Evaluation of Sustained Outreach Services for Immunization & Vitamin A Supplementation In Indonesia

Final Report

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At the request of the UNICEF Indonesia country office, the evaluation was carried out by John Snow Inc. (JSI), an international public health organization with substantial experience in immunization programmes worldwide, and of their monitoring, evaluation and implementation.

Contents

Annexes

1. Sustainable Outreach Services (SOS) - A strategy for reaching the unreached with immunization and other services; 2000; WHO/V&B/00.37 www.who.int/vaccines-documents/
2. John Snow, Inc., 1616 North Fort Myer Drive, Arlington, Virginia 22209, USA www.JSI.com/
3. UNITED NATIONS CHILDREN'S FUND - Terms of Reference for Evaluation of Sustained Outreach Services (SOS) for Immunization/Vitamin A; UNICEF Indonesia; (undated)
4. Evaluation of SOS in Indonesia: Agreed Design Framework, 2011 www.JSI.com/
5. Data Collection Instrument - Qualitative Interviews in English and Bahasa Indonesia, Sept 2011

6. WHO Vaccine Preventable Diseases Monitoring System, Global Summary 2011, http://apps.who.int/immunization_monitoring/en/globalsummary/countryprofileselect.cfm
7. Narrowing the Gaps to Meet the Goals – UNICEF, Sept 2010
8. Schedule of Visits and Logistic Details of Field Activities in SOS Areas
9. Interviewee Responses; Planning Assumptions & Defining Success in SOS
10. Interviewee Responses; Suggested Additional Services for SOS Package
11. Review of Vaccine Management & Storage Provisions at Health Facility A

Acronyms

AD	Auto Disable (syringe)
BCG	Bacillus Calmette-Guerin (vaccine)
BOK	*Bantuan Operasional Kesehatan* operational expenses for health activities
DHO	District Health Office / Officer
DHS	Demographic Health Survey
DKI	*Daerah Khusus Ibukota* special admin area for national capital
DPT	Diphtheria-Pertussis-Tetanus (vaccine)
DPT_3	Diphtheria-Pertussis-Tetanus immunization, 3rd dose
DPT-HB	Diphtheria-Pertussis-Tetanus & Hepatitis B (combined vaccine)
DTPK	*Daerah Tertinggal, Perbatasan dan Kepulauan Terluar* programme for disadvantaged areas, borders and outermost islands
EPI	Expanded Programme on Immunization
FI	Fully Immunized (infant/child)
HB	Hepatitis B (vaccine)
HB_3	Hepatitis B immunization, 3rd dose
HF	Health Facility
HTR	Hard to reach (area/location)
Ind.Rp	Indonesian Rupiah
IP	*Indeks Pemakaian* vaccine utilization rate
JSI	John Snow Inc.
MDGs	Millennium Development Goals
MOH	Ministry of Health
NI	Never immunized (infant/child)
NTT	Nusa Tenggara Timor (province of Indonesia)
OPV	Oral Polio Vaccine
OPV_4	Oral Polio Vaccine immunization, 4th dose
PHO	Provincial Health Office / Officer
posyandu	*Pos Pelayanan Terpadu;* Integrated Health Post
puskesmas	*Pusat Kesehatan Masyaraka* first line health facility
RisKesDas	*Riset Kesehatan Dasar* basic medical research
SOS	Sustainable / Sustained Outreach Services
SBD	Sumba Barat Daya (district of Indonesia)
TB	Tuberculosis
TT	Tetanus Toxoid (vaccine)
UCI	Universal Child Immunization
US$	United States of America dollars
UNICEF	United Nations Children's Fund
VAC	Vitamin A capsules
VVM	Vaccine Vial Monitor
WHO	World Health Organization

Executive Summary

The Expanded Programme on Immunization in Indonesia has long shown high levels of overall performance, with officially reported national coverage rates of 80% or higher indicated for most key EPI antigens over many years. Survey data shows somewhat lower national coverage figures, but more important, reveals substantial performance variations within the country that are not apparent from the national figures. Many of these areas of lower performance are inaccessible or remote locations, where available transport options are limited, terrain is challenging and populations are small and dispersed. Service delivery can be difficult, time-consuming and expensive to provide or sustain in such areas, and typically, infants and children do not have access to the high levels of health care provided in the more accessible parts of the country.

To address such inequities WHO devised a strategy comprising a package of immunization and other health services that could be delivered to isolated and remote areas on a more regular and sustainable basis. This strategy, known as the Sustainable Outreach Services (SOS) approach, was not a replacement or alternative to routine immunization programmes, but was designed to build upon an existing service, and enable it to extend its range of activities to areas not previously served by the routine programme alone. Beginning in 2009, Indonesia has piloted this approach in selected areas of some of its remote Eastern provinces as a means of addressing low immunization coverage in those areas, and thereby, contribute to achieving its Millennium Development Goals nationally. The SOS strategy has been progressively phased into selected districts of three of these Eastern provinces to date, and MOH required an evaluation of the resulting impact of the new approach on immunization services in the target areas.

In view of the relatively short time that most SOS-implementing areas had been operational, it was agreed that the focus of the evaluation would be on the process of implementation, rather than its programmatic impact. The five main programme areas to be covered by the evaluation were the intervention design, its implementation, the results, the costs and a summary of strengths, weaknesses and lessons learned from the pilot phase. In addition, the evaluation assessed some key indicators of the routine immunization programme upon which the SOS strategy is built, and whose infrastructure it largely shares. The main method of qualitative data collection was through interviews of health staff and officials at national, provincial, district, health facility and community levels, and was supplemented by observational, quantitative and financial data gathered wherever possible. The evaluation was conducted between September and December 2011, and included field visits to all of the remote SOS-implementing areas in 6 districts of 3 Eastern provinces of Indonesia.

Results of the evaluation show that in the overall design and rationale for the intervention, there have been significant shortcomings in documentation and communication from the national level. While the specific objectives and characteristics of the version of SOS as adopted in Indonesia may have been understood by those involved in its design, these fundamentals have not been adequately articulated, documented or disseminated for use within the country. As a result, staff interviewed at province, district and health facility levels did not have a good understanding of these issues, and did not have a clear idea of how SOS was a related but distinct activity from the routine programme.

Some shortcomings were also noted in implementation of SOS. Some districts completed all key preparation steps, but others omitted important items, in particular, micro-planning and mapping of hard-to-reach areas. For staff training, emphasis was placed on socializing and mobilizing for SOS, but little attention was given to implementation guidelines and technical issues. None of the districts made changes to the schedule of vaccines offered, and all continued to target the same age groups as routine services. No specific provisions were noted for identifying, immunizing and recording doses given to older age groups, or for reporting these to district level. Much of the inherent flexibility offered by the SOS approach has not

been used in Indonesia, and in effect, SOS was implemented as a pulsed routine EPI activity only, with some other services added. An ideal schedule for the timing of SOS rounds in a typical year shows that up to 4 SOS rounds per year are possible, although it is unclear whether funding limitations will actually permit this in practice. This schedule applies only to UNICEF-funded SOS activities, but for any future government funding of SOS, typical delays of 6 months or more in release of local government funds may only permit one or two SOS rounds to be conducted per year.

The strategy was apparently well-accepted in all 6 SOS-implementing districts to date and interviews reflect a belief that results are positive and better than expected. There is little quantitative data so far to support such views, although the first district to implement has provided limited data which shows some decrease in performance over the brief period when SOS was implemented. This is too small a sample to draw any firm conclusions on the SOS strategy, but a larger body of data was collected on key indicators of the routine programme across all health facilities visited. This reveals a number of serious weaknesses and failures in basic functions of the routine programme, and shows that many of these are either being ignored completely, or are being carried out at completely inadequate levels. Such widespread weaknesses must inevitably compromise service quality at all delivery points and undermine any advances made, both by the routine programme itself, and thus by the SOS strategy.

Targeting small, remote communities for SOS has resulted in significantly higher costs and for this initial stage of implementation, operational costs are estimated at 3 to 5 times higher per village than for the routine programme. Benefits from these higher costs have yet to be realized, partly due to a limited operating period and thus limited data, but also due to programmatic weaknesses and compromised service quality. It was found that operational costs for SOS were only part of total costs for the strategy, and implementation to date has relied mainly on existing infrastructures for both land and sea transport, and on existing human resources. This approach can only offer a temporary solution, and to become a sustainable intervention, substantial additional investment for SOS will be needed in infrastructure, capital and human resources.

The main recommendations of the evaluation include:

- Appropriate guidelines, explanatory and training materials on the local SOS programme to be prepared as a matter of priority;
- Planning, preparation and staff training prior to introducing SOS to be improved, and districts to include all key activities in preparations;
- A detailed assessment of land and sea transport and of manpower needs in all SOS-implementing areas to be carried out;
- Immediate and intensive efforts to re-focus attention on ensuring routine programme quality at all levels;
- Urgent measures to ensure that all basic immunization programme functions are performed regularly and comprehensively across all health facilities;
- These steps to take priority over any consideration of expanding SOS, which would be premature and ineffective until basic programme quality can be assured.

1. Background

For many years, the Expanded Programme on Immunization (EPI) in Indonesia has shown high levels of overall performance, with officially reported national coverage rates of 80% or higher indicated for most key EPI antigens. Survey data indicate somewhat lower national coverage figures, however, and also reveal substantial performance variations within regions, with pockets of low coverage in some areas. These are often inaccessible or remote locations, where available transport options are limited, terrain is challenging and populations are small and dispersed. As a result, service delivery can be difficult, time-consuming and expensive to provide or sustain, and in such areas, infants and children typically do not have access to the high levels of health care provided in more accessible parts of the country.

In an attempt to address these inequities and to achieve the Millennium Development Goals (MDGs), the Ministry of Health (MOH), through its National EPI unit located within the Directorate General of Disease Control and Environmental Health, has piloted a strategy known as 'Sustained Outreach Services' (SOS) in selected areas of Indonesia. This intervention is based on a WHO global strategy, (Annex 1) and adapted by the MOH to provide populations in remote areas with a package of basic immunization, maternal and child health services, on a regular and sustainable basis. Beginning In 2009, and with financial support from the UNICEF Indonesia office, and technical support from both UNICEF and WHO, this approach has been progressively phased into a number of remote locations of priority districts in three provinces of Eastern Indonesia. Lessons learned from this pilot activity will be used to assist in formulating national EPI policy and in enhancing programme strategies, and after an initial two years of operation, MOH required an evaluation of the experiences and resulting impact on programme performance of the SOS intervention.

The evaluation was conducted between September and December of 2011. In view of the relatively short time since its introduction, evaluation of the SOS strategy was designed to focus on process issues rather than on outcomes and programmatic achievements. The latter will only become apparent after a longer period of implementation in the pilot provinces and districts, and the accumulation of a larger body of programme data and operational results.

2. Purpose of the Evaluation

The evaluation was designed to assess the relevance, effectiveness and efficiency of the Sustained Outreach Services (SOS) strategy as it is applied in the current target areas of Indonesia. The specific purposes of the activity were to:

- Document factors that supported SOS programming in Indonesia, including those that led to changes in immunization coverage in the target areas,
- Recommend sustainable mechanisms as considered appropriate for wider application of SOS in the national EPI and the broader child survival programmes of the government,
- Identify any needs for additional human and financial resources required towards solving inequities in the long term, that will increase and sustain immunization coverage levels in hard to reach areas, and
- Contribute to global knowledge on equity and evidence-based, cost effective/ cost efficient strategies for reaching the poorest populations in geographically hard-to-reach areas.

In addition, the evaluation would attempt to identify key elements contributing to SOS programme implementation, to determine gaps in achieving EPI coverage targets, and to summarize the lessons learned.

3. Evaluation Design

The overall design for conducting the evaluation (Annex 4) outlined 3 main phases:

Phase 1: Desk Review and Draft Evaluation Design (September – October 2011)
Phase 2: Field Work (October – November 2011)
Phase 3: Preparation of the final report (November – December 2011)

A quantitative and qualitative data collection instrument for use during phase 2 field work was prepared, with specific sections designed for each group of individuals to be interviewed and each administrative level involved in delivering the SOS programme. The instrument was field tested and an Indonesia language translation was added to the text to produce a dual-language instrument for ease and flexibility of use in the field. (Annex 5)

4. The Routine Immunization Programme in Indonesia

As noted in section 1, EPI in Indonesia has long reported high levels of overall performance, with government estimated national coverage rates of 80% or higher indicated for most EPI antigens over many years. Figure 1 illustrates official MOH-reported national immunization coverage rates in infants for the main EPI antigens over the period 1980 – 2010, as published on the WHO website (Annex 6).

