

# *The Lancet* Breastfeeding Series

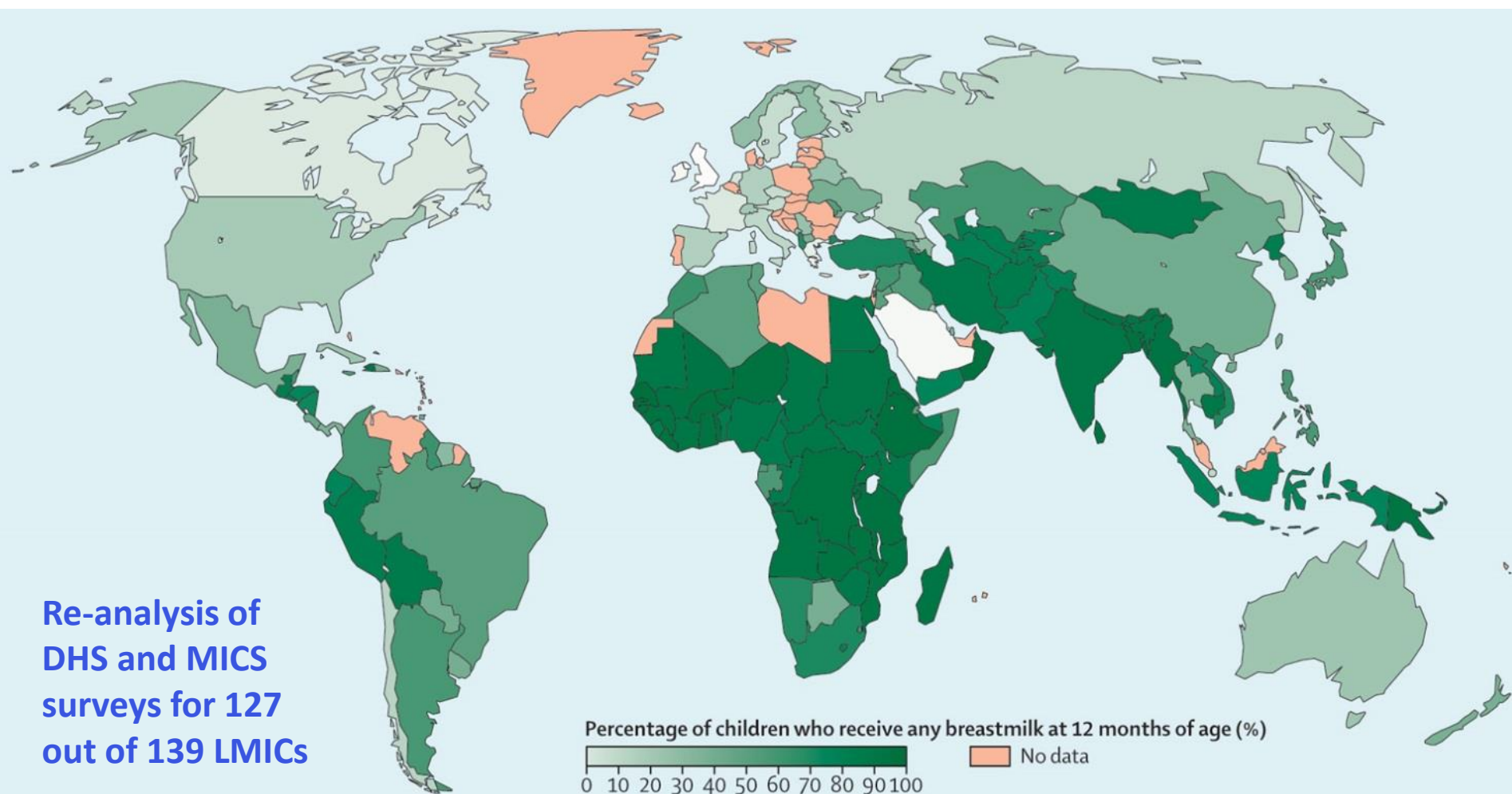
**Why invest, and what it will take to improve  
breastfeeding practices?**

