Asia-Pacific Economic Cooperation

Home Visit and Follow-up for Low and Very Low Birth Weight Preterm Infants

Ming-Chou Chiang, MD (江明洲)

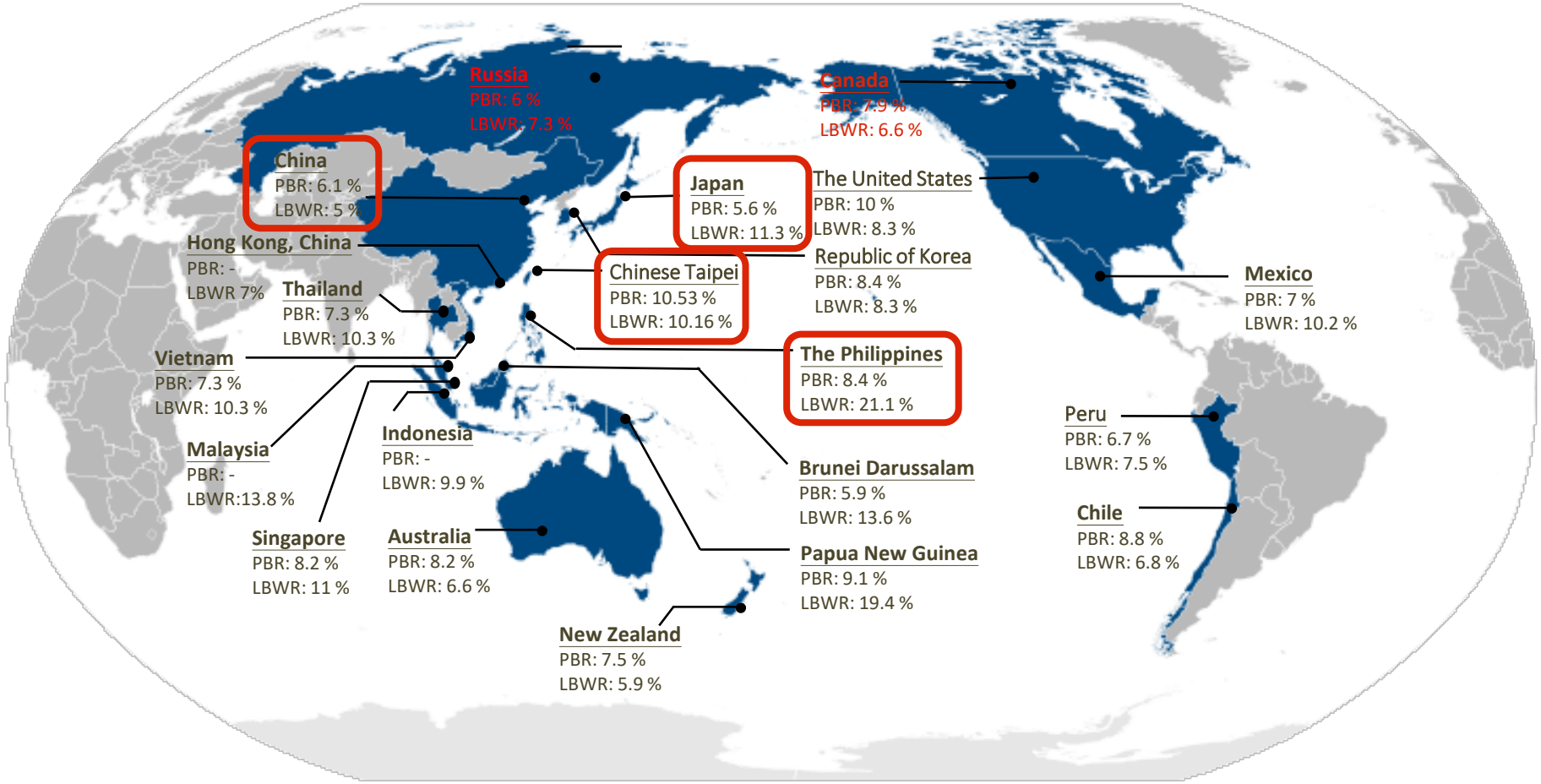
Director, Division of Neonatology, Department of Pediatrics,
Chang Gung Memorial Hospital Linkou Branch, Taoyuan,
Chinese Taipei

Outline

- Current preterm birth rate among APEC economies
- Actions on preterm birth and WHO recommendation on home visit and follow-up
- What's the care need for the families with preterm infants
- The program of home visit for low (including very low) birth weight premature infants
- Stories behind statistics

I have nothing to disclose.

