COVID-19 TASK FORCE

Informing the Caribbean 's Response

THE UNIVERSITY OF THE WEST INDIES

Evidence base to guide the safe reopening of the UWI Campuses:

Produced by a working group of the UWI COVID-19 Task Force

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Executive Summary:

The COVID-19 taskforce was requested to provide an evidence base to guide the safe reopening of the UWI campuses. A working group was assembled to carry out the task. Key issues identified to review were related to the transmission of SARS-CoV-2, the use of air-conditioning in buildings, offices and transportation, risk factors related to age and co-morbidities, mental health interventions and visitors to campuses, including childcare. The evidence used for this report was collected up to the 20th June 2020. It should be noted that new evidence is being published daily, so findings and recommendations will need to be adapted and updated as the pandemic progresses. Additionally, recommendations will likely change according to risk within a country. Countries with active community spread may choose to recommend more strict interventions than countries without active transmission.

Summary of Main Findings and Recommendations:

Issue 1 - Transmission of SARS-CoV-2:

Main Findings:

- SARS-CoV-2 is predominantly transmitted through close contact by droplets, although some medical / dental procedures generate aerosols that may contribute to transmission.
- Although there is no evidence for viable virus being present in the air from hospital studies, many scientists continue to believe that airborne transmission of SARS-CoV-2 is possible.
- Physical distancing of 1 meter or more is highly effective at reducing transmission of SARS-CoV-2. There is a reduction in risk of 82% with a physical distance of 1 meter, with every additional 1 meter of separation more than doubling the relative protection.
- Face coverings / masks can prevent the spread of infectious droplets from a symptomatic infected person and may also effectively reduce the spread of infectious droplets from pre-symptomatic and asymptomatic persons. There is however limited evidence that wearing a mask by healthy individuals plays a role in preventing transmission.
- Cough etiquette manoeuvres do not block the release and dispersion of droplets to the surrounding environment but may reduce the number of droplets released.
- Face shields / screens are effective at reducing the risk of transmission.
- Transmission through asymptomatically infected people is probably rare, however pre-symptomatic and mildly affected people may contribute substantially to transmission.
- Viable virus can be detected on surfaces for several days. Use of sanitising agents for cleaning / disinfecting surfaces and for hand washing can remove and inactivate SARS-CoV-2 on surfaces thereby reducing the risk of contact transmission.
- SARS-CoV-2 is found in faeces and on toilet surfaces. Flushing toilets can potentially aerosolize virus from faecal matter leading to contamination of surrounding areas.

Recommendations:

No one intervention is completely protective. Due to the risks of transmission from pre-symptomatic, asymptomatic and mildly-affected people and the possibility of airborne spread, physical distancing of at least 1 meter, face mask use, cough etiquette, hand hygiene and physical barriers (face shields / screens and closing toilet lid before flushing) are needed to mitigate the COVID-19 pandemic until an effective vaccine is produced.

Issue 2: Air-conditioning

Main Findings**:**

- There is no definitive evidence that air-conditioning systems in buildings are responsible for the spread of SARS-CoV-2.

- Air-conditioning systems move large volumes of air around in buildings.
- Engineers agree that there is the potential for the SARS-CoV-2 particles to be moved within the air-conditioning system in an aerosolised form.
- Risk of SARS-CoV-2 transmission though the use of air-conditioning can be reduced by the following: air dilution, extraction, pressurization, airflow distribution, mechanical filtration and ultraviolet germicidal irradiation

Recommendations:

1. Check and service air conditioning systems to ensure operation as designed.
2. Adjust control settings to maximize the in-flow of outside (fresh) air that the equipment can accommodate.
3. Reduce occupancy capacity to a minimum of 50% in high tenancy areas such as lecture halls.
4. Assess and change air filters to the highest rating that the equipment can accommodate.
5. Install Ultraviolet Germicidal Irradiation (UVGI) disinfection in the supply air system.

Issue 3: Transportation:

Main Findings:

The likelihood of SARS-CoV-2 spread is higher in a public transport setting due to the limited space for physical distancing, the spread of virus through regularly touched common surfaces and the design of the air conditioning system in vehicles.

Recommendations:

For transport vehicles, the most effective method for reducing the possible spread of SARS-CoV-2 is to increase ventilation, so air conditioning should be turned off and windows should be opened. Physical distancing of 1-2 meters should be maintained where possible and masks / face coverings should be worn. Common surfaces in vehicles should be regularly cleaned.

Issue 4. Risk of Severe infection

Main Findings:

- There is an increasing risk for severe COVID-19 disease with age. Males over the age of 65 face a greater risk of developing the critical or mortal condition.
- Comorbidities such as hypertension, diabetes, cardiovascular disease, respiratory diseases (including COPD), chronic kidney disease and cancer are associated with greater risk of death from COVID-19 infection.
- Obesity is a significant predictor for mortality among inpatients with COVID-19 after adjusting for age, gender, and other comorbidities.

Recommendations:

Older staff and students, especially those over 65, should take extra precautions while on campus to shield themselves from COVID-19, as should students and staff with co-morbidities including diabetes, cardiovascular disease, respiratory diseases (including COPD), hypertension, chronic kidney disease and cancer. Obese staff and students should also take extra care.

Issue 5: Mental Health

Main Findings:

- An evidence base for identifying and addressing the mental health impact of COVID-19 pandemic on universities is yet to emerge.
- International studies identify concerns which pose a threat to mental health of staff and students.

- The UWI COVID-19 Task Force conducted a survey across all five campuses to assess the mental health impact of the pandemic on staff and students. Preliminary results show 24% of staff and 30.2% of students reporting clinically significant levels of depressive symptoms and 22.1% and 27% respectively reporting clinically significant levels of anxiety symptoms, Full reports for the University and each campus will be available in July.

Recommendations**:**

1. Ongoing monitoring of staff and student mental health and wellbeing to identify and address concerns and utilization of COVID-19 Impact survey report findings across campuses
2. Expansion of mental health services to include more diverse, safety conscious, cost effective, wide-reaching and culturally relevant options
3. Expand sensitization and basic training for staff and leadership to recognise psychological and mental health issues and understand campus-specific protocols for referral; to allow for earlier identification and intervention

Issue 6: Visitors to campuses, including childcare, children and the general public

Main Findings**:**

- Evidence indicates that children are not contracting SARS-CoV-2 at the same rate as adults, however it is still not clear whether children transmit the virus at a similar rate as adults.
- There is no evidence to date on the degree to which children can transmit SARS-CoV-2.
- According to CDC, children under the age of 18 account for under 2% of reported cases of COVID-19 in China, Italy, and the United States.
- Clinical features of COVID-19 in children include fever and cough, but a large proportion of infected children appears to be asymptomatic.

Recommendations**:**

- Introduce Flexible work arrangements.
- Introduce Family-friendly policies for all.
- Develop childcare programme protocols.

Childcare programs that remain open during the COVID-19 pandemic should:

- *Limit attendance*
- *Plan ahead*
- *Create a COVID-19 (coronavirus) response plan*
- *Screen for Symptoms*
- *Log daily attendance*
- *Clean frequently*
- *limit non-essential visitors*
- *Create drop-off and pick up protocols*
- *Require sick children and staff to stay home*

Where feasible, staff members should wear face coverings. Cloth face coverings should **NOT** be put on babies and children under the age two because of the danger of suffocation.

Issue 1: Evidence Base for Issues related to Transmission of SARS-CoV-2:

Background: How is SARS-CoV-2 thought to be transmitted?

