

Humanitarian Policy Group

HPG Background Paper

Assessing the impact of humanitarian assistance

A review of methods in the food and nutrition sector

Dedicated to improving humanitarian policy and practice

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A background paper for HPG Research 17



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1. Introduction: why is impact data important

Impact data by definition determines whether intervention objectives are being met. Such data therefore provides guidance on the need to modify interventions where these are not achieving objectives during the project/programme cycles, or where unintended and adverse impacts are occurring. Another key role for impact data is that, if collected and analysed across a series of the same type of interventions over time, this will contribute to a body of knowledge concerning the general effectiveness of specific types of intervention. This role is of particular interest to donor organisations. In order to fulfil all of the above roles, impact assessments need to be conducted at the start, mid-project and at the end of the intervention.¹

If the role of the impact assessment is simply to help construct a body of knowledge regarding the efficacy of a particular type or design of intervention then assessments at the beginning and end of the intervention will suffice.

For the purposes of this review, impact is considered in relation to the core objectives of food security and nutrition surveillance systems in emergency situations. These normally comprise provide information on threats to lives and livelihoods. as well as on intervention impact on saving lives, reducing levels of malnutrition (wasting and on occasions micro-nutrient deficiency), preventing increases in levels of malnutrition and, increasingly, protecting livelihoods (WFP, 2003).²

There are also potential unintended (and negative) impacts of humanitarian interventions which food security and nutritional surveillance systems can identify, such as food aid leading to a reduction in food prices thereby acting as a disincentive to local production, causing displacement to and around feeding centres thereby impacting livelihoods and increasing health problems, or fuelling conflict thereby adversely affecting livelihoods.;

In theory, food security and nutrition indicator monitoring could be used to assess impact of the overall humanitarian response (including non-food and nutrition interventions which impact on food security and nutritional status) and specific emergency food and nutrition interventions within that response. In general, however, food security and nutritional indicator monitoring systems (FS/NIM) have rarely been used effectively or with ‘scientific’ rigour to assess intervention impacts *at population level*. There are many reasons for this which will be discussed below. However, for some type of interventions, i.e. therapeutic feeding programmes, impact is routinely and rigorously assessed at project and individual beneficiary level through nutrition indicator monitoring.

The evidence is that agencies tend to place far greater emphasis on measuring the delivery of services which are assumed to have an impact, i.e. process indicators. Up until now this has been encouraged by donors. For example, log frames used by DFID and the EC explicitly demand that proposals set out monitoring criteria which have process indicators as a core set of information. The WFP Results Based Management strategy (WFP, 2003) focuses largely on process indicators.

The types of process indicator that are monitored, analysed and presented as a proxy for impact in the emergency food and nutrition sector include: quantities of food delivered, programme coverage, and equity of distribution (food basket monitoring at household or distribution point). In the case of selective feeding programme coverage, length of stay and default rates are all used as proxies for impact at population level.

A question for this paper is whether it is feasible and appropriate to move beyond this in utilising food security and nutritional status monitoring to measure actual impact of programmes/interventions, and if so, how.

This paper will review the use of nutritional indicators and food security/livelihoods assessment methods for assessing the impact of humanitarian action. It shows that a mixture of information, drawing on various sources, is often required in order to better know the impact of particular humanitarian programmes.

2. Nutritional indicator monitoring systems and their use in impact assessment

According to a recent review (Shoham et al., 2001), there are essentially six types of nutrition indicator monitoring system which convey information at population level, and which could therefore theoretically be utilised for impact assessment (see Table 1).³

Table 1: Types of nutrition information monitoring systems

Nutrition information monitoring system	Advantages	Disadvantages
Repeated surveys at national level	National-level surveys have sometimes been carried out in humanitarian emergencies – UNICEF used a survey in 2003 in Zimbabwe to make statements about the emergency and the impact of humanitarian aid.	These are costly and only carried out every 5–10 years. A national survey would never be implemented at national level to determine impact of an emergency intervention over a short time frame.
Repeated small-scale surveys	This is the most frequently used type of nutritional assessment conducted during emergencies.	The weaknesses of such surveys relate to the often limited scope for data disaggregation, which may not be sufficient to assess conditions of particular

		population groups. The cost in terms of human resources and staff time is also high when surveying in widely dispersed communities. Obtaining statistically representative samples in areas of insecurity may also be problematic.
Clinic-based growth monitoring	This may be the only regular source of nutritional data. It is available nationally, easily accessible and can demonstrate trends. It is especially useful in areas of insecurity, where surveys may not be feasible.	Samples may be biased sample (only healthier children attend, fewer children over the age of one), weighing and recording by clinic staff may be inaccurate, and there is a time lag between data collection and analysis at central level.
Community-based growth monitoring	This can work well when community mobilisers are adequately resourced, trained and supported. It can provide more comprehensive coverage of under-fives, compared to clinic-based programmes.	There are problems of data accuracy, delays in analysis and a lack of contextual information.
Centrally based	These are less costly than	There is a lack of inclusion of

sentinel site surveillance ⁴	national surveys and can reveal more in depth information on the causes of malnutrition. Data collectors tend to spend more time in the targeted communities (they are covering fewer areas). Where the surveillance targets the most vulnerable communities, this can provide good early warning of crises.	population groups which may also be of interest but have not been selected, and the data collected is not representative of the wider population and cannot be extrapolated.
Community-based sentinel site surveillance	These are lower-cost and potentially useful in areas of insecurity.	Systems require ongoing commitment in a way that one-off surveys do not. ⁵ Another significant constraint is lack of representativeness and the data may not be (or may not be perceived as) of sufficient quality.

There are many factors that render nutritional status an imperfect indicator for impact assessment. Due to the multi-causal nature of malnutrition it is impossible to attribute the impact on nutritional status of a nutrition or food security intervention at population level without controlling or accounting for other sectoral interventions, e.g. health, support for caring practices, WATSAN, or income support. This is reflected in the SMART working group findings. Furthermore, it would be necessary to account and control for other non-intervention-related food security factors. A refugee or IDP camp where there may be considerable control over resources and

services within the camp is a situation where there is likely to be greatest knowledge of all food security-related factors. Here the intuitive link between interventions like food aid deliveries/selective feeding and nutritional status may be realistic. For example, there was considerable confidence that the diminution in levels of wasting in the Goma refugee camps from late 1994 to early 1995 was mainly linked to the rapidly implemented general ration programme (in conjunction with other services) (Clay and Stokke, 2000).

However, even in refugee/IDP programmes food security components are rarely clear-cut. The most comprehensive database of nutritional status of emergency-affected populations is currently the RNIS based in the SCN in Geneva. During 1995–97, roughly half the reports (which deal mainly with refugee and IDP camp situations) showed over 10% levels of wasting and almost one-fifth over 20%. The data also showed a strong association between wasting and CMR. Benchmark CMR levels below 1/10,000/day were in turn associated with rations providing over 2,000 kcals per person per day, while < 1,500 kcals per day were associated with mortality rates ranging from 2–10 times higher. However, these data have to be treated with care; first, they do not allow for correlation of actual shortfalls in consumption with mortality as rations may be deliberately low because beneficiaries are partly self-sufficient, and second other non-intervention factors may affect levels of wasting and the resulting mortality, e.g. market stimulations/prices, freedom of movement and income-earning opportunities (Clay and Stokke, 2000).

There are numerous cases in the literature of reductions in the prevalence of malnutrition associated with the adequate supply of rations being held up as good qualitative evidence of the emergency food ration–malnutrition linkage, e.g. in the Great Lakes camps. Indeed, a phenomenon frequently reported over the past few years has been the rapid reduction in levels of wasting once areas previously cut off because of conflict and insecurity have become accessible to humanitarian agencies and general ration distributions, e.g. Angola and Liberia. However, although much of

this impact has been attributed to the provision of emergency food aid, other factors like the re-establishment of markets, the resumption of agricultural activity and freedom of movement have also played a significant role (Clay and Stokke, 2000). In essence, it would be necessary to establish a control group to attribute impact with scientific certainty. It is of interest that a recent study examining the impact of World Bank nutrition programmes in three stable (non-emergency affected) countries (SC UK, 2003) found that nutritional improvement was mirrored in control areas, forcing the conclusion that the programmes had no significant nutritional impact.

For ethical reasons it is clearly impossible to design an intervention in such a way that there are control groups established to demonstrate impact. However, there are situations where a new type of programme design, e.g. community-based therapeutic feeding as opposed to clinic-based TF or community-managed targeting as opposed to administrative targeting, is implemented and nutritional impact compared with impact on the control group who are targeted with the traditional programme design (ENN, 2003). This kind of impact assessment is scientifically credible.

Apart from the fundamental difficulty of attributing cause and effect either to individual projects/programmes or the entire humanitarian response without control groups, there are numerous other difficulties which are specific to nutritional survey or surveillance data, and which undermine the role of this type of information in impact assessment:

- *Sampling difficulties.* In many non-camp situations it may be difficult to construct robust sampling frames. Census data may be many years old while the crisis may have had a dramatic impact on demographics and population numbers due to out-migration and high mortality. Although cluster surveys are a compromise measure, in many situations (especially in conflict situations or where terrain is very difficult) it may prove difficult to gain access

to the 30 clusters proscribed. Nomadic groups may also prove difficult to sample (World Vision, 1999; SMART, 2002).