Nemat Hajeebhoy

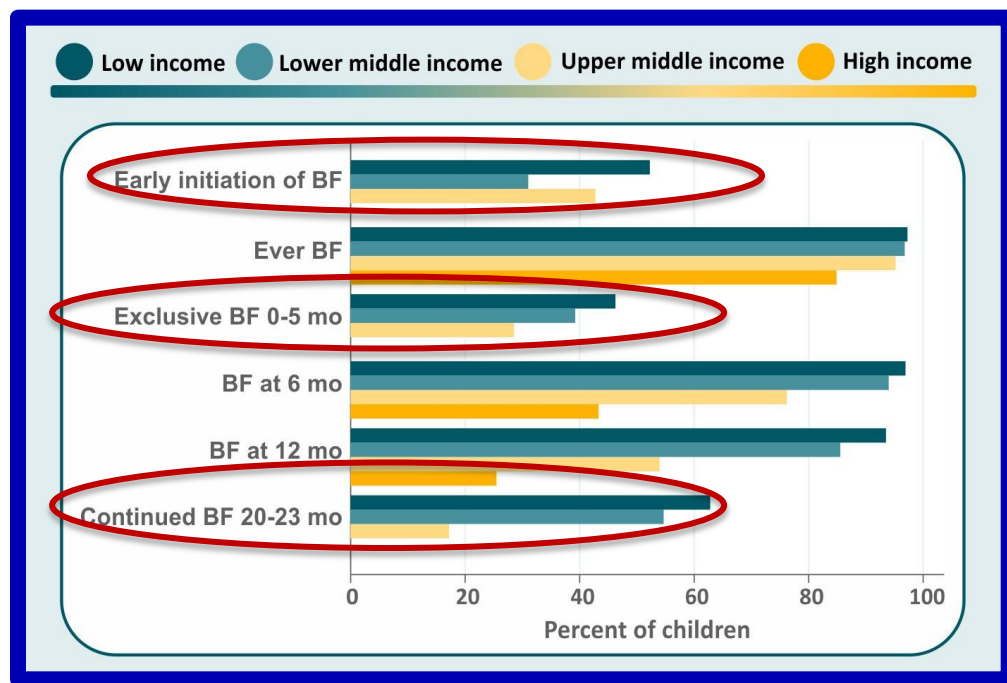
# **Lancet 2016 Breastfeeding Series: Sneak Peak into how essential breastfeeding is for building a better world for future generations in all countries, rich and poor alike.**

- Present and past patterns and trends
- Potential lives saved by scaling up breastfeeding
- Short and long term health consequences
- Economic implications
- Exquisitely personalized medicine
- Determinants of breastfeeding and effective interventions
- Lucrative market of breastmilk substitutes
- Environmental role