According to the current evidence, SARS-CoV-2 is primarily transmitted between people via respiratory droplets and contact routes. Droplet transmission occurs when a person is in close contact with an infected person and exposure to potentially infective respiratory droplets occurs, for example through coughing, sneezing or very close personal contact resulting in the inoculation of entry portals such as the mouth, nose or conjunctivae (eyes). Transmission may also occur through virus contaminated surfaces (fomites) in the immediate environment around the infected person. Therefore, transmission of SARS-CoV-2 can occur directly by contact with infected people, or indirectly by contact with surfaces in the immediate environment. In specific circumstances and settings, such as during some medical / dental procedures know as aerosol generating procedures (AGPs), airborne / aerosol transmission of SARS-CoV-2 may be possible. There is also some evidence for the airborne / aerosol transmission of SARS-CoV-2 in the absence of AGPs (see below).

1. **Evidence Base for airborne transmission of SARS-CoV-2.**

The scientific community has been debating and discussing for some time whether the SARS-CoV-2 might spread through aerosols in the absence of medical aerosol generating procedures (AGPs). This is an area of active research and knowledge about the transmission of SARS-CoV-2 is accumulating every day. Infectious disease experts and policy makers in many countries around the world, especially in Asian countries such as China and South Korea, strongly suspect that SARS-CoV-2 is transmissible by air. Some studies have found that the viral RNA of SARS-CoV-2 is present in air samples in isolation rooms and quarantine facilities [1] and in and around hospitals and department store entrances [2], while other studies did not find the viral RNA in air samples where the patients with COVID-19 were treated [3, 4]. However, the presence of viral RNA is not the same as replication and infection competent (viable) virus that could be transmissible. At present, there is no data to support viable virus in the air outside of AGPs from available hospital studies.

A small number of experimental studies conducted in aerobiology laboratories have found viral RNA and viable virus to be present in aerosols. One highly quoted study found that viable SARS-CoV-2 remained in floating aerosols for up to 3 hours [5]. However, this study used experimentally induced AGPs, where aerosols were generated using high-powered jet nebulizers, which does not reflect normal human cough conditions.

There is increasing evidence that certain persons may release more aerosol particles during speech than others and that practices such as shouting and singing may have contributed to COVID-19 super-spreading events, such as in the well-known choir practice incident in Washington [6] and the church in South Korea. These data demonstrate the high transmissibility of SARS-CoV-2, the possibility of super-transmitters contributing to broad transmission in certain unique activities and circumstances and the possibility of airborne spread under certain circumstances.

High quality research including randomized trials in multiple settings are required to address many of the acknowledged research gaps related to AGPs and airborne transmission of the COVID-19 virus.

<u>Main findings</u>**:** SARS-CoV-2 is predominantly transmitted through close contact via droplets. Some medical / dental procedures generate aerosols, which may contribute to airborne spread in these scenarios. At present, there is no data to support viable virus in the air outside of aerosol generating procedures (AGPs) from available hospital studies, although viral RNA has been found in air samples.

Despite the lack of evidence, many scientists continue to believe that airborne transmission of SARS-CoV-2 is possible.

Weight of Evidence**:** Low (C)

Recommendations**:** Due to the observed high transmissibility of SARS-CoV-2, the lack of agreement about the distance that 'infected' droplets can travel, the lack of information on the viability of the virus on droplets, the infectious dose of the virus and the low weight of evidence for airborne transmission, it is recommended that persons presume that some degree of airborne transmission of SARS-CoV-2 in community settings, such as on the UWI Campuses, may be possible. According to risk, people should therefore take appropriate precautions to avoid face-to-face contact with others, they should maintain physical distancing (see evidence base below) and should wear face coverings in crowded settings where physical distancing measures are difficult to maintain (see evidence base below).

2. Evidence base for physical distancing in reducing the transmission of SARS-CoV-2

The 1 to 2-meter rule of spatial separation is central to droplet precautions and assumes that large droplets do not travel further than 2 meters. A recent systematic review (Bahl et al, 2020) reviewed the evidence for horizontal distance travelled by droplets. Of 10 studies on horizontal droplet distance, 8 showed droplets travel more than 2 meters, in some cases up to 8 meters. Another systematic review [7], investigated the optimum distance for avoiding person-to person virus transmission. The review identified 172 observational studies across 16 countries and six continents, with no randomised controlled trials and 44 relevant comparative studies in healthcare and non-healthcare settings. The findings showed a reduction in risk of 82% with a physical distance of 1 meter in both healthcare and community settings. Every additional 1 meter of separation more than doubled the relative protection, with data available up to 3 meters. The findings of this systematic review and meta-analysis supported physical distancing of 1 m or more. The review concluded that physical distancing of at least 1 meter is strongly associated with protection, but distances of up to 2 meters might be more effective.

Main findings: Physical distancing of 1 meter or more is highly effective at reducing transmission of SARS-CoV-2. A recent systematic review showed a reduction in risk of 82% with a physical distance of 1 meter in both healthcare and community settings with every additional 1 meter of separation more than doubling the relative protection

Weight of Evidence**:** Good (A)

Recommendations**:** Adopt physical distancing guidelines of 1-2 meters, depending on risk.

3. Evidence base for the use of masks and face coverings in reducing the transmission of SARS-CoV-2

Infectious disease experts and policy makers in many countries around the world, especially in Asian countries such as China and South Korea, are convinced that SARS-CoV-2 is transmissible by air. As such, they have stringent face mask policies in place for citizens in public spaces and for health care workers in medical facilities. The World Health Organization (WHO) and policy makers in the United States and some European countries have taken a more evidence-based approach while awaiting more concrete findings on the effectiveness of universal masking, namely by insisting that only patients with confirmed or suspected COVID-19 wear face masks, as well as the health care workers who treat them. As emerging evidence supports that SARS-CoV-2 is likely to be transmissible by air during normal talking and breathing [8], and that pre-symptomatic and asymptomatic people are able to transmit the virus (see evidence base below), these more sceptical countries, as well as the WHO, have started to introduce more stringent face mask policies in health care facilities and public spaces.

The WHO Interim Guidelines [9], produced on the 6th June 2020, state that:

"The use of masks is part of a comprehensive package of the prevention and control measures that can limit the spread of certain respiratory viral diseases, including COVID-19. Masks can be used either for protection of healthy persons (worn to protect oneself when in contact with an infected individual) or for source control (worn by an infected individual to prevent onward transmission). However, the use of a mask alone is insufficient to provide an adequate level of protection or source control, and other personal and community level measures should also be adopted to suppress transmission of respiratory viruses. Whether or not masks are used, compliance with hand hygiene, physical distancing and other infection prevention and control (IPC) measures are critical to prevent human-to-human transmission of COVID-19".

Studies of influenza, influenza-like illness, and human coronaviruses (not including SARS-CoV-2) provide evidence that the use of a medical mask can prevent the spread of infectious droplets from a symptomatic infected person (source control) to someone else and potential contamination of the environment by these droplets. A recent systematic review meta-analysis [7], albeit biased towards observational data, showed that face masks are associated with protection, even in non-health-care settings, with either disposable surgical masks or reusable 12–16-layer cotton ones, although much of this evidence was on mask use within households and among contacts of cases. This could be considered to be indirect evidence for the use of masks (medical or other) by healthy individuals in the wider community; however, these studies suggest that such individuals would need to be in close proximity to an infected person in a household or at a mass gathering where physical distancing cannot be achieved, to become infected with the virus. The findings of this systematic review and meta-analysis concluded that robust randomised trials are needed to better inform the evidence for the use of masks and face coverings, but this systematic appraisal of currently best available evidence might inform interim guidance.

Results from cluster randomized controlled trials on the use of face masks among young adults living in university residences in the United States of America indicated that face masks may reduce the rate of influenza-like illness, but showed no impact on risk of laboratory-confirmed influenza. Additionally, a recent study from China stated that masks worn within households in Beijing, China [1]), prevented secondary transmission of SARS-CoV-2 if worn before symptom onset of the index case.

