The 11th Scientific Respiratory Medicine Meeting

PIPKRA 2013
PROCEEDING BOOK
Towards Respiratory Health for the Future
February 7th – 10th, 2013
Venue:
BOROBUDUR HOTEL

Department of Pulmonology and Respiratory Medicine
Faculty of Medicine University of Indonesia
Persahabatan Hospital Jakarta
Naskah Lengkap
Pertemuan Ilmiah Pulmonologi dan Ilmu Kedokteran Respirasi 11
(PIPKRA 2013)

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Fakultas Kedokteran Universitas Indonesia

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Tim Ilmiah PIPKRA 2013

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Urban Respiratory Health Problem

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Abstract

Urban Medicine is the health of a population that lives and works closely together, usually in an incorporated area, such as a city or town, with a common water supply and with similar environmental conditions. The urban respiratory health problems including communicable disease (new emerging disease, tuberculosis, HIV/AIDS) and non-communicable disease (indoor air pollution, outdoor air pollution, chronic obstructive lung disease, asthma, smoking related disease, sick building syndrome, lung cancer, occupational and environmental lung disease, etc).

In urban community, new emerging disease can develop become pandemic. Factors to be considered in pandemic population density, population mobility pattern and reproducing number of virus. Exposure to tobacco smoke and indoor air pollution is consistently associated with TB, regardless of the specific types of exposures and specific TB outcomes. The risk of death from TB among smokers was found higher than risk of latent disease. TB cases were more frequent among residents living at lower floors and decreasing trend was evident with increasing vertical heights.

Possible mechanism of pollutant-associated adverse health effects:
- PM-or ozone induced pulmonary inflammation
- Free radical and oxidative stress by metals and organic chemical compounds
- Covalent modification (enzyme)
- Biologic compounds: endotoxins, glucans, inflammation and innate immune effects
- Stimulate nervous system: airway reactivity
- Adjuvant effect
- Pro-coagulant activity
- Suppression of normal defense mechanism.
The most important risk factor for COPD is cigarette smoking. Pipe, cigar, and other types of tobacco smoking popular in many cities are also risk factors for COPD.

Other documented causes of COPD include:

- Occupational dusts and chemicals (vapors, irritants, and fumes) when the exposures are sufficiently intense or prolonged.
- Indoor air pollution from biomass fuel used for cooking and heating in poorly vented dwellings.
- Outdoor air pollution, adds to the lungs total burden of inhaled particles, although its specific role in causing COPD is not well understood.

Adverse health effects of air pollution linked to COPD:

- Mortality
- Increased incidence of LRTI
- Increased exacerbation
  - Less daily activity
  - Increase hospitalization
  - Increase emergency unit visit
  - Increase medication
- Reduction of lung function
- Increase prevalence of wheezing
- Increased prevalence of chest tightness
- Increased prevalence of cough requiring medical attention

Sick Building Syndrome is caused by inadequate ventilation, chemical contaminants from indoor sources, chemical contaminants from outdoor sources and biological contaminants. Inadequate ventilation, which may also occur if heating, ventilation and air conditioning systems do not effectively distribute air to people in the building.

Most indoor air pollution comes from sources inside the building, such as adhesives, carpeting, upholstery, manufactured wood products, photocopiers, air conditioners, pesticides and cleaning agents. Environmental tobacco smoke also contributes high levels of toxins and particulate matter. The outdoor air that enters a building can be a source of indoor air pollution, as pollutants can enter the building through poorly located air vents, windows and other openings. Biological contaminants such as bacteria, mold, pollen and viruses can also be making buildings—and their occupants—sick. These can breed in any stagnant water that has collected in ducts or drains, or other
places. Other sources of biological contaminants include insects or bird droppings – which can result in cough, chest tightness, fever, chills, muscle aches and allergic responses.

Regarding the association between air pollution and mortality, fine-particulate air pollution or a more complex pollution mixture associated with fine particulate matter, is contributes to excess mortality in some cities in USA.

**Conclusion:** Some factors in urban living condition (population density, indoor and outdoor air pollution, smoking habit, etc) are increase the risk for the evidence of respiratory disease.