

1 **Strengthening the Primary Care Workforce to Deliver Community Case** 2 **Management for Child Health in Rural Indonesia**

3 4 **Abstract**

5 **Objectives** This paper reports the implementation of Community Case Management (CCM) to
6 reduce infant mortality in a rural district, Kalimantan Indonesia.

7 **Methods** An interpretive qualitative methodology was used. In-depth interviews were
8 conducted with 18 Primary Health Care Workers (PHCWs), and PHCWs were observed during a
9 consultation with mothers to gain insight into the delivery of the new protocol and workforce
10 issues. The field notes and interview transcriptions were analysed thematically.

11 **Results** PHCWs reported that their performance had improved as a result of increased
12 knowledge and confidence. The implementation had also reportedly enhanced the PHCWs'
13 clinical reasoning. However, the participants noted confusion surrounding their role in
14 prescribing medication.

15 **Conclusions** CCM is viewed as a useful model of care in terms of enhancing rural PHCW's
16 capacity to provide child health care and improve the uptake of lifesaving interventions.
17 However, work is needed to strengthen the workforce and to fully integrate CCM into maternal
18 and child health service delivery across Indonesia.

19 **Key words** - child health, Primary Health Care Workers, community case management

20 **What is known about the topic?** Indonesia has successfully reduced infant mortality in the last
21 ten years. However, the concern remains on the issues related to the disparities between
22 districts. The number of infant deaths in rural areas tend to be staggeringly high compared to
23 that in the cities. One of the causes is inadequate access to child health care.

24 **What does this paper add?** CCM is a model of care that is designed to address childhood
25 illnesses in limited resource setting. In CCM, PHCWs are trained to deliver lifesaving
26 intervention to sick children in rural community. CCM is reported to have improved PHCWs'
27 capacity in treating childhood illnesses.

28 **What are the implications for practitioners?** CCM can be considered to strengthen PHCWs'
29 competence in addressing infant mortality in areas where access to child health care is
30 challenging. Policy on tasks shifting needs to be further examined so that CCM can be integrated
31 into current health service delivery in the country.

32 **Introduction**

33 Everyday approximately 19,000 children under the age of five die worldwide and about 13,000
34 of them die before reaching the end of their first year of life, particularly in low and middle
35 income countries (LMIC) ^{1,2}. The new Sustainable Development Goal (SDGs) child health target
36 is to end the preventable deaths newborns and children under 5 years of age, with all countries
37 aiming to reduce neonatal mortality to 12 deaths per 1,000 live births and under-5 mortality to
38 25 per 1,000 live births by the end of 2030 ³. Indonesia has successfully reduced the number of
39 infant deaths in the last decade, from the high figure of 37 infant deaths per 1000 lives in 2005
40 to 23 per 1000 in 2015 ⁴. In order to support the global effort to achieve the development goals
41 target, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF)
42 established a policy that highlights the importance of community-based treatment and
43 enhancement of quality service at primary care level to reduce infant mortality. One of the
44 initiatives that came from this policy was the development of Integrated Management for
45 Childhood Illnesses (IMCI) that aimed to reduce mortality and morbidity in children by
46 improving the management of common illnesses at a primary care level.

47 Since 1996, IMCI has been implemented in more than 100 countries, including Indonesia ⁵. IMCI
48 has improved health service quality and reduced child mortality and health care costs ⁶. Despite
49 the reported successful implementation of IMCI, there have been some concerns associated with

50 the constraints in achieving adequate coverage to improve child survival and the
51 implementation remained suboptimal ⁷. The constraints include poor health worker
52 performance, problems associated with training, weak health systems and poor national policy
53 support ⁶.

54 Community case management (CCM) is a further initiative in the development of a community-
55 based model to improve child survival. CCM was introduced as a pilot in 2011 in the district of
56 Kutai Timur, East Kalimantan by the NGO JHPIEGO and Save the Children in collaboration with
57 the District Health Office (DHO) with the goal of reducing infant mortality from current rate of
58 21 deaths per 1000 lives ⁸. CCM focuses on the management and prevention of pneumonia,
59 malaria, diarrhoea, and neonatal illness ⁹. The evidence-based interventions in CCM are
60 delivered by trained, supervised community members that vary depending on the local context.
61 Community members may include Ministry of Health outreach workers, professional health
62 workers, and private sector workers ⁹. CCM has been reported by mothers to have improved
63 their access to child health care ¹⁰ and is accepted by communities ¹¹. However, little knowledge
64 is available concerning how CCM in Indonesia is delivered from the perspective of PHCWs.
65 Understanding CCM from the view of PHCWs is crucial to ensure that the workforce has the
66 capacity to deliver relevant and appropriate care to communities and that there are adequate
67 supportive mechanisms enabling the uptake of quality services. Such insights are also an
68 important component in the documentation of lessons learnt to inform policy and service
69 planning decisions to sustain improvements in service delivery and ultimately health outcomes.
70 This paper reports a study investigating the care provided by PHCWs and their experiences in
71 implementing CCM in the Kutai Timur district that informed the further development of
72 community based integrated management for childhood illness (C-IMCI) that has been
73 subsequently endorsed by the Ministry of Health.

