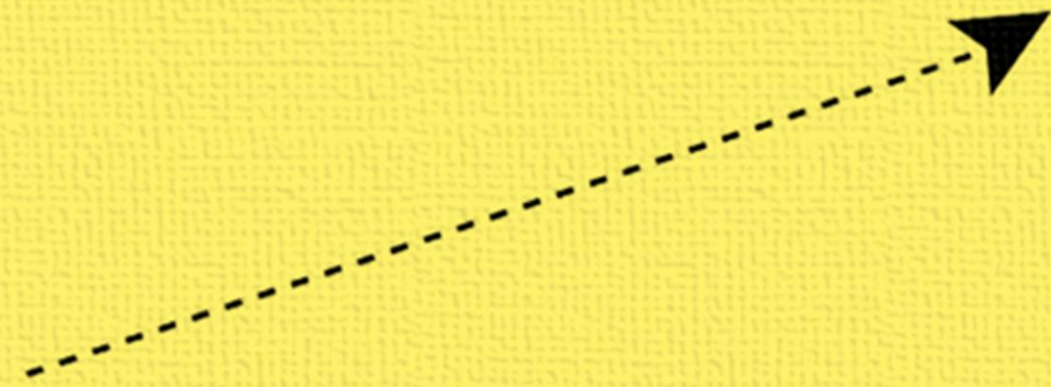


新生兒醫療對於國家未來的影響 與醫療效益

兒童醫藥材短缺研討會

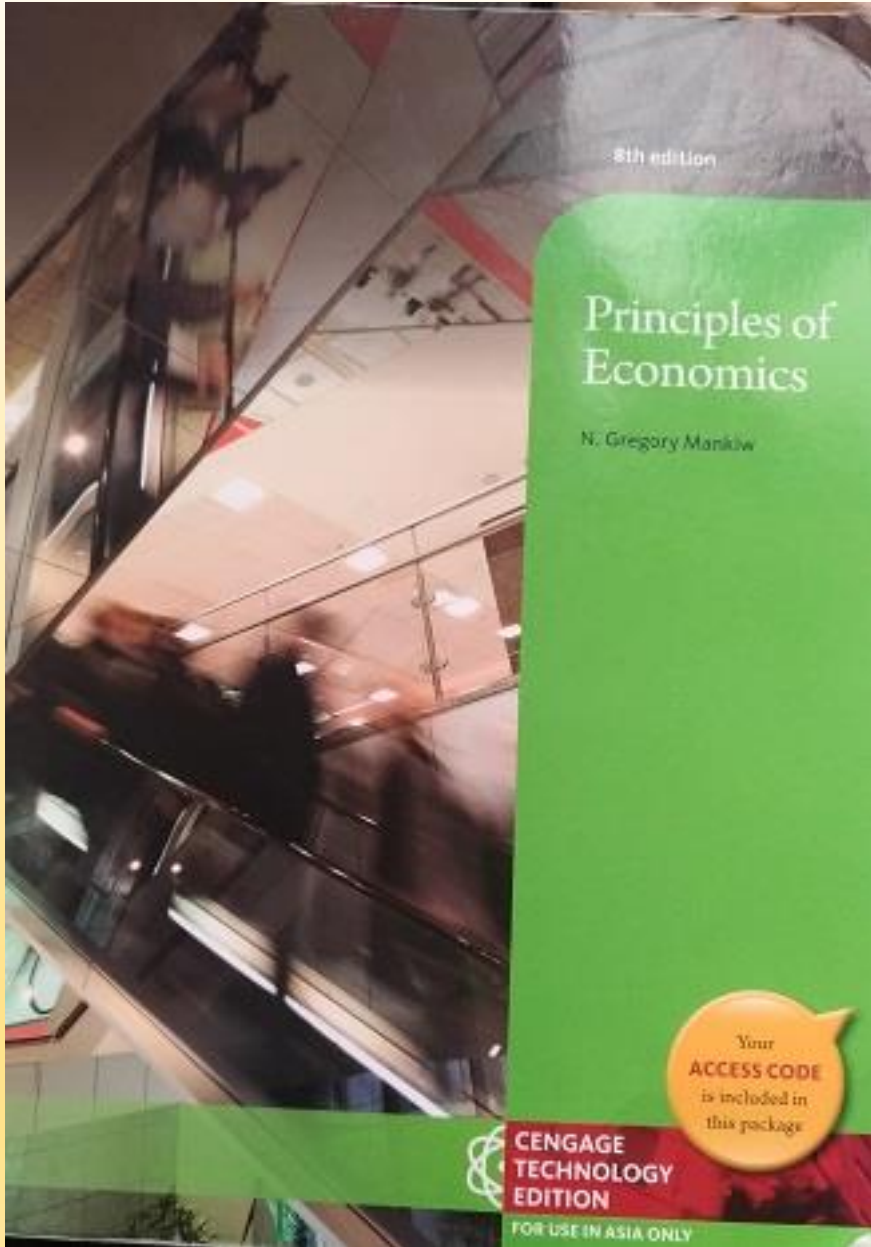
What happens to us
early in life can have a
significant impact on
our future health and
well-being



