

MUAC vs. WHM : The perspective of interface

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The perspective of interface

The *interface* refers to patient recruitment and patient flow between :

- The community and the program (recruitment, referral, admission, coverage)
- The services that constitute the program (service integration)

One of the foundations of the CTC concept is the *strong interface model* :

The interfaces between the host population and the service, between constituent parts of the service, and with all outside bodies delivering complementary services should be as efficient as possible.

This presentation discusses the use of MUAC in CTC programs solely from this perspective.

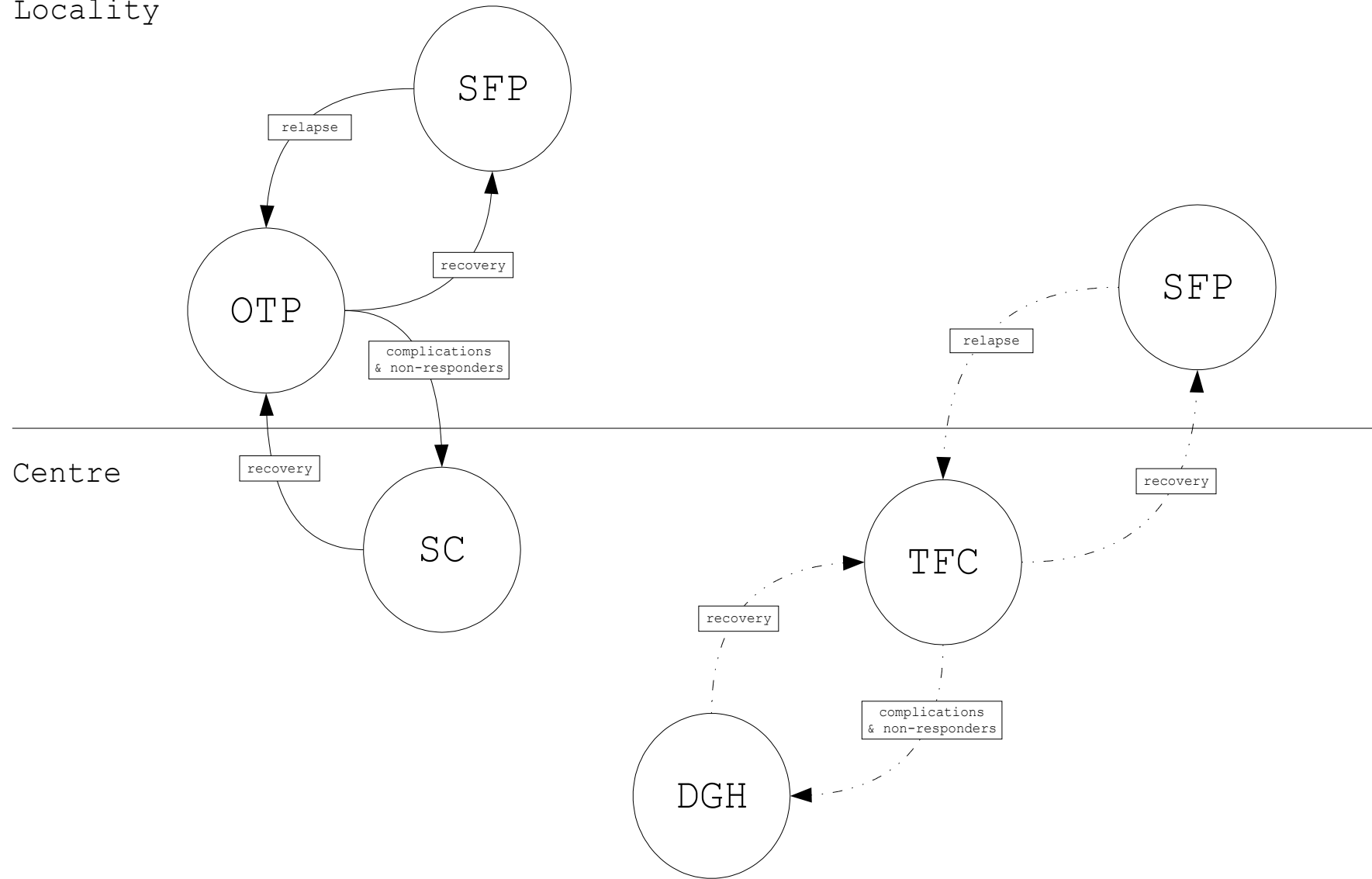
Interface in the context of TFC and CTC programs

