Conclusions

• Use of statistical models to calculate periodic state-level estimates of influenza burden from death certificate, hospital discharge, and virus surveillance data is feasible and can provide information to policymakers and epidemiologists for setting priorities and planning interventions.

• Evaluation of multiple outcome measures provides a broad picture of the population impact of influenza and can complement ongoing surveillance, which may underestimate influenza outcomes.

• Our estimates of total influenza excess hospitalizations and deaths were up to six times greater than the number of laboratory-confirmed influenza hospitalizations and hospitalizations linked to death within 30 days from statewide surveillance, depending on the outcome.

• We captured the evolution of influenza A[H3N2] over the course of the 2009 pandemic (6-7): influenza A[H3N2] was associated with higher rates of hospitalization among persons 0-4, 5-9, and 50-64 years old compared to influenza A[H1N1] or B, resulting in the highest overall numbers and rates of excess hospitalization during the study.

• Our models were less suited to capturing extremes of season-to-season variability in influenza virulence. Other challenges included lack of power to fit age-stratified models for less frequent outcomes. We did not account for respiratory syncytial virus.

• In summary, estimates of influenza excess deaths and hospitalizations may be useful for state public health planning and more accurate public information about the burden of influenza.

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