



**Table 1. Mumps Cases by Case Classification, 2007 vs. 2006**

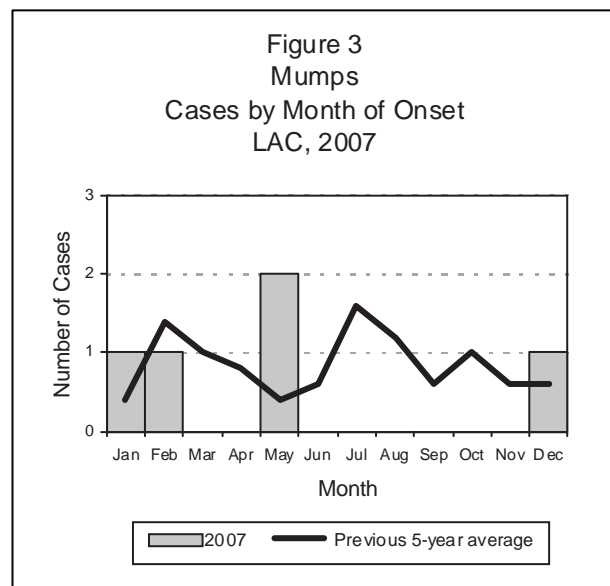
	Confirmed		Probable	
	2007	2006	2007	2006
Number of Cases	5	10	13	63
Age at Onset				
Mean	35.2	31.5	19.9	16.0
Median	44.0	32.0	10.5	9.0
Range	6.0 – 53.0	3.0 – 56.0	3.0 – 64.0	1.0 – 55.0

## IMMUNIZATION RECOMMENDATIONS

- € Mumps disease can be 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 mumps-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 mumps immunity, or no documentation of physician-diagnosed mumps. 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.
- € Approximately 90% of those who receive two doses of the current live attenuated mumps 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 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 out of the country.

## STRATIFIED DATA

**Trends:** Since 1997, the annual number of LAC mumps cases has decreased by 87% (Figure 2). This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population. Although the greater media attention and general public awareness related to the 2006 multi-state mumps outbreak resulted in a large number of suspect case reports (n=103) in 2006, only 10% (n=10) were confirmed cases and 61% (n=63) were probable cases. In 2007, there was a decrease in the number of suspect case reports (n=60). Among the 60 suspect cases, 8% (n=5) were identified as confirmed and 30% (n=18) as probable cases. However, since 2006 it should be noted that vaccination history and negative laboratory results have been considered irrelevant by the California Department of Health Services based upon studies conducted by the CDC during the Midwest outbreak. Thus, a large number of the probable cases in 2006-2007 would have been





classified as false prior to 2006 because they had documentation of 2 doses of MMR vaccine and/or negative laboratory results.

**Seasonality:** Historically, mumps incidence peaks during the winter and summer seasons. However, suspect mumps cases are reported throughout the year (Figure 3).

**Age:** Similar to previous years, 80% (n=4) of all confirmed cases in 2007 were in persons over the age of 15 (Figure 4). Children and young adults are more likely to have been fully immunized. Table 1 indicates that probable cases in the last couple years were on average younger than the confirmed cases.

**Sex:** The male-to-female ratio of the confirmed cases was 1.5:1.

**Race/Ethnicity:** Three of the confirmed cases were Asian and two were Hispanic.

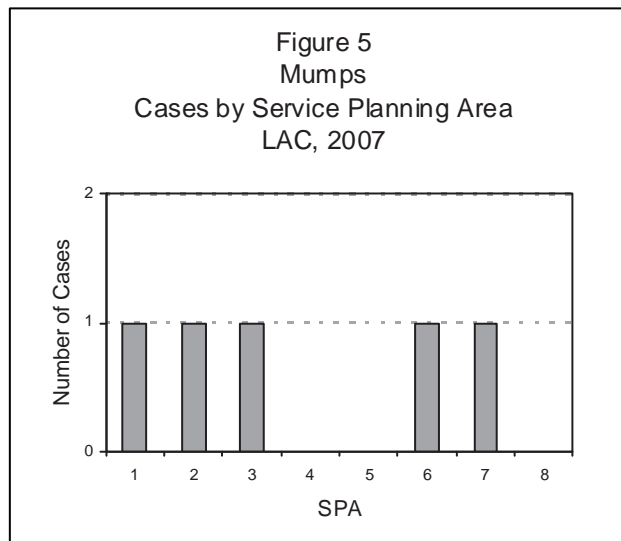
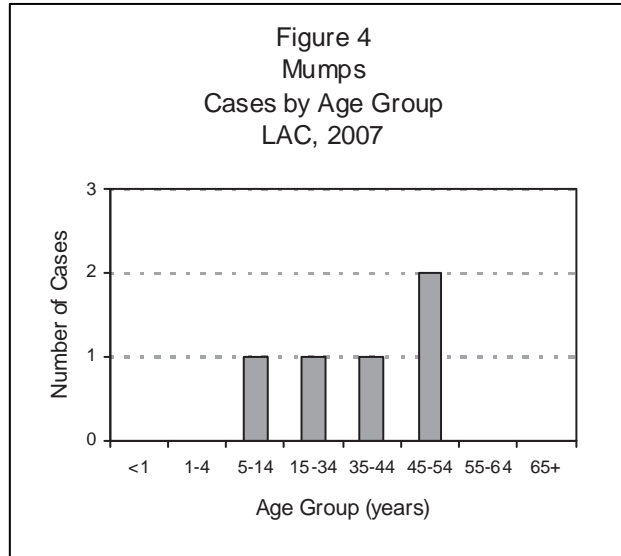
**Location:** Confirmed cases were reported in SPA 1, 2, 3, 6, and 7 (Figure 5). None of the cases was epidemiologically linked to another 2007 case, but the case in SPA 2 was epidemiologically linked to a 2006 case with onset in December.

**COMMENTS**

The 2006 multi-state mumps outbreak, which resulted in more than 6,000 reported mumps cases, had a profound impact on mumps surveillance nationwide. Vaccine efficacy was reevaluated, the case definition was slightly revised, and laboratory test guidelines were changed. Changes in case classifications also resulted in a large number of suspect cases that would have been classified as false prior to 2006 being classified as probable after 2006. Greater media attention and general public awareness also significantly increased the number of mumps reports.

During 2007, mumps outbreaks were also reported internationally. The state of Maine reported at least seven confirmed mumps cases, prompting some universities to exclude from classes students who were not up to date with their mumps vaccinations. The Maine outbreak was believed to be linked to outbreaks in the Canadian provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Alberta. Internationally, 232 mumps cases were identified in an Ethiopian refugee camp between August 1 and November 9, 2007. The United States was in the process of resettling approximately 1,000 refugees from this camp and notified state health departments of potential imported mumps cases. However, LAC did not receive any notifications of imported mumps cases.

While there were no outbreaks (i.e., 3 epidemiologically linked cases) reported in LAC, there was one situation that required close monitoring. Two LAC cases (a father with onset in January 2007 and his son with onset in December 2006) were discovered to be epidemiologically linked to a laboratory-confirmed case in another state (with onset in January 2007). The father and son had traveled internationally in December 2006. Multiple family, friend, and work contacts were identified. The continued identification of cases in LAC and in other parts of the world indicates that more work needs to be done to increase





vaccination coverage and prevent further transmission. It should be noted that not all cases of parotitis are due to mumps. Sporadic cases among highly immunized populations are most likely caused by other agents such as parainfluenzae virus types 1 and 3, influenza A virus, coxsackie A virus, echovirus, lymphocytic choriomeningitis virus, human immunodeficiency virus, and other non-infectious causes such as drugs, tumors, immunologic diseases, and obstruction of the salivary duct. Determination of epidemiological linkages, MMR vaccination status, and appropriate laboratory testing (mumps IgM antibody assay and viral culture) will help ensure that only true mumps cases are reported.