Compared with most TFC programs, CTC programs tend to be characterised by proximity to the community and close integration between services :

Interface between ...		CTC	TFC
Community	Program	MODERATE : OTP services delivered locally. Referral by community-based staff.	WEAK : TFC located centrally. Referral by central program staff.
Primary Intervention	SFP	STRONG : OTP and SFP services are delivered by the same agency at the same location.	WEAK : TFC and SFP services are often delivered by different agencies at different locations.
Primary Intervention	HDU	STRONG : OTP and HDU services are often run by the same agency. If HDU services are delivered by (e.g.) the district hospital then support (i.e. training, staff, drugs, RUTF, formula feed, and funding) is given. Dedicated staff are employed to manage the OTP : HDU interface.	VARIABLE : TFC and HDU services are usually run by different agencies with HDU services delivered by the district hospital. Formal links between TFC and HDU are often weak even when delivered at the same site.

Interface Example : Service integration (simplified)

Locality



Community : primary intervention interface weakness in CTC

In an **emergency context** CTC relies on large numbers of local (i.e. community-based) outreach workers for referral into service :

Large numbers of local staff can mean :

- High capital costs for provision of scales and height boards.
- Low levels of supervision / quality control.
- High training costs.

Low levels of literacy and numeracy mean :

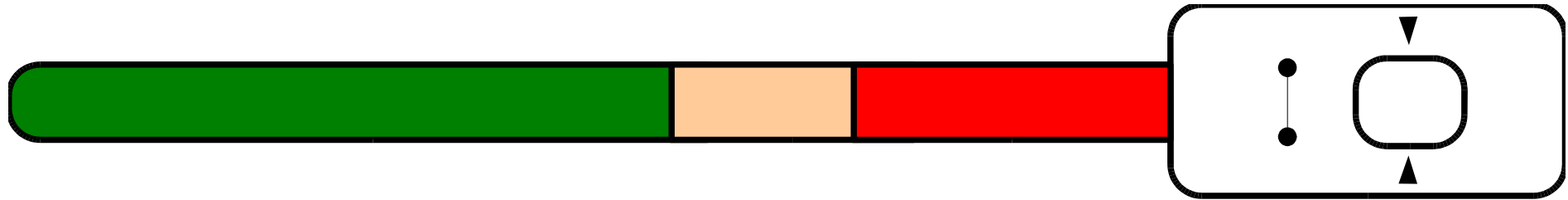
Indices that require a familiarity with a large number of mathematical concepts (i.e. digit recognition, number formation, magnitude estimation, number order, and number comparison) to perform table look-up ... arithmetical calculation are impractical.

This means :

The use of weight-for-height percentage of median (WHM) by outreach workers is **not** practical in CTC programs.

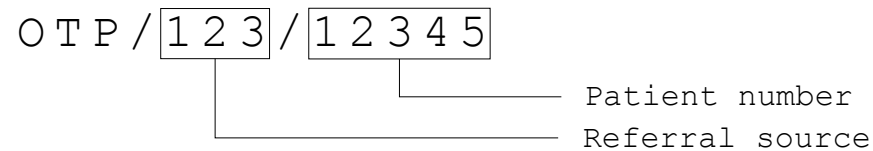
MUAC (a simple, low-cost, single-operation, banded, intuitive, linear measure) is a more practical index for use by CTC outreach workers.

Simple, low-cost, single-operation, banded, intuitive, linear measure



No numbers · No writing · *Pulling* can be controlled for mechanically

Control digits on referral slips allow quality, community pressure, and petty corruption control :



Community : primary intervention interface weakness in CTC

But ... the **sole use of MUAC** for referral and admission is problematic :

MUAC is *perceived* as being a poor indicator :

It does not select the same children as WHM.

It is prone to error[†] :

Large inter-observer variation compared to WHM under **ideal** conditions.

