



MEASLES

CRUDE DATA	
Number of Cases	1
Annual Incidence ^a	
LA County	0.01 ^b
California ^c	0.05
United States ^c	0.05
Age at Diagnosis	
Mean	1 year
Median	1 year
Range	N/A

^aCases per 100,000 population.

^bRates calculated based on less than 19 cases or events are considered unreliable.

^cCalculated from Final 2008 Reports of Nationally Notifiable Infectious Disease. MMWR 58(31);856-857;859-869.

DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. The clinical case definition for measles is a fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, or conjunctivitis. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. A case is confirmed by a positive IgM titer, a four-fold increase in acute and convalescent IgG titers, isolation of measles virus, or detection of viral RNA (RT-PCR).

Immunization Recommendations:

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) or Measles-Mumps-Rubella-Varicella (MMRV) vaccine.
- Usually, two doses of measles-containing vaccine are given via MMR or MMRV vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination, no serological evidence of measles immunity, or no documentation of physician-

diagnosed measles. Proof of immunization with two MMR doses is recommended for health care workers, persons attending post-high school educational institutions, international travelers, as well as others who work or live in high-risk settings.

- Women should not become pregnant within 4 weeks of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR or MMRV vaccine.

2008 TRENDS AND HIGHLIGHTS

- During January to July 2008, 131 measles cases were reported in the US, compared with an average of 63 cases per year during 2000 to 2007. Approximately 91% of these cases were unvaccinated and 89% were associated with importations from other countries. (MMWR 2008; 57:893-896)
- Only one measles case was reported in Los Angeles County (LAC) (Figure 2). The single case was a 23-month old unvaccinated child who was hospitalized for five days with pneumonia. The child was unvaccinated because she presented to a health clinic without an immunization record (Table 1). Clearly, this was a missed opportunity for vaccination since the case did not receive a reminder to return for a follow-up visit to check the immunization record or to catch up on vaccinations.
- As long as measles continues to circulate in other parts of the world, unvaccinated individuals will continue to be at risk for measles infection.



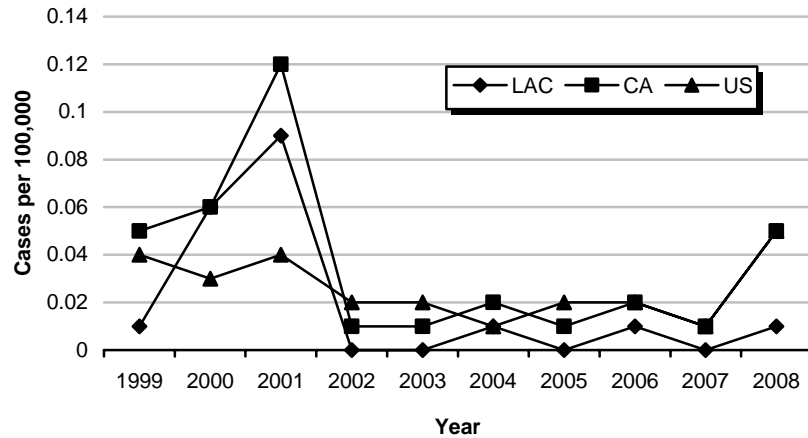
**Reported Measles Cases and Rates* per 100,000 by Age Group, Race/Ethnicity, and SPA
 Los Angeles County, 2004-2008**

	2004 (N=1)			2005 (N=0)			2006 (N=1)			2007 (N=0)			2008 (N=1)		
	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000	No.	(%)	Rate/ 100,000
Age Group															
<1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
1-4	0	0.0	0.0	0	0.0	0.0	1	100.	0.2	0	0.0	0.0	1	100.	0.2
5-14	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
15-34	1	100.	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
35-44	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
45-54	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
55-64	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
65+	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Unknown	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
Race/Ethnicity															
Asian	1	100.	0.1	0	0.0	0.0	1	100.	0.1	0	0.0	0.0	0	0.0	0.0
Black	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Hispanic	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	1	100.	0.0
White	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Other	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Unknown	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	
SPA															
1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
2	0	0.0	0.0	0	0.0	0.0	1	100.	0.0	0	0.0	0.0	1	100.	0.0
3	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
4	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
5	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
6	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
7	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
8	1	100.	0.1	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Unknown	0	0.0		0	0.0		0	0.0		0	0.0		0	0.0	

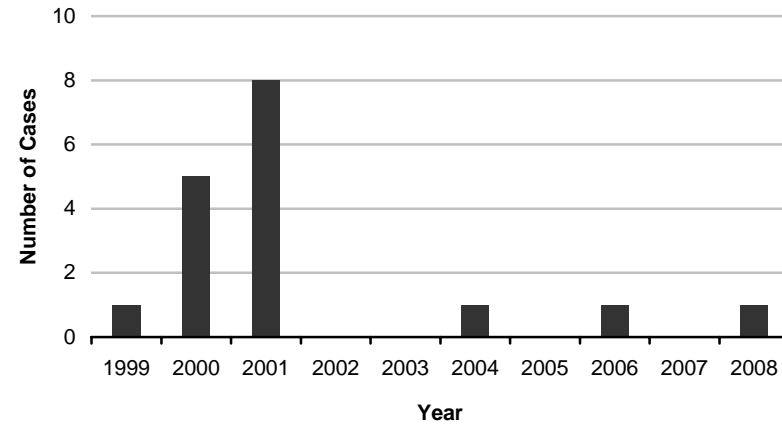
*Rates calculated based on less than 19 cases or events are considered unreliable.



