INNOVATION CASE STUDIES

HEALTHCARE

WSHCOUNCIL

Tripartite Alliance for Workplace Safety and Health

Year of Issue: 2022

FOREWORD

The healthcare sector has been at the forefront of our fight against COVID-19, sparking a renewed focus on the importance of Workplace Safety and Health (WSH). With continuous pressures placed on our healthcare workers, we must not only ensure their safety at the workplace, but also their well-being; and in doing so, they will be able to cope better in taking care of our community.

I am happy to share that many healthcare institutions have implemented new technologies, designs and user-driven innovations to improve the health and safety of healthcare workers. The WSH Council (Healthcare) Committee has compiled a list of these innovations to encourage cross-learning of the adoption of technology across the sector.

I am glad to present this publication consisting of 11 projects that contain exemplary innovations in enhancing the safety and health of our healthcare workers. The featured projects were chosen based on their innovativeness, cost effectiveness and applicability to the sector at large. These projects are sorted into three main categories:

1. Innovative Initiatives in Promoting Health and Well-being
2. Use of Technology in Supporting/Promoting WSH
3. Adopting Design Thinking for Workflow Efficiencies and Promoting WSH in the Workplace

My thanks and appreciation to the various healthcare institutions who came forward to share their projects. I hope this publication will provide good recommendations in implementing sound WSH innovations at your workplaces. I also encourage you to share these practices with your fellow colleagues and partners.

Together, let us improve the health, safety, and well-being of every healthcare worker.

Dr Eugene Fidelis Soh
Chairman
WSH Council (Healthcare) Committee
Workplace Safety and Health Council

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PROJECT 1
MINDFULNESS PRACTICE

Background

Healthcare workers are susceptible to burnout due to the physical and emotional demands of the job. Symptoms can include emotional exhaustion, cynicism, perceived clinical ineffectiveness, and lack of empathy to colleagues and/or patients. In addition, the Institute of Healthcare Improvement has found burnout to be correlated to clinical incidents and errors.

Problem

- COVID-19 placed heightened demands on healthcare staff, making them even more susceptible to burnout.
- Over the past two years, healthcare institutions have seen increased staff turnover and absenteeism.

Solution: Introducing mindfulness practice

The practice of mindfulness has been extensively studied and offers multiple benefits such as building resilience, lowering blood pressure, and improving mental health through stress relief. By practising mindfulness in the workplace, healthcare workers can improve their focus, better adapt to changes, contribute more effectively at multi-disciplinary rounds, and enhance peer appreciation.

To help the healthcare workers achieve mindfulness, the following steps were taken:

- Mindfulness practice was introduced in a sandbox trial ward under a three-minute duration via video guidance, involving five to eight participants.
- After several iterative cycles, mindfulness practice has been implemented for all nursing staff at the beginning of each shift, conducted in the staff room (Figure 1).
- Posters on mindfulness were also put up at public areas to raise awareness (Figures 2 and 3).

Figure 1: Nurses practising mindfulness in the staff room

Figure 2: Poster on mindfulness

Figure 3: Staff putting up mindfulness posters around the workplace

Benefits/Results

- While mindfulness and state of well-being are usually self-reported, seven factors related to staff well-being have been identified and considered: Clarity, Respect, Equity, Dialogue, Opportunities, Quality of Life and Wellness (Figure 4):

Measurement of Staff Well-being

• A quick sensing based on the six staff values + Wellness:

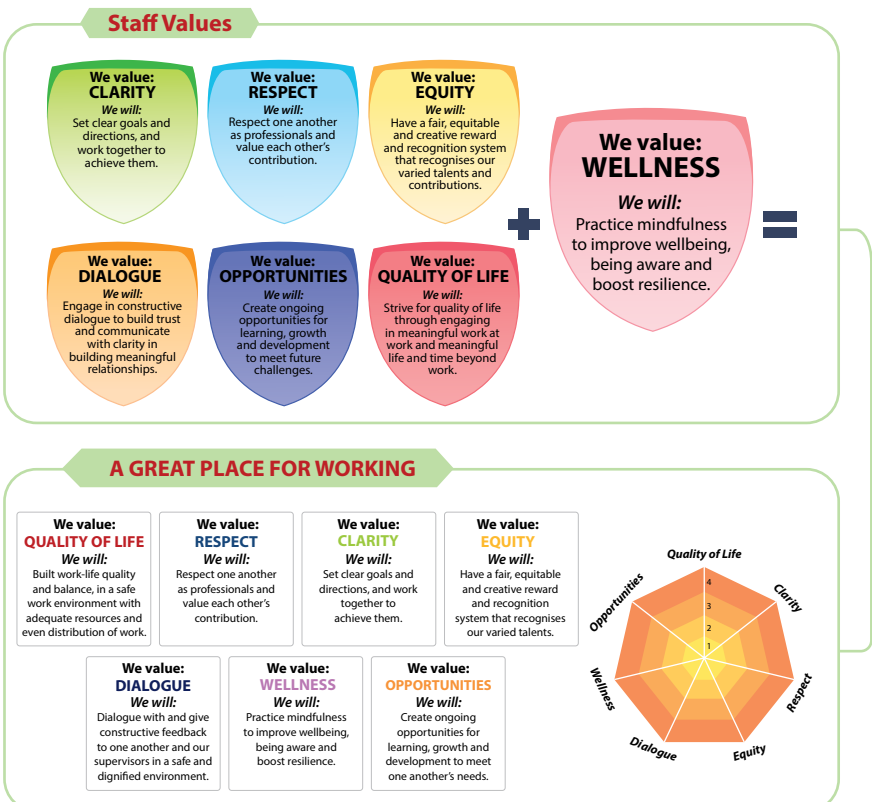


Figure 4: Parameters used to measure staff well-being

- Measurement for the effectiveness of mindfulness was then done through a value spider diagram where these factors were rated on a scale of 1 to 5. The results showed an overall improvement in staff well-being, with a high Wellness score and an increase in ratings of Quality of Life, Respect, Equity and Dialogue. In particular, Quality of Life and Respect showed significant increases, from 2.5 to 4.25 and 2.5 to 4 respectively (Figure 5):

