

MEASLES UPDATE**National Immunization Program (NIP), Centers for Disease Control & Prevention
Measles Activity in U.S. through Week 34 (August 27, 2005)**

No. of confirmed measles cases reported to MMWR by Week 34, 2005:	56
No. of confirmed measles cases reported to NIP by Week 34, 2005:	55
No. of confirmed measles cases reported for same period in 2004:	25
Total No. of U.S. outbreaks (3 or more linked cases) in 2005:	1

As of Week 34 (ending Aug 27, 2005), a total of 56 measles cases have been reported for the Morbidity and Mortality Weekly Report (MMWR) compared to 25 cases for the same period of last year. Five cases reported to the MMWR are error records to be deleted by: Utah (- 4), NJ (- 1) and NC (- 1). Five cases not yet reported to the MMWR include 2 from Oregon (imports from Egypt/Saudi Arabia), and recent imports from WA (1 from France); OH (1 from Nigeria) and MI (1 from Yemen). All confirmed measles cases to date are listed in Table 1 by rash onset. A total of 55 confirmed measles cases have been reported to NIP by 13 states: Arizona - 1; California - 3; Delaware - 1; Hawaii - 2; Indiana - 33; Illinois - 2; New York - 1; NYC - 4; Oregon - 2; Tennessee - 1; Wisconsin - 2; Ohio - 1; Washington - 1; and Michigan - 1. Ninety-six percent (53/55) of cases are import-associated which includes 17 imported cases and 36 cases that were epi-linked to an imported case. Source countries for the import-associated cases were: Armenia (1 case imported); India (2 cases imported); Indonesia (1 case imported and 1 secondary case); Egypt/Saudia Arabia (2 cases imported); Thailand (2 cases imported); Germany (1 case imported and 1 spread case); Romania - (1 import and 33 import-associated cases); China - 1 import; France - 1 import; Nigeria - 1 import; and Yemen - 1 import.

Measles Confirmed since last Update:**NEW YORK CITY** - 1 traceable to import

The first measles case for 2005 was an importation from Indonesia in an 11-month-old Brooklyn resident, rash onset January 2. One spread case was also reported in a 1-year-old male from Manhattan, onset **January 16**. The 1-year-old had been vaccinated after exposure to the 11-month-old in a medical setting. The 1-year-old received vaccine 9 days prior to rash onset. Other symptoms included fever of 102.7; conjunctivitis, coryza, cough and diarrhea.

HAWAII - 1 import and 1 unknown source

Hawaii reported one imported case in a Maui resident (rash onset **February 17**), who had recently returned from **Thailand**. The 27-year-old male was unvaccinated because of personal beliefs.

Hawaii also reported one confirmed case in a 10-month-old Maui resident, rash onset **April 20**. Symptoms included rash, cough, coryza, conjunctivitis, fever of 103 and diarrhea. Source of infection was unknown.

DELAWARE - 1 import

New Castle County, Delaware reported a single import from **Thailand/Laos**, rash onset **February 18**. The foreign born 44-year-old male (U.S. resident) had returned from southeast Asia 2 weeks prior to febrile rash. The case-patient gave a verbal history of having received measles vaccine in the U.S., and denied cough, coryza or conjunctivitis. A private lab reported positive IgM result. Rash was initially thought to be the result of a new medication. A second blood obtained on March 17 was also positive (by direct capture) at the State lab. No secondary cases were identified.

CALIFORNIA - 1 import and 1 traceable; 1 unknown source case

San Diego confirmed a 2-case chain of measles in 2 siblings (U.S. residents), ages 33 and 25 years, with rash onsets **February 26 and March 17, 2005**. The first case was an import from **Germany**. Both brothers were unvaccinated because of personal beliefs. The March case was in Puerto Rico during his infectious period. No other cases were identified.

A military hospital in Santa Barbara reported confirmed measles in a 9-month-old military dependent, rash onset **April 23**. Source of infection was unknown.

