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On the road to universal coverage of postnatal care: Considerations for a targeted approach for at-risk mother- baby dyads informed by an expert consultation

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3 1 **On the road to universal coverage of postnatal care: Considerations for a**
4 **targeted approach for at-risk mother-baby dyads informed by an expert**
5 **consultation**
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30 24

31 24 **Abstract:**

32 25 **Introduction:** The potential of timely, quality postnatal care (PNC) to reduce maternal and
33 26 newborn mortality and to advance progress toward Universal Health Coverage (UHC) is well-
34 27 documented. Yet, in many low- and middle-income countries, coverage of PNC remains low.
35 28 Risk-stratified approaches can maximize limited resources by targeting mother-baby dyads
36 29 meeting the evidence-based risk criteria which predict poor postnatal outcomes.

37 30 **Objectives:** To review evidence-based risk criteria for identification of at-risk mother-baby
38 31 dyads, drawn from a literature review, and to identify key considerations for their use in a risk-
39 32 stratified PNC approach.

40 33 **Design/setting/participants:** A virtual, semi-structured group discussion was conducted with
41 34 maternal and newborn health experts on Zoom™. Participants were identified through
42 35 purposive sampling based on content and context expertise.

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3 36 **Results:** Seventeen experts, (5 male, 12 female), drawn from policymakers, implementing
4 37 agencies and academia participated and surfaced several key themes. The identified risk
5 38 factors are well known necessitating accelerated efforts to address underlying drivers of risk.
6 39 Risk-stratified PNC approaches complement broader UHC efforts by providing an equity lens
7 40 to identify the most vulnerable mother-baby dyads. However, these should be layered on
8 41 efforts to strengthen PNC service provision for all mothers and newborns. Risk factors should
9 42 comprise context relevant, operationalizable, clinical and non-clinical factors. Even with rising
10 43 coverage of facility delivery, targeted postnatal home visits still complement facility-based PNC.
11 44 **Conclusion:** Risk-stratified PNC efforts must be considered within broader health systems
12 45 strengthening efforts. Implementation research at the country level is needed understand
13 46 feasibility and practicality of clinical and non-clinical risk factors and identify unintended
14 47 consequences.

23 48 **Article summary**

26 **Strengths and limitations of this study**

- 28 • A major strength of this study is the depth and breadth of expertise of the participants
29 in PNC, each bringing a combination of clinical, research, policy, and
30 implementation skills across multiple low-and-middle-income countries.
- 31 • The study explored a critical area of maternal and newborn health where limited
32 evidence exists, highlighting the role of targeted PNC within the current UHC context
33 and its operationalization.
- 34 • However, the consultation did not include experts representing Ministries of Health
35 or other government stakeholders as ultimate custodians of a targeted PNC
36 approach.
- 37 • In addition, nearly all experts came from a clinical background, which shaped
38 perspectives shared.
- 39 • The discussion platform did not allow for confidentiality, which could have led to
40 social desirability bias.

49 Introduction

50 Approximately 66% of maternal deaths and 75% of neonatal deaths occur within the first week
51 after delivery.¹ WHO recommends postnatal care (PNC) at a facility, within 24 hours after birth,
52 regardless of place of birth, observation within a facility for at least 24 hours after delivery, and
53 early postnatal home visits by community health workers (CHWs) to complement facility-based
54 PNC.² Efforts to expand coverage of quality, timely, equitable PNC services to all mothers and
55 their newborns directly contribute to the achievement of the 3rd Sustainable Development Goal
56 overall, including to target 3.8, which relates to the attainment of Universal Health Coverage
57 (UHC).^{3,4}

58 Despite an increase in facility delivery, PNC coverage in many low- and middle-income
59 countries (LMICs) remains below 50%.⁵ In many LMICs, observation within a facility for the
60 recommended 24 hours after delivery is challenging. This is in part due to pressure from
61 families to leave after an uncomplicated delivery, lack of staffing and infrastructure for inpatient
62 care, facility opening and closing times and a significant proportion of home deliveries.^{6,7}

63 Evidence from LMICs with high newborn mortality rates demonstrates that early, quality
64 postnatal home visits, within 72 hours after birth, can reduce newborn deaths by between 30-
65 61% through support for healthy postnatal practices and early identification of danger signs
66 and referral.⁸ Yet, in many LMICs, the CHW cadres responsible for conducting home visits are
67 under-resourced and inadequately trained, supervised, and remunerated.⁹ Where high
68 coverage of postnatal home visits is difficult to achieve due to these challenges, as in most
69 LMICs, evidence demonstrates benefit in identifying and providing postnatal home visits to
70 mother – baby dyads who face a higher risk of poor outcomes.¹⁰

71 Risk-stratified PNC approaches aim to identify and prioritize at-risk mother-baby dyads at the
72 facility and at home for early postnatal home visits using evidence-informed criteria to identify
73 those at risk of an adverse outcome.^{11,12} Using these criteria, health providers categorize
74 mother-baby dyads based on risk and proactively create client-specific care plans.¹³ While
75 criteria can be clinical (e.g., medical conditions and complications) or nonclinical (e.g.,
76 sociodemographic, household, environmental factors), most risk stratification efforts have
77 used clinical criteria, and most have focused on risk identification in pregnancy.^{14,15}

78 Evidence from other fields of medicine has shown that a narrow focus using a risk-stratified
79 approach could lead to unintended negative consequences including missing clients with no
80 identifiable risk factors and could create room for stigmatization.^{16,17} Thus, it is crucial to layer

1
2
3 81 the approach on, and integrate it into, existing quality improvement and UHC efforts aiming to
4
5 82 provide quality, timely PNC for all mothers and their newborns.
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7 83 To inform the development and implementation of this approach, an iterative scoping literature
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9 84 review to identify risk criteria for use and an expert consultation were conducted. This paper
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11 85 presents the findings and recommendations from the expert consultation; findings from the
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13 86 scoping review will be published separately.
14

15 87 **Methodology**

16
17 88 To gain a better understanding of the identification and use of risk criteria in the provision of
18
19 89 PNC services, a qualitative approach using a semi-structured virtual group discussion was
20
21 90 used. A team of maternal and newborn health (MNH) experts, drawn from academia,
22
23 91 implementation partners and donors, were invited for a facilitated virtual expert consultation in
24
25 92 April 2021. Participants were selected through purposive sampling based on their ability to
26
27 93 provide in-depth and detailed information on the subject matter (PNC) and context (LMICs)
28
29 94 due to their experience and expertise. The participants were contacted via email. The
30
31 95 consultation aimed to:

- 30 96 1. Review key risk factors, drawn from the literature review, for use at service delivery
31
32 97 points (facility, community) to identify at-risk mother-baby dyads.
- 33 98 2. Identify key considerations to prioritize risk factors and operationalize a risk-stratified
34
35 99 PNC approach.

