Businesses for Health Papua New Guinea

- A not for profit established in 2017.
- B4H works to reduce the impact of PNG's TB crisis on workplaces, the economy and sustainable development of PNG
- B4H raises income from private sector sponsors and subscribers to workplace health promotion services

Businesses for Health:
Tuberculosis and HIV

www.businesses4health.com

Facebook@B4HTB #coveryourcough #vaccineswork

Businesses for Health Operations

Key Components

- Sponsors/subscribers
- Service delivery
- Staff
- Administration

https://fb.watch/v/47sGYbECX/

Services

Business sponsors/subscribers

- Executive briefing
- Workplace training
- Contact workshops, tracing
- Case finding and support
- Links to PHA TB/HIV/COVID services

Free Public Advocacy and IEC

- E-news, PR,
- Events e.g. monthly online webinars, World TB Day, World AIDS Day
- TB toll free info line 7676 2482
- www.businesses4health.com
- Facebook & social media
- Campaigns e.g. #coveryourcough, #vaccinework

HVAC & infectious disease transmission

- HVAC systems play a role in infectious disease transmission, including COVID-19 and Tuberculosis.
- Knowledge is emerging about how COVID-19 virus spreads.
- Inferences about spread can be drawn from the SARS outbreak in 2003 (a virus genetically similar to SARS-CoV-2) and, to the transmission of other viruses (chicken pox, measles, see the PNG immunisation chart).
- Scientific investigation on best practice and consensus on germ-proof HVAC is on-going.

COVID-19 Transmission

Primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Talking & breathing can also release droplets and particles.

Droplets mostly fall to the ground or other surfaces in about 1 m (3 ft), while particles (also known as aerosols), behave gas and travel through the air for longer distances

Infected droplets can be picked up by hands that touch contaminated surfaces (fomite transmission) or be re-entrained into the air when disturbed on surfaces.

Aerosol transmission occurs if the virus remains suspended in poorly ventilated spaces

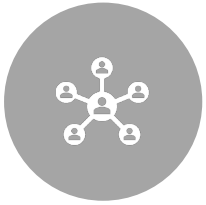
REVIEW the basis for Niupela Pasin…

Most Coronavirus transmission is likely to result from

- direct person to person contact
- indirect contact through inanimate objects like doorknobs
- through the hands to mucous membranes such as those in the nose, mouth & eyes
- standing very close via droplets and particles spread between people

BEFORE spending money on your HVAC system reducing aerosol transmission

REVIEW, REMIND, REPEAT, REINFORCE



SOCIAL DISTANCING (1.5+)

SURFACE CLEANING AND DISINFECTION

HANDWASHING AND HYGIENE STRATEGIES

VACCINATION

Ventilation and Infection: before and after covid-19

Airborne Hazards can be reduced but not always eliminated

Communicate the limitations of the HVAC system

Keep up to date on knowledge about the virus and its spread.

We all have a role to play to control the spread of this disease. HVAC is part of it and even more significant are social distancing, hygiene and the influence we can have on personal behaviour

Key Points on Bringing Fresh Air into a Building

1. BCA + AS1668.2 latest
2. Occupational Health & Safety Requirement OHS
3. Workplace productivity
    - Comfort
    - Indoor environment quality IEQ
    - Ventilation rates
    - Outdoor airflows
    - Humidity
4. Check outdoor air flows and distribution against
    - Design intent
    - Actual building population
    - Usage pattern
5. Check indoor/outdoor air quality against
    - Carbon monoxide CO
    - Carbon dioxide CO2
    - Temperature
    - Humidity

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6. Control of microorganism in buildings to AS/NZS3666.2
    - Legionnaire disease
    - Pontiac fever
    - Humidifier fever
    - Hypersensitivity pneumonitis

7. Outdoor and recycled air shall be filtered in accordance to AS1324.1
    - Design intent
    - Actual building population
    - Usage pattern

8. Outdoor air volume is determinant to (larger of the two is considered)
    - Occupant-related contaminant, l/s/person
    - Smoking Activity Metabolism
    - Non-occupant-related contaminant, Space area, l/s/m2 Type of enclosures

9 Outdoor air shall be clean and dirt-free
    - Particulates must be filtered to AS1324.2
    - Smoke odour and gaseous irritants
    - Adjusted to meet rise in enclosure temperatures (dampers, vavs, etc.)

