ORIGINAL ARTICLE

Risk Evaluation on Security Personnel Managing Illegal Detainees in a Makeshift Covid-19 Low Risk Quarantine and Treatment Centre

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ABSTRACT

INTRODUCTION: The Covid-19 pandemic situation in Malaysia has resulted in a whole country approach where a newly makeshift low risk Covid-19 treatment centre was built to house all Covid-19 positive illegal immigrants. In view of the desperate situation the illegal detainees were in due to the high risk of violence and escape, this saw efforts of multiagency coordination working alongside healthcare personnel in managing such patients and situation. This study was conducted to assess the risk based on the hazard and likelihood, that was used in evaluating the prevention and control measures adopted to maintain safety and security issues for all security personnel. **MATERIALS AND METHODS**: A semi-quantitative, integrated type of hazard identification, risk assessment and risk control approach were used that incorporated risk rating and severity rating to cover four elements, which were people, property, environment, and reputation. Total scores range from 1 to 25 and was colour-coded categorized into low, medium and high risk. The assessment was done over two weeks in early June 2020. **RESULTS**: Four types of occupational and security hazards were identified namely physical, biological, psychological and ergonomics hazards. Physical hazards with possible violence and riot scored the highest risk whilst ergonomic issues had the lowest rating. This evaluation serves as a good planning tool in optimizing the risk mitigation measures among security personnel working in a biological hazardous environment through a solid multi-agency collaborative effort. **CONCLUSION**: With the fluidity of the Covid-19 pandemic, periodical risk evaluation is recommended to meet dynamic changes such as frontliner resources, the number of patients in ward and the evolution of the Covid-19 infection itself to maintain safety and security for all.

Keywords
HIRARC, security, illegal detainee, COVID-19

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INTRODUCTION

Epidemiological data has shown that Covid-19 is a highly transmissible disease, and the risk amplifies with certain conditions such as those of older age, having co-morbid medical condition, living in close proximity, poor hygiene and others. Among these, living in confined spaces such as detention centre that caters illegal detainees is without exception as it has issues with overcrowding and personal hygiene.[1,2] The standard procedure for managing this type of offenders who entered the country without valid documentation was to send them to detention centre for legal processing and eventually deport back to the country of origin. During pandemic, this normal procedure was halted due to the Movement Control Order (MCO) that prohibited international travelling. This resulted in a longer detention and deportation process that made them vulnerable to become potential epicentre for Covid-19 cluster outbreak of which Malaysia experienced.

The decision for a nation strategy on containment and mitigation were decided based on scientific evidence and enforced order of the Prevention and Control of Infectious Diseases Act 1988 and the Police Act 1967.[3-5] This step was significant, as the situation in China had proven that by isolating the infected group of individuals and practicing social distancing, the pandemic managed to be contained.[6] With collaborative involvement of multi-agencies, an unprecedented makeshift treatment facility which took only four days to setup, where the team transformed the existing Malaysia Agro Exposition Park Serdang (MAEPS) exhibition facility into a low risk quarantine and treatment centre known as PKRC *(Pusat Kuarantin dan Rawatan Covid-19 Berisiko Rendah)*. In the initial phase, PKRC received Malaysians and legal foreign nationality Covid-19 positive patients. However, on 21st May 2020, the country had a surge of cases among illegal foreigners in detention centre where the role of PKRC was changed overnight through 180-degree transformation in terms of human resource, structure and function. While medical care for the detainees remained the same as per national clinical guideline, concerns on the security and safety aspect of handling these group of people with offence records emerged and needed to be dealt with according to enforcement procedures.[7] The concern was even greater when at one period, PKRC had mass admission of over 400 detainees with Covid-19. Risk from violence and aggression with possible hostage situation, self-inflict injury were possible security related incidences where contingency measures to respond promptly were critical.[8]

Other factors both from detainee and staff perspectives such as sociodemographic, types of offence, potential risky behaviour, staffing and job description for each personnel, and environmental factors that could influence the threat were also brainstormed. To address all these concerns, a risk assessment was conducted systematically using the risk management approach in evaluating the risks associated with organizational activities and systems . The use of hazard identification, risk assessment and risk control (HIRARC) had become fundamental for risk management which complied with the Occupational Safety and Health Act 1994 general duties of employers to ensure, so far as is practicable, the safety, health, and welfare at work of all their employees.[9] Therefore, this paper highlights the security related findings based on HIRARC evaluation in terms of its risk assessment and adequacy of control measures adopted in such centre.

