Summary of Coverage Assessment Methods

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Coverage is the proportion of all people needing or eligible to receive a service who actually receive that service. For community therapeutic care (CTC) and community management of acute malnutrition (CMAM), this will be the proportion of severe acute malnourished children (SAM) who receive therapeutic care. This is also known as ***treatment coverage***.

Treatment coverage should not be confused with ***geographical coverage*** which can be defined as the ratio of primary healthcare facilities in the program area that deliver CMAM services to the total number of primary healthcare facilities in the program area. This indicator tries to measure the availability of CMAM through the decentralisation and scale-up of CMAM services hence is a proxy or indirect estimator of treatment coverage. Geographical coverage will always overestimate treatment coverage and often by a very large margin.

The effectiveness of CMAM program and the coverage it achieves are directly linked. An effective CMAM program achieves good coverage and a program with good coverage is an effective program. Even for a programme that is achieving good clinical outcomes (high cure rates and low death rates), impact is diminished if it only achieves low levels of coverage (*Figure 1*).

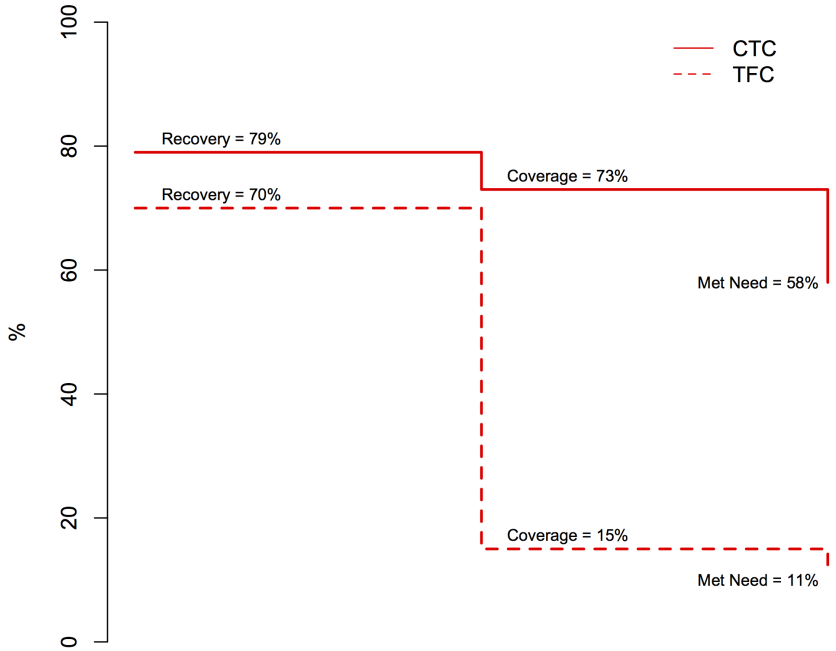


Figure 1: *Cure rates, coverage and met need*

Investigating coverage and the factors influencing coverage are essential to improving both coverage and effectiveness and, through them, to meeting need. Before 2002 no good methods existed for investigating coverage. The ***Centric Systematic Area Sampling (CSAS)*** method, developed for the CTC research program, provides the ability to estimate and map coverage with useful precision and provides information about barriers to program access. This method was used to test and reform the CTC model of service delivery. It was later used as a monitoring and evaluation tool but has proved too resource intensive for routine program monitoring. The ***CSAS*** method was replaced by the ***Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage*** or ***SLEAC*** (a lower cost classification-based development of CSAS) and ***Semi-Quantitative Evaluation of Access and Coverage*** or ***SQUEAC*** (a semi-quantitative approach concentrating on detailed investigations of factors influencing coverage). The adoption of the CTC / CMAM model at national levels has led to requests for methods that can provide information about coverage over wide areas. This need is being met by adaptations of the ***SLEAC*** method and ***Simple Spatial Survey Method*** or ***S3M***,an adaptation of the ***CSAS*** method that uses improved spatial sampling and more effective use of data.

Experience over the past decade has shown that investigation of coverage and factors effecting coverage using these methods can inform program reforms which improve coverage and effectiveness. Programs that have adopted a “build it and they will come” approach tend to achieve SPHERE minimum cure-rates (i.e. 75%) and coverage proportions below about 20%. NGO-delivered programs that audit coverage using ***CSAS***, ***SQUEAC***, or ***SLEAC*** methods regularly achieve cure-rates exceeding 85% and coverage proportions exceeding 70%. The current challenge is to achieve these levels of performance in national CMAM programs.

Centric Systematic Area Sampling (CSAS)

CSAS was developed in 2002 as part of the CTC research program. It was used for program monitoring and evaluation for several years. However, it was deemed too expensive to be used routinely and has now been superseded by the less resource intense ***SQUEAC*** and ***SLEAC*** methods for routine monitoring and evaluation purposes.

