

2009: Vaccine Adverse Events Reporting System

1. BACKGROUND

The Vaccine Adverse Events Reporting System (VAERS) is a passive surveillance program that monitors vaccine safety in the United States. VAERS collects reports of adverse events occurring after vaccination from public and private providers, patients, patient advocates, and vaccine manufacturers. Approximately 30,000 events are reported nationally each year, with 10-15% classified as serious and requiring follow-up investigations.

The primary purpose of VAERS is to signal negative effects of vaccines that were not detected during pre-market testing. Since VAERS reports are collected on any adverse event following vaccination, they may or may not be related to vaccine administration. Therefore, it can not be assumed that the events are caused by vaccine administration. However, VAERS data can help monitor or identify:

- Symptoms frequently associated with vaccination side effects
- New, unusual, or rare adverse events
- Large increases in adverse events occurring after vaccination
- Vaccine lots with a higher rate of adverse events than expected
- Potential risk factors for adverse events
- Potential vaccine safety issues.

Although VAERS data can serve as a useful indicator of vaccine safety issues, findings should be interpreted with caution. When interpreting this data, it is important to note that cases reported to VAERS contain both coincidental events and those truly caused by vaccines.

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2. REPORTING PERIOD

This report summarizes adverse events reported to VAERS between January 1, 2000 and December 31, 2009, with an emphasis on **reports in Oregon during 2009**. Although VAERS cases were reported in 2009, vaccine administration and adverse events may have occurred in prior years.

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3. LIMITATIONS

Although VAERS can serve as a useful indicator of vaccine safety issues, findings should be interpreted with caution. Some limitations include:

- Inability to show causality due to incomplete information and methodological limitations
- Simultaneous administration of multiple vaccine antigens
- Reporting bias, underreporting, untimely reports
- Lack of a denominator (total shots given)
- Inaccurate coding of symptoms
- Multiple reports on a single case.

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4. RESULTS

In 2009, 32,879 VAERS cases were reported in the United States (*Table 1*). Of those, 540 were reported in Oregon. Although the total number of VAERS cases increases each year, the proportion of Oregon cases has stayed constant (*Graph 1*). The largest proportion of reported cases usually occurs among children ages 0-6 years followed by adults, ages 19-49 years (*Table 2* and *Graph 2*). This is expected, considering the majority of the recommended vaccine schedule applies to children ages 0-6. Women are twice as likely to report symptoms than men which may be attributed to shot uptake of certain vaccines and reporting behaviors (*Graph 3*).

Administration Source

The majority of cases both nationally and in Oregon are reported after vaccines administered by private providers. In 2009, almost half (44.4%) of reports in Oregon occurred after private provider vaccine administration compared to 20.0% by public providers (*Table 3* and *Graph 4*). Oregon's public providers are required to submit VAERS reports to the Oregon Immunization Program. Other administration sources include all reports by military providers and those not identified. One-third of cases are from unknown sources and are likely submitted by secondary sources (i.e., parents, providers who did not administer the original shot, etc.).

Symptoms

The most commonly reported symptom of an adverse event was pyrexia (fever), occurring in 3.8% of reports, followed by injection site erythema (3.6%) (*Table 4*). Consistent with national symptom rankings, injection site erythema and pyrexia are ranked as the most commonly reported adverse events since 2000. The most common symptoms are local reactions.

Serious Events

Of the 540 VAERS reports in Oregon during 2009, 30 (5.6%) were classified as serious events (*Table 5* and *Graph 5*). Nationally, 8.3% of events were classified as severe.

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Severe events are those where death, permanent disability, a life threatening illness/reaction, or hospitalization¹ was reported. Although the proportion of severe events in Oregon fluctuated between 3.4% and 7.9% from 2000 through 2009, it has never exceeded that of the United States. Since VAERS is a passive surveillance system that accepts reports from anyone, there is variability from reporting and selection bias. Additionally, reports are not validated unless they are classified as serious, which could lead to some serious events left misclassified as non-serious. Among the 30 severe cases, two deaths, seven permanent disabilities, seven life threatening illnesses, and 21 hospitalizations were reported (*Graph 6*). Cases can involve more than one severe event.

The majority of severe cases occur among 0-6 year old children (*Table 6*). As the number of vaccines received during these ages are greater than any other age group, it is reasonable to see the most events occurring in this age group. However, it is important to note that a variety of events classified as serious coincidentally occur during the first few years of life (i.e., Sudden Infant Death Syndrome) and have not been linked to vaccine administration.² Increases and decreases in severe events may also coincide with secular trends, interfering events, policies, and interventions. For example, a national decrease in infant deaths reported to VAERS since the early 1990s mirrored a national decrease in Sudden Infant Death Syndrome and successful outcomes of the “Back to Sleep” campaign.³

The largest number of severe cases was reported after receipt of an influenza vaccine – six severe reports after seasonal influenza vaccination and five after 2009 H1N1 influenza vaccinations. Out of 30 severe events, 11 had received multiple vaccines.

Adverse Events Following HPV Vaccination⁴

¹ Hospitalization does not necessarily include emergency room visits.

² Fleming, Blair, Platt, et al. (2001). The UK accelerated immunisation programme and sudden unexpected death in infancy: Case-control study. *British Medical Journal*, 322, 822-825.

