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LETTER TO EDITOR

Modification of Standard Operating Procedures at the Emergency Department in Brunei During the Second-Wave Outbreak of COVID-19; a Letter to Editor

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Dear Editor:

Following 457 days without local transmission, the second wave of COVID-19 hit Brunei Darussalam in August 2021. This warranted the Emergency Department (ED) at Raja-Isteri-Pengiran-Anak-Saleha Hospital to revise standard operating procedures (SOPs). Emergency Department Operations Centre was re-activated, managing ED operations, logistics, personal protective equipment (PPE) provisions, and communication with other Health Facility operation centers. ED adopted the "3-D Zone-separation approach"; Cold/Non-Isolation (CZ), Hot/Isolation (HZ) and Lava/Quarantine zones (LZ). CZ patients present with symptoms other than influenza-like illness (ILI), HZ patients with ILI, and LZ patients on Quarantine order/confirmed COVID-19 positive. This strategy eluded the mixing of low-risk, high-risk and very-high-risk patients in the ED. Patients brought/walked in were screened, categorized, and allocated by well-trained Emergency Medical Services (EMS) crew and triage nurses (Figure 1). Each zone had fully equipped resuscitation areas. All admitted/discharged patients from HZ/LZ were swabbed for SARS-COV-2 PCR or given self-isolation notices, respectively, hampering community spread.

ED staff in all zones wore full PPE; long-sleeve isolation gowns, shoe covers, headcovers, N95 masks, eye/face shields, and gloves. Optional enhanced PPE, i.e.: Jupiter suits and powered air-purifying respirators, were provided for HZ and LZ. There were dedicated donning/doffing areas in every zone. No used PPEs were allowed in the clean zones (doctor's room/offices), and regular terminal cleaning was scheduled for all zones and on an ad-hoc basis.

Spatial Team-based Rostering System (1) was adopted to reduce ED doctors' exposure risk and unnecessary cross-staff exposure by creating i) "fixed-teams" and ii) "altered shift-length". Five "fixed-teams" with 8-doctors; 4 covered HZ/LZ while 4 covered CZ. Each team conducted 2 HZ shifts followed by 3 days off and 2 CZ shifts followed by 3 days off. Each shift was 12 hours (both day and night shifts, instead of 7-hour day shift and 10-hour night shift), maintaining net working hours of 48 hours/week. Two short breaks were allowed during 12-hour shifts, enabling staff to doff, de-stress, and regain energy.

These amendments successfully achieved the goals; (i) decreasing staff overlap time, maximizing staff physical distancing, (ii) increasing direct-care hours, reducing pressure on night-duty staff, and maintaining adequate manpower during all shifts, (iii) increasing 'downtime' to assist staff with mental and physical well-being. Off days allowed family time and ample time to recover (if sick). During the implementation of the new SOP, from August – December 2021, the doctors had zero infections; however, after the relaxation in January 2022 the numbers were on the rise.

Doctors don PPE before entering zones in the established "gowning area". On exiting/entering a zone, doffing/donning was required, respectively, preventing mixing of zones (2). It worked efficaciously, limiting cross-infection and conserving CZ infection-free (3). Weekly assisted reproductive technology (ART)s/PCRs for healthcare workers became mandatory. Despite the advantages, the inevitable pitfall was unintentional exposure to a COVID-positive patient in all zones, as asymptomatic patients were also treated in CZ, and later di-

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agnosed positive. With community spread, picking out potential cases at triage became challenging.
Spending 12 hours in PPEs was challenging, resulting in sweat-soaked scrubs and leftover facial hallmarks of N95 masks. We did not meet friends/colleagues for months. Educational activities were halted, and mandatory weekly ART and PCR staff surveillance was not very enjoyable.
The pandemic demanded the worldwide ED network share experiences and stand united, curbing infection and paving administrative prototypes for future pandemics.

1. Declarations

1.1. Acknowledgments

None.

1.2. Conflict of interest

None.

1.3. Fundings and supports

None.

