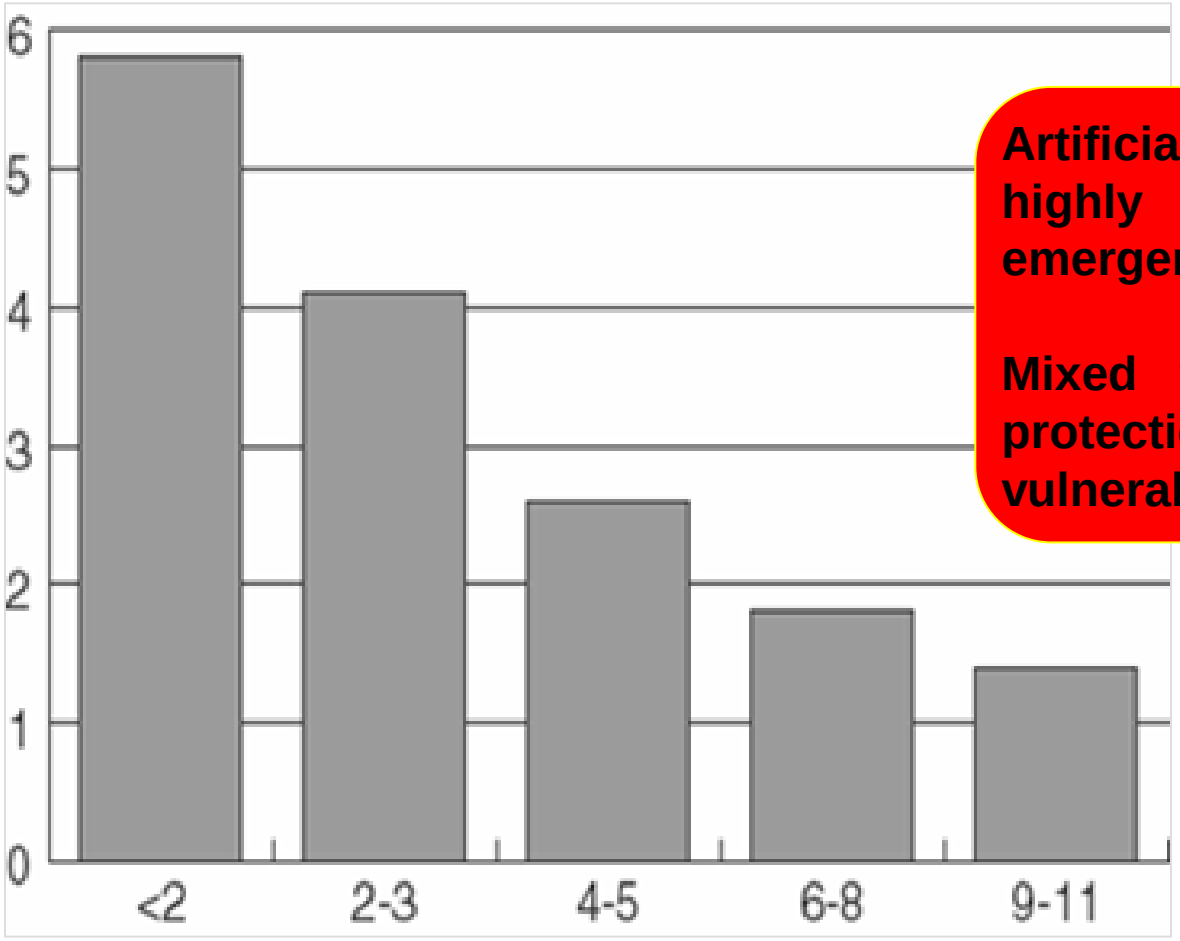

Artificially fed infants are highly vulnerable in emergencies

Mixed fed babies lose protection and are more vulnerable to infection

- Which do you think is the most effective means of preventing under five deaths?

- Insecticide treated materials
- Hib (meningitis) vaccine
- Appropriate breastfeeding
- Appropriate complementary feeding
- Vitamin A and Zinc supplementation

Preventative interventions	Proportion of under 5 deaths prevented
Exclusive and continued breastfeeding until 1 year of age	**13%**
Insecticide treated materials	7%
Appropriate complementary feeding	**6%**
Zinc	5%
Clean delivery	4%
Hib vaccine	4%
Water, sanitation, hygiene	3%
Antenatal steroids	3%
Newborn temperature management	2%
Vitamin A	2%

How many child deaths can we prevent this year? Lancet 2003; 362: 65–71

IMPROVING BREASTFEEDING PRACTICES COULD SAVE MORE THAN 820,000 LIVES A YEAR

BUT… BREASTFEEDING CAN EASILY BE UNDERMINED WITHOUT EVERYONE'S ACTIVE SUPPORT

Importance of Breastfeeding (1/5)

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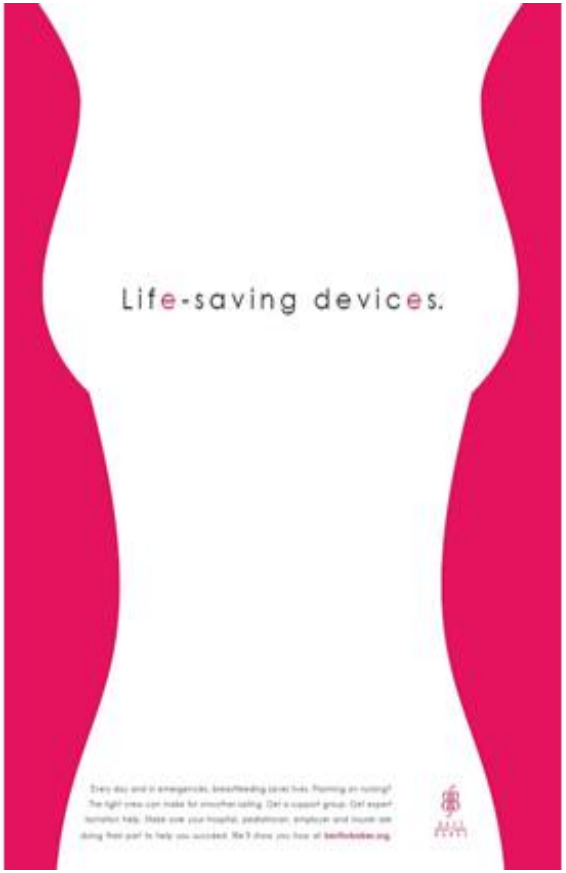

Breastfeeding **SAVES LIVES** in emergencies all over the world and infants who are not breastfed are far more likely to get sick and die.

Importance of Breastfeeding (2/5)

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Breastmilk

- Perfect nutrients.
- Easily digested; efficiently used.
- Protects against infection.
- Costs less than artificial feeding.

Breastfeeding

- Helps bonding and development.
- Helps delay a new pregnancy.
- Protects mothers' health.