New call from California: A hospital in Riverside reported measles in a 48-year-old U.S. citizen with international travel history—Hong Kong, Cambodia and Thailand July 1–July 28. Patient developed fever on Aug 6 (up to 104), followed by rash onset Aug 8. Diffuse maculopapular rash spread from neck to all over body, cough, watery eyes, diarrhea, nausea and

vomiting. Patient was hospitalized for 6 days. Commercial lab results from specimens collected Aug 16 were IgM positive, IgG negative. The State Lab will retest the specimen(s). **This case is not yet included in Table 1.**

WISCONSIN – 1 traceable

Serum and viral specimens from a 15-year-old contact to a previously reported import from Germany (rash April 3rd) were collected and forwarded to CDC on April 20. Serologic results for the contact case were IgM positive and sequencing was Genotype D4. The NETSS record for the secondary case was transmitted during Week 34.

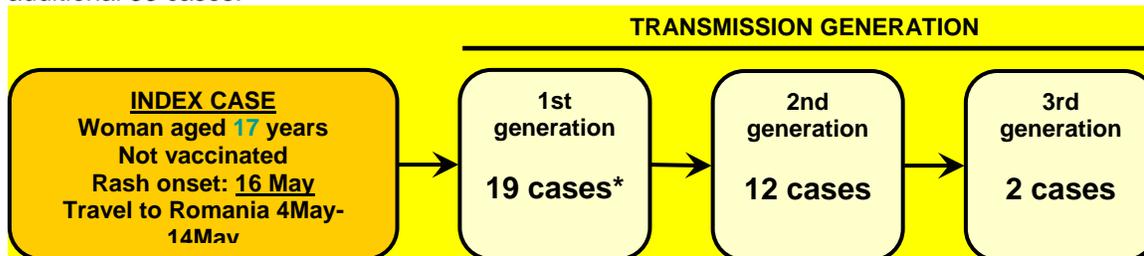
INDIANA/Illinois Outbreak

Rash Onset Dates: May 16 – June 24, 2005

34 confirmed cases

Source: Romania

On May 29, 2005, the Indiana State Department of Health (ISDH) was notified of a 7 year old female (Indiana resident hospitalized in Cincinnati with suspected measles. Serological analysis confirmed the measles diagnosis. The child's parents informed the ISDH that she had been in northwestern Indiana, on May 15, 2005 when a community member (had returning from Romania) had been ill with rash and fever (the index case). The investigation that followed identified an additional 33 cases.



33 confirmed measles cases were reported by the State of Indiana and 1 in Illinois with rash onset dates between 16 May and 24 June. All but one of the cases occurred within a community group that does not routinely accept vaccinations. Twenty-eight cases were not vaccinated; two cases were vaccinated with one or two doses; one case was <1 year of age; one was born prior to 1957; and vaccination status could not be documented for 2 cases. Measles virus of genotype D4 was detected. Source: Indiana State Department of Health

ILLINOIS - 1 traceable and 1 import

Grundy County, Illinois reported one 1st generation case (rash onset **May 29**) linked to the Indiana outbreak. The IL case was an unvaccinated 12-year-old Illinois resident exposed in Indiana on May 15, 2005.

Chicago reported 1 import from **Pakistan** in an 8-year-old child with rash onset **May 31**. The U.S. resident had documented history of 1 MMR in the U.S. at 15 months of age. Her return date to the U.S. was May 23, after 7 months in Pakistan; was prodromal May 26. She met case definition and was IgM positive at State and private labs. Viral specimens were collected and sent to the State lab and will be forwarded to CDC if isolation is successful. Several exposures include E.R. visits on May 26 and May 29; and a doctor's office on May 28. She was hospitalized 4 days, admitted for dehydration and high fever.

TENNESSEE – 1 import

Tennessee reported an imported measles in a 24-year-old Nashville resident. He traveled to **China** from June 29- July 14. Fever began July 19 and rash began on **July 21**. Specimens drawn on July 22 and July 26 were both IgM positive. He was hospitalized July 24-26 for dehydration, mild thrombocytopenia and increased liver enzymes. According to his father he had received 1 dose of measles-containing vaccine at 9 months after 1 year of age; however, the vaccination card could not be checked. No specimens for viral isolation were taken.

