ergonomics
SOCIETY OF
SOUTH AFRICA

## ESSA NEWSLETTER – COVID-19 SPECIAL ISSUE 2
RETURN TO WORK

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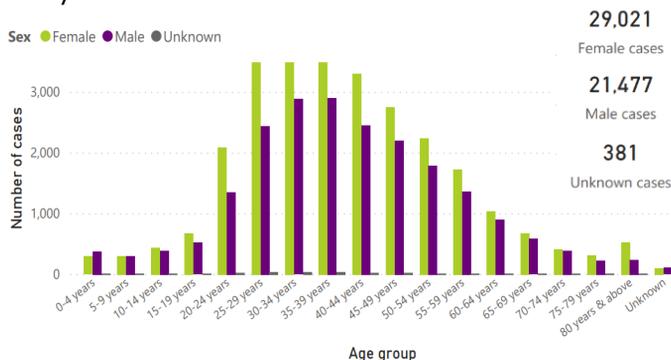
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EDITOR'S NOTE

Dear ESSA Community,

After more than two months since the lockdown started, the country has moved from alert level 5 to level 3 where even more sectors of the economy have been reopened.
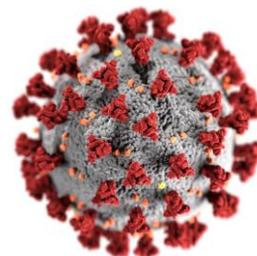
The majority of the 50 879 reported infections in South Africa (as at 8 June 2020) are in the economically active age range (18-60/65 years: see figure below) As such, workplaces play a critical role in the fight against COVID-19. While the statistics for COVID-19 infections within the various industries have not been published, there are media reports of the virus spreading within the mining sector as well as among military, police and healthcare workers. As more organisations and sectors return to work, it can be expected that organisation and even sector based outbreaks may become common.

29,021 Female cases

21,477 Male cases

381 Unknown cases

Cumulative COVID-19 positive cases by age and sex (4 June 2020; NICD https://www.nicd.ac.za/wp-content/uploads/2020/06/COVID19-Daily-Report-National-Public-8June2020_.pdf)

EDITOR'S NOTE (cont)

Minimum requirements for the safe return to work have been set out for employers and employees through various regulations and directives. The latest, in this regard, is the Consolidated Direction on Occupational Health and Safety Measures in Certain Workplaces (Gazetted No. 43400) that was published on the 4th of June 2020. COVID-19 related return to work requirements are meant to be implemented with the Occupational Health and Safety Act 85 (1993) and its supporting regulations in mind. This includes the Ergonomics Regulations.
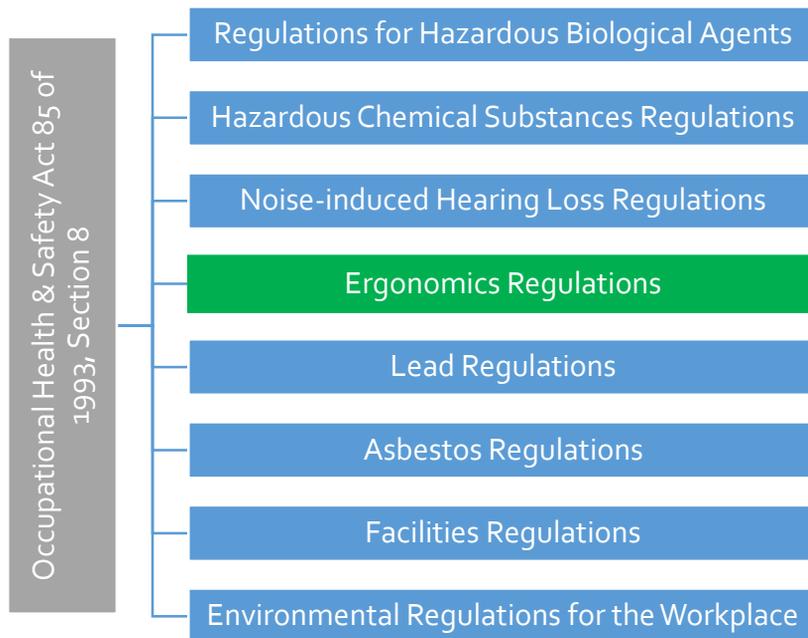
Some of the regulations indicating requirements for the management of COVID-19 risk management in line with section 8 of the Occupational Health & Safety Act No. 85 of 1993 (Figure adapted from (Presentation by Mr W Mallon at the NIOH Webinar (COVID-19 training for shop stewards), 29 May 2020)

