EPI(SA) FACT SHEET
MEASLES ELIMINATION

1. EPIDEMIOLOGY OF MEASLES

Measles is a viral disease caused by a Morbilivirus. There are 8 different strains of measles viruses that are endemic in certain countries.

Measles virus is transmitted by infected droplets during coughing, sneezing, through direct contact with nasal or throat secretions of infected persons or by touching contaminated objects.

Measles is predominantly a childhood disease causing rash, fever and any of the following: cough, coryza (runny nose) and conjunctivitis. Measles is a highly infectious disease, which spreads rapidly amongst people not immune, leading to significant morbility and death.

The most common complications are pneumonia, diarrhoea, croup, otitis media (ear infections), mouth ulcers and eye complications. The uncommon complications are encephalitis where 1 in 1000 reported cases has permanent brain damage, myocarditis, pneumothorax, pneumomediastinum, appendicitis and sub-acute sclerosing pan encephalitis (SSPE), which is a fatal chronic infection of the brain. Death from measles is a reality, and up to 6% of measles cases may die.

Measles Epidemiology	
RESERVOIR	HUMAN, NO ANIMAL RESERVOIR
TRANSMISSION	RESPIRATORY, PERSON TO PERSON AIRBORNE
TEMPORAL PATTERN	PEAK LATE WINTER AND SPRING
COMMUNICABILITY	MAXIMUM 4 DAYS BEFORE TO 4 DAYS AFTER RASH ONSET

In 2000, 1593 suspected measles cases were reported from 9 provinces in South Africa and 39 were confirmed measles cases. The detection, investigation and reporting of suspected measles cases has improved since 1998. Laboratories have played a major role in both AFP and measles surveillance.

2. MEASLES RESURGENCE IN THE USA, 1989-1991

A dramatic increase in measles cases and deaths took place in the USA between 1989 and 1991.

During these 3 years a total of 55,622 cases were reported, with 123 measles-associated deaths (death-to-case ratio = 2.2 per 1,000 cases).

A total of 49% of the deaths occurred among children under 5 years of age. Incidence rates for infants were more than twice as high as those in any other age group.

In 90% of cases, fatal cases had no history of vaccination. At the time, measles vaccine coverage was low in many cities. Surveys in areas experiencing measles outbreaks in pre-school children, indicated that as few as 50% of children had been vaccinated against measles by their second birthdays.

The most important cause of the measles resurgence of 1989-1991 was low vaccination coverage.

3. EPI(SA) GOALS AND STRATEGIES

Goal: The national goal is to eliminate indigenous transmission of measles virus in South Africa, by the end of 2002.
Strategies: To reach this goal, the strategies as defined by WHO and adopted by South Africa are as follows:

High routine coverage with measles vaccine:.
The national target is 90% coverage with two doses of measles vaccine at 9 and 18 months of age. The 1994 survey indicated 76% immunisation coverage for the first dose and 83% in the 12-23 months age group. The 1998 survey found coverage of 82%.

Mass immunization campaigns:.
A catch-up campaign were conducted during 1996/7 in children aged 9 months to under 15 years, and a follow-up campaign were conducted in 2000 in children aged 9 to 59 months. The aim of the catch-up campaigns conducted in 1996 and 1997 was to facilitate implementation of the measles elimination strategy by rapidly interrupting chains of measles transmission.
The impact of measles campaigns on the measles cases is evident. Since 1996 and 1997 the number of cases and deaths due to measles has

decreased dramatically. Since 1999, no deaths due to measles disease were reported.

"Mopping-up" activities in low coverage and high risk areas:

A reliable method is to measure low district coverage by conducting a district survey of immunisation coverage. Mopping-up immunisation activities can then be focussed on high risk areas and areas with known low routine immunisation coverage. A survey was conducted in Mpumalanga, with subsequent mopping-up immunisation and a coverage survey is planned for the North West Province in 2001.

Effective case-based measles surveillance with laboratory support:

To maximize the impact of the measles elimination strategy, case finding activities must be strengthened to allow an immediate clinical and laboratory investigation of all suspected measles cases.

Table 1: Doses given (millions) and % immunisation coverage, campaigns.

YEAR	NO OF DOSES	% COVERAGE
1996	7.0	91.1
1997	7.2	83.4
2000	3.8	92.0

4. MEASLES SURVEILLANCE

South Africa introduced measles case based surveillance in 1998, to include complete epidemiological investigation with laboratory confirmation of each case. The case definition for measles and surveillance indicators were adopted.

MEASLES CASE DEFINITION
FEVER, AND
MACULOPAPULAR
('BLOTCHY') RASH, AND
ONE OF THE FOLLOWING:
COUGH, OR
CORYZA ('RUNNY NOSE") OR
CONJUNCTIVITIS.

The measles surveillance indicators are to measure the quality of measles surveillance and to evaluate progress. The WHO indicators were adopted as follows:

- At least 80% of suspected measles cases
  - are reported within 7 days of the onset of the rash;
  - are investigated within 48 hours of reporting.
- At least 80% of reported suspected measles cases must have a complete epidemiologic AND laboratory investigation with basic information collected including: EPID number, district, name, age, number of doses of measles vaccine received and date of last measles vaccination, date of rash onset, date of notification, date of investigation, of blood sample collection, and final classification.
- At least 80% of confirmed measles cases are laboratory confirmed (by serological test or epidemiological linkage).
- Of the total laboratory confirmed measles cases, following a complete epidemiologic investigation, at least 80% of cases should have a known source of infection.
- At least 80% of specimens must be tested by the laboratory and the results reported back to the surveillance unit within 7 days of receipt.

5. TREATMENT OF MEASLES

Measles can be prevented with immunisation. Uncomplicated measles can be managed at home. A clinician or clinic may be consulted for the treatment of symptoms. A medical practitioner must be consulted if serious complications occur (eg. pneumonia), and hospitalisation may be required.

6. MEASLES PREVENTION

Immunising children with 2 doses of measles vaccine at the age of 9 and 18 months can prevent measles. Vaccination provides lifelong immunity against measles.

Although the first measles vaccination at 9 months protects infants, sero conversion is sub optimal due to the presence of maternal antibodies, which wane with time after birth.

The second dose at 18 months of age is to provide another chance to protect the children against measles, especially for those children who did not respond to the first dose of vaccine. About 1 of every 10 children does not respond to the first dose of vaccine. The second dose also serves as a booster to increase antibody levels in those with low antibody levels. After the second dose, 99% of children are protected against measles.

Some of the children get fever, redness and tenderness at the injection site, or mild rash 5 to 15 days after vaccination. However, patients with vaccine-associated rash are not infectious. Serious side effects are very rare.

FOR FURTHER INFORMATION CONTACT:

EXPANDED PROGRAMME ON IMMUNIZATION
DEPARTMENT OF HEALTH
PRIVATE BAG X828, PRETORIA, 0001
Tel: 012 312 0099 Fax: 012 321 9882
OR
WCP DEPARTMENTOF HEALTH, EPI
P.O.BOX 2060, CAPE TOWN, 8000
Tel: 021-483 3156/5691 Fax: 021-483 2264/4345