³ Silvers, Ellenberg, Wise, Varricchio, Mootrey, & Salive (2001). The epidemiology of fatalities reported to the Vaccine Adverse Event Reporting System 1990-1997. *Pharmacoepidemiology and Drug Safety*, 10, 279-285.

⁴ Includes cases where HPV vaccine was administered alone or in combination with other vaccines.

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In 2009, 3,315 VAERS cases were reported following HPV vaccination in the United States – a 40% decrease in reported cases from the previous year. Factors contributing to this large decrease are currently being explored. Among those cases, 1.5% were reported in Oregon (*Table 11*). Most cases occurred in children 7-18 years old (56.3%) (*Table 12*). HPV vaccine administered by a private provider prior to adverse symptom onset was reported in 33.3% of Oregon cases compared to 27.2% following public provider administration (*Table 13*). The most frequently reported symptoms during an adverse event following HPV vaccination were non-serious events. In 2009, dizziness and headache were the most reported symptoms in Oregon as well as nationally (*Table 14*). Among Oregon cases, 20.8% reported an emergency room or doctor visit compared to 42.2% nationally. Six severe cases were reported in 2009, among which all were hospitalized and two reported a life-threatening illness (*Table 15--18*).

Adverse Events Following Seasonal Influenza Vaccination⁵

In 2009, 7,821 VAERS cases were reported following seasonal influenza vaccination in the United States (*Table 19*). Among those cases, 1.4% were reported in Oregon. Oregon cases were primarily among females (71.2%) and 19-49 year olds (27.9%) (*Table 20*). Flu vaccine administered by a private provider prior to adverse symptom onset was reported in 46.0% of Oregon cases compared to 8.1% following public provider administration. The most frequently reported symptoms during an adverse event following flu vaccination were non-serious events. In 2009, pyrexia and injection site pain were the most reported symptoms in Oregon (*Table 21*). Nationally, pyrexia and injection site erythema were most reported. Among Oregon cases, 31.5% reported an emergency room or doctor visit compared to 33.5% nationally. Six (5.4%) severe cases following flu vaccination were reported in Oregon compared to 669 (8.6%) nationally (*Table 22*). Among the severe cases in Oregon, four (3.6%) reported disability, two (1.8%) reported a life-threatening illness, and two (1.8%) reported hospitalization. None of the cases resulted in death (*Table 23—26*).

Adverse Events Following 2009 H1N1 Influenza Vaccination⁶

⁵ Includes cases where influenza vaccine was administered alone or in combination with other vaccines.

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In 2009, 7,440 VAERS cases were reported following 2009 H1N1 influenza vaccination in the United States (*Table 27*). Among those cases, 1.4% were reported in Oregon. Oregon cases were primarily among females (70.6%) and 19-49 year olds (40.5%) (*Table 28 & 29*). Flu vaccine administered by a private provider prior to adverse symptom onset was reported in 38.1% of Oregon cases compared to 26.2% following public provider administration (*Table 30*). The most frequently reported symptoms during an adverse event following flu vaccination were non-serious events. In 2009, pyrexia and urticaria were the most reported symptoms in Oregon (*Table 31*). Nationally, pyrexia and headache were most reported. Among Oregon cases, 32.5% reported an emergency room or doctor visit compared to 33.8% nationally. Five (4.0%) severe cases following flu vaccination were reported in Oregon compared to 450 (6.1%) nationally (*Table 32*). Among the severe cases in Oregon, one (0.8%) died, one (0.8%) reported a life-threatening illness, and four (3.2%) reported hospitalization (*Table 33—36*).

Adverse Events Following Zoster Vaccination⁷

In 2009, 1,848 VAERS cases were reported following zoster vaccination in the United States. Among those cases, 2.4% were reported in Oregon (*Table 37*). Oregon cases were primarily among females (79.5%) and those of age 65 and older (45.5%) (*Table 38 & 39*). In Oregon, most cases occurred after vaccine administered by an unknown source. The most frequently reported symptoms during an adverse event following zoster vaccination were non-serious events. In 2009, injection site erythema and swelling were the most reported symptoms in Oregon (*Table 40*). Among Oregon cases, 16.0% reported an emergency room or doctor visit compared to 34.3% nationally. Only one (2.3%) case following zoster vaccination was reported as severe in Oregon compared to 116 (6.3%) nationally (*Table 41*). The single severe case in Oregon involved permanent disability.

⁶ Includes cases where H1N1 influenza vaccine was administered alone or in combination with other vaccines.

⁷ Includes cases where zoster vaccine was administered alone or in combination with other vaccines.

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5. CONCLUSIONS

This overview summarizes adverse events reported to VAERS in 2009. Oregon has seen an incremental increase in VAERS reporting over the past nine years. However, an increasing number of vaccines have been introduced to the market since this time.

Overall, 2009 VAERS reports reflect no new vaccine safety concerns. The majority of cases occurred among young children. This is expected as most vaccines are received during this time. Most Oregon events occurred after vaccines administered by private providers, which is similar to the national pattern. Common symptoms included fever and local reactions such as injection site swelling, erythema, and pain. Thirty events were classified as severe in 2009.