Cluster Identification: None of the confirmed cases in 2007 were epidemiologically linked to each other. As described above, one case was linked to a 2006 LAC case and a 2007 laboratory-confirmed case in another state. The index case from this cluster of three cases was exposed in another country. An additional 2007 case (not related to the cluster) was also exposed in another country and was linked to a 2008 LAC case.

Vaccination Status: Only one of the confirmed cases was fully immunized with two doses of MMR vaccine. The remaining four cases did not know or remember their vaccination status.

Laboratory Confirmation: Eighty percent (n=4) of the confirmed cases had supporting laboratory confirmation. One case was epidemiologically linked to a 2007 laboratory-confirmed case in another state.

## **ADDITIONAL RESOURCES**

Additional information 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>

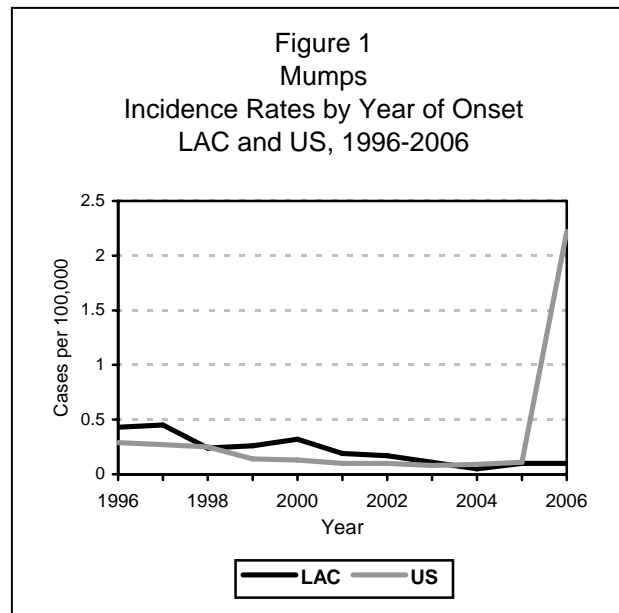
## MUMPS

CRUDE DATA	
Number of Cases	10
Annual Incidence <sup>a</sup>	
LA County	0.10 <sup>b</sup>
California	0.06
United States	2.22 <sup>c</sup>
Age at Diagnosis	
Mean	31.5 years
Median	32.0 years
Range	3.0 – 56.0 years

<sup>a</sup> Cases per 100,000 population.

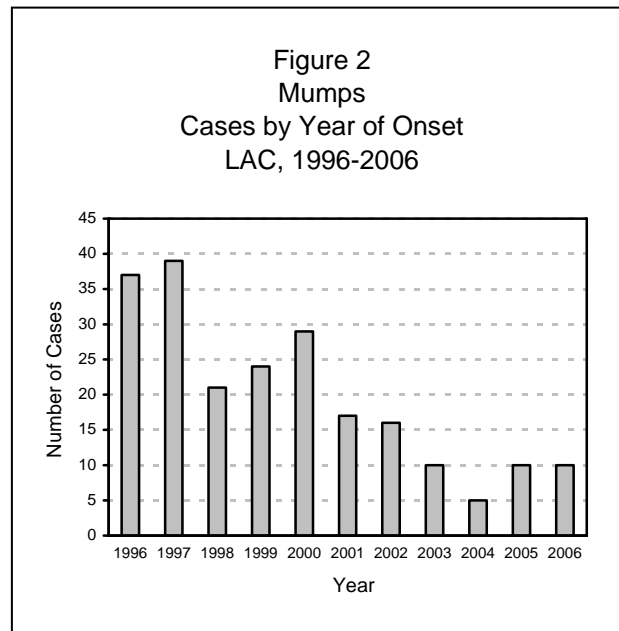
<sup>b</sup> Rates based on less than 19 observations are unreliable.

<sup>c</sup> Calculated from 2007 Summary of notifiable diseases issue of MMWR (56:853-863).



### DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets from infected persons. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation (*i.e.*, positive IgM titer, significant increase between acute and convalescent IgG titers, or culture confirmation). The minimum clinical criteria for mumps is an acute onset of unilateral or bilateral swelling of the parotid or other salivary gland lasting  $\geq 2$  days without other apparent cause. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.



### DISEASE ABSTRACT

- Greater media attention and public awareness of mumps following the multi-state mumps outbreak in the Midwest in 2006 resulted in twice as many suspect mumps reports compared to 2005.
- Of 103 suspect mumps reports received at the LAC Immunization Program during 2006, only 10 were identified as confirmed mumps cases.
- During 2006, there were 21 reported cases in CA, of which 48% were reported in LAC.

## IMMUNIZATION RECOMMENDATIONS

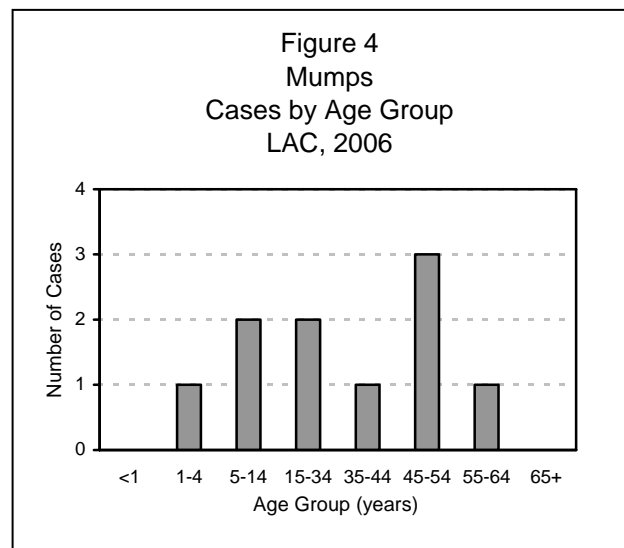
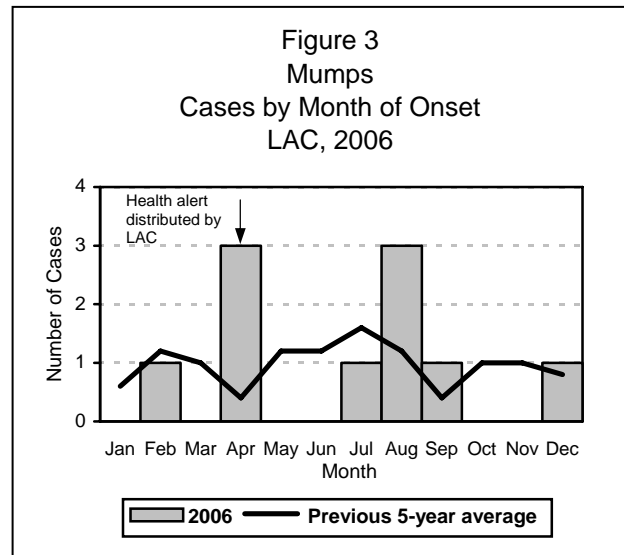
- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally recommended to achieve immunity. The first dose is recommended at 12 months of age. The second dose can be given as early as four weeks after the first dose, but is usually given at ages 4 to 6 years. Vaccination is recommended for those who have no prior MMR, particularly if they are in a high-risk setting.
- Approximately 90% of those who receive two doses of the current live attenuated mumps vaccine develop immunity.
- Generally, persons can be considered immune to mumps if they were born before 1957, have serologic evidence of mumps immunity, have documentation of physician-diagnosed mumps, or have documentation of vaccination with at least one dose of live mumps vaccine on or after their first birthday.
- 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:** Since 1995, the annual number of cases of mumps has decreased by 76% (Figure 2). This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population. The 2006 multi-state mumps outbreak in the Midwest area of the United States resulted in greater media attention and general public awareness of mumps. In LAC, twice as many suspect cases were reported in 2006 (n=103) compared to 2005 (n=50). Among the 103 suspect cases, 10 were identified as confirmed and 63 as probable cases. However, it should be noted that vaccination history and negative lab results were considered noncontributory in 2006 by the California Department of Health Services based upon studies conducted by the CDC during the Midwest outbreak. Thus, a large number of the probable cases this year would have been classified as false in previous years because they had documentation of 2 doses of MMR vaccine and/or negative lab results.