74 **The context of Kutai Timur**

75 Kutai Timur is located in the province of East Kalimantan, Kalimantan Island; the biggest island
76 in Indonesia. With a size of 35,747 km², the district is inhabited by 253,847 people ¹², with
77 approximately seven people every km². Kutai Timur consists of 18 subdistricts with 135
78 villages. CCM was implemented in six subdistricts with a total of 17 villages with the selection
79 based upon the villages that the NGO had established relationships with and logistic reasons.

80 The Kutai Timur DHO is responsible to govern health services provision in the district through
81 one public hospital and 19 *Puskesmas* (community health centres) ¹³. In addition, there are
82 approximately 96 *Posyandu* (integrated health clinic) in villages. However, at the time of the
83 research study not all were in operation due to a shortage of resources and staff. In 2011, health
84 services were provided by 682 health staff comprising 17% medical doctors and 65% nurses
85 and midwives. Other health workers include pharmacists, nutritionists, sanitation and public
86 health staff ¹³. In general, the ratio of health workers per population meets the national standard
87 where 25 doctors and more than 300 nurses served 100,000 people. However, only 40
88 midwives serve 100,000 people, as opposed to 117 per 100,000, which is the national standard.
89 The low level of midwifery coverage is further exacerbated by the poor distribution of health
90 workers. Not all villages had either a doctor, a nurse or a midwife in residence ¹³. Besides these
91 health workers, villagers are served by traditional healers and traditional birth attendants
92 (*Dukun*) ¹⁴.

93 In Kutai Timur, the health workers included in the implementation of CCM are trained
94 community nurses, midwives, and *Kader* (community health volunteers). Nurses and midwives
95 have a minimum of three years nursing and midwifery training, whereas the *Kaders* do not have
96 any health related formal education. In Indonesia, *kader* are local community members who
97 provide volunteer work in expanding health programs endorsed by the *Puskesmas* ¹⁵. All PHCWs
98 must undertake a two week CCM training prior to delivering care as part of this model. The two-
99 week training consists of two parts: in-class and clinical practice section. Materials delivered
100 during the in-class section were the same for all PHCWs while for clinical practice section,

101 participants were grouped in accordance to their job-responsibilities and competencies (health
102 professionals or kader). Accessing a health facility is a challenge for the community in most
103 villages due to geography and accessible transportation.

104 **Methods**

105 To comprehensively understand the implementation of CCM from the PHCWs' perspective,
106 qualitative data were collected from July to October 2011. In-depth interviews with PHCWs
107 and observation of PHCWs who had been trained and were delivering CCM in Kutai Timur at the
108 time of the study. The participants were recruited through a snowball technique ¹⁶. The first
109 participant invited was the village nurse/ midwife participant, and kader, who were selected by
110 the program supervisor in each *Puskesmas*. After one PHCW participant was recruited, the
111 participant was asked to recommend other PHCWs in the district who might be interested in
112 participating in the study. This technique offered technical advantages in terms of recruiting
113 participants in concealed and hard to reach populations such as villages in Kutai Timur. The
114 snowballing method was applied only to recruit village nurses/ midwives and kader
115 participants. Whilst, purposive sampling method was utilised to recruit program supervisor
116 participants.

117 In depth interviews of approximately one hour were held with the PHCWs, and observations
118 were conducted when the PHCWs provided non-urgent consultation with mothers. While no
119 formal observation checklists were used, notes were taken based upon the CCM guidelines. No
120 new interviews were conducted when data saturation was achieved. The interviews and
121 observation were conducted, recorded and transcribed in Bahasa Indonesia. The transcripts
122 were then back translated into English with the closest interpretation and meaning for further
123 analysis. As a native Indonesian, the first author used the approach of 'researcher as translator'
124 ¹⁷. In this role, the author was able to pay close attention to cross cultural meanings and
125 interpretations, and therefore engaged with the issues of meaning equivalence within the
126 research process. The observation and interview were conducted by the first author, who is a

127 native Indonesian, and has a health professional background. This background contributed to a
128 close understanding of the study context and culture and assisted in establishing rapport with
129 participants. The process of critical self-reflexivity was practiced to ensure that all authors
130 considered their own individual own norms and values and how this shaped the approach,
131 analysis and interpretation of data ¹⁸.

