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MCHIP Maternal and Child Health Integrated Program

Indicator Guide

Monitoring and Evaluating Integrated Community Case Management

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JSI John Snow, Inc.

Karolinska Institutet

Save the Children

UPPSALA UNIVERSITET

World Health Organization

The Maternal and Child Health Integrated Program (MCHIP) is the United States Agency for International Development (USAID) Bureau for Global Health's flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health; immunization; family planning; malaria; nutrition; and HIV/AIDS and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening.

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Cover photo by: Jane Briggs, SIAPS

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Abbreviations

ACT	artemisinin combination therapy
CCM	Community Case Management
CHERG	Child Health Epidemiology Reference Group
CHW	community-based health worker
DHS	Demographic and Health Survey
HMIS	health management information system
HSA	health surveillance assistant
iCCM	integrated Community Case Management
IR	Intermediate Result
M&E	monitoring and evaluation
MCHIP	Maternal and Child Health Integrated Program
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MNCH	maternal, neonatal and child health
MOH	Ministry of Health
NA	not applicable
NGO	nongovernmental organization
NMS	national-level milestone
NRA	National Regulatory Authority
ORS	oral rehydration solution
RDT	rapid diagnostic test [for malaria]
RM	routine monitoring
SES	socioeconomic status
SS	special study
TF	task force
TOR	terms of reference
U5	under five [years of age]
USAID	United States Agency for International Development
WHO	World Health Organization

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We are excited to watch this work move from our hands to those of our colleagues at the country level. We look forward to seeing countries adapt and own these indicators and include them in their respective M&E frameworks to efficiently monitor and manage their iCCM programs.

—The iCCM TF Steering Committee

Overview of Guide

BACKGROUND AND RATIONALE

Under-five (U5) mortality remains unacceptably high, with 6.9 million children dying annually (2011 estimate).[1] Diarrhea, pneumonia and malaria are still responsible for the majority of mortality in the postneonatal period,[2] despite internationally recommended effective treatments. When provided through fixed health facilities only, these treatments are often inaccessible to marginalized children with the greatest need. Integrated Community Case Management (iCCM) addresses this inequitable gap in access to lifesaving interventions by ensuring assessment, classification and treatment of sick children through trained community-based health workers (CHWs) as a complement to fixed or scheduled facility-based services.

The World Health Organization (WHO) and UNICEF endorse the management of pneumonia, malaria and diarrhea at the community level,[3,4,5,6] and meta-analyses have found that Community Case Management (CCM) for pneumonia is associated with a 24% reduction in all-cause U5 mortality.[7] Increasingly, global partners and Ministries of Health (MOHs) are adopting and scaling up iCCM programming to accelerate progress toward Millennium Development Goal (MDG) 4.[8] Expansion of iCCM has been buoyed by evidence that CHWs can increase the coverage of treatment of sick children,[9,10,11,12] and deliver that coverage at adequate levels of quality.[11,13,14]

To be effective, iCCM programs require supportive health system strategies that ensure supportive policies, adequate resources, CHW incentives, supply of commodities, adequate training and supervision, linkages between communities and health systems, and the overall delivery of quality services—all on a continuous basis. The Community Case Management Essentials guide for program managers provides operational guidance for the design and implementation of iCCM.[15] In response to the expansion of iCCM programming, USAID and collaborating development partners have also developed an iCCM Benchmark Framework to describe the stages of implementation and necessary health systems components for iCCM (Table 1).

Table 1. Integrated Community Case Management Benchmark Framework

STAGE OF PROGRAM IMPLEMENTATION			
	Advocacy and Planning	**Pilot and Early Implementation**	**Expansion/Scale-Up**
Component 1: Coordination and Policy Setting	Mapping of iCCM partners conducted	MOH leadership established to manage unified iCCM	MOH leadership institutionalized to ensure sustainability
	Technical advisory group established including community leaders, iCCM champion and CHW representation		
	Needs assessment and situation analysis for package of services conducted		
	Stakeholder meetings held to define roles and discuss current policies	Discussions completed regarding ongoing policy change (where necessary)	Routine stakeholder meetings held to ensure coordination of iCCM partners
	National policies and guidelines reviewed		
Component 2: Costing and Financing	iCCM costing estimates undertaken based on all service delivery requirements	Financing gap analysis completed	Long-term strategy for sustainability and financial viability developed
	Finances for iCCM medicines, supplies and all program costs secured	MOH funding invested in iCCM program	MOH investment in iCCM sustained
Component 3: Human Resources	Roles of CHWs, communities and referral service providers defined by communities and MOH	Role of and expectations for CHW made clear to communities and referral service providers	Process in place for update and discussion of CHW role/expectations
	Criteria for CHW recruitment defined by communities and MOH	CHWs trained, with community and facility participation	Ongoing training provided to update CHWs on new skills, reinforce initial training
	Plan for comprehensive CHW training and refresher training developed (modules, training of trainers, M&E)		
	CHW retention strategies, incentive/motivation plan developed	CHW retention strategies, incentive/ motivation plan implemented and made clear to CHW; community plays a role in providing rewards, MOH provides support	CHW retention strategies reviewed and revised as necessary
			Advancement, promotion, retirement offered to CHWs who express desire
Component 4: Supply chain management	Appropriate iCCM medicines and supplies consistent with national policies (RDTs where appropriate) included in essential drug list	iCCM medicines and supplies procured consistent with national policies and plan	Stocks of medicines and supplies at all levels of the system monitored (through routine information system and/or supervision)
	Quantifications for iCCM medicines and supplies completed		
	Procurement plan for medicines and supplies developed		
	Inventory control, resupply logistic system and standard operating procedures for iCCM developed	Logistics system implemented to maintain quantity and quality of products for iCCM	Inventory control and resupply logistics system for iCCM implemented and adapted based on results of pilot with no substantial stock-out periods

STAGE OF PROGRAM IMPLEMENTATION			
	Advocacy and Planning	**Pilot and Early Implementation**	**Expansion/Scale-Up**
Component 5: Service Delivery and Referral	Plan for rational use of medicines (and RDTs where appropriate) by CHWs and patients developed	CHWs rationally use medicines and diagnostics to assess, diagnose and treat sick children	Timely receipt of appropriate diagnosis and treatment by CHWs made routine
	Guidelines for clinical assessment, diagnosis, management and referral developed	Guidelines reviewed and modified based on pilot	Guidelines regularly reviewed, and modified as needed
	Referral and counterreferral system developed	Referral and counter-referral system implemented; community information on location of referral facility clarified; health personnel clear on their referral roles	CHW referral and counterreferral with patient compliance is routine, along with information flow from referral facility back to CHW with returned referral slips
Component 6: Communication and Social Mobilization	Communication strategies developed, including messaging on prevention and management of community illness for policymakers, local leaders, health providers, CHWs, communities and other target groups	Communication and social mobilization plan implemented	Communication and social mobilization plan and implementation reviewed and refined based on M&E
	Communication and social mobilization content developed for CHWs on iCCM and other messages (training materials, job aids, etc.)	Materials and messages to aid CHWs are available	
	Materials and messages for iCCM defined, targeting the community and other groups	CHWs dialogue with parents and community members about iCCM and other messages	
Component 7: Supervision and Performance Quality Assurance	Appropriate supervision checklists and other tools, including those for use of diagnostics, developed	Supervision visit every 1–3 months, includes reports review, data monitoring	CHWs routinely supervised for quality assurance and performance
	Supervision plan, including number of visits, supportive supervision roles, self-supervision, etc., established	Supervisor visits community, makes home visits, provides skills coaching to CHWs	Data from reports and community feedback used for problem-solving and coaching
	Supervisor trained in supervision and has access to appropriate supervision tools	iCCM supervision included as part of the CHW supervisor's performance review	Yearly evaluation includes individual performance and evaluation of coverage or monitoring data
Component 8: M&E and HMISs	Monitoring framework for all components of iCCM developed and sources of information identified	Monitoring framework tested and modified as needed	M&E through HMIS data performed to sustain program impact
	Standardized registers and reporting documents developed	Registers and reporting documents reviewed	Operations research and external evaluations of iCCM performed as necessary to inform scale-up and sustainability
	Indicators and standards for HMISs and iCCM surveys defined		
	Research agenda for iCCM documented and circulated	CHWs, supervisors and M&E staff trained on the new framework, its components and use of data	

Reference: McGorman L, Marsh D, Guenther T, et al. A health systems approach to integrated community case management of childhood illness: methods and tools. *Am J Trop Med Hyg*. 2012;87(suppl 5):69-76. Note that the iCCM Benchmark Framework is adapted from WHO building blocks for health systems (World Health Organization. *Everybody's Business: Strengthening Health Systems to Improve Health Outcomes; WHO's Framework for Action*. 2007. Available at: www.who.int/healthsystems/strategy/everybodys_business.pdf).

Abbreviations: CHW = community-based health worker; HMIS = health management information system; iCCM = integrated Community Case Management; M&E = monitoring and evaluation; MOH = Ministry of Health; RDT = rapid diagnostic test.

A large challenge across all components and all stages of iCCM programs is the bottleneck in monitoring implementation and evaluating progress. This issue is compounded by the fact that iCCM is often a newly introduced intervention, conducted in the community and disconnected from data collection through routine health management information systems (HMISs). While national programs and development partners usually develop specific protocols at the start of iCCM programs (referred to as the "national iCCM protocol handbook"), they often measure monitoring and evaluation (M&E) indicators that are nonstandard and therefore not comparable to other country's iCCM programs.

In response to a lack of recommended standard iCCM indicators, global partners came together through the iCCM Task Force (TF) to develop a list of proposed iCCM indicators that programs might adopt to monitor implementation and evaluate progress.

PURPOSE OF THE GUIDE

The overall goal of this guide is to encourage iCCM programs to more effectively monitor and evaluate iCCM implementation and results across all of the iCCM benchmark components. The specific objectives of this guide are to

- compile iCCM indicators useful across program components and phases,
- encourage the consistent use of standardized definitions and metrics for iCCM indicators,
- serve as a resource for iCCM programs to improve M&E systems, and
- promote improved M&E of iCCM programs by providing a menu of indicators and guidance in the use of the indicators.

A number of audiences should find this guide useful in their work, including the following:

- iCCM program managers
- M&E officers of iCCM programs
- International agencies supporting and/or implementing iCCM
- Researchers examining operational aspects of iCCM programs

This guide is organized into two main sections. This first section provides an overview of the guide, the methodology, and the frameworks used to develop the indicators and measurement guidance. The second section includes indicator reference sheets organized by each iCCM benchmark component. The reference sheets provide guidance on the use and adaptation of each indicator. Table 2 presents a description of the contents of the reference sheets.

Table 2. Organization of Reference Sheets

COMPONENT:	Specifies corresponding benchmark component
INDICATOR:	Abbreviated title of the indicator
TYPE:	Specifies if indicator type is RM, SS or NMS
DEFINITION:	Detailed definition of the indicator
METRIC:	Specifies the numerator and denominator (for quantitative indicators) and the criteria (for qualitative indicators)
RATIONALE:	Reason for collecting the indicator
DATA SOURCE AND COLLECTION METHOD:	Specifies recommended data source(s) and data collection method for the indicator
FREQUENCY:	Recommended frequency of data collection
DISAGGREGATE BY:	Recommendations for subgroup analyses or disaggregation
DIRECTION OF DESIRED CHANGE:	Direction in trend analysis that shows improvements in the iCCM program

LEVEL OF INDICATOR:	Type of indicator using the logic model (Figure 1)
MEASUREMENT NOTES:	Additional notes related to ▪ definitions of the data elements ▪ data requirements ▪ recommendations for data collection ▪ interpretation of the indicator ▪ caveats

Abbreviations: iCCM = integrated Community Case Management; NMS = national-level milestone; RM = routine monitoring; SS = special study.

INDICATOR DEVELOPMENT

Figure 1. Generic Logic Model

Inputs	**Inputs** are the resources invested in a program
Processes	**Processes** are the activities carried out to achieve the program's objectives
Outputs	**Outputs** are immediate results achieved at the program level through the execution of activities
Outcomes population	**Outcomes** are short-term or intermediate results at the level achieved by the program through the execution of activities (also known as "coverage")
Impacts	**Impact** refers to health status that the program is intended ultimately to influence (such as mortality, morbidity or nutrition)

Reference: Frankel N, Gage A. *M&E Fundamentals: A Self-Guided Minicourse*. Chapel Hill, NC: MEASURE Evaluation; 2007.

The iCCM TF supported an intra-agency effort to propose a list of M&E indicators that span the program phases and components outlined in the iCCM Benchmark Framework (see Box 1 for more information on links between benchmarks and indicators). The preliminary list of indicators was adapted from the Save the Children toolkit to introduce CCM[16] and previous work of the CCM Operations Research Group in standardizing outcome measures. The indicators draw on global initiatives and consensus indicators where available. The recommended coverage indicators are based on consensus indicators used in the *Countdown to 2015* reports[17,18] and the recommendations of the Child Health Epidemiology Reference Group (CHERG) outlined in the May 2013 *PLOS Medicine* "Measuring Coverage in MNCH [maternal, neonatal and child health]" collection.[19,20,21,22] Indicators of qualitative milestones (e.g., policy for CCM of pneumonia) adopt the same type of ranking system—"Yes/Partial/No"—as used in the *Countdown to 2015* health policy and systems indicators. Indicators measuring the quality of iCCM are adapted from the Integrated Management of Childhood Illness facility-based quality of care measures,[23] and were reviewed in a meeting sponsored by the WHO in November 2010.

Box 1. Relationship between iCCM Benchmark Framework and iCCM Indicators

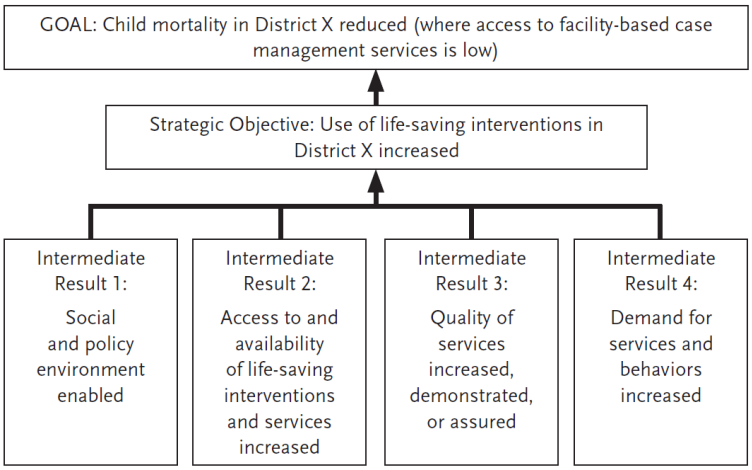
The iCCM Benchmark Framework is meant to be a tool for program planners and managers to systematically design and implement iCCM programs from the early phases through to expansion and scale-up. Key activities or steps that should be completed are specified for each component and for each phase of implementation. For example, within the human resources component, development of a training plan for CHW training and refresher training is identified as a benchmark in the advocacy and planning phase, training of CHWs is a benchmark in the pilot and early implementation phase, and ongoing/refresher training of CHWs is a benchmark in the expansion/scale-up phase. The intent is that program planners/managers should address benchmarks in one phase before progressing to the next, although it is recognized that such a linear progression is not always possible. By spanning components from coordination and policy setting to human resources and M&E, and by covering introduction to expansion, the iCCM benchmarks help planners and implementers chart their way toward implementing a comprehensive iCCM program at scale.

The iCCM indicators complement the iCCM benchmarks by providing a harmonized set of metrics to measure iCCM implementation and results, covering all eight components and the three program phases. The indicators were not designed to correspond directly to each of the 58 individual benchmarks, but do address the main elements of each component and phase and provide a comprehensive and standardized approach to monitoring iCCM programs and assessing progress toward improved coverage of lifesaving curative interventions.

Reference: McGorman L, Marsh D, Guenther T, et al. A health systems approach to integrated community case management of childhood illness: methods and tools. *Am J Trop Med Hyg*. 2012;87(suppl 5):69-76.

The iCCM indicators were further developed using three frameworks: (1) the iCCM Benchmark Framework (Table 1), (2) a generic logic model (Figure 1) and (3) an expanded results framework from the *Community Case Management Essentials* guide (Figure 2). The use of the iCCM Benchmark Framework ensured that the proposed indicators covered all the essential health system components across the program phases. The iCCM TF used the generic logic model and the expanded results framework to ensure that the recommended indicators included measures at each stage of program implementation and anticipated results. The reference sheets in section two of this guide specify the level of indicator based on the logic model. Annex 1 illustrates how each indicator fits within the iCCM Expanded Results Framework.

Figure 2. Expanded Results Framework Showing External Factors and Strategies



Reference: CORE Group, Save the Children, BASICS, MCHIP. *Community Case Management Essentials: Treating Common Childhood Illnesses in the Community; A Guide for Program Managers*. 2nd ed. Washington, DC; 2012.

The proposed iCCM indicators were refined during a series of teleconferences and meetings in 2010 and 2011. Technical experts were assigned to subgroups to further revise the indicators and provide details on measurement in the reference sheets for each component. A final review and meeting with all partners served to finalize the beta version of the indicator list. Following the release of the *PLOS Medicine* articles on coverage measurement in May 2013, which showed that the indicator for pneumonia treatment coverage was not valid,[19,20,21,22] several revisions were made to the indicators for treatment coverage and an indicator was added to capture care-seeking. It is anticipated that as iCCM programs implement and adapt the indicators, future iterations of the indicator list and guidance may be necessary.

CATEGORIES OF INDICATORS

The indicators can be broken down into three general categories based on how they are measured:

1. *Routine monitoring (RM) indicators measuring implementation through routine sources*: These indicators are expected to be available over time at the community, facility, district and regional levels in most cases. Primarily for use by program managers and implementers, these should be measured routinely.
2. *Special study (SS) indicators measured through household surveys or other SSs*: These indicators are collected on a periodic basis and are not be expected to be available on a continuous basis. These indicators are for use by both program managers and national-level stakeholders (MOH and partners).
3. *National-level milestone (NMS) indicators assessed through document reviews and key informant interviews*: These indicators are not collected on a regular basis in countries and are closer to program milestones than to traditional indicators. They are intended for use in comparing iCCM programs across countries and for assessing how supportive a given country environment is for iCCM programming. Examples of NMS indicators include the adoption of policies supporting iCCM, the identification of iCCM focal points within the MOH and the existence of a costed annual plan for iCCM.

Some indicators may be measured both routinely and periodically.

Global Indicators

The iCCM indicators include 9 indicators recommended for the global level and 39 indicators recommended at the country level. Global-level indicators span all eight components and all three indicator categories and can be used to compare progress in iCCM programming across countries. In comparison, iCCM program managers can choose from the menu of country-level indicators to incorporate into monitoring and evaluating progress across all aspects of iCCM within their respective country.

SELECTION, ADAPTATION AND DATA COLLECTION OF INDICATORS BY CATEGORY

This guide outlines a menu of indicators for M&E of iCCM programs and should be used to help select a set of indicators appropriate for the specific program objectives and context. Programs should not attempt to use all the indicators described in this guide; rather, they should select a subset of indicators relevant for RM, a subset for tracking progress at the national level, and a subset for evaluation and assessment through SSs. Once indicators are selected, they should be adapted to reflect the program scope, implementing context and resource availability within the country. Guidance on indicator definitions and approaches to data collection are presented in this guide to promote standardization across the global iCCM community; adaptations should be documented clearly to facilitate assessment of comparability.

This section provides guidance on selection, adaptation and data collection organized according to the three categories of indicators.

Routine Monitoring Indicators

Selection and adaptation

Data for monitoring of implementation needs to be available regularly and provide information on how well the program activities are being carried out. This guide presents many examples of RM indicators across the benchmark components. It is recommended that a manageable set of indicators for RM be selected by reviewing what is already captured or could be easily added to existing systems for monitoring and reporting and what information will be required to assess how well the iCCM program is being implemented. The concept of "implementation strength," which measures the program processes and outputs in three domains (human resources, supply chain management, and supervision and performance quality assurance), provides a useful framework for selecting a subset of indicators for RM (see Box 2). RM indicators will need to be aligned with existing systems for routine data collection and with program areas of greatest interest; an example of how Malawi adapted implementation strength indicators is given in Box 2.