台大醫院兒童醫院
小兒部新生兒科

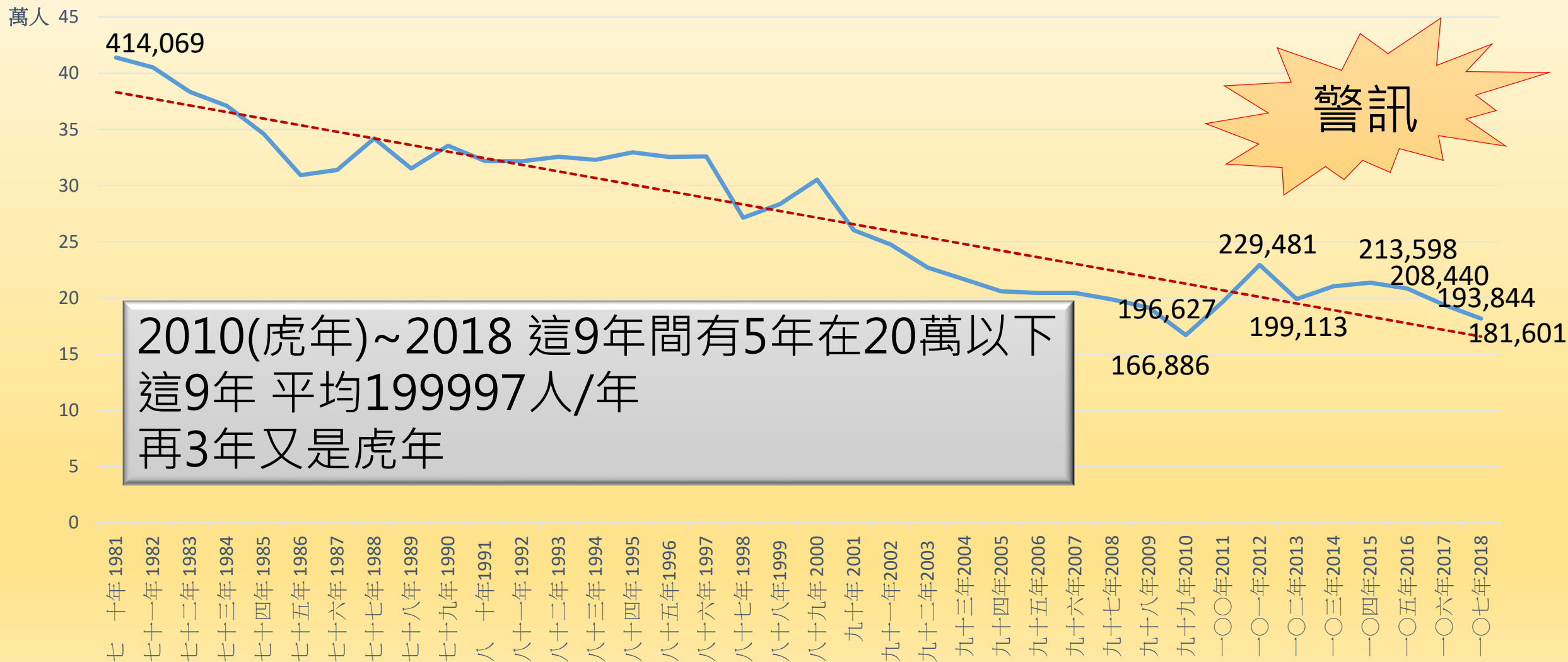


周弘傑
主治醫師 MD; PhD



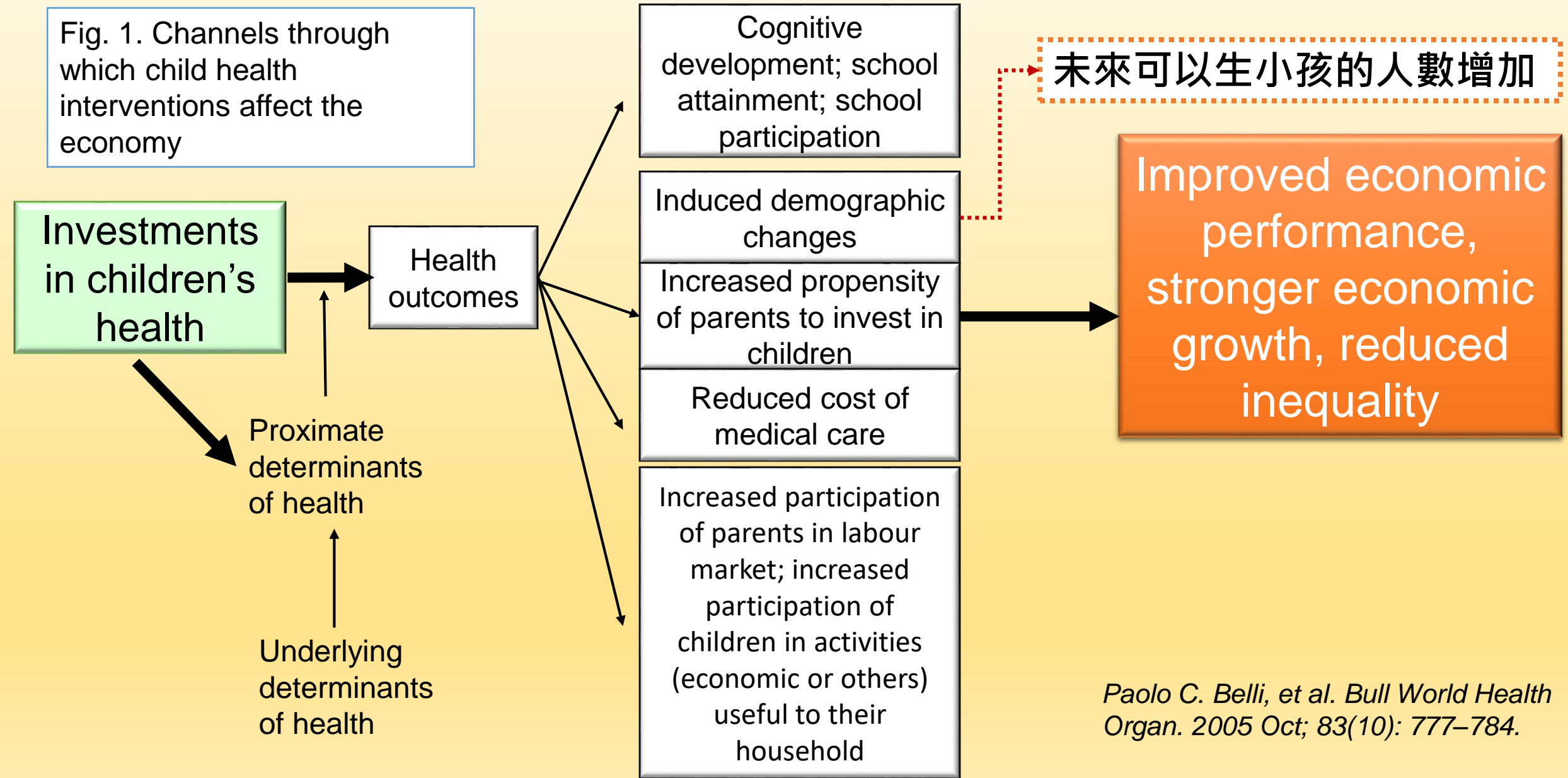
Economic is the study of how society manages its scarce resources, how people make decisions, and how people interact with one another.