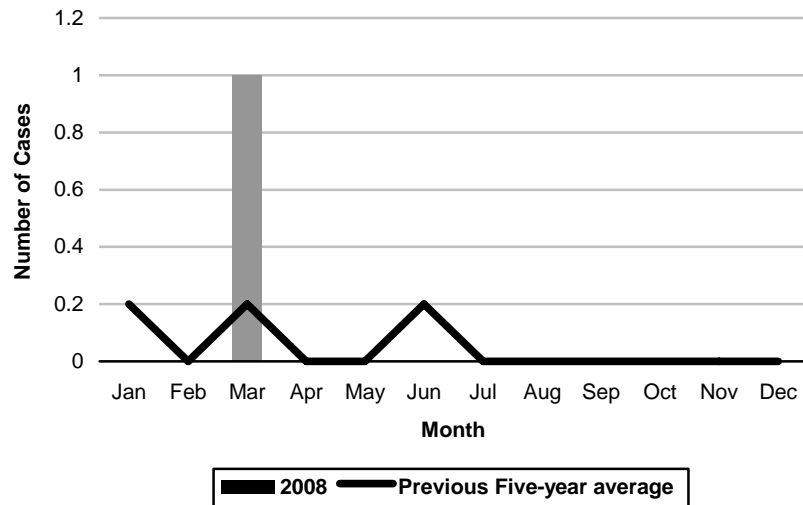
**Figure 1. Incidence Rates of Measles
US, CA and LAC, 1999-2008**



**Figure 2. Reported Measles Cases
LAC, 1999-2008**



**Figure 3. Reported Measles Cases by Month of Onset
LAC, 2008 vs. Previous Five-Year Average**



**Table 1. Vaccination Status of Reported Measles Cases
LAC, 2008**

	Reported Cases	Cases Too Young to Be Vaccinated ¹	Cases Eligible for Vaccination and Up-to-Date ²	Cases Eligible for Vaccination and Not Up-To-Date ³	Personal Beliefs Exemption School Vaccine Waivers Among Cases Age <18 Years (n=1)
No.	1	0	0	1	0
%	100%	0%	0%	100%	0%

¹ Cases less than 12 months of age

² Cases 12 months of age and older and who are up-to-date with the measles immunization recommendations for their age

³ Cases 12 months of age and older and who are not up-to-date with the measles immunization recommendations for their age. Includes cases that have unknown immunization status, have personal belief exemption school vaccine waivers, or have no valid documentation of receiving measles vaccines prior to disease onset.



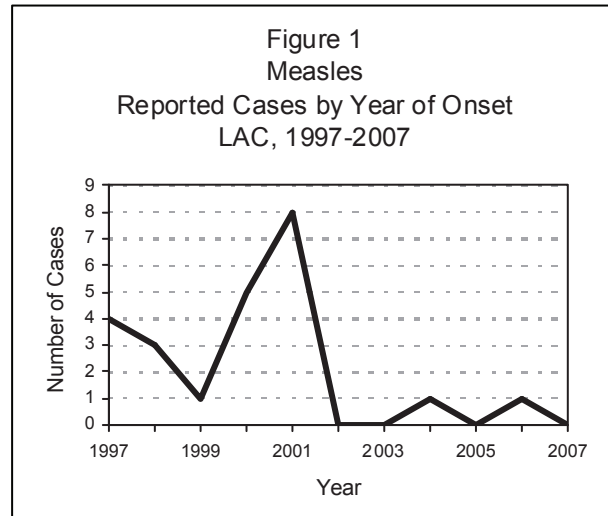
MEASLES

CRUDE DATA	
Number of Cases	0
Annual Incidence ^a	
LA County	0 ^b
California	0.01 ^{b,c}
United States	0.01 ^b

^a Cases per 100,000 population

^b Rates based on less than 19 observations are unreliable.

^c Calculated from Final 2007 Reports of Nationally Notifiable Infectious Diseases issues of MMWR (57: 901, 903-913).



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by a positive IgM titer or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- € From 81 measles suspect reports received at the LAC Immunization Program, there were no confirmed measles cases identified in LAC during 2007, marking the fourth time this has occurred in over 40 years.
- € During 2007, 4 measles cases were reported in California.

IMMUNIZATION RECOMMENDATIONS

- € Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) or Measles-Mumps-Rubella-Varicella (MMRV) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- € Usually, two doses of measles-containing vaccine are given via MMR or MMRV vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- € Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination, no serological evidence of measles immunity, or no documentation of physician-diagnosed measles. Proof of immunization with two MMR doses is recommended for health care workers and persons attending post-secondary educational institutions as well as others who work or live in high-risk settings.
- € Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- € Although the titer of vaccine-induced antibodies is lower than that following natural disease, both serologic and epidemiologic evidence indicate that vaccine-induced immunity appears to be long-term and probably life-long in most individuals.
- € Women should not become pregnant within 4 weeks of vaccination.



- € Individuals who are severely immunocompromised for any reason should not be given MMR or MMRV vaccine.
- € All foreign travelers who are not immune to measles should be vaccinated, ideally 2 weeks prior to travel.
- € Unvaccinated infants 6 months of age and older should be vaccinated if they are traveling outside of the US.

STRATIFIED DATA

Trends: Over the past 10 years, the number of confirmed measles cases has decreased significantly (Figure 1). Although absolute numbers are low, the number of reported measles cases started increasing in 1999. In 2002, 2003, 2005, and 2007 no confirmed cases of measles were identified in LAC, marking only four times this has occurred in more than 40 years. The single cases in 2004 and 2006 were imported cases, whose rash onsets occurred within 18 days of traveling outside of the US.