Box 2. Implementation Strength

Indicators of implementation strength are used to measure both the process and outputs of an iCCM program, (i.e., "the amount of program that is delivered"). The implementation strength indicators for iCCM programs focus on three components: human resources (health workers who are trained, capable and motivated to provide care and are accessible to the population), supply chain management (availability of essential drugs and supplies at all times), and supervision and performance quality assurance (CHWs receiving regular and supportive supervision). These indicators are a subset of routine indicators that are being recommended for measuring iCCM program performance. Countries can adapt their routine iCCM indicators to be able to measure implementation strength. An example of this in Malawi has been presented in the table below. Routine iCCM indicators were adapted to be able to measure implementation strength, as shown in the matrix below. Data sources include RM (health surveillance assistants [HSAs] and health facility reporting forms), census projections (for population estimates) and periodic surveys of HSAs.

COMPONENT	GENERIC IMPLEMENTATION STRENGTH INDICATOR	ICCM INDICATORS FROM MALAWI THAT WERE ADAPTED TO ASSESS IMPLEMENTATION STRENGTH
Human Resources	CHWs trained in iCCM	Ratio of HSAs trained in iCCM per 1,000 U5 population
	CHWs deployed for iCCM and working	Ratio of HSAs deployed per 1,000 U5 population in district
		Ratio of HSAs trained in iCCM and deployed per 1,000 U5 population in the district
		Percent of hard-to-reach areas in a district with an HSA trained in iCCM and deployed
		Ratio of HSAs trained in iCCM and deployed per 1,000 U5 population in hard-to-reach areas
		Percent of HSAs trained in iCCM providing iCCM
		Population coverage of deployed HSAs
		Proportion of HSAs providing iCCM services
Supply Chain Management	Availability of iCCM supplies	Proportion of HSAs with supply of key iCCM drugs in last 3 months (items reported individually)
Supervision and Performance Quality Assurance	CHWs supervised	iCCM-trained HSAs supervised in the last 3 months
		iCCM-trained HSAs supervised in the last 3 months with reinforcement of clinical practice
		Proportion of HSAs supervised in iCCM in last 3 months
		Proportion of HSAs supervised in last 3 months with reinforcement of clinical practice

Data collection

Table 3 provides a summary of data sources by data collection method. RM should be conducted using existing tools to the extent possible. These tools can include the following:

- Treatment registers, household registers, etc.
- Health facility or CHW logbooks
- Supervision checklists at the different levels of care
- Monthly reports from various levels of care on the performance of iCCM programs
- Registers/reports/stock records of commodity availability, use, reordering
- Training records/reports
- Existing databases that capture RM of iCCM programs at the district level

Table 3. Summary of Data Sources by Data Collection Method and Indicator Category

DATA COLLECTION METHOD	DATA SOURCES
RM	
Routine CHW reporting	Routine (monthly or quarterly) compilation of CHW iCCM services and supplies information as recorded in CHW register, CHW report, stock records or other monitoring tools and reported to subdistrict and higher levels. CHW services and supplies information may include numbers and types of cases seen, referrals, and drugs in stock.
Routine supervision reporting	Routine (monthly or quarterly) compilation of information on CHW performance and health systems support collected by supervision checklists/forms reported to subdistrict and higher levels. CHW performance measures may include consistent classification and treatment assessed through register reviews, CHW ability to correctly count respiratory rates, and/or CHW knowledge assessed through case scenarios.
Extraction of routine reports	Extraction and compilation of information routinely recorded by CHW and/or supervisory forms in systems where the data is not routinely reported and compiled at higher levels. Example: extracting and compiling numbers of CHWs accurately counting respiratory rates from available supervision checklists at the health facility level.
Review of administrative records	Review of records on iCCM program activities, such as trainings and human resources (e.g., number of CHWs or supervisors trained in iCCM and deployed)
SS	
CHW survey	Sample of CHWs visited in their catchment area or subdistrict to collect information through interviews with CHWs; inspection of stocks and service delivery site; direct observation of care; application of case scenarios; register review
Household survey	Sample of households visited and women of reproductive age or child caretakers interviewed about knowledge and use of sick child care
Costing studies	Studies that examine budget-related items
NMS	
Key informant interviews	Qualitative interviews with key iCCM program managers to collect initial or supplementary information on national policies, practices and iCCM program guidance
Document review	Review of official documents such as written meeting notes, TOR, strategies, operational plans, budgets, financial reports, policies and/or guidance

Abbreviations: CHW = community-based health worker; iCCM = integrated Community Case Management; NMS = national-level milestone; RM = routine monitoring; SS = special study; TOR = terms of reference.

RM of iCCM implementation should be integrated as much as possible into existing HMISs and not occur through parallel systems. For example, in Kenya, iCCM indicators and reporting will be included in the existing District Health Information System as part of the overall Community Health Strategy monitoring system, which captures data monthly from each community unit. In addition, iCCM indicators should be included within the national HMIS, which will assist in the routine collection of data assessing implementation of iCCM programs. Introducing new data elements/indicators within existing systems is difficult and program implementers should review what data is currently being collected to identify how it can be adapted to iCCM implementation indicators. If not, there will be a need for concerted advocacy to incorporate select implementation strength indicators into existing systems.

Frequency

To the extent possible, data collection for RM indicators should tie into data collection frequencies of existing systems, occurring on a monthly and/or quarterly basis, as appropriate. It is recommended that data be reviewed at least every quarter so that any bottlenecks in data collection can be identified in a timely manner prior to larger surveys/evaluations. Review meetings should be conducted either annually or biannually and be integrated with key health meetings within the country.

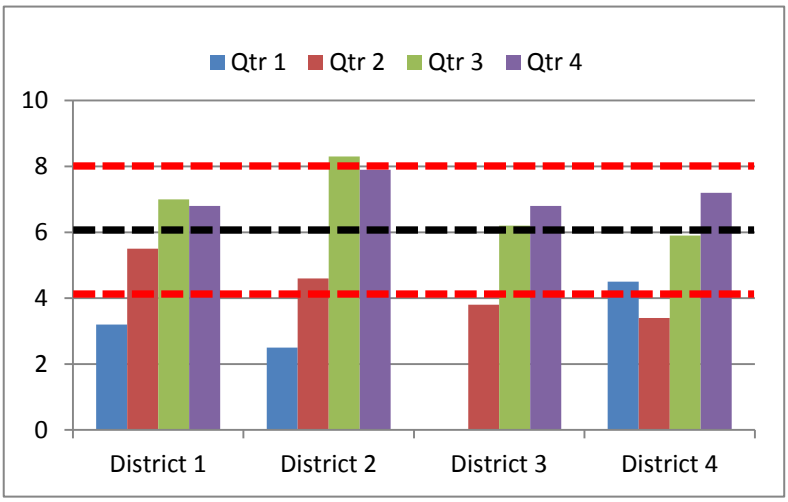
Analysis and disaggregation

Disaggregation of routine data will most likely take place at subnational levels (district, province, region, etc.). Analysis will include reviewing trends over time to assess implementation of the various components of the iCCM program at the different levels.

Targets for monitoring should be set in consultation with key stakeholders and should be specific to the context and stage of implementation of the country program. Figure 3 presents two graphs (with fictional data) to illustrate how routine data for selected implementation strength indicators can be presented across time and place. The different data sources are included. Conduct analysis of treatment data for each iCCM condition individually and, where possible, compare the number of cases treated to the expected number of cases and disaggregate treatments by point of service (community and health facility). Further examples of analysis and use of data from RM of CCM programs in six African countries are provided by the International Rescue Committee.[24]

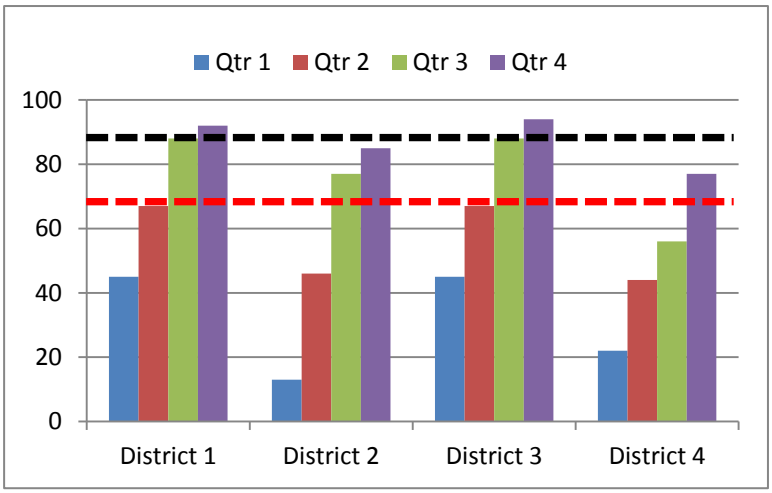
Figure 3. Sample Data Displays for Routine Monitoring Indicators

a) Number of CHWs/1,000 U5 population by quarter and district



Target: 6 community-based health workers (CHWs) per 1,000 children under five years of age (U5s); action thresholds: < 4 or > 8 CHWs/1,000 U5s. Numerator from Human Resources Management System; denominator from National Statistics Office population projections.

b) Percent of CHWs with routine supervision by quarter and district



Target: > 90% of targeted community-based health workers (CHWs) receiving at least one routine supervision visit each quarter; action threshold: <75%. Numerator and denominator from program records.

National-Level Milestone Indicators

Selection and adaptation

The NMS indicators can help to track how supportive an environment is for iCCM implementation and identify areas for advocacy. It is recommended that all relevant NMS indicators be assessed at baseline and that indicators for which there is room for improvement be selected for ongoing program monitoring. Most NMS indicators are scored using a "Yes/Partial/No" scale and suggested criteria are given in the detailed indicator descriptions. Criteria should be reviewed and adapted as needed, with any changes made to the metric criteria clearly noted.

Data collection

The majority of NMS indicators are measured through a combination of document review and key informant interviews. Experience collecting these indicators in Malawi showed that a document review alone was insufficient to determine the status of most indicators; multiple key informant interviews were required to determine values.[25] Where possible, a "Yes" value should be supported with relevant documents. Key informants can be sources for supporting documents, many of which may not be available in the public domain and need to be obtained directly from MOH and implementing partners.

Frequency

The NMS indicators are collected infrequently because the values are unlikely to change quickly. An assessment of all NMS indicators should be undertaken at program baseline and then reviewed every 2–3 years. Indicators can also be updated periodically whenever there has been a change in the status of the indicator.

Analysis and disaggregation

Most NMS indicators are scored using a "Yes/Partial/No" scale, and can be displayed using a "stoplight" approach ("Yes" = green; "Partial" = yellow; "No" = red). Supporting documents required to substantiate a "Yes" value should be referenced and key informants listed. An example of a display for NMS indicators in Malawi is available in Annex 6 of the desk review report.[26] While most NMS indicators will be analyzed at the national level, large countries with decentralized health systems may need to disaggregate some indicators to the provincial or district level.

Special Study Indicators

Selection and adaptation

Several indicators, particularly those related to costing, quality of care and coverage, can only be measured using SSs. Indicators requiring SSs should be carefully selected, as such studies can be very expensive to conduct and need additional technical resources. To the extent possible, data collection for selected indicators should be integrated into upcoming household surveys, facility surveys and special research studies being conducted by partners.

Data collection

Most SS indicators can be collected through household surveys and CHW surveys (see Table 3). Costing indicators require highly specialized costing studies conducted with technical support from health economists. Existing questions on treatment coverage in national household surveys such as Demographic and Health Survey (DHS) and Multiple Indicator Cluster Survey (MICS) may not provide information on point of service; therefore, program implementers will need to work with designers of SSs to modify the questions so they capture data on the effect of iCCM. The gold standard to measure quality of care for iCCM is direct observation with clinical reexamination; however, this approach requires substantial resources and may not be feasible in many settings. Less costly approaches such as case scenarios, direct observation only and register reviews should be assessed as alternatives where the gold standard is not possible and for more frequent monitoring.[27]

Frequency

SSs should be carried out periodically and after the program has been implemented for a sufficient period of time. For example, if a study on care-seeking behaviors is conducted early in the program, the value of the findings would be low given that adequate time has not passed for changes in care-seeking behaviors to take place. Because SSs should whenever possible be included as part of planned surveys (such as DHS, MICS or other partner surveys), the timing/frequency will often depend on when these surveys are taking place within the country. More information on the recommended frequency of collection is provided in the detailed indicator reference sheets.

Analysis and Disaggregation

Analysis and disaggregation of indicators measured through SSs will vary according to the type of data collection and indicator. Where possible, however, data should be disaggregated to subnational levels. Coverage and treatment data should be disaggregated by point of service, iCCM condition and other relevant factors (child age, socioeconomic status [SES], maternal education, urban/rural, etc.). Examples of data analysis and use for quality of care and costing studies are available for Malawi.[28]

Box 3. Addressing Equity

In analyzing socioeconomic health inequalities across the iCCM indicators, data collected on the iCCM global- and country-level indicators must be complemented by data on living standards or SES. Data on SES or living standards could be direct—income and expenditures—or indirect—asset index—depending on the type of data that is available in each country. Data on living standards/SES can be collected using small ad hoc household surveys, SSs, exit interviews from health centers, and existing large-scale household surveys such as Living Standards Measurement Study (World Bank), DHS, MICS, World Health Surveys, Rand surveys, etc. Some forms of routine data may also be suitable for health equity analysis. Other complementary data is also required to be able to conduct equity analysis across the relevant iCCM indicators. For example, during multivariable analysis of specific iCCM indicators, additional data from the community level, household level, health facility level and individual level is required to better understand the relationship between living standards/SES and specific iCCM indicators.

Inequalities across iCCM indicators can be assessed by analyzing the variation in mean values of indicators across quintiles of a measure of living standards (using multivariate analysis). In addition, concentration curves and indices can be used to display the share of iCCM indicators across wealth quintiles. Below is a summary table highlighting the different types of data required to assess equity across health sector–related indicators.

*Ordinal measures only rank individuals or households and do not permit comparisons of magnitudes across units.

†Cardinal measures—for example, income or consumption in units of currency—convey comparable information about magnitude.

	HEALTH VARIABLES	UTILIZATION VARIABLES	LIVING STANDARDS MEASURE (ORDINAL)*	LIVING STANDARDS MEASURE (CARDINAL)†	UNIT SUBSIDIES	USER PAYMENTS	BACKGROUND VARIABLES
Health Inequality	√		√				
Equity in Utilization		√	√				
Multivariate Analysis	√	√		√			√
Benefit-Incidence Analysis		√	√		√		√
Health Financing				√		√	

Reference: O'Donnell O, van Doorslaer E, Wagstaff A, Lindelow M. *Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and Their Implementation*. Washington, DC; World Bank; 2008.

LIMITATIONS AND FURTHER WORK

This indicator guide provides a set of harmonized indicators organized according to the iCCM Benchmark Framework to encourage iCCM programs to more effectively monitor and evaluate iCCM implementation and results. The guide is intended to serve as a resource for iCCM programs and builds on the experience gained to date in implementing and monitoring iCCM programs. However, there are some limitations to the guide and some areas for further work, which are outlined below:

- Indicators emphasize case management through the public sector; however, iCCM-type services are increasingly being delivered through private sector platforms as well. Further work is needed to understand monitoring of case management services provided through the private sector.
- There is a critical need for research to develop and test new approaches to estimate treatment coverage for pneumonia and to improve maternal recall of care-seeking and treatment for all iCCM conditions.
- Communication and social mobilization are essential to creating demand for iCCM services. There are limited indicators for this component; future versions of this guide will look to add more.
- Many indicators have not been tested; several indicators and data elements are being introduced into routine systems whose current data quality is unknown.
- All indicators for the costing component are measured through SSs that require heavy technical assistance.
- Many indicators require adaptation at the country level and may not be completely comparable across countries once adapted to specific program contexts.
- Given that supervision may not happen as expected, some of the indicators that are supposed to be collected through supervision will be difficult to measure fully.

Summary Table of Integrated Community Case Management Indicators by Benchmark Component

COMPONENT	NO.	TYPE	INDICATOR	DEFINITION
Component 1: Coordination and Policy Setting	1.1*	NMS	iCCM policy	iCCM is incorporated into national MNCH policy/guideline(s) to allow CHWs to give: ▪ low osmolarity ORS and zinc supplements for diarrhea ▪ antibiotics for pneumonia ▪ ACT (and RDTs, where appropriate) for fever/malaria in malaria-endemic countries
	1.2	NMS	iCCM coordination	An iCCM stakeholder coordination group, working group or TF—led by the MOH and including key stakeholders—exists and meets regularly to coordinate iCCM activities
	1.3	NMS	iCCM partner map	List or map of iCCM partners, activities and locations is available and up to date
	1.4	NMS	iCCM target areas defined	Target areas for iCCM are defined, based on country-specific criteria
Component 2: Costing and Financing	2.1*	NMS	Annual iCCM costed operational plan	A costed operational plan for iCCM exists (or is part of a broader health operational plan) and is updated annually
	2.2	SS	iCCM national financial contribution	Percentage of the total annual iCCM budget which comes from national funding sources
	2.3	SS	Expenditure (1): iCCM proportion of disease program	Average annual recurrent actual expenditure for iCCM in geographic target areas as a percentage of total average expenditure on child health, by type of condition
	2.4	SS	Expenditure (2): Average iCCM expenditure per capita (child) by disease program	Average annual recurrent actual expenditure in iCCM programs per capita (child) under five in target areas by type of condition
	2.5	SS	Expenditure (3): Average cost per iCCM contact	Average expenditure per iCCM contact by type of condition
Component 3: Human Resources	3.1	NMS	Training strategy	Existence of comprehensive iCCM training strategy that is competency based
	3.2	RM	iCCM CHW density	Number of CHWs trained and deployed for iCCM per 1,000 children under five in target areas
	3.3*	RM	Targeted CHWs providing iCCM	Proportion of CHWs targeted for iCCM who are trained and providing iCCM according to the national plan
	3.4	RM/SS	Annual iCCM CHW retention	Proportion of CHWs trained in iCCM who are providing iCCM 1 year after initial training

COMPONENT	NO.	TYPE	INDICATOR	DEFINITION
Component 4: Supply Chain Management	4.1	NMS	Medicine and diagnostic registration	All key iCCM medicines and diagnostics are registered with the NRA or similar agency (key products defined by country policy)
	4.2*	RM	Medicine and diagnostic availability	Percentage of iCCM sites with all key iCCM medicines and diagnostics in stock during the day of assessment visit or last day of reporting period (key products defined by country policy)
	4.3	RM	Medicine and diagnostic continuous stock	Percentage of iCCM sites with no stock-outs of key iCCM medicines and diagnostics in the past month (key products defined by country policy)
	4.4	RM	Medicine and diagnostic storage	Percentage of iCCM sites with medicines and diagnostics stored appropriately
	4.5	RM	Medicine and diagnostic validity	Percentage of iCCM sites with no expired or damaged medicine or diagnostics on the day of observation
Component 5: Service Delivery and Referral	5.1	RM	iCCM treatment rate	Number of iCCM conditions treated per 1,000 children under five in target areas in a given time period
	5.2	RM	Caseload by CHW	Proportion of CHWs (or iCCM sites in cases of multiple CHWs/area) treating at least X cases per month (to be defined locally)
	5.3	RM	Referral rate	Proportion of sick child cases recommended for referral by the CHW
	5.4*	SS	Treatment coverage of diarrhea and malaria	Percentage of sick children who received timely and appropriate treatment (reported separately for each iCCM condition)
	5.5	SS	iCCM treatment coverage of diarrhea and malaria by CHW	Proportion of overall treatment coverage of diarrhea and malaria being provided through iCCM by CHWs (reported separately for each iCCM condition)
	5.6	SS	Appropriate care-seeking	Proportion of sick children who were taken to an appropriate provider (appropriate provider and aspects of timeliness defined by country protocols) (reported separately for each iCCM condition)
	5.7	SS	First source of care	Proportion of sick children under five in iCCM target areas taken to iCCM-trained CHWs as first source of care
	5.8	SS	Follow-up rate	Number and proportion of cases followed up according to country protocol after receiving treatment from CHW
	5.9	SS	Successful referral	Proportion of children recommended for referral who are received at the referral facility
Component 6: Communication and Social Mobilization	6.1	NMS	Communication strategy	Communication strategy for childhood illness exists and includes iCCM
	6.2	SS	Caregiver knowledge of CHW location and role	Proportion of caregivers in target areas who know of the presence and role of their CHW
	6.3*	SS	Caregiver knowledge of illness signs	Proportion of caregivers who know two or more signs of childhood illness that require immediate assessment and, if appropriate, treatment

COMPONENT	NO.	TYPE	INDICATOR	DEFINITION
Component 7: Supervision and Performance Quality Assurance	7.1	NMS	Supervision strategy	A national supervision strategy exists and outlines designated cadres, job descriptions and standardized supporting materials (e.g., checklists, training materials)
	7.2	RM	iCCM supervisor training	Proportion of supervisors assigned to iCCM (at all levels of health system) that were trained in iCCM
	7.3	RM	CHW-to-supervisor ratio	Ratio of CHWs deployed for iCCM to iCCM supervisors
	7.4*	RM	Routine supervision coverage	Proportion of CHWs who received at least one administrative supervisory contact in the prior 3 months during which registers and/or reports were reviewed
	7.5	RM	Clinical supervision coverage	Proportion of CHWs who received at least one supervisory contact during the prior 3 months during which a sick child visit or scenario was assessed and coaching was provided
	7.6*	RM/SS	Correct case management (knowledge)	Proportion of CHWs who demonstrate correct knowledge of management of sick child case scenarios
	7.7	RM/SS	Correct count of respiratory rate	Proportion of CHWs who correctly count respiratory rate
	7.8	RM/SS	Complete and consistent registration	Proportion of CHWs whose registers show completeness and consistency between classification and treatment
	7.9	SS	Correct case management (observed)	Proportion of sick children visiting a trained CHW who receive correct case management from that CHW
	7.10	SS	Appropriate RDT use	Use of RDTs (for child presenting with fever where RDTs are part of the iCCM package)
	7.11	SS	Appropriate prescribing practice for positive RDTs	Appropriate prescribing practices are used when results of RDTs are positive (where RDTs are part of the iCCM package)
	7.12	SS	Appropriate prescribing practice for negative RDTs	Appropriate prescribing practices are used when results of RDTs are negative (where RDTs are part of the iCCM package)
	7.13	SS	First dose	Proportion of sick children provided first dose of treatment in the presence of a CHW
	7.14	SS	Counseling quality	Among children receiving prescription medicines for an iCCM condition, the proportion in which the caregiver receives counseling on how to provide the treatment(s)
	7.15	SS	Correct referral	Proportion of children with danger signs that were correctly recommended for referral
Component 8: M&E and HMISs	8.1*	NMS	National M&E plan for iCCM	Existence of a comprehensive, integrated M&E plan for iCCM
	8.2	NMS	iCCM utilization indicators included in HMIS	One or more indicators of community-based treatment for diarrhea, pneumonia and/or malaria are included in the national HMIS
	8.3	RM	District reporting	Proportion of districts reporting complete iCCM data on time

*Global-level indicator.

