KNOWLEDGE BRIEF

ADOPTING LONG-TERM STRATEGIES FOR CLEANING AND DISINFECTION OF PUBLIC TRANSPORT SYSTEMS

AUGUST | 2021

INTRODUCTION

In 2020, public transport providers acted quickly to increase protective measures and reduce the risk of COVID-19 spreading in their networks. While many countries remained on lockdown, others were not as restricted but still experienced low ridership. This was due to a multitude of factors including lower demand for mobility and passengers concerns for safety. Efforts to entice riders back will be critical to societies returning to routine activity and economic recovery.

While the propagation of the SARS-CoV-2 virus that causes COVID-19, or the number of serious infections, may be significantly reduced in many countries due to vaccination campaigns or other measures, societies must remain vigilant. Increasing ridership will create more crowding conditions, so operators and authorities need to determine how to work within their existing operations to minimise the risk.

UITP worked with ISSA, the worldwide cleaning industry association, which has a pandemic-specific division called the Global Biorisk Advisory Council (GBAC), to survey public transport operators and authorities and provide advice regarding next steps[1]. This Knowledge Brief focuses on processes for cleaning and disinfection of surfaces to avoid cross-contact contamination[2].


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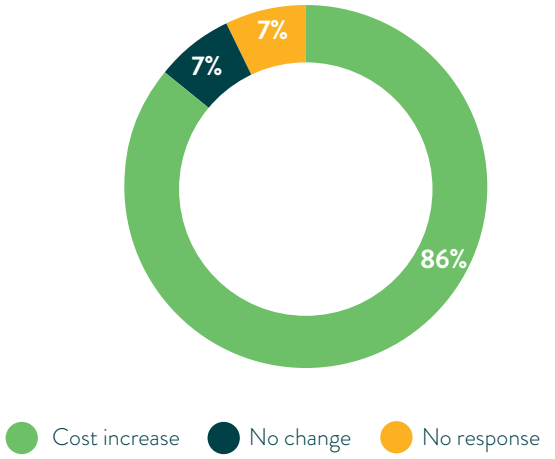
FROM REACTIVE TO STRATEGIC LONG-TERM PLANNING

The results of the UITP-ISSA survey, conducted at the end of 2020/early 2021, showed that nearly all respondents increased their cleaning and/or implemented new or additional disinfecting. Respondents largely reported increased frequencies, more use of cleaning chemicals or equipment, purchase of new technology, and increased use of contracted service providers. Fleet and facility cleaning costs also rose for at least 86% of respondents.

1 The survey consisted of a questionnaire sent to 272 public transport operators and authorities, with 56 sets of responses collected across December 2020 and January 2021.
2 Air handling is not the object of this Knowledge Brief, although some of the recommendations in this paper are applicable to this area too.

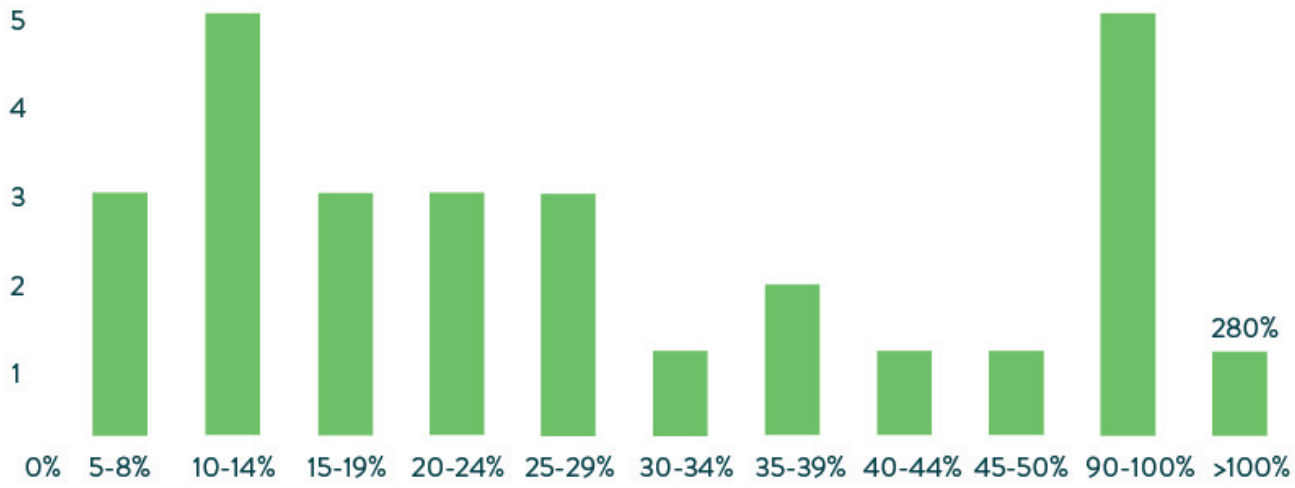
In the early phases of an outbreak, this is quite common. However, quick escalation often brings inefficiencies that need to be addressed later, in case any of the changes should be adopted into a mid- or long-term strategy. It is here that transport providers need to focus on the next steps.