每年出生數



Investing in children's health: what are the economic benefits?

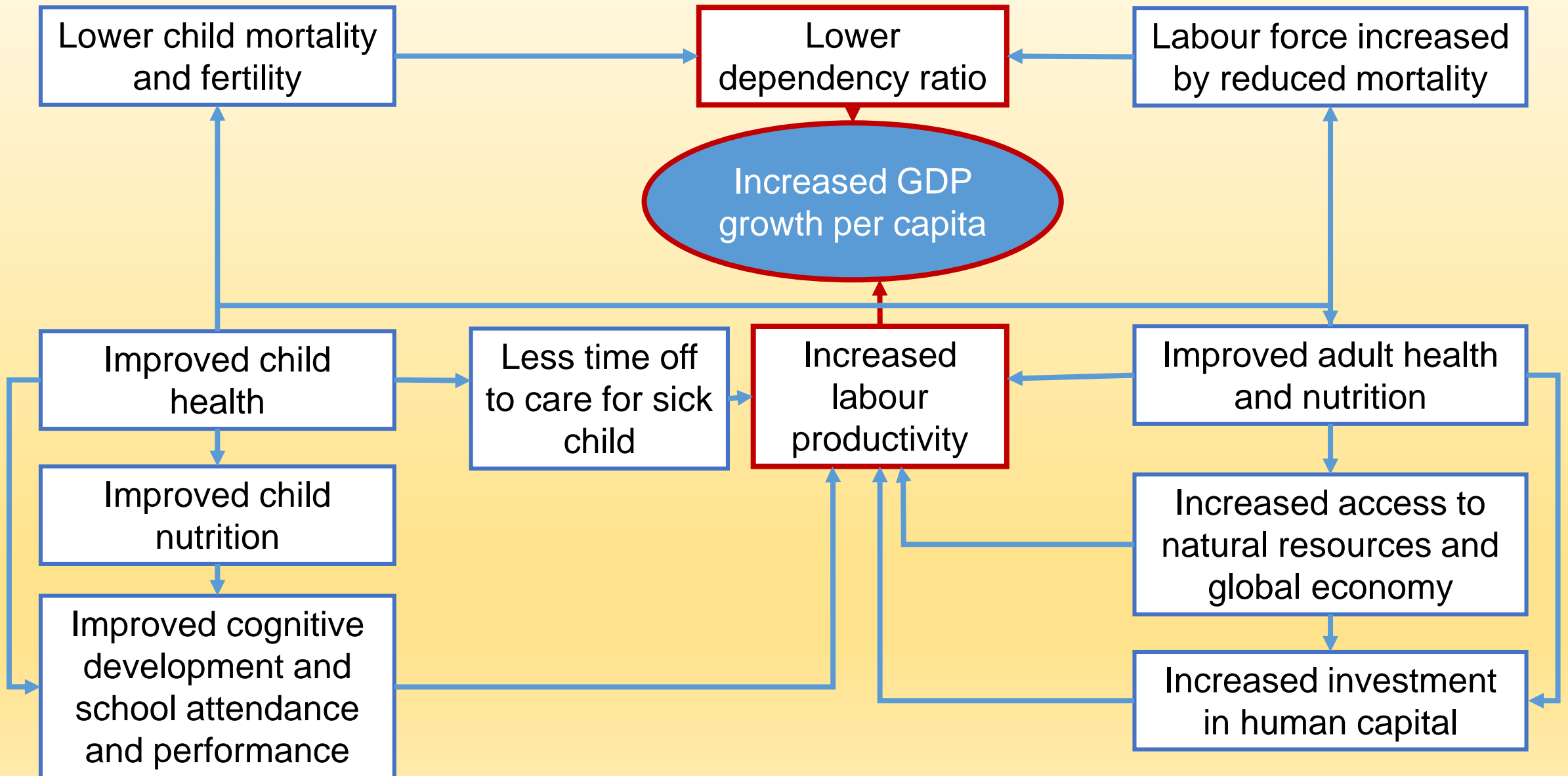
Fig. 1. Channels through which child health interventions affect the economy



Paolo C. Belli, et al. *Bull World Health Organ.* 2005 Oct; 83(10): 777–784.

