Health and Direct Economic Cost of Influenza Disease in Indonesia*

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BACKGROUND

• Influenza virus types A and B are the common causes of acute respiratory illness; in temperate climates, outbreaks happen mainly in winter season, but may occur unpredictably in tropical countries

• More accurate data on morbidity and mortality due to Influenza are available mainly from developed countries

• Periodic increase of morbidity and mortality above the predicted baseline used to measure relative severity of the outbreaks

• Population density and over-crowding, poor access to adequate medical services, poor nutrition, limited public health infrastructures, lack of safe water supply and poor sanitation facilitate the transmission

• High prevalence of smoking may serve as a risk factor for complications and prolonged illness
Seasonal influenza in Indonesia is a common disease and catch low awareness of the health providers (under-estimated)

In Indonesia, the epidemic of H5N1 in recent years (the total deaths up to early February 2012: 152 from 184 cases), create more attention regarding the importance of this self limiting Seasonal Influenza

Influenza activity occurs year-round with increased incidence during rainy season (November to April)

Completeness and quality of surveillance data reported are scarce, although Indonesia has strengthened the national surveillance system for Seasonal Influenza in recent years

Influenza viruses A (H1 and H3) and B have been observed as the cause of seasonal infections
BACKGROUND

• WHO estimated that in temperate climate zones, about 2-10% of the population develops clinical influenza; and annually, there are 3 - 5 million cases of severe Influenza illness and between 250,000 – 500,000 deaths in the world

• Evidence shows that Influenza associated mortality rates are higher in low & middle income countries

• The highest infection rates occur in children aged 5 – 9 years, but serious morbidity and mortality occur in children under two years of age, the elderly and people with high risk health conditions (diabetes mellitus, renal dysfunction, immunosuppressive conditions)
Virology Based Influenza Surveillance

2006 – 2012:

- Influenza Like Illness (ILI) Study, collaborative research between NIHRD & US CDC covering 20 subdistricts (health center based)
- Surveillance of SARI (Severe Acute Respiratory Infection), covering 10 general hospitals

2005-2008

- The Indonesian Pediatric Diarrhea Surveillance Network, NIHRD, US CDC and US NAMRU-2:
  Study on the prevalence of seasonal influenza A and B viruses, and avian influenza A (H5N1) virus, among children seeking medical care with acute influenza-like illness (ILI) and diarrhea in Indonesia.
Total Number of ILI Patients and Proportion of Flu Positive by Week, in Indonesia: 2011

Source: ILI Study, NIHRD 2012
Total Number of ILI Patients Positive Flu by Type and Sub-Type, in Indonesia: 2011

Source: ILI Study, NIHRD 2012
METHODS

• Medical expenditures only include those attributed to Influenza and its pneumonia complications; the other co-morbidity has been sorted out and excluded.
• The medical expenditures (in-patient and out-patient services), include emergency services, drugs, radiological services and clinical pathology services, nursing and room costs for in-patient
• Hospitalized patients: cost of general hospital room based on the 3rd class tariff
• The real unit cost of hospital services has been calculated using the Activity Based Costing (ABC) method. The method assigns costs through activities within an organization. Health personnel have been interviewed to determine principal activities and the distribution of individual’s time among the activities. Indirect costs have been linked to services through time allocation and other tracing methods.
ECONOMIC COSTS

• Direct Costs: Medical Expenditures include hospitalized patients and out-patients in 2011
• Total no of Influenza cases: 3,990,849
• Unit cost per visit (out-patient): Rp. 208,337 (US $ 23.15,-)
• Total medical expenditures of out-patients: calculated with the assumption of one visit per patient per year in 2011: Rp. 831,441,508 (92.4 million US Dollar)
ECONOMIC COSTS

• Total number of Hospitalized patients due to Influenza with pneumonia in 2011: 199,543

• Average medical expenditures per hospitalized patient: Rp. 2,707,663,- (US $ 300.85,-) (ALOS: 6.3 days)

• Thus, total medical expenditures for hospitalized patients in 2011: Rp. 540,295,198,000,- (60 million US Dollars)

• Cost of Inactivated Influenza Vaccine: Rp. 121,000,- (US $ 13.44,-) per dose (0.5 ml) with efficacy 70% to 90%
DISCUSSION & CONCLUSION

• Total Direct Economic Costs due to medical expenditures (ambulatory and in-patients): US $ 152.4 millions
• If the Indirect Economic Costs due to lost days of work or education, transportation cost and other social disruption are included, it will increase the total costs
• WHO (2005) projected that a moderate new influenza epidemic would increase hospitalizations, mortality and economic losses by at least 5 to 10 fold compared with a typical seasonal epidemic
• Raising the public awareness of Influenza and its complications as well as the benefit of Influenza vaccine need to be improved