Although there is currently a limited amount of evidence on the effectiveness of universal masking of healthy people in the community to prevent infection with respiratory viruses, including SARS-CoV-2, many countries around the world are mandating the use of masks in public settings, such as in crowded spaces and on public transport, when it may not be possible to physically distance. Many papers reiterate that no one intervention is completely protective and that combinations of physical distancing, face mask use, and other interventions are needed to mitigate the COVID-19 pandemic until we have an effective vaccine.

Main findings**:** Face coverings / masks can prevent the spread of infectious droplets from a symptomatic infected person to someone else and potential contamination of the environment by the droplets. Similarly, it is also likely that face masks / coverings will effectively reduce the spread of infectious droplets from pre-symptomatic and asymptomatic persons. There is however limited evidence that wearing a mask by healthy individuals plays a role in preventing transmission.

Weight of Evidence: Fair (B)

Recommendations: Use face coverings / masks according to risk and in situations when physical distancing is not possible. This should include when on Campus.

4. **Evidence base for the effectiveness of respiratory hygiene/cough etiquette in reducing the transmission of SARS-CoV-2:**

While no consensus exists regarding the best description of the respiratory hygiene/cough etiquette among health agencies, it appears that: "Cover your mouth and nose with a tissue when you cough or sneeze. Dispose the used tissue in a garbage can. If you do not have a tissue, cough or sneeze into your elbow or sleeve, not in your hands" is the most acceptable recommendation.

Evidence for the effectiveness of respiratory hygiene/cough etiquette in reducing the transmission of respiratory diseases is limited. Questions therefore remain about the effectiveness of recommended non-pharmaceutical interventions (NPEs) to block or control cough droplets to prevent the spread of respiratory pathogens like SARS-CoV-2.

To investigate this, a study was carried out [11], to determine the effectiveness of recommended simple primary prevention measures such as "cover your mouth when coughing" to determine their effectiveness in blocking droplets expelled as aerosol during coughing. Participants performed a voluntary cough while covering the mouth and nose with the hands, sleeve/arm, tissue, or while wearing a surgical mask. Droplets released or diverted were quantitatively characterized to assess how effective those manoeuvres were in controlling the cough aerosol jet. Results showed that the recommended cough etiquette manoeuvres did not block the release and dispersion of a variety of different diameter droplets to the surrounding environment. Although it remains possible and even logical that transmission was reduced, this study was not however designed to carry out measurements of this reduction.

Main findings: recommended cough etiquette manoeuvres did not block the release and dispersion of a variety of different diameter droplets to the surrounding environment. They may however reduce the number of droplets released into the air from a cough.

Weight of Evidence: Low (C)

Recommendations: Respiratory hygiene/cough etiquette should be practiced in combination with other non-pharmaceutical interventions such as physical distancing and the wearing of masks / face coverings.

5. **Evidence base for the use of face shields / screens in reducing the transmission of SARS-CoV-2:**

Face shields can substantially reduce the short-term exposure of health care workers to large infectious aerosol particles, but smaller particles can remain airborne longer and flow around the face shield more easily to be inhaled [12]. Thus, face shields provide a useful adjunct to respiratory protection for workers caring for patients with respiratory infections. However, they cannot be used as a substitute for respiratory protection when it is needed.

Main findings: Face shields / shields are effective at reducing exposure to SARS-CoV-2

Weight of Evidence: Fair (B)

Recommendations: Use face shields / screens according to risk in crowded places and places where physical distancing cannot be maintained.

6. **Evidence base for appropriate density of people in buildings in reducing the transmission of SARS-CoV-2**

Physical distancing continues to be the strongest safeguard to prevent the spread of COVID-19. Very little information was found in the literature related to recommended maximum density limits of people in offices, rooms and building related to mitigating the transmission of SARS-CoV-19. Guidelines from Australia, where they are currently recommending people to maintain a safe distance of no less than 1.5 metres between people, are recommending a maximum density limit which aims to prevent the crowding of people in a space. A premise must not have a density of more than 1 person per 4 square metres of floor space. This means an operator must not allow people to enter or stay on the premises (indoor or outdoor) if the size of the premises is insufficient to allow for 4 square metres of space for each person. Other countries are currently recommending that people keep apart by a recommended distance, which ranges from 1-2 meters from country to country. There is no literature providing evidence for optimal 'maximum density limits' to avoid transmission for SARS-CoV-19 or other respiratory viruses.

<u>Main findings</u>**:** Maximum densities of 1 person per 4 square meters is recommended in Australia. No other evidence is available.

<u>Weight of Evidence</u>**:** insufficient (D)

<u>Recommendations</u>**:** Maintain physical distancing of 1-2 meters when inside buildings according to risk.

7. **Evidence base for transmission of virus by asymptomatic, pre-symptomatic and mildly affected people**

Infection with SARS-CoV-2 commonly results in the development of clinical symptoms, particularly amongst the elderly (Davies NG et al, 2020). However, recent data indicates that a fraction of persons that become infected with SARS-CoV-2 never develop symptoms [13], especially those <20 years of age [14]. Limited information is available regarding the ability of asymptomatic SARS-CoV-2-infected persons to transmit the virus to a secondary contact. Most early studies did not distinguish between pre-symptomatic and asymptomatic transmission, with only several recent studies examining transmission from true asymptomatically-infected people. Pre-symptomatic transmission refers to those that have been infected with SARS-CoV-2, do not have symptoms, but will develop symptoms at some later point during the infection. Asymptomatic transmission refers to those that have been infected with SARS-CoV-2 that do not develop symptoms during infection.

SARS-CoV-2 has been recovered from asymptomatically-infected persons [15, 16], providing evidence for the potential for secondary transmission. A pre-print systematic review and meta-analysis identified four studies detailing secondary transmission rates from SARS-CoV-2 asymptomatically infected people [13], with one not differentiating between pre-symptomatic and asymptomatic transmissions. Investigation of a call center outbreak in South Korea identified 97 SARS-CoV-2-infected people of which 4 did not develop any symptoms and none of these asymptomatically-infected people transmitted the virus to a household contact [17]. A study examining the first 100 SARS-CoV-2 confirmed people in Taiwan found that 9 people were asymptomatic of which none transmitted the virus to a secondary case [18]. Of the 22 index cases that transmitted SARS-CoV-2 in the Taiwan study, 4 were mild, 5 had mild pneumonia, 7 had severe pneumonia, and 6 had acute respiratory distress syndrome (ARDS)/sepsis. Finally, in a study examining close contacts of SARS-CoV-2-infected people in Wuhan, China, of the 305 asymptomatically-infected people identified, only 1 transmitted the virus to a secondary case for an incidence of 0.33% [19]. In that study, 576 persons had a mild infection, of which 19 transmitted the virus to a secondary case for an incidence of 3.3%

(compared to 5.6% and 6.2% for moderate and severe cases, respectively). These studies demonstrate that SARS-CoV-2 asymptomatic transmission is rare and that mildly symptomatic persons transmit virus much more readily. Mildly symptomatic persons have been suggested to contribute substantially to SARS-CoV-2 transmission [(20].

SARS-CoV-2 presymptomatically-infected persons commonly have viable virus recovered by cell culture prior to the symptomatic phase [15], indicating the potential to transmit infectious virus. A large number of case series have demonstrated that SARS-CoV-2 presymptomatically-infected persons can transmit virus and cause infection clusters [21-32]. Mathematical modeling studies suggest that nearly half (44-48%) of all SARS-CoV-2 transmission events occur from presymptomatically-infected persons [33-35].

Main findings**:** SARS-CoV-2 secondary transmission in asymptomatically infected people is rare, however pre-symptomatic and mildly infected people may contribute substantially to transmission.