MATERIALS AND METHODS

As a newly set up facility, one of the first task was to develop a standard operating procedure (SOP) that included a narrative explanation and a step-by-step instruction in the form of a flow chart that serves as a guide for performing the HIRARC evaluation. The purpose of establishing this SOP was to provide a process for the evaluation and management of workplace hazards and risks as well as to minimize the potential for injury, adverse health effects, or damage due to workplace incidents (Figure 1).

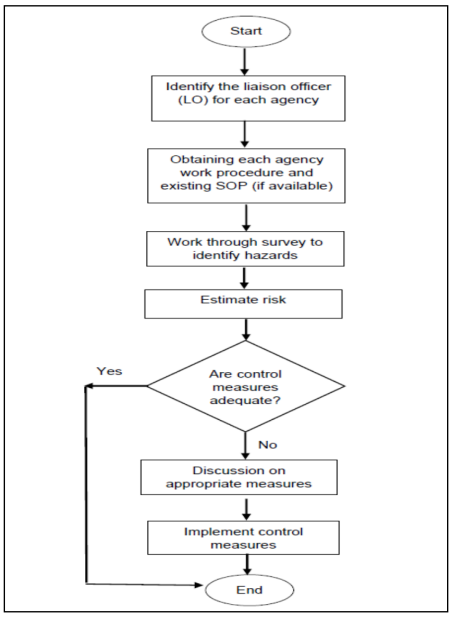

Figure: 1 Process flow for performing the HIRARC evaluation

The evaluation was done over a period of two weeks on seven enforcement and government agencies that provided security services at PKRC. Firstly, liaison officers of each agency were identified for access to their standard operating documents on security matters. Thereafter a walk-through inspection was done to observe on how documented operating procedures were translated into practice and whether the control measures had been implemented. This was followed by further discussion with the liaison officers on understanding the opted control measures.

Table 1: Risk Matrix for Hazard Identification, Risk Assessment and Risk Control (HIRARC) Evaluation based on PEAR Model

Consequences					Risk Rating				
					Likelihood				
Severity rating	P People	E Environ-ment	A Asset	R Reputation	1 Very unlikely (0-20%)	2 Likely (20-40%)	3 Possible (40-60%)	4 Probable (60-80%)	5 Highly Likely (80-100%)
1	Negligible/ No injury	No/slight effect	No/slight damage	No/slight impact	1	2	3	4	5
2	Minor/ First aid	Minor effect	Minor damage	Minor impact	2	4	6	8	10
3	Moderate/ Medical management	Local effect	Local damage	Considerable impact	3	6	9	12	15
4	Single fatality	Major effect	Major damage	Major national impact	4	8	12	16	20
5	Multiple fatality	Extensive effect	Extensive damage	Major international impact	5	10	15	20	25

1-6 (LOW RISK)	**TOLERABLE**- may be acceptable but review task to see if risk can be reduced further.
8-12 (MODERATE RISK)	**COMPULSORY IMPACT REDUCTION** – task should be undertaken with planned approach to control risks and applies temporary measures if required
15-25 (HIGH RISK)	**INTOLERABLE**- task must not proceed and **IMMEDIATE** actions with further control measures put in place to reduce risk control.

Additionally, assessment was done based on the facilities zoning area that was divided into three zones viz. red, yellow and green zones as per Figure 2. The zonings were decided based on the distance of exposure from Covid-19 positive patient, clinical/work activity and protective infrastructure that were in placed for example, glass shielding as a separator.

