

## About this module...

This module discusses the process of microplanning to ensure immunization services reach every community. It starts with maps at district and health centre level, which should be updated to include all population centres and groups in the catchment area and to flag high-risk areas. It next describes how to identify priority, high-risk health centres and communities based on numbers of unimmunized children. It then describes how to clarify barriers to service access and utilization in priority communities and to make a workplan for solutions. It concludes with making a session plan and following up on defaulters.



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## Making or updating a map

Every district and every health centre should display a map that shows the current location and relative size of the population groups in their catchment areas. A catchment area is usually determined by national authorities to help ensure service delivery. Specific facilities are made responsible for specific catchment areas and the population living in them.

District and health centre maps should include all eligible population groups in their catchments. A table listing these populations or communities should be displayed next to each map. The maps should be updated regularly to include any changes in the catchment areas, including new administrative divisions. Priority, high-risk areas, identified based on their high numbers of unimmunized children (see Section 2 of this module), should be clearly marked.

All sources of updated maps should be used: polio eradication microplanning activities in particular may have current versions to offer. If online access is available, Internet-based tools, such as Google Maps with its Map Maker (www.google.com/maps), can be used to create updated catchment area maps. Community leaders and administrative officials should collaborate on creating and updating local maps, just as they should be involved in all microplanning steps.

#### 1.1 District map

This map should display the important geographical features and population centres of the whole district. It should also show the locations of all the health centres and the district health facilities that are under supervision.

The district map should include:

- health centres with their catchment areas shown as boundaries and their distances to district facilities marked
- urban communities, towns, villages, rural settlements, isolated households
- rivers, mountains, valleys and other similar geographical features and landmarks
- natural seasonal barriers, such as flood zones during the rainy season
- roads and tracks.

The table to be displayed next to the district map (see Table 4.1 for example) should include:

- the total population and target population in the catchment area of each health centre
- approximate distances and travel times to each health centre
- health centre contacts and any other information that may be useful in coordination and supervision efforts.

Table 4.1 District-level list of peripheral health centres and their catchment area populations

Health centre name	Total population in health centre catchment area*	Population <1 year of age in health centre catchment area	Distance between health centre and main district facility (km and travel time)	Name of health centre contact person	Phone number of health centre contact person

\* State source of population data

#### **1.2** Health centre map

Each health centre should make a simple map of its catchment area (see Figure 4.1). The communities in the catchment area should be listed and the list updated regularly. Community boundaries should be confirmed with the help of community leaders (see Module 7 (*Partnering with communities*) for more details on how to involve communities in microplanning activities).

The health centre catchment area map should be an operational diagram with details that can help with planning. Maps created for polio or other mass vaccination and health intervention campaigns may serve as examples.

The health centre map should include:

• locations of every village and/or community in the catchment area, including those that are not reached and/or are new

- landmarks and significant buildings, for example, religious centres, markets, schools, motor parks
- settlements of urban poor and migrants within towns and cities
- settlements of migrants and/or displaced persons in rural areas.

The table displayed next to the health centre map (see Table 4.2 for example) should include:

- the total population and target populations in each community in the catchment area
- approximate distances and travel times to each community
- community volunteer names and their mobile phone numbers.

Include every community on the map even if accurate numbers are not available. This applies particularly to communities of migrant workers, urban poor, ethnic minorities, new rural settlements and groups in movement or unrest.

#### Figure 4.1 Example health centre map





Community name	Total population in community*	Population <1 year of age in community	Distance between community and health centre (km and travel time)	Name of community contact person	Phone number of community contact person

#### **Table 4.2** Health centre-level list of catchment area communities and populations

\* State source of population data

# Identifying priority health centres and communities

Two levels of analysis lead to the identification of priority health centres and communities:

- 1. At district level, the analysis of health centre immunization data for the past year should identify those health centres and communities in need of priority support.
- 2. At health centre level, the analysis of community immunization data for the past year should identify those in need of priority visits. Visits may be needed for evaluating low coverage and the reasons behind it (see Section 3 of this module).