Weight of Evidence: Fair (B)

Recommendations**:** Physical distancing, mask/face coverings, and hand hygiene precautions should be maintained in the presence of persons without COVID-19 symptoms due to the inability to distinguish between pre-symptomatic and asymptomatic SARS-CoV-2 infections.

8. Evidence base for cleaning and disinfecting surfaces and hand hygiene

Fomites are thought to contribute to SARS-CoV-2 transmission as individuals who come in contact with fomites (e.g. doorknobs, handrails, computer mice, trash cans etc.) may transfer the virus (via contaminated hands) to the mucosa of their eyes, nose or mouth. A recent systematic review [36] identified several studies that reported wide contamination of object surfaces (especially high touch surfaces) in hospital wards occupied by SARS-CoV-2 infected individuals and other areas in COVID-19 designated hospital settings [4, 37 – 40]. In one study, higher positive rates for surfaces tested were found in staff areas than in patient rooms [39] which was attributed in part to more thorough disinfection in patient areas. This also suggests that virus can be transferred from one surface to another by contaminated hands, thereby facilitating indirect contact transmission.

A number of studies have investigated how long SARS-CoV-2 lasts on different types of surfaces (including paper, aluminium, copper, cardboard, wood, plastic, cloth, glass, banknotes, stainless steel, plastic, surgical masks) and the effect of environmental conditions on survivability [5, 41- 43]. Taken together they suggest that SARS-CoV-2 can remain viable on surfaces from 3 hrs up to 7 days after contamination depending on the type of surface, with the virus lasting longest on plastic surfaces.

Sanitizing agents can limit transmissions of pathogens that are spread via fomites by inactivating the pathogens before they have a chance to enter the human body. Therefore cleaning / disinfecting surfaces and hand hygiene are considered basic infection control measures [44, 45] and have been identified as key strategies for limiting the spread of SARS-CoV-2 [40, 46, 47]. Research indicates that simply washing hands regularly with soap and water or using alcohol-based solutions (in the absence of soap and water) can greatly reduce the risk of transmitting the virus [48]. For eliminating SARS-CoV-2 from surfaces, common chemicals such as sodium dichloroisocyanurate, sodium hypochlorite, ethanol, and hydrogen peroxide have been shown to be effective [4, 43, 49-52]. A study of 335 people in 124 families in Beijing, China with at least one laboratory confirmed case of COVID-19 found that daily use of chlorine or ethanol based disinfectant in households was 77% effective (OR=0.23, 95% CI 0.07 to 0.84) at preventing secondary cases within families [10].

Main Findings: Viable SARS-CoV-2 can be detected on surfaces up to several days after contamination. Use of sanitising agents for cleaning / disinfecting surfaces and for hand washing can remove and inactivate SARS-CoV-2 on surfaces thereby reducing the risk of contact transmission.

Weight of evidence: – Good (A)

Recommendations: Frequent hand washing and routine cleaning / disinfection of surfaces (especially high touch services) should be implemented.

9. Evidence base for the role of public toilets in transmission

In addition to displaying respiratory symptoms, COVID-19 cases may present with gastrointestinal symptoms such as vomiting and diarrhoea [53]. SARS-CoV-2 RNA is frequently detected in the faeces of COVID-19 patients [53 - 55] and has also been detected in sewage and wastewater from outbreak areas [56 - 6042 - 46]. This, and the fact that gastrointestinal symptoms and viral shedding have been noted in other coronaviruses, led to the suggestion that faecal transmission may contribute to SARS-CoV-2 spread. At least three studies have now reported viable virus in patient stools [61- 63] and an epidemiological study of 335 people in 124 families in Beijing, China with at least one laboratory confirmed case of COVID-19, found that diarrhoea as a symptom in the primary case was a risk factor for SARS-CoV-2 transmission within families [10].

Data from empirical studies and computer simulations indicate that flushing toilets can create plumes of bio-aerosol that may lead to environmental contamination [64, 65] and inhalation exposures for users [64]. After flushing, residual microorganisms may exist on toilet bowl walls to be later aerosolized [66, 67]. SARS-CoV-2 can also persist on object surfaces for up to several days [5, 41-43] and multiple studies have detected viral RNA on toilet seats, bathroom floors and / or restroom taps [4, 37, 68 - 71].

Although these data are insufficient to conclude that faecal transmission does in fact occur, they indicate that it remains a plausible route for SARS-CoV-2 spread and it would be prudent to take precautions [72]. The use of sanitizing agents can limit transmissions of pathogens that are spread via fomites by inactivating the pathogens before they have a chance to enter the human body. Cleaning / disinfecting surfaces and hand hygiene are thus considered basic infection control measures [44, 45] and have been identified as key strategies for limiting the spread of SARS-CoV-2 [10, 40, 46, 47]. Keeping toilet lids closed during flushing has also been recommended to reduce risk of aerosol inhalation [72]

Main Findings: SARS-CoV-2 is found in the faeces of COVID-19 infected individuals and on toilet surfaces. Flushing toilets can potentially aerosolize virus from faecal matter leading to contamination of surrounding areas. It is still unclear whether virus detected in patient faeces can cause onward transmission (via contact with contaminated surfaces or inhalation of aerosolised virus) but based on evidence from other coronaviruses and epidemiological data on SARS-CoV-2, faecal transmission (which is often associated with toilet use) remains plausible. Sanitizing agents can limit transmissions of pathogens that are spread via fomites by inactivating the pathogens before they have a chance to enter the human body.

Weight of evidence: Low (C)

Recommendation: Toilet seat and other contact areas in public toilets should be cleaned frequently. Close toilet lid before flushing. Wash hands after using the toilet.

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Issue 2 – Evidence base for the use of Air-Conditioning on Campus:

Minimizing the spread of SARS-CoV-2 requires a holistic approach including many aspects such as personal, social, psychological and collective considerations. This note considers only the engineering aspect with respect to air conditioning for the mitigation of SARS-CoV-2 spread. The suggestions should be considered within this context and not misinterpreted as a stand-alone opinion. For successful mitigation of SARS-CoV-2 spread, the suggestions must be implemented in conjunction with other protocols.

A review of the literature did not show any definitive evidence that the air-conditioning systems in buildings are responsible for the spread of SARS-CoV-2. Of the many recently published documents, only one suggested that air-conditioning was in some way linked to the transmission of the virus: Chinese restaurant case study (widely referenced) [1]. However, scientific scrutiny of the conditions and circumstances leading to the conclusions showed there were some flaws. The authors also indicated shortcomings in the study. This was echoed by the overwhelming disagreement from experts in the area of study [2],

A pre-peer-reviewed research article of the Diamond Princess Cruise Ship scenario concluded 'We infer that the ship central air conditioning system did not play a role, i.e. the long-range airborne route was absent in the outbreak. Most transmission appears to have occurred through close contact and fomites.' [5]

The facts that we know presently are:

1. SARS-CoV-2 is a highly infectious virus.
2. SARS-CoV-2 is transmitted due to droplets in the air within close proximity to an infected person.
3. Particles (Virus infected droplets) less than 10 um, have the potential to be aerosolised and remain airborne for long periods. [6, 7]
4. Large droplets in low humidity conditions have the potential to dry out and become aerosols before reaching the ground. [8, 9]
5. Air-conditioning systems move large volumes of air around in buildings.

Based on known facts, engineers agree that there is the potential for the SARS-CoV-2 particles to be moved within the air-conditioning system in an aerosolised form from one region to another within a building. Since SARS-CoV-2 is a novel virus, there are no current credible studies on this virus to substantiate this. Within this context, the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) relied on published peer reviewed research on other airborne virus and pathogen transmission and developed guidelines for the treatment of the SARS-CoV-2 within an air-conditioned environment. The ASHRAE's Executive Committee and Epidemic Task Force approved two statements specific to the ongoing response to the COVID-19 pandemic. [10]

1. *Statement on airborne transmission of SARS-CoV-2:* Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.
2. *Statement on operation of heating, ventilating, and air-conditioning systems to reduce SARS-CoV-2 transmission:* Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.