36 100 A discussion guide was developed in line with the two key objectives, pretested with an MNH
37
38 101 expert who was not part of the consultation and used to facilitate the meeting. The consultation
39
40 102 was held on Zoom™ for ninety minutes and facilitated by two trained researchers who were
41
42 103 not known to the participants. In addition to the researchers and participants, there were two
43
44 104 observers, one note-taker and one person managing the virtual meeting logistics.

45 105 Since the discussion aimed to seek the experts' opinions on a subject matter rather than
46
47 106 information on the experts themselves, it was deemed to be non-human subjects research
48
49 107 and therefore did not require ethical approval. However, verbal consent was sought from the
50
51 108 participants to record the proceedings and use the recordings while ensuring that all
52
53 109 participant information was de-identified. Experts were given the option to opt out of the
54
55 110 recorded session and those who participated provided consent.

56 111 The initial emerging themes were identified during the virtual discussion and summarised at
57
58 112 the end of the consultation by the facilitators and one of the observers. The themes were
59
60 113 shared with the experts via email to elicit any additional reflections. Data saturation was not

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2
3 114 discussed. The audio transcript generated by Zoom™ was used for data analysis with the
4
5 115 audio recording used to correct any errors in the transcript. A deductive approach was used
6
7 116 to code the data along the initial themes and to assess for any new emerging themes after
8
9 117 which thematic analysis was conducted. Further exploration of the initial themes and new
10
11 118 emerging themes was conducted by the full research team.

12 119 **Findings**

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15 120 Of the twenty-one invited MNH experts, seventeen participated in the consultation. Five of the
16
17 121 participants were male. For two of the non-participants, the reason given was unavailability
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19 122 during the identified time slot due to prior commitments while one was on leave and was not
20
21 123 able to participate. Two did not respond to the invite. The findings are presented along the key
22
23 124 themes that emerged from the data.

24 125 **1. Reflection on risk factors identified from the literature review**

25
26 126 The risk factors identified from the iterative, scoping literature review were presented for the
27
28 127 experts to reflect on and to identify additional factors based on their research and experience.
29
30 128 The scoping review focused on population-based studies and excluded hospital-based studies
31
32 129 and therefore the criteria identified were non-clinical rather than the clinical risk factors
33
34 130 traditionally used to screen for risk.

35
36 131 An adapted version of the Mosley and Chen framework was used for the scoping review.¹⁸ In
37
38 132 the framework, distant factors are the broader socioeconomic factors at individual, household,
39
40 133 or community level such as education, wealth status and residence. These act through the
41
42 134 proximate causes that are primarily bio-behavioural factors related to the mother and/or
43
44 135 neonate such as maternal age, birthweight and utilization of health services that are more
45
46 136 directly linked to observed clinical manifestations such as infection or bleeding which led to
47
48 137 death.

47 **Textbox 1: Factors associated with poor outcomes for mothers and newborns in the** 48 **postnatal period**

49
50 Proximate factors include maternal age (<20, >35), primiparity and grand multiparity, shorter birth
51
52 intervals, first order/rank neonates, male neonates, birth weight (smaller and larger than average),
53
54 multiple gestation, previous history of death of child aged less than 5 years, and lack of or
55
56 inadequate antenatal care

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58 Distant factors include low levels of parental education (lower than primary level education),
59
60 parental employment (no employment or informal employment), rural residence, low household
income, use of solid fuels and lack of clean water

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3 138 According to the experts, the risk factors presented have been known to the MNH community
4
5 139 for decades, yet they still played a significant role in influencing maternal and neonatal
6
7 140 outcomes in the postnatal period. This raised the importance of expanding initiatives that
8
9 141 address and eliminate these risk factors, such as promoting female education, economic
10
11 142 empowerment and addressing factors that lead to early childbearing including child marriage,
12
13 143 in addition to applying them for screening purposes.

14 144 *'These require generic interventions so some of the interventions and approaches for*
15 145 *those risk drivers are not restricted or limited to the specific risk periods that we are*
16 146 *taught, and we have spoken about. There are things that can be part of broad*
17 147 *packages of care and just ensuring that you have delivery platforms that can address*
18 148 *them.'* **Participant 13, M.**

19
20
21
22 149 Additionally, they identified the role of broader, emerging issues such as climate change,
23
24 150 conflict, displacement, and disease outbreaks and their resultant effect in aggravating the
25
26 151 proximate and distant risk factors which pushes a larger proportion of mother-baby dyads into
27
28 152 the risk categories.

29
30 153 *'Conflict is one that jumps out to me. Forty percent of the current global burden of*
31 154 *maternal newborn adverse outcomes, from our conservative estimation, are related*
32 155 *conflicts settings including populations on the move. The risks [in these settings] are*
33 156 *very different to the way we look at the those in stable circumstances.'* **Participant 13,**
34
35 157 **M.**

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39 158 **2. Key considerations for the prioritization of risk factors and operationalization of a risk-**
40 159 **stratified PNC approach**

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44 161 **a) Framing risk-stratified PNC approaches in the context of universal health coverage**

45
46 162 Achieving UHC for PNC means providing quality, timely, accessible, equitable services for all
47
48 163 mother-baby dyads, regardless of place of birth. Thus, it is critical to understand how a PNC
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50 164 approach that prioritises a sub-set of mothers and babies contributes to—or detracts from—
51
52 165 these aims. There were mixed reactions from the participants on the role of the risk-stratified
53
54 166 PNC approaches within the context of achieving PNC coverage for all.

55 167 *'We've been wondering whether focused approach and risk-stratified approach for the*
56 168 *babies at most risk would be a more efficient way of doing it because our universal*
57
58 169 *approach as you know, has been very challenging. It would be important to discuss*
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3 170 *this risk stratified approach but at the same time, you know balancing the universal*
4 171 *approach, I think, somehow being able to do both will be important.'* **Participant 3, F.**
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7 172 However, the experts agreed that the journey towards achieving UHC is incremental and
8 173 equity-focused, creating opportunities for risk-stratified PNC approaches that identify and
9 174 prioritise those already facing poorer outcomes.

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13 175 A risk-stratified PNC approach still relies on a strengthened health system that can provide
14 176 optimal PNC services for all mothers and their newborns. According to participants, a risk-
15 177 stratified approach would require strengthened provider capacity in PNC; adequate supply of
16 178 essential medicines and equipment; strong referral systems including community follow-up;
17 179 timely, reliable, quality data for risk screening; functional monitoring systems to assess
20 180 functionality of the risk-stratified PNC approach and the provision of respectful, dignified care.