RESULT AND DISCUSSION

Table 2 summarized the findings based on types of hazard and its possible work activity involved where exposure from it could result in safety and security issues. Risk assessment was based on its description dan rating that uses colour coding to categorize the risk in considering the adequacy of risk control that had been implemented.

The management for Covid-19 especially among illegal detainee had opened a different perspective that goes beyond clinical management per se. In such scenario, depending on who sees what and how, there is always an argument on the complex balance of security needs between human rights and appropriate health care that need to be provided to these group of population.[12] One must remember that first and foremost, these detainees have an offence of having stayed in the country without legal documentation while some of them have additional violation such as criminal offences and have been convicted by the local court. As security is defined as a state where measures are taken to protect a territory, person, infrastructure, or organization against any possible threat, this falls under the purview of the nation sovereignty in terms of legal authority on the country and its population. On that note, under the European system, it has been stated that in emergency situations, authorities may require to take measures that normally diverge from the standard human rights protection.[13]

In standard practice, detainees in custody were given equal standard medical care, nonetheless doctor-patient

consultation should always be preceded with a risk assessment to ensure treatment could be given in a safe manner.[14] As such this paper concentrates on presenting security related issues in managing detainee patients. Overall issues that were identified can be broadly categorized into four types of hazards which are physical, biological, psychological and ergonomics hazards.

Table 2: HIRARC findings based on zone area type of hazard, risk assessment and risk control

No.	Type of Hazard & Hazard Identification	Risk Assessment (Row x Column)		Risk Control
1.	***Biological hazard*** Covid-19 infection from contact with detainee patient	• RZ – due to long hours & close contact	***High risk*** P→4x5=20 E→1x2=2 A→4x5=20 R→4x5=20	✓Hierarchy of control according to work zone- Full PPE usage. ✓Training of proper donning & doffing.
		• YZ & GZ – receiving infective detainee for admission (minimal close contact)	***Moderate risk*** P→3x3=9 E→ 1x2=2 A→3x3=9 R→3x3=9	✓Partial PPE usage- Eye goggle or face shield, N95, plastic apron, glove.
		• GZ – no close contact	***Low risk*** P→2x2=4 E→ 1x2=2 A→2x2=4 R→2x2=4	✓Minimum PPE usage such as surgical 3-ply mask.
2.	***Physical hazard*** bodily injury from potential riot/hostage/strike incident	✓RZ, YZ and GZ– multiple level of defence with possible direct contact with detainee patient	***High risk*** P→4x5=20 E→ 1x2=2 A→4x5=20 R→5x5=25	✓Standard Operating Procedures (SOP) of agencies involved & Full PPE usage. ✓Training of proper donning & doffing. ✓Regular drill/simulation to test activation of defence of each agency.
3.	***Psychological hazard*** Workload in terms of type & number of detainees, frequency & duration of work, number of staffing	• RZ – due to close contact, frequency, duration working hours	***High risk*** P→4x5=20 E→ 1x1=1 A→4x5=20 R→3x5=15	✓Mental Health Psycho-Spiritual Support (MHPSS) including Psychological First (PFA) -performed before, during and exit deployment. ✓Workload based on available number of staffing, shift frequency & duration, adequate break time (translated into each agency's SOP).
		• YZ – minimal close contact, frequency, duration working hours	***Moderate risk*** P→3x4=12 E→ 3x1=3 A→3x4=12 R→3x4=12	
		• GZ – no close contact, frequency, duration working hours	***Low risk*** P→3x2=6 E→ 1x2=2 A→3x2=6 R→3x2=6	
4.	***Ergonomics hazard*** Activity related to food aggregation/distribution	• RZ & YZ: Manual handling and repetitive motion Technical issue such as internet connectivity loss that result in manual handling (weight to be pushed= 15-20kg per episode episode)	***Low risk*** P→2x2=4 E→ 1x2=2 A→2x2=4 R→2x2=4	✓Use of artificial intelligence in the form of robotic device. ✓Technical training on device with regular support from robotic supplier.