Evidence base for a role for air conditioning in viral spread

Mitigation of infectious aerosol dissemination should be a consideration in all facilities. Pathogen dissemination through the air occurs through droplets and aerosols typically generated by coughing, sneezing, shouting, breathing, toilet flushing, some medical procedures, singing, and talking [11, 12]. Transmission of disease varies by pathogen infectivity, reservoirs, routes, and secondary host susceptibility [13, 14, 15]. The dissemination of smaller infectious aerosols, including droplet nuclei resulting from desiccation, can be affected by airflow patterns in a space in general and airflow patterns surrounding the source in particular. Of special interest are small aerosols (<10 µm), which can stay airborne and infectious for extended periods (several minutes, hours, or days) and thus can travel longer distances and infect secondary hosts who had no contact with the primary host [16, 17].

While ventilation systems cannot interrupt the rapid settling of large droplets, they can influence the transmission of infectious aerosols droplet nuclei. These findings support the ASHRAE statement "Transmission of SARS-CoV-2 through the air is sufficiently likely…".

The variable most relevant for air conditioning design and control is disrupting the transmission pathways of infectious aerosols. The disruption can be implemented in single or multiple modalities across the different processes involved in the operation of a centralized air conditioning system. [18, 19, 20, 21].

Dilution and extraction ventilation.

Ventilation with effective airflow patterns [22] is a primary infectious disease control strategy through dilution of room air around a source and removal of infectious agents [23]. However, with SARS-CoV-2 being novel, there are no studies to guide by how much infectious particle concentrations must be reduced to achieve a measurable reduction in disease transmissions. Infectious particle concentrations to reduce disease transmission vary widely among different pathogens [24, 25].

The mitigation proposal is to increase outdoor air ventilation by disabling demand-controlled ventilation and to open outdoor air dampers to 100% or to the maximum that the air conditioning system can accommodate.

Pressurization and airflow distribution.

Room pressure differentials and directional airflow are important for controlling airflow between zones in a building [23, 26]. A recent ASHRAE Research Project found convincing evidence that a properly configured and operated anteroom is an effective means to maintain pressure differentials and create containment in hospital rooms [26, 27].

The mitigating proposal is to ensure that the system is operating as designed, which promotes airflow patterns from clean to dirty regions. This would provide effective air flow paths that force airborne particulates to exit clean spaces, such as office and lecture theatres.

Mechanical filtration.

The use of highly efficient particle filtration in centralized HVAC systems reduces the concentration of airborne infectious particles [6]. This strategy reduces the transport of infectious agents from one area to another when these areas share the same central HVAC system through supply of recirculated air. Filtration will not eliminate all risk of transmission of airborne particulates because many other factors besides infectious aerosol concentration contribute to disease transmission. With the novel SARS-CoV-2, there is no scientific data on the minimum concentration required for infection.

The mitigating proposal is to improve central air and other HVAC filtration to MERV-13 [28] or the highest level that the system can accommodate without inducing significantly high pressure drop. Keep systems running longer hours (24/7 if possible) to ensure flushing of the space during the un-occupied hours.

Ultraviolet germicidal irradiation.

UV-C energy (in the wavelengths from 200 to 280 nm) provides the most germicidal effect, with 265 nm being the optimum wavelength. The majority of modern UVGI lamps create UV-C energy at a near-optimum 254 nm wavelength. UVGI inactivates microorganisms by damaging the structure of nucleic acids and proteins with the effectiveness dependent upon the UV dose and the susceptibility of the microorganism. Centers for Disease Control and Prevention (CDC) has approved UVGI as an adjunct to filtration for reduction of tuberculosis risk and has published a guideline on its application [23, 29].

The mitigating proposal is to add a duct or air-handling-unit-mounted UVGI devices.

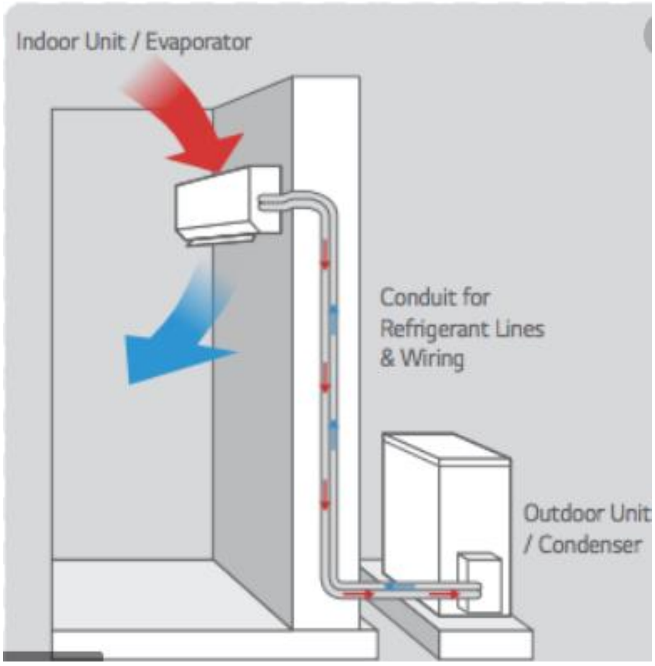
Recommendations for the reopening of buildings with centralized air conditioning

1. Check and service air conditioning systems to ensure design operation. This would mitigate the pressurization and airflow distribution and optimization aspect and is an inherent part of the system design.

2. Adjust control settings to maximum outside (fresh) air that the equipment can accommodate. (Opening windows randomly can overload the cooling capacity). This would mitigate the dilution and extraction ventilation aspect and is an inherent part of the system design.
3. Reduce occupancy capacity to minimum 50% in high tenancy areas such as lecture halls. A reduction of 50% in an area automatically increases the design dilution rate per person by 100%.
4. Assess and change air filters to the highest rating that the equipment can accommodate according to the operating specifications. (Using higher rated filters than manufacturers' specification will induce larger than design pressure drop. This would affect airflow, dilution and extraction in the building and in extreme cases can result in coil icing and low humidity). Filtration would reduce particulate (including infectious) matter in the supply air and is an inherent aspect of the system design.
5. Install Ultraviolet Germicidal Irradiation (UVGI) disinfection in the supply air system. This would mitigate the possibility of viral and bacterial particulate in the supply air.

Recommendations for the reopening of buildings with individual air conditioning units.

Individual air conditioning units are employed to cool small office space with limited occupants. These units (commonly called split A/C units) recycle the air within the space, extracting only the heat and moisture.



1. For spaces with individual air conditioning units, to introduce fresh air into the mix, the simplest way is to slightly open a window. (Fully opening or allowing too much fresh air will significantly reduce or nullify the cooling capacity of the air conditioning unit). This will enable dilution of the air in the room.
2. Check and clean air filters as recommended. This would reduce particulate (including infectious) matter in the supply air.
3. In cases where there is significant traffic flow (e.g. departmental secretary office), install Ultraviolet Germicidal Irradiation (UVGI) disinfection in the supply air system. This would mitigate the possibility of viral and bacterial particulate in the supply air.

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Issue 3: Evidence base - transport of students and staff around campuses

Summary of Findings**:** Transport vehicles have limited space for social distancing and the volume to occupancy ratio is low. Within this context and the non-peer review publications [1], among other factors such as regularly touched common surfaces, the likelihood of SARS-CoV-2 spread is higher in a public transport setting [2, 3]. The design of the air conditioning system in terms of air flow pattern is also different from that of buildings.

