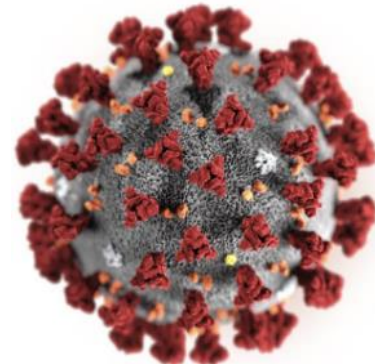


# QUALITY ASSURANCE PROJECT

## Improving Appropriate Outpatient Rehabilitation Management of Moderately Severe COVID-19 Survivors in Hospital Sungai Buloh



Kementerian Kesihatan Malaysia  
Hospital Sungai Buloh



# MULTI-DISCIPLINARY MEMBERS



Clinical Rehabilitation  
Medicine, Nursing,  
Occupational Therapy  
& Physiotherapy  
Units.

Dr Akmal Hafizah Zamli, Dr Nur Arisah Misnan, Dr Raiha Hasni Mohd Hanaffi, Dr Pamela Chia Shook Yen, Dr Izuan Effendi Abdul Wahab, Dr Amitha Na Shern Lhung, Dr Fatnin Faqiha Azmi Mahmud, Dr Tan Bee Cher, Dr Dayang Nur Atheerah Kamaruddin, Dr Norfaezah Kamaluddin, Dr Raagini Letchumanan, Dr Muhammad Shafaat So'af, Mr Muhd Zulkifli Adnan, Ms Nur Diana Absar, Ms Zarina Zakaria.

# SELECTION OF OPPORTUNITY FOR IMPROVEMENT

# PROBLEM IDENTIFICATION & LIST OF OPPORTUNITY FOR IMPROVEMENT

No	Problem
1.	Delayed fitting of spinal orthosis in patients with Idiopathic Adolescent Scoliosis (AIS) in Rehabilitation Clinic.
2.	Poor healing of plantar diabetic foot ulcer in ambulatory patients under Rehabilitation Clinic follow up.
3.	Incomplete lower extremity prosthesis prescriptions, fitting and check-out for amputee patients at Rehabilitation Clinic.
4.	Low percentage of appropriate outpatient rehabilitation management of moderately severe COVID-19 survivors in Hospital Sungai Buloh



# PROBLEM PRIORITIZATION - SMART CRITERIA

No	Problem	S	M	A	R	T	Total
1.	Delayed fitting of spinal orthosis in patients with Idiopathic Adolescent Scoliosis (AIS) in Rehabilitation Clinic.	40	41	45	32	43	201
2.	Poor healing of plantar diabetic foot ulcer in ambulatory patients under Rehabilitation Clinic follow up.	45	37	45	26	31	184
3.	Incomplete lower extremity prosthesis prescriptions, fitting and check-out for amputee patients at Rehabilitation Clinic.	30	45	45	38	37	195
4.	<b>Low percentage of appropriate outpatient rehabilitation management of moderately severe COVID-19 survivors in Hospital Sungai Buloh</b>	<b>45</b>	<b>45</b>	<b>45</b>	<b>38</b>	<b>37</b>	<b>210</b>

Weightage: 1 = Low; 2= Medium; 3= High; No of group members = 15; Technique = Group voting

# PROBLEM VERIFICATION

No	Problem	Verification
1.	Delayed fitting of spinal orthosis in patients with Idiopathic Adolescent Scoliosis (AIS) in Rehabilitation Clinic.	45.9% of patients with patients with Idiopathic Adolescent Scoliosis (AIS) were fitted with spinal orthosis within 6 months.
2.	Poor healing of plantar diabetic foot ulcer in ambulatory patients under Rehabilitation Clinic follow up.	53.5% of patients with diabetic plantar wound healing has not achieved target wound healing following 12 weeks of management.
3.	Incomplete lower extremity prosthesis prescriptions, casting, fitting and check-out for amputee patients at Rehabilitation Clinic.	41.2% of amputee patients completed lower extremity prosthesis prescriptions, casting, fitting and check-out within 6 months.
4.	Low percentage of appropriate outpatient rehabilitation management of moderately severe COVID-19 survivors.	<b>16.3%</b> of moderately severe COVID-19 survivors were provided with appropriate outpatient rehabilitation management.

# RATIONALE FOR SELECTION OF PROBLEM

**Seriousness** Verification study involving referral of moderately severe COVID-19 survivors from July to December 2020 (n=165) , showed only **16.3% were provided with appropriate outpatient rehabilitation management.** This has affected their recovery process leading to **67.5% survivors continued to experience persistent symptoms** beyond 12 weeks duration known as Post COVID-19 Condition (Long COVID).

Figure 1: Outpatient Rehabilitation Referral

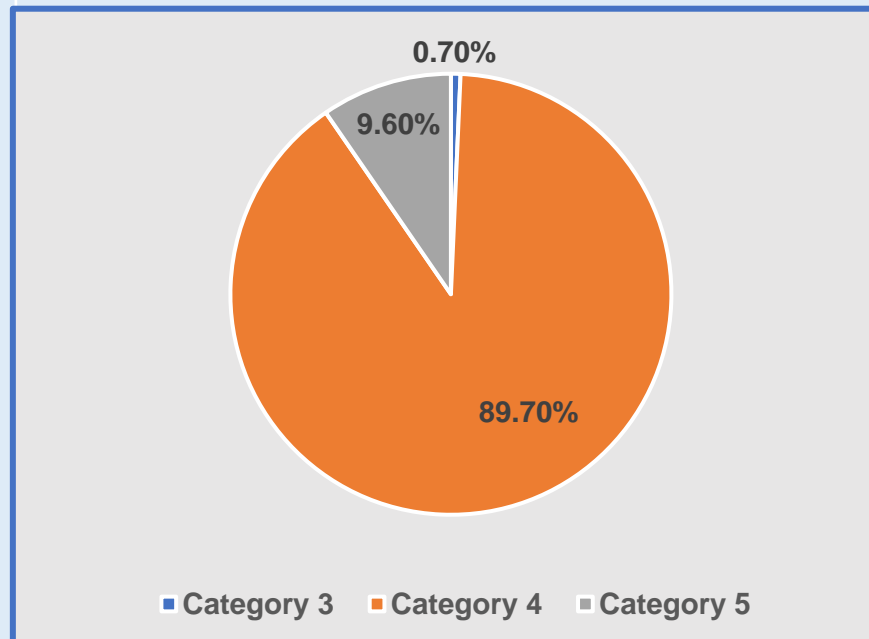
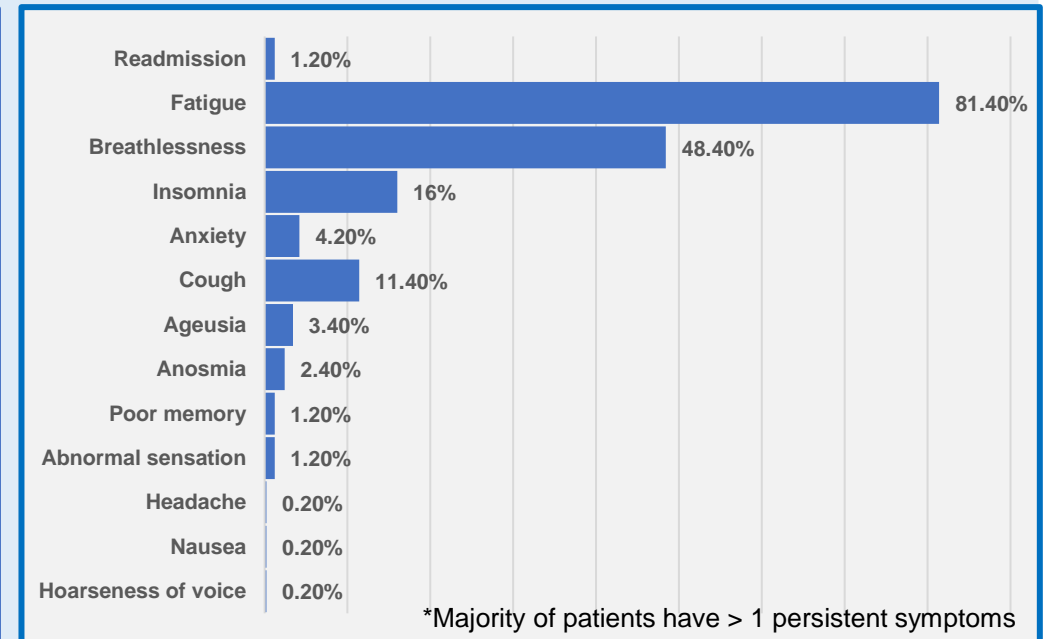


Figure 2: Spectrum of Persistent Symptoms



# RATIONALE FOR SELECTION OF PROBLEM

## Measurable

Data can be extracted from COVID-19 referral and e-His clinical entry documentation .

## Appropriateness

The WHO has regarded rehabilitation as an important component required for moderately severe COVID-19 survivors. Countries around the globe were urged to prioritize rehabilitation for management of medium and long-term consequences of COVID-19.

[illegible]

## Remediable

Appropriate outpatient rehabilitation management can be provided with structure and process related interventions.

## Timeliness

The project can be completed within the stipulated time frame.



# TERMS & DEFINITION :

## 1.MODERATELY SEVERE COVID-19 SURVIVORS

“Patients diagnosed with **Category 4 & 5 infection** based on the MOH Malaysia Clinical Staging of COVID-19 who survived the acute infection and discharged”.



**MINISTRY OF HEALTH  
MALAYSIA**

**Table 1: Clinical Staging of COVID-19**

Clinical Stage	Disease Severity
1	Asymptomatic
2	Symptomatic, No Pneumonia
3	Symptomatic, Pneumonia
4	Symptomatic, Pneumonia, Requiring supplemental oxygen*
5	Critically ill with or without other organ failures

*\*In patients who present with hypoxia, it is important to determine if the cause is due to COVID-19 pneumonia or other causes (e.g. bronchial asthma, fluid overload and heart failure). Hypoxia does not necessarily categorise the patients as category 4.*

# TERMS & DEFINITION :

## 2. REHABILITATION



“A set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment”

- WHO 26 Oct 2020



# TERMS & DEFINITION :

## 3. POST COVID-19 CONDITION (LONG COVID)



**Post COVID-19 Condition (PCC)** occurs in individuals with a history of probable or confirmed SARS-CoV-2 infection, usually **3 months** from the onset of COVID-19 with symptoms that last for **at least 2 months**, that **cannot be explained by an alternative diagnosis**. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others which generally have an **impact on everyday functioning**. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time.

A separate definition may be applicable for children.

# TERMS & DEFINITION :

## 4. APPROPRIATE OUTPATIENT REHABILITATION MANAGEMENT

### COVID-19: interim guidance on rehabilitation in the hospital and post-hospital phase from a European Respiratory Society- and American Thoracic Society-coordinated international task force

Martijn A. Spruit<sup>1,2,3,4</sup>, Anne E. Holland<sup>5,6,7</sup>, Sally J. Singh<sup>8,9,10</sup>, Thomy Tonia<sup>11</sup>, Kevin P. Wilson<sup>12</sup> and Thierry Troosters<sup>13,14</sup>

**Background:** Patients with coronavirus disease 2019 (COVID-19) or post-COVID-19 will probably have a need for rehabilitation during and directly after the hospitalisation. Data on safety and efficacy are lacking. Healthcare professionals cannot wait for published randomised controlled trials before they can start these rehabilitative interventions in daily clinical practice, as the number of post-COVID-19 patients increases rapidly. The Convergence of Opinion on Recommendations and Evidence process was used to make interim recommendations for rehabilitation in the hospital and post-hospital phases in COVID-19 and post-COVID-19 patients, respectively.

**Methods:** 93 experts were asked to fill out 13 multiple-choice questions. Agreement on directionality was tabulated for each question.  $\geq 70\%$  agreement on directionality was necessary to make consensus suggestions.

**Results:** 76 (82%) experts reached consensus on all questions based upon indirect evidence and clinical experience on the need for early rehabilitation during the hospital admission, the screening for treatable traits with rehabilitation in all patients at discharge and 6–8 weeks after discharge, and around the content of rehabilitation for these patients. It advocates for assessment of oxygen needs at discharge and more comprehensive assessment of rehabilitation needs, including physical as well as mental aspects 6–8 weeks after discharge. Based on the deficits identified, multidisciplinary rehabilitation should be offered with attention on skeletal muscle and functional as well as mental restoration.

**Conclusions:** This multinational task force recommends early, bedside rehabilitation for patients affected by severe COVID-19. The model of pulmonary rehabilitation may suit as a framework, particularly in a subset of patients with long-term respiratory consequences.

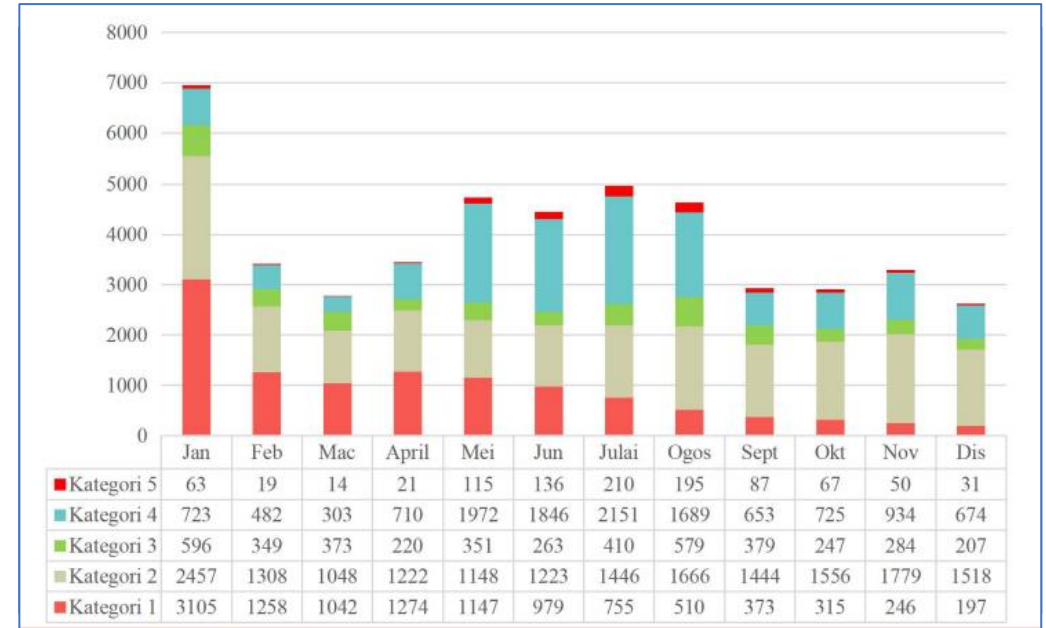
Reference: Spruit MA, Holland AE, Singh SJ, et al. COVID-19: interim guidance on rehabilitation in the hospital and post-hospital phase from a European Respiratory Society- and American Thoracic Society-coordinated international task force. Eur Respir J 2020; 56: 2002197 [https://doi.org/10.1183/13993003.02197-2020].

- ✓ **Screening** for post COVID-19 symptoms.
- ✓ Perform **physical evaluation** using **standardised outcome measure**.
- ✓ Perform **cognitive evaluation** using **standardised outcome measure**.
- ✓ Perform **psychological evaluation** using **standardised outcome measure**.
- ✓ Perform **functional evaluation** using **standardised outcome measure**.
- ✓ **Assess O<sub>2</sub> requirement** at rest and on exertion.
- ✓ Provide **patient education** and **resources**.
- ✓ Provide **personalised exercise / therapy** regime.
- ✓ **Symptomatic treatment, investigation and referral** as indicated



# BACKGROUND

- COVID-19 is a highly contagious disease that may potentially result in catastrophic health outcomes.
- In Malaysia, > 5 million infections and > 37 thousand mortalities have since been reported.
- Being the primary COVID-19 hospital on 10/3/2020 until it status changed to hybrid on 22/4/2022; HSgB has recorded > 92,874 acute admissions.
- Of these; 6,761 has been referred for outpatient rehabilitation management.



Acute COVID-19 admissions in HSgB Jan – Dec 2021 (N=47,144)



Outpatient COVID-19 rehabilitation referral Jan – Dec 2021 (N=6,498)

# LITERATURE REVIEW

- Female
- **Hospitalization**
- Length of hospitalization
- Requires mechanical ventilation
- Multiple co-morbidities
- Chronic lung disease
- Obesity

Hill et al. *BMC Public Health* (2023) 23:2103  
<https://doi.org/10.1186/s12889-023-16916-w>

BMC Public Health

## RESEARCH ARTICLE

## Open Access



### Risk factors associated with post-acute sequelae of SARS-CoV-2: an N3C and NIH RECOVER study

Elaine L. Hill<sup>1\*</sup>, Hemalkumar B. Mehta<sup>2\*</sup>, Suchetha Sharma<sup>3</sup>, Klint Mane<sup>4</sup>, Sharad Kumar Singh<sup>5</sup>, Catherine Xie<sup>6</sup>, Emily Cathey<sup>7</sup>, Johanna Loomba<sup>7</sup>, Seth Russell<sup>8</sup>, Heidi Spratt<sup>9</sup>, Peter E. DeWitt<sup>8</sup>, Nariman Ammar<sup>10</sup>, Charisse Madlock-Brown<sup>11</sup>, Donald Brown<sup>12</sup>, Julie A. McMurry<sup>13</sup>, Christopher G. Chute<sup>14</sup>, Melissa A. Haendel<sup>15</sup>, Richard Moffitt<sup>16</sup>, Emily R. Pfaff<sup>17</sup>, Tellen D. Bennett<sup>18</sup>, on behalf of the N3C Consortium and the RECOVER Consortium

#### Abstract

**Background** More than one-third of individuals experience post-acute sequelae of SARS-CoV-2 infection (PASC, which includes long-COVID). The objective is to identify risk factors associated with PASC/long-COVID diagnosis.

**Methods** This was a retrospective case-control study including 31 health systems in the United States from the National COVID Cohort Collaborative (N3C). 8,325 individuals with PASC (defined by the presence of the International Classification of Diseases, version 10 code U09.9 or a long-COVID clinic visit) matched to 41,625 controls within the same health system and COVID index date within  $\pm 45$  days of the corresponding case's earliest COVID index date. Measurements of risk factors included demographics, comorbidities, treatment and acute characteristics related to COVID-19. Multivariable logistic regression, random forest, and XGBoost were used to determine the associations between risk factors and PASC.

**Results** Among 8,325 individuals with PASC, the majority were > 50 years of age (56.6%), female (62.8%), and non-Hispanic White (68.6%). In logistic regression, middle-age categories (40 to 69 years; OR ranging from 2.32 to 2.58), female sex (OR 1.4, 95% CI 1.33–1.48), hospitalization associated with COVID-19 (OR 3.8, 95% CI 3.05–4.73), long (8–30 days, OR 1.69, 95% CI 1.31–2.17) or extended hospital stay (30+ days, OR 3.38, 95% CI 2.45–4.67), receipt of mechanical ventilation (OR 1.44, 95% CI 1.18–1.74), and several comorbidities including depression (OR 1.50, 95% CI 1.40–1.60), chronic lung disease (OR 1.63, 95% CI 1.53–1.74), and obesity (OR 1.23, 95% CI 1.16–1.3) were associated with increased likelihood of PASC diagnosis or care at a long-COVID clinic. Characteristics associated with a lower likelihood of PASC diagnosis or care at a long-COVID clinic included younger age (18 to 29 years), male sex, non-Hispanic Black race, and comorbidities such as substance abuse, cardiomyopathy, psychosis, and dementia. More doctors per capita in the county of residence was associated with an increased likelihood of PASC diagnosis or care.

# LITERATURE REVIEW

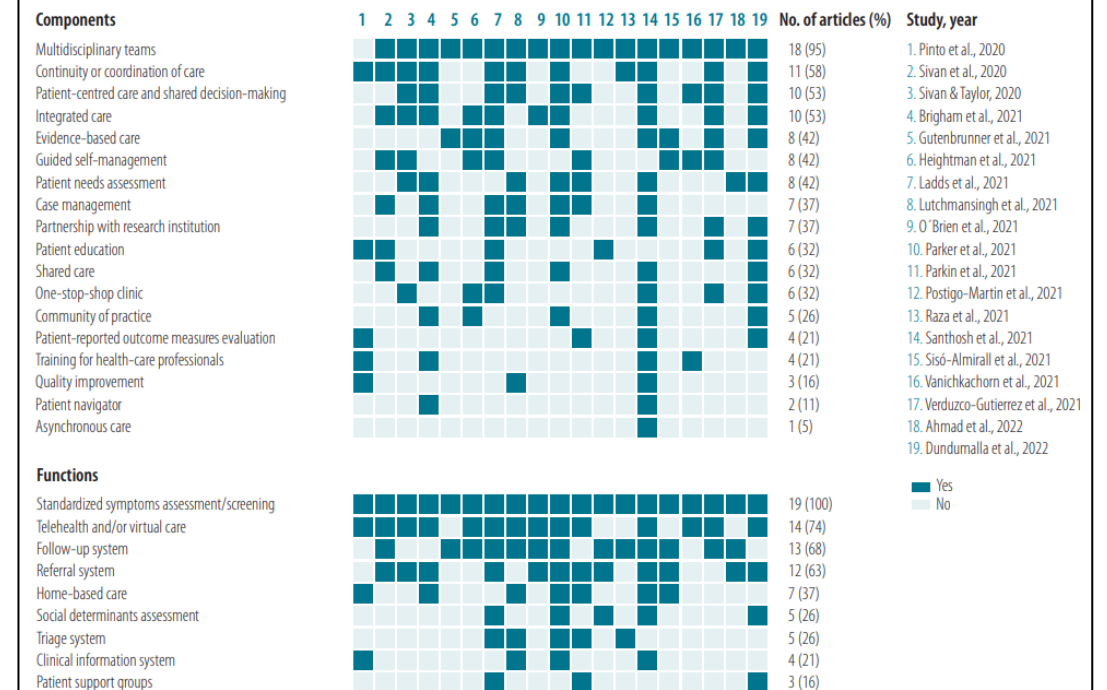
- There is **currently no known cure for Long COVID.**
- Management relies on general advice, supported self-management and **multidisciplinary rehabilitation.**

WHO's Post COVID-19 Condition Rehabilitation Care Model, 2022

## Scoping review of rehabilitation care models for post COVID-19 condition

Simon Décarý,<sup>a</sup> Wouter De Groote,<sup>b</sup> Chiara Arienti,<sup>c</sup> Carlote Kiekens,<sup>d</sup> Paolo Boldrini,<sup>e</sup> Stefano Giuseppe Lazzarini,<sup>c</sup> Michèle Dugas,<sup>f</sup> Théo Stefan,<sup>f</sup> Léa Langlois,<sup>f</sup> Frédérique Daigle,<sup>a</sup> Florian Naye,<sup>a</sup> Annie LeBlanc<sup>f</sup> & Stefano Negrini<sup>g</sup>

Fig. 2. Proposed components and functions of rehabilitation care models for post COVID-19 condition



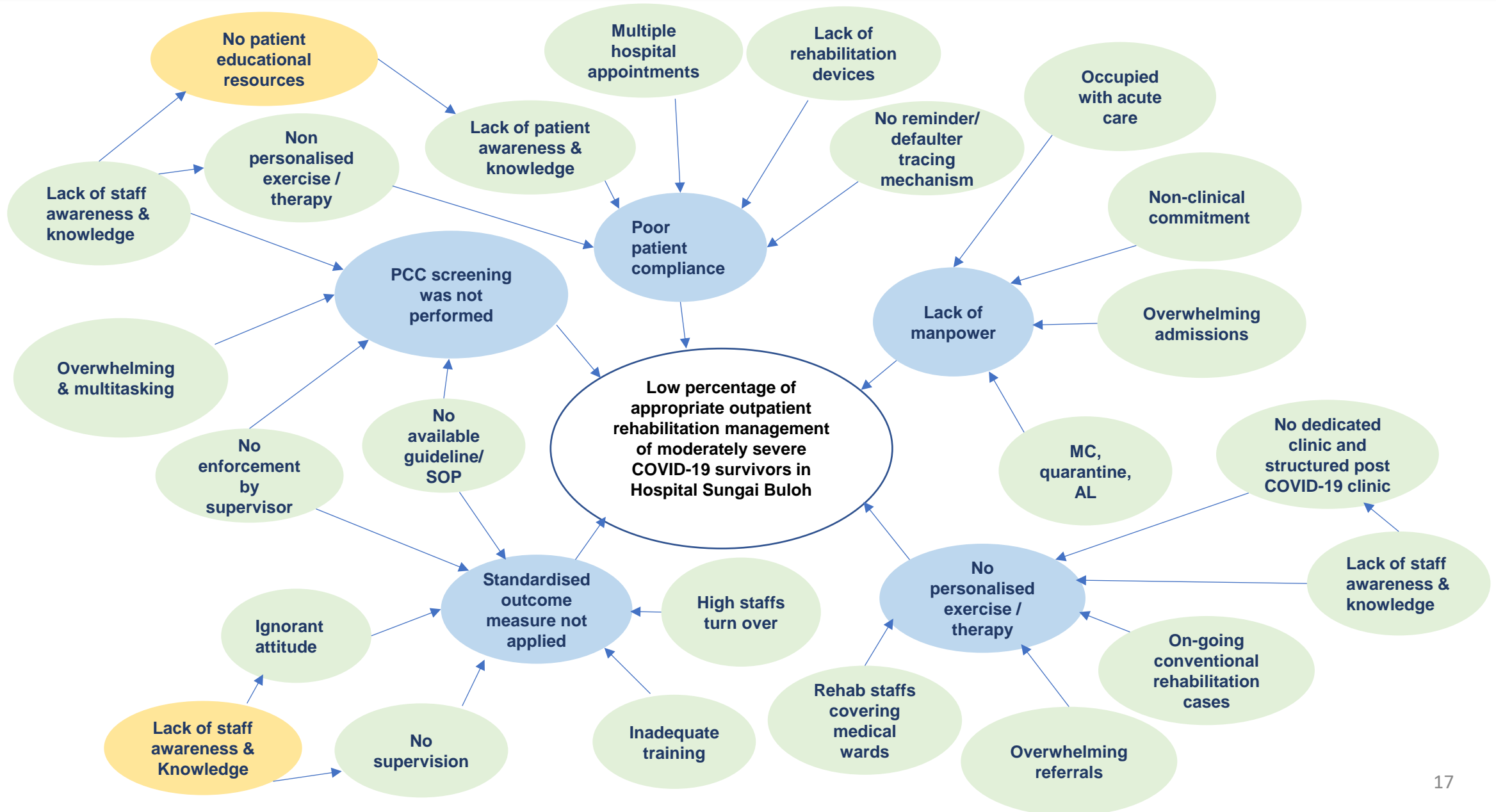
COVID-19: coronavirus disease 2019.