- *Disaggregating impact.* In large crisis-affected areas, the aggregate figure for prevalence of malnutrition cannot be disaggregated to smaller sub-groups. It may therefore prove difficult to determine whether the associated impact of a humanitarian intervention is equitable across all geographic areas and livelihood groups.
- *Timeliness.* Nutrition surveys can be conducted rapidly in camp situations (perhaps 2–3 days). However, in open situations, especially in large areas with poor infrastructure, such surveys can take weeks. Furthermore, the costs can be substantial especially where travel over large distances is involved and outside expertise needs to be hired (Young and Jaspars, 1995).
- *Baseline/seasonality.* Lack of baseline nutritional data (pre-emergency) creates interpretive difficulties. Although an intervention may be associated with reduced levels of wasting, it will not be possible to know whether the intervention has led to ‘normal’ levels of wasting. This may be particularly problematic in areas of chronic destitution, i.e. northern Darfur, north-east Kenya, where levels of wasting are in the region of 20% in normal years (a level that would normally trigger an emergency intervention). Similarly, in areas of endemic HIV infection there is growing evidence of unusually high levels of severe wasting (as a proportion of global wasting). Without baseline data on these rates it may be difficult to interpret post-intervention nutrition survey findings. A related issue is seasonal variation in nutritional status. Without baseline data on variation it will be difficult to interpret repeated nutritional surveys/surveillance during a project cycle. There are many examples of where this has been problematic (Young and Jaspars, 1995).

- *Survey fatigue.* There is some evidence from the literature that repeated nutrition surveys meet with some resistance from mothers (Young and Jaspars, 1995). However, this seems to occur mostly when mothers perceive no benefits, e.g. there is no resulting intervention. In the case of impact assessment this is less likely to be the case.
- *Poorly conducted surveys.* A review by CDC of data used in the Horn of Africa over the last decade showed that the majority of nutrition surveys had methodological problems and established best practices had not been followed. This demonstrates a major problem with training and donor coordination, the lack of appropriate analytical tools and standardised reporting requirements, and problems in disseminating current best practice methodologies. There are numerous other examples in the literature of poorly conducted nutrition surveys (Garfield, 2001; Shoham, 2001; SMART, 2002).
- *Target population/elderly and infants.* Nutritional surveys traditionally measure wasting among the under-fives. However, there are a growing number of reported cases where the most nutritionally vulnerable are another demographic group. It has been observed amongst populations affected by food crisis that food consumption by children may be protected by adults forgoing meals. As a consequence, the nutritional status of children may be the last to suffer. Also, in some contexts other groups may be more nutritionally vulnerable. For example, in Bosnia a number of nutrition and health surveys were conducted in the 'at-risk' populations of the besieged enclaves in 1992 and early 1993. These surveys collected anthropometric data on under-fives and found no signs of malnutrition. However, surveillance systems set up to collect data in the same besieged enclaves at the end of 1993 collected nutritional, health and socio-economic data on all household members and found that, while the nutritional status of children remained normal, the elderly (over 60 years of age) showed elevated signs of wasting,

while adults experienced substantial weight loss. This argues for including adults and the elderly in nutritional surveillance in certain situations (Shoham et al., 2001). There are also methodological difficulties with assessing the nutritional status of infants (under six months). Recent evidence suggests that, in some situations, this age group can be as nutritionally vulnerable as the 6–59-month group, and that breast feeding does not automatically equate with nutritional security. However, appropriate methodologies for measuring nutritional status of this group are not currently in the public domain (Golden, 2000; Prudhon, 2000).

- *Non-anthropometric impact.* Nutritional impact of interventions will not only occur through growth/weight gain but will also be expressed in terms of improving/increasing tissue integrity/immunity/physical activity levels. These impacts will not be measured in traditional nutritional surveys. A seminal study by Beaton and Ghassemi (1982) examined the effectiveness (and impact) of a large number of supplementary feeding programmes in stable situations. The authors' conclusion was that there was no demonstrable impact on nutritional status using anthropometric measures. While this finding was partly explained by the poor operational performance of some of the SFPs, another aspect was the positive impact these programmes may have had on variables such as physical activity levels and immunocompetence, i.e. there may have been a significant nutritional impact which was not measured in the study. This is rarely considered in emergency contexts.

3. Food security monitoring & livelihoods assessment methods: their use in impact assessment

3.1 Existing food security & livelihoods assessment methods

Food security monitoring is increasingly being conceptualised as part of livelihoods assessment. Livelihoods assessment approaches generally include:

- estimation of the severity of food insecurity;
- identification of vulnerable groups; and
- identification of appropriate interventions.

Assessment approaches used in emergencies rarely incorporate all aspects of the livelihoods framework. Only two of the livelihood assessment approaches specifically refer to livelihoods in the description of their methodology (CARE and Oxfam) Other approaches consider elements of livelihoods, such as food security, economic security and the strategies and assets needed to bring these about.

Table 2: Objectives and elements of assessment approaches

Approach	Objectives	Elements of livelihoods	Application
CARE livelihood security	To provide a multi-dimensional view of livelihoods to identify vulnerable households, and peoples goals to identify programming priorities	All	Mostly development, stable situations
Oxfam livelihoods approach to food security	To determine the severity of food insecurity in terms of risks to lives and to livelihoods, and to identify appropriate interventions	Food security	Mainly natural disasters Displaced Political emergencies

SC-UK household economy	To estimate the impact of a 'shock' on the ability of a household to acquire food and non-food goods.	Food security, income and expenditure	Natural disasters Refugees Conflict
ICRC economic security	To determine the risk of decapitalisation and to intervene to prevent this	Resources, assets, strategies, obligatory expenditure	Conflict
MSF food security	To determine the stage of food insecurity and appropriate food and health interventions	Food security and access to health care	Conflict but limited applications because newly developed approach
WFP vulnerability assessment and mapping	to provide a detailed understanding of food insecurity and vulnerability conditions and thus support program design, particularly regarding food aid targeting and priority groups	Food security	Mostly development, but also includes monitoring in disaster-prone areas.

USAID famine early warning	To manage threats to food security through provision of timely and analytical early warning and vulnerability information	Food security	Natural disasters
Applied anthropological research	To improve knowledge of social and cultural dynamics to inform interventions	All, but often with particular emphasis on specific aspects, e.g. social capital, local institutions, governance, etc	Mostly stable contexts Development

Source: Jaspars and Shoham, 2003.

The approaches show differences in the relative focus on economic, social or political factors. Many approaches have an economic perspective in order to determine the need for assets and resources as part of an emergency response. Anthropological approaches use a social perspective, but such fieldwork in emergencies or politically unstable situations is rare. All approaches are based to varying degrees on entitlement theory, and concepts of vulnerability and coping strategies.

Table 3: Concepts and definitions in assessment approaches

Concept	Definition
Livelihood security	Adequate and sustainable access to income and resources to meet basic needs (including adequate access to food, potable water, health facilities, educational opportunities, housing, and time for community participation and social integration)
Economic security	When a households resources and assets are sufficient to meet the obligatory household expenses.
Household economy	The sum of household income and the exchange value of its labour and other assets.
Exchange entitlements	People's ability to acquire food
Food security	Access by all people at all times to the food needed for a healthy life
Coping strategy	Temporary responses to declining food entitlements, which are characteristic of structurally secure livelihood systems. Or: strategies which do not cause serious damage to livelihoods.
Crisis/ Survival strategies	Strategies used as a last resort to prevent destitution and death leading to the depletion of essential assets causing permanent damage to livelihoods.
Food deficit	The gap between food requirements and food sources when households are unable to overcome the reduction in normal food sources after a shock, by finding alternative food sources.

Most approaches include a number of stages in information collection. These include:

- Information gathering on the context, which includes a description of macro-economic, political and social factors.
- The identification of food economy or livelihood zones, and, in some cases, different wealth groups within these.
- An assessment of different food and income sources, and sometimes expenditure, in normal times and the changes as a result of a particular shock.
- An assessment of coping strategies.
- In some approaches, an assessment of nutritional status as a measure of the severity of food insecurity.

In analysing the assessment findings, the severity of food insecurity is determined by a combination of the indicators below:

- A food deficit.
- A large shift in entitlements.
- An unusually high prevalence of malnutrition (taking into account other influences on nutritional status; public health and the social and care environment).
- The adoption of crisis strategies, or a large proportion of the population adopting marginal activities.

Food insecurity constitutes a risk to livelihoods, and is generally the only livelihood outcome that is analysed by emergency assessment approaches.

Most emergency assessments are done to identify the need for emergency relief, in many cases estimating the need for food aid and feeding programmes. The uses of assessments are closely related to the mandate of the agency, or those who commission the assessment. Household economy assessments are often commissioned by WFP or UNHCR to assess or rationalise food aid needs (Boudreau,

1998). MSF uses assessments to determine the need for general rations, and different types of feeding programmes.

CARE's and Oxfam's livelihoods approach, ICRC's economic security analysis, and in some cases household or food economy analysis, are also used determine livelihood support interventions. Interventions are determined by the severity of food insecurity, and an analysis of which livelihood systems are most affected and how.

Humanitarian interventions are increasingly being invoked to protect livelihoods as well as ensuring food security, preventing mortality and protecting nutritional status. It is beyond the ambit of this review to discuss the extent to which donors support such objectives and the extent to which such objectives are explicitly reflected in donor policies (Jaspars et al., 2002). Within the INGO community there are marked differences concerning humanitarian intervention livelihood objectives. This reflects a number of factors, including agency mandate, professional capacity and historical development, including extent of work in non-emergency situations. It is probably true to say that those agencies with a more developmental ethos have a tendency to prioritise livelihood protection in the proposals they submit to donors. The extent to which donors support such objectives appears to be a function of implicit/explicit policy on saving lives versus livelihood protection in humanitarian crises, geopolitical considerations and current resource availability. Those operational agencies which specify livelihoods protection as an intervention objective rarely do so in a quantitative manner. Thus, objectives will be framed in terms of preventing the sale of key assets, preventing migration (which would undermine production, preventing indebtedness), etc.

At a recent WFP technical consultation on emergency needs assessment (ENA) (WFP, 2003), the working group on non-food aid responses to humanitarian crises defined livelihoods protection in terms of preventing:

- any activity that would lead to the liquidation of primary productive assets; and
- emergency induced social phenomena which adversely impact livelihoods, e.g. displacement, breakdown of kinship networks.

According to the technical group, information needed to determine whether livelihoods were being protected by an intervention included:

- estimate of primary asset liquidation;
- changes in productive capacity (human capital);
- population movement (political or economic); and
- changes in market conditions induced (commercial and wages).