Abbreviations: ACT = artemisinin combination therapy; CHW = community-based health worker; HMIS = health management information system; iCCM = integrated Community Case Management; M&E = monitoring and evaluation; MNCH = maternal, neonatal and child health; MOH = Ministry of Health; NMS = national-level milestone; NRA = National Regulatory Authority; ORS = oral rehydration solution; RDT = rapid diagnostic test (for malaria); RM = routine monitoring; SS = special study; TF = task force.

Indicator Reference Sheets for Monitoring and Evaluating Integrated Community Case Management Programs, by Benchmark Component

COMPONENT 1. COORDINATION AND POLICY SETTING

COMPONENT: COORDINATION AND POLICY SETTING		
NO. 1.1	INDICATOR: Integrated Community Case Management (iCCM) policy	TYPE: National-level milestone (NMS)

DEFINITION:
iCCM is incorporated into national maternal, neonatal and child health (MNCH) policy/guideline(s) to allow community-based health workers (CHWs) to give:

- low osmolarity oral rehydration solution (ORS) and zinc supplements for diarrhea
- antibiotics for pneumonia
- artemisinin combination therapy (ACT) (and rapid diagnostic tests [RDTs] where appropriate) for fever/malaria in malaria-endemic countries

METRIC:
Yes: National policy guidelines have been adopted to allow CHWs to provide treatment in line with World Health Organization (WHO) recommendations for all relevant conditions (diarrhea, pneumonia and malaria in countries with malaria)

Partial: National policy guidelines have been adopted to allow CHWs to provide treatment in line with WHO recommendations for at least one, but not all, relevant conditions

No: No national policy guidelines exist that support iCCM in line with WHO recommendations

RATIONALE:
This indicator measures the degree of government endorsement of increased access to basic health services through community actors. iCCM policy provides a framework for funding and support for iCCM implementation, which should be embedded within national planning processes and broader MNCH policies and strategies.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., Ministry of Health [MOH] policy, strategy or guideline)

FREQUENCY:	DISAGGREGATE BY:
Annual until a "Yes" rating is achieved; afterward, whenever the policy is revised	not applicable (NA)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions
"National policy guidelines" may include official national written policies or MOH guidelines, but not training materials. The documents may be specific to iCCM, or iCCM may be incorporated within broader health or child health policy documents.

The country must meet all conditions to receive a rating of "Yes," including both ORS and zinc for diarrhea, antibiotics for pneumonia, and both ACTs and RDTs (if appropriate) for malaria.

Data requirements and recommendations for data collection
Policy documents should be reviewed on an annual basis until a "Yes" rating is achieved. After that point, annual review will only be needed if a policy change has occurred. In most cases, policy documents will be available to the program, but if not, they can be obtained by requesting them from relevant authorities.

Interpretation of indicator and caveats
In general, iCCM policy should fall under broader health and child health policies. When assigning a rating to this indicator, emphasis should be placed on whether policies allow for iCCM in line with WHO recommendations, more than whether a separate and specific iCCM policy exists. If the rating is "Partial," it is important to document which condition(s) do not have appropriate policies and where the barriers, shortcomings or gaps are. If the rating is "No," it is important to document why no policies exist.

COMPONENT: COORDINATION AND POLICY SETTING		
NO. 1.2	INDICATOR: iCCM coordination	TYPE: NMS

DEFINITION:
An iCCM stakeholder coordination group, working group or task force—led by the MOH and including key stakeholders— exists and meets regularly to coordinate iCCM activities.

METRIC:
Yes: MOH-led iCCM stakeholder group established and meeting as outlined in terms of reference (TOR), or if no TOR exists, at a minimum of twice per year

Partial: MOH-led iCCM stakeholder group established but meets less than twice (0–1 meeting) per year

No: MOH-led iCCM stakeholder group not established

RATIONALE:
This indicator demonstrates the MOH's ownership, leadership and management capacity to closely monitor the iCCM strategy and to coordinate activities with the participation of all stakeholders. Because activities are typically highly interdependent (e.g., they may require pooling of various resources or agreement on input-output relationships), effective coordination is critical to the success of the iCCM process.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., TOR, meeting minutes)

Key informant interviews with iCCM program managers

FREQUENCY:	DISAGGREGATE BY:
Annual	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

The "iCCM stakeholder coordination group" should be led by the MOH, meaning that it is led either by a specific iCCM focal unit or by a broader unit with clearly defined responsibilities for iCCM within a wider child health mandate. Whatever the leading unit or entity, it should have a person or persons with specific responsibility for coordinating, strengthening and reporting on iCCM activities, as specified in job descriptions, TORs and/or other administrative documents. The coordination group should include key stakeholders, which could be nongovernmental organizations (NGOs), private sector, donor and other agencies, etc.

"Meets regularly" is defined as meeting at least two times per year.

The country must meet all conditions to receive a rating of "Yes."

Data requirements and recommendations for data collection

Documents such as working group TORs, meeting minutes, job descriptions, etc., should be consulted; if these are not found, appropriate authorities may be asked verbally.

Interpretation of indicator and caveats

In general, coordination efforts should be undertaken within the broader health and child health contexts. When assigning a rating to this indicator, emphasis should be given to whether the MOH is leading the coordination of iCCM activities, more than whether there are separate and specific iCCM units and working groups. If the rating is "Partial," it is important to document specific reasons why the coordination group meets less than two times per year or is otherwise not fully functional. If the rating is "No," it is important to document why a coordination group does not exist.

COMPONENT: COORDINATION AND POLICY SETTING		
NO. 1.3	**INDICATOR: iCCM partner map**	**TYPE: NMS**
DEFINITION: List or map of iCCM partners, activities and locations is available and up to date		
METRIC: Yes: List/map of all known sites where iCCM is being implemented, by whom and for which condition (diarrhea, pneumonia or malaria) is available and has been updated within the last year Partial: List/map of some or all known iCCM partners, activities and locations available but not updated within the last year No: List/map of iCCM partners, activities and locations not available		
RATIONALE: Documentation of iCCM partners and their activities in different locations within a given country will assist policymakers and service providers to make effective and efficient use of resources, while contributing to improved communication and standardization of iCCM strategies.		
DATA SOURCE AND COLLECTION METHOD: Document review of administrative documents (e.g., maps, administrative records)		
FREQUENCY: Annual		**DISAGGREGATE BY:** NA
DIRECTION OF DESIRED CHANGE: "Yes" or movement toward "Yes" is desirable		**LEVEL OF INDICATOR:** Input
MEASUREMENT NOTES: **Data element definitions** An "iCCM partner" is defined as any group that is implementing iCCM in the country. The list or map should include all known CCM partners and sites, and have been updated in the past year, to receive a rating of "Yes." **Data requirements and recommendations for data collection** Documents such as maps and other administrative records should be consulted. **Interpretation of indicator and caveats** If the rating is "Partial," it is important to document where the barriers, shortcomings or gaps are. If the rating is "No," it is important to document why no list or map exists.		

COMPONENT: COORDINATION AND POLICY SETTING		
NO. 1.4	**INDICATOR: iCCM target areas defined**	**TYPE: NMS**

DEFINITION:
Target areas for iCCM are defined, based on country-specific criteria

METRIC:
Yes: Target geographic areas for all iCCM conditions (i.e., diarrhea, pneumonia, and malaria in countries with malaria) are defined based on country-specific criteria

Partial: Some but not all of the above conditions are met (Either target areas are defined for *all* iCCM conditions but *are not* based on country-specific criteria, *or* target areas are defined for some *but not all* iCCM conditions and *are* based on country-specific criteria

No: iCCM target areas are not defined for any condition

RATIONALE:
This indicator measures country readiness for iCCM implementation and the extent to which iCCM-targeted geographic areas are based on selected country-specific criteria (e.g., distance, poverty). It will also make it possible to compare iCCM performance across targeted areas, which can in turn contribute to ideas for corrective measures to better focus iCCM efforts.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., operational plans, guidelines)

FREQUENCY:	**DISAGGREGATE BY:**
Annual	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions
A "target area" is defined as a specific geographic area where iCCM efforts will be focused. Guidelines or other documents should specify the targeted areas and criteria for selection, which can be defined by the country (e.g., political, financial, distance).

In order to receive a "Yes" rating, target areas should be defined for all iCCM conditions (diarrhea, pneumonia, and malaria in countries with malaria) and based on country-specific criteria.

Data requirements and recommendations for data collection
Relevant documents such as operational plans, guidelines and other documents, should be consulted for evidence regarding targeted areas and the criteria used in their selection. If such documents are not found, appropriate authorities may be asked verbally. The data source should be documented.

Interpretation of indicator and caveats
If the rating is "Partial" or "No," it is important to document which iCCM conditions do not have targeted areas, which targeted areas are not based on country-specific criteria and reasons for shortcomings.

COMPONENT 2. COSTING AND FINANCING

COMPONENT: COSTING AND FINANCING		
NO. 2.1	INDICATOR: Annual iCCM costed operational plan	TYPE: NMS

DEFINITION:
A costed operational plan for iCCM exists (or is part of a broader health operational plan) and is updated annually

METRIC:
Yes: A costed iCCM operational plan / work plan for all relevant iCCM conditions (as specified by country policy or implementation status) exists (or is part of a broader health operational plan) and has been updated within the past year

Partial:

- A costed iCCM operational/work plan exists (or is part of a broader health operational plan), includes at least one but not all relevant iCCM conditions, and has been updated within the past year
  OR
- A costed iCCM operational/work plan exists (or is part of a broader health operational plan) and includes at least one relevant iCCM condition, but has not been updated within the past year

No: No costed plans for iCCM are available for any relevant health condition.

RATIONALE:
This indicator measures whether financial resources have been committed to the operational plan that supports iCCM. Subsequent analysis can determine whether it is sufficient, well spent or specifically funded.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., operational plans, work plans, budgets)

FREQUENCY:	DISAGGREGATE BY:
Annual	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions
A "costed operational plan" (may be called an "operational plan," "work plan," or other similar plan) includes programmatic goals, clearly stated and quantified objectives, and iCCM activities that clearly support the plan's goals and objectives. Activities should be broken down into the resources needed; these resources should be costed. If iCCM is included in a broader health or child health operational plan, iCCM activities should be costed in order to receive a rating of "Yes."

The work plan must meet all criteria in order to receive a rating of "Yes."

Data requirements and recommendations for data collection
If possible, the iCCM annual work plan or equivalent should be reviewed by an observer with a financial background. It should include the elements listed in "Data element definitions."

Interpretation of indicator and caveats
If the rating is "Partial," it is important to document what elements are missing or why the plan has not been updated. If the rating is "No," it is important to document why no costed plan exists.

COMPONENT: COSTING AND FINANCING		
NO. 2.2	INDICATOR: iCCM national financial contribution	TYPE: Special study (SS)

DEFINITION:
Percentage of the total annual iCCM budget which comes from national funding sources

METRIC:
Numerator: Total annual public budgeted funding (MOH, provincial, and municipal budgets) allocated to iCCM
Denominator: Total annual budgeted funding allocated to iCCM program (public plus international donors)

RATIONALE*:* This indicator measures how much of the annual budget for iCCM comes from national sources and therefore helps to demonstrate national ownership of the iCCM program rather than dependence on external financial resources.

DATA SOURCE AND COLLECTION METHOD:
Costing study, including analysis of administrative budgets and documents

FREQUENCY:	DISAGGREGATE BY:
Episodic	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Input

MEASUREMENT NOTES:

Data element definitions

"Total annual public budgeted funding" (numerator) is annual budget allocations from all government sources that are specifically directed to the iCCM program.

"Total annual budgeted funding" (denominator) is the total amount of annual budgeted funding specifically directed to iCCM from all known government and international donor sources.

Both recurrent and capital figures should be included. While it would be ideal to collect actual expenditure data as opposed to budget allocations, expenditures by subprogram are rarely if ever tracked, so budget allocation data is recommended.

Data requirements and recommendations for data collection

Identifying total iCCM budgets and expenditures is very difficult because they often are spread across different organizations, are included in different cost centers and represent only a part of total child health costs. For example, total expenditures related to treating pneumonia in the community may include drugs purchased by an international agency, training paid by an NGO, per diems paid by a health center and supervision paid by a district health office. Data may potentially be extracted from budget documents in the MOH and records from international donors, but in decentralized settings—where iCCM may be funded from different sources and budgets managed at subnational levels—an SS will most likely be needed to determine total national-level funding.

Interpretation of indicator and caveats

This indicator shows national government budget allocations for iCCM and how they compare with international donations, as a rough indication of host-country government ownership. It only provides a partial picture, however, because unless actual expenditures are measured, it only shows planned and not actual funding. It also does not include private sector costs or host country donations. Finally, as stated above, it may be difficult to identify iCCM allocations when iCCM is undertaken within broader child health programs, and to distinguish iCCM allocations from other child health allocations.

COMPONENT: COSTING AND FINANCING		
NO. 2.3	INDICATOR: Expenditure (1): iCCM proportion of disease program	TYPE: SS

DEFINITION:
Average annual recurrent actual expenditure for iCCM in geographic target areas as a percentage of total average expenditure on child health, by type of condition

METRIC:
Numerator: Annual recurrent expenditure for iCCM in target areas where iCCM programs operate (by type of condition)

Denominator: Total annual recurrent expenditure on child health in target areas (by type of condition)

RATIONALE:
This indicator measures how much is spent on iCCM treatment as a proportion of total child health expenditures. It shows how funding for iCCM contributes to the overall response to each child health condition, which is one indication of iCCM's role in the child health program.

DATA SOURCE AND COLLECTION METHOD:
Costing study, including analysis of financial expenditure records

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ Type of condition ▪ Geographic area (e.g., province, district) where possible in countries with decentralized health systems
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better over time until iCCM program is mature	Output

MEASUREMENT NOTES:

Data element definitions

Numerator: "Recurrent expenditure" should include the following:

- Cost of drugs purchased for the iCCM program
- Payments to CHWs (if relevant)
- Cost of CHW trainings
- Per diems of supervisors
- Other expenditures directly related to iCCM (to be defined by each country but could include items such as CHW transport-related expenditures, reporting forms, supervisors' transport, or other items directly associated with iCCM)

The numerator for this indicator is essentially the same as the numerator for indicators 2.4 and 2.5. The three indicators can be measured from data collected during the same costing study.

Denominator would include the same costs as numerator, plus costs of treating iCCM diseases through all levels of the system (i.e., iCCM costs plus health facility/health system costs).

Data requirements and recommendations for data collection

Identifying total iCCM expenditures is very difficult because they often are spread across different organizations, are included in different cost centers and represent only a part of total child health costs. For example, the cost of treating childhood diseases in iCCM programs (numerator) may include drugs purchased by an international agency, training paid by an NGO, per diems paid by a health center and supervision paid by a district health office. The total cost of treating those same diseases (denominator) would include those same costs at the community level as well as the cost of services provided in facilities. Because of the difficulty of identifying all these costs, this indicator can only be measured with an SS. However, as mentioned in "Data element definitions," from a single SS, several other indicators can be measured as well.

Interpretation of indicator and caveats

This will show the proportion of expenditures on children under five that goes through iCCM, by type of condition. It can be used to better understand how big a role iCCM plays within the broader child health program, and in particular, how iCCM expenditures compare to other child health expenditures, such as those associated with facility-based services.

Measurement issues include:

- How to get a big enough representative sample that is feasible.
- Which expenditures to include (e.g., NGO management costs)

COMPONENT: COSTING AND FINANCING		
NO. 2.4	INDICATOR: Expenditure (2): Average iCCM expenditure per capita (child) by disease program	TYPE: SS

DEFINITION:
Average annual recurrent actual expenditure in iCCM programs per capita (child) under five in target areas by type of condition

METRIC:
Numerator: Annual recurrent iCCM expenditure in target areas (by type of condition)

Denominator: Population under five each year in target areas

RATIONALE:
This indicator will measure how much was spent on average for each child under five in iCCM target areas. Figures can be compared across countries or across subregional areas within countries and would be used mainly to measure equity in iCCM resource allocation.

DATA SOURCE AND COLLECTION METHOD:
Costing study, including analysis of financial expenditure records; census or other source required for denominator

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ Type of condition ▪ Geographic area (e.g., province, district) where possible in countries with decentralized health systems
DIRECTION OF DESIRED CHANGE: Toward optimal (standard cost) levels (see "Interpretation of indicator and caveats")	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

Numerator: "Recurrent iCCM expenditure" includes the following:

- Cost of drugs purchased for the iCCM program
- Payments to CHWs (if relevant)
- Cost of CHW trainings
- Per diems of supervisors
- Other expenditures directly related to iCCM (to be defined by each country but could include items such as CHW transport-related expenditures, reporting forms, supervisors' transport, or other items directly associated with iCCM)

The numerator for this indicator is essentially the same as the numerator for Indicators 2.3 and 2.5. The three indicators can be measured from data collected during the same costing study.

Denominator: Total number of children under five in CHW catchment areas

Data requirements and recommendations for data collection

Identifying total iCCM costs (the numerator) is very difficult because expenditures often are spread across different organizations, are included in different cost centers and represent only a part of total child health costs. For example, the total cost of treating pneumonia in the community may include drugs purchased by an international agency, training paid by an NGO, per diems paid by a health center and supervision paid by a district health office. Because of the difficulty of identifying these costs, this indicator can only be measured with an SS. However, as mentioned in "Data element definitions," from a single SS, several other indicators can be measured as well. Note that differences in costs across countries may be partly due to different input prices.