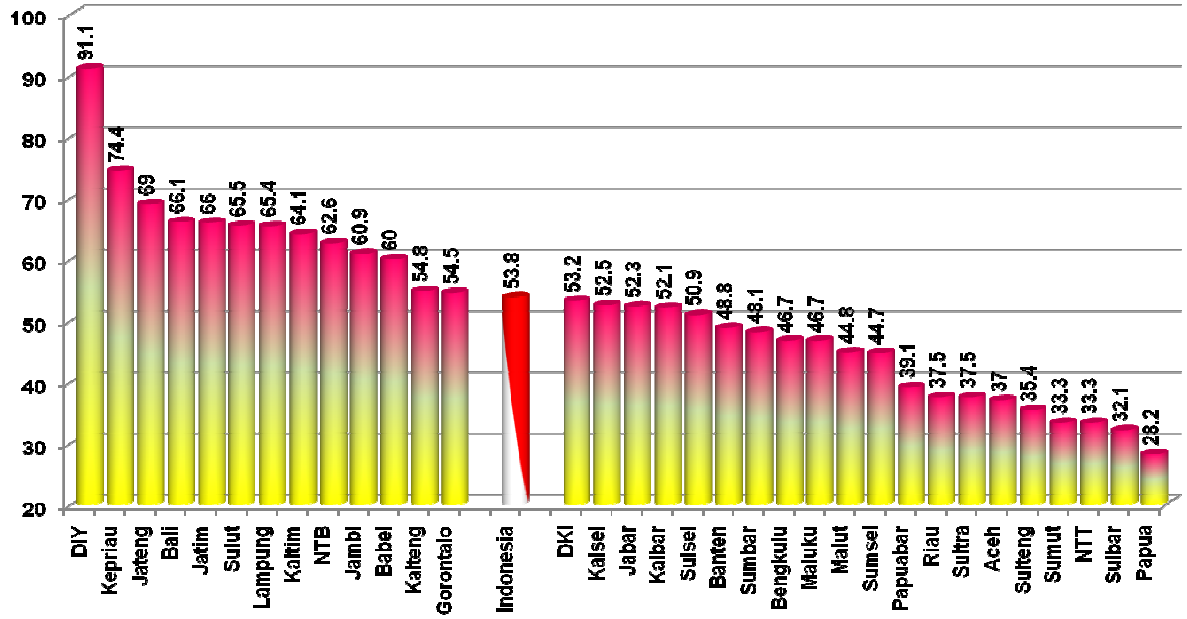
Figure 1: Nationally Reported % Immunization Coverage in Infants, Indonesia

	2010	2009	2008	2007	2006	2000	1990	1980
BCG	97	93	89	92	93	87	94	61
DTP1	94	89	86	93	93	87	-	-
DTP3	83	82	77	88	87	77	88	-
OPV3	93	89	91	84	84	74	89	-
HB0	75	68	52	83	41	55	-	-
HB3	83	82	78	84	72	65	-	-
Measles	89	82	83	88	88	73	85	-

Source: WHO 2011

Survey data often indicates somewhat lower national coverage figures however, and for example, the national health research and development agency at MOH carries out periodic *RisKesDas* (basic medical research) surveys, which regularly show such differences. More important, such surveys illustrate the extent of variations in immunization coverage within the country, and highlight the areas where performance falls below the national averages. Some preliminary data from the 2010 *RisKesDas* survey is shown in Figure 2, which indicates substantial differences in provincial rates for fully immunized infants across the country, and a range of more than 60 percentage points between the highest and lowest performers.

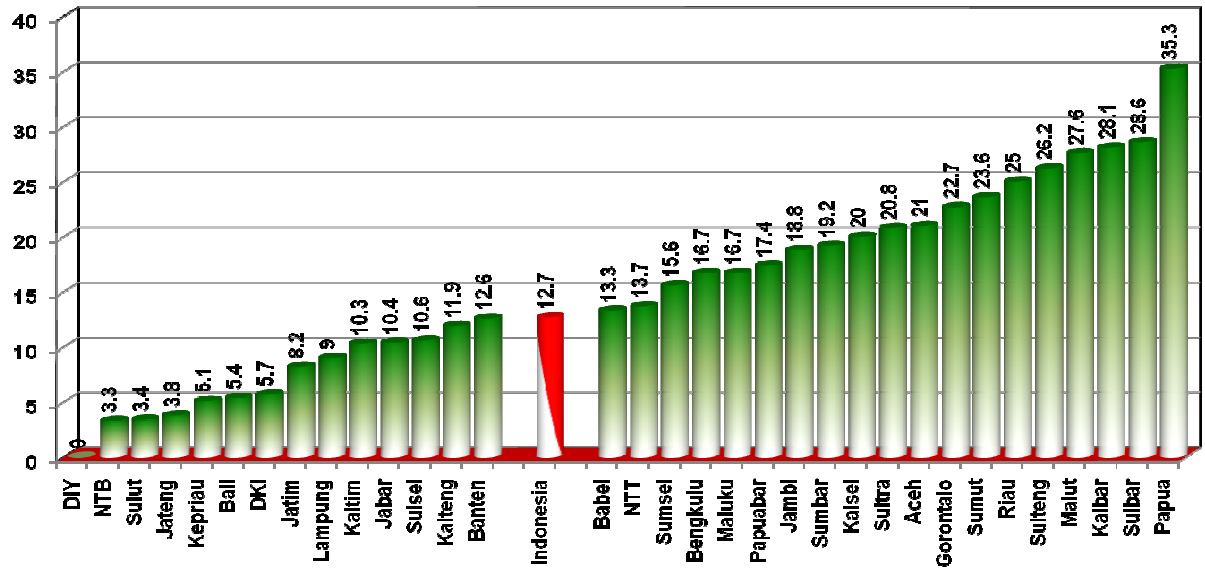
Figure 2: Percentage of Fully Immunized Infants, by Province



Source: RisKesDas 2010

Figure 3, also from the 2010 RisKesDas survey, shows a virtual mirror image of Figure 2, with the percentages of infants never immunized, again ranked by province.

Figure 3: Percentage of Infants Never Immunized, by Province



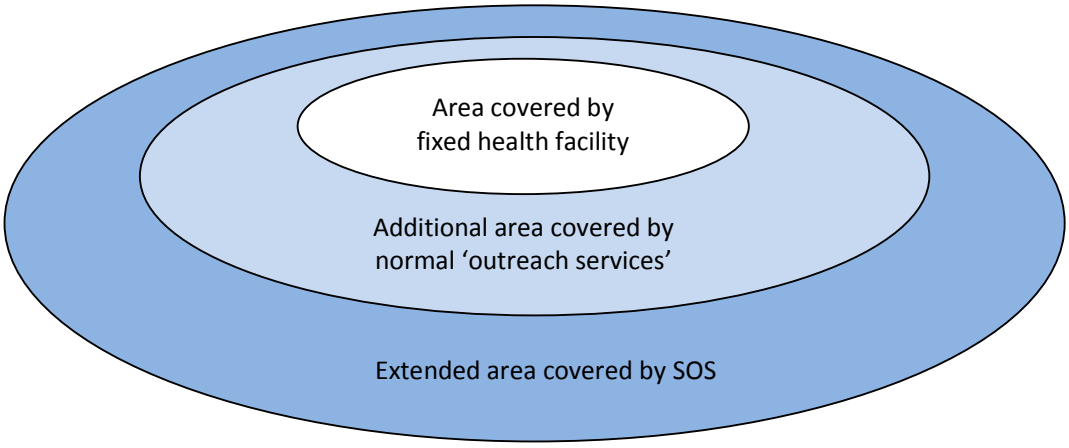
Source: RisKesDas 2010

5. WHO/UNICEF Strategy on Sustainable Outreach Services (SOS)

Globally, indicators show inadequate access to health services for large sections of the population in many countries, and an increasing disparity between rich and poor. Such deficiencies may affect both those in densely populated areas as well as those in remote areas, but while the first group may suffer poor access due to cultural or socio-economic factors, those in remote areas may be deprived simply because of distance or geographic barriers. Thus, although remote populations are not the only group to suffer inadequate health services, and not all remote populations are poor, inevitably, remote communities will bear a disproportionate share of the burden. To address such inequities, a new vaccine-delivery strategy was developed jointly by WHO and UNICEF in 2000, with the aim of reaching remote populations with limited access to health services on a more regular and sustainable basis. The key objective of this new strategy, the 'sustainable outreach services' (SOS) approach, was to enable health services to 'reach the unreached' – to provide for those sectors of the population who have previously been outside the operational range of routine health services.

Many health programmes operate 'outreach services', which are designed to extend the normal operational range of fixed heath facilities. Such services typically use mobile teams to carry health services to communities living beyond what is considered a reasonable travelling distance from the fixed facility, and who would otherwise not use, or have only limited access to regular health services. The SOS approach is not intended to replace such outreach activities, but to extend their range even further, carrying health services to areas and communities that have not previously had access at all, or had access only rarely and on a sporadic basis. See Figure 4. The ultimate aim of SOS is to reach all communities, and to achieve complete equity in provision of health services.

Figure 4: Comparison of operational areas for Fixed, Outreach and SOS services



The main characteristics of the SOS approach, and the features that distinguish it from routine EPI services operated from fixed facilities, according to the WHO /UNICEF strategy, are:

- The usual intervals between immunization doses and contacts are replaced by a number of campaign-style "rounds" or "cycles" of short duration that are carried out each year;
- Each cycle typically provides immunization and vitamin A supplementation, plus a "package" of other health and related services. The package of services to be provided is flexible and chosen locally to suit needs and priorities;
- The usual EPI schedule of vaccines may be changed to focus on antigens with high single-dose impact. BCG vaccine should not be used in SOS as its main protection is against disseminated TB but for this, it must be given shortly after birth. In SOS, such early contact cannot be assured. Also, it has relatively

small impact on disease control, and needs intra-dermal administration which requires special skills and experience;

- The usual EPI target age groups may be changed initially to include older, un-protected children. Slowly, as older groups are covered, the programme should work towards targeting normal <1 age groups, at a rate depending on success of the SOS approach;
- The usual EPI cold chain requirements are simplified wherever possible;
- The usual EPI technologies, (i.e., auto-disable (AD) syringes, safety boxes, Vaccine Vial Monitor (VVMs), etc.) are still used;
- Communities should be involved in design and also in execution of the strategy;
- SOS should not be confused with "catch-up" campaigns, which aim to raise coverage using a once-only type of intervention;
- SOS should not be seen as a "project", but as a structural component of routine immunization services, and used for as long as is needed in any area;
- To ensure sustainability, SOS should be gradually integrated into government regular health service budgets;
- Both the frequency of rounds and the package of services provided by SOS remain permanently flexible, and may be changed as local needs change.

Provision of immunization and vitamin A supplementation are usually considered the minimum package for SOS, and other services to be added may include: malaria control, ante-natal care, micro-nutrients, simple curative services, safe delivery kits, traditional birth attendant training, anti-parasitic treatments, cattle immunization, agricultural and/or legal counselling, family planning education, vector control, water and sanitation (e.g., decontamination of wells, construction of latrines, etc.) Meeting local needs is one of the key factors to consider in deciding which interventions are to be included in any package of SOS services.

6. Equity for Children

The Convention on the Rights of the Child is founded on the principle of equity (universality, non-discrimination and accountability), according to which, every child has the right to basic health care, including protection against vaccine-preventable diseases. High-risk groups, such as remote and hard-to-reach populations, deserve special attention in order to realize that right, not least because it is exactly those groups who suffer the greatest burden of morbidity and mortality, and where health indicators are among the worst to be found anywhere. However, while equity in health interventions has always been morally and ethically justified, providing such services to remote and hard-to-reach communities carries a far higher cost than providing the same service in urban and easily-reached areas. Therefore, doubts over whether such services could be afforded have often resulted in governments being reluctant to invest in them, and many remote and hard-to-reach populations remain chronically under-served.

A recent study by UNICEF however, has now demonstrated that in addition to being ethically justified, providing health services to remote, hard-to-reach communities also makes a sound economic and strategic case. (Annex 7) Furthermore, it is shown that an equity-based health strategy can move countries more quickly and cost-effectively towards meeting Millennium Development Goals 4 and 5 – (aimed at reducing child mortality and improving maternal health respectively) – than following current, conventional strategies. Therefore, the SOS approach, which is essentially an equity-based strategy for the delivery of immunization and other health and related services, fits well with the re-focus of attention by both UNICEF and the international community on equity-based health programming.