The Preterm birth rate and low birth weight rate among APEC Economies in 2020



(%, per 100 birth)

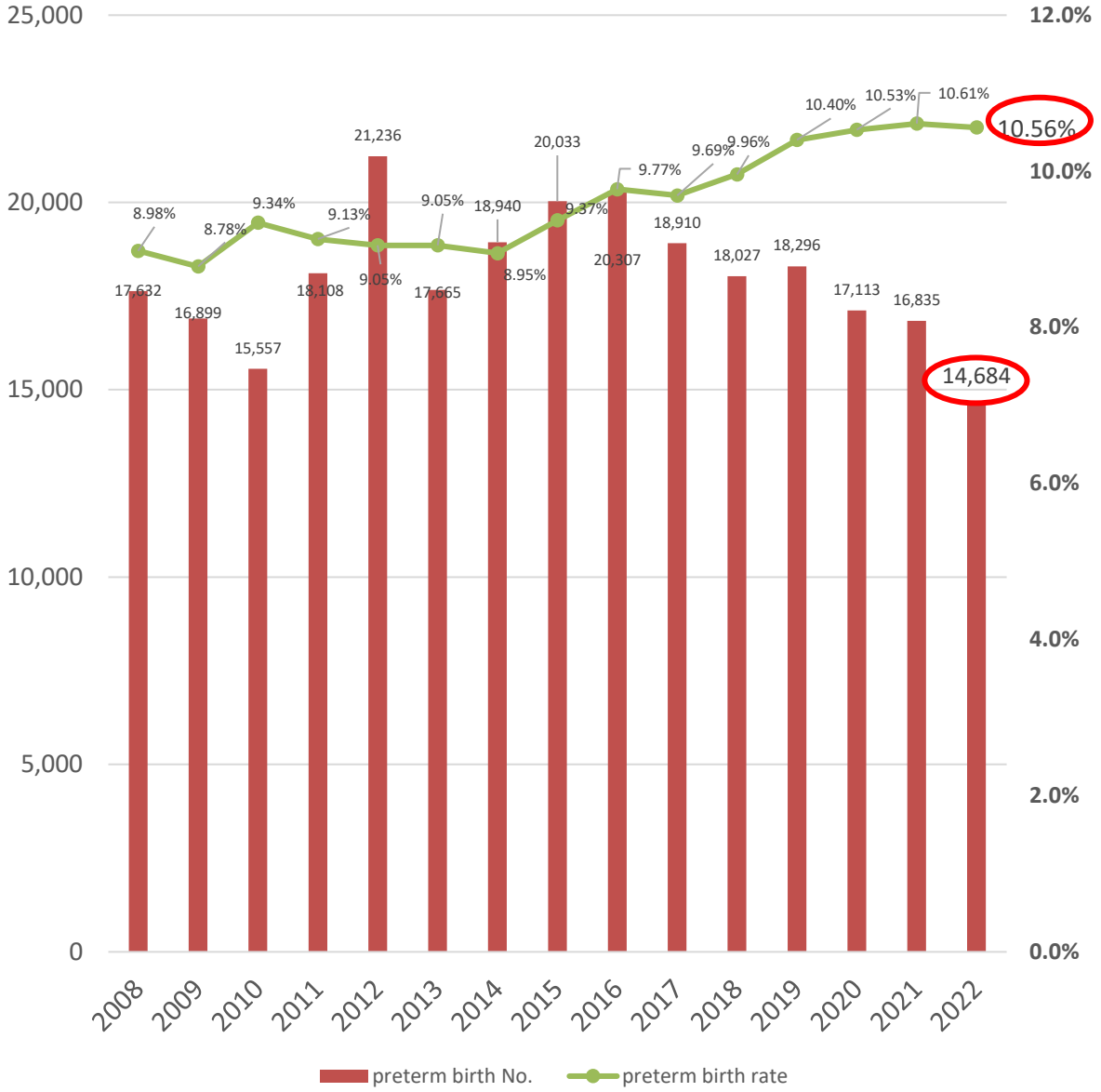
PBR : Preterm birth rate (PBR, per 100 birth); LBWR: low birth weight rate (LBWR, per 100 birth)