- **Results (Blue- Baseline):**
  - ➢ Significant improvement in:
    - o Quality of Life (2.5 → 4.25)
    - o Respect (2.5 → 4)
  - ➢ Highness wellness score (4.2)
    - o Staff practicing mindfulness

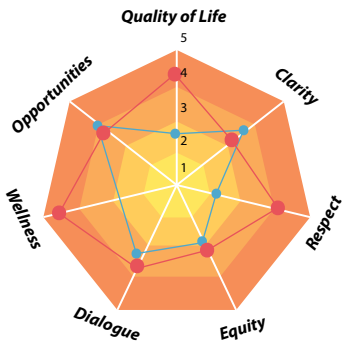


Figure 5: Staff Value Spider Diagram showing an overall improvement in staff well-being

PROJECT 2

WORKPLACE SAFETY ON AGGRESSION AND FEARFUL ENCOUNTER TRAINING REDESIGN

Background

The Workplace Safety on Aggression and Fearful Encounter (WorkSAFE) is a tailored preventive programme designed to promote awareness against workplace violence and curb its occurrence. Training is typically conducted via traditional, didactic classroom methods, which involves a big trainee pool each lesson.

Problem

- The number of assault (verbal/ physical) and violence cases in a healthcare institution has increased over the past five years.
- The data obtained from institutions' Incident Reporting system revealed that:
  i. Healthcare workers have inadequate knowledge and lack self-defence skills in handling disturbed, aggressive, and violent (DAV) cases. They also experience fear when handling such cases.
  ii. There is an increase in the number of cases referred to the Institute of Mental Health.
- Existing methods of training were not ideal due to:
  i. Manpower constraints to release a big pool of staff for training in a short period of time.
  ii. Unsuitability of contents and deliverables for full-day classroom training.
  iii. Ineffective learning caused by overwhelming information coupled with knowledge retention fatigue and greater preference for action-focused outcomes instead.
  iv. An urgent need to push out essential information for staff protection.

Solution: Redesigning WorkSAFE training

Increasing awareness and providing healthcare staff with the essential knowledge and skills to protect themselves is of top priority. The current method of training also needs to be revised to allow better retention of knowledge.

The WorkSAFE training was hence redesigned:

- The training programme was re-designed through first conducting literature reviews and conducting internal surveys.
- Programme learning outcomes were then derived from current ground issues and best practices from literature reviews, which include awareness of workplace violence, early anticipation and recognition of DAV situations, as well as responding and breaking away with appropriate methods when encountering DAV situations.
- A hybrid training approach was eventually adopted, consisting of face-to-face classroom sessions and online learning modules.
- Training was experiential instead of didactic and included skills demonstration as well as return demonstration.
- A decentralised training strategy was used:
  i. WorkSAFE Champions for respective departments were nominated after attending a two-day "Train the Trainer" programme. These Champions would become master trainers to their colleagues and looked upon as content experts.
  ii. WorkSAFE Champions will then conduct training for nurses using a micro-learning approach.
- Training modules were broken down into shorter sessions of 15 to 20 minutes each (Figure 6), with each module conducted by WorkSAFE Champions daily over two weeks during roll calls or handover periods, peer-to-peer learning sessions, and post-incident briefings.
- A Plan, Do, Check, Act (PDCA) cycle approach was used after initial pilot runs, and gaps were identified for improvements. Some of these included removing complex skills, as well as developing an instruction guide for trainers for effective decentralised training.

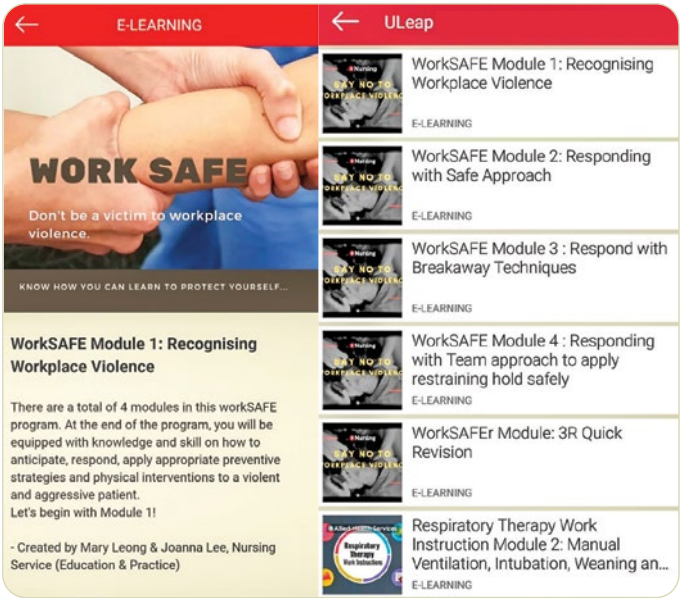


Figure 6: E-learning Modules for WorkSAFE

Benefits/Results

- Staff showed greater proficiency and confidence in handling DAV cases, based on improvements in their self-evaluation proficiency ratings (Figures 7 and 8).