**Seasonality:** Historically, mumps incidence peaks during the winter and spring seasons. However, mumps cases have been reported throughout the year. In 2006, cases occurred throughout the year with peaks in April (n=3) and August (n=3). The summer months of July, August, and September accounted for 50% (n=5) of confirmed cases (Figure 3). The first MMWR report on the Iowa outbreak occurred in late March. LAC followed up with a health alert in early April subsequently increasing the number of suspect mumps reports.

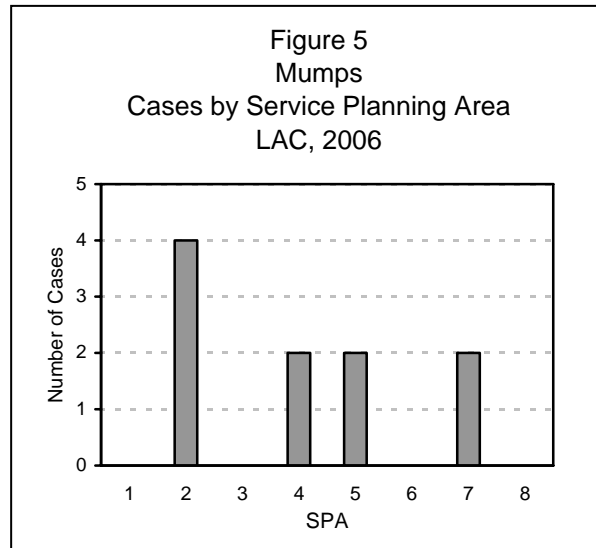
**Age:** Similar to previous years, 70% (n=7) of all confirmed cases in 2006 were in persons over the age of 15 (Figure 4). Children and young adults are more likely to have been fully immunized.



**Sex:** The male-to-female ratio of the confirmed cases was 1.5:1.

**Race/Ethnicity:** More than half of the confirmed mumps cases occurred among non-Latinos. There were 4 white cases, 3 Hispanic cases, 2 Asian cases, and 1 as unspecified race/ethnicity (data now shown).

**Location:** Confirmed cases were reported in four of the eight SPAs (Figure 5). Four of the cases (40%) resided in San Fernando Valley (SPA 2). Metro (SPA 4), West (SPA 5), and East (SPA 7) reported two cases each. None of the cases was epidemiologically linked to another 2006 case, although there were cases linked to 2007 cases (details in the Comments section below).



## COMMENTS

During January to October 2006, more than 5,700 mumps cases were reported in the United States, including more than 2,500 cases from the multi-state outbreak in the Midwest area. The predominant age group affected in the Midwest outbreak was the 18-24 year age group; a high proportion of whom were college students. The close-contact environment of college dormitories may have facilitated transmission of the mumps virus. The Midwest outbreak had a profound impact on mumps surveillance nationwide. On April 7, the Immunization Program released a health alert urging Los Angeles County healthcare providers to be vigilant about mumps. Greater media attention and general public awareness also increased the number of mumps reports. Vaccine efficacy was reevaluated, the case definition was slightly revised, and laboratory test guidelines were revised.

The efficacy of the mumps component of the MMR vaccine was reevaluated. Efficacy was estimated to be approximately 80% after one dose and approximately 90% after two doses. Thus, individuals who received 2 doses may still be susceptible to mumps. In the United States, where mumps vaccination coverage is high, most mumps cases will likely occur in persons who have received 2 doses [1].

In April 2006, the California Department of Health Services (CDHS) updated mumps surveillance guidelines and specimen collection guidelines for mumps virus testing. In addition, a mumps case report form was created and introduced for use in reporting probable and confirmed mumps cases to the state. Most notably, the CDHS also changed the classification of mumps cases. Prior to 2006, suspect mumps cases that received 2 doses of MMR vaccine were classified as false cases (regardless of clinical symptoms). In 2006, a suspect mumps case that met the clinical case definition (regardless of MMR vaccination history), is not laboratory-confirmed, and is not epidemiologically-linked to another probable or confirmed case was classified as a probable mumps case.

The value of mumps serological testing in previously vaccinated individuals was also questioned. In vaccinated individuals, the IgM response is highly variable and may be absent. In addition, it may not be possible to observe a 4-fold rise between acute and convalescent IgG titers. Thus, it was determined that a negative lab result, especially in previously vaccinated individuals, did not rule out mumps. Urine cultures were also no longer recommended because of lack of sensitivity. There are concerns with relying only on clinical classification of a mumps case. A clinical diagnosis of mumps may be unreliable since agents other than the mumps virus can cause parotitis. Parotitis can also be caused by parainfluenzae virus types 1 and 3, influenza A virus, Coxsackie A virus, echovirus, lymphocytic choriomeningitis virus, human immunodeficiency virus, and other non-infectious causes such as drugs, tumors, immunologic diseases, and obstruction of the salivary duct. As a result of the new case definition and laboratory test guidelines, a large number of suspect cases that would have been classified as false prior to 2006 were classified as probable in 2006.

Cluster Identification: None of the confirmed cases in 2006 were epidemiologically linked to each other. One case was linked to a 2005 case. Another case was exposed in the Phillipines and was subsequently linked to two cases with onset in 2007. None of the cases reported traveling to the states involved in the Midwest outbreak.

Vaccination Status: Only two of the confirmed cases were fully immunized with 2 doses of MMR vaccine. One case (age 3) had received 1 dose of MMR vaccine but was up-to-date for his age. The remaining 7 cases did not know or remember their vaccination status.

Laboratory Confirmation: Ninety percent (n=9) of the confirmed cases had supporting laboratory confirmation. One case was epidemiologically linked to a 2007 lab-confirmed case in another state.

## REFERENCE

1. CDC. Brief report: update: mumps activity--United States, January 1–October 7, 2006. MMWR 2006; 55(42):1152-1153.

## ADDITIONAL RESOURCES

Additional information is available at:

- National Immunization Program – [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)
- Immunization Action Coalition – [www.immunize.org](http://www.immunize.org)
- LAC Immunization Program – [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)



## MUMPS

CRUDE DATA	
Number of Cases	10
Annual Incidence <sup>a</sup>	
LA County	0.10 <sup>b</sup>
California	0.13
United States	
Age at Diagnosis	
Mean	41.0 years
Median	49.5 years
Range	1 – 76 years
Case Fatality	
LA County	0.0%
United States	

<sup>a</sup> Cases per 100,000 population.

