

COMBATING THE COVID-19 PANDEMIC: OUR SUCCESS STORIES


2020-2022



NATIONAL PUBLIC HEALTH LABORATORY MALAYSIA



MAKMAL KESIHATAN
KEMENTERIAN K
(NATIONAL PUBLIC
(MINISTRY OF



"Many of life's failures are people who did not realize how close they were to success when they gave up."
— Thomas Edison

HATAN AWAM KEBANGSAAN
RIAN KESIHATAN MALAYSIA
(PUBLIC HEALTH LABORATORY)
TRY OF HEALTH MALAYSIA)

A portrait of Dr. Fatana Binti Ismail, a woman wearing a red hijab and a dark blue blazer. She has a name tag that says "FATANA" and is standing outdoors with a blurred background of trees and a building.

DR. FATANAH BINTI ISMAIL

DIRECTOR OF NATIONAL PUBLIC HEALTH

PAKAR PERUBATAN KESIHATAN AWAM JUSA UTAMA C

National Public Health Laboratory (NPHL) is an organization under the Disease Control Division, Ministry of Health Malaysia built with the objective to support services responding to infectious disease outbreaks and surveillance activity. NPHL was one of the laboratory played a vital role managing COVID-19 pandemic.

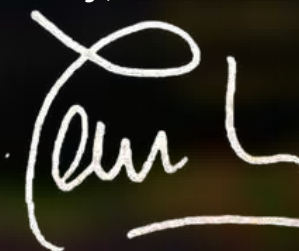
It is time to acknowledge the hard work of the team players in this organization. This coffee table book is a one-of-a-kind illustrated, highlighting the contributions and achievements of NPHL combatting COVID-19 pandemic for over the past 3 years.

Allow me to take an opportunity to congratulate our editor team who worked diligently and passionately in getting the anecdotes related to ensure this coffee table comes out perfectly. I know it was not an easy task but they still made it to the end.

I would also like to express my gratitude and thank to all dedicated NPHL staffs who are always willing to go an extra mile for this country. This coffee table book means as a wonderful tribute for them.

Thank you.

Sincerely,

A handwritten signature in white ink, appearing to read 'Fatanah', with a stylized flourish above the name.

Dr. Fatanah Binti Ismail

MEET THE EDITORIAL TEAM



DR SANTHI SUBRAMANIAM
PUBLIC HEALTH PHYSICIAN



NIK FAZLINA BT NIK MUSTAFA
ASSIST. SCIENCE OFFICER



NURAI SYAH BINTI TALIB
SCIENCE OFFICER (MICROBIOLOGY)



RAMIZAH AMIRAH BINTI MOHD LAWI
INFORMATION TECHNOLOGY
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**ANIS SABRINA BINTI
MOHD KAMARULZAMAN**
ASSIST. INFORMATION TECHNOLOGY
OFFICER (MYSTEP)