Change in costs in cleaning and disinfection since the outbreak



Regardless of a region's level of COVID cases or restrictions, transport operators and authorities must move from their emergent reactive state to a more strategic long-term planning position. This new phase of recovery and stabilisation will require further attention to cleaning, disinfecting and air handling, as well as other practical infection prevention tactics. **This must be executed in a more efficient and sustainable way.**

Cleaning and disinfection cost increase, by percentage



This strategic shift can be done by addressing a few measures:

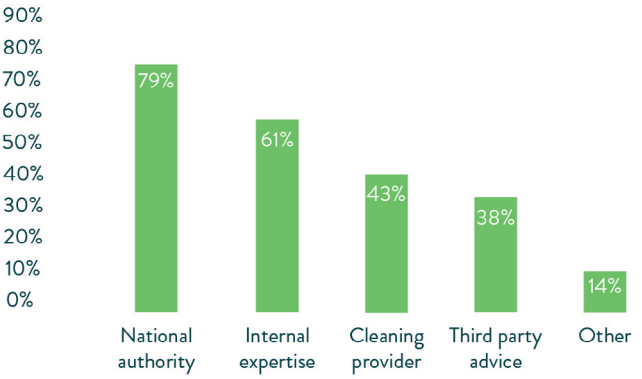
- Infection-specific training for in-house cleaning staff, risk management and operations leaders.
- Ensuring third-party providers have the right training and/or accreditation, and tools for the job.
- Infection prevention risk assessments based on anticipated ridership volumes and nature of the infectious disease.
- Reviewing cleaning workloading to create scalable plans.
- Evaluating tools and technology to ensure they are the right fit for ongoing needs.
- Third-party validation to close gaps and reassure employees and riders.

KNOW THE EXPERTISE OF YOUR EXPERTS

In any crisis response, there is an immediate use of internal teams to create protocols for a new risk that they may not have historical experience addressing. Typically, risk managers, safety or security leaders are tasked to help organisations, for example, with their COVID-19 protocols. However they may not have specific infectious disease experience or knowledge. That can lead to well meaning approaches that could have unintended gaps.

Turning to a national authority is a natural option for advice and nearly 80% of respondents did this. However, not all health authorities or government agencies have provided advice specific to transport networks. This can also lead to possible gaps in implementation of general public health protection recommendations.

Guidance used for decisions on cleaning and disinfection regimes



Although 91% reported using outsourced providers for their disinfection needs, or in combination with in-house teams, only 43% of respondents said they used their cleaning providers for guidance when making decisions regarding cleaning and disinfecting. This may seem surprising considering that cleaning companies may be able to recommend the best, most cost-effective course of action. However, it should also be noted that some cleaning firms were new to the infectious agent containment and removal tactics.

It is highly recommended that authorities and operators require their vendors to provide proof of specialised training in infection prevention tactics or even accreditation from a specialised organisation. It also is advisable to ask service providers for the reasoning behind their suggested service techniques.

Filling internal knowledge gaps is another way to increase efficiency for long-term implementation. Team leads who create or execute infection prevention protocols should have a baseline training on what is needed to address COVID-19 and other infectious diseases. The new normal for transportation providers should include at least one internal subject matter expert who has a basic understanding of infectious disease scenarios and the preventative, response, infection control, and contamination control measures they may need to use in public outbreak situations.

THE DIFFERENCE BETWEEN CLEANING AND DESINFECTING

One point that protocol decision makers should be versed in, which can greatly impact their operations costs, is the difference between cleaning and disinfecting.