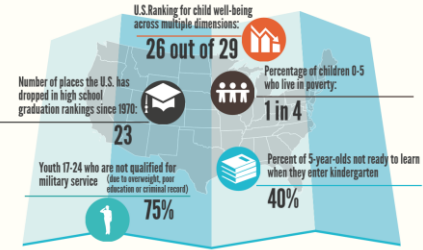
How improved health
influences economic growth

*Source: Adapted from World Health
Report 1999*



WHY DOES EARLY CHILDHOOD MATTER?

TO IMAGINE HOW THE U.S. WILL DO TOMORROW, WE NEED ONLY ASK HOW ITS CHILDREN ARE DOING TODAY



The first years create a foundation for future emotional, intellectual and social health and development

Babies make 700 brain connections every second in the first years of life

IMPACT OF EARLY CHILDHOOD

What happens to us early in life can have a significant impact on our future health and well-being



HIGH-QUALITY EARLY CHILDHOOD PROGRAMS LEAD TO BETTER EDUCATIONAL AND SOCIAL OUTCOMES...

CHILDREN IN HIGH-QUALITY PROGRAMS ARE:

- Less likely to need special education services
- More likely to graduate high school
- 4 times more likely to graduate college
- More likely to be employed
- More likely to have high-skill jobs & contribute more in taxes
- 50% less likely to commit a crime

BENEFITS OF INVESTING EARLY

...AND BETTER LONG-TERM HEALTH BENEFITS...

- Early intervention for disadvantaged children leads to:
 - Lower risk for cardiovascular disease and chronic diseases
 - Increased healthier behaviors (e.g. physical activity, healthier eating, etc.)
 - Reduced healthcare costs
 - Early screening, diagnosis and treatment can address problems early - before they become more complex and more costly

...WHICH MEAN RETURNS FOR EACH DOLLAR SPENT

\$6-\$17 return for every dollar invested

7-10% per year return

...That's...

\$84,000-\$100,000 NET return to society

in high-quality early childhood programs as a result of better education, increased productivity and decreased social costs

over the lifetime of each child for each dollar invested in early intervention



REFERENCES:

1. The Raising of America: Early Childhood and the Future of our Nation. <http://www.raisingamerica.org>
2. Campbell F, Crist G, Heckman J, Moore SH, Pinto R, Pungello L, Pan Y. "Associations & Health: Improve adult health outcomes with quality early childhood programs that health and nutrition." Available from: <http://hawaiienergy.org/content/resources/research-summary-associations-health>
3. Association of Maternal & Child Health Programs. The Power of Prevention for Mothers and Children: The Cost Effectiveness of Available from: http://www.amchp.org/Policy_Advocacy/health-reform/Documents/powerofprevention.pdf

Association of Maternal & Child Health Programs
AMCHP
ASSOCIATION OF MATERNAL & CHILD HEALTH PROGRAMS

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WHY DOES EARLY CHILDHOOD MATTER?



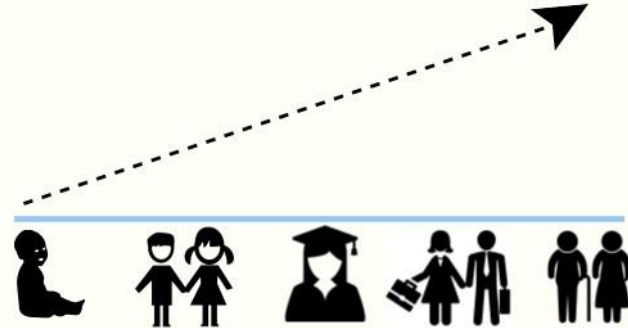
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Returns on Investment from Early Childhood Development (ECD)

每1元投資
社會初估獲利8.6元(\$)

ECD initiatives benefit society roughly \$8.60 for each \$1 initially invested



ECD programs can boost one's earnings later in life

增加日後賺錢能力

縮短學術成就差距

High quality ECD programs narrows the achievement gap in academic performance



ECD initiatives can lower one's involvement with the criminal justice system

減少涉及犯罪事項

減少補救教學或特殊教育需求

Early childhood learning initiatives can reduce the need for remedial education or special education placements



Affordable ECD programs can allow parents to increase their earnings and employment; higher family income also helps children's academic outcomes

增加父母賺錢與受雇機會/家庭收入提高會幫助小孩學術成就

The hidden cost of caring for a child with a life limiting illness

Parents as carers

- Develop nursing skills
- Special needs: devices/ Hospital appointment and admissions
- **Physical burden/ Social isolation**

Impact on family life

- All aspects of quality of life for parents, sleep, work, finances, relationships.
- Physical/mental health: fear, anxiety/depression
- **Environment/spaces: store the equipment**

Impact on siblings

- Receive less attention from parents.
- Family gather time (because of hospitalization)
- **Feeling less important**

Financial impact: economic stress

- Caring responsibilities
- Limited employment opportunities
- Out-of-pocket costs, coupled with an inability to work: spend about 1/3 of post-tax income

