

## **Online Supplementary Document**

### **Description of the intervention**

#### *Reinforcement of facility-based care*

Prior to the commencement of the trial, all clusters will receive a health system strengthening intervention implemented at all seven study PHCs. To meet anticipated increase in utilisation as a result of the trial, each PHC will receive targeted, physical infrastructure improvements, including having separate general and maternity units, separate observation rooms for men and women, a pharmacy, and solar panels for continuous electricity. All PHC staff from the seven participating sites will receive training in priority areas of clinical care, including integrated management of childhood illness according to WHO guidelines, antenatal and delivery care, post-natal and newborn care, family planning, and rational prescription. Each PHC will recruit a formally-trained midwife to complement the existing auxiliary midwives that were responsible for PHC maternity care prior to the study.

#### *CHW recruitment*

CHWs will be recruited from the cluster in which they will work. They must be between 18 to 45 years old, inclusive, and know how to read and write in French. Female candidates will be encouraged. Community leaders, including mayors, village chiefs, and members of the Community Health Association (the administrative body of the PHC) will nominate potential candidates who meet these criteria. If community leaders are unable to identify an eligible candidate from the cluster, a CHW from a nearby village will be recruited and will relocate to the cluster in which he/she will work.

CHW candidates will participate in the pre-service training (described below) after which the final selection of CHWs will be made based on the trainer's evaluation of each candidate's mastery of the protocol, active listening ability, spirit of commitment, and communication skills. CHWs who previously worked in the study area will be recruited and retrained according to their randomised assignment. In both arms, the community leaders of the cluster will ensure that the selected CHW(s) has a health post, which will be located either at the CHW's home or at a separate site, depending on the resources and preferences of the community.

### *CHW training*

All selected CHWs will undergo a six-week, full time pre-service training and a one-week full time annual reinforcement training, conducted separately by arm. Training curriculum for the following will be the same for both arms: iCCM of malaria, diarrhoea, acute respiratory infections, and malnutrition; newborn care; antenatal and post-partum care; contraception; vaccination schedules; CHW roles and responsibilities, including patient communication, good clinical practices, and stock management; and data collection on a phone-based CHW application. In the intervention arm, the training curriculum will include additional modules on proactive case detection, door-step care, and home-based follow-up.

### *CHW supervision*

All participating CHWs will receive monthly one-on-one supervision and weekly group supervision with a dedicated CHW supervisor, recruited and trained for this exclusive purpose. Each supervisor will be responsible for between 15 and 20 CHWs, with an equal number of CHWs from intervention and control arms. In turn, CHW supervisors themselves will receive

monthly one-on-one supervision and weekly group supervision from a manager, following the same strategy used for CHW supervision.

Group supervision sessions will be held separately for CHWs assigned to each study arm in order to minimize spill-over effects. Group supervision sessions will be held every week for the first three months after intervention launch and every two weeks after the first three months.

During group supervision sessions, which will last approximately two hours, the supervisor and CHWs will discuss common challenges faced by CHWs in the field and potential solutions. At the final group session of the calendar month, the supervisor and CHWs will agree on a schedule of individual supervision sessions for the coming month. Each CHW will know in advance the date and time of his/her next individual supervision session, but not the location within his/her catchment area at which it will take place.

Monthly individual CHW supervision activities will include the following: (i) home visits conducted without the CHW in which the supervisor conducts household interviews in the absence of the CHW to elicit patient or caregiver perspectives of CHW care; (ii) direct observation in which the supervisor observes the CHW providing care (at the health post for CHWs in the control arm, during home visits for CHWs in the intervention arm); and (iii) one-on-one feedback in which the supervisor and CHW identify areas of strength and areas for improvement.

*CHW reporting*

CHWs will record all patient encounters using a CHW mobile application on an Android smartphone. In addition to measuring aggregate process indicators, such as the number of children under five evaluated per month, the data collected by the CHW application will be used to generate CHW performance indicators, including coverage (percentage of population interfacing with the CHW per month), speed (percentage of sick children under five treated within one day of symptom onset), and quality of care (percentage of patient encounters conducted without protocol error). The data collected by the CHW application will also be used to identify system-level challenges, such as drug stock-outs.

CHWs who commit any protocol deviation (e.g., conducting proactive case finding home visits in the control arm, not conducting proactive case finding home visits in the intervention arm), will be required first to work closely with the supervisor to address the problem, and then will be summoned to a meeting with the administrative body of the PHC if the problem persists, and finally removed from his/her post if performance does not improve. Falsification of data or charging user fees to patients (verified through supervisory home visits without the CHW and/or patient data auditing) will constitute immediate termination.

#### *CHW compensation*

All CHWs will be compensated for their work with a monthly salary of 40,000 FCFA (approximately 70 USD), which is circa minimum wage. CHWs will receive an additional 3000 FCFA (approximately 5.40 USD) of monthly phone credit, and 1000 FCFA (approximately 1.80 USD) for each group supervision meeting to cover transportation costs. All CHWs will also be

enrolled in Mali's payroll tax and social security retirement benefits (INPS) system.

Compensation will be the same in both study arms.