Changes in the number of adverse events reported after specific vaccines may be attributed to population trends. Due to the 2009 H1N1 influenza pandemic, the public had an increased awareness/concern about seasonal and H1N1 influenza vaccines, which may account for the increased number of report received after receipt of seasonal influenza vaccine. Adverse events occurring after HPV vaccination decreased across the country yet stayed constant in Oregon. HPV vaccination (≥ 1 shots) rates of women in Oregon's sentinel surveillance area remain consistent from quarter to quarter, which is proportionate to the number of VAERS reports. Factors contributing to the large decrease in reported events occurring after HPV vaccination at the national level are currently being explored.

These findings should be interpreted with caution because occurrence of an event is not necessarily related to vaccination. Temporal association between vaccination and symptom onset does not indicate causation. Symptoms could be misdiagnosed, coincidental, or attributed to an underlying condition or medication. Furthermore, because VAERS is a passive surveillance system, data may be limited in coverage and accuracy. VAERS relies on the public to voluntarily submit reports. However, variability in reporting standards, reporter bias, and under reporting may skew the data. Additional limitations are outlined in *Section 3*.

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Despite the limitations of VAERS, the public health importance of this surveillance system is critical. VAERS continues to be the largest resource for evaluating adverse events occurring after vaccine administration. Detection of rare adverse events that may have gone undetected in pre-market vaccine testing has the potential of identification with this system. Therefore, timely analysis of Oregon VAERS data should continue to be a priority.

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TABLES

Table 1. VAERS cases.

	Oregon		United States	
	n	%	n	%
2000	197	1.4%	14,205	100.0%
2001	180	1.3%	13,581	100.0%
2002	190	1.3%	14,202	100.0%
2003	207	1.2%	16,849	100.0%
2004	221	1.4%	15,464	100.0%
2005	230	1.5%	15,772	100.0%
2006	213	1.2%	17,433	100.0%
2007	369	1.3%	28,525	100.0%
2008	413	1.5%	28,075	100.0%
2009	540	1.6%	32,879	100.0%

Table 2. VAERS cases by age, Oregon.

	Age												Total OR cases	
	0-6		7-18		19-49		50-64		65+		Unknown			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2000	80	40.6%	24	12.2%	52	26.4%	13	6.6%	7	3.6%	21	10.7%	197	100.0%
2001	92	51.1%	15	8.3%	31	17.2%	15	8.3%	19	10.6%	8	4.4%	180	100.0%
2002	99	52.1%	17	9.0%	26	13.7%	16	8.4%	19	10.0%	13	6.8%	190	100.0%
2003	109	52.7%	14	6.8%	45	21.7%	21	10.1%	8	3.9%	10	4.8%	207	100.0%
2004	122	55.2%	9	4.1%	38	17.2%	17	7.7%	13	5.9%	22	10.0%	221	100.0%
2005	111	48.3%	27	11.7%	40	17.4%	16	7.0%	24	10.4%	12	5.2%	230	100.0%
2006	89	41.8%	24	11.3%	41	19.3%	24	11.3%	17	8.0%	18	8.5%	213	100.0%
2007	108	29.3%	48	13.0%	71	19.2%	39	10.6%	49	13.3%	54	14.6%	369	100.0%
2008	106	25.7%	86	20.8%	80	19.4%	51	12.4%	40	9.7%	50	12.1%	413	100.0%
2009	148	27.4%	106	19.6%	126	23.3%	80	14.8%	50	9.3%	30	5.6%	540	100.0%

Table 3. VAERS cases by gender, Oregon.

	Female		Male		Unknown		Total	
	n	%	n	%	n	%	n	%
2000	108	54.8%	85	43.2%	4	2.0%	197	100.0%
2001	107	59.4%	71	39.4%	2	1.1%	180	100.0%
2002	109	57.4%	78	41.1%	3	1.6%	190	100.0%
2003	111	53.6%	93	44.9%	3	1.5%	207	100.0%
2004	110	49.8%	109	49.4%	2	0.9%	221	100.0%
2005	131	57.0%	97	42.2%	2	0.9%	230	100.0%
2006	111	52.1%	95	44.6%	7	3.3%	213	100.0%
2007	243	65.9%	120	32.5%	6	1.6%	369	100.0%
2008	255	61.7%	141	34.1%	17	4.1%	413	100.0%
2009	361	66.9%	170	31.5%	9	1.7%	540	100.0%

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Table 4. Most frequently reported symptoms following vaccination, Oregon, 2009.

Symptom	n	%
Pyrexia	90	3.8%
Injection site erythema	85	3.6%
Injection site swelling	74	3.1%
Injection site pain	63	2.7%
Dizziness	50	2.1%
Pain	50	2.1%
Injection site warmth	44	1.9%
Urticaria	43	1.8%
Vomiting	43	1.8%
Pain in extremity	40	1.7%

Table 5. Severe cases.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	15	7.6%	197	1,228	8.6%	14,205
2001	16	7.2%	180	1,450	10.7%	13,581
2002	15	7.9%	190	1,414	10.0%	14,202
2003	7	3.4%	207	1,614	9.6%	16,849
2004	11	5.0%	221	1,267	8.2%	15,464
2005	15	6.5%	230	1,298	8.2%	15,772
2006	9	4.2%	213	1,462	8.4%	17,433
2007	14	3.8%	369	2,296	8.1%	28,525
2008	31	7.5%	413	2,452	8.7%	28,075
2009	30	5.6%	540	2,712	8.3%	32,879

Table 6. Severe cases by age, Oregon.