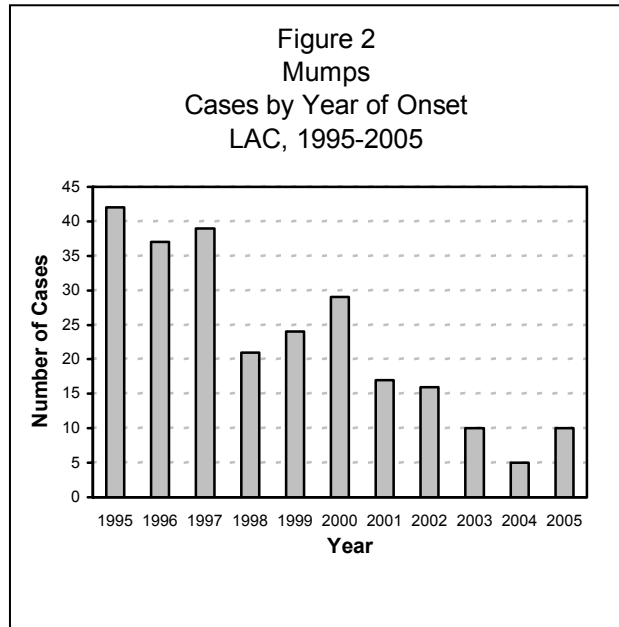
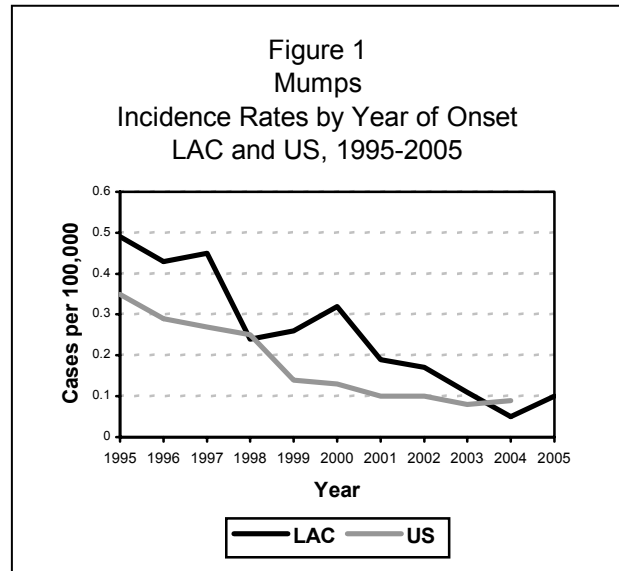
<sup>b</sup> Rates based on less than 20 observations are unreliable.

### DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets from infected persons. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation (i.e., mumps IgM antibody assay). The minimum clinical criteria for mumps is an acute onset of unilateral or bilateral swelling of the parotid or other salivary gland lasting  $\geq 2$  days without other apparent cause. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.

### DISEASE ABSTRACT

- The incidence of mumps cases in LAC has been steadily declining since 1995 (Figure 1).
- Of 50 suspect mumps reports received at the LAC Immunization Program during 2005, only 10 were identified as LAC mumps cases.

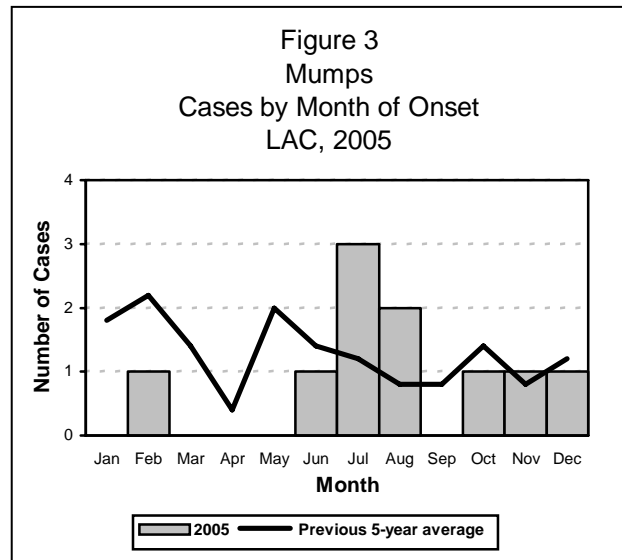




- During 2005, there were 47 reported cases in CA, of which 21% were reported in LAC.

### IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally recommended to achieve immunity. 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 who have no prior MMR, particularly if they are in a high-risk setting.
- Approximately 90% of those who receive two doses of the current live attenuated mumps vaccine develop immunity.
- Generally, persons can be considered immune to mumps if they were born before 1957, have serologic evidence of mumps immunity, have documentation of physician-diagnosed mumps, or have documentation of vaccination with at least one dose of live mumps vaccine on or after their first birthday.
- 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:** Since 1995, the annual number of cases of mumps has decreased by 76% (Figure 2). This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population; however, the continued identification of cases indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

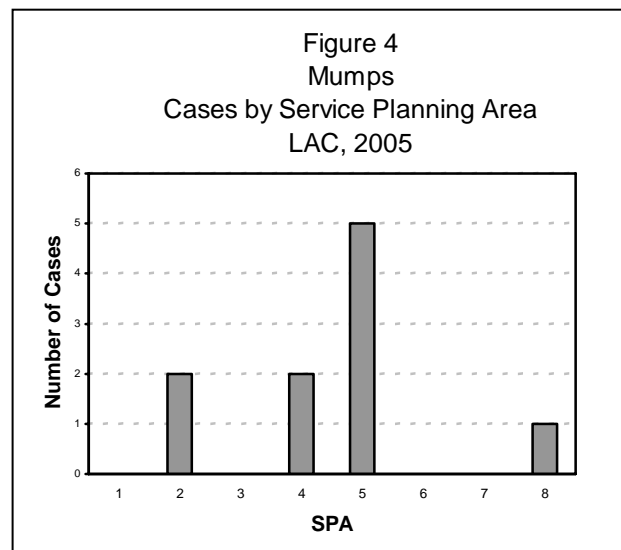
**Seasonality:** Historically, case reports have peaked during the winter and spring seasons. However, in 2005, 60% (n=6) of the cases occurred in the summer months with a peak in July (Figure 3).

**Age:** Similar to 2004, 80% (n=8) of all reported cases in 2005 were in adults over the age of 20.

**Sex:** The male-to-female ratio of the cases was 1:2.3. It is unknown why twice as many females than males have been reported.

**Race/Ethnicity:** More than half of the reported mumps cases occurred among non-Latinos. There were 4 White cases, 4 Asian cases, 1 Hispanic case, and 1 as unspecified race/ethnicity.

**Location:** Cases were reported in four of the 8 SPAs (Figure 4). Five of the cases (50%) resided in West (SPA 5). San Fernando Valley (SPA 2) and Metro (SPA 4) reported two cases each. South Bay (SPA 8) reported one case.





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## COMMENTS

The majority of reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases among highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies. Determination of MMR vaccination status and appropriate laboratory testing (mumps IgM antibody assay) will help ensure that only true mumps cases are reported.

Cluster Identification: Two of the cases in 2005 were epidemiologically linked to each other. The cases were household contacts residing in SPA 5. Both were Asian females, aged 54 and 76 years old. Onset of mumps symptoms occurred in June and July. One of the cases was laboratory-confirmed with a positive mumps IgM antibody test result. Neither of the cases knew her vaccination status.

Vaccination Status: None of the cases had documented dates for their MMR vaccinations. One case (age 1) was never vaccinated. Nine cases did not know or remember their vaccination status.

Laboratory Confirmation: Eighty percent (n=8) of the cases had supporting laboratory confirmation.

