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A Cluster of Nonspecific Adverse Events in a Military Reserve Unit following H1N1 Pandemic Influenza Vaccination — Possible Stimulated Reporting?

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Abstract

Background: On 02/20/10, 197 army reservists in one unit received inactivated 2009 H1N1 monovalent influenza vaccine (MIV), several with concomitant (seasonal influenza, hepatitis A, and hepatitis B) vaccines. A 23-year-old male reservist presented to the Emergency Department (ED) with onset of progressive limb weakness 4 hours after receiving MIV. On exam there was generalized weakness; he was diagnosed with possible Guillain Barré Syndrome (GBS) and admitted. After two days, his symptoms resolved, laboratory investigations were normal, a neurologist excluded GBS and he was discharged. On 02/21/10, 13 reservists from his unit presented to the ED with nonspecific symptoms. The ED physician contacted CDC and filed Vaccine Adverse Event Reporting System (VAERS) reports.

Objectives: To describe the spectrum of AEs among reservists in this unit after inactivated H1N1 vaccine and to identify factors contributing to this cluster of reports.

Methods: We reviewed these reservists' VAERS reports and hospital records for demographics, influenza vaccination status, diagnostic results and outcome. We screened VAERS reports to identify other potentially affected reservists and FDA reviewed all VAERS reports after the same MIV lot. In collaboration with DoD's VHC Network we conducted a survey of unit reservists to identify contributing factors for this cluster.

Results: Among the 14 reservists, predominant symptoms included weakness, headache, lethargy, dizziness, nausea, and paraesthesia. Eight were male; median age was 28.5 yrs (range 19-51). All demonstrated normal exam findings and laboratory investigations. A single reservist from the same unit filed a VAERS report but reported no AEs after MIV. Review of other VAERS reports following the same MIV lot revealed no consistent pattern.

Conclusions: This cluster represents possible stimulated reporting following H1N1 vaccination of service personnel.

Background

- Army reservists in one unit received inactivated 2009 H1N1 monovalent influenza vaccine (MIV), several with concomitant vaccines.
- A single male reservist presented to the ED with onset of progressive limb weakness 4 hrs after receiving MIV. On exam there was generalized weakness; he was diagnosed with possible Guillain Barré Syndrome (GBS) and admitted. After two days, his symptoms resolved, laboratory investigations were normal, a neurologist excluded GBS and he was discharged.
- The next day, 13 reservists from the unit presented to the ED with nonspecific symptoms. The ED physician contacted CDC and filed Vaccine Adverse Event Reporting System (VAERS) reports.

Methods

- We reviewed the reservists' VAERS reports and hospital records for demographics, influenza vaccination status, diagnostic results and outcome.
- We screened VAERS reports to identify other potentially affected reservists and FDA reviewed all VAERS reports after the same MIV lot.
- In collaboration with DoD's Vaccine Healthcare Center (VHC) Network we conducted a survey of unit reservists to identify contributing factors for this cluster.
  - A secure link to the survey was emailed to 165 reservists by the VHC inviting voluntary participation.
  - Hard copy surveys were also distributed to a convenience sample of reservists at one of their regular meetings.
  - Information solicited included, demographics, medical history, occurrence of local and systemic symptoms, and if applicable, healthcare provider's diagnosis, and safety concern about the next season's (2010-2011) influenza vaccine.
  - We compared adverse event (AE) reporting in demographic/administrative subgroups.

Results

Clinical review of VAERS reports (n=14):

- Predominant symptoms included weakness, headache, lethargy, dizziness, nausea, and paresthesia.
- Eight were male; median age was 28.5 yrs (range 19-51). All demonstrated normal exam findings and laboratory investigations.
- A single reservist filed a VAERS report but reported no AEs after MIV.

Review of VAERS reports with the same MIV vaccine lot number:

- FDA found no consistent pattern.

Survey results:

- The overall survey response rate was 55/165 (33.3%).
- Most frequent symptoms were headache, dizziness, and fatigue (Table 1).
- Factors associated with reporting an AE to H1N1 vaccine are shown in Table 2.
  - Only sex and race were significantly associated with reporting AE to H1N1 vaccine. The reporting rate for females was nearly twice that for males; the rate for blacks was nearly 3 times that of whites.
  - Taking prescribed medications; allergies; and a medical visit in last year were of borderline significance.
- Factors associated with concern about the safety of 2010-2011 seasonal influenza vaccination are shown in Figure 1.
  - Reported an AE to H1N1 vaccine
  - Sought medical attention for their symptoms
  - Whether the healthcare provider (HCP) diagnosed the symptoms as an AE to the H1N1 vaccine