In order to assess humanitarian impact at household level in terms of livelihoods protection, it would therefore be necessary to have baseline information on primary assets, human capital, normal population movements and market conditions. Without baseline quantification of the above variables, any attempt at meaningful impact analysis would be problematic.

3.2 Use of food security and livelihoods assessment methods for impact assessment

There are numerous methodologies available for assessing the type of livelihoods-related information detailed above. In the literature, the methodologies have tended to be categorised as generic agency emergency needs assessment approaches (ENA). However, the approaches have considerable overlap.

There appear to be very few examples of livelihoods-based ENAs being used to assess the impact of humanitarian interventions. However, there is evidence of a growing ‘interest’ in this area. A cursory ‘phone-round’ of the key agencies was able to find only two examples of these methodologies being used to assess the impact on livelihoods of humanitarian interventions (both employing the household economy approach: see Box 1). There are also recent examples of CARE’s Coping

Strategy Index being used to establish baseline data specifically for the purposes of subsequently monitoring trends and judging humanitarian programme impact (CARE/WFP/ERREC, 2003; CARE/SC US, 2002). Oxfam has also commissioned a study which will involve examination of the impact of food aid in southern Africa (Oxfam, 2003).

At the recent WFP ENA technical meeting (WFP, 2003) the following were agreed:

- The ENA must develop a reasonable hypothesis about the degree to which the affected population can meet essential food and non-food needs without compromising livelihoods, health and well-being.
- This should be based on an analysis of the degree to which the population can expand its coping options.
- The analysis should then propose a range of responses setting out the advantages and disadvantages of each and hypothesise as to how each response may impact the affected population in terms of stated objectives.
- Given the uncertainty of the livelihoods data in such a short time frame it is then essential that, once an option is chosen and implemented, the population are further monitored to determine whether the intended impact has occurred, i.e. there is a need to keep testing the hypothesis.
- Where this is unlikely to happen, baseline information becomes more critical as such data allows more 'informed' assessment and prediction of the likely impact of the response.

WFP has recently published a strategy paper on Results Based Management (WFP, 2003). In this paper, impact is defined as 'positive and negative, intended or unintended long-term results produced by a WFP operation, either directly or indirectly'. As can be seen from strategy priority 2, protection of livelihoods has become an explicit impact indicator that WFP programme staff are advised to monitor.

However, despite the apparent growing interest in measuring the impact of humanitarian interventions on livelihood status, the evidence is that ENAs are rarely revisited with a view to measuring impact. ENAs are mainly conducted to assess vulnerability and need (most often food needs) once an emergency situation has been identified or declared.

There may be many reasons for this. Perhaps the most significant is that the imperative or incentive to conduct impact assessment by those agencies implementing interventions is reduced by the lack of flexibility in the international humanitarian aid system. Following the initial ENA, and approval by donors for resources for a particular intervention (e.g. food aid, livestock off-take or cash transfers), agencies are aware that, in the event that they have got it wrong, i.e. the intervention is inappropriate/inadequate, it is unlikely that donor mechanisms are sufficiently flexible to allow for a reallocation or redirection of resources to remedy the situation.

As noted in the 'expert review on ENA', the international humanitarian system is not currently set up to allow such flexible programming even though the need for this, especially where rapid livelihoods analysis is undertaken, is recognised (WFP, 2003). It could also be argued that the current donor interest in impact assessment/Results Based Management has more to do with determining whether certain types of intervention (which they repeatedly fund), are (cost)-effective.

There are of course other factors which militate against impact assessment using livelihoods frameworks. Many of these are the same as the case for nutrition impact assessment. These are: lack of control group and resulting inability to control for confounding factors, measurement errors (these can be even more significant for the types of information collected in livelihoods assessment compared to nutritional indicators (IGADD, 1993)), and lack of baseline data.

There are also factors which are more specific to livelihoods-type information. For example, coping strategy data may be difficult to elicit where these are perceived by the community as unlawful, immoral or damaging to the wider community (Jaspars and Shoham, 2002). This is even more likely to be problematic in situations of chronic conflict and instability (SCCPI).

The lack of easily quantifiable intervention objectives with regard to protecting livelihoods also militates against assessment of impact on livelihoods. Unlike nutrition objectives, which are usually expressed in terms of reducing the prevalence of wasting to below a specified level, setting similar quantifiable objectives for livelihoods is less straightforward. What level of asset protection is desirable or recommended? What degree of loss of social capital is sustainable or allowable? These are difficult questions. Furthermore, measurement of these types of variable poses challenges in terms of sampling design, sample size and methods of quantification (Shoham, 1991).

Another difficulty is the lack of consensus and standardisation of livelihood assessment methodologies. It will be difficult to compare impact in different areas of a country if different methodologies are employed by INGOs. Attempts to standardise approaches, as in the southern Africa rolling VAC, have met with mixed results (WFP, 2003).

There are also potential advantages to livelihoods assessment approaches compared to nutrition indicator monitoring in terms of assessing impact. One significant advantage is that livelihoods-type assessments invariably rely on some form of key informant interviews/focus group discussions with target groups/beneficiaries/affected populations. In contrast to nutrition surveys, these techniques allow intervention beneficiaries to articulate how and whether interventions have impacted their lives/livelihoods and food security. Such

perspectives can significantly increase confidence in findings, i.e. whether the intervention is having an impact, and if so how?

Box 1: Case studies using the Household Economy Assessment (HEA) approach (SC UK, 1999)

Case study 1

SC UK conducted an impact assessment on the impact of food aid on household economies in 1999 in three areas in Ethiopia (north and south Wollo and east Hararghe). The assessment utilised the HEA approach. The strategy to measure food aid impact included four principal stages:

- i) Quantifying food aid distributed in the study area.
- ii) Quantifying food aid received at household level and stratifying households by wealth group.
- iii) Tracing utilisation of food aid for consumption, sale, redistribution, exchange, paying back loans and other uses.
- iv) Assessing the impact on household economy and food security of each method of utilisation. This included changes in food consumption (quantity and quality), changes in expenditure patterns and changes in income generation strategies (e.g. labour migration, sale of productive assets and whole household migration).

Key findings were that:

- For poorer and some middle income households that had migrated for work, food aid had encouraged return to home areas.
- Food aid constituted a significant proportion of the diet, but was insufficient to prevent hunger. A large percentage of households experienced a deficit in 1999.

– Food aid effectively prevented sale of animals for grain in the months when food aid was delivered. However, households were forced to increase animals sales in months when distribution did not occur to buy grain and non-food items.

Case study 2 (Knox-Peebles, 2003)

Another impact assessment conducted by SC UK and also utilising the HEA approach looked at the impact of a cash relief programme in the same three areas. Cash rather than food aid was given out on the employment scheme (EGS). One of the aims of the impact assessment was to determine whether households improve their access to food (consume more food, food of a better quality and share it within the household) without resorting to negative coping strategies.

The study used background food economy reports for the areas concerned. PA leader interviews were also conducted in one PA where food aid was distributed over the same period of time as the cash distribution (effectively a control group). The PA also shared the same agro-ecological features as the cash distribution PA.

The assessment found that cash beneficiaries reported consuming a larger amount of food than they did before the cash project. Households in the same wealth groups who received food aid consumed around the same amount of food in terms of kilocalories. Cash beneficiaries in the poor groups consumed a more varied diet and better-quality food, e.g. more expensive teff. Also, poor cash-receiving households were able to buy second-hand clothes and basic necessities such as kerosene, stationary and ghee. Middle-income households were able to invest in farm tools, buy seed, repay loans and buy chickens with the extra cash. Over the project period, there was no unusual migration in search of work or unusual sale of assets.

Another tool which is being introduced partly in order to help assess the impact of interventions on livelihoods is the coping strategy index (CSI). This has been developed by WFP and CARE after initial piloting in Kenya (Maxwell, 2001). The CSI

enumerates both the frequency and severity of the coping strategies of households faced with a short-term insufficiency of food. It goes beyond commonly used caloric indicators to incorporate elements of future vulnerability. The CSI enumerates all consumption-related coping strategies commonly used by a population. The approach is used as a rapid means of assessing livelihood status through a set of proxy indicators related to consumption (see Case Study 3). Four general categories of coping are measured, with individual strategies defined specifically according to location and culture:

- i. dietary change (eating less preferred but less expensive foods, etc);
- ii. increasing short-term food access (borrowing, gifts, wild foods, consuming seed stock, etc);
- iii. decreasing the numbers of people to feed (short-term migration, etc); and
- iv. rationing strategies (mothers prioritising children/men, limiting portion size, skipping meals, skipping eating for whole days, etc).

Work on the CSI in Ghana concluded that the index offers detailed information and a complete picture about decisions and behaviour involving trade-offs and vulnerability and also that it is much less time-consuming and less expensive in terms of data collection and analysis than benchmark indicators like consumption, poverty or nutrition (Maxwell et al., 1999).