For the denominator, census or similar data will be needed to determine the number of children under five in target areas of interest.

Interpretation of indicator and caveats

This indicator will show how much is being spent on iCCM services per child, and would be used mainly to measure equity and efficiency in iCCM resource allocation. As young iCCM programs grow in their early stages, it is generally a positive sign if this figure increases because it means that more resources per child are allocated to the program. Ideally, a mature program should allocate the amount of resources needed to provide services according to national or international standards ("standard cost"), and no more than that amount. If a program spends more per child than such standard cost levels, it may represent waste or inefficiency; in such cases, movement toward standard cost levels (lower cost per child) would be desirable.

Optimal levels of cost per child will also depend on the extent and effectiveness of child health coverage through primary health care facilities. If facility-level data is collected in the cost study for this indicator, it may be informative to compare cost per child through iCCM with cost per child through health facilities.

Other issues related to data collection include:

- How to get a big enough representative sample that is feasible
- Which expenditures to include (e.g., NGO management costs)

COMPONENT: COSTING AND FINANCING		
NO. 2.5	INDICATOR: Expenditure (3): Average cost per iCCM contact	TYPE: SS

DEFINITION:
Average expenditure per iCCM contact by type of condition

METRIC:
Numerator: Annual recurrent iCCM expenditure in target areas (by type of condition)

Denominator: Number of iCCM contacts each year (by type of condition)

RATIONALE:
This indicator will measure how much was spent on average for each service provided (contact). Figures can be compared across countries or across subregional areas within countries and would be used mainly to compare efficiency in iCCM resource use.

Data source and collection method:
Costing study, including analysis of financial expenditure records; service statistics required for denominator

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ Type of condition ▪ Geographic area (e.g., province, district) where possible in countries with decentralized health systems
DIRECTION OF DESIRED CHANGE: Higher = worse (in most cases; see also "Interpretation of indicator and caveats")	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

Numerator: "Recurrent iCCM expenditure" includes the following:

- Cost of drugs purchased for the iCCM program
- Payments to CHWs (if relevant)
- Cost of CHW trainings
- Per diems of supervisors
- Other expenditures directly related to iCCM (to be defined by each country but could include items such as CHW transport-related expenditures, reporting forms, supervisors' transport, or other items directly associated with iCCM)

The numerator for this indicator is essentially the same as the numerator for indicators 2.3 and 2.4. The three indicators can be measured from data collected during the same costing study.

Denominator: The definition of "contacts" may depend on what information is available in each country and what is recorded in the system. They could be defined either as the number of visits to CHWs by children under five seeking health services (whether or not they receive a treatment), or the number of children under five who are treated. If both visits and treatments are recorded separately in the system, the analysis should use both and compare the two results. Which definition is used should be clearly documented.

Data requirements and recommendations for data collection

Identifying total iCCM expenditures is very difficult because they often are spread across different organizations, are included in different cost centers and represent only a part of total child health costs. For example, the total cost of treating pneumonia in the community may include drugs purchased by an international agency, training paid by an NGO, per diems paid by a health center and supervision paid by a district health office. Because of the difficulty of identifying these costs, this indicator can only be measured with an SS. However, as mentioned in "Data element definitions," from a single SS, several other indicators can be measured as well. Note that differences in costs across countries may be partly due to different input prices.

For the denominator, data will come from service statistics kept by CHWs on the number of contacts with children under five years of age.

Interpretation of indicator and caveats

This indicator will show how much is being spent on iCCM services per child, and would be used mainly to compare efficiency in iCCM resource use. Issues include the following:

- How to get a big enough representative sample that is feasible
- Which expenditures to include (e.g., NGO management costs)
- Will the CHW registers or other records include the number of contacts with children under five, and if so, how are contacts defined and recorded?

Regarding the point about contacts with children, as noted in "Data element definitions," the denominator (contacts) may be defined in two different ways; if both are tracked by the system in a given country, the indicator can likewise be measured two different ways. Using a denominator of "total visits" would tend to result in lower cost because drug costs would be spread over all patients, including some who do not receive drugs. Conversely, using only "patients treated" would tend to result in higher costs because time costs spent by CHWs with both treated and untreated patients would be allocated to the treated patients only. True costs will likely lie somewhere between the two. If both visits and treatments are recorded by the system, the indicator should ideally be measured both ways.

While in most cases a lower cost per contact would be preferred to higher cost (because lower costs would imply a more efficient program), there may be some instances where higher cost per contact would be preferred. For example, if CHWs are frequently out of key drugs, the cost per visit may be lower than if most CHWs have drugs. Likewise, programs with more supervision and training may have higher costs per contact, but the quality of service might be much better in the higher-cost-per-child program. Such possible factors should be considered when interpreting this indicator.

COMPONENT 3. HUMAN RESOURCES

COMPONENT: HUMAN RESOURCES		
NO. 3.1	INDICATOR: Training strategy	TYPE: NMS

DEFINITION:
Existence of comprehensive iCCM training strategy that is competency based

METRIC:
Yes: The training strategy has all the critical components for successful training. Components may be country defined but should ideally include the following (based on WHO standards):

- Recommended length of 5–6 days
- Uses a trainer-to-participant ratio of 1:4 or better (where feasible)
- Trainers have been trained in the iCCM course and in facilitation skills
- Includes training of supervisors as well as CHWs
- Includes at least 30–35% of the training time devoted for actual clinical training including examining and treating actual cases (competency based)
- Includes follow-up visits within 4–6 weeks after initial training
- Other criteria defined by country

Partial: Strategy has at least two, but not all, of the above critical components (not counting "other")

No: Strategy has no critical components or there is no written training strategy

RATIONALE:
Training is a foundation of iCCM programs and should be viewed as part of a comprehensive strategy to support quality iCCM implementation rather than as an isolated activity. In addition, trainings themselves must be designed to be competency based, building and testing both knowledge and skills of CHWs to deliver iCCM services according to specified standards. This indicator encourages countries to develop (and continually update) a comprehensive training strategy.

Data source and collection method:
Document review of administrative documents (e.g., training strategy, curricula, implementation guidelines)

FREQUENCY:	DISAGGREGATE BY:
Annual until a "Yes" rating is achieved; afterward, whenever the training strategy is revised	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

"Comprehensive iCCM training strategy" specifies critical components such as those listed in "Metric."

The training strategy should include all listed criteria in order to obtain a rating of "Yes."

Data requirements and recommendations for data collection

The training strategy itself and related materials should be reviewed to determine which components it contains.

While not included in the list of critical components required to achieve a "Yes," it is also strongly recommended that countries include in their strategy an information system for tracking basic data on training, such as the number of each type of cadre trained and functional status of trainees. Such a system would contribute toward data collection for several of the other indicators in the human resources component.

Interpretation of indicator and caveats

If the rating is "Partial," it is important to document which components are and are not included in the training strategy, including reasons why certain elements are missing. If the rating is "No," it is important to document why there is no strategy.

COMPONENT: HUMAN RESOURCES		
NO. 3.2	INDICATOR: iCCM CHW density	TYPE: Routine monitoring (RM)

DEFINITION:
Number of CHWs trained and deployed for iCCM per 1,000 children under five in target areas

METRIC:
Numerator: Number of CHWs who are trained and deployed (to serve in a specific target area)

Denominator: Number of children under five in target communities ÷ 1,000

RATIONALE:
Density of health workers is one of the most commonly reported indicators internationally for assessing health workforce resource levels. This indicator looks specifically at the number of CHWs trained and deployed for iCCM relative to the number of children under five in areas targeted for iCCM. Information on density of CHWs deployed for iCCM can provide a crude estimate of potential access to iCCM services. Within a given country, this indicator can be monitored over time against established targets, where they exist.

DATA SOURCE AND COLLECTION METHOD:
Review of administrative records (e.g., facility reports, CHW reports, civil service payroll registers) or CHW survey
Census estimates or similar estimate required for denominator (U5 population in catchment areas)

FREQUENCY:	DISAGGREGATE BY:
Annual if using administrative records; episodic if by CHW survey	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"CHWs" are community-based health workers accepted by their communities and trained in iCCM to provide basic treatment and preventive health services to children.

"Number of CHWs trained" should be available from administrative records and should be based on country-specific minimum training requirements in iCCM that a CHW should meet.

A "target area" for iCCM is a location identified by countries as needing a trained CHW in order to improve access to child health services for the population.

Data requirements and recommendations for data collection

In general, information for this indicator should be derived from administrative records such as CHW rosters, training records, etc., (for the numerator) and census or similar population data (for the denominator). As with most measures of health worker density, periodic validation through a population census, labor force survey, health facility assessment or other representative survey is recommended.

Interpretation of indicator and caveats

Comparisons of densities between countries and even within countries by region or district need to be made cautiously. There are currently no commonly accepted thresholds or benchmarks to guide interpretation of densities of CHWs deployed in iCCM across countries, but individual countries may set targets and monitor progress toward those targets.

Indicators on density do not provide complete and accurate information on access to iCCM services, as CHWs may not always reside in their catchment areas, may not be consistently available to provide services or may lack supplies. In addition, density does not provide information on the travel time required to reach iCCM services or on the equity of the distribution of iCCM-trained CHWs. A more complete picture of access to iCCM services is obtained when this indicator is interpreted in combination with other indicators in this component.

The information collected to measure this indicator can be used to measure related indicators of interest to a country, such as percentage of target areas with at least one trained CHW. As with many indicators in this guide, it is especially important to observe trends and changes over time.

COMPONENT: HUMAN RESOURCES		
NO. 3.3	INDICATOR: Targeted CHWs providing iCCM	TYPE: RM

DEFINITION:
Proportion of CHWs targeted for iCCM who are trained and providing iCCM according to the national plan

METRIC:
Numerator: Number of CHWs targeted for iCCM who are trained and have provided iCCM services in the last 3 months

Denominator: Number of CHWs targeted for iCCM

RATIONALE:
As part of planning human resources for iCCM, countries are encouraged to identify target areas for iCCM and determine the number of CHWs to be trained and deployed in these target areas. This indicator tracks country progress toward achieving and sustaining the targeted number of CHWs providing iCCM services, by measuring the number of CHWs who have been trained in iCCM and who are actively providing iCCM services at the time of assessment.

DATA SOURCE AND COLLECTION METHOD:
Review of administrative records (e.g., CHW registers and reports) and routine CHW reporting or CHW survey

FREQUENCY:	DISAGGREGATE BY:
Annual if using administrative records; episodic if by CHW survey	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"CHWs" are community-based health workers accepted by their communities and trained in iCCM to provide basic treatment and preventive health services to children.

"Targeted for iCCM" refers to the number of CHWs that the country plans to have trained in iCCM.

The number of CHWs "who are trained" should be available from administrative records and should be based on country-specific minimum training requirements in iCCM that a CHW should meet.

The number of trained CHWs "who have provided iCCM services in the last 3 months" should be based on written or oral reports submitted by CHWs, for example, "CHW has submitted at least one iCCM monthly report in the last 3 months," or "CHW has attended at least one monthly meeting at health facility in last 3 months and reported treatment numbers," or similar evidence defined by the country.

Data requirements and recommendations for data collection

Ideally, the information for this indicator should be available from administrative training records, or possibly a training database that tracks active trainees. The records may be kept centrally but are often found only at district level or even at health centers. A national-level database would be beneficial and can be used when measuring several of the other indicators in this component. If the number of trained CHWs is known but not how many are active, it may be necessary to include questions on this topic in CHW surveys to see how many CHWs are currently active.

Interpretation of indicator and caveats

This indicator is similar to Indicator 3.2, which measures the number of iCCM-trained CHWs per target population, while this indicator measures the number of CHWs providing iCCM against deployment targets. The information collected to measure this indicator can be used to measure additional indicators of interest not described in this guide, such as the percentage of target areas with at least one trained CHW.

A high proportion of targeted CHWs providing iCCM suggests improved access to trained providers in target areas. However, this indicator should be looked at together with others, such as Indicator 3.2 to understand whether the density of trained CHWs is appropriate, and Indicators 4.2 and 4.3 to understand whether trained CHWs have the necessary medicines and diagnostic supplies to provide services.

Interpretation of changes in the proportion of targeted CHWs providing iCCM over time should take into account shifting numbers of target CHWs and can be informed by data on CHW retention (see Indicator 3.4).

COMPONENT: HUMAN RESOURCES		
NO. 3.4	INDICATOR: Annual iCCM CHW retention	TYPE: RM/SS

DEFINITION:
Proportion of CHWs trained in iCCM who are providing iCCM 1 year after initial training

METRIC:
Numerator: Number of CHWs providing iCCM services 1 year after initial iCCM training (time frame can be modified if desired by country stakeholders)

Denominator: Number of CHWs in the initial iCCM training

RATIONALE:
This indicator encourages countries and agencies involved in training and supporting CHWs to monitor the status of trainees and identify issues that may cause trained CHWs to stop providing iCCM services. It also promotes contact with CHWs trained in iCCM during the initial posttraining period and can help identify early on the types of support that need to be put in place. Finally, it will also help generate estimates of how many CHWs will need to be recruited and trained as replacements.

DATA SOURCE AND COLLECTION METHOD:
Review of administrative records (e.g., training records, CHW reports, supervision records) or CHW survey

FREQUENCY:	DISAGGREGATE BY:
Annual if using administrative records; episodic if by CHW survey	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"CHWs" are community-based health workers accepted by their communities and trained in iCCM to provide basic treatment and preventive health services to children.

As with Indicators 3.2 and 3.3, countries will need to define criteria for "providing iCCM services." The number of "CHWs trained in iCCM" should be available from administrative records; inclusion should be based on country-specific minimum training requirements in iCCM that a CHW should meet. For simplicity's sake, it is recommended that the denominator for this indicator be the number of CHWs who were trained in iCCM in any given quarter (3-month period).

Evaluation of whether CHWs are actively providing iCCM services 1 year after training should be based on written or oral reports submitted by CHWs, for example, "CHW has submitted at least one iCCM monthly report in the previous 3 months," or "CHW has attended at least one monthly meeting at health facility in previous 3 months and reported treatment numbers," or similar evidence defined by the country.

Data requirements and recommendations for data collection

Ideally, the information for this indicator should be available from administrative training records, or possibly a training database that tracks active trainees. The records may be kept centrally but are often found only at district level or even at health centers.

If such records are available, it is recommended that quarterly cohort analysis be done as the most precise and relatively simple approach. In such an analysis, the number of CHWs trained in iCCM would be tracked every quarter (the denominator), and then 1 year after the end of that quarter, the number of active CHWs would be collected or calculated (the numerator). In theory, it is possible to measure the indicator each quarter if all required information is available from administrative records, but it will likely be more practical to measure it annually as four quarterly calculations. The quarterly results can be presented separately or averaged together for a single annual figure.

If the number of trained CHWs in a quarter is known, but not how many are active 1 year later, it may be necessary to include relevant questions on this topic in CHW and/or health center surveys. Selected approaches and criteria for determining if a CHW is still providing services should be documented.

Interpretation of indicator and caveats

Approaches to measuring retention, particularly of CHWs, are not well established and drawing comparisons across countries is difficult. This indicator attempts to standardize the time frame of measurement relative to training. It does not provide any information on retention of CHWs after the first year of training. As a result, this indicator is most appropriate in the early phases of iCCM program implementation and scale-up, when large numbers of CHWs are being trained in iCCM. The indicator alone does not provide information on reasons why CHWs are not providing iCCM services; additional data should be collected to shed light on possible reasons. This indicator can be used to help plan for replacements and refresher trainings and to identify issues with retention early on in iCCM programs to improve sustainability. More mature iCCM programs will want to consider using other indicators to assess retention of CHWs trained in iCCM, such as the percentage of CHWs ever trained who are still active.

COMPONENT 4. SUPPLY CHAIN MANAGEMENT

COMPONENT: SUPPLY CHAIN MANAGEMENT		
NO. 4.1	INDICATOR: Medicine and diagnostic registration	TYPE: NMS

DEFINITION:
All key iCCM medicines and diagnostics are registered with the National Regulatory Authority (NRA) or similar agency (key products defined by country policy)

METRIC:
Yes: iCCM medicines and diagnostics appropriate for use with children for all relevant conditions are registered (if required) with the NRA

Partial: iCCM medicines and diagnostics for some iCCM conditions are registered with the NRA

No: No iCCM medicines or diagnostics are registered with the NRA

RATIONALE:
Sustained availability of high-quality pharmaceutical supplies for the iCCM programs starts with their registration with the NRA. NRA certificates or waivers are required for starting domestic bidding or customs clearance in most countries

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., list of registered drugs or other official list from NRA or similar agency)

FREQUENCY:	DISAGGREGATE BY:
Annual	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

iCCM medicines and diagnostics likely to be assessed include the following:

- low osmolarity ORS and zinc supplements for diarrhea
- antibiotics for pneumonia
- ACTs (and RDTs where appropriate) for fever/malaria in malaria-endemic countries
- others required by program (tailor to each country's needs)

"Key iCCM medicines or diagnostics" does not mean all products managed by CHWs but would mean the most critical medicines and diagnostics for priority conditions such as pneumonia, malaria and diarrhea. Policymakers in each country will decide which products to include.

Data requirements and recommendations for data collection

Administrative records of the NRA or equivalent should be reviewed. Manufacturers' own internal release documents cannot be considered as equivalent to the NRA certificate for the purpose of releasing pharmaceuticals. To achieve a rating of "Yes," all key drugs for all iCCM conditions must be registered if registration is required. (Note that in some cases, registration of ORS might not be required; in those cases, only drugs requiring registration would be included.)

Interpretation of indicator and caveats

Registration of key medicines is only the first step toward improved availability of iCCM products at the community level. This indicator should be interpreted along with other indicators in this component. Reasons for ratings of "Partial" or "No" should be documented.

COMPONENT: SUPPLY CHAIN MANAGEMENT		
NO. 4.2	INDICATOR : Medicine and diagnostic availability	TYPE: RM

DEFINITION:
Percentage of iCCM sites with all key iCCM medicines and diagnostics in stock during the day of assessment visit or last day of reporting period (key products defined by country policy)

METRIC:
Numerator: Number of iCCM sites with all key iCCM medicines and diagnostics in stock during the last assessment/observation visit or the last day of a reporting period.

Denominator: Number of iCCM sites assessed.

RATIONALE:
Having key iCCM products available at iCCM sites through a well-functioning supply or logistics system is essential to enable CHWs to treat children under five. This indicator measures to what extent such products are available at a given point in time.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting, or CHW survey with direct observation of supplies on day of visit

FREQUENCY:	DISAGGREGATE BY:
Monthly or quarterly if through routine supervision reporting. Episodic if collected through a CHW survey.	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

iCCM medicines and diagnostics likely to be assessed include the following:

- low osmolarity ORS and zinc supplements for diarrhea
- antibiotics for pneumonia
- ACTs (and RDTs where appropriate) for fever/malaria in malaria-endemic countries
- others required by program (tailor to each country's needs)

"Key iCCM medicines or diagnostics" does not mean all products managed by CHWs but would mean the most essential medicines and diagnostics for priority conditions such as pneumonia, malaria and diarrhea. Policymakers in each country will decide which products to include.

Products are considered "in stock" if there is at least one unit which is not damaged or expired.

Data requirements and recommendations for data collection

This indicator measures product availability (or absence) at a certain point in time and serves as a proxy indicator of the ability of a program to meet communities' needs with a full range of services. In theory, the indicator can be measured on a routine basis through a well-functioning logistics management information system or supervisory report forms, but in countries where such systems are weak, a survey of a sample of CHWs will be necessary.

Interpretation of indicator and caveats

Evaluators should interpret this indicator with caution because facilities can avoid stock-outs by rationing supplies. This indicator does not inform evaluators whether supply levels are adequate to ensure future product availability (see Indicator 4.3), nor whether there have been recent stock-outs. It measures the percentage of iCCM sites with all key "tracer" products (a list of essential drugs used for iCCM) available at a point in time, but does not inform about product availability for products other than those drugs, although availability of other drugs can be assessed at the same time. It is worth reporting the percentage of sites with each individual product as well as the percentage of sites with all products. Where possible, Indicator 4.2 should be used in conjunction with Indicator 4.3 to gain a more complete picture of product availability.