The COVID-19 workplace minimum requirements have been introduced to ensure that employees are protected and organisation can operate safely. Insufficient workplace controls for COVID-19 risks pose a threat to business continuity because infected workers have to be removed from work for at least 14 days. In some situations, operations sometimes have to come to a halt in order to disinfect affected workstations.

This issue of the ESSA Newsletter highlights ergonomics considerations that organisations may need to take cognisance of as they develop, implement, and review their risk assessments and workplace plans. The integration of ergonomics considerations, in this regard, can contribute to the development of more robust controls, and risk management strategies that comprehensively address workplace risks, including COVID-19 related risks. This is critical for organisations because it has been indicated that workplaces are another critical area where community spread of the virus occurs.

Please email us (ergonomicssa@gmail.com) if you would like to provide feedback or comment on our newsletter. Get in touch with us as well if you would like to contribute an ergonomics-related article for the newsletter or would like to share your experiences of applying ergonomics as you manage COVID-19 in your workplaces..

By: Sma Ngcamu-Tukulula

To design work and workplaces during the time of Covid-19 it is first necessary to understand the virus transmission. The basics are as follows:

1. The majority of infections are person to person where the virus essentially travels on fluid particles released by an infected person. Because SARS-CoV-2 (the virus that causes Covid-19) is a respiratory virus most of the viral particles are released when an infected person sneezes, coughs, breaths, and speaks (although there is also evidence that the virus may be found and possibly also transmitted in other bodily fluids, but for simplicity's sake I'll focus on the respiratory transmission). Once released, the virus is transmitted either directly from person to person (i.e. a non-infected person breathes in a sufficient viral load) or from touching a surface where an infected person has released viral particles (i.e. door handles, elevator buttons, desk tops, etc.). It is not yet certain how many viral particles an uninfected person needs to be exposed to before they get infected, but based on studies of MERS and SARS it may be as few as 1000 viral particles (https://www.sciencemediacentre.org/expert-reaction-to-questions-about-covid-19-and-viral-load/). The first thing we learn about how to design work and workplaces is that exposure of workers to Covid-19 needs to be reduced. This includes the reduction in exposure to other workers, suppliers and contractors, customers, and other people on their commute to and from work. It also means reducing the number of people in one place at the same time.

https://www.nicd.ac.za/diseases-a-z-index/covid-19/infographics/

2. We also know that the length of exposure is also very important. The longer one is exposed to an infected person the greater the chance that an uninfected person will reach a sufficient viral load to become infected themselves. For the design of work and the workplace this is a vital piece of information since the "normal" working day is roughly 8 hours and this is a long time to be in the same proximity as someone constantly shedding the virus. From a work design perspective we should be looking at how we can break up this time to reduce (a) the chance of exposure and (b) the length of time of exposure.

3. We also know (because social distancing is now part of our DNA) that our distance away from an infected person is important. What is not certain is how far away we need to be. This is difficult to determine because of numerous factors. What we do know is that transmission distance is higher when a person is symptomatic, when they exert themselves physically, when others are "down wind", and when in enclosed spaces. Generally this is good news for workers working outside in relative isolation (such as farm workers and even some construction jobs).