# First global map of breastfeeding prevalence



# Breastfeeding: one of the few positive health behaviors more prevalent in LMICs than HICs



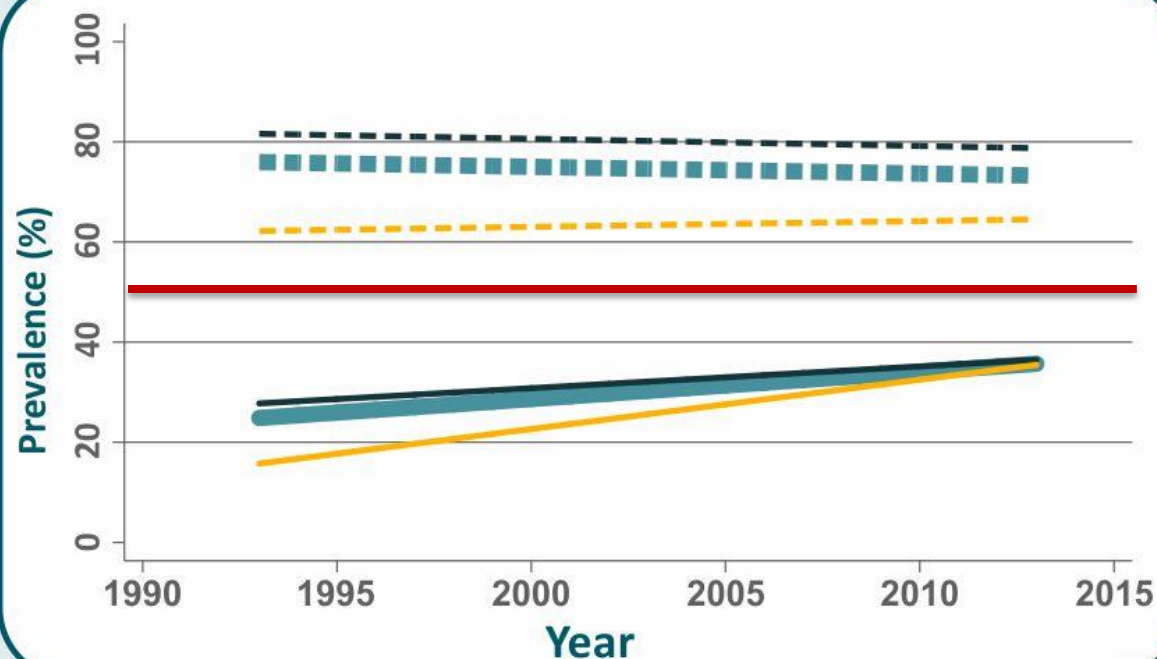
## Low- and middle-income countries

- Less than 40% of infants under 6 months are exclusively breastfed
- About 1/3 of children between 6 and 24 months are not breastfed

## Most high-income countries

- Fewer than 20% of children are breastfed up to 12 months (data is limited)
- More educated, wealthier women breastfeed for longer

# Breastfeeding practices over time



For each doubling in national GDP per capita, breastfeeding prevalence at 12 months decreases by 10 percentage points

# Improving breastfeeding would annually save about 820,000 children under 5 years of age

87% of them among infants less than 6 months of age

Reduce infection-related mortality (<3mo) by 88%

Outcome	Types of comparison (breastfeeding categories)	Studies (n)	Age range of outcome	Pooled effect (95% CI)	Confounding and effect modification	Other biases	Conclusions	
Effects on children, adolescents, or adults according to breastfeeding pattern								
Sanikar et al (2015)*	Mortality due to Infectious diseases	Exclusive versus predominant	3	<6 months	OR 0.59 (0.41-0.85)	All studies from LMICs, where confounding by SEP would probably underestimate the effect of breastfeeding. Confounder-adjusted studies showed similar effects	Studies that avoided reverse causation (breastfeeding stopped because of illness) showed similar effects. No evidence of publication bias but very few studies available	Consistent evidence of major protection. Few studies used the four breastfeeding categories in young infants, but evidence from other studies comparing any versus no breastfeeding is very consistent
Sanikar et al (2015)*	Mortality due to Infectious diseases	Exclusive versus partial	3	<6 months	OR 0.22 (0.14-0.34)	See above	See above	See above
Sanikar et al (2015)*	Mortality due to Infectious diseases	Exclusive versus none	2	<6 months	OR 0.12 (0.04-0.31)	See above	See above	See above
Sanikar et al (2015)*	Mortality due to Infectious diseases	Any versus none	9	6-23 months	OR 0.48 (0.38-0.60)	See above	See above	See above
Horta et al (2013)*	Diarrhoea incidence	More versus less breastfeeding (eg exclusive vs non-exclusive; predominant vs partial; partial vs none; any breastfeeding vs no breastfeeding)	15	<5 years	RR 0.69 (0.58-0.82)	Most studies were from LMICs, where confounding would probably underestimate an effect. Confounder-adjusted studies showed similar effects. Three RCTs of breastfeeding promotion (not included in the meta-analysis) showed protection against diarrhoea morbidity (pooled OR 0.69 [0.49-0.96])	Few studies that allowed for reverse causation also showed protection. Publication bias is unlikely to explain the findings because results from large and small studies were similar	Strong evidence of major protection against diarrhoea morbidity and admissions to hospital, particularly in young infants, based on a large number of studies
Horta et al (2013)*	Diarrhoea incidence	See above	23	<6 months	RR 0.37 (0.27-0.50)	See above	See above	See above
Horta et al (2013)*	Diarrhoea incidence	See above	11	6 months to 5 years	RR 0.46 (0.28-0.78)	See above	See above	See above
Horta et al (2013)*	Admission to hospital for diarrhoea	See above	9	<5 years	RR 0.28 (0.16-0.50)	See above	See above	See above
Horta et al (2013)*	Lower respiratory infections (incidence or prevalence)	See above	16	<2 years	RR 0.68 (0.60-0.77)	Most studies were from LMICs, where confounding would probably underestimate the effect of breastfeeding. Confounder-adjusted studies showed similar effects	Studies that avoided reverse causation showed similar effects. No evidence of publication bias	Strong evidence of a reduction in severe respiratory infections in breastfed children, based on a large number of studies
Horta et al (2013)*	Admissions to hospitals for respiratory infections	See above	17	<2 years	RR 0.43 (0.33-0.55)	The only available RCT showed an RR of 0.85 (0.57-1.27), a non-significant reduction in admissions to hospital	See above	See above