CARE has piloted the CSI in Eritrea and Malawi (see Box 2). The role of the CSI in both these countries has been to assess population vulnerability and also to provide a baseline from which to measure future vulnerability in the context of humanitarian interventions, i.e. measure impact (CARE/WFP/ERREC, 2003). In Eritrea, the CARE vulnerability assessment calculated CSI based on information on the following activities/coping strategies:

1. Rely on less preferred and less expensive foods

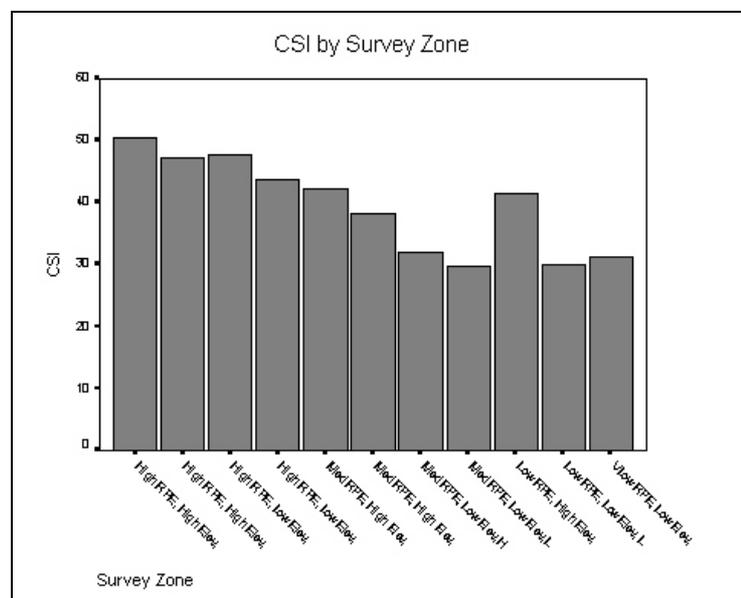
2. Borrow food or rely on help from friends and relatives
3. Purchase food on credit
4. Gather wild food
5. Consume seed stock held for next season
6. Limit portion sizes at meal times
7. Restrict consumption of adults so children can eat
8. Reduce number of meals eaten in a day
9. Skip entire days without eating

The severity weights used to calculate the index were the averages of the individual values obtained in the focus group interviews conducted in each Zoba (administrative zone), so a single set of severity weights was applied to all households in the sample. The table below shows the CSI for each zone.

Table 4: CSI by survey zone

<i>Survey 1.1 Zone</i>	<i>Average CSI</i>
<i>1: HR, HE, HP</i>	<i>50.4</i>
<i>2: HR, HE, LP</i>	<i>47.3</i>
<i>3: HR, LE, HP</i>	<i>47.8</i>
<i>4: HR, LE, LP</i>	<i>43.8</i>
<i>5: MR, HE, HP</i>	<i>42.2</i>
<i>6: MR, HE, LP</i>	<i>38.2</i>
<i>7: MR, LE, HP</i>	<i>32.0</i>
<i>8: MR, LE, LP</i>	<i>29.8</i>
<i>10: LR, HE, LP</i>	<i>41.4</i>
<i>11: LR, LE, HP</i>	<i>30.1</i>
<i>12: LR, LE, LP</i>	<i>31.3</i>
<i>Total Sample</i>	<i>39.5</i>

Figure 1: Coping strategy index by survey zone



A distinct geographic pattern is evident. The areas with the greatest agricultural potential (high rainfall and high elevation) have the highest levels of CSI, and the index levels are lower in the drier and lower-elevation zones. This finding is consistent with the hypothesis that the households that have been most strongly affected by the drought are in the areas where agriculture normally is a major livelihood.

Table 5: Household demographic characteristics by CSI quartile

<i>CSI quartile</i>	<i>Household size</i>	<i>No. active household members^a</i>	<i>Dependency ratio</i>	<i>% female-headed households</i>	<i>% single-headed households</i>	<i>% HH members with primary education</i>
<i>1 (0.0 – 20.3)</i>	<i>5.3</i>	<i>2.7</i>	<i>.452</i>	<i>30.8</i>	<i>24.1</i>	<i>28.7</i>
<i>2 (20.4 – 38.5)</i>	<i>5.3</i>	<i>2.6</i>	<i>.490</i>	<i>36.3</i>	<i>33.0</i>	<i>26.3</i>
<i>3 (38.6 – 56.8)</i>	<i>5.0</i>	<i>2.5</i>	<i>.496</i>	<i>43.3</i>	<i>39.1</i>	<i>26.2</i>
<i>4 (56.9 +)</i>	<i>5.3</i>	<i>2.4</i>	<i>.537</i>	<i>41.0</i>	<i>37.0</i>	<i>25.4</i>
<i>Total Sample</i>	<i>5.2</i>	<i>2.5</i>	<i>.493</i>	<i>27.8</i>	<i>33.3</i>	<i>26.6</i>

^a *Household members aged 15–65*

Households in the higher CSI quartiles have higher dependency ratios and are more likely to be female-headed and single and have a lower proportion of household members with primary education than households in the lower quartiles.

Table 6: Household food access to resources, percent that borrowed money, and food consumption measure

<i>CSI quartile</i>	<i>Rainfed area cultivated (tsimdi)</i>	<i>% total land owned plus rented that is cultivated</i>	<i>% HH with irrigated land</i>	<i>Value of household assets (Nakfa)</i>	<i>Value of livestock (Nakfa)</i>	<i>Value of livestock sold (Nakfa)</i>	<i>% HH that borrowed money</i>	<i>Food stocks+ expenditures per person (Nakfa/pers/month)</i>
<i>1 (0.0 - 20.3)</i>	2.2	95.5	5.3	2040	5256	1101	22	98
<i>2 (20.4 - 38.5)</i>	2.5	96.8	2.4	1745	4515	1011	32	74
<i>3 (38.6 - 56.8)</i>	2.3	97.8	0.4	1380	3769	782	33	66
<i>4 (56.9 +)</i>	2.6	98.8	0.2	1130	3293	726	38	59

In terms of household assets, borrowing, and food consumption levels, Table 3 shows that households in the higher CSI quartiles are less likely to have access to irrigated land, have fewer household assets, own and sell fewer livestock, and are more likely to borrow money, than households in the lower CSI quartiles. Also, the calculated measure of food consumption declines significantly in moving from the low to the high CSI quartiles.

Table 7: Correlations between CSI and household characteristics

Household characteristic	Pearson correlation coefficient with CSI
Calculated food consumption	-.197**
Rainfed area cultivated	.036*
Irrigated cultivation (y=1/n=0)	-.136**
Area of irrigated cultivation	-.107**
Value of household assets	-.129**
Value of livestock	-.087**
Consumption loan (y=1/n=0)	.122**
Family size	-.021
Dependency Ratio	.106
Female headed (y=1/n=0)	.090**

*** correlation at 0.01 (2-tailed)*

** correlation at 0.05 (2-tailed)*

These results indicate that the CSI measure is highly correlated with the household characteristics that are normally associated with livelihood status and food consumption levels. Therefore, this index can serve as a rapid measure of household livelihood conditions. Another important finding of the assessment is that some of the individual coping strategy frequency weights are highly correlated with the overall index. Tracking of these individual coping mechanisms could be used as very rapid and approximate indicators of household livelihood conditions, rather than tracking the whole array of coping strategies.

Other alternative food security monitoring approaches have also recently come into the public domain. A notable example is the Cornell Radimer hunger scale. This was first used in the US and subsequently piloted in the Russian Federation (Welsch et al., 1998) and Java (Studdert et al., 2001). The scale provides a useful tool for rapidly assessing food insecurity in an emergency. It is useful in providing early warning that

dietary quality and diversity in a population are worsening before frank malnutrition becomes prevalent. The type of information collected relates to qualitative/subjective assessments of hunger, e.g. 'do you worry that food will run out before your salary comes in', 'I can't afford to eat the way I should', etc.

In 1996, WFP began to examine the possibility of looking at impact, process and effect indicators (collectively referred to as performance indicators (Field Exchange, 1997)). Effect indicators were essentially indicators that reflected whether the intervention was preventing unacceptable coping strategies like prostitution, banditry, etc. A case study in Zaire showed how it was not sufficient to monitor nutrition and health to demonstrate the impact of a programme. The provision of an adequate ration proved essential not only in maintaining a satisfactory nutritional situation, but also in preventing a worsening relationship between refugees and the local community and further instability in the region. The greater the need for women to complement their general ration, the more they appeared to be the victims of violence, sexual harassment and rape. The smaller the general ration, the greater the number of refugees looking for jobs and the greater the number of security incidents. Based on this experience, WFP policy section argued that an additional objective of emergency assistance would then appear to be the provision of an adequate ration to maintain harmony between the two communities and prevent undesirable activities and events occurring. WFP identified the following performance indicators for refugees/IDPs:

- The number of adolescents leaving the camps pursuing any source of survival including joining the fighting parties in the Massisi region.
- The cases of teenage prostitution.
- The number of robberies and attacks on food and food stocks.

In SCCPI, the types of coping strategies employed to protect lives and livelihoods often become more marginal and 'outside ethical and moral norms'. As has been

recorded in numerous studies (Jaspars and Shoham, 2002), obtaining information on these activities may be extremely difficult. Yet these activities may protect lives and livelihoods even though they incur considerable social costs to individuals, households and communities. Impact on social capital must therefore be factored into any livelihoods impact assessment. The methods for doing so are however as yet unclear but probably reside in the realm of anthropological study.

In the last decade, there has been much written about the potentially negative impact of certain types of humanitarian intervention. 'Do no harm' has become a guiding principle of interventions in conflict situations, e.g. do not fuel the conflict. Risk of encouraging migration or overcrowding through interventions have also been highlighted. The impact of food aid on markets and producer prices has also been cited as a risk to livelihoods. There has also been an ongoing conviction that long-term humanitarian assistance (food aid) creates dependency and undermines livelihoods. Most recently, there has been evidence that aid beneficiaries have been sexually exploited by humanitarian agency personnel.

While some of these negative impacts can easily be assessed, e.g. migration to feeding points, sexual exploitation, others, like fostering dependency or impact on producer prices, are far harder to measure, let alone attribute to an intervention. During an intervention, market analysis can serve to help measure the desired and unintended consequences of food aid interventions. The potential economic disincentives of food aid to trade, production and labour are understood. If economic efficiency is on the ENA agenda, the likely impact of food aid must be assessed. Well-timed distributions with careful targeting increases demand without necessarily replacing commercial purchases. Getting the right balance of local purchase, triangular transactions and international imports can help to ensure that producers are not discouraged. However, market analysis is anything but a science, especially in the type of data-poor environments that exist during many

emergencies. This type of assessment therefore needs to be continuously revisited (Watkins, 2003).