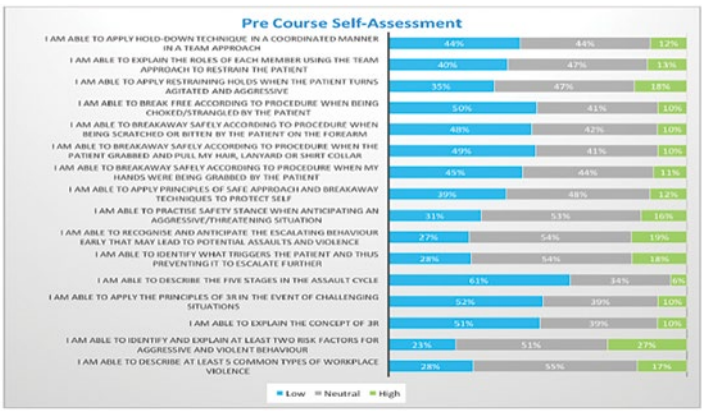


Figure 7: Pre-course self-evaluation proficiency rating of participants

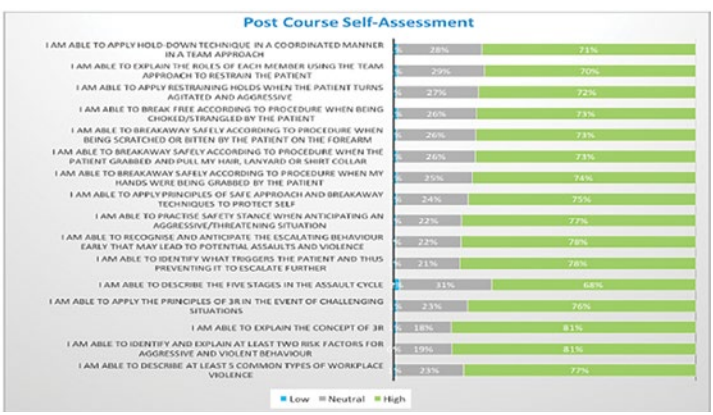
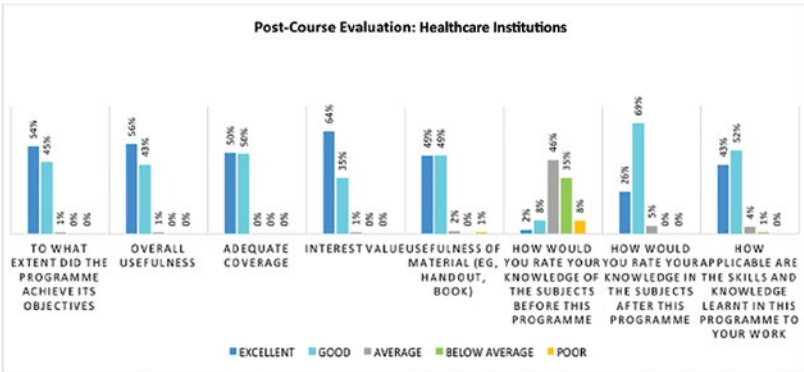


Figure 8: Post-course self-evaluation proficiency rating of participants

- The programme was shared and adopted by two community partners of the institution in early August 2019 and had achieved positive outcomes (Figure 9).



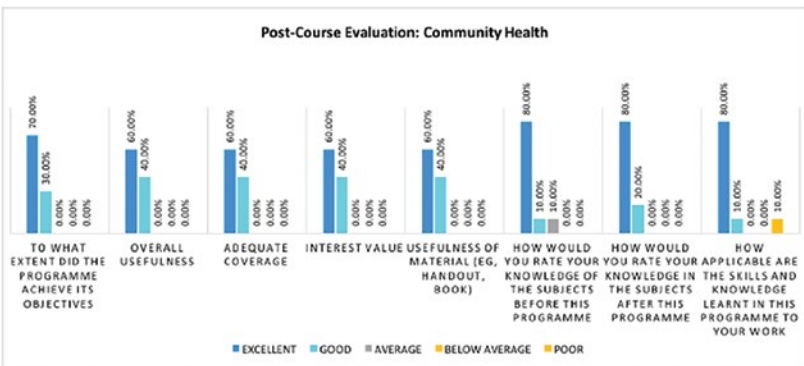


Figure 9: Post-couse evaluation for the healthcare institution and its community health partners

- Nurses gained greater confidence and had a reduced need for psychological support.

PROJECT 3

COVID-19 AEROSOL SHIELD FOR RESUSCITATION OF PATIENTS IN A&E

Background

The Accident and Emergency (A&E) department routinely performs intensive care medicine and anaesthesiology when complications such as arterial puncture or cannulation, hematoma or pneumothorax occur in patients. This exposes staff to contact, droplets, and airborne particles, potentially causing the spread of infectious diseases. Staff are typically provided various Personal Protective Equipment (PPE) for protection.