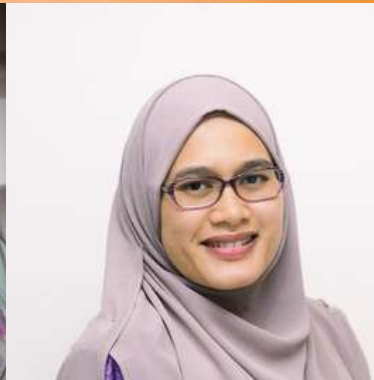
ACKNOWLEDGEMENT



**DR NOR ZAHRIN
BINTI HASRAN**



**DR WAN AMANI
BINTI WAN ABDUL AZIM**



**DR NORFAZILLAH
BINTI AB MANAN**



**DR DONAL HUDA
BT NASRIL**

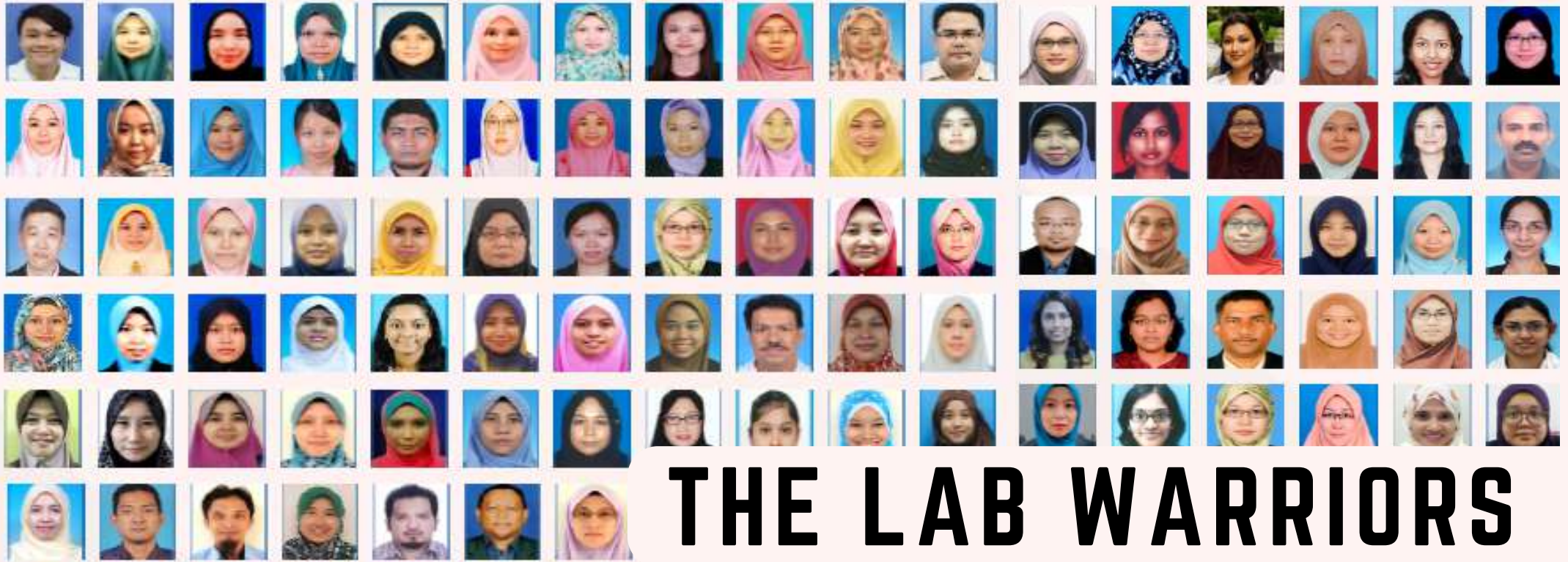


**MRS YU KIE
A/P CHEM**



**MRS Salfaryna
ALZAHARI**

"We are in this together and we will get through this, together." – UN Secretary-General Antonio Guterres





OF NPHL





**DETECTION OF FIRST
POSITIVE SAMPLES**



NPHL was the first laboratory successfully identified and confirmed 3 samples of COVID-19 in Malaysia on 24th January 2020 (who were close contacts of positive Index cases in Singapore).



ELECTRON MICROGRAPH OF SARS-CoV-2



Figure 2: Vero E6 cell layer with a visible cytopathic effect (CPE); the cells infected by the virus have been destroyed.

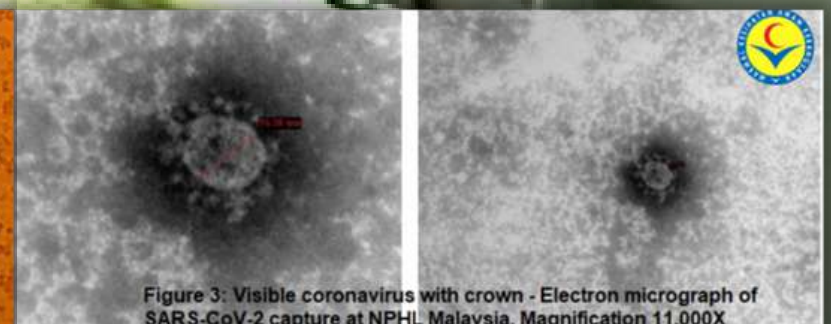


Figure 3: Visible coronavirus with crown - Electron micrograph of SARS-CoV-2 capture at NPHL Malaysia. Magnification 11,000X

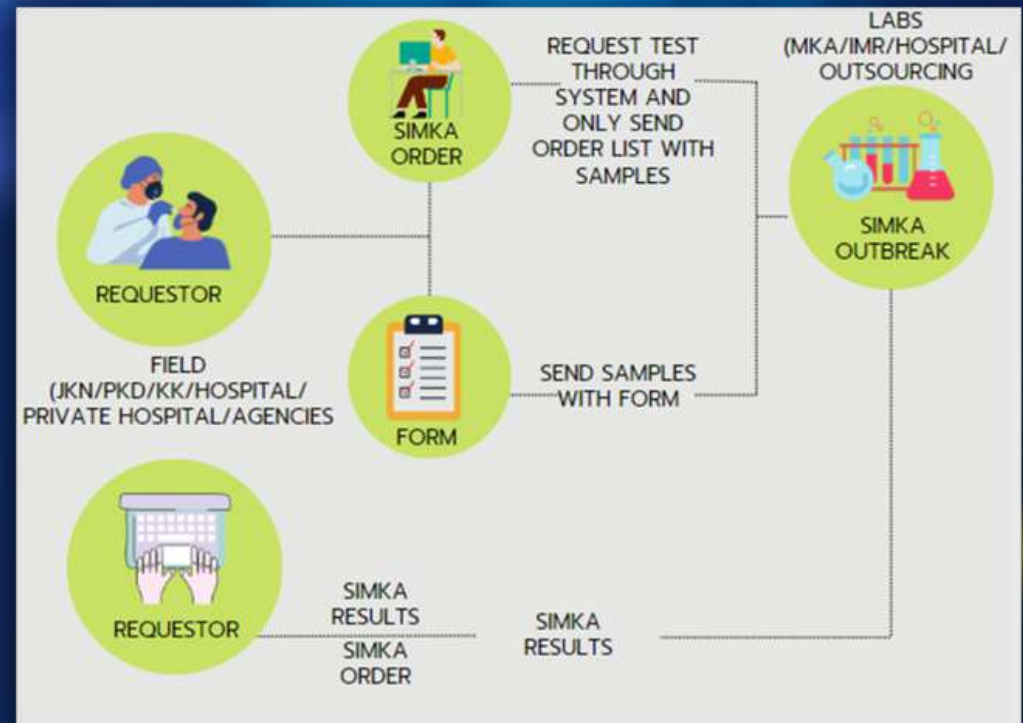
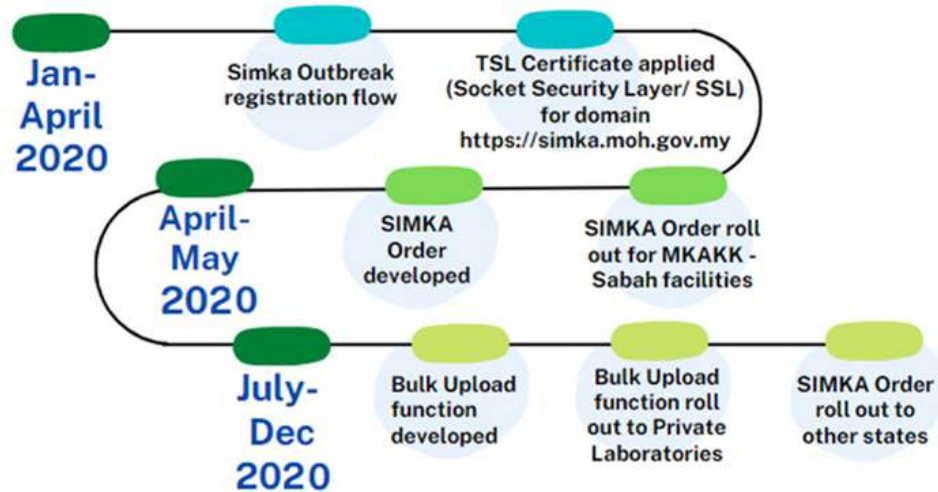


First laboratory in Malaysia who have successfully grew SARS-CoV-2 live virus in cell culture.