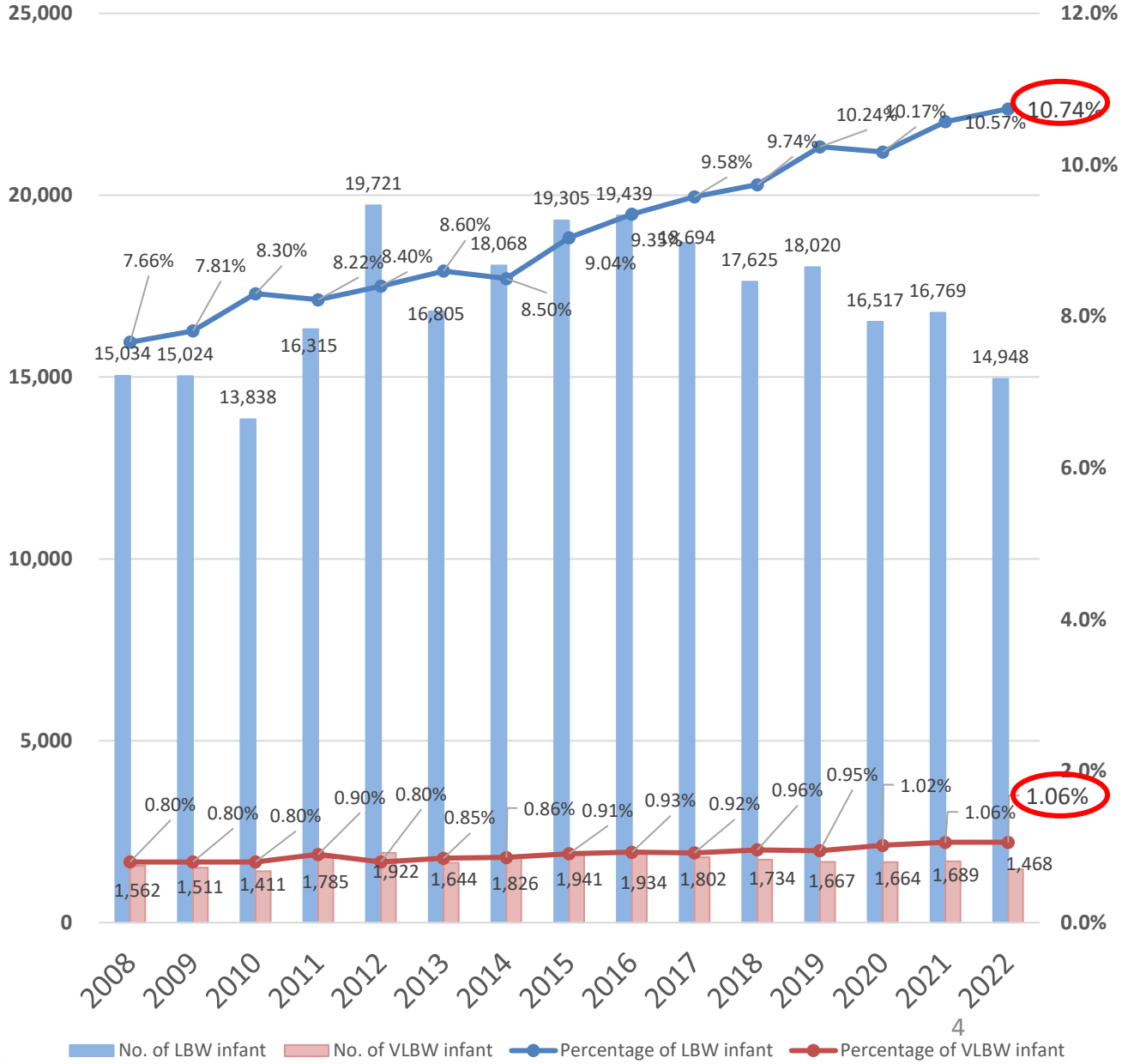
Data source: 1. National, regional, and worldwide estimates of preterm in 2020, with trends from 2010: a systematic analysis. (Supplementary Appendix)

2. Chinese Taipei: Statistics of Birth Reporting System

3. Hong Kong, China: DATA.GOV.HK

Both preterm birth rate and the percentage of LBW infant in Chinese Taipei has reached 10% of all live birth





Data source: The Statistics of Birth Reporting System

2023

FIGURE 5.1 Newborn health: timeline of progress over the past decade and vision for the next decade

MILESTONES

- **2012** — 1st Born Too Soon report
- **2014** — Every Newborn Action Plan (ENAP)
- **2015** — SDG target on newborn mortality
- **2017** — Network for Improving Quality of Care for Maternal, Newborn and Child Health
- **2018** — Newborn health in humanitarian settings field guide
- **2019** — Survive and thrive: transforming care for small and sick newborns
- **2019** — Newborn Essential Solutions and Technologies (NEST360) launched
- **2020** — iKMC study led by WHO
- **2020** — ENAP coverage targets and milestones
- **2020** — Standards of hospital care for small and sick newborns
- **2021** — Implementation toolkit for small and sick newborns
- **2022** — WHO preterm care guideline

