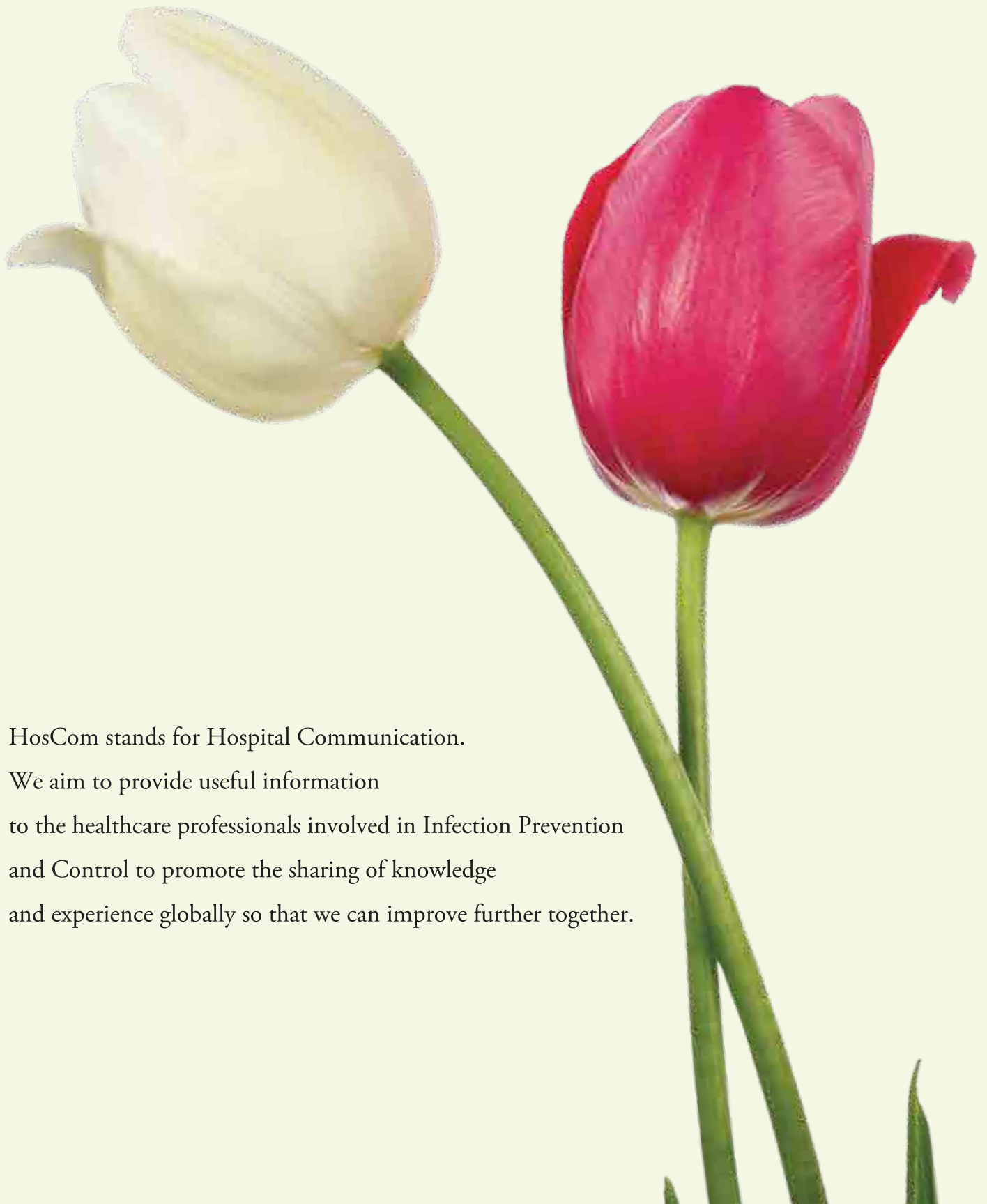


# HosCom International

2021



HosCom stands for Hospital Communication.

We aim to provide useful information to the healthcare professionals involved in Infection Prevention and Control to promote the sharing of knowledge and experience globally so that we can improve further together.

**SARAYA**



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## Environmental Cleaning and Healthcare Associated Infection in Asia : A Perspective

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### Introduction

Contaminated environmental surfaces in patient rooms are a critical component in healthcare-associated infection (HAI) transmission<sup>1</sup> and a well-recognised common source of nosocomial outbreaks.<sup>2-3</sup> It has also been well demonstrated that contact with a contaminated environment by healthcare personnel (HCP) is equally as likely as a direct contact with a patient, which leads to the contamination of the healthcare provider's hands or gloves that may result in patient-to-patient transmission of nosocomial pathogens.<sup>4</sup> Thus, environmental surfaces and shared noncritical medical equipment may become contaminated with infectious agents and contribute to cross-transmission through the acquisition of transient hand carriage by HCP.<sup>5</sup> Furthermore, evidence suggests that a patient admitted to a room previously occupied by a patient with methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), multidrug-resistant *Acinetobacter baumannii* or *Clostridioides (Clostridium) difficile* is at a substantially increased risk for acquiring these pathogens.<sup>6-10</sup> Therefore, improving cleaning and disinfection of room surfaces will decrease the risk of HAIs in both resource-available and resource-limited settings in Asia.