Disinfecting has gained widespread attention as a way to deactivate the SARS-CoV-2 virus that causes COVID-19. Yet, disinfection can only work if a surface has been properly cleaned first.

The virus often is enveloped in residue of the human host's cell membranes when it is expelled, so there needs to be a way to clean first to break down the barrier of protein or fatty substance it is in before disinfectant can reach the virus to deactivate it. Cleaning also helps remove other dirt and debris that can block disinfectants from doing their job. Even if workers are using a dual-purpose cleaning/disinfecting agent, they cannot let it sit on the surface. Mechanical movement of wiping the chemical off the surface will remove the virus and any other substances that could pose a threat to occupants.

Anti-microbial coatings are also widely used by public transport operators, with 25% of respondents saying they use them and a further 18% considering it. It should be noted that coating takes time to eat through the virus' envelope, so although it offers some protection before the next round of cleaning, the protection is not immediate. Besides, if there is dirt in between the anti-microbial coating and the virus, it will not get a chance to work. Therefore, cleaning surfaces regularly is essential even when using anti-microbial shields.

Due to the physical removal of most substances on a surface, proper cleaning measures can be an effective measure to take in many low-risk areas of a transport system, reducing the amount of overall disinfecting. As systems look for efficiencies, evaluating where to clean only and where to add disinfection, based on an appropriate infection risk assessment, could be a way to transition into a more manageable operations routine.

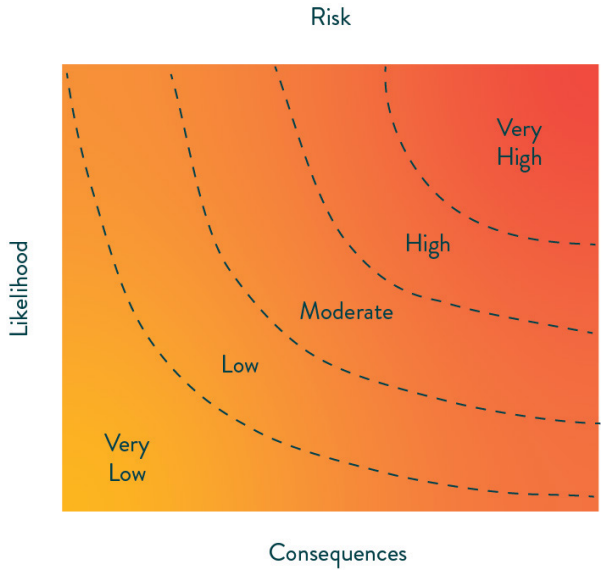
ASSESS YOUR RISKS

Typically, when an outbreak develops, organisations wait until their local or world health authorities provide guidelines. But those guidelines are generic and may not fit the situation of each business or public entity that needs to come up with their own protocols and mitigation tactics. Instead, each organisation can and should conduct its own unique risk assessment.

It begins by understanding the likelihood of the virus being present in their transport system, the consequences of employee or passenger contact with it and determining the organisation's tolerance for what level of risk is acceptable. The amount of traffic which transport providers have at any given moment means they cannot eliminate the likelihood that a virus could enter their environment. So, risk assessments and, consequently, risk mitigation

steps will work to minimise the threat as best as possible with the level of resources available.

Likelihood and consequence of COVID-19 virus being present



Risk is a function of both the likelihood that something will happen and the consequences if it does happen[3].

An infectious agent risk assessment needs to look at all activities and procedures within the fleet and facilities to determine which ones pose a higher risk of exposure, where, when and how. The assessment should include:

1. **Identifying the hazards:** Not just the virus and bodily fluids that could carry it, but also chemicals or equipment used to deactivate the virus. Evaluate safety data sheets for anything to understand what hazards might be introduced due to their use. Some chemicals cannot be used without protective equipment, for example. Also look at which areas or zones have higher risks of virus exposure.
2. **Assessing the risk based on the hazards**: When are the employees in closest contact with other individuals? Where could the disinfecting tactics put anyone at risk for other types of chemical or UV or other exposures that have additional consequences?
3. **Rate the risks from high to low:** Colour coding can make them easier to evaluate quickly. Looking at the probability of the risk and the severity of the consequences which ones have the highest priority to address in your mitigation protocols? Which solutions might be too risky to employ? What other ways are there to deactivate or remove the virus from the environment?
4. **Determine the risk mitigation steps:** Select the most appropriate staffing, processes, chemicals/equipment, personal protective equipment and other tactics, such as line management, contactless activities, public awareness communications/signage and more. Where could you employ your resources to make the most impact? How often do you need to conduct tactics to make the most impact?
5. **Create a work checklist and conduct training:** Determine the individual steps and the training needed to show employees what new activities they need to conduct and how to do them properly. What necessary oversight or verification steps are needed to ensure it is done correctly in real time?
6. **Review and monitor:** This step is often forgotten during crisis response but is vital to understanding if the initial protocols and tactics are as effective as intended. As knowledge of a new virus is evolving, tactics also need to keep up with new understanding of how the infections occur and how best to reduce them. Regular review throughout an outbreak is critical to identifying gaps, making adjustments, identifying what resources need to be replenished or updated and determining where retraining is necessary.

As viruses, bacteria and other infectious agents can vary, so must an organisation's risk reduction approach. It is widely accepted that other outbreaks will occur on local, national or even international scales after COVID-19 levels out.

Even more common viruses, such as influenza and norovirus have high contact transmission tendencies, which can be addressed by tactics similar to those being used against SARS-CoV-2. These infection prevention steps

3 ISSA Infection Risk Management Course, 2020.

are important to institutionalise now in order to prepare for faster and more effective responses to future risks and challenges.

WORKLOADING AND PRODUCT EVALUATION

As local communities make efforts to come out of lockdown or go through the fluctuations of normalising ridership, the need for cleaning and disinfecting will also shift, and sometimes it can happen quickly. Authorities and operators need to understand the most efficient way to deploy in-house or contracted workers by conducting workloading analysis.

Survey respondents varied regarding how much of an increase in frequency they implemented for cleaning and disinfecting. When one organisation goes from one time a day to two times a day, but others in the same mode of transport increased to three or even five times a day, it raises the question of why they chose such different approaches. What risk assessment was done in each respondent's situation and how sustainable is that workload and its related costs over the next one to two years? Also, how much of the cleaning and disinfection was carried out for surfaces and items with low to very low probability of the SARS-CoV-2 to be transmitted?

Workloading evaluates which steps are needed, how often and how long they take to create a desired outcome. Proper workloading requires a thorough, documented risk assessment. When looking at cleaning and disinfecting, this analysis can help maximise staff time and minimise product waste, as well as identify where to deploy which technology or tasks for best risk mitigation.

For instance, some chemicals require specific dwell times, which means there is a waiting period before the cleaning crew can wipe down an area. How often workers must refill supplies, restock restrooms or even how far they can clean based on the length of equipment power cords can impact operational efficiency. Once operators better plan the limited windows of downtime, during which teams can clean and disinfect vehicles or public areas, understanding how to maximise resources becomes even more critical in reducing risk of infection.

Each of these factors also impact the budget. Certain options for cleaning or disinfecting might have lower purchase cost but require more staff time to complete, while others might do the job in less time but have a higher hazard level to those nearby or come at a higher cost. Proper workloading can help strike the best balance.

Data gathering and analysis technology also can help improve workloading efficiencies. By reviewing

traffic patterns and shifts, organisations can identify where and when to deploy staff most effectively, even learning where they do not have to clean or restock supplies on a given day or shift. Integrating fleet and facility data systems with cleaning and maintenance data systems can help hone that decision making even further, enabling more accurate purchasing patterns, maintenance needs and uncovering service gaps.

Informed evaluation of new technology also can help organisations tighten up their infection prevention spending. Many respondents reported purchasing new tools or systems to reduce COVID-19 risk. Still others were evaluating new technology from spraying tactics to coatings to UV-C light options.

Even after taking all the aforementioned steps, ongoing process auditing is important to identify where improvements can yet be made and to ensure higher consistency and efficacy of risk mitigation tactics. This does not have to be done by external parties, as long as the internal teams have clear direction regarding what their intended tasks and outcomes should be and have a standard quality assurance programme for reviewing and improving what is in place. Tools such as process mapping are invaluable in situations like this.