Parental employment opportunities

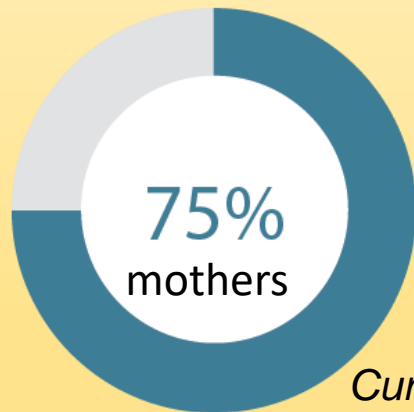
- Give-up paid employment, regardless earning power
- Attend medical appointments rarely available outside of traditional working hours
- **Lose jobs**

Non-medical expense:

- Travel to appointment
- parking
- Hotel and accommodation
- Meals
- fuel for travel
- Time away from work
- Special equipment
- Home adaptations
- Special childcare arrangements

Forgone employment

- ① 37.1% vs 69% mothers be employed.
 - ② 32.9% quit a job
 - ③ 46% required working fewer hours.
- (Thyen 1999)*



Curran 2001

unable to return to paid employment



(Knoll 1992)

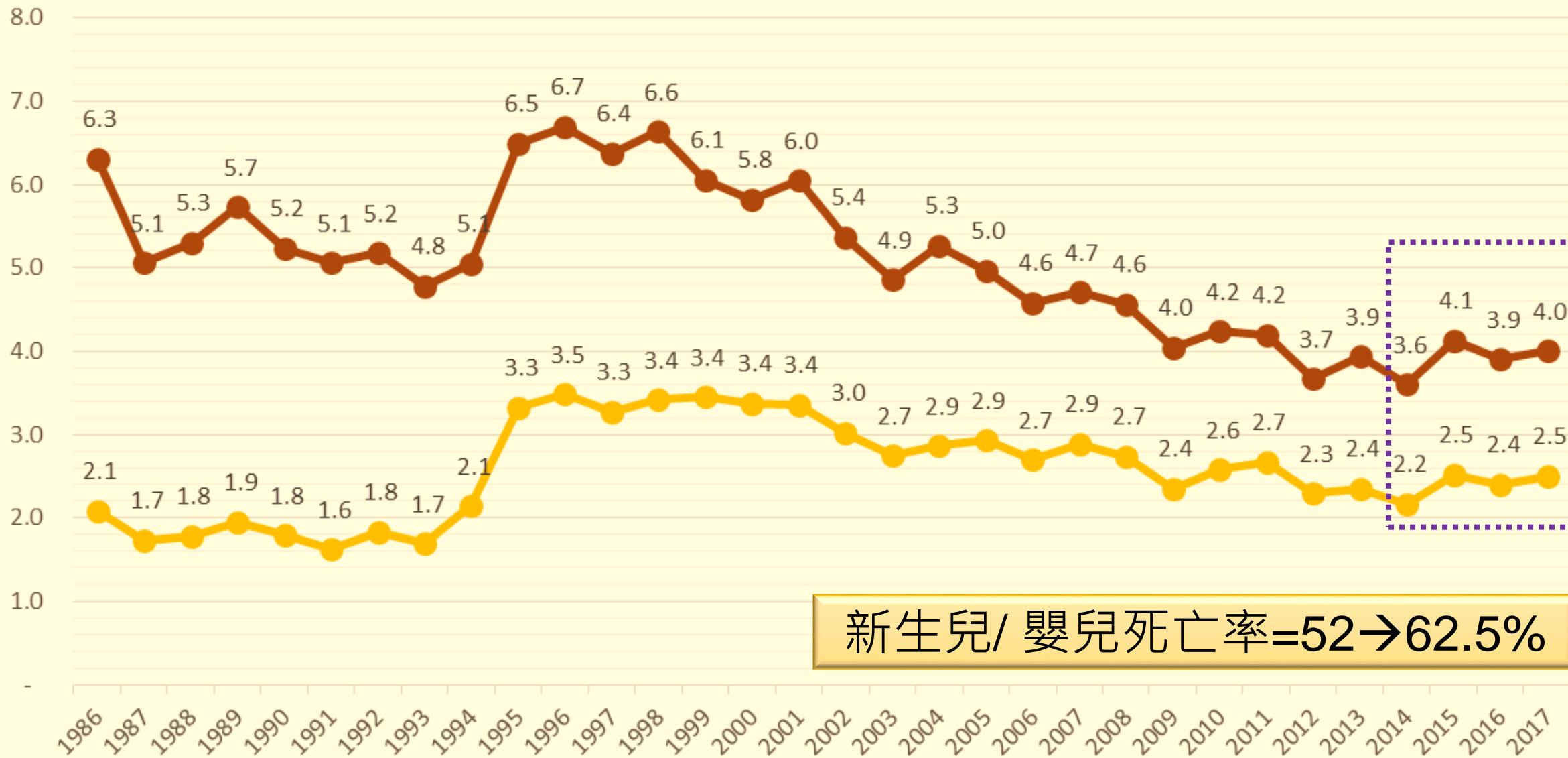
50% of families had a spouse who gave up their employment