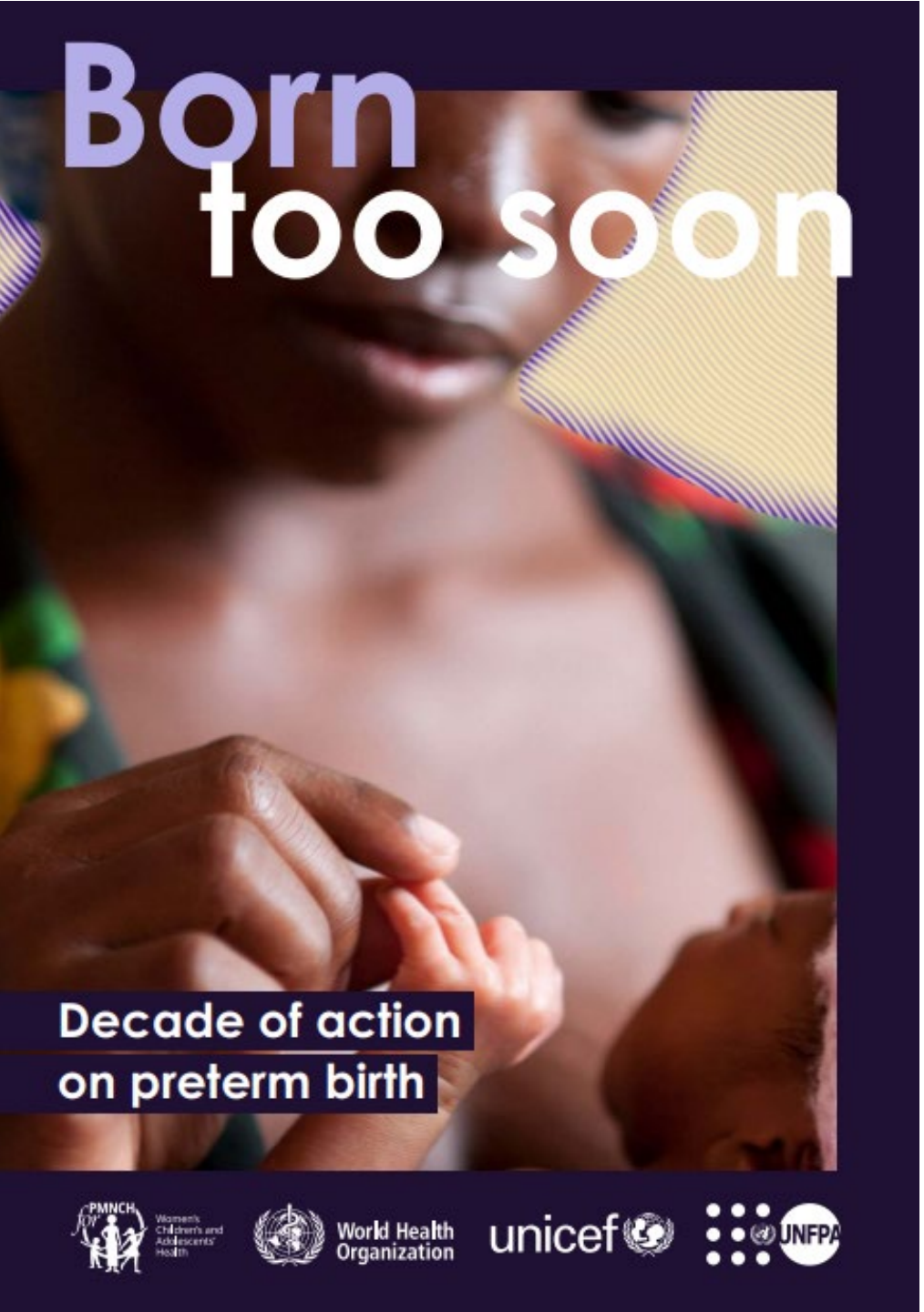
VISION

Every small and sick newborn, everywhere, including those born too soon, receives respectful and high-quality care, putting families at the centre, and without risk of catastrophic expenses.

2023

PIVOTS:

- Invest ambitiously in small and sick newborn care (SSNC)
- Implement high-quality, family-centred SSNC
- Innovate through multicountry learning
- Integrate follow-up care into routine systems



Actions on preterm birth: Continuum of care

FIGURE 5.3 Continuum of care, with packages focused on SSNC (level-2) and follow-up care

			Small and sick newborn care (level-2) and follow-up		
HOSPITAL (DISTRICT)	Adolescent hospital care e.g. HIV and other chronic diseases	Reproductive health care including family planning and regulated assisted reproductive technologies	Emergency obstetric care Advanced antenatal care Skilled birth attendance, including care for women when preterm birth is imminent Immediate newborn care (stimulation, warmth, breastfeeding)	Emergency obstetric care for women Emergency care for small and sick newborns (level 2)	Hospital care of childhood illnesses including infections and chronic conditions
OUTPATIENT	Adolescent-friendly care e.g. HIV, mental health and other chronic diseases	Reproductive health care including family planning	Antenatal care e.g. detecting and treating infections, surveillance of likelihood and interventions to prevent preterm birth Skilled birth attendance Immediate newborn care (stimulation, warmth, breastfeeding)	Postnatal care visits for mothers and newborns Referral where required	Preventive child care e.g. immunization, nutrition Assessment and treatment of less severe illness as outpatient e.g. integrated management of childhood illness Referral where required
COMMUNITY	Adolescent health at home and school including nutrition, exercise and reproductive education Prevention of gender-based violence	Empowerment of women for healthy choices, prevention of gender-based violence Preconception health care	Pregnancy and childbirth counselling and preparation for safe birth and newborn care Referral where required	Healthy home care for women and newborns Referral where required	Healthy home care for children including nutrition and home management of minor illnesses e.g. oral rehydration solution Referral where required

INTERSECTORAL Including "five Es": equity and rights, economic (including financial protection), environment (including nutrition, climate, WASH), education and emergencies