#### 2.1 Analysis of district immunization data

Table 4.3 shows a format for the analysis of district immunization data from the preceding 12 months. The format identifies and prioritizes high-risk health centres where immunization performance is problematic (see Module 6 (*Monitoring and surveillance*), Section 4.2 for more details). Health centres are ranked and prioritized by the number of unimmunized infants in their catchment areas.

#### How to prioritize health centres using district immunization data

- Use all available information to complete the analysis of immunization data the inputs of community and administrative leaders is needed to best assemble all available information.
- Rank health centres by the number of unimmunized infants; the one with the highest number of unimmunized children is ranked first (1) and so on. The health centre ranked 1 has the highest priority, and so on.
- Consider prioritizing health centres that have inaccurate data; for example, a health centre that shows negative values for unimmunized children due to inaccurate population data or negative vaccine wastage rates may need to be given priority.
- Consider prioritizing health centres with known management problems.

#### **Table 4.3** District immunization data analysis: example format

(To include data from all health centres in the district over the past 12 months)

Note that this format uses penta3 (DTP+HepB+Hib) and MCV1 to evaluate unimmunized children and then prioritizes health centres by number of penta3-unimmunized children. Different programmes may use different antigens – follow national guidelines on this.

Health centre name		Analys	Prioritize health centres			
	Annual target population	Doses o admin	f vaccine istered	Unimm chile	nunized dren	Highest number of penta3
	<1 year of age	penta3	MCV1	penta3	MCV1	unimmunized children is priority 1,
	а	b	с	a – b	a – c	and so on

#### 2.2 Analysis of health centre data

Table 4.4 shows a format for analyzing health centre data from the preceding 12 months. The format identifies priority communities by indicators of access and utilization. Data to complete this table should be taken from monthly reports or be gathered from tally sheets and registers.

#### How to prioritize communities using health centre immunization data

- Use all available information to complete the analysis of health centre data the input of community and administrative leaders is needed to best assemble all available information.
- List every community, including new ones and those that do not have regular access to services (for example, urban slums, distant rural communities).
- Rank communities by number of unimmunized infants; the one with the highest number of unimmunized children is ranked first (1) and so on. The community ranked 1 has the highest priority, and so on.
- Look for any monthly variation in immunizations given in a community when reviewing data from the preceding 12 months and note any seasonal changes in the last column (for example, decreases during the rainy season).

-	Main community characteristics: urban poor, semi-urban, rural, migrant, ethnic minority, new settlements, flooded in rainy season	and/or other relevant factors								
	Number of outreach visits completed	during year								
	Number of outreach visits planned	during year								
	<b>Distance</b> from HC (km)									
	Priority: highest number of unimmunized	(c) is 1, and so on								
-	<b>Unimmunized</b> (missed penta3 doses)	a – b = c								
,	Penta3 doses given during the year	q								
	<b>Target</b> population <1 year of age	a								
	Name of community									

**Table 4.4** Health centre data analysis: example format (to include data from all communities in the catchment area over the past 12 months)

# B Identifying barriers to access and utilization

To identify and understand the issues that become barriers to access and utilization, prioritized communities need visits from teams of health centre and district staff. Community chiefs, leaders and volunteers must be engaged in evaluation visits. Permission from community authorities is essential before conducting surveys, focus groups and similar exercises to identify barriers. Two basic evaluation exercises are included here. Module 7 (*Partnering with communities*) discusses information gathering in more detail.

#### 3.1 Household survey of immunization status

Table 4.5 is a questionnaire format for evaluating the immunization status of children aged 12–23 months by household. In a small community, a sample of five partially immunized or unimmunized children may be sufficient; but in a larger community such as an urban slum, where there may be different subgroups of people, a sample of at least 10 may be needed. Vaccine information given by households can be checked against the immunization register. The questionnaire can be modified to meet local evaluation needs.