It also fits well with the current political climate in Indonesia. The government of President Susilo Bambang Yudhoyono was re-elected in 2009, and announced a number of initiatives to focus attention on the lowest administrative levels and under-served areas of the country. Two of these initiatives are of special significance to SOS activities, namely:

- the *Bantuan Operasional Kesehatan* (or BOK) mechanism, which channels funds for operational expenses in health activities directly from central government to each individual health centre, and

- the *Daerah Tertinggal, Perbatasan dan Kepulauan Terluar* (or DTPK) programme, which establishes a separate sub-directorate and programme within the MOH to focus efforts and to provide funding for the needs of disadvantaged areas, borders and the outermost island communities.

These two government initiatives will be discussed in more detail later in this report.

7. The Sustained Outreach Services Strategy in Indonesia

Based on the WHO and UNICEF global strategy, the UNICEF office in Indonesia began developing a proposal for 'reaching the unreached' populations in late 2006. Under the overall guidance and direction of the national MOH/EPI unit, plans for a possible pilot phase activity were discussed with a number of provincial and district government offices which suffered low routine EPI coverage, and had significant numbers of difficult-access areas. The name Sustained Outreach Services (SOS) was adopted for the local strategy, (as distinct from the original WHO term, which was *Sustainable* Outreach Services), and the first pilot district began implementing services in mid-2009.

The strategy has since been progressively phased into selected districts of three provinces in Eastern Indonesia, namely Nusa Tenggara Timor (NTT), Maluku and North Maluku. All three provinces are small, both in terms of population and in their total surface areas, all are geographically remote, and all include many small islands. A general profile of these three provinces, together with the corresponding national figures, is shown in Figure 5.

Figure 5: General Profile of Provinces Implementing SOS

Province	Islands	Population (2010)	% of total	Ranking, Indonesia	Land Area (km^2)	% of total	Sea Area (km^2)	% Sea / Province
NTT	566	4,474,954	1.86	13	48,718	2.54	200,000	80.41
Maluku	634	1,499,981	0.63	28	46,914	2.44	658,295	93.35
N. Maluku	395	966,003	0.42	32	31,982	1.67	132,388	809.54
National Total	18,036	239,994,519	100	33	1,918,919	100	3,274,331	63.05

Source: DHS2007

With reference to Figures 2 and 3, it will also be noted that all three SOS-implementing provinces are below the national average for the percentage of fully-immunized infants, especially in the case of NTT province, and above the national average for the percentage of infants never immunized. Details are summarised in Figure 6.

Figure 6: Percentage of Fully Immunized & Percentage of Never Immunized Infants, SOS Provinces

Province	% Fully Immunized Infants	% Never Immunized Infants
NTT	33.3	13.7
Maluku	46.7	16.7
N. Maluku	44.8	27.6
National Average	53.8	12.7

Apart from the additional factor of their remoteness however, it was not clear why these three provinces were selected for initiating the SOS strategy. They have neither the lowest percentages of fully immunized infants, nor the highest percentages of infants who were never immunized, as will also be clear from Figures 2 and 3. Translating these percentages into numbers of infants, Figure 7 illustrates that the three selected provinces are ranked 12, 23 and 24 respectively out of 33 provinces in Indonesia for numbers of infants never immunized. Furthermore, these 3 provinces together account for only 5% of all infants nationally who were never immunized, and only 4% of all children aged less than 1 year old in the country.

Figure 7: Numbers of Infants Never Immunized by Province & SOS Provinces

	Province	Infants Never Imm	% of total Never Imm	% of total <1yr
1	Jawa Barat	97,700	16.42	19.54
2	Sumatera Utara	75,156	12.63	12.38
3	Jawa Timur	48,799	8.20	12.04
4	Riau	33,392	5.61	6.62
5	Kalimantan Barat	28,493	4.79	4.35
6	Sumatera Selatan	27,441	4.61	3.66
7	Banten	26,355	4.43	3.48
8	Aceh	22,088	3.71	3.47
9	Jawa Tengah	22,004	3.70	3.46
10	Sumatera Barat	20,235	3.40	2.78
11	Papua	17,810	2.99	2.68
12	Nusa Tenggara Timur	17,660	2.97	2.19
13	Sulawesi Selatan	17,644	2.97	2.19
14	Lampung	15,038	2.53	2.19
15	Kalimantan Selatan	14,145	2.38	2.11
16	Sulawesi Tengah	14,119	2.37	1.59
17	Jambi	13,636	2.29	1.51
18	Sulawesi Tenggara	10,886	1.83	1.47
19	DKI Jakarta	9,510	1.60	1.29
20	Kalimantan Timur	7,871	1.32	1.12
21	Sualwesi Barat	7,083	1.19	1.09
22	Bengkulu	6,849	1.15	1.05
23	Maluku Utara	6,508	1.09	0.97
24	Maluku	6,364	1.07	0.97
25	Gorontalo	6,008	1.01	0.91
26	Kalimantan Tengah	5,529	0.93	0.85
27	Nusa Tenggara Barat	3,473	0.58	0.83
28	Bali	3,348	0.56	0.79
29	Papua Barat	3,296	0.55	0.55
30	Bangka Belitung	2,995	0.50	0.52
31	Kepulauan Riau	2,037	0.34	0.49
32	Sulawesi Utara	1,584	0.26	0.47
33	DI Yogyakarta	0	0.00	0.39
	Total	**595,056**	**100.00**	**100.00**
	Total, 3 SOS Provinces	**30,532**	**5.13**	**4.13**

Source: RisKesDas Survey, 2010

Given the considerable numbers of infants in all provinces of Indonesia who have never been immunized as shown by Figure 7, selections for the initial phase of SOS therefore appear surprising. Although small, remote communities are equally deserving of health services and equally valid subjects for SOS, deliberate targeting of such areas when large, unmet needs remain in many other, far more accessible parts of the country appears to require further explanation. An equity-based approach does not require that small, remote communities should take priority, but that all unserved communities should be addressed. In addition, the likely higher costs and greater difficulties of reaching small, remote communities raises further questions on the wisdom of the initial selections for SOS.

In spite of such questions however, SOS activities had been, or were being implemented in a total of 6 districts in the three selected provinces by May 2011. These comprise 3 districts in NTT province, which has a total of 21 districts, 1 district in Maluku province, from a total of 11 districts, and 2 districts in North Maluku province, from a total of 9 districts. Figure 8 shows the general profile of these 6 SOS-implementing districts, the percentages of each provincial population represented by the target districts, and the numbers of health facilities and villages involved in each case.

Figure 8: Profile of SOS Implementation Districts

Province	NTT			Maluku	North Maluku	
District	Sumba Barat Daya	Alor	Kupang	Aru	East Halmahera	North Halmahera
Started SOS	**2009**	**2010**	**2011**	**2010**	**2010**	**2010**
Population 2010	283,818	190,253	303,998	83,997	72,800	161,580
% of province	6.3	4.3	6.8	5.6	7.3	16.2
Total no. of villages	96	175	177	126	76	196
No. of SOS villages	60	30	38	126	23	20
Total no. of HFs	10	22	23	19	14	17
No. of SOS HFs	8	10	13	19	5	5
SOS % of total villages	**63**	**17**	**21**	**100**	**30**	**10**
SOS % of total HFs	**80**	**45**	**57**	**100**	**36**	**29**

The SOS activities in each of these 6 districts to date may be summarised as follows:

7.1 Sumba Barat Daya District, NTT Province

This was the first district in Indonesia to pilot the SOS strategy, commencing in July 2009 with services delivered through 8 of the 10 health facilities in the district. The original decision to pilot SOS in this district was due to it being newly-established, with a new and inexperienced administration that was considered to need support through mentoring and additional funding. Access in this district is not particularly difficult however, and the 10 health facilities normally have all-season access via a road network of reasonable standard. In view of this, it was later decided by MOH and UNICEF that the district did not fully justify continued SOS funding, since it had far fewer remote and hard-to-reach locations than other, more needy areas within the province. As a result, UNICEF support for the strategy was discontinued at the end of the 2010 season in this district, after funding a total of 3 SOS rounds in July 2009, June 2010 and July 2010 respectively, and no further support is anticipated at this point.

7.2 Alor District, NTT Province

Preparation for SOS activities began in July 2010, with plans for providing extended services from 10 out of a total of 22 health facilities in the district. This is a small but extremely steep and mountainous island district, where access to some health facilities is very difficult and demanding, especially during the wet season. Access by land is possible to all 10 facilities implementing SOS, although some can also be reached by sea, sometimes with shorter travel time. The first SOS round was conducted in August 2010, followed by 3 rounds in June, July and August respectively of 2011.

7.3 Kupang District, NTT Province

This is the most recent district to initiate the SOS strategy and preparation activities began in May 2011, with plans for providing extended services from 13 out of a total of 23 district health facilities. This is a reasonably large district forming the western part of Timor Island, and travel to some of the more distant health facilities can be extremely time-consuming (up to 12 hours for a single journey) due to the poor, very rough roads. A total of 3 SOS rounds have been conducted to date, carried out in May, June and July 2011 respectively.

7.4 Aru District, Maluku Province

SOS preparations began in May 2010, and unusually among districts introducing the strategy so far, it was decided by the provincial office, and in agreement with UNICEF, to introduce SOS services simultaneously from all 19 health facilities in the district. Using this approach, the first SOS round was conducted in July 2010 with a second in November 2011. Based on initial feedback from Aru district however, and on experiences with other early adopters of SOS, the UNICEF country office has since suggested a guideline of a maximum of five health facilities per district to implement SOS activities. This is intended as a means of focusing management and monitoring efforts, and ensuring adequate impact of the strategy. Aru district will thus modify their operational plans from the end of 2011, and in common with other SOS districts, will focus on 5 selected health facilities in future. Two health facilities in the district were visited during this evaluation, both of which will be among the 5 focus health centres to continue SOS activities and to receive UNICEF support from 2012.

7.5 East Halmahera District, North Maluku Province

Preparation for SOS activities began in May 2010, and following the UNICEF guideline, the district planned to provide extended services from 5 out of a total of 14 health facilities. This is a large but sparsely populated district with a very limited and often very basic road network. As a result, access to most of the health facilities requires at least some travel by sea, and some can be reached only by sea. Journey times from the district health office to health facilities are often very extended. Two SOS rounds were conducted in June and September 2010, with a further 3 rounds in May, July and September of 2011.

7.6 North Halmahera District, North Maluku Province

SOS preparations began in May 2010 with plans to provide services from 5 out of the total of 17 health facilities, and 2 initial rounds were conducted in June and September of 2010. An annual review meeting was held with UNICEF and the provincial and district health teams in late 2010, but it was found that SOS performance in this district had been less than satisfactory in its first year of operation. The district health office therefore decided to conduct intensive advocacy on SOS before attempting further SOS rounds. The meeting also noted that the District Health Officer (DHO) did not participate in this important review, and that only staff representing health facilities were present. As DHO involvement is critical to all operational matters in the district, his absence was seen as further indication that additional preparation was needed before SOS could continue. These proposed advocacy activities were carried out during the first quarter of 2011, and as a result, only 1 SOS round was planned for later in the current year, expected to be conducted in October 2011.

8. Conducting the Evaluation

The evaluation was carried out according to the design as outlined in Section 3, and during the field work phase, visits were made to all SOS-implementing provinces and districts, and to selected health facilities and communities within each district. In order to complete field work within the design timeframe, it was decided that visits would focus on 2 health facilities per district, and to one community for each health facility. At each location, data were collected using 3 main mechanisms:

- Through structured interviews, using the data collection instrument developed during phase 1 of the evaluation (see Annex 5),
- From discussions with other responsible health staff, officials or individuals at each location, and
- By making direct observations, copies of records, taking readings, photographs, etc., to assess the status of services and operational conditions at health facilities in each of the locations visited.

The schedule of visits and the main logistical details of activities carried out during the field work phase are attached at Annex 8.

9. Findings on the SOS Strategy in Indonesia

Findings of the evaluation are grouped into the same 5 categories as used in the data collection instrument, namely, design, implementation, results, costs, and strengths, weaknesses and lessons learned. The latter category is reported in section 12 of this report.

9.1 Design

As already described in section 7, design of the SOS strategy used in Indonesia was initiated by the UNICEF country office, working in collaboration with the respective MOH officials at central, provincial and district levels. The objectives and characteristics of the strategy were based on the original WHO global model, with the main purpose being to bring health services to previously unserved populations who were outside the operational range of routine health services. Specific objectives and characteristics of the local version of SOS do not appear to have been well articulated or documented however, and the evaluation team were unable to locate strategy documents, guidelines, background or training materials that define or explain what SOS objectives and approaches were to be adopted. It was likewise unclear which of the features of SOS as set out in the original WHO model were to be incorporated, including what schedule of vaccines was to be used, what age groups would be targeted, and how these would be revised and adapted as implementation of the strategy proceeded.