ADOLESCENT → REPRODUCTIVE HEALTH → PREGNANCY → LABOUR AND BIRTH → POSTNATAL MATERNAL AND NEWBORN → CHILD

WHO recommendations for care of the preterm or low-birth-weight infant

Domain	Recommendation	Status	Strength/ type
C. FAMILY INVOLVEMENT AND SUPPORT			
C.1 Family involvement	Family involvement in the routine care of preterm or low-birth-weight infants in health-care facilities is recommended. (*Strong recommendation, low- to moderate-certainty evidence*)	New	Strong
C.2 Family support	Families of preterm or low-birth-weight infants should be given extra support to care for their infants, starting in health-care facilities from birth and continued during follow-up post-discharge. The support may include education, counselling and discharge preparation from health workers, and peer support. (*Conditional recommendation, very-low-certainty evidence*)	New	Conditional
C.3 Home visits	Home visits by trained health workers are recommended to support families to care for their preterm or low-birth-weight infant. (*Strong recommendation, moderate-certainty evidence*)	New	Strong

World Health Organization

C.3 HOME VISITS

Recommendation and remarks

RECOMMENDATION C.3 (NEW)

Home visits by trained health workers are recommended to support families to care for their preterm or low-birth-weight infant. *(Strong recommendation, moderate-certainty evidence)*

Remarks

- Trained health workers can include nurses, midwives, doctors and community health workers.
- The GDG noted that there were limited data on the content, frequency, duration and intensity of home visits for preterm and LBW infants. Based on the trials included in the evidence review, the GDG recommended that extra home visits (i.e. additional to the routine scheduled postnatal contacts for all infants *[22]*) should be made, and that their content, frequency, duration and intensity should be based on clinical judgement.
- The GDG noted that home visits also increased exclusive breastfeeding, immunization visits and parental–infant attachment and decreased parental stress, though these were not critical outcomes.

Summary of the evidence

OVERVIEW	C.3 Home visits
PICO	**Population** – Families of preterm or LBW infants **Intervention** – Home visits to support families to care for their preterm or LBW infant in the home **Comparator** – Usual care **Outcomes** – All-cause mortality, morbidity, growth, neurodevelopment at latest follow-up
Timing, setting, subgroups	**Timing of the intervention** – Birth to 6 months of age **Setting** – Health-care facility or home in any country or setting **Subgroups** • Gestational age at birth (< 32 weeks, ≥ 32 weeks) • Birth weight (< 1.5 kg, ≥ 1.5 kg)

WHO recommendation on home visit and follow-up (Evidence)

C.3. Home visits

GRADE Table C.3: Comparison – Home visits to support families to provide care versus usual care

Source: Bedwell C, Lavender T, Tate N, Danna VA. Interventions to support parents, families and carers in caring for premature or low birth weight (LBW) infants in the home: a systematic review and meta-analysis. medRxiv. 2022:2022.10.25.22281452v1. doi:10.1101/2022.10.25.22281452.

Certainty assessment							Summary of findings				
Participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	No. of participants: Usual care	No. of participants: Home visits	Relative risk (RR) (95% CI)	Anticipated absolute effects: Risk with usual care	Anticipated absolute effects: Risk difference with home visits
Mortality by 6 months of age											
6984 (1 RCT)	not serious	serious[a]	not serious	not serious	none	⨁⨁⨁◯ Moderate	166/3331 (5.0%)	138/3653 (3.8%)	**RR 0.71** (0.57 to 0.89)	50 per 1000	**14 fewer per 1000** (from 21 fewer to 5 fewer)
Mortality by 12 months of age											
970 (1 study)	serious[d]	serious[a]	not serious	not serious	none	⨁⨁◯◯ Low	14/485 (2.9%)	1/485 (0.2%)	**RR 0.14** (0.02 to 1.16)	29 per 1000	**25 fewer per 1000** (from 28 fewer to 5 more)
Hospitalization by 12 months of age											
970 (1 study)	serious[d]	serious[a]	not serious	not serious	none	⨁⨁◯◯ Low	485	485	-	The mean hospitalization was **0.25 months**	MD **0.34 higher** (0.16 higher to 0.52 higher)
Growth – not measured											
-	-	-	-	-	-	-	-	-	-	-	-
Cognitive development at 10–12 months of age; assessed with BSID-III											
652 (2 RCTs)	serious[b]	not serious	not serious	not serious	none	⨁⨁⨁◯ Moderate	329	323	-	-	SMD **0.03 SD higher** (0.12 lower to 0.19 higher)
Motor development at 10 months of age; assessed with BSID-III											
136 (1 RCT)	not serious	serious[a]	not serious	serious[c]	none	⨁⨁◯◯ Low	67	69	-	-	SMD **0.02 SD lower** (0.35 lower to 0.32 higher)
Infant temperament at 6 months of age; assessed with Infant Behavioural Assessment (IBA)											
161 (1 RCT)	not serious	serious[a]	not serious	serious[c]	none	⨁⨁◯◯ Low	78	83	-	The mean infant temperament was **0** points	MD **0.7 points higher** (0.6 lower to 1.46 higher)
Mother–infant attachment at 6 months of age											
136 (1 RCT)	not serious	serious[a]	not serious	serious[c]	none	⨁⨁◯◯ Low	67	69	-	The mean attachment at 6 months was **101.3** points	MD **1.2 points lower** (2.79 lower to 0.39 higher)
Exclusive breastfeeding at 6 months of age											
7183 (3 RCTs)	serious[b]	not serious	not serious	not serious	none	⨁⨁⨁◯ Moderate	19/3428 (0.6%)	161/3755 (4.3%)	**RR 4.48** (0.28 to 72.63)	6 per 1000	**19 more per 1000** (from 4 fewer to 397 more)
Immunization visits in the first year of life											
136 (1 RCT)	serious[b]	serious[a]	not serious	not serious	none	⨁⨁◯◯ Low	67	69	-	The mean visits were **2.53** visits per year	MD **1.21 visits higher** (0.93 higher to 1.94 higher)