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# Improving breastfeeding practices would have a profound effect on morbidity as well as mortality

**Improving  
breastfeeding would  
prevent:**

**More than 54% of all  
diarrhea episodes**

**And 32% of all  
respiratory infections**

**(in LMICs)**

**Protection against  
hospital admissions  
even greater:**

**72% of all  
admissions for  
diarrhea**

**57% for respiratory  
infections**



# Breastfeeding protects health and contributes to development

## Breastfeeding protects against:

- Acute otitis media (<2 yrs)
- Malocclusion
- Type 2 diabetes
- Obesity

## But not against:

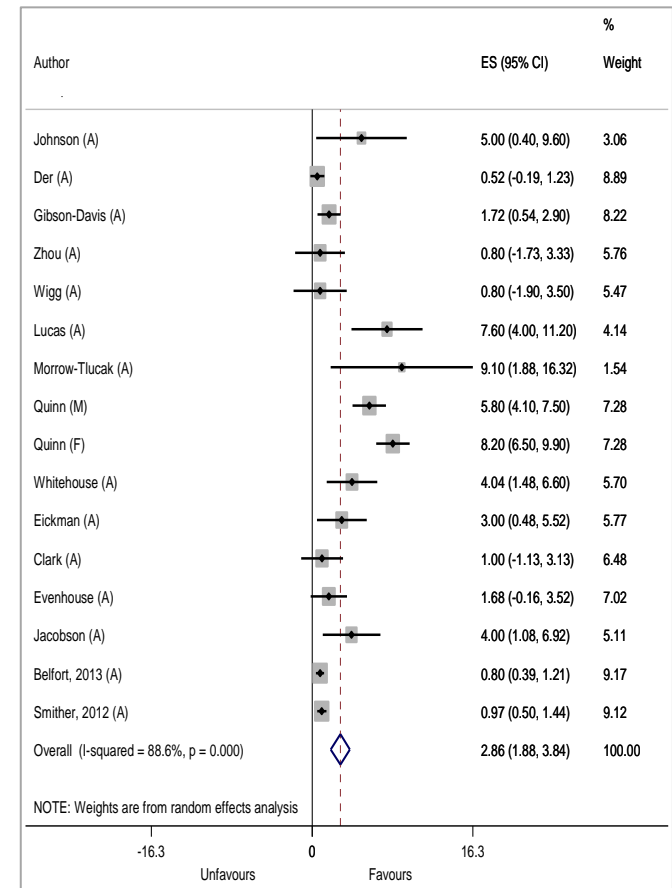
- Asthma
- Eczema
- Food allergies

## No evidence for effect on:

- Blood pressure
- Serum lipids
- Growth (wt or length)