1.4. Authors' contribution

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SO & FA: researched literature and conceived the study. LJ & SO were involved in protocol development. SO & FA wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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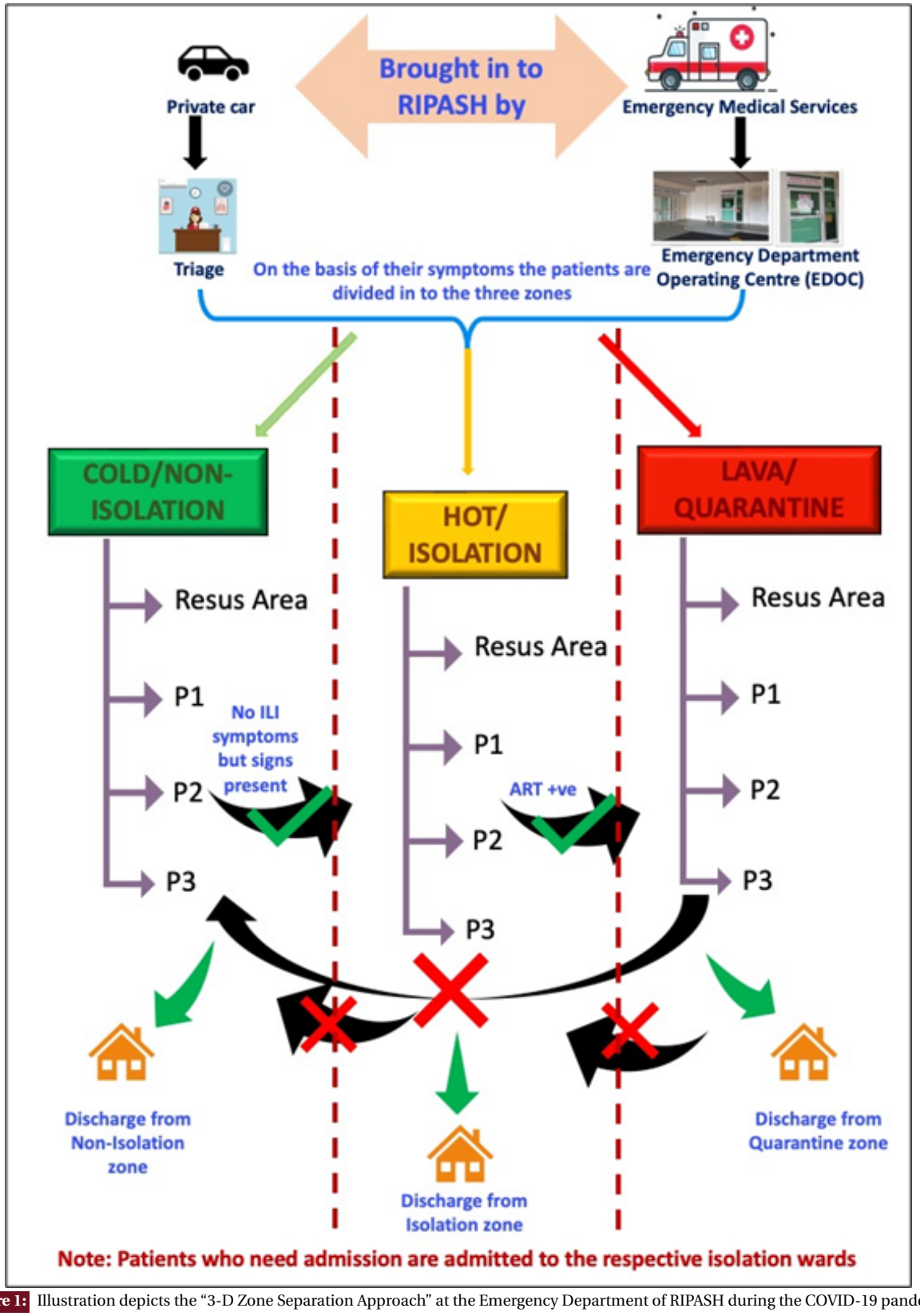

Figure 1: Illustration depicts the "3-D Zone Separation Approach" at the Emergency Department of RIPASH during the COVID-19 pandemic. ILI: influenza-like illness; ART +ve: Antigen rapid test positive.