#### How to complete the household questionnaire

In the top section of the form:

- tally each household with eligible children visited
- tally the total number of children aged 12–23 months in the household
- tally the number of children with immunization cards.

Under "Immunization status of child":

- for each child with an available card, tally whether they are fully, partially or never immunized under "From card tally"
- if the card is not available but the caregiver gives the immunization history (in response to prompting questions), tally whether the child is fully/partially/never immunized under "By recall tally".

In the lower part of the form:

- If a child is partially or never immunized, write the name of the child and ask the caregiver the question, "Why was the child not fully immunized?"
- Mark the row with the choice that best matches the answer the caregiver gives.

After noting the answer to the question about a child not being fully immunized, try to understand issues from the household's point of view. For example, when a caregiver says she is "too busy", you may need to find out whether she may be able to attend sessions at specific times, or whether there are additional problems such as cancelled sessions that discourage people from going to the next one. Understanding the situation will help in adding appropriate solutions to the workplan (this issue is discussed further in Section 4 of this module).

Partially or never immunized children identified in this exercise should be added to defaulter tracking lists.

Table 4.5	Household immunization status of	uestionnaire assessing	children aged 12–23 months
	i louselloid illining allous o	acould in fail c assessing	

Date:				Community name:										
Distance from health c	entre (in km):		Health centre name:											
			Tally								To	otal		
Number of visited hou children 12–23 monthe	seholds with s of age													
Total number of children 12–23 months of age	en													
Number of children wi immunization cards	th													
Immunization st	atus of child	From card – t	ally					By	recall	– tall	у		To	otal
Fully immur	ized for age													
Partially	immunized													
Never	Immunized													
For each child who is p Then mark an "x" next	artially or neve to the reason t	er immunized, ask only one que hat best matches the answer g	stion – iven	"Why w	as the	child	not ful	ly imr	nunize	d?″				
		Child's name or ID number												
unaware o		need for immunization												
	unaware of 2nd or 3rd d	need to return for ose												
Lack of information	place &/or ti	me of immunization unknown												
Luck of monitution	fear of adve	rse reactions												
	incorrect ide	as about contraindications												
	other													
	postponed u	until another time												
	no faith in in	nmunization												
Lack of motivation	rumours													
	other													
	place of imn	nunization too far												
	time of imm	unization inconvenient												
	vaccinator a	bsent												
	vaccine not	available												
Obstation	caregiver to	o busy												
	family probl of caregiver	em, including illness												
	child ill – no	t taken for immunization												
	child ill – tak but not vacc	en for immunization inated												
	long waiting	time												
1	other					1					1			

#### 3.2 Community discussion

Table 4.6 is a guide to community discussions on barriers. It aims to gather information on community perceptions and ideas for improvement and is meant to complement the household survey. It requires the involvement of caregivers, community health workers and community leaders. Interviews may be done with individuals or groups separately or together as appropriate for the situation. The questions can be modified as needed and the exercise is intended to take about an hour.

#### Table 4.6 Community discussion guide

Commun	ity description
Distance from health centre – km and time	
Total population from health centre data	
Total population from community leaders' information	
Results of household immunization status questionnaire	
Number of children 12–23 months of age partially or never immunized	
Discussion with caregivers (done after completing the household	l survey) – suggested questions:
Where do you get immunizations? (Outreach/HC fixed site/other)	
Where was your last child delivered?	
If at home, what was your main reason for not using a health facility?	
Where do you take sick children? (Traditional healer/HC/district/ private/other)	
How much does it cost to travel to the HC/district?	
Do you have to pay any fees at the HC/district facilities?	
When was the last outreach visit from the health centre to your community?	
What do you think the health facility can do to get children fully immunized?	
Discussion with community health worker(s) – suggested question	ons:
What supplies of medicines do you have in the community? (ORS, antibiotics, paracetamol, antimalarials, etc.)	
In what health programmes do you work? (for example, ANC, nutrition, EPI, TB, malaria)	
Do you have a mobile phone? Give number(s).	
Are you informed in advance of outreach sessions?	
If so, how?	
How are the communities you work with informed about an outreach session before and on the day of the session?	
When did you last receive any training?	
Do you do defaulter follow up for the immunization programme?	
Discussion with community leader(s) – suggested questions:	
What do you see as the main health problems in your community?	
How can the health facility improve services for the community?	