## Longer breastfeeding associated with higher performance on intelligence tests

- Average of 3 IQ points, controlling for maternal IQ
- Improved academic performance (some studies)
- Increased adult earnings





# The economic case for investing in breastfeeding

## Economic gains:

**US\$302 billion/year**

(0.47% of global GNI)

Due to increased productivity associated with higher intelligence

## Estimated health benefits:

Reduced annual healthcare costs totaling nearly \$400 million in the U.S., UK, Brazil and urban China

	Estimated percentage loss in gross national income	Estimated loss in 2012 US\$
Eastern and southern Africa	0.04%	\$0.1 billion
West and central Africa	0.06%	\$0.3 billion
Middle East and north Africa	0.97%	\$11.8 billion
South Asia	0.05%	\$1.0 billion
East Asia and Pacific	0.31%	\$28.1 billion
Latin America and the Caribbean	0.39%	\$12.1 billion
Eastern Europe and central Asia	0.75%	\$17.6 billion
Subtotal (low-income and middle-income countries)	0.39%	\$70.9 billion
High-income countries	0.53%	\$231.4 billion
World	0.49%*	\$302.0 billion (total estimated loss)

Estimates are based on data for 96 countries (of 197 countries in the UNICEF's 2014 database).<sup>31</sup> For details about data and included countries, and country-level results, see appendix pp 115–16. \*Global average, weighted by gross national income.

**Table 2: Estimated economic losses from cognitive deficits associated with regional infant feeding practices compared with every infant breastfeeding until at least 6 months of age.**

# Breastfeeding benefits women's health

Each year a mother breastfeeds decreases the risk of developing invasive breast cancer by 6%

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Breastfeeding also reduces the risk of ovarian cancer

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New impact modelling:

- Current rates of breastfeeding prevent almost 20,000 deaths from breast cancer per year
  - Another 20,000 deaths could be prevented by improving breastfeeding practices further
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New review confirms role of breastfeeding in birth spacing

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**Are these effects biologically plausible?**  
**Could an intervention as simple and so early,  
have such a profound impact on health  
throughout life?**

OCTOBER 2013

# Paving the Way for Personalized Medicine

FDA's Role in a New Era of Medical Product Development



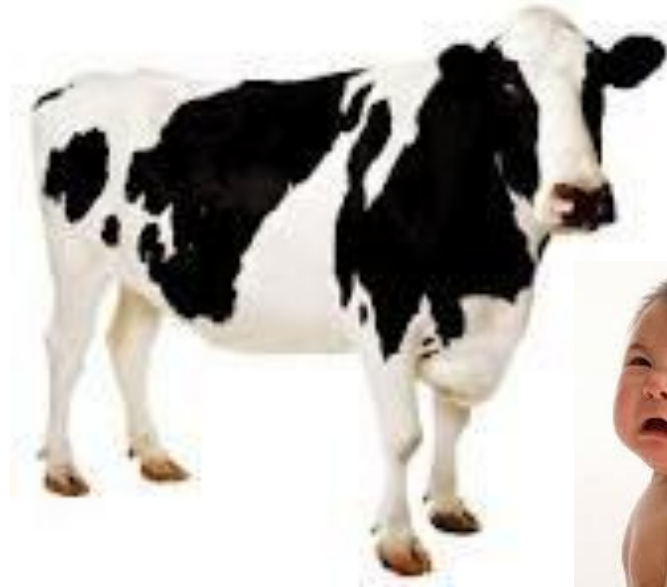
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
U.S. FOOD AND DRUG ADMINISTRATION

# Breastfeeding – exquisitely personalized medicine at a critical moment

## Individualized components of breastmilk

- Bacteria from the mother's gut microbiome
- Immune cells primed in the mother's intestine
- Carbohydrates that shape the baby's microbiome
- Small RNA's that control genes in the baby
- Microvesicles (exosomes) that control genes in the baby
- Stem cells that survive in the baby