### Environmental cleaning practices and challenges in resource-limited settings

Standard methods to improve the cleaning/disinfection of environmental surfaces in hospital rooms include improving cleaning/disinfection by environmental service workers through education and feedback on cleaning effectiveness (e.g. use of fluorescent dyes), 'no-touch' methods (e.g. UV-C irradiation) and, in the future, possible use of self-disinfecting surfaces (e.g. impregnating or coating surfaces with heavy

metals, such as silver or copper, or a germicide).<sup>11-13</sup> In resource-limited settings, with the limitation of access to technology, it is important to adhere to basic concepts of environmental cleaning through the use of a risk stratification matrix in order to help determine the needed frequency of environmental cleaning/disinfection (ECD).<sup>14</sup> Data on the practice of ECD in resource-limited settings is limited. Notably, a national survey in Thailand<sup>15</sup> revealed that >90% of surveyed hospitals (n=212) reported having implemented an ECD protocol. However, only 55.2% (117/212) had an ECD checklist available, and 43.4% (92/212) had a mechanism to audit ECD practices. Among the hospitals implementing an ECD protocol, a high adherence to implemented ECD protocols and ECD checklists was documented only in 56.8% (109/192) and 57.3% (67/117), respectively.<sup>15</sup> Because routine and terminal environmental cleaning by environmental service workers are frequently inadequate,<sup>16</sup> these data emphasize the need to have mechanisms for monitoring adherence to ECD protocols and ECD checklists. Interestingly, methods used to audit ECD practices include a visual inspection of cleanliness (66%), microbiological monitoring (57%), fluorescence marking (14%) and ATP or bioluminescent testing (10%). It is recognized that barriers and challenges for hospitals to effectively implement ECD protocol include staff concern, inadequate education provided to staff, lack of resources and funding, time constraints and uncertainty regarding which cleaning and disinfecting products to use.<sup>15</sup>

Simple suggestions to reduce environment-related infections in resource-limited settings, if implementable, include the following: 1) All mattresses should be covered with a plastic liner that completely encloses the mattress, which makes cleaning easier and eliminates the possibility of mattresses becoming contaminated with liquids and harbouring bacteria. 2) All chairs should be cleanable (e.g. made of wood or plastic and not covered

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in fabric, which can lead to VRE transmission). 3) A combined cleaner/disinfectant solution should be used. 4) All touchable surfaces should be cleaned periodically (ideally daily but may vary depending on the risk), when soiled and for terminal disinfection (patient discharged). 5) Environmental service workers should be trained at the start of their employment and yearly and should wear personal protective equipment (e.g. disposable gloves), if available. 6) Each nursing unit should have a checklist, which defines the items that should be cleaned/disinfected by environmental services and those that should be cleaned/disinfected by nurses.

## Environmental cleaning/disinfection and HAIs

It is estimated that contaminated environmental surfaces in patient rooms contribute up to approximately 20% of several key HAI pathogens (e.g. MRSA, VRE, MDR Gram-negative bacilli and *C. difficile*) transmission in intensive care units.<sup>6–10, 16</sup> All of these pathogens have been demonstrated to persist in the environment from hours to days or, in some cases, up to months.<sup>17</sup> Furthermore, these pathogens have been demonstrated to frequently contaminate the surface environment and medical equipment in the rooms of colonized or infected patients, to transiently colonize hands of HCP, to be associated with person-to-person transmission and to cause outbreaks in which environmental transmission seems to play a role.<sup>4, 17</sup> Throughout several regions of the world, hospital surfaces have also been demonstrated to be contaminated by several key emerging infectious diseases, such as the severe acute respiratory syndrome coronavirus (SARS-CoV), novel influenza, and Middle East respiratory syndrome coronavirus (MERS-CoV),<sup>18–22</sup> and have been linked as a cause of person-to-person transmission of these pathogens.<sup>22</sup>

In Asia, despite the limitations of research that has focused on the impact of environmental cleaning/disinfection on HAIs, a few works, performed during major floods, demonstrated that infection prevention measures featuring an advanced source control and environmental cleaning can significantly limit the transmission of MDR *A. baumannii* within a single institution and for the surveyed hospitals.<sup>23–24</sup> Furthermore, the role of environmental cleaning has been highlighted in one national survey in Thailand

that demonstrated the association of the presence of environmental cleaning service with the reduction of MDR *A. baumannii* rates.<sup>25</sup> In a recent network meta-analysis<sup>26</sup> that included works from resource-available and resource-limited settings, the impact of environmental cleaning may have differential effects on different MDR Gram-negative bacilli. Although a combination of infection prevention approaches, inclusive of standard practices (e.g. adherence to hand hygiene and contact precaution recommendations), antibiotic stewardship, environmental cleaning and source control, is the most effective intervention to prevent MDR Gram-negative bacilli infections, environmental cleaning plays a critical role in the control of MDR *A. baumannii*.<sup>26</sup> Together, these data highlight the need to enhance environmental cleaning to help effectively control MDR Gram-negative pathogens, particularly MDR *A. baumannii*, in resource-limited settings.

## Prerequisites of establishing an effective environmental cleaning program in Asia

In a study that evaluated three-phase cleanliness in a surgical room in a Thai tertiary care center (unpublished data), the investigators tested the cleanliness before cleaning, after manual cleaning and after a hydrogen peroxide system. The investigators performed RODAC plate cultures before cleaning, after manual cleaning and after a hydrogen peroxide system. Despite the fact that the hydrogen peroxide system produced the best outcome in reducing the bioburden of pathogens, the RODAC plates revealed that the highest pathogen bioburden occurred after the manual cleaning, which emphasizes the need for the education and training of environmental staff in resource-limited settings. In addition, in a two-stage observational study comparing manual bed cleaning in high- and low-resource settings,<sup>27</sup> mattresses in the low-resource settings were found to be highly contaminated prior to cleaning. Cleaning significantly reduced the biological contamination of mattresses in the low-resource settings. After a training, the contamination observed after cleaning in the high- and low-resource settings seemed comparable, and cleaning with the appropriate type of cleaning materials adequately reduced the contamination of mattresses. Predictors for contaminated mattresses in a low-resource setting included the type of products used, type of wards, training and level of contamination

prior to cleaning. The authors concluded that routine manual cleaning by trained staff can be as effective in a low-resource setting as in a high-resource setting.<sup>27</sup> Thus, a multimodal strategy, inclusive of the training of domestic service staff, availability of adequate time to clean beds between patient admissions and application of the correct type of cleaning products, is needed.