S I M K A



SIMKA SYSTEM MILESTONE DURING MALAYSIA COVID-19 PANDEMIC



Mandated as a main platform for **CENTRALIZED DATABASE SYSTEM** for COVID-19 testing.
This system also been used for reporting to MySejahtera.



NPHL were invited as speaker/ trainer to “Novel Coronavirus (2019-nCoV) Sample Management Workshop for government frontliners” in WPKL and Putrajaya.



HANDLING COVID-19 SAMPLE TRAINING

Training on handling of COVID- 19 samples was expanded to health care personnel's from the private sectors (general practitioner and paramedics) conducted by Family Health Division MOH @ Pantai Hospital Bangsar.



“Education is the most powerful weapon which you can use to change the world.”
—Nelson Mandela





RAPID RESPONSE TEAM





The Rapid Response Team (RRT) of NPHL is a specialized team that response to the public health emergency/crisis requiring laboratory expertise. Involved in eight missions with the total of 898 evacuees from China, Italy, Iran and Indonesia (Humanitarian Assistance and Disaster Relief Mission) during the early phase of pandemic.



SAMPLE OUTSOURCE AND MOBILE LAB



Our partners, MOH hospital, universities laboratories under Ministry of Higher Education, Malaysia Genomic Institute (Ministry of Science, Technology and Innovation), private facilities and Hospital AngkatanTenteraTuankuMizan (Defence Ministry) have given the support and cooperation testing COVID-19 samples which were beyond NPHL capacity during crucial time.



| OUT 50 | | | |
|------------|------|------|--|
| VALUE | UNIT | SEMI | |
| TIDREC | | | |
| UMMC | | | |
| UMBI | 150 | | |
| PPUKM | 200 | | |
| HPUPM | 80 | | |
| UiTM | 50 | | |
| HTJ | 100 | | |
| HKL | 100 | | |
| HISB | 100 | | |
| HMELAKA | 100 | | |
| IKN | 100 | | |
| MGI | 100 | | |
| MKAJB | | | |
| MKA IPOH | | | |
| H SELAYANG | 100 | | |
| PAVAGS LAB | | | |
| TOTAL | | | |



Dr Adham Baba
@DrAdhamBaba

Semalam saya meninjau kesiapsagaan Makmal
Kesihatan Awam Kebangsaan Sungai Buloh. Makmal
ini adalah di antara fasiliti KKM seluruh negara yg telah
dipertingkatkan dgn kapasiti membuat ujian RT-PCR
bagi mengesan Covid-19

Terima kasih kpd staf-staf

#KitaMestiMenang
#DudukRumah

VISIT FROM MINISTER OF HEALTH DATO' SRI DR ADHAM BABA





THE WORKING VISIT
OF
THE MEDICAL EXPERT TEAM
FROM THE PEOPLE'S REPUBLIC
OF CHINA
TO
NATIONAL PUBLIC HEALTH
LABORATORY (NPHL) MALAYSIA

DATE : 21 APRIL 2020

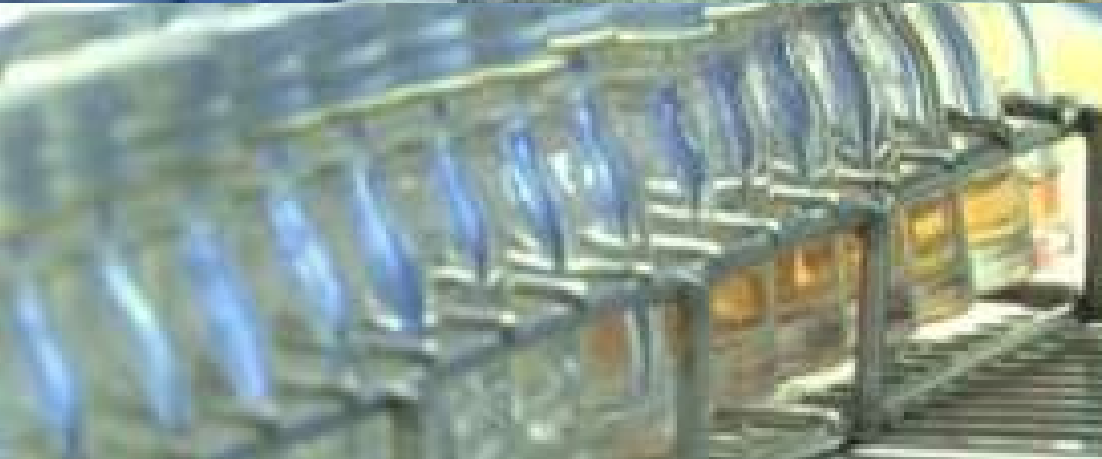
VENUE : MEETING ROOM, NPHL

VISIT FROM CHINA MEDICAL EXPERT





PREPARATION OF IN HOUSE VIRAL TRANSPORT MEDIA (VTM)







"The only thing standing between you and outrageous success is continuous progress."