# 5W + 1H PROBLEM ANALYSIS

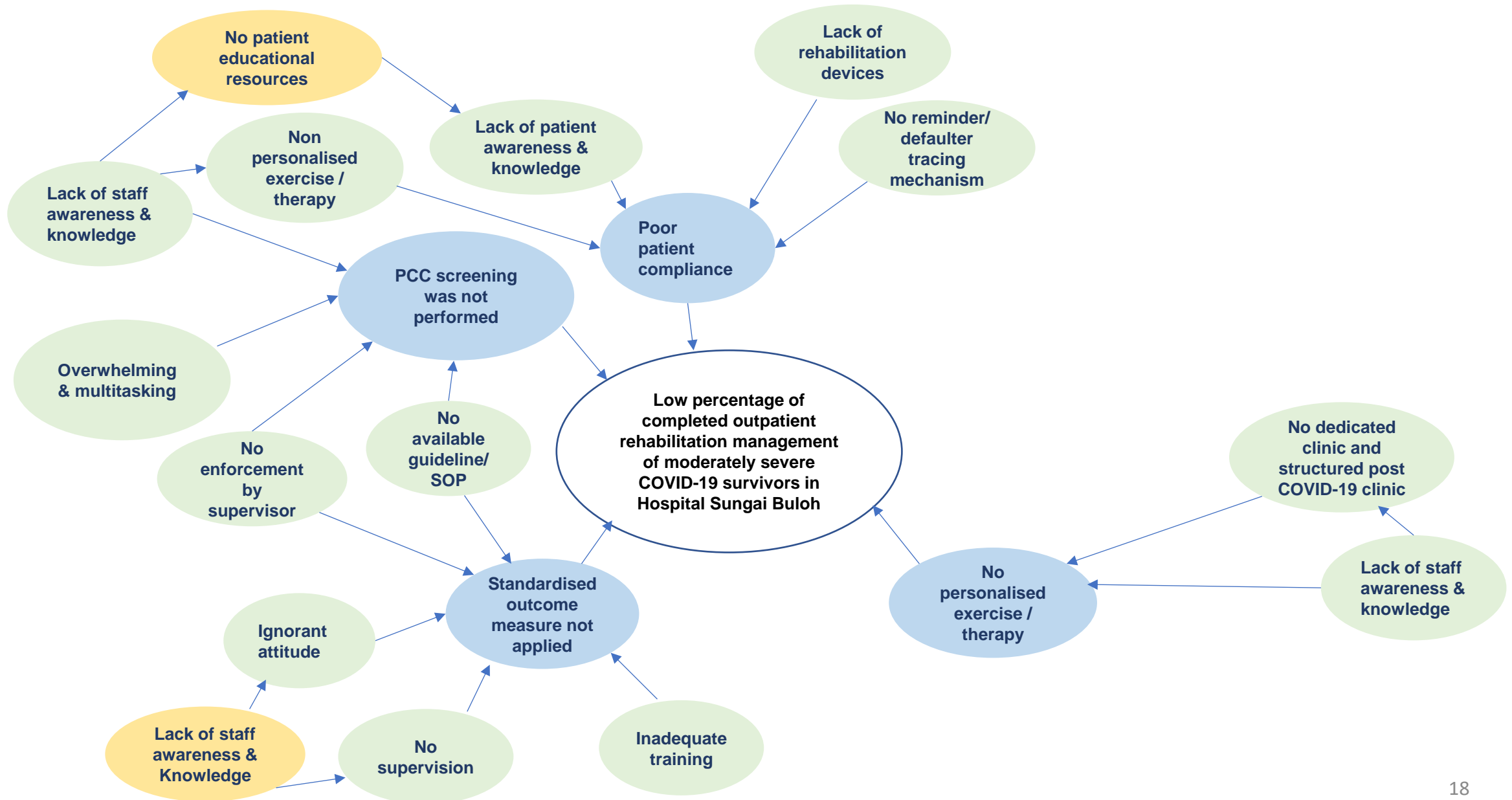
<b>WHAT</b>	Low percentage of appropriate outpatient rehabilitation management of moderately severe COVID-19 survivors in Hospital Sungai Buloh
<b>WHO</b>	Patient, caregivers, rehabilitation specialist, medical officers, rehabilitation nurses, physiotherapist, occupational therapist
<b>WHERE</b>	Rehabilitation Medicine Clinic / Department
<b>WHEN</b>	Since 2020 till now
<b>WHY</b>	Multiple factors contributed to the problem
<b>HOW</b>	Moderately severe COVID-19 survivors in Hospital Sungai Buloh were not provided with appropriate outpatient rehabilitation management that fulfil all the required criteria.



# PROBLEM ANALYSES CHART



# PROBLEM ANALYSES CHART



# PROBLEM STATEMENT

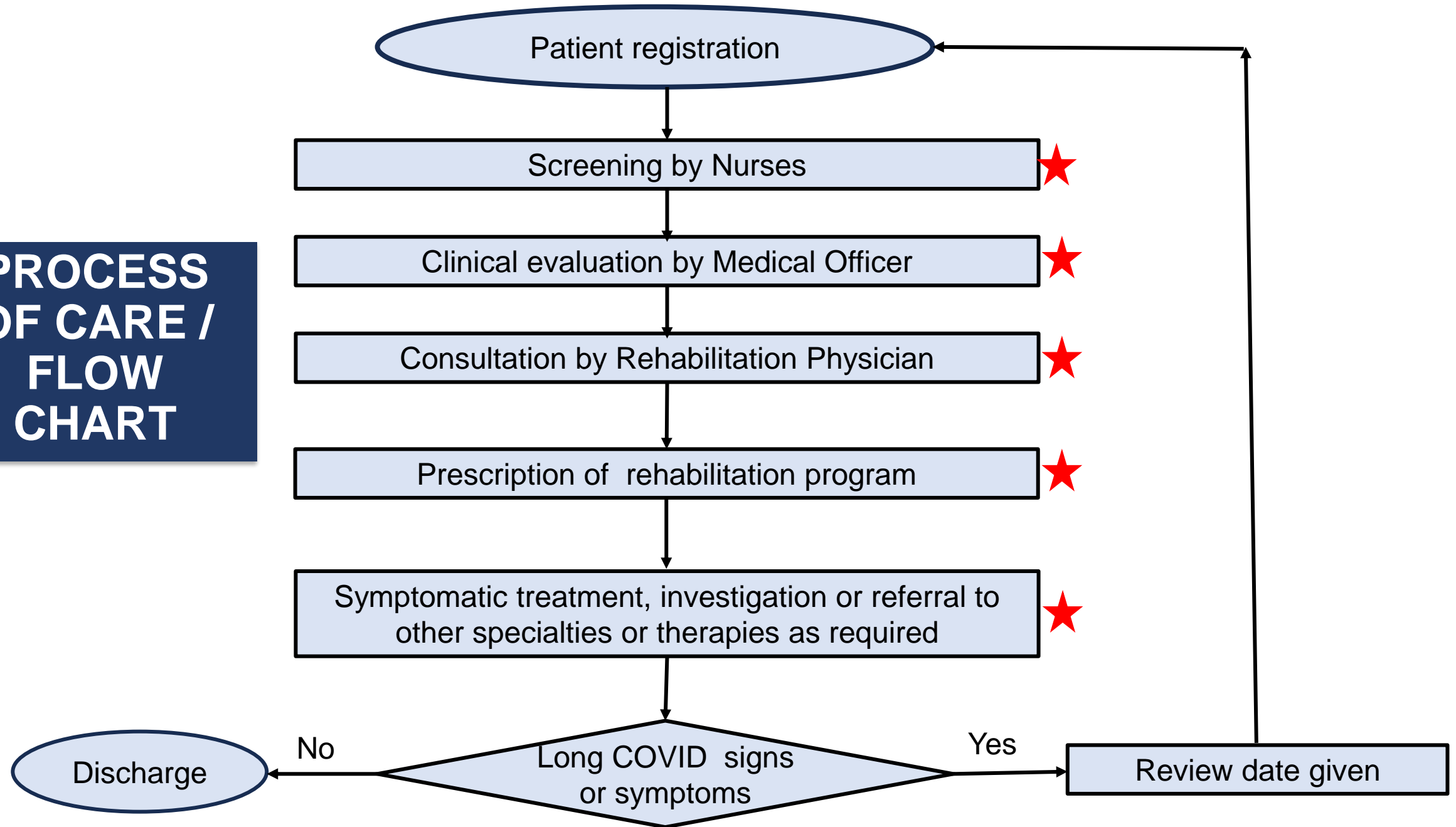
A verification survey conducted from July – December 2020 (N=165) among patients with moderately severe COVID-19 showed only **16.3% were provided with appropriate outpatient rehabilitation management.**

This has affected patients' recovery process which predispose to **the risk of Long COVID or Post COVID-19 Condition (PCC)** consequences.

Multiple factors **including lack of awareness, knowledge and practice of staffs; no educational resources; non availability of coordinated and structured services.**

This study aims to **improve appropriate outpatient rehabilitation management of moderately severe COVID-19 survivors** in Hospital Sungai Buloh.

# PROCESS OF CARE / FLOW CHART





# REFERENCES FOR DEVELOPING MOGC

## Consensus statement

### The Stanford Hall consensus statement for post-COVID-19 rehabilitation

Robert M Barker-Davies<sup>1,2</sup>, Oliver O'Sullivan<sup>1,3</sup>, Kahawalage Pumi Prathima Senaratne<sup>4,5</sup>, Polly Baker<sup>1,6</sup>, Mark Cranley<sup>4</sup>, Shreshth Dharm-Datta<sup>4</sup>, Henrietta Ellis<sup>4</sup>, Duncan Goodall<sup>4,7</sup>, Michael Gough<sup>4</sup>, Sarah Lewis<sup>4</sup>, Jonathan Norman<sup>4</sup>, Theodora Papadopoulou<sup>4,8</sup>, David Roscoe<sup>4,9</sup>, Daniel Sherwood<sup>4</sup>, Philippa Turner<sup>4,9</sup>, Tammy Walker<sup>4</sup>, Alan Mistlin<sup>4</sup>, Rhodri Phillip<sup>4</sup>, Alastair M Nicol<sup>4,10</sup>, Alexander N Bennett<sup>1,11</sup>, Sardar Bahadur<sup>4</sup>

#### ABSTRACT

The highly infectious and pathogenic novel coronavirus (CoV), severe acute respiratory syndrome (SARS)-CoV-2, has emerged causing a global pandemic. Although COVID-19 predominantly affects the respiratory system, evidence indicates a multisystem disease which is frequently severe and often results in death. Long-term sequelae of COVID-19 are unknown, but evidence from previous CoV outbreaks demonstrates impaired pulmonary and physical function, reduced quality of life and emotional distress. Many COVID-19 survivors who require critical care may develop psychological, physical and cognitive impairments. There is a clear need for guidance on the rehabilitation of COVID-19 survivors. This consensus statement was developed by an expert panel in the fields of rehabilitation, sport and exercise medicine (SEM), rheumatology, psychiatry, general practice, psychology and specialist pain, working at the Defence Medical Rehabilitation Centre, Stafford, UK. Seven teams appraised evidence for the following domains relating to COVID-19 rehabilitation requirements: pulmonary, cardiac, SEM, psychological, musculoskeletal, neurorehabilitation and general medical. A chair combined recommendations generated within teams. A writing committee prepared the consensus statement in accordance with the appraisal of guidelines research and evaluation criteria, grading all recommendations with levels of evidence. Authors scored their level of agreement with each recommendation on a scale of 0–10. Substantial agreement (range 7.5–10) was reached for 36 recommendations following a chaired agreement meeting that was attended by all authors. This consensus statement provides an overarching framework assimilating evidence and likely requirements of multidisciplinary rehabilitation post COVID-19 illness, for a target population of active individuals, including military personnel and athletes.

#### BACKGROUND

In late 2019 a highly pathogenic novel coronavirus (CoV), severe acute respiratory syndrome (SARS)-CoV-2, emerged, causing a global pandemic with millions of cases worldwide.<sup>1</sup> CoVs are large enveloped non-segmented positive sense RNA viruses causing enteric and respiratory disease in animals and humans.<sup>2</sup> SARS-CoV-2 belongs to the CoV  $\beta$ -species, mainly transmitted through

respiratory droplets and close personal contact, of which there have been two global epidemics in the last 20 years, SARS in 2003, caused by SARS-CoV-1, and Middle Eastern respiratory syndrome (MERS) in 2012, caused by MERS-CoV. SARS-CoV-2 causes COVID-19, which has a predilection for the lungs, and can result in a severe pneumonia, inducing serous fluid, fibrin exudates and hyaline membrane formation in the alveoli, associated with intensive care unit (ICU) admission and high mortality.<sup>3</sup> The complications include those meeting diagnostic criteria for acute respiratory distress syndrome (ARDS), anaemia, cardiac injury and secondary infection.<sup>4</sup> SARS-CoV-2, like SARS-CoV-1, enters human cells via the same receptor, angiotensin-converting enzyme 2 (ACE2).<sup>5</sup>

COVID-19 is a highly infectious respiratory disease and as a result, the COVID-19 pandemic has profoundly impacted the UK population resulting in strict measures to curtail spread of infection. This zoonotic disease was unknown in humans and most research has concentrated on the acute phase to reduce mortality. Acute treatment is largely symptomatic and supportive depending on the severity of infection. As of April 2020, there was no specific treatment or vaccination available. The disease is currently predicted to result in significant morbidity for 3–6 months (intermediate phase) with pressure on routine medical and rehabilitation services for 12 months and beyond (chronic phase).

The illness severity pattern so far observed is as follows:

1. Asymptomatic infected patients.
2. Symptomatic patients isolating at home.
3. Symptomatic patients admitted to hospital.
4. Symptomatic patients requiring ventilatory support in critical care.

COVID-19 is a multisystem disease, which in certain cases will require full multidisciplinary team (MDT) rehabilitation to enable recovery. Whenever possible rehabilitation should commence in the critical care setting. The National Institute for Health and Care Excellence (NICE) recommends progressive rehabilitation programmes are best initiated within the first 30 days (postacute phase) to have greatest impact on recovery.<sup>6</sup> The sequelae in those who survive this illness will potentially dominate medical practice for years and rehabilitation medicine should be at the forefront of guiding

## COVID-19: interim guidance on rehabilitation in the hospital and post-hospital phase from a European Respiratory Society- and American Thoracic Society-coordinated international task force

Martijn A. Spruit<sup>1,2,3,4</sup>, Anne E. Holland<sup>5,6,7</sup>, Sally J. Singh<sup>8,9,10</sup>, Thomy Tonia<sup>11</sup>, Kevin C. Wilson<sup>12</sup> and Thierry Troosters<sup>13,14</sup>

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British Society of  
Rehabilitation Medicine  
Promoting quality through  
education and standards

## Rehabilitation in the wake of Covid-19 - A phoenix from the ashes

### British Society of Rehabilitation Medicine (BSRM)

Prepared on behalf of the BSRM by:

Dr Margaret Phillips  
Prof Lynne Turner-Stokes  
Prof Derick Wade  
Dr Krystyna Walton

The document has been reviewed by members of the following BSRM committees:

- The Executive Committee
- The Research and Clinical Standards sub-committee.

This is a working document that will be reviewed and revised if necessary, as further evidence and information becomes available and as the Covid-19 situation develops.

The focus of the document is on adults aged 16 and over, but it is anticipated that an appendix focusing on the particular needs of children will be added.

Issue 1

27.4.2020

British Society of Rehabilitation Medicine | Registered charity number 293196

► Additional material is published online only. To view please visit the journal online (<http://dx.doi.org/10.1136/bjports-2020-102596>).

For numbered affiliations see end of article.

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Barker-Davies RM, et al. *Br J Sports Med* 2020;54:949–959. doi:10.1136/bjports-2020-102596



949

# MODEL OF GOOD CARE

No	Critical Steps	Criteria	Standard
1.	Screening by nurses	▪ Vital signs screening including BP, HR, RR, Temp, Pain Score	100%
		▪ Body Mass Index (BMI)	100%
		▪ Screening for PCC symptoms	100%
2.	Clinical examination by medical officer	▪ History taking and clinical examination	100%
		▪ Apply standardised outcome measure for physical function.	100%
		▪ Apply standardised outcome measure for cognitive function.	100%
		▪ Apply standardised outcome measure for psychological function	100%
		▪ Evaluate the effect of PCC on function	100%
		▪ Assessment of O <sub>2</sub> saturation at rest and during exertion	100%
3.	Consultation by Rehabilitation Physician	▪ Review of PCC symptoms screening	100%
		▪ Review of physical, cognitive & functional measure	100%
		▪ Order for investigations as indicated	100%
		▪ Prescribe symptomatic treatment as indicated	100%
4.	Prescription of rehabilitation program	▪ Provide patient education	100%
		▪ Provide educational resources for PCC	100%
		▪ Provide personalised exercise / therapy	100%
5.	Referral to other specialties or therapies as required	▪ Refer patient to other medical specialties or therapies as required	100%

# KEY MEASURES FOR IMPROVEMENT

# STUDY OBJECTIVES

## **General Objective:**

- To increase the percentage of appropriate outpatient rehabilitation management provided for moderately severe COVID-19 survivors in Hospital Sungai Buloh.

## **Specific Objectives:**

- To determine the existence and magnitude of inappropriate outpatient rehabilitation management provided for moderately severe COVID-19 survivors.
- To identify the contributing factors for the problem.
- To formulate and implement remedial measures.
- To evaluate and re-evaluate the effectiveness of remedial measures.

# INDICATOR & STANDARD

## Indicator:

Percentage of moderately severe COVID-19 survivors provided with appropriate outpatient rehabilitation management.

## Numerator:

- Number of moderately severe COVID-19 survivors provided with appropriate outpatient rehabilitation management.

## Denominator

- Number of moderately severe COVID-19 survivors referred for outpatient rehabilitation management.

## Formula:

$$\frac{\text{Number of moderately severe COVID-19 survivors provided with appropriate outpatient rehabilitation management}}{\text{Number of moderately severe COVID-19 survivors referred for outpatient rehabilitation management.}} \times 100\%$$

## Standard:

- 80%\*

# PROCESS FOR GATHERING INFORMATION



# STUDY METHODOLOGY

Study Design	QA / QI Study - retrospective and prospective cross sectional, quasi experimental, time series study design
Study sampling	Convenience sampling method
Sample size	N = 165
Study analysis	Microsoft Excel
Study period	Verification study : July - Dec 2020, Remedial Measures: Jan - June 2021 Cycle 1 study : July - Dec 2021, Remedial Measures: Jan - June 2022 Cycle 2 study : July - Dec 2022, Remedial Measures: Jan - June 2023 Cycle 3 study : July - Dec 2023, Remedial Measures: Jan - June 2024
Inclusion criteria	<ul style="list-style-type: none"><li>▪ Malaysian citizen</li><li>▪ Age <math>\geq</math> 12 years old</li><li>▪ Laboratory confirmed COVID-19</li><li>▪ Referred for outpatient rehabilitation management</li></ul>
Exclusion criteria	<ul style="list-style-type: none"><li>▪ Prisoners</li><li>▪ Pre-existing severe disability eg prolonged bed ridden, severe stroke or tetraplegia</li><li>▪ Clinically unstable to undergo rehabilitation physical evaluation and intervention</li></ul>

# PHASE 1: DATA COLLECTION

<b>Problem</b>	<ul style="list-style-type: none"> <li>▪ Low percentage of appropriate outpatient rehabilitation management for moderately severe COVID-19 survivors.</li> </ul>
<b>Indicator</b>	<ul style="list-style-type: none"> <li>▪ Percentage of moderately severe COVID-19 survivors provided with appropriate outpatient rehabilitation management.</li> </ul>
<b>Numerator</b>	<ul style="list-style-type: none"> <li>▪ Number of moderately severe COVID-19 survivors provided with appropriate rehabilitation management.</li> </ul>
<b>Denominator</b>	<ul style="list-style-type: none"> <li>▪ Number of moderately severe COVID-19 survivors referred for outpatient rehabilitation management.</li> </ul>
<b>Standard</b>	<ul style="list-style-type: none"> <li>▪ 80% adapted from international literatures.</li> </ul>
<b>Variables collected</b>	<ul style="list-style-type: none"> <li>▪ Number of moderately severe COVID-19 survivors provided with appropriate outpatient rehabilitation management.</li> <li>▪ Number of moderately severe COVID-19 survivors referred for outpatient rehabilitation management.</li> </ul>
<b>Data collection tool</b>	<ul style="list-style-type: none"> <li>▪ Electronic Total Hospital Information System (e-THIS) medical record documentation</li> <li>▪ Microsoft excel data sheet proforma</li> <li>▪ Audit checklist form</li> </ul>

# PHASE 2 : DETERMINING CONTRIBUTING FACTORS

<b>Problem</b>	<b>Low percentage of completed outpatient rehabilitation management of moderately severe COVID-19 survivors.</b>		
<b>Factors identified</b>	Poor staff awareness and knowledge	Poor staff practices	No available COVID-19 educational resources / SOP
<b>Variables collected</b>	Level of knowledge on comprehensive evaluation of patients	Practice on comprehensive evaluation of patients	Identify available educational resources / SOP
	Level of knowledge on objective outcome measures	Practice on administration of objective outcome measures	Adherence to administration of outcome measures
	Level of knowledge on prescribing exercise / activity regime	Practice on prescribing exercise/activity regime	Adherence to prescribing exercise/activity regime details
<b>Data collection tool</b>	Interview/ focus group discussion	Observation & audit checklist form	Observation & audit checklist form

# DATA COLLECTION PROFORMA – EXCELL SHEET

File Home Insert Page Layout Formulas Data Review View Help Tell me what you want to do

Cut Copy Format Painter Clipboard Font Alignment Number Styles Cells Editing Add-ins

AZWAN BIN ZAKARIA

A	B	C	D	E	F	G	H	I	J	K
Name ( IN CAPITAL LETTER)	S/B	Gender	Age	Race	IC Number /Passport No	Test category ( 4 o	Phone number	Date of discharge	TCA Rehab	
During teleconsultation, if patient passed away, please input as 'deceased - with the date & cause of death'. If readmission, please input as 'readmission to which hospital- with the date & cause of readmission'. Thank you.										
AZWAN BIN ZAKARIA		SB01000343	1	50	0	7 11108F+11	4B	0193812264	3/11/2020	4/12/2020
FADIL		SB01000857	1	43	0	77 05	5	012 4825	14/11/2020	18/12/2020
MOHAMMAD YUNUS		SB01000367	1	43	0	77 55	4A	019 7286	17/11/2020	18/12/2020
NOOR IR		SB01000934	1	77	0	44 55	4A	012 0324	19/11/2020	18/12/2020
CHAI APPAN		SB01000970	1	54	2	67 63	4A	019 5035	19/11/2020	18/12/2020
VI TH		SB01000318	1	43	1	77 43	4A	012 2323	19/11/2020	31/12/2020
ZAID		SB01000670	2	56	0	65 38	4B	012 1494	20/11/2020	4/12/2020
MOHAMMAD AMERICAN		SB01000700	1	56	0	65 09	4A	019 9882	20/11/2020	18/12/2020
RAI		SB01000193	1	34	3	57 43	4A	012 92514	24/11/2020	31/12/2020
ABDI	BU BAKAR	SB0100063	1	64	0	57 33	5	012 990	24/11/2020	23/3/2021
LEE		SB01000519	1	37	1	83 51	4A	012 2002	24/11/2020	30/12/2020
OTH		SB01000212	1	68	0	52 43	4A	012 3610	25/11/2020	18/12/2020
HUS		SB01000860	1	52	0	69 47	4B	011 2473	25/11/2020	28/12/2020
PON		SB01000739	2	42	1	78 54	4A	019 0621	25/11/2020	28/12/2020
SITI	ZIN	SB01000958	2	42	0	78 00	4A	010 8761	25/11/2020	28/12/2020
WON		SB01000701	2	53	1	68 06	4A	012 0333	26/11/2020	29/12/2020
LETC	TIAR	SB01000260	2	80	2	40 74	4A	012 1165	27/11/2020	30/12/2020
RAFI		SB01000618	2	78	0	43 20	5	019 1315	27/11/2020	30/12/2020
KRIS		SB01000223	1	73	2	47 05	4A	012 0045	27/11/2020	28/12/2020
AZIZ	IN	SB01000707	1	58	0	63 03	4A	012 9573	27/11/2020	31/12/2020
AMR		SB01000861	1	58	0	63 71	4A	012 1665	27/11/2020	30/12/2020
NUR		SB01000907	1	38	3		4A	012 1252	27/11/2020	29/12/2020
AMR		SB01000066	1	77	0	43 35	4A	012 1033	28/11/2020	29/12/2020
RAM		SB01000416	1	61	2	60 27	4A	012 1141	28/11/2020	28/12/2020
MAI		SB01000786	2	52	0	69 70	4A	019 7900	28/11/2020	20/1/2021
MD E		SB010004191	1	35	3		4A	010 8246	28/11/2020	29/12/2020
RAN		SB01000629	1	34	3		4A	012 7105	30/11/2020	30/12/2020
ANNI	RI YANA	SB010001054	2	40	3	801228-12-0448	5	0125748226	30/11/2020	31/12/2020

Patient identifiers

Patient identifiers

Patient identifiers

Patient's confidentiality



# AUDIT CHECKLIST FORM

## IMPROVING APPROPRIATE OUTPATIENT REHABILITATION MANAGEMENT OF MODERATELY SEVERE COVID-19 SURVIVORS IN HOSPITAL SUNGAI BULOH

Audit Checklist Form (Tick ' / ' if done)