WASHINGTON – 1 import

Washington State reported (to NIP) confirmed measles in a 43-year-old resident who was infected while in **France**. He attended a systems information event in Paris during week of July 31 - Aug 5. He toured France several days before and after the event. He returned to the U.S. on Aug 8; with rash onset **Aug 20, 2005**. M.D. reported continuing cough, watery eyes, temp of 102, slight coryza, and Koplick's spots on the buccal mucosa Aug 22. A blood specimen drawn Aug 22 was IgM negative and IgG negative; a second draw on Aug 24 was IgM positive and IgG negative. Viral specimen is being processed at CDC.

MICHIGAN – 1 import

Michigan reported confirmed measles in a 12 year-old male from **Yemen**. He flew from Frankfurt into Detroit on Lufthansa 422, arriving in Detroit on August 13. Rash onset date was **August 15, 2005**, accompanied by fever of 39C, conjunctivitis, cough, coryza, vomiting, and diarrhea. The initial lab work was done at a commercial lab. Div of Quarantine was notified. The State was unable to get any serum (positive at ARUP) but a respiratory specimen (throat swab) was forwarded to CDC.

OHIO – 1 import (**possible new outbreak**)

One imported case from Nigeria was reported by Ohio State Health Department in a 6-year-old child from **Nigeria**, arriving August 13, 2005. The child flew from Amsterdam to Detroit to Dayton. He was febrile at a county fair August 17; rash onset **August 18**. He was hospitalized. Two other measles like illnesses are currently under investigation in 2 hospital employees (**not yet included in Table 1**).

Table 1

***U.S. MEASLES cases reported (N=55) by rash onset:
Cases in Bold are those reported since last Update***

#	Proj	Age /dob	Rash onset Date	Vacc	Spread Cases?	Reported To MMWR?	Viral Specimens Received	MEASLES as of Sep 3, 2005 Comments / Source Information
01 imp	NYC	11 mo old male	1/2/05	No	Yes, 1	Yes	Yes, D9	IMPORT, Brooklyn resident returning Jan 1 after 1 month family visit to Indonesia. 1 nosocomial spread below.
02 trac	NYC	1 yr old male	1/16/05	After Exposure to case 1	No	Yes	No	This child from Manhattan was vaccinated after ER exposure to the import from Indonesia. He received vaccine on 1/7/05, 9 days prior to rash onset. Symptoms included rash, fever 102.7; conjunctivitis, coryza, cough & diarrhea.
03 imp	NYC	70 yr old male	1/10/05	No	No	Yes	Yes, D8	Single IMPORT, India U.S. resident returned from India on Jan 5
04 imp	AZ	28 yr old male	1/17/05	No	No	Yes, Not coded as import	Yes, D6	Visiting scholar arrived 1/17 from Armenia Foreign visitor – This case needs to be flagged as “import” in NETSS; currently listed as indigenous
05 imp	NYS	12 mo old male	2/26/05	No	No	Yes	Yes, D8	Westchester County resident Returned from India on 2/22/05
06 imp	OR	33 yr old male	2/11/05	Yes, Accepted verbal dates	No	No	No	Import in foreign born college student returning from trip to Cairo/Saudi Arabia on 1/29/05 ; could have infected brother below but both are classified as imports; vaccinated in Egypt at 11 mos and 12 mos. Residing in U.S. for over 1 year
07 imp	OR	35 yr old male	2/18/05	Unk, No dates	No	No	No	Import from Cairo/Saudi Arabia Verbal history of vaccination while a child in Egypt; no documentation. Traveled w/brother above. Residing in U.S. for over 1 year
08 imp	HI	27 yr old male	2/17/05	No, PBE	No	Yes	No	Import from Thailand U.S. Resident / Maui Personal Belief Exemption
09 imp	DE	44 yr old	2/18/05	Unk	No	Yes	No	Import from Thailand/ Laos Foreign born U.S. resident, Verbal history of vaccine