Problem

- With the onset of COVID-19, staff in A&E face greater exposure to the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) virus.
- The sudden spike in demand of PPE had caused global supply shortages and reduced the availability of PPE.

Solution: The COVID-19 aerosol shield

- Implementing barrier-enclosure systems such as aerosol shields and plastic drapes can act as a useful alternative for PPE in ensuring safe emergency medical procedures for both patients and staff in A&E (Figure 10).
- The COVID-19 aerosol shield was designed in order to work with the existing mechanical resuscitators deployed in A&E. It was then manufactured and delivered to the A&E department in 2020.
- The shield is portable, lightweight, cost effective, and can be conveniently cleaned and disinfected after use.

Figure 10: Aerosol box and aerosol shields used in A&E

Benefits/Results

- The COVID-19 aerosol shield is a timely innovation for patients and staff during the COVID-19 pandemic, who required protection against contact, droplets, and airborne particles.
- The aerosol shield provided the safety barrier needed for patients and staff in A&E amidst the global shortages and limited availability of PPE due to the pandemic.

PROJECT 4

ULTRAVIOLET C DISINFECTANT BOX

Background

Healthcare workers frequently use various medical equipment while conducting medical treatment and taking care of patients. Examples of equipment, personal items, and PPE used by healthcare workers can include stethoscopes, tendon tappers, spectacles, mobile phones, goggles, computer keyboards, blood pressure cuffs, N-95 masks, and surgical masks.

Problem

- During the COVID-19 pandemic, the institution anticipated a sharp increase in PPE usage, especially N-95 and surgical masks.
- The virus not only posed a higher risk towards healthcare workers, but also raised significant concerns regarding personal hygiene and sanitisation.
- As N-95 masks were crucial in preventing COVID-19 infections, a shortage of such masks would be a major crisis for healthcare workers. It was thus essential that such a scenario be prevented.

Solution: The Ultraviolet C (UVC) disinfectant box

- Ultraviolet light in Band C (UVC) is a potent disinfectant which can quickly inactivate/kill pathogens such as bacteria and viruses.
- The UVC Disinfectant Box was designed by fitting a box with UV lights which reflect on walls within the box to maximise the killing effect, as well as a timer which automatically shuts off the UV lights when disinfection is completed or when the box is not in use.

- Instructions on how to operate it safely were also created and documented (Figure 11). For added safety, no light is able to escape once the lid is closed and when the lid is opened, the light automatically shuts off.
- Staff can also place their masks and personal items such as stethoscopes, spectacles, tags, and mobile phones inside the box for disinfection, enabling the reuse of supplies throughout their work shift.

Benefits/Results

- Medical supplies were swabbed before and after being placed in the box. All swabs were sent to an independent laboratory for testing and analysis. The results showed that the UVC light is extremely effective in disinfecting medical supplies and only requires items to be exposed to it for one minute.
- As the project allowed for personal reuse of PPE, it greatly reduces costs and eliminates concerns over shortages of protective equipment.

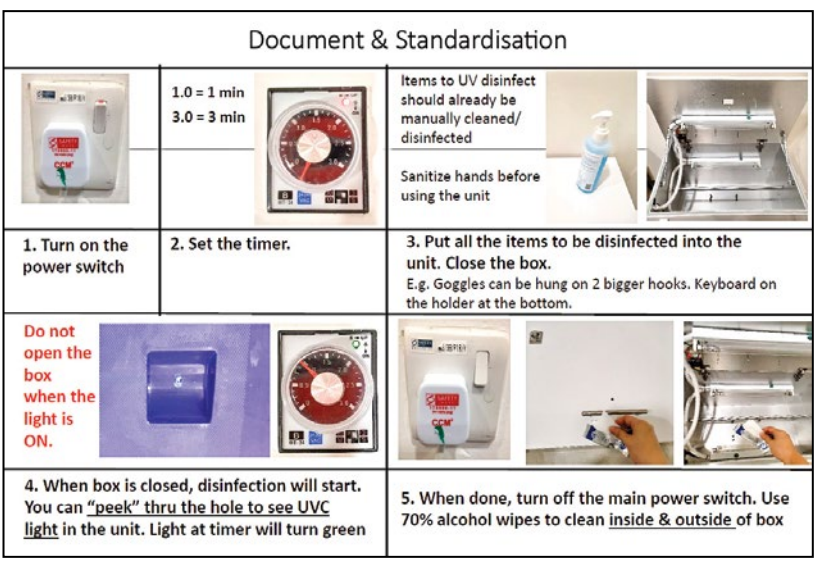


Figure 11: Instructions on how to use the UVC Disinfectant Box

PROJECT 5

DINING PODS IN MAIN INPATIENT WARD LOBBIES AND VENTILATION ENHANCEMENT AT STAFF PANTRIES

Background

To abide by safe distancing measures during the pandemic, inpatient teams have staggered mealtimes and must re-organise their pantries (three to six nurses on each meal break). Due to the nature of mask-down activities inside, pantries have one of the highest risks of COVID-19 transmission. While safe distancing helps, clusters continue to form in staff pantries at various public healthcare institutions, especially in small and enclosed pantries.

Problem

- The inpatient ward pantries were unable to accommodate more than three staff and some staff ended up having their meals or resting at the staircase lobbies in their wards.
- The seats at the ward's lift lobbies also did not offer any privacy for staff to have their meals.
- With pantries unable to accommodate the new measures, staff not only continued to be at risk of COVID-19 transmission due to poor ventilation, but were also unable to have a proper and comfortable area to have their meals.