— Dan Waldschmidt, business strategist



COVID-19 VACCINATION

Supporting the Ministry of Health objective, in April 2021, first dose of COVID-19 vaccine was administered in NPHL with the nurses assistance from Sungai Buloh Health Clinic.





NPFL VACCINATION PROGRAMME



B. RECEIVING VACCINE FROM IKU

A. TRANSPORTATION WITH POLICE ESCORT



C. BRIEFING BY KKSb FMS



D. VACCINE GIVEN BY KKSb PERSONNEL



E. REGISTRATION AND CONSENT



F. OBSERVATION POST-VACCINATION



G. OUR OWN VACCINATORS



H. OUR MEDICAL TEAM





**VISIT FROM
GREATER KLANG
VALLEY (GKV)
TEAM**



NPHL received Greater Klang Valley members on 20th August 2021, primarily for knowledge sharing on SIMKA system (reporting system) and COVID-19 test process.





TRANSITION TO RAPID MOLECULAR



3 technologies (cobas®, GeneXpert®, QIAstat-Dx Analyzer) was placed in NPHL to replace the conventional PCR method, directly eases the methodology burden.



PARLIAMENT SCREENING ACTIVITY

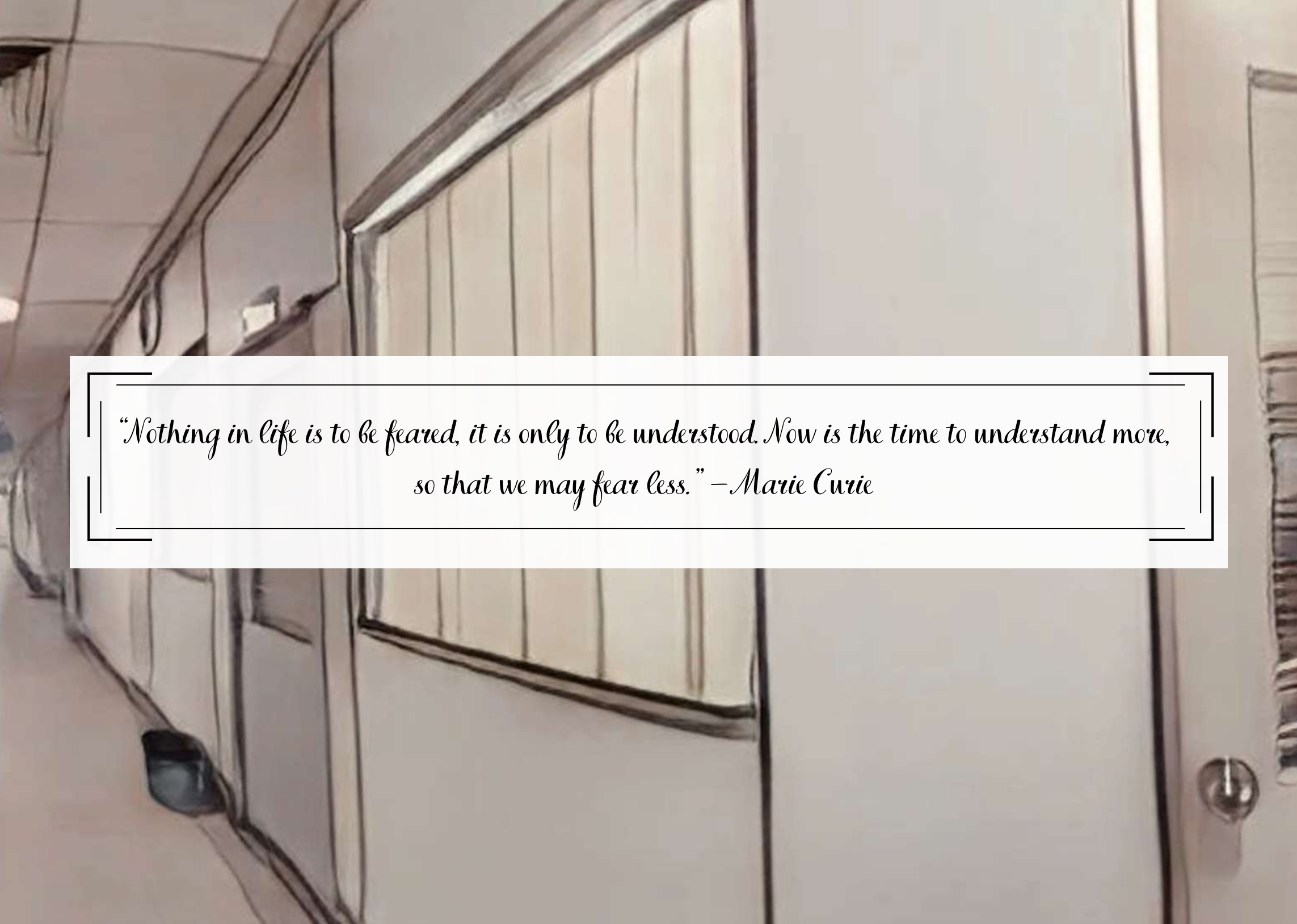




NPHL WAS the main PLAYER in the detection of COVID-19 cases in the Parliament house, using Rapid Test Antigen-Professional, ensuring minimum COVID-19 transmission risk among the members.







*“Nothing in life is to be feared, it is only to be understood. Now is the time to understand more,
so that we may fear less.” – Marie Curie*

NATIONAL TESTING STRATEGY

National COVID-19 Testing Strategy developed with the objective to have a flexible testing strategy according to the changing epidemiology of COVID-19 in the country, re look resource availability and response to the health care system's capacity.