Interviews conducted at field level clearly reflect these shortcomings, and show that most staff did not have a good understanding of the overall objectives of SOS in Indonesia, the age groups to be targeted, how these differed from those of the routine EPI programme, and how broad objectives were to be translated into practice. Figure 9 illustrates the wide range of responses elicited by interview questions on SOS objectives, and the considerable degree of uncertainty among staff, both at provincial and at district levels, will be noted.

Figure 9: Responses on SOS Programme Objectives

Province	District	Objectives of SOS Programme							
		Children below the age of 1yr	Children below the age of 3yr	Children below the age of 3yr	Mothers	Provide services in remote / hard to reach areas	Provide services in areas with low coverage	Reach Universal Child Immunization coverage levels	Provide services in areas with high drop-out rates
NTT		✓			✓			✓	
	Sumba BD	✓			✓	✓			
	Alor			✓	✓	✓			
	Kupang		✓		✓		✓		
Maluku		✓			✓	✓	✓		
	Aru		✓	✓	✓		✓		
N. Maluku		✓			✓		✓		
	E. Halmahera	✓			✓		✓		✓
	N. Halmahera	✓			✓		✓		

Field interviews also revealed that staff were unclear on the underlying assumptions for the SOS programme, which strategies were to be followed at local level, how success or otherwise would be defined and measured, and in what respects SOS was a related, but distinct activity from the routine programme. Many staff appeared to interpret the strategy as simply another name for routine activities, and thus approached it much as they would any normal outreach session. In the absence of any clear guidelines on specific objectives and strategies for SOS however, this is an understandable response. Annex 9 shows responses to interview questions on planning assumptions and defining success in SOS, and as for the findings in Figure 9, it appears that in general, staff do not have a good understanding of these issues. Thus, in terms of overall design and rationale for the version of SOS as adopted in Indonesia, the evaluation reveals that there have been significant shortcomings in documentation and communication. While the specific objectives and characteristics of the programme may have been understood by those involved in its design, these fundamentals have not been adequately articulated, documented or disseminated for national use.

Recommendation

Appropriate guidelines, explanatory and training materials on the local version of SOS should be prepared as a matter of priority. These should be designed for national, provincial, district and health centre use, with objectives, strategies, operational approaches and implementation details appropriate to the Indonesian context clearly spelled out. It is suggested that the bullet list in section 5, detailing the main characteristics of the SOS approach and the features that distinguish it from routine EPI services, be used as the basis for such guidelines. Once developed, these materials should be widely disseminated, quoted, referenced, and used for training sessions and training materials and for staff briefings to the maximum extent possible.

9.2 Implementation

As already noted, the SOS strategy has been progressively phased into the 6 districts where it has been, or is currently being implemented, over the period 2009 to 2011. Preparations, planning and staff training for introduction of the new strategy were carried out by respective provincial offices in each case, sometime with support from the central EPI team. It was noted however, that considerable variations in extent and content of this preparation phase occurred from district to district. The key activities involved in preparation were:

- A general district briefing and planning meeting during which the SOS strategy was outlined and explained,
- Drafting of a district plan of introduction which identified the specific health facilities to be involved in SOS and their timescales for implementation,
- A district micro-planning exercise in which locations and detailed logistics of access to villages and hard-to-reach communities served by each health facility were mapped out, and
- Briefing and training of staff on the SOS strategy, and explanation on how it relates to the existing routine immunization programme.

The evaluation revealed that some districts completed all these preparation steps, but others omitted one or more components, in particular, the micro-planning and mapping exercise, which was only carried out for 33% of health facilities involved. Figure 10 shows responses of health facility staff in each district when interviewed on preparation activities for SOS in their respective locations. It will be noted that while both NTT and Maluku provinces carried out general planning meetings and prepared an introduction plan for SOS, North Maluku province appears to have given little attention to these key steps. On the other hand, North Maluku province provided staff training sessions in a larger proportion of locations than the other provinces.

The interviews also revealed that although these preparation activities had been carried out, many staff felt there was over-emphasis on socializing and mobilizing for SOS, but insufficient attention given to providing implementation guidelines and explaining technical issues for the new strategy. Later in the evaluation, it became clear that such staff comments were highly relevant, and that far more attention should have been given to many basic programmatic issues, including:

- Reporting and recording; reporting of SOS doses verses routine doses, keeping combined or separate health facility records, calculating immunization drop-out rates;
- Injection issues; dose sizes, sites of administration, diluents and dilution, use and interpretation of Vaccine Vial Monitors (VVMs), frozen or heat-damaged vaccines;
- Vaccine care; storage temperatures and temperature monitoring, vaccine stock levels and stock records, calculating vaccine needs, wastage and utilization rates (IP rates);
- Routine equipment maintenance, defrosting and cleaning, care of cold boxes and vaccine carriers, keeping and using icepacks, using vaccine quality indicators;
- Injection safety; use of safety boxes, safe disposal of sharps waste;
- Benefits of immunization, side effects, fear and pain of injections, dealing with refusals, providing advice and accurate information to parents and guardians.

Figure 10: Responses on Preparations for SOS, by Health Facility

Province	District	HF	Planning, Preparation & Training			
			Was a district or local planning meeting held?	Was a SOS introduction plan prepared?	Was mapping carried out to identify HRT areas and communities?	Was SOS training / briefing conducted?
NTT	Sumba BD	1	✓	✓		✓
		2	✓		✓	
	Alor	1	✓	✓		
		2	✓	✓		
	Kupang	1	✓	✓		
		2	✓	✓		
	Province		100%	83%	33%	33%
Maluku	Aru	1	✓	✓		✓
		2	✓	✓		
	Province		100%	100%	0%	50%
N. Maluku	E. Halmahera	1			✓	✓
		2		✓		
	N. Halmahera	1	✓	✓	✓	✓
		2				✓
	Province		25%	50%	50%	75%
All			75%	75%	33%	50%

The package of services provided under the SOS strategy to date has varied somewhat from district to district, although all 6 districts have included the basic items of immunization and vitamin A, plus a number of other services considered to be appropriate in each case. Other services provided so far have been ante-natal care interventions and malaria control measures and in one case, family planning services. None of the districts made any changes to the routine schedule of EPI vaccines offered, and all have continued to offer BCG vaccine, in spite of it not being recommended for use in SOS services according to the original WHO model. In addition, all districts have apparently continued to target the same age groups as for routine immunization. There appear to have been no specific provisions made for identifying, immunizing and recording vaccine doses given to older age groups, nor any measures for recording and reporting these to district level as a distinct outcome of the SOS strategy.

Once again, in the absence of official guidelines or documentation on specific objectives and strategies for SOS in Indonesia, it is unclear whether changes to the schedule of vaccines or to the target age groups have been considered, recommended or intended in the programme design. However, field level staff did not seem to be aware of such options, and much of the inherent flexibility offered by the original WHO model for SOS has not been used in Indonesia. In effect, SOS has been implemented only as a pulsed routine EPI activity, with some other services added. Figure 11 shows the ranges of services offered during 2010 in each of the 6 SOS-implementing districts, and Annex 10 shows interviewee responses on suggested additional services that might be considered for including in the SOS package in future. It will be noted from the latter that a common theme in all 5 districts who have offered suggestions was the provision of food supplementation - a commonly-used inducement in Indonesia for encouraging mothers and women to attend for immunization and other health services.

Figure 11: Services Offered in SOS-Implementing Districts, 2010

Province	District	Services Offered (2010)								
		Were standard routine immunization vaccines available?	Was Vitamin A supplement offered?	Were anti-natal care & Iron Folate Acid supplement offered?	Was tetanus toxoid for mothers/ women offered?	Were LLIN mosquito bednets available?	Were Rapid Diagnostic Tests for malaria available?	Was preventive / treatment medication for malaria available?	Family Planning provided	Supplementary feeding available
NTT		✓	✓	✓	✓	✓				
	Sumba BD	✓	✓	✓						
	Alor	✓	✓	✓	✓	✓			✓	
	Kupang (2011)	✓	✓	✓	✓	✓				
Maluku		✓	✓	✓	✓	✓	✓			
	Aru	✓	✓	✓	✓	✓	✓			✓
N. Maluku		✓	✓		✓	✓	✓			
	E. Halmahera	✓	✓	✓		✓				✓
	N. Halmahera	✓	✓	✓	✓	✓	✓			

The logistics of implementing SOS activities has also varied somewhat from district to district, largely as a reflection of differing terrain and geography across the areas where the strategy has been introduced. For NTT province, access across the 3 districts involved has been mainly by 4-wheel drive vehicle and/or motorcycle, with some 30% of locations requiring travel partly or entirely on foot, but none requiring access by sea. In Maluku province on the other hand, access to all health facilities in Aru district involves at least some sea travel, and accordingly, 67% of sites reported that SOS teams traveled by boat, or using a combination of boat together with some travel on foot. Similarly, for North Maluku province, many areas also depend on sea transport due to the limited road networks available, and more than 80% of locations reported that SOS teams traveling at least partly by boat, often in combination with other forms of transport such as car, motorcycle or on foot.

The size of SOS teams appear to have been quite similar across all 3 provinces so far, with an average of 4 health staff per team reported from both NTT and Maluku provinces, and an average of 3.3 staff per team reported for North Maluku province. Considerable variations were noted within these average figures however, with a maximum team size of 8 staff reported from two locations in NTT province, and a minimum of one staff reported from one location. Both Maluku and North Maluku provinces reported SOS teams of 7 members on some occasions, although only 2 members attended during many of the visits. Almost all locations visited reported that SOS activities were generally implemented without delays and according to plan in their respective areas, and that the strategy was uniformly applied to all facilities within the district, with minimal local variations. Amongst a few problems and difficulties reported during the implementation phase were some cases of bad weather and flooding which caused delays and disruptions, some difficulties with transport and shortages of fuel, and a number of cases where distribution of vaccines was delayed from a higher administrative level and where vaccine quantities delivered were insufficient to meet the programme needs.

Figure 12 shows the frequency and timing of all SOS rounds conducted by districts to date, with all rounds taking approximately 4 weeks to be completed. It will be noted that there has been some increase in frequency in the second year of implementation for most districts, and that 3 of the districts reached the 'target' of providing 3 SOS rounds per year. This frequency is considered by MOH as the 'minimum' level of SOS to be provided in each district, and is linked to its goal of achieving 'Universal Child Immunization' (UCI) in all villages. UCI requires each child to receive 1 dose of BCG, 3 doses of DPT-HB, 3 doses of OPV and 1 dose of measles, and with 3 SOS rounds per year, a previously unvaccinated child can theoretically receive all immunizations needed to qualify for UCI within 1 year. Thus, 3 SOS rounds per year will enable a district to make the maximum rate of progress towards the UCI goal.

Figure 12: Frequency and Timing of SOS Rounds Conducted to Date, by District

District	2009												Total	2010												Total	2011												Total
	J	F	M	A	M	J	J	A	S	O	N	D		J	F	M	A	M	J	J	A	S	O	N	D		J	F	M	A	M	J	J	A	S	O	N	D	
SBD							✓						1						✓	✓						2													0
N.Halmahera																			✓			✓				2											✓		1
E.Halmahera																		✓				✓				2				✓			✓		✓				3
Alor																					✓					1					✓	✓	✓						3
Aru																				✓						1											✓		1
Kupang																														✓	✓	✓							3

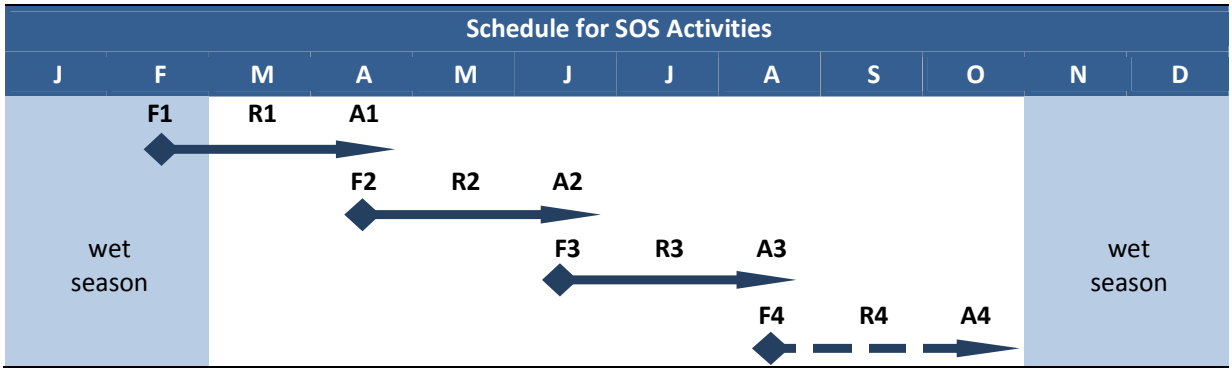
It will also be noted from Figure 12 that two of these 'UCI qualifying' districts have provided their 3 rounds in consecutive months, (Alor and Kupang), but one has allowed a one-month break between each round (East Halmahera). The evaluation found that the second strategy, with one-month breaks between rounds, appears to be more efficient than with rounds provided in consecutive months. The numbers of children attending sessions with the consecutive-month strategy appears to show a marked decrease month by month, and by the time the 3rd round commences, attendance is often much reduced. Thus, assuming the costs involved in conducting each round to be equal, the service obviously becomes less efficient with each passing round. With the one-month break strategy however, the numbers of children attending sessions appear to be more uniform, with little decrease evident over the season. In this case, a more efficient use of resources is indicated and apparently, more children are immunized and more progress is made towards protecting all children in the area. Obviously, no firm conclusions can be drawn based on observations in only one district, and more study will be required on this apparent effect. However, planning breaks between SOS rounds does appear to suggest a method of ensuring more efficient use of resources.

