Ensuring Healthy Outcomes from the Start: Pediatric Development Clinic Model for Health, Nutritional, and Developmental Follow-up and Early Interventions for small and sick newborns

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30 MILLION SMALL AND SICK NEWBORNS REQUIRE INPATIENT CARE

2.5 million neonatal deaths

Millions who survive are at risk of mild to severe disability and require follow-up care

There is a lack of scalable models to reduce mortality and morbidity of at-risk newborns in LMICs
Pediatric Development Clinic (PDC)

- Started in 2014 in Rwinkwavu by PIH/IMB in collaboration with MOH and UNICEF; expanded to Kirehe in 2016
- PDC: Integrated model of structured medical, nutritional & developmental follow-up for high-risk infants, 0 – 5 years
  - Low birth weight & Prematurity
  - Brain injury (encephalopathy following asphyxia)
  - Hydrocephalus
  - Cleft lip/palate
  - Trisomy 21
  - Global developmental delay
  - Severe acute malnutrition <12 months old child
  - Post-CNS infection (cerebral malaria, meningitis)
- Integrated into public health facilities
- Using task-shifting approach - trained nurses and social workers deliver PDC services
Pediatric Development Clinic (PDC)
Approach For Follow-up Care Of Small And Sick Newborns

**RISKS**
- Poor health status and early mortality
- Malnutrition
- Sub-optimal development or disability
- Sub-optimal home environment (stigma, poor caregiver mental health)

**TARGETED NURTURING CARE INTERVENTIONS IN PDC**
- Enhanced Growth monitoring & feeding assessment
- Nutrition counselling
- Supplementation and management
- Managing children with feeding difficulties
- Group counselling
- Play and Communication
- Routine clinical check-ups
- Developmental monitoring
- Early intervention Program
- Integrated social support
- Parents’ support groups

**GOAL**
Children thrive and reach their full developmental potential
Referral to and Enrollment in Pediatric Development Clinic (PDC)

High-risk infant identified at birth and referred to the hospital neonatal unit

Newborn managed in neonatology until stable and safely gaining weight

Newborn discharged from hospital and referred directly to PDC for outpatient follow-up

Child enrolled at the PDC closest to their home and starts regular follow-up schedule
Follow-up and Monitoring in the PDC During Routine PDC Visits

Caregivers participate in a group education session

Child’s health & nutrition monitored, and interventions provided as needed (Small and nutritionally at risk infants and their mothers managed using MAMI program)

Child’s development monitored using GMCD*

Social worker assessment and support

- Coaching of responsive caregiving
- Screening for depression and linkage to mental health care
- Additional social support determination:
  - Individual counselling
  - Food packages support
  - Home visiting

*GMCD (Guide for Monitoring Child Development)
Follow-up and Monitoring in the PDC During Routine PDC Visits

- Caregivers participate in a group education session
- Child's health & nutrition monitored, and interventions provided as needed (Small and nutritionally at risk infants and their mothers managed using MAMI program)
- Child's development monitored using GMCD*
- Child is enrolled in Early Intervention Program (EIP) parent support groups
- Parents receive counselling on ECD and health/nutrition promotion
- Child attends regular PDC follow-up until age of discharge

• Baby Ubuntu program for Early care and support for children with developmental disabilities
  - 10 modular, participatory group rehabilitation program
  - Co-facilitated by a trained Expert Parent and a PDC Healthcare provider

Child has severe developmental delay/disability

Child is developmentally on-track

Parents received targeted counselling to address mild/moderate delay

Child has mild to moderate delay

CHILD CONTINUES TO RECEIVE PDC FOLLOW-UP

*GMCD (Guide for Monitoring Child Development)
PDC Impact Evaluation - Methods (1/2)

• We aimed to assess the impact of PDC on survival, nutritional, and developmental outcomes at ages 11-39 months.

• Included children:
  • Discharged alive from the hospital neonatology care units
  • Born preterm (<37 weeks’ gestation)
  • With low weight at birth (<2,000 grams)
  • or, with hypoxic ischemic encephalopathy (HIE)

• Conducted a quasi-experimental study to compare a historic control group to children receiving PDC intervention in Kayonza and Kirehe districts.

• Home-based cross-sectional surveys were conducted to collect data on outcomes on survival, nutritional and developmental status
PDC Impact Evaluation - Methods (2/2)

• Nutritional status was measured using the WHO’s Child Growth Standards.

• Developmental status was measured using the Ages and Stages Questionnaire.

• Weighted logistic regression was used to control for confounding and differential non-participation in household surveys.
Results - Survival, Nutrition, and Developmental Status (N=812)

- **Death**: 6.2% (PDC Intervention Group) vs. 14.0% (Control Group)
- **Stunting**: 59.8% (PDC) vs. 65.5% (Control)
- **Underweight**: 29.6% (PDC) vs. 34.9% (Control)
- **Wasting**: 6.3% (PDC) vs. 7.9% (Control)
- **Potential developmental delay**: 74.7% (PDC) vs. 81.4% (Control)

*\(p<0.05\)
Adjusted Results - Survival, Nutrition, and Developmental Status

• Overall, after accounting for confounding and non-participation in household surveys, PDC intervention was associated with:
  • 51% reduction in the odds of death (OR 0.49; 95% CI 0.26-0.92)
  • 52% reduction in the odds of developmental delay (OR 0.48; 95% CI 0.30-0.77).

• In Kayonza, PDC intervention was associated with 52% reduction in the odds of stunting (OR 0.52; 95% CI 0.28-0.98).

• PDC was not associated with a significant reduction in underweight or wasting.
Empowering Caregivers

“I was taught how to interact with my child. Before I thought my child couldn’t learn anything […] Before coming here I did not know I should do this. Now I see that he can still learn.”

*Mother in PDC Program*

“We learnt a lot from here, how we should look after and take care of children. […] We should help each other. There shouldn’t be any dispute [in the family] about who should be looking after the kids. That is not reserved to women only.”

*Father in PDC Program*
Conclusions

• PDC is associated with improved survival and developmental outcomes among high risk children enrolled in PDC program.

• Providing integrated ECD services with early care and support interventions into primary healthcare for high risk infants is feasible in rural settings of Rwanda using task shifting approach.

• Continuous quality improvement of care for children with complex conditions and ongoing efforts for improvement of referral system to high level of care as well as specialized services.

• PDC decentralization to new 14 health centers in Kirehe for total district coverage.

• PDC Policy advocacy at the national level for its adoption and scale up across Rwanda
Murakoze!
Thank you!