**MINISTRY OF HEALTH
MALAYSIA**

National COVID-19 Testing Strategy *Strategi Pengujian COVID-19 Kebangsaan*

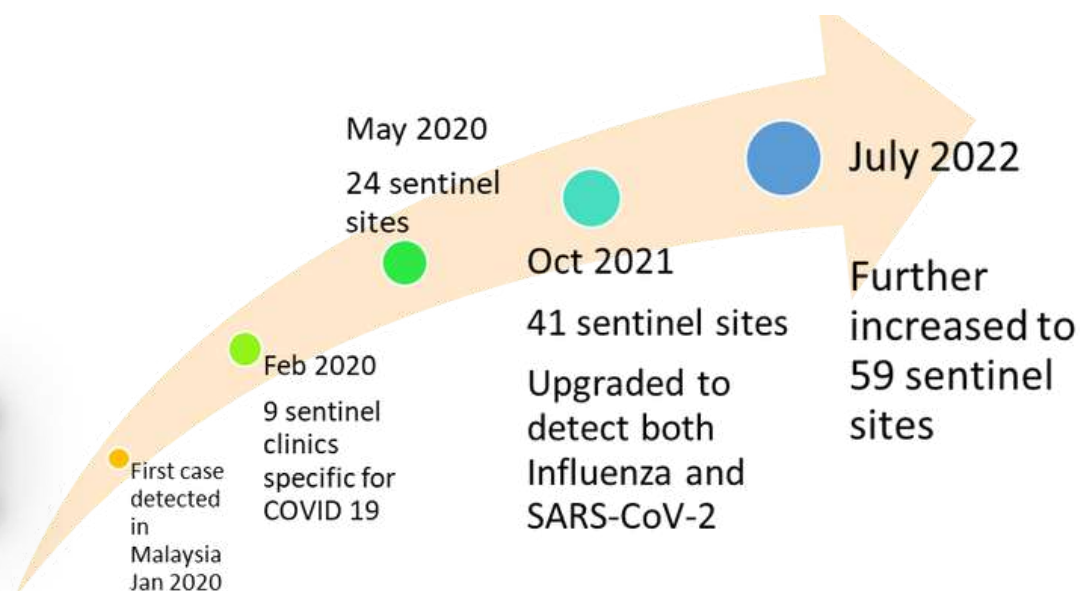
26 November 2021



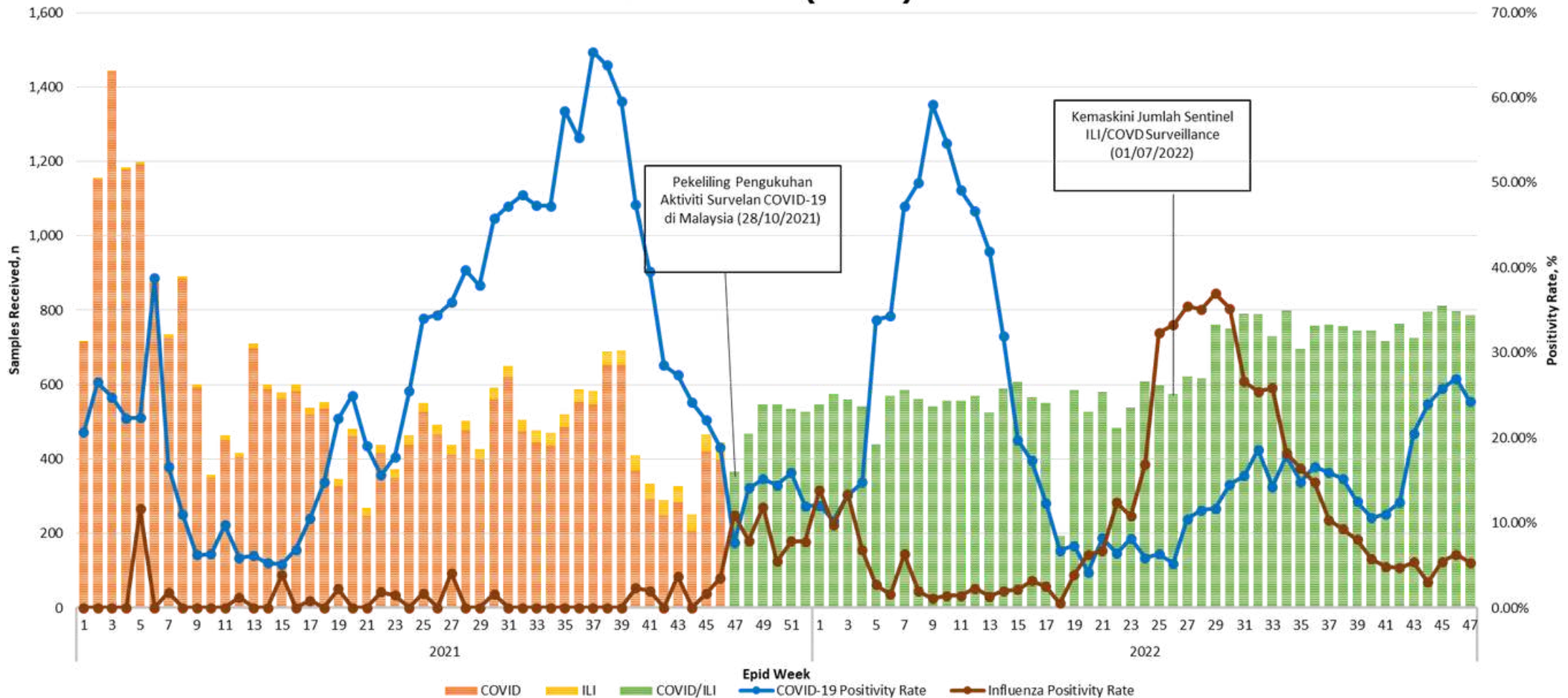




ILI SURVEILLANCE



SENTINEL ILI: SAMPLES RECEIVED, INFLUENZA AND COVID-19 POSITIVITY RATE BY EPID WEEK (NPHL)



Strengthening surveillance was important to detect and contain outbreaks in order to protect those most at risk of severe and poor outcomes in the community. Not only managing pandemic was the priority of the country of that time but detection of disease-causing organisms is very critical in controlling the outbreaks and avoiding large-scale epidemics. Currently, the country has 59 sentinel sites are operating throughout the country using the same case definition and criteria.