Large intra-observer variation compared to WHM under **ideal** conditions.

Preferential selection of younger children (seen as a bad thing).

This has led to a two-stage referral / admission system being employed :

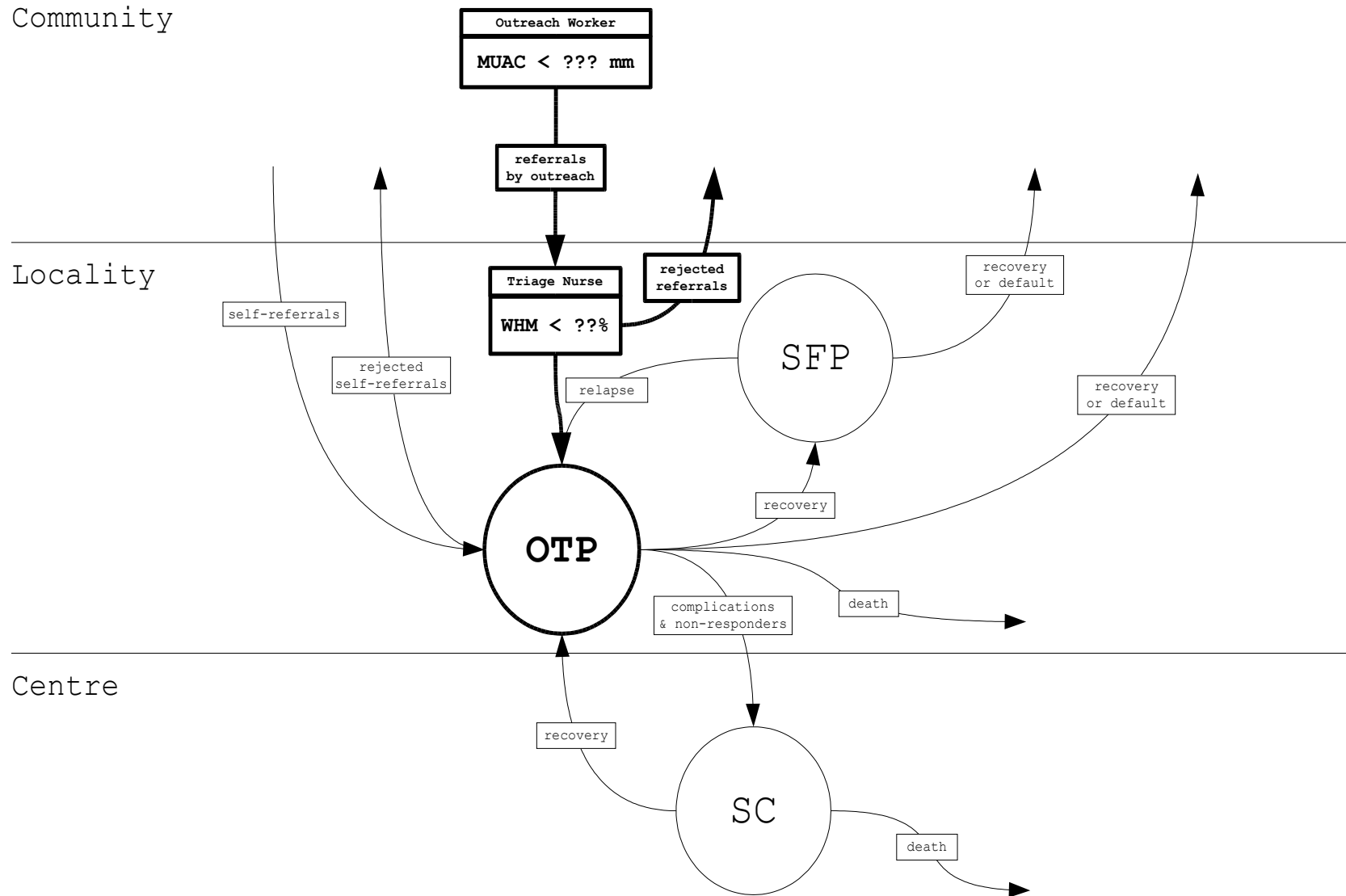
Case-finding and referral in their home community by outreach workers of children with low MUAC to OTP sites. Referred children weighed, measured, and WHM calculated at OTP sites :

Children with low MUAC but $WHM \geq 70\%$ are rejected.