	Age												Total OR reports	
	0-6		7-18		19-49		50-64		65+		Unknown			
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2000	9	4.6%	2	1.0%	3	1.5%	0	0.0%	0	0.0%	1	0.5%	197	100.0%
2001	7	3.9%	1	0.6%	1	0.6%	3	1.7%	0	0.0%	1	0.6%	180	100.0%
2002	4	2.1%	0	0.0%	1	0.5%	2	1.1%	7	3.7%	1	0.5%	190	100.0%
2003	5	2.4%	1	0.5%	0	0.0%	0	0.0%	0	0.0%	1	0.5%	207	100.0%
2004	8	3.6%	0	0.0%	1	0.5%	0	0.0%	2	0.9%	0	0.0%	221	100.0%
2005	11	4.8%	1	0.4%	1	0.4%	0	0.0%	2	0.9%	0	0.0%	230	100.0%
2006	4	1.9%	0	0.0%	3	1.4%	1	0.5%	1	0.5%	0	0.0%	213	100.0%
2007	6	1.6%	1	0.3%	1	0.3%	1	0.3%	4	1.1%	1	0.3%	369	100.0%
2008	8	1.9%	4	1.0%	3	0.7%	4	1.0%	3	0.7%	9	2.2%	413	100.0%
2009	12	2.2%	5	0.9%	9	1.7%	2	0.4%	1	0.2%	1	0.2%	540	100.0%

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Table 7. Total cases resulting in death.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	4	2.0%	197	144	1.0%	14,205
2001	1	0.6%	180	176	1.3%	13,581
2002	1	0.5%	190	138	1.0%	14,202
2003	0	0.0%	207	197	1.2%	16,849
2004	3	1.4%	221	162	1.1%	15,464
2005	1	0.4%	230	130	0.8%	15,772
2006	2	0.9%	213	119	0.7%	17,433
2007	0	0.0%	369	162	0.6%	28,525
2008	1	0.2%	413	182	0.7%	28,075
2009	2	0.4%	540	193	0.6%	32,879

Table 8. Total cases resulting in permanent disability.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	5	2.5%	197	303	2.1%	14,205
2001	4	2.2%	180	383	2.8%	13,581
2002	6	3.2%	190	408	2.9%	14,202
2003	2	1.0%	207	296	1.8%	16,849
2004	2	0.9%	221	274	1.8%	15,464
2005	2	0.9%	230	264	1.7%	15,772
2006	1	0.5%	213	298	1.7%	17,433
2007	1	0.3%	369	506	1.8%	28,525
2008	8	1.9%	413	541	1.9%	28,075
2009	7	1.3%	540	543	1.7%	32,879

Table 9. Total cases resulting in life threatening illness.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	2	1.0%	197	211	1.5%	14,205
2001	2	1.1%	180	222	1.6%	13,581
2002	6	3.2%	190	235	1.7%	14,202
2003	2	1.0%	207	277	1.6%	16,849
2004	1	0.5%	221	237	1.5%	15,464
2005	5	2.2%	230	230	1.5%	15,772
2006	5	2.4%	213	272	1.6%	17,433
2007	3	0.8%	369	474	1.7%	28,525
2008	11	2.7%	413	493	1.8%	28,075
2009	7	1.3%	540	566	1.7%	32,879

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Table 10. Total cases resulting in hospitalization.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	7	3.6%	197	812	5.8%	14,205
2001	7	3.9%	180	932	6.9%	13,581
2002	9	4.7%	190	912	6.4%	14,202
2003	4	1.9%	207	1,162	6.9%	16,849
2004	6	2.7%	221	859	5.6%	15,464
2005	8	3.5%	230	929	5.9%	15,772
2006	4	1.9%	213	1,049	6.0%	17,433
2007	12	3.3%	369	1,673	5.9%	28,525
2008	18	4.4%	413	1,791	6.4%	28,075
2009	21	3.9%	540	2,034	6.2%	32,879

Table 11. HPV VAERS cases.

Year	Oregon		United States	
	n	%	n	%
2007	41	0.7%	5,837	100.0%
2008	53	0.9%	5,624	100.0%
2009	48	1.5%	3,315	100.0%

Table 12. HPV VAERS cases by age.

Year	Age													
	0-6		7-18		19-49		50-64		65+		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2007	0	0.0%	19	46.3%	6	14.6%	0	0.0%	0	0.0%	16	39.0%	41	100.0%
2008	1	1.9%	35	66.0%	5	9.4%	0	0.0%	0	0.0%	12	22.6%	53	100.0%
2009	0	0.0%	27	56.3%	11	22.9%	0	0.0%	0	0.0%	10	20.8%	48	100.0%

Table 13. HPV VAERS cases by source administered.

Year	Oregon						United States					
	Public		Private		Other/Unknown		Public		Private		Other/Unknown	
	n	%	n	%	n	%	n	%	n	%	n	%
2007	5	12.2%	13	31.7%	23	56.1%	279	4.8%	1,463	25.0%	4,095	70.2%
2008	14	26.4%	17	32.1%	22	41.5%	432	7.7%	1,381	24.6%	3,811	67.8%
2009	6	12.5%	16	33.3%	26	54.2%	342	10.3%	901	27.2%	2,072	62.5%

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Table 14. Top ten reported symptoms preceding HPV adverse events, Oregon.