Figure 12: Locations where staff would sit and have their breaks

Solution: Enhanced measures for staff breaks

1. Dining Pods

- Dining pods were designed to:

i. Adhere to safe distancing measures and Infection Control guidelines.

ii. Provide a more comfortable and private dining area.

iii. Provide sufficient capacity to support all the four wards on each level[1].

iv. Prevent aerosol transmission via airflow directional control and dilution[2] *(The pods were placed directly below the ceiling fan, so that the downdraft from the fan will dilute any aerosolised particles, redirect their movement, and prevent them from spreading. It also accelerates their decay rate).*

- The design principles of the dining pods were based on human-centric innovation (Figure 13).

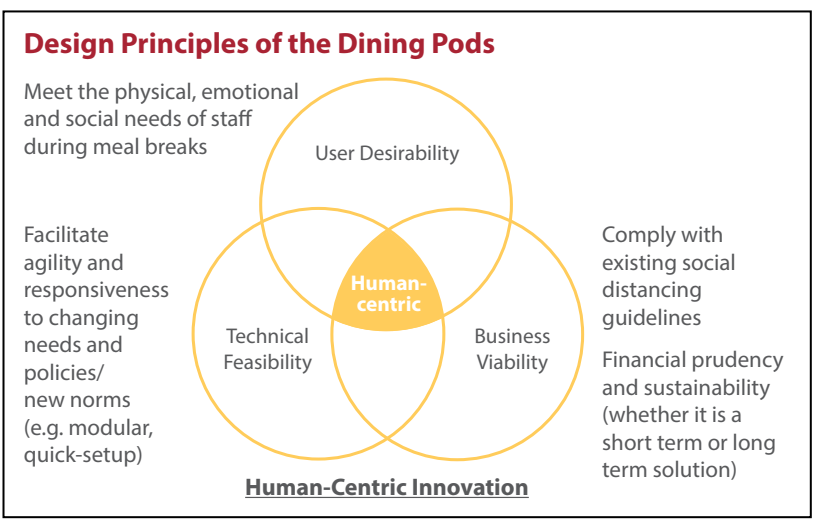


Figure 13: Design principles of the dining pods

[1] The dining pods were deployed to seven levels of the main inpatient wards (levels 5, 7, 8, 9, 10, 11, 12). Due to the high utility of the pods, they were later deployed to the rest areas and Seminar Room as well.

[2] Together with Infection Control, the Nursing and Facilities Teams conducted an aerosol simulation test using smoke and humidifiers. The test showed that the dining pod set-up is effective in preventing transmissions via airflow directional control.

- Design specifications and location considerations of dining pods (Figures 14 and 15):
  - Partitions of 1.8 metres tall and separated pod entrances were used to ensure staff safety. The height, coupled with the offset entrances, helps to prevent aerosol generated by one dining pod user to reach the adjacent user. In addition, the offset entrances also help minimise staff contact and facilitate natural ventilation.
  - Sufficient space is allocated for the pods to ensure staff can have their meals comfortably while not obstructing traffic.
  - The pods were made from materials that could be easily wiped down during Infection Control (e.g. PE canvas, panelled partitions etc.).
  - Two sets of pods were placed at each main ward lobby on eight floors, accommodating as many as 64 staff.

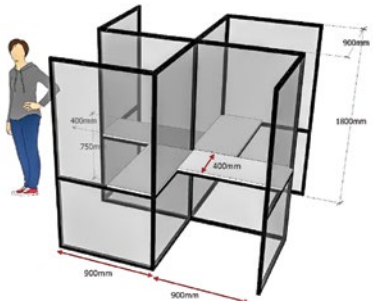


Figure 14: Dimensions of dining pods

Figure 15: Dining pods placed at the main ward lobby

2. Ventilation Enhancement

- One ventilation enhancement air extractor fan was retrofitted in each inpatient ward's staff pantry, to reduce disease transmission risks.
- The air extractor fan replaces the air within the pantry at least six times an hour. This means that any viral particles exhaled by an individual can be purged away in about ten minutes, instead of lingering within the pantry and infecting other occupants.

Benefits/Results

- The innovative solutions ensured that staff safety was taken care of and that safe distancing measures and Infection Control guidelines were adhered to, especially during their breaks.
- Staff provided positive reviews about the benefits of these enhanced measures on their well-being. The dining pods at Level 11 were subsequently innovated beyond its original intent and repurposed to function as staff PPE stations.

Figure 16: Dining pods repurposed as staff PPE doffing stations at Ward Level 11

PROJECT 6

DEVELOPMENT OF SURGICAL SUCTION ADAPTOR

Background

Laparoscopy is a surgical procedure used to examine the organs inside the abdomen. The procedure is aerosol-generating and poses a potential health risk to healthcare professionals if the aerosols are not well-contained during the operation.

Problem

- Staff were concerned about possible transmissions amidst the COVID-19 pandemic.
- While smoke evacuators and virus filters can help to reduce risk of transmission during laparoscopy, the additional costs due to supply disruptions might not make them a viable solution.