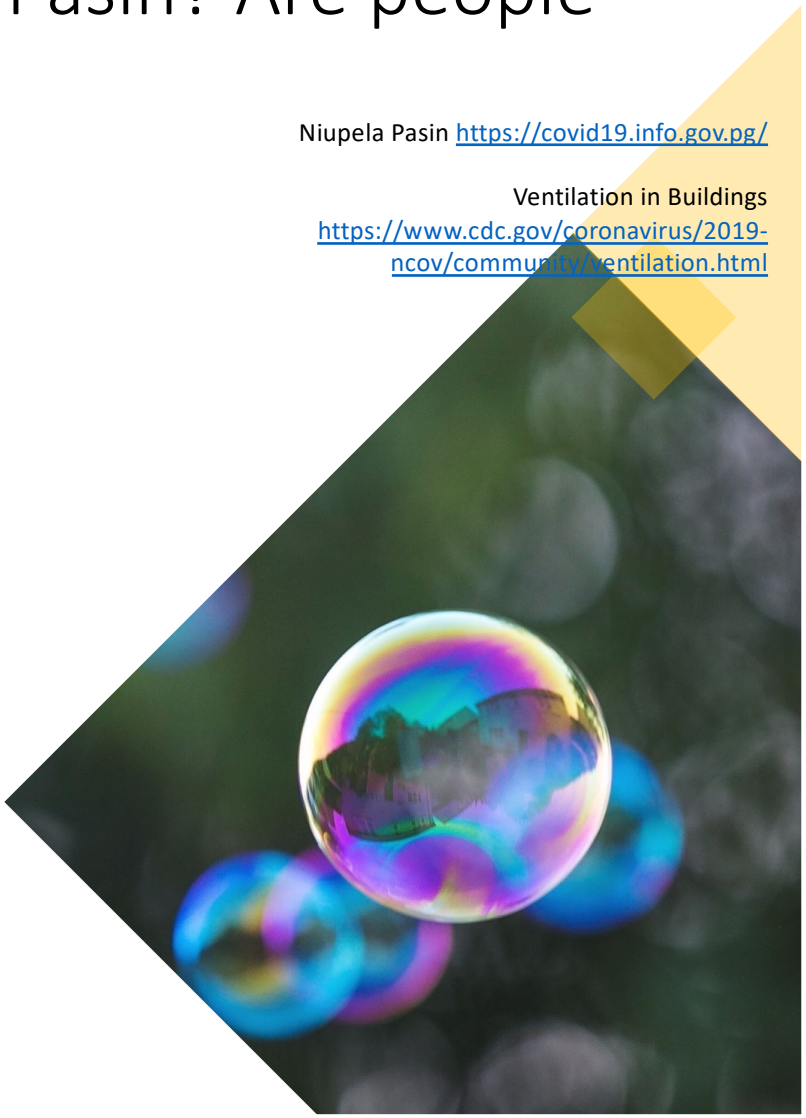
10 . Outdoor air survey reports and records
    - Detail report of outdoor air status within the building
    - Status
    - Causes Recommendations
    - Certification Signed off by certified personal
    - Registration Hard file & Electronic copy

Are you 100% complying with Niupela Pasin? Are people still sick? Yes? Then add HVAC

Increase	• Increase outdoor air ventilation
Reduce	• Reduce population in the building and increase dilution ventilation per person.
Disable	• Disable demand-controlled ventilation (DCV).
Open	• Open minimum outdoor air dampers, as high as 100%. Eliminating re-circulation (more difficult in hot humid weather).
Improve	• Improve central air filtration to the MERV-13 or the highest compatible, seal edges of the filter to limit leaks.
Keep	• Keep HCVAC systems running longer hours, if possible 24/7, to reduce recirculation AND Increase filtration
Consider	• Consider portable room air cleaners with HEPA filters.
Consider	• UVGI (ultraviolet germicidal irradiation), particularly in high-risk spaces such as waiting rooms and overcrowded rooms.