4. The importance of contextual food security and health information in interpreting nutritional status data

The SMART workshop findings specify that nutritional status data must be interpreted in the context of food security and agro-economic data. It is also recommended that any other additional data should be justified for relevance and usefulness. A checklist of options includes causes of death, morbidity, water and sanitation, infant feeding, access to health services and child protection. There are several reasons why it is critically important to contextualise nutritional information with food security and other information in order to predict or understand intervention impact. In essence, reliance on child anthropometry alone will not provide an understanding of factors which are determining current nutritional status, or are likely to influence short-term nutritional trends. As a result, inappropriate interventions may be implemented or continued.

Box 2: Three case studies of linked food security and nutritional information

Case study 1: Northern Sudan (Northern Darfur State, 2000)

A nutritional survey was conducted at the same time as a household economy assessment. The HEA predicted that there would be a food deficit at some point in the future, based on poor cereal production, high grain prices and low groundnut prices. The anthropometric survey showed a current high rate of global malnutrition as well as signs of Vitamin A deficiency. The nutrition survey also indicated that there had recently been a measles epidemic. If the malnutrition rates had been interpreted in the absence of the HEA data, the high rate of wasting may have been attributed mainly to food insecurity as there had been a harvest shortfall and the role of the measles epidemic as a major contributing factor may have been overlooked (Chastre and Le Jeune, 2001).

Case study 2

A recent study (James et al., 1999) examined nutrition survey results in India, Ethiopia and Zimbabwe that included data on maternal BMI as well as nutritional status of children under five. The assumption underpinning the study was that high levels of maternal malnutrition indicated food insecurity, while high levels of child malnutrition were related more to non-food security factors such as disease and care as young children are in the process of developing a competent immune system and are dependent upon carers. The study found that households with higher proportions of combined maternal and child malnutrition (e.g. India) were those most likely to be food insecure, while households with a low proportion of combined malnutrition were estimated to be more in need of public health measures and support for caring practices (e.g. Zimbabwe). These findings suggest that there may be additional advantages to including other demographic groups (than the under fives) in nutrition indicator monitoring.

Case study 3: (Source: Assefa, 2001)

In March 2001, SC US conducted a rapid assessment in drought-affected southern Faryab in Afghanistan. This assessment confirmed the seriousness of the impact of three years of drought. SC US conducted a nutritional survey at the beginning of April. The survey only found 7% wasting, which was close to normal. In contrast micronutrient status of the population was very poor, with widespread reports of scurvy affecting people of all ages and gender. The consumption of fruit and vegetables by most of the population had been minimal for several months. It appeared that grain stocks from previous years had made a significant contribution in mitigating the impact of the drought in the first two years. Selling livestock was an important coping mechanism employed by most people. However, there were few animals left at the time of the survey, and very few other economic opportunities existed, i.e. selling labour, selling crafts. People were resorting to risky coping

strategies with very low returns such as selling land, displacement, begging and taking loans with high interest rates.

The main findings of the survey were:

- micronutrient deficiencies can occur in the absence of raised levels of malnutrition;
- signs of PEM have been a late indicator of the food crisis;
- coping strategies have allowed the population to consume sufficient calories but not sufficient nutrients;
- coping strategies employed have become increasingly desperate and socially disruptive, while at the same time undermining sustainable livelihood patterns; and
- given the exhaustion of coping strategies and considering poor harvest prospects, acute malnutrition could increase rapidly in near future and/or people will become displaced before they get malnourished.

As illustrated in Box 2, nutrition information in isolation only provides a limited view of the situation. Relying on NIM alone for impact assessment would only demonstrate an impact on anthropometry and not on other explicit or implicit intervention objectives, i.e. micronutrient status, livelihoods status, etc. Furthermore, an impact or lack of impact on nutritional status may occur for reasons unrelated to the intervention. However, while there are compelling conceptual reasons for strengthening the integration of nutritional and food security/livelihood assessment in monitoring programme impact, there may be a number of technical and institutional challenges to implementing integration:

- The types of individuals that are able to collect nutritional information, e.g. nurses/health staff at health centres or community-based staff in nutrition surveys, may not be suited to collecting more analytical livelihood-type

information using participatory methods. At the very least, substantial training will be required. It may therefore be difficult to collect both types of data during the same surveys/monitoring.

- Collecting livelihood information or adopting a livelihoods-oriented approach will require spending time with respondents to allow in-depth questioning. This would favour sentinel site nutritional surveillance (centrally administered), rather than repeated surveys or growth monitoring programmes.
- Nutritional indicator monitoring is rarely carried out on samples that represent specific livelihood or food economy groups. This will make it difficult to integrate the two types of information into an analytical framework. Furthermore, where food security/livelihood data are to be collected in conjunction with nutrition indicator monitoring, the nutritional data would need to be collected on a far larger sample for statistical reasons, whereas the food security/livelihood data would only need to be collected on a sub-sample. This might prevent useful statistical correlation between the two types of data set.
- Combining the two types of information collection will increase costs substantially, especially in open (non-camp) situations.

Given the many factors which undermine nutritional information monitoring as a tool for impact assessment, it could be argued that certain types of NIM system predispose themselves to impact assessment. Sentinel site monitoring has the advantage of timeliness, e.g. assessments are quicker and it is possible to detect changes earlier on, better conducted measurements due to technical support capacity, and ability to collect, combine and analyse contextual data. However, the disadvantages include inability to extrapolate findings to other populations with statistical confidence, and survey fatigue.

It may be that the optimal systems are context-specific, e.g. sentinel site monitoring is best suited to open situations and repeated nutritional surveys are best suited to

camp situations (rapidly implementable and can account for confounding factors more easily).

Arguably the most valuable role for nutrition and food security information in impact assessment is in detecting the impact of programme reduction or withdrawal. This role is likely to be most critical in protracted emergency situations, particularly where agencies wish to phase out for political or resource-related reasons. There are numerous examples of this. Other scenarios include protracted refugee or IDP caseloads where populations have been given land or legal opportunities to resettle. In such situations, donors may have a tendency to make broad-bush assessments of need and phase out programmes without a careful analysis of the degree of self-sufficiency. Intense nutrition and food security monitoring in these situations can demonstrate early deterioration/impact of programme changes.

For example, in Malange, Angola, in 1995 access to land had improved but was still limited by sporadic fighting and the widespread laying of landmines. Local traders were operating aircraft and had established rudimentary markets. As a result of the improvement, the international humanitarian community was attempting to decrease the amount of food aid provided. It was quickly noted that, to determine the optimal level of food aid requirements, reductions in the general ration were best carried out in conjunction with surveillance activities. This showed that a gradual reduction in the general ration did not necessarily have a negative impact on nutritional status. However, the near-total withdrawal of the ration in December 1995 resulted in an increase in the level of acute malnutrition among children under five years of age. This suggested that certain population groups within Malange were still at least partially dependent on external assistance. More in-depth qualitative studies revealed that a proportion of the population, especially those who were displaced from rural areas and had no access to land within the peri-urban secure boundaries of the city, were particularly vulnerable if the ration was withdrawn. The information allowed for more effective targeting of limited resources (Borrel and Salama, 1999).

4.1 The importance of assessing micronutrient status

Micronutrient status is rarely assessed at the onset of an emergency situation. There are several reasons for this.

- Lack of a field-friendly method to assess micro-nutrient status (Seal, 1998).
- Relative rarity of clinical micronutrient problems in emergencies, especially since the introduction of CSB (fortified blended foods) into general rations in the early 1990s.
- Low levels of wasting can mask poor micronutrient status (Assefa, 2001).
- Some forms of deficiency disease, e.g. pellagra and scurvy, appear to affect older age groups more predominantly and would therefore be missed in a standard nutritional survey which measures and weighs children under five years of age (Duce et al., 2003).

Currently there are no practical tests available which meet all necessary criteria for biochemical assessments in the difficult circumstances encountered in the field. This is partly because the instability of vitamins and the interference provided by other substances in biological samples makes analysis a complex and demanding task. However, initiatives are afoot to develop technologies (Seal, 2000).

There have been no large micronutrient outbreaks as occurred in southern Africa in the late 1980s since the introduction of CSB into general rations in the early 1990s. However, small-scale problems do still occur with alarming regularity, e.g. Angola, Afghanistan, Kenya and Nepal have all witnessed outbreaks over the past three years. The main type of outbreaks seen are beri-beri (wet and dry), pellagra, scurvy and angular stomatitis. These outbreaks can invariably be attributed to poor ration planning and over-dependence on the use of CSB to prevent and/or treat outbreaks. As is increasingly being argued in the literature, CSB is an expensive commodity and,

due to its low nutrient/volume ratio, logistically difficult to transport in sufficient quantities to meet outbreaks (Briend, 2004).

Where outbreaks have occurred over the past few years, these are usually picked up in health centres (e.g. Angolan IDP camps and Nepalese refugee camps) or through surveys following anecdotal reports (e.g. north-east Afghanistan). However, there are very often enormous difficulties with diagnosis, as symptoms are easily confused with other medical conditions. The literature is full of examples of misdiagnosis or poorly standardised diagnostic criteria (Golden, 1997; Duce, 2003). It is frequently the case that local diagnosis is followed by international teams descending upon local areas to verify the outbreak and establish standardised surveillance and training of locals.

All these factors complicate attempts to introduce rigorous micronutrient status impact assessment following interventions. The lack of a methodology/technique for assessing the biochemical status of populations means there can be no baseline data against which to judge impact. Where periodic problems occur, e.g. Nepal and Kenya, surveillance systems may be set up in clinics, but these can only monitor clinical manifestations (which it could be argued is towards the end stage of a problem and misses sub-clinical deficiency). Furthermore, as micro-nutrient deficiency diseases are highly seasonal in nature (as they are dependent on the seasonal availability of micronutrient-rich foods) lack of baseline data on seasonal fluctuations makes it difficult to judge impact at any given point in time. For example, an outbreak of pellagra in Angola and the ensuing response by MSF Belgium led to a dramatic reduction in incidence as measured by cases presenting to clinics. However, after the second distribution of B vitamin tablets, incidence began to rise again, probably as a result of seasonal factors. (Bacquet, 2002).