132 The data were analysed thematically ¹⁹. Once collected, the data were reviewed, sorted and
133 classified to identify issues, topics, patterns, and themes. This method of analysis provided an
134 opportunity for the researcher to become immersed within the data and so generate rich
135 insights into the participants' world ¹⁹. In this study transcripts were read repeatedly (reread)
136 and sorted to allow the creation of a conceptual map of predominant story lines. As new data
137 was obtained through the continued process of interview, new categories were created and
138 some categories collapsed into themes. Categories developed into themes by virtue of their fit
139 with and truthfulness to the data ²⁰. Field notes from the observations were used alongside
140 interview data to link the context with phenomena and improve rigor of the research.
141 Consensus was reached with the authors concerning data coding and key themes.

142 Ethical clearance was obtained from the UTS Human Ethics Research Committee as well as from
143 the Faculty of Nursing Universitas Indonesia.

144 **Results**

145 Eighteen PHCWs (three program supervisors, 11 village nurse/ midwife, and four *Kaders*) were
146 recruited in the study. The participant's, gender, ages, education and occupations are illustrated
147 in the Table 1.

148 Table 1

149 **Participant characteristics**

150

| Characteristics of Participant | Program supervisor at Puskesmas (N=3) | Primary health care worker (N=15) |
|---------------------------------------|--|--|
| Gender | | |
| Male | | 2 |
| Female | 3 | 13 |
| Age (years) | | |
| 18-27 | | 5 |
| 28-37 | 2 | 7 |
| 38-47 | 1 | 3 |
| Education level | | |
| Secondary (7-12) | | 3 |
| Academy/ University | 3 | 12 |
| Occupational status | | |
| Nurse | 1 | 7 |
| Midwife | 2 | 4 |
| <i>Kader</i> | | 4 |

151

152 The analysis identified five themes: enhanced family and child health knowledge and practice;
 153 professional confidence and motivation; development of clinical reasoning; and role and scope
 154 of practice.

155 ***Enhanced family and child health knowledge and practice***

156 PHCW participants revealed that the CCM training had made a difference to their practice and
 157 enhanced their knowledge of newborn health. Not only did PHCWs' knowledge about babies
 158 with infection increase, but also their understanding about low birth weight babies. This was
 159 demonstrated by a nurse participant who said: "I have more knowledge ... I came across with a
 160 baby suffering from low birth weight, and I knew what to do with it". Another nurse said she

161 taught a mother with low birth baby to apply the Kangaroo Mother Care method. The mother
162 was asked to hold the baby with skin to skin contact between the baby's front and the mother's
163 chest. The nurse reported increased weight two weeks following the intervention. This was
164 confirmed in the observation of a following up consultation with this mother.

165 ***Professional confidence and motivation***

166 The increase of PHCW's knowledge resulted in a reported increase in PHCW confidence in
167 delivering clinical interventions as reported by a *kader* participant following her visit to a
168 mother. The participant said, "I have got more knowledge and have become more confident in
169 giving counselling to families ...". The confidence increased when the intervention they gave to a
170 family was successful. One nurse said, "... I become more confident ... particularly when we give
171 medication and it works." A midwife reported that she was excited to see that a baby's eye
172 condition had much improved after the topical application of antibiotic cream. PHCWs noted
173 that the feedback they received from the trainer during the CCM course and successfully passing
174 the CCM examination improved confidence.

175 A supervisor participant in the study reported that following the training program, most of the
176 PHCWs were competent and able to implement the program. The supervisor believed that
177 "PHCWs in the field can do this program ..." and believed that "the PHCWs in *Puskesmas* and
178 villages were motivated and enthusiastic after being trained and were willing to visit mothers at
179 home following the delivery of their baby".

180 ***Development of clinical reasoning***

181 PHCWs reported that their clinical reasoning skills involving the assessment and evaluation of
182 sick babies had improved. A nurse reported that:

183 CCM interventions depend on the level ... there are various levels ... each level has
184 different interventions ... for babies with normal conditions, with local infection and
185 severe infection ... so we will deliver interventions based on the level ... [Nurse 1]

186 Following a home visit, a PHCW demonstrated an understanding of the diagnosis based on what
187 was outlined in the CCM protocol:

188 ... the mother reported that the baby's umbilical cord was bleeding, so I immediately
189 came (to visit the baby) ... we took the temperature ... it was good: 36.1° C ... and we
190 assessed the body, there was no pustule (signs of infection - red swelling spot on the
191 baby's skin), and she concluded that the baby was not classified as sick/infected. [Nurse
192 2]

193 PHCW participants were able to articulate the difference between newly learned CCM practice,
194 previous practice and hospital practice.

