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EVALUATION OF INDOOR AIR QUALITY IN THE PEDIATRIC INTENSIVE CARE UNIT OF A MEDICAL CENTER IN THE GREATER TAIPEI AREA

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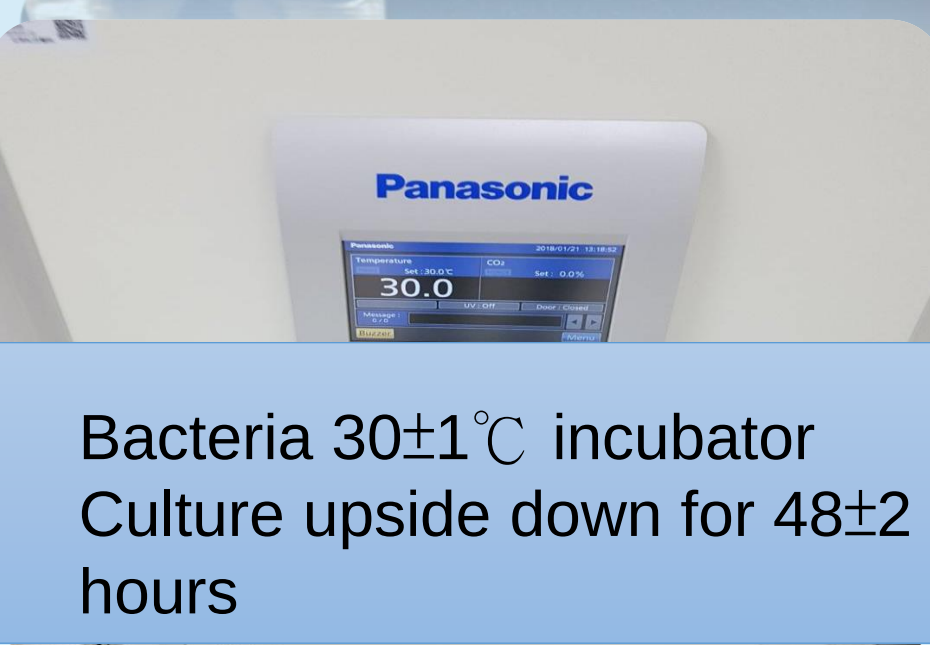
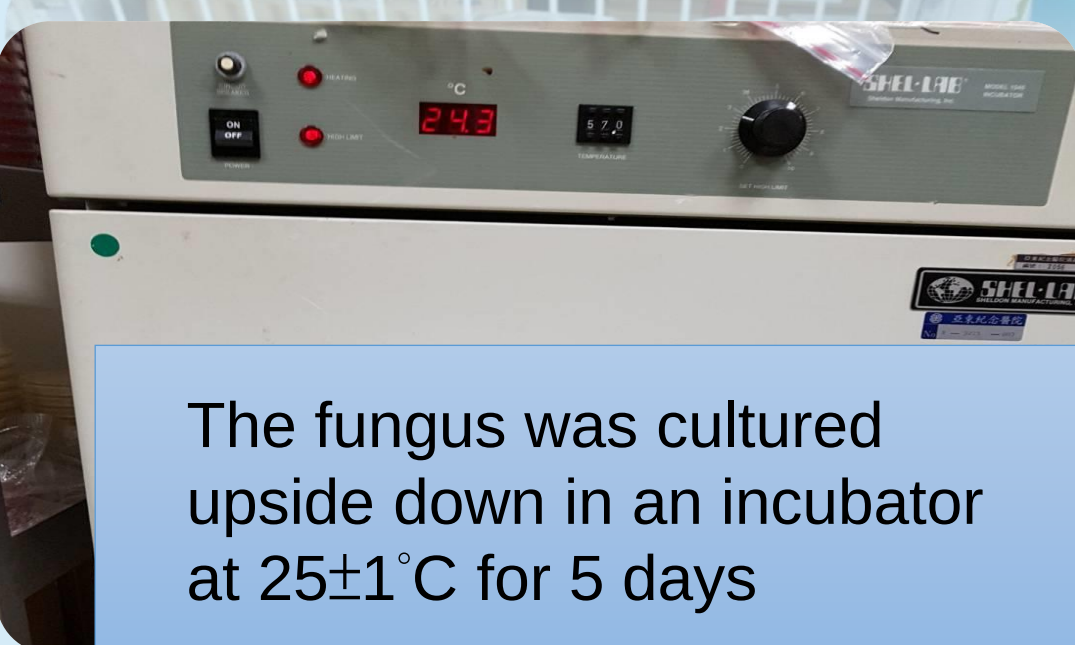
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INTRODUCTION

The European Centre for Disease Prevention and Control(ECDC) conducted infection in children epidemic servery in hospitals from 2011 to 2012, the infection epidemic in Pediatric Intensive Care Unit(PICU) was the highest. Research on the causes of infection in PICU could improve the quality of care effectively.

RESULTS

In the patterns of different wards, there were obviously variant in CO, PM10 and the concentration of bacteria. Open ward's CO was higher than isolated ward's. Isolated ward's PM10 and the concentration of bacteria were higher. There were only differences in temperature and humidity at different time periods. In terms of environmental factors, we found that frequent use of disinfecting and cleaning solutions led to an increase in TVOC concentration; CO₂ was used as an indicator of indoor air pollutants, so that it brought up the correlation between CO₂ and TVOC, while CO₂ began to accumulate, it indicated that the monitored site was poorly ventilated and easy to cause the concentration of other indoor air pollutants to rise up; HCHO concentration, which is used in humid environment, was detected at higher value in high humid environment; with different seasons, the concentration of bacteria and fungi was getting higher.



1. Each sampling time is 2 minutes
2. Wipe the sampling tray with an alcohol swab, then dry it with kimtech
3. To ensure the representativeness of sampling and reduce sample variation, Duplicate samples were collected simultaneously for both fungi and bacteria
4. Each batch of sampling needs to carry blank and equipment blank samples
5. After the sampling is completed, use paraffin to seal up, Paste the sample number and put it in the freezer

AIM

The European Centre for Disease Prevention and Control(ECDC) conducted infection in children epidemic servery in hospitals from 2011 to 2012, the infection epidemic in Pediatric Intensive Care Unit(PICU) was the highest. Research on the causes of infection in PICU could improve the quality of care effectively.

METHOD

This research used Purposive Sampling method and selected a PICU in a medical center in Great Taipei area. In January and April of 2018, which were in winter and spring, the researchers monitored the indoor air quality, including carbon dioxide (CO₂), carbon monoxide (CO), total volatile organic matter (TVOC), formaldehyde (HCHO), ozone (O₃), aerosol PM_{2.5}, PM₁₀, and the concentration of Bioaerosols, also the temperature and humidity. By referring above information, explored the correlation between "different ward types", "different time periods" and "environmental factors" on indoor air quality.

CONCLUSIONS

We recommend to strengthen the disinfection and exhausting simultaneously, depending on the needs of wards, increase the intensity and frequency of exhaust for air pollutants, avoid to affect indoor air quality. Through the models of ward management, nursing administrators may consider this study for the space design and management polices of PICU, further to promote the health of in-patient children .

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