COMMENTS

In the year 2000, the CDC stated that measles was no longer endemic in the US. High vaccination coverage, a highly effective vaccine, and diligent public health surveillance activities have contributed to the limited number of measles cases nationwide. However, even a limited number of cases serve as a reminder that measles can and still does occur in the US. The risk of imported disease remains because the virus continues to circulate in other parts of the world, putting unvaccinated individuals at risk for measles infection. During 2007, large measles outbreaks were reported in Japan, Canada, the United Kingdom, and Switzerland. In May, another state's Department of Health identified a measles case that had traveled from another country to attend an event. The subsequent public health investigation identified 102 California residents that were possibly exposed to the case, 7 of whom were residents of LAC. All 7 LAC residents reported a history of vaccination or previous disease. None developed measles-like symptoms. In another 2007 situation, a different state's Department of Health identified a measles case in a child who had traveled on an international flight from another country and traveled to multiple cities in the US. Six cases of measles were linked to the index case through exposures during travel, in the airport, and during an event. Five of the seven cases had no documented measles vaccination. While no LAC measles cases were identified in association with any of the exposures in Japan, Canada, the United Kingdom, Switzerland, and the two states, the potential disease exposures serve as a reminder that we must continue to sustain high measles vaccine coverage levels. According to the most recent National Immunization Survey data, over 93% of children 19-35 months of age in LAC are vaccinated against measles.

Because LAC is in many ways a "gateway" to the US for travelers, it is important that an effective measles surveillance system be maintained in LAC. The public health department depends on healthcare providers and laboratories to identify measles cases and report them in a timely manner. Routinely reminding reporting facilities about the reporting requirements dictated by the California Code of Regulations, Title 17, Section 2500 is an activity that should continue to be implemented. In addition, healthcare providers can play an important role in preventing further transmission by promoting appropriate pre-travel vaccination and by being aware of travel history when evaluating symptomatic patients. The possibility of measles should also be considered in persons with exposure to travelers or exposure to measles in their community (e.g., in healthcare, school, daycare, or household settings). In addition, since measles is highly contagious it is essential that appropriate airborne infection control measures be followed stringently with all suspect measles cases.

CASE INVESTIGATION

The LAC Immunization Program immediately investigate all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum clinical criteria for measles classification have been met. If a measles report involves a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to



assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) may be given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical examination and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis by public health nurses or Immunization Program surveillance staff if physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. In the absence of an IgM test, a four-fold rise in measles IgG antibody titers between an acute serum specimen and a convalescent specimen at 2 weeks later usually indicates current or recent measles infection.

In summary, the decline in the number of measles cases in LAC is attributable to the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program and others to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

Additional information about measles is available at:

- € National Center for Immunization and Respiratory Diseases – <http://www.cdc.gov/vaccines>
- € Immunization Action Coalition – <http://www.immunize.org>
- € LAC Immunization Program – <http://www.lapublichealth.org/ip>

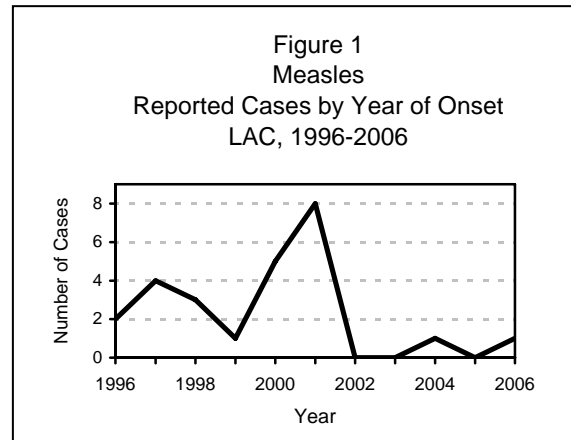
MEASLES

CRUDE DATA	
Number of Cases	1
Annual Incidence ^a	
LA County	0.01 ^b
California	0.02 ^b
United States	0.02 ^c

^a Cases per 100,000 population.

^b Rates based on less than 19 observations are unreliable.

^c Calculated from 2007 Summary of notifiable diseases issue of MMWR (56:853-863).



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by a positive IgM titer or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- From 64 measles suspect reports received at the LAC Immunization Program, there was only one confirmed measles case identified in LAC during 2006.
- During 2006, 6 measles cases were reported in California. Since all recent measles cases have been imported, an effective measles surveillance system needs to be maintained.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) or Measles-Mumps-Rubella-Varicella (MMRV) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via MMR or MMRV vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with two MMR doses is recommended for health care workers and persons attending post secondary educational institutions as well as others who work or live in high-risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Although the titer of vaccine-induced antibodies is lower than that following natural disease, both serologic and epidemiologic evidence indicate that vaccine-induced immunity appears to be long-term and probably life-long in most individuals.
- Women should not become pregnant within 4 weeks of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Trends: Over the past 10 years, the number of confirmed measles cases has decreased significantly (Figure 1). Although absolute numbers are low, the number of reported measles cases started increasing in 1999. In 2002, 2003, and 2005, no confirmed cases of measles were identified in LAC, marking only three times this has occurred in more than 40 years. The single cases in 2004 and 2006 were imported cases, whose rash onsets occurred within 18 days of traveling outside of the United States.

Sex: Female.

Race/Ethnicity: Asian.

Seasonality: Rash onset in January.

Age: The case was 3 years of age.

Location: The case resides in SPA 2 (San Fernando HD) but the illness was not linked to local transmission. The case acquired measles while traveling to and from India and developed clinical symptoms of measles within 18 days of returning to the United States.

Vaccination Status: Due to a personal beliefs exemption, the case did not receive any MMR vaccine.

Laboratory Confirmation: The case was confirmed with a positive IgM antibody titer.

Complications: The case survived but was hospitalized for 4 days with dehydration and pneumonia.