#	Proj	Age /dob	Rash onset Date	Vacc	Spread Cases?	Reported To MMWR?	Viral Specimens Received	MEASLES as of Sep 3, 2005 Comments / Source Information
10 Imp	CA	33 yr old male	2/26/05	No, PBE	Yes, 1	Yes	No	San Diego Import (U.S. resident) source Germany Infected his 25 year old brother. Not vaccinated due to personal beliefs.
11 Trac	CA	25 yr old male	3/17/05	No, PBE	No	Yes	No	Brother to above case Traceable to Import / Germany This case was vacationing in Puerto Rico during his infectious period . No known spread. Not vacc due to personal beliefs.
12 imp	NYC	40-year-old male	3/3/05	No	No	Yes	Yes, unsuccessful	Import Thailand; foreign born U.S. resident; returned to U.S. on 3/1/05
13 imp	WI	47 yr old male	4/3/05	No	No	Yes	No	U.S. resident, import from Frankfurt, Germany. Went to Germany on 3/17; returned to U.S. on 3/29. Prodromal 3/31. One unimmuniz contact w/symptoms Is pending lab work. Virals collected.
14 Trac	WI	15 yr old female	4/16/05	No	No	Yes	Yes, D4	Traceable to import from Germany
15 Unk	HI	10 mo old male	4/23/05	No	No	Yes	No	Unknown source
16 Unk	CA	9 mo old female	4/23/05	No	No	Yes	No	Military Dependent reported by AFB Source unknown
17 IMP	IN	17 yr old female	5/16/05	No. PBE	Yes, 19 cases in first generation	Yes	Yes, D4 for the outbreak	Index case in a 34 case outbreak Indiana (33) and IL (1) U.S. resident unimmunized for Personal beliefs visited Romania Source: Romania
18-49 Trac	IN	9 mos to 45 years	5/26 – 6/24/05	2 of 34 had hx of vax	12 cases in 2 nd 2 cases in 3 rd	Yes	Yes – D4 for x cases In outbreak	34 case outbreak among a group not routinely accepting vaccinations. Only one case occurred outside of the community. Two of 34 cases were vaccinated. Health care worker survived but was in ICU w/complications; History of 1 MMR.
50 Trac	IL	12 year old	5/29/05	No	No	Yes	Yes, D4	Exposed to index while visiting family in Indiana
51 IMP	IL	8 year old female	5/31/05	1 MMR @ 15mos	No	Yes, but Not as import	Virals sent to State lab	Import in Chicago from Pakistan U.S. Resident had been with family inPakistan 7 months, returned 5/23/05. Needs to be coded as “import” in NETSS; child was hospitalized 5/29-6/3. Rubella IgG was negative – vax failure. Never got second dose.
52 IMP	TN	24 yr old male	7/21/05	Yes, at 9 mos & 1 yr	No	Yes	No	U.S. Resident Source is CHINA Returned 6/29/05
53 IMP	WA	43 yr old male	8/20/05	Unk	Unk	No	Obtained	U.S. Resident Source is France Mtg in France July 31 – Aug 5 Tourist few days prior and after the event Meets case definition. IgM positive on 8/24
54 IMP	OH	6 yr old male	8/18/05	Unk	2 under investig	Yes	No	Import from Nigeria arrived 8/13/05 Hospitalized 8/22— Flew Amsterdam –Detroit-Dayton

#	Proj	Age /dob	Rash onset Date	Vacc	Spread Cases?	Reported To MMWR?	Viral Specimens Received	MEASLES as of Sep 3, 2005 Comments / Source Information
55 IMP	MI	12 yr old male	8/15/05	Unk	Unk	No	Obtained, Being processed at CDC	Import from Yemen Infectious on flights Frankfurt into Detroit

2005 Measles Outbreaks (3 or more linked cases)

Shaded= IMPORTED source

	Proj	Location(s)	1 st & Last Rash Onsets	# Conf Cases	Ages (or range)	Comments
1	INDIANA	Linn County/ Johnson County	May 16- June 24, 2005	34	9 mos – 45 yr	Source is Romania Outbreak among group not routinely accepting vaccinations.

Visit REVB's Molecular Surveillance Website at:
<http://www.cdc.gov/ncidod/dvrd/revb/measles/index.htm>

US Genotyping Results 2005

State	First & last rash date	Geno type	Comments	No. cases identified
IN, OH	5/16- 6/24/05	D4	Import: Romania	33
IL	5/26/05	D4	Spread from IN	1
WI	4/16/05	D4	Import: Germany	2
NYS	2/26/05	D8	Import: India	1
AZ	1/17/05	D6	Import: Armenia	1
NYC	1/10/05	D8	Import: India	1
NYC	1/2/05	D9	Import: Indonesia	2

Rubella

As of Week 34, 8 cases of rubella had been reported to MMWR compared to 9 cases for the same period of last year. NIP is aware of 8 confirmed rubella cases this year: Michigan (1); Maryland (1); NYS (1 import/France); NYC (1 import from Malaysia, 1E genotype); MA (1); OR (1); NH (2 epi-linked).