Usually, once an outbreak has been identified, interventions are seen to have a marked impact, either through enhancing the general ration with a blended food or

targeted distribution of a vitamin pill. Where reduction in incidence is dramatic and rapid, impact can be inferred. Where interruptions in the intervention occur, e.g. a break in the CSB pipeline, and incidence rises, impact can be further corroborated.

On occasions, residual problems persist following an intervention, e.g. in Nepal, with no easy explanation as to why there is a residual low level micro-nutrient deficiency problem (Upadhyay, 1998). Theoretically, it may be that low levels of deficiency disease in the area/local population are endemic, but the absence of baseline data will make it difficult to judge whether this is the case.

Conclusions:

- Micronutrient problems will periodically recur while the international food aid system maintains the 'CSB strategy' and does not consider fortifying other food vehicles.
- In order to predict outbreaks, it is imperative that information on food rations and their micronutrient content (both donated and locally available) and equity of access are closely monitored/assessed. Software packages are available which make 'prediction easy'.
- Where outbreaks still occur, the lack of biochemical assessment techniques dictates that impact assessment will be based upon clinical symptoms, with the inherent difficulties of local diagnosis and poorly standardised diagnostic criteria amongst agencies.
- The lack of routine assessment of baseline micronutrient status (biochemical and clinical) will determine that, where outbreaks occur, it will be difficult to assess impact accurately, especially as there is a large seasonal element to these types of deficiency disease.
- In light of these difficulties, it is imperative that the impact of interventions to address micronutrient outbreaks is assessed through a combination of monitoring the micronutrient adequacy of food rations (accounting for tablet

distribution if appropriate) in conjunction with clinical information on the incidence of diseases following an intervention. Food rations can be monitored through food basket monitoring at distribution point or household level.

- The speed of diminution in incidence of the disease following an intervention is a key indicator of impact. Most micro-nutrient deficiency diseases respond rapidly to improved diet (Duce, 2003).

5. Using nutrition and food security monitoring to determine the impact of general ration and selective feeding programmes

The main types of emergency feeding interventions are general rations, supplementary feeding and therapeutic feeding programmes. These programmes are usually established and justified on the basis of nutritional survey data, i.e. the prevalence of global and severe acute malnutrition. Current guidelines advocate trigger levels of prevalence of wasting in conjunction with information on 'exacerbating factors' for implementation of these programmes (MSF, UNHCR, WFP, etc).

5.1 The impact of general ration programmes

Assessing the impact of general rations through nutrition indicator monitoring is problematic for all the reasons discussed above. In most cases, where general rations are triggered by a high prevalence of wasting, i.e. > 20% or 10–19% with exacerbating factors, selective feeding programmes will also have been implemented. Thus, a reduction in levels of wasting will in part be due to these programmes, as well as the general ration. It will therefore be difficult to separate out the impact of general rations from selective feeding on the prevalence of wasting.

The most feasible means of assessing the impact of general rations may be to combine assessment of process indicators with nutritional impact monitoring. Key process indicators are food basket monitoring (for quality and quantity) and

targeting (inclusion and exclusion error). Information on speed of change in population-level nutritional status in relation to the onset of general ration programmes will also strengthen confidence in the assessment of impact. Equally, if disruption to the general ration leads to a subsequent rapid deterioration in population-level nutritional status, impact can be confidently inferred (providing there is no evidence of other simultaneous marked changes in food security or health circumstances).

5.2 The impact of selective feeding programme

All selective feeding programmes (therapeutic and supplementary) collect data on key programme-related outcomes/impacts, including weight for height, average daily weight gain, mortality, default and average length of stay in programmes. For health centre-based therapeutic feeding programmes where beneficiaries are entirely dependent on the programme inputs, these indicators give a clear indication of programme impact at individual and project beneficiary level. For supplementary feeding programmes (SFPs) the link between programme and impact at individual or project beneficiary level is less clear-cut, as other food security factors can have a significant impact on programme performance. Targeted SFPs are predicated on the basis of adequate household food security (either through general rations or some other means). Frequently, however, SFPs are implemented in the absence of adequate food security/general rations so that it would be expected that impact would be compromised.

All selective feeding programmes produce monthly, mid-term and end of programme data summaries. Although these describe key outcomes in terms of nutritional impact and mortality at programme level, they cannot be used to infer impact at population level unless there is good data on programme coverage, default and readmissions. Obtaining good data on programme coverage is not straightforward, and there is currently some debate as to the most appropriate methodology for doing this (ENN, 2003).

There are established minimum standards for the expected impact of selective feeding programmes in emergencies (Sphere, 2000; MSF, 1995). However, although each agency evaluates the impact of these programmes individually in terms of targets (e.g. average daily weight gain, mortality), there is currently no overview of impact across a large number of selective feeding programmes. This is a worrying situation as there are so many factors which can undermine impact (especially of supplementary feeding programmes) in emergency situations, e.g. breaks in the food aid pipeline, or overcrowding at feeding centres.

The Beaton and Ghassemi (1982) review concluded that there was little impact of supplementary feeding programmes in stable situations in terms of growth performance. Arguably, these findings had a significant impact on the perception of these programmes, which in turn contributed to a reduction in the subsequent scale of their implementation. A similar review of emergency supplementary feeding programmes is long-overdue as it cannot be assumed that these types of emergency programme automatically achieve their objectives, or that if they do, they do so in a cost-effective manner.

Agencies such as ICRC have policies whereby SFPs are rarely implemented so that general ration provision is planned on the basis of catering for the additional nutritional needs of the mild and moderately malnourished. It has been argued that these expanded general ration programmes have been as effective in meeting the needs of the mild and moderately malnourished as general ration programmes in conjunction with SFPs (Curdy, 1994). Given the recent advent of RUTF in the context of community care for the severely malnourished, the rationale for emergency SFPs involving centre-based distributions/feeding may be under further threat.

Another constraint on assessing the impact of SFPs is lack of clarity or explicitness of objectives. The impact and effectiveness of these programmes can only be measured in relation to stated objectives and delivery goals (process indicators)

The objectives for supplementary feeding programmes are often narrowly defined as to prevent mortality amongst mild and moderately malnourished individuals (targeted supplementary feeding) and prevent increasing levels of malnutrition at population level (blanket supplementary feeding).

However, other objectives for these programmes may also be invoked, e.g to ensure food access in situations of conflict where general ration distributions may be targeted by combatants, to enhance the household food security of refugee-impacted households or of households supporting prisoners (Borrel, 1997). These types of objective rarely appear in agency emergency nutrition guidelines but may be stated in programme proposals submitted to donors. Such objectives are often country and population specific. However, they may not be stated as explicit objectives or may be stated in such a way (e.g. qualitatively) that it is difficult to measure whether the objective has been achieved. Clearly, in the examples given above some form of food security monitoring would need to be introduced to test whether programmes have achieved desired impact.

5.3 The impact at population level

Although there are many examples where improvements in population nutritional status as evidenced by repeated nutritional surveys is attributed in part to the implementation of emergency selective feeding programmes, there are very few examples of studies which explicitly set out to analyse the impact of selective feeding programmes at population level. Where this has been done, the results/findings have been inconclusive. For example, a study on the impact at national level of the Zimbabwe Community Supplementary Feeding Programme (Munro, 2002) focused mainly on coverage and whether the most malnourished

were enrolled (targeting). These proxy indicators for population level impact showed only moderate coverage of the programme and high exclusion and inclusion errors.

In the case of therapeutic feeding programmes, attempts at impact assessment would be problematic due to the generally low coverage of such health centre-based programmes. Indeed, this is a main reason for the recent advent of Community Based Therapeutic feeding programmes, which promise far greater coverage through out-patient and community-based care.

In conclusion, it may be possible to attribute impact of therapeutic feeding programmes on levels of severe malnutrition at population level where there is good coverage (i.e. > 80% – extremely unusual), and where the programme data shows that targets are being met. In the case of supplementary feeding, the best that may be said with certainty is that, where levels of wasting are declining or staying the same (stated objectives for blanket supplementary feeding), the programmes are not being ineffective.

6. Mortality and Crude Mortality Rate (CMR)

Although the focus of this review is on nutrition and food security information and its role in impact assessment, it is important to mention the potential role of mortality monitoring in impact assessment, especially as this is one of the two monitoring tools advocated by SMART for impact assessment (Box 3). The same methodological difficulties arise with using crude mortality rates as an index of impact as occurs with nutrition indicator monitoring, namely confounding variables. There are also, however, other intrinsic aspects of this indicator which undermine its potential role in impact assessment. The most important is that increasing mortality is an extremely late indicator (i.e. compared to nutritional status) if the role of impact assessment is to modify intervention design to improve performance. Mortality data can however be used very effectively retrospectively to help demonstrate whether the intervention had the desired impact.

Box 3: The Standardised Monitoring and Assessment of Relief and Transition (SMART)

The SMART inter-agency initiative stipulates that two measures (Crude Mortality Rate and nutritional status of children under five) are the most basic essential indicators for assessing the severity of population stress and for monitoring the overall effort of the humanitarian community. However, those supporting the initiative also acknowledge that, while these indicators demonstrate the extent to which the relief system is meeting the needs of the population and thus the overall impact and performance of the relief system, they cannot be used to demonstrate the performance of any single organisation or intervention (SMART, 2002).

The SMART initiative led to consensus that the standard nutritional status indices to be used are wasting and oedema (wasting is measured using weight for height). Consensus was also reached on a generic, standardised methodology to be used in all emergencies for assessing nutritional status. SMART also states that nutrition survey data cannot be interpreted in isolation, and that the food security context needs to be understood to interpret nutritional survey data. Furthermore, although there is as yet no agreed method or best practice, the Household Economy Assessment (HEA) is recommended as the approach for food security analysis. SMART also states that mortality data collection is much more difficult than collecting data on nutritional status. It is prone to error and needs to be triangulated with other data, such as nutritional status, grave counting, religious authority records, mother to child ratios and demographic profile. SMART also states that there is no evidence for recommending a particular method of estimating CMR.