* P:People; E: Environment; A:Asset; R:Reputation; RZ: Red Zone, YZ: Yellow Zone; GZ: Green Zone; PPE: Personal Protective Equipment; MHPSS: Mental Health Psycho-Spiritual Support; PFA: Psychological First; SOP: Standard Operating Procedure

PHYSICAL HAZARD

With the evolving challenge in managing pandemic situation, reports had commented that detention centres and their system lack medical access which may affect optimum provision of good healthcare. Moreover, it may be difficult to comply with local health guidelines such as practicing frequent hand washing and physical distancing, both due to access and supplies.[2,15] It is especially dire for people in such facilities, given that exposure to the virus can lead to relatively quick and life-threatening consequences. This is one of the reasons why PKRC was transformed to provide the same medical care for any human being. However, with such new and unfamiliar infrastructure facility, other relevant risk or threats related to aggression, self-harm, and opportunity for escape route as detainee perceived security control was more laxed in such healthcare facility. Concurring to these reasonings were one rational why evaluation found that physical hazard gained the highest total risk rating of 25 for people, asset, and reputation. It was also the main concern for all security related agencies with the risk of bodily injury from handling potential riot, hostage, or strike incidents. The countermeasure adopted the Defence in Depth (DiD) concept where series of defensive mechanism were layered to protect what should be protected and in the case of PKRC, it is the people and asset. When implemented correctly and maintained properly, DiD led to a reasonable level of security. Therefore, mitigation that was put in place by collaboration with various agencies included a four-level security which were:

- First level – This was implemented in the red and yellow zones where immigration officers had the authority to guard this group of people through the function of a special tactical team that act to contain immediate unwanted incident and to bring other staff out to safety.
- Second level- A 24-hour standby police team as well as the use of approximately 2km length of concertina wire that surrounded the facility in enhancing reinforcement to the first line defence mechanism.
- Third level – Approximately 13 allotted control posts guarded by a combined team of police, military and RELA (People Volunteer Corp) that went on watch 24 hours daily, located outside the concertina perimeter.
- Fourth level - The last defence was in the form of regular on wheel patrol by both the police and security officers of the Agro park itself.

In addition, other mitigation included having repeated number of practical simulations for riot scenario as well as having ongoing medical related dry run that could lead to potential unwanted incident to occur. This simulation exercise was done at different shift and place to reflect the possibility of any unwanted event that could occur anytime and anywhere within the facility. This was also done to strengthen the command, control, and coordination among multiagency.

BIOLOGICAL HAZARD

Based on the whole operation, more than half (59.6%) of Covid-19 positive detainees had a clinical staging of categories 1 and 2.[16] The assessment was done based on zoning area of the facilities that was divided into three zones *viz* red, yellow and green zones as per Figure 2. For medical care, each cubicle ward (4 metre width, 12 metre length) housed 4 to a maximum of 6 patients with ample space clearance as well as necessities being provided for personal care and hygiene. The whole area had in total 36 cubicles with a total bed capacity for 216 patients. As part of preparedness should there be a surge of cases, the area can house up to another 34 beds to full maximum capacity of 250 beds. This subsequently translated to the type of personal protective equipment (PPE) that is needed to be worn when working in each zone.

The highest score rating was found to be 20 and as part of risk minimisation, those working in the red zone that dealt directly with detainee had higher risk and were mandated to wear full PPE which include Tyvek suit, N95 mask with face shield, plastic apron, shoe cover and double gloving. However, PPE has its own risk if not properly worn especially during doffing post shift. Therefore, the role of the infection control team in monitoring PPE procedure such as proper donning and doffing techniques were assessed periodically and on spot-check basis. At the same time, PKRC also embarked on a health surveillance monitoring where those frontliners irrespective of

agencies were randomly chosen to undergo swab testing for Covid-19 to assess for possible workplace exposure. Approximately 520 of them (representing nearly 50% of total staffing) were swabbed and all results reported were negative.