KIT EVALUATION

A total of 256 COVID-19 Rapid Test Antigen kits were evaluated in NPHL during the pandemic.



WGS TRAINING TO REGIONAL PUBLIC HEALTH LABORATORIES

Training on WGS was organized by NPHL to other Public Health Regional Staffs (Kota Kinabalu and Johor Bharu) using Illumina MiSeq.



WGS BIOGENOMIC TRAINING FOR ASEAN MEMBER STATES (AMS)





NPHL organized training on Strengthening Laboratory Capacity on COVID-19 Genomic for AMS: A Hands on Training and Knowledge Sharing Workshop over a period of time from April 2022 to September 2022 involving 7 ASEAN countries, an opportunity to share experiences and networking with other ASEAN member Countries.



"The greater the difficulty, the more the glory in surmounting it." — Epicurus, Greek philosopher





**HANDOVER CEREMONY GENOMIC
SEQUENCER FROM WHO TO NPHL**



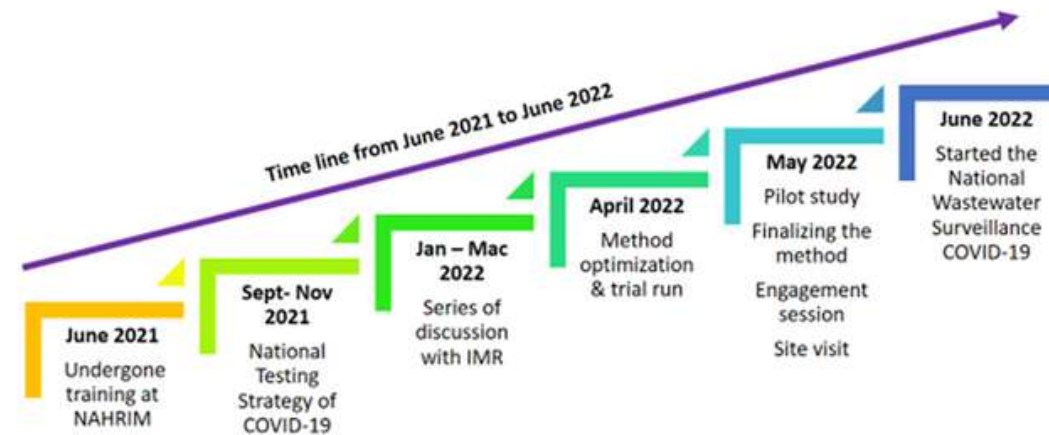
WHO Representative and Head of the WHO Country Office in Malaysia, Brunei Darussalam and Singapore, Dr Rabi Abeyasinghe hand over Genomic Sequencer MinION Oxford Nanopore Technologies to the Director of NPHL witnessed by Ybhg Datuk Dr Norhayati Binti Rusli, Deputy Director General of Health (Public Health), Ministry of Health Malaysia.





COVID-19 WASTEWATER SURVEILLANCE

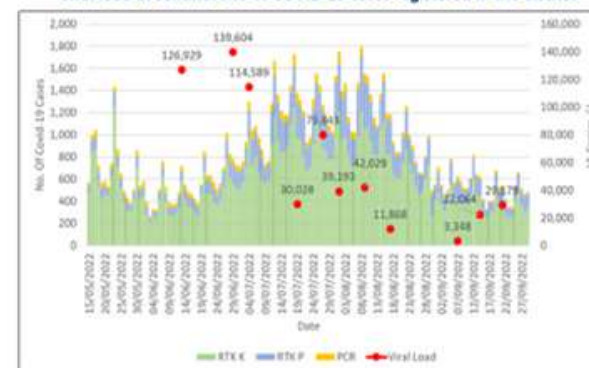




NPHL is doing wastewater testing for COVID-19 routinely (both from sentinel sites and point of entry, KLIA) with the capacity of 48 test per month since its operation in Dec 2021.



Viral load at sentinel site Vs COVID-19 cases registered in the district



| Sampling Date At Sentinel Site | Results | |
|--------------------------------|-----------------------------|---------------------------------|
| | Detection & Viral Load (VL) | Variant screening (Presumptive) |
| 13/06/2022 | DETECTED/ VL 126,929 | Omicron |
| 29/06/2022 | DETECTED/ VL 139,604 | Omicron |
| 04/07/2022 | DETECTED/ VL 114,589 | Omicron |
| 19/07/2022 | DETECTED/ VL 90,028 | Insufficient |
| 27/07/2022 | DETECTED/ VL 79,843 | Omicron |
| 01/08/2022 | DETECTED/ VL 39,193 | Omicron |
| 09/08/2022 | DETECTED/ VL 42,028 | Omicron |
| 17/08/2022 | DETECTED/ VL 11,868 | Omicron |
| 07/09/2022 | DETECTED/ VL 3,348 | Omicron |
| 14/09/2022 | DETECTED/ VL 22,064 | Omicron |
| 21/09/2022 | DETECTED/ VL 29,179 | Omicron |

| SAMPLING DATE AT KLIA | FLIGHTS | RESULTS | | | |
|-----------------------|---------|-----------|---------------------|----------------------------------|--|
| | | Detection | Viral Load copies/L | Variants screening (Presumptive) | Results WGS (Freyja method) |
| 08 Jun 22 | XXX | DETECTED | 22,309 | Omicron | Omicron BA.5: 100% |
| 15 Jun 22 | XXX | DETECTED | 478,000 | Omicron | Omicron BA.5: 86.2%, Omicron BA.2: 13.6%, *Other: 0.2% |
| 22 Jun 22 | XXX | DETECTED | 3,828 | Omicron | Omicron BA.5: 88.7%, Omicron BA.2: 11.0%, *Other: 0.4% |