Design

CSAS uses a two-stage sampling design. First stage is a systematic spatial sample of the entire program area to select the communities to survey. The sample is therefore representative of the whole program area. Second stage is an active and adaptive case-finding (also called snowball or chain-referral) method that find all or nearly all SAM cases in the communities being surveyed. Hence, sample is representative of the communities surveyed.

Results

CSAS yields the following results:

- Overall coverage estimate
- Local coverage estimates which can be represented as a coverage map
- Ranked list of barriers

Figure 2 and *Figure 3* show typical ***CSAS*** outputs from a coverage assessment of an NGO-delivered CMAM program undertaken in two neighbouring health districts in Niger.

Figure 2: *Map showing the spatial distribution of point and period coverage in a CMAM program produced using the CSAS method*

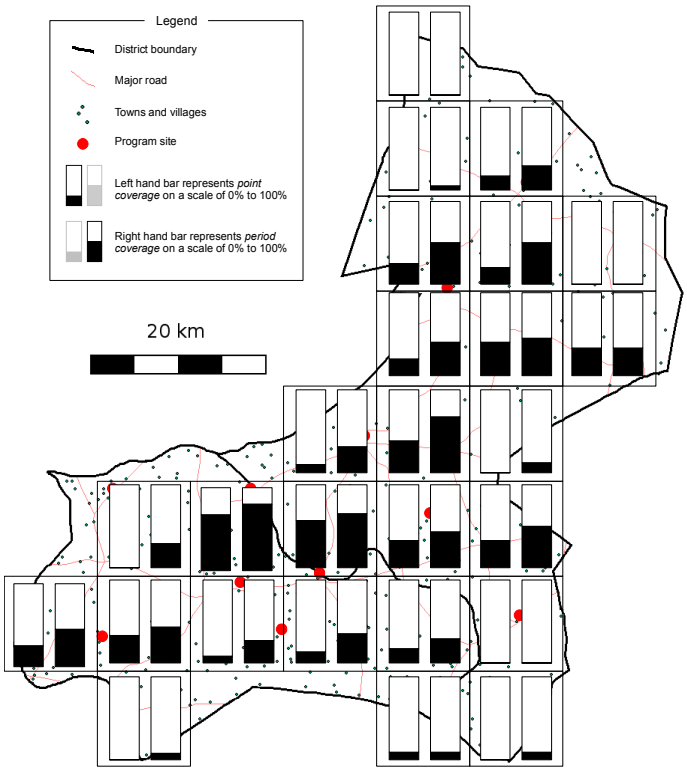
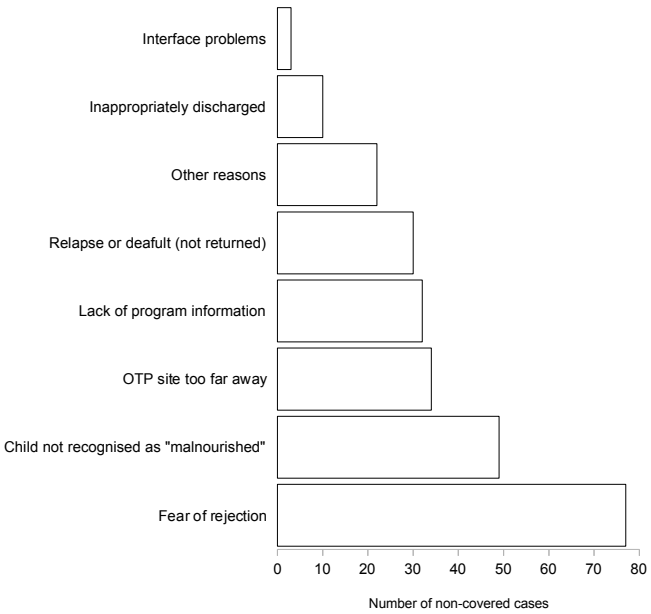


Figure 3: *Barriers to service access and uptake in a CMAM program reported by carers of non-covered cases produced using the CSAS method*



Semi-quantitative Evaluation of Access and Coverage (SQUEAC)

SQUEAC is a semi-quantitative method that provides in-depth analysis of barriers and boosters to coverage. It is designed as a routine program monitoring tool through the intelligent use of routine monitoring data complemented by other relevant data that are collected on a "little and often" basis.

Design

SQUEAC is more an investigation than a survey. ***SQUEAC*** is made up of three stages:

Stage 1: Semi-quantitative investigation into factors affecting coverage using the ***SQUEAC*** toolkit

Stage 2: Confirm areas of high and low coverage identified in stage 1 through small studies and small-area surveys

Stage 3: Estimating overall coverage using Bayesian techniques. Likelihood survey is conducted as part of this stage. This survey utilises a systematic spatial sample as with all the other coverage survey methods. *Stage 3* of ***SQUEAC*** is optional and is done if the reporting of an overall coverage estimate is a key information requirement in addition to the the rich information on barriers and boosters to coverage already gained from *Stages 1* and *2*.