For example, a recent study in Gode in Ethiopia used a two-stage cluster survey involving 595 households to examine mortality retrospectively over an eight-month period. UN agencies were claiming that widespread famine had been averted in 2000 due to the humanitarian response. However, the survey established that, from

December 1999 to July 2000, the CMR in Gode was approximately six times higher than the pre-famine baseline and three times higher than the accepted cut-off for the definition of the acute phase of a complex emergency. The study concluded that most deaths were associated with wasting and major communicable diseases, and occurred before the humanitarian intervention began. The response was delayed and inadequate, consisting primarily of food aid and selective feeding at a few central locations. The intervention may have increased disease transmission and mortality by attracting non-immune malnourished people to central locations. Furthermore, a measles vaccination campaign with vitamin A distribution was implemented very late in the emergency (Salama et al., 2001).

6.1 Crude mortality rates

Surveillance systems for monitoring CMR, such as monitoring of burial places, routine reports from street leaders in refugee camps, or routine reports of deaths in hospital from curative services usually require a reasonably stable situation and reliable population estimates. They also take considerable time to establish, and need to run for some time before data can be meaningfully analysed. These factors make them unsuitable for estimating mortality in emergency assessments. It is, however, possible to estimate cumulative incidence retrospectively using a cross-sectional survey. This is currently the recommended method for estimating mortality in emergencies. There are, however, a number of problems with this approach.

- **Manipulation:** populations may exaggerate deaths in order to get more aid or under-estimate numbers who have died if there is a fear of losing ration entitlement.
- **Taboos:** in some cultures death is a taboo subject which can lead to an underestimate.
- **Unreliability:** reviews have shown serious methodological errors. The most common of these is the nesting of the mortality survey within a nutrition survey, thereby excluding households in which all children under five years of

age had died, leading to underestimation of mortality. In general, evidence shows that the methods used lacked standardised procedures for defining households, enumerating household members, selecting the principal informant, ascertaining whether identified household members were living at home during the survey period, failing to define live births and not having a standardised question set.

- Difficulties in estimating the size of the denominator: household census methods require the tracking of a potentially large number of individuals over time, some of whom may move in and out of the household during the recall period.
- Lack of guidance on sample size calculations and data analysis procedures: current editions of handbooks on emergency assessment do not provide details on how sample sizes should be calculated.

In light of these many difficulties SC UK decided to design and undertake preliminary testing of a method that might overcome some of these problems (ENN, 2004). The desirable attributes of this method were: a familiar sampling method, reliability, low overheads, resistance to manipulation and taboo, and robustness to denominator estimation problems. This led to the decision to use under-five mortality rates using previous birth histories. This has the following advantages:

- i) a single informant with a single relationship to the deceased. Restricting the collection of data to mother and child simplifies the estimation of denominator population; and
- ii) a standard validated question set is already available. This question set makes no mention of death and has low data collection and analysis overheads.

Initial findings of this approach are promising, but there is still work to do in validating estimates from the method, establishing reasonable design effects for use

in sample size calculations, establishing benchmark values for the interpretation of under five years mortality and using the method with alternative sampling methods.

7. The use of conceptual frameworks

Underlying assessments of intervention impact on nutritional status or food security/livelihoods are models of determinants of nutritional status and food security. The UNICEF conceptual framework (first developed in 1990) for causes of malnutrition is now widely applied and understood by nutritionists in emergency and stable situations. The framework distinguishes immediate, underlying and basic causes of malnutrition. This framework has been adapted in a number of guidelines (e.g. WFP, 2000; Oxfam, 2001) out of recognition that it needed to take into account concepts of coping strategies and the influence of external events such as war, drought and civil strife on nutrition (UNHCR, 1995). More recently, frameworks for food security and livelihoods status have begun to emerge, e.g. FIVIMS, WFP, DFID and Oxfam. Food security frameworks highlight the three dimensions of food availability, access and utilisation (Riley et al., 1995) while livelihood security frameworks highlight basic outcomes (e.g. food security, health, water), livelihood assets and strategies and context (e.g. natural resources, infrastructure, economic context). Oxfam highlight two other dimensions in its food security framework – seasonal timing and severity of food insecurity. All these frameworks identify and set out determinants of nutritional status, food security and livelihood status respectively. Implicit in each framework is the understanding that nutritional status, food security and livelihoods status are determined by a number of factors which act together. The frameworks guide assessment procedures and ensure consistent analysis of determinants of nutritional, food security and livelihood status, which in turn provide entry points for effective interventions.

The differences between the frameworks developed by agencies tend to reflect their specific *modus operandi* and information needs. The frameworks are, however,

largely similar; where differences exist, these are mainly in the emphasis (hierarchical prioritisation) given to different determinants.

In situations where it proves impossible to measure/monitor nutritional status or food security (e.g. insecure areas, widely dispersed and inaccessible populations), proxies for measures of intervention impact may need to be found. As discussed earlier, most impact assessments have been based on proxy indicators of intervention process/service delivery/programme outputs. In these instances, however, service delivery/programme output indicators would need to be assessed for all sectors which contribute to nutritional status/food security, i.e. there would need to be an examination of the extent to which interventions are addressing all determinants of malnutrition or food security as identified in the various conceptual frameworks. However, this analysis would only need to focus on and prioritise the immediate determinants, i.e. food, health and care provision in the case of nutritional status and availability, access and utilisation in the case of food security. Indeed, emergency needs assessments rarely encompass all aspects of conceptual frameworks (Jaspars and Shoham, 2002).

Although most agencies working in the nutrition and food security sector are unable to implement multi-sectoral and integrated interventions in emergencies, some agencies attempt to do so, especially when there is awareness of an absence of other agencies who are able or willing to address 'other' sectoral needs, e.g. WATSAN or health, and that this will undermine their food and nutrition interventions. This type of integrated programming can, however, pose enormous challenges. Oxfam attempted to implement such a programme in the Somali region of Ethiopia (Gode) in 1999 (Gladwin, 2000). The programme attempted to set up selective feeding, strengthen health centres, implement measles vaccination and vitamin A distribution, implement a WATSAN programme and mobilise community resources. The challenges were enormous and led to the conclusion that an integrated emergency response is unlikely to be provided by a single agency, and

that a coordinated response is necessary. In southern Ethiopia in 2000, Concern implemented a less ambitious integrated programme which provided selective feeding programmes, targeted general rations and seeds and tools (Sadler, 2001). It also advocated for greater general ration provision. Over a six-month period, malnutrition rates dropped from 25% to 7%, while other food security indicators like meal frequency also improved. Concern concluded that ‘the stabilisation of malnutrition is a good indication that Concern’s nutrition programme has achieved its goal and that generally short-term household food security status has improved’.

As the majority of situations determine that impact assessments using direct measures like nutritional status and food security indicators are flawed, an analysis of service delivery/process indicators for key sectors which impinge on nutritional status and food security would complement such analysis. This information could be collated and analysed by a coordinating agency in the humanitarian emergency. In situations where nutritional and food security monitoring are not possible (e.g. there are high levels of insecurity) this type of multi-sectoral service delivery analysis may be all that is feasible.

8. Conclusions

Using nutritional and food security data as a measure of programme impact can serve three main purposes:

- assess whether a programme (specifically food security and nutrition programmes) is achieving its objectives during the project cycle, thereby providing opportunities to modify programme design if appropriate;
- assess the overall impact of the humanitarian response on nutritional status and food security; and
- provide information about whether specific types of nutrition and food security-related interventions are generally effective, and in what type of context.

Food security monitoring is understood as part of livelihoods analysis, while nutritional status monitoring is understood to reflect a variety of factors as described in the UNICEF conceptual framework for causes of malnutrition.

The main difficulty with using food security and nutrition data for impact analysis of specific or overall humanitarian interventions is the absence of control groups. In most emergency contexts, it will not be ethically possible to establish control groups. Such groups can only be established when a new form of (potentially better) programme design is implemented, so that the control group is the population in receipt of services through the traditional programme design, e.g. clinic-based therapeutic feeding (control group) versus community therapeutic care (intervention group). There may be rare occasions where an intervention is carried out in one area and not another even though both locations have been affected by the shock. This may arise where there is a lack of agency capacity. The non-intervention area then becomes the control group by default. There are also situations where two proximate areas have different types of intervention. For example, in Rwanda in 1995 WFP implemented general rations and supplementary feeding in some prefectures, while ICRC, which was operating in nearby prefectures, only implemented a general ration programme (with an expanded ration of 2,400 kcals per capita per day). If comparison of the nutritional impact in both populations had been made, it may have been possible to deduce the impact of the supplementary feeding programme.

In the absence of control groups the best that can be hoped for is that information on impact through nutrition and food security monitoring is interpreted in conjunction with good data on potentially confounding factors, e.g. the onset of harvests or increase in remittances, as well as data on service delivery/outputs of the specific food and nutrition intervention and/or all interventions which may potentially affect food security and nutrition. These types of data will be more easily available or there will be more knowledge of these types of information in certain settings, like refugee or IDP camps, especially where there are controls on the

movement of the camp population and the flow of resources into and out of the camp. However, even with good information on potentially confounding factors, diminutions in malnutrition and improvements in food security can only strengthen the conviction that there is a causative association – it cannot be taken as scientific proof. The best that can be shown with certainty is that the programme is *not* having the desired impact, i.e. if nutritional and food security status decline. Speed of change in nutritional and food security levels in relation to the onset of an intervention is another potential sign of impact and can strengthen confidence that there is a causative association. This can also be used to show a causative deterioration in the event that the intervention becomes flawed or interrupted, e.g. breaks in the food aid pipeline for the general ration. Extending this idea a little further, it could be argued that the most useful role for nutrition and food security data in impact assessment during the implementation of an emergency programme is in monitoring the potential negative impact of reducing or ending an intervention. Thus, in protracted emergency situations where there are political or resource pressures to reduce the intervention, nutritional and food security monitoring can be critical in ensuring that lives are not put at risk, and that the speed and scale of programme change are managed carefully and appropriately.