New York City - 1 import from Malaysia, Genotype 1E

Rubella was imported in a 39-year-old U.S. resident (foreign born) with travel to Malaysia. He had a rash, fever of 101, lymphadenopathy. CDC received 2 serum samples on this case in April, as well as throat swab and urine specimen. The sera were IgM positive for rubella. Culture results on the clinical specimens were negative (collected 2 weeks post rash); the RT-PCR and throat swab was positive for rubella RNA. The genotype was 1E.

Massachusetts - 1 unknown

Massachusetts reported a laboratory confirmed rubella case in a 44-year old U.S. born resident with unknown vaccination history. The individual worked at an international company in Worcester County. Rash onset was May 15, 2005, occurring while on a bus trip back from Montreal. Symptoms included fever of 100.5, rash which started on face and spread to the rest of body, fading 6 days later, joint pain, sore eyes. The IgM on June 3 was positive at State lab. No clinical specimens were collected for viral isolation due to late notification. The case was infectious while visiting and traveling to and from Montreal. Health Canada was notified.

Oregon – 1 unknown source

Oregon confirmed rubella in a resident who visited Boston during his exposure period. This U.S. born 46 year-old male was exposed while in Boston on May 24-26 while attending a large international conference. His vaccine history is unknown. Rash onset was 6/10, with red eyes, cough, lymphadenopathy, 104 temp. Blood collected appropriately on 6/14 was IgM strong positive at CDC and the IgG was positive but low positive. CDC requested additional serum. CDC also tested the avidity of the IgG - it was low, which is consistent with an acute case of rubella. Case flew to Atlanta and Boston during infectious period. NIP notified Div of Quarantine about the 5 flights involved during the 4 days prior to his rash (he flew from Portland to Atlanta on 6/6; to Boston on 6/7 and returned to Portland on 6/10). Contact names were shared with MA and GA. A viral specimen was obtained but was unsuccessful. A NH case were identified as result of the investigation of attendees at same conference.

New Hampshire – 2 cases

New Hampshire confirmed rubella in a NH resident in an adult male who also attended the same meeting as the Oregon case above (both attended conference in Boston in late May). New Hampshire attendee had rash onset June 11. The wife of the New Hampshire case was also confirmed, rash onset June 28.

Rubella, Congenital Syndrome (CRS)

The current total for CRS in Week 34 remains **1** case compared to 0 cases for same period last year. The 2005 report is a child born in New Hampshire on November 4, 2004. This 10-week old infant had congenital cataract, patent ductus arteriosus, congenital heart disease; hearing loss, microcephaly, enlarged spleen, enlarged liver; and failure to thrive. Parents were Liberian refugees who came to the U.S. in February 2004 (they had been in **Abidjan, Ivory Coast** where rubella was occurring). The 25-year-old mother was vaccinated with rubella-containing vaccine on March 1--very early in her pregnancy. Date of mother's first prenatal care in U.S. was April 9 (her 3rd child). CDC received clinical samples (throat swab and urine) and serum. The virus was not vaccine virus. Results from direct RNA extraction and RT-PCR were positive. The strain was closely related to the Uganda sequence.

CRS from 2003 confirmed - import from Nigeria born in California

California received a call in January 2005 from a geneticist who had just evaluated a 21 month old child with bilateral hearing loss. The child also had pulmonic stenosis and the mother, who was born in Nigeria and became pregnant in that country, recalled having had a febrile rash illness ("like heat rash") while in her first trimester of pregnancy (in Nigeria). The mother was uncertain of her vaccination history. She delivered at a Los Angeles hospital and the hospital requested both the mother's labor and delivery record and the infant's newborn record. The geneticist asked California to arrange rubella PCR testing on the newborn screening card. The infant had received an MMR at about 16 months of age so serology would not provide any useful information. CDC Rubella lab has completed testing of the blood spot from this potential CRS case and believes the results show that this patient was rubella IgM positive at birth and is a CRS case. CDC was unable to obtain a positive result for rubella RNA, probably because the viral RNA was degraded. The case was entered into the CRS registry for 2003 and will be included in California's morbidity for CY2005.