Symptom	n	%
Dizziness	7	2.4%
Headache	7	2.4%
Vomiting	6	2.0%
Pain in extremity	5	1.7%
Pyrexia	5	1.7%
Rash	5	1.7%
Syncope	5	1.7%
Urticaria	5	1.7%
Drug exposure during pregnancy	4	1.4%
Erythema	4	1.4%

Table 15. Total cases resulting in death after HPV vaccination

Year	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2007	0	0.0%	41	12	0.2%	5,837
2008	0	0.0%	53	18	0.3%	5,624
2009	0	0.0%	48	16	0.5%	3,315

Table 16. Total cases resulting in permanent disability after HPV vaccination

Year	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2007	0	0.0%	41	114	2.0%	5,837
2008	0	0.0%	53	156	2.8%	5,624
2009	0	0.0%	48	163	4.9%	3,315

Table 17. Total cases resulting in life threatening illness after HPV vaccination

Year	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2007	0	0.0%	41	81	1.4%	5,837
2008	0	0.0%	53	75	1.3%	5,624
2009	2	4.2%	48	98	3.0%	3,315

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Table 18. Total cases resulting in hospitalization after HPV vaccination

Year	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2007	0	0.0%	41	180	3.1%	5,837
2008	1	1.9%	53	298	5.3%	5,624
2009	6	12.5%	48	274	8.3%	3,315

Table 19. VAERS FLU cases.

	Oregon		United States	
	n	%	n	%
2000	22	1.3%	1,709	100.0%
2001	20	1.2%	1,640	100.0%
2002	35	1.7%	2,068	100.0%
2003	30	1.3%	2,313	100.0%
2004	28	1.0%	2,826	100.0%
2005	56	1.7%	3,376	100.0%
2006	44	1.5%	2,987	100.0%
2007	72	1.8%	4,048	100.0%
2008	94	1.9%	4,995	100.0%
2009	111	1.4%	7,821	100.0%

Table 20. VAERS FLU cases by age, Oregon.

	Age													
	0-6		7-18		19-49		50-64		65+		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2000	1	4.6%	1	4.6%	9	40.9%	6	27.3%	3	13.6%	2	9.1%	22	100.0%
2001	0	0.0%	0	0.0%	9	45.0%	5	25.0%	5	25.0%	1	5.0%	20	100.0%
2002	2	5.7%	3	8.6%	9	25.7%	7	20.0%	13	37.1%	1	2.9%	35	100.0%
2003	0	0.0%	2	6.7%	12	40.0%	7	23.3%	8	26.7%	1	3.3%	30	100.0%
2004	5	17.9%	0	0.0%	10	35.7%	4	14.3%	8	28.6%	1	3.6%	28	100.0%
2005	8	14.3%	2	3.6%	15	26.8%	9	16.1%	19	33.9%	3	5.4%	56	100.0%
2006	11	25.0%	2	4.6%	14	31.8%	8	18.2%	5	11.4%	4	9.1%	44	100.0%
2007	17	23.6%	5	7.0%	20	27.8%	15	20.8%	9	12.5%	6	8.3%	72	100.0%
2008	14	14.9%	11	11.7%	26	27.7%	15	16.0%	14	14.9%	14	14.9%	97	100.0%
2009	25	22.5%	16	14.4%	29	26.1%	21	18.9%	14	12.6%	6	5.4%	111	100.0%

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Table 21. Top ten reported symptoms after FLU adverse events, Oregon, 2009.

Symptom	n	%
Pyrexia	16	3.4%
Injection site pain	14	3.0%
Pain in extremity	13	2.8%
Dizziness	12	2.6%
Injection site erythema	11	2.3%
Pain	11	2.3%
Inappropriate schedule of drug administration	10	2.1%
Injection site swelling	9	1.9%
Cough	8	1.7%
Nausea	8	1.7%

Table 22. Severe events occurring after receipt of flu vaccine.

	Oregon			United States		
	n	% of OR total	Total OR events	n	% of US total	Total US events
2000	1	4.6%	22	148	8.7%	1,709
2001	2	10.0%	20	188	11.5%	1,640
2002	8	22.9%	35	250	12.1%	2,068
2003	0	0.0%	30	279	12.1%	2,313
2004	2	7.1%	28	242	8.6%	2,826
2005	3	5.4%	56	315	9.3%	3,376
2006	3	6.8%	44	312	10.5%	2,987
2007	4	5.6%	72	386	9.5%	4,048
2008	13	13.8%	94	457	9.2%	4,995
2009	6	5.4%	111	669	8.6%	7,821

Table 23. Total cases resulting in death occurring after receipt of flu vaccine.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	0	0.0%	22	21	1.2%	1,709
2001	0	0.0%	20	31	1.9%	1,640
2002	1	2.9%	35	21	1.0%	2,068
2003	0	0.0%	30	56	2.4%	2,313
2004	1	3.6%	28	43	1.5%	2,826
2005	1	1.8%	56	32	1.0%	3,376
2006	0	0.0%	44	22	0.7%	2,987
2007	0	0.0%	72	31	0.8%	4,048
2008	0	0.0%	94	27	0.5%	4,995
2009	0	0.0%	111	41	0.5%	7,821