Children with low MUAC and $WHM < 70\%$ are admitted.

[†]Common error types (pulling, off-centre measurement) increase sensitivity. Gross misclassification errors are exceptionally rare when banded straps are used.

Present dominant selection method for OTP in CTC programs



Community : primary intervention interface weakness in CTC

The two-stage referral / admission system with an **adequately sensitive MUAC threshold** causes the *problem of rejected referrals* :

In the community :

The referral is devalued :

Carers become unwilling to attend **even if the child's condition deteriorates.**

Carers of rejected children may actively disparage the program.

Local leaders become disillusioned with the program.

Amongst outreach workers :

Staff prestige is devalued.

Staff morale is depressed.

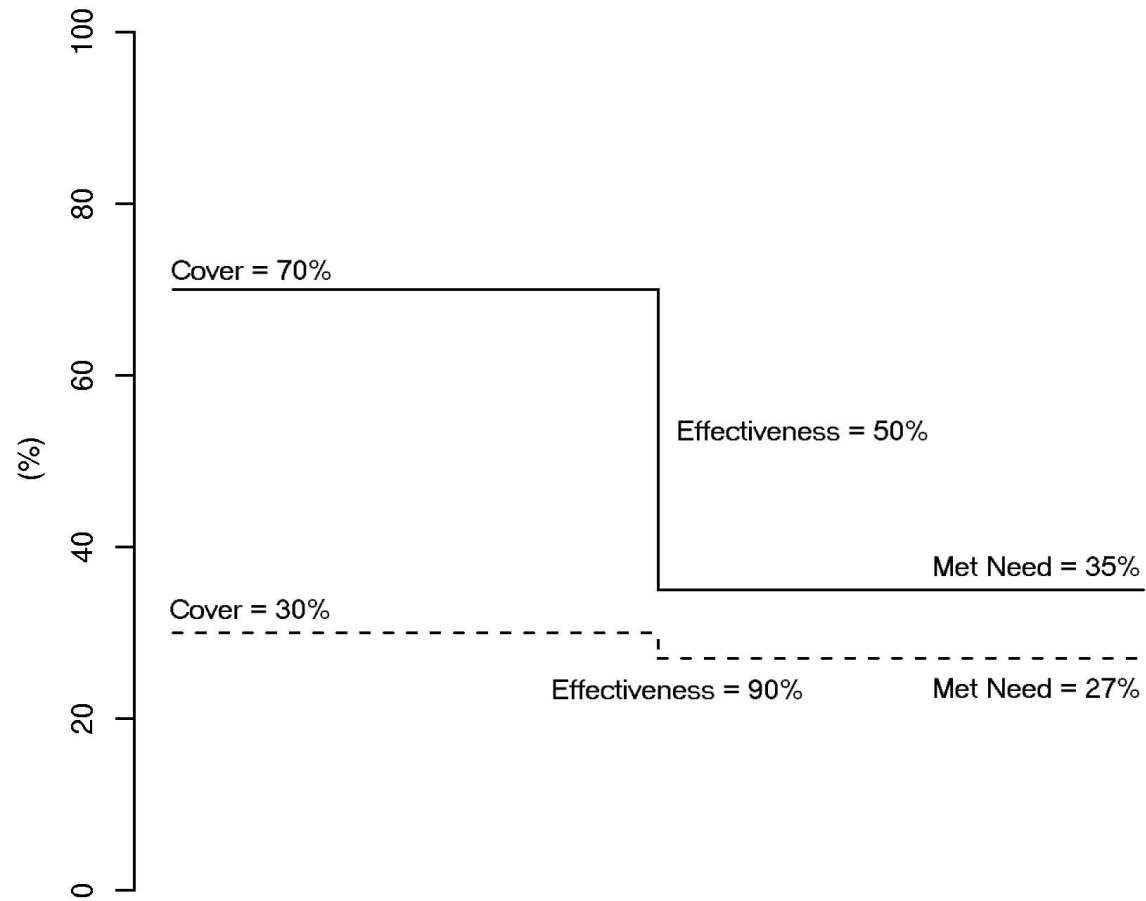
Staff performance is depressed.