COMPONENT: SUPPLY CHAIN MANAGEMENT		
NO. 4.3	INDICATOR: Medicine and diagnostic continuous stock	TYPE: RM

DEFINITION:
Percentage of iCCM sites with no stock-outs of key iCCM medicines and diagnostics in the past month (key products defined by country policy)

METRIC:
Numerator: Number of iCCM sites with no stock-outs of key iCCM medicines or diagnostics in the past month

Denominator: Number of iCCM sites assessed

RATIONALE:
iCCM products must be continuously available at iCCM sites to reliably deliver iCCM services; this requires a well-functioning supply or logistics system. This indicator helps to track whether key products are continuously available to CHWs and to identify stock-outs.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting or CHW survey

FREQUENCY:	DISAGGREGATE BY:
Monthly or quarterly if through routine supervision reporting. Episodic if collected through a CHW survey.	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

iCCM medicines and diagnostics likely to be assessed include the following:

- low osmolarity ORS and zinc supplements for diarrhea
- antibiotics for pneumonia
- ACTs (and RDTs where appropriate) for fever/malaria in malaria-endemic countries
- others required by program (tailor to each country's needs)

"Key iCCM medicines or diagnostics" does not mean all products managed by CHWs but would include the most essential medicines and diagnostics for priority conditions such as pneumonia, malaria and diarrhea. Policymakers in each country will decide which products to include.

Data requirements and recommendations for data collection

If a well-functioning logistics management information system or routine monitoring and supervision system is in place that captures information on stock-outs in the past month for all selected commodities, the above information could be collected routinely. If no such system is in place, record reviews and/or interviews with CHWs through special surveys will be necessary.

Interpretation of indicator and caveats

This indicator does not measure adequacy of stock levels; such a measurement would entail assessing whether there are enough products to treat all cases but not so much stock as to result in expiries and wastage. Ideally, iCCM programs would have a "Maximum/Minimum" inventory management system, in which each level of the product is assigned "Maximum/Minimum/Reorder/Emergency Order" stock levels for its supplies. However, these systems are not always in place; assessing stock-outs in the past month is a feasible alternative.

The indicator only measures whether stocks were continuously available for the preceding month and does not capture the length of stock-out. Because availability of supplies can fluctuate over time, it is important to measure this indicator as frequently as possible to track trends over time.

COMPONENT: SUPPLY CHAIN MANAGEMENT		
NO. 4.4	**INDICATOR: Medicine and diagnostic storage**	**TYPE: RM**

DEFINITION:
Percentage of iCCM sites with medicines and diagnostics stored appropriately

METRIC:
Numerator: Number of iCCM sites with medicines and diagnostics stored in an appropriate manner.

Denominator: Number of iCCM sites assessed

RATIONALE:
To make sure that medicines and diagnostics are not damaged while they are being stored, CHWs should follow good storage practices. This indicator measures CHWs' ability to store such products properly.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting, or CHW survey including direct observation of storage conditions on the day of the survey

FREQUENCY:	**DISAGGREGATE BY:**
Monthly or quarterly if through routine supervision reporting. Episodic if collected through a survey.	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

Storage conditions can be locally defined by countries, but the following six criteria are commonly used to define "stored appropriately":

- Storage area free of rodents or insects
- Storage area secured with a lock and key, access limited
- Medicines are protected from direct sunlight
- Medicines are stored at appropriate temperature
- Space is sufficient for the quantity of products that should be stored
- Space should be dry, free from flooding

Data requirements and recommendations for data collection

This indicator can only be measured through direct observation of storage space. Such observation should be carried out by someone familiar with proper storage techniques, either through a CHW survey or through supervisory visits.

Interpretation of indicator and caveats

This indicator measures the conditions of storage facilities (including CHW storage spaces) compared with a list of conditions required to protect the integrity of products. When any conditions are not met, products are at risk of damage or expiration. The indicator should be calculated separately for each condition listed in "Data element definitions" (note that the percentage of sites meeting each condition informs which conditions are easiest/hardest to meet), and can also be calculated as the percentage of sites that meet all conditions.

COMPONENT: SUPPLY CHAIN MANAGEMENT		
NO. 4.5	INDICATOR: Medicine and diagnostic validity	TYPE: RM

DEFINITION:
Percentage of iCCM sites with no expired or damaged medicines or diagnostics on the day of observation

METRIC:
Numerator: Number of iCCM sites with no expired or damaged iCCM medicines, RDTs or other key products on the day of observation

Denominator: Number of iCCM sites assessed

RATIONALE:
This indicator can highlight a number of potential problems in the system:

- overstocking that results in expiries
- the inability of iCCM and higher-level sites to practice "first to expire, first out"
- improper stock handling in transportation
- improper storage causing damage to the commodities

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting, or CHW survey including direct observation of product conditions on the day of the survey

FREQUENCY:	DISAGGREGATE BY:
Monthly or quarterly if through routine supervision reporting. Episodic if collected through a survey.	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

The indicator should be measured for all iCCM medicines and diagnostics of interest in each country.

"Expired" means that a product is still in the storage space even after its date of expiration as indicated on the package.

"Damaged" means that a product has visible imperfections either in the packaging or the product itself (e.g., ripped packaging, test envelope opened, discoloration of liquids, unusual smell or stickiness of tablets). For a full list of possible signs of damage refer to either of the following sources:

- John Snow, Inc./DELIVER in collaboration with the World Health Organization. *Guidelines for the Storage of Essential Medicines and Other Health Commodities*. Arlington, Va.: John Snow, Inc./DELIVER, for the U.S. Agency for International Development; 2003.
- World Health Organization-Western Pacific Regional Office (WHO-WPRO), USAID | DELIVER PROJECT, Foundation for Innovative New Diagnostics (FIND), Roll Back Malaria Partnership, President's Malaria Initiative (PMI), UNICEF. *Transporting, Storing, and Handling Malaria Rapid Diagnostic Tests in Health Clinics*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 3, WHO-WPRO; 2009.

Data requirements and recommendations for data collection

This indicator can only be measured through direct observation of stored products. Such observation should be carried out by someone familiar with proper storage techniques, either through a survey or through supervisory visits.

Interpretation of indicator and caveats

Reducing wastage rates saves money and helps ensure that customers receive quality products. This indicator provides an important but incomplete picture of wastage. The full effect of wastage on the program may be greater than that suggested by the indicator. For example, facilities with high wastage rates that dispose of products without proper records may appear to be doing better than facilities with low wastage rates that still have expired or damaged products in the storeroom.

COMPONENT 5. SERVICE DELIVERY AND REFERRAL

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.1	INDICATOR: iCCM treatment rate	TYPE: RM

DEFINITION:
Number of iCCM conditions treated per 1,000 children under five in target areas in a given time period

METRIC:
Numerator: Number of treatments for children under five provided by iCCM condition in a 12-month period in target area by point of treatment (community or facility)

Denominator: Number of children under five in target areas at a given time divided by 1,000

RATIONALE:
This indicator enables an assessment of the utilization of curative services by sick children based on administrative records. If CHW records are available routinely, this indicator can be measured more frequently and easily than coverage indicators that depend on household surveys. However, the denominator requires estimates of the number of children under five, which would need to be determined based on census or equivalent data.

DATA SOURCE AND COLLECTION METHOD:
Routine CHW and health facility reporting (health management information system [HMIS]), or extraction of routine reports, for numerator

Census estimates for U5 population in target areas for denominator

FREQUENCY:	DISAGGREGATE BY:
Monthly or quarterly if based on routinely collected CHW and health facility reporting; episodic if extraction of routine reports is required	▪ Point of treatment (public/private, facility/community, professional/CHW) ▪ iCCM condition ▪ Age group ▪ Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Outcome

MEASUREMENT NOTES:

Data element definitions

Treatment at any level is defined as a record of treatment for an iCCM condition in CHW and health facility reports. If the HMIS is used for this indicator, it is important that treatment by CHWs be reported separately from facility-based treatments.

Data requirements and recommendations for data collection

This indicator is meant to be collected through routine data sources such as CHW and health facility reports. Ideally, the number of treatments will be collected and reported separately for the CHW and health facility. Comparing these two figures gives an estimate of the share of total coverage provided by the iCCM program as opposed to facility-based services. The denominator requires census or other data on catchment area populations.

If routine reporting does not capture the desired data—or does not disaggregate CHW and facility-based treatments—the data could potentially be extracted from routine CHW and facility registers/reports for a set time period, using service registers as the data source. If such an extraction is not feasible, it would be best to use coverage indicators instead, such as Indicators 5.4 and 5.5, which require episodic coverage surveys.

Interpretation of indicator and caveats

In some countries, CHW and facility-based treatments are aggregated in HMIS reports from the facility level, preventing evaluators from disaggregating and comparing the two values.

This indicator does not measure whether a program is addressing the treatment needs of a given population. It will only indicate the number of children who received services as a percentage of the catchment area. The denominator is all children in the target area whether they were sick or not, and therefore does not measure whether treatment was responding to incidence of iCCM conditions or not.

The disaggregation recommended for measurement of this indicator depends on CHW treatment data being routinely available, which often will not be the case. The denominator also depends on catchment area estimates of the U5 population in geographic areas of interest, which may not always be available, accurate or up to date.

In some settings, information from this indicator can also be used to calculate a "treatment ratio" (ratio of treated cases to expected cases by iCCM condition in a given catchment area). The treatment ratio enables an assessment of the utilization of curative services by sick children, based on administrative records, on an annual basis and with less cost than coverage indicators. As such, the treatment ratio can help provide an interim estimate of coverage between surveys. The numerator is the treatment rate (this indicator) while the denominator is a modeled estimate of expected cases per U5 child in a given catchment area (by iCCM condition) over a 1-year period. These estimates are derived by the Child Health Epidemiology Reference Group (CHERG) as being 0.3 pneumonia cases per child per year (global estimate for Millennium Development Goal [MDG] countries), 5 diarrhea cases per child per year (may vary by country or region), and 1–2 malaria cases per child per year (depending on endemicity). The CHERG estimates of the denominator may not reflect actual incidence of the condition in target areas, but are seen by some as being better than indicators that do not take disease incidence into consideration at all. However, modeled estimates can be hard to interpret.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.2	INDICATOR: Caseload by CHW	TYPE: RM

DEFINITION:
Proportion of CHWs (or iCCM sites in cases of multiple CHWs/area) treating at least X cases per month (to be defined locally)

METRIC:
Numerator: Number of CHWs (or iCCM sites in cases of multiple CHWs/site) treating at least X cases per month (to be defined locally)

Denominator: Number of CHWs (or iCCM sites in cases of multiple CHWs/site) in area of interest

RATIONALE:
Ideally, CHWs should be assessed periodically to determine whether they are seeing sufficient cases to sustain their skills and meet the treatment needs of their community, while not seeing so many cases that they become overburdened. Currently, there is no global evidence base that determines levels necessary to sustain skills, but morbidity levels are a function of catchment area and epidemiology. Collecting morbidity rates is the first step in determining what should be the ideal caseload range per CHW or iCCM site for various profiles. Countries should define ideal caseload locally depending on their social and health system context.

DATA SOURCE AND COLLECTION METHOD:
Routine CHW reporting or extraction of routine reports

FREQUENCY:	DISAGGREGATE BY:
Annual, or more frequently if desired and feasible	▪ iCCM condition ▪ Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

Treatment at any level is defined as a record of treatment for any iCCM condition in CHW or health facility reports.

In most cases, the unit of measurement will be CHWs, but in cases where multiple CHWs cover an area together, then that area (the "iCCM site") can be the unit of measurement.

Desired caseload should be defined locally.

Data requirements and recommendations for data collection

This indicator is meant to be collected through routine data sources such as CHW reports. CHW reports should be designed to capture this data and systems should ensure that data from CHW reports reaches the appropriate levels for review and decision-making.

Interpretation of indicator and caveats

The ideal caseload per CHW or iCCM site will depend on the social and health system context, so each country will need to set the appropriate level based on the local situation. It is important that CHWs treat enough patients each month to retain their skills, but it may also be possible that a very high caseload could adversely affect quality, so countries need to seek optimal levels where CHW skills are maintained and community needs met. Interpreting caseload can be hard when more than one CHW delivers iCCM at a given site. In this situation, commonly one CHW is the main provider and keeps the only medicine box—which would means that the other(s) probably do not retain skills. Another example would be that the service is rotated among the CHWs, but programs cannot easily apportion caseloads among them.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.3	INDICATOR: Referral rate	TYPE: RM
DEFINITION: Proportion of sick child cases recommended for referral by the CHW		
METRIC: Numerator: Number of sick children seen by CHWs who are recommended for referral in a target area in a given time period Denominator: Number of sick children seen by CHWs in a target area in a given time period		
RATIONALE: This indicator enables a program to assess the proportion of cases managed that are being referred by CHWs.		
DATA SOURCE AND COLLECTION METHOD: Routine CHW reporting, or CHW survey in which referral data is extracted from CHW registers		
FREQUENCY: Quarterly or monthly if measured through routine CHW reporting; episodic if collected through a CHW survey	**DISAGGREGATE BY:** Subnational geographic area (e.g., province, district, health facility)	
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output	
MEASUREMENT NOTES: **Data element definitions** "Sick children" are children under five years of age presenting with an iCCM condition, including diarrhea, pneumonia, malaria (in malaria-endemic countries) or others if appropriate according to country guidelines. **Data requirements and recommendations for data collection** If referral information is collected routinely through monthly CHW reports, this indicator should be gathered and analyzed at whatever frequency is desired at each level. If the information is not available routinely, it will need to be collected through a CHW survey. In such a survey, the data for the indicator would be obtained from CHW registers for the desired time period. **Interpretation of indicator and caveats** This indicator does not assess how well CHWs identify danger signs, whether referrals are made correctly, or whether the referred child is actually taken to a health facility for care. Therefore, this indicator should be used in conjunction with the indicators on correct referral (7.15) and successful referral (5.9).		

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.4	**INDICATOR: Treatment coverage of diarrhea and malaria**	**TYPE: SS**

DEFINITION:
Percentage of sick children who received timely and appropriate treatment for diarrhea and malaria (reported separately for each iCCM condition)

METRIC:
Numerator: Number of children under five with an iCCM condition (diarrhea or malaria in malaria-endemic areas) who received timely and appropriate treatment during the last 2 weeks

Denominator: Number of children under five with an iCCM condition in the last 2 weeks (report separately for each iCCM condition)

RATIONALE:
This indicator enables an assessment of the utilization of curative services for malaria and diarrhea within a given population. Note that this indicator is to be reported separately for malaria and diarrhea. For each of these illnesses, the indicator measures the percentage of children with these conditions who were able to access curative services at an aggregate level, regardless of their residence, the health service's location or who provides the service; disaggregating the indicator by those variables can provide valuable insights. In the aggregate, the indicator shows whether the need for curative services for children with malaria and diarrhea is being met. If sample size is sufficient, disaggregation by income quintile, sex and age would also provide evidence of equity/disparity in curative child health services.

Measurement of pneumonia treatment coverage through household surveys is no longer recommended because of the poor validity of this indicator.[17,18,29] Most of the children identified as having suspected pneumonia in household surveys do not truly have pneumonia, making interpretation of treatment information very problematic (see *PLOS Medicine* articles for more details).[19,20,21,22] Instead, it is recommended that household surveys capture information on care-seeking practices for signs of suspected pneumonia (see Indicator 5.6). Note that some programs may wish to continue collecting and reporting information on pneumonia treatment through household surveys until an improved approach has been developed.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	**DISAGGREGATE BY:**
Episodic	▪ iCCM condition (diarrhea/malaria) ▪ Point of treatment (public/private, facility/community, professional/CHW) ▪ Subnational geographic area ▪ Other relevant social markers (e.g., ethnicity, religion, sex, age group, educational level of mother, income quintile) if sample size is sufficient
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Outcome

MEASUREMENT NOTES:

Data element definitions

"iCCM conditions" for this indicator include diarrhea, malaria (in malaria-endemic countries) and others if appropriate according to country guidelines.

"Timely treatment" is defined as treatment and support being provided within the advised time frame for each condition according to WHO and/or national-level case management norms and protocols.

Timely treatment is specified for malaria (fever) as being treated within 24 hours of onset of symptoms (often measured in household survey as on the same or next day). Studies have found poor sensitivity and specificity of maternal recall for malaria diagnostic tests (finger/heel stick). Consequently, the current recommendation is that household surveys track treatment coverage of fever and, where possible, supplement with data from service delivery assessment to better understand the proportion of suspected malaria cases that receive appropriate diagnosis and treatment.

No timeliness specification has been determined for diarrhea, but prompt treatment is recommended. In the absence of other guidelines, reporting any appropriate treatment for diarrhea regardless of timing and timeliness of appropriate treatment using various time categories (within 24 hours, within 48 hours, etc.) can be helpful to understand care-seeking and treatment practices.

"Appropriate treatment" is defined as medication/therapy being in accordance with national or WHO guidelines (e.g., ACT for fever/malaria, ORS and zinc for diarrhea). For diarrhea, treatment may be reported separately for ORS and for ORS and zinc; further validation of zinc treatment is required. It is not realistic to expect respondents to recall additional details such as dose, frequency and duration.

Data requirements and recommendations for data collection

This indicator must be collected through a national- or subnational-level household survey such as Demographic and Health Survey (DHS) or Multiple Indicator Cluster Survey (MICS), with adequate sample size to enable disaggregation by factors of interest. Surveying with physical examples of commonly used, appropriate medicines may improve the validity of respondents' recall about the type of treatment.

Interpretation of indicator and caveats

Adequate sample size is required to disaggregate by factors of interest.

Currently, treatment coverage can be derived from MICS and DHS surveys, with some limitations. Questions need to be designed to allow disaggregation by point of treatment. There is a CHERG working group on this subject and discussions are taking place with DHS and MICS for these changes to be mainstreamed. Some recent surveys (e.g., the Malawi 2010 DHS and the 2010 Child Survival and Mortality Survey in Niger) included questions to allow for disaggregation by community- or facility-level treatment. Accuracy of respondent recall may be suspect in terms of measuring whether treatment provided was timely and/or appropriate.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.5	INDICATOR: iCCM treatment coverage of diarrhea and malaria by CHW	TYPE: SS

DEFINITION:
Proportion of overall treatment coverage of diarrhea and malaria being provided through iCCM by CHWs (reported separately for each iCCM condition)

METRIC:
Numerator: Number of children under five with an iCCM condition (diarrhea or malaria in malaria-endemic areas) in the last 2 weeks receiving timely and appropriate treatment from a CHW

Denominator: Number of children under five with an iCCM condition in the last 2 weeks (report separately for each iCCM condition)

RATIONALE:
This indicator measures the proportion of child health coverage for malaria and diarrhea that is provided by CHWs through the iCCM program. Note that this indicator is to be reported separately for malaria and diarrhea. It allows programs to measure what percentage of total coverage is provided by iCCM and whether iCCM is replacing facility-level services or helping to expand aggregate coverage.

Measurement of pneumonia treatment coverage through household surveys is no longer recommended because of the poor validity of this indicator.[17,18,29] Most of the children identified as having suspected pneumonia in household surveys do not truly have pneumonia, making interpretation of treatment information very problematic (see *PLOS Medicine* articles for more details).[19,20,21,22] Instead, it is recommended that household surveys capture information on care-seeking practices for signs of suspected pneumonia (see Indicator 5.6). Note that some programs may wish to continue collecting and reporting information on pneumonia treatment through household surveys until an improved approach has been developed.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ iCCM condition (diarrhea/malaria) ▪ Subnational geographic area (e.g., province, district, urban/rural) if sample size is sufficient ▪ Other relevant social markers (e.g., ethnicity, religion, sex, age group, educational level of mother, income quintile) if sample size is sufficient
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Outcome

MEASUREMENT NOTES:

Data element definitions

"iCCM conditions" include diarrhea, malaria (in malaria-endemic countries) and others if appropriate according to country guidelines.

"Timely treatment" is defined as treatment and support being provided within the advised time frame for each condition according to WHO and/or national-level case management norms and protocols.

Timely treatment is specified for malaria/fever as being treated within 24 hours of onset of symptoms. Studies have found poor sensitivity and specificity of maternal recall for malaria diagnostic tests (finger/heel stick). Consequently, the current recommendation is that household surveys track treatment coverage of fever and, where possible, supplement with data from service delivery assessment to better understand the proportion of suspected malaria cases that receive appropriate diagnosis and treatment.