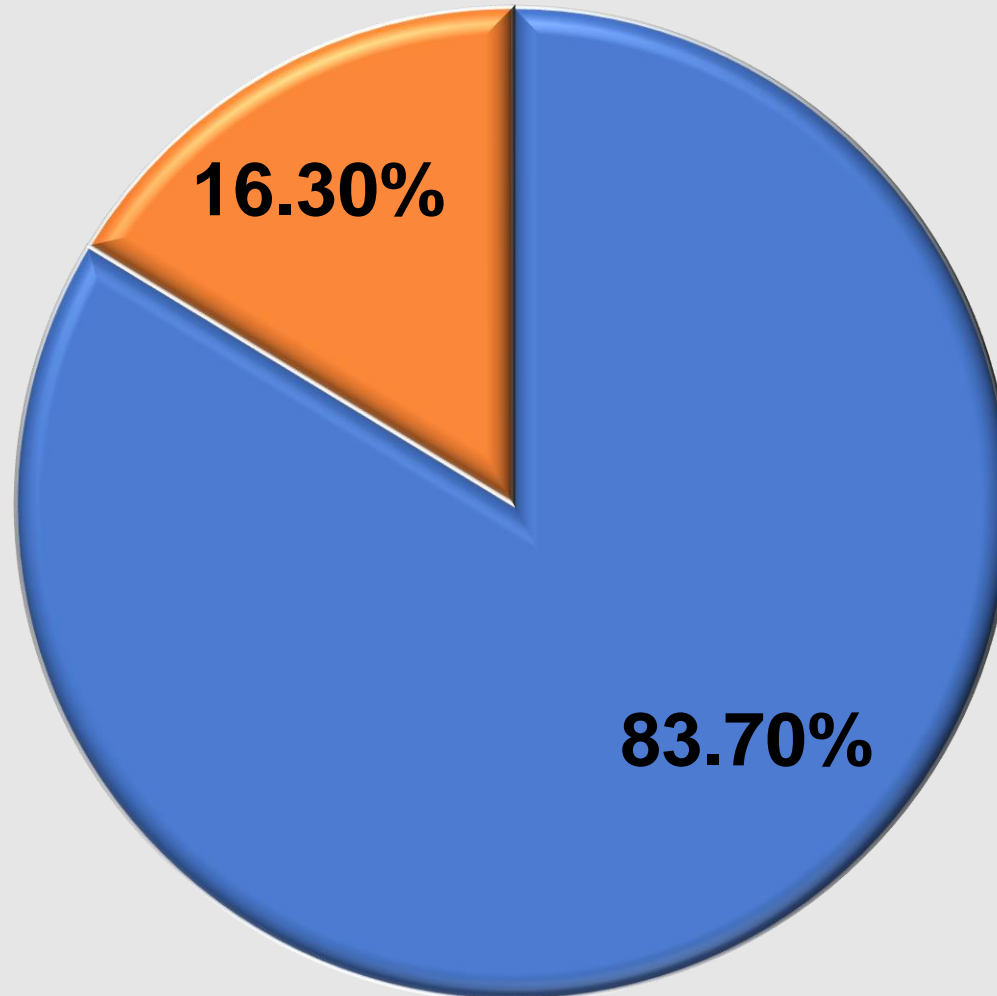
No	Initial	SB	Month/Year	Screening for PCC symptoms	Physical Outcome Measure eg TUG, STS	Cognitive Outcome Measure eg MSE	Psychological Outcome Measure eg DASS, IES	Functional Outcome Measure eg MBI, WHODAS	O <sub>2</sub> assessment eg 6MWT	Symptomatic rx. (x or referral if indicated)	Patient education & resources	Personalised exercise / therapy regime	Appropriate Tick (/)
1	AZ	0109343	11/20	✓						✓		✓	✗
2	FA	1096857	11/20	✓						✓		✓	✗
3	MYMY	1102367	11/20	✓					✓	✓	✓	✓	✗
4	NAMN	1102934	11/20	✓						✓	✓	✓	✗
5	CN	1101970	11/20	✓						✓		✓	✗
6	AM	1105739	11/20	✓						✓		✓	✗
7	HA	1103560	11/20	✓						✓		✓	✗
8	PKL	1105739	11/20	✓						✓		✓	✗
9	WYS	1106349	11/20	✓						✓		✓	✗
10	WC	1104701	11/20	✓						✓		✓	✗
11	OH	1100212	11/20	✓						✓		✓	✗
12	ZJ	11099670	11/20	✓					✓	✓		✓	✗
13	AP	1103066	11/20	✓	✓					✓		✓	✗
14	AAH	1104707	11/20	✓						✓		✓	✗
15	MHM	1102700	11/20	✓						✓	✓	✓	✗
16	RM	1103618	11/20	✓					✓	✓	✓	✓	✗
17	AP	1101054	11/20	✓	✓				✓	✓	✓	✓	✗
18	CNH	1125520	12/20	✓	✓		✓	✓	✓	✓	✓	✓	✓
19	CYC	1107047	12/20	✓	✓	✓		✓	✓	✓		✓	

# **ANALYSIS & INTERPRETATION**



# RESULTS OF VERIFICATION STUDY

## Percentage of Patients With Appropriate Outpatient Rehabilitation Management



Appropriate outpatient rehabilitation management

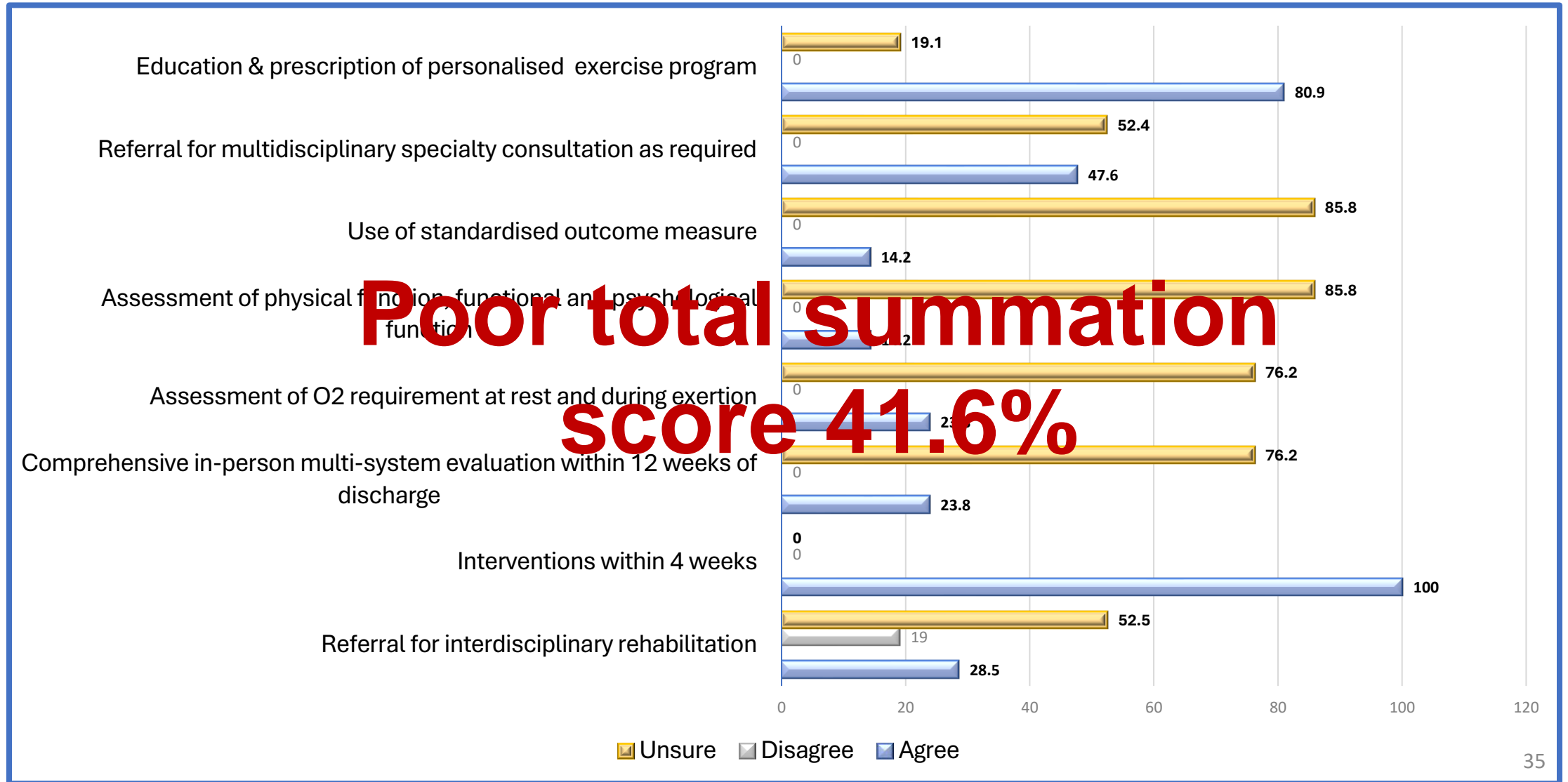


Inappropriate outpatient rehabilitation management

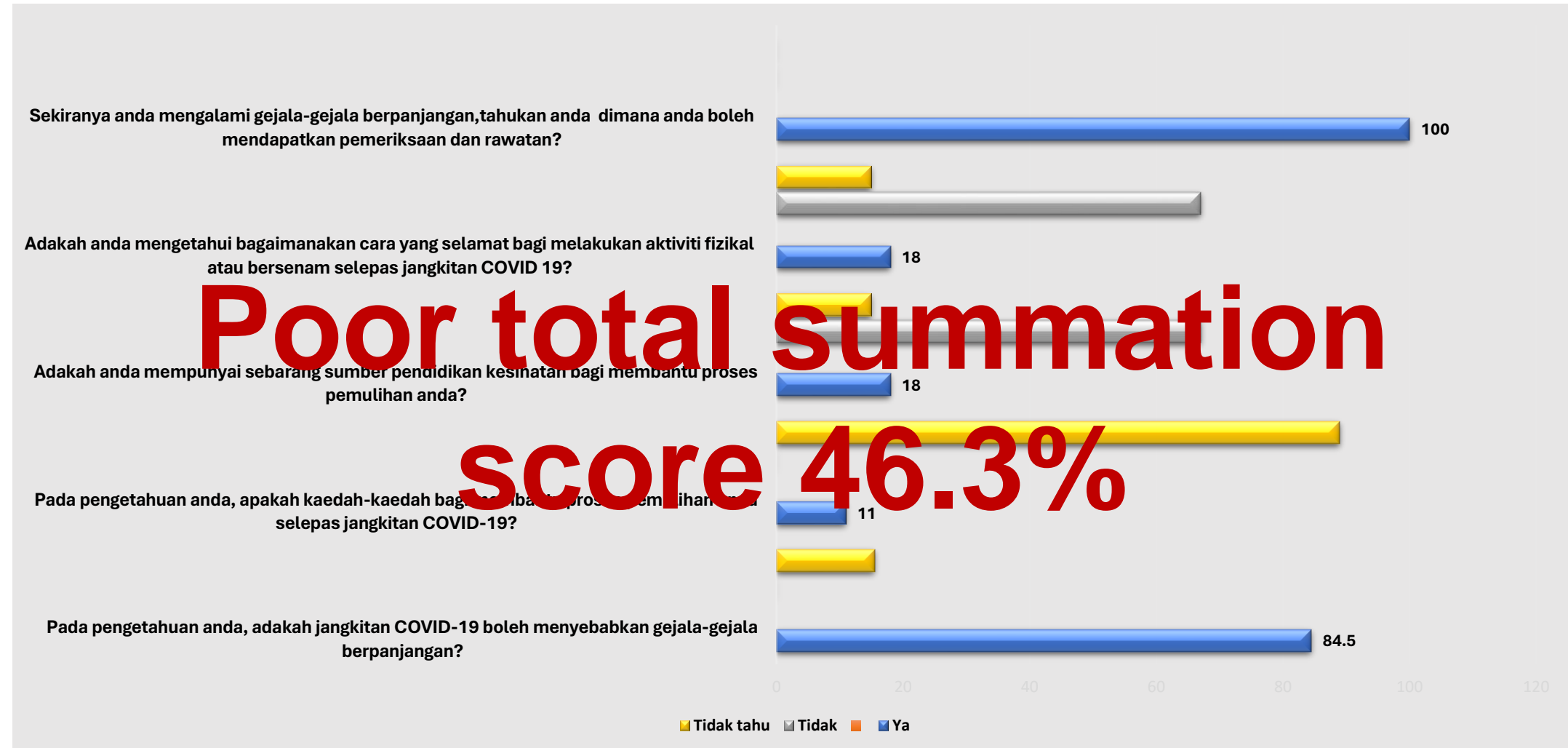
# MODEL OF GOOD CARE

No	Critical Steps	Criteria	Std	Ver
1.	Screening by nurses	▪ Vital signs screening including BP, HR, RR, Temp, Pain Score	100%	100%
		▪ Body Mass Index (BMI)	100%	0%
		▪ Multi-system screening for PCC symptoms	100%	16.3%
2.	Clinical examination by medical officer	▪ History taking and clinical examination	100%	100%
		▪ Physical function assessment using standardised outcome measure	100%	16.3%
		▪ Cognitive function assessment using standardised outcome measure	100%	16.3%
		▪ Psychological function assessment using standardised outcome measure	100%	16.3%
		▪ Evaluate the effect of PCC using functional outcome measure	100%	16.3%
		▪ Assessment of O <sub>2</sub> saturation at rest and during exertion	100%	32%
3.	Consultation by Rehabilitation Physician	▪ Review of PCC symptoms	100%	100%
		▪ Review of physical, cognitive, psychological & functional outcome measure	100%	16.3%
		▪ Order for investigations as indicated	100%	100%
		▪ Prescribe symptomatic treatment as indicated	100%	100%
		▪ Referral for other specialties or therapies as indicated	100%	100%
4.	Prescription of rehabilitation program	▪ Provide patient education	100%	47%
		▪ Provide educational resources for PCC	100%	21%
		▪ Provide personalised exercise / therapy	100%	100%
5.	Referral to other specialties or therapies as required	▪ Refer patient to other medical specialties or therapies as required	100%	100%

**Figure 4: Awareness, Knowledge & Practice Level of Staffs (N=21) involving 2 Specialists, 8 Medical Officers, 4 Physiotherapist, 3 Occupational Therapist and 4 Nurses**



**Figure 5: Awareness, Knowledge and Practice Level of Patients Attending Outpatient Rehabilitation Clinic (N=28)**




# STRATEGIES FOR CHANGE

# PLANNING FOR STRATEGY

Factor addressed	Strategy	When strategy was performed
Structure related remedial measures: People (Staffs)	<b>In-service training</b> <ul style="list-style-type: none"> <li>Department CME by Rehab Physicians</li> <li>Hospital CME by Rehab Physician</li> <li>WHO Online Courses made compulsory to all staffs / new staffs</li> </ul> <b>Presentation at meetings</b> <ul style="list-style-type: none"> <li>Department meetings</li> <li>Multidisciplinary Meeting</li> <li>MDAC meeting</li> </ul> <b>Out-service training</b> <ul style="list-style-type: none"> <li>19 CPD activities as listed</li> </ul>	<ol style="list-style-type: none"> <li>2/1/21, 15/2/21, 1/4/21, 16/8/21, 3/9/21, 10/11/21, 3/12/21</li> <li>1/4/21</li> <li>1/5/21 – now</li> </ol> <ol style="list-style-type: none"> <li>16/8/21, 3/9/21</li> <li>29/10/20; 9/12/21</li> <li>10/3/21; 31/7/21</li> </ol> <ol style="list-style-type: none"> <li>As listed</li> </ol>
Process related remedial measures	<ol style="list-style-type: none"> <li>One stop multi-disciplinary centre (CROSS)</li> <li>Clinical framework incorporated in e-HIS</li> <li>Real Time Database (RTD)</li> </ol>	<ol style="list-style-type: none"> <li>2/1/21 – now</li> <li>1/4/21 – now</li> <li>1/4/21 – now</li> </ol>
Structure related remedial measures: People (Patients)	<ol style="list-style-type: none"> <li>One-on-one education</li> <li>Group education</li> <li>WHO translated educational resources</li> <li>WHO adapted local educational resources</li> </ol>	<ol style="list-style-type: none"> <li>2/1/21 – now</li> <li>2/1/21 – now</li> <li>7/3/22 – now</li> <li>29/5/23 – now</li> </ol>



# 1. IN-SERVICE TRAININGS

  
**HOSPITAL SUNGAI BULOH**  
**JABATAN REHABILITASI PERUBATAN**

Rujukan Kami	Bil (31) HSB/REHAB/770/17/JLD 04
Tarikh	11 Ogos 2021
Perkara	PANGGILAN MESYUARAT JABATAN PERUBATAN REHABILITASI BIL 3/2021
Daripada	Ketua Jabatan Rehabilitasi
Kepada	Senarai Edaran

Adalah saya dengan hormatnya merujuk perkara di atas.

2. Sukacita dimaklumkan bahawa Mesyuarat Jabatan Perubatan Rehabilitasi Bil 3/2021 akan diadakan mengikut ketetapan berikut iaitu:

Tarikh	: 16 Ogos 2021 (Isnin)
Masa	: 2 – 4.30 petang
Tempat	: Bilik Seminar Klinik Pakar Rehabilitasi

3. Agenda mesyuarat adalah seperti yang dimaklumkan:

- 3.1. Maklumat Pentadbiran
- 3.2. Maklumbalas, Tindakan & Pengesahan Minit Mesyuarat Terdahulu
- 3.3. Pelaporan KPI & Statistik Jabatan
- 3.4. Pelaporan Perolehan & Kewangan
- 3.5. Pembentangan Modul "Post COVID-19 Outpatient Rehabilitation Management"
- 3.6. Hal-Hal lain

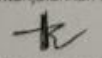
4. Sekian untuk perhatian, persediaan dan kehadiran pihak Tuan/Puan seterusnya. Kerjasama yang diberikan amatlah dihargai didahului dengan ucapan terima kasih.

Sekian, terima kasih.

"MALAYSIA MADANI"

"BERKHIDMAT UNTUK NEGARA"

Saya yang menjalankan amanah,

  
**(DR AKMAL HAFIZAH ZAMLI)**  
Ketua Jabatan Perubatan Rehabilitasi  
Hospital Sungai Buloh

DR ZAMAL HAFIZAH ZAMLI  
MRD 2019 RER 01222  
HOSPITAL SUNGAI BULOH (HSB) (PUSAT)  
Klinik Pakar Perubatan Rehabilitasi  
Hospital Sungai Buloh

## DEPARTMENT / HOSPITAL CME

### POST COVID-19 OUTPATIENT REHABILITATION MANAGEMENT MODULE

Introduction	<ul style="list-style-type: none"> <li>Post COVID-19 infection impact on multi organ systems</li> <li>Rationale for Post COVID-19 Rehabilitation</li> </ul>
Essentials in Rehabilitation Assessment	<ul style="list-style-type: none"> <li>Comprehensive multi-system screening for PCC</li> <li>Physical assessment using standardised outcome measure</li> <li>Cognitive assessment using standardised outcome measure</li> <li>Physical assessment using standardised outcome measure</li> <li>Impact of PCC on function using standardised outcome measure</li> <li>Oxygen assessment at rest and during exertion</li> </ul>
Identifying red-flags	<ul style="list-style-type: none"> <li>Identifying red-flags and referral for other specialties</li> <li>Investigations for red-flags</li> </ul>
Prescription of Personalised Rehabilitation Regime	<ul style="list-style-type: none"> <li>Interpreting multi organ system assessments / outcome measure</li> <li>Provide symptomatic treatment for PCC symptoms</li> <li>Identifying needs for other therapies</li> <li>Educate &amp; empower patients with self-management strategies</li> <li>Prescription of personalised exercises / rehabilitation</li> </ul>

Rehab Dept Meeting : 16/10/2020  
Bilik Seminar ; Klinik Rehab

esysuarat Rehab Dept  
2021

dept

1. Nur Hafiza Idarus  
2. Kantha Andigapper  
3. Siti Nadiah Md Sabir  
4. Wan Norzizma  
5. Nor Afiqah Mohamed  
6. Siti Hajar Mard Zail  
7. Nur Hafiza Idarus  
8. Nor Yegmin Mohamed Ansaui  
9. Dr Hajar  
10. Dr Kewin Chong  
11. Dr. G. Sen Thilvel  
12. Rizwan  
13. Muhammad Azhar

**eCME HOSPITAL SUNGAI BULOH**

**TAJUK : The R&R of COVID-19**

**TARIKH : 16 April 2021**

**JABATAN : Rehab Medicine**

**PENCERAMAH : Dr Akmal Hafizah Zamli**

**MAKLUMAN & PERHATIAN**

- MOHON KERJASAMA PESERTA UNTUK AKTIFKAN MICROPHONE DI TETAPAN DALAM MOD SENYAP.
- PESERTA DI DALAM AUDITORIUM DIMINTA UNTUK MENUTUP APLIKASI ZOOM DAN LETAKKAN TELEFON DALAM MOD SENYAP
- SILA GUNAKAN Q/A PLATFORM (CHATROOM) UNTUK KEMUKAKAN SOALAN KEPADA PENCERAMAH
- JANGAN LUPA UNTUK MENDAFTAR KEHADIRAN MENGGUNAKAN GOOGLE FORM

**HOSPITAL**

**eCME HOSPITAL SUNGAI BULOH**

Li-Shun Chua

You

16 Mohd Zuan Effendi

Mo

40



# 2. OUT-SERVICE TRAININGS

Rehabilitation Healthcare Professionals WHO Open Courses Self-Paced Online Training with Certifications are made **compulsory for all interdisciplinary staffs – Doctors, Nurses, Physiotherapist, Occupational Therapist**



## Certificate Examples



Rehabilitation Healthcare Professionals WHO Open Courses with Certification available at:

<https://openwho.org/courses/clinical-management-COVID-19-rehabilitation?locale=en>

## 2. OUT-SERVICE TRAININGS

### List of webinars / virtual trainings on Post COVID-19 Rehabilitation involving / attended by the multidiscipline rehabilitation staffs

#### Continuous Professional Development Activities

Virtual Medical Update Series "Road to Recovery - Post COVID-19 Rehabilitation" SgBH, MOH 16/4/2021
Virtual National Webinar "Post COVID-19 Rehabilitation Management" HSNZ-SgBH, MOH 1/7/2021
Malaysian Medical Association National Webinar Series "Long COVID-19 Management - A Rehabilitation Perspective" 12/8/2021
Virtual 12 <sup>th</sup> Annual Rehabilitation Medicine Conference 2021 "Perspectives of Rehabilitation in Long COVID Management" MARP-MOH 24/9/2021
Malaysian Medical Association National Webinar Series "Long COVID-19 Rehabilitation Management" 24/7/2021
Virtual Medical Update Series "Post COVID-19 Rehabilitation" HT-SgBH, MOH 10/7/2021
Malaysian Medical Association National Webinar Series "Long COVID: A Rehabilitation Framework Model" 12/8/2021
Virtual Medical Update Series "Post COVID-19 Rehabilitation" HPI-SgBH, MOH 17/8/2021
Virtual Medical Update Series "Post COVID-19 Medical & Rehabilitation Management" HT-SgBH, MOH 17/9/2021
National Virtual Symposium "Post COVID-19 Condition Focused Rehabilitation Medicine – Facing the Challenges Together" SgBH, MOH 7/7/2022
Virtual 12th Biennial Scientific Meeting "Long COVID Rehabilitation Perspectives" HsBH, MOH 10/1/22
Upskilling Workshop for Occupational Health Doctors (OHD) and Approved Medical Examiners (AME) on Clinical and Workplace Management of Long COVID held on 23 <sup>rd</sup> April 2022
Virtual Medical Update Series "Post COVID-19 Rehabilitation Management" RSB-SgBH, MOH 20/1/2022
Asia Pacific Neuropsychiatry Conference (NEURON) "Rehabilitation in Long COVID: Challenges with Mental Health Related Issues & Brain Fog" 16 – 17/6/2022
Malaysian Medical Association National Webinar Series "Long COVID in Primary Healthcare" 29/8/2022
National Institute of Health (NIH) Long COVID Scientific Symposium "Characterization & Prediction of Long COVID: Analysis of the Malaysian COVID-19 Rehabilitation Outpatient Specialize Services (CROSS) Database" MOH 2/11/2022
Academy of Silent Mentor (AFSM) Tripartite Conference Sarawak 2022 Healthcare Challenges in the 21 <sup>st</sup> Century "Characterization & Prediction of Long COVID: Analysis of the Malaysian COVID-19 Rehabilitation Outpatient Specialize Services (CROSS) Database" AFSM-MOH 15/12/2022
Virtual Webinar "Long COVID Rehabilitation Perspectives" Medical Development Division, MOH 31/3/2023
National Symposium "Post COVID-19 Condition Focused Rehabilitation Medicine 2.0 – Together for Better Outcomes" SgBH, MOH 29/5/2023

### 3. FOCUS GROUP MEETINGS

A group of approximately 15 people are seated in a room with a pink wall and a blue carpet. They are all wearing face masks. The room has a wooden desk in the foreground and a blue chair. A white text box with the text "Multidisciplinary Collaboration" is overlaid on the image.