COMMENTS

It is important to be reminded that while measles is no longer considered to be endemic in the United States, the virus continues to circulate in other parts of the world putting susceptible individuals at risk of measles infection. LAC's single measles case this year was identified in January. As previously mentioned, the case was an imported case who was unvaccinated. In March, the Colorado Health Department notified the LAC Immunization Program of their imported case who had 2 LAC contacts. In April, CDC notified local health departments of a Venezuelan measles case who was infectious while attending a conference in Chicago. Later that same month, the LAC Immunization Program was notified of an Australian case who was incubating measles during a 4-hour layover at LAX airport. In June, the CDC released a media advisory regarding a measles outbreak in Germany, which notified World Cup games attendees of potential exposure. Then from July to August, a multi-state investigation identified 3 measles cases associated with the adoption of children in China. Only one of the cases had documentation of having received 2 doses of a measles-containing vaccine. While no LAC measles cases were identified in association with any of the exposures in Colorado, Chicago, LAX, Germany, or China, the potential disease exposures serve as a reminder that we must continue to sustain high measles vaccine coverage levels. According to the most recent National Immunization Survey data, over 90% of children 19-35 months of age in LAC are vaccinated against measles. In addition, ensuring that travelers are immune to measles can minimize the importation of measles. Healthcare providers can play an important role in pre- and post-travel-related health screenings by promoting appropriate pre-travel vaccination and by being aware of travel history when evaluating symptomatic patients.

It is important that an effective measles surveillance system be maintained in LAC. For surveillance to be effective, suspected cases must be reported to the health department in a timely manner. The 2006 LAC case is a prime example of delayed reporting. Although healthcare providers suspected measles and ordered the appropriate laboratory tests, the case was not reported to the health department. Furthermore, the final diagnosis of "not measles" was made before final lab results were even available. When the labs were determined to be positive, the laboratory reported the results to the LAC Immunization Program. However, 22 days had passed since symptom onset. This is problematic because the maximum incubation period for measles is 18 days and the maximum communicability period is 4

days after onset. The extended reporting lag time led to delayed or missed opportunities for effective public health intervention. Fortunately, all contacts were immune to measles and no other cases were identified. In response to this situation, the LAC Immunization Program called the reporting facility to remind them that measles cases should be reported within one working day of identification of the suspected case, regardless of whether lab results are ready. Routinely reminding reporting facilities about the reporting mandates by the California Code of Regulations, Title 17, Section 2500 is an activity that should continue to be implemented.

In 2006, the 64 suspect measles reports came from a variety of sources. Half (n=32) of the suspect cases were first reported by laboratories, 17.2% (n=11) were reported by hospitals/clinics, 17.2% (n=11) were reported by school nurses, and the remaining 15.6% (n=10) were reported by other sources, including the state health department, other counties, and workplaces. Among the 64 suspect cases, 39.1% (n=25) had febrile-rash illnesses that were ruled out because they did not meet the minimum clinical criteria for measles. Thirty-seven of the 64 suspect cases (57.8%) had laboratory studies performed. For 5 of the 37 cases, testing was conducted due to clinical suspicion of measles; results were negative for 4 cases, ruling out measles as the cause of illness. The remaining 32 patients tested were reported to the health department by laboratories due to false positive lab results. Further investigation revealed that the individuals were asymptomatic and that measles antibody tests were performed to test for immunity as part of a routine physical examination, school entrance requirement, or employee health requirement.

It is the policy of the LAC Immunization Program to immediately investigate all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum clinical criteria for measles classification have been met. If a measles report involves a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) may be given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical examination and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis by public health nurses or Immunization Program surveillance staff if physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2 to 28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. In the absence of an IgM test, a four-fold rise in measles IgG antibody titers between an acute serum specimen and a convalescent specimen at 2 weeks later usually indicates current or recent measles infection.

In summary, the decline in the number of measles cases in LAC is attributable to the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program and others to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

Additional information about measles is available at:

- National Immunization Program – www.cdc.gov/vaccines
- Immunization Action Coalition – www.immunize.org
- LAC Immunization Program – www.lapublichealth.org/ip

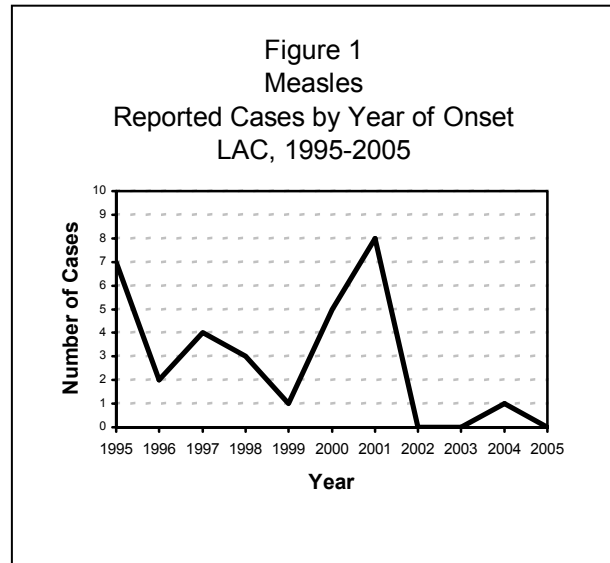


MEASLES

CRUDE DATA	
Number of Cases	0
Annual Incidence ^a	
LA County	0
California	0.01
United States	
Case Fatality	
LA County	0.0%
United States	

^a Cases per 100,000 population

^b Rates based on less than 20 observations are unreliable.



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by a positive IgM titer or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- From 36 measles suspect reports received at the LAC Immunization Program, there were no confirmed measles cases identified in LAC during 2005, marking only the third time this has occurred in over 40 years.
- During 2005, 4 measles cases were reported in California. Since all recent measles cases have been imported, an effective measles surveillance system needs to be maintained.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via MMR vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with two MMR doses is recommended for health care workers and persons attending post secondary educational institutions as well as others who work or live in high risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Although the titer of vaccine-induced antibodies is lower than that following natural disease, both



serologic and epidemiologic evidence indicate that vaccine-induced immunity appears to be long-term and probably life-long in most individuals.