## ADDITIONAL RESOURCES

Additional information is available at:

- National Immunization Program – [www.cdc.gov/ip](http://www.cdc.gov/ip)
- Immunization Action Coalition – [www.immunize.org](http://www.immunize.org)
- LAC DHS, Immunization Program – [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)

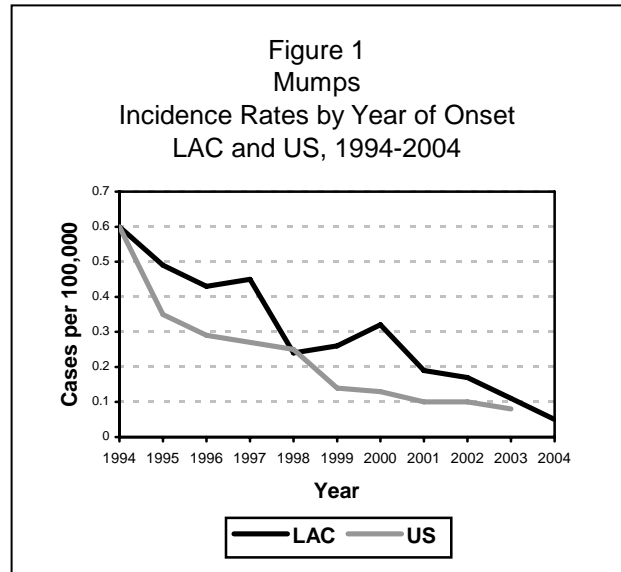


## MUMPS

CRUDE DATA	
Number of Cases	5
Annual Incidence <sup>a</sup>	
LA County	--- <sup>b</sup>
California	0.15
United States	0.09
Age at Diagnosis	
Mean	44 years
Median	43 years
Range	25 - 64 years
Case Fatality	
LA County	0
United States	N/A

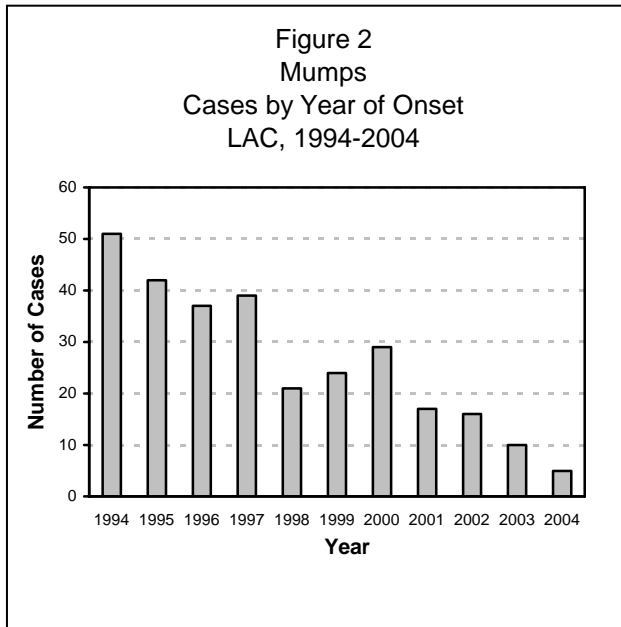
<sup>a</sup> Cases per 100,000 population.

<sup>b</sup> Rates based on less than 20 observations are unreliable.



### DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets from infected persons. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation (i.e., mumps IgM antibody assay). The minimum clinical criteria for mumps is an acute onset of unilateral or bilateral swelling of the parotid or other salivary gland lasting >2 days without other apparent cause. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.



### DISEASE ABSTRACT

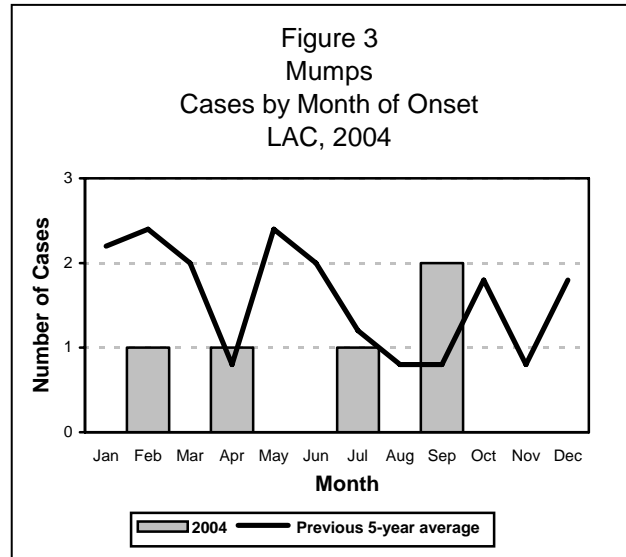
- The incidence of mumps cases in LAC has been steadily declining since 1994 (Figure 1).



- Of 25 mumps reports received at the LAC Immunization Program during 2004, there were only 5 confirmed mumps cases identified in LAC.
- During 2004, there were 55 reported cases in CA, of which 9% were reported in LAC.

### IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally recommended to achieve immunity. 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 who have no prior MMR, particularly if they are in a high-risk setting.
- Over 95% of those who receive the current live attenuated mumps vaccine develop immunity.
- Generally, persons can be considered immune to mumps if they were born before 1957, have serologic evidence of mumps immunity, have documentation of physician-diagnosed mumps, or have documentation of vaccination with at least one dose of live mumps vaccine on or after their first birthday.
- 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

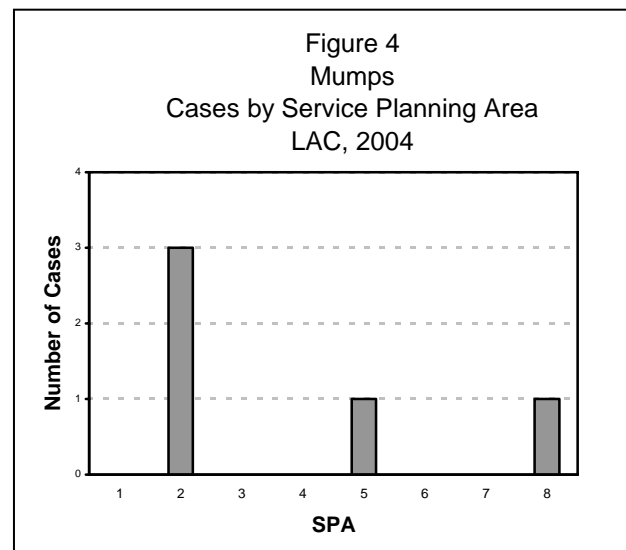
**Trends:** Since 1994, the annual number of cases of mumps has decreased by 90% (Figure 2). This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population, however, the continued identification of cases indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

**Seasonality:** Historically, case reports have peaked during the winter and spring seasons. However, in 2004, the cases were uniformly distributed throughout the year (Figure 3).

**Age:** Unlike in 2003 when 90% of all reported cases were under the age of 11, all reported cases in 2004 were adults over the age of 24.

**Sex:** The male-to-female ratio of the cases was 1:1.5.

**Race/Ethnicity:** More than half of the reported mumps cases occurred among non-Latinos. There were 3 White cases, 1 Hispanic case, and 1 as unspecified race/ethnicity.



**Location:** Cases were reported in three of the 8 SPAs (Figure 4). Three of the cases resided in San Fernando Valley (SPA 2). West (SPA 5) and South Bay (SPA 8) reported one case each.



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## COMMENTS

The majority of reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases among highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies. Determination of MMR vaccination status and appropriate laboratory testing (Mumps IgM antibody assay) will help ensure that only true mumps cases are reported.

**Cluster Identification:** None of the cases in 2004 was epidemiologically linked to each other.

**Vaccination Status:** None of the cases had documented dates for their MMR vaccinations. One case claimed to have never been vaccinated. Four cases had an unknown vaccination status.