# Identifying solutions and preparing a workplan

Some people do not live within reach of health services, whether they are in permanent shelter or mobile nomadic/seasonal migrant communities. In many countries, geographical barriers are not the only, or even the primary, reason that limits access and utilization of immunization services. Access is also made difficult by inconvenient scheduling, lack of information and/or lack of opportunities. All these problems can be solved relatively simply by improving scheduling, raising awareness and/or expanding outreach.

This section is a guide to taking the information collected in Sections 1–3 and planning solutions to overcome the identified barriers to access and utilization. Solutions should be added to a workplan to guide a practical approach, and a workplan should be developed for each priority community. The table in Module 6 (*Monitoring and surveillance*), Annex 6.1 lists common problems and possible solutions. While not exhaustive, this may help to complete a workplan.

#### 4.1 Outline solutions

Table 4.7 shows a format for outlining solutions at health centre, community and district levels.

#### How to list identified solutions

- Hold a brainstorming session with key people from the health centre, community and district to gather ideas. Be sure to include a session on how higher performing health centres and communities have been able to solve their problems and achieve improvements (this will give evidenced-based ideas).
- Get consensus on the main problems (not every problem) and list the priority ones. To address the problems, limit priority problems to about three. Working on a longer list of problems usually becomes too difficult for a practical approach.
- Choose practical and feasible activities to solve the prioritized problems, since:
  - health centre problem-solving activities should be within existing capacity and resources
  - community activities may be limited to the capacity of its volunteers since additional resources are often not available
  - district-level activities may provide support to the health centre with extra technical or financial resources.

Community name:	Village One						
Main problems		SOLUTIONS					
Description of the main problems identified for the community	HEALTH CENTRE activities	COMMUNITY activities	DISTRICT activities				
<b>Example:</b> Poor community attendance at outreach sessions	Call the community chief or community worker by mobile phone in advance of the session to confirm time and place	Mobilize mothers and children by informing them in advance and encouraging attendance at session	Ensure costs of outreach sessions are budgeted (transport and per diem) according to HC session plan				

Table 4.7 Identified solutions list – example format

#### 4.2 Make a workplan to implement identified solutions

Table 4.8 shows a workplan format to follow planned health centre and community activities over a six-month period.

#### How to complete the health centre workplan

- Complete one form for each person involved the same form can be used for both health centre staff and community workers.
- List the main health centre and community-level problem-solving activities from the exercise given in Section 4.1, compiled on the form shown in Table 4.7. Activities should be defined as specific tasks for the person named on the form.
- Make a schedule for completing the activities over the next six months (see Table 4.8) the person named on the form should track their progress as the activities/tasks are completed each month.

aff or community wo	orker:		Schedule	by month		
	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Δŭ	0o 1 week before ession	Do 1 week before session				

Table 4.8 Workplan to achieve identified solutions – example format

## Making a session plan

A session plan lists all communities served by the health centre and specifies how frequently each community will be reached based on such factors as distance, target population, workload and other relevant operational issues. This section provides an example format and gives a simple method for choosing session frequency, scheduling dates and organizing the supplies needed to complete a session plan that reaches every community in a health centre catchment area. It is based on a maximum workload of about 30 infants per vaccinator per session. It uses an immunization schedule that requires a minimum of four contacts during the first year of life. The aim is to plan sessions so that staff time is used efficiently.