3. However, this is bad news for workers working in enclosed spaces such as offices and factories, especially when they are required to work in close proximity to one another. This was illustrated beautifully in a South Korean call centre study (see below). Call centre operators working in a small, enclosed space, with the recirculating ventilation meant that as soon as one person was infected in this space, more than 60% of people in this area became infected. A few other workers on the opposite side of the building also become infected, probably from touching infected surfaces.
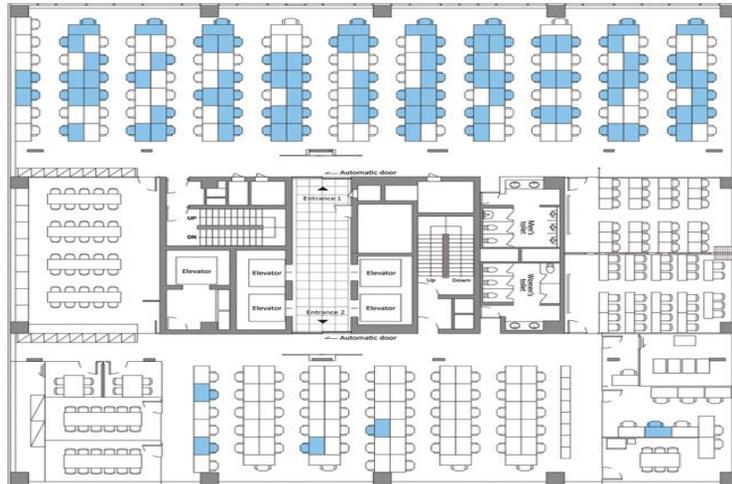
Taking these three transmission issues into consideration the risk formula may therefore be calculated as follows:

Infection risk = (exposure rate x exposure time)/distance

This is an important formula when considering the possible work and workplace design issues when returning to work.

Here are a few guidelines that emerge from the ergonomics literature:
1. Reduce exposure time
2. Reduce exposure rate
3. Increase the distance

1. Reduce the exposure time

a. Limit time spent in meetings and gatherings. Can meetings be done without face-to-face contact (consider similar communication technologies as working from home).
b. Organisations can look at changing the ventilation rates where air conditioners are in operation. Artificial ventilation rates should drop to reduce air velocity. Where fresh air intake is possible this should be increased to reduce the recirculation of virus particles.
c. Stagger break times to ensure that not everyone is taking a break at the same time.

2. Reduce the exposure rate

a. Carefully assess who actually needs to be exposed by coming to work. The elderly (especially those over 60 years of age) and those with underling comorbidities (especially a history of respiratory illnesses, cancers, or diabetes). In general, anyone who can continue to work from an isolated position (such as from home) should continue to do so until we have achieved sufficient herd immunity or a vaccine is developed that allows us to achieve herd immunity. Organisations can still do a lot more to facilitate this "working from a distance" scenario and it certainly saves on commuting time and costs.

b. Limit the amount of time that people are at work and look at changing the times that people are at work (e.g. arrival and departure times), especially if they are working in different work teams. This might also mean workers coming in to work on alternative days. If this can be negotiated with different workers so that other commitments can be met, even better. Organisations should develop a density plan for how many workers can be on site given the type of work they do and the space available.

c. Screening is obviously going to need to increase. Screening checks such as self-reports are susceptible to considerable bias where jobs are precarious. Temperature checks are open to a confidence bias when so many people are asymptomatic or not yet symptomatic.

d. Cleaning, cleaning, and more cleaning, especially shared workspaces and shared surfaces. Individual workers can be encouraged to do this, but this can also be impractical in shared spaces such as meeting rooms and foyers. Plans will need to be made to increase the cleaning capacity.

e. Cleaning also includes greater capacity to wash hands (soap and water is best). Ideally this should be easily accessible on entering and exiting each major section of work areas.

f. Where possible, physical barriers will need to be in place between workers and customers. Obviously this is not possible in all circumstances.

g. PPE is beyond the scope of this article, but suffice to say that PPE should be appropriate to the type of work being carried out or it will not be used properly.