**PASTIKAN
SAHIIH**

**KIT UJIAN KENDIRI COVID-19:
ADAKAH IANYA TEPAT?**

bersama

DR. DONAL HUDA NASRIL
Pakar Patologi
Makmal Kesihatan Awam Kebangsaan


**JUMAAT, 6 OGOS 2021
3:30 PETANG**

**DR DONAL
HUDA NASRIL**
PAKAR PERUBATAN PATOLOGI

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Kementerian K

Dr. Nor Zahrin

peranan Makm

Townhall COVID-



DR NOR ZAHRIN HASRAN

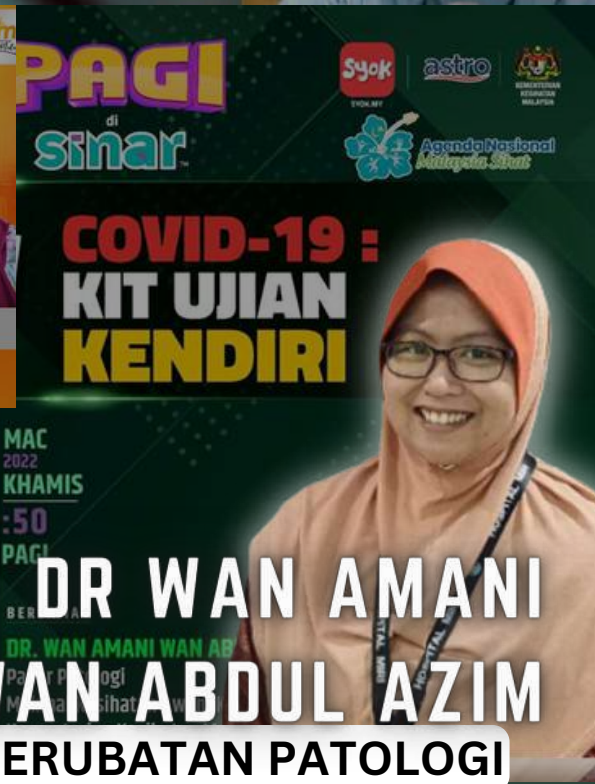
PAKAR PERUBATAN KESIHATAN AWAM

n Kesihatan Malaysia - Portal Myhealth
rin Hasran memberi taklimat mengenai
kmal Kesihatan Awam Kebangsaan

VID-19 bersama Agensi Media · 14 Feb 2020 ·

inar

PAGI DI SINAR CARA BETUL BUAT UJIAN KENDIRI ATAU SELF TEST KIT COVID-19



Molecular characterization of *Vibrio cholerae* O1 El Tor strains in Malaysia revealed genetically diverse variant lineages

Kwai Lin Thong¹, Kathryn Bee Lin Tham², Soo Tein Ngoo³, Shiang Chiet Tan¹, Wan Noraini Wan Yusoff⁴, Rahayu Ahmad Hanapi⁵, Nurizzat Mohamad⁶, Cindy Shuan Ju Teh⁷

Affiliations + expand
PMID: 34724597 DOI: 10.1111/med.14388

Abstract

Vibrio cholerae O1 El Tor variants have been the major causative agents of cholera worldwide since their emergence in the 2000s. Cholera remains endemic in some regions in Malaysia. Therefore, we aimed to investigate the genetic characteristics of the *V. cholerae* O1 El Tor strains associated with outbreaks and sporadic cases to elucidate the molecular evolution among the strains circulating in this region. A total of 45 *V. cholerae* O1 El Tor strains isolated between 1991 and 2011 were examined

17th National Epidemiology Conference (NEC) Epidemiology in the Time of COVID-19 24th-30th Nov 2021 BEJ, VOLUME 2, SUPPL. 1, NOVEMBER 2021

BORNEO EPIDEMIOLOGY JOURNAL BEJ

CONFERENCE POSTER PRESENTATION: PP 27

SIMKA ORDER: A Laboratory Information System in Combating COVID-19 Pandemic – A Descriptive Study

Santhi Subramaniam^{1*}, Saidatul Syazana Shazri², Mohd Ruzal Hakim Arman³, Sharifah Nura Abu Bakar⁴, Mohd Adlin⁵ @ Yusoff Ruzal Hakim⁶, Crystal Anah Pev^{7*}

Abstract

Introduction: Since the pandemic began in March 2020, laboratories received massive number of samples to be tested daily as Real Time Polymerase Chain Reaction (RT-PCR) is a gold standard in diagnosing COVID-19. Both government and private laboratories independently processed the sample via individual laboratory system. Hence, a well-developed laboratory information system (LIS) is required to provide a centralized database that can be used nationwide. The aim of this study is to describe the functions of Simka Informasi Maklumat Kajian Awam (SIMKA) ORDER in facilitating end-to-end laboratory process of COVID-19 samples.

Methods: SIMKA ORDER was established by National Public Health Laboratory (NPHL) since October 2020 which focused on the online application process of the sample at the ground level instead of conventional manual form registration.

Results: The system functions to monitor samples end-to-end activity which includes sample collection until processing of test report. In addition, Turn Around Time (TAT) is one of the key performance indicators for laboratory component which can be improved through the system in managing RT-PCR samples. Moreover, the not-working feature of this system enables the samples to be managed efficiently when a laboratory reached its maximum capacity. These key features support an immediate public health response including case identification and case isolation to break the COVID-19 chain transmission.