#### 5.1 Immunization session plan

Table 4.9 shows an example immunization session plan format. It compiles a list of communities and the distances from the health centre that is responsible for their immunization services. The type of session needed – fixed (at the health centre) or outreach (at a site in the community) – for rural communities usually depends on the distance of the community from the health centre or on the travel time needed if the terrain is difficult. The type of session needed for urban communities may depend on social factors or convenience for the groups being served. The frequency of sessions needed depends on the number of infants expected at each session. The number of infants an immunization programme should expect to serve in a community depends on its total population. Table 4.10 is a simplified guide to choosing session frequency based on total population – it gives the end result of calculations based on total population details).

#### Table 4.9 Health centre overall session plan: example format

Note that this includes all communities, some of which may be scheduled for fixed sessions (at the health centre) and some for outreach

Community name	Distance from HC in km	<b>Type of session</b> (fixed or outreach)	Total population	Session frequency

#### How to choose session frequency

Table 4.10 estimates the best use of staff time based on the number of vaccinators expected to be available for each session in a range of population sizes. Find the total population of the community to be served and choose the session frequency based on the number of vaccinators available for the immunization team. The following are some examples:

- for a community with a total population of 6000 and an immunization team with two vaccinators per session, session frequency should be every two weeks
- for a community with a total population of 3000 and an immunization team with one vaccinator per session, session frequency should be monthly
- for a community with a total population of 500 and an immunization team with one vaccinator per session, session frequency should be quarterly.

This table states that a reasonable workload is about 30 infants per vaccinator per session. The maximum acceptable workload may vary depending on the national schedule and immunization policies and strategies; follow national guidelines.

		<b>Session f</b> i (30 infants per vaco	r <b>equency</b> cinator per session)	
	Total population of community	1 vaccinator per session	2 vaccinators per session	
	5001-10 000	Weekly	Every 2 weeks	
	3001–5000	Every 2 weeks	Monthly	
4- or 5-contact schedule	2001–3000	Monthly	Monthly	
	1001–2000	Monthly	Quarterly	
	0–1000	Quarterly	Quarterly	

#### **Table 4.10** Estimated immunization session frequency

#### Reviewing and adjusting session plans

Session plans should be reviewed quarterly with corresponding monitoring data for communities served (see Module 6 (*Monitoring and surveillance*), Section 4). Any missed or incomplete sessions should be rescheduled and adjustments should be made. The session frequency may need to change if population numbers change significantly.

#### 5.2 Health centre outreach session plan

Every health centre should make, display and monitor an outreach schedule to show the date and place of each session, the means of transport and the person responsible for arranging it. It should also include a community contact person who will communicate session dates and other reminders to the wider community. An example format is shown in Table 4.11. Note that fixed sessions can be added to this if needed to keep all on one sheet (leave the transport column blank or write "fixed" there).

Outreach sessions are often planned for rural communities that are 5–15 km from the health centre and for urban populations who use convenient locations such as markets, community centres and schools. Outreach sessions may also need to be planned to take place before and/or after seasonal rains or other factors that make populations hard to reach at certain times of the year. In some programmes, communities living more than 10 km away from the health centre may be served by mobile activities organized from district level, as shown in Figure 4.2. Follow national and district guidelines for microplanning.

Other activities, such as EPI Plus and maternal–child health interventions, may be integrated in immunization sessions. Follow national guidelines on including additional staff, logistics and financial resources as needed.



### **Figure 4.2** Illustration of fixed, outreach and mobile strategy service distance requirements (example from WHO AFRO)

							*									
τ, ς	ession requency	Distance	Transport needed*	Person responsible for transport	Community contact name & mobile phone #	Date(s) scheduled & done	*l dtnoM Month 2	E dfnoM	₽ dtnoM	c dfnoM	9 dtnoM	7 dłnoM	8 dłnoM	6 dłnoM	01 dinoM	MONTN 12
						Date(s) scheduled:										
						Date(s) done:										
						Date(s) scheduled:										
						Date(s) done:										
						Date(s) scheduled:										
						Date(s) done:										
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						Date(s) done:										
						Date(s) scheduled:										
						Date(s) done:										
rrite "ov	vernicht" if n	eeded to cor	molete sessions	in the community	u l eave the	Sessions done:										
r write"	"fixed" in it if	the commur	nity is served by	/ fixed sessions at t	he health centre.	Sessions planned:										
(Tor e)	example, z da	ates if diweek	Iy sessions)			% done										

Table 4.11 Health centre outreach session plan – example format

Immunization in practice

#### 5.3 Immunization session supplies

Outreach teams must be sure to take sufficient supplies to complete the sessions planned for each trip. Table 4.12 will help to organize supplies and can be used for fixed sessions and for monthly ordering (see Section 5.4).