Figure 2. PKRC zoning area in a hall that was converted into Covid-19 ward according to three zones *viz* red: high risk, yellow: moderate risk, and green: low risk zones.

From another positive angle, this evaluation was also an approach to portray collaborative arrangement between agencies that facilitated better preparedness in managing security related issues so as not to disrupt health-care delivery within centre that catered for this vulnerable group.[17] Other danger that may arise was from the existence of wildlife animals. This was not surprising as PKRC sat within a 130 hectares agritourism park belonging to the Malaysian Agricultural Research and Development Institute. One reported incident where a frontliner while on his round duty, found a phyton in a manhole. This was due to dry and hot season where animal tend to seek hiding in confined spaces to reduce heat exposure. Sealing all possible manhole was done and thereafter, no incident was reported.

PSYCHOLOGICAL HAZARD

As this is a novel virus, the management of patient without a doubt created a lot of anxiety, fear and stress coupled with the amount of workload and issues related to the new norm working environment. On the other hand, other psychological issues identified were the feeling of boredom due to certain monotonous activity such as guarding at the control post. This psychological spectrum was influenced by the role of different agencies and the different work zone areas where higher scores were found from those working in the red zone with a score of 20 while those working in the green zone such as guarding at control post had lower rating score of 6.

One study that examined psychological risk experienced by 470 health care workers in Singapore during the Covid-19 outbreak between medically and non–medically trained hospital personnel (clerical staff, administrator and maintenance workers) found that 68 participants (14.5%) had anxiety, while depression and stress were 42 (8.9%) respectively. Their findings were lower from published literature of previous disease outbreaks and this could be influenced by past Severe Acute Respiratory Syndrome (SARS) experience that improved mental preparedness and enhanced a more definitive infection control measure.[18] With this known knowledge, PKRC set up a special unit comprising of psychiatrist, psychologist, counsellor and religious experts from Ministry of Health and The Military Religious Corps to cater the mental health psychospiritual support (MHPSS) to all staff in need. As part of routine services, pre-deployment briefing and post-deployment debriefing were given to all staff who worked at PKRC. For the detained patients, a study postulated that this pandemic could adversely affect the mental health of prisoners and further increase rates of self-harm.[19] However, during the facility's entire operation, no major violence occurred and care was given in a peaceful manner. This may be explained by the fact that although numerous negative psychological consequences were associated with confinement and social isolation, spending time in this makeshift facility has probably reduced prisoners' exposure to negative and intimidating behaviours, such as bullying, threats and violence from other inmates. Some perceived this as a privilege of having a conducive therapeutic environment, thus increasing their overall sense of safety and security.[20]

ERGONOMICS HAZARD

Other potential risk identified was related to food distribution and serving to patients due to its regular repetitive motion to distribute 3 meals a day to 400 existing detainee patients in a period of 45 minutes for

each meal session. This activity must be completed by 5 staff per shift where 2 staff worked in the yellow zone while the remaining 3 worked in the red zone. Through observation, packed foods were brought in the ward using different methods from the green to yellow zone until the entrance of red zone, food was transferred using manual procedure with the aid of trolley. Thereafter from red zone, food was distributed directly to patients using robotic equipment. This modification that used artificial intelligence was a smart move in eliminating manual handling and minimizing repetitive motion. As a result, this rendered ergonomic risk as low with a rating score of only 4. Moreover, the use of this locally developed robotic technologies in distributing the food helped mitigate the risk of infection due to close proximity.