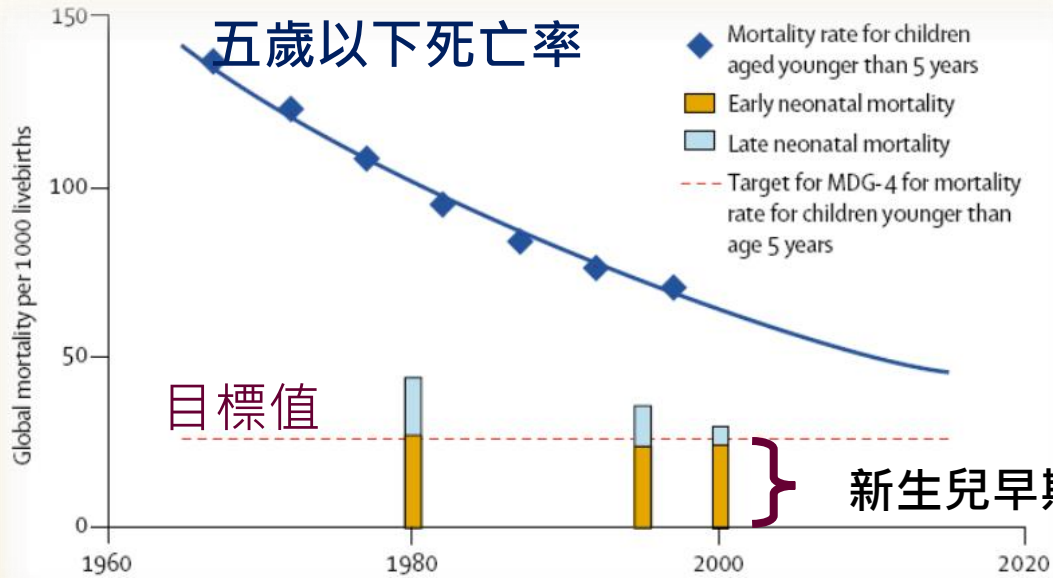
87% had to take time off work because of the care needs of the child

U1 mortality

● 新生兒 新生兒死亡率(每千活產) ● 嬰兒 嬰兒死亡率(每千活產)

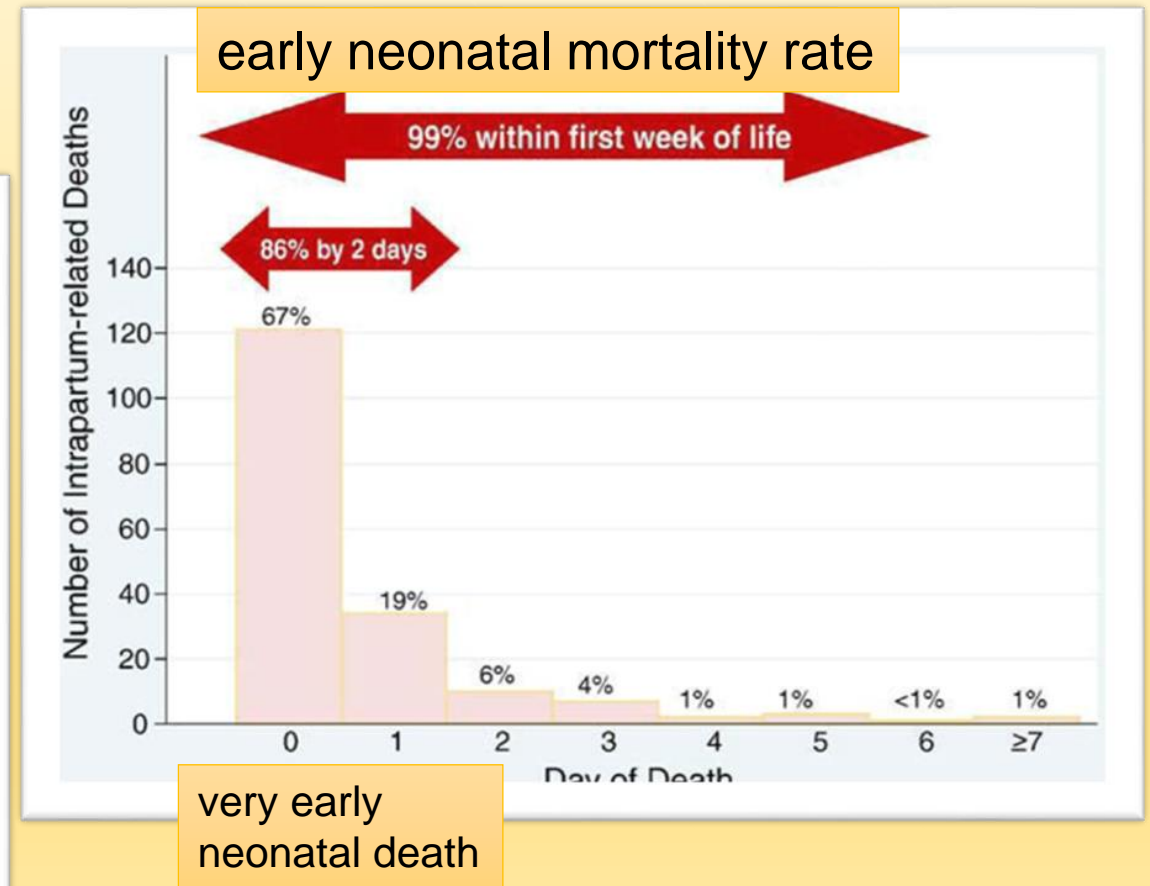
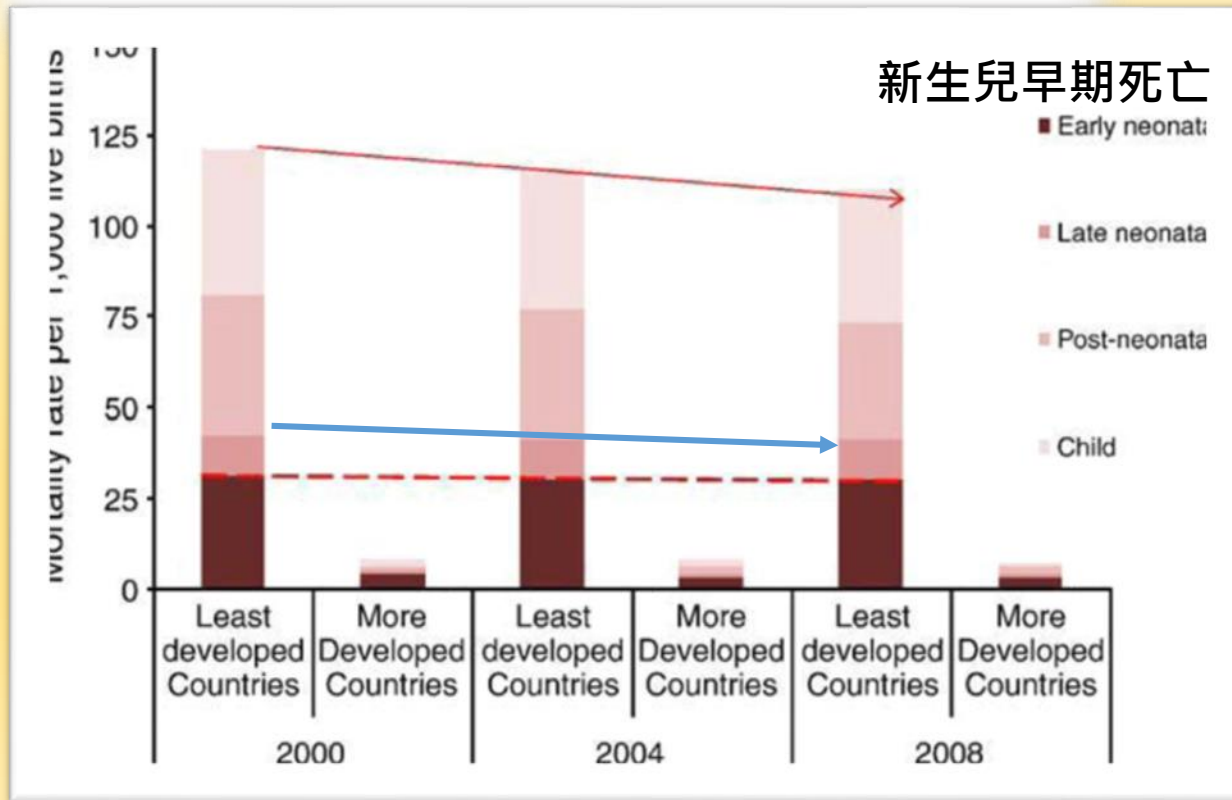