Table 4.12 shows supply calculations for a monthly session. The vaccines in this example match current WHO recommendations – health centres should have their own tables that match national immunization schedules. The quantity of supplies is calculated for the number of infants expected per session. The number of infants expected is based on the total population and session frequency indicated in Table 4.3. Ideally, health centres should calculate the supplies needed for each session from lists of infants compiled by reviewing immunization register appointments, defaulter tracking and newborn infant lists (see Module 6 (*Monitoring and surveillance*), Section 1).

Note that Table 4.12 is a rough estimate of needs; numbers include an average 10% excess and/or are rounded off to whole units. Each health centre should calculate its supply quantities based on the national immunization schedule and any known variations, such as increased numbers of infants in sessions where defaulters are expected to catch up even if a list of expected infants is not compiled. Health centre wastage rates and other similar factors should also be taken into account for both vaccine vial and AD syringe numbers. Quantities may be rounded off based on packaging and/or ease of dispensing from the pharmacy or stockroom.

Supplies for EPI Plus or other activities integrated with immunization sessions should be added to the table and stock lists as directed by national guidelines.

Total population of community	0–500	501-1 000	1 001–2 000	2 001–3 000	3 001-4 000	4 000-5 000
Expected number of infants	2	5	10	20	30	40
RV — single dose tube	1	3	5	10	15	20
OPV – 10-dose vial + dropper	1	2	3	5	6	7
PCV — single-dose vial	2	4	8	17	25	33
Pentavalent — single-dose vial	2	4	8	17	25	33
BCG – 20-dose vial + diluent	1	1	1	1	1	1
Measles – 10-dose vial + diluent	1	1	1	2	2	3
AD syringe – 0.5 ml	14	20	30	60	79	109
BCG AD syringe – 0.05 ml	3	4	8	12	15	20
RUP reconstitution syringe – 5 ml + needle	2	2	2	3	3	4
RUP reconstitution syringe – 2 ml + needle	2	2	2	2	2	2
Safety box	1	1	1	2	2	3
Other						

#### 5.4 Health centre monthly stock report

Monthly stock reports are needed to ensure adequate supplies and avoid stock-outs. Table 4.13 shows an example format for a health centre stock report, giving an estimated monthly consumption requirement based on expected immunization service activities. The consumption figures should correlate with the total number of doses used at sessions held during the month. This example matches the schedule given in Table 4.12, but each health centre should report according to national guidelines. Stock report data may be added to the monthly summary report, as shown in Module 6 (*Monitoring and surveillance*), Section 3.

#### Table 4.13 Health centre monthly stock report – example format

Monthly stock report								
Health centre nam	ne:		Date report completed:					
Stock month and	year:		Reported by:	Reported by:				
	Monthly consumption	Opening stock	Order received	Closing stock	Order for next month			
RV – single dose								
OPV – 10-dose vial + dropper								
PCV – single-dose vial								
pentavalent – single-dose vial								
BCG – 20-dose vial + diluent								
Measles – 10-dose vial + diluent								
AD syringe – 0.5 ml								
BCG AD syringe – 0.05 ml								
RUP reconstitution syringe – 5 ml + needle								
RUP reconstitution syringe – 2 ml + needle								
Safety box								
Other								

## **Finding defaulters**

Every health centre needs to plan to follow up defaulters or infants who miss scheduled vaccinations, who thus fall into the unimmunized or underimmunized group. Refer to Module 6 (*Monitoring and surveillance*), Section 1.4 for details on defaulter tracking methods. This section is a brief reminder of how opportunities to complete vaccinations can be linked to regularly scheduled immunization services.