21
22
23 181 *'If you are looking at this risk factor I go back to the skills. Do they know how to identify*
24 182 *this woman who is at risk, do they know how to deal with a woman who is at risk?'*
25 183 **Participant 15, F.**
26
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29 184 *'There are so many things that's tied to it [risk screening] like data to screen and to*
30 185 *track morbidity and outcomes....and then the women's experience of care, and often*
31 186 *that's forgotten...'* **Participant 12, F.**
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35 187 *I was thinking, one of the things that needs to be taken into consideration is what exists*
36 188 *in terms of the community health system...so that probably is going to guide us in what*
37 189 *can be done in terms of approaches.'* **Participant 6, F.**
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41 190 One expert emphasised the need for robust data for accurate screening and outcome tracking
42 191 which could pose a significant challenge to implementation in many LMICs due to weak data
43 192 systems. The expert noted that data availability also informs the refinement of the approach
44 193 through a continuous review of those identified as at-risk and those with no identifiable risk
45 194 factors who later develop complications.

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49 195 **b) Framing risk-stratified early postnatal home visits in the context of rising coverage of facility**
50 196 **delivery**
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54 197 A benefit of the risk-stratified PNC approach is to prioritise limited community-level resources
55 198 towards early postnatal home visits for at-risk mother-baby dyads. The rising coverage of
56 199 facility deliveries and the missed opportunities for providing quality early PNC at facility level
57 200 led to questions on whether a community-based risk-stratified PNC approach was still relevant
58 201 and if more emphasis ought to be placed on quality PNC at facility level.

202 Despite the rising global coverage of facility delivery, participants noted that a significant
203 proportion of mothers still deliver at home in many LMICs, and many of those who deliver in a
204 facility are discharged before the recommended 24 hours. Again, some categories of at-risk
205 mother-baby dyads such as adolescent mothers or mothers with small and sick newborns will
206 still require postnatal home visits even with strengthened, quality PNC services at facility level.

207 *'I think, personally, facility delivery is increasing and there are a lot of issues at facility*
208 *level. I think, ideally, we should focus on improving the quality of services provided to*
209 *mother and baby at facility level... increasingly I think what we really need is a strategy*
210 *that addresses quality at the facility.'* **Participant 1, M.**

211 *"I think we are seeing more and more women deliver in the facility, but we are not*
212 *seeing a reduction in [postnatal] mortality due to quality issues. If we could improve*
213 *the quality of care during childbirth and have those who are at risk stay longer, we may*
214 *see a return on investment in saving mothers and newborns lives.'* **Participant 14, F.**

215 **c) Selection of risk factors and timing of screening**

216 According to the experts, there is value in using both clinical and non-clinical risk factors in a
217 screening approach. They, however, noted that the challenges of their operationalization may
218 be why risk screening approaches have used clinical factors. For example, several of the
219 factors identified are difficult to use for rapid screening at service delivery point by a health
220 provider and could create stigma or embarrassment (e.g., household income). Some clinical
221 risks can also be challenging to use in rapid screening (e.g., body mass index). Selecting both
222 clinical and non-clinical risks factors based on feasibility of use at service delivery level could
223 address the challenge.

224 *'And yes, I do agree that, in addition to the clinical aspects of the risk factor, also*
225 *looking at the other determinants like socio-economic elements that put a baby at risk,*
226 *I think, are important also to include. Again, balancing all of this, you know so that it's*
227 *programmable—that is the biggest challenge.'* **Participant 3, F.**

228
229 *'May I suggest start with a clinical approach defined by context...'* **Participant 13, M.**

230 The targeted PNC approach proposes the assessment of risk after birth. However, some of
231 the identified risk factors are either already present or manifest during pregnancy. Therefore,
232 experts emphasised on the importance of conducting the screening during the first contact in
233 pregnancy to identify and, where possible, address these risk factors as early as possible to
234 improve outcomes through pregnancy and into the postpartum period.

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3 235 **d) Mitigating negative unintended consequences**
4

5 236 The participants emphasised that every pregnancy is a high-risk event and many mothers and
6 237 babies who develop complications in the postnatal period lack identifiable risk factors.
7 238 Therefore, a risk-stratified approach approaches must be nested within PNC strengthening
8 239 initiatives so that the broader system acts as the safety net that catches those without
9 240 identifiable risk factors and, thus, do not meet the screening criteria.

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14 241 *'Certainly, risk stratification is crucial and being able to identify moms and babies, who*
15 242 *are more likely to have poor outcomes. I think we also know that sometimes those poor*
16 243 *outcomes come from nowhere for both the mother and the baby. I feel like we need to*
17 244 *consider also what a dual strategy is so that there is a specific strategy that deals with*
18 245 *the mothers and babies who are more at risk and more likely to have those poor*
19 246 *outcomes. And then, a broader based community strategy that can detect those issues*
20 247 *that seem to come from nowhere for mothers and babies who do not appear to have*
21 248 *any risk factors, but then subsequently develop significant issues.'* **Participant 10, F.**

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28 249 As one expert noted, improvements in overall quality and use of PNC by all women, including
29 250 those not identified as at-risk, have been seen in areas where risk-stratified PNC approaches
30 251 were used, highlighting the potential of a knock-on effect with implications for strengthening
31 252 PNC for all women. This points towards a potential inherent risk mitigation factor that should
32 253 be studied further.

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36
37 254 *'What was found in one study is by initially concentrating on that risk stratification that*
38 255 *indeed it led to improvements in PNC numbers, quality, and content overall, so you*
39 256 *know again that kind of speaks to the theory of by concentrating on one aspect all*
40 257 *boats rise...'* **Participant 6, F.**

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44 258 **Discussion**
45

46 259 Timely and quality postnatal care is increasingly recognized as critical for mothers and their
47 260 newborns. Yet in many LMICs, PNC coverage remains stubbornly low despite increased
48 261 facility delivery. While prior risk stratification efforts have sought to identify and prioritize at-
49 262 risk mothers during pregnancy,^{19,20} limited efforts have targeted at-risk mother-baby dyads
50 263 during the postnatal period.²¹ The findings of this expert consultation underscore the potential
51 264 contribution of identifying at-risk mother-baby dyads based on clinical and non-clinical risk
52 265 criteria to broader UHC efforts and raise key considerations for the operationalization of risk-
53 266 stratified PNC approaches.