This has a negative effect on patient recruitment which directly reduces program coverage and **COVERAGE IS ALL!**

Data sources : Formal and natural focus groups and in-depth interviews with principal carers, clinic workers, community leaders, non-beneficiaries, outreach workers, OTP centre staff, MoH staff, and NGO staff (five independent sources over two years).

Why coverage is so important (illustration)

Low coverage means low met need regardless of program effectiveness :



Note : CTC coverage typically exceeds 60%
CTC effectiveness is typically similar to TFC effectiveness
TFC coverage rarely reaches 30% over wide areas

What about using MUAC in TFC programs?

MUAC **is** used in TFC programs as the first stage of a two-stage screening and referral system :

STAGE 1 : All children have their MUAC measured :

Children with MUAC \geq 130 mm are rejected.

Children with MUAC $<$ 130 mm pass to STAGE 2.

STAGE 2 : Children with MUAC $<$ 130 mm are weighed, measured, and WHM calculated :

Children with low MUAC but WHM \geq 70% are rejected.

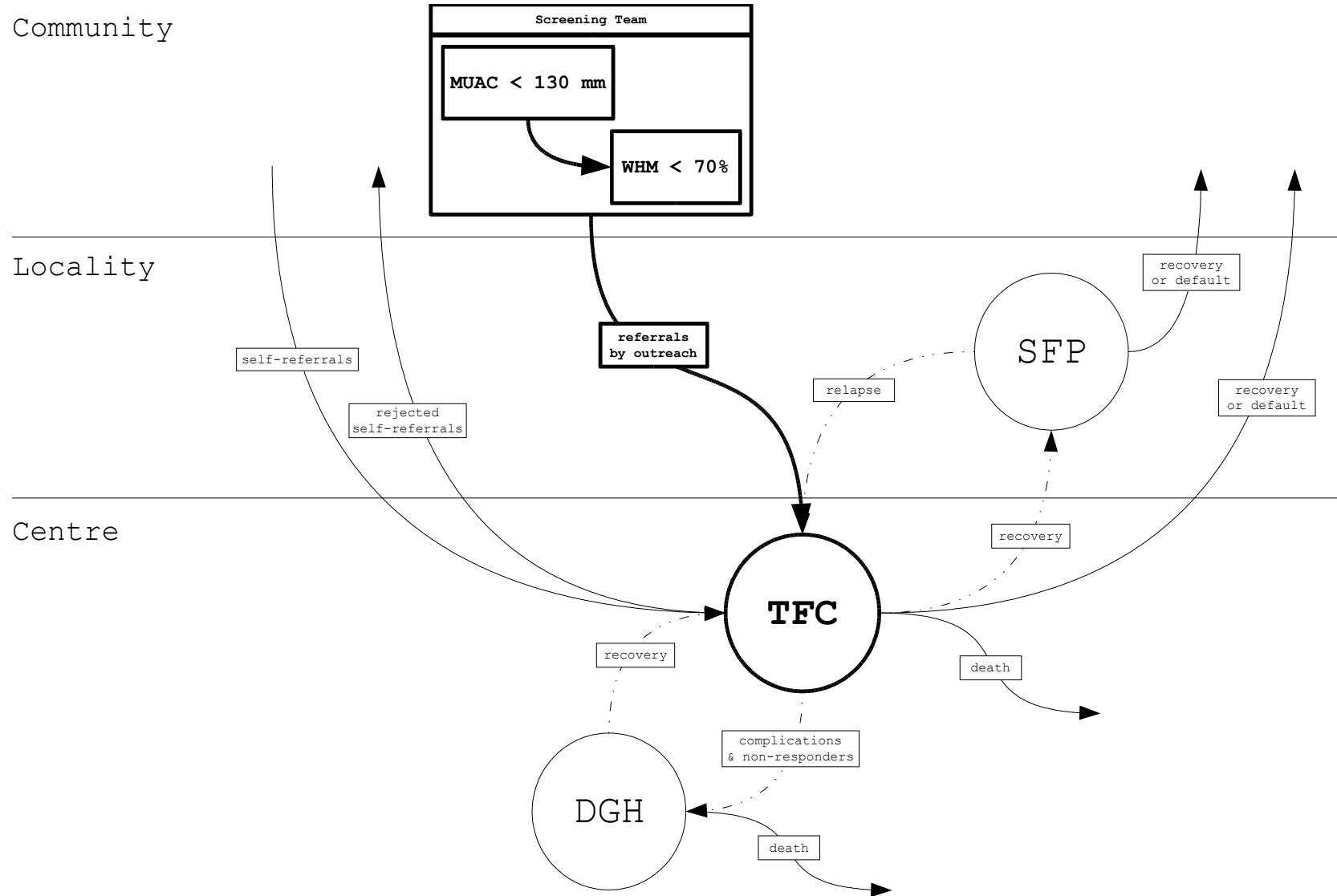
Children with low MUAC and WHM $<$ 70% referred for admission.