Several factors were found to influence the timing of SOS rounds within the season. The most important of these was the availability of funds, but another critical factor was weather conditions and specifically, the timing and duration of the wet season. Concerning availability of funds, UNICEF support for SOS is generally disbursed early in the calendar year, and may usually be expected to reach district level by January or February each year. It was noted that 2010 was unusual in this respect however, and due to some UNICEF administrative issues, funds were not received until April of that year. By comparison, local government funds for the routine programme are regularly delayed by 6 or more months, and funds are often not received by the district office until June, July or even August in a given calendar year. Clearly, such delays will place severe limitations on the functioning of health services, and will essentially limit activities to narrow period in each year. A further consideration on availability of funds is the need for accounting and reconciliation at the end of each calendar year. For UNICEF funds in Indonesia, this usually means that all expenditures must be made by the end of September to allow sufficient time for completing payments and closing financial books before the end-of-year deadline. Similar end-of-year accounting and reconciliation rules apply to government funds for the routine programme.

Concerning weather conditions, the occurrence and duration of the wet season will often mean the interruption of all health services in remote areas for a period of several months in the year. In the

provinces of Eastern Indonesia, the wet season typically occurs from early November to late February each year, and SOS activities will not normally be possible during these months. Therefore, allowing for both funding limitations and weather restrictions on availability of health services, Figure 13 shows the effective periods for conducting SOS with UNICEF funding, and an ideal schedule for the timing of SOS rounds in a typical year.

Figure 13: Suggested Schedule for SOS Activities in a Typical Year



F1 – 4: Apply for funds, rounds 1, 2 3, and 4
R1 – 4: Conduct rounds 1, 2, 3 and 4
A1 – 4: Accounts and reconciliation for rounds 1, 2, 3 and 4

This ideal schedule would operate as follows: each cycle of SOS activity takes a total of 3 months, and begins in month 1 with application by the provincial office to UNICEF for release of funds (F1). Once funds are received, the first SOS round is planned and implemented (R1), during month 2 of the cycle. In month 3, accounts for the cycle just completed are compiled and submitted to UNICEF (A1), together with an application for release of funds for the next SOS round (F2). Once F2 funds are received, the second SOS round is planned and implemented (R2), and the cycle is repeated. Note that this schedule results in a one-month break between rounds, and thus corresponds with that shown in Figure 12 for East Halmahera district in 2011. Note also that the schedule allows for a possible 4 SOS rounds per year, and so exceeds MOH 'minimum' level of 3 rounds. Whether this is feasible in practice is uncertain however, as the final round may be prevented by funding limitations as described above, and for this reason, the 4th round in Figure 13 is shown as tentative only. It should be emphasized that this schedule applies only to Unicef-funded SOS activities. For any future government funding of SOS, the customary delays of up to 6 months in release of funds may only permit one, or at most 2 SOS rounds per year. Therefore, the issue of much delayed release of funds would need to be resolved before any government-funded SOS could be considered.

Recommendation

Planning, preparation and staff training prior to introducing SOS should be improved, and districts should include all 4 key activities shown in Figure 10 in preparations. Particular attention should be given to strengthening briefing and training, and this is to include detailed implementation guidelines and technical issues applicable to the SOS strategy, as well as basic programmatic topics as described in this section. Specific provisions should be made for identifying, immunizing and recording vaccine doses given to older age groups, and for recording and reporting these to district level as a distinct outcome of the SOS strategy. Districts should aim to provide at least 3 SOS rounds per year in order to make maximum rates of progress towards the MOH goal of UCI in every village. Wherever possible, planning should allow a break of 1 month between SOS rounds as this appears to ensure better attendance at outreach sessions and more efficient use of resources. The usual long delays in release of funds must be resolved before any government-funded SOS can be considered.

9.3 Results

The SOS strategy appears to have been generally well-accepted in all 6 districts where it has been introduced to date, and among those interviewed, the great majority believed impact was better than expected and that immunization coverage had increased as a result. Most also reported that access to services had improved, the range of services available had increased, the frequency of outreach sessions and visits to hard-to-reach villages and communities had risen, and that numbers of children immunized had improved accordingly. There was less confidence in the quality of services provided with the strategy however, and only some 40% of those interviewed thought that any improvement had occurred since the introduction of SOS, but that quality had remained largely unchanged. Figure 14 summarises these responses by administrative level and health facility.

Figure 14: Responses on Overall Results of SOS

Province	District	HF	Results					
			Cover	Access	Quality	Range	Nr OR	Nr Chn
NTT	Sumba BD	1	▲	▲	▲	▲	▲	▲
		2	▲	▲	—	▲	▲	▲
	Alor	1	▲	▲	—	▲	▲	▲
		2	▲	▲	▲	▲	—	—
	Kupang	1	▲	▲	▲	▲	—	?
		2	▲	▲	—	▲	▲	▲
Maluku	Aru	1	▲	▲	—	▲	▲	—
		2	▲	▲	▲	▲	▲	—
N. Maluku	E. Halmahera	1	▲	▲	▲	▲	—	▲
		2	▲	—	—	▲	▲	▲
	N. Halmahera	1	▲	▲	—	▲	—	▲
		2	—	▲	—	▲	▲	▲

Key and Notes:

Cover	Has local immunization coverage increase with SOS? / decrease? / little change?
Access	Has access to other local services improved with SIS? / declined? / little change?
Quality	Has quality of local services increased with SOS? / decreased? / little change?
Range	Has the range of services increased with SOS? / decreased? / little change?
Nr OR	Has the number of outreach sessions increased with SOS? / decreased? / little change?
Nr Chn	Has the number of children reached increased with SOS? / decreased? / little change?
▲▼— ?	Increase/ Decrease / Little change / Unknown

As detailed in section 7, the SOS strategy has been introduced very recently in Indonesia, with 4 of the 6 districts commencing activities in 2010 and another commencing only in early 2011. It is thus far too early in the programme cycle to expect meaningful quantitative data on performance from these areas, and for this reason, the focus of this evaluation was on process rather than performance. Nevertheless, one district of the 6 implementers, Sumba Barat Daya (SBD) where SOS was introduced from 2009, has reported three consecutive years of data covering 2008 - 2010, and from these, it appeared that a very preliminary analysis of the impact of the strategy on district performance might be possible. The data as reported by the SBD district health office for this period is shown in Figure 15.

Figure 15: Reported Performance, SBD District, 2008-2010

Year	BCG		DPT3/HB3		OPV4		Measles	
	Nr	%	Nr	%	Nr	%	Nr	%
2007								
2008	3,963	49.96	2,851	35.94	2,885	36.37	5,251	66.20
2009	7,993	93.42	7,871	91.99	7,824	91.44	7,889	92.20
2010	6,683	78.11	6,249	73.04	6,064	70.87	6,624	77.42
2011								

SOS

It will be seen however, that the reported data is highly variable with more than 150% increase in immunization coverage indicated for some antigens between 2008 and 2009, but followed by a 15-20% decrease in coverage per antigen between 2009 and 2010. It was noted that this district was newly established in 2007, with its initial year of health activities in 2008, so the very large increase in performance from 2008-2009 may be explained by the health services starting from a low base and building up to their full potential over that period.

The 15-20% coverage decrease between 2009 and 2010 however, corresponds to the period when the SOS strategy was introduced, and given the broad-based improvement and expansion of services indicated by response in Figure 14, some increase in performance over this period might have been expected, rather than a sharp decrease. Thus, in spite of the generally positive views expressed by interviewees on the impact of SOS, evidence from the only district so far with consecutive years of data involving the strategy is not encouraging. As already noted in section 7.1, UNICEF support for SOS activities in SBD district was discontinued at the end of 2010 and use of the strategy ceased, so no further data will be generated to either confirm or disprove the contradictory results reported for 2008 – 2010. Therefore, all future evidence on the impact of the SOS strategy will need to be collected from the other 5 implementing districts, and they should be closely monitored for this purpose. All results, data and indicators should be carefully and systematically documented, and as recommended in section 9.2, particular attention should be given to recording and reporting the impact on older age groups. In addition, a formal evaluation should be planned after a reasonable period of operation has elapsed, 3 years for example, in order to make a more representative and quantitative analysis of the impact of SOS on district performance.

Quantitative data was also collected wherever possible from each of the health facilities visited during the evaluation, and generally, this also suggested improving health service performance. As illustrated in Figure 14, most facilities reported increased numbers of children immunized, more outreach activities conducted, rising immunization coverage, and improved access and a greater range of services provided to remote communities. As an example, data collected from one such health facility was as follows:

Health Facility A: this was a well-established and busy centre, with 15 health staff and a wide range of activities, including 20 regular EPI outreach sites. For both 2009 and 2010, the reported immunization coverage was the second highest of health facilities in the district, with patient attendance also amongst the highest in the district. SOS was introduced from 2010, bringing expanded services to 11 villages and 3 sub-villages, and providing ante-natal care with iron folate acid supplementation, bed-nets and rapid diagnostic tests for malaria and supplementary feeding. Reported immunization coverage for the past 3 years at this facility was as shown in Figure 16.

Figure 16: Reported Immunization Coverage data, Health Facility A

SOS

	Reported Immunization Coverage			Change since SOS
	2008	2009	2010	
BCG	64	77	84	+ 9.09%
HB0	0	0	6	+0.00%
DPT-HB1	73	80	89	+ 11.25%
DPT-HB3	68	79	88	+ 11.39%
Polio4	74	79	85	+7.59%
Measles	71	78	85	+ 8.97%

These results clearly support the indications in Figure 14 of increased numbers of children immunized and increasing immunization coverage, and show an average rise of some 10% coverage for each EPI antigen since the SOS strategy was introduced in early 2010. A review of vaccine management and storage provisions at this facility however, revealed a shocking situation. (see Annex 11)

Summary of vaccine management and storage provisions at Health Facility A:

- All vaccines in the cold chain were completely frozen into a thick layer of ice;
- Vaccine management was totally absent, with different vaccine stocks randomly mixed together, kept in a series of un-labeled plastic bags, and also frozen into the ice ;
- Many vaccine vials had no labels, so could not even be identified;
- Many vaccine vials observed were long past their expiry date;
- No temperature records or charts were kept, and there was no cold chain thermometer;
- No vaccine stock records were kept, nor were there any registers for recording stocks;
- Based on the huge amounts of accumulated ice, there had evidently been no cold chain maintenance for many months, perhaps years;
- Therefore, vaccine stocks had very likely been frozen for many months, perhaps years;
- The health facility was continuing to function, and inevitably, was continuing to use vaccines taken from the stocks examined, apparently unconcerned by, or unaware of, their actual condition.

As a result of this chaotic situation, much of the vaccine stock would have long been damaged beyond repair and therefore completely impotent. In the absence of any records, it was impossible to determine how long this situation had persisted, but it appeared likely that for many of those vaccinated from this health facility during 2011, and perhaps earlier, none of the bacterial vaccines administered would have provided any protection whatever. Therefore, reports of increased immunization coverage in this health area as shown in Figure 16, and of increased numbers of children immunized resulting from the SOS strategy, are completely undermined by serious and apparently long-running failures in vaccine management. Of greater concern was that the failures appear to have gone unnoticed and un-reported for many months, perhaps longer, which implies a number of fundamental weaknesses in programme management and supervision at district level and beyond.

Results and observations from other locations visited showed that the multiple failures described for 'Health Facility A' were not isolated incidents, but were repeated with varying degrees of frequency and severity across all the SOS-implementing provinces and districts. The key functions of vaccine storage and management, cold chain and logistics, recording and reporting of storage temperatures and stock levels, cold chain equipment maintenance and management and supervision are not new or unique for SOS activities. On the contrary, they have always been fundamental components of the routine EPI programme and continue to be essential for its proper functioning. Indicators for these basic functions were therefore

assessed as part of the evaluation of SOS, and findings on selected functions, with averages by province and across all the implementing facilities visited, are shown in Figure 17.