When moving from an emergency shift in operations into a long-term strategic plan, it also is advisable to ask the front-line workers for their observations. They often will see positive outcomes or potential gaps that supervisors and managers will not see.

THE BENEFITS OF CERTIFICATION AT METRO DE MADRID, SPAIN

Metro de Madrid has obtained two certificates:

- **Garantía Madrid**, which certifies the protocols, measures and good practice put in place in the context of the COVID-19 health crisis and highlights the measures adopted to guarantee the safety and health of customers and staff as well as the company's commitment to fight COVID-19.
- **AENOR Certification of Protocol against COVID-19**, an external approval of the measures applied by Metro de Madrid and an endorsement that these activities comply with the directives of the Health Ministry and competent authorities for COVID-19 prevention and hygiene? and the advanced understanding of the reality in the sector.

Undertaking this certification process has enabled Metro de Madrid to make the following improvements to its protocols:

- Preparation time and improving the dilution of disinfection products.
- Improvements to the use of authorised disinfection products (approved by the health authorities and by internal protocols).
- Improvement of product documentation (product sheets) by the third-party cleaning companies for use by their staff.
- Improved signage of facilities disinfected by fogging[4].
- Continuous improvement of records and periodical inspections of the observance of cleaning and disinfection plans, as well as the correct application of established protocols.
- Improving the training of cleaning staff for the correct implementation of the cleaning and disinfection measures.

VERIFY, VALIDATE AND COMMUNICATE

Third-party validation also will be helpful as transportation providers enter this next stabilisation phase. First, it can help identify the unintended gaps that may exist in their employee and rider protection protocols that internal employees and managers may not be aware of, due to lack of infectious disease mitigation knowledge.

Second, even in situations where the circulation of the virus is very limited, citizens may be hesitant to restart pre-pandemic levels of activity outside their home.

With this in mind, communicating to riders exactly what steps have been taken to protect them and promoting that an organisation's steps have passed review can help strengthen public confidence in the reduced risk of taking public transport. When it comes to re-establishing rider and visitor confidence, there cannot be enough over-communication in public awareness campaigns as well as in signage and announcements within systems and facilities.

Lastly, there is a liability factor associated with COVID-19. Third-party verification can be a preventative step to help to identify areas of non-compliance before authorities are conducting spot inspections.

There also is a concern about COVID-related liability or litigation in some countries. In many cases, the burden of proof may be on the organisation responsible for a facility or system that they did their due diligence to protect employees or riders within their fleet or facilities, not for a person who contracts COVID to prove that they did so within this facility or system. Having proof of third-party verification that proper protocols are in place can help prove that due diligence.

4 A fogging machine, or 'fogger', is a versatile piece of disinfection equipment that uses a fine spray to apply a chemical solution.

CONCLUSION

When the coronavirus pandemic began, public transport had to react to an emergency situation and tested, implemented or intensified many different cleaning and disinfecting products and procedures. This has had a big impact on operations, and therefore on staff, but also on costs for operators and authorities.

Today, scientific evidence shows that public transport is COVID-safe when the right measures are in place[5]. Ensuring the right level of cleanliness and disinfection is part of public transport operators' responsibility but it requires some very specific expertise that it is not often available internally.

After a reactive state in the initial periods of the pandemic, practices should be reviewed, with the help of experts, and adapted to maximise the level of safety of the public transport networks and keep costs under control, maintaining the same level of operations while reassuring staff and passengers.

Through UITP's partnership with ISSA and GBAC, UITP members benefit from a discounted rate to take the GBAC Fundamentals Trained Technician online course, which provides a 2.5 hour overview from infectious disease mitigation experts.

GBAC STAR leverages decades of expertise advising public and private entities regarding outbreak protocols to protect passengers and staff, breaking it down to 20 key elements that every plan should have, from worker safety programmes to cleaning and disinfecting, to personal protective equipment, infection prevention strategies and more.

UITP members will receive a special discount when applying for this accreditation programme, which will review protocols for fleets, stations, depots, shelters and corporate facilities.

Find out more here: GBAC STAR™ Application - UITP - Global Biorisk Advisory Council (GBAC) (issa.com)

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This Knowledge Brief has been prepared by the UITP Secretariat in collaboration with Dianna Steinbach, Vice President of Corporate Development for ISSA, the worldwide cleaning industry association.

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