BSID-III: Bayley Scales of Infant and Toddler Development, third edition; CI: confidence interval; MD: mean difference; RCT: randomized controlled trial; RR: relative risk; SD: standard deviation; SMD: standardized mean difference

- **Mortality**: Moderate-certainty evidence from one trial with 6984 participants suggests decreased all-cause mortality by 180 days of age (RR 0.71, 95% CI 0.57 to 0.89). Low-certainty evidence from one observational study with 970 participants suggests decreased all-cause mortality by 12 months (RR 0.14, 95% CI 0.02 to 1.16).
- **Neurodevelopment**: Moderate-certainty evidence from two trials enrolling 652 participants suggests little or no effect on cognitive neurodevelopment (BSID-III) by 12 months (SMD 0.03, 95% CI -0.12 to 0.19).
- There was an increase in **EBF (exclusive breastfeeding)** at 6 months (RR 4.48, 95% CI 0.28 to 72.9; 3 trials, 7221 participants).

The concerns from families with preterm infants…

Sources: A study conducted by the Mackay Medical College Foundation of the Mackay Medical College on “Investigating the Home Care Needs of Premature Infants” with in-depth interviews and focus groups methods.

The program of home visit for low (including very low) birth weight premature infants

The Protection of Children and Youths Welfare and Rights Act

Article 7-2. (**Central authorities**) Authorized agencies in charge of health are responsible for affairs regarding mother and child health, fertility care, **notification of premature babies, follow-up visits and care services**, early intervention for children with developmental problems, the mental health of children and youth, medical care, rehabilitation, health insurance, etc.

Article 23-1. (**county (city) governments**) Establish a notification system for premature babies and provide follow-up visits and care services.

Program objectives

1 Family support

- Mitigate the care burden and pressure of families.
- Provide the emergence contact information.

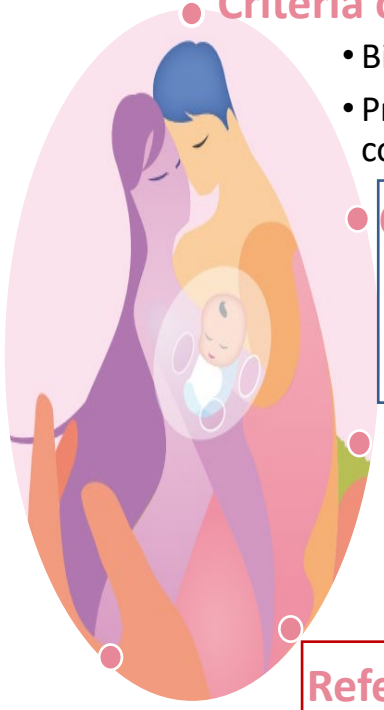
2 Early detection of potential health problems

- Early detection of developmental problems and early intervention.
- Monitoring of complications and follow-up.

3 Improve quality of care

- Strengthening the knowledges and skills of home care for caregivers.
- Improving the home care quality

Program contents



Criteria of enrollment

- Birth weight ≦1,500g
- Preterm infant with birth weight over 1,500g, with comorbidities or medical catheter or devices.

Care need assessment

Assessing the physical status of infants, the need of health education, the stress of main caregiver in families.

Home visit services

- Home visit, virtual visit and telephone visit.
- Follow up and care from discharge to 2 yo. (corrected age)

Referral and follow-up

Consulting Call Service

Providing call services for emergency events, care resources and supportive consultation.

Stress assessment of caregivers during the enrollment and case closure phases.

Reminding and following-up on all enrolled cases to return to the outpatient for neurodevelopment examination for very low birth infant at 6 m, 12m, 18m and 24m CA(NHI Reimbursement Item).

Results and milestone of the home visit program for low (including very low) birth weight premature infants

81 hospitals join in this program (**> 95%** VLBW infants)

2020
- "Program for Improving Children's Health Care" was approved by Executive Yuan. "Home visit program for LBW infant " was 1 of the sub-program.