Figure 17: Assessment of Basic Programme Indicators

Province	District	HF	Assessment of Basic Programme Indicators					
			Temp Mon	VVMs	Vacc Exp	CC Maint	Vac Stock	EPI Supp
NTT		PHO	80	80	100	100	70	100
	Sumba BD	DHO	0	100	100	0	0	0
		HF1	0	100	10	0	0	0
		HF2	100	100	0	0	0	0
	Alor	DHO	0	100	100	25	60	0
		HF1	0	100	100	75	0	0
		HF2	0	50	100	50	0	—
	Kupang	DHO	0	100	0	50	60	—
		HF1	0	100	100	100	0	0
		HF2	0	0	0	0	0	0
Maluku		PHO	0	100	100	50	30	100
	Aru	DHO	80	0	0	50	0	0
		HF1	0	—	—	—	0	0
		HF2	0	0	0	0	0	0
N. Maluku		PHO	100	100	100	100	80	100
	E. Halmahera	DHO	0	100	100	0	0	—
		HF1	0	100	100	100	70	100
		HF2	0	0	0	0	0	0
	N. Halmahera	DHO	100	100	100	75	50	100
		HF1	0	100	100	75	0	100
		HF2	100	100	100	100	0	100
		NTT	**18.00**	**83.00**	**70.00**	**40.00**	**19.00**	**10.00**
		Maluku	**20.00**	**25.00**	**25.00**	**25.00**	**7.50**	**25.00**
		N. Maluku	**42.86**	**85.71**	**85.71**	**64.29**	**28.57**	**71.43**

Key & Notes:

Temp Mon	Temperature monitoring charts used, readings taken regularly & recorded twice daily
VVMs	VVMs are understood and used, VVM status is recorded in vaccine stock books
Vacc Exp	Vaccine expiry dates are understood and used, no expired vaccines observed in stocks
CC Maint	Maintenance regularly carried out, no ice build-up, seals clean, vaccine carriers stored clean & dry
Vac Stock	Vaccine stock books updated, stock balances with physical checks, summaries each month / year
Scoring	100=satisfactory, 0=very poor, — =none/not applicable
Site	PHO=Provincial Health Office, DHO=District Health Office, HF=Health Facility

It will be noted from Figure 17 that the functions of recording and reporting storage temperatures, maintaining and recording of vaccine stocks and carrying out proper cold chain equipment maintenance were particularly weak across all health facilities. It is clear from this assessment that many basic functions of the routine programme are either being ignored completely, or are performed completely inadequately and require urgent and substantial reinforcement. These critical weaknesses were already mentioned in section 9.2 as requiring more attention, and Figure 17 now makes it plain why every opportunity must be taken to provide technical briefing and training on the whole range of basic programmatic issues Such widespread weaknesses must inevitably compromise service quality at all delivery points and undermine any

advances made. The uncertainties expressed by interviewees on questions of the quality of services provided as shown in Figure 14 were clearly justified. Implications of these findings and the wider consequences for SOS and immunization services in general, are discussed in more detail in section 10.

Recommendation

Further evidence on impact of the SOS strategy should be collected from the 5 currently implementing districts, which should be closely monitored for this purpose. All results, data and indicators should be carefully and systematically documented, with specific attention given to recording impact on older age groups. A formal evaluation should be planned after a period of operation has elapsed, 3 years for example, to make a more representative and quantitative analysis of the impact of SOS on district performance. Many basic functions of the routine programme are in urgent need of strengthening and upgrading, and immediate and intensive efforts are needed to re-focus attention on ensuring programme quality at all levels. Re-emphasising the essential nature of performing all basic immunization programme functions regularly and comprehensively across all facilities will be a critical first step in this effort. This must take priority over any consideration of expanding SOS, which would be premature and ineffective until basic programme quality can be assured. Therefore, no further expansion of SOS can be planned or recommended at present.

9.4 Costs

The main financial support for the SOS strategy to date has been by direct annual funding allocations from the UNICEF country office. These allocations are channeled through 3 UNICEF provincial offices located respectively in NTT, Maluku and North Maluku, and then transferred to the MOH provincial offices responsible for each of the SOS-implementing districts. UNICEF support has been focused on funding only the recurrent operational costs for SOS, with the other major categories of expenditure including vaccines and supplies, staff salaries and infrastructure costs, being funded from government sources. Government also funds the entire routine immunization programme for all districts, and this runs in parallel with SOS in those districts where the latter is being implemented.

The major categories of UNICEF expenditure for SOS in each province have been:

- Introduction activities for each of the implementing districts, including briefing meetings, micro-planning and staff training,
- Socialization and mobilization activities for SOS,
- Operations (Implementation and supervision at province, district, health facility and community levels),
- Annual review meetings to assess progress.

For 2010, UNICEF funding for SOS operational costs in each of the 6 implementing districts was as shown in Figure 18.

Figure 18: UNICEF Funding of Operational Costs for SOS, 2010

District	UNICEF funding for SOS 2010, IDR	Villages served by SOS	UNICEF funding / village 2010, IDR	UNICEF funding / village, USD
SBD	99,275,000	60	1,654,583	187.0
N. Halmahera	48,000,000	20	2,400,000	271.0
E. Halmahera	69,200,000	23	3,008,696	340.0
Alor	105,750,000	30	3,525,000	398.3
Aru	131,125,000	126	1,040,675	117.6
Kupang *	98,140,000	38	2,582,632	291.8
Aru (from 2012)	100,000,000	34	2,941,176	332.3

* For 2011

Since numbers of children targeted in the hard-to-reach areas of implementing districts are not exactly known, costs may be conveniently expressed per village served, rather than per individual child immunized. From the table, it will be seen that costs/village served ranged from US$118 to US$398 in 2010. The lowest cost per village is for Aru district, but as mentioned in section 7.4, the district was unusual in that SOS was introduced simultaneously to all health facilities, and thus to all villages, during the first year of operation. Aru was also unusual in that, by agreement with local authorities, UNICEF funds covered operational costs only from district level to health facility, whereas in all other districts, funds covered costs from province level to health facility. These differences result in a below-average cost per village for Aru district that may not be very realistic, and an additional estimate is therefore shown in Figure 18 of projected costs for Aru in 2012. As mentioned, from the start of 2012, the district will focus on only 5 health facilities (with 34 villages) instead of on all 19 facilities, so will then be more in line with other SOS districts. If a UNICEF funding level more in line with other implementing districts is also assumed, costs per village in 2012 then become approximately US$332. It will be seen that this is similar to costs in other areas, and may be a more realistic value. SBD district also focused on a far higher proportion of health facilities that average in 2010, (see Figure 8), and in addition, had substantially easier access than most other districts as described in section 7.1. As a result, calculated costs per village in SBD may also be unreasonably low compared to other districts. Thus, if these two outlying values are omitted, the indicated operational cost per SOS village for 2010 is between US$270 and US$400.

Operational costs for routine services are funded by local government, and funding levels in 2010 for the 6 implementing districts were as shown in Figure 19. These are also expressed as costs per village reached, although obviously, the concept of 'villages reached' by routine EPI is somewhat theoretical, since the service operates mainly from a static health facility with some added outreach. However, the denominator for routine services is always the total infant population of the health area, and in this sense, routine services theoretically provide for all infants and cover all villages. Funding levels for routine EPI may thus be expressed per village served in a similar way to funding for SOS, and this provides a convenient means of directly comparing the two types of activity.

Figure 19: Local Government Funding of Operational Costs for Routine Services, 2010

District	Government funding for Routine 2010, IDR	Villages served by Routine	Government funding / village 2010, IDR	Government funding / village, USD	SOS / Routine cost ratio **
SBD	125,000,000	96	1,302,083	147.128	1.271
N. Halmahera	165,000,000	196	841,837	95.123	2.851
E. Halmahera	70,000,000	73	958,904	108.351	3.138
Alor	120,000,000	175	685,714	77.482	5.141
Aru	49,000,000	126	388,889	43.942	2.676
Kupang *	84,000,000	177	474,576	53.624	5.442
Aru (from 2012)	80,000,000	126	634,921	71.742	4.632

* For 2011
** i.e., comparing costs/village in Figure 18 with costs/village in Figure 19

It will be noted that Aru and SBD districts again indicate somewhat different levels of funding per village compared to other districts, in this case showing the lowest and highest values respectively. As for the indicators shown in Figure 18, such values may not reflect the true level of costs in the districts, particularly in the case of Aru, where access to all health facilities requires at least some travel by sea, and much higher funding levels would seem to be necessary. If the Aru figure is omitted as being unreasonably low, the indicated operational cost per village for routine services in 2010 is then between US$54 and US$147 for the year.

Finally, the operational costs per village for SOS and for routine activities may be compared to give a ratio of costs between the two types of activity as indicated in the final column of Figure 19 (ie, comparing costs/village from Figure 18 with costs/village from Figure 19). If outlying figures for Aru and SBD districts are again omitted as discussed, this ratio indicates that during the initial stages of implementation, SOS operational costs have been between 3 and 5 times higher per village than for the routine programme in the same district. Thus, as anticipated in section 7, data collected confirms that targeting the SOS strategy on small and remote communities has resulted in significantly higher operating costs and has certainly involved many additional operational difficulties. Unfortunately however, such higher costs and efforts have yet to produce tangible benefits, and as detailed in section 9.3, the few results available to date are not only contradictory, but in any event, are undermined by numerous programmatic weaknesses that compromise service quality.

Under such circumstances, consideration of the cost-efficiency and cost effectiveness of the SOS strategy is premature. Given a 3 to 5-fold increase in costs, SOS cannot be considered efficient until a substantial rise in coverage and/or rise in the numbers of formerly unreached communities served can be demonstrated. Neither can SOS be considered effective at present, since poor quality of routine services means that protection of children against target diseases cannot be ensured. Both indicators will require further time before any significant impact or improvement can be expected. Therefore, it is suggested that consideration of the cost-efficiency and cost effectiveness of SOS should be deferred until a suitable period of programme operation has elapsed.

On the question of whether the additional costs for SOS are affordable and sustainable, most interviewees believed that assuming government continues to receive donor support, the costs are affordable and the strategy could be sustained in its present form. It was abundantly clear from the evaluation however, that operational costs were only one part of the total costs for the strategy, and that in order to become sustainable in the longer term, additional investment will be needed in infrastructure, capital and human resources.

Implementation of SOS to date has relied mainly on an existing transport infrastructure, but this approach can only be a temporary solution. By definition, delivery of the strategy requires travel to remote, inaccessible and difficult areas, where terrain is often very demanding and sometimes dangerous. Therefore, for SOS to be sustainable, providing vehicles and equipment designed for such conditions will be essential, and the safety and protection of health staff must always be the first consideration. For such areas, the standard 2-wheel drive ambulance or lightweight motorcycle commonly used by health facilities will be completely unsuitable, and more appropriate and robust types of off-road transport must be provided. A detailed assessment of land transport needs in all SOS-implementing areas should be carried out to determine numbers, types and specifications of additional vehicles required. Interview responses on the question of transport available for SOS however, indicate that many gaps and shortcomings exist at health facilities and observations by the evaluation team confirm that many obsolete or unsuitable vehicles are currently in use.

Where travel by sea is involved, the same attention to staff safety and protection must apply and the same imperative to provide appropriate, secure and sustainable means of transport exists. This will be particularly important in the present SOS operational areas of Eastern Indonesia, where some districts and facilities depend largely or entirely on sea transport to access their target populations. Current methods of sea transport used for SOS are typically a local fishing boat or cargo freighter, or at a far higher cost, a small chartered 'speed boat', partly-cabined and powered by one or more outboard engines. In some areas, districts or health facilities have their own boats rather than depending on chartered transport and these may offer slight advantages over fishing boats, freighters or 'speed boats'. In most cases however, vessels available are very basic, with limited or non-existent navigation and safety equipment on board and with rarely any provision for passenger safety, such as life rafts or life jackets. Such poor standards place the lives

of health staff at serious risk, and cannot be accepted as part of providing public health services. If SOS is to become a sustainable activity for the longer term, it will be essential to review the needs for sea transport in parallel with needs for land transport as mentioned above, and investment must be provided to ensure that minimum acceptable standards of safety and security are met while at sea.