Results

SQUEAC provides the following results:

- Mapping of coverage using small area surveys through a "risk mapping" approach
- Estimation of coverage using Bayesian techniques
- Concept map of barriers and boosters to coverage

Figure 4 shows the relations between factors influencing coverage and effectiveness in a MoH-delivered CMAM program in Sierra Leone. *Figure 5* shows coverage mapping through a risk mapping approach.

Figure 4: *Relations between factors influencing coverage and effectiveness produced by a* ***SQUEAC*** *assessment*

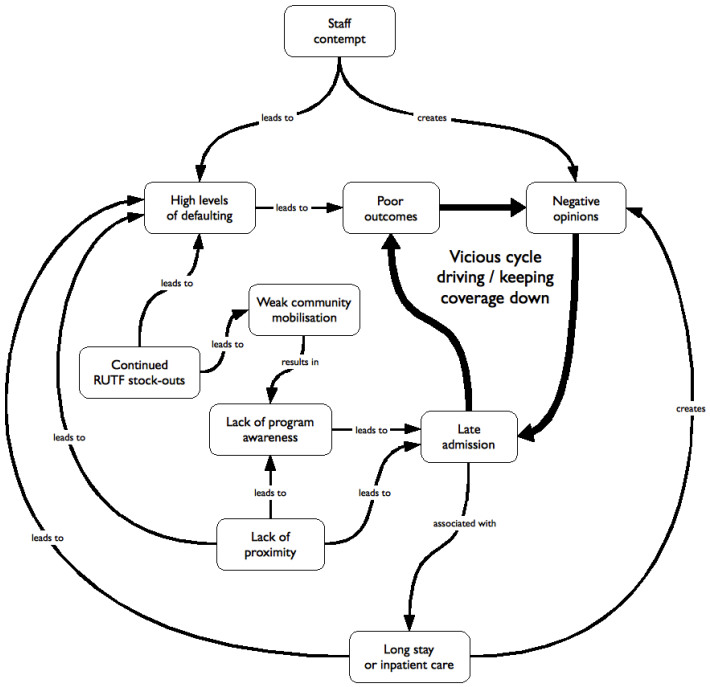
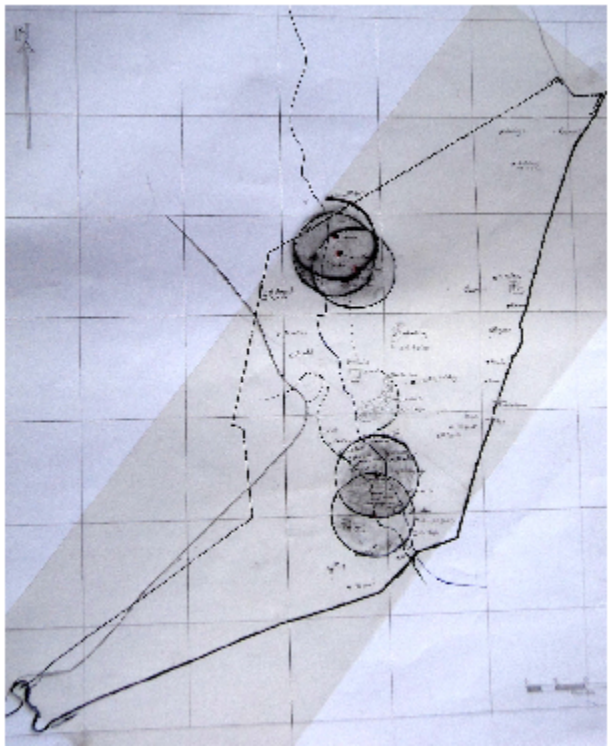


Figure 5: *Coverage mapping by risk mapping*



Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC)

SLEAC is a rapid low-resource survey method that classifies coverage at the service delivery unit (SDU) level such as the district. A ***SLEAC*** survey identifies the category of coverage (e.g. "low coverage", "moderate coverage" or "high coverage") that describes the coverage of the service delivery unit being assessed. The advantage of this approach is that relatively small sample sizes (e.g. $n \leq 40$) are required in order to make an accurate and reliable *classification*.

SLEAC can also estimate coverage over several service delivery units hence ideal for coverage survey of wide areas. Coverage is still classified for individual service delivery units. Then, data from individual service delivery units are combined and coverage for this wider area is estimated from this combined sample.

SLEAC was originally developed as a companion method for ***SQUEAC*** but has recently been used for mapping of coverage classes in service delivery units over very wide-areas.