This does **not** cause an interface problem in TFC programs because :

Both stages take place in the home community.

No-one is referred that does not meet the program's entry criteria.

What about using MUAC in TFC programs?



Problem solved?

The obvious solution to this problem is to use the TFC case-finding and referral system in CTC programs but this :

Is too expensive.

Is too difficult for outreach staff.

This means :

It loses the potential interface advantage of using community-based referrals.

It is inappropriate unless we accept a reduction in coverage of case-finding and referral activities.
This will lead to lower program coverage and :

COVERAGE IS ALL!

More problems in the developmental context

TFC programs are usually limited to emergency contexts. CTC programs are suitable for :

Emergency contexts.

Relief to development (R2D) contexts.

Pure development (PDev) contexts.

The community : program interfaces in R2D and PDev contexts are more numerous :

Standard CTC outreach services (R2D only).

Growth monitoring services (stand-alone, integrated with PHC, integrated with EPI, integrated with CHW, integrated with MCH).

Community nutrition services (stand-alone, integrated with PHC, integrated with MCH, &c.).

But ... each of these services uses a different **primary** definition of malnutrition depending on the aims of the particular intervention.

The effect of different primary definitions of malnutrition

The use of different primary definitions of malnutrition :

Standard CTC outreach services : MUAC + WHM

Growth monitoring : WAM

Community nutrition services : HAM / HAZ

Leads to :

Confusion between the use and meaning of indices that have a height or weight component.

Inappropriate referral (increases the problem of rejected referrals).

Poor program image amongst potential referrers (low patient recruitment).

Poor integration with other services (weakens the CTC *strong interface* model).

All this acts to reduce coverage and :

COVERAGE IS ALL!

One solution to these problems

One solution to these problems is to use a single referral and admission criteria based on MUAC.

This will :

Remove the interface problems caused by rejected referrals from :

Standard CTC outreach services (use MUAC alone).

Other (e.g. GM, PHC, EPI, MCH, and CNW) services (use current primary indicator as first-stage screen, MUAC in second stage).

Improve :

Program image with external services.