WHO. Breastfeeding Counselling: a training course. 1993

Importance of Breastfeeding (3/5)

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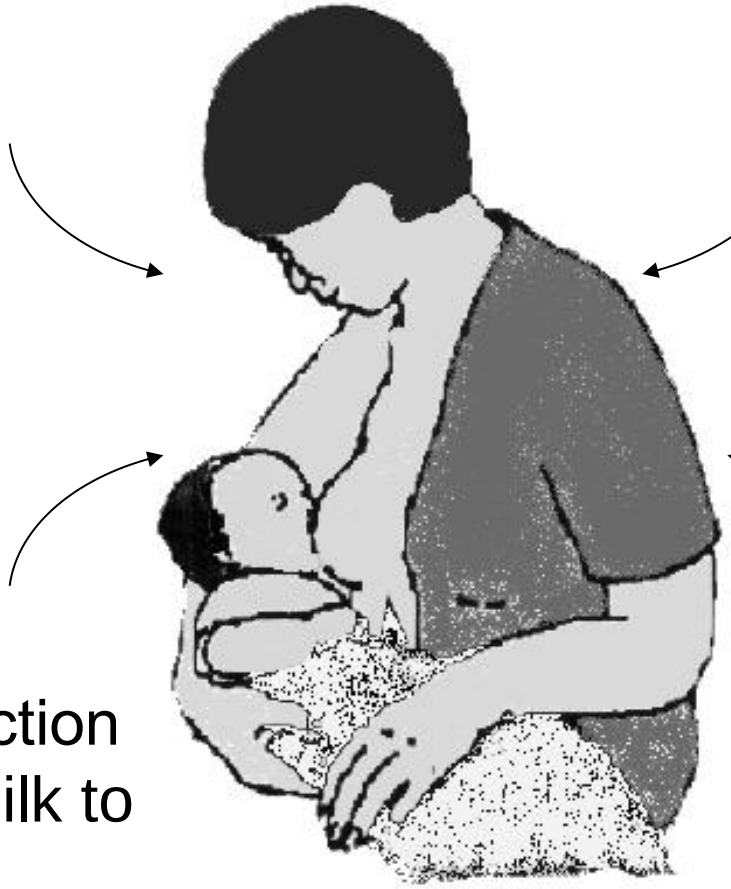
Protection against Infection

1. Mother infected.



2. White cells in mother's body make antibodies to protect mother.

3. Some white cells go to breast and make antibodies there.

4. Antibodies to mother's infection secreted in milk to protect baby.

WHO. Breastfeeding Counselling: a training course. 1993

Importance of Breastfeeding (4/5)

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Evan Schuurman/Save the Children

- For Infant:

- Protection against child infections
- Increases in intelligence
- Probable reductions in overweight and diabetes
- Protection against malocclusion
- No association with allergic disorders such as asthma
- No association with blood pressure and cholesterol

Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet* 2016; 387

Importance of Breastfeeding (5/5)

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- For breastfeeding women:

- Protection against breast cancer
- Improvement of birth spacing
- Might protect against ovarian cancer and type 2 diabetes.

A. Maclaine, Bangladesh, 2007

Breastfeeding in the 21st century: epidemiology, mechanisms, a
lifelong effect. Lancet 2016; 387

What is in breastmilk and infant formula?

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DID YOU EVER WONDER WHAT'S IN... ?

BREASTMILK

WATER

CARBOHYDRATES (energy source)
- Lactose
- Oligosaccharides (see below)

CARBOXYLIC ACID
- Alpha hydroxy acid
  - Lactic acid

PROTEINS (building muscles and bones)
- Whey protein
  - Alpha-lactalbumin
    - HAMLET (Human Alpha-lactalbumin Made Lethal to Tumour cells)
  - Lactoferrin
  - Many antimicrobial factors (see below)
- Casein
- Serum albumin

NON-PROTEIN NITROGENS
- Creatine
- Creatinine
- Urea
- Uric acid
- Peptides (see below)
- Amino Acids (the building blocks of proteins)
  - Alanine
  - Arginine
  - Aspartate
  - Glycine
  - Cystine
  - Glutamate
  - Histidine
  - Isoleucine
  - Leucine
  - Lycine
  - Methionine
  - Phenylalanine
  - Proline
  - Serine
  - Taurine
  - Theronine
  - Tryptophan
  - Tyrosine
  - Valine
  - Carnitine (amino acid compound necessary to make use of fatty acids as an energy source)
- Nucleotides (chemical compounds that are the structural units of RNA and DNA)
  - 5'-Adenosine monophosphate (5'-AMP)
  - 3',5'-Cyclic adenosine monophosphate (3',5'-cyclic AMP)
  - 5'-Cytidine monophosphate (5'-CMP)
  - Cytidine diphosphate choline (CDP choline)
  - Guanosine diphosphate (UDP)
  - Guanosine diphosphate - mannose
  - 3'- Uridine monophosphate (3'-UMP)
  - 5'-Uridine monophosphate (5'-UMP)
  - Uridine diphosphate (UDP)
  - Uridine diphosphate hexose (UDPH)
  - Uridine diphosphate-N-acetyl-hexosamine (UDPAH)
  - Uridine diphosphoglucuronic acid (UDPGA)
  - Several more novel nucleotides of the UDP type

FATS
- Triglycerides
  - Long-chain polyunsaturated fatty acids
    - Docosahexaenoic acid (DHA) (important for brain development)
    - Arachidonic acid (AHA) (important for brain development)
    - Linoleic acid
    - Alpha-linolenic acid (ALA)
    - Eicosapentaenoic acid (EPA)
    - Conjugated linoleic acid (Rumenic acid)
  - Free Fatty Acids
  - Monounsaturated fatty acids
    - Oleic acid
    - Palmitoleic acid
    - Heptadecenoic acid
  - Saturated fatty acids
    - Stearic
    - Palmitic acid
    - Lauric acid
    - Myristic acid
- Phospholipids
  - Phosphatidylcholine
  - Phosphatidylethanolamine
  - Phosphatidylinositol
  - Lysophosphatidylcholine
  - Lysophosphatidylethanolamine
  - Plasmalogens
- Sphingolipids
  - Sphingomyelin
  - Gangliosides
    - GM1
    - GM2
    - GM3
  - Glucosylceramide
  - Glycosphingolipids
  - Galactosylceramide
  - Lactosylceramide
  - Globotriaosylceramide (GB3)
  - Globoside (GB4)
- Sterols
  - Squalene
  - Lanosterol
  - Dimethylsterol
  - Methosterol
  - Lathosterol
  - Desmosterol
  - Triacylglycerol
  - Cholesterol
  - 7-dehydrocholesterol
  - Stigma-and campesterol
  - 7 ketocholesterol
  - Sitosterol
  - β-lathosterol
  - Vitamin D metabolites
  - Steroid hormones