#### 6.1 Defaulter tracking list

An example defaulter tracking list is shown in Module 6 (*Monitoring and surveillance*). This list should be completed regularly at the end of each session or monthly, depending on health centre practice. A community worker or other staff should be assigned to find defaulters and give them appointments for the next immunization session. For outreach sessions, this list should be sent to the community at least a week in advance.

#### 6.2 Other opportunities

Immunization status should be reviewed at all health care visits. Children who are due or overdue should be vaccinated immediately whenever possible. If vaccines are not immediately available for administration during the same visit, the infant should be referred to the earliest possible immunization session. The caregiver should be informed of the time, date and location of the immunization session, and the infant's name should be added to the health centre defaulter tracking list to help ensure the follow-up visit is made.

### Annex 4.1

# Calculations used in determining needed session frequency

The following steps are needed to develop Table 4.10:

#### 1. Calculate the annual target population and monthly newborn target

Since infants are the target population for immunization, calculating the number of newborns expected in a year gives the annual target population for a programme:

Annual target population = (total population) x (% infants in population or expected birth rate)

The percentage of infants in the population, or the expected birth rate, should be obtained from local data. If a specific local percentage is not available, the suggestion here is to use 3% as an estimate for session planning. See Module 6 (*Monitoring and surveillance*), Section 4.1 for further discussion on calculating targets.

Divide the annual target population by 12 to get the monthly newborn/infant target:

Monthly newborn target = (annual target population)/12

#### 2. Calculate the expected number of infants per session

In order to choose the frequency of sessions, sessions, an estimate is needed of the expected number of infants per session for a given community. This includes the number of newborns presenting for first doses of vaccines and the number of infants returning for follow-up doses. The number of infants returning for follow-up doses depends on the number of contacts required by the national immunization schedule. For example, for a four-contact schedule, each newborn will be added to the schedule as a returning infant three times in later months during the year; this means that for a monthly session, there should be three returning infants for every newborn expected based on the monthly newborn target.

Table 4.14 shows the results of calculations based on the annual target population and the monthly newborn target to determine the expected number of newborns plus returning infants at individual sessions. A four-contact (minimum) schedule is assumed. A choice among weekly, biweekly (every two weeks), monthly and quarterly (every three months) is also assumed. Both the number of contacts and the choice of sessions may vary in different programmes.

#### Note that the equations are:

Expected number of newborns and returning infants at a weekly session = monthly newborn target

Expected number of newborns and returning infants at a biweekly session = monthly newborn target x 2

Expected number of newborns and returning infants at a monthly session = monthly newborn target x 4

Expected number of newborns and returning infants at a quarterly session = annual target population

	Annual		Expected number of newborns and returning infants at each session (by session frequency for 4-contact minimum schedule)					
opulation	target population (infants <1 year of age)	Monthly newborn target	Weekly session (once every week)	<b>Biweekly</b> session (once every two weeks)	<b>Monthly</b> session (once every month)	Quarterly session (once every 3 months)		
Total po	(= total population x 3%)	(= annual target population/12)	(= monthly newborn target)	(= monthly newborn target x 2)	(= monthly newborn target x 4)	(= annual target population)		
10 000	300	25	25	50	100	300		
5000	150	13	13	25	50	150		
4000	120	10	10	20	40	120		
3000	90	8	8	15	30	90		
2000	60	5	5	10	20	60		
1000	30	3	3	5	10	30		
500	15	1	1	3	5	15		
200	6	1	1	1	2	6		

#### Table 4.14 Expected number of infants per session

#### 3. Choose session frequency based on acceptable workload per vaccinator

Table 4.10 uses 30 injections per session. Session frequency per immunization site can be decided based on number of vaccinators available and acceptable workload.