Mumps

Sullivan County Summer Camp Outbreak - 31 cases

Source: England (*Epi-X posted Aug 1, 2005*)

New York State reported large **MUMPS** outbreak involving cases among international counselors and campers at summer camp in Sullivan County. Many of the campers had documentation of 2 MMR doses. The index case was identified as a camp counselor from England. Four of 5 serology specimens tested in the CDC lab were mumps IgM positive.

U.S. mumps morbidity to date:

A total of 23 of the 31 New York State mumps cases from a Sullivan County camp outbreak had been officially reported to MMWR by Week 33. The current U.S. total for mumps reported to MMWR by Week 34 (ending Aug 26) was 183 cases reported (from 31 grantees) compared to 136 cases for same period of 2004. Eighty-one (42%) of cases are <15 years of age. For the 150 cases (82%) where case status is known, 100 are confirmed and 50 are probable. Forty-five cases (24%) are laboratory confirmed. Of the 78 cases (43%) with known importation status; 65 are indigenous and 13 are imported. A new import in Week 33 is the index (camp counselor from U.K.) in Sullivan County, NY outbreak. Of the 76 cases (41%) with known vaccination status, 58 were vaccinated and 18 were not; or 32% of 183 cases are reported as vaccinated. Of the 103 cases (56%) where race is known, 81 are White, 10 are Asian, and 8 are African American, 1 is Native American, & 3 are other. Of the 80 cases where Hispanic ethnicity is known, 6 are Hispanic.

New York State - one possible mumps case at a second summer camp in Sullivan County (Florida resident).

This patient may be lost to follow up per Florida but if possible CDC Measles Lab will test convalescent specimen on a possible mumps identified in August at a summer camper in Sullivan County, NYS. The probable case was a 9-year-old Florida resident (vaccinated) who was diagnosed on August 11 with otitis media and given augmentin. On August 16, he developed parotitis and was seen by an ENT on August 17. The serology sent to CDC by NYS was IgM indeterminate and IgG weakly positive at CDC. Seven of 8 boys in the same cabin with the sick boy had documentation of 2 MMRs. There was no known source of infection.

Massachusetts reported 4 cases of mumps were laboratory confirmed among employees at a Boston Hotel (w/large international clientele). The index case was a 27-year-old Swedish born female with parotitis onset July 28, 2005, confirmed by positive IgM at a commercial lab. No history of travel during her exposure period. Three of her 14 direct contacts developed parotitis and fever during Aug 14-16 (now also confirmed by IgM). The secondary cases are co-workers aged 25 to 36 years w/unknown vaccination histories. Of interest, the index case had at least 5 outpatient visits, receiving extensive testing including a CT scan before mumps was considered. Viral specimens were requested. Local board of health held 2 vaccine clinics where approximately 58 persons were given MMR. Four refused and one was not able to be reached. There was one asymptomatic pregnant woman with unknown vaccination status who was referred to her physician for follow up.

Pennsylvania - One mumps import from the U.K.

On May 31, a 20 year old unvaccinated woman took a British Airways flight from Heathrow to JFK. She traveled by ground transportation to a camp in the Poconos where she is to work as a counselor. The following day, June 1, she developed first unilateral then bilateral parotitis, an IgM was drawn was positive. No children were present, but 31 counselors had serum was drawn, 3 were found to be susceptible and were vaccinated. No evidence of secondary spread to date, 2 weeks later. The woman recovered uneventfully. JFK Quarantine Station was notified.

Nassau County, New York reported a 4 year old girl with parotitis in day care, history of 1-dose MMR; source is her 41 year old father with parotitis/orchitis (very high IgM). Growth from viral specimens collected on the child within 4 days of onset was unsuccessful.

Please send questions or comments to Gustavo Dayan M.D. , MMR Activity at NIP; or to Ms. Susan B. Redd at sbr1@cdc.gov; fax (404) 639-8665 or ph (404) 639-8763. We appreciate being informed of measles, rubella or mumps activity in your project area.