**Indirectly estimating potential burden and target caseload**

The approximate yearly potential burden of SAM at national level among children 6-59 months can be estimated indirectly based on the latest SAM prevalence estimates, an incidence correction factor and population figures as shown below. Calculation of estimated SAM burden is critical, because it informs the target caseload and indirect coverage calculation. However, estimation of SAM burden should be understood as a rough estimate and such figures should be interpreted with caution. Furthermore, it is essential that **the process for calculating the burden figure, and target caseload, is undertaken with key stakeholders responsible for delivering the programme** (Government, UNICEF, nutrition cluster or sector partners etc.) and that **consensus is reached** on the final figures to be used.

This short document is structured in three parts:

* **Part 1** outlines a process of estimating the burden of SAM, which will need to be agreed upon and if necessary negotiated with government and other stakeholders. Responding to feedback from UNICEF staff last year, calculating the burden of the target area when the programme is not aiming for national coverage is a critical element for both the programme planning and appropriate reporting of programme coverage and progress (see below).
* **Part 2** outlines the way to define the proportion of the estimated SAM burden that the programme will target.
* **Part 3** outlines how to estimate and communicate coverage and programme performance, recognizing that many countries are not aiming for national coverage and complementary aspects of coverage/performance need to be calculated and reported to best represent the status of the programme vis-a-vis the need.

1. **Estimating the burden of SAM (Need)**

Estimating the burden of SAM depends on calculating a number of elements, primarily the prevalence, the incidence correction factor and the population figure.

**Prevalence of SAM**

Prevalence reflects the proportion of malnourished children 6-59 months in a population at a point in time and is estimated through anthropometric surveys (SMART, MICS, DHS etc. using weight-for-height Z-score). This is calculated as:

***Number of children (6-59 months) with severe acute malnutrition / population of 6-59 months***

**Annual Incidence of SAM**

SAM incidence is defined as the occurrence of new cases of SAM in children 6-59 months in a population over a specific time period (usually a year). Some studies have tried to estimate SAM incidence by looking at programme admissions over a year for SAM programmes which maintain a high coverage, by reanalysing longitudinal studies that monitored episodes of malnutrition over time and by assessing the duration of untreated SAM[[1]](#footnote-1). Estimation of incidence is challenging because:

* The mean duration of a SAM episode is not easy to estimate and may vary widely from setting to setting.
* The method relies on an assumption of constant incidence - unlikely since SAM is strongly affected by seasonality.

A common estimate of the average duration of an untreated SAM episode is 7.5 months (Garenne et al 2009). Using this to estimate incidence over one year (i.e. 12 months) yields:

***Incidence = Prevalence/average duration of disease***

***so***

***Incidence = Prevalence × (12/7.5) = Prevalence × 1.6***

***NOTE:*** *If the incidence is specifically known, that can be used in place of the 1.6 figure.*

**Calculating the burden[[2]](#footnote-2)**

The annual estimated SAM burden is defined as the number of children 6-59 months with SAM present in a population over a period of time (based on prevalence and incidence[[3]](#footnote-3)). It is recommended to calculate both a national burden figure and a figure for the specific geographic areas where SAM management programmes are operating to better understand the needs.

**National burden:**

The most accurate method (to date) that we can propose (still with many caveats) relies on having good quality regional/provincial breakdowns of SAM prevalence using the same methodology for **all** the regions/provinces in that country (i.e. Method 1 below). It is recognized however that this scenario is rare and most countries will not have good data disaggregated for all regions/provinces. In these cases, there are a few options for calculating the national burden. However, the further the calculation is from the preferred method, the more inaccurate the calculations will likely be. Of Methods 2 and 3, choosing between them may be reliant on the country context and what is known about the quality of the data from the surveys conducted in the country.

***Method 1 (the preferred method): utilizing standardized sub-national data***

Standardized sub-national may be available in the case where a national SMART (or good quality MICS) survey has been conducted (and ideally two SMART surveys for that year – one pre and one post-harvest, from which you would take the average prevalence). You would then use the regional/provincial SAM prevalence with the regional/provincial 6-59m population and the incidence correction factor (see calculation below) to calculate regional burdens which when added would make up a national burden.