## Multidisciplinary Collaboration

Infectious Disease, Respiratory Medicine, Psychiatry, Geriatric Medicine, Endocrine, Neurology, Rehabilitation Medicine, Physiotherapy, Occupational Therapy



# 4. DEDICATED ONE STOP CENTRE



Vital signs measurement



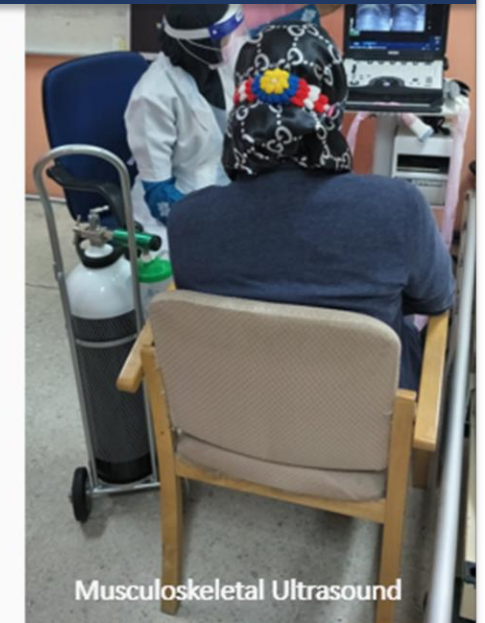
Body Mass Index



6 Minutes Walk Test with SPO<sub>2</sub>

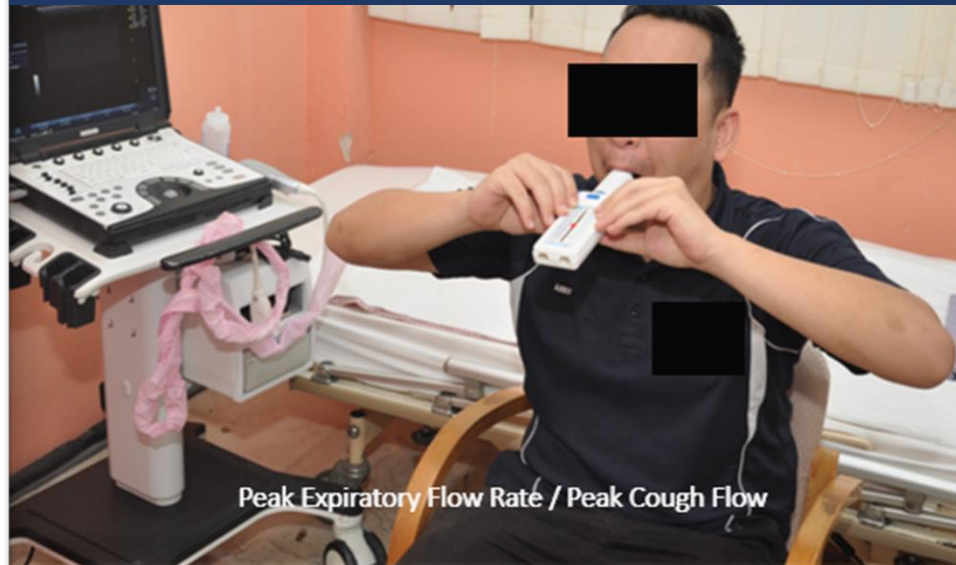


Timed Up & Go



Musculoskeletal Ultrasound

## COVID-19 REHABILITATION OUTPATIENT SPECIALISED SERVICES (CROSS)



Peak Expiratory Flow Rate / Peak Cough Flow



Hand dynamometer



Psychological screen



# 5. TELECONSULTATION



- Done within 4 weeks to all referrals by dedicated MO.
- Use of standard template.
- Appropriate medical advise given.
- Identify red-flags symptoms.
- Decision of urgency of medical review.
- Real Time Data (RTD) entry.

## 5. REAL TIME DATABASE (RTD) BY MEDICAL OFFICER

BMSE	D ( D)	D ( A)	D( S)	BMI	PEFR	mMRC	R Hand dyna	L Hand dyna	VAS	MBI	PCFS	TUG	Distance	Lowest 02	Highest HR
0	0	0	0	30	460	0	28	22	0	100	1	8	350	97	118
0	0	0	0	32.8	400	1	17	17	0	100	1	na	303	96	104
0	0	0	0	32.8	440	0	32	30	0	100	1	8	330	90	103
0	0	0	0	29.5	400	0	26	23	0	100	1	8	360	94	114
0	0	0	0	23	300	0	18	14	0	100	0	NA	345	97	100
0	0	0	0	26.9	550	0	44	39	0	100	0	7	450	95	118
0	0	0	0	33.2	450	0	34	33	0	100	1	-	-	93	121
0	0	0	0	33	400	0	16	16	0	100	1	9	330	93	105

Assessment using selected standardised outcome measures & Real-Time Data entry

0	0	0	0	32.9	640	0	34	43	0	100	1	na	403	90	102
0	0	0	0	28	450	0	40	36	0	100	0	8	380	97	116
0	0	0	0	25.2	490	0	20	20	1	100	1	8	300	97	133
0	0	0	0	25.9	800	0	31	20	0	100	0	9	360	95	105
0	0	0	0	35	370	0	13	9	0	100	0	7	400	95	139
0	0	0	0	31.6	530	0	35	29	0	100	0	7	440	96	110
0	0	0	0	32.8	600	0	40	34	0	100	0	9	330	94	86
0	0	0	0	32	300	0	13	18	0	100	1	8	360	98	109
0	0	0	0	31.6	390	0	27	24	0	100	1	9	390	95	156
0	0	0	0	25.9	500	0	35	31	0	100	1	NA	452	97	119
0	0	0	0	31.6	600	0	42	41	0	100	0	6	360	97	143
0	0	0	0	28	500	1	9	12	0	100	1	14	360	97	140

Note: Sample of COVID-19 rehabilitation Real-Time Database (RTD) parameters that comprises of standardised outcome measures such as oxygen evaluation at rest and on exertion, psychological screening, respiratory and muscle strength evaluation by the interdisciplinary rehabilitation team.

## 6. EXTRA-AGENCY COLLABORATION



**Taylor's University collaboration via CRC  
& Hospital Director**





# 7. DEVELOP CLINICAL FRAMEWORK FOR OUTPATIENT REHABILITATION

## COVID-19 Rehabilitation Outpatient Specialized Services (CROSS)

<b>Entrance pathway</b>	<ul style="list-style-type: none"> <li>Post COVID-19 Rehabilitation Inpatient Specialized Services (CRISS) cases</li> <li>All category 4 &amp; 5 automated referral</li> <li>Other categories with Long COVID symptoms</li> <li>Patients with existing rehabilitation needs whom contracted COVID-19</li> </ul>
<b>Teleconsultation</b>	<ul style="list-style-type: none"> <li>Monitor progress at home such as home oxygen therapy, wounds</li> <li>Symptoms screenings using standardized questionnaire</li> <li>Real time database entry</li> <li>Medical advise and awareness for <b>red flags</b> symptoms</li> <li>Decide urgency for in-person review</li> </ul>
<b>Comprehensive in-person review</b>	<ul style="list-style-type: none"> <li><b>Interval:</b> 1 – 3 months; 3 – 6 months &amp; 6 – 12 months as per attending clinician judgement</li> <li><b>Method:</b> One-on one in-person evaluation by interdisciplinary rehab team members, then team discussion as required</li> <li><b>Multi-system impairment evaluation:</b> Cognitive – Brief MSE, MMSE; Psychosocial – DASS, COVID-19 IES; Respiratory – Auscultation; Home oximeter diary, Incentive spirometer, PEFR; CVS – 1MSTS; 6MWT; MSK – FSS, MRC, TUG, Hand dynamometer; Others are based on comprehensive clinical evaluation.</li> <li><b>Functional assessment:</b> MBI; PCFS</li> <li><b>Quality of Life:</b> WHODAS 2.0; Community ADL – RTW, RTD</li> <li><b>Consultation:</b> Immediate access as clinically required for other medical specialties referral, further investigation &amp; management including but not limited to pulmonologist, cardiologist, internal medicine, infectious disease, neurologist, psychiatrist, geriatrician</li> <li><b>Other interdisciplinary / team activation:</b> Immediate access for SLT, MSW consultation and further management</li> <li><b>Rehabilitation prescription:</b> Targeted, personalized, gradual increment; home based with monitoring log and access for medical advise; institutional based program on case to case basis; intensity based on Modified Borg Scale and THRR</li> <li><b>Adjuncts:</b> IMT, OPEP, TED stockings, abdominal binders, wheelchairs, ambulatory O<sub>2</sub></li> </ul>
<b>Exit Pathway</b>	<ul style="list-style-type: none"> <li>Complete symptoms resolution</li> <li>Absence of new on-going symptoms or issues</li> <li>Full re-integration into society &amp; pre-morbid life roles</li> </ul>

**Abbreviation:** FSS- Fatigue Severity Scale; THRR-Target Heart Rate Response; MSK – Musculoskeletal; IMT- Inspiratory Muscle Trainer; OPEP- Oscillating Positive Expiratory Pressure; 1MSTS- 1 Minute Sit To Stand; TUG- Timed Up &Go; 6MWT- 2 Minutes Walking Test; RPE-Rate of Perceived Exertion; Modified Barthel Index; PCFS- Post C-19 Functional Scale; PEFR- Peaked Expiratory Flow Rate; PCF- Peak Cough Flow; RTW- Return to Work; RTD- Return to Drive; WHODAS- World Health Organization Disability Assessment Scale; DASS – Depression, Anxiety, Stress Scale; C-19 IES- Covid 19 Impact of Event Scale; PT- Physiotherapy; OT- Occupational Therapy, SLT- Speech Language Therapy

# 8. MERGE OF CLINICAL FRAMEWORK INTO E-HIS SYSTEM

**WARGANEGARA**

**HOSPITAL SUNGAI BULOH**

SR00782412

Gender: Female DOB: 11/08/1998(2)  
Nationality: Malaysian  
Race: MELAYU Iss Dt: 22/09/1  
Issued At: Hospital Sungai Buloh

014 69

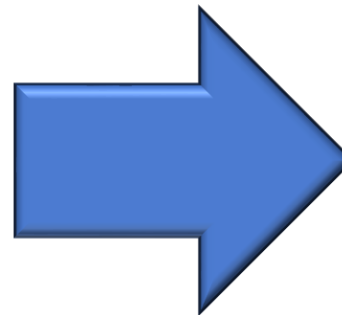
31/06/4  
116/82 (12)  
116  
37°C  
41- 110 kg  
H- 157 cm  
BMI- 44.0  
Quill city med

Initial BP :

Time	HR	SPo2	Dyspnea	Time	HR	SPo2
Resting	127	95		Resting		
Min 1	147	95		Min 1		
Min 2	148	90		Min 2		
Min 3	150	90		Min 3		
Min 4	151	89		Min 4		
Min 5	149	90		Min 5		
Min 6	151	89		Min 6		
Leg Fatigue				Leg Fatigue		
Num Lengths	↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑			Num Lengths	↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑	
Distance (m)	320m			Distance (m)		
Rest Info	No			Rest Info	No	
Time				Time		
Spo2				Spo2		
HR				HR		

Post: 134 97

Begin the test with "Start walking Now" and use the following standard encouragement :



Clinical Event History - Badrul Ashir Bin Yusoff, 36Y, MaleID:SB01150884 - Windows Internet Explorer provided by Hospital Sungai B

Protected mode is currently turned off for the Internet zone. Click here to open security settings.

Period: 08/02/2024 07:23 Flow Sheet View

Encounter No: Normality Indication: Color

[H]-High [L]-Low [X]-Critical Low [V]-Critical High [A]-Abnormal [C]-Critical

Comments: 1 of 1

Clinical Note

Physician Notes

Checklist: CROSS clerking notes

27/09/2023 14:12

Medication

Drug Profile

Medication Administration Summary

Radiology/Imaging

General X-Ray

X-Ray: Chest

Hospital Sungai Buloh, Enc:OP-162076180001,27/09

Clinical Note

Physician Notes

Checklist

CROSS clerking notes

Patient Care

General Services

General OP Vital Sign

Temperature

HR

Pain Score

Respiration

Pulse

Systolic Blood Pressure

Diastolic Blood Pressure

Hospital Sungai Buloh, Enc:OP-162076180002,28/09

Clinical Note

Physician Notes

Progress Note

CROSS Progress Notes

Referral Letter

Ref to GOC Therapy

Patient Care

Brief MSE

DASS

IES - COVID 19

BMI

PCF/PEFR

mMRC Dyspnoea Scale

Hand Dynamometer

VAS

MBI

PCFS

TUG

6 minute walking test

6 MWT distance

minute

HR

SPO2

310m

Clinical Event History - Badrul Ashir Bin Yusoff, 36Y, MaleID:SB01150884 - Windows Internet Explorer provided by Hospital Sungai B

Protected mode is currently turned off for the Internet zone. Click here to open security settings.

Period: 10/11/2023 00:00 08/02/2024 07:23 Flow Sheet View

Encounter No: Normality Indication: Color

[H]-High [L]-Low [X]-Critical Low [V]-Critical High [A]-Abnormal [C]-Critical

Comments: 1 of 1

Clinical Note

Physician Notes

Progress Note

Checklist: CROSS Progress Notes

Patient Care

General Services

General OP Vital Sign

Temperature

Weight

Height

BMI

Pain Score

Respiration

Pulse

Systolic Blood Pressure

Diastolic Blood Pressure

SPO2

Event Details - Webpage Dialog

Brief MSE

MMSE (if impaired MSE):

DASS

IES - COVID 19

BMI

PCF/PEFR

mMRC Dyspnoea Scale

Hand Dynamometer

VAS

MBI

PCFS

TUG

6 minute walking test

minute

HR

SPO2

37.0

14

0

56

139

78

0 (at rest)

1

2

3

4

5

6

1 min post

58

71

76

78

79

78

79

60

96

96

97

95

95

96

96

97

49



## 8. MERGE OF CLINICAL FRAMEWORK INTO E-HIS SYSTEM

Event Details -- Webpage Dialog

**Note Type** : CROSS clerking notes  
**Date/Time** : 27/09/2021 16:13

**Med/Anc Service** : Relab Medicine  
**Performed By** : K

---

**General information**

Education status	: SPM
Occupation	: Senior Officer
Covid 19 Stage	: 4
Medical co-morbidities	: DM, HPT, DL, IHD
Date of admission	: 11/6/2021
Date of discharge	: 15/6/2021
Length of stay (LOS)	: 5
ICU/HDW admission	: No
Tracheostomy	: No
Highest O2 therapy	: NP3L
Total duration of oxygenation	: 4
LTOT requirement	: No
Covid 19 treatment	: Steroid
Complication	: AKI,
Other complication	: General OP Vital Sign Temperature 37.5°C (36~38) BMI 32 Pain Score 0 Respiration 20 /min Respiration 20 /min Pulse 67 /min (74~91) Critical Abnormal Systolic Blood Pressure 151 mmHg (99~131) Critical Abnormal Diastolic Blood Pressure 85 mmHg (59~81) Critical Abnormal
Teleconsult symptoms	: 1) Fatigue 2) Exertional dyspnea
Residual symptoms	: Currently Symptoms improving Mild fatigue upon strenuous activity

CROSS clerking sheet in the e-His System

BMI assessment and documentation

Screening for post COVID-19 symptoms.



## 8. MERGE OF CLINICAL FRAMEWORK INTO E-HIS SYSTEM

Parameters / Score	
Brief MSE	: Intact
DASS	: Normal
IES - COVID 19	: Normal
BMI	: 32
PCF/PEFR	: 400
mMRC Dyspnoea Scale	: 0
Hand Dynamometer	: 22/18
VAS	: 0
MBI	: 100
PCFS	: 1
TUG	: 9
6 minute walking test	
minute	HR
6 MWT distance	: 310m
FSS	: 9
VAFS	: 10
RTD	: Yes
RTW	: No
WHODAS 2.0	: Normal
Rehab Goals	: Borg RPE 4
Prescription 1. Respi -Deep breathing exercise -Thoracic Movement exercise  2. Strengthening -Upper limbs: Bicep curl, Alternate punch, Shoulder press -Lower limbs: Sit to stand, sitting knee extension  3. Endurance -Indoor Walking: gradual increase in duration	
Rehab Prescription	: Plan 1. Exercise pamphlet and diary given 2. Keep SpO2>95% 3. Advised to walk in nearest PPV for Covid19 vaccination 4. Review in 1 year post covid

Info

BMI- Body Mass Index; DASS- Depression Anxiety Stress Scale; FSS- Fatigue Scale Score; IES- Impact of Covid-19 Event Scale; mMRC- Modified Medical Research Council Dyspnoea Scale; MBI- Modified Barthel Index; MMSE- Mini Mental State Examination; PCFS- Post Covid-19 Functional Status Scale; PEFR- Peak Expiratory Flow Rate; RTW- Return To Work; RTD- Return to Driving; TUG- Timed Up & Go; VAS- Visual Analogue Scale; WHODAS- World Health Organization Disability Assessment Scale.

- Cognitive & Psychological assessment with BMSE, DASS & IIES
- Physical assessment with hand dynamometer, PCF, FSS, mMRC
- Functional outcome measure assessment with MBI, PCFS, WHODAS 2.0
- O2 requirement at rest and on exertion assessment with 6MWT, TUG.

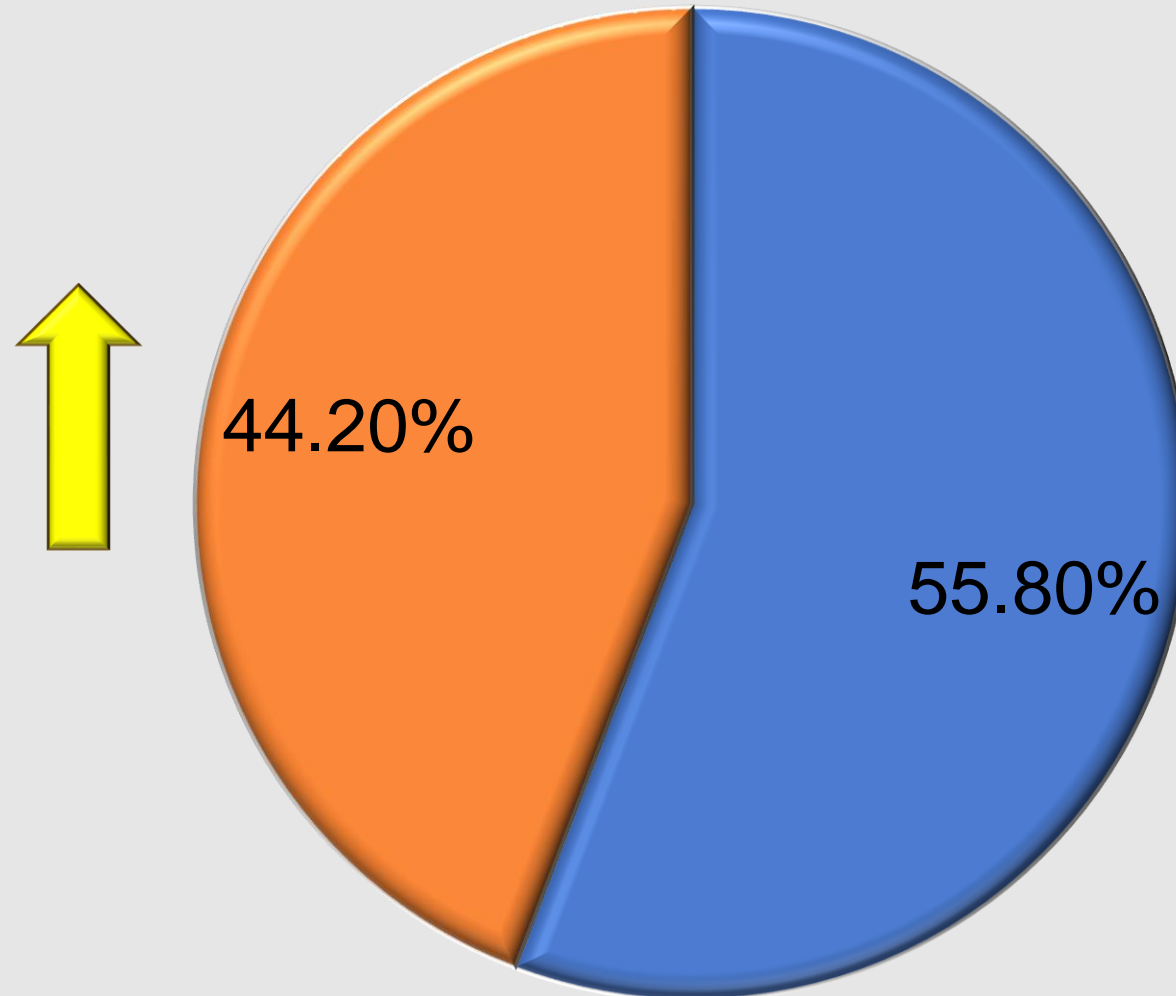
- Symptomatic treatment as indicated
- Personalised exercise regime
- Provision of education & resources
- Empowerment with self-rehabilitation strategies.

## 9. STRUCTURED EDUCATION IN PERSON & IN GROUPS



# POST CYCLE 1 INTERVENTION RESULT

Percentage of Patients With Appropriate Outpatient Rehabilitation Management



Appropriate outpatient rehabilitation management



Inappropriate outpatient rehabilitation management



# MODEL OF GOOD CARE

No	Critical Steps	Criteria	Std	Ver	Cycle 1
1.	Screening by nurses	▪ Vital signs screening including BP, HR, RR, Temp, Pain Score	100%	100%	100%
		▪ Body Mass Index (BMI)	100%	0%	54%
		▪ Multi-system screening for PCC symptoms	100%	16.3%	100%
2.	Clinical examination by medical officer	▪ History taking and clinical examination	100%	100%	100%
		▪ Physical function assessment using standardised outcome measure	100%	16.3%	68.5%
		▪ Cognitive function assessment using standardised outcome measure	100%	16.3%	68.5%
		▪ Psychological function assessment using standardised outcome measure	100%	16.3%	68.5%
		▪ Evaluate the effect of PCC using functional outcome measure	100%	16.3%	68.5%
		▪ Assessment of O <sub>2</sub> saturation at rest and during exertion	100%	32%	68.5%
3.	Consultation by Rehabilitation Physician	▪ Review of PCC symptoms	100%	100%	100%
		▪ Review of physical, cognitive, psychological & functional outcome measure	100%	16.3%	68.5%
		▪ Order for investigations as indicated	100%	100%	100%
		▪ Prescribe symptomatic treatment as indicated	100%	100%	100%
		▪ Referral for other specialties or therapies as indicated	100%	100%	100%
4.	Prescription of rehabilitation program	▪ Provide patient education	100%	47%	77%
		▪ Provide educational resources for PCC	100%	21%	44.2%
		▪ Provide personalised exercise / therapy	100%	100%	100%
5.	Referral to other specialties or therapies as required	▪ Refer patient to other medical specialties or therapies as required	100%	100%	100%

# 10. COLLABORATION TO PROVIDE ACCESS FOR COVID-19 REHABILITATION EDUCATIONAL MATERIALS (BM)

Sokongan untuk P Pengurusan Kend Berkaitan Jangkita

**Mengurus berkaitan minum da**

Sokongan untuk P Pengurusan Kend Berkaitan Jangkita

**Mengurus harian ke**

Sokongan untuk P Pengurusan Kend Berkaitan Jangkita

**Bersenam jangkitan COVID-19**

**Subject: Re: KEBENARAN KOLABORASI PENTERJEMAHAN BAHASA MALAYSIA MATERIAL PENDIDIKAN REHABILITASI PASCA JANGKITAN COVID-19 TERBITAN WORLD HEALTH ORGANIZATION (WHO) OFFICE FOR EUROPE**

Salam Sejahtera YBrs. Dr.,

**Kebenaran Kolaborasi Penterjemahan Bahasa Malaysia Material Pendidikan Rehabilitasi Pasca Jangkitan COVID-19 Terbitan *World Health Organization (WHO) Office For Europe***

Dengan hormatnya saya diarah merujuk kepada perkara di atas.

2. Untuk makluman YBrs. Dr., YBhg. Dato' Sri KSU telah bersetuju dengan permohonan kolaborasi material penterjemahan Bahasa Malaysia untuk terbitan *World Health Organization (WHO) Office for Europe*. Dalam hal ini juga, terbitan ini hanya boleh digunakan untuk maksud usaha memperkasa pendidikan pesakit bagi rehabilitasi pasca jangkitan COVID-19.

Perhatian dan kerjasama YBrs. Dr. berhubung perkara ini adalah amat dihargai dan didahului dengan ucapan terima kasih.

Sekian.