VITAMINS
- Vitamin A
- Beta carotene
- Vitamin B6
- Vitamin B8 (Inositol)
- Vitamin B12
- Vitamin C
- Vitamin D
- Vitamin E
- a-Tocopherol
- Vitamin K
- Thiamine
- Riboflavin
- Niacin
- Folic acid
- Pantothenic acid
- Biotin

MINERALS
- Calcium
- Sodium
- Potassium
- Iron
- Zinc
- Chloride
- Phosphorus
- Magnesium
- Copper
- Manganese
- Iodine
- Selenium
- Choline
- Sulpher
- Chromium
- Cobalt
- Fluorine
- Nickel

METAL
- Molybdenum (essential element in many enzymes)

GROWTH FACTORS (aid in the maturation of the intestinal lining)
- Cytokines
  - interleukin-1β (IL-1β)
  - IL-2
  - IL-4
  - IL-6
  - IL-8
  - IL-10
  - Granulocyte-colony stimulating factor (G-CSF)
  - Macrophage-colony stimulating factor (M-CSF)
  - Platelet derived growth factors (PDGF)
  - Vascular endothelial growth factor (VEGF)
  - Hepatocyte growth factor -α (HGF-α)
  - HGF-β
  - Tumor necrosis factor-α
  - Interferon-γ
  - Epithelial growth factor (EGF)
  - Transforming growth factor-α (TGF-α)
  - TGF-β1
  - TGF-β2
  - Insulin-like growth factor-I (IGF-I) (also known as somatomedin C)
  - Insulin-like growth factor- II
  - Nerve growth factor (NGF)
  - Erythropoietin

PEPTIDES (combinations of amino acids)
- HMGF I (Human growth factor)
- HMGF II
- HMGF III
- Cholecystokinin (CCK)
- β-endorphins
- Parathyroid hormone (PTH)
- Parathyroid hormone-related peptide (PTH-rP)
- β-defensin-1
- Calcitonin
- Gastrin
- Motilin
- Bombesin (gastric releasing peptide, also known as neuromedin B)
- Neurotensin
- Somatostatin

HORMONES (chemical messengers that carry signals from one cell, or group of cells, to another via the blood)
- Cortisol
- Triiodothyronine (T3)
- Thyroxine (T4)
- Thyroid stimulating hormone (TSH) (also known as thyrotropin)
- Thyroid releasing hormone (TRH)
- Prolactin
- Oxytocin
- Insulin
- Corticosterone
- Thrombopoietin
- Gonadotropin-releasing hormone (GnRH)
- GRH
- Leptin (aids in regulation of food intake)
- Ghrelin (aids in regulation of food intake)
- Adiponectin
- Feedback inhibitor of lactation (FIL)
- Eicosanoids
  - Prostaglandins (enzymatically derived from fatty acids)
    - PG-E1
    - PG-E2
    - PG-F2
  - Leukotrienes
  - Thromboxanes
  - Prostacyclins

ENZYMES (catalysts that support chemical reactions in the body)
- Amylase
- Arysulfatase
- Catalase
- Histaminase
- Lipase
- Lysozyme
- PAF-acetylhydrolase
- Phosphatase
- Xanthine oxidase

ANTIPROTEASES (thought to bind themselves to macromolecules such as enzymes and as a result prevent allergic and anaphylactic reactions)
- a-1-antitrypsin
- a-1-antichymotrypsin

ANTIMICROBIAL FACTORS (are used by the immune system to identify and neutralize foreign objects, such as bacteria and viruses.)
- Leukocytes (white blood cells)
  - Phagocytes
    - Basophils
    - Neutrophils
    - Eosinophils
  - Macrophages
  - Lymphocytes
    - B lymphocytes (also known as B cells)
    - T lymphocytes (also known as C cells)
- sIgA (Secretory immunoglobulin A) (the most important antiinfective factor)
- IgA2
- IgG
- IgD
- IgM
- IgE
- Complement C1
- Complement C2
- Complement C3
- Complement C4
- Complement C5
- Complement C6
- Complement C7
- Complement C8
- Complement C9
- Glycoproteins
  - Mucins (attaches to bacteria and viruses to prevent them from clinging to mucousal tissues)
  - Lactadherin
- Alpha-lactoglobulin
- Alpha-2 macroglobulin
- Lewis antigens
- Ribonuclease
- Haemagglutinin inhibitors
- Bifidus Factor (increases growth of Lactobacillus bifidus - which is a good bacteria)
- Lactoferrin (binds to iron which prevents harmful bacteria from using the iron to grow)
- Lactoperoxidase
- B12 binding protein (deprives microorganisms of vitamin B12)
- Fibronectin (makes phagocytes more aggressive, minimizes inflammation, and repairs damage caused by inflammation)
- Oligosaccharides (More Than 200 Different Kinds!)

FORMULA

WATER

CARBOHYDRATES
- Lactose
- Corn maltodextrin

PROTEIN
- Partially hydrolyzed reduced minerals whey protein concentrate (from cow's milk)

FATS
- Palm olein
- Soybean oil
- Coconut oail
- High oleic safflower oil (or sunflower oil)
- M. alpina oil (Fungal DHA)
- C.cohnii oil (Algal ARA)

MINERALS
- Potassium citrate
- Potassium phosphate
- Calcium chloride
- Tricalcium phosphate
- Sodium citrate
- Magnesium chloride
- Ferrous sulphate
- Zinc sulphate
- Sodium chloride
- Copper sulphate
- Potassium iodide
- Manganese sulphate
- Sodium selenate

VITAMINS
- Sodium ascorbate
- Inositol
- Choline bitartrate
- Alpha-Tocopheryl acetate
- Niacinamide
- Calcium pantothenate
- Riboflavin
- Vitamin A acetate
- Pyridoxine hydrochloride
- Thiamine mononitrate
- Folic acid
- Phylloquinone
- Biotin
- Vitamin D3
- Vitamin B12

ENZYME
- Trypsin

AMINO ACID
- Taurine
- L-Carnitine (a combination of two different amino acids)

NUCLEOTIDES
- Cytidine 5-monophosphate
- Disodium uridine 5-monophosphate
- Adenosine 5 monophosphate
- Disodium guanosine 5-monophosphate
- Soy Lecithin

Developed as a student project for the Breastfeeding Course for Health Care Providers, Douglas College, New Westminster, BC, Canada - © 2007 by Cecily Heslett, Sherri Hedberg and Haley Rumble.