Investment must also be provided for regular, routine maintenance of all SOS vehicles, both for land and sea transport, including spare parts and items that require regular replacement, such as tires, brake parts, lamps, filters and similar consumables in the case of land vehicles. Use of maintenance contracts with a manufacturer-approved agent for each vehicle may offer a cost-effective way of providing regular care, ensuring that working lifetimes of SOS vehicles are maximized, and guaranteeing that transport is always kept in good, operational condition. Some additional investment in cold chain facilities will also be required. Many interviewees indicated that additional cold boxes and vaccine carriers were needed to support increased levels of activity in their facilities, and some areas also require new or additional refrigerators.

Implementation of SOS to date has relied mainly on existing health staff to deliver extended services, but interview responses indicate the need for additional human resources in many areas. It would appear obvious that providing an additional service would require at least some additional staffing, although it is difficult to quantify such needs without an in-depth review of conditions and workloads at each level and facility involved. Therefore, as for land and sea transport needs, it will be necessary to make a thorough assessment of manpower needs for delivery of the service, and this should include manpower for actually traveling to the hard-to-reach locations that are the focus of SOS. Given the demanding and sometimes dangerous conditions involved, drivers of the off-road transport described above must have above-average skills and experience, and a level of competence well beyond that needed for normal, routine driving. It cannot be assumed that any member of health staff with a driving license can safely carry an SOS team to remote locations, and engaging highly skilled drivers must be considered as essential a part of establishing the programme as is provision of the appropriate and secure types of transport already mentioned.

Recommendation
A detailed assessment of land transport needs in all SOS-implementing areas should be carried out to determine numbers, types and specifications of additional vehicles required. A similar assessment of sea transport needs should be made, and investment must be provided to ensure that minimum acceptable standards of safety and security are met while at sea. Investment must also be provided for regular, routine maintenance of all SOS vehicles, both for land and sea transport, including spare parts and items that require regular replacement. Use of maintenance contracts with a manufacturer-approved agent for each vehicle may offer a cost-effective way of guaranteeing that transport is always kept in good, operational condition. For human resources, it appears obvious that providing an additional service will require at least some additional staffing, and as for land and sea transport needs, it will be necessary to make a thorough assessment of manpower needs, including manpower for actually traveling to the hard-to-reach locations that are the focus of SOS. Engaging highly skilled drivers must be considered as essential a part of establishing the programme as is provision of the appropriate and secure types of transport already mentioned. It should be noted that these recommendations for investment in infrastructure, capital and human resources are ***in addition to*** recommendations made in section 9.3 for urgent strengthening and upgrading of the routine programme to ensure service quality at all levels.

10. Findings on the Routine Immunization Programme

As noted in section 5, SOS is not intended as a replacement for routine EPI and its regular 'outreach services', nor is it a separate programme from them. Rather, SOS will build upon the established framework of the routine EPI to carry services beyond the range of existing delivery points to serve remote and previously unreached areas. Therefore, SOS will utilize most of the existing structures and management

systems of the routine programme, including the basic principles and practices of immunization, the vaccine storage and management systems, cold chain and logistics, the reporting and recording framework, injection safety provisions, sharps waste disposal, and many other components. SOS will not establish its own separate structures for these functions, and will thus depend on them already being operational and well-managed for the routine EPI, in order to serve the needs of the SOS initiative. It was in this context that the evaluation reviewed the operational status of routine EPI structures in the areas visited, alongside its evaluation of SOS activities. Findings on some basic programme functions were summarized in Figure 17, and these, together with other key areas of concern are reviewed in greater depth in the following sub-sections.

10.1 Vaccine Management & Stock Control

Few of the facilities visited kept adequate records of vaccine stocks, or of quantities received and issued in a given period. None of the provincial stores and none of the district stores kept records with all the necessary information, although the 3 provincial stores and 3 of the 6 district stores (50%) kept at least some stock records. Most of the health facilities visited kept no vaccine stock records at all, and often did not even have stock books for recording such information. Attention to vaccine expiry dates and the status of Vaccine Vial Monitors (VVMs) was inadequate at all levels, and even where vaccine records were kept, information on these critical factors was mostly not included. Management and stock control of vaccines was assessed as being the weakest of all the basic programme indicators, and is in urgent need of attention. As a result of such poor record-keeping, it proved impossible to check on the numbers of children claimed to have been vaccinated during any given period in a health area, and also impossible to make independent estimates of immunization coverage in SOS implementing areas.

10.2 Temperature Monitoring

Few of the health facilities visited were found to maintain adequate temperature records for vaccine storage, and many facilities kept no such records at all. A majority of facilities had no record books or charts for this purpose, and many had no functioning thermometer. NTT and Maluku provinces were the worst offenders on this indicator, with North Maluku province being only marginally better. As a basic tenet of vaccine and cold chain management, temperatures in all storage equipment should be routinely monitored to ensure conditions are maintained within the safe limits for the vaccines to be stored. This requirement has been part of all EPI training since the programme was established in the 1980's, and with the advent of new and more sensitive vaccines, it is even more important today than during the programme's infancy. It is therefore a matter of great concern that this basic safety and quality requirement is no longer being complied with in so many cases, and perhaps more seriously, that it is no longer recognized as being an important function by so many staff and at so many levels.

10.3 Recording & Reporting

Most health facilities visited had very poor records of their immunization performance and achievements, and many kept no detailed records at all, except for activities carried out during the current weeks or months. Very few facilities could show any records of performance or activities in previous years, and in general, institutional memory at this level appears to be almost non-existent. As a result, tracking changes in levels of routine programme activity, or of the impact of introducing SOS was very difficult at best, and mostly impossible. With such poor and fragmentary data at health facilities, compiling performance results at district level must inevitably prove extremely challenging and highly prone to errors, and this continues to be a serious weakness affecting all health service delivery. Such fundamental weaknesses at the local and district levels will automatically be aggregated and amplified at province level, and therefore eventually have a major impact on nationally reported data. Weaknesses in local level recording and reporting are thus a matter for serious national concern.

10.4 Cold Chain Equipment Maintenance

The routine maintenance of cold chain equipment should include cleaning, defrosting and removing accumulations of ice and water from vaccine storage areas, drying and removing mold from all seals and mating surfaces and draining and drying vaccine carriers and cold boxes after use. In more than 50% of health facilities visited, equipment maintenance was seen to be poor or very poor, and none of the locations visited had a contingency plan for protecting vaccines in the event of a cold chain failure. Again, NTT and Maluku provinces were the worst offenders on this indicator, with North Maluku only slightly better. This basic requirement has similarly been part of all EPI training since the programme was established more than 30 years ago, but as in the case of cold chain temperature monitoring, its importance now appears to be largely forgotten or ignored, compromising vaccine quality and safety as a result. It is similarly a matter of great concern that this basic requirement is no longer being complied with by a majority of vaccine storage facilities.

10.5 Injection Safety and Sharps Waste Disposal

Little attention was given to ensuring safety of injections and even less to proper collection and disposal of used injection equipment. Stocks of safe injection items such as AD syringes, needles and sharps safety boxes were often completely absent or very depleted, and health staff were seen to be using completely inappropriate equipment. Even when available in the facility, safety boxes were often not used at all or not used correctly in many of the locations visited. One provincial store was seen to have large stocks of safety boxes for distribution, but a number of health facilities visited in the same province had no safety boxes at all, and reported that they had long been out of stock. Used, discarded injection equipment was found lying on pathways and in public areas around health facilities at a number of locations. As for the other basic programme functions mentioned in this section, it appears that the importance of injection safety is now largely forgotten or ignored.

10.6 EPI Supplies

Dry storage areas for keeping stocks of syringes, needles, safety boxes, spare thermometers, vaccine carriers, icepacks, vaccine diluents, child health cards or books, reporting and recording forms, stock registers, and similar items was poorly organized and managed in the majority of locations visited. Stocks of such supplies were often completely absent or very depleted, and there appeared to be no awareness that these items should normally be kept in hand to ensure a smoothly running programme. Such stocks that were found to exist were often in poor condition, with little attempt made to keep them clean, dry and ready for use.

10.7 Supervision

Perhaps the greatest failing in basic functions and one which affected all health activities was the generally weak and ineffective supervision by staff at provincial and district levels. Most of the problems outlined in this section could be readily corrected with proper supervision, and with attention to the simple guidelines and rules that have been part of all EPI training since the programme began. Even when traveling with provincial or district staff, however, such problems appeared to pass unnoticed, and generally, no attempts were made to address or correct them. Supervision was thus seen to be largely ineffectual, and in spite of the costs involved, of little practical value. The terms ‘supportive and/or effective supervision’ are much-used when discussing improvements to quality and levels of performance in immunization programmes. This evaluation indicates however, that supervision in the areas visited is neither supportive nor effective, and generally has little impact on achieving improvements. It was found that many of the problems outlined above are simply not seen or recognized by the supervisor, and therefore, no attempt is made to initiate corrective action. Such supervisory failures are hardly surprising however, given that many of the very same problems that require attention and correction at lower levels are also present at the supervisor’s own level. Indeed, problems at the supervisor’s level are often more serious, given the greater quantities and values involved, and the greater numbers of mothers and children potentially affected by any error or failure. It

would appear self-evident that if a supervisor cannot recognize and correct problems at his/her own level, he/she will inevitably be unable to recognize and correct the same problems at lower levels.

As an example of this problem, the evaluation team visited one health facility and found large amounts of frozen and heat-damaged vaccine, along with huge accumulations of ice in the storage refrigerator. The district-level officer accompanying the team did not appear to recognize the seriousness of the problem however, and only took corrective action when urged to do so by the team. It was later found that the district store where this officer was based was the supply point for the health facility concerned, and in this store, a large amount of heat-damaged vaccine was also identified. Furthermore, the cold chain equipment at this store showed clear signs of inadequate routine maintenance. Thus, if such problems are not seen and corrected at the supervisor's own level, similar problems occurring at health facility level are most unlikely to be recognized and corrected during supervisory visits.

In a further example, a provincial store visited carried out no monitoring of vaccine storage temperatures, and kept no proper records of vaccine stocks received, issued or the balances in hand. Vaccine stocks appeared very large however, and calculation revealed that more than 6 times the required amount of measles vaccine for the target population was in stock, almost 4 times the required amount of polio, twice as much BCG and more than twice the required stocks of DPT-HB. The responsible provincial-level officer accompanied the evaluation team during this inspection, but apparently saw no particular problems or need for corrective action. Later, at a health facility in the same province, it was learned that vaccine shortages were often experienced, and for a period of 3 months in 2011, the district store responsible had completely ran out of vaccine stocks and immunization activities had to be suspended. In this case, the problem of inadequate vaccine stock management had not been recognized and corrected at the province level, and this was reflected at districts and health facilities within the province. However, the provincial-level supervisor accompanying the team did not see this as a problem for which he personally needed to take any corrective action.

10.8 Implications for SOS

The findings and failures outlined in this section are not new issues that arise only as a result of the SOS initiative. Rather, they are long-standing problems that have been reported many times in the past and by different reviewers, but continue to be a source of great concern and weakness. So long as such basic problems remain un-addressed and uncorrected, they will seriously limit the ability of MOH to extend routine coverage and provide quality immunization services. They will also inevitably impact on and limit the potential of the SOS initiative, since it depends on exactly the same routine programme structures and management systems.

Recommendation

As outlined in section 9.3, the above-mentioned basic functions of the routine programme are in urgent need of strengthening and upgrading. Immediate and intensive efforts are needed to re-focus attention on ensuring programme quality at all levels.

11. Other Initiatives for 'Reaching the Unreached'

As mentioned in section 6, there are two government initiatives designed to focus attention on the lowest administrative levels and provide support for under-served areas of the country that are of special significance for SOS activities. These are as follows:

11.1 The *Bantuan Operasional Kesehatan* (or BOK) mechanism

This mechanism was devised by Ministry of Health in 2009 to address concerns on the slow rate of progress in meeting the MDG targets. It provides assistance from central government direct to first line health

facilities, (the *puskesmas*) and is intended to support any operational expenses related to preventive and promotive health services. (and so can include expenses for routine immunization and for SOS activities). In principle, such operational expenses are already covered through the regular health budget, but following decentralization of government services in 2000, the responsibility for funding all activities now rests with the local government in each district. Local governments set the priorities and funding levels for each service within their area, and so may not necessarily allocate the amounts requested by individual government departments. Thus, for health services, items such as operational expenses may not always be fully funded by local government, especially if they are seen as relating to new or additional activities. In such cases, the BOK mechanism provides an invaluable alternative source of funds for activities and expenses that otherwise might not be covered, and for the SOS initiative, a critical source of counterpart funding to secure its support in the longer term.