As routine and terminal cleaning of patient rooms is frequently inadequate, other key prerequisites to help implement an effective and sustainable environmental cleaning program include having good to excellent administration support, having hospital epidemiologist available in resource-limited settings and enhancement of the hospital safety culture. These factors have been evident in a Thai national survey,<sup>15</sup> which reveals a relationship between having good to excellent hospital administration support for the infection control program and association with high adherence to implemented ECD protocols and ECD checklists, and having a hospital epidemiologist was associated with the presence of an ECD checklist and regular ECD auditing. National infection control curriculums should, therefore, be created to provide a formal training for post-graduate physicians in infection prevention to become a hospital epidemiologist as a part of strategic infection prevention plans to improve national ECD practices. Lastly, a strong organisational safety culture and participation in a collaborative network to reduce HAI may also play a significant role to help enhance the effort of HAIs and MDR pathogens control in resource-limited settings, as suggested by national surveys in the United States, Japan, and Thailand<sup>128-30</sup>

## Conclusions

Overwhelming evidence suggests the key role of environmental cleaning to help reduce the transmission of HAIs, MDR pathogens as well as emerging infectious diseases. Despite several barriers and challenges, several data suggest a successful implementation of an environmental cleaning program in resource-limited settings. With the limited resources, resource-limited settings should adhere to basic recommendations for environmental cleaning and selecting non-technology strategy first. Mechanisms to monitor, audit and feedback should be available. Several prerequisites, inclusive of leadership support, availability of hospital epidemiologist, appropriate education and training for

staff and implementation of multimodal strategy, are essential for establishing an effective environmental cleaning program in resource-limited settings.

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## 日本語要約

### アジアにおける環境管理と医療関連感染：見解と展望

病室の汚染された環境表面は、医療関連感染 (HAI) の伝播に関わる主要な要素の一つであり、アウトブレイクの原因の一つとしても広く認識されている。汚染された環境表面との接触は、保菌患者と直接接触した時と同様に医療従事者の手指を汚染し、環境表面から医療従事者を介して患者への感染が起こることも示されている。さらに、これまでの報告から、メチシリン耐性黄色ブドウ球菌 (MRSA)、バンコマイシン耐性腸球菌 (VRE)、多剤耐性アシネトバクター (MDRA) やクロストリディオイデス (クロストリジウム)・ディフィシルに感染した患者が退院した後、次にその部屋へ入院した患者は、前の患者が感染していた病原菌への感染リスクが高まることが示唆されている。これらのことから、病室環境の適切な清掃と消毒の取組みを向上することが、HAIの発生を抑制することに繋がると考えられる。

環境管理の向上を適える一般的な方法として、清掃業者への教育とフィードバック (例えば、蛍光塗料を使用した教育ツールの利用)、“ノータッチ”テクノロジーを用いる方法 (例えば、UV-C照射)、或いは将来的には、自己消毒表面 (例えば、銀や銅などの重金属や殺生物剤を浸み込ませた、またはコートした表面) の活用といった方法が挙げられる。しかしながら、リソースやテクノロジーへのアクセスが限られているような現場では、リスク層別化マトリクスを用いて実施頻度を決定し、基本的な環境清掃と消毒を着実に実施することが重要となる。

リソースの限られた現場における環境清掃/消毒 (Environmental cleaning/disinfection: ECD) の実践に関するデータは限られているが、タイにて全国規模で行われた調査によると、90%以上の病院で (n=212)、何かしらのECDプロトコル (実施手順) を持っていることが明らかとなった。しかしながら、ECDチェックリストが用意されていたのは55.2%、さら

にECDの実践を監査する仕組みが整っていたのは43.4%にとどまった。さらに、ECDプロトコルを実践している病院のうち、ECDプロトコルやECDチェックリストの遵守率が高いとされたのは、それぞれ56.8%と57.3%のみとなっており、ただ実践するのではなく、実践をモニタリングする仕組みを構築する必要性が示唆された。病院にとってのECDを実践する際の障壁としては、スタッフの不足、スタッフへの教育の不足、リソースや資金の不足、時間的制約、清掃や消毒にどの製品を使用したら良いかが分からない、といった事柄が挙げられた。また、この調査では、感染管理プログラムへの病院経営側からの良好なサポートがある病院では、ECDプロトコルやチェックリストの遵守率が高く、病院に疫学者がいることとECDチェックリストや監査システムがあることが相関を示した。組織の安全文化や上層部のサポートが効果的な実践に重要であるという日本やアメリカ等での報告とも一致する結果が得られた。