2021
- Pilot study in 9 hospitals from 8 areas, building models (includes enrollment, need assessment and referral) for implementation

2022.2
- 1st edition project instruction for hospital to implement (including operation details)

2022.4
- Expanding this program to all hospitals passing the certification of Emergency Responsibility Hospitals in Taiwan.
- Interfacing with birth reporting system.

2023.7
- Training program (includes internship for home visit) launched

2023.9
- Project Instruction for care manager and medical staffs

3,106 cases (enrollment rate **98%**)

14,186 calls

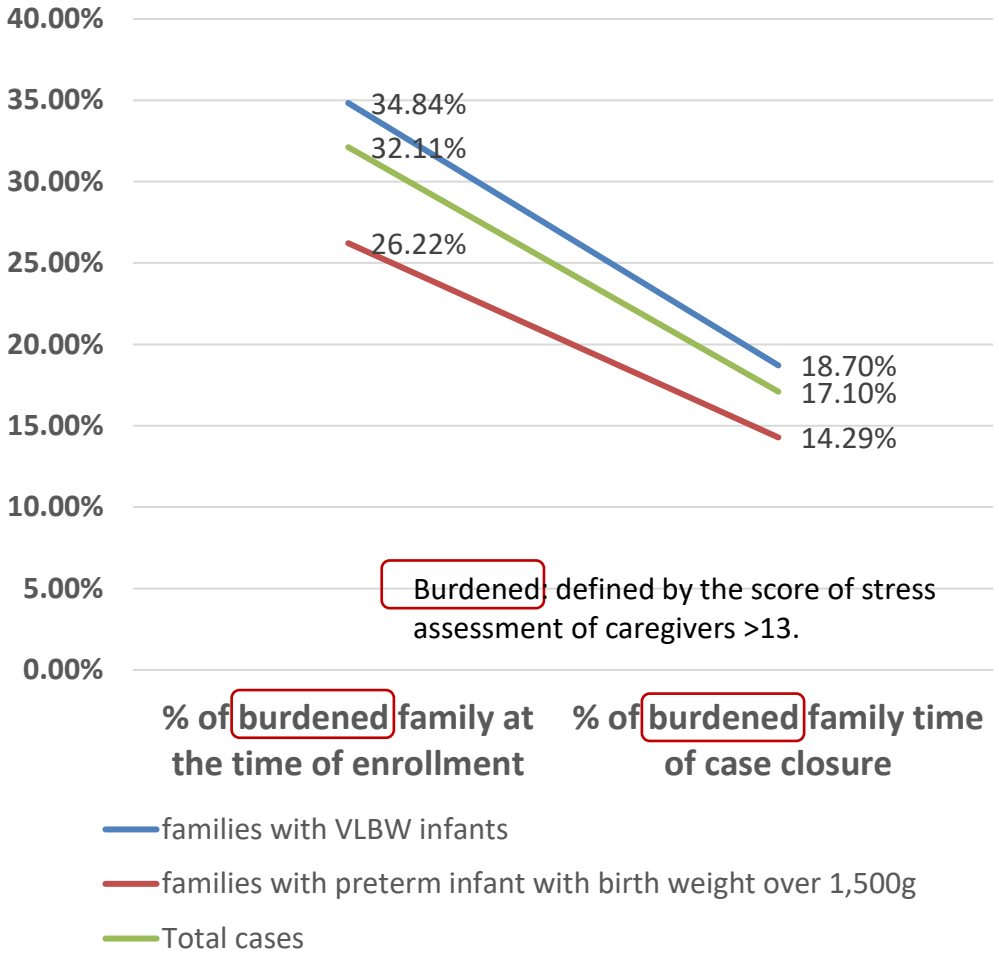
2,662 virtual visits

1,044 home visits

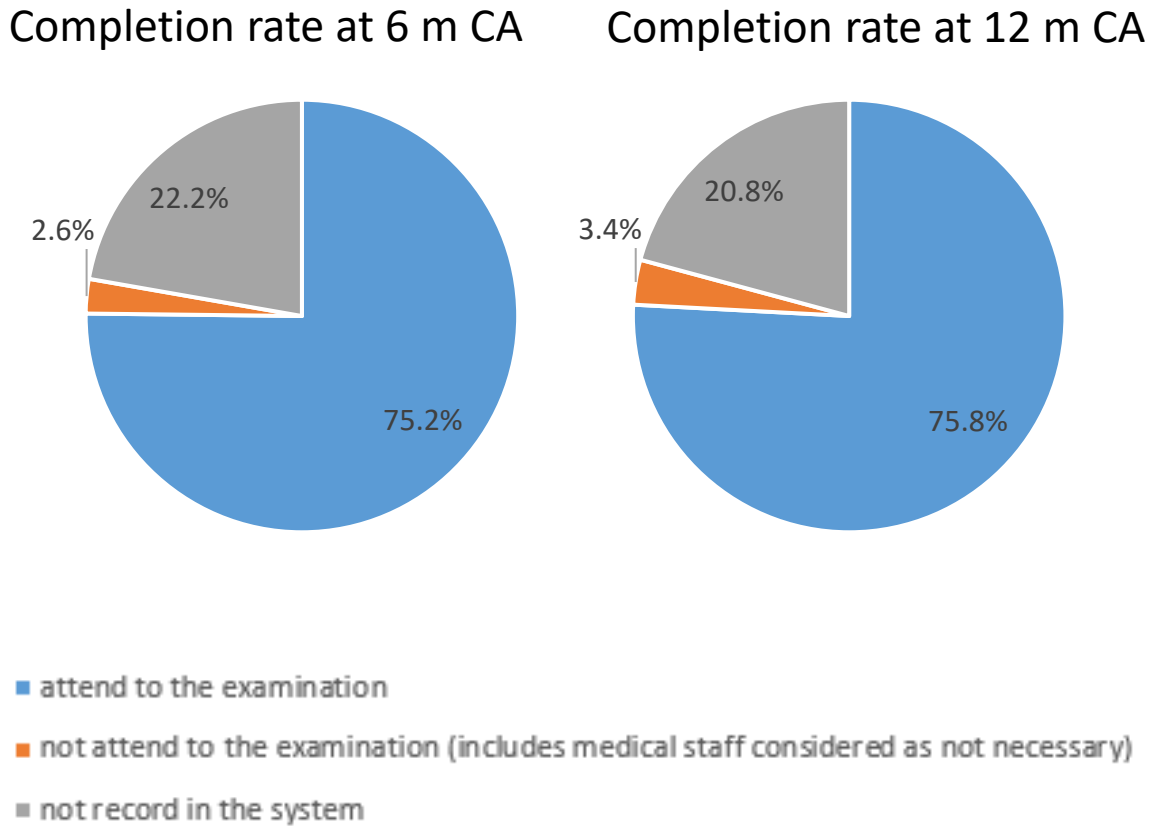
By the end of Feb.2024

Outcomes of the home visit program for low (including very low) birth weight premature infants

Stress assessment of caregivers during the enrollment and case closure phases



Completion rate for neurodevelopmental evaluation among very low birth weight (VLBW) infant



CA: corrected age

By the end of Feb. 2024

Stories behind statistics

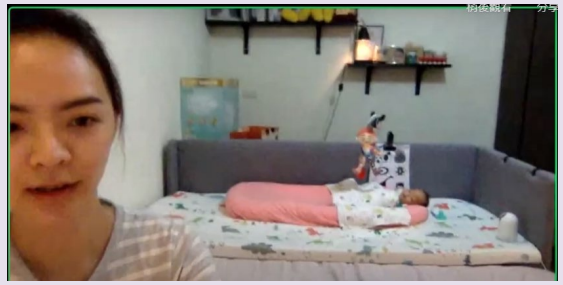
Pin-Wei couldn't wait to enter the world at around 29 weeks, weighing just 810 grams. After nearly 100 days in the NICU, she finally went home, still reliant on oxygen and feeding tubes. Pin-Wei 's mom felt overwhelmed. The home care nurse from Linkou Chang Gung Memorial Hospital immediately provided invaluable guidance, from feeding to equipment management.