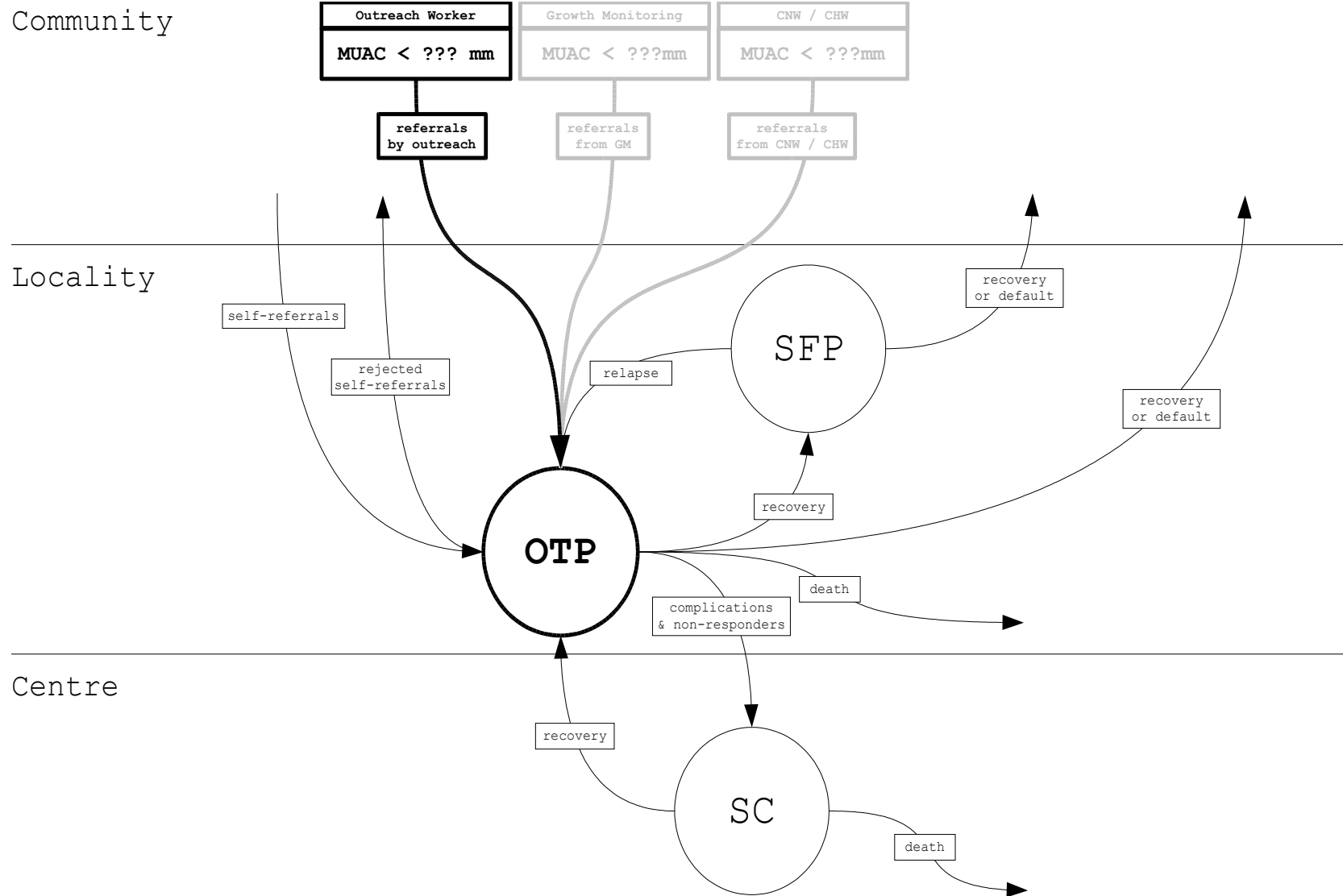
Strengthen interfaces with external services.

The CTC community : program interface.

Staff morale and performance.

This solution will also reduce costs, delays, and crowding at centre gates since referral from the community will be an **admission entitlement** not a betting slip.

One solution to these problems



Conclusions

Removing the WHM admission criteria and using MUAC alone as an admission criteria for CTC programs has much to recommend it from a political and administrative perspective as well as in terms of improving the community : program interface.

Such a change may have much else to recommend it ... this will be discussed in the following presentations.

Acronyms

The following acronyms were used in this presentation:

CHW	Community (village) health worker
CNW	Community (village) nutrition worker
CTC	Community therapeutic care
DGH	District general hospital
EPI	Expanded program of immunization
GM	Growth monitoring
HAM	Height-for-age percentage of median
HAZ	Height-for-age z-score
HDU	High dependency unit
MCH	Maternal and child health
MUAC	Mid-upper-arm-circumference
OTP	Outpatient therapeutic care
PHC	Primary health care
PDev	Pure development
R2D	Relief to development
RUTF	Ready to use therapeutic food
SC	Stabilisation centre
SFP	Supplementary feeding program
TFC	Therapeutic feeding centre
WAM	Weight for age percentage of median
WHM	Weight for height percentage of median