No timeliness specification has been determined for diarrhea, but prompt treatment is recommended. In the absence of other guidelines, reporting any appropriate treatment for diarrhea from a CHW regardless of timing and timeliness of appropriate treatment by a CHW using various time categories (within 24 hours, within 48 hours, etc.) can be helpful to understand care-seeking and treatment practices.

"Appropriate treatment" includes correct medication/therapy in accordance with national or WHO guidelines (e.g., ACT for fever/malaria and ORS and zinc for diarrhea. For diarrhea, treatment may be reported separately for ORS and for ORS and zinc; further validation of zinc treatment is required.

Data requirements and recommendations for data collection

This indicator must be collected through a national- or subnational-level household survey such as DHS or MICS. If necessary, national stakeholders may need to work with DHS/MICS to ensure that appropriate questions are included in the survey instruments. Surveying with physical examples of commonly used, appropriate medicines may improve the validity of respondents' recall about the type of treatment.

Interpretation of indicator and caveats

This indicator derives directly from the previous indicator (5.4). Both indicators have the same denominator, but this one estimates what percentage of total coverage is provided by iCCM. This information allows programs to know whether iCCM is replacing facility-level services or helping to expand aggregate overall coverage. Even without an increase in total coverage, however, task shifting of curative care from facilities to the community may provide a benefit because of earlier treatment and, perhaps, fewer cases of severe disease as well as less opportunity cost for families.

Adequate sample size is required to disaggregate by factors of interest.

Accuracy of respondent recall may be suspect in terms of measuring whether treatment provided was timely and/or appropriate.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.6	INDICATOR: Appropriate care-seeking	TYPE: SS

DEFINITION:
Proportion of sick children who were taken to an appropriate provider (appropriate provider and aspects of timeliness defined by country protocols) (reported separately for each iCCM condition)

METRIC:
Numerator: Number of children under five with an iCCM condition (diarrhea, suspected pneumonia or malaria in malaria-endemic areas) who were taken to an appropriate provider (appropriate provider and any aspects of timeliness defined based on country protocols)

Denominator: Number of children under five with an iCCM condition in the last 2 weeks (report separately for each iCCM condition)

RATIONALE:
This indicator enables an assessment of the pattern of care-seeking for iCCM conditions from various providers within a given population. Note that this indicator is to be reported separately for diarrhea, suspected pneumonia and malaria. For each of these illnesses, the indicator measures the percentage of children with these conditions who were able to seek care from providers considered appropriate for case management of iCCM conditions at an aggregate level, regardless of their residence or specific type of provider (private, public, CHW, etc.), though disaggregating the indicator by those variables can provide valuable insights. In the aggregate, the indicator shows whether children with iCCM conditions in need of assessment and treatment are being taken to appropriate providers, and—if timing of care-seeking is measured—can also determine whether care is sought soon after symptom onset (which is particularly important for malaria). Measurement of appropriate care-seeking for suspected pneumonia is especially important given that the indicator for treatment coverage is not recommended because of its poor validity. Information on place of care-seeking can be linked with data on providers to better understand the proportion of children taken to a specific point of service who receive appropriate assessment and treatment.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ iCCM condition ▪ Timeliness of care-seeking (if captured) ▪ Point of care (public/private, facility/community, professional/CHW) ▪ Subnational geographic area ▪ Other relevant social markers (e.g., ethnicity, religion, sex, age group, educational level of mother, income quintile) if sample size is sufficient
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Outcome

MEASUREMENT NOTES:

Data element definitions

"iCCM conditions" for this indicator include diarrhea, suspected pneumonia, malaria (in malaria-endemic countries) and others if appropriate according to country guidelines. The indicator should be reported disaggregated by iCCM condition (and not as a single indicator grouping all conditions).

"Appropriate providers" must be defined in each context and should include only trained providers who are allowed to provide case management for malaria, pneumonia and diarrhea under MOH policy.

Programs are also encouraged to assess timeliness of care-seeking, especially for malaria. "Timely care-seeking" is defined as seeking care within the advised time frame for each condition according to WHO and/or national-level case management norms and protocols.

Timely care-seeking is specified for malaria (fever) as being within 24 hours of onset of symptoms. No timeliness specification has been determined for diarrhea or suspected pneumonia, but prompt care-seeking is recommended for both. In the absence of other guidelines, reporting any care-seeking for diarrhea or pneumonia from an appropriate provider regardless of timing and timeliness of appropriate care-seeking using various time categories (within 24 hours, within 48 hours, etc.) can be helpful to understand care-seeking behavior.

Data requirements and recommendations for data collection

This indicator must be collected through a national- or subnational-level household survey such as DHS or MICS, with adequate sample size to enable disaggregation by factors of interest.

Interpretation of indicator and caveats

Adequate sample size is required to disaggregate by factors of interest, particularly for suspected pneumonia as the number of children with suspected pneumonia can be quite small even in large surveys.

Currently, care-seeking can be derived from MICS and DHS surveys, with some limitations particularly around timing of care-seeking. Questions need to be designed to allow disaggregation by point of care. Accuracy of respondent recall may be suspect in terms of measuring whether care-seeking was timely and/or appropriate and further research is needed to validate caregiver reports of where they sought care.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.7	**INDICATOR: First source of care**	**TYPE: SS**

DEFINITION:
Proportion of sick children under five in iCCM target areas taken to iCCM-trained CHWs as first source of care

METRIC:
Numerator: Number of sick children under five in the target area whose caregivers sought care from iCCM-trained CHWs as first source of care for the child within a given time period

Denominator: Number of sick children under five in the target area within a given time period

RATIONALE:
This indicator assesses whether iCCM-trained CHWs are sought as the first point of treatment by caregivers of sick children under five.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caregivers of children under five

FREQUENCY:	**DISAGGREGATE BY:**
Episodic	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Outcome

MEASUREMENT NOTES:

Data element definitions

"Caregivers" are parents or others who are primarily responsible for the care of children.

The recall time period may be defined by the program but is usually defined as within the 2 weeks prior to the survey.

"Sick children" may also be defined by the program but in general would be children experiencing symptoms related to iCCM conditions, such as fever, diarrhea, and cough with fast or difficult breathing.

Data requirements and recommendations for data collection

This indicator must be collected through household surveys such as DHS or MICS or other national or subnational surveys. If necessary, national stakeholders may need to work with DHS/MICS to determine the feasibility of adding appropriate questions to the survey instruments

Interpretation of indicator and caveats

This indicator measures whether caregivers are using CHWs as their first source of care when their children become sick. The indicator is related to other indicators such as whether caregivers can recognize signs of childhood illness (see Indicator 6.3), whether they know of iCCM-trained CHWs working near their homes (see Indicator 6.2), as well as other factors such as whether caregivers feel confident going to CHWs instead of health facilities or expect that the provider has supplies. The indicator needs to be interpreted in conjunction with all those other indicators and factors.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.8	**INDICATOR: Follow-up rate**	**TYPE: SS**

DEFINITION:
Number and proportion of cases followed up according to country protocol after receiving treatment from CHW

METRIC:
Numerator: Number of cases followed up according to protocol after receiving treatment from CHW in target area for a given period of time

Denominator: Total number of cases receiving treatment from CHW in target area for a given period of time

RATIONALE:
This indicator helps a program to assess whether sick children receive follow-up care through a CHW home visit and/or mothers returning with their child to the CHW. The purpose of the follow-up visit is to help ensure patient adherence, provide counseling and initiate prompt referral if patient is not improving.

Data source and Collection Method:
Extraction of routine reports (CHW registers, supervisory reports) where follow-up information is captured

Household survey to interview mothers/caretakers of sick children under five who recently visited a CHW

FREQUENCY:	**DISAGGREGATE BY:**
Quarterly or annual if based on extraction of routine reports; episodic if measured by a household survey	Subnational geographic area(e.g., province, district, health facility) ▪ iCCM condition
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

Children "receiving treatment from CHW" are defined as children who were presented to a CHW within the time period of interest (locally defined) with an iCCM condition, and who received or were prescribed treatment.

"Follow-up visits" could be defined as the CHW visiting the child's home or the mother bringing the child to the CHW for a follow-up visit.

Data requirements and recommendations for data collection

It may be possible in some cases to collect follow-up information routinely from CHW or supervisory reports, if CHWs report follow-up information and/or if supervisors collect it based on CHW registers. However, in many cases, such data is not recorded or reported. In such cases, the information would need to be collected through a survey of CHWs to extract register data or a household survey to interview mothers who recently visited a CHW for treatment of their sick child.

Interpretation of indicator and caveats

This information is not captured in national-level household surveys such as DHS and MICS, but could be included in subnational household surveys focused on assessing iCCM programs. Even when relevant questions are included, depending on the time period reviewed, there may be issues of recall and/or small sample size. In addition, CHW registers may not currently capture this data in many countries, so routine data collection may not be possible in some cases. Further, self-reported data on follow-up is difficult to verify. There are drawbacks to all potential data collection methods, and the decision on which to use will need to be based on local conditions and context.

COMPONENT: SERVICE DELIVERY AND REFERRAL		
NO. 5.9	INDICATOR: Successful referral	TYPE: SS

DEFINITION:
Proportion of children recommended for referral who are received at the referral facility

METRIC:
Numerator: Number of sick children with danger signs who are referred by CHW and who are received at the referral facility

Denominator: Total number of sick children with danger signs recommended for referral by CHW

RATIONALE:
This indicator allows a program to assess whether sick children referred by CHWs are taken for care at the facility level within an appropriate time period.

DATA SOURCE AND COLLECTION METHOD:
Extraction of routine reports (need both CHW registers and health facility registers)

Household survey to interview mothers/caretakers of sick children under five

FREQUENCY:	DISAGGREGATE BY:
Episodic	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Outcome

MEASUREMENT NOTES:

Data element definitions

"Danger signs" are defined at the country level within the iCCM protocol.

"Received at the referral facility" means that there is documentation showing that the child was brought to a referral facility and received treatment for her or his condition.

Data requirements and recommendations for data collection

This indicator is difficult to measure and all potential data sources have limitations. The denominator (number of children with danger signs referred by CHWs) can potentially be collected either through a CHW survey or through supervisory visits in which CHW registers are reviewed. CHW registers may have a column showing whether referred children reached the health facility and received care; in those cases, it may be possible to measure both numerator and denominator from CHW registers alone. If information on the numerator (the number of referred children receiving care at a referral facility) is not available through CHW registers, it would need to be collected from a facility survey, and facilities would need to have records matching individuals receiving care at the health facility with those who were referred by CHWs. Alternatively, data on successful referral could also be collected through a household survey, asking mothers whether their children were referred by a CHW within a certain time period and whether they acted on the referral and sought care.

Interpretation of indicator and caveats

This indicator is easiest to measure if CHW registers contain information not only about children referred to health facilities, but also on whether the referred cases sought and received care at the referral facility. In such situations, however, since the information is self-reported by the CHW, it is difficult to verify. If a facility survey is used to verify whether the referral was successful or not, evaluators may find that facility registers and reports do not record which sick children with danger signs were referred by which CHWs. If measured through SSs or household surveys, sample size must be sufficient to capture sufficient numbers of sick children with danger signs.

COMPONENT 6. COMMUNICATION AND SOCIAL MOBILIZATION

COMPONENT: COMMUNICATION AND SOCIAL MOBILIZATION		
NO. 6.1	INDICATOR: Communication strategy	TYPE: NMS

DEFINITION:
Communication strategy for childhood illness exists and includes iCCM

METRIC:
Yes: Communication strategy for childhood illness includes iCCM for all relevant conditions (diarrhea, pneumonia and malaria in malaria-endemic countries)

Partial: Communication strategy for childhood illness includes iCCM for at least one but not all relevant conditions

No: Communication strategy for childhood illness does not exist *or* exists but does not include iCCM for any relevant condition

RATIONALE:
Many behavior change interventions are developed on an ad hoc basis and are not based on pre-tested data or an overall communication strategy for health. The presence of a communication strategy for child health is a prerequisite for iCCM communication to be effectively coordinated and country led.

Data source and Collection Method:
Document review of administrative documents (national communication strategy document) and implementation materials (e.g., behavior change communication materials, job aids, training curricula, formative research on care-seeking behavior); key informant interviews

FREQUENCY:	DISAGGREGATE BY:
Annual until a "Yes" rating is achieved; afterward, whenever the policy is revised	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

"Includes iCCM" means the strategy document makes specific reference to the role of CHWs and iCCM programming, and lays the foundation for uniform child health messaging at the community level.

To achieve a rating of "Yes," a national communication strategy must exist and must include iCCM for all iCCM conditions (pneumonia, diarrhea and malaria in malaria-endemic countries). To achieve a rating of "Partial," the requirements are the same, for at least one but not all relevant conditions.

Data requirements and recommendations for data collection

The national communication strategy and related documents should be consulted annually; if these are not found, appropriate authorities may be asked verbally. After a rating of "Yes" is achieved, the indicator can be updated as necessary whenever the national communication strategy is updated.

Interpretation of indicator and caveats

As with other "Yes/Partial/No" indicators, rankings may be subjective. It may be useful, when reviewing national communication strategies for the country in question, to refer to gold standard communication strategies (e.g., UNICEF's Facts for Life and FHI 360's C-Change Project [see Annex 2]) as good determinants for what constitutes a "Yes." Furthermore, as different communication strategies may exist across the health sector (e.g., for malaria alone, for child health overall, and sometimes for health as a whole), a thorough record review of all strategies should be conducted to provide the appropriate ranking. Finally and perhaps most importantly, this indicator does not measure whether the communication strategy is effective or not. Effective strategies should be evidence based, using formative qualitative/quantitative research on demand-side barriers (e.g., financial, behavioral, social and cultural barriers) to successfully address those barriers; otherwise, they may be misguided or incomplete. Additionally, the strategy should reflect the ultimate goal of changing social norms (normative and empirical norms) for care-seeking. If a country or program desires, it can make the indicator more demanding by requiring, for example, that the strategy not only cover iCCM conditions, but be evidence based, address social norms, etc.

COMPONENT: COMMUNICATION AND SOCIAL MOBILIZATION		
NO. 6.2	INDICATOR: Caregiver knowledge of CHW location and role	TYPE: SS

DEFINITION:
Proportion of caregivers in target areas who know of the presence and role of their CHW

METRIC:
Numerator: Number of caregivers of children under five from target communities who can describe the location of a CHW in their community and the role and iCCM services provided by that CHW

Denominator: Total number of caregivers of children under five interviewed from target communities

RATIONALE:
One way to measure effectiveness of communication and community sensitization around iCCM is to investigate the level of awareness of the presence and role of CHWs among caregivers in iCCM catchment areas. If caregivers have not been appropriately sensitized to the location of their CHW and services provided, then iCCM services may be underutilized, and the iCCM program will need to undertake an intensified focus on communication.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Episodic	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"Caregivers" are parents or others who are primarily responsible for the care of children.

To be counted in the numerator, the caregiver being interviewed must know whether there is a CHW working in the community, *and* if so, the CHW's approximate location and role. Both items must be known in order to be counted.

The role of the CHW is to assess and treat sick children, providing basic preventive and treatment services for diarrhea, pneumonia and malaria (if appropriate).

Data requirements and recommendations for data collection

This indicator is presently not included in national-level household surveys such as DHS or MICS; programs can advocate for this indicator to be included in such surveys as well as those conducted by implementing partners.

Interpretation of indicator and caveats

Caretaker knowledge of the presence and role of CHWs is one of the necessary conditions of successful iCCM programs, but this alone will not guarantee that iCCM services are used. This indicator should be interpreted in conjunction with Indicator 6.3, as well as various indicators in Component 5: Service Delivery and Referral, in order to gain a complete understanding of iCCM use. Additional quantitative or qualitative information can also be collected to better understand reasons for use or nonuse of iCCM services. It may be useful to track the components of the indicator (percentage of caregivers who know the location of a CHW and, separately, percentage of caregivers who know the role of the CHW), as well as the indicator itself. If this indicator is not collected in DHS/MICS, the country could assess—as a minimum—caretaker knowledge of where to access health care, with CHWs as one option.

COMPONENT: COMMUNICATION AND SOCIAL MOBILIZATION		
NO. 6.3	INDICATOR : Caregiver knowledge of illness signs	TYPE: SS

DEFINITION:
Proportion of caregivers who know two or more signs of childhood illness that require immediate assessment and, if appropriate, treatment

METRIC:
Numerator: Number of caregivers of children under five interviewed who can correctly state two or more signs of childhood illness that require immediate assessment and, if appropriate, treatment.

Denominator: Number of caregivers of children under five interviewed

RATIONALE:
Communication for iCCM must correspond to overall awareness of signs of childhood illness and appropriate follow-up actions. A prerequisite for care-seeking at the community level is for caregivers to adequately recognize signs of childhood illness. Where awareness is low, targeted communication interventions must work to educate target groups.

DATA SOURCE AND COLLECTION METHOD:
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ iCCM condition ▪ Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Outcome

MEASUREMENT NOTES:

Data element definitions

"Caregivers" are parents or others who are primarily responsible for the care of children.

"Signs of childhood illness" refers to symptoms for each iCCM condition, as described in the WHO/UNICEF *Integrated Management of Childhood Illness* handbook (see Annex 2).

The five major danger signs for severe disease are refusal to breastfeed, vomiting everything, convulsions, loss of consciousness and being lethargic. In some programs, a sixth danger sign specific for pneumonia is chest indrawing. Signs for less severe disease targeted by iCCM, and also requiring care-seeking, include high fever, diarrhea, blood in stool, and fast or difficult breathing. Naming any two of the above signs is sufficient to count the caregiver as having knowledge.

Data requirements and recommendations for data collection

This indicator should be collected through a household survey such as DHS or MICS. To be counted in the numerator, caregivers need to know at least two of the above signs of illness.

Interpretation of indicator and caveats

This indicator should be interpreted in conjunction with indicators in Component 5: Service Delivery and Referral in order to gain a complete understanding of iCCM use. Additional quantitative or qualitative information can also be collected to better understand reasons for use or nonuse of iCCM services. For reporting purposes, the percentage of caregivers knowing each condition should be shown, thus indicating which conditions are better known and where there are gaps.

COMPONENT 7. SUPERVISION AND PERFORMANCE QUALITY ASSURANCE

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.1	INDICATOR: Supervision strategy	TYPE: NMS

DEFINITION:
A national supervision strategy exists and outlines designated cadres, job descriptions and standardized supporting materials (e.g., checklists, training materials)

METRIC:
Yes: National supervision strategy for iCCM exists and includes designated cadres, job description, and standardized supervision checklists, guidelines and training materials

Partial: Supervision strategy for iCCM exists but does not include all required components and materials

No: Supervision strategy and supporting materials for iCCM do not exist

RATIONALE:
This qualitative indicator can be used to assess and describe the planning and strategies (available inputs) for robust supervision of iCCM.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (supervision strategy, manual, guidelines, tools and plans)

FREQUENCY:	DISAGGREGATE BY:
Annual until a "Yes" rating is achieved; afterward, whenever the policy is revised	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions
In order to receive a rating of "Yes," a national supervision strategy written document must exist and must include all items mentioned in "Metric" (cadres, job descriptions, and tools such as checklists, guidelines and training materials).

Data requirements and recommendations for data collection
The national supervision strategy and related documents should be consulted annually to determine if they meet some or all of the stated criteria. After a rating of "Yes" is achieved, the indicator can be updated as necessary whenever the strategy is updated.

Interpretation of indicator and caveats
This indicator only shows whether a national supervision strategy exists and its contents. It does not indicate whether the strategy and contents are of high quality or not, nor whether they are implemented as designed. To be useful for program improvement, especially in cases where the rating is "Partial" or "No," this indicator should be accompanied by a description of the components and tools that are available and those that are still needed for a full supervision strategy.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.2	INDICATOR: iCCM supervisor training	TYPE: RM

DEFINITION:
Proportion of supervisors assigned to iCCM (at all levels of health system) that were trained in iCCM

METRIC:
Numerator: Number of supervisors assigned to iCCM (at all levels of the health system) that have been trained in iCCM

Denominator: Number of supervisors assigned to iCCM (at all levels of the health system)

RATIONALE:
This indicator aims to assess the iCCM training status of iCCM supervisors. Training of iCCM supervisors in iCCM protocols and procedures is necessary to ensure that assigned supervisors, often a cadre with many other responsibilities, have a good understanding of the iCCM program they are supervising.

