Nebraska Department of Health and Human Services

HEALTH ALERT NETWORK Advisory

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TO: Nebraska Healthcare Providers, Infection Preventionists, Laboratories, Public Health

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RE: **Management of Influenza and Influenza-Associated Pneumonia**

DATE: February 14, 2018

Background

The CDC announced on Friday that the nationwide number of hospitalizations this influenza season has surpassed that during the H1N1 pandemic of 2009–2010. In addition, last week 1 out of every 10 deaths in the US was related to influenza. The number of patients tested for influenza is holding steady in recent weeks, and the percentage of influenza tests positive for influenza A remains at peak levels (approximately 25%), suggesting the flu season will likely continue for several more weeks. In Nebraska, while influenza A H3N2 is decreasing, it still remains the predominant strain despite an increase in influenza B. While influenza-like illness (ILI) hospitalizations in Nebraska remain at high levels (455 during the last week of January) they have not yet surpassed the peak reached during the 2009 H1N1 pandemic year.

The H3N2 influenza strain causes a more severe influenza illness with a higher rate of hospitalizations and bacterial pneumonia superinfections. Influenza infections are frequently complicated by bacterial superinfection because influenza infection causes epithelial injury, increased bacterial colonization, and impaired host response.

The leading cause of concomitant or post influenza pneumonia (which usually occurs 4–14 days after initial first influenza symptoms) is *S. pneumoniae* (approximately 50% of cases), followed by *S. aureus* (MSSA or MRSA), *S. pyogenes*, and *H. influenzae*. *Mycoplasma pneumoniae* and non-influenza respiratory viruses have also been reported. During the historic H3N2 epidemic in 1968, 25% of post influenza pneumonias were caused by *S. aureus*.

Nebraska DHHS' 2017 statewide electronic surveillance for antibiotic resistance indicates that 33% (4662/13974) of *S. aureus* isolates reported in Nebraska were methicillin resistant. Please see Table 2 below for *S. aureus* sensitivities to selected antibiotics. Additionally, 20% (151/773) of all 2017 *S. pneumoniae* isolates were either intermediate or resistant to penicillin.

Recommendations

While influenza vaccine efficacy varies from year to year, it remains the best way to reduce the risk of influenza infection, hospitalizations, and deaths. Influenza vaccination should be offered

to anyone over 6 months of age who is unvaccinated, especially those at risk for severe complications.

For individuals who develop influenza infection, antiviral therapy should be considered and works best when initiated within the first 48 hours after symptom onset. Treatment is particularly important for anyone with severe disease and persons at high risk for influenza-related complications (Table 1). Additionally, prophylaxis should be considered for persons at high risk who have been in contact with a person with diagnosed influenza.

Rapid influenza diagnostic tests (RIDT) may be used to guide therapy but should not replace clinical evaluation. RIDT sensitivity is about 50 to 70%; specificity is 90 to 95%. When influenza is widely prevalent, false negative results increase (negative predictive value drops), and increasing weight should be given to clinical judgment.

Please consider concomitant bacterial pneumonia, especially in children, upon presentation with ILI. Treatment of pneumonia occurring on or following initial influenza presentation should at least include coverage for *S. aureus* (including MRSA), *S. pneumoniae, H. influenza* and *S. pyogenes.*

Table 1.CDC and AAP recommendations for the treatment of influenza using antivirals (Those at high risk of complications)

Patients under 2 and older than 64, OR patients of any age with one of the following:
• Chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematologic (including sickle cell disease), or metabolic disorders (including diabetes mellitus) or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability, moderate to severe developmental delay, muscular dystrophy, or spinal cord injury)
• People with immunosuppression, including that caused by medications or by HIV infection
• Women who are pregnant or postpartum (within 2 wk after delivery)
• People <19 yrs who are receiving long-term aspirin therapy
• American Indian/Alaskan native people
• Residents of nursing homes and other chronic care facilities
Anyone who lives with someone who meets the above criteria

Table 2. Sensitivity of *S. aureus* to Selected Antibiotics

Antibiotic Name	Number sensitive	Percent sensitive	Total tested
Oxacillin/Methicillin	9312	67%	13974
Clindamycin	2842	67%	4272
Doxycycline	40	98%	41
Trimethoprim-sulfamethoxazole	4460	96%	4625
Vancomycin	13994	99.9%	13995

For more information, please contact your local health department or the Nebraska Department of Health and Human Services as cited above.