2009: Vaccine Adverse Events Reporting System

Table 24. Total cases resulting in permanent disability occurring after receipt of flu vaccine.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	1	4.6%	22	25	1.5%	1,709
2001	0	0.0%	20	25	1.5%	1,640
2002	2	5.7%	35	60	2.9%	2,068
2003	0	0.0%	30	30	1.3%	2,313
2004	0	0.0%	28	49	1.7%	2,826
2005	0	0.0%	56	43	1.3%	3,376
2006	0	0.0%	44	49	1.6%	2,987
2007	0	0.0%	72	88	2.2%	4,048
2008	4	4.3%	94	81	1.6%	4,995
2009	4	3.6%	111	115	1.5%	7,821

Table 25. Total cases resulting in life threatening illness occurring after receipt of flu vaccine.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	1	4.6%	22	34	2.0%	1,709
2001	0	0.0%	20	46	2.8%	1,640
2002	4	11.4%	35	55	2.7%	2,068
2003	0	0.0%	30	64	2.8%	2,313
2004	0	0.0%	28	59	2.1%	2,826
2005	1	1.8%	56	72	2.1%	3,376
2006	2	4.6%	44	68	2.3%	2,987
2007	0	0.0%	72	78	1.9%	4,048
2008	7	7.5%	94	107	2.1%	4,995
2009	2	1.8%	111	138	1.8%	7,821

Table 26. FLU Total cases resulting in hospitalization occurring after receipt of flu vaccine.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2000	1	4.6%	22	113	6.6%	1,709
2001	2	10.0%	20	136	8.3%	1,640
2002	7	20.0%	35	182	8.8%	2,068
2003	0	0.0%	30	200	8.7%	2,313
2004	1	3.6%	28	171	6.1%	2,826
2005	1	1.8%	56	246	7.3%	3,376
2006	1	2.3%	44	246	8.2%	2,987
2007	4	5.6%	72	286	7.1%	4,048
2008	6	6.4%	94	648	7.0%	4,995
2009	2	1.8%	111	547	7.0%	7,821

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Table 27. VAERS H1N1 cases.

	Oregon		United States	
	n	%	n	%
2009	126	1.7%	7,440	100.0%

Table 28. VAERS H1N1 cases by age.

	Age													
	0-6		7-18		19-49		50-64		65+		Unknown		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
2009	29	23.0%	26	20.6%	51	40.5%	17	13.5%	3	2.4%	0	0.0%	126	100.0%

Table 29. VAERS H1N1 cases by gender.

	Female		Male		Unknown		Total	
	n	%	n	%	n	%	n	%
2008	89	70.6%	36	28.6%	1	0.8%	126	10.0%

Table 30. VAERS H1N1 cases by source administered.

	Oregon						United States					
	Public		Private		Other/Unknown		Public		Private		Other/Unknown	
	n	%	n	%	n	%	n	%	n	%	n	%
2008	33	26.2%	48	38.1%	45	35.7%	2,151	28.9%	1,431	19.2%	3,858	51.9%

Table 31. Top ten reported symptoms after H1N1 adverse events, Oregon, 2009.

Symptom	n	%
Pyrexia	27	5.0%
Urticaria	22	4.1%
Dizziness	20	3.7%
Cough	15	2.8%
Nausea	14	2.6%
Headache	13	2.4%
Dypnoea	12	2.2%
Vomiting	11	2.0%
Pain	10	1.9%
Pruritus	10	1.9%

Table 32. H1N1 Severe events.

	Oregon			United States		
	n	% of OR total	Total OR events	n	% of US total	Total US events
2009	5	4.0%	126	450	6.1%	7,440

Table 33. H1N1 Total cases resulting in death.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2009	1	0.8%	126	34	0.5%	7,440

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Table 34. H1N1 Total cases resulting in permanent disability.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2009	0	0.0%	126	20	0.3%	7,440

Table 35. H1N1 Total cases resulting in life threatening illness.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2009	1	0.8%	126	101	1.4%	7,440

Table 36. H1N1 Total cases resulting in hospitalization.

	Oregon			United States		
	n	% of OR total	Total OR cases	n	% of US total	Total US cases
2009	4	3.2%	126	369	5.0%	7,440

Table 37. VAERS Zoster cases.

Year	Oregon		United States	
	n	%	n	%
2006	7	3.9%	182	100.0%
2007	34	1.5%	2,208	100.0%
2008	23	1.2%	1,865	100.0%
2009	44	2.4%	1,848	100.0%

Table 38. VAERS Zoster cases by age, Oregon.

Year	Age							
	50-64		65+		Unknown		Total	
	n	%	n	%	n	%	n	%
2006	1	14.3%	0	0.0%	3	42.9%	7	100.0%
2007	3	8.8%	19	55.9%	12	35.3%	34	100.0%
2008	8	34.8%	13	56.5%	2	8.7%	23	100.0%
2009	18	40.9%	20	45.5%	6	13.6%	44	100.0%

Table 39. VAERS Zoster cases by gender, Oregon.

Year	Female		Male		Unknown		Total	
	n	%	n	%	n	%	n	%
2006	7	100.0%	0	0.0%	0	0.0%	7	100.0%
2007	23	67.7%	8	23.5%	3	8.8%	34	100.0%
2008	15	65.2%	7	30.4%	1	4.4%	23	100.0%
2009	35	79.5%	7	15.9%	2	4.6%	44	100.0%

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Table 40. Top ten reported symptoms after Zoster adverse events, Oregon, 2009.