- Women should not become pregnant within 4 weeks of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Trends: Over the past 10 years, the number of confirmed measles cases has decreased significantly (Figure 1). Although absolute numbers are low, the number of reported measles cases started increasing in 1999. In 2002, 2003, and 2005, no confirmed cases of measles were identified in LAC, marking only three times this has occurred in more than 40 years. The single case in 2004 was an imported case, whose rash onset occurred within 21 days of traveling outside of the United States.

COMMENTS

While there were no confirmed measles cases in LAC in 2005, measles continues to circulate in other parts of the world. Susceptible individuals who reside in the United States will be at risk and imported cases will continue to be identified. For example, in 2005, the state of Indiana experienced an import-associated measles outbreak involving 34 cases. In a separate situation, LAC was alerted about possible measles contacts/cases among a group of 311 resettling Kenyan refugees who were emigrating from an area where measles incidence was high. Because LAC is in many ways a “door-way” to the US for travelers and other persons coming from parts of the world where measles continues to circulate, it is important that an effective measles surveillance system be maintained in this local health jurisdiction. With the high measles vaccine coverage levels (exceeds 90% for children 19-35 months of age), indigenous measles cases are expected to be almost non-existent. The importation of measles, however, has resulted in sporadic measles activity in LAC, as was noted in 2004 and in 2001, when at least 3 of the 8 cases that year were proven to have a foreign travel or foreign born connection.

The strength of LAC’s measles surveillance system is exemplified by the fact that 36 suspect measles cases were reported in 2005. For surveillance to be effective, suspected cases must be reported to the health department. In 2005, suspect measles reports came from a variety of sources. Approximately 42% (n=15) of the suspect cases were first reported by laboratories, 33% (n=12) were reported by hospitals/clinics, 17% (n=6) were reported by school nurses, and the remaining 8% (n=3) were reported by other sources, including the state health department, other counties, and via death certificate review. Among the 36 suspect cases, 47% (n=17) had febrile-rash illnesses that were ruled out because they did not meet the minimum clinical criteria for measles. Twenty-three of the 36 suspect cases (64%) had laboratory studies performed. For 8 of the 23 cases, testing was conducted due to clinical suspicion of measles; results were negative, ruling out measles as the cause of illness. The remaining 15 patients tested were reported to the health department by laboratories due to positive lab results. Further investigation revealed that the individuals were asymptomatic and that measles antibody tests were performed to test for immunity as part of a routine physical examination, school entrance requirement, or employee health requirement.

It is the policy of the LAC Immunization Program to immediately investigate all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum clinical criteria for measles classification have been met. If a measles report involves a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) may be given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical examination and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis by public health nurses if physicians



have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. In the absence of an IgM test, a four-fold rise in measles IgG antibody titers between an acute serum specimen and a convalescent specimen at 2 weeks later usually indicates current or recent measles infection.

In summary, the decline in the number of measles cases in LAC is attributable to the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program and others to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

Additional information about measles is available at:

- National Immunization Program – www.cdc.gov/nip
- Immunization Action Coalition – www.immunize.org
- LAC, Immunization Program – www.lapublichealth.org/ip

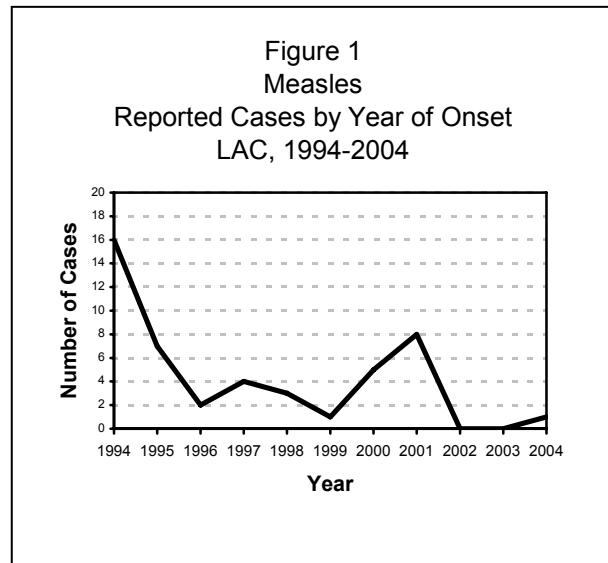


MEASLES

CRUDE DATA	
Number of Cases	1
Annual Incidence ^a	
LA County	--- ^b
California	N/A
United States	N/A
Case Fatality	
LA County	0.0%
United States	

^a Cases per 100,000 population

^b Rates based on less than 20 observations are unreliable.



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by positive IgM titers or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- From 49 measles reports received at the LAC Immunization Program, there was only one confirmed measles case identified in LAC during 2004.
- During 2004, 6 measles cases were reported in California. Since the current measles cases have been imported cases, an effective measles surveillance system needs to be maintained.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via MMR vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with two MMR doses is recommended for health care workers and persons attending post secondary educational institutions as well as others who work or live in high risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Although the titer of vaccine-induced antibodies is lower than that following natural disease, both serologic and epidemiologic evidence indicate that vaccine-induced immunity appears to be long-term



- and probably life-long in most individuals.
- Women should not become pregnant within 4 weeks of vaccination.
 - Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Trends: Over the past 10 years, the number of confirmed measles cases has decreased significantly (Figure 1). Although absolute numbers are low, the number of reported measles cases started increasing in 1999. In 2002 and 2003, no confirmed cases of measles were identified in LAC; marking the only two times this has occurred in more than 30 years. The single case in 2004 was an imported case, whose rash onset occurred within 21 days of traveling outside of the United States.