DATA SOURCE AND COLLECTION METHOD:
Review of administrative records; key informant interviews

FREQUENCY:	DISAGGREGATE BY:
Annual	▪ Subnational geographic area (e.g., province, district, urban/rural) ▪ Type of supervisor trained in iCCM (e.g., regional-, district- or subdistrict-level supervisor)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

"Supervisors" may include managers, clinicians, nurses, midwives, health or other officers, or specialists who have been assigned to provide supervision and/or support and/or mentoring to CHWs in iCCM.

Supervisors "assigned to iCCM" should be country defined but would likely be determined by whether certain cadres of supervisors have iCCM in their job descriptions.

Supervisors "trained in iCCM" should also be country defined but should be determined by having completed standard training courses that have iCCM and supervision skills as part of their curricula.

Data requirements and recommendations for data collection

In most cases, training records and other program records should contain the needed information on number of supervisors who were trained during the period of interest and the number of supervisors assigned to CCM at each level of the system. If such records do not contain the needed information, key informant interviews with program managers or supervisor surveys may be necessary to obtain it. Triangulation of data sources (reports and key informants) is ideal.

Interpretation of indicator and caveats

The indicator provides information on the extent to which iCCM supervisors have been trained at each level. It does not measure the quality of the training nor the extent to which supervisors practice skills learned in training in their ongoing work.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.3	**INDICATOR: CHW-to-supervisor ratio**	**TYPE: RM**

DEFINITION:
Ratio of CHWs deployed for iCCM to iCCM supervisors

METRIC:
Numerator: Number of CHWs trained in iCCM

Denominator: Number of supervisors assigned to iCCM supervision

RATIONALE:
This indicator aims to assess the availability of iCCM supervisors for iCCM-trained CHWs.

DATA SOURCE AND COLLECTION METHOD:
Review of administrative records; key informant interviews

FREQUENCY:	**DISAGGREGATE BY:**
Annual if collected routinely; episodic if collected through key informant interviews	▪ Subnational geographic area (e.g., province, district, urban/rural) depending on sample size ▪ Level of supervisor trained in iCCM (e.g., regional-, district- or subdistrict-level supervisor)
DIRECTION OF DESIRED CHANGE: Lower = better, to a point (see "Measurement Notes")	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

"Supervisors" may include managers, clinicians, nurses, midwives, health or other officers, or specialists who have been assigned to provide supervision and/or support and/or mentoring to CHWs in iCCM.

Supervisors "assigned to iCCM" should be country defined but would likely be determined by whether certain cadres of supervisors have iCCM in their job descriptions.

Data requirements and recommendations for data collection

In most cases, administrative records should contain the needed information on number of CHWs and number of supervisors assigned to iCCM. If such records do not contain the needed information, a supervisor survey or key informant interviews may be necessary to obtain it. Triangulation of these data sources (reports and key informants) is ideal.

Interpretation of indicator and caveats

Up to a point, the lower the ratio of CHWs to supervisors the better (i.e., supervisors overseeing a smaller number of CHWs is preferable because it allows for more frequent visits and more time per visit). However, if the ratio is very low, it could indicate inefficiencies or that the number of CHWs in a given area is lower than desired. In addition to the overall ratio, district or other subnational ratios should be calculated if possible, to obtain the range of the highest and lowest values.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.4	**INDICATOR: Routine supervision coverage**	**TYPE: RM**

DEFINITION:
Proportion of CHWs who received at least one administrative supervisory contact in the prior 3 months during which registers and/or reports were reviewed

METRIC:
Numerator: Number of CHWs who received at least one administrative supervisory contact in the prior 3 months during which registers and/or reports were reviewed

Denominator: Number of CHWs trained in and deployed for iCCM or number of CHWs interviewed (if survey used for measurement)

RATIONALE:
This indicator aims to measure the amount of routine administrative supervision that takes place on a quarterly basis among iCCM-trained CHWs. Administrative supervision is important to ensure CHW engagement/motivation and activity, as well as timely and complete reporting.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting or CHW survey

FREQUENCY:	**DISAGGREGATE BY:**
Quarterly if collected routinely through supervisory records; episodic if CHW survey is required	Subnational geographic area (e.g., province, district, urban/rural) depending on sample size
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"Supervisors" may include managers, clinicians, nurses, midwives, health or other officers, or specialists who have been assigned to provide supervision and/or support and/or mentoring to CHWs in iCCM.

An "administrative supervisory contact" is defined as a visit from a supervisor to the CHW workplace that includes review and discussion of such issues as CHW activities and challenges; availability of supplies and equipment; data quality, accuracy, and completeness; other reporting issues; etc.

Data requirements and recommendations for data collection

In contexts with strong routine data collection, this indicator may be collected through review of supervisors' records and/or routine HMISs. However, in many contexts, a periodic survey of iCCM-trained CHWs may be necessary to assess the proportion of CHWs supervised in the previous 3-month period and the content of supervision. Sample surveys/interviews of iCCM-trained CHWs could potentially be conducted at refresher trainings, paydays or other times where CHWs are gathered or via cellphone or text messages in order to minimize costs, though the usual risks apply to such convenience sampling.

If possible, routine data and sample surveys should be compared and triangulated to counteract their inherent weaknesses: incompleteness (routine data) and recall issues (sample surveys).

Interpretation of indicator and caveats

This indicator measures the extent to which supervision was carried out in a country or subnational area. It does not provide information on the quality of the supervision or other factors such as where the supervision took place, what topics were covered and whether feedback was provided. The indicator is best used in conjunction with other supervision indicators.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.5	INDICATOR: Clinical supervision coverage	TYPE: RM

DEFINITION:
Proportion of CHWs who received at least one supervisory contact during the prior 3 months during which a sick child visit or scenario was assessed and coaching was provided

METRIC:
Numerator: Number of CHWs receiving at least one supervisory contact in the prior 3 months where a sick child visit was observed or scenario was assessed and coaching provided

Denominator: Number of CHWs trained in and deployed for iCCM, or number of CHWs interviewed (if survey used for measurement)

RATIONALE:
This indicator aims to measure the amount of clinical supervision on a quarterly basis among iCCM-trained CHWs. Clinical supervision is important to ensure maintenance of CHW clinical skills in provision of services to sick children.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting or CHW survey

FREQUENCY:	DISAGGREGATE BY:
Quarterly if collected routinely through supervisory records; episodic if CHW survey is required	Subnational geographic area (e.g., province, district, urban/rural) depending on sample size
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"Supervisors" may include managers, clinicians, nurses, midwives, health or other officers, or specialists who have been assigned to provide supervision and/or support or mentoring to CHWs in iCCM.

Clinical "supervisory contact" includes review and discussion of CHW quality of services as well as quality, accuracy, and completeness of data. Ideally, at least one sick child visit must have been observed by the supervisor, with care assessed by the supervisor and coaching provided.

"Coaching" refers to support given to the CHW to better provide improved-quality services.

In cases where an actual sick child visit cannot be observed, the supervisor should administer a case scenario to assess CHW quality of care.

Data requirements and recommendations for data collection

In contexts with strong routine data collection, this indicator may be collected through review of supervisors' records and/or routine HMISs. However, in many contexts, a periodic survey of iCCM-trained CHWs may be necessary to assess the proportion of CHWs supervised in the previous 3-month period and the content of supervision (linked to Indicator 7.6). Sample surveys/interviews of iCCM-trained CHWs could potentially be conducted at refresher trainings, paydays or other times where CHWs are gathered or via cellphone or text messages in order to minimize costs, though the usual risks apply to such convenience sampling.

If possible, routine data and sample surveys should be compared and triangulated to counteract their inherent weaknesses: incompleteness (routine data) and recall issues (sample surveys).

Interpretation of indicator and caveats

This indicator measures the extent to which clinical supervision of CHWs occurs in an iCCM program, i.e., where a sick child visit or case scenario was observed and coaching was provided. By itself, it does not provide information on the quality of the supervision or the coaching, nor does it indicate whether the treatment of the sick child was considered appropriate (covered by Indicator 7.9).

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.6	INDICATOR: Correct case management (knowledge)	TYPE: RM/SS

DEFINITION:
Proportion of CHWs who demonstrate correct knowledge of management of sick child case scenarios

METRIC:
Numerator: Number of CHWs who demonstrate correct management of sick child case scenarios

Denominator: Number of CHWs assessed

RATIONALE:
This indicator aims to assess CHWs' knowledge of the management of sick children through a variety of case scenarios of child illnesses covered by iCCM.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting, extraction of routine reports or CHW survey where case scenarios are administered

FREQUENCY:
Episodic; should be assessed more frequently for CHWs with less than 1 year of service

DISAGGREGATE BY:
- Subnational geographic area (e.g., province, district, urban/rural) depending on sample size
- Characteristics of CHW (e.g., education level, iCCM training cohort, gender)
- iCCM condition

DIRECTION OF DESIRED CHANGE:
Higher = better

LEVEL OF INDICATOR:
Output

MEASUREMENT NOTES:

Data element definitions

"Correct knowledge" is defined as the degree to which the CHW can describe correct management of iCCM conditions when presented with various sick child case scenarios.

"Correct management" refers to proper assessment and treatment of iCCM conditions according to recognized protocols, norms and standards, as observed by a trained evaluator.

The "number of CHWs assessed" refers to the number of CHWs who had a report assessed during the period (e.g., supervisor's report), or if a CHW survey was used, the number of CHWs included.

If possible, the indicator should be disaggregated by type of iCCM condition presented (e.g., proportion of CHWs who correctly manage a case scenario of a two-year-old child presenting with rapid breathing and fever).

Data requirements and recommendations for data collection

In contexts with strong data collection and supervision that includes case scenarios, this indicator may be collected through routine data and/or review/extraction of information from supervision reports. However, in many contexts, a short survey of a sample of iCCM-trained CHWs where CHWs are either administered a written or oral case scenario may be necessary to assess knowledge of case management.

Interpretation of indicator and caveats

This indicator measures knowledge of case management as assessed using case scenarios according to supervisors' records or a CHW survey. It does not measure actual observed treatment, which is measured by Indicator 7.7, and should therefore be used in conjunction with that indicator. Different case scenarios can be used to assess knowledge of different competencies (e.g., referral for danger signs, correct treatment for illness and age). The indicator can be used to identify competencies for improvement to be covered in refresher training or supportive supervision. The information can also help program managers and supervisors identify areas where CHWs need extra skills reinforcement.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.7	**INDICATOR: Correct count of respiratory rate**	**TYPE: RM/SS**

DEFINITION:
Proportion of CHWs who correctly count respiratory rate

METRIC:
Numerator: Number of CHWs who correctly count the respiratory rate of live case, supervisor, community infant, or video

Denominator: Number of CHWs assessed

RATIONALE:
This indicator aims to assess the ability of CHWs to count respiratory rates correctly in order to classify fast breathing/pneumonia in children with cough according to the WHO algorithm.

DATA SOURCE AND COLLECTION METHOD:
Routine supervision reporting, extraction of routine reports or CHW survey

FREQUENCY:	**DISAGGREGATE BY:**
Annual if collected through records review; episodic if collected through survey	▪ Subnational geographic area (e.g., province, district, urban/rural) depending on sample size ▪ Characteristics of CHW (e.g., education level, iCCM training cohort, gender) ▪ iCCM condition
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

The "respiratory rate" counted by the CHW should be compared to a gold standard rate determined by supervisor or evaluator.

"Correctly count respiratory rate" means count +/− two breaths per minute in comparison to rate counted by trained supervisor or video standard. The test case for counting of respiratory rates can be a sick or healthy child ("live case") from the community, an adult supervisor/evaluator, or a video case scenario of child breathing.

Data requirements and recommendations for data collection

Ideally, this indicator should be calculated by directly observing a CHW count the respiratory rate of a live test case, and comparing against a gold standard as described in "Data element definitions." In the absence of a survey, if direct observation and testing of respiratory rates is included in supervisory reports, such reports can be analyzed periodically (e.g., annually) to provide an approximation of the indicator.

Interpretation of indicator and caveats

The type of case where the respiratory rate was counted (i.e., sick child, healthy child, adult supervisor, video case scenario, etc.) should be described with the presentation of the indicator, and it is recommended that all CHWs be assessed using the same type of case.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.8	**INDICATOR: Complete and consistent registration**	**TYPE: RM/SS**

DEFINITION:
Proportion of CHWs whose registers show completeness and consistency between classification and treatment

METRIC:
Numerator: Number of CHWs whose registers show completeness and consistency between classification and treatment for at least four out of five cases reviewed

Denominator: Number of CHWs assessed

RATIONALE:
This indicator assesses whether CHWs are able to maintain good records and whether they are providing appropriate treatment following classification of patients according to their records. As it is based on administrative data, it is a rapid, albeit imperfect, way of assessing quality of care. CHW registers are a data source for several other key iCCM indicators, so encouraging complete and accurate recordkeeping is essential for tracking progress in many aspects of iCCM programs.

Data source and Collection Method:
Routine supervision reporting, extraction of routine reports or CHW survey

FREQUENCY:	**DISAGGREGATE BY:**
Quarterly or more frequent if based on routine records; episodic if measured by a CHW survey	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

For a register entry to be considered "complete and consistent," the information on classification and treatment must be completely filled in and the treatment provided by the CHW must be appropriate for the classification listed by the CHW, according to WHO and/or national treatment guidelines. For a CHW to be counted as having complete and consistent records, at least four out of five entries, or cases, need to meet the above conditions.

Data requirements and recommendations for data collection

The data for this indicator may be collected on an ongoing basis through supervisory visits, or periodically through CHW surveys. In either case, the data will come from review of the CHW register. The evaluator should randomly select five iCCM entries (cases) and review all fields for each case to judge completeness and consistency. If data is available, it would also be worthwhile to measure consistency between assessment and classification, as well as consistency between classification and treatment.

Interpretation of indicator and caveats

This indicator measures data completeness of CHW registers and appropriateness of (reported) treatment provided. It does not measure actual case management delivered. It is a threshold indicator (each CHW either meets the criteria or does not), and therefore does not assess how poorly CHWs are performing if they do not reach this standard. For CHWs who do not meet the criteria, the indicator also does not indicate the reason (e.g., lack of completeness, inappropriate treatment).

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.9	INDICATOR: Correct case management practice (observed)	TYPE: SS

DEFINITION:
Proportion of sick children visiting a trained CHW who receive correct case management from that CHW

METRIC:

Numerator: Number of sick children who were correctly treated/referred for all conditions
Denominator: Number of sick children assessed requiring treatment and/or referral

RATIONALE:
This indicator aims to assess the actual practice of CHWs in managing sick children correctly, with the ultimate outcome of correct treatment and/or referral.

DATA SOURCE AND COLLECTION METHOD:
CHW survey with direct observation and clinical reexamination

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ Subnational geographic area (e.g., province, district, urban/rural) depending on sample size ▪ iCCM condition
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

"Correct case management" refers to proper assessment and treatment of iCCM conditions according to recognized protocols, norms and standards, as observed by a trained evaluator.

Data requirements and recommendations for data collection

This indicator must be measured through a survey using a representative sample of iCCM-trained CHWs (e.g., random sample of CHWs stratified by district or region). In contexts with high utilization of iCCM services, direct observation of CHWs in their communities may be possible. In other contexts, direct observation of CHWs' consultations with sick children may be conducted at primary health centers.

Ideally, direct observation should be accompanied by clinical reexamination of the sick child by a trained clinician; the reexamination is necessary to ascertain whether the treatment or referral action was correct for each sick child encounter observed.

Interpretation of indicator and caveats

This indicator will most often be measured among children 2–59 months old, as algorithms for younger infants may not be included in iCCM protocols.

This indicator is a composite indicator that assesses the correctness of treatment and/or referral for all signs and illnesses in the children managed by a CHW. The indicator can and should be disaggregated to examine correctness of management for specific signs and illnesses (e.g., fever, pneumonia) in order to be useful for program improvement in refresher training or supportive supervision. Common, nonsevere conditions will likely dominate the case mix managed by CHWs, and sample size and/or time spent for each CHW must be large enough to ensure sufficient numbers of cases are observed for all illnesses of interest. Assessment of CHW ability to manage rare, severe conditions may need to be measured through case scenarios only; therefore, consideration should be given to combining this indicator with Indicator 7.6 for severe illness scenarios. Intraclass correlation (design effect) should be accounted for if more than one child encounter is observed per CHW.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.10	INDICATOR: Appropriate RDT use	TYPE: SS

DEFINITION:
Use of RDTs (for child presenting with fever where RDTs are part of the iCCM package)

METRIC:
Numerator: Number of sick children under five in target areas who present with fever within the age group appropriate for RDT per policy and who are tested with an RDT in a given time period

Denominator: Number of sick children under five in target areas presenting with fever in a given time period within the age group appropriate for RDT per policy

RATIONALE:
This indicator enables a program to track whether RDTs are being used for every sick child consultation where the child presents with fever.

DATA SOURCE AND COLLECTION METHOD:
CHW survey, routine CHW or supervision reporting, or extraction of routine reports
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Quarterly if collected through routine reports Episodic if collected through CHW or household surveys	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions
"Testing with an RDT" means that either (1) administrative records indicate that an RDT was used or (2) a provider was observed to administer an RDT during a supervisory visit or evaluation visit during a CHW survey.

Data requirements and recommendations for data collection
Ideally, CHW reports should be designed to capture this data, and systems should ensure that the data arrives at appropriate levels for review and decision-making. If such records are not reported, the information can potentially be obtained routinely through supervisor records. In addition, CHWs can be observed through surveys, and mothers can be surveyed to ask whether their child with fever was assessed with an RDT. Results from household surveys should be viewed with caution, as maternal recall of diagnostic tests for malaria was shown to be suboptimal in a validation study in Zambia which found 62% sensitivity and 90% specificity for recall of a finger/heel prick test.[20]

Interpretation of indicator and caveats
One should note that if data is taken from CHW registers, it is reported—not actual—RDT use. Actual RDT use can only be assessed via direct observation. However, CHWs may be more likely to use RDTs when observed by a supervisor than in normal practice, so direct observation may result in the upper limit. Finally, the reason for nonuse must be considered; for example, a stock-out of RDTs would preclude their use and would require a different interpretation of the indicator.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.11	**INDICATOR: Appropriate prescribing practice for positive RDTs**	**TYPE: SS**
DEFINITION: Appropriate prescribing practices are used when results of RDTs are positive (where RDTs are part of the iCCM package)		
METRIC: Numerator: Number of children presenting with fever in a target area with a positive RDT who receive an ACT in a given time period Denominator: Number of children presenting with fever in a target area with positive RDT in a given time period		
RATIONALE: Allows one to assess whether ACTs are being prescribed appropriately following a positive RDT diagnosis.		
DATA SOURCE AND COLLECTION METHOD: CHW survey, routine CHW or supervision reporting, or extraction of routine reports		
FREQUENCY: Quarterly if collected through routine reports Episodic if collected through CHW surveys		**DISAGGREGATE BY:** Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better		**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

"Appropriate prescribing practice" is defined as provision of malaria treatment (ACT) according to national or global standards following a positive RDT result.

Data requirements and recommendations for data collection

The prescribing practice may be assessed through either of the following processes:

- review of administrative records indicating whether the provider prescribed/provided an ACT following a positive RDT result
- direct observation or administration of a case scenario during a supervisory visit, evaluation visit or CHW survey indicating whether the provider prescribed/provided ACT following a positive RDT result

Interpretation of indicator and caveats

This indicator measures whether ACT is prescribed or provided appropriately following positive RDT results. One should note that if data is taken from CHW registers, it is reported—not actual—provision of ACT. Actual provision can only be assessed via direct observation. However, CHWs may be more likely to provide or prescribe ACT when observed by a supervisor than in normal practice, so direct observation may result in the upper limit. Finally, the reason for nonuse must be considered; for example, a stock-out of ACTs would require a different interpretation of the indicator.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.12	INDICATOR: Appropriate prescribing practice for negative RDTs	TYPE: SS

DEFINITION:
Appropriate prescribing practices are used when results of RDTs are negative (where RDTs are part of the iCCM package)

METRIC:
Numerator: Number of sick children in a target area with negative RDT who do not receive an ACT in a given time period

Denominator: Number of sick children in a target area with negative RDT in a given time period

RATIONALE:
This indicator allows one to confirm whether ACTs are being prescribed following a negative RDT, which would indicate overuse of ACTs. This is a measure of rational drug use.