195 I think it was classified as an emergency. The baby experienced chest in drawing, she
196 was also groaning ... it was clear that there is something wrong with her respiration ...
197 Usually what we did in the past was address the breathing problem first. But in the CCM
198 procedure, we have to address the infection first then we refer if there is no change. In
199 hospital, we had to focus on respiration first, as it is impossible to give Cotrimoxazole or
200 Gentamycin (antibiotics) first ... that is the difference. [Nurse 3]

201 Some PHCWs implied that CCM was strongly medical in approach, which sometimes seemed at
202 odds with the nursing/ midwifery approach. Two nurses and one midwife mentioned that their
203 main role in delivering CCM was to diagnose a medical problem and to give medication.
204 Whereas as another nurse and midwife participant noted that their goal is to address the basic
205 needs of patient

206 ***Role and scope of practice***

207 Participants noted that they were not sure about legal aspects of medicine administration.
208 Participants were not clear if they had the authority to legally administer antibiotics. A nurse
209 participant noted that "for the antibiotics administration in CCM, I don't know ... if something

210 happened ... I am not sure whether we are permitted by law". This is supported by another
211 PHCW (nurse) participant who said "I don't know ... therefore I am a bit ... ehm ... is it legal or
212 not". PHCWs in villages were familiar with giving medication in their usual daily practice
213 outside of the project. However, they were uncertain about their role:

214 We do provide the service (giving medication to patients) besides CCM, but we get
215 confused about that. I have asked someone in the Nursing Association about SIPP (the
216 permission letter for nursing practice) I think SIPP can only be used if you are in a group
217 with other health professionals ... and that is not for drug prescription". [Nurse 5]

218 However, nurse and midwife participants stated that they felt confident and trusted by the
219 community to administer medication as CHWs were often the only ones who could administer
220 medication in the village. A nurse stated that "because we are the only ones in the village, there
221 is no doctor here ... the people here trust us". Moreover, they felt competent to administer
222 medications as they had been trained and were familiar with the procedural standard. However
223 one nurse said, "I am worried if something happens after the antibiotics administrations ... but
224 we feel safe because the standard procedure is there". Another nurse participant noted that
225 giving medication is a form of delegation from *Puskesmas* as "the *Puskesmas* has assigned us to
226 be here to run the program at village level".

227 PHCWs said that they were reluctant to administer antibiotic injections to babies due to family
228 cultural objections, A *Kader* noted "there is a bit of worry ... let the nurses or midwives do the
229 medication ... I am not sure about the legal aspect".

230 **Discussion**

231 Reports from PHCWs and observations of their practice confirms that the implementation of
232 CCM in the district has made a difference to the delivery of child health care, the introduction of

233 a structured clinical intervention enhanced practitioner knowledge, professional confidence,
234 motivation and clinical reasoning.

235 ***Improving family and child health knowledge and practice***

236 The findings of this study indicate that health care workers transferred their learning into
237 practice following training and were able to successfully deliver lifesaving interventions to
238 address child illnesses. Other studies have also found that community-based interventions can
239 result in improved PHCW performance ²¹. However to transfer new learning into practice
240 trained health workers require a supportive working environment where there is appropriate
241 supervision and adequate medicines ²².

242 In our study PHCWs confidence in their competence was built through feedback received from
243 the examiners/trainers and their practice reinforced from feedback from mothers as well as
244 their own observation when the intervention they provided was successful. This concurs with
245 Cappers definition of professional confidence in the context of nursing practice as ‘an internal
246 feeling of self-assurance and comfort as well as being reaffirmed by colleagues, patients and
247 friends’ ²³. In research in Canada Brown at al. ²⁴ found that professional confidence is a dynamic
248 process that involves personal and professional factors such as feeling, knowing, believing,
249 accepting, doing, looking, becoming, and evolving. Professional confidence underpins
250 engagement in effective practice, critical thinking, clinical reasoning and skill deployment ²⁵.
251 Professional confidence can positively influence clinical performance ²³, resulting in improved
252 patient outcomes. The lack of professional confidence may be associated with stress,
253 particularly in life threatening situations ²⁶. Professional over-confidence, in contrast, may
254 result in clinical errors, leading to negative patient outcomes ²⁷. Since professional confidence
255 and motivation of PHCWs is an essential element for practice performance, it is important that
256 ongoing CCM program delivery incorporates continuing professional development and
257 supervisory feedback.

