

CHICKEN POX REPORTING IN NORTH DAKOTA: AN EVALUATION

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STUDY OBJECTIVES

1. Identify ways to determine unreported chicken pox cases
2. Identify which ICD-9 codes were used for reporting purposes
3. Identify the need for education among schools and child care providers

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<http://www.vaccineinformation.org/photos/variaap002.jpg>

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BACKGROUND

- Varicella zoster is the second most contagious viral exanthem. Measles is most contagious.
- The first varicella vaccine was introduced in the United States in 1995.
- Decreased disease incidence from 4 million cases per year to less than 500,000 cases per year. (98% decrease!!)
- This was important for public health, and epidemiology... Hospitalizations and deaths became rare, and it was now feasible to study

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METHODS

- Identify 1-2 Hospitals/clinics willing to work with the NDDoH to compile billing data where a patient's ICD 9 codes relate to a chickenpox diagnosis
- Obtain a line list of patients who were diagnosed with chickenpox
- Conduct a chart review to obtain the surveillance data needed and enter the information into MAVEN
 - Maven is the disease management system used by disease control for all reportable conditions.
- Estimate the time needed to conduct chickenpox surveillance
- Conduct a survey among a random sample of schools and child care centers to identify any outbreaks that may have occurred within the 2014 calendar year

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OBTAIN PATIENT LIST

- ICD 9 Codes

ICD9 Code	Diagnosis or Treatment
052.0	Post varicella encephalitis/myelitis
052.1	Varicella (hemorrhagic) pneumonitis
052.7	Chickenpox with other specified complications
052.8	Chickenpox with unspecified complications
052.9	Varicella without mention of complication

- Healthcare Facility (HCF) A
 - Submitted request to billing department for a line list of patients who were billed for the above diagnoses from January 1, 2014 to June 30, 2015
- Healthcare Facility (HCF) B
 - Submitted request to financial analyst to pull claims data for the above ICD 9 codes during the same study period

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RESULTS OF OBTAINING PATIENT LIST

- HCF A:
 - 34 days needed from first contact to acquisition of patient line list
 - 89 records found that matched the ICD 9 codes, 1 duplicate record
 - Records were pulled from all clinics and facilities
 - Two ICD 9 codes presented: 052.9 (95.24%) and 052.7 (4.76%)
 - New ICD 9 code identified: **647.63- varicella complicating early pregnancy**
- HCF B:
 - 25 days passed from first contact to acquisition of line list
 - 26 records found that matched the ICD 9 codes
 - Records were pulled from all clinics and facilities

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CHART REVIEWS

Methods

- HCF A:
 - Information was requested to be released for encounters for the two weeks prior/following the date of service where the requested ICD 9 code was used
 - All patient encounters were reviewed for information that is requested in MAVEN for chickenpox clinical symptoms, vaccine history and eplink/contact history
 - The patients provided were compared to MAVEN cases reported from January 1, 2014 through June 30, 2015
 - NDIIS was accessed to compare vaccination and history and update MAVEN information
 - All new cases not previously entered which met the CDC probable or confirmed definition were added to MAVEN

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CHART REVIEW RESULTS HCF A

- 63 cases of probable or confirmed chickenpox were identified
- 4 of the identified cases had previously been reported and identified in MAVEN (6.35%)
- 7 of the cases were not added to MAVEN due to out of state residence (11.11%)
- 7 of the 88 charts pulled had an ICD9 code 052.9 utilized for Immunity testing with no clinical indication of a rash or other symptoms. (7.95%)
- 51 new chickenpox cases were added to MAVEN for 2014 and 2015 or 58% of charts reviewed

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CHART REVIEWS

Methods

- **HCF B:**
 - Information was requested to be released for encounters for the two weeks prior/following the date of service where the requested ICD 9 code was used
 - All patient encounters were reviewed for information that is requested in MAVEN for chickenpox clinical symptoms, vaccine history and epilink/contact history
 - The patients provided were compared to MAVEN cases reported from January 1, 2014 through June 30, 2015
 - NDIIS was accessed to compare vaccination and history and update MAVEN information
 - All new cases not previously entered which met the CDC probable or confirmed definition were added to MAVEN

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CHART REVIEW RESULTS HCF B

- 21 cases of probable or confirmed chickenpox were identified
- 2 of the identified cases had previously been reported and identified in MAVEN (**9.52%**)
- 4 of the cases were not added to MAVEN due to out of state residence (**19%**)
- No charts pulled had an ICD9 code 052.9 utilized for Immunity testing but two charts that were included did not have clinical evidence of disease (**7.70%**)
- 13 new chickenpox cases were added to MAVEN for 2014 and 2015 or **62%** of charts reviewed

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CHILD CARE/EDUCATION PROVIDER SURVEY

Methods

- A survey was developed to ask chickenpox incidence and outbreak information as well as reporting policy awareness among child care providers.
- The survey was mailed to 35 child care providers who were randomized from the most recent child care center registry.
 - A Qualtrics link was provided in the letter
- The survey was presented to 10 licensed education centers who were randomized from the most recent state licensed educator list.
 - Schools were called directly to request nursing contact information
 - If nursing staff were not available, the registrar was asked to participate
 - Those available by email were sent a link to the Qualtrics survey

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CHILD CARE/EDUCATION SURVEY RESULTS

- 15 of the 35 child care providers responded (42.86 %)
- All responded by post, none by phone or through Qualtrics
- No cases of chickenpox occurred during the time period, and therefore no outbreaks occurred
- Only 4 of the 15 were unaware that chickenpox was a mandatory reportable illness (26.67 %)
- 7 of the 15 child care providers were not aware of personal responsibility to report chickenpox to NDDoH (46.67 %)
- School survey: only 2 responded out of 10
 - None indicated recalling a chickenpox outbreak in their school

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DISCUSSION

1. Two healthcare facilities agreed to participate
2. ICD-9 codes utilized were 052.0, 052.1, 052.7, 052.8, 052.9, 647.63
3. 78 previously unreported cases of chickenpox were identified by chart review and added to Maven.
4. 20.2% of cases identified had not been vaccinated despite being old enough to receive the vaccine
5. Most childcare providers were aware of mandatory disease reporting policies, however none of those surveyed had any cases of chickenpox in the past year
6. Only a small percentage of childcare programs and schools were contacted- this could be increased. There is also evidence that childcare and school education may increase the number of cases reported if and when they occur.

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SIGNIFICANCE

1. There are unreported cases of chickenpox in North Dakota
2. Provider reporting practice, child care survey results, and school reporting practices suggest that education may help to improve reporting to ND DOH
3. Most cases were not confirmed by lab result (93.9%), but still should be reported through other methods
4. Initiating an active surveillance project may be more costly, but more effective in identifying and reporting cases of chickenpox

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QUESTIONS

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