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3 267 Given the risk of stigma resulting from labelling mothers and newborns as 'at-risk,' the term
4 268 'targeted PNC' may be more suitable for real-world application than 'risk stratified PNC' and
5 269 is thus used throughout this discussion.
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9 270 The expert consultation concluded that concurrent efforts are needed to target coverage of
10 271 PNC to those most at-risk of adverse outcomes, while improving quality of and access to PNC
11 272 to meet the increasing coverage of facility delivery. Through providing an equity lens to guide
12 273 systematic identification of those most vulnerable to poor postnatal outcomes, targeted PNC
13 274 should be considered a contribution—not an alternative—to UHC efforts.
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17
18 275 The expert consultation concluded that targeted PNC should be considered and provided in
19 276 the presence of certain conditions. First, targeted PNC is only appropriate in the context of
20 277 efforts to strengthen the timing and quality of facility PNC, including pre-discharge PNC, for all
21 278 mother-baby dyads. This allows for identification and timely service provision for those who
22 279 develop complications in the absence of identifiable risk factors. Community-based provider
23 280 cadres must be sufficiently resourced (sufficient numbers to achieve population coverage) and
24 281 supported (through training and supportive supervision)²² to allow for adequate counselling for
25 282 caregivers on identification of dangers signs and immediate care-seeking, timely identification
26 283 and outreach to at-risk mother-baby dyads who later develop complications and rapid referral.
27 284 Second, monitoring systems, which often include limited data related to PNC,²³ must be
28 285 strengthened allow both timely identification of mother-baby dyads meeting established risk
29 286 criteria, and proactive tracking, identification, and resolution of any unintended consequences.
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38 287 Implementing a targeted PNC approach nested within broader equity-based UHC efforts
39 288 entails consideration of how limited resources can be most effectively and efficiently targeted
40 289 to those most likely to benefit. Exploration of several key considerations through robust country
41 290 learning agendas is needed. First, decisions of which mother-baby dyads should be targeted
42 291 should be guided by identification of risk factors comprising both clinical and non-clinical
43 292 predictors of poor outcomes. While clinical risk factors may more feasibly identifiable, evidence
44 293 demonstrates that non-clinical factors may be equally important to consider; for example,
45 294 McCarthy et al found that mothers with higher household wealth were more likely to receive a
46 295 postnatal home visit than women in poorer households.²⁴ Evidence-based risk criteria for both
47 296 facility- and community-based providers must be determined with consideration of both
48 297 contextual relevance and feasibility of operationalization.
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57 298 Next are considerations of how to operationalize selected evidence-informed clinical and non-
58 299 clinical risk factors by facility and community providers. The timing of risk identification merits
59 300 further consideration (i.e., some factors may be identifiable during pregnancy, while others
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3 301 manifest only following delivery). Clear and feasible guidance on actions to be taken for
4 302 mother-baby dyads meeting risk criteria is needed and must be developed with careful
5 303 consideration of the implications for provider workload and motivation, client flow, and facility
6 304 infrastructure capacity. In addition to tailored criteria, the identification mechanisms and
7 305 associated actions for mother-baby dyads identified to meet risk criteria will need to be
8 306 differentiated for facility- and community-based providers.

13
14 307 Increasingly, the role of service quality, including respectful treatment at facilities, is
15 308 recognised as a factor to initiation and continuation of service use.^{25,26} Given the vulnerability
16 309 of at-risk mother-baby dyads, particularly those with identified non-clinical risks (e.g.,
17 310 adolescent mothers, those with low socio-economic status), efforts to increase accessibility
18 311 and ensure respectful care at all levels of the health system are particularly critical elements
19 312 of broader UHC efforts. Unintended consequences of a targeted PNC approach—positive and
20 313 negative impacts on the health system and on health outcomes—must be assessed,
21 314 monitored continuously, and addressed.

27
28 315 Notably, broader efforts are needed to reduce prevalence of underlying clinical and non-
29 316 clinical risk factors that contribute to poor maternal and newborn outcomes.²⁷ Mitigating the
30 317 non-clinical risk factors will require a multi-sectoral effort beyond the health system. Further
31 318 efforts are needed to deepen understanding of how issues such as climate change, conflict,
32 319 displacement, and disease outbreaks may confound the proximate and distant risk factors.

36
37 320 This consultation has several limitations. The expert consultation invited perspectives of a
38 321 small number of global and country experts. While care was taken to ensure diversity of
39 322 experts' sex, organisation affiliation, and country of origin, perspectives of other relevant
40 323 stakeholders are not represented. Importantly, no experts represented Ministries of Health or
41 324 other government stakeholders as ultimate custodians of a targeted PNC approach. In
42 325 addition, nearly all experts came from a clinical background, which shaped perspectives
43 326 shared. The discussion did not allow for confidentiality, which could have led to social
44 327 desirability bias.

49 328 **Conclusion**

51
52 329 Targeted community-based PNC approaches, nestled within broader efforts to strengthen
53 330 quality PNC services including pre-discharge PNC, could improve outcomes for mother-baby
54 331 dyads most at-risk of morbidity and mortality during the postnatal period. This paper makes
55 332 the following key points:

- 58 333 ● Efforts are needed to increase coverage of quality, timely PNC to mother-baby dyads
59 334 most at risk of poor health outcomes in the postnatal period while advancing progress

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2
3 335 toward universal coverage of quality PNC. A targeted PNC approach is one way of
4 achieving this.
5 336
6 337 ● Targeted PNC approaches should be considered in tandem with and layered on
7 complementary efforts aiming to strengthen the coverage, timing, and quality of facility
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12 342 ● Evidence-based clinical and non-clinical factors for use to assess risk should be
13 selected based on key considerations including application to the context and
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15 344 community.
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17 346 ● Context specific evidence is required to deepen insights into the feasibility and
18 operationalizability of clinical and non-clinical risk factors in a real-world setting;
19 347 capacity of the health system to support a targeted PNC approach while offering quality,
20 348 timely PNC services for all mothers and their babies; and unintended consequences
21 349 (both positive and negative) of a targeted PNC approach.
22 350
23 351

352 **Author contributions**

353 The authors confirm contribution as follows:

354 **AM** contributed to the design and implementation of the expert consultation,
355 conceptualization, secondary data analysis and manuscript writing. AM is a clinician,
356 researcher, and a public health expert with 15 years' experience in maternal, newborn and
357 adolescent health.

358 **MY** contributed to the design and implementation of the expert consultation,
359 conceptualization, and manuscript writing. MY is a public health expert and researcher with
360 expertise in adolescent and youth health including postnatal care for first time adolescent
361 and young mothers.

362 **MK** contributed to the design and implementation of the expert consultation (including as co-
363 facilitator for the virtual group discussion), data analysis, and critical review and feedback.
364 MK is a clinician, public health expert and researcher with 16 years' experience in research,
365 evaluation, and health policy.

366 **JJ** contributed to the design and implementation of the expert consultation,
367 conceptualization of the manuscript and critical review and feedback. JJ is a clinician, public
368 health expert and researcher with over 35 years' experience in maternal and newborn
369 health.