3. Increase the distance

a. For those who really need to be at a central location, organisations need to redesign the workplace. The most obvious design requirement is moving people further apart. Open-plan and hot-desking solutions will need to be re-thought. Some have even argued that the days of the open-plan office are over (https://www.nationalgeographic.com/science/2020/04/will-coronavirus-end-the-open-office-floor-plan/?fbclid=IwAR1To1RhcJVtckd4ozh_9BtPfe8yntloeAOLdNrAJSqr4h4dXnLlHs_ifl8). One option is to use work analysis methods to see what types of workspaces are required to do the work efficiently, effectively, and safely. This might include a solution such as Activity-Based Working (ABW). However, there will still be some restrictions on classic ABW solutions in that some workspace types should preferably be avoided or minimised (such as small-space meeting rooms, small collaborative spaces, and informal areas where many people might naturally gather). Rather repurpose communal space (rest areas, foyers, waiting rooms, canteens, conference rooms, etc.) to place seated workers to create greater distancing between the workers.

b. The entry and exit points to a building are particularly vulnerable. With restricted access, these points will become high volume areas and therefore high risk areas. There is no getting around this other than sanitising regularly (and I mean, REGULARLY and thoroughly).

c. Flow through a building needs to also be considered. Organisations should think about creating one-way flows of people, widening the movement areas, and considering which people should be close to high traffic areas and which people should not. Elevators are also a high-risk area according to the risk formula. Opening up staircases for people going down and elevators for people going up is one consideration where possible. At the very least, policies on how many people per elevator will need to be considered.

1.5m
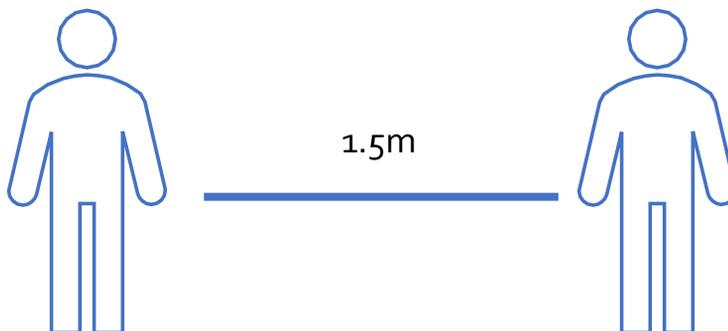
In developing solutions always involve the workers in the planning (i.e. participatory design). Often workers will not only be personally concerned about their own health and safety, but they are in the best position to identify creative solutions. As a final point, it is worth noting that many of the suggestions made here are good for creating a healthier more productive workspace regardless of whether we have a Covid-19 pandemic or not. Hopefully the pandemic can be used to help business managers understand that there are better ways of designing our workplaces.