Weight of Evidence: Fair (B)

Recommendations**:** For transport vehicles, the most effective method for reducing the possible spread of SARS-CoV-2 is to increase ventilation. Within the context of the UWI being located in the Caribbean, not using the air conditioning and rolling down the windows in the vehicles is recommended. This would provide high dilution and rapid airflow within the space. Physical distancing of 1-2 meters should be maintained where possible and masks / face coverings should be worn. Common surfaces in vehicles should be regularly cleaned.

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Issue 4. Evidence base for issues related to severe infection (age, co-morbidities)

There have been many published studies and reviews around the area of risk factors / co-morbidities associated with increased severity of COVID-19. From the very start of the outbreak in China and Italy it became clear that there was an association between several risk factors and worse prognosis in patients with COVID-19, including older age, hypertension, heart failure, diabetes, and pulmonary disease.

In 191 hospitalised patients from China, 91 (48%) had a comorbidity, with hypertension being the most common (58 [30%] patients), followed by diabetes (36 [19%] patients) and coronary heart disease (15 [8%] patients). In this study, multivariable regression showed increasing odds of in-hospital death associated with older age on admission (1)

Thirteen further studies from China (2) were included in a meta-analysis that including a total number of 3027 patients with SARS-CoV-2 infection. Male, older than 65, and smoking were risk factors for disease progression in patients with COVID-19. The proportion of underlying diseases such as hypertension, diabetes, cardiovascular disease, and respiratory disease were statistically significant higher in critical/mortal patients compared to the non-critical patients.

Another study analysed data from 1590 laboratory confirmed hospitalised patients from 575 hospitals in 31 provinces/autonomous regions/provincial municipalities across mainland China (3). The most prevalent comorbidity was hypertension (16.9%), followed by diabetes (8.2%). One hundred and thirty (8.2%) of patients reported having two or more comorbidities. After adjusting for age and smoking status, COPD (HR (95% CI) 2.681 (1.424-5.048)), diabetes (1.59 (1.03-2.45)), hypertension (1.58 (1.07-2.32)) and malignancy (3.50 (1.60-7.64)) were risk factors for death. The hazard ratio (95% CI) was 1.79 (1.16-2.77) among patients with at least one comorbidity and 2.59 (1.61-4.17) among patients with two or more comorbidities.

In a comparability analysis of risk factors across 17 studies (4) evidence supporting a total of 60 predictors for disease severity, of which seven were deemed of high consistency, 40 of medium and 13 of low. Among the factors with high consistency of association was age, C-reactive protein, D-dimer, albumin, body temperature, SOFA score and diabetes. These results suggested that diabetes might be the most consistent comorbidity predicting disease severity. Another study (5) showed that COVID-19 patients with diabetes had worse outcomes compared with the sex- and age-matched patients without diabetes. This study also showed that older age and comorbid hypertension independently contributed to in-hospital death of patients with diabetes.

Fourteen studies with 29,909 COVID-19 infected patients and 1445 cases of death were included in another meta-analysis (6). Significant associations were found between older age (≥65 vs <65 years old, gender (male vs female) and risk of death from COVID-19 infection. In addition, hypertension, cardiovascular diseases (CVDs), diabetes, chronic obstructive pulmonary disease (COPD) and cancer, were associated with higher risk of mortality.

The CDC recently reported that among 7,162 cases in the USA, 2,692 (37.6%) patients had one or more underlying health condition or risk factor (7). The percentage of COVID-19 patients with at least one underlying health condition or risk factor was higher among those requiring intensive care unit (ICU) admission (358 of 457, 78%) and those requiring hospitalization without ICU admission (732 of 1,037, 71%) than that among those who were not hospitalized (1,388 of 5,143, 27%). The most commonly reported co-morbidities were diabetes mellitus, chronic lung disease, and cardiovascular disease.

Among patients with cancer and COVID-19, 30-day all-cause mortality was high and associated with general risk factors and risk factors unique to patients with cancer (8).

Another study set out to determine whether obesity is a risk factor for mortality among COVID-19 patients (9). A total of 238 patients were included, 218 patients (91.6%) were African American, 113 (47.5%) were male, and the mean age was 58.5 years. Of the included patients, 146 (61.3%) were obese (BMI >30kg/m2), with 63 (26.5%), 29 (12.2%), and 54 (22.7%) with class 1, 2, and 3 obesity, respectively. Obesity was identified as a predictor for mortality as was male gender and older age.

In a very large prospective observational cohort study from the UK, 20 133 hospital in-patients with COVID-19 were included (10). The median age of patients admitted to hospital with COVID-19, or with a diagnosis of COVID-19 made in hospital, was 73 years. More men were admitted than women (men 60% - women 40). Increasing age, male sex, and comorbidities including diabetes, chronic cardiac disease, non-asthmatic chronic pulmonary disease, chronic kidney disease, liver disease and obesity were associated with higher mortality in hospital.

Main Findings:

- There is an increasing risk for severe COVID-19 disease with age. Males over the age of 65 face a greater risk of developing the critical or mortal condition.
- Patients with any comorbidity yielded poorer clinical outcomes than those without. A greater number of comorbidities also correlated with poorer clinical outcomes.
- Comorbidities such as hypertension, diabetes, cardiovascular disease, respiratory diseases (including COPD), chronic kidney disease and cancer are associated with greater risk of death from COVID-19 infection.
- Obesity is a significant predictor for mortality among inpatients with COVID-19 after adjusting for age, gender, and other comorbidities.

Weight of Evidence: Good (A)

Recommendations:

1. Older staff and students, especially those over 65, should take extra precautions while on campus to shield themselves from COVID-19
2. Student and staff with co-morbidities including diabetes, cardiovascular disease, respiratory diseases (including COPD), hypertension, chronic kidney disease and cancer should take extra precautions while on campus to shield themselves from COVID-19
3. Student and staff who are obese should take extra precautions while on campus to shield themselves from COVID-19.
4. Students and staff living with and caring for family member in the above higher risk categories should take extra precautions while on campus to shield themselves from COVID-19

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Issue 5: Evidence base for issues related to Mental Health of students and staff

The COVID-19 situation is a continuously evolving one and its novelty has not allowed for a significant body of peer-reviewed work on mental health impact and interventions to yet emerge. However, the prevalence of mental health issues among students of higher education institutions has been long documented in the literature and this awareness has resulted in the provision of fundamental support resources at most institutions. The emergence of a threat, the nature of which has been experienced by no one in our current cohort, illuminates the need for extensive evaluation of its impact on students/staff with (i) pre-existing mental health conditions and (ii) no known mental health conditions. Since this is outside the remit of this paper, the focus herein is on the following:

a. Identification of mental health issues typically facing students and related recommendations
b. Summary of best practice in relation to student mental health and related recommendations
c. Identification of mental health issues typically facing staff and related recommendations
d. Summary of best practice in relation to staff mental health and related recommendations.

a. Identification of mental health issues in students

Aeurbach et al (2017), in their review of mental disorders among college students based on the WHO World Mental Health Surveys, report that 1 in 5 college students suffer from mental disorders. This information is based on a peer reviewed study conducted in 21 countries [1]. Yusen & Xue (2020) concur with Aeurbach et al and predict an aggravation of prior mental conditions due to COVID-19 exacerbated by: inability to access normal coping mechanisms e.g. getting together with friends; low levels of physical activity; disappearance of routines. They identify uncertainty as a major stress factor and point to common symptoms of mental health issues in young people: depression, anxiety, grief [2]. Brown & Kafka (2020), further identify increased risks of sleeping disorders, substance abuse and suicide among students [3].