ARTIFICIAL FEEDING IS ALWAYS RISKY

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No active protection

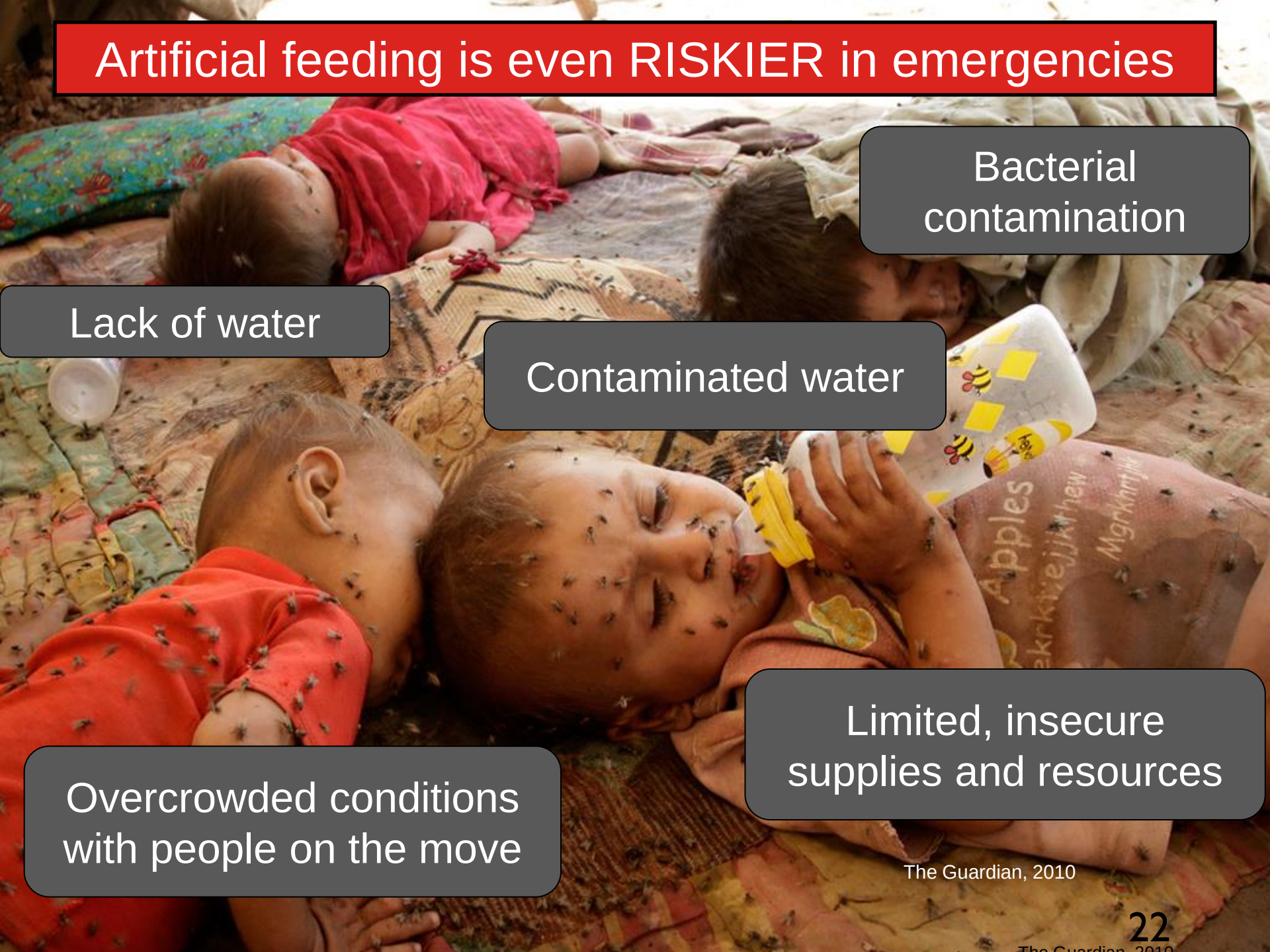
Infant formula powder is not sterile

Increases food insecurity and dependency

Bottle and teats extra source of infection

Costly in time, resources and care

Artificial feeding is even RISKIER in emergencies



Bacterial contamination

Lack of water

Contaminated water

Limited, insecure supplies and resources

Overcrowded conditions with people on the move

The Guardian, 2010

The Guardian, 2010

Higher RISKS for non-breastfed children

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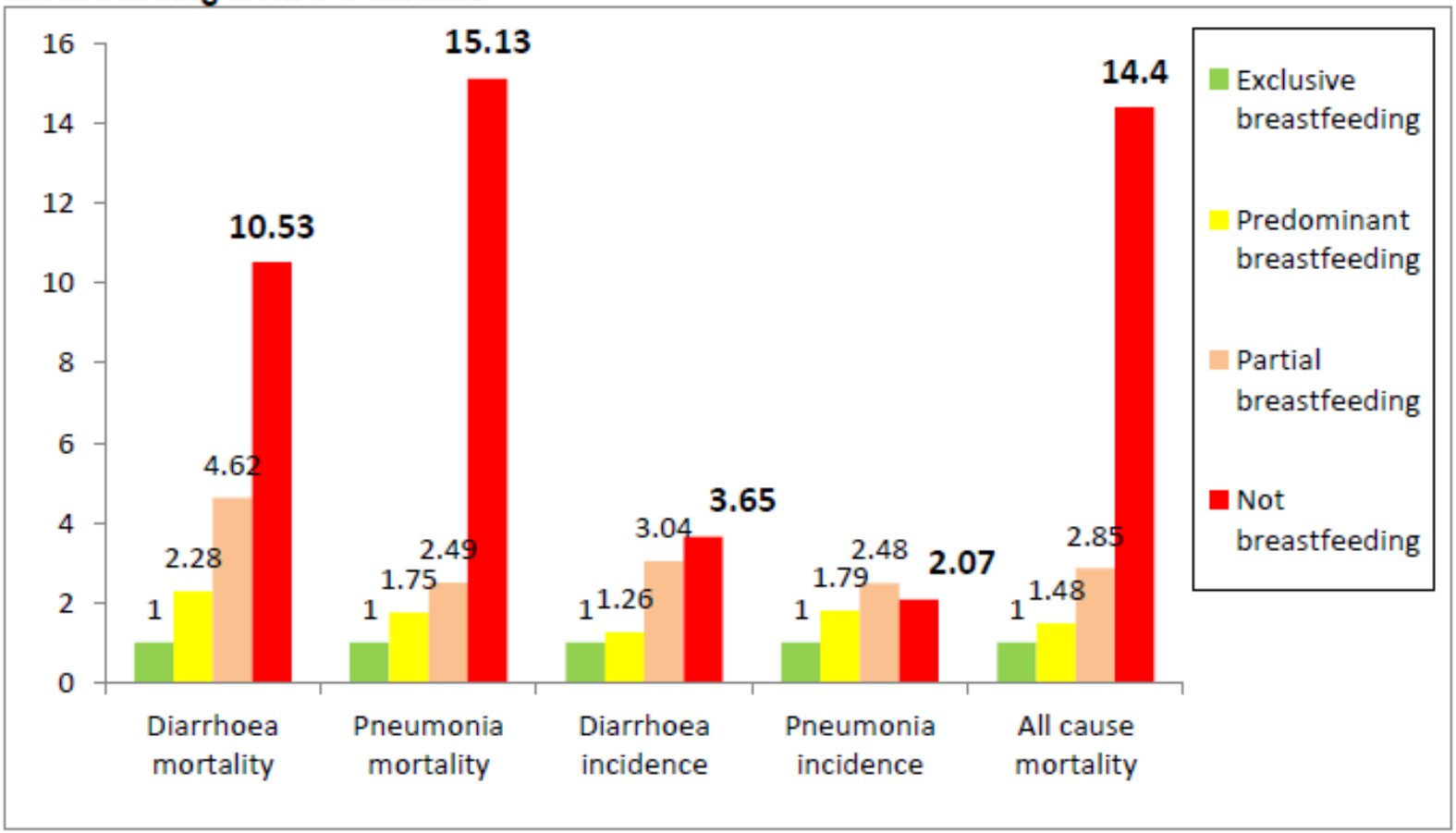
Figure 2: Relative risk of not breastfeeding for infections and mortality compared to exclusive breastfeeding from 0-5 months