By: Andrew Thatcher

ERGONOMICS PRINCIPLES IN THE MANAGEMENT RETURN TO WORK: SAFE WORKPLACES AND FIT WORKERS

Systems approach

Ergonomics advocates a systems approach in designing and managing workplaces. In line with this, COVID-19 risk management in workplaces needs to take a systems view where the interactions, influences and impact of internal (e.g. tools, tasks, workers, within the organisation) and external factors (e.g. regulations set by the government, virus spread in the sector and surrounding community), are considered and accounted for. Organisations that fall into the trap of focusing on only complying to a list of controls as a return to work strategy are at risk of inadvertently introducing unmanaged risks into the workplace. Conversely, return to work strategies that are entrenched in systems thinking are more likely to introduce controls that tackle the multifaceted nature of COVID-19 transmission. Ergonomics specialists can thus advise organisations against myopic COVID-19 strategies. In this regard, and as an example, ergonomists would be able to advise and assist in the development of COVID-19 training for workers that goes beyond workplace related risk factors. This is critical because workers can acquire and transmit the virus at home, while commuting, and when partaking in retail activities. Consequently, training would need to equip workers with information on how they can protect themselves and others at work and outside the work environment.
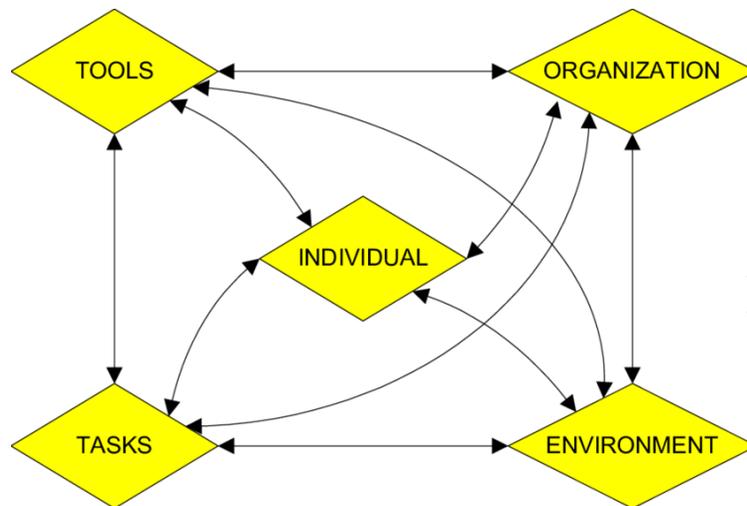
Work System Model (Carayon & Smith, 2000; Smith & Carayon-Sainfort, 1989)

Organisations that take a systems approach would also be in a better position to identify other organisational interventions that would need to be introduced to support the main COVID-19 controls. This could include employee assistance programs to support workers that are going though stress, stigmatisation and even financial challenges due to COVID-19. Another organisational intervention that could emerge from taking a systems view is the need to conduct robust investigations to establish why controls were ineffective in preventing the spread of the virus within the workplace.

The worker should be at the centre of the return to work strategy

A central tenet of the human factors/ ergonomics discipline is the human centred approach where workplace and systems are designed to be safe and productive by considering the abilities, limitations, and needs of workers. HF/E professionals are thus concerned with understanding how workers interact with the various physical, cognitive and organisational elements in the workplace systems and finding ways of making them easier to use, safer, and more efficient. This is done by ensuring a better fit between workers' physical, cognitive, psychosocial capabilities on the one hand, and the workplace elements and controls within the work system on the other hand.

Implied in the safe return to work requirements, and consistent with the discipline of ergonomics, is the dual objective of ensuring a safe and productive workplace concurrent to worker safety. This means that workplaces need to be made safe for employees to work without being exposed to COVID-19 and other workplace hazards. It also means that organisations need to ensure that employees are not infected by the coronavirus when they report to work in order to protect the workforce and the communities they come into contact with. Safe return to work COVID-19 strategies should thus take a worker centred approach to ensure that the controls that are implemented are user-friendly and effective. Several instances where controls did not adequately consider workers abilities, limitations and needs have already led to increased risk of exposure to COVID-19 in various settings. Examples of COVID-19 controls that were arguably not adequately human centred include the following:

- Hygiene protocols that focus only on entry/exit points and workstations and neglect all the other areas where workers gather and interact including bathrooms, water cooler stations and tea rooms.
- Poorly designed and incorrectly sized masks issued to workers as well as inadequate training on the proper use of masks.
- Organisations failing to consider human behaviour and the influence of the organisation's safety culture when implementing controls.
- Hand sanitisers that are placed in inconvenient areas may lead to a spread in infections between employees due to missed opportunities to practice hygiene protocols that are at the centre of the fight against the coronavirus.
- Respirators that do not adequately accommodate the size and shape of different healthcare workers has been reported to sometimes be too tight for some users such that they leave skin abrasions and cause difficulty when breathing. Respirators that are too loose on users prevent a tight seal between the mask and the skin from being attained and increase the risk of exposure to the virus.