A UWI COVID-19 Task Force Rapid Response COVID-19 Impact Survey was carried out online across all 5 UWI campuses during April-May 2020. The survey measured campus, faculty, age, gender, religion, ethnicity, sexual orientation, anxiety, coping, depression, loneliness, pre and post COVID psychosocial concerns. The survey utilised mixed methods and the respondents were asked to indicate what their top three concerns were regarding student roles and what support they needed from the university. The full report of survey findings will be available in July 2020. Reports will be available for the overall UWI as well as for each individual campus. Preliminary results show 30.2% of students reported moderately severe to severe depressive symptoms (N=2778) while 27% of students reported severe anxiety symptoms (N=2778). Symptoms in these ranges warrant clinical intervention (which may include counselling/psychotherapy or pharmacological treatment) [4].

In their guidance notes for providers, about students and consumer protection during the COVID-19 pandemic, the OFS (2020) indicates that international students are at high risk since they may experience additional anxiety and worry over family. They also point out the following issues which would have deleterious effects on students: (i) additional responsibilities of caring for family members; (ii) possible experience of bereavement; (iii) loss of childcare providers for students with children; (iv) inability of students with disabilities to meet medical and other needs; (v) escalation of situations of domestic abuse during lockdown period resulting in additional levels of panic; (vi) extreme anxiety of new students, about having missed much of their final school terms; and being faced with circumstances (e.g. content and delivery) totally different from those marketed during recruitment. Further, communication can be disrupted by office closures and limited access to campus, which in turn impacts engagement and access to information for both new and returning students [5].

Gonzalez et al (2020), in a study conducted with 3707 participants, considered a sample of 2530 students from University of Valladolid, Spain. The purpose was to analyse the psychological effects of COVID-19 on members of the university. They found that (i) Arts, Humanities, Social Science & Law students show greater scores for anxiety/depression/stress compared to Engineering & Architecture; (ii) these scores were higher in students than in staff and (iii) higher in undergraduate than PG students [6].

<u>Recommendations</u>

1. Repeat survey after resumption of classes or start of new semester to monitor changes and assess scope of issue and numbers of persons needing interventions (already planned).
2. Campus specific reports from the UWI COVID-19 Impact survey should be visited once available to identify campus-specific concerns which can inform interventions.
3. Expand sensitization and basic training for staff to recognise psychological and mental health issues and understand campus-specific protocols for referral; to allow for earlier identification and intervention.

b. **Best practice in providing assistance to students**

The UWI COVID-19 Task force Rapid Response Impact Survey contains a qualitative component which crowd sourced ideas from students on how best they think the university can support them. Results will be made available in July 2020.

Yusen & Xu (2020) identify the following best practices: (i) teaching student resilience; (ii) creation of alternative projects for students whose research/internships were affected; (iii) refunding/crediting unused fees from room & board or meal plans to alleviate financial pressure and distress; (iv) creating public health messaging about mental health issues (v) focusing on symptom recognition and proactivity in addressing mental health issues; (vi) faculty offering virtual office hours to students (endorsed by (O'Connor, 2020); (vii) creation of online support groups [2, 7].

<u>Recommendations</u>

1. Expansion of tele-health services to make up for limited face-to-face services with social distancing in light of an anticipated increase in mental health concerns.
2. Expansion of services to include more cost effective and wide-reaching options: e.g. online psychoeducational resources available through different media (e.g. visual, audio and video); self-led online interventions; group telehealth services.
3. Source or create culturally relevant mental health resources to promote coping, resiliency and wellness.
4. Regular and relevant, centralized, easy to assess outreach via websites and social media.
5. Crowdsource all questions students may have and provide answers for them online.
6. Online office hours to facilitate real time engagement

c. **Identification of mental health issues (STAFF)**

Ahmad (2020) suggests that major mental health challenges for staff arise from the pressure of simultaneously (i) moving courses online while undergoing training; (ii) managing changing home situations; (iii) managing work schedules; (iv) maintaining scholarly activities and (v) the absence of social connectedness [8].

Buckee et al (2020) purport that the pandemic may widen already existing gender inequities among staff, and especially in STEM fields, as it relates to hiring, promotion, publishing, pay, service loads and grant allocation. The widening can be attributed in part to inequalities in domestic work, childcare, and responsibilities for ageing parents and community members, with women spending significantly more time on such activities than male counterparts [9].

The UWI COVID-19 Task Force Rapid Response COVID-19 Impact Survey carried out across all 5 UWI campuses during April-May 2020 included a sample consisting of 847 staff and 276 persons who are both staff and students. The survey measured campus, faculty, age, gender, religion, ethnicity, sexual orientation, anxiety, coping, depression, loneliness, pre and post COVID psychosocial concerns. The survey utilised mixed methods and the respondents were asked to indicate what their top three concerns were regarding work roles and what support they needed from the university. 24% of staff reported moderately severe to severe depressive symptoms and 22% reported severe anxiety symptoms on clinical screening measures. Symptoms in these ranges warrant clinical intervention (counselling/psychotherapy or pharmacological treatment) [4]. The full report of survey findings will be available in July 2020. Reports will be available for the overall UWI as well as for each individual campus.

<u>Recommendations</u>

1. Repeat survey after resumption of classes or start of new semester to monitor changes and assess scope of issue and numbers of persons needing interventions.
2. UWI Campus Study should be revisited once complete to identify campus-specific concerns.
3. Expand/introduce sensitization for leadership to recognise psychological and mental health issues and understand campus-specific protocols for referral to allow for earlier identification and intervention.
4. University should undertake a review of existing gender inequities as well as those exacerbated by the pandemic

d. **Best practice in providing assistance to staff**

University of Bristol HR page recommends addressing work security issues as a priority in alleviating extreme staff anxiety; especially pertaining to staff on fixed-term contract. The establishment of a Precarious Contract Review Group is put forward as a practice welcomed by such staff. Further best practices are identified as (i) meditation/bible reading groups; (ii) an Employee Assistance Programme (EAP) App for quick access to stress reduction exercises and (iii) a SharePoint Site where staff can share personal stories or other forms of encouragement [10].

The UWI COVID-19 Task force Rapid Response Impact Survey contains a qualitative component which crowd sourced ideas from staff on how best they think the university can support them [4]. Results will be made available in July 2020.

<u>Recommendations</u>

1. Expansion of telehealth EAP (Employee Assistance Programmes) and other university mental health services to assist with continued limited face-to-face services with social distancing as well an anticipated increase in mental health concerns.
2. Expansion of services to include more cost effective and wide-reaching options: e.g. online psychoeducational resources available through different media (e.g. visual, audio and video), self-led online interventions, group telehealth services.
3. Sourcing or creation of culturally relevant mental health resources to promote coping, resilience and wellness.
4. Regular and relevant, centralized, easy to assess outreach via websites and social media.
5. Crowdsource questions staff may have and provide answers for them online via the intranet.
6. Explore strategies to allow for flexibility and options such as continued remote work, flexi time etc and provision of digital support where necessary.

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Issue 6: Evidence base for issues related to Childcare, Children, the General Public and Animals on The UWI Campus:

Categories of persons and animals considered:

Categories of children passing through the campuses.

- Open Campus Preschools in Jamaica on the Mona Campus (ages 3 months – 5 years) and in Trinidad on Open Campus offices/classroom space (18 months to 4+ years)

- Nursery on The UWI Hospital, Jamaica (Birth to 2 years)
- Staff members' children housed in offices, libraries, extra office space on all campuses (5 – 13 years) after school as well as during holidays.

Special consideration for childcare facilities on The UWI campuses.

- Registered nursery and preschools. The preschools follow the Ministry of Education and Ministry of Health Guidelines for reopening in each country. Schedule to reopen in September 2020. The protocols include social distancing, wearing of masks and sanitising practices. In Jamaica, the Early Childhood Protocols for re-opening of preschools is being developed.

Categories of persons entering campuses for activities.