Bahagian Dasar dan Hubungan Antarabangsa  
Kementerian Kesihatan Malaysia

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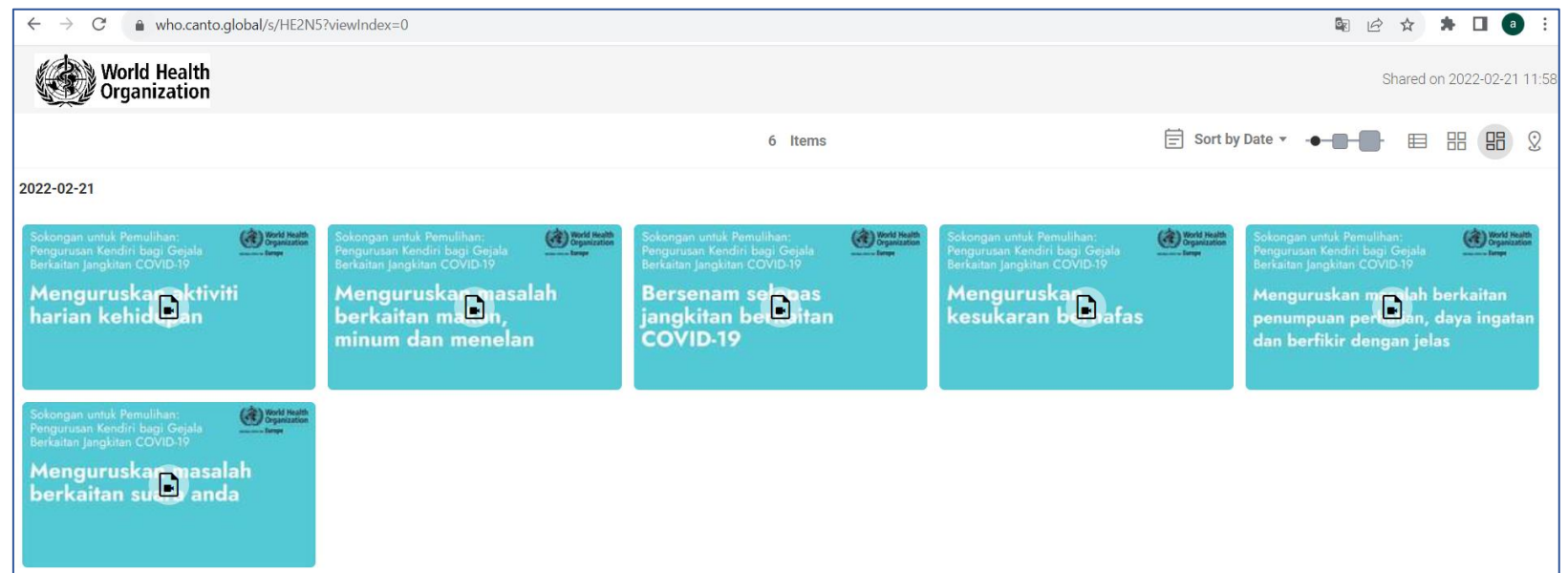
Mengurus masalah berkaitan dengan suara anda

in kesakitan

Approval by Division of Policy & International Relations MOH

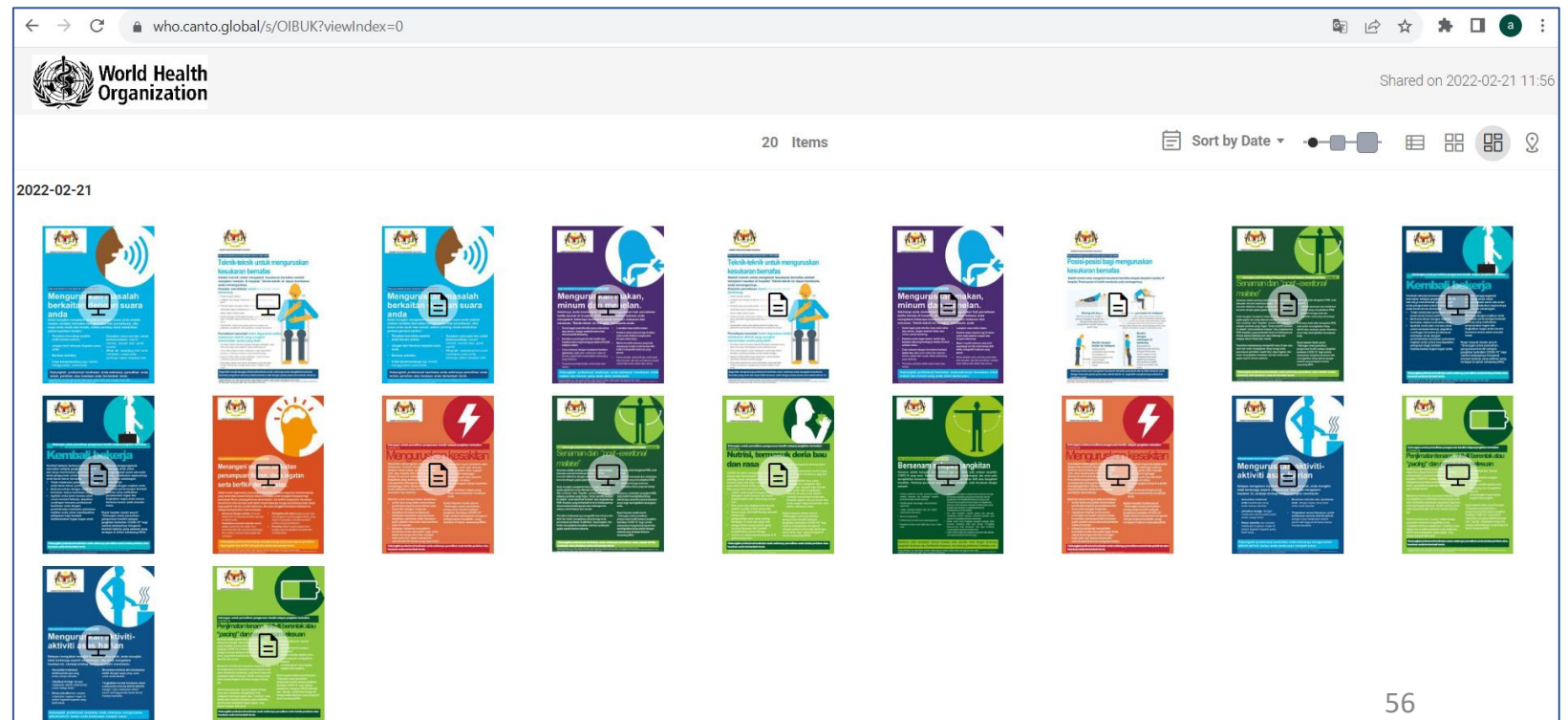
Bahasa Malaysia translated 6  
video series:

<https://who.canto.global/b/NTTVB>



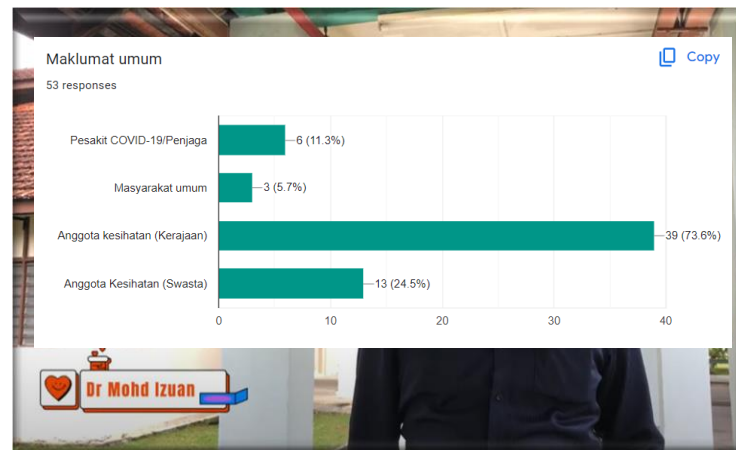
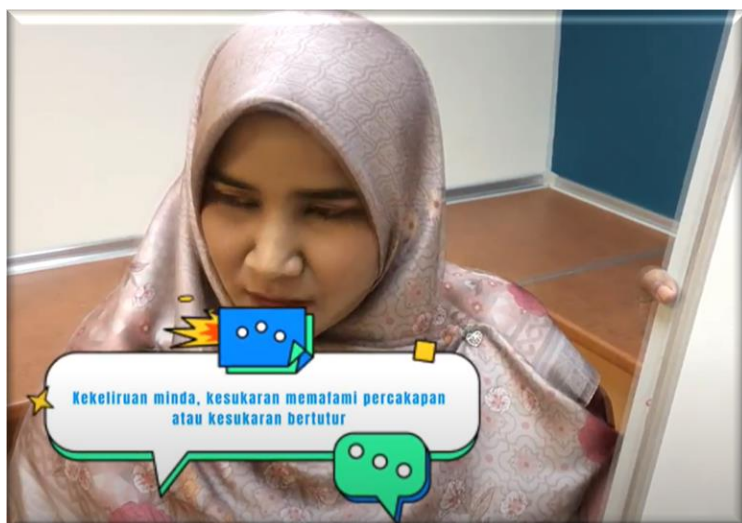
Bahasa Malaysia translated 13  
posters series were available  
at WHO website:

<https://who.canto.global/b/U076U>





# 11. EDUCATIONAL VIDEO COLLABORATION (NGO CARE & SHARE CIRCLE) EMPOWERMENT OF PATIENTS / CAREGIVERS WITH REHABILITATION SELF- MANAGEMENT



**PEJABAT TIMBALAN KETUA PENGARAH KESIHATAN (PERUBATAN)**  
Bahagian Perkembangan Perubatan  
Aras 7, Blok E1, Parcel E, Presint 1,  
Pusat Pentadbiran Kerajaan Persekutuan  
62590 Putrajaya

Tel : 03-88831034  
Faks : 03-88831040  
Laman Web : <http://www.moh.gov.my>

Ruj. Kami : KKM.600-27/15/1 Jld.3 ( 9 )

Tarikh : 27 Mei 2022

**Dr. Kuldip Kaur a/p Prem Singh**  
Pengarah  
Hospital Sungai Buloh

Puan,

**PERMOHONAN KELULUSAN TIMBALAN KETUA PENGARAH KESIHATAN MALAYSIA (PERUBATAN) BAGI EDARAN UMUM VIDEO PENDIDIKAN KESIHATAN "MENGENAI GEJALA-GEJALA AMARAN – SOKONGAN BAGI REHABILITASI KENDIRI INDIVIDU PASCA JANGKITAN COVID-19"**

Dengan segala hormatnya saya merujuk kepada perkara di atas dan surat dari Hospital Sungai Buloh rujukan Bil(11)HSB/780/36/35Jld.2 bertarikh 10 Mei 2022 adalah berkaitan.

2. Pejabat ini mengambil maklum matlamat penerbitan video pendidikan "Mengenai gejala-gejala amaran- Sokongan Bagi Rehabilitasi Kendiri Individu Pasca Jangkitan COVID-19" ini adalah untuk memperkasakan individu pasca COVID-19 serta keluarga pesakit dengan pengetahuan dan kemahiran tertentu bagi menangani gejala-gejala yang mungkin dialami ketika berada di fasa pemulihan.

3. Sukacita dimaklumkan bahawa Pejabat ini tiada halangan bagi edaran umum video ini kepada masyarakat bagi penekanan kepentingan pendidikan kesihatan sebagai proses pemulihan pasca jangkitan COVID-19. Perhatian pihak puan dalam perkara ini amatlah dihargai dan didahului dengan ucapan terima kasih.

Sekian.

**"WAWASAN KEMAKMURAN BERSAMA 2030"**

**"BERKHIDMAT UNTUK NEGARA"**

Saya yang menjalankan amanah,

(DATO' DR. ASMAYANI BT KHALIB) (MMC: 27622)  
Timbalan Ketua Pengarah Kesihatan (Perubatan)  
Kementerian Kesihatan Malaysia



CERTIFIED TO ISO 9001:2015  
CERT. NO. : QMS 01897



CERTIFIED TO ISO 9001:2015  
CERT. NO. : QMS 01897



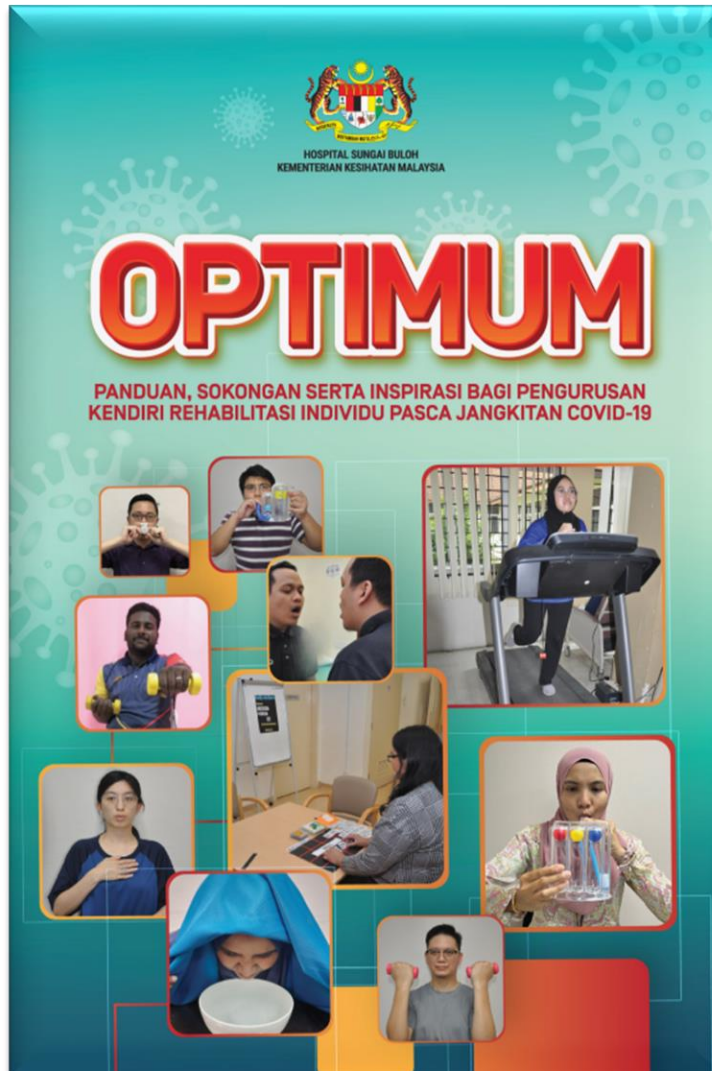
CERTIFIED TO ISO 9001:2015  
CERT. NO. : MY-QMS 01897





# 12. FREE DIGITAL BOOKLET "OPTIMUM" (ISBN 978-967-19838)

EMPOWERMENT OF PATIENTS / CAREGIVERS WITH REHABILITATION SELF-MANAGEMENT



MyGovUC<sup>®</sup>

DR KULDIP KAUR A/P PREM SINGH (HSUNGAIBULOH) <drkuldip@moh.gov.my>

## EDARAN E-BOOKLET "OPTIMUM: PANDUAN, SOKONGAN SERTA INSPIRASI BAGI PENGURUSAN KENDIRI REHABILITASI INDIVIDU PASCA JANGKITAN COVID-19"

1 message

ROSDAYANA BINTI ROSLY (MOH-SELANGOR) <rosdayana@moh.gov.my>  
To: Pengarah Hospital Selangor <pgrhosp\_jkns@moh.gov.my>  
Cc: UnitPerkhidmatanKlinik/JKNS <upk.jkns@moh.gov.my>

15 April 2022 at 09:01

Tuan/ Puan,

### EDARAN E-BOOKLET "OPTIMUM: PANDUAN, SOKONGAN SERTA INSPIRASI BAGI PENGURUSAN KENDIRI REHABILITASI INDIVIDU PASCA JANGKITAN COVID-19"

Saya dengan segala hormatnya merujuk perkara di atas dan surat daripada Hospital Sungai Buloh dengan nombor rujukan Bil (10) HSB/780/36/35 Jld.2 bertarikh 5 April 2022 adalah berkaitan.

- Untuk makluman pihak tuan/puan, Jabatan Perubatan Rehabilitasi dan Pertubuhan Pasca Siswazah Hospital Sungai Buloh telah menerbitkan sebuah buku bertajuk "Optimum: Panduan, Sokongan Serta Inspirasi Bagi Pengurusan Kendiri Rehabilitasi Individu Pasca Jangkitan Covid-19".
- Sehubungan itu, dilampirkan surat daripada Hospital Sungai Buloh berkenaan hal ini beserta QR code di Lampiran 1 bagi muat turun E-booklet tersebut. Semoga bahan Pendidikan kesihatan ini dapat membantu meningkatkan penyampaian perkhidmatan kepada semua pesakit yang memerlukan sokongan rehabilitasi pasca jangkitan Covid-19. Segala perhatian pihak tuan/puan berhubung perkara ini amat dihargai.

Sekian, terima kasih.

"WAWASAN KEMAKMURAN BERSAMA 2030"

"BERKHIDMAT UNTUK NEGARA"

Saya yang menjalankan amanah,

Dr. Rosdayana Binti Rosly (MMC: 61146)  
Ketua Penolong Pengarah (Perubatan)  
Bahagian Perubatan  
Jabatan Kesihatan Negeri Selangor  
upk.jkns@moh.gov.my  
rosdayana@moh.gov.my  
Tel:03-51237333 ext 270

Peringatan  
Pengguna Perkhidmatan MyGovUC 2.0 adalah bertanggungjawab melindungi kerahsiaan data/maklumat Rasisia Rasmi Kerajaan. Adalah diingatkan agar pengguna sentiasa peka dengan SEMUA peraturan, arahan keselamatan dan pekikling semasa yang berkuatkuasa bagi semua pengendalian data/maklumat Rasisia Rasmi Kerajaan yang berkaitan.



PEJABAT PENGARAH HSB	
TP(Pen)	Calitan:
TP(Peng)	Rehabilitasi & semua aktiviti
Ketua Jabatan	
Ketua Unit	
Akuasiti / Kawangan	
Ketua Penyelia Jururawat	
Ketua Penyelia Hospital	
PRO	
PA	
Lain-lain Jawatan (Nyatakan)	
Tandatangan / tarikh: 15/04/2022	

DR. SHAHABUDDIN BRAHIM (MMC 37309)



KEMENTERIAN KESIHATAN MALAYSIA  
Bahagian Perkembangan Perubatan  
Aras 7, Blok E1, Parcel E, Presint 1,  
Pusat Pentadbiran Kerajaan Persekutuan  
62590 Putrajaya

Tel : 03-88831047  
Faks : 03-88831479  
Laman Web : http://www.moh.gov.my

Ruj. Kami : KKM.600-27/15/1 Jld.3 (8)

Tarikh : 15 April 2022

Dr. Kuldip Kaur a/p Prem Singh  
Pengarah  
Hospital Sungai Buloh

Puan,

### PERMOHONAN KELULUSAN KETUA PENGARAH KESIHATAN MALAYSIA BAGI EDARAN UMUM PERCUMA E-BOOKLET "OPTIMUM: PANDUAN, SOKONGAN SERTA INSPIRASI BAGI REHABILITASI KENDIRI INDIVIDU PASCA JANGKITAN COVID-19"

Dengan segala hormatnya saya merujuk kepada perkara di atas dan surat daripada Hospital Sungai Buloh rujukan Bil(8)HSB/780/36/35 Jld.2 bertarikh 8 Mac 2022 adalah berkaitan.

- Untuk makluman, YBhg. Tan Sri Dato' Seri Ketua Pengarah Kesihatan telah bersetuju bagi edaran umum percuma e-booklet ini kepada masyarakat umum bagi penekanan kepentingan pendidikan kesihatan bagi proses pemulihan pasca jangkitan COVID-19.
- Sukacita juga dimaklumkan bahawa Kementerian Kesihatan Malaysia tiada halangan akan penjualan naskah salinan cetak e-booklet tersebut bagi tujuan menampung kos percetakan oleh pihak Pertubuhan Pascasiswazah Hospital Sungai Buloh. Perhatian pihak puan dalam perkara ini amatlah dihargai dan didahului dengan ucapan terima kasih.

Sekian.

"WAWASAN KEMAKMURAN BERSAMA 2030"

"BERKHIDMAT UNTUK NEGARA"

Saya yang menjalankan amanah,

(DATO' DR MOHD FIKRI BIN UJANG) (MMC:27355)  
Pengarah  
Bahagian Perkembangan Perubatan  
Kementerian Kesihatan Malaysia



CERTIFIED TO ISO 9001:2015  
CERT. NO.: QMS 01897



CERTIFIED TO ISO 9001:2015  
CERT. NO.: QMS 01897



CERTIFIED TO ISO 9001:2015  
CERT. NO.: MY-009 01897



# 13. DIGITAL BOOKLET “OPTIMUM” (ISBN 978-967-19838)

## EMPOWERMENT OF PATIENTS / CAREGIVERS WITH REHABILITATION SELF- MANAGEMENT



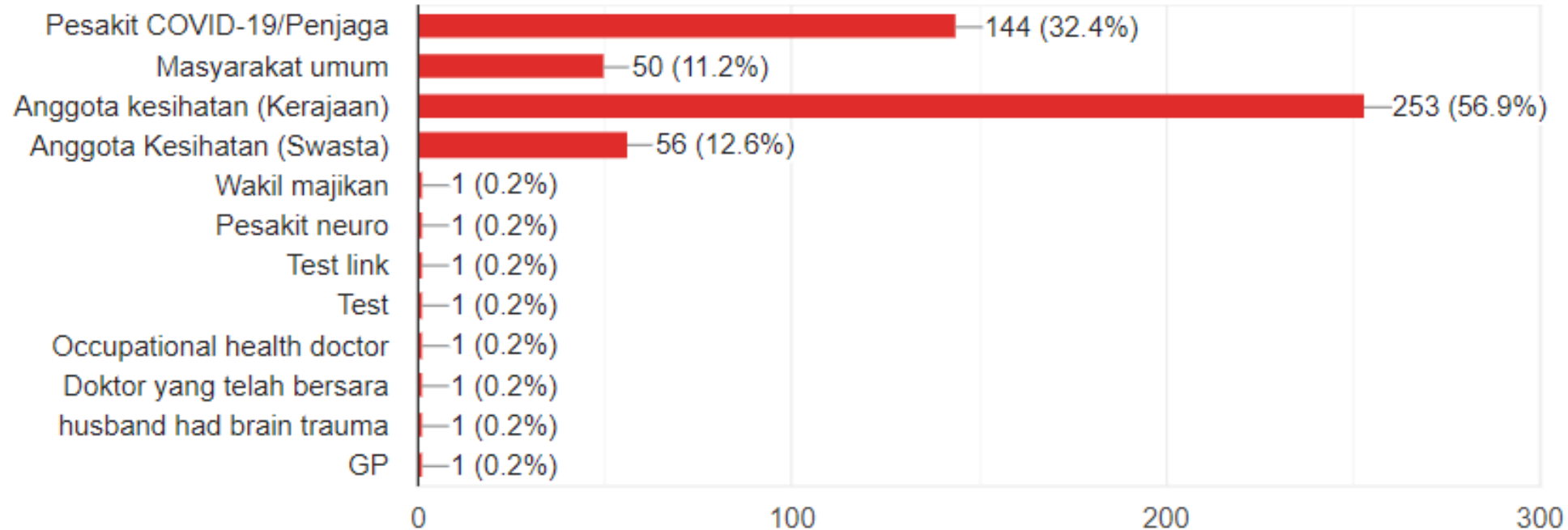
Tan Sri Dato' Seri Director General of Health Malaysia on the 14<sup>th</sup> May 2022 di Pusat Kawalan Kusta Negara, Hospital Sungai Buloh





## Maklumat umum

445 responses



Copy

COVID  
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Also known  
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ation



medicine in helping "long haulers" to get back on their feet, with Dr Akmal Hafizah Zamli, rehabilitation physician and head of the Department of Rehabilitation Medicine at Hospital Sungai Buloh.

To access the Ministry of Health's online guide for rehabilitation after a long COVID diagnosis, [click here.](#)

Produced by: Lim Sue Ann

# 15. VIRTUAL SYMPOSIUM POST COVID-19 CONDITION FOCUSED REHABILITATION MEDICINE

## SYMPOSIUM SCHEDULE

TIME	ACTIVITY	SPEAKER
0800 – 0845	Registration	
0845 – 0900	Video Message from the Global Webinar 06-10-21 • WORLD HEALTH ORGANIZATION INTRODUCTION TO REHABILITATION POST COVID-19 CONDITION	Dr. De Groote Wouter Head of Rehabilitation Program, Non-communicable Diseases Department, World Health Organization, Geneva, Switzerland
0900 – 0915	Post COVID-19 Condition – Rehabilitation Medicine Strategies for the Nation • A PLAN AHEAD	Dr. Yusriza Mohd. Yusof Head of Rehabilitation Medicine Services, Ministry of Health Malaysia
0915 – 0945	Sneak Peek into the Post COVID-19 Condition database • COVID-19 REHABILITATION OUTPATIENT SPECIALIZED SERVICES (CROSS)	Dr. Akmal Hafizah Zamli Head of Rehabilitation Medicine Department, Hospital Sungai Buloh
0945 – 1000	Tea Break	
1000 – 1200	Multidisciplinary Perspectives of Post COVID-19 Condition ... Lecture Series • EMBRACING THE PANDEMIC STORM (Issues and challenges in Post COVID-19 Condition) • TACKLING THE SIREN CALL (Addressing the psychological impacts) • FIXING THE PULMONARY WRECKS (Management of long-term pulmonary consequences) • GETTING BACK ON DECK (Rehabilitation medicine approach to recovery for Post COVID-19 Condition)	Dr. Nor Arisah Misnan Consultant Infectious Disease Physician Hospital Sungai Buloh  Dr. Lee Chung Wah Consultant Psychiatrist & Senior Lecturer Taylor's University School of Medicine  Dr. Arvindran Alaga Kedah State Head of Respiratory Services & Head of Respiratory Unit Hospital Sultanah Bahiyah  Dr. Sa'ari Mohamad Yatim Selangor State Head of Rehabilitation Medicine Services & Head of Rehabilitation Medicine Department, Hospital Serdang
1200 – 1230	Post COVID-19 Condition ... The Survivor Perspective • THEIR TRUE STORIES	Dr. Kavitha Andiappan Rehabilitation Physician Hospital Sungai Buloh
1230 – 1300	Officiating & Launching • POST COVID-19 CONDITION EDUCATIONAL LEAFLETS & VIDEO SERIES	Dr. Yusriza Mohd. Yusof Head of Rehabilitation Medicine Services, Ministry of Health Malaysia
1300 – 1400	Lunch & Zohor Prayer	
1400 – 1630	Interdisciplinary Rehabilitation Medicine Perspectives of Post COVID-19 Condition ... Case Based Workshop Series • BREATHING IS BEGINNING (Home oxygen therapy) • PRIORITIES & INTERVENTIONS (Rehabilitation nursing perspectives) • THE SHORT & LONG OF IT! (Physiotherapy management of respiratory and musculoskeletal impacts) • TACKLING THE WAX AND WANE ... (Occupational therapy management for fatigue, brain fog, insomnia and psychological distress) • NEUROLOGICAL COMPLICATION (Ultrasound guided Botulinum Neurotoxin injection) • THE ULTIMATE TARGET (Return to Work program for Post COVID-19 Condition)	Dr. Akmal Hafizah Zamli Head of Rehabilitation Medicine Department Hospital Sungai Buloh  Madam Ruhini Md Isa Head of Rehabilitation Nursing Unit Hospital Sungai Buloh  Miss Nur Hazrina Iderus Head of Physiotherapy Unit Hospital Sungai Buloh  Madam Juliana Ibrahim Head of Occupational Therapy Unit Hospital Sungai Buloh  Dr. Kavitha Andiappan Rehabilitation Physician Hospital Sungai Buloh  Dr. Fazita Abdul Talib Head of Rehabilitation Medicine Department, Social Security Organisation (SOCSO), Rehabilitation Centre Tun Abdul Razak
1630 – 1700	Question & Answer Session	All Workshop Series Facilitators

## VIRTUAL SYMPOSIUM

### Post COVID-19 Condition Focused Rehabilitation Medicine

### “FRONTING THE CHALLENGES TOGETHER”

More than 2.5 million Malaysians have survived COVID-19, but to some their journey has only just begun. Many remain debilitated by symptoms such as persistent fatigue, breathlessness, brain fog and depression. The World Health Organisation (WHO) has defined **Post COVID-19 condition**, also known as **Long COVID**, as the following:

“A condition that occurs in individuals with a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms that last for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others and generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time.”