**Participatory approach in risk management**

Risk assessments and the implementation of effective controls are the basis upon which the determination on whether it is safe to return to work or not is made. While the C19 OHS direction specifies that controls must be made by a competent person, it is good practice to have a team of relevant stakeholders conducting the risk assessments. Adopting a participatory approach and getting inputs from various stakeholders, particularly workers, is an important step in ensuring that all prevalent risks are identified and the most suitable controls are developed.

In line with the Occupational Health and Safety Act as well as the Ergonomics Regulations, ergonomics hazards and risks need to be identified, controlled and managed in workplaces. This means that a person that is competent in ergonomics should form part of the risk management team. This would assist with the process of ensuring that ergonomic risks that are prevalent in the workplace, and those that may ensue from the introduction of COVID-19-related changes, are appropriately captured and managed.

By: Sma Ngcamu-Tukulula

COVID-19 RISK CONSIDERATIONS FOR CLEANING STAFF

The Department of Employment and Labour has provided guidelines to minimize the spread of COVID-19 in workplaces. ,As part of the guidelines, employers are encouraged to conduct risk assessments and workplace plans on how they will manage COVID-19 related risks as they return to operational status. At the heart of these requirements are hygiene protocols that encourage effective cleaning and disinfection with the aim of arresting the spread of the virus. The risk of contracting COVID-19 during cleaning is therefore higher for those that have to clean the workplace. While the COVID-19 cleaning strategies in places of work need to be ramped up, this needs to be done in a manner that minimizes the risks to employees in general, as well as cleaners in particular.

Cleaning protocols in workplaces need to be designed taking into account the potential sources of contamination and infection (some of which are illustrated in the figure) in order to effectively minimize the risk they can pose to workers. Furthermore, the corona virus has different lifespans depending on the material that the droplets landed on and or contacted made by an infected individual with certain items at work. As seen in the table below, the longest survival of the virus is on stainless steel surface (REHVA, 2020).
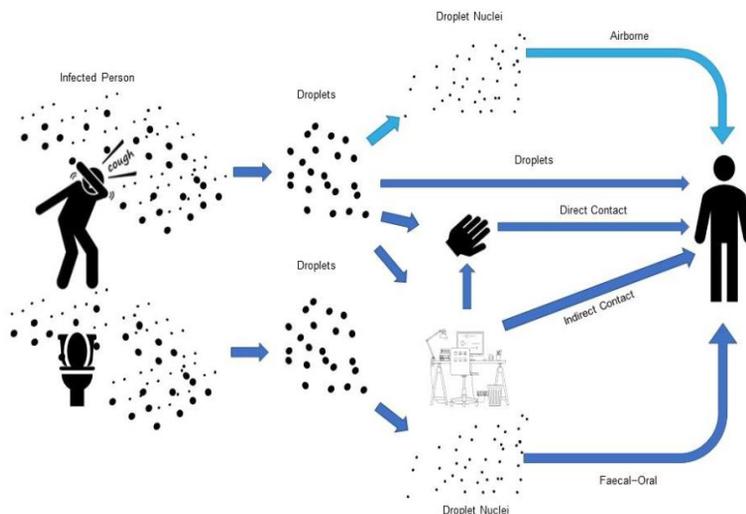
Typical SARS-CoV-2 Virus Survival Times	
Aerosols	3 hours
Copper Surface	4 hours
Cardboard Surface	24 hours
Plastic Surface	2-3 Days
Stainless Steel Surface	2-3 Days

Lifespans of the virus of different surfaces and in the air. (Taken from Franchimon, 2020)

Illustration of COVID-19 exposure channels and places that require regular cleaning (Taken from REHVA, 2020)

Ergonomics related considerations:
• The cleaning of surfaces will likely have to be done more frequently than under normal circumstances, especially for high touch zones. This may impact the number of cleaning staff required.
• It is likely that there will be different cleaning protocols for the various locations that the virus can survive on, informed by the lifespan of the virus on different materials. Cleaning protocols and procedures will need to be updated and personnel will need to be trained on the new way of working as well as the new equipment and cleaning materials that need to be used.
• The cleaning requirements for existing cleaning staff will likely be higher and may lead to higher workload being experienced. This may require work to be redesigned in order to optimize workload. Work-rest schedules may also need to be reviewed and adjusted accordingly in line with fatigue risk management systems, which may also need to be introduced if not already in place.