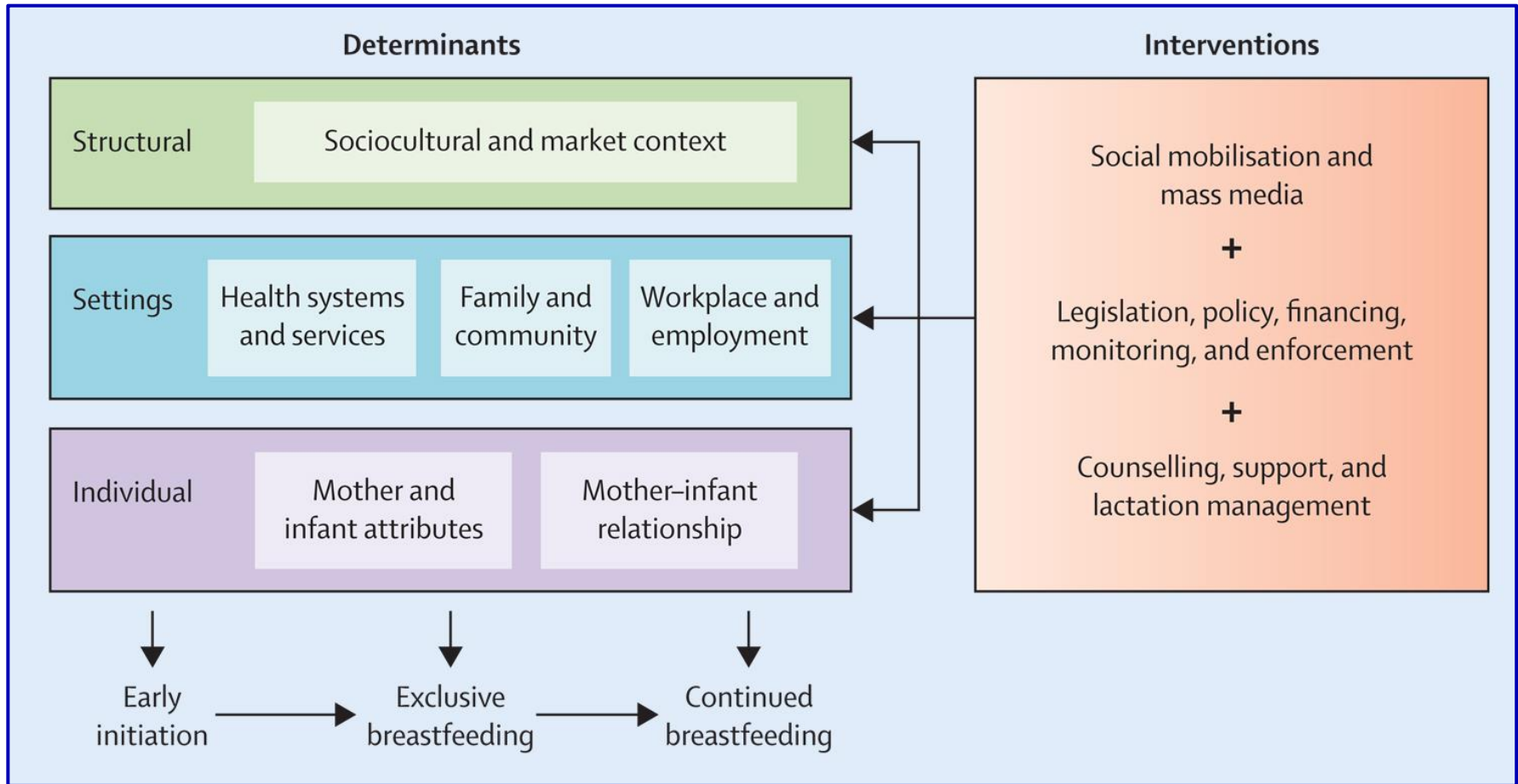
***“In all mammalian species the reproductive cycle comprises both pregnancy and breastfeeding: in the absence of the latter, none of these species, man included, could have survived.” – Paediatrician Bo Vahlquist***