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3 370 **PI** contributed to the design and implementation of the expert consultation (including as co-
4 371 facilitator for the virtual group discussion), data analysis, and critical review and feedback. PI
5 372 is a clinician, public health expert and researcher.
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7

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22 380 reflect positions or policies of the Bill & Melinda Gates Foundation.
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25 26 381 **Patient involvement**

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28 382 No patients or members of the public were involved in the design, or conduct, or reporting, or
29 383 dissemination plans of the research.
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32 33 384 **Conflicts of Interest**

34
35 385 Having read and understood the [BMJ policy on declaration of interests](#), the authors have no
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Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
<i>Personal characteristics</i>			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	
Occupation	3	What was their occupation at the time of the study?	
Gender	4	Was the researcher male or female?	
Experience and training	5	What experience or training did the researcher have?	
<i>Relationship with participants</i>			
Relationship established	6	Was a relationship established prior to study commencement?	
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	
Domain 2: Study design			
<i>Theoretical framework</i>			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	
<i>Participant selection</i>			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	
Sample size	12	How many participants were in the study?	
Non-participation	13	How many people refused to participate or dropped out? Reasons?	
<i>Setting</i>			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	
<i>Data collection</i>			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	
Field notes	20	Were field notes made during and/or after the interview or focus group?	
Duration	21	What was the duration of the interviews or focus group?	
Data saturation	22	Was data saturation discussed?	
Transcripts returned	23	Were transcripts returned to participants for comment and/or	

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
<i>Data analysis</i>			
Number of data coders	24	How many data coders coded the data?	
Description of the coding tree	25	Did authors provide a description of the coding tree?	
Derivation of themes	26	Were themes identified in advance or derived from the data?	
Software	27	What software, if applicable, was used to manage the data?	
Participant checking	28	Did participants provide feedback on the findings?	
<i>Reporting</i>			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	
Data and findings consistent	30	Was there consistency between the data presented and the findings?	
Clarity of major themes	31	Were major themes clearly presented in the findings?	
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**On the road to universal coverage of postnatal care:
Considerations for a targeted postnatal care approach for
at-risk mother-baby dyads in low- and middle-income
countries informed by a consultation with global experts**

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Analysis

On the road to universal coverage of postnatal care: Considerations for a targeted postnatal care approach for at-risk mother-baby dyads in low- and middle-income countries informed by a consultation with global experts

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KEY MESSAGES

- Efforts are needed to increase coverage of quality, timely postnatal care (PNC) to mother-baby dyads most at risk of poor health outcomes in the postnatal period while advancing progress toward universal coverage of quality PNC. A targeted PNC approach is one way of achieving this.
- Targeted community-based PNC approaches must be considered in tandem with and layered on complementary efforts aiming to strengthen the coverage, timing, and quality of facility PNC for all mother-baby dyads rather than as stand-alone

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5 for mother-baby dyads who develop complications without identifiable risk factors.
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- 10 ● Evidence-based clinical and non-clinical factors for use to assess risk should be
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13 community.
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 - 15 ● Context-specific evidence is required to deepen insights into the feasibility and
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18 quality, timely PNC services for all mothers and their babies; and unintended
19 consequences (both positive and negative) of a targeted PNC approach.
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28 **Contributors and sources**

29 The authors confirm contribution as follows:

30 **AM** contributed to the design and implementation of the expert consultation,
31 conceptualization, secondary data analysis and manuscript writing. AM is a clinician,
32 researcher and a public health expert with 15 years' experience in maternal, newborn and
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46 **PI** contributed to the design and implementation of the expert consultative workshop, data
47 analysis, and critical review and feedback. PI is a clinician, public health expert and
48 researcher.

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8
9 52 conclusions contained within are those of the authors and do not necessarily reflect positions
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11 53 or policies of the Bill & Melinda Gates Foundation.

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13 **55 Patient involvement**

14 56 No patients were involved

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17 **58 Conflicts of Interest**

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19 59 Having read and understood [BMJ policy on declaration of interests](#), the authors have no
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21 60 conflict of interest to declare.

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3 70 **Abstract:**

4 71 **Introduction:** The potential of timely, quality postnatal care (PNC) to reduce maternal and
5 72 newborn mortality and to advance progress toward Universal Health Coverage (UHC) is well-
6 73 documented. Yet, in many low- and middle-income countries, coverage of PNC remains low.
7
8 74 Risk-stratified approaches can maximize limited resources by targeting mother-baby dyads
9 75 meeting the evidence-based risk criteria which predict poor postnatal outcomes.

10
11 76 **Objectives:** To review evidence-based risk criteria for identification of at-risk mother-baby
12 77 dyads, drawn from a literature review, and to identify key considerations for their use in a risk-
13 78 stratified PNC approach.

14 79 **Design/setting/participants:** A virtual, semi-structured group discussion was conducted with
15 80 maternal and newborn health experts on Zoom™. Participants were identified through
16 81 purposive sampling based on content and context expertise.

17 82 **Results:** Seventeen experts, (5 male, 12 female), drawn from policymakers, implementing
18 83 agencies and academia participated and surfaced several key themes. The identified risk
19 84 factors are well-known, necessitating accelerated efforts to address underlying drivers of risk.
20 85 Risk-stratified PNC approaches complement broader UHC efforts by providing an equity lens
21 86 to identify the most vulnerable mother-baby dyads. However, these should be layered on
22 87 efforts to strengthen PNC service provision for all mothers and newborns. Risk factors should
23 88 comprise context-relevant, operationalizable, clinical and non-clinical factors. Even with rising
24 89 coverage of facility delivery, targeted postnatal home visits still complement facility-based PNC.
25 90 **Conclusion:** Risk-stratified PNC efforts must be considered within broader health systems
26 91 strengthening efforts. Implementation research at the country level is needed understand
27 92 feasibility and practicality of clinical and non-clinical risk factors and identify unintended
28 93 consequences.
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Strengths and limitations of this study

- A major strength of this study is the depth and breadth of expertise of the participants in PNC, each bringing a combination of clinical, research, policy, and implementation skills across multiple low-and-middle-income countries.
- The consultation brought together experts, many of whom had engaged in parallel discussions around the topic, with the aim of advancing consensus on the role of a targeted PNC approach, and the key considerations of such an approach.
- However, the consultation included a limited number of global experts and did not include mothers, service providers, or experts representing Ministries of Health or other government stakeholders as ultimate custodians of a targeted PNC approach.
- In addition, nearly all experts came from a clinical background, which shaped perspectives shared.
- The discussion platform did not allow for confidentiality, which could have led to social desirability bias.