Ergonomics related considerations:

• Some businesses may not afford to hire external companies to conduct the daily cleaning of their workplaces. Contracted employees would need to be acquainted with the organisation's risk management processes with a focus on the COVID-19 specific controls that are in place before they conduct their cleaning services.

• Organisations may require employees to be responsible for the cleaning of their work environment. Workers who previously did not have cleaning responsibilities for their immediate workstations may now have this responsibility added to their normal duties. This will also pose a risk to the employees if they are not trained on cleaning techniques more specifically for such a pathogen.

• The development of cleaning protocols needs to consider a variety of factors and risks associated with the changes to the way work is done, in addition to the virus and its routes of infection. Cleaning protocols should thus be guided and supported by robust risk controls that can effectively minimize the risk of infection.

By: Bongani Maduna & Sma Ngcamu-Tukulula

MEETINGS IN LIGHT OF COVID-19

The Department of Employment and labour has published the "Covid-19 Occupational Health and Safety Measures in Workplaces" which gives some guidance of how work might need to change.

These recommendations are based on the premise to "minimize contact between workers as well as between workers and members of the public" (section 16.8).

This means that a workplaces need to be arranged to "ensure minimal contact between workers and as far as practicable ensure that there is a minimum of one and a half metres between workers while they are working, for example, at their workstations" (section 17).

The guideline makes mention of a number of measures that can be used to achieve the 1.5m distance between individuals if simply spacing out work stations is not possible
•   reducing the number of individuals present at any time (section 17)
•   arranging physical barriers to form a solid barrier between individuals (section 18.1)
•   supplying appropriate PPE based on a risk assessment of the working place. (18.2)
This applies to distances between workers as well as between workers and members of the public (section 37

The risk of meetings:
People might unknowingly bring the COVID-19 virus to the meeting and others might unknowingly be exposed.

Before the meeting
Consider the following:
- Is it necessary to meet in person?
- Could the meeting be postponed or replaced with a tele or video conference?
- Could the number of attendees be reduced?

Follow the guidelines based on the level from the National Command Council.
- have information of health authorities and procedures at hand (who will you need to contact if someone becomes ill)
- pre-order sufficient supplies (tissues, hand sanitises)
- make sure that all participants provide contact details (communicate clearly that you will need to share those information with the public health authorities should a participant become ill)

Develop a response plan in case someone at the meeting becomes ill
- which is the nearest doctor/hospital to be called?
- what procedure is to be followed?
- have a space where the individual can be at least two metre away from everyone else

During the meeting
- provide information or briefing (orally and in writing) on the measures you have taken to minimise risk
    - encourage regular hand-washing/sanitising
    - require the wearing of masks
    - Provide contact details where participants can get information/advice on COVID-19
- provide hand-sanitiser at the entrance and prominently around the venue
- arrange seats to that participants are at least 2 metres apart
- open windows/ensure ventilation
- follow your response plan if anyone starts feeling unwell

After the meeting
• retain names and contact details of all participants
• if someone at the meeting was isolation with suspected COVID-19 let all participants know and advise them to self-isolate for 14 days. should they start to feel unwell they should contact the relevant public health authority.