環境管理がHAIに及ぼす影響に焦点を当てたアジアでの研究として、洪水が起きた際に行われた複数の検証で、重点的な感染源の管理と環境管理を主体とした感染管理対策の実践により、多剤耐性アシネトバクター (MDRA) の伝播が有意に抑制されたことが示された。さらに、タイにて行われた全国調査より、MDRAの発生率と環境清掃サービスの有無に関連があることが示され、環境管理の果たす役割の重要性が明らかとなった。また、近年報告されたメタアナリシスでは、多剤耐性グラム陰性桿菌の種類によって、環境管理の及ぼす影響も異なることが示唆された。報告によると、標準予防策 (手指衛生等)、抗菌薬の適正使用、環境管理、感染源の管理といった複数のアプローチを一緒に実践することが最も効果を発揮する介入手段であることが分かったが、多剤耐性グラム陰性桿菌の中でも、MDRAについて、環境管理が不可欠な要素であることが分かった。これらのことから、多剤耐性グラム陰性桿菌、中でもリソースの限られた現場におけるMDRAの管理には、環境管理が非常に重要な役割を果たすことが示された。

多くのエビデンスによって、HAIの抑制や多剤耐性菌の感染制御における環境管理の重要性が示されている。また、様々な障壁はあるものの、リソースの限られた現場においても、テクノロジーに頼らずとも、基本的な環境清掃/消毒の実践をすることで、効果的な環境管理ができることも示されている。その効果的な環境管理を確立するためには、ただ実践するだけではなく、モニタリングや監査の仕組みを整えること、上層部からのサポート、病院疫学者の存在、スタッフへの適切な教育とトレーニング等が必要不可欠であると考えられる。

# World Information

## Clean Hospitals: a Unique Global Network Improving Healthcare Environmental Hygiene

Clean Hospitals team



### THE BEGINNING OF A NEW TYPE OF COLLABORATION

Since the World Health Organization (WHO) Clean Care is Safer Care program began in 2005, over 130 WHO member states and autonomous areas have pledged their support to prevent healthcare-associated infections (HAI). Over 17,000 healthcare facilities have committed to improve hand hygiene as part of this, representing well over 10 million healthcare workers and over 4 million patient beds, an unprecedented achievement in patient safety. This widely acclaimed program has led to lots of lives saved across the world each year. Healthcare workers, patients and the general public now understand the benefits of a clean hands culture and that ‘Clean Hands Save Lives’. Prof. Didier Pittet, Clean Hospitals Chair, is the External Program Lead for the WHO First Global Patient Safety Challenge: Clean Care is Safer Care.

Clean Hospitals was born from a lack of strong guidance for environmental hygiene and cleaning in the healthcare sector. The lack of awareness and the need for the whole sector to improve healthcare environmental hygiene was proven by the expression of all stakeholders in this market. Prof. Pittet was joined by international infection prevention control specialists and global stakeholders in creating the global network that was born during Interclean 2018, and officially launched in September 2019.

Two white papers have been written at this stage regarding the objectives of the initiative: “Keeping

Hospitals Clean and Safe Without Breaking the Bank; Summary of the Healthcare Cleaning Forum 2018”, published by BioMedCentral (Dec 2019), and “Clean Hospitals: Transforming Patient Safety from an Idea to an International Collaborative Movement.”, published by the European Cleaning Journal (Sept 2019).



### PURPOSE

We aim to use the knowledge and momentum generated by our research and working groups to raise industry standards and increase the visibility of the hospital environment in patient care.

The purpose of the initiative is to increase patient safety and bring international attention to the need for an increased focus on healthcare environmental hygiene.

Although the hospital environment tends to be one of the most understudied and underfunded areas in healthcare, there is enough literature in

# World Information

the field to prove that a well-maintained patient environment is crucial for preventing the spread of healthcare-associated infections and antimicrobial resistance.

Beyond patients, hospital environmental hygiene also has a direct impact on the lives of the people working in the hospitals, as well as a broader impact on communities and the environment.

These improvements will benefit public health by lowering rates of healthcare-associated infections, reducing antimicrobial resistance, and protecting hospital staff as well as the wider environment.

## WHY IS IT UNIQUE?

Clean Hospitals members and collaborative partners are a unique blend composed of academia, governmental bodies, key opinion leaders, associations, organizations, hospitals, service providers and industry.

All our stakeholders work hand-in-hand to improve healthcare environmental hygiene globally. We seek to harness the collective strengths in order to collaborate across disciplines and interest groups.



## FIELD OF ACTIVITIES

The Clean Hospitals team is increasing the scientific, evidence-based literature in the field (via publications in peer-reviewed journals, research projects, etc.) and addressing common challenges and misconceptions. We are developing and organizing training and certification programs for use in different geographical regions. Clean Hospitals is supporting information-sharing and communication activities that have an impact on the healthcare environmental hygiene field and improve infrastructure for hospital cleaning.

## RESEARCH ACTIVITIES

### • Systematic Review in Healthcare Environmental Hygiene

A review of the effect that interventions in the hospital environment have on healthcare-associated infections. We are currently defining the search terms, as well as the inclusion and exclusion criteria. This project will ultimately raise awareness of hospitals and governmental bodies.

### • Cost and Value in Healthcare Environmental Hygiene

An analysis of the cost and value of environmental hygiene in hospitals. This is meant to sensitize hospitals and governing bodies to the substantial and increasing cost of healthcare-associated infection and antimicrobial resistance. It is aimed at quantifying the effectiveness of environmental hygiene interventions in reducing healthcare-associated infections, and assessing various models for testing the cost-effectiveness of environmental hygiene in hospitals. The goal of this project is to ensure that the value of environmental hygiene is recognized by the relevant stakeholders.



## EDUCATION AND TRAINING

The development of a core curriculum for training and/or certification of hospital environmental hygiene personnel is one of the projects of the Clean Hospitals Education committee. It will be designed using an implementation science-centred approach that can be adapted across cultural and geographical areas and resource levels. The team is currently working on collecting existing models, which will be analysed and discussed with an international group of experts.