Source: Lancet 2008 [3].

INFANT FORMULA DONATIONS CAN INCREASE DIARRHOEA

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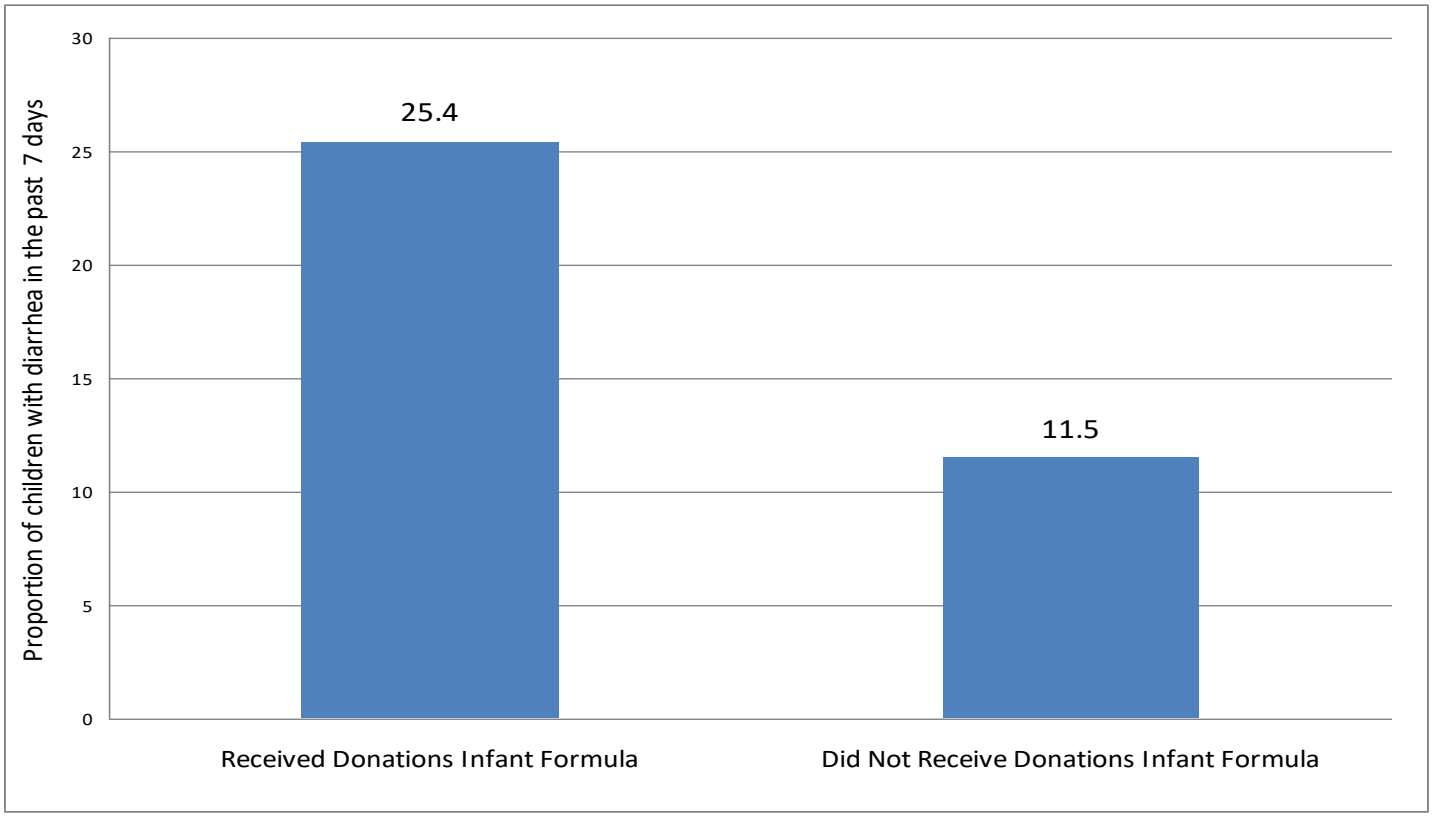
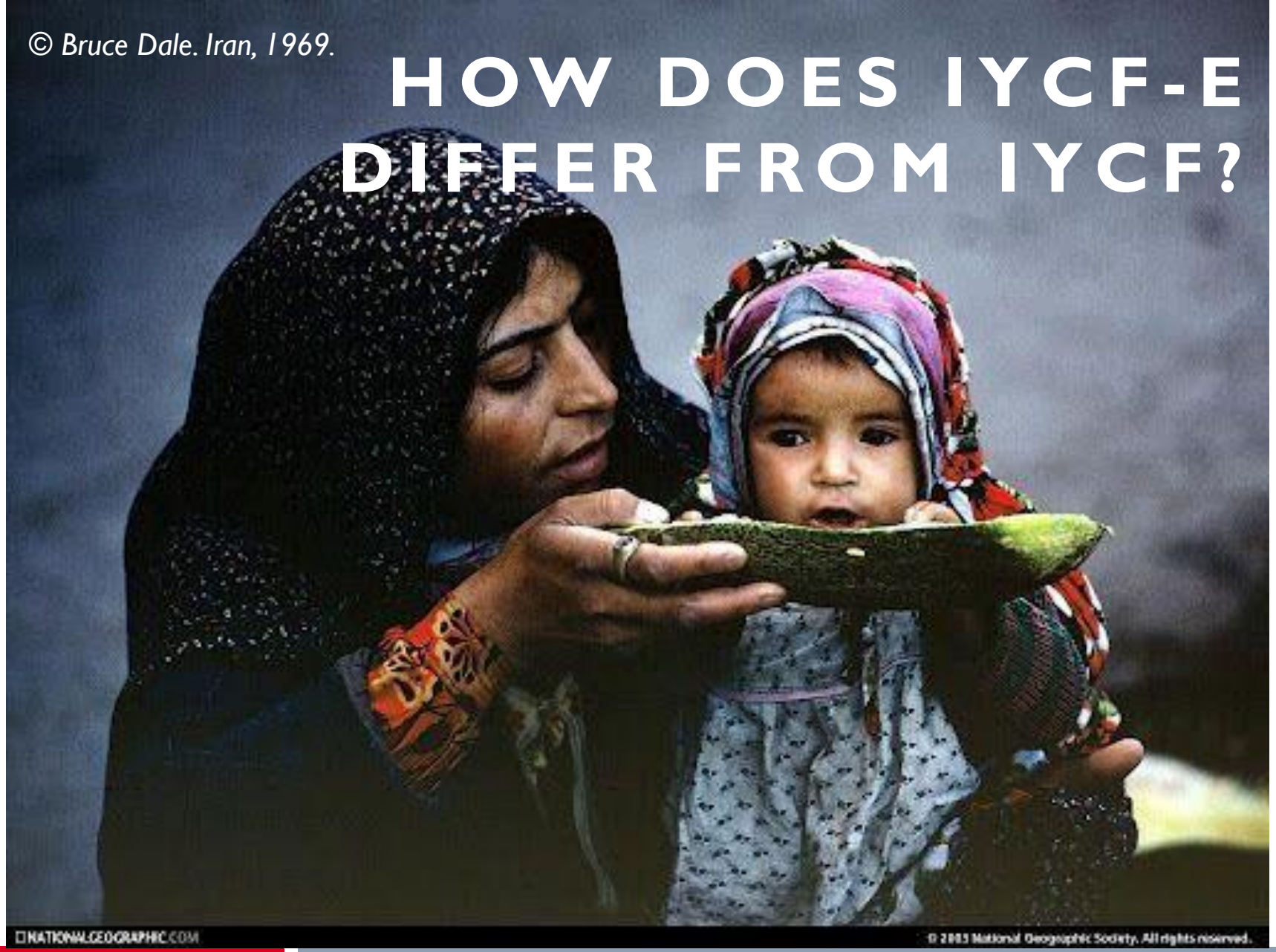
Relation between prevalence of diarrhoea and receipt of donated infant formula in children under two (2)

