

## **Future challenges in hospital hygiene and public health due to air-associated health hazards**

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### **Issue:**

In recent decades, hospital hygiene has focused on effective control strategies against contact or waterborne transmissions. Outside operating theatres or infection wards, airborne pathogens have played a minor role so far. For public health, the airborne route of transmission also played a subordinate role. Apart from bioterrorism, the focus here is more on chemical and physical hazards. In future, air-associated health hazards will increase. Besides airborne pathogens, examples include insects, heatwaves, particulate matter as well as pollen, mould and radon.

### **Description of the problem:**

No attention has been paid to systematic risk regulation of the transmission mode air. Hospital hygiene is 'micro-level public health' with a particularly vulnerable population. The experience of hospital hygiene measures can help to develop appropriate public health interventions. Which air hygiene measures have we taken to counter SARS-CoV-2 and how can these be more efficient in the future?

### **Results:**

In response to SARS-CoV-2, face masks were introduced. This has reduced the risk of transmission both in hospitals and in public, but has not completely prevented indirect transmission through aerosols indoors. Ventilation rules further reduced the risk of transmission, but were not applicable everywhere. Since most buildings do not have central air filtration units, the use of decentralised air filters increased, with unknown relevance.

### **Lessons:**

Breathing air cannot be substituted. Therefore, air hygiene is a primary prevention and needs to become more structured to be effective against future air-associated health hazards. Future construction projects for hospitals and public buildings must be adapted to prevention of air-associated health hazards. Hazard and risk analyses, technical, organisational and personal control measures, their monitoring and an incident management should be combined into an 'Air Safety Plan' as part of a hygiene plan for hospitals and the public.

### **Key messages:**

- Breathing air is increasingly polluted by natural or anthropogenic chemical, biological and physical influences and thus becomes a carrier of health hazards, especially for vulnerable groups.
- Since air cannot be replaced, primary preventive air hygiene based on "Air Safety Plans" will be important in the future as an efficient measure against air-associated hazards such as SARS-CoV-2.