Hospital-Acquired Influenza in Canberra Hospital 2017

20 November 2018

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We declare no conflicts of interest
Background

- Acquisition of influenza virus in hospital associated with increased morbidity, mortality and healthcare costs\(^1,2\)

- Spread facilitated by healthcare workers, other patients and visitors\(^3\)

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Background

- Previous studies have examined general trends over several seasons\textsuperscript{1-4}
- High number of cases in 2017 allowed focused single-centre examination
Study aims

- Compare and contrast patients with community-acquired (CA) and hospital-acquired (HA) influenza
- Evaluate characteristics of patients, management and outcomes
Methodology

- Design: retrospective observational study
- All adult influenza cases April-October 2017 included
- Data from FluCAN and hospital information systems
- Hospital-acquired influenza: symptom onset ≥48h after admission
- Focussed analysis on hospital-acquired cases
Statistical analysis

- Performed using IBM SPSS Statistics 22 software
- Continuous variables: Mann-Whitney U test
- Categorical variables: $\chi^2$ test or Fisher’s exact test
- Multivariate logistic regression and linear regression to control for age
Results

- Total of 292 patients included in study
  - 28 (9.6%) HA and 264 (90.4%) CA
- 66.1% of cases due to influenza A
Number of community and hospital-acquired influenza diagnoses per calendar week in 2017
Characteristics

- No significant difference in baseline characteristics
- Vaccinated in 2017: 60% CA; 41% HA
- CA group presented with an influenza-like-illness (ILI)
- HA group presented with a non-ILI
Management and outcomes

- HA influenza diagnosed sooner than CA influenza
- 62.5% of HA cases treated within 48 hrs vs. 39.8% of CA cases
- HA group had a longer length of stay after diagnosis than CA group (13 vs. 5 days)
- No difference in ICU admission or mortality
Ward placement of hospital-acquired influenza patients during incubation period, symptom onset, diagnosis and post-diagnosis
Infection control

- Median of 5 bed moves for HA patients
  - 8 patients moved at least once after diagnosis
- 22 HA patients in multiple-occupancy rooms during incubation period
- 17 HA patients shared a ward with another HA patient during incubation period
- Post diagnosis 9 HA patients moved into double rooms
Hospital-acquired influenza cases present in units during patient incubation period
Discussion

- HA cases occurred in clusters, contrast to previous study\(^1\)
  - Data suggestive of in-hospital transmission
    - Transferring of patients associated with increased risk of acquiring infection\(^2\)
    - Longer length of stay provides greater opportunity for transmission

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Discussion

• Differences in presentation could lead to underdiagnosis
  • HA patients mostly presented with non influenza-like-illness

• When symptoms were identified, diagnosis was prompt

• Proportion of patients receiving treatment within ideal window was low
  • Affects outcomes$^1$
  • Early treatment may decrease infectivity$^2$


Limitations

- Study design as an observational study
- Epidemiologic analysis only focussed on HA patients
- Threshold of 48hrs to define HA influenza may have led to misclassification of CA as HA
Conclusion

- 2017 influenza season resulted in high numbers of hospital-acquired influenza

- Cluster pattern of HA influenza suggestive of intra-hospital transmission
  - There is a need for increased infection prevention and control
  - Further research is required into the role of healthcare workers, patients and visitors in transmission