Further information
➢ The European Agency for Safety at Work (2020): COVID-19: guidance for the workplace
https://oshwiki.eu/wiki/COVID-19:_guidance_for_the_workplace#Organising_meetings_or_events
➢ World Health Organisation (2020): Getting your workplace ready for COVID-19
https://www.who.int/docs/default-source/coronaviruse/advice-for-workplace-clean-19-03-2020.pdf?sfvrsn=bd671114_6&download=true
➢ International Labour Organisation (2020): Sectoral impact, responses and recommendations
https://www.ilo.org/global/topics/coronavirus/sectoral/lang--en/index.htm (includes list with sector specific recommendations)
➢ U.S. Department of Labor Occupational Safety and Health Administration: Guidance on Preparing Workplaces for COVID-19
https://www.osha.gov/Publications/OSHA3990.pdf

By: Swantje Zschernack

SOME CONSIDERATIONS FOR DECIDING WHICH EMPLOYEES SHOULD RETURN TO THE PHYSICAL WORKSPACE

South Africa was among the nations that initiated a countrywide lockdown as a way of managing the spread of COVID-19. Stringent lockdown measures were put in place to flatten the curve, allowing the country to be more prepared to manage the pandemic.

Now that lockdown restrictions are being eased, more of the South African workforce is returning to work. While much still needs to be learned about Covid-19, experts have observed that the virus leads to severe disease in some persons who contract it while having no or few symptoms in others. As such, questions have emerged around who can return to work and who cannot.

Employee health considerations

The data in circulation from organisations such as the CDC, WHO and NHS has suggested that there are conditions that place people at a greater risk from Covid-19, making them more vulnerable to the dangers of coronavirus infection. Covid-19 may adversely affect persons who are in the following risk groups:
- People over 65 years of age
- People with underlying conditions such as diabetes, chronic liver disease, a BMI of 40 or above, chronic respiratory disease, chronic heart disease, etc.
- People who are immunocompromised such as those who have HIV, those who have immune deficiencies or those who have undergone cancer treatment, bone marrow transplantation, etc.

Family responsibility considerations

While lockdown restrictions are currently being lifted, things are not yet back to normal. Some professions and institutions may not be able to resume operations for a few more weeks. For instance, schools remain closed and it is not yet clear which schools will open and when. Additionally, care givers may not be able to work for a while longer. Employers may need to consider employees who may not be able to return to work due to caretaking obligations attributed to Covid-19 such as caring for ill family members or children who cannot yet return to school. This group of employees may need to be accommodated and permitted to work from home if possible.

Occupational requirement considerations

There are some occupations that cannot be done remotely. Cleaners, plumbers, electricians, manufacturers, miners, etc. need to leave the comfort and safety of their homes in order to do their jobs. Employers may need to consider the adjustments that can be made to ensure that those who need to return to work can do so safely. Employers may need to consider allowing employees to work in shorter shifts with smaller teams. Employers could, if possible, even provide transportation for those who need to come to work to limit possible exposure to the virus. Further adjustments may need to be made if some of the returning employees people are have health challenges or family responsibility needs.

Not everyone may be able to return to work, however, there are ways to accommodate those who cannot yet return to the physical office. Technological advancements are being used to allow employees to do their work virtually. While these advancements may come with their own challenges, they provide at least a way to allow employees who are able to use them to keep earning a living and providing for themselves and their families.

By: Sethunya Matsie

Organisations should be guided by the relevant legal and regulatory requirements as well as best practice when managing return to work during the COVID-19 pandemic. More information on return to work considerations can be found in the following links:

1. National institute of Occupational Health
   http://www.nioh.ac.za/covid-19-presentations/

1. ISO standards
   https://www.iso.org/covid19

2. CIEHF resources
   https://covid19.ergonomics.org.uk/

   - https://www.ergonomics.org.uk/common/Uploaded%20files/Publications/CIEHF-Creating-a-Safe-Workplace.pdf
   - https://www.ergonomics.org.uk/common/Uploaded%20files/Publications/CIEHF-Creating-a-Safe-Workplace-7-Steps.pdf

3. IEA resources
   - https://iea.cc/eu-guidance-on-returning-workers/
   - https://iea.cc/jes-publishes-tips-for-working-at-home/

4. Australian Ergonomics society
   https://www.ergonomics.org.au/resources/links/covid-19

5. Backtoworksafely.org
   https://www.backtoworksafely.org/