Figure 17: HME filter adaptor developed to reduce aerosol transmission

Solution: Developing a surgical suction adapter

- A Heat Moisture Exchanger (HME) filter adaptor was developed to ensure safety during aerosol-generating procedures while maintaining cost-effectiveness (Figure 17).
- It was designed to:
  i. Reduce aerosol transmission and contamination risks.
  ii. Retrofit onto the existing mobile surgical suction system (Figure 18).
- The adaptor was 3D-printed and implemented in surgical procedures.

3D printer-adapted HME filter

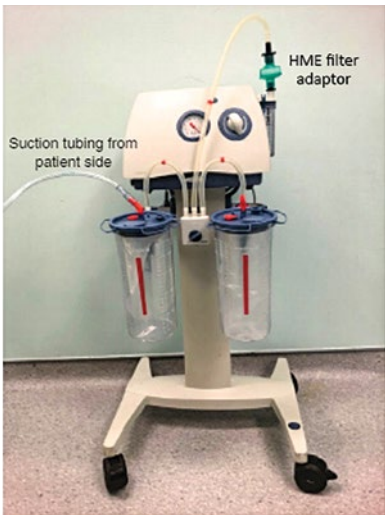


Figure 18: HME filter adaptor retrofitted onto existing mobile suction system

Benefits/Results

- Staff continue to be protected even if compatible virus filters are unavailable.
- Costs were saved as expensive smoke evacuators and virus filters can now be replaced with the HME filter adaptors that are made in-house.

PROJECT 7

SAVE AND SAFE INNOVATIVE RETROFITTING OF MULTI-SHELVED TROLLEYS

Background

Food services in the hospital involve the use of Multi-Shelved Trolleys (MSTs) to transport multiple Gastronorm (GN) pans of prepared food from one station to another for chilling, heating, or freezing processes. Heavy usage has caused the MSTs' side frames to expand by about 50mm, resulting in frequent work safety issues such as load dislodge or shake-off from shelves.

Problem

- Replacement of MSTs come at a high cost.
- With inadequate MSTs, staff resorted to unsafe and unproductive practices such as:
  i. Manually transferring loaded GN pans to avoid the use of unsafe MSTs.
  ii. Transferring only partially loaded instead of fully loaded GN pans to reduce holding loads on unsafe MSTs.
  iii. Inconsistent compliance regarding safety interlocking guards on MSTs.

Solution: Retrofitting of MSTs to improve food service

- MSTs were retrofitted with steel rods to secure side frames and prevent expansion (Figure 19).

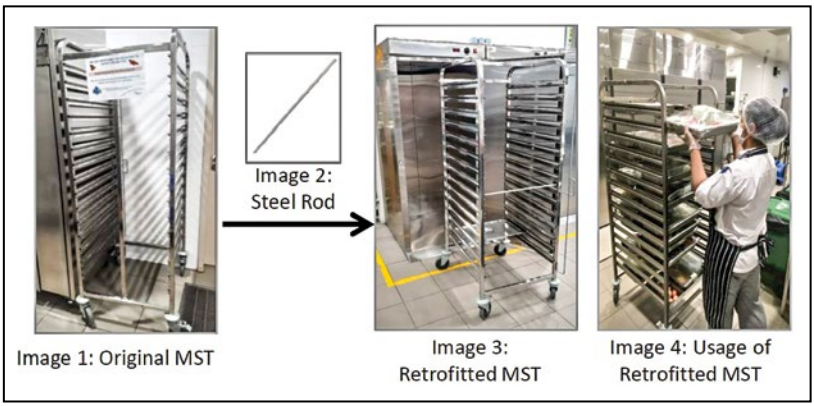


Figure 19: MSTs before and after being retrofitted with steel rods

- Reminder posters on safe MST usage were developed and disseminated (Figures 20 and 21).

Figure 20: Reminder poster on safe MST usage

Figure 21: Reminder poster pasted on food chillers and warmers

Benefits/Results

- Since the implementation of retrofitted MSTs, the number of reported incidents related to workplace safety had reduced to zero (Figure 22).

Figure 22: Reported number of incidents before and after MST retrofitting

- Food servicing processes became more efficient, due to reduction in utilisation of equipment like GN pans, combi-ovens, blast-chillers, and food warmers (Figure 23).

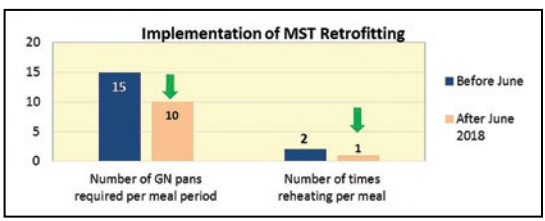


Figure 23: Number of GN pans required and number of times reheating is required has reduced

- The entire food preparation process took a shorter time to complete after the MSTs were retrofitted (Figure 24).

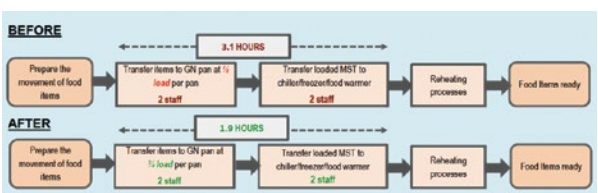


Figure 24: Duration of preparation process before and after retrofitting of MSTs

- With more efficient and quicker food servicing, staff expressed an increase in overall satisfaction and confidence.

PROJECT 8

ENHANCED MANOEUVRABILITY OF HILL-ROM BEDS

Background

In hospital operations, healthcare workers often move patients around via Hill-Rom beds, ArjoHuntleigh beds, and other hospital beds. Usually, two staff are required to move each Hill-Rom bed.