- Athletes (internal and external)
- Walkers (internal and external)
- Community persons walking through the campus
- Vendors visiting offices
- Events on campus

Animals on campuses.

- Goats
- Dogs
- Cats

Evidence of the risks

This guide uses an:

A. ***Evidence base for risks related to severity of disease and ability to transmit the virus in children. Also take into consideration the risks to people living with children (3)***
B. ***Evidence base for risks of opening campuses to the General Public - dogwalkers, sports, entertainment etc***

Children and SARS-CoV-2

Current evidence indicates that children are not contracting the COVID-19 virus at the same rate as adults, however it has not shown whether children transmit the virus at a similar rate as adults. There is no evidence to date on the degree to which children can transmit the virus. According to CDC, children under the age of 18 account for under 2% of reported cases of COVID-19 in China, Italy, and the United States.

Pediatric COVID-19 infection is relatively mild when compared to adults, and children are reported to have a better prognosis. Mortality in children appears rare. Clinical features of COVID-19 in children include fever and cough, but a large proportion of infected children appears to be asymptomatic and may contribute to transmission. It remains unclear why children and young adults are less severely affected than older individuals [1].

Silvia Stringhini at Geneva University Hospitals and her colleagues tested some 2,700 people aged 5 and older for antibodies to SARS-CoV-2 [2]. The researchers found that only one out of the 123 children aged 5–9 tested positive, although 21 of them lived with someone who had COVID-19 antibodies. Of 369 participants aged 65 or older, 11 lived with another person with COVID-19 antibodies and 15 tested positive. The researchers say that the low prevalence for children suggests that they might be less susceptible to infection, whereas the low prevalence in the elderly might stem from less exposure to the virus and an ageing immune response.

Asymptomatic persons

Research indicates that persons who are asymptomatic can pass the virus on the others. A massive coronavirus testing campaign in Vietnam has found evidence that infected people who never show any symptoms can pass the virus to others. Of roughly 14,000 people tested between mid-March and early April, 49 were infected. Le Van Tan at the Oxford University Clinical Research Unit in Ho Chi Minh City, Vietnam, and his colleagues monitored 30 of the 49 individuals and found that 13 developed no symptoms during their hospital stay [3].

Animals

Research on SARS-CoV-2 in animals is limited, but studies are underway to learn more about how this virus can affect different animals. Recent research shows that ferrets, cats, and golden Syrian hamsters can be experimentally infected with the virus and can spread the infection to other animals of the same species in laboratory settings. A number of studies have investigated non-human primates as models for human infection. Rhesus macaques, cynomolgus macaques, African green monkeys, and common marmosets can become infected SARS-CoV-2 and become sick in a laboratory setting.

Mice, pigs, chickens, and ducks do not seem to become infected or spread the infection based on results from these studies. Data from one study suggest dogs are not as easily infected with the virus as cats and ferrets [4].

Recommendations for childcare on the UWI campuses:

Many staff of the UWI are parents and, after in school hours, children may be present in offices on campus waiting on their parents to go home together. As well, many parents rely on family for after-school care, and this may be less available as social distancing precautions are taken for elderly or extended family who provide such care. Such decreased options for childcare may result in increased considerations for campus departments and employees regarding children's presence on campuses.

In this context, The UWI campuses can consider the following:

Flexible work arrangements**:** The needs of working parents can vary greatly, different types of flexible work arrangements support parents to care for their children and families. Flexible work arrangements include teleworking, compressing the work week or ensuring protected long-term leave so that workers can care for children who are in school or relatives who are sick, elderly or live with disabilities. This is especially important for essential workers.

Family-friendly policies for all**:** Family-friendly policies should apply to all workers, regardless of their gender or employment status (whether they are an employee or a contract worker, for example). Especially for women, who in many places assume more care responsibilities than men, measures should be taken to ensure working mothers are not penalized for challenges with childcare as a result of the pandemic. By adopting and expanding family-friendly policies, employers have a central role to play in supporting the well-being of working parents and their children [5, 6].

Childcare programme protocols**:**

Childcare programs that remain open during the COVID-19 pandemic should address these additional considerations:

- **Limit attendance**: Each room in a childcare centre can have a maximum of 10 people, including staff and children. Each group (cohort) of 10 people must stay together throughout the day and cannot mix with other groups (cohorts) in the centre.
    - **Plan ahead** and recruit those with childcare experience to ensure you have a roster of substitute caregivers who can fill in if your staff members are sick or stay home to care for sick family members.

- **Create a COVID-19 (coronavirus) response plan**: All childcare settings must have a plan in place if a child, parent, staff member or childcare provider is exposed to COVID-19.
- **Screen for Symptoms**: Everyone must be screened (for example, have their temperature checked) before they enter the childcare setting. Anyone feeling unwell must stay home. Home childcare providers feeling unwell cannot offer service.
- **Log daily attendance:** Childcare providers must keep daily records of everyone entering the childcare setting. This will help support contact tracing.
- **Clean frequently**: Childcare providers must thoroughly clean the space, toys and equipment frequently and regularly, according to public health advice.
- **No non-essential visitors**: Non-essential visitors are not allowed to enter the childcare setting.
- **Create drop-off and pick-up protocols**: Childcare providers must establish drop-off and pick-up protocols that facilitate physical distancing
- **Require sick children and staff to stay home.** Sick staff members should not return to work until they have met the criteria to discontinue home isolation.

When feasible, staff members should wear face coverings within the facility. Cloth face coverings should NOT be put on babies and children under age two because of danger of suffocation [7].

Parent Drop-Off and Pick-Up

- **Hand hygiene stations** should be set up at the entrance of the facility, so that children can clean their hands before they enter. If a sink with soap and water is not available, provide hand sanitizer with at least 60% alcohol next to parent sign-in sheets. Keep hand sanitizer out of children's reach and supervise use. If possible, place sign-in stations outside, and provide sanitary wipes for cleaning pens between each use.
- **Consider staggering arrival and drop off times** and plan to limit direct contact with parents as much as possible.
    - Have childcare providers greet children outside as they arrive.
    - Designate a parent to be the drop off/pick up volunteer to walk all children to their classroom, and at the end of the day, walk all children back to their cars.
    - Infants could be transported in their car seats. Store car seat out of children's reach.
- Ideally, the same parent or designated person should drop off and pick up the child every day. If possible, older people such as grandparents or those with serious underlying medical conditions should not pick up children, because they are more at risk for severe illness from COVID-19.
- **Communicate to parents** the importance of keeping children home when they are sick.
- **Communicate to staff** the importance of being vigilant for symptoms and staying in touch with facility management if or when they start to feel sick.
- **Establish procedures** to ensure children and staff who come to the childcare center sick or become sick while at your facility are sent home as soon as possible.

Have a plan if someone is or becomes sick.

- **Keep sick children and staff separate** from well children and staff until they can be sent home.
- **Plan to have an isolation room** or area (such as a cot in a corner of the classroom) that can be used to isolate a sick child. Additional information about isolation in related settings can be found here: isolation at home and isolation in healthcare settings.
- **Be ready to follow campus guidance** on how to disinfect your building or facility if someone is sick.

- **If a sick child has been isolated** in your facility, clean and disinfect surfaces in your isolation room or area after the sick child has gone home.
- If COVID-19 is confirmed in a child or staff member:
    - Close off areas used by the person who is sick.
    - Open outside doors and windows to increase air circulation in the areas.
    - Wait up to 24 hours or as long as possible before you clean or disinfect to allow respiratory droplets to settle before cleaning and disinfecting.
    - Clean and disinfect all areas used by the person who is sick, such as offices, bathrooms, and common areas.
    - If more than 7 days have passed since the person who is sick visited or used the facility, additional cleaning and disinfection is not necessary. Continue routine cleaning and disinfection [8].

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