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Title: The impact of pandemics and quality interventions on trends in hospitalized pneumonia 2001-2012

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Body: Aim The aim of this study is to describe the frequency and outcomes of patients hospitalized with pneumonia over the past decade. Design Prospective audit of a pneumonia management program in a 1,000 bed university hospital from 2001 to 2012. Results We analyzed data from 5,729 pneumonia hospitalizations in general wards from 2001 to 2012. There was a marked increase in average admissions from 15-20 per month in 2001/2002 to 60-69 per month in 2011/12. This was especially striking in 2003 and 2009, after each pandemic of respiratory tract infection. Patients were older, mean age of 57-60yrs in 2001/2 increasing to 66yrs in 2011/12 and the proportion who had co-morbidities increased from 52-54% in 2001/2 to 85-86% in 2011/2. There was a slight increase in length of stay, from 4.1-4.5 days in 2001/2 to 4.8-5.6 days in 2011/2, but little change in 2 week re-admission rates of 4.3-9.3% in 2001/2 and 3.6-5.8% in 2011/2. The hospital mortality increased from 11.5% in 2001 to 17.5% in 2007 following which we implemented aggressive guideline based triage and resuscitation at the emergency department (Phua J et al, Eur Resp J 2010;36:826 & Thorax 2009;64:598). The mortality rates then declined steadily to 8% in 2012. Conclusions In the past decade, following 2 respiratory pandemics, a lot more patients were hospitalized with pneumonia. The patients were older, had more co-morbidities, stayed longer in hospital and tended to suffer higher mortalities. Aggressive intervention programs are required to cope more effectively with the rising disease burden, patient morbidity and mortality from pneumonia.