Problem

- Constant pushing around of beds can cause musculoskeletal issues such as back pain.
- With two staff per bed needed, significant nursing resources were usually allocated to push the beds around and could be better allocated towards attend to other matters such as critical cases.

Solution: Enhance manoeuvrability of Hill-Rom beds for greater productivity

- "Robot" beds which can be pushed by just one worker instead of two were implemented (Figure 25).
- The beds come with a motor to generate power and an intelligent system that can sense the amount of strength being used to push the bed, the speed it is moving at, and the gradient of the ground. It then adjusts the amount of power used to maintain a safe and regulated speed.

Figure 25: Nurse pushing the new "robot" bed[3]

Benefits/Results

- With less risk of musculoskeletal injuries, the beds were safer for staff to push. Staff suffered less risk of strain, thus improving their health and satisfaction levels.
- As less manpower is needed, resources are better optimised to handle critical cases instead, improving the quality of healthcare delivered to patients.
- The newly upgraded bed replaced the old one and no additional resources were needed for maintenance.
- In total, about 76 man hours were saved each month.

[3] Photo was taken before the onset of COVID-19.

PROJECT 9

ONE-MAN OPERATED EVO MOVERS AND ARJO BEDS

Background

In hospital operations, healthcare workers often move patients around via their beds. Usually, two staff are required to move a patient from one place to another, or transfer a patient to another bed. Patients may also need to be transferred to and from weighing hoists during the moving process.

Problem

- Constant pushing around of beds and lifting of patients can cause musculoskeletal issues such as back pain.
- With two staff per bed needed, significant nursing resources were usually allocated to move patients around and could be better allocated to other functions.

Solutions: Adoption of one-man operated devices

1. The Evo mover (Figure 26)

- Adopted to transfer patients more efficiently as only one worker is needed.
- The Evo mover enables staff to adopt a less strenuous movement posture.

Figure 26: Evo mover for transfer of patients

2. The Arjo 9000x plus bed (Figure 27)

- The new Arjo 9000x plus bed comes with a motorised fifth wheel that alleviates the bed weight and reduces effort required from staff to move the bed.
- It includes the IndiGo Intuitive Drive assist function which reacts to the force applied by the user to give progressive speed assistance of up five kilometres per hour.
- A built-in weighing scale is incorporated to reduce the need for staff to transfer patients to and from weighing hoists.
- The bed also has an Auto Compensation function that allows up to a maximum of 100kg to be added to or removed from the bed, without affecting the indicated patient weight.

Figure 27: The Arjo 9000x plus bed

Benefits/Results

- These devices help to mitigate occupational health risks associated with the moving of patients, such as back and muscle strains.
- They also reduce the number of staff needed so that manpower can be better optimised.
- With a more efficient transportation and transfer system, the time taken to move patients around is also reduced, resulting in increased efficiency.

PROJECT 10
TELE-HEALTH SERVICES

Background/Problem

Although tele-health services have been offered as an option to patients since 2005, healthcare services were still mostly delivered through face-to-face consultations during pre-COVID times. This results in high patient loads daily at healthcare institutions.

Problem

- During the onset of COVID-19, safe distancing measures were introduced across the nation. Due to high patient loads at healthcare institutions, implementing safe distancing measures while ensuring the efficient delivery of healthcare services posed a challenge.

Solution: Expansion of tele-health services

- A comprehensive suite of tele-health services was implemented during the COVID-19 Circuit Breaker months across polyclinics and healthcare provider groups, to allow patients to receive clinical care for chronic conditions while not compromising on the quality of care provided.
- The current patient consultation flow was redesigned for tele-health services. The new process included registration of the patient, queue management, access to the video-consultation platform, and provision of home medication delivery services (Figure 28).

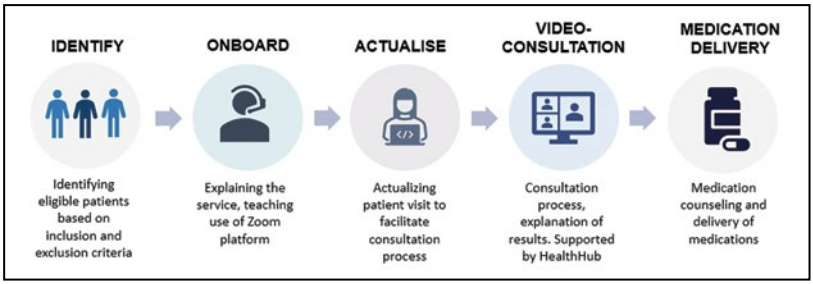
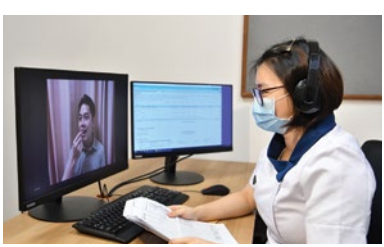


Figure 28: Process of video consultation

- Technological innovation was used to ensure efficiency of tele-health services:
  i. Automated patient lists were generated using data from the business intelligence system with validated criteria, replacing the need for doctors to review medical records for patient eligibility.
  ii. An internet-based platform was adopted for patients to arrange their medication delivery date, which reduced post-teleconsultation phone calls, enabling pharmacy staff to focus on medication counselling.