**Despite this growing body of evidence,  
women worldwide still do not have the support  
they need to breastfeed**



# Building an enabling environment for breastfeeding: A conceptual model



# Interventions to improve breastfeeding practices

Systematic review examined the effect of interventions by setting: 20,000+ papers screened and 300 studies examined

## Meta-analyses:

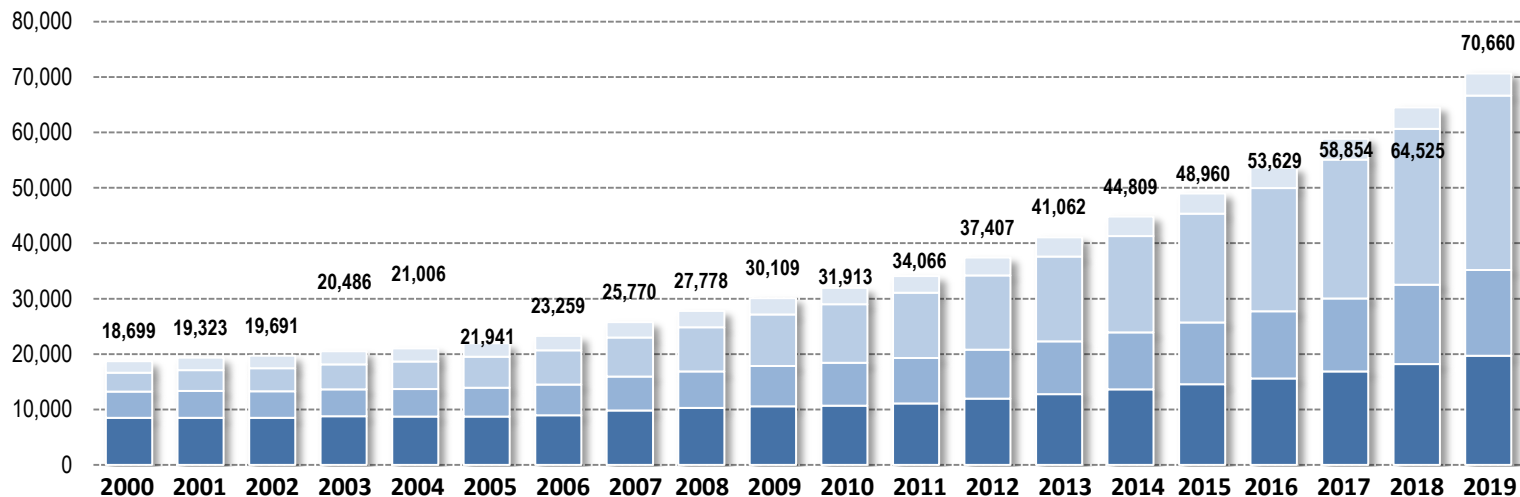
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- Breastfeeding practices are highly responsive to interventions delivered in health systems, communities and homes
- Health system and community interventions can increase exclusive breastfeeding by x2.5
- Maternity leave and work-place interventions also beneficial (studies are few and generally limited to HICs)
- Largest effects of interventions are achieved when interventions are delivered in combination
- Mix of interventions needed may vary by setting and breastfeeding trends

# The breast milk substitute (BMS) industry is large and growing

- *In 2014, global sales of all baby milk formula were about US\$ 44.8 billion*
- *By 2019, the market value is projected to reach US\$ 70.6 billion.*

Total Retail Sales of Milk Formula



***“Possibly, no other health behavior can affect such varied outcomes in the two individuals who are involved: the mother and the child.”***

***“Success in breastfeeding is not the sole responsibility of a woman – the promotion of breastfeeding is a collective societal responsibility”***

***“If breastfeeding did not already exist,  
someone who invented it today would deserve  
a dual Nobel Prize in medicine and economics.”***

Keith Hanson,  
Vice President for Human Development,  
World Bank Group

# Acknowledgements

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