新生兒/ 嬰兒死亡率=52→62.5%



Intrapartum-related stillbirths and neonatal deaths: where, why, and what can be done?

Lawn JE, et al. *Int J Gynaecol Obstet.* 2009 Oct;107 Suppl 1:S5-18



嬰兒死亡率 (IMR)

新生兒死亡率 (neonatal mortality rate, NMR)
(0~28天)

新生兒期後死亡率 (post-neonatal mortality rate, PNMR)
(28~365天)

新生兒早期死亡率 (early neonatal mortality rate)
(7天內死亡)

新生兒晚期死亡率 (late neonatal mortality rate)
(7-28天死亡)

新生兒極早期死亡率
(very early neonatal mortality rate)
(24小時內死亡)



Helping Babies Breathe®

HBB



Helping Babies Breathe®
THE GOLDEN MINUTE®

key concept of HBB

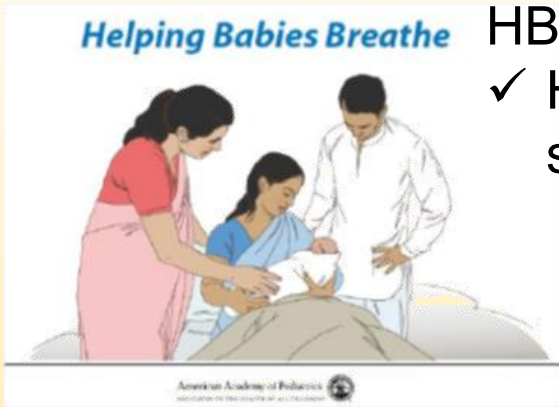
Within one minute of birth, a baby should be breathing well or should be ventilated with a bag and mask.

The Golden Minute identifies the steps that a birth attendant must take immediately after birth to evaluate the baby and stimulate breathing.

The **Golden Minute®**
is the most important
time of a newborn's life



A healthy first cry represents a baby with unlimited potential!



HBB Overview

✓ Helping Babies Breathe= initial steps of neonatal resuscitation

- ↓ neonatal mortality 47%
- ↓ fresh stillbirths by 24%



推出HBB
第2版

Roll out of Helping Babies Breathe

2010

WHO publishes recommendations on Basic Newborn Resuscitation

2012

Roll out of Essential Care for Every Baby

2014

Roll out of Helping Babies Breathe, 2nd edition

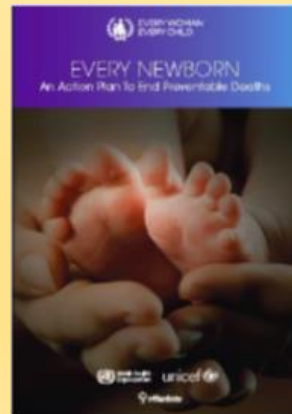
2016

2011



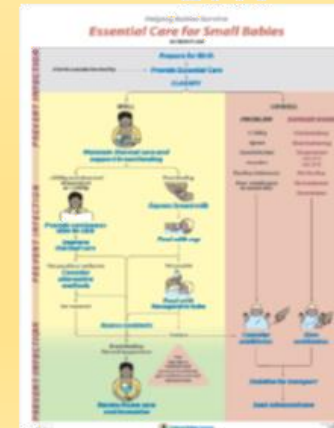
Roll out of Helping Mothers Survive Bleeding after Birth