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4 **targeted postnatal care approach for at-risk mother-baby dyads in low- and**
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13 100 *Angela Muriuki and colleagues argue that there is a critical role for targeted postnatal care*
14 *(PNC) approaches that prioritise mother-baby dyads who are at risk of poorer outcomes in*
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106 **Introduction**

107 Approximately 66% of maternal deaths and 75% of neonatal deaths occur within the first week
108 after delivery.¹ WHO recommends postnatal care (PNC) at a facility, within 24 hours after birth,
109 regardless of place of birth, observation within a facility for at least 24 hours after delivery, and
110 early postnatal home visits (PNHVs) by community health workers (CHWs) to complement
111 facility-based PNC.² Despite an increase in facility delivery, PNC coverage in many low- and
112 middle-income countries (LMICs) remains below 50%.³ In many LMICs, observation within a
113 facility for 24 hours after delivery is challenging. This is in part due to pressure from families
114 to leave after an uncomplicated delivery, lack of staffing and infrastructure for inpatient care,
115 facility opening and closing times and a significant proportion of home deliveries.^{4,5}

116 Evidence from LMICs with high newborn mortality rates demonstrates that early, quality
117 PNHVs, within 72 hours after birth, can reduce newborn deaths by between 30-61% through
118 support for healthy postnatal practices and early identification of danger signs and referral.⁶
119 Yet high coverage of PNHVs is difficult to achieve in most LMICs, particularly due to limited
120 coverage of CHW cadres.⁷

121 However, where adequate human resources are made available, evidence demonstrates
122 benefit in identifying and providing risk-stratified PNHVs to mother-baby dyads.⁸ Such an
123 approach would identify and prioritize at-risk mother-baby dyads at the facility and at home for
124 early PNHVs using evidence-informed criteria to identify those at risk of an adverse outcome.
125 ^{9,10} Criteria can be clinical (e.g., medical conditions and complications) or nonclinical (e.g.
126 sociodemographic, household, environmental factors). Using these criteria, health providers
127 categorize mother-baby dyads based on risk and proactively create client-specific care
128 plans.¹¹ A limited number of nascent program experiences have provided initial results and

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3 129 lessons,¹² buttressed by a review of PNHV approaches that identified the need for “specifically
4 130 targeting high-risk mothers and newborns for PNHVs, rather than using a ‘blanket approach’
5 131 that attempts to reach all mothers and newborns”.¹³ Yet the overall field lacks consensus
6 132 around the need for a risk-stratified PNC approach, and the essential considerations for such
7 133 an approach. Further, evidence from other fields of medicine has shown that a narrow focus
8 134 using a risk-stratified approach could lead to unintended negative consequences including
9 135 missing clients with no identifiable risk factors and potential for stigmatization.^{14,15}

14
15 136 To inform the development and implementation of a risk-stratified PNC approach in LMICs, an
16 137 iterative scoping literature review to identify risk criteria and an expert consultation were
17 138 conducted. This paper presents the findings and recommendations from the expert
18 139 consultation; findings from the scoping review will be published separately.

140 **Methodology**

141 A team of maternal and newborn health (MNH) experts, selected for their PNC expertise and
142 drawn from academia, implementation partners and donors, were invited for a facilitated virtual
143 expert consultation in April 2021. The consultation aimed to:

- 144 1. Review key risk factors, drawn from the literature review, for use at service delivery
145 point (facility, community) to identify at-risk mother-baby dyads.
- 146 2. Identify key considerations to prioritize risk factors and operationalize a risk-stratified
147 PNC approach.

148 A discussion guide was developed in line with the two key objectives, pretested with an MNH
149 expert who was not part of the consultation and used to facilitate the meeting. Discussion
150 questions were high-level to encourage engagement:

- 151 1. In your experience, what are the major risk factors, both proximate and distal, that
152 predict poor outcomes in the postnatal period for both mother and baby?
- 153 2. What key issues or considerations should be taken into account when selecting risk
154 factors for use in a risk stratification approach in different contexts?

155 The consultation was held on Zoom™ for ninety minutes. Consent was sought from the
156 participants to record the proceedings and use the recordings while ensuring that all
157 participant information was de-identified. An inductive analysis process was used, and data
158 were coded into emerging themes following transcription.

159

160 **Findings**

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3 161 Sixteen MNH experts participated in the consultation. The discussion mainly explored key
4 162 considerations for prioritization and operationalization. The findings are presented along the
5 163 key themes that emerged during the discussion.

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9 164 **Risk factors identified from the literature review**

10 165 The risk factors identified from the iterative scoping literature review¹ (Textbox 1) were
11 166 presented for the experts to reflect on and identify any additional factors based on their
12 167 research and experience.

16
17 **Textbox 1: Factors associated with poor outcomes for mothers and newborns in the**
18 **postnatal period (full list is presented in the scoping review paper)**

19 Proximate factors include maternal age (<20, >35), primiparity and grand multiparity, shorter birth
20 intervals, first order/rank neonates, male neonates, birth weight (smaller and larger than average),
21 multiple gestation, previous history of death of child <5 years, and lack of or inadequate antenatal
22 care
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24 Distant factors include low levels of parental education (lower than primary), parental employment
25 (no employment or informal employment), rural residence, low household income, use of solid fuels
26 and lack of clean water
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29 168
30 169 The risk factors presented have been known to the MNH community for decades. The
31 170 participants raised the importance of strengthening initiatives that address and eliminate these
32 171 risk factors in addition to applying them for screening purposes. Additionally, they identified
33 172 the role of broader, emerging issues such as climate change, conflict, displacement, and
34 173 disease outbreaks in aggravating the proximate and distant risk factors which puts a larger
35 174 proportion of mother-baby dyads at risk.

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41 175 **Key considerations for the operationalization of a risk-stratified PNC approach**

42 176 **a) Framing risk-stratified PNC approaches in the context of universal health coverage**

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44 177 Achieving universal health coverage (UHC) for PNC means providing quality, timely,
45 178 accessible, equitable services for all mother-baby dyads, regardless of place of birth. Thus, it
46 179 is critical to understand how a PNC approach that prioritises a sub-set of mothers and babies
47 180 contributes to these aims. The journey towards achieving UHC is incremental and equity-
48 181 focused, creating opportunities for risk-stratified PNC approaches that identify and prioritise
49 182 those already facing poorer outcomes.

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58 ¹ The scoping review focused on population-based studies and excluded hospital-based studies and therefore
59 the criteria identified were mainly non-clinical rather than the clinical risk factors traditionally used to screen for
60 risk.