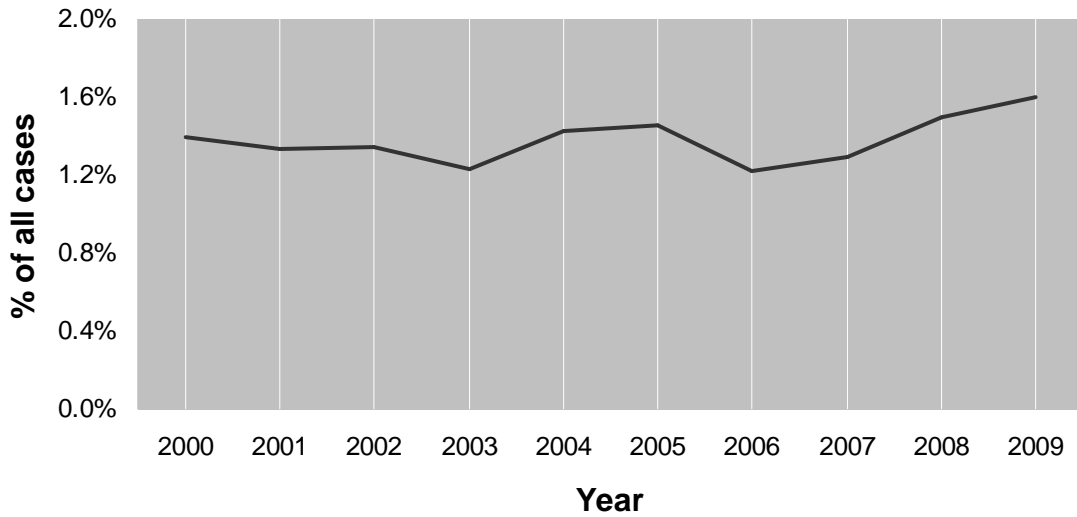
Symptom	n	%
Injection site erythema	14	7.8%
Injection site swelling	12	6.7%
Pain	11	6.2%
Pruritus	8	4.5%
Herpes zoster	6	3.4%
Injection site pain	6	3.4%
Erythema	5	2.8%
Injection site pruritus	5	2.8%
Injection site warmth	4	2.2%
Rash	4	2.2%

Table 41. Zoster Severe events.

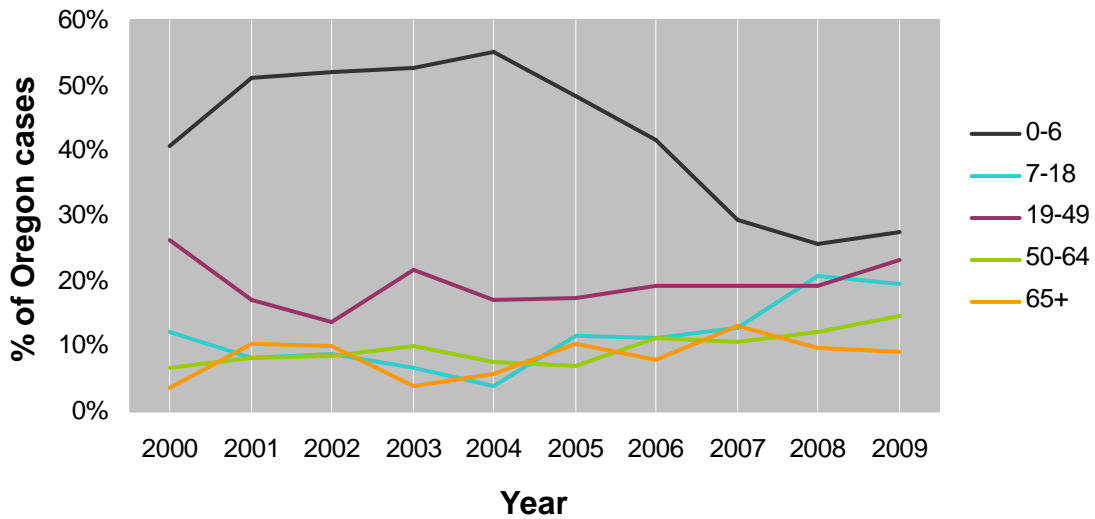
Year	Oregon			United States		
	n	% of OR total	Total OR events	n	% of US total	Total US events
2006	0	0.0%	7	7	3.9%	182
2007	3	8.8%	34	134	6.1%	2,208
2008	1	4.4%	23	115	6.2%	1,865
2009	1	2.3%	44	116	6.3%	1,848