2014



Every Newborn Action Plan

2015



Roll out of Essential Care for Small Baby

Golden hour of neonatal life: **Need of the hour**

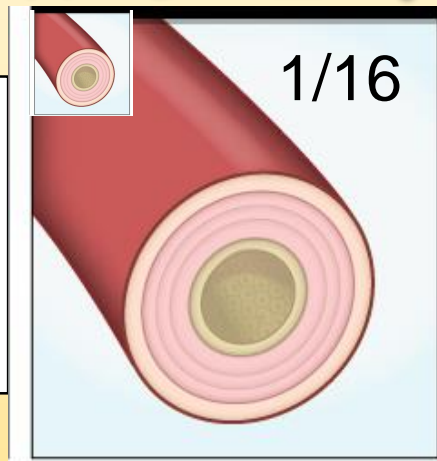
- Concept adopted from adult trauma
- "Golden Hour" of neonatal : the first hour of post-natal life in both preterm and term neonates → practicing all the evidence based intervention for term and preterm neonates, in the initial sixty minutes of postnatal life for better long-term outcome.
- Initial first hour of neonatal :
 - ✓ neonatal resuscitation,
 - ✓ post-resuscitation care,
 - ✓ transportation of sick newborn to neonatal intensive care unit,
 - ✓ respiratory and cardiovascular support and initial course in nursery.
- ↓ hypothermia, hypoglycemia, IVH, BPD, and ROP.

兒童 ≠ 小大人

新生兒 ≠ 兒童縮小版

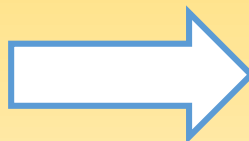
但在真實世界中 **大小** 是一個問題！

想像800公克是50公斤成人血管的 **16/1000**
身體血管的截面積約為成人的1/16



將一條細細的維生導管置入1/16的血管，技術面新生兒科醫師克服了，但如果連這類醫材國內都沒有，技術再好我們的早產兒怎麼維生？

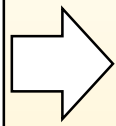
鼻孔也是



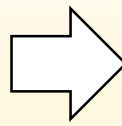
置入鼻孔呼吸
輔助也是1/16



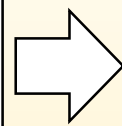
藥物劑量
以Kg計算



量少



藥物臨床試驗? 證照?
廠商進藥意願?



進不來 → 沒藥用
進來了 → off-label use

當我們已進入開發國家卻是使用未開發國家藥物!
舉例: 咖啡因 vs aminophylline → 被笑是落後地區



Aminophylline

1973年第一篇paper for AOP

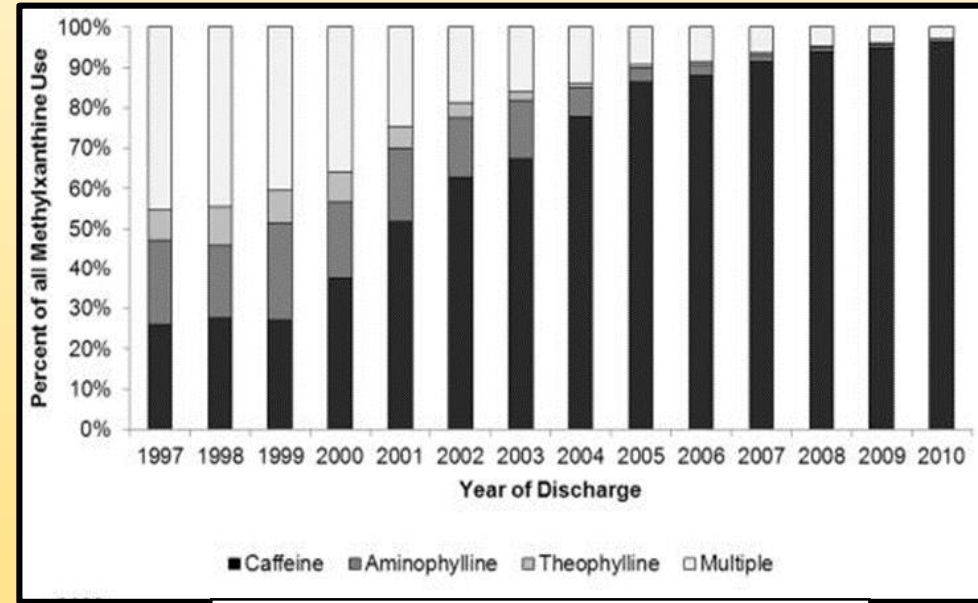
Kuzemko JA. Arch Dis Child. 1973 May;48(5):404-6.



Caffeine

1977年第一篇paper for AOP

Aranda JV, J Pediatr. 1977 Mar;90(3):467-72.



咖啡因使用比例 ↑

J Pediatr. 2014 May;164(5):992-998.e3.

長久下來，新生兒科醫師雖然做了很多無米之炊的事，努力讓台灣新生兒醫療不輸歐美，但...

因為小，所以需要我們的關愛！

因為早，所以需要我們的灌溉！



因為我們的小孩值得更好的治療

Thank
you

周 弘
傑

台大醫院兒童醫院
小兒部 新生兒科