Sex: Male.

Race/Ethnicity: Asian.

Seasonality: Rash onset in June.

Age: The case was 26 years of age.

Location: The case resides in SPA 8 (South Bay), but the illness was not linked to local transmission. The case acquired measles while traveling outside of the United States and developed clinical symptoms of measles within five days of returning to the United States.

Vaccination Status: No MMR documentation was available. The case denied a history of refusing childhood immunizations but couldn't recall receiving the MMR vaccine.

Laboratory Confirmation: The case was confirmed with a positive IgM antibody titer.

Complications: The case survived but was hospitalized for two days.

COMMENTS

Because LAC is in many ways a "door-way" to the US for travelers and other persons coming from parts of the world where measles continues to circulate, it is important that an effective measles surveillance system be maintained in this local health jurisdiction. With the high measles vaccine coverage levels (exceeds 90% for children 19-35 months of age), indigenous measles cases are expected to be almost non-existent. The importation of measles, however, can result in sporadic measles activity as was noted this year and in 2001 when at least 3 of the 8 cases that year were proven to have a foreign travel or foreign born connection.

The strength of LAC's measles surveillance system is exemplified by the fact that 49 suspect measles cases were reported in 2004. For surveillance to be effective, a case or suspected case must be reported to the health department. In 2004, suspect measles reports came from a variety of sources. Approximately 38.8% (n=19) of the suspect cases were first reported by hospitals/clinics, 28.6% (n=14) were reported by school nurses, 20.4% (n=10) were reported by laboratories, and the remaining 12.2% (n=6) were reported by other sources, including the state health department, residential facilities, the military, and via death certificate review.

It is the policy of the LAC Immunization Program to immediately investigate all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum criteria for measles classification has been met. If any measles report(s) involve a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination



to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) is given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis if the physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. In the absence of an IgM test, a four-fold rise in measles IgG antibody titers between an acute serum specimen and a convalescent specimen at 2 weeks later usually indicates current or recent measles infection.

In summary, the decline in the number of measles cases in LAC is attributable to both the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

Additional information about measles is available at:

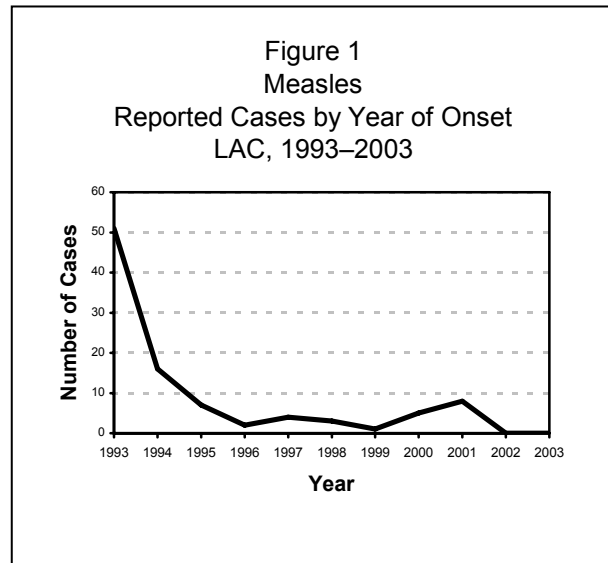
- National Immunization Program – www.cdc.gov/nip
- Immunization Action Coalition – www.immunize.org
- LAC, Immunization Program – www.lapublichealth.org/ip



MEASLES

CRUDE DATA	
Number of Cases	0
Annual Incidence	
LA County	0
California	N/A
United States	0.01
Case Fatality	
LA County	0.0%

^a Rates based on less than 19 observations are unreliable.



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by positive IgM titers or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- From 133 measles reports received at the LAC Immunization Program and one work site that had a possibility of 24 exposed individuals, there were no confirmed measles cases identified in LAC during 2003.
- No confirmed cases of measles have been identified in LAC in both 2002 and 2003.
- During 2003, there were 0 reported cases in the US, of which, 5 cases were reported in California. This serves as a reminder that vigilance against measles is necessary and should continue in order to prevent the occurrence of new cases.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via (MMR) vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with two MMR doses is recommended for health care workers and person attending post secondary educational institutions as well as others who work or live in high risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Women should not become pregnant within 4 weeks of vaccination.



- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Over the past several years the incidence of measles has significantly decreased in LAC since a record high occurring in 1993 (Figure 1). With the exception of this year and 2002, the number of measles cases has been increasing since 1999.

COMMENTS

Because LAC is in many ways a “door-way” to the US for travelers and other persons coming from parts of the world where measles continues to circulate, it is important that an effective measles surveillance system be maintained in this local health jurisdiction. With the high measles vaccine coverage levels (exceeds 90% for children 19-35 months of age), indigenous measles cases are expected to be almost non-existent. The importation of measles, however, can result in sporadic measles activity as was noted in 2001 when at least 3 of the 8 cases that year were proven to have a foreign travel or foreign born connection.

The strength of LAC’s measles surveillance system is exemplified by the fact that 133 suspect measles cases were reported in 2003. Upon investigation of these suspects, none were found to actually be measles cases.

It is the policy of the LAC Immunization Program to immediately follow-up on all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum criteria for measles classification has been met. If any measles report(s) involve a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) is given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis if the physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. However, if a four-fold rise in measles IgG titer level is evidenced from sera drawn two weeks apart, a recent measles infection is indicated.