Table 1a. Most Frequent Symptoms Reported

Symptom	Number of Reports
Headaches	12
Dizziness or Light headedness	9
Fatigue	8
Nausea	7
Weakness	7
Numbness or tingling in limbs	5
Runny nose or nasal congestion	5
Muscle or joint pain	4

Table 1b. Most Frequent Symptom-Pairs Reported

Symptom	Symptom	Number of Reports
Dizziness or Light headedness	Headaches	7
Nausea	Headaches	6
Fatigue	Headaches	5
Dizziness or Light headedness	Nausea	5
Weakness	Headaches	5
Fatigue	Dizziness or Light headedness	4
Numbness or tingling in limbs	Headaches	4

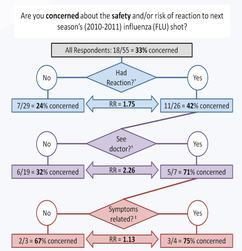
Table 1c. Most Frequent Symptom-Triples Reported

Symptom	Symptom	Symptom	Number of Reports
Fatigue	Dizziness or Light headedness	Headaches	4
Dizziness or Light headedness	Nausea	Headaches	4

Table 2. Reporting of AEs following H1N1 vaccine, by category, July 2010

Category		No. respondents*	No. (%) reporting AEs		RR†	p-value§
Sex	Female	19	13	(68.4)	1.89	0.022
	Male	36	13	(36.1)	—	—
Race	Black	35	20	(57.1)	2.86	0.048
	Other	5	3	(60.0)	3.00	0.447
	White	15	3	(20.0)	—	—
BMI	Obese	13	6	(46.2)	1.15	0.683
	Overweight	19	11	(57.9)	1.45	0.216
	Normal	20	8	(40.0)	—	—
Chronic condition	Yes	9	6	(66.7)	1.53	0.182
	No	46	20	(43.5)	—	—
Allergy	Yes	11	8	(72.7)	1.78	0.060
	No	44	18	(40.9)	—	—
Regular Meds.	Yes	9	7	(77.8)	1.88	0.050
	No	46	19	(41.3)	—	—
Visited HCP in last year	Yes	11	8	(72.7)	1.78	0.060
	No	44	18	(40.9)	—	—
Tobacco use	Yes	20	9	(45.0)	0.93	0.703
	No	35	17	(48.6)	—	—
Prior seasonal flu vaccine	Yes	27	13	(48.1)	1.04	0.556
	No	28	13	(46.4)	—	—
Physical activity 24 hrs. before H1N1 vaccine	Vigorous	15	7	(46.7)	1.05	0.639
	Moderate	22	12	(54.5)	1.23	0.272
	Don't know	9	3	(33.3)	0.75	0.901
	Minimal	9	4	(44.4)	—	—
Can pass the military fitness test	No	11	6	(54.5)	1.12	0.419
	Don't know	3	0	(0.00)	0.00	1.000
	Yes	41	20	(48.8)	—	—
Other vaccines same day	Yes	9	6	(66.7)	1.25	0.182
	Unsure	16	4	(25.0)	0.47	0.993
	H1N1 only	30	16	(53.3)	—	—
All Respondents		55	26	(47.3)		

* Total and number reporting one or more local and/or systemic reaction.
† Relative risk; denominator (reference level) is blank.
§ Fisher's exact test, i.e. using hypergeometric distribution.



Discussion

This cluster represents possible stimulated reporting.

Our survey's limitations include a low response rate and potential recall bias.

Reported AE were nonspecific and unlikely to represent serious disease.

Although 26/55 survey respondents experienced AEs after H1N1, only 7 of these reported they sought medical attention for symptoms.

AEs following H1N1 vaccine were significantly more often reported by female and black reservists.

Concern about the safety of 2010-2011 seasonal influenza vaccine was higher for reservists who a) reported an AE to H1N1 vaccine, b) sought medical attention for their symptoms and c) if their symptoms were diagnosed as related to the H1N1 vaccine.

Conclusions

- This cluster represents possible stimulated reporting.
- Reported AEs were nonspecific and unlikely to represent serious disease.
- AEs following H1N1 vaccine were significantly more often reported by female and black reservists.
- Concern about the safety of 2010-2011 influenza vaccine was higher for reservists who a) reported an AE to H1N1 vaccine, b) sought medical attention for their symptoms and c) if their symptoms were diagnosed as related to the H1N1 vaccine.
- Follow up studies in a more controlled setting should be considered to corroborate these findings.

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