**Laboratory Confirmation:** Eighty percent (n=4) of the cases had supporting laboratory confirmation.

## ADDITIONAL RESOURCES

Additional information is available at:

- National Immunization Program – [www.cdc.gov/ip](http://www.cdc.gov/ip)
- Immunization Action Coalition – [www.immunize.org](http://www.immunize.org)
- LAC DHS, Immunization Program – [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)

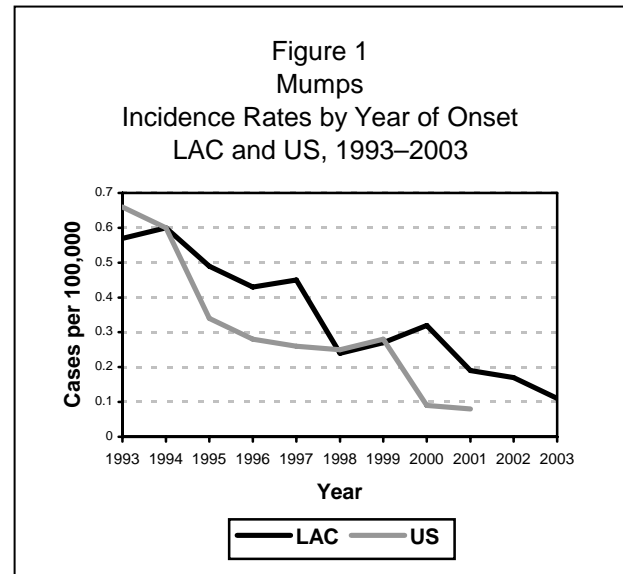


## MUMPS

CRUDE DATA	
Number of Cases	10
Annual Incidence <sup>a</sup>	
LA County	-- <sup>b</sup>
California	
United States	
Age at Diagnosis	
Mean	9
Median	7
Range	4–31 years
Case Fatality	
LA County	0
United States	N/A

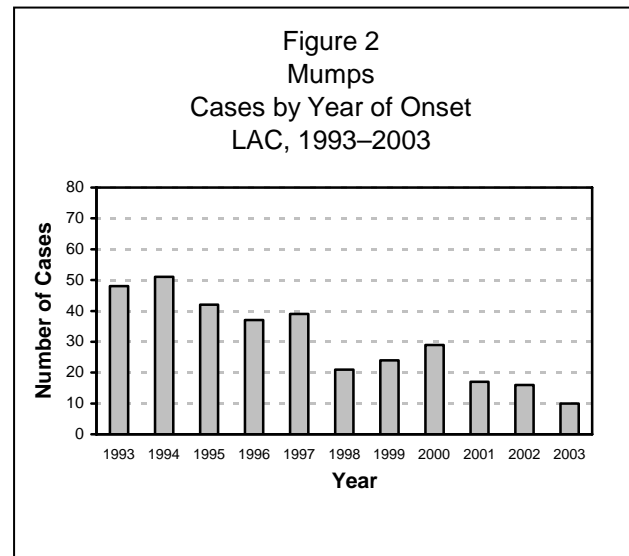
<sup>a</sup> Cases per 100,000 population.

<sup>b</sup> Rates based on less than 20 observations are unreliable.



### DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets from infected persons. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation (i.e., mumps IgM antibody assay). Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.



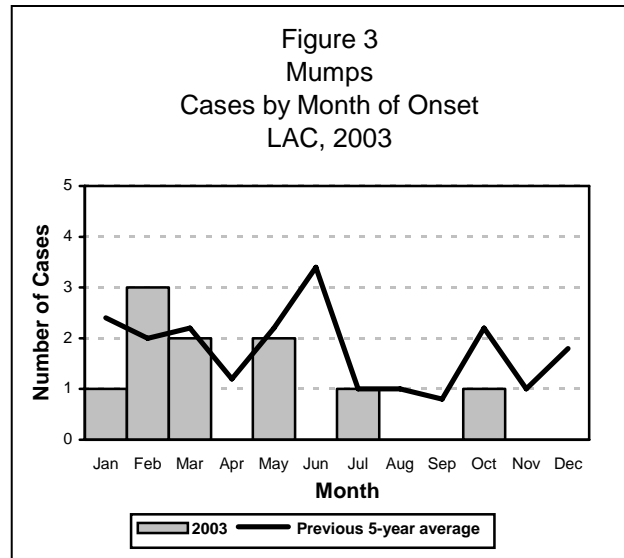
### DISEASE ABSTRACT

- The incidence of mumps cases in LAC has been steadily declining since 1992 (Figure 1).
- Of 37 mumps reports received at the LAC Immunization Program during 2003, there were only 10 confirmed mumps cases identified in LAC.
- During 2003, there were 10 reported cases in the US, of which, 59 cases were reported in California.



## IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally recommended to achieve immunity. 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 who have no prior MMR, particularly if they are in a high-risk setting.
- Over 95% of those who receive the current live attenuated mumps 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

**Trends:** Since 1993, the annual number of cases of mumps has decreased by 79%. This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population, however, the continued identification of cases indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

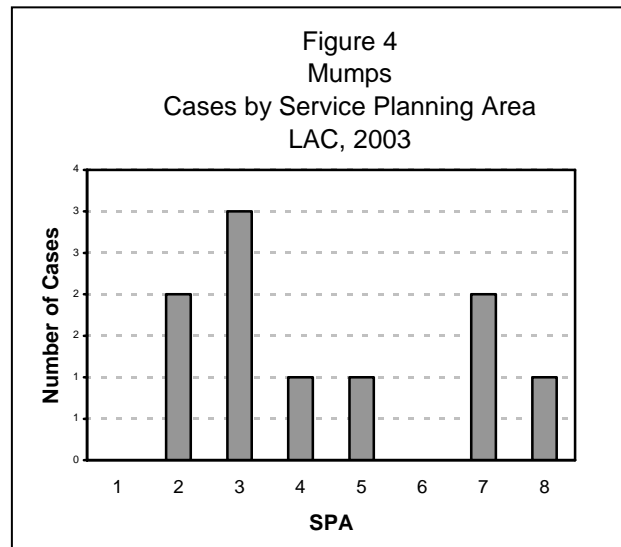
**Seasonality:** Historically, case reports have peaked during the winter and spring seasons. However, most of the cases (60%) occurred in the first three months of 2003, and the remaining cases were uniformly distributed throughout the year (Figure 3).

**Age:** Persons under the age of 11 accounted for 90% (n=9) of all reported cases in 2003.

**Sex:** The male-to-female ratio of the cases was 1:0.7

**Race/Ethnicity:** About half of the reported mumps cases occurred among non-Latinos. There were 4 Hispanic cases, 2 cases among Whites, 1 case reported as Asian, 1 case identified as Other race/ethnicity, and 2 as unspecified race/ethnicity.

**Location:** Cases were reported in six of the eight SPAs (Figure 4). Three of the cases resided in San Gabriel (SPA 3). San Fernando Valley (SPA 2) and East (SPA 7) reported two cases each, and Metro (SPA 4), West (SPA 5), and South Bay (SPA 8) each accounted for one case.



## COMMENTS

The majority of reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases among highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies.



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**Cluster Identification:** None of the cases in 2003 was epidemiologically linked to another.

**Vaccination Status:** Most of the cases (n=6, 60%) had documented dates for their MMR vaccinations. Two cases claimed to have been adequately vaccinated, but no documentation was available. Two cases had an unknown vaccination status.