The creation of teaching and training modules in key areas of hospital environmental hygiene is currently part of our ongoing projects. Areas covered will include surfaces, hand hygiene, waste management, air, information technology, digitalization and implementation science. Subjects will be broken down into modules across three levels, from beginner to advanced. Organizations can choose in which subjects and levels they would like to have trainings in.

### WHY DO WE NEED CLEAN HOSPITALS?

The world has changed...

As we wake up each day, we are acutely aware that the world has changed. While the world goes into lockdown, governments and health authorities encourage social distancing, hand washing or sanitizing using alcohol rubs, the wearing of personal protection masks, adequate sleep, avoidance of anyone with symptoms, and cleaning and disinfection of touch points. All these measures are encouraged worldwide to reduce the chance of picking up COVID-19 and potentially spreading it.

In case of lock-down, healthcare workers are encouraged to go into battle on the frontlines. They are being sent into hospitals and buildings that we know have the virus in its patients, on its surfaces, in its air and even in other staff who do not yet show symptoms.

“While we distance ourselves from the virus, they are getting closer to it.”

“While we rest eight hours a night, many of them are lucky to get four hours.”

Doctors, nurses, paramedics, physiotherapists, radiographers, medical students, cleaning staff and even non-clinical staff like receptionists, administrative workers, maintenance staff, engineers, and kitchen staff working throughout the building are all connected to healthcare workers on the front line.

The whole healthcare sector needs more supply of cleaning products and training against infections, and both are very limited or simply not available.

### WHY YOU SHOULD JOIN CLEAN HOSPITALS?

In this high-pressure situation, our hospital network is at boiling point and what's on the inside is now coming out and being noticed.

Many individuals and teams of healthcare workers are being praised for their heroic actions; teams of cleaners are being clapped at the end of their shift; and the general public is praising how our healthcare workers are putting their lives and their family's lives in danger.

COVID-19 has already shown us that viruses spread when cases are concentrated in cruise ships, hospitals and aged-care facilities, and that cross-contamination not only occurs through patient-to-patient contact but also through touching of infected surfaces within a facility and then touching the face.

Correctly cleaned healthcare facilities are an essential need for our healthcare workers to survive and be able to save lives. They spend more time at work than at home, and if the hospital they work in are subject to transmit infections then there are chances that they will get infected eventually, it's just a matter of time.

## BECOME A PIVOTAL PLAYER

Last year, Clean Hospitals was launched and the objective was changing the culture in healthcare environmental hygiene. There is much to be done to ensure our hospitals are clean and safe for our healthcare workers, their families, and patients. Together we can and will make a difference. Hospitals, industries, governmental bodies, academics, associations, providers, subcontractors, and all organizations involved in the cleaning and healthcare environmental hygiene sector are welcome to join Clean Hospitals.

Contact the Clean Hospitals team  
[www.cleanhospitals.com](http://www.cleanhospitals.com)



### 日本語要約

Clean Hospitalsは、医療分野における環境衛生と清掃のための強力な指針を作るため、感染対策の国際的な専門家や様々なグローバル企業が参画し、2019年9月に発足されました。Clean Hospitalsの目的や活動に関しては、以下の二つのホワイトペーパーが発行されています；①“Keeping Hospitals Clean and Safe Without Breaking the Bank ; Summary of the Healthcare Cleaning Forum 2018”BioMedCentral (Dec 2019) (財政を圧迫しない病院の清潔と安全の保持；ヘルスケアクリーニングフォーラム総括)、②“Clean Hospitals : Transforming Patient Safety from an Idea to an International Collaborative Movement.” the European Cleaning Journal (Sept 2019) (清潔な病院：患者安全をアイデアから国際的な共同行動へ)。

Clean Hospitalsは、患者ケアにおける業界基準を作り、院内環境の可視化を推進するための研究やワーキンググループからの、知識と熱意を活用していくことを目的としています。そうすることで患者安全が推進され、医療機関における環境衛生に対する国際的な関心が高まるのが期待されます。組織編成はユニークで、アカデミア、行政、専門家、学会、病院、産業界などからメンバーが参加しています。

Clean Hospitalsは科学的で根拠のある文献を増やし、共通の課題や誤解の解決に取り組み、地域別に研修や認証プログラムを実施するといった活動をしています。

#### 【現在取り組んでいる研究】

- 医療分野における環境衛生に関するシステマティックレビュー
- 医療分野における環境衛生にかかる費用とその価値

#### 【教育と研修】

教育グループでは、既存のモデルなどを参考に、研修カリキュラムと認証プログラムの骨子を作成しています。科学的に根拠のある内容を用いつつ、文化や地域、資源レベルに応じて適応できるようなデザインとなる予定です。構成する内容は、環境表面、手指衛生、廃棄物処理、空気、情報技術、デジタル化、実践科学となっています。

COVID-19の影響で、世界は変わりつつあります。国境が封鎖、社会活動が制限され、行政は社会的隔離、手指衛生、PPE着用、十分な睡眠、症状保持者との接触を避けることなどを推奨しています。一方、医療従事者は最前線でウイルスと戦わなければなりません。ここで言う「最前線で戦う医療従事者」には、医師、看護師、救急救命士、理学療法士、放射線技師、学生、清掃員、事務員、臨床工学技士、調理スタッフなど、医療機関で働くすべてのスタッフが含まれます。医療機関では清掃や消毒に用いる物資、必要な教育が十分に足りているとは言えない状況です。

このような状況下でも、医療従事者の素晴らしい行動が注目を浴びていることがあります。シフトの終わりに称賛を浴びる清掃員、自分や家族の感染リスクの中、病院で働く医療従事者への称賛など。COVID-19は患者間の接触だけではなく、汚染された環境表面からの接触感染も既に示されています。そのため、適切に清掃された医療機関はこういった医療従事者の感染リスクを下げ、命を救うために不可欠です。

Clean Hospitalsは、医療環境衛生の文化を変えることを目的にしています。医療従事者やその家族、患者の安全のために、医療機関が清潔で安全であることを確実にするため、実践すべきことが多々あります。ぜひあなたも参加いただければ幸いです。

## Promotion of Hand Hygiene Practice at Schools in Vietnam during COVID-19 Pandemic

Duong Linh Trang, MBA  
Saraya Greentek Co., Ltd.