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3 183 A risk-stratified PNC approach still requires a strengthened health system that can provide
4 184 optimal PNC services, as the selected quotes in Textbox 2 illustrate. This includes
5 185 strengthened provider capacity in PNC; adequate supply of essential medicines and
6 186 equipment; strong referral systems including community follow-up; timely, reliable, quality data
7 187 for risk screening; functional monitoring systems to assess functionality of the risk-stratified
8 188 PNC approach and the provision of respectful, dignified care.

13 **Textbox 2: Selected quotes from participants on framing risk stratified approaches within**
14 **the context of UHC**

17 *'we've been wondering whether focused approach and risk-stratified approach for the babies at*
18 *most risk would be a more efficient way of doing it because our universal approach as you know,*
19 *has been very challenging. It would be important to discuss this risk stratified approach but at the*
20 *same time, you know balancing the universal approach, I think, somehow being able to do both will*
21 *be important.'* **Participant 3, F**

25 *'If you are looking at this risk factor I go back to the skills. Do they know how to identify this woman*
26 *who is at risk, do they know how to deal with a woman who is at risk?'* **Participant 15, F**

29 *'There are so many things that's tied to it [risk screening] like data to screen and to track morbidity*
30 *and outcomes....and then the women's experience of care, and often that's forgotten....'*
31 **Participant 12, F**

34 189

36 190 **b) Framing risk-stratified early PNHVs in the context of rising coverage of facility delivery**

39 191 A benefit of the risk-stratified PNC approach is to prioritise limited community-level resources
40 192 towards early PNHVs for at-risk mother-baby dyads. The rising coverage of facility deliveries
41 193 and the missed opportunities to provide quality early PNC at facility level raised questions on
42 194 whether a community-based risk-stratified PNC approach is still relevant and if more emphasis
43 195 should be placed on quality facility-level PNC.

48 196 Despite the rising global coverage of facility delivery, a significant proportion of mothers still
49 197 deliver at home in many LMICs, and many are discharged before the recommended 24 hours.
50 198 Again, some categories of at-risk mother-baby dyads such as adolescent mothers or mothers
51 199 with small and sick newborns will still require PNHVs even with strengthened, quality PNC
52 200 services at facility level. Textbox 3 provides select expert quotes that illustrate this point.

56 201

Textbox 3: Selected quotes from participants on framing early postnatal home visits in the context of rising coverage of facility delivery.

'I think, personally, facility delivery is increasing and there are a lot of issues at facility level. I think, ideally, we should focus on improving the quality of services provided to mother and baby at facility level... increasingly I think what we really need is a strategy that addresses quality at the facility,'

Participant 1, M

"I think we are seeing more and more women deliver in the facility, but we are not seeing a reduction in [postnatal] mortality due to quality issues. If we could improve the quality of care during childbirth and have those who are at risk stay longer, we may see a return on investment in saving mothers' and newborns' lives,' **Participant 14, F**

c) Selection of type of risk factors to use in a screening approach

203 There is value in including non-clinical risk factors in a screening approach. However, the
204 challenges of their operationalization may be the reason why risk screening approaches have
205 largely used clinical factors. For example, several of the factors identified are difficult to use
206 for rapid screening at service delivery point by a health provider and could create stigma or
207 embarrassment (e.g., household income). Some clinical risks can also be challenging to use
208 in rapid screening (e.g., body mass index).

209 A tiered approach that begins with clinical risk factors, which are more acceptable and easier
210 to use, and then includes the non-clinical risks could mitigate this challenge. Alternatively,
211 selecting both clinical and non-clinical risks factors based on ease of use at service delivery
212 level could address the challenge. Textbox 4 provides select quotes that illustrate this point.

Textbox 4: Selected quotes from participants on selection of risk factors for use.

'And yes, I do agree that, in addition to the clinical aspects of the risk factor, also looking at the other determinants like socio-economic elements that put a baby at risk, I think, are important also to include. Again, balancing all of this, you know so that it's programmable—that is the biggest challenge,' **Participant 3, F.**

'May I suggest start with a clinical approach defined by context...,' **Participant 13, M.**

'I like that idea of a tiered approach because starting with all the factors including the socioeconomic ones can be very difficult, so the suggestion of a tiered approach would work well.' **Participant 6, F.**

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3 214 **d) Mitigating negative unintended consequences**
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5 215 Every pregnancy is a high-risk event. Many mothers and babies who develop complications
6
7 216 in the postnatal period lack identifiable risk factors, and a risk-stratified approach should also
8
9 217 rapidly identify and manage them. Risk-stratified PNC approaches must be nested within PNC
10
11 218 strengthening initiatives so that the broader system acts as the safety net that catches those
12
13 219 without identifiable risk factors and, thus, do not meet the screening criteria.

14 220 As one expert noted, improvements in overall quality and use of PNC by all women, including
15
16 221 those not identified as at-risk, have been seen in areas where risk-stratified PNC approaches
17
18 222 were used, highlighting the potential of a knock-on effect with implications for strengthening
19
20 223 PNC for all women. As illustrated by the selected quotes in Textbox 5, this points towards a
21
22 224 potential inherent risk mitigation factor that should be studied further.
225

24 **Textbox 5: Selected quotes from participants on mitigating negative unintended
25 consequences**

26
27
28 *'Certainly risk stratification is crucial and being able to identify moms and babies, who are more
29 likely to have poor outcomes. I think we also know that sometimes those poor outcomes come from
30 nowhere for both the mother and the baby. I feel like we need to consider also what a dual strategy
31 is so that there's a specific strategy that deals with the mothers and babies who are more at risk
32 and more likely to have those poor outcomes. And then, a broader based community strategy that
33 can detect those issues that seem to come from nowhere for mothers and babies who don't appear
34 to have any risk factors, but then subsequently develop significant issues,'* **Participant 10, F**

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40 *'What was found in one study is by initially concentrating on that risk stratification that indeed it led
41 to improvements in PNC numbers, quality and content overall so you know again that kind of speaks
42 to the theory of by concentrating on one aspect all boats rise...'* **Participant 6, F**
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46 227 **Discussion**

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48 228 Timely and quality postnatal care is critical for mothers and newborns. Yet in LMICs, PNC
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50 229 coverage remains stubbornly low¹⁶ despite increased facility delivery. Prior risk stratification
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52 230 efforts have sought to identify and prioritize at-risk mothers during pregnancy.^{17,18} Yet limited
53
54 231 efforts have targeted at-risk mother-baby dyads during the postnatal period,¹⁹ and little global
55
56 232 consensus around the need for a risk-stratified PNC approach, and the considerations for such
57
58 233 an approach, exists. Given the risk of stigma resulting from labelling mothers as “at-risk”, the
59
60 234 term “targeted PNC” may be more suitable for real-world application than “risk stratification”
235 and is thus used throughout this discussion.