Design

SLEAC uses a systematic spatial sample similar to that used in CSAS. Only small sample sizes ($n \leq 40$) are required for each service delivery unit in which coverage is being classified.

Results

SLEAC yields the following results:

- Overall coverage classification
- Can be used over wide areas to provide local coverage classifications with a coverage map and a wide area estimates
- Ranked list of barriers

Figure 6 shows a map of coverage class for all administrative districts in a MoH-delivered CMAM program in Sierra Leone. ***SLEAC*** also provides output similar to *Figure 3*. It is typical to use ***SLEAC*** to identify areas for further investigation using the ***SQUEAC*** method (*Figure 7*)

Figure 6: *Map of per-district coverage produced by the* ***SLEAC*** *method*

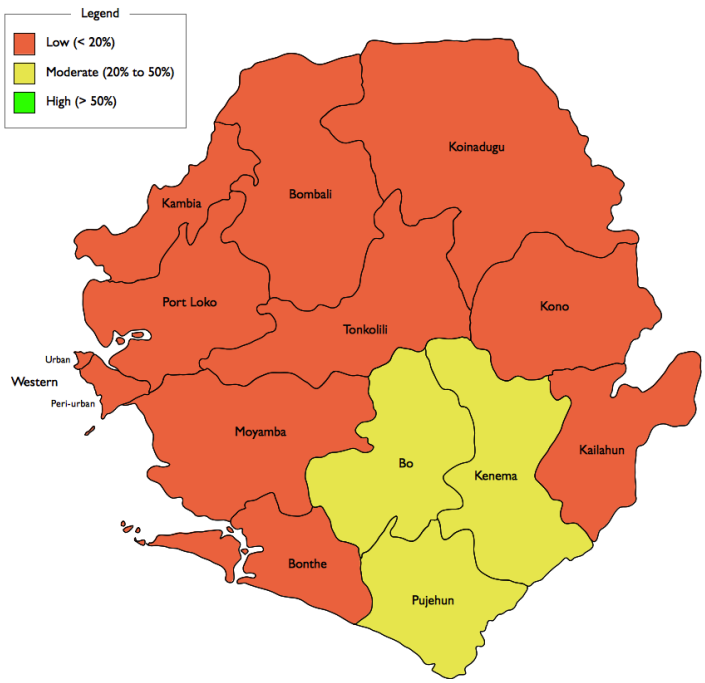


Figure 7a: *Using* ***SLEAC*** *and* ***SQUEAC*** *in failing service delivery units*

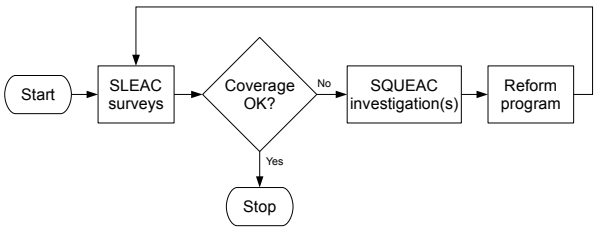
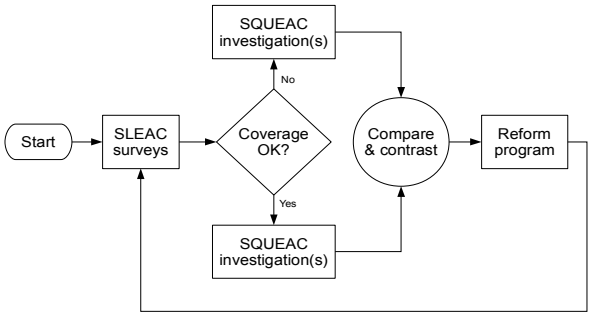


Figure 7b: *Using* ***SLEAC*** *and* ***SQUEAC*** *in succeeding and failing service delivery units*



Simple Spatial Survey Method (S3M)

S3M is a development of ***CSAS*** for very wide area usage. The key features of ***S3M*** are:

- Triangular irregular network (TIN) rather than a grid sample
- Highly efficient use of sample (c. 6x reuse of data)
- Lower cost than CSAS (10 x area of 2 x cost)
- Maps a 'coverage surface'
- Automatic smoothing of data
- Simple to understand
- Simple enough for NGOs / MoHs to do

Design

S3M uses a two-stage sampling design. First stage is a systematic spatial sample using triangular irregular network rather than a grid to identify communities to sample. The second stage is active and adaptive case-finding to find all or nearly all SAM cases within the communities selected.

Results

S3M provides the following outputs:

- Coverage map similar to that of ***CSAS***
- Overall estimate of coverage
- Ranked barriers

Figure 8 shows a map of coverage in a MoH-delivered CMAM program in Niger produced using the ***S3M*** method. ***S3M*** also provides output similar to *Figure 3*.

Figure 8: *Coverage map produced by the* ***S3M*** *method*