### Background

The first case of COVID-19 caused by the SARS-CoV-2 virus was confirmed in Vietnam on January 23, 2020.<sup>1</sup> Quarantining, monitoring and restricting people in epidemic areas, border closing, medical warnings, and declarations were put in place. Direct human interacting activities, travel and trade in high-risk localities have been limited. In some places where controls have been tightened, temperature checks are taken, antiseptic hand wash is used, and free masks are given out.

Needless to say, the COVID-19 pandemic has socially impacted Vietnam in several ways. A Vietnamese pop song titled “Jealousy of CoVy”,<sup>2</sup> which is a revised version of a 2017 song titled “Jealousy”,<sup>3</sup> went viral online during the global pandemic. The song’s goal was to raise awareness about the practice of hand hygiene in Vietnamese communities. Many localities have also organised movements to encourage the prevention of COVID-19.<sup>4-5</sup>

The Vietnamese government has continuously emphasised the importance of proper hand hygiene practice as one of the most effective ways to protect citizens from being infected with COVID-19. However, proper hand hygiene has been limited in public places due to the shortage of hand washing facilities, such as hand washing basins and hand soap.

As for the education sector, the school break for the year 2020’s Tet holiday (Vietnam’s lunar new year) was extended from 3 February to 9 February, and from mid-February 2020 to mid-May 2020, they had to let students out of school.

That meant schools closed for three months to implement epidemic prevention procedures.<sup>6-7</sup>

Preparations continued for the safe return of children to schools in June 2020. To support communities in their efforts to protect children from COVID-19, Saraya Greentek Co., Ltd., a branch company of Saraya Co., Ltd. (Japan) in Vietnam, in cooperation with AEON Vietnam and AEON TopValu, developed an education program called “Clean Hands—Strengthen Future” that promoted hand hygiene in 100 preschools and primary schools in areas where AEON Vietnam has business. This program is the first phase of the Sustainable Education For the Youth (SEFY) project, a five-year project owned by AEON Vietnam to promote sustainable education for young children from 3 to 10 years old. The topics for the education program for each school year are determined by the Ministry of Education of Vietnam. In the context of the COVID-19 pandemic, “Clean Hands—Strengthen Future” was chosen as the topic of the first phase of the SEFY project, which is from June 2020 to June 2021.

### PURPOSE

The goal of this education program is to ensure a safe environment for school children during the COVID-19 pandemic and beyond. Specifically, the program provides young children with basic knowledge of hand hygiene and encourages the practice of frequent hand washing in their daily lives to form good habits in the practice of personal hygiene.

### ACTIVITIES

Through this education program, we provided schools with hand washing basins, hand soap and educated the children about the basics of hand hygiene.

# World Information



*The program has provided 100 hand washing basins and 12,000 bottles of hand soap to schools.*

Saraya Greentek plays an important role in educating the children about the basic knowledge of hand hygiene in this mission.

Our goal was to convey three important messages to the children: WHY to practise hand hygiene; WHEN to practise hand hygiene; and HOW to practise hand hygiene.

We performed various activities to attract the children's attention so they could learn about hand hygiene in an enjoyable way.



*In our play, SGT's engineers portray types of food poisoning bacteria and the Coronavirus to show what happen to those students who do not wash their hands.*



*Local government representative, the school headmaster, and school children promise to practise hand hygiene on the Hand Hygiene Commitment Tree.*



*School children get involved in our programs on hand hygiene knowledge.*



*Dancers perform the "Jealousy of CoVy" song to promote the practice of hand hygiene.*



*Children practice hand washing.*



*We gave out 65,000 mini handwashing manuals to school children to remind them of hand hygiene.*

# World Information

“We knew we needed many fun and visual activities for this educational program to maintain the young children’s attentions, especially the three-to-five-year-old students in preschools, so they would remember what they had learned”, said Le Kha Hung, a 23-year-old environment engineer at Saraya Greentek, who is the young director for this school event. His design for this program—from the bacterial play to performances of the “Jealousy of CoVy” dance—was based on his experience with various community charity activities when he was a university student. Together with other young colleagues at Saraya Greentek, including biologists, chemical engineers and food engineers, and under the guidance of Duong Linh Trang, the company’s CEO, Le Kha Hung has led the team to success, receiving much appreciation from local governments and teachers at the schools where they performed.



**Le Kha Hung, a 23-year-old environment engineer, is the young director of our school event.**



**Le Kha Hung and Duong Linh Trang, the CEO of Saraya Greentek, run through the program details before the performance at 1-6 Preschool in Hai Phong, Vietnam.**



**Performers practice the “Jealousy of CoVy” dance in the park.**



**Van Dai and Lan Nguyen, chemical engineers at Saraya Greentek make performance tools.**

## Conclusions

As of 9 March 2021, Vietnam has had a total of 2,524 confirmed COVID-19 cases, including 35 deaths and 1,920 recovered cases.<sup>8</sup>

According to a March 2020 survey, Vietnam is the country with the highest satisfaction in the world regarding the government’s response to the pandemic.<sup>9-10</sup> In the context of weak healthcare systems, low budgets and its large population, Vietnam has implemented a strict 14-day quarantine policy and traced those exposed to the virus. Due to the recent spread of the new coronavirus strain,<sup>11</sup> officials are considering whether to increase the quarantine period from 14 to 21 days. Instead of depending on medicine and technology to prevent a coronavirus epidemic, Vietnam has established a widespread system of public surveillance, helped along by a well-supplied and generally respected military force.<sup>12</sup> The fundamental factor that drives the Vietnamese government’s success is framing the virus as “foreign invaders”<sup>13</sup> to mobilise the country’s nationalism.