- A wide variety of tele-health services was incorporated, including video consultation with doctors, tele-direct observed therapy, tele-physiotherapy, tele-psychology, and tele-dietetics (Figure 29).

Video Consultations (with doctors)



Tele-Direct Observed Therapy

Tele-Physiotherapy

Tele-Dietetics

Figure 29: The different types of tele-health services

Benefits/Results

- As of February 2022, more than 250,000 tele-consultation sessions have been conducted for all tele-health services.
- Tele-health services saved about 65,000 physical clinic visits in total during the Circuit Breaker and Heightened Alert Phase Two. Based on a patient experience survey, patients enjoyed greater levels of satisfaction and empowerment (Figure 30)[4].

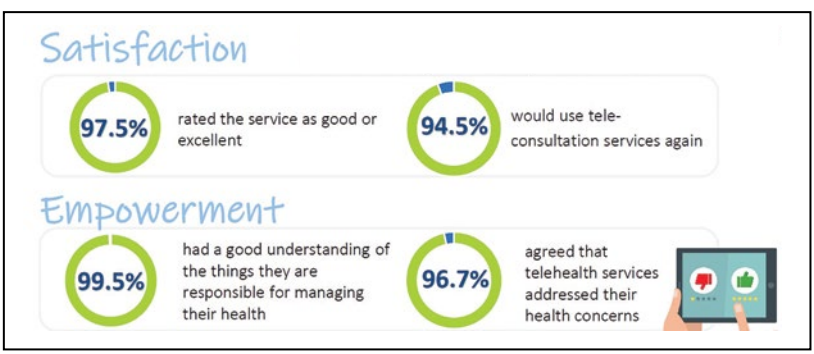


Figure 30: Satisfaction and empowerment ratings by patients

- Looking beyond the pandemic, tele-health will continue to complement in-person care as part of the routine care for patients with chronic conditions.

[4] A patient experience survey was conducted with 844 participants within one week after they received a tele-consultation.

PROJECT 11

REDUCTION OF MANUAL PACKING ERRORS AT THE PHARMACY

Background

Packing of medication is one of the main processes in the medication supply chain. Undetected errors can result in wrong dispensing of medication and harm to patients.

Problem

- The Outpatient Pharmacy at the institution keeps around 1,200 drug line items. Many of these drugs are similar in names and appearance.
- To avoid packing errors, an automated packing system was implemented. However, around 20% of packing still falls out of automation and needs to be packed manually.
- For the manually-packed drugs, each drug line item is assigned a drug bin with a bin code and staff are to pack them by the bin codes. However, there was still a packing error rate of 1.7 per 1,000 items[5].

[5] The error rate was derived from data collected between 15 September 2015 to 16 March 2016.

Solutions: Redesigning workflow for manual packing

- The Clinical Practice Improvement Programme was adopted, with some design thinking elements for workflow redesign (Figure 31).

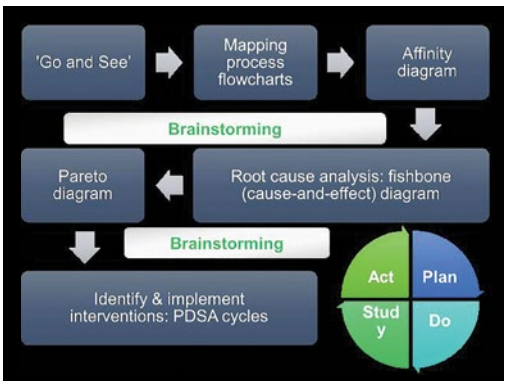


Figure 31: Clinical Practice Improvement Programme

- Three interventions, each addressing a different issue (Figure 32), were implemented in phases to allow time to conduct Plan, Do, Study, Act (PDSA)s.

Intervention 1

Issue 1

Lack of procedure to identify loose return drugs

New drug return procedure introduced:

1. Staff to sort loose return drugs into Ziploc bags
2. Staff to indicate bin codes on Ziploc bag containing return drugs
3. At the drug return bin, drugs are categorised by shelf locations, which are represented by bin codes

Intervention 2

Issue 2

Inappropriate label format

Reformatting of labels:

1. Bin code shifted to the left to accommodate the natural reading order
2. Font size is enlarged for better visibility
3. Packing errors were also shared with staff to increase awareness

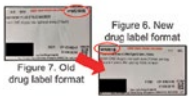


Figure 8. New bin label format

Figure 9. Old bin label format

Intervention 3

Issue 3

Lack of standardised packing procedure

Improving the manual packing procedure:

1. Remove unnecessary waste steps and standardise the process
2. Revise manual packing working instructions
3. Revamp manual packing training materials including workflow, map of drug shelves and packing protocol

Figure 32: Interventions implemented for redesigning of the packing workflow

Benefits/Results

- Packing errors were reduced from 1.7 to 0.6 per 1,000 line items, increasing patients' safety.
- About S$4,767 per year was also saved. For example, treatment costs to treat adverse drug events caused by packing errors were saved due to the error reduction.
- 374 manhours were saved per year in identifying and sorting returned drugs into individual shelves. This also reduced stress in the work environment.
- With reduced patient complaints, staff satisfaction and morale improved as well.

Acknowledgement

The WSH Council would like to take this opportunity to thank all healthcare institutions who have shared their innovative projects in making this useful publication possible.

Published in July 2022 by the Workplace Safety and Health Council.

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