Niupela Pasin https://covid19.info.gov.pg/

Ventilation in Buildings https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.html



Tools for Improving Ventilation

Increase outdoor air:

- Open outdoor air dampers to reduce air recirculation. Difficult to do in hot/ humid weather
- Open windows and doors, to increase outdoor air flow. Even a slightly open window can introduce beneficial outdoor air.

Use fans to increase the effectiveness of open windows: Avoid placing fans so contaminated air flows directly from one person to another. Use a window fan, placed n a window, to exhaust room air to the outdoors.

Ensure ventilation systems operate properly and provide acceptable indoor air quality for the current occupancy level for each space.

Rebalance or adjust HVAC systems to increase total airflow to occupied spaces when possible.

Turn off any demand-controlled ventilation (DCV). Set the fan to the "on" position instead of "auto," to operate the fan continuously.

Improve central air filtration:

- Ensure air filters are properly sized and within their recommended service life.
- Inspect filter housing and racks to ensure appropriate filter fit and minimize air leaks around the filter.

Ensure washroom exhaust fans are functional and operating at full capacity when the building is occupied.

Inspect and maintain exhaust ventilation systems in meeting areas such as kitchens. Operating them even when the space is NOT occupied will increase overall ventilation within the occupied building.

Use portable high-efficiency particulate air (HEPA) fan/filtration systems to enhance air cleaning (especially in higher risk areas or areas frequently inhabited by people with a higher likelihood of having).

Generate clean-to-less-clean air movement by evaluating and repositioning as necessary, the supply louvers, exhaust air grilles, and/or damper settings.

Use ultraviolet germicidal irradiation (UGVI) treatment to inactivate viruses.

Run the HVAC system at maximum outside airflow for 2 hours before and after the building is occupied.

Improving ventilation & A/C: Initial costs and operating costs

- Risk assessment factors –incidence rates of airborne infections, facemask compliance, expectations and room occupant density
- Cost estimates for ventilation tools

NO COST: opening windows; inspecting and maintaining dedicated exhaust ventilation; disabling DCV controls; repositioning outdoor air dampers

Less than $100: using fans to increase effectiveness of open windows; repositioning supply/exhaust diffusers to create directional airflow

$500 (approximately): adding portable HEPA fan/filter systems

MORE adding upper room UVGI

Factors affecting transmission of TB & COVID-19

	Description
Concentration of infectious droplet nuclei	The more droplet nuclei in the air, the more probable that M. tuberculosis will be transmitted
Space	Exposure in small, enclosed spaces
Air circulation	Recirculation of air containing infectious droplet nuclei
Ventilation	Inadequate local or general ventilation that results in insufficient dilution or removal of infectious droplet nuclei
Specimen handling	Improper specimen handling procedures that generate infectious droplet nuclei
Air Pressure	Positive air pressure in infectious patient's room that causes M. tuberculosis organisms to flow to other areas

Proximity & Length of Exposure Factors that Can Affect Transmission of M. tuberculosis

	Description
Duration of exposure to a person with infectious TB	The longer the duration of exposure, the higher the risk for transmission
Frequency of exposure to infectious person Physical proximity to infectious person	The more frequent the exposure, the higher the risk for transmission
Duration of exposure to a person with infectious TB	The closer the proximity, the higher the risk for transmission

Must Watch, Must Read on Ventilation and Tuberculosis

YouTube link:
https://youtu.be/gtHY8hCjD1I

This 1966 CDC film illustrates the airborne transmission pattern of Tb and the study used to verify this pattern. Using animation and live action, the film also describes measures effective for the control of TB infection

ABC News:

Town planners on a 'crusade' against TB could help us to redesign our cities post-COVID

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