Alongside the government in the battle against the coronavirus, many community activities have focused on relieving adverse economic impacts on poor people and businesses in difficulty due to the pandemic through essential programs, such as providing Mask ATMs,<sup>14</sup> Rice ATMs,<sup>15</sup> Zero Cost supermarkets,<sup>16</sup> reductions in bank interest rates and extensions to bank loan terms.<sup>17</sup>

“The business sector should demonstrate social responsibility towards the community. Each business should work in a socially responsible manner to promote the interests of society. In times of need, such as the current COVID-19 pandemic spreading worldwide and in Vietnam, it is our responsibility to support our government and our people in the fight against the “foreign invaders”. Our team is young, and we also have expertise in the field of hygienic management. Together, with the synergy of our expertise, strength and enthusiasm, we will contribute our part to the success of the fight against COVID-19 in Vietnam. In the long term, we can help to form good habits in school children to practise hand hygiene in their daily lives”, said Duong Linh Trang, the CEO of Saraya Greentek, to her team before she decided to lead the school education program.

“The extent of this project required the involvement of all members of our team, from engineers to accountants. It was also quite difficult for us to conduct our daily business activities while also performing our educational programs at schools across the country, including the practices and rehearsals for our performance. We have spent many hours after work and on weekends”, Duong Linh Trang added. “By the end of every performance in front of thousands of school children, we were always very exhausted. However, when we saw the happy smiles on the teachers’ faces, who really appreciated our efforts, and the joy and eagerness of the children who were deeply engaged in our program, our tiredness vanished. We knew we had done something good for the community!”

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**Quick-drying Hand Disinfectant**

# Alsoft VB

**Fast acting alcohol hand rub with added performance for a wide array of viruses and bacteria.**





**The outstanding features of Alsoft VB is its applicability to surgical use as a hand disinfectant. It is formulated with moisturizing ingredients, causes less hand skin irritation.**

## Introduction

In 2009, the World Health Organization (WHO) issued the WHO Guidelines on Hand Hygiene in Health Care (hereafter WHO guidelines), which strongly recommended hand hygiene using quick-drying alcohol-based hand rubs to prevent healthcare-associated infections and ensure patient safety by enabling healthcare workers to practice correct hand hygiene at the proper time and by improving healthcare worker's compliance to hand hygiene. Alsoft VB, is an alcohol-based hand disinfectant that contains ethanol and n-propanol as the active ingredients and supplementary phosphoric acid. Two outstanding features of Alsoft VB are its excellent effect against non-enveloped viruses that are resistant to alcohol-based rubs and its applicability to surgical use as a hand disinfectant. These qualities are verified in the European Standard Test Methods, meeting the requirements of EN14476 (Virucidal Activity) and EN12791 (Surgical Handrub) in a short contact time. Its efficacy against a broad spectrum of microorganisms is also confirmed in the tests for efficacy against general bacteria, fungi and mycobacterial specified in European Standard Test Methods. At the same time, Alsoft VB, formulated with moisturizing ingredients, causes less hand skin irritation.

## Features

- An alcohol-based hand disinfectant containing ethanol and n-propanol as the active ingredients and phosphoric acid. Effective against a broad spectrum of microorganisms including general bacteria, fungi and viruses in a short contact time.
- Meets the claims of EN14476 (Virucidal activity) and EN12791 (Surgical Handrub) in a short contact time making it highly effective against non-enveloped viruses and applicable for surgical use as a hand disinfectant.
- Provides comfortable hand disinfection without a sticky or uncomfortable feeling, containing no thickening agents.
- Requires no rinsing and wiping.
- Contains moisturizing ingredient to inhibit hand skin irritation.

## Components & Properties

- Components      Active ingredients: Ethanol 66.5%(w/w), n-Propanol 10%(w/w)
- Properties        A clear, colorless liquid with a distinctive alcohol odor

## Efficacy on microorganisms

- ▶ Hygienic Handrub : EN1500      15 sec
- ▶ Surgical Handrub : EN12791      1 min
- ▶ Bactericidal Activity : EN13727    15 sec
  - Escherichia coli                      • Pseudomonas aeruginosa                      • Staphylococcus aureus
  - Enterococcus hirae                      • Listeria monocytogenes                      • Salmonella enterica
- ▶ Yeastocidal Activity : EN13624    15 sec
  - Candida albicans
- ▶ Mycobactericidal Activity : EN14348    15 sec
  - Mycobacterium terrae    • Mycobacterium avium
- ▶ Virucidal Activity : EN14476
 

|                          |        |                          |        |                  |        |
|--------------------------|--------|--------------------------|--------|------------------|--------|
| • Adenovirus             | 15 sec | • Murine norovirus       | 15 sec | • Vaccinia virus | 15 sec |
| • Rotavirus              | 15 sec | • Influenza virus (H3N8) | 15 sec | • BVDV           | 15 sec |
| • Influenza virus (H1N1) | 15 sec | • Poliovirus             | 30 sec |                  |        |
| • Bovine corona virus    | 15 sec | • Feline calicivirus     | 15 sec |                  |        |