In the absence of scientifically proven treatments, it potentially lead to substantial impacts on society, increased healthcare burden and economic productivity losses. Long COVID is indeed a medical challenge of highest priority. We bring to you distinguished speakers of diverse specialties to provide guidance in delivering comprehensive and effective care to our patients. **Join us!**

**LIMITED PLACES AVAILABLE!**

Organized by:  
**REHABILITATION MEDICINE  
DEPARTMENT  
&  
POST GRADUATE SOCIETY  
HOSPITAL SUNGAI BULOH**

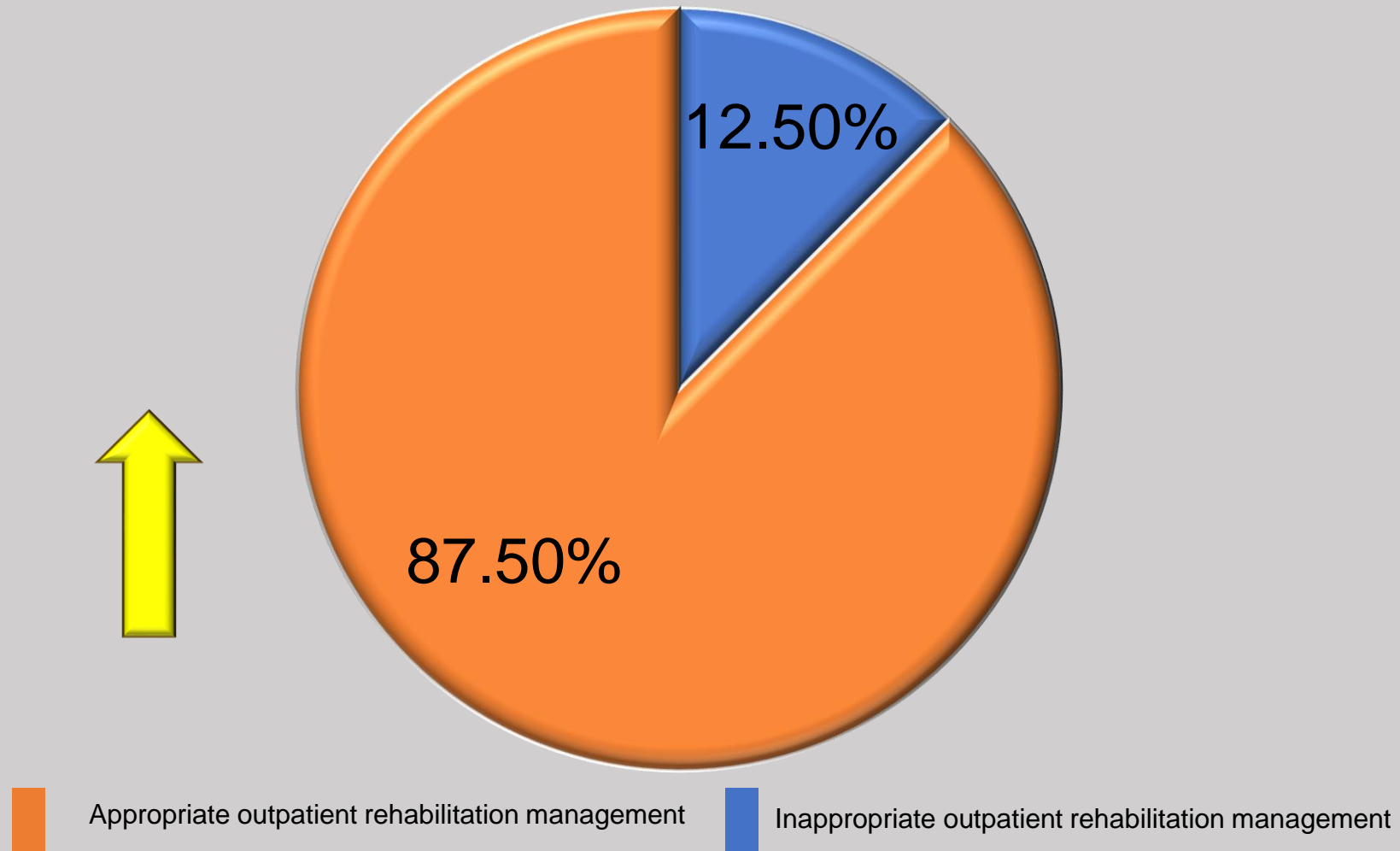
Date :  
**7<sup>th</sup> MARCH 2022 (Monday)**  
Time :  
**0800 – 1700**  
Platform : Zoom

Approved CPD :  
**Category A1 (8 points)**

Participated by **63 HSgB** interdisciplinary Rehabilitation staffs with total **460 virtual attendance** across Malaysia from various healthcare professional categories and specialties including from MOH, private and universities.

# POST CYCLE 2 INTERVENTION RESULT

Percentage of Patients With Appropriate Outpatient Rehabilitation Management





# MODEL OF GOOD CARE

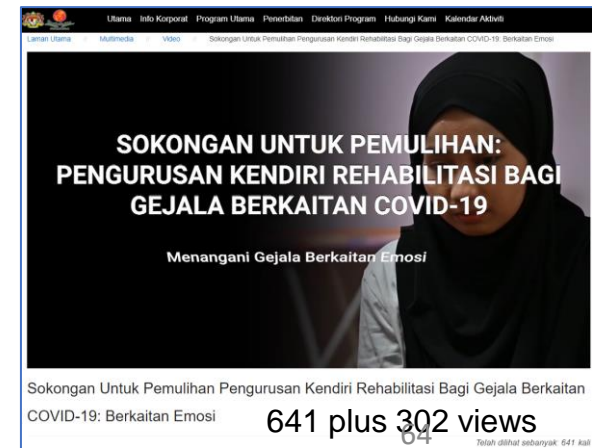
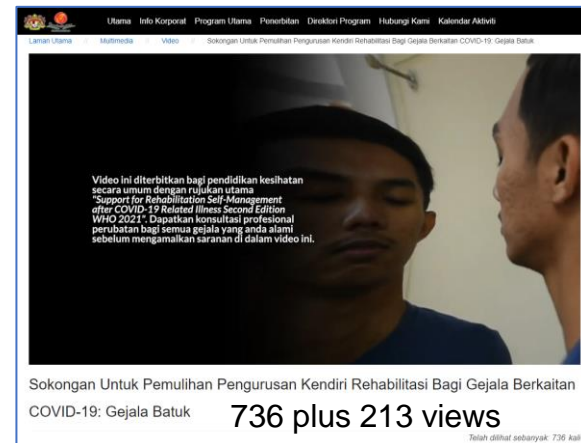
No	Critical Steps	Criteria	Std	Ver	Cycle 1	Cycle 2
1.	Screening by nurses	▪ Vital signs screening including BP, HR, RR, Temp, Pain Score	100%	100%	100%	100%
		▪ Body Mass Index (BMI)	100%	0%	54%	100%
		▪ Multi-system screening for PCC symptoms	100%	16.3%	100%	100%
2.	Clinical examination by medical officer	▪ History taking and clinical examination	100%	100%	100%	100%
		▪ Physical function assessment using standardised outcome measure	100%	16.3%	68.5%	94.2%
		▪ Cognitive function assessment using standardised outcome measure	100%	16.3%	68.5%	94.2%
		▪ Psychological function assessment using standardised outcome measure	100%	16.3%	68.5%	94.2%
		▪ Evaluate the effect of PCC using functional outcome measure	100%	16.3%	68.5%	94.2%
		▪ Assessment of O <sub>2</sub> saturation at rest and during exertion	100%	32%	68.5%	100%
3.	Consultation by Rehabilitation Physician	▪ Review of PCC symptoms	100%	100%	100%	100%
		▪ Review of physical, cognitive, psychological & functional outcome measure	100%	16.3%	68.5%	94.2%
		▪ Order for investigations as indicated	100%	100%	100%	100%
		▪ Prescribe symptomatic treatment as indicated	100%	100%	100%	100%
		▪ Referral for other specialties or therapies as indicated	100%	100%	100%	100%
4.	Prescription of rehabilitation program	▪ Provide patient education	100%	47%	77%	100%
		▪ Provide educational resources for PCC	100%	21%	44.2%	100%
		▪ Provide personalised exercise / therapy	100%	100%	100%	100%



# 16. POST COVID-19 REHABILITATION VIDEO COLLABORATION WITH MYPORTAL HEALTH

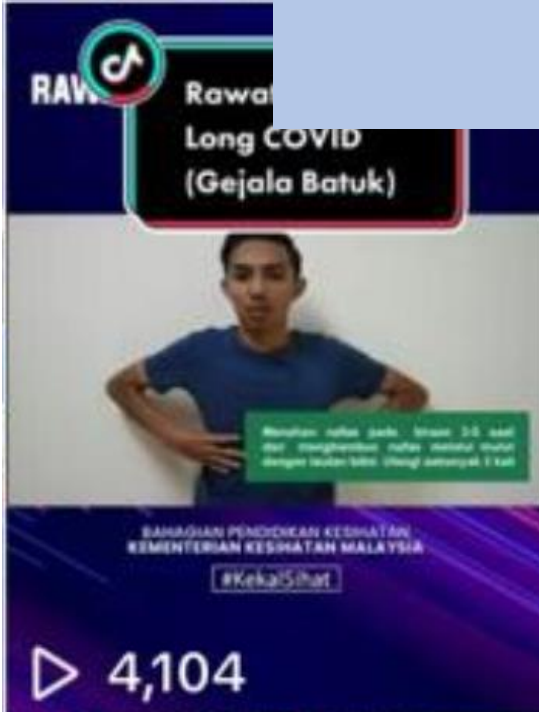
## PORTAL & YOU TUBE VIDEOS 6,569 VIEWS

Available for free download at MyHealth Portal at  
[www.myhealth.gov.my](http://www.myhealth.gov.my)





**TIK TOK VIDEO**  
**47,792 VIEWS**





# 17. NATIONAL SYMPOSIUM POST COVID-19 CONDITION 2.0 FOCUSED REHABILITATION



**NATIONAL SYMPOSIUM**  
**POST COVID-19 CONDITION**  
**FOCUSED REHABILITATION MEDICINE 2.0**  
**“Together for Better Outcomes”**

Organized by  
**REHABILITATION MEDICINE DEPARTMENT & POST GRADUATE SOCIETY**  
**HOSPITAL SUNGAI BULOH**

Auditorium Hospital Sungai Buloh | 29-05-2023 (Monday) | 0800 – 1700  
CPD: Category A1 (8 points)



### THE SPEAKERS

**DR. YUSNIZA MOHD YUSOF**  
Head of Rehabilitation Medicine Services Ministry of Health, Malaysia,  
Clinical Director, Hospital Rehabilitasi Cheras, Kuala Lumpur.

**DR. SAARI MOHAMAD YATIM**  
Selangor Head of Rehabilitation Medicine Services,  
Head of Rehabilitation Medicine Department, Hospital Serdang

**DR. AKMAL HAFIZAH ZAMLI**  
Head of Rehabilitation Medicine Department,  
Hospital Sungai Buloh

**DR. SYAZATUL SYAKIRIN SIROL AFLAH**  
Consultant Respiratory Physician,  
Respiratory Medicine Institute, Hospital Kuala Lumpur

**DR. NOR ARISAH MISNAN**  
Consultant Infectious Disease Physician, Hospital Sungai Buloh

**DR. SATHYA RAO JOGULU**  
Family Medicine Specialist, Ampang Health Clinic

### THE SPEAKERS

**DR. FAZITA ABDUL TALIB**  
Head of Rehabilitation Medicine Department,  
PERKESO Rehabilitation Centre Tun Abdul Razak Melaka

**DR. PAMELA CHIA SHOOK YEN**  
Rehabilitation Physician, Hospital Sungai Buloh

**MADAM JULIANA IBRAHIM**  
Head of Occupational Therapy Unit,  
Rehabilitation Medicine Department, Hospital Sungai Buloh

**MR. KHAIRI JAFFAR**  
Head of Physiotherapy Unit, Rehabilitation Medicine Department,  
Hospital Sungai Buloh

**MADAM RUHINI MD ISA**  
Head of Nursing Unit, Rehabilitation Medicine Department,  
Hospital Sungai Buloh

REGISTRATION QR CODE  
For enquiries contact Klinik Pakar Rehabilitasi Hospital Sungai Buloh :  
03-61561321 ext 2334 | hugbrehabdept@gmail.com  
011-36432892  
Person in Charge: Dr Fatrin Fagha Azmi Mahmud & Dr Raagini Letchumanan

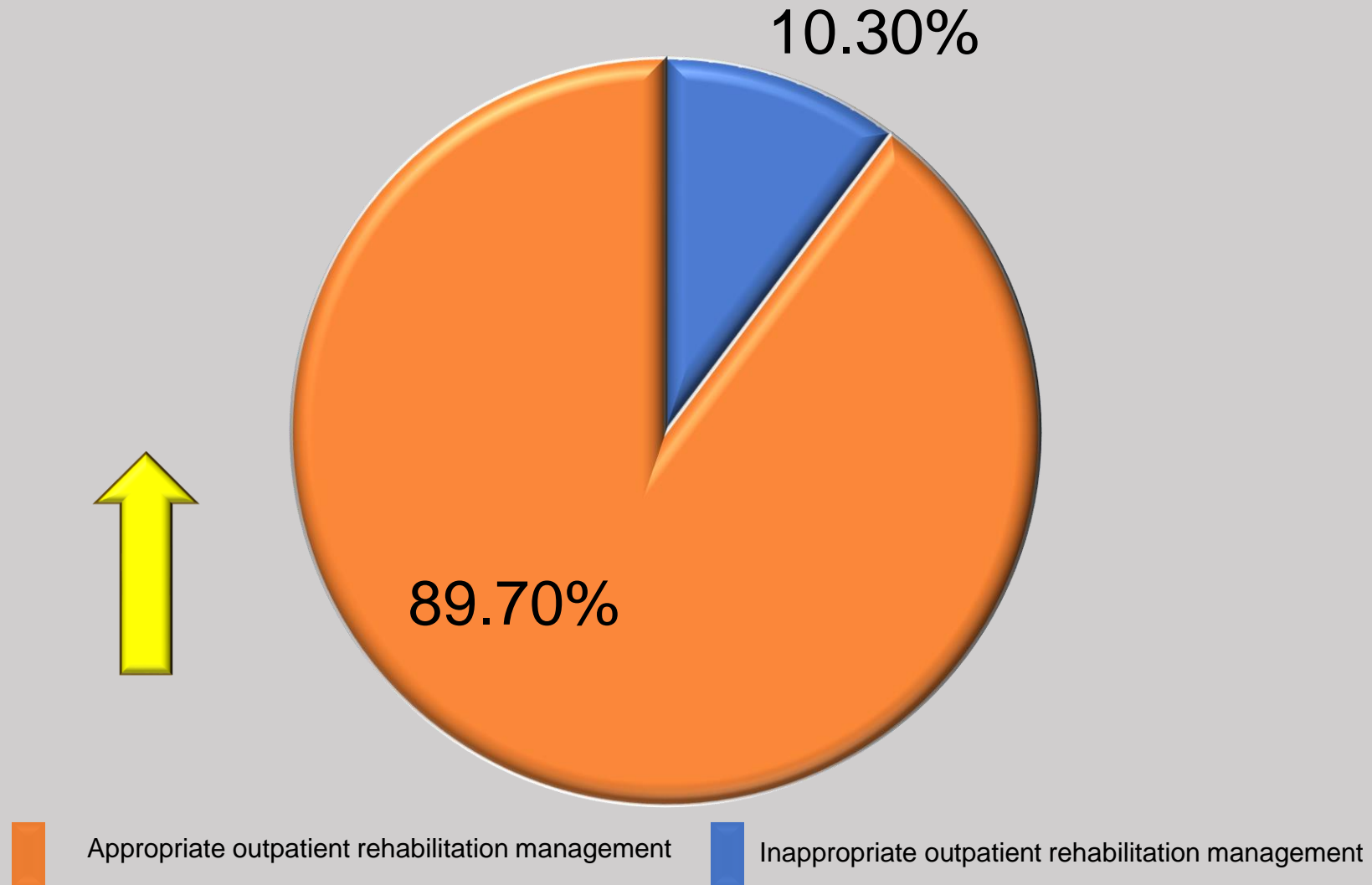
Symposium package: RM100 for specialist and RM80 for all other categories  
(includes of registration fee, physical & digital booklet self-rehabilitation guide, OPTIMUM ISBN 978-967-1829-0-5  
e-program book, e-symposium content materials, hands-on sessions, e-certificate,  
link for educational posters & video series, meals & drinks)  
Local Purchase Order (LPO) accepted as e-banking to

SYMPOSIUM SCHEDULE		
TIME	ACTIVITY	SPEAKER
0800-0810	Registration	
0810-0815	Science on 5 • World Health Organization Update on Post COVID-19 Condition	Video Message
0815-0830	Together for Better! • Rehabilitation Medicine Services	Dr Yusniza Mohd Yusof Head of Rehabilitation Medicine Services, Ministry of Health Malaysia
0830-0850	Unlocking the Mystery • COVID-19 Rehabilitation Outpatient Specialized Services (CROSS) – Lessons Learned of 2 Years' Experience	Dr Akmal Hafizah Zamli Head of Rehabilitation Medicine Department, Hospital Sungai Buloh
0850-0915	Tea Break	
0915-0930	Let's Burn the Burn-outs • Brain-Gym & Breathworks	Pn Juliana Ibrahim / En Khairi Jaffar Head of Occupational Therapy / Head of Physiotherapy Unit, Hospital Sungai Buloh
0930-1215	Multidisciplinary Update Lecture Series • The Science Behind – What We Know So Far and How Do We Handle It... • Pulmonary Impacts – Outcomes, Interventions & Expectations • Rehabilitation Medicine Perspectives – The Panoramic View... What's New? • Primary Care Management – Tips & Perks • Return to Work – The Ultimate Target!	Dr Nor Arisah Misnan Consultant Infectious Disease Physician, Hospital Sungai Buloh Dr Syazatul Syakirin Sirol Aflah Consultant Respiratory Physician, Respiratory Medicine Institute, Hospital Kuala Lumpur Dr Sa'ari Mohamad Yatim Selangor Head of Rehabilitation Medicine Services, Head of Rehabilitation Medicine Department, Hospital Serdang Dr Sathya Rao Jogulu Family Medicine Specialist & Head of Ampang Health Clinic Dr Fazita Abdul Talib Head of Rehabilitation Medicine Department, PERKESO Rehabilitation Centre Tun Abdul Razak Melaka
1215-1235	Perspectives of COVID-19 survivor Long Hauler's Fight – When is the End in Sight?	Dr Pamela Chia Shook Yen Rehabilitation Physician, Hospital Sungai Buloh
1235-1300	Officiating Ceremony & Launch of Self Rehabilitation 3-Minutes-Video-Series	Dr Yusniza Mohd Yusof / Dr Nika Nor Aniza Nik Mohd Zin Head of Rehabilitation Medicine Services, Ministry of Health Malaysia/ Director of Hospital Sungai Buloh
1300-1400	Lunch & Zohor Prayer	
1400-1530	Interdisciplinary Rehabilitation Case Studies The Genetics – Top 5 Tips • Nursing Strategies • Basic Spirometry Outcomes • Rehabilitation Case Series • Breath Works & Chest Clearance • Physiotherapy Interventions The Challenging Struggle • Occupational Therapy Strategies – Fatigue, Stress, Brain Fog & Insomnia The Power of Breath • Rehabilitative Ultrasound – Diaphragmatic Breathing Neurological Complications • Intrathecal Botulinum Neurotoxin Injection for Spasticity	Pn Ruhini Md Isa Head of Rehabilitation Ward, Hospital Sungai Buloh Dr Akmal Hafizah Zamli Head of Rehabilitation Medicine Department, Hospital Sungai Buloh En Khairi Jaffar Head of Physiotherapy Unit, Hospital Sungai Buloh Pn Juliana Ibrahim Head of Occupational Therapy Unit, Hospital Sungai Buloh Dr Akmal Hafizah Zamli Head of Rehabilitation Medicine Department, Hospital Sungai Buloh Dr Pamela Chia Shook Yen Rehabilitation Physician, Hospital Sungai Buloh
1530-1700	Video & Hands-on Series Station 1: The Basics • Peak Expiratory Flow Rate • Basic Spirometry Station 2: Rehabilitative Ultrasound • Diaphragmatic Breathing Station 3: Secretion Mobilization • Mechanical Handheld Chest Percussors • Mechanical Vest Chest Percussors • Mechanical Insufflation-Exsufflation Device Station 4: Chronic Non-Productive Cough • Steam Inhalation • Active Cycle Breathing Techniques • Stop Cough Exercises Station 5: Lung Volume Recruitment Adjuncts • Low-Capacity Incentive Spirometer • High-Capacity Incentive Spirometer • Inspiratory Muscle Trainer • Oscillating Positive Expiratory Pressure Device Station 6: Relaxation Strategies • Progressive Muscle Relaxation • Breathing Techniques • Mouthpieces	Dr Muhammad Shafaat So'af Dr Pamela Chia Shook Yen / Dr Ho Wan Yi Dr Akmal Hafizah Zamli / Dr Raagini Letchumanan / Dr Sharifah Nur'aini Said Abdul Karim Dr Tan Bee Cher Dr Dayang Nur Atheerah Kamaruddin / Dr Izuan Effendi Abd Wahab Dr Akmal Hafizah Zamli / Dr Aqeela Othman Talib / Dr Fatim Nabilla Hanis Dr Fatrin Fagha Azmi Mahmud Pn Nazhatul Shima Md Nasir Dr Faezah Kamaluddin Dr Reginald Valentino Rapieng En Nasrun Mas Sanut @ Mat Sood Dr Amitha Na Sherg Lungung Dr Hanis Atia Harun Pn Juliana Ibrahim Pn Wan Nur'Azmina Wan Ata Pn Rosliawati Samal

Participated by **63 HSgB interdisciplinary Rehabilitation staffs** with total **246 physical attendance** across Malaysia from various healthcare professional categories and specialties including from MOH, private and universities.

# POST CYCLE 3 INTERVENTION RESULT

Percentage of Patients With Appropriate Outpatient Rehabilitation Management

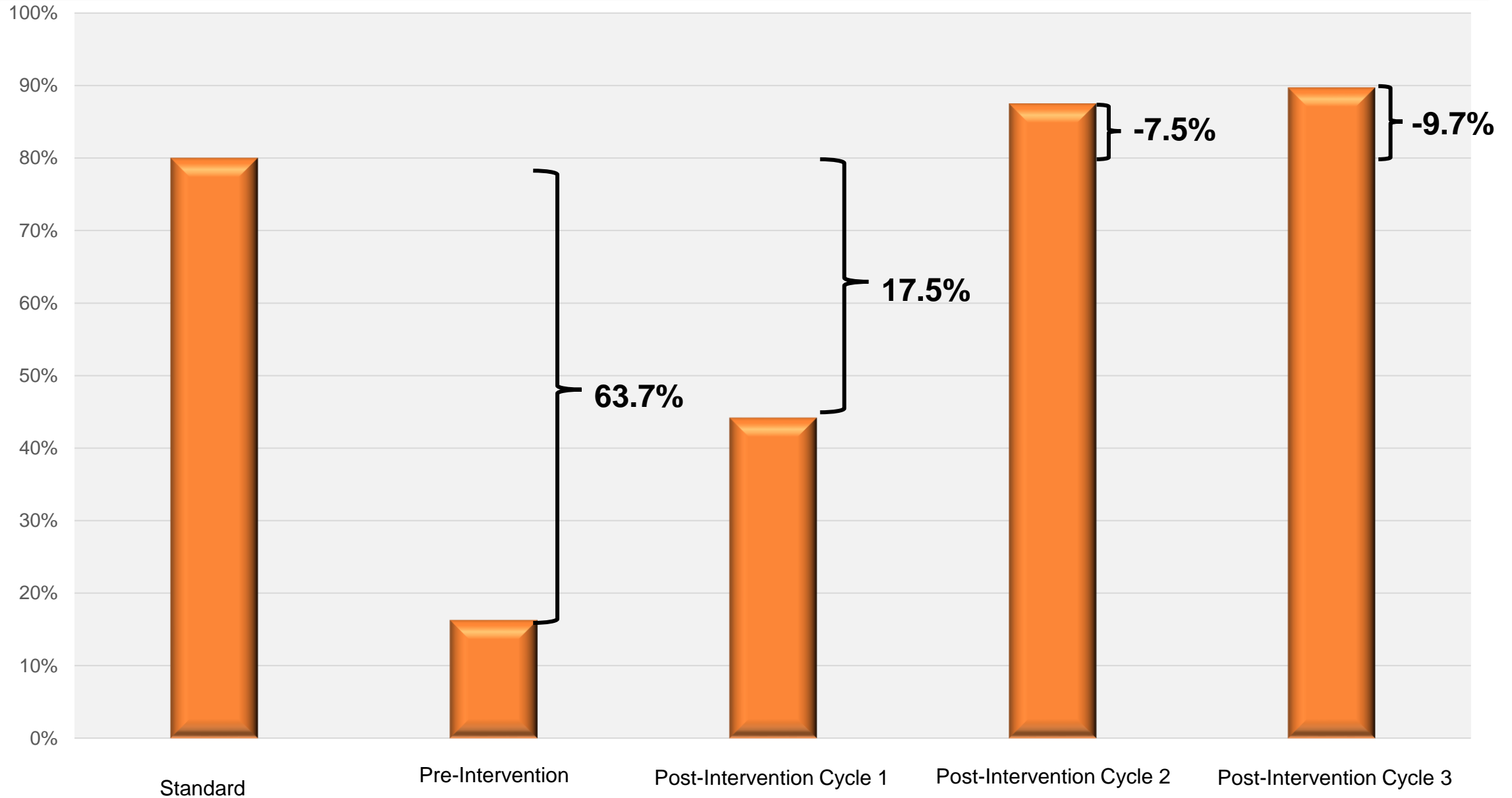


# MODEL OF GOOD CARE

No	Critical Steps	Criteria	Std	Ver	Cycle 1	Cycle 2	Cycle 3
1.	Screening by nurses	▪ Vital signs screening including BP, HR, RR, Temp, Pain Score	100%	100%	100%	100%	100%
		▪ Body Mass Index (BMI)	100%	0%	54%	100%	100%
		▪ Multi-system screening for PCC symptoms	100%	16.3%	100%	100%	100%
2.	Clinical examination by medical officer	▪ History taking and clinical examination	100%	100%	100%	100%	100%
		▪ Physical function assessment using standardised outcome measure	100%	16.3%	68.5%	94.2%	96%
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3.	Consultation by Rehabilitation Physician	▪ Review of PCC symptoms	100%	100%	100%	100%	100%
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		▪ Order for investigations as indicated	100%	100%	100%	100%	100%
		▪ Prescribe symptomatic treatment as indicated	100%	100%	100%	100%	100%
		▪ Referral for other specialties or therapies as indicated	100%	100%	100%	100%	100%
4.	Prescription of rehabilitation program	▪ Provide patient education	100%	47%	77%	100%	100%
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		▪ Provide personalised exercise / therapy	100%	100%	100%	100%	100%