In summary, the decline in the number of measles cases in LAC is attributable to both the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

Additional information about measles is available at:

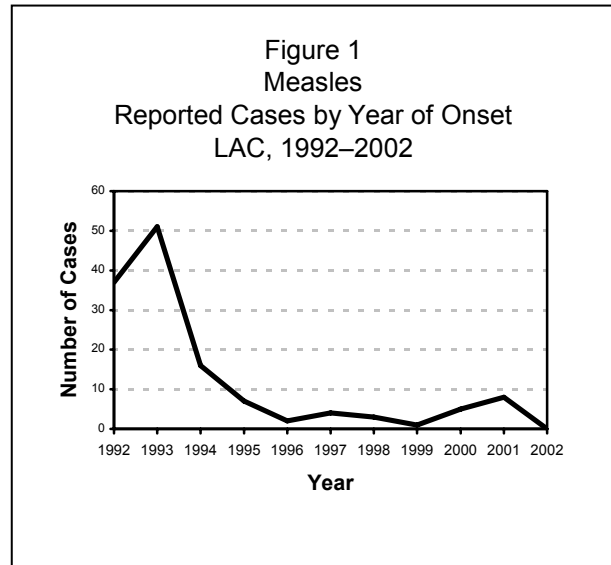
- National Immunization Program – www.cdc.gov/nip
- Immunization Action Coalition – www.immunize.org
- LAC, Immunization Program – www.lapublichealth.org/ip



MEASLES

CRUDE DATA	
Number of Cases	0
Annual Incidence	
LA County	0
California	0.01
United States	N/A
Case Fatality	
LA County	0.0%
United States	N/A

^a Rates based on less than 19 observations are unreliable.



DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus and is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by positive IgM titers or a four-fold increase in acute and convalescent IgG titers.

DISEASE ABSTRACT

- There were no confirmed measles cases reported in LAC during 2002. This marks first time this has occurred in the history of this county.
- During 2002, there were 44 reported cases in the US, of which, 5 cases were reported in California. This serves as a reminder that vigilance against measles is necessary and should continue in order to prevent the occurrence of new cases.

IMMUNIZATION RECOMMENDATIONS

- Measles disease can be effectively prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (ACIP).
- Usually, two doses of measles-containing vaccine are given via Measles-Mumps-Rubella (MMR) vaccine. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years.
- Vaccination is recommended for those born in 1957 or later who have no prior MMR vaccination or history of disease. Proof of immunization with 2 MMR doses is recommended for health care workers and person attending post secondary educational institutions as well as others who work or live in high risk settings.
- Over 95% of those who receive the current live attenuated measles vaccine develop immunity.
- Women should not become pregnant within 1 month of vaccination.



- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

STRATIFIED DATA

Over the past several years the incidence of measles has significantly decreased in LAC since a record high occurring in 1993 (Figure 1). With the exception of this year, the number of measles cases has been increasing since 1999.

COMMENTS

As case counts have decreased markedly from those reported in the early 1990s, more epidemiologically linked cases are contributing to continued reports of measles. In 2000, 4 of the 5 cases were linked together as part of a cluster of cases that occurred during May and June. This cluster included unvaccinated siblings aged 1 and 3 years. While hospitalized, these cases infected a 24-year old hospital employee. The index cases also infected a 9-month old from another local health jurisdiction while this infant was visiting their home. A 29 year-old LAC resident developed measles after visiting the 9-month old infant in a hospital. All the cases, with the exception of the 9-month old infant, were preventable had they been adequately immunized with the MMR vaccine. Similarly, two of eight confirmed measles cases were epidemiologically linked in SPA 7 (East) during March 2001. However, it has been nearly ten years since an outbreak of measles has occurred in LAC.

It is the policy of the LAC Immunization Program to immediately follow-up on all suspect measles cases that are reported in order to verify diagnosis, medical history information, immunization status, and past travel history. Physicians and suspect cases are contacted directly by phone to verify the diagnosis and determine if the minimum criteria for measles classification has been met. If any measles report(s) involve a school or a sensitive setting like a health care facility, a school nurse or a medical administrator is contacted to assist in investigative efforts and to immediately implement isolation procedures necessary for preventing the spread of the disease. Susceptible contacts are identified and offered MMR vaccination to prevent natural measles occurrence. If vaccine is contraindicated, immune globulin (IG) is given instead. IG is recommended for infants less than 6-months of age, pregnant women, and immunocompromised individuals.

Both clinical and laboratory tests are important in the diagnostic confirmation of the disease. Blood specimen collections are arranged for serological analysis if the physicians have not ordered them. The testing laboratory is contacted to obtain measles IgM and IgG antibody levels. Detection of both types of antibodies is important in disease testing. Measles IgM antibodies are detectable from 2-28 days after rash onset. The presence of IgG antibodies in the serum indicates prior exposure to measles, either by natural means or by immunization. However, if a four-fold rise in measles IgG titer level is evidenced from sera drawn two weeks apart, a recent measles infection is indicated.

In summary, the decline in the number of measles cases in LAC is attributable to both the effectiveness of the MMR vaccine, diligent surveillance activities, and the success of the various outreach and educational programs implemented by the LAC Immunization Program to improve vaccination coverage rates in the county.