Yogyakarta Indonesia post-2006 earthquake.





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Different focuses of IYCF and IYCF-E programming

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IYCF

- Promote, protect and support optimal IYCF
- Improve IYCF practices (strong BCC component)
- In depth situational analysis

IYCF-E

- Rapid response
- Prevent harm
- Immediately save lives
- Promote, protect and support optimal IYCF
  - e.g. keep mothers breastfeeding, ensure access to appropriate complementary food
- Support non-breastfed infants
- Improve key IYCF practices (if possible)

Selection of Key IYCF-E Interventions and Actions

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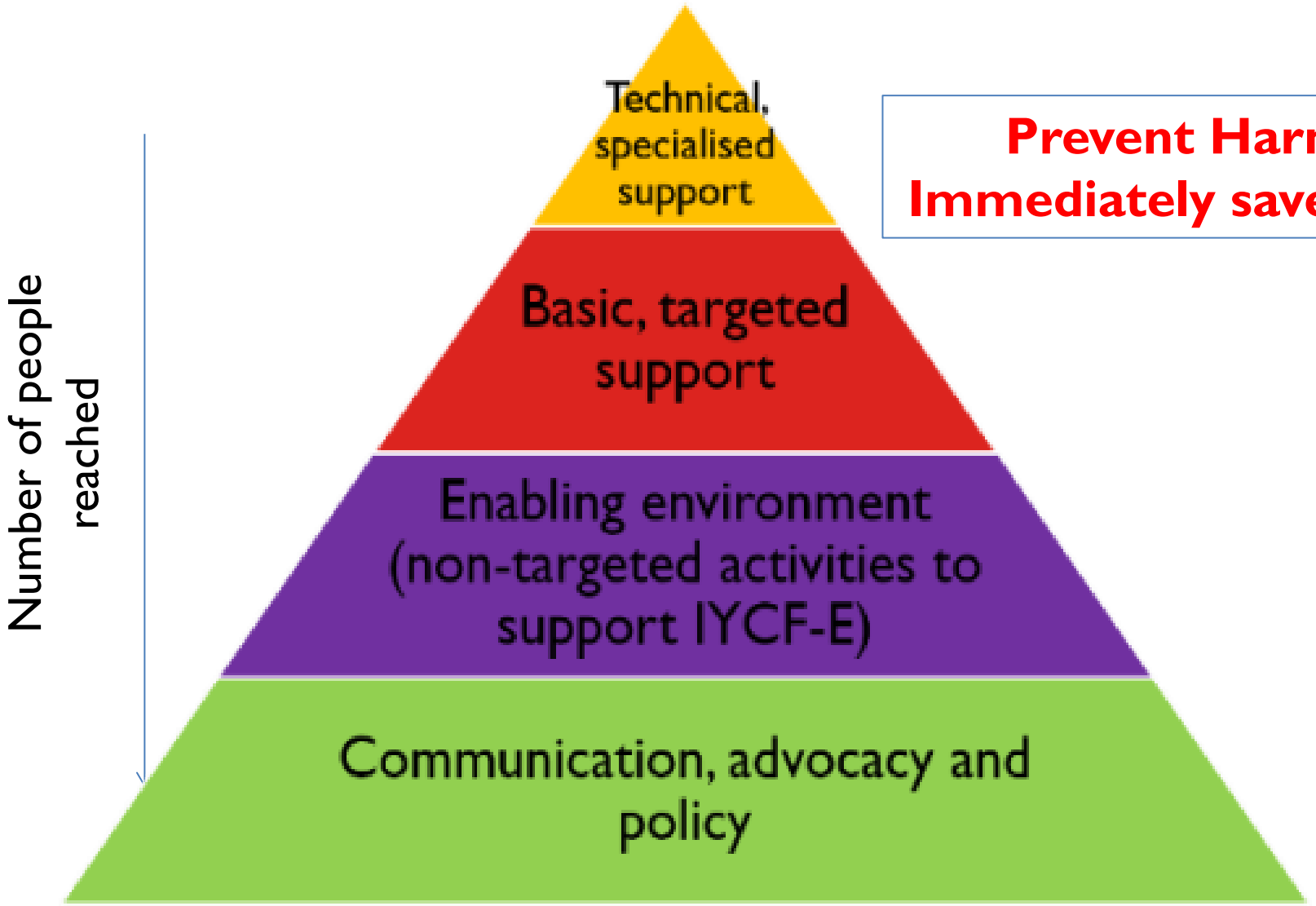