**Dispenser Stand  
for Hand Disinfectants**

**TS-1390  
MS-625**



\*Dispenser not included

\*Dispenser not included



## MS-625



### Specifications

|                |                          |
|----------------|--------------------------|
| Product Name   | Dispenser Stand MS-625   |
| Dimension      | W230 x D230 x H625       |
| Dispensers     | UD-1600, UD-9000, UD-450 |
| Product Weight | Approx. 2.5kg            |
| Materials      | Painted steel            |

## TS-1390



### Specifications

|                |                                    |
|----------------|------------------------------------|
| Product Name   | Dispenser Stand TS-1390            |
| Dimension      | W350 x D350 x H1390 (Adjustable)   |
| Dispensers     | UD-1600, UD-9000, UD-450, TUD-1000 |
| Product Weight | Approx. 6kg                        |
| Materials      | Painted steel                      |

### Dispenser



Disinfectant  
Spray / Gel

\*Not compatible with other dispensers

#### UD-1600



Foam /  
Liquid Soap

Disinfectant

- ▶ The UD-1600 provides safe, contamination free dispensing.
- ▶ Use with foam hand soap or alcohol hand disinfectant.
- ▶ Large 1.2L bottle in a low profile wall mounted design.

#### UD-450



Foam /  
Liquid Soap

Disinfectant

- ▶ Modern usability and technology integrated in a compact unit.
- ▶ Liquid contents can be viewed without opening.
- ▶ Tamper resistant lock system.

#### UD-9000



Foam /  
Liquid Soap

Disinfectant

- ▶ The new UD-9000 provides safe, contamination free dispensing.
- ▶ Use with foaming hand soap or alcohol hand disinfectant.
- ▶ Large 1.2L bottle in a low profile wall mounted design.

#### ADS-500/1000



Foam /  
Liquid Soap

Disinfectant

- ▶ Hygienic dispenser, the No-Touch feature prevents healthcare-associated infection.
- ▶ The pump can be easily changed for liquid soap or disinfectant. The bottle cavity is adjustable to fit 500ml and 1000ml bottles.
- ▶ The battery powered dispenser can be placed anywhere on the counter or mounted on the wall.

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- Goodmaid Chemicals Corporation Sdn. Bhd.**  
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70400 Seremban, Negeri Sembilan, Malaysia  
URL: <https://www.goodmaid.net/>
- Saraya Myanmar Co., Ltd.**  
No.84, E/G, Room3F, 3rd Floor, Sayar San Lan Thwe, Grand Sayar  
San Condo, Bahan Township, Yangon, 11201, Myanmar
- Taiwan Saraya Hygiene Co., Ltd.**  
8F.-3, No.100, Sec.2, Nanjing E.Rd., Zhongshan Dist.,  
Taipei City 10457, Taiwan  
URL: <https://www.saraya.tw>
- Saraya International (Thailand) Co., Ltd.**  
23/21 12th Floor, Sorachai Building, Soi Sukhumvit 63,  
Sukhumvit Rd., Klongtonnua, Wattana, Bangkok 10110, Thailand  
URL: <https://www.saraya-thailand.com/>
- Saraya MFG. (Thailand) Co., Ltd.**  
700/504 Moo 2 Amata Nakorn Industrial Estate,  
Tambol Baankao, Amphur Phanthong, Chonburi 20160, Thailand
- Saraya Greentek Co., Ltd.**  
Unit 13.05 Level 13, Pearl Plaza Building, 561A Dien Bien Phu street,  
ward 25, Binh Thanh District, Ho Chi Minh City, Viet Nam
- Saraya Greentek Hanoi Office**  
Unit 05.05, level 05, ICON 4 building, 243A De La Thanh street,  
Lang Thuong district, Ha Noi city, Viet Nam

### Europe

- Saraya Europe SAS**  
Allée Alfred Nobel, ZI de la Praye 55500 Velaines, France  
URL: <https://www.saraya-europe.com>
- Paris office**  
62-64 rue Jean Jaurès 92800  
PUTEAUX Paris - La Defense, France
- Saraya Co., Ltd. Europe**  
Rue des Palais 44, 1030 Brussels, Belgium  
URL: <https://www.saraya-europe.com/>
- SARAYA POLAND Sp. z o.o.**  
1, Zorzy Str, Klaudyn, 05-080 Izabelin, Poland
- Saraya CIS LLC.**  
Zatsepa St., 28, Building 1, Office 5, Moscow 115054, Russia  
URL: <https://www.saraya-cis.ru/>
- Saraya Ukraine LLC.**  
34,Vasylykivska str., office A-306, Kyiv 01004, Ukraine  
URL: <https://www.saraya.com.ua/>

### Africa/ Middle East

- Saraya Manufacturing (U) Ltd.**  
PO Box 23740, Plot 6C, Seventh Street,  
Industrial Area, Kampala, Uganda  
URL: <http://saraya-east-africa.com/>
- Saraya Beauté et Santé**  
Henchir Sradka, Dar Chabaane Fehri,  
P.O.Box 46, 8011, Nabeul, Tunisie
- Saraya Middle East for Industrial Investment J.S.C.**  
Office 303, 3rd floor, Plot 305, Green Tower,  
90th st South, New Cairo 11835, Cairo, Egypt
- Saraya Middle East Trading DMCC**  
DMCC Business Center, Unit no. 46, Gold Tower, Lake Level, Cluster 1,  
Jumeirah Towers, Dubai, UAE
- Saraya Kenya Co., Ltd.**  
Upper Ground Floor Unit05, Marsabit Plaza,  
Ngong Road, Nairobi, Kenya