For the initial year of the mechanism, (2010), BOK funding was allocated at a uniform rate to all health facilities in the country, but as the scheme now matures into its second season, there are indications that differential rates may be applied, depending on the specific needs of individual facilities. This suggests that facilities conducting SOS may be able to apply for extra support depending on the numbers of SOS sessions they provide per year, and the distances and difficulties involved in travelling to hard-to-reach locations.

11.2 The *Daerah Tertinggal, Perbatasan dan Kepulauan Terluar* (or DTPK) programme

In the MOH National Mid-term Development Plan 2010-2014, addressing disparities in health outcomes is identified as a priority theme. Special attention is therefore focused on areas where disparities are considered to be greatest, namely, the disadvantaged areas, the borders and the outermost island communities. Initially, each unit of the MOH was required to include a component of support for DTPK areas in their planning and budgeting, but from early 2011, a separate DTPK sub-directorate was created within the MOH to coordinate efforts. At the same time, a government decree identified 45 priority districts and 101 priority health facilities within those districts for direct funding and support during 2011-2014 under the DTPK programme. Such support is intended specifically for preventive and promotive health services, and is funded entirely from government sources, with no donor contribution.

It will be noted that the focus for the DTPK programme is very similar to that of SOS. Indeed, to the extent that disadvantaged areas, borders and the outermost island communities are unlikely to be covered by regular health services, they could equally be targets for SOS and its efforts to 'reach the unreached', It was no surprise therefore, to find in the government decree for DTPK that 3 of the priority districts identified - Kupang and Alor in NTT province, and Aru in Maluku province – were also implementing districts for SOS. In addition, 1 out of the 101 priority health facilities for DTPK support - Buraga heath centre in Alor district - was also an implementing facility for SOS.

Recommendation

Facilities conducting SOS should explore the options of applying for extra support from the BOK mechanism, depending on the numbers of SOS sessions they provide per year, and the distances and difficulties involved in travelling to hard-to-reach locations. Also, given the similarities between the DTPK and SOS areas of interest and their already overlapping focus districts and facilities that the programmes should collaborate as soon as possible. The DTPK sub-directorate is located in the directorate of Basic Medical Services, while the immunization programme is in the sub-directorate of Communicable Disease Control, part of the Directorate General of Disease Control and Environmental Health. It is recommended that these respective sub-directorates should explore the possibility of developing a joint approach to their activities as a matter of priority.

12. Summary of Main Findings, Conclusions and Recommendations

12.1 Design

There have been significant shortcomings in documentation and communication on design of the version of SOS as adopted in Indonesia; most staff did not have a good understanding of the overall objectives, the age groups to be targeted, how these differed from the routine EPI programme, and how broad objectives were to be translated into practice. While the specific objectives and characteristics of the programme may have been understood by those involved in its design, these have not been adequately articulated, documented or disseminated for national use. **It is recommended** that appropriate guidelines, explanatory and training materials on the local version of SOS should be prepared as a matter of priority. These should be designed for national, provincial, district and health centre use, with objectives, strategies, operational approaches and implementation details appropriate to the Indonesian context clearly spelled out. It is suggested that the bullet list in section 5, detailing the main characteristics of the SOS approach and the features that distinguish it from routine EPI services, be used as the basis for such guidelines. Once developed, these materials should be widely disseminated, quoted, referenced, and used for training sessions and training materials and for staff briefings to the maximum extent possible.

12.2 Implementation

Considerable district-to-district variations were found in extent and content of the preparation phase for SOS. While some districts completed all key preparation steps, others omitted one or more components, in particular, the micro-planning and mapping of HTR areas. There was an apparent over-emphasis on socializing and mobilizing for SOS, but insufficient attention to implementation guidelines and technical issues. None of the districts made changes to the schedule of vaccines offered and all continued to give BCG, although this is not usually recommended in SOS. All have continued to target the same age groups as routine services, and no specific provisions were noted for identifying, immunizing and recording doses given to older age groups, or for reporting these to district level. Much of the inherent flexibility offered by the SOS approach has not been used in Indonesia, and in effect, SOS was implemented only as a pulsed routine EPI activity, with some other services added. Three implementing districts reached the MOH 'target' of providing 3 SOS rounds per year, and this enables the maximum rate of progress towards the government's UCI goal. Only one district has allowed a one-month break between each round, which appears to be a method of ensuring more efficient use of resources. An ideal schedule for the timing of SOS rounds in a typical year is presented that allows up to 4 SOS rounds per year in principle, although it is unclear whether funding limitations will actually permit this in practice. This ideal schedule applies only to UNICEF-funded SOS activities, and for any future government funding of SOS, the customary delays of up to 6 months in release of funds may only permit one, or at most 2 SOS rounds per year. **It is recommended** that planning, preparation and staff training prior to introducing SOS should be improved, and districts should include all 4 key activities shown in Figure 10 in preparations. Particular attention to be given to strengthening briefing and training, and this to include detailed implementation guidelines and technical issues applicable to the SOS strategy, as well as basic programmatic topics as described in section 9.2. Specific provisions to be made for identifying, immunizing and recording vaccine doses given to older age groups, and for recording and reporting these to district level as a distinct outcome of the SOS strategy. Districts should aim to provide at least 3 SOS rounds per year in order to make maximum rates of progress towards the MOH goal of UCI in every village, and wherever possible, should avoid planning SOS rounds in consecutive months. A break of 1 month should normally be allowed between each SOS round, as this appears to ensure better attendance at outreach sessions and more efficient use of resources. The issue of much delayed release of government funds will need to be resolved before any future government-funded SOS activities could be considered.

12.3 Results

SOS appears to have been generally well-accepted in all 6 implementing districts. There is a belief that impact is better than expected, numbers of children immunized has increased, access to services, the range

of services available, the frequency of outreach sessions and visits to hard-to-reach communities have all risen, and that coverage has improved. There is little evidence so far to support these views, and it is too early in the programme cycle for quantitative performance data to be reported from most of the implementing areas. Data from one district is available, and although this shows a decrease in performance over the brief period when SOS was implemented, this is too small a sample to draw any firm conclusions. Data collected on key basic functions of the routine programme across all facilities visited reveal a number of serious weaknesses and failures however, and it was found that many of the basic functions of the routine programme are either being ignored completely, or are being carried out at completely inadequate levels. Such widespread weaknesses must inevitably compromise service quality at all delivery points and undermine any advances made. **It is recommended** that further evidence on impact of the SOS strategy should be collected from the 5 currently implementing districts, which should be closely monitored for this purpose. All results, data and indicators to be carefully and systematically documented, with specific attention given to recording impact on older age groups. A formal evaluation should be planned after a period of operation has elapsed, 3 years for example, to make a more representative and quantitative analysis of the impact of SOS on district performance. Many basic functions of the routine programme are in urgent need of strengthening and upgrading, and immediate and intensive efforts are needed to re-focus attention on ensuring programme quality at all levels. Re-emphasising the essential nature of performing all basic immunization programme functions regularly and comprehensively across all facilities will be a critical first step in this effort. This must take priority over any consideration of expanding SOS, which would be premature and ineffective until basic programme quality can be assured. Therefore, no further expansion of SOS can be planned or recommended at present.

12.4 Costs

As anticipated, targeting the SOS strategy on small and remote communities has resulted in significantly higher costs. Indicated operational costs per village for SOS was found to be between US$270 and US$400 in 2010, and for routine services between US$54 and US$147. SOS operational costs were thus 3 to 5 times higher per village than the routine programme for this initial stage of implementation. Benefits from the higher costs have yet to be realized, partly due to a limited operating period and contradictory data, but also due to programmatic weaknesses and compromised service quality. Consideration of the cost-efficiency and cost effectiveness of the SOS strategy is thus premature at present. It was clear that operational costs for SOS were only part of total costs for the strategy, and to be sustainable, additional investment is needed in infrastructure, capital and human resources. Implementation of SOS to date has relied mainly on existing infrastructures for both land and sea transport, but this approach can only be a temporary solution, and more appropriate and secure types of transport must be provided. **It is recommended** that a detailed assessment of land transport needs in all SOS-implementing areas should be carried out to determine numbers, types and specifications of additional vehicles required. A similar assessment of sea transport needs should be made, and investment must be provided to ensure that minimum acceptable standards of safety and security are met while staff are at sea. Investment must also be provided for regular, routine maintenance of all SOS vehicles, both for land and sea transport, including spare parts and items that require regular replacement. Use of maintenance contracts with a manufacturer-approved agent for each vehicle may offer a cost-effective way of guaranteeing that transport is always kept in good, operational condition. For human resources, it appears obvious that providing an additional service will require at least some additional staffing, and as for land and sea transport needs, it will be necessary to make a thorough assessment of manpower needs including manpower for actually traveling to the hard-to-reach locations that are the focus of SOS. Engaging highly skilled drivers must be considered as essential a part of establishing the programme as is provision of the appropriate and secure types of transport already mentioned.

12.5 Other Initiatives for 'Reaching the Unreached'

Two government initiatives designed to focus attention on the lowest administrative levels and provide support for under-served areas of the country are of special significance for SOS activities. First, the BOK

mechanism provides assistance from central government direct to first line health facilities, (the *puskesmas*) and is intended to support any operational expenses related to preventive and promotive health services. This can include expenses for routine immunization and also for SOS activities. Thus, the mechanism provides an invaluable alternative source of funds for activities and expenses that otherwise might not be covered by local government, and for the SOS initiative, a critical source of counterpart funding to secure its support in the longer term. It appears that facilities conducting SOS may be able to apply for extra support depending on the numbers of SOS sessions they provide per year, and the distances and difficulties involved in travelling to hard-to-reach locations.

Second, the DTPK programme provides special support for disadvantaged areas, the borders and the outermost island communities, and specifically for preventive and promotive health services in those locations. The focus for the DTPK programme is very similar to that of SOS, and the areas that it targets could equally be targets for SOS and its efforts to 'reach the unreached'. Some districts and facilities supported by DTPK are already included in pilot SOS activities. **It is recommended** that facilities conducting SOS explore the options of applying for extra support from the BOK mechanism, depending on the numbers of SOS sessions they provide per year, and the distances and difficulties involved in travelling to hard-to-reach locations. Also, given the similarities between the DTPK and SOS areas of interest, and their already overlapping focus districts and facilities that the programmes should collaborate as soon as possible. The DTPK sub-directorate is located in the directorate of Basic Medical Services, while the immunization programme is in the sub-directorate of Communicable Disease Control, part of the Directorate General of Disease Control and Environmental Health. It is recommended that these respective sub-directorates should explore the possibility of developing a joint approach to their activities as a matter of priority.

12.6 Strengths, Weaknesses and Lessons Learned

The following programme strengths are implied by the design and objectives of SOS, although it was not possible at this stage in the programme cycle to observe and confirm that all of these benefits have actually been realised, and if so, to what extent. On the other hand, all the weaknesses listed are already occurring, and all were actually observed and documented by the evaluation team. More important, it appeared that many of these weaknesses have been persisting, un-reported and uncorrected, for some considerable time.

Strengths

- SOS supports integration of health services, e.g., EPI with Malaria Control, etc.
- Encourages and requires inter-programme and inter-sectoral collaboration
- Allows communities to participate actively in shaping their health services
- Provides for expansion of services to new, previously unserved areas
- Offers a greater range of services to communities than available previously
- Promotes higher coverage and greater equity in delivery of health services

Weaknesses

- Inadequate documentation and communication on the design and objectives of SOS
- Insufficient training and briefing on technical issues and basic programmatic topics
- Numerous failures and shortcomings observed in routine immunization services
- Quality of EPI services are seriously compromised in SOS-implementing provinces
- Any advances made risk being undermined by failures in basic EPI functions
- Ineffective monitoring and supervision fails to detect or recognise such problems
- Lack of local government commitment and support in some areas

Lessons learned

- Detailed micro-planning of hard-to-reach areas is a critical part of preparations for SOS
- Adherence to such micro-plans is essential for successful implementation
- Mobilization to ensure community participation and involvement is vital for success

- Focusing SOS activities on small, remote communities has resulted in a 3 to 5-fold rise in operating costs compared to routine services
- Support for SOS has only addressed recurrent operating costs to date
- For SOS to be sustainable in the long term, substantial additional investment is needed in infrastructure, capital and human resources
- Any new strategy building on immunization services requires a secure, well-functioning basic programme before it can succeed
- Many basic routine immunization functions that were cornerstones of the programme in Indonesia since its inception are no longer performed adequately
- Immediate, intensive efforts are needed to re-focus attention on ensuring programme quality at all levels
- Re-emphasising the essential nature of performing all basic immunization programme functions regularly and comprehensively across all facilities will be a critical first step in this effort
- This must take priority over any consideration of expanding SOS, which would be premature and ineffective until basic programme quality can be assured
- Therefore, no further expansion of SOS can be planned or recommended at present