Prevent Harm
Immediately save lives

GROUP EXERCISE

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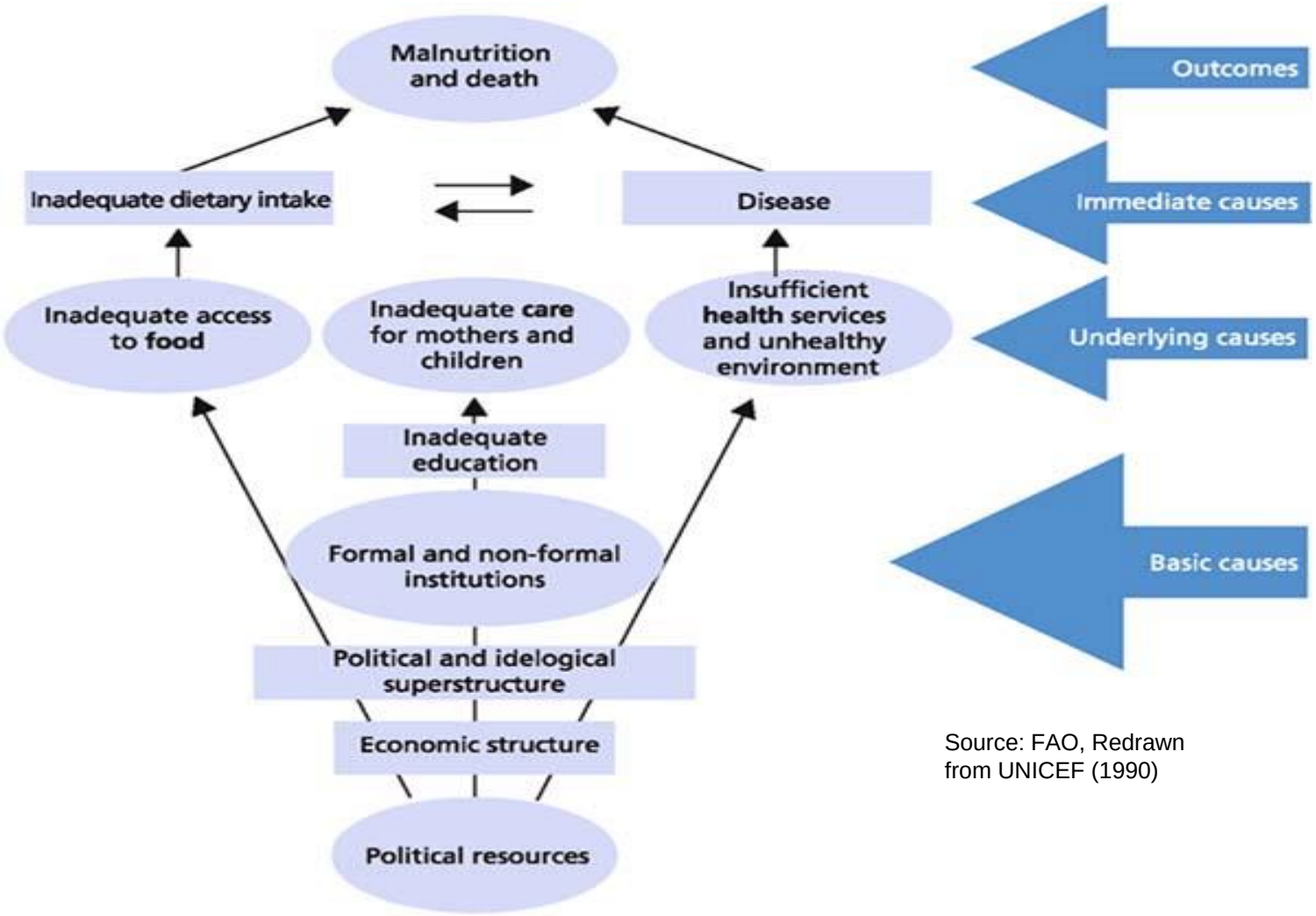
Links between morbidity, mortality, nutritional status and IYCF



Source: FAO, Redrawn from UNICEF (1990)

IYCF-E Interventions: Basic Interventions

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1) Prioritise needs of PLW and children/caregivers
2) Provide for the nutritional needs of PLW (micronutrients, BSFP)
3) Complementary feeding for children 6-23 months
4) Demographic breakdown at registration (<6, 6-12, 12-<24 & vulnerable groups if possible)
5) Registration of infants within two weeks of delivery
6) Establish secure and supportive places for breastfeeding
7) Ensure support for early initiation of exclusive breastfeeding for all new-borns

IYCF-E Interventions: Technical Interventions

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1) Breastfeeding and Complementary Feeding Counselling
2) Mother-Baby Areas offering privacy and comprehensive feeding support
3) Support groups (i.e. Mother-to-Mother, Care Groups)
4) Artificial Feeding Support: Assessment, BMS counselling and support
5) Mental Health & Psychosocial Support
6) Support for exceptionally difficult circumstances (i.e. acutely malnourished children, orphans/unaccompanied infants, LBW infants, infants affected by HIV)