***NOTE:*** *This approach is most accurate where the data quality is good and you also have strong population estimates.*

***National Burden = sum of regional (or provincial) burdens***

***Regional Burden = regional population 6-59m x [regional prevalence + (regional prevalence x 1.6)]***

***(Or simplified to: Regional Burden = Population 6-59m x regional prevalence x 2.6)***

*Table: example of calculation in Country X as above using regional figures*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Population** | **Population 6-59m**  (using 17% as standard) | **SAM Prevalence** | **Burden**  (pop 6-59m x prevalence x 2.6) | **Target caseload**  Burden x coverage (e.g. 70%) |
| Province A | 6,000,000 | 1,020,000 | 2.1 | 55,692 | 38,984 |
| Province B | 3,000,000 | 510,000 | 2.8 | 37,128 | 25,990 |
| Province C | 15,000,000 | 2,550,000 | 3.8 | 251,940 | 176,358 |
| Province D | 10,000,000 | 1,700,000 | 2.3 | 101,660 | 71,162 |
| Province E | 11,000,000 | 1,870,000 | 2.9 | 140,998 | 98,699 |
| **Total** | 45,000,000 | 7,650,000 | 2.8 | 587,418 | 411,193 |

***Method 2: Mixing/matching data sources (e.g. SMART and MICS).***

The caveat up front is that data from different sources will be derived from different methodologies and be from different time periods (in a good harvest year; pre/post-harvest etc.) so comparability is problematic. Nevertheless, for planning purposes, this information can be of use. For instance, in Country X, out of a total of 8 provinces, SMART surveys were conducted in 3 provinces and there is SAM prevalence data from the MICS for the other 5 provinces. You could still calculate the burden by province using the different SAM prevalences (from SMART and MICS) with the incidence correction factor and 6-59m populations and total these to make a national estimated burden (as per the calculation method above).

***Method 3: Use aggregated national figures****.*

If a country has an aggregated national level SAM prevalence figure (e.g. the aggregated figure of 2.8 in Table above) this can be used in the following calculation:

***National Burden = national population 6-59m x [national prevalence + (national prevalence x 1.6)]***

***Or simplified to: National Burden = National population 6-59m x national prevalence x 2.6***

**Target area burden:**

In the case of national programmes, the national burden and target area burden will be the same, so no need for further calculation. In the case of programmes that do not aim to be national, the target area burden should also be calculated. To calculate the burden in the area you are targeting for SAM programmes, you can use the following methods (similar to the above for the national burden calculation).

***Method 1 (the preferred method): utilizing standardized sub-national data***

As above for the national calculation, use the standardized regional/provincial SAM prevalence estimates for the programme target area (e.g. the SMART data per province/region) with the province/region 6-59m population.

***Target Area Burden = sum of target area regional (or provincial) burdens***

***Regional Burden = regional population 6-59m x regional prevalence x 2.6***

***NOTE:*** *If you use a regional or local SMART survey to calculate the prevalence of the SAM burden in your programme target area but you use a mix of different surveys (e.g. MICS and SMART) to calculate your national burden, there may be a noticeable discrepancy in the figures since the methodology is not the same. If there is a noticeable discrepancy, the likely reasons should be noted in programme planning documents and reporting.*

***Method 2: Mixing/matching data sources (e.g. SMART and MICS).***

For instance, in Country X with 8 provinces, programmes are operating in 4 province: SMART surveys were conducted in 3 provinces and there is SAM prevalence data from the MICS for the other 1 province. You could still calculate the burden by province using the different SAM prevalences (from SMART and MICS) with the incidence correction factor and 6-59m populations and total these to make a national estimated burden (as per the calculation method above).

***Method 3: Use aggregated target area figures****.*

You could take an aggregated target area SAM prevalence figure (e.g. the aggregation of the different SAM prevalences figures from different regions/provinces as per the example above) with the total target area population, as follows:

***Target Area Burden = target area population 6-59m x aggregate target area prevalence x 2.6***

1. **Estimating the annual target caseload of SAM**

The target caseload is defined as the number of children 6-59 months with SAM that a particular programme expects to treat within a specific time period in a specific area.

***Method 1***

A rough estimation of the target caseload for planning purposes in a new area/country can be obtained by adapting the estimated SAM burden calculation (e.g.: population x estimated prevalence x incidence) to take account of the planned geographical target area for service delivery and the treatment coverage[[4]](#footnote-4) objective.

**Target caseload = estimated SAM burden in the target area x treatment coverage (%)**

which is equivalent to

**Target caseload = Target area population 6-59m x Prevalence\* x 2.6 x treatment coverage (%)**[[5]](#footnote-5)

***\*NOTE:*** *Use the same prevalence figure for calculating your target caseload as for calculating your target area burden.*

Depending on the stage of the programme, the **target treatment coverage may be based on Sphere standards**, experience documented in well-run SAM programmes in a similar context or on a gradual building up from existing health facility coverage. E.g. a target of 50% may be used for the first 6 months of the programme, rising to 70 or 80% at the end of the first year in line with levels documented to be achievable in well-run SAM programmes. If there is no recent survey then the above equation becomes problematic as the number of previous years prevalent and incident cases who remain (i.e. untreated, spontaneously recovered without treatment or died) will be unknown. In this case the below method is advised.