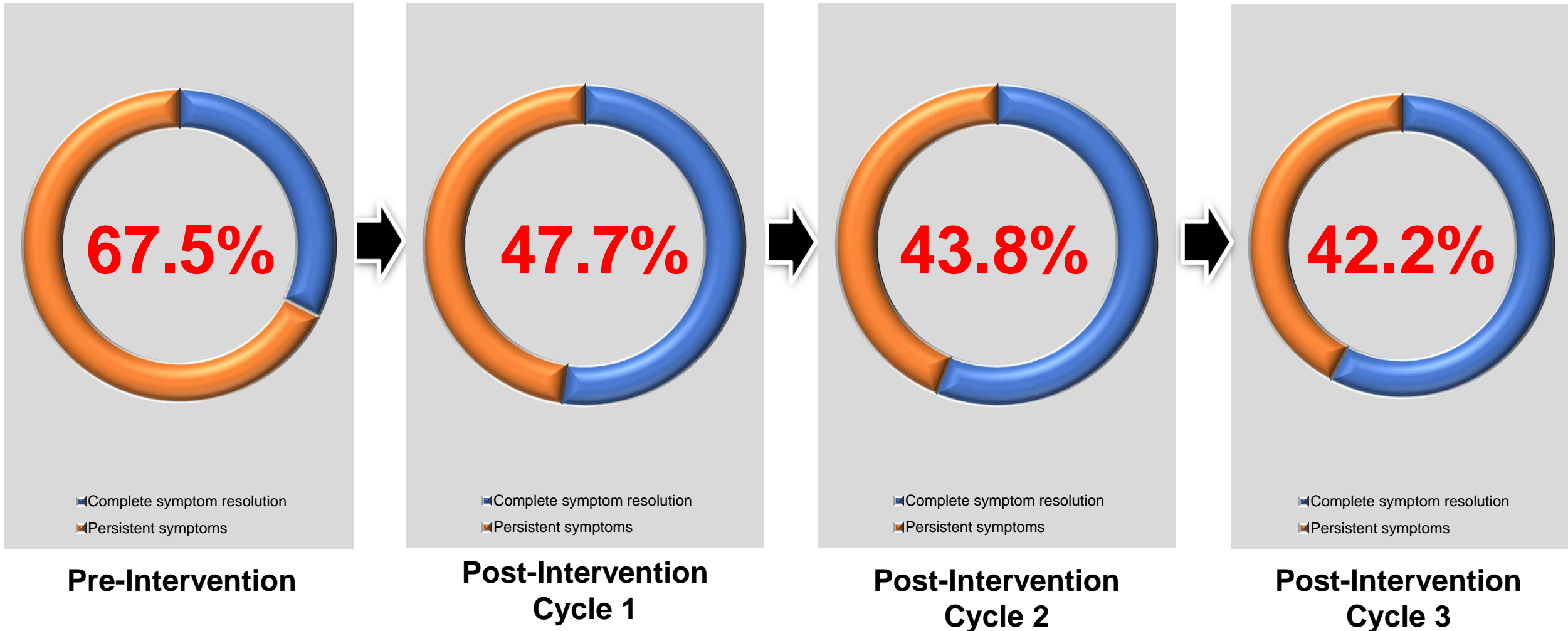


# ACHIEVABLE BENEFIT NOT ACHIEVED (ABNA)



# CLINICAL IMPACT

Improving complete symptoms resolution among patients



# COST IMPACT

## Interdisciplinary Rehabilitation Cost of A Single Session (Based on FPP Schedule)

Description	Cost
Registration	RM10.00
Doctors Consultation	RM60.00
Education Session	RM20
Modified Barthel Index	RM150
Mini Mental State Examination	RM160
Group Education Session	RM20
Rehabilitation of All Disabilities	RM120
Physiotherapy	RM20
Occupational Therapy	RM20
<b>Grand Total</b>	<b>RM380</b>

**RM380**



### The Costs of Long COVID

David M. Cutler, PhD

More than 6 million people have died from COVID-19 worldwide, including nearly 1 million in the US.<sup>1</sup> But mortality is not the only adverse consequence of COVID-19. Many survivors suffer long-term impairment, officially termed *postacute sequelae of SARS-CoV-2 infection* and commonly called *long COVID*.

Author affiliations and article information are listed at the end of this article.

Long COVID—typically defined as symptoms lasting more than 30 days after acute COVID infection—has received some public attention, but it is not nearly as intense as it is for acute COVID-19 infection. Support groups are devoted to the condition, and Congress has allocated more than \$1 billion to the National Institutes of Health to study it. But the relatively meager attention that has been paid to long COVID is unfortunate because its health and economic consequences are likely to be every bit as substantial.

People who have more acute disease is not a prere The most common sympt variety of organ systems (t implicated), along with me pathways may involve dire autoimmune responses.

Because many prevail COVID-19 support groups COVID is not entirely know infection will have at least 1 will have 3 or more sympto

Rates this high trans Disease Control and Prevention estimates that as of May 5, 2022, the US has had roughly 81 million cases of COVID-19 and 994 187 COVID deaths. Even the lower-end estimate of 12% of people with 3 or more symptoms of long COVID implies that 9.6 million people in the US may have developed long COVID—roughly 10 times the number of COVID-19 deaths. It is not known how long people with long COVID will be symptom be very slow.<sup>4</sup>

Reduced health is earn less than they wou were out of the labor fo million people may be o

This reduction in l because of long COVID, workforce because of l social care, and retail.<sup>7</sup> 1 wages and prices. Part of the recent surge in inflation in the US may thus be related to long COVID.

People who are no longer able to work may also apply for Social Security Disability Insurance. To date, there has been no sustained increase in disability insurance applications since the onset of COVID-19. This is good news, though it bears watching as disability centers continue reopening from their COVID-19 shutdowns.

Table 1: The Economic Cost of Long COVID	
Impact	Value (\$ billion)
Reduced quality of life	\$2,195
Reduced earnings	\$997
Increased medical spending	\$528
Total cost	\$3,719
Cost per capita	\$11,189
Percent of 2019 GDP	17%

Pound Sterling \$528 = Ringgit Malaysia RM3,124.63 medical expenditure for person with Long COVID

Citation: Cutler DM. The Costs of Long COVID. JAMA Health Forum. 2022 May 6;3(5):e221809.doi:10.1001/jamahealthforum.2022.1809. PMID: 36219031.

# COST SAVING



\* Calculation based on survivors that achieved complete symptoms resolution during the QA/QI study



# SURVIVORS' FEEDBACK

"Saya berterima kasih dengan Jabatan Perubatan Rehabilitasi Hospital Sungai Buloh atas pelaksanaan **CROSS** di mana pelaksanaannya telah membantu saya dari segi latihan fizikal, latihan pernafasan, latihan memori dan emosi untuk mengharungi simptom 'long covid' ini dan seterusnya kembali berkhidmat dan bergaul dalam masyarakat."

- En. Nazir Pejuang pesakit Covid-19 kategori 5A



A very positive experience. Everyone was friendly and helpful during the tests and follow up with doctors.

MAKLUMBALAS PERKHIDMATAN KLINIK REHABILITASI COVID-19  
"COVID-19 REHABILITATION OUTPATIENTS SPECIALISED SERVICES (CROSS)"



PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

A very positive experience. Everyone was friendly and helpful during the tests and follow-up with the doctor. The doctor, Ustaz Hafizah, was particularly patient, helpful and advised on many matters raised by me.

CADANGAN PENAMBAHBAIKAN: This is my first experience. I really have no suggestions to offer at this stage.

En. Nazir 13/04/2021

## Hospital Sungai Buloh has 1<sup>st</sup> Class team. Kudos!

MAKLUMBALAS PERKHIDMATAN KLINIK REHABILITASI COVID-19

"COVID-19 REHABILITATION OUTPATIENTS SPECIALISED SERVICES (CROSS)"



PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

All the medical staff are very professional & friendly from the reception/registration team to the physiotherapist Dr. Siti and especially Dr Akmal.

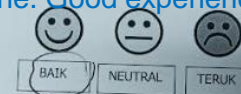
CADANGAN PENAMBAHBAIKAN: Hospital Sg Buloh has 1<sup>st</sup> class team, kudos! All is good, MCH should increase their remuneration as they are the ones who will protect us & save us from this Covid-19 Pandemic!



Alhamdulillah dengan bantuan pasukan Rehabilitasi Hospital Sg Buloh, keadaan saya bertambah baik dalam menangani gejala-gejala Long Covid. Senaman pernafasan dan senaman ringan untuk kekuatan otot yang diajar sangat membantu saya untuk mengembalikan keupayaan diri untuk menjalani kehidupan seharian.

Encik Azmi Mahmud, Pejuang Covid-19 Kategori 4A

Walking exercise to ascertain endurance is good. Staffs & doctors explain clearly on the test that were done. Good experience & well done



PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

- 1) Walking Exercise to ascertain the endurance - Good.
- 2) STAFF & DRS EXPLAIN CLEARLY ON THE TEST THAT WERE DONE
- 3) GOOD EXPERIENCE AND WELL DONE

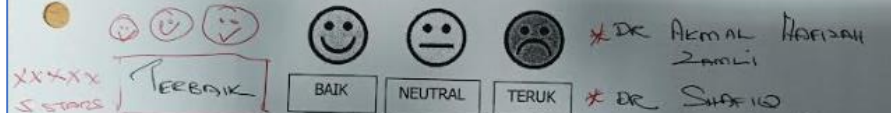
CADANGAN PENAMBAHBAIKAN:

THANK YOU SO MUCH FOR TAKING CARE OF MY WELL BEING.

## I am very impressed by Hospital Sungai Buloh Doctors & Staffs! God Bless

MAKLUMBALAS PERKHIDMATAN KLINIK REHABILITASI COVID-19

"COVID-19 REHABILITATION OUTPATIENTS SPECIALISED SERVICES (CROSS)"



PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

I wish to Record My Sincere APPRECIATION to Klinik REHAB esp Dr Akmal who remembers all the patient by Name which is rather Amazing & Awesome.

CADANGAN PENAMBAHBAIKAN: DR Akmal always go beyond the call of duty and very helpful to all here patient. This is very very good. All the Juwari esp Cik Suhaila are always smiling and service is very good.

Rusman Terima Kasih.

KEEP UP THE GOOD WORK, STAFFS. I AM VERY VERY IMPRESSED BY HOSPITAL SG BULOH & DOCTORS & JUWARI. THANK YOU GOD BLESS

Alhamdulillah! Amat memuaskan dan mematuhi beberapa kaedah yang ditetapkan bagi menjamin pesakit berada di tahap terbaik.

MAKLUMBALAS PERKHIDMATAN KLINIK REHABILITASI COVID-19  
"COVID-19 REHABILITATION OUTPATIENTS SPECIALISED SERVICES (CROSS)"

TARIKH: 03 Feb 21

PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

Alhamdulillah! Amat memuaskan dan mematuhi beberapa kaedah yang ditetapkan bagi menjamin pesakit berada di tahap terbaik.

CADANGAN PENAMBAHBAIKAN: Ya terbaik. Insya Allah kaedah dan staf yang ada adalah memadai diwujudkan sin.

Very Good. I am very impressed by the services rendered to me by every single staff here



PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:

Very good I am very impress by the services rendered to me by every single staff here. They are polite, very patient, very good in explanation especially the doctor who attended to me.

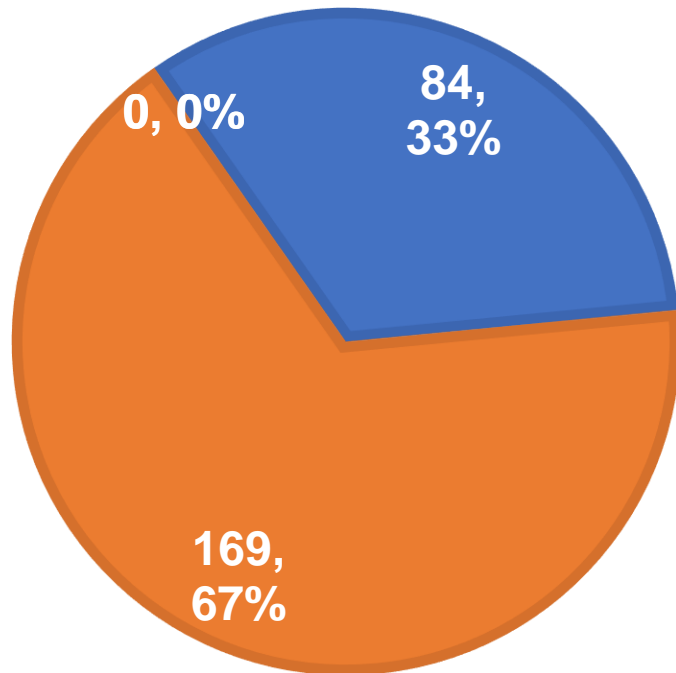
CADANGAN PENAMBAHBAIKAN:

Overall very satisfied. Thank you so much & God Bless You all in Rehab clinic staff.



# SURVIVORS' RATING (N=253)

■ Terbaik ■ Baik  
■ Neutral ■ Teruk



BIL	PENGALAMAN ANDA TERHADAP PERKHIDMATAN KAMI:
1	SERVICES SANGAT OKAY! DOCTORS AND NURSES ARE ALL KIND AND NICE. THEY SPEAK SOFTLY AND REALLY HELP BOOST CONFIDENT
2	EXCELLENT CONSULTATION & WELL-TRAINED STAFF. VERY FRIENDLY INDEED
3	EXCELLENT SERVICE. THE DOCTORS AND NURSES ARE VERY GOOD
4	EXCELLENT SERVICE. THERAPIST WAS THROUGH IN CHECKING
5	AMAT MEMUASKAN
6	VERY HELPFUL, CARING THANK YOU
7	AMAT CEMERLANG
8	SANGAT BAIK DAN SAYA RASA SELESA
9	TUNJUK AJAR UNTUK MELAKUKAN EXERCISE SANGAT BAIK DAN MANTAP
10	VERY EFFICIENT. FAST AND HAPPY
11	ALHAMDULILLAH PERKHIDMATAN YANG SAYA DAPAT TERBAIK, PENERANGAN JELAS DAN MUDAH FAHAM. TERBAIK
12	VERY GOOD, VERY DETAILS ALL STAFF VERY FRIENDLY & CARE TO PATIENT.
13	KALI PERTAMA DATANG KE KLINIK REHABILITATION DAPAT LAYANAN YANG BAIK DENGAN PHYSIO DAN REHABILITASI
14	ALL DOCTORS AND NURSES ARE VERY HELPFUL-OOMPH
15	SANGAT PANTAS, INFORMASI YANG DIBERIKAN JELAS DAN MEMUASKAN
16	SANGAT BAIK. DOKTOR BEKERJASAMA, PENERANGAN LENGKAP SEMUA STAFF TERSANGAT BAIK
17	TERBAIK FROM EVERY STAFF
18	EXCELLENT :)
19	BAGUS, TERBAIK, MESRA PELANGGAN
20	SANGAT BERPUAS HATI DENGAN KERJASAMA DARI DOCTOR, FISIO TERAPI, OCC TERAPI
21	ALHAMDULILLAH, TERBAIK, SEGALA PERTANYAAN SAYA DIJAWAB DENGAN BAIK, MUDAH DI FAHAMI.
22	EXTREMELY SATISFIED. VERY GOOD COACHING FROM THE DOCTOR. VERY CLEAR EXPLANATION. THANK YOU FOR THE CLEAR GUIDANCE
23	TERBAIK
24	ALHAMDULILLAH! AMAT MEMUASKAN DENGAN MEMATUHI BEBERAPA KAEDAH YANG DITETAPKAN BAGI MENJAMIN PESAKIT BERADA DITAHAP YANG TERBAIK. INSHAALLAH.
25	EXCELLENT SERVICE-BEYOND EXPECTATION
26	EXPERIENCE WAS REALLY AMAZING. STAFF VERY FRIENDLY & SHARE GOOD INFORMATIVE ABOUT COVID.
27	WALKING EXERCISE TO ACCERTAIN THE ENDURANCE-GOOD. STAFF & DRS EXPLAIN CLEARLY ON THE TEST THAT WERE DONE. GOOD EXPERIENCE AND WELL DONE
28	EXCELLENT! STAFF ARE POLITE AND DETAIL. DR AKMAL IS AWESOME. SHE VERY KIND AND PATIENT. WE NEED MORE DR'S LIKE HER. THANK YOU DR. AKMAL. GOD BLESS YOU
29	BAIK DAN TERBAIK.
30	PERKHIDMATAN DI PUSAT REHAB SANGAT BAIK DAN STAFF MESRA PESAKIT. SAYA TENANG DAN SELESA. TERIMA KASIH NURSE DAN DOKTOR
31	VERY GOOD, I AM VERY IMPRESS BY THE SERVICE RENDERED TO ME BY EVERY SINGLE STAFF HERE. THEY ARE POLITE, VERY PATIENCE, VERY GOOD IN EXPLANATION ESPECIALLY THE DOCTOR WHO ATTENDED TO ME.
32	I WISH TO RECORD MY SINCERE APPRECIATION TO KLINIK REHAB ESPECIALLY DR AKMAL WHO REMEBERS ALL THE PATIENT BY NAME WHICH IS RATHER AMAZING & AWESOME. DR KAMILA AWAY GO BEYOND HER CARE OF DUTY AND VERY HELPFUL TO ALL HER PATIENT. THIS IS VERY VERY GOOD. ALL THE JURURAWAT ESPECIALLY CIK SUHAILA ARE ALWAYS SMILING AND SERVICE IS VERY GOOD. RIBUAN TERIMA KASIH. KEEP UP THE GOOD WORK, SYABAS. I AM VERY VERY IMPRESSED BY HOSPITAL SG. BULOH & DOCTORS & JURURAWAT. THANK YOU, GOD BLESS.
33	DOKTOR MEMBERIKAN KHIDMAT NASIHAT YANG TERBAIK KEPADA PESAKIT SELEPAS COVID

34	SANGAT MEMUASKAN DAN MENEPATI STAFF-STAFF DAN DOKTOR LAYANAN BAGUS & MESRA
35	EXCELLENT - IN EVERY WAY & DETAIL, CURTEOUS FROM STAFF - DOCTOR
36	A VERY POSITIVE EXPERIENCE. EVERYONE WAS FRIENDLY, AND HELPFUL DURING THE TESTS AND FOLLOW-UP WITH THE DOCTOR. THE DOCTOR AKMAL HAFIZAH, WAS PARTICULARLY PATIENT, HELPFUL AND ADVISED ON MANY MATTERS RAISED BY ME.
37	SANGAT MEMUASKAN - PROFESIONALLY
38	ALL THE MEDICAL STAFF ARE VERY PROFESSIONAL & FRIENDLY FROM THE RECEPTION/ REGISTRATION TEAM TO THE PHYSIOTHERAPIST DR. SITI AND ESPECIALLY DR AKMAL. HOSPITAL SG. BULOH HAS 1ST CLASS TEAM, KUDOS!
39	PERTAMA KALI MENERIMA RAWATAN. INI ADALAH PERKHIDMATAN YANG TERBAIK SAYA TERIMA.
40	LAYANAN YANG MEMUASKAN DARI NURSE DAN DR SANGAT FRIENDLY DAN SOPAN
41	PENJELASAN YANG TERBAIK DARI DR
42	SAYA ZAKARIA B AB. RAHMAN TERIMA LAYANAN SANGAT MEMUASKAN SAYA UCAP TERIMA KASIH.
43	OK. LEBIH BERKESAN DARI NASIHAT DR. MEMULIHKAN KESIHATAN
44	PUASHATI. ALHAMDULILLAH, PERKHIDMATAN YANG DIBERIKAN TERBAIK.
45	BANYAK TUNJUK AJAR. PERKHIDMATAN TERBAIK BAGI SAYA, TERIMA KASIH BANYAK
46	TERBAIK
47	VERY FRIENDLY. I WAS TREATED IN A VERY GOOD MANNER. TQVM TO ALL THE STAFF AND DR.
48	LAYANAN MESRA & PENJELASAN RAWATAN SANGAT JELAS
49	ORGANISED AND WELL-MANNERED STAFF
50	BERTEGUR, SOPAN DAN TELITI TERHADAP PESAKIT
51	MEMUASKAN. MEMBERI PELAJARAN TENTANG TEKNIK-TEKNIK PEMULIHAN PERNAFASAN
52	MENGETAHUI BERKENAAN COVID-19 DENGAN TERPERINCI & EXERCISE YANG PERLU DILAKUKAN.
53	KEKALKAN PERKHIDMATAN YANG TERBAIK INI BUAT SELAMANYA-LAMANYA. JUTAAN!! TERIMA KASIH KEPADA WARGA HOSPITAL SUNGAI BULOH
54	BEST SERVICE AND COULD NOT THINK HOW TO IMPROVE IT- MAINTAIN
55	THANK YOU SO MUCH FOR TAKING CARE OF MY WELL BEING
56	ALL IS GOOD, MOH SHOULD INCREASE THEIR RECOMMENDATION AS THEY ARE THE ONE WHO WILL PROTECT US AND SAVE US FROM THIS COVID-19 PANDEMIC!
57	PENGALAMAN SANGAT BAHARU & LAYANAN YANG BAIK DI PERINGKAT KAUNTER, STAF SEHINGGA DOKTOR
58	BAIK DAN SANGAT TERATUR DAN JELAS
57	DR. SHIKIN VERY FRIENDLY & HELPFUL
58	ALHAMDULILLAH SEMUANYA BAIK.
59	BAIK, MESRA, BERSOPAN-SANTUN
60	BANGUS SANGAT SERVICES
61	PENGALAMAN SANGAT BAHARU & LAYANAN YANG BAIK DI PERINGKAT KAUNTER, STAF SEHINGGA DOKTOR
62	BAIK DAN SANGAT TERATUR DAN JELAS
63	SANGAT PUAS DENGAN PERKHIDMATAN
64	GOOD AND EXCELLENT EXERCISE
65	TERBAIK
66	MENDAPAT LAYANAN BAIK PERKHIDMATAN CEPAT

# LESSONS LEARNT

## Strengths

- First QA project that specifically focus on rehabilitation aspect of COVID-19.
- Pioneered multidisciplinary and structured rehabilitation clinic for Long COVID.
- Highest number of database for Long COVID survivors in Malaysia.
- Research works and publication of Long COVID rehabilitation.
- Led to locally adapted educational resources across various platforms, which had benefitted not only the community but also healthcare professionals.

# LESSON LEARNT

## **Limitations**

- Change in virus virulence and PHEIC has led to sub-minimal comparability.
- Change to hybrid system with full conventional rehab cases.

## **Different perspectives if the project is repeated**

- Multi-centre involvement may provide generalisability of findings for the nation.

# THE NEXT STEPS

## Future Plans

- Expand applicability to other conventional rehab cases – TBI, SCI, stroke.
- Expand other various potential research topics – trajectory of Long COVID; Return to Work; economics of Long COVID & vaccination research.



# VALUE ADDED FEATURES

# COMMUNITY EMPOWERMENT ON LOCAL EXPERIENCE IN POST COVID-19 CONDITION & REHABILITATION



General public awareness through mass media and electronic

## ARTICLE BY THE STAR

Wednesday, 10 Nov 2021 9:20 PM MYT

The Star  
(Malaysia)

English-language daily  
newspaper in Malaysia



### Health DG: Over 60% of long Covid patients continue to have symptoms

PETALING JAYA: More than 60% of long Covid patients referred to the rehabilitation centre in Hospital Sungai Buloh from November 2020 to September this year continued to have persistent symptoms, says Health director-general Tan Sri Dr Noor Hisham Abdullah. Dr Noor Hisham said during the period, 2,712 long Covid patients were referred to the Covid-19 Rehabilitation Outpatient Specialised Services (CROSS) at Hospital Sungai Buloh within four to 12 weeks after infection. Out of this, 984 cases or 36.3% recovered completely from symptoms experienced, 1,715 or 63.2% cases continued to have symptoms while 13, or 0.05%, ended in death.

"However, checks on their medical records found that there were other comorbidities factors contributing to these deaths, such as cancer, kidney failure, heart attack, blood infection and lung infection. Generally, most Covid-19 patients in Malaysia have the potential to make a full recovery, but there are a few patients facing complications known as long Covid. "Long Covid is when former Covid-19 patients still show signs and symptoms following recovery from infection," he said in a statement on Wednesday (Nov 10).

Dr Noor Hisham said analysis on the same database found that a total of 2,324 patients had undergone evaluation after 12 weeks of post Covid-19 infection.

## ARTICLE BY FREE MALAYSIA TODAY (FMT)

<https://www.freemalaysiatoday.com/category/nation/2021/11/10/2712-sent-to-long-covid-rehab-centre/>  
Date : 10 November 2021



### 2,712 sent to Long Covid rehab center

PETALING JAYA: A total of 2,712 long Covid patients have been referred to the rehabilitation centre from November last year to September, the health ministry said. It said the patients were sent to the Covid-19 Rehabilitation Outpatient Specialised Services (CROSS) centre at Sungai Buloh Hospital. Long Covid patients are those who have recovered but experience ongoing symptoms five to 12 weeks after the initial Covid-19 infection.