IYCF and IYCF-E build on each other

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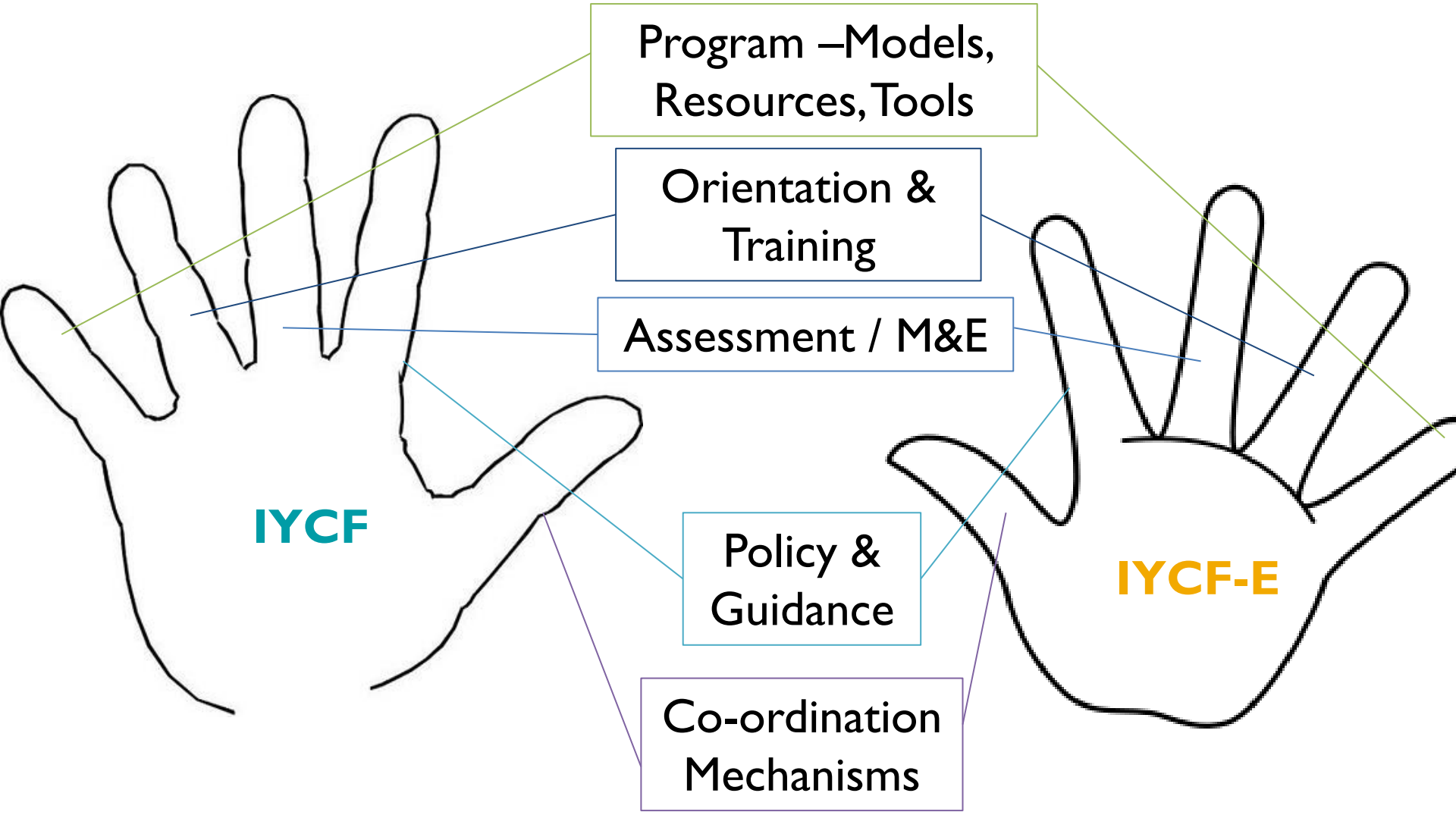

Integration with other sectors

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Priority Sectors for IYCF-E Linkages:

- Food Security and Livelihoods
- Health (incl. PSS & RH)
- Water, Sanitation and Hygiene
- Child Protection
- Shelter and Non-food Items
- Other Nutrition programmes

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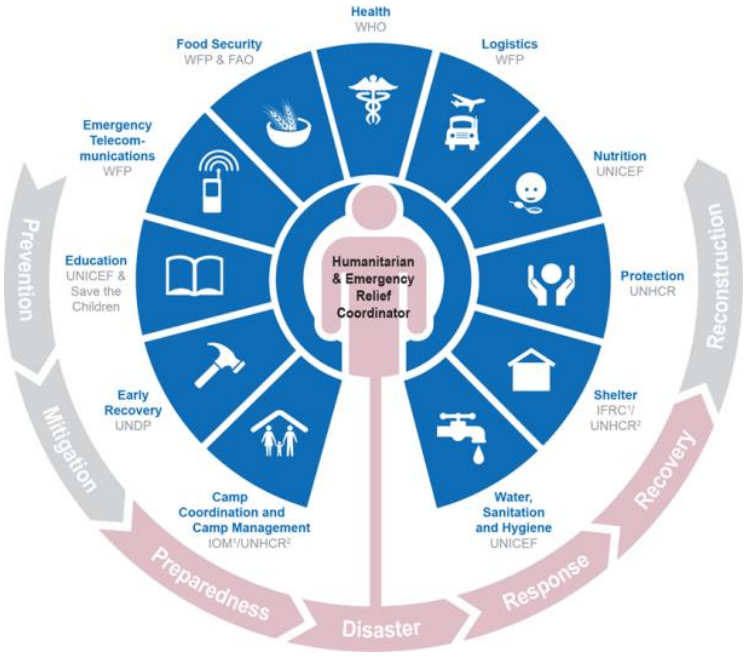
- Logistics
- Camp Management/Coordination
- Education



IDENTIFY	PROTECT
Ensure newborns are **registered**	Report uncontrolled BMS distributions (*all sectors)*
Assess and coordinate appropriate nutrition support for separated and orphaned children **(CP)**	Include children 0-23 months in **shelter** vulnerability criteria
Train **CP and Health** staff on how to identify and refer mothers with infant feeding difficulties.	Never include infant formula / bottles / teats / pacifiers in **NFIs**
Registration of household with children < 2 ((0-<6 months, 6-<12 months, 12-<24 months)	Protect PLW, infants and young children during **mass distributions**

PROMOTE	SUPPORT
Standardise relevant IYCF and **food security** messages	Prioritize support for immediate initiation of breastfeeding after **delivery**
Standardise the inclusion of IYCF counselling as part of **ANC and PNC services**	Plan for breastfeeding corners / spaces
	Locate Child Friendly Spaces near Baby Friendly Spaces (**CP**)
Implement **cash/voucher programmes** that promote good nutrition outcomes	Ensure caregivers of artificially fed infants have access to a **safe water** supply and prioritize breastfeeding mothers in the provision of **potable water**
Provide **hygiene promotion** and related NFIs at IYCF sites	Ensure inclusion and effective access of PLW and children 6-23 months (and caregivers) in **food aid** programmes.

Challenges to optimal IYCF in Emergencies

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Low pre-crisis breastfeeding rates

Poor feeding practices pre-crisis

Increase in myths & misconceptions undermining breastfeeding during crisis

Lack of appropriate complementary foods during crisis

Lack of resources and support during crisis

Formula donations

Challenges to IYCF-E interventions

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Poor understanding of IYCF-E

Weak M&E systems for IYCF-E programs

Weak legislation and adoption of policies & guidelines

Challenges to optimal IYCF-(E) practices Yemen

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Lack of clean water, sanitation, and food for PLW and infants and young children

Limited integration into CMAM

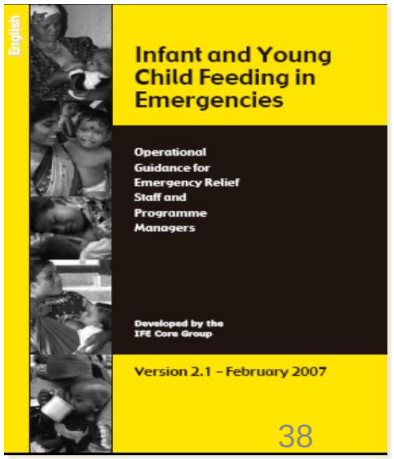
Untargeted Donations of BMS and aggressive marketing of companies

Poor IYCF practices pre-crisis

Health workers not trained on regulations of BMS

Gaps in IYCF-(E) policy

High rates of bottle feeding pre-crisis



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- IFE Core Group – Operational Guidance on IYCF in Emergencies (2011)
- WHO Guiding Principles for IYCF during Emergencies (2004)