6. GRAPHS

Graph 1. Percent of VAERS cases reported in Oregon

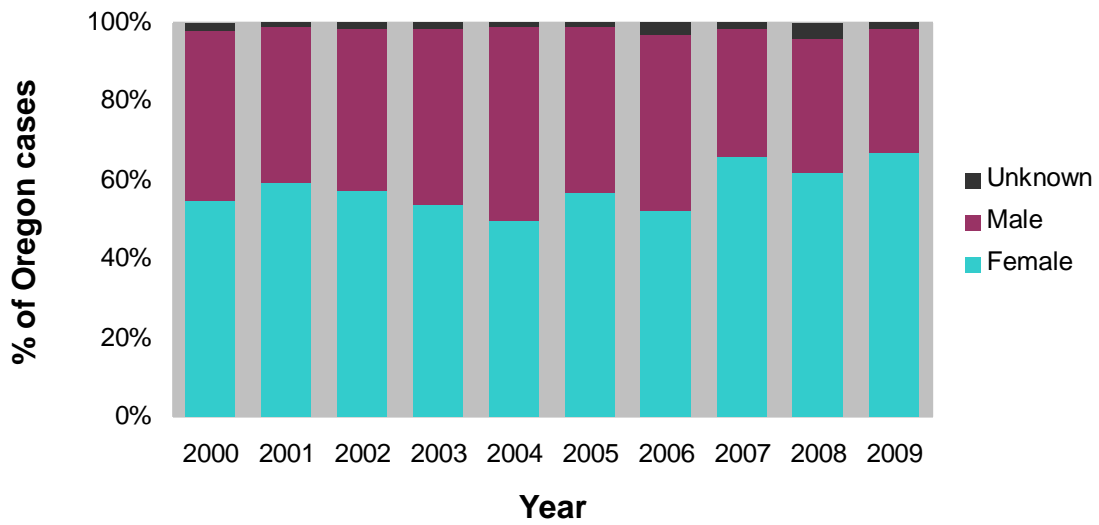


Graph 2. VAERS cases by age, Oregon

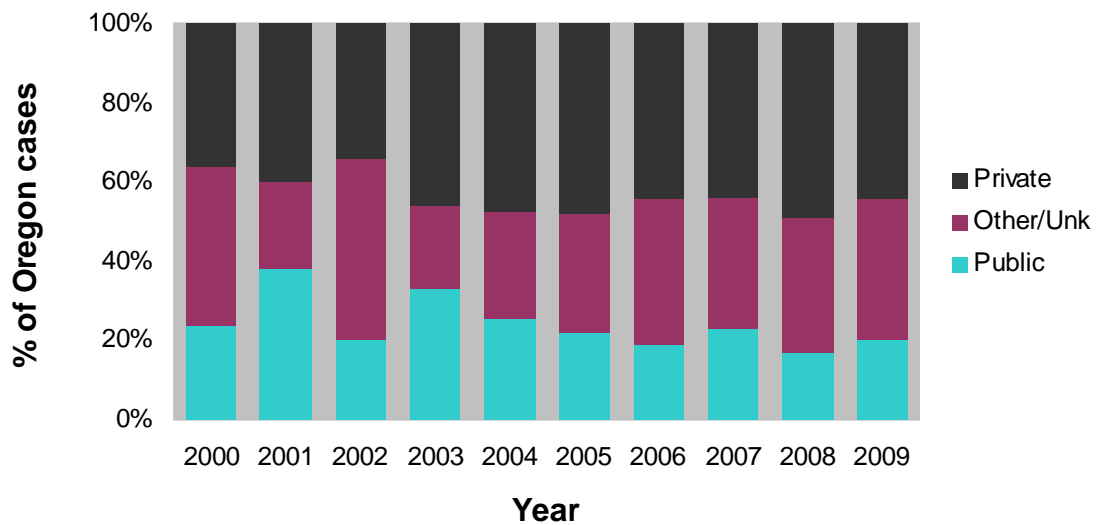


2009: Vaccine Adverse Events Reporting System

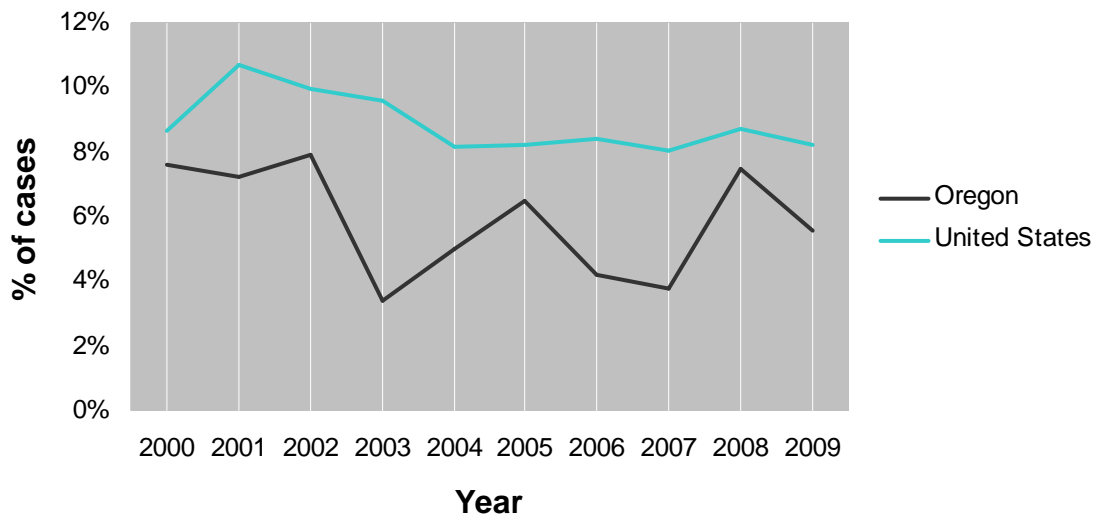
Graph 3. VAERS cases by gender, Oregon



Graph 4. VAERS cases by source, Oregon



Graph 5. Proportion of cases classified as serious



Graph 6. Percent of cases by type of severity, Oregon