### **ADDITIONAL RESOURCES**

Additional information is available at:

- National Immunization Program – [www.cdc.gov/ip](http://www.cdc.gov/ip)
- Immunization Action Coalition – [www.immunize.org](http://www.immunize.org)
- LAC DHS, Immunization Program – [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)

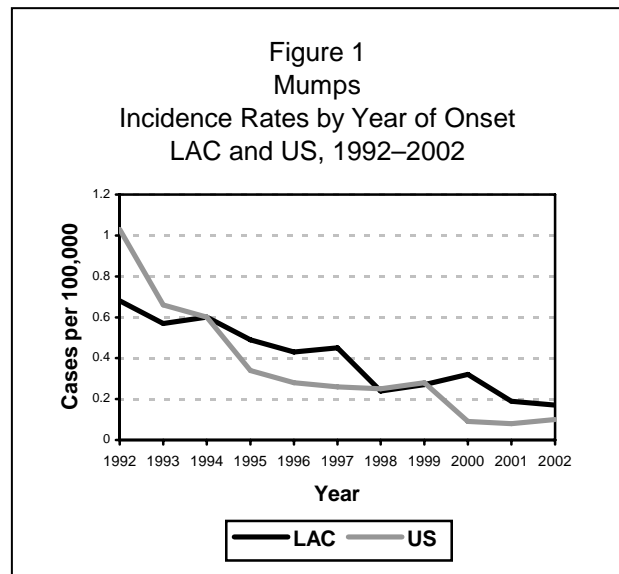


## MUMPS

CRUDE DATA	
Number of Cases	16
Annual Incidence <sup>a</sup>	
LA County	-- <sup>b</sup>
California	0.2
United States	0.1
Age at Diagnosis	
Mean	8
Median	7
Range	1–16 years
Case Fatality	
LA County	0
United States	N/A

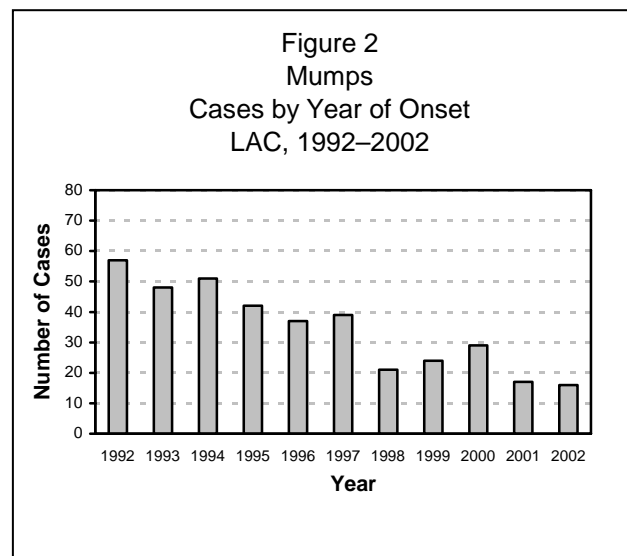
<sup>a</sup> Cases per 100,000 population.

<sup>b</sup> Rates based on less than 20 observations are unreliable.



### DESCRIPTION

Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets. Symptoms begin 14–18 days after exposure, with a range of 12–25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.



### DISEASE ABSTRACT

- The incidence of mumps cases in LAC has been steadily declining since 1992 (Figure 1).

### IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR), are normally required to achieve immunity. 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 who have no prior MMR, particularly if they are in a high-risk setting.

- Over 95% of those who receive the current live attenuated mumps vaccine develop immunity.
- Women should not become pregnant within one month of vaccination.
- Individuals who are severely immunocompromised for any reason should not be given MMR vaccine.

## STRATIFIED DATA

**Trends:** Since 1992, the incidence of mumps has decreased by 77%. The steady decline in the annual number of reported cases has reached a plateau in 2001 and 2002. This decline reflects the effectiveness of the MMR vaccine in reducing the incidence of disease in the general population, however, the plateau indicates more work that needs to be done to vaccinate remaining individuals and prevent further transmission.

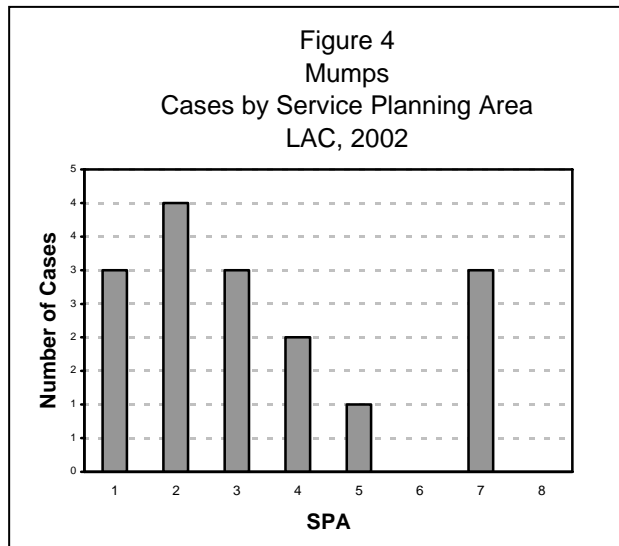
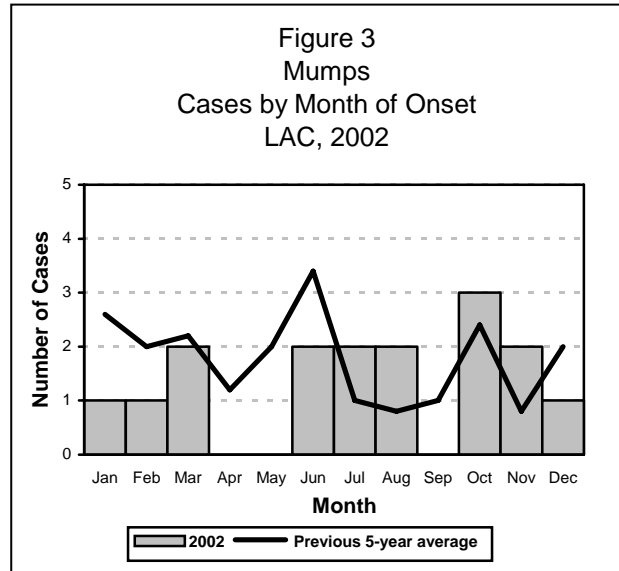
**Seasonality:** Historically case reports have peaked during the winter and spring seasons. Fifty percent of the cases occurred in the winter months and 25% of the cases were reported during the spring months. However, the number of cases occurring during May, June, and July accounts for over 37% of the reported cases in 2002 (Figure 3).

**Age:** Persons under the age of 14 accounted for 94% of all reported cases in 2002.

**Sex:** The male-to-female ratio of the cases was 1:0.6

**Race/Ethnicity:** About half of the reported mumps cases occurred among Latinos. There were 3 cases among Asians, 1 case reported in Blacks, and 1 case identified in Whites and 3 had unspecified race/ethnicity.

**Location:** Cases were reported in six of the 8 SPAs (Figure 4). Antelope Valley (SPA 1), San Fernando (SPA 2), San Gabriel (SPA 3), and East (SPA 7) reported similar number of cases and accounted for 81% of the total 2002 cases.



## COMMENTS

The majority of reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases among highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies.

**Cluster Identification:** None of the cases in 2002 was epidemiologically linked to another.

**Vaccination Status:** Most of the cases (n=10, 63%) had documented dates for their MMR vaccination. Four cases claimed to have been vaccinated but no documentation was available. One case did not have a previous history of MMR vaccination, and one had an unknown vaccination status.



## **ADDITIONAL RESOURCES**

National Immunization Program at: [www.cdc.gov/ip](http://www.cdc.gov/ip)

Immunization Action Coalition at: [www.immunize.org](http://www.immunize.org)

LAC Department of Health Services, Immunization Program at: [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)

## MUMPS

CRUDE DATA	
Number of Cases	17
Annual Incidence <sup>a</sup>	
LA County	0.2 <sup>b</sup>
California	0.1
United States	0.1
Age at Diagnosis	
Mean	12
Median	7
Range	1-39 years
Case Fatality	
LA County	0.0%
United States	N/A

<sup>a</sup> Cases per 100,000 population.

<sup>b</sup> Rates based on less than 20 observations are unreliable.