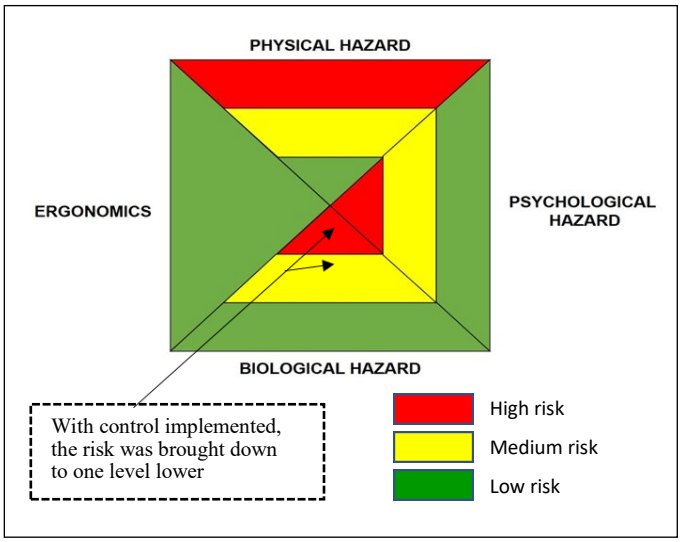

Figure 3: Infographic illustration on the overall risk matrices on security assessment at the PKRC

Based on the whole assessment, an infographic was drawn to represent the combination of the overall HIRARC findings that not only depict in terms of risk level but in explaining the extend of risk based on width of area (Figure 3). Moreover, it used the common colour coding of risk where red represent high risk while yellow and green colour implied medium and low risks respectively. It was found that physical hazard had all three-colour coding risk levels with high risk representing the biggest perimeter area due to possibility of physical injury from managing illegal detainees. This became a constant priority issue and was the relevant reason for the DiD placement. Vice versa, biological risk was given low risk represented by the widest perimeter area as the prevention and control measures adopted was able to minimize the risk of cross infection. However, there was still possibility of high and medium risks especially in the red zone but with good control measures such as the use of PPE and distancing practice were able to bring down the risk lower. Similarly, ergonomic hazard portrayed low risk. Generally, the current assumed prevention and control methods used had facilitated the government and public health practitioners in tackling safety and security issues among all staff. At the same time, involvement through multi-agency approach had lessen the work burden and did not overwhelm the overall healthcare services.[21] Even though the semi-quantitative risk rating was done during a period that had certain preparedness level, risk remain uncertain which needed revisiting in terms of frontliner manpower strength, the number of existing detainee patients in ward and the evolution of the Covid-19 infection itself. In summary, this type of infographic presentation served as a check and balance approach for assessing the prevention and control measures in place with mapping out existing hazards and risk level and comparing the dynamic in changes of the risk through snapshot of times.

CONCLUSION

This novel Covid-19 pandemic continues to create uncertain situation in terms of its magnitude, spreads, and the heterogeneity of infected people. There is a need for a counterbalance strategy in managing security and health related issues. This integrated HIRARC methodology provided additional value in assessing multiple consequences involving people, asset, environment, and reputation that showed the government's effort in providing access and available necessary health care with equality.

ABBREVIATION

Covid-19: Coronavirus Disease 2019; PKRC: *Pusat Kuarantin dan Rawatan Covid-19 Berisiko Rendah*; HIRARC: Hazard Identification Risk Assessment and Risk Control; PEAR: People, Environment, Asset, Reputation; SOP: Standard Operating Procedure; DiD: Defence in Depth; OSHA: Occupational Safety and Health Act 1994;

MHPSS: Mental Health Psycho-Spiritual Support; PFA: Psychological First Aids; RELA: People Volunteer Corp; PPE: Personal Protective Equipment.

DECLARATION

This is to declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.

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ETHICAL APPROVAL

This research did not involve the use of human data of the detainees but on the situational assessment in terms of safety and security set up where approval was gained from the Deputy Director for Safety and Security of the PRKC Centre to conduct and publish the research findings. Other data used was from open accessed document made available through official website and regular press conference announcement through mass media.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

All data generated or analysed during this study are included in this published article as per explained in methodology.

COMPETING INTEREST

The authors declare no conflict of interest.

FUNDING

The research received no external funding.

AUTHORS CONTRIBUTION

AAR, MAM and MFR designed the research. EMA, WMHWM, FRM and MAASM validated the methodology. All authors participated in data collection. AAR and MFR drafted the manuscript. All authors read and approved the final manuscript.

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