236

237 The expert consultation concluded that concurrent efforts are needed to target coverage of
238 PNC to those most at risk of adverse outcomes, while improving quality of PNC to meet the
239 increasing coverage of facility delivery. Through providing an equity lens to guide systematic
240 identification of those most vulnerable to poor postnatal outcomes, targeted PNC should be
241 considered a contribution—not an alternative—to UHC efforts. PNC approaches targeting
242 those most at-risk of mortality in the postnatal period also contributes to the attainment of the
243 3rd Sustainable Development Goal.

244

245 We suggest that targeted PNC can be advanced in parallel, and as a contribution, to UHC
246 efforts. In the short term, community-based provider cadres must be sufficiently resourced and
247 staffed to allow screening of all mother-baby dyads, adequate counselling on danger signs,
248 timely identification and outreach to at-risk mother-baby dyads, and rapid identification and
249 referral for those who later develop complications. In the medium term, universal coverage of
250 PNHVs can only be achieved when CHW-to-household ratios are fully adequate, and
251 transportation is available for CHWs to reach assigned households; this requires advocacy
252 with government to deepen investments in CHWs. Targeted PNHVs would be phased out as
253 an adequate CHW-to-household ratio is reached and blanket PNHV coverage can be
254 achieved. Longer-term investments are needed to address gaps in physical infrastructure and
255 human resources, as well as social challenges that limit use of facility-based services, degrade
256 service quality, and discourage longer stays. Further, while ANC coverage is generally
257 higher,²⁰ efforts to strengthen coverage and quality of ANC are needed in tandem to improve
258 detection of at-risk mother-baby dyads and encourage continuity of care.

259

260 Targeted PNC should be considered and provided in the presence of certain conditions. First,
261 targeted PNC is only appropriate in the context of efforts to strengthen the timing and quality
262 of facility PNC, including pre-discharge PNC, for all mother-baby dyads. This allows for
263 identification and timely service provision for those who develop complications even in the
264 absence of identifiable risk factors. Second, monitoring systems must allow both timely
265 identification of mother-baby dyads meeting established risk criteria, and proactive tracking,
266 identification and resolution of any unintended consequences.

267

268 Implementing a targeted PNC approach nested within broader equity-based UHC efforts
269 entails consideration of how limited resources can be most effectively and efficiently targeted
270 to those most likely to benefit. Exploration of several key considerations through robust country
271 learning agendas is needed. First, decisions of which mother-baby dyads should be targeted
272 should be guided by identification of risk factors comprising both clinical and non-clinical

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3 273 predictors of poor outcomes. Evidence-based risk criteria for both facility- and community-
4 274 based providers must be determined with consideration of both contextual relevance and
5 275 feasibility of operationalization.
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9 277 Next are considerations of how to operationalize selected evidence-informed clinical and non-
10 278 clinical risk factors by facility and community providers. The timing of risk identification merits
11 279 further consideration (i.e., some factors may be identifiable during pregnancy, while others
12 280 manifest only following delivery). Clear and feasible guidance on actions to be taken for
13 281 mother-baby dyads meeting risk criteria is needed and must be developed with careful
14 282 consideration of the implications for provider workload and motivation, client flow, and facility
15 283 infrastructure capacity. Given the vulnerability of at-risk mother-baby dyads, particularly those
16 284 with identified non-clinical risks, efforts to increase accessibility and ensure respectful care are
17 285 particularly critical elements of broader UHC efforts. Unintended consequences—positive and
18 286 negative impacts on the health system and on health outcomes—must be assessed,
19 287 monitored continuously, and addressed in consultation with health workers and policymakers.
20 288 Further, efforts are needed to gather perspectives of mothers, their families, and communities
21 289 to understand the acceptability of a targeted PNC approach and to identify unintended
22 290 consequences from clients' perspectives.
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26 292 Notably, broader efforts are needed to reduce prevalence of underlying clinical and non-
27 293 clinical risk factors that contribute to poor maternal and newborn outcomes. Mitigating the non-
28 294 clinical risk factors will require a multi-sectoral effort beyond the health system.
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32 296 This consultation has several limitations. The expert consultation invited perspectives of a
33 297 small number of global and country experts. While the format facilitated robust engagement
34 298 of experts with deep and diverse expertise in the subject matter, and involvement in strategy
35 299 and policy from the organizational to global levels, findings represent the perspectives of a
36 300 small and targeted sample. While care was taken to ensure diversity of experts' sex,
37 301 organisation affiliation, and country of origin, perspectives of other relevant stakeholders are
38 302 not represented. Notably, all experts came from a clinical background, which shaped
39 303 perspectives shared. The discussion explored high-level policy considerations, and did not
40 304 explore acceptability of targeted PNC from the perspectives of mothers, families, or health
41 305 workers. The discussion did not allow for confidentiality, which could have led to social
42 306 desirability bias.
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57 307 **Conclusion**
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3 308 Targeted community-based PNC approaches, nested within broader efforts to strengthen
4 309 quality PNC services including pre-discharge PNC, could improve outcomes for mother-baby
5 310 dyads most at-risk of morbidity and mortality during the postnatal period.
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10 312 **References**
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<http://www.equator-network.org/reporting-guidelines/srqr/>

Page/line no(s).

Title and abstract

<p>Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	<p>Page 1/Line 4 Page 6/Line 96</p>
<p>Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	<p>Page 4/Line 70</p>

Introduction

<p>Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	<p>Page 7/Line 132</p>
<p>Purpose or research question - Purpose of the study and specific objectives or questions</p>	<p>Page 7/Line 137</p>

Methods

<p>Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	<p>Page 7/Line 142</p>
<p>Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	<p>Page 7/Line 142 Page 7/Line 149</p>
<p>Context - Setting/site and salient contextual factors; rationale**</p>	<p>Page 6/Line 108</p>
<p>Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	<p>Page 7/Line 142</p>
<p>Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	<p>Page 7/Line 156</p>
<p>Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	<p>Page 7/Line 142</p>

1 2 3 4 5 6	Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	Page 7/Line 149
7 8 9	Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	Page 8/Line 162
10 11 12 13	Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	Page 7/Line 158
14 15 16 17	Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	Page 7/Line 158
18 19 20 21	Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	n/a

Results/findings

24 25 26 27	Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	Page 8/Line 176
28 29 30 31 32 33 34 35	Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	Page 9/Textbox 2 Page 10/Textboxes 3-4 Page 11/Textbox 5

Discussion

38 39 40 41 42 43 44	Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	Page 11/Line 228
45 46	Limitations - Trustworthiness and limitations of findings	Page 13/Line 296

Other

49 50 51	Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	Page 3/Line 58
52 53 54	Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	Page 3/Line 49

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*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
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