### DESCRIPTION

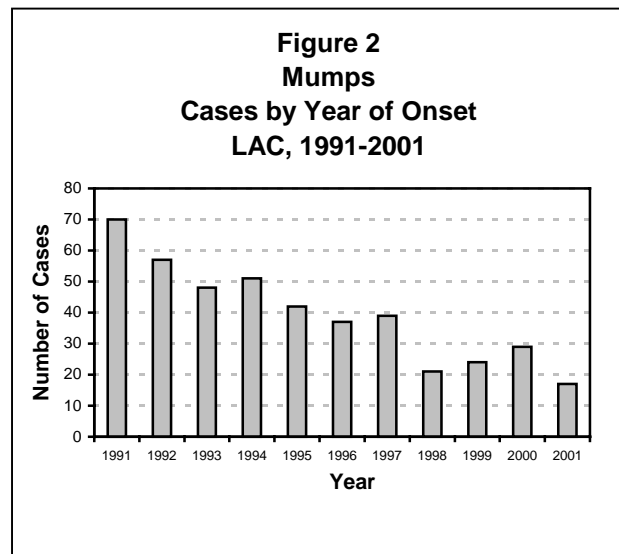
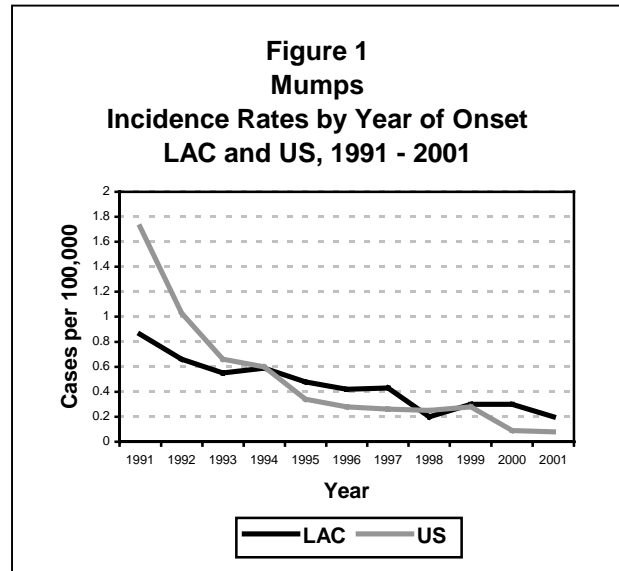
Mumps is a vaccine-preventable disease caused by an RNA paramyxovirus that is transmitted by direct contact with respiratory droplets. Symptoms begin 14-18 days after exposure, with a range of 12-25 days, and include swelling of salivary glands, fever, and inflammation of the testes in teenage and adult males. Up to 20% of infected individuals may be asymptomatic. Sequelae include encephalitis, meningitis, orchitis, arthritis, and deafness. In addition, pregnant women who contract mumps are at increased risk of spontaneous abortions. Most reported cases are diagnosed based on clinical symptoms and do not have supporting laboratory confirmation. Although single probable or confirmed cases are reportable, only outbreaks of two or more cases are investigated.

### DISEASE ABSTRACT

- The incidence of mumps cases in LAC has been steadily declining since 1991 (Figure 1).

### IMMUNIZATION RECOMMENDATIONS

- Two doses of mumps-containing vaccine, usually given as Measles-Mumps-Rubella (MMR),



are normally required to achieve immunity. 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 who have no prior MMR, particularly if they are in a high-risk setting. Over 95% of those who receive the current live attenuated mumps vaccine develop immunity.

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

### STRATIFIED DATA

**Trends:** Since 1991, the incidence of mumps has decreased by 78%.

**Seasonality:** Historically case reports have peaked during the winter and spring seasons. However, the onset date of 35% of the reported cases in 2001 was in May and June (Figure 3).

**Age:** Persons, aged less than 14 years, accounted for 71% of all reported cases in 2001. Of all the cases, four were between 1-4 years, eight were between 5-14 years, four were between 15-34 years, and one was between 35-44 years of age.

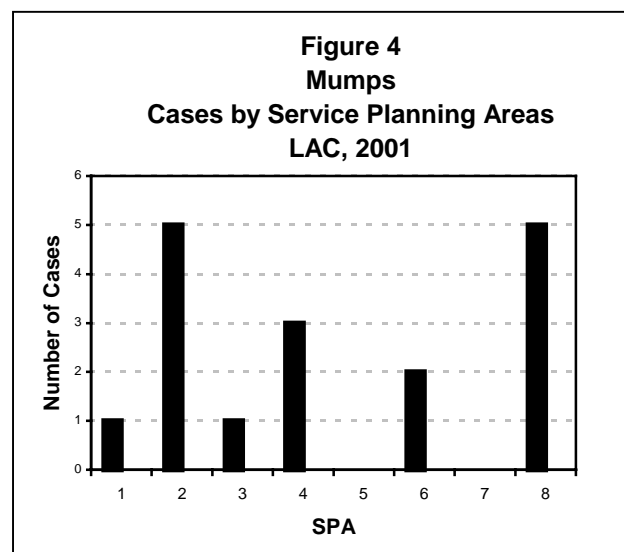
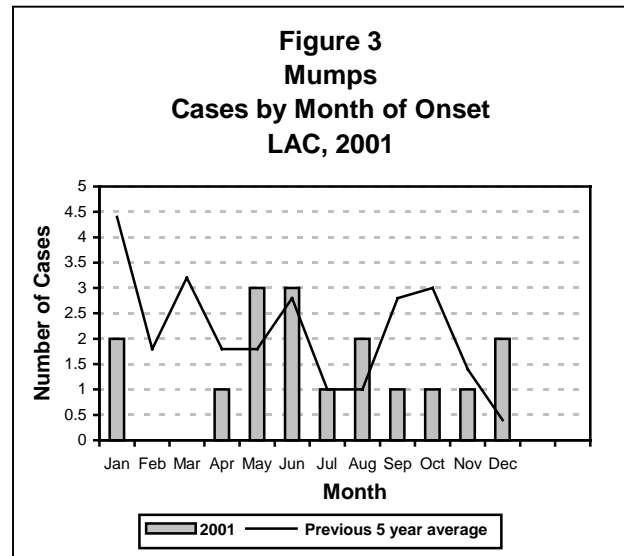
**Sex:** The male-to-female ratio of the cases was 1:1.3

**Race/Ethnicity:** About 70% of the reported mumps cases occurred among Latinos, although this ethnic group accounts for 45% of LAC population in 2001. Asians and Blacks accounted for one case each, and three cases were of an unspecified race/ethnicity.

**Location:** Cases were reported in six of the 8 Service Planning Areas, and ten of the 24 health districts. San Fernando (SPA2) and South Bay (SPA 8) accounted for 59% (n=10) of reported cases, with West Valley and Inglewood districts reporting 6 of these 10 cases (Figure 4).

### COMMENTS

Most reported individual (non-outbreak related) and non-lab confirmed clinical mumps cases in highly immunized populations are most likely caused by other agents such as coxsackie and parainfluenza group 3 viruses. Recurrent parotitis can also result from non-infectious etiologies.



**Cluster Identification:** No cases were epidemiologically linked.

**Vaccination Status:** Of the 17 cases, only seven claimed to have received a first dose of MMR with an additional four cases having received a second dose of MMR. However, no documentation was obtained on any of the cases.

#### **ADDITIONAL RESOURCES**

National Immunization Program at: [www.cdc.gov/ip](http://www.cdc.gov/ip)

Immunization Action Coalition at:  
[www.immunize.org](http://www.immunize.org)

LAC Department of Health Services, Immunization Program at: [www.lapublichealth.org/ip](http://www.lapublichealth.org/ip)