DATA SOURCE AND COLLECTION METHOD:
CHW survey, routine CHW or supervision reporting, or extraction of routine reports

FREQUENCY:	DISAGGREGATE BY:
▪ Quarterly if collected through routine reports ▪ Episodic if collected through CHW surveys	Subnational geographic area (e.g., province, district, health facility)
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions

"Appropriate prescribing practice" is defined as not providing malaria treatment (ACT) following a negative RDT result. Programs may also decide to include appropriate referral for negative RDT results, as this is often included in iCCM protocols.

Data requirements and recommendations for data collection

The prescribing practice may be assessed through either of the following processes:

- review of administrative records indicating whether the provider prescribed/provided an ACT following a negative RDT result
- direct observation or administration of a case scenario during a supervisory visit, evaluation visit or CHW survey indicating whether the provider prescribed/provided ACT following a negative RDT result

Interpretation of indicator and caveats

This indicator measures potential overuse or inappropriate use of ACT following negative RDT results. One should note that if data is taken from CHW registers, it is reported—not actual—ACT provision/prescription. Actual provision/prescription can only be assessed via direct observation. Finally, the reason for not giving an ACT for RDT-fevers must be considered. For example, if the CHW has a stock-out of ACTs, this indicator could potentially falsely show correct prescribing practices; such a situation would require a different interpretation of the indicator.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.13	INDICATOR: First dose	TYPE: SS

DEFINITION:
Proportion of sick children provided first dose of treatment in the presence of a CHW

METRIC:
Numerator: Number of children given first dose of treatment in the presence of a CHW

Denominator: Number of children treated by CHWs

RATIONALE:
This indicator aims to assess whether CHWs follow standard protocols of providing sick children with the first dose of medication before referring them to a health facility, or before the caretaker begins home-based care. For severely ill children requiring referral, promptly starting the first dose of treatment (e.g., ORS for diarrhea, ACT for fever/malaria) is often indicated before the child arrives at the facility. For treatment at home not requiring referral, first dose should be provided at the CHW site with an orientation provided to the caretaker.

DATA SOURCE AND COLLECTION METHOD:
CHW survey, routine CHW or supervision reporting, or extraction of routine reports
Household survey to interview mothers/caretakers of children under five

FREQUENCY:	DISAGGREGATE BY:
Annual if collected through routine records; episodic if collected through a CHW or household survey	▪ Subnational geographic area (e.g., province, district, urban/rural) depending on sample size ▪ iCCM condition
DIRECTION OF DESIRED CHANGE: Higher = better	**LEVEL OF INDICATOR:** Output

MEASUREMENT NOTES:

Data element definitions
For severely ill children requiring referral, the "first dose of treatment" (e.g., ORS for diarrhea, ACT for fever/malaria) should be provided at the CHW site to ensure that treatment starts promptly. For nonsevere illness, the "first dose" should be given to the child at the CHW site to demonstrate to caretakers the preparation/administration of the medication for treatment at home.

Data requirements and recommendations for data collection
In some contexts with strong data collection and supervision, where CHW reports or supervisory reports include information on first dose, data for this indicator may be compiled or extracted from such reports. In the absence of such routine information, this indicator should be measured through a CHW survey or possibly a household survey. If using a household survey, caregivers can be asked if their sick child who received treatment from a CHW took the first dose in the presence of the CHW.

Interpretation of indicator and caveats
This indicator provides information on CHW service quality in terms of following protocols when providing the first dose of medication to sick children. This is important to ensure proper procedures for both severely ill children being referred, and for nonsevere illnesses to be managed through home-based care. If the indicator is collected through routine information, the quality of the information will depend on self-reporting by CHWs or observation by supervisors. Unless direct observation is completed for all CHWs during supervision, information from supervision reports may not accurately represent the service quality in a target area (i.e., CHWs with lower utilization or services will not be included). If the indicator is collected through a CHW survey, sample size and/or time spent at each CHW must be large enough to ensure sufficient numbers of observed cases of all iCCM conditions of interest. Intraclass correlation (design effect) must be accounted for if more than one child encounter is observed per CHW. If measured through a household survey, there are potential concerns about ability of caregiver to recall and adequate sample size in contexts where the number of children being treated by CHWs is small. However, since most surveys ask about illness during the 2 weeks prior to the survey, the recall bias would be quite minimal.

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.14	**INDICATOR: Counseling quality**	**TYPE: SS**

DEFINITION:
Among children receiving prescription medicines for an iCCM condition, the proportion in which the caregiver receives counseling on how to provide the treatment(s)

METRIC:
Numerator: Number of children provided medicines where caregivers were provided proper counseling for provision of treatments (dose, duration, frequency and follow-up)

Denominator: Number of cases of children prescribed medicines

RATIONALE:
This indicator aims to assess if CHWs provide proper counseling for provision of medications/treatments at home.

DATA SOURCE AND COLLECTION METHOD:
CHW survey with direct observation and clinical reexamination

FREQUENCY:
Episodic

DISAGGREGATE BY:
- Subnational geographic area (e.g., province, district, urban/rural) depending on sample size
- iCCM condition

DIRECTION OF DESIRED CHANGE:
Higher = better

LEVEL OF INDICATOR:
Output

MEASUREMENT NOTES:

Data element definitions

"Prescription medicines for an iCCM condition" include those listed in the national iCCM protocol handbook with specific treatment.

"Counseling" should include information about the frequency, dose and duration of treatment administration in the home.

"Caregivers" are parents or others who are primarily responsible for the care of children.

Data requirements and recommendations for data collection

The recommended method for collecting data to measure this indicator is a CHW survey where counseling is observed. CHW records or supervisory forms in some contexts may contain information on counseling, and in such cases it may be possible to extract and compile data for this indicator from those sources. But such self-reports may be subject to bias and will not indicate whether counseling truly occurred according to the above definition. Therefore, in most cases, this indicator should be measured through a CHW survey where counseling is observed.

Interpretation of indicator and caveats

If the indicator is collected through routine information, the quality of the information will depend on self-reporting by CHWs or observation by supervisors. If the indicator is collected through a CHW survey, sample size and/or time spent for each CHW must be large enough to ensure sufficient numbers of observed cases of all iCCM conditions of interest. Intraclass correlation (design effect) must be accounted for if more than one child encounter is observed per CHW.

The indicator currently focuses on counseling for administration of treatments, but theoretically it could be expanded or adapted for other counseling aspects (e.g., continued feeding and fluids, insecticide-treated nets, vaccination).

COMPONENT: SUPERVISION AND PERFORMANCE QUALITY ASSURANCE		
NO. 7.15	INDICATOR: Correct referral	TYPE: SS

DEFINITION:
Proportion of children with danger signs that were correctly recommended for referral

METRIC:
Numerator: Number of cases with danger signs or severe disease recommended for referral according to protocol

Denominator: Number of cases with danger signs who should be referred according to protocol as assessed by reexamination (by gold standard clinician)

RATIONALE:
This indicator aims to assess the actual practice of CHWs in managing severely ill children (with danger signs) correctly, with the ultimate outcome of correct referral recommendations. This is important because severely ill children are at the highest risk of subsequent mortality.

DATA SOURCE AND COLLECTION METHOD:
CHW survey with direct observation and clinical reexamination; routine supervision reporting in special settings (see "Measurement Notes")

FREQUENCY:	DISAGGREGATE BY:
Episodic	▪ Subnational geographic area (e.g., province, district, urban/rural) depending on sample size ▪ iCCM condition
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Output

MEASUREMENT NOTES:

Data element definitions

"Danger signs" or severe illnesses that require referral are those listed for each disease in the national iCCM protocol handbook.

Data requirements and recommendations for data collection

In contexts with strong data collection and supervision, where supervision includes direct observation of clinical encounters and reexamination of the sick child, data from the supervision encounters may be compiled/extracted from information in supervision checklists/reports. However, unless direct observation with reexamination is completed for all CHWs during supervision visits, information from supervision reports may not accurately represent the service quality in a target area (i.e., CHWs with lower utilization or services will not be included). Therefore, an SS (CHW survey) is likely to be more appropriate for accurate measurement of the indicator.

If a CHW survey is used, clinical reexamination is necessary to establish the correct treatment or referral action for each sick child encounter observed. This indicator will most often be measured among children 2–59 months old, as algorithms for younger infants may not be included in iCCM protocols.

Interpretation of indicator and caveats

In direct observation, it is likely that common, nonsevere conditions will dominate the case mix managed by CHWs. Thus, the sample size for this indicator—even in relatively large surveys with direct observation—may be limited. This indicator should be interpreted in conjunction with the case management knowledge indicator (see Indicator 7.6) to also assess the knowledge of CHWs in taking correct action (referral) for children presenting with danger signs.

COMPONENT 8. MONITORING AND EVALUATION AND HEALTH MANAGEMENT INFORMATION SYSTEMS

COMPONENT: MONITORING AND EVALUATION (M&E) AND HMISS		
NO.8.1	INDICATOR: National M&E Plan for iCCM	TYPE: NMS

DEFINITION:
Existence of a comprehensive, integrated M&E plan for iCCM

METRIC:
Yes: An M&E plan for iCCM covers all relevant iCCM conditions and has all the critical components (may be country defined but should ideally include the following):

- Program goals and objectives
- Indicators to be measured
- How (tools), how often (frequency) and where (at what level) the indicator data will be collected (methodologies)
- Dissemination/use of information (how often and to what levels)

Partial: M&E plan exists but has only some of the critical components or does not cover all iCCM conditions

No: Plan has no critical components or there is no written M&E plan that covers iCCM

RATIONALE:
An integrated plan for RM and periodic evaluation is a document that specifies all the M&E plans and activities related to the iCCM program. M&E plans and activities should be integrated and/or coordinated at the national level among partners in large-scale programs. A good M&E plan includes a number of key components to ensure that the plan can be used to improve performance and measure progress toward desired objectives. This indicator encourages countries to develop and/or revise an integrated M&E plan for iCCM that includes all the critical components.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., M&E plans and related materials)

FREQUENCY:	DISAGGREGATE BY:
Annually	NA
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

See "Metric" for the suggested specific criteria needed for a rating of "Yes." Plans must meet all criteria in order to receive a "Yes" rating.

Note that the "M&E plan for iCCM" could be a stand-alone plan or integrated into a broader M&E plan at the national level.

While not considered essential for a "Yes" rating, it is also recommended that M&E plans include components such as a framework specifying program implementation and the scope of evaluation; key M&E questions to be addressed; approach for analysis and interpretation of data; work plan and budget (including financial and human resources required); coordination of resources and partner activities; and any other relevant country-specific elements.

Data requirements and recommendations for data collection

The M&E plan itself and related materials should be reviewed on an annual basis by someone with M&E experience to determine whether the plan has all the components necessary for a rating of "Yes."

Interpretation of indicator and caveats

It is important to document which components are included in the M&E plan and which are not. If the rating is "Partial," it is especially important to document reasons why certain elements are missing and whether other important aspects are included in the M&E plan. If the rating is "No," it is important to document why there is no integrated plan.

COMPONENT: M&E AND HMISS		
NO.8.2	INDICATOR: iCCM utilization indicators included in HMIS	TYPE: NMS

DEFINITION:
One or more indicators of community-based treatment for diarrhea, pneumonia and/or malaria are included in the national HMIS

METRIC:
Yes: One or more iCCM indicator is included in the national HMIS and disaggregated by level

No: No recommended iCCM indicators are included in the national HMIS, or indicators are included but are not disaggregated by level.

RATIONALE:
This indicator shows the degree of MOH commitment to RM of the iCCM program, which can be expected to contribute to evidence-based decision-making on community-based health services

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., HMIS documents)

FREQUENCY:	DISAGGREGATE BY:
Annual	Service level (e.g., facility/community)
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
"Yes" or movement toward "Yes" is desirable	Input

MEASUREMENT NOTES:

Data element definitions

"HMISs" are information systems (paper-based, computerized or both) in which information from service delivery points is collected routinely (usually every month), and passed up to higher levels of the health system for tracking progress and decision-making.

"Included in the national HMIS" means that (1) the indicator is included in reporting forms that are aligned with WHO or national standards and consistently used by programs throughout the country; (2) the collection and reporting of the indicator(s) is disaggregated by service level (facility/community level); and (3) disaggregated information on the indicator(s) is available at national and district levels for decision-making. Indicators may be defined by the country but should be appropriate for routine collection through the HMIS (e.g., number of children seen, number of children treated). All three conditions must be met in order to give this indicator a rating of "Yes."

Data requirements and recommendations for data collection

HMIS reporting forms and reports from various levels of the system should be reviewed annually by someone familiar with M&E and HMISs. The reviewer(s) should assess whether any iCCM indicators are included in forms, whether forms are generally available at the central level, and if results are reported separately for both facility-based and community-based services.

Interpretation of indicator and caveats

It is important to report not only a "Yes" or "No" rating, but additional information such as reasons for the rating and what indicators, if any, are collected by HMIS.

CHWs do not typically report into HMISs, and when they do, iCCM information is often pooled with facility-based child health data. This may mask important trends such as whether iCCM programs are growing at the expense of facility-based services; that is why it is important that iCCM indicators collected through the HMIS be disaggregated by level. It should be noted that the inclusion of indicators in the HMIS does not necessarily mean they are used for decision-making.

COMPONENT: M&E AND HMISS		
NO.8.3	INDICATOR: District reporting	TYPE: RM

DEFINITION: Proportion of districts reporting complete iCCM monitoring data on time

METRIC:
Numerator: Number of implementing districts reporting complete iCCM monitoring data on time

Denominator: Number of districts implementing iCCM

RATIONALE:
Timely and complete data collection and reporting are important to enable data use for program monitoring and decision-making. iCCM data availability and completeness at district level is feasible to measure and can be used as a proxy for measuring data use.

DATA SOURCE AND COLLECTION METHOD:
Document review of administrative documents (e.g., HMIS, other iCCM reports where relevant)

FREQUENCY:	DISAGGREGATE BY:
Annually; quarterly if possible	Subdistrict
DIRECTION OF DESIRED CHANGE:	**LEVEL OF INDICATOR:**
Higher = better	Input

MEASUREMENT NOTES:

Data element definitions

"HMISs" are information systems (paper-based, computerized or both) in which information from service delivery points is collected routinely (usually every month), and passed up to higher levels of the health system for tracking progress and decision-making.

"iCCM monitoring data" may be integrated within the HMIS or be collected through a parallel system. In either case, it is usual to establish deadlines for reports to be submitted at each level (CHW, facility, district, etc.).

Timeliness in this case would refer to whether the reports from the district level to the central level are received on or before the set deadline.

Criteria for completeness would be country specific, but should include key iCCM monitoring information, such as cases treated by CHWs by iCCM condition and reporting rates for lower levels (e.g., proportion of health facilities and CHWs contributing data to report during time period).

Data requirements and recommendations for data collection

This indicator provides information on timeliness and completeness of district-level reporting. These elements can also, and should, be used to track reporting from subdistrict to district level.

Calculating this indicator requires establishing a system to track whether reports are received at the next level on time. In cases where it is not possible to track whether reports arrive before or after the set deadline, it would still be useful to track the proportion of expected reports that are received and are complete.

Interpretation of indicator and caveats

If iCCM monitoring data is not available on time or is incomplete, it cannot be effectively used to help adjust programs to achieve desired objectives. Program managers should explore reasons why reports are not submitted at all, are submitted late or are missing information and work with district-level staff to address any issues.

This indicator does not provide any information about whether or not the data is being used by district- or facility-level staff to inform decision-making about iCCM programs. Approaches to assess extent of data use at the district level would need to be developed at the country level, but might include observation of visual displays of iCCM data at district and facility levels, mention of iCCM monitoring data in meeting minutes, and reported instances of examples of using data to inform a decision or change to the program.

Annex 1: Indicators by Expanded Results Framework

STRATEGIC OBJECTIVE: USE OF LIFESAVING INTERVENTIONS INCREASED			
5.1 iCCM treatment rate 5.4 Treatment coverage of diarrhea and malaria 5.5 iCCM treatment coverage of diarrhea and malaria by CHW 5.6 Appropriate care-seeking			
IR 1: Social and policy environment enabled	**IR 2: Access to and availability of lifesaving interventions and services increased**	**IR 3: Quality of services increased, demonstrated or assured**	**IR 4: Demand for services and behaviors increased**
1.1 iCCM policy 1.2 iCCM coordination 1.3 iCCM partner map 1.4 iCCM target areas defined 2.1 Annual iCCM costed operational plan 2.2 iCCM national financial contribution 2.3 Expenditure (1): iCCM proportion of disease program 2.4 Expenditure (2): Average iCCM expenditure per capita (child) by disease program 2.5 Expenditure (3): Average cost per iCCM contact 8.1 National M&E plan for iCCM 8.2 iCCM utilization indicators included in HMIS	3.1 Training strategy 3.2 iCCM CHW density 3.3 Targeted CHWs providing iCCM 3.4 Annual iCCM CHW retention 4.1 Medicine and diagnostic registration 4.2 Medicine and diagnostic availability 4.3 Medicine and diagnostic continuous stock	4.4 Medicine and diagnostic storage 4.5 Medicine and diagnostic validity 5.2 Caseload by CHW 5.3 Referral rate 5.8 Follow-up rate 5.9 Successful referral 7.1 Supervision strategy 7.2 iCCM supervisor training 7.3 CHW-to-supervisor ratio 7.4 Routine supervision coverage 7.5 Clinical supervision coverage 7.6 Correct case management (knowledge) 7.7 Correct count of respiratory rate 7.8 Complete and consistent registration 7.9 Correct case management (observed) 7.10 Appropriate RDT use 7.11 Appropriate prescribing practice for positive RDTs 7.12 Appropriate prescribing practice for negative RDTs 7.13 First dose 7.14 Counseling quality 7.15 Correct referral 8.3 District reporting	5.7 First source of care 6.1 Communication strategy 6.2 Caregiver knowledge of CHW location and role 6.3 Caregiver knowledge of illness signs

Abbreviations: CHW = community-based health worker; HMIS = health management information system; iCCM = integrated Community Case Management; IR = Intermediate Result; M&E = monitoring and evaluation; RDT = rapid diagnostic test.

Annex 2: List of Resources and Tools for Integrated Community Case Management Indicators

C-Change. Available at: http://c-changeprogram.org/.

Child Health Epidemiology Reference Group. Available at: http://www.cherg.org/.

John Snow, Inc./DELIVER in collaboration with the World Health Organization. *Guidelines for the Storage of Essential Medicines and Other Health Commodities*. Arlington, Va: John Snow, Inc./DELIVER, for the U.S. Agency for International Development; 2003.

Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys. Demographic and Health Surveys. Available at: http://www.measuredhs.com/.

PLOS. Measuring Coverage in Maternal, Newborn, and Child Health. Available at: http://www.ploscollections.org/article/browse/issue/info%3Adoi%2F10.1371%2Fissue.pcol.v01.i16.

UN Commission on Life-Saving Commodities for Women and Children. Available at: http://www.everywomaneverychild.org/resources/un-commission-on-life-saving-commodities.

UNICEF. Available at: http://www.unicef.org/.

UNICEF. Facts for Life. Available at: http://www.factsforlifeglobal.org/.

UNICEF. Multiple Indicator Cluster Survey. Available at: http://www.unicef.org/statistics/index_24302.html.

United States Agency for International Development. Available at: http://www.usaid.gov/.

World Health Organization (WHO). Available at: http://www.who.int/en/.

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World Health Organization-Western Pacific Regional Office (WHO-WPRO), USAID | DELIVER PROJECT, Foundation for Innovative New Diagnostics (FIND), Roll Back Malaria Partnership, President's Malaria Initiative (PMI), UNICEF. *Transporting, Storing, and Handling Malaria Rapid Diagnostic Tests in Health Clinics*. Arlington, Va.: USAID | DELIVER PROJECT, Task Order 3, WHO-WPRO; 2009.

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