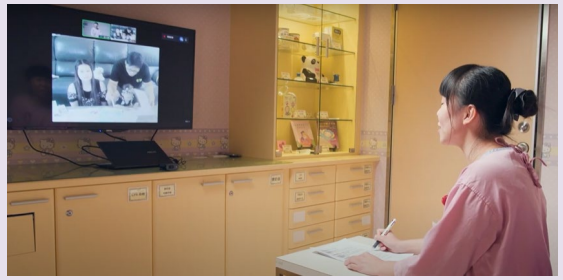
A memorable incident was when Pin-Wei had a gastric bleed at home; the nurse promptly advised and followed up at the clinic. With the dedicated care of the medical team, Pin-Wei overcame her reliance on tubes, bringing warmth to her family.

"The professional medical team took good care of me and my baby"

Wen-Yu was born at 33 weeks and weighed 1,200 grams. She was hospitalized for more than two months before going home, in addition to dealing with care issues, she also had to deal with the series of different examinations. The care manager from Taipei Mackay Memorial Hospital learned about Wen-Yu's health and feeding situation at home via video visits, and assessed the sleeping environment during the visit.

Wen-Yu's mother stated that the care manager was very patient in answering care questions, reminding her of the time to return to outpatients, and providing suggestion on Wen-Yu's health and developmental challenges, which gave her tremendous reassurance.





"The nurse was patient and professional, which reassured me"

Acknowledgement

Health Promotion Administration, Ministry of Health and Welfare

Director-General, Chao-Chun Wu (吳昭軍 署長)

Maternal and Child Health Division,

Division Director, Yu-Hsuan Lin (林宇旋 組長)

Technical Specialist, Yung-Hung Chang (張永泓 技正)

All participating hospitals & families