***Method 2***

An alternative and **preferable method for estimating programme targets,** appropriate for already established SAM programmes where admission reports are being collated, is to extrapolate from the previous year’s admissions figures. Last years collated admissions figures can be adapted by taking account of the following:

* adding on estimates calculated as above for areas of expansion not covered in the previous year.
* % reporting, i.e. if 75% of facilities with SAM services submit reports giving a total admissions of 3620 children, then a very rough estimate for 100% of facilities would be (3620/75) x 100
* Adding an estimated number of cases for any predictable surges in coverage and therefore admissions due to mobilization events, or further decentralization of services (e.g. based on previous experiences of similar surges.)
* Any predicted increases in prevalence compared to the previous year (e.g. where early warning indicators predict higher than usual seasonal increases)

***NOTE:*** *There should be a* ***consensus between all stakeholders*** *(cluster or sector coordination level) and on the trends, figures from last years as well as in country actual capacity.*

1. **How to estimate and communicate treatment coverage, geographic coverage, and programme performance**

**Estimating coverage / performance**

*NOTE: admissions is defined as cases newly admitted (otherwise defined as number of new SAM admissions).This is different from ‘cases treated’.*

In previous years, the indirect calculation of coverage has been done comparing the national burden and the number of new admissions for that year nationally. However, it is recognized that many countries do not have programmes covering the whole country, nor are they aiming for nationwide coverage. For 2013/2014, the recommendation is to use a number of different but complementary ways to calculate the coverage to better reflect coverage and programme progress.

i. National treatment coverage

The below method of calculation of national coverage is an *indirect* approach. It is capable of providing very rough / approximate coverage estimates and no information on barriers / bottlenecks.

**National treatment coverage = new admissions/national burden**

ii. Target area treatment coverage

Another calculation of coverage is to calculate coverage according to the area targeted (where SAM programmes are operating). In some cases where countries are operating countrywide, the target area treatment coverage will be exactly the same as the national coverage:

**Target area treatment coverage = new admissions/target area burden**

iii. Geographic coverage

There are two working definitions of geographic coverage (as below). Both definitions are being requested by UNICEF HQ for 2013 since they reflect different but complementary aspects of programme reach.

1. **Geographic coverage = Healthcare facilities delivering treatment for SAM (national or target area)/ Total number of healthcare facilities (national or target area)**
2. **Geographic coverage = Districts delivering treatment for SAM/ Total districts**

iv. Programme implementation progress

Another measure of success is to calculate the progress of the programme against the targets set, as per the following:

**Programme implementation progress = admissions/target caseload**

**How to use/communicate coverage / performance data**

In order to fully capture and communicate the scale of SAM programming to a range of audiences, it is important to have a common understanding of how best to use these different figures. Each figure helps show how the programme has performed against the need and ideally all the above should be presented altogether when communicated.

1. The national treatment coverage estimate presents the nationwide progress and gap and thus ensures that the overall SAM burden and need within the country is not forgotten or overlooked. This can be important for advocacy purposes to promote further scale up of programming efforts.
2. The targeted area treatment coverage figure demonstrates the progress achieved within the areas that SAM management programmes are operating, and the remaining gap in these areas. This can be important for showing success where we/partners work, but also point to the need for further scale-up.
3. Geographic coverage represents a crucial starting point for developing and monitoring SAM management scale-up strategies, identifying gaps where there is an unmet need for SAM management and advocating with ministries of health and other partners to fill these gaps.
4. The final figure for programme progress lends itself more to communicating the success against agency/partner aspirations and qualified by the capacities in place in the country. This can be important for showing success in both the planning and delivering of programmes of UNICEF/partners as per the capacities in place.

1. (Garenne et al 2009) (Isanaka et al 2011) [↑](#footnote-ref-1)
2. Burden may also be referred to as ‘Universal’ caseload by OCHA and others [↑](#footnote-ref-2)
3. Note that if a different incidence rate is used, this will impact the figures. Calculated from Total population (n) x estimated proportion of children 6-59m in the population (%) [↑](#footnote-ref-3)
4. Treatment coverage (different from geographic coverage) is defined (as in part 2 below) as “new admissions/burden” [↑](#footnote-ref-4)
5. If treatment coverage is known, it should be estimated based on previous year’s performance, as well as taking into account the overall UNICEF/partner capacity to treat. SPHERE standards are 70% in urban areas, 50% in rural areas and 90% in camps. [↑](#footnote-ref-5)