ADDITIONAL RESOURCES

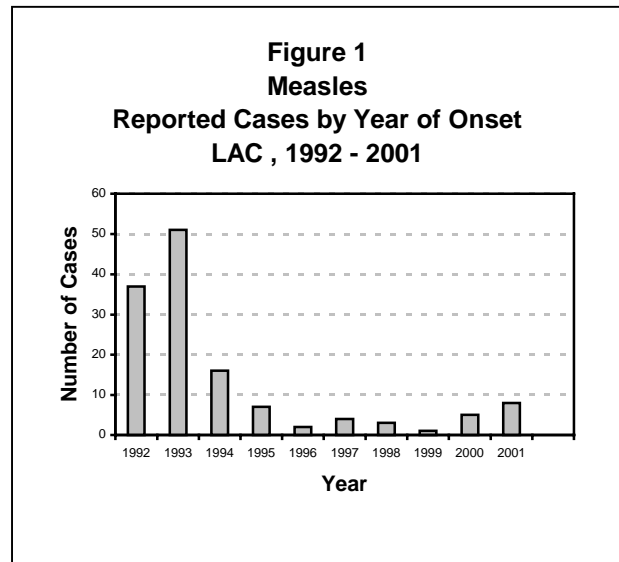
National Immunization Program at: www.cdc.gov/nip

Immunization Action Coalition at: www.immunize.org

LAC, Immunization Program at: www.lapublichealth.org/ip

MEASLES

CRUDE DATA	
Number of Cases	8
Annual Incidence	
LA County	N/A ^a
California	0.11
United States	0.04
Age at Diagnosis	
Mean	15
Median	12
Range	1-38 years
Case Fatality	
LA County	0.0%
United States	N/A



^a Rates based on less than 20 observations are unreliable.

DESCRIPTION

Measles is a vaccine-preventable disease caused by a paramyxovirus. Measles is transmitted by contact with respiratory droplets or by airborne spread. Common signs and symptoms of measles include fever, cough, conjunctivitis, runny nose, photophobia, Koplik spots, and a generalized maculopapular rash. Severe complications are rare, but can include acute encephalitis and death from respiratory or neurologic complications. Immunocompromised individuals are more likely to develop complications. All persons who have not had the disease or who have not been successfully immunized are susceptible. The minimum clinical criteria for measles are fever of at least 101°F, a generalized rash lasting at least three days, and either cough, coryza, conjunctivitis, or photophobia. A case is confirmed by positive IgM titers or a four-fold increase between acute and convalescent IgG titers.

DISEASE ABSTRACT

- The annual number of measles cases in 2001 was at its highest since 1995.
- During 2002, 7 of the 8 cases identified were over the age of one year and could have been prevented by Measles-Mumps-Rubella (MMR) vaccine, given in accordance with current Advisory Committee on Immunization Practices (ACIP) recommendations.

STRATIFIED DATA

Trends: According to Figure 1, the number of confirmed measles cases has decreased significantly after a record high in 1993. Although absolute numbers are low, the number of measles cases has been increasing since 1999, reversing a 5 year decline and stabilizing trend.

Sex: The male-to-female ratio of the cases was 1:1.7

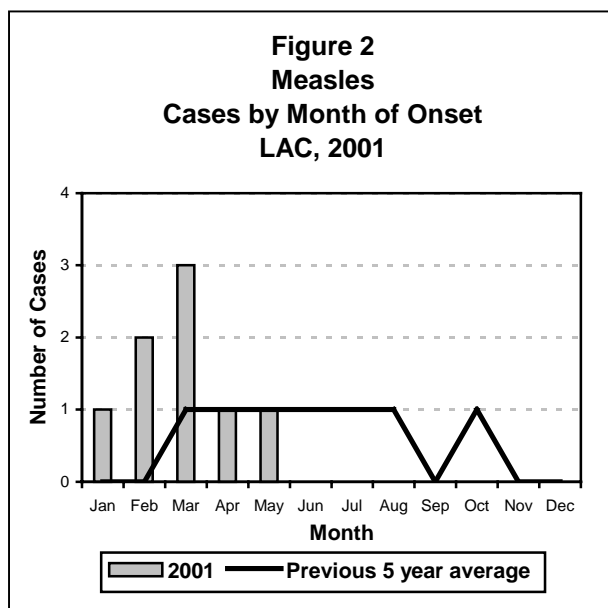
Race/Ethnicity: Three cases were Latino, three were Asian, one was White, and one was Black.

Seasonality: All cases occurred in the first two quarters of 2001, consistent with the temporal pattern of measles in temperate areas (Figure 2).

Age: One case was <1 year, two were between 1-4 years, two were between 5-14 years, two were between 15-34, and one was between 35-44 years of age.

Location: Cases were geographically distributed throughout LAC health districts, with one case identified in West, one in West Valley, two in Hollywood Wilshire, two in Bellflower, and two in Torrance.

COMMENTS



Four of the eight measles cases had not been vaccinated for the following reasons: the first case did not receive the MMR vaccine because of a liver transplant, the second case was a child who was too young to receive the vaccine, the third case was a 12-month-old child who did not receive timely vaccination due to traveling, and the last case was an adult male who did not recall ever receiving measles-containing vaccine.

In only one instance was there evidence of secondary spread from the eight measles cases reported in 2001. This involved spread from an un-immunized adult case to an infant who was too young to have been immunized. This cluster of two cases occurred in the Bellflower area of LAC during March. The rarity of secondary cases is a result of the high measles immunization coverage levels generally present among LAC children.

Vaccination Status: Of the eight cases, four claimed to be vaccinated against measles and only two had documentation. However, of these two latter cases, one was given the vaccine prior to the recommended time period, which may not have resulted in lasting immunity.

Importation Status: Four of the eight cases had travel to or arrival from other countries or states within 18 days of rash onset. One had traveled to Japan during the incubation period, which is consistent with disease onset. Another case was a student from Korea visiting the US. A third case had lived in the Philippines since childhood and had recently moved back to California. The final case had recently traveled to Tijuana, Mexico and was not protected by vaccination because of medical concerns with liver transplantation.

Hospitalization: Four cases were hospitalized, with two cases having stayed for 4-5 days. None of the cases was pregnant and no complications were reported.

ADDITIONAL RESOURCES

National Immunization Program at: www.cdc.gov/nip

Immunization Action Coalition at: www.immunize.org

LAC Department of Health Services, Immunization Program at: www.lapublichealth.org/ip

Acute Communicable Disease Program at:
www.lapublichealth.org/acd/procs/b73/b73index.htm