Health director-general Dr Noor Hisham Abdullah said that of the total number, 984 (36.3%) cases fully recovered from the symptoms, 1,715 (63.2%) cases still experienced persistent symptoms while 13 had died. On the fatalities, he said a review of medical records found that there were other factors that contributed to the deaths, namely cancer, kidney failure, heart attack, bacterial infection in the blood as well as lung infections. Noor Hisham noted that a total of 2,324 patients had undergone evaluation after 12 weeks of post Covid-19 infection.

"It was found that 97.5% of them were patients in Category 4 and 5," he said in a statement. Of these 2,324 cases, a total of 914 (39.4%) fully recovered while 1,410 (60.6%) cases still experienced persistent symptoms, with most of them reporting more than one symptom. The five most frequently reported symptoms were lethargy (71.8%), breathing difficulties while doing activities (61.9%), cough (13.6%), pain (13.2%), and sleeping difficulties (11%).

## ARTICLE BY THE EDGE MARKETS

Date : 20<sup>th</sup> November 2021

<https://www.theedgemarkets.com/article/long-covid-challenge-malaysian-employers>

The Edge (Malaysia)  
Newspaper in Malaysia



### Long Covid: A challenge for Malaysian employer

KUALA LUMPUR (Nov 20): International SOS, one of the world's leading health and security companies, has identified Long Covid as a challenge for businesses in Malaysia and around the world, the *CovidSOS* health news portal reported. Globally, increasing cases of long Covid are now being documented, as many people report symptoms related to Covid-19 months after infection, the report said, noting that International SOS is being increasingly called on by organisations to help them effectively manage this emerging and concerning phenomenon.

"As more Covid-19 cases are reported, Malaysia will have to prepare for the expected increase of those suffering from long Covid and provide the necessary support", International SOS medical director for Singapore and Malaysia Dr Chan Yung was quoted as saying.

"This is particularly important as we are in the process of moving into a possible 'living with the virus' phase. This means long Covid is something that Malaysian organisations have already faced, are facing, or will face in the future," she said.

Health director-general Tan Sri Dr Noor Hisham Abdullah has said that as of Oct 30, a total of 5,193 patients have undergone treatment and monitoring rehabilitation programmes to address long Covid symptoms nationwide, involving 31 public hospitals, four university hospitals, and six private health facilities.

The five most frequently reported symptoms of long Covid are lethargy (71.8%), difficulty in breathing while performing activities (61.9%), coughing (13.6%), pain (13.2%), and difficulty sleeping soundly (11%).

"According to the Ministry of Health (MoH), from November 2020 to September this year, 2,712 long Covid patients were referred to the Covid-19 Rehabilitation Outpatient Specialised Services (CROSS) at Hospital Sungai Buloh within four to 12 weeks after infection. From this, 984 cases or 36.3% recovered completely from symptoms experienced, but 1,715 or 63.2% of cases continued to have persistent symptoms," Dr Chan shared.

The Star  
(Malaysia)  
English-language daily  
newspaper in Malaysia

8/8/22, 12:15 AM

Support is available for long haulers | The Star

## Support is available for long haulers

NATION

Monday, 07 Mar 2022

PETALING JAYA: Covid-19 long haulers suffer an array of symptoms, with less than 70% of those referred to the rehabilitation unit at Hospital Sungai Buloh returning to work within three months of recovery.

Measures have been put in place by the Health Ministry to support long Covid sufferers, with at least 5,856 of them benefiting from rehabilitation at the ministry's facilities, including Sabah and Sarawak.

Hospital Sungai Buloh rehabilitation medicine department head Dr Akmal Hafizah Zamli said its Covid-19 Rehabilitation Outpatient Specialised Services (CROSS) was established in November 2020 as the first rehabilitation medicine service dedicated to long Covid sufferers in the country.

According to the CROSS database from November 2020 to January 2022 of mainly Category 4 and 5 Covid-19 patients aged 13 to 89, 62.4% (or 2,987) continued to have symptoms after more than three months.

"Analysis of the CROSS database also revealed that from the total cohort of 2,987 patients, 1,470 out of 2,220 applicable patients, or 66.2%, successfully returned to work in less than three months.

"Meanwhile, the reasons for not returning to work are wide-ranging, including loss of job as the company had reduced operations or closed down due to the economic impact of the pandemic, trauma and fear of contracting the infection again, lack of new job opportunities and also still recovering from the after-effects of Covid-19 or long Covid.

"Common symptoms of long Covid are wide-ranging, with the most common being fatigue, exertional fog and hair loss.

erest issues will always warrant

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<https://www.thestar.com.my/news/nation/2022/03/07/support-is-available-for-long-haulers>

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# COMMUNITY EMPOWERMENT ON POST COVID-19 CONDITION & REHABILITATION

General

## COVID-19 Rehabilitation Outpatient Specialised Services (CROSS) Pandemic Calamity Response

As one of the designated epicentre hospitals for COVID-19, Hospital Sungai Buloh (HSgB) manages an increasing number of cases. This includes moderately severe categories as the current third wave of the pandemic hits our country.

The result is a shift in the profile demand for rehabilitation medicine services in HSgB, from neuromedical, musculoskeletal, spinal and neurosurgical services, to new rehabilitation services related to the COVID-19 response.

The need to formalise a specialised, structured and comprehensive rehabilitation medicine services that caters for the intermediate and long term effects of COVID-19 in the moderately severe Stage 4 & 5 survivors was agreed upon between the multidisciplinary team involved in COVID-19 management on 6 November 2020.

The main goals were to identify and manage any residual impairment expected, primarily in the pulmonary, musculoskeletal and cognitive domains. This will help optimise the COVID-19 survivors' return to their best functional level, or in severe cases, to adapt to living with residual disabilities.

The multidisciplinary initiative supported by HSgB Director Dr Kuldip Kaur led to a comprehensive outpatient rehabilitation medicine service called COVID-19 Rehabilitation Outpatient Specialised Services (CROSS) clinic. It serves as a one-stop centre for assessment, with provision for customised rehabilitation prescription and monitoring of rehabilitation outcomes for moderately severe COVID-19 survivors. The aim is to provide for their intermediate and long term rehabilitation needs following an initial acute hospital discharge.



The multidisciplinary meeting between the different Head of Units/Departments

At any one time, the CROSS clinic team will comprise:

- one Rehabilitation Physician
- one Occupational Therapist
- two Medical Officers
- two nursing personnel
- two Physiotherapists

With this interdisciplinary approach, diagnosis, management and prognostication of complex medical impairments and disabilities are made comprehensively. Hence, realistic and customised rehabilitation goals and prescriptions will be formulated based on input from multidisciplinary team members whenever required.

The pillars in our comprehensive rehabilitation strategies for COVID-19 survivors predominantly involve pulmonary, musculoskeletal and cognitive rehabilitation. Psychosocial assessment and support are also provided whenever indicated. Examples of the specific rehabilitation prescription include assisted airway clearance techniques, deep breathing exercises, graded physical activity, energy conservation techniques, re-training of daily living activities, relaxation techniques, cognitive therapy, adaptive and

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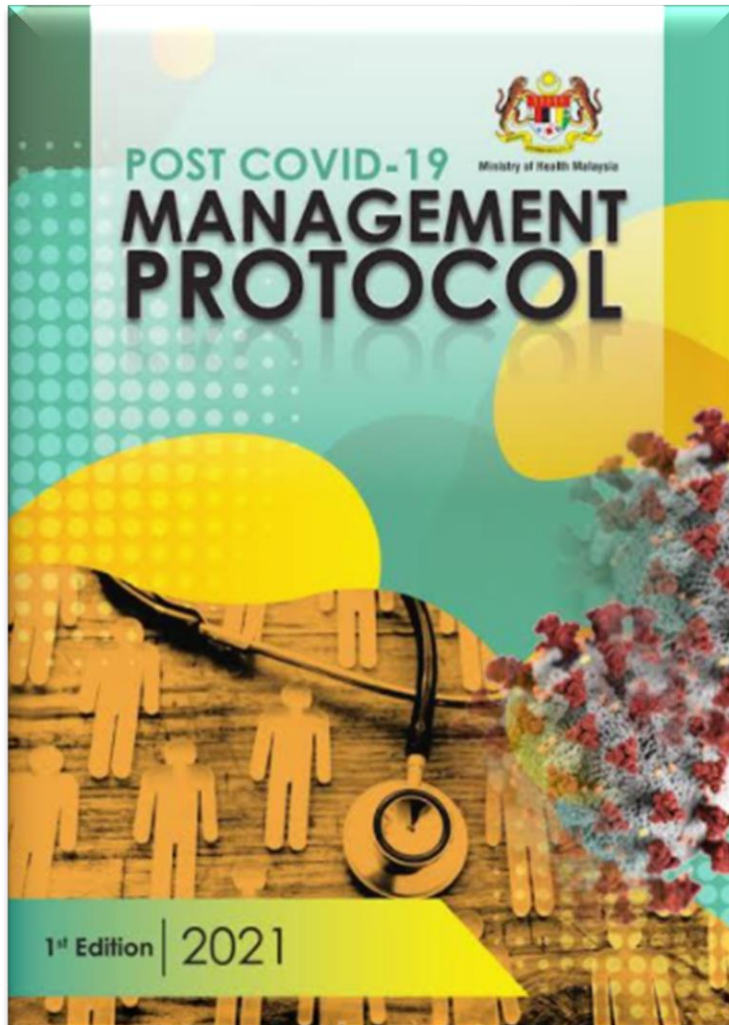
**KEMENTERIAN KESIHATAN MALAYSIA** ✓

10 March 2021 at 04:17 · 🌐

Selaras dengan pewartaan Hospital Sungai Buloh sebagai salah satu fasiliti utama dengan fungsi 'Fully COVID-19', pelbagai bidang kepakaran multi-discipline seperti Jabatan Perubatan, Jabatan Psikiatri & Kesihatan Mental, Unit Respiratori Hospital Universiti Teknologi MARA serta Jabatan Perubatan Rehabilitasi telah memulakan inisiatif perkhidmatan baharu dinamakan COVID-19 Rehabilitation Outpatient Specialised Services (CROSS) bermula 6 November 2020.

Perkhidmatan ini disediakan khusus bagi kes severe COVID-19 (peringkat 4 & 5) survivors yang mengalami multiple residual medical impairments and physical disabilities. Sehingga kini, lebih daripada 1,000 pesakit severe COVID-19 telah dirujuk bagi perkhidmatan ini.

# CONTRIBUTION IN POST COVID-19 MANAGEMENT PROTOCOL MOH MALAYSIA



## CHAPTER 9

### POST COVID-19 FOLLOW UP REHABILITATION RECOMMENDATIONS

#### 1.0 Introduction

- 1.1 COVID-19 has led to an increasing burden of disease and disability throughout the globe and it is expected to continue to do so in the next few years. It has brought many challenges and has caused major impacts to existing ministrations including the rehabilitation services.<sup>1,2</sup> Comparable to the aftermath of any other major illness or injury, many COVID-19 survivors require rehabilitation services to facilitate them back to normal function or in some cases to adapt to living with residual disability.<sup>3</sup> Due to its novelty, the full spectrum of post-discharge impacts in COVID-19 survivors remains unknown.<sup>1-3</sup>
- 1.2 Experience with previous outbreaks of coronaviruses have been associated with persistent pulmonary function impairment, muscle weakness, pain, fatigue, depression, anxiety, vocational problems, and reduced quality of life to various degrees.<sup>4,5</sup> Severe COVID-19 survivors who have required prolonged intensive care are expected to experience greater degree of impairments and shall require wider physical, cognitive, functional and psychological health support needs following discharge from the acute settings.<sup>1,5</sup>

#### 2.0 Justification

- 2.1 World Health Organization (WHO) defined rehabilitation as a set of measures that assist individuals who experience, or are likely to

#### Exercise

#### Instructions

##### Shoulder Circles



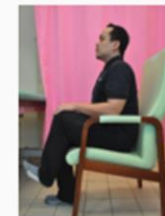
- As the patient's arms are kept relaxed by the side or resting on the lap, the shoulders are slowly moved around in forward circle.
- This is then repeated in a backward circle.

##### Side Bends



- The patient's body is kept straight with the arms hanging down on either side.
- One arm is slid down towards the floor while bending the body laterally and then returned to the start position.
- This is repeated for the other arm.

##### Knee Lifts



- The patient's knees are lifted up and down slowly one at a time, without exceeding hip height.



## SENARAI HOSPITAL DAN FASILITI KESIHATAN YANG MENYEDIAKAN PERKHIDMATAN PERUBATAN REHABILITASI BAGI LONG COVID:



Wilayah Persekutuan Kuala Lumpur dan Putrajaya	<ul style="list-style-type: none"> <li>Hospital Rehabilitasi Cheras</li> <li>Hospital Kuala Lumpur</li> <li>Pusat Perubatan Universiti Malaysia</li> <li>Hospital Chancellor Tunku Mukhriz</li> <li>Hospital Universiti Putra Malaysia</li> <li>Hospital Daehan Rehab (Putrajaya)</li> <li>Pusat Perubatan Prince Court</li> <li>Hospital Gleneagles Kuala Lumpur</li> <li>Pusat Perubatan Ara Damansara</li> </ul>
Selangor	<ul style="list-style-type: none"> <li>Hospital Sungai Buloh</li> <li>Hospital Serdang</li> <li>Hospital Tengku Ampuan Rahimah, Klang</li> <li>Hospital Shah Alam</li> <li>Hospital Teknologi MAR</li> <li>Hospital ReGen Rehab</li> <li>Hospital Sunway</li> </ul>
Negeri Sembilan	<ul style="list-style-type: none"> <li>Hospital Tuanku Jaafar Seremban</li> <li>Hospital Rembau</li> <li>Hospital Bandar Seri Jempol</li> <li>Hospital Tuanku Ampuan Najihah</li> </ul>
Pahang	<ul style="list-style-type: none"> <li>Hospital Tengku Ampuan Afzan</li> <li>Hospital Sultan Haji Ahmad Shah</li> </ul>
Kelantan	<ul style="list-style-type: none"> <li>Hospital Raja Perempuan Zainab II</li> <li>Hospital Universiti Sains Malaysia</li> </ul>
Pulau Pinang	<ul style="list-style-type: none"> <li>Hospital Pulau Pinang</li> <li>Hospital Seberang Jaya</li> <li>Hospital Balik Pulau</li> </ul>

## SENARAI HOSPITAL DAN FASILITI KESIHATAN YANG MENYEDIAKAN PERKHIDMATAN PERUBATAN REHABILITASI BAGI LONG COVID:



Kedah	<ul style="list-style-type: none"> <li>Hospital Sultanah Bahiyah</li> <li>Hospital Jitra</li> <li>Hospital Kuala Nerang</li> <li>Hospital Sultan Abdul Halim</li> </ul>
Perak	<ul style="list-style-type: none"> <li>Hospital Raja Permaisuri Bainun</li> <li>Hospital Batu Gajah</li> </ul>
Sabah	<ul style="list-style-type: none"> <li>Hospital Sandakan</li> <li>Hospital Queen Elizabeth</li> </ul>
Sarawak	<ul style="list-style-type: none"> <li>Hospital Umum Sarawak</li> <li>Hospital Miri</li> <li>Hospital Sibu</li> </ul>
Johor	<ul style="list-style-type: none"> <li>Hospital Sultan Ismail</li> <li>Hospital Sultanah Aminah</li> </ul>
Terengganu	<ul style="list-style-type: none"> <li>Hospital Kemaman</li> <li>Hospital Sultanah Nur Zahirah</li> <li>Hospital Dungun</li> </ul>
Melaka	<ul style="list-style-type: none"> <li>Hospital Melaka</li> <li>Pusat Rehabilitasi PERKESO Tun Abdul Razak</li> </ul>





# POST COVID-19 REHABILITATION ATTACHMENT & VISITORS 2021 - 2024

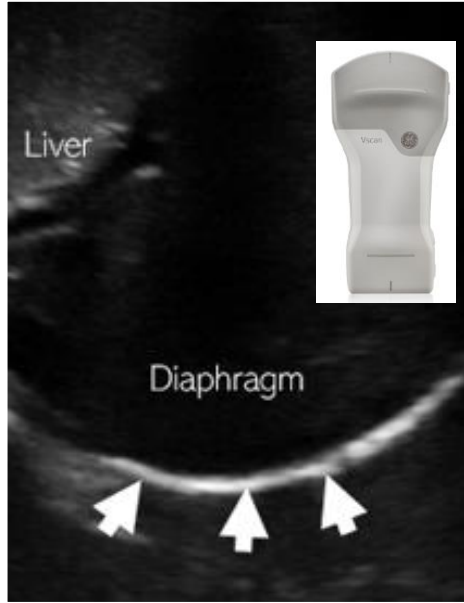




# PROVISION OF NEW EQUIPMENTS FOR POST COVID-19 REHABILITATION SERVICES



**2 Units of mechanical handheld chest percussor**



**Portable wireless handheld ultrasound**



**Desktop spirometry**



**Mechanical insufflation exsufflation or cough assist device**

**TOTAL RM75,300**

# RESEARCH COLLABORATION WITH UNIVERSITIES

- **HSgB – HUITM – NIH**

“Post COVID-19 Characterization and Prediction – Analyses of CCOVID-19 Rehabilitation Outpatient Specialized Services (**CROSS**) Database in A Primary Designated Hospital of Malaysia”. Published

- **University Malaya Medical Centre – HSgB**

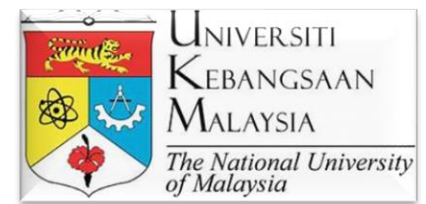
“Long Term Effects of COVID-19 Survivors Requiring Intensive Care Treatment”. Received Fundamental Research Grant Scheme (FRGS)”.Data Collection.

- **HSgB – Taylor’s University**

“Effectiveness and efficiency of CCOVID-19 Rehabilitation In-patient Specialized Services (**CRISS**) in improving functional outcomes of survivors in a primary designated hospital for COVID-19”. Published.

- **HSgB – The National University of Malaysia**

“Economic impact and cost analyses of Long COVID” . Data collection.





*Original Manuscript*

## **Post-COVID-19 Condition Characterization: Insights From a Cross-Sectional Study in a Malaysian Rehabilitation Center**

Asia Pacific Journal of Public Health  
1–8

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DOI: 10.1177/10105395231203118

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This is the largest study (N=3037) to date assessing and describing PCC in a Southeast Asian cohort involving comprehensive in-person multisystem evaluations.

Although post-COVID-19 condition (PCC) is a major public health concern, studies on PCC in Southeast Asia are lacking. This study aimed to describe PCC symptoms and its functional impact among COVID-19 survivors undergoing outpatient rehabilitation in Malaysia. We evaluated 3037 patients with confirmed COVID-19, referred between November 2020 and September 2022, 3 to 6 months after infection. PCC was diagnosed in 71.1%. Fatigue and dyspnea were the most common symptoms. The PCC patients had reduced respiratory, ambulatory, and musculoskeletal function, and higher fatigue and pain scores, and were less likely to return to work (odds ratio [OR] = 0.55) compared with non-PCC patients. Recognition of PCC symptoms and its functional impact can guide early, tailored, rehabilitation interventions.

### **Keywords**

COVID-19, long COVID, rehabilitation, post-COVID-19 condition, postacute sequelae of SARS-CoV-2 infection

# DIAPHRAGM FUNCTIONAL EVALUATION

Spiesshoefer et al. *Respiratory Research* (2022) 23:187  
<https://doi.org/10.1186/s12931-022-02100-y>

Respiratory Research

## CORRESPONDENCE

## Open Access



### Diaphragm dysfunction as a potential determinant of dyspnea on exertion in patients 1 year after COVID-19-related ARDS

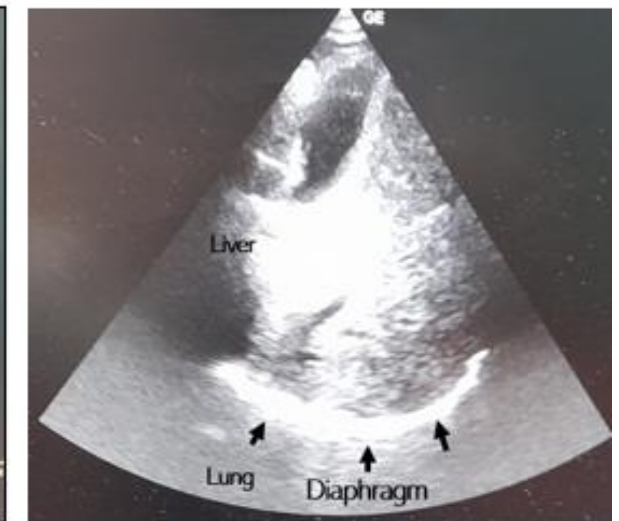
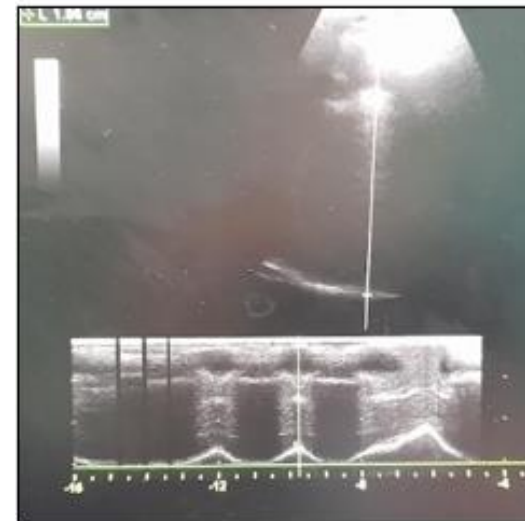
Jens Spiesshoefer<sup>1,2†</sup>, Janina Friedrich<sup>1†</sup>, Binaya Regmi<sup>1</sup>, Jonathan Geppert<sup>1</sup>, Benedikt Jörn<sup>1</sup>, Alexander Kersten<sup>3</sup>, Alberto Giannoni<sup>2</sup>, Matthias Boentert<sup>4,5</sup>, Gernot Marx<sup>6</sup>, Nikolaus Marx<sup>3</sup>, Ayham Daher<sup>1</sup> and Michael Dreher<sup>1</sup>

#### Abstract

Some COVID-19 patients experience dyspnea without objective impairment of pulmonary or cardiac function. This study determined diaphragm function and its central voluntary activation as a potential correlate with exertional dyspnea after COVID-19 acute respiratory distress syndrome (ARDS) in ten patients and matched controls. One year post discharge, both pulmonary function tests and echocardiography were normal. However, six patients with persisting dyspnea on exertion showed impaired volitional diaphragm function and control based on ultrasound, magnetic stimulation and balloon catheter-based recordings. Diaphragm dysfunction with impaired voluntary activation can be present 1 year after severe COVID-19 ARDS and may relate to exertional dyspnea.

This prospective case–control study was registered under the trial registration number NCT04854863 April, 22 2021

**Keywords:** Coronavirus, Mechanical ventilation, Long COVID, Diaphragm function, Dyspnea





# DESKTOP SPIROMETRY

## AMERICAN THORACIC SOCIETY DOCUMENTS

### Standardization of Spirometry 2019 Update

An Official American Thoracic Society and European Respiratory Society  
Technical Statement

Brian L. Graham, Irene Steenbruggen, Martin R. Miller, Igor Z. Barjaktarevic, Brendan G. Cooper, Graham L. Hall, Teal S. Hallstrand, David A. Kaminsky, Kevin McCarthy, Meredith C. McCormack, Cristine E. Oropez, Margaret Rosenfeld, Sanja Stanojevic, Maureen P. Swanney<sup>†</sup>, and Bruce R. Thompson; on behalf of the American Thoracic Society and the European Respiratory Society

THIS OFFICIAL TECHNICAL STATEMENT WAS APPROVED BY THE AMERICAN THORACIC SOCIETY AND THE EUROPEAN RESPIRATORY SOCIETY SEPTEMBER 2019

**Table 1.** Indications for Spirometry

#### Diagnosis

- To evaluate symptoms, signs, or abnormal laboratory test results
- To measure the physiologic effect of disease or disorder
- To screen individuals at risk of having pulmonary disease
- To assess preoperative risk
- To assess prognosis

#### Monitoring

- To assess response to therapeutic intervention
- To monitor disease progression
- To monitor patients for exacerbations of disease and recovery from exacerbations
- To monitor people for adverse effects of exposure to injurious agents
- To watch for adverse reactions to drugs with known pulmonary toxicity

#### Disability/impairment evaluations

- To assess patients as part of a rehabilitation program
- To assess risks as part of an insurance evaluation
- To assess individuals for legal reasons

#### Other

- Research and clinical trials
- Epidemiological surveys
- Derivation of reference equations
- Preemployment and lung health monitoring for at-risk occupations
- To assess health status before beginning at-risk physical activities



# CONCLUSION

- Pre-remedial study showed **only 16.3%** of moderately severe COVID-19 survivors received completed outpatient rehabilitation management.
- The key contributing factors included **lack of awareness, knowledge and practice** among rehab professionals; poor awareness and knowledge among patients, lack of specific guidelines and educational resources.
- Various strategies for change has been implemented including **training sessions, teleconsultation**, comprehensive one-stop-centre acronym as CROSS (**C**COVID-19 **R**ehabilitation **O**utpatient **S**pecialised **S**ervices), and provision of **educational resources**.
- Post intervention showed an **increased percentage** from 16.3% to 44.2% in Cycle 1, to 87.5% in Cycle 2, then to 89.7% in Cycle 3.



# GANTT CHART

ACTIVITIES	June 2020	July 2020	Aug 2020	Nov 2020	Dec 2020	Jan - June 2021	Jul – Dec 2021	Jan – June 2022	Jul – Dec 2022	Jan– June 2023	Jul - Dec 2023
Selection of team & brainstorming	<div></div>										
Preparation of Protocols		<div></div>									
Preparation for data collection			<div></div>								
Pre-intervention study				<div></div>	<div></div>						
Data Analysis					<div></div>	<div></div>					
Intervention Activities						<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	
Evaluation 1 <sup>st</sup> cycle							<div></div>	<div></div>			
Evaluation 2 <sup>nd</sup> cycle								<div></div>	<div></div>		
Evaluation 3 <sup>rd</sup> cycle									<div></div>	<div></div>	<div></div>
Report Writing											<div></div>

Planned

Completion

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