Nutrition indicators have intrinsic weaknesses as impact monitoring tools, e.g. difficulties of disaggregating survey data, or time consuming in open situations. Certain types of nutrition monitoring approach may be more appropriate for specific contexts, e.g. sentinel site monitoring in open situations, and surveys in camp settings. Food security/livelihood status monitoring also has specific problems for impact assessment, e.g. lack of consensus on methodology, or difficulty of collecting coping strategy data in situations of conflict. However, the methods of collecting food security/livelihoods data also confer an important advantage for impact assessment. Beneficiary views can be rigorously analysed with regard to programme impact/appropriateness.

Another aspect of nutrition indicator monitoring for impact assessment is the critical importance of contextualising the information and the difficulties of so doing.

Nutritional survey results can mask imminent famine unless combined with food security/livelihood analysis,⁶ i.e. low rates of malnutrition may exist alongside (and therefore mask) a severe erosion of livelihoods and the exhaustion of coping strategies. Nutritional indicator monitoring in isolation can easily lead to false positives and false negatives in terms of identifying food crisis and the impact of an intervention. Furthermore, there is often a need to respond before nutritional deterioration can be measured. In some situations, micronutrient deficiency disease outbreaks may occur before widespread protein energy malnutrition so that nutrition indicator monitoring systems need to expand indicators to include micronutrient status. Analysis of the nutritional status of adults (BMI) in conjunction with the nutritional status of under-fives in the same household can help determine the degree to which nutritional problems are related to disease/caring practices rather than food security constraints (James, 1998). Furthermore, in some contexts where child nutritional status is protected at the expense of adult food consumption, measuring the nutritional status of adults can lead to earlier detection of nutritional stress caused by food insecurity. There is a need for research and development into how best to integrate nutritional indicator and food security assessments, as this will pose institutional as well as technical challenges.

In emergencies, micronutrient monitoring is rarely done. This partly reflects an absence of technology for biochemical assessment in the field. As a result, micronutrient status impact assessment is best conducted through food basket monitoring of ration quality, in conjunction with information on speed of impact through clinical diagnosis (controlling for other factors where possible).

The main types of food and nutrition programmes in humanitarian emergencies are general ration and selective feeding programmes.

It is very difficult to demonstrate impact of general rations on nutritional or food security status for many of the reasons already discussed. Ideally, process (food basket monitoring) and impact information will be combined. This can be strengthened by monitoring speed of change of impact indicators (possibly reinforced by deterioration where there are unintended interruptions in the pipeline). Impact of supplementary feeding programmes is also difficult to infer due to potential confounding factors. The most confident assertion that can be made is 'a negative', i.e. if there is nutritional or food security deterioration or no improvement, then the programme is not having the desired impact. Impact assessment for these two types of programme is easier in certain types of situation where it is possible to control for confounding variables, e.g. camp situations. However, the evidence shows that, even in camp situations, this is not always the case (ODI, 1996).

It is theoretically feasible to determine the impact of therapeutic feeding programmes providing there is data on coverage, default and mortality. However, as coverage of traditional therapeutic feeding programmes is usually poor, even this is difficult.

There is an apparent growing consensus that livelihoods protection (which includes food security analysis) is a legitimate aim/objective of humanitarian interventions. However, there are very few examples of assessments to determine the impact of humanitarian interventions on livelihoods protection and food security. There may be several reasons for this. Perhaps the most significant is the lack of flexibility in the humanitarian system to modify resource allocations once decisions have been taken following the initial needs assessment. Furthermore, it is difficult to set quantifiable objectives for livelihood impact. Another factor is that certain methodologies, e.g. HEA and HLS, require the extensive training of staff and a period of weeks in the field.

The two examples found in the 'grey' literature were of household economy analysis. The HEA approach allows quantification of impact on livelihood status (including food security). Once again however there are issues around lack of control groups. The coping strategy index is starting to be utilised as a proxy for livelihoods status and food consumption. This is a more rapid type of assessment, and is being used to establish baseline information for subsequent impact assessment. A variant of this is the Cornell Radimer scale (which focuses mainly on consumption variables). This approach can be implemented even more rapidly than the CSI.

Given that part of the current impetus for impact assessment is donor-driven and related to issues of cost-effectiveness, the credibility of impact information is key. Statistical rigour of information and analysis may therefore be critical. One of the often heard critiques of HEA is that it involves only quasi-quantification. However, SC UK has been developing more statistically rigorous means of sampling households in pursuit of greater understanding of the relationship between HIV and food security status at household level (FEx 2004 in press). This work could improve credibility of HEA findings in relation to impact monitoring. However, implementing HEA analysis in the context of impact assessment may prove difficult in many situations where there are lack of suitably trained staff or where time and security elements preclude this type of approach. In these situations other forms of assessment may be more appropriate, e.g. CSI, Cornell Radimer.

As the majority of situations determine that impact assessment using direct measures like nutritional status and food security indicators is flawed, an analysis of service delivery/outcome indicators for key sectors which impinge on nutritional status and food security will complement such analysis. This information could be collated and analysed by a coordinating agency in the humanitarian emergency. In situations where nutritional and food security monitoring is not possible (e.g. high level of insecurity) this type of multi-sectoral service delivery analysis based on

conceptual frameworks for causes of malnutrition and food insecurity may be all that is feasible.

It is important that the livelihood protection objectives of interventions include aspects of social capital (WFP, 2003). Agencies like WFP have begun to incorporate indicators which allow an assessment of intervention impact on social capital.

Finally, interventions can have (unintended) negative impacts on livelihoods and food security. These may operate through the market or through social mechanisms. Impact assessment therefore needs to incorporate indicators which allow an analysis of these potential 'side-effects'. However, methodologies for this type of analysis do not currently exist and need to be developed.

In conclusion, in most cases it will be impossible to measure the impact of humanitarian interventions with scientific rigour either during or following the intervention using nutrition and food security information. There are exceptions, i.e. when it is possible to establish control groups in trials of a new type of intervention. Nutrition and food security information (in conjunction with mortality data) can be used retrospectively to demonstrate whether the situation improved, or at least did not deteriorate, during the intervention. However, once again causality cannot be proven. The most valuable role for nutrition and food security monitoring during the intervention cycle may be to monitor the impact of programme reduction or withdrawal.

In view of the methodological difficulties of impact assessment using nutrition and food security information, the optimum is to combine this type of information with process or service delivery information. The context will determine whether and how a combination of these two types of information should be used. Thus, in situations where it is impossible to account for confounding factors (i.e. there is little knowledge of non-intervention food security variables), it may be more appropriate

to invest mainly in monitoring process indicators based on conceptual frameworks for malnutrition and food security. In camp situations (especially where population movement and resource flows are controlled) there may be more confidence in associations between intervention and impact measurements. Furthermore, an analysis of the temporal relationship between intervention and changes in the measures of nutritional status and food security can be a useful means of triangulating causal analysis. Certain types of intervention lend themselves more readily to credible impact assessment, e.g. therapeutic feeding programmes with good coverage, versus supplementary feeding programmes in open situations. In essence, the design of impact monitoring systems using nutrition and food security information needs to be highly context specific and based on pragmatic choice, while the findings need to be presented transparently with regard to methodological inadequacies.

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¹ This is most likely to occur through ongoing monitoring, e.g. sentinel site surveillance, rather than periodic surveys which have inherent start up costs in terms of time and human resources. There are very few examples of agencies conducting surveys for impact assessment in this way, e.g. at the start, mid-project and at the end of the intervention (Bailey.K 2001). However, nutrition and food security monitoring systems are also relatively uncommon in emergency settings. Nutrition monitoring systems may exist as part of a project monitoring system in a discrete area, e.g. community development project, or as part of the ongoing national growth monitoring system through MCH clinics. There have also been examples of sentinel site surveillance in emergency prone areas involving the collection of nutrition and food security information, e.g. Darfur in Sudan (Young.H and Jaspars.S (1995) and Wollo in Ethiopia (Kelly.M 1991). Food security monitoring systems may have been established for early warning purposes in drought or emergency prone areas, e.g. the FSAU for Somalia and the FSU for southern Sudan. However, the vast majority of areas affected by sporadic emergencies do not have ongoing nutrition or food security monitoring systems.

² These objectives may be stated more explicitly. Thus, nutritional objectives may be expressed in terms of reducing levels of wasting to pre-emergency levels (where information for this exists) or to below levels which would trigger an emergency response, e.g. less than 10%. In the case of micronutrient deficiency disease the objective is more likely to be expressed in terms of eradicating incidence of the disease. Objectives with regard to mortality will be stated in terms of reducing or maintaining the crude mortality rate to a level in a normal population in a developed or developing country which is equivalent to 0.27/10,000/day. Food security objectives may be stated in terms of ensuring access to sufficient food to meet an average requirement of 1,960-2,210 kcals/person/day or more in the case of populations engaged in moderate or heavy work activities. Such food security objectives may also be qualified in terms of preventing food acquisition activities which are detrimental to household or community.

³ In this review the term nutrition indicator monitoring is used to encompass activities which may be defined as surveys or surveillance. Surveys usually denote a one off assessment which may be repeated to measure trends and/or impact while surveillance involves regular and ongoing data collection activities – the periodicity of which varies with individual systems

⁴ Sentinel site refers to the monitoring of purposively selected communities or service delivery sites in order to detect changes in context, programme and outcome variables. Communities are purposively selected for a number of reasons. For example, a community may be of particular interest because of an intervention. Data can be collated and analysed centrally or by trained members of the community.

⁵ There are examples where these systems have lost political and therefore financial support once the emergency is over, e.g. Darfur, in northern Sudan in the mid-1980s

⁶ The term food/livelihoods security information used in this discussion is meant to denote all information which informs understanding of a population's access to food. Coping strategies are therefore a component of this type of information.