258 ***Developing clinical reasoning***

259 Clinical reasoning has been defined as “a complex cognitive process that uses formal and
260 informal thinking strategies to gather and analyse patient information, evaluate the significance
261 of this information and weigh alternative actions”²⁸. Clinical reasoning is therefore a thinking
262 process involved in decision-making. The perceived improvement of clinical reasoning by
263 PHCWs maybe the result of training conducted prior to CCM implementation that drew upon
264 pedagogically sound principles of adult learning. In the education program, the participants
265 were taught, using interactive hands on case-based scenarios, how to deal with newborn babies
266 with low birth weight and infections and how to assess, diagnose and intervene.

267 Clinical reasoning is closely related to professional confidence and patient outcomes²⁵, which
268 eventually contributes to quality of care. Clinical reasoning should therefore continue to be a
269 key aspect of CCM training, continuing professional development and supervision to ensure that
270 clinical skills are constantly employed and updated to maintain health worker performance.
271 Studies have found that multifaceted interventions work best to improve health provider
272 performance²⁹. Appropriate supervision and feedback alongside financial and non-financial
273 incentives³⁰ and effective personnel management in line with the service delivery program can
274 help to facilitate provider performance to increase universal health care access³¹.

275 ***Roles and scope of practice***

276 One of the main interventions of CCM is administering medication (antibiotics) to sick children.
277 Some PHCW participants felt confident in giving antibiotics to sick babies because they had
278 trust from the community, and adequate knowledge in that they had been educated and passed
279 the competency examination. In addition, their presence in the village was on behalf of the
280 *Puskesmas*, which was mandated by the head of the *Puskesmas*, who was in all cases a medical
281 doctor; thus, they had authority. However, there was a concern among PHCW participants about
282 whether their practice in delivering antibiotics was lawful.

283 In Indonesia, the legislation mandates that antibiotics should be obtained by the presentation of
284 a medical prescription ³². In order to enhance the quality of service in health centres in the
285 country, there was a government initiative of task delegation where nurses and midwives could
286 provide medical diagnosis and treatment for certain diseases using a clinical algorithm ³³. A
287 clinical algorithm has been developed a part of the Integrated Management of Childhood Illness
288 (IMCI), a facility-based official model used by government to enhance child health provision in
289 *Puskesmas* throughout the country ³⁴. This task delegation initiative was formalised in a letter of
290 agreement between the Indonesian Medical Association (IMA) and Indonesian National Nurses
291 Association (INNA). Despite the rolling out of the nurse and midwife algorithm in the country,
292 there was contention around the initiative between IMA and INNA that resulted in IMA
293 cancelling the agreement in one district ³³.

294 In contrast to the use of medical treatment in IMCI, the procedure of diagnosing and treating a
295 sick baby in CCM had not been formalised in any legal document. The absence of such an
296 agreement may have resulted in the confusion for PHCWs in delivering the health intervention.
297 Since the PHCWs were uncertain of the legalities in the administration of medicine, this might
298 have been better covered in the training, thus providing assurance around the legalities. Role
299 confusion amongst PHCWs can also result from the absence of a clear job description of 'who
300 does what' in CCM implementation, which may result in the PHCWs poor performance ³⁵.

301 ***Limitations***

302 Despite the advantages of snowballing technique, it was noted that the variation of PHCWs
303 involved in this study tends to be homogenous. However, we argue that the study population
304 itself was a specific group who all have been exposed to the same training, project, and a
305 relatively similar working environment. Hence the minimum variation of the study participant
306 has a minimum influence to the result.

307 We realized that observation method used in this study may lead to a potential response bias
308 (Hawthorne effect). Therefore, the findings from this observation were triangulated with the
309 interviews and FGDs results, instead of being analysed and reported independently.

310 **Conclusion**

311 The findings from this study show that the implementation of CCM has enhanced PHCWs'
312 practice and performance. In the context of the Kutai Timur district, the implementation of CCM
313 is reliant upon trained community nurses, village midwives and community health volunteers.
314 Ongoing training, professional development and supervision are required to maintain health
315 worker knowledge, confidence, motivation and clinical reasoning skills. However, the role that
316 PHCWs play and their scope of practice in delivering care under CCM needs to be more clearly
317 defined.

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