Conclusion: In summary, SIMKA ORDER provides a different approach on COVID-19 samples management. Further detailed evaluation will need to be done to study its effectiveness in the long run.

Keywords: Laboratory information system, end-to-end, SIMKA ORDER, COVID-19

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³Faculty of Mechanical Engineering, University Technology MARA, Shah Alam, Selangor, Malaysia
⁴Research, 24-10-2021
⁵Accepted, 26-11-2021



National Special jury awards for innovation, Ministry of Health

PUBLICATIONS AND

A REVIEW YEAR ANALYSIS ON QUALITY CHECKING OF BLOOD FILM MALAYSIA PARADISE, NATIONAL MALAYSIA EXAMINATION PROGRAMME, MINISTRY OF HEALTH MALAYSIA

Chikara Saito¹, Nurhidayah Saipuan², Nurul Hafizah³, Muhammad Hisham⁴, Mohd Hafiz⁵, Nurhidayah Saipuan⁶, Nurul Hafizah⁷, Nurul Hafizah⁸, Nurul Hafizah⁹, Nurul Hafizah¹⁰

ABSTRACT

The quality checking of blood film for malaria parasite is an important activity for monitoring the performance of malaria microscopy. Considering its important role in the National Examination Programme in Malaysia, we evaluated the performance of the quality checking of blood film malaria parasite control and between 2010 to 2021 and analyze the outcomes. A total of 47,128 blood film malaria parasite were examined and analyzed for quality checking at the National Public Health Laboratory, of which a total of 10,100 were positive and 37,028 were negative. Analysis showed that 10.1% of 47,128 blood film malaria parasite were positive and 37.0% of 47,128 blood film malaria parasite were negative. The percentage of positive and negative blood film malaria parasite were 10.1% and 37.0%, respectively. In general, the performance of quality checking of blood film malaria parasite was generally satisfactory with the percentage of error was less than 1%, below the standard set by the National Examination Programme, Ministry of Health Malaysia.

INTRODUCTION

Malaria microscopy is regarded as the most suitable diagnostic method and remains as the gold standard for identification of malaria parasite. It is performed by a person with sufficient training and skill to identify malaria parasites compared to other methods.

RESULTS

Analysis showed that there was a total of 47,128 blood film malaria parasite were examined and analyzed for quality checking at the National Public Health Laboratory, of which a total of 10,100 were positive and 37,028 were negative. Analysis showed that 10.1% of 47,128 blood film malaria parasite were positive and 37.0% of 47,128 blood film malaria parasite were negative. The percentage of positive and negative blood film malaria parasite were 10.1% and 37.0%, respectively. In general, the performance of quality checking of blood film malaria parasite was generally satisfactory with the percentage of error was less than 1%, below the standard set by the National Examination Programme, Ministry of Health Malaysia.

SARS-CoV-2 Surveillance, A Descriptive Study By National Public Health Laboratory

Santhi Subramaniam¹, Sharifah Nura Abu Bakar², Crystal Peter³, Saidatul Syazana Shazri⁴, Mohd Ruzal Hakim Arman⁵

¹National Public Health Laboratory, 47000 Sungai Buloh, Selangor, Malaysia.
²Faculty of Mechanical Engineering, University Technology MARA, 40450 Shah Alam, Selangor, Malaysia

INTRODUCTION

Sentinel surveillance is a network of recruited health facility that are responsible for sampling in a community as a part of public health control measures for early case detection and community transmission monitoring.

RESULTS

SARS-CoV-2 sentinel surveillance was first introduced on 24th February 2020 with 9 health clinics throughout Malaysia and subsequently increased to 26 health clinics. Each sentinel health clinics is required to send 15 samples per week of patients who present with sudden onset of respiratory infection.

DISCUSSION & CONCLUSION

Sudden surge in sentinel positivity rate from epid week 22 onwards can be applied as an alert sign to the transmission status in the community. The highest positive samples are contributed by the working age group from 25 to 60 years old, with further analysis revealed there is no obvious positivity rate discrepancy between male and female contributing 58.44% and 59.52% respectively. In conclusion, the sentinel positivity rate shows significant recession from epid week 37 onwards in line with national recovery plan. Hence, expanding more sentinel sites and other supplementary surveillance program must be put on consideration for better data representativeness. Further studies on disease modeling such as prediction by sentinel samples would enhance Malaysia's existing alert system.

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

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First place in National Epidemiology Conference 2021

First Runner Up
for
e-Poster
Presentation
from Quality
Division



STUDY OF COLD BOX TEMPERATURE STABILITY (NMRR ID :774-58579)
Azwa Mohd Surur, Lurman Abu Bakar, Wan Amani Wan Abdul Azim, Nor Zahrin Hassan, & Esah Md Ali
National Public Health Laboratory (NPHL), Sungai Buloh

Introduction

Periodic monitoring of vaccine potency is important because the potency depends on uninterrupted cold chain as the vaccine may lose its potency. The damage is irreversible and the desired effect will not be obtained. Therefore, to help enhance assurance of vaccine potency by Public Health programs in Malaysia, the study was done to examine the temperature stability of cold box sets. The cold box set was specially designed for transporting vaccines from health facilities to NPHL as a laboratory performing vaccine potency tests.

Objectives

The objectives of the study were to determine the number and configuration of ice packs to maintain the desired temperature of a defined time period and also to determine ice pack condition time.

Materials and Methods

a) Study duration: May 2020 to January 2021
b) Cold box temperature stability versus number and configuration of an ice pack.

Four configurations of cold box set consisting of Polystyrene box size 42.5(L)x30(W)x29(H), thick paper card, plastic air cushion, internal box (size 18(L)x10(W)x14(H) cm), aluminum packaging ice pack size 18 cm x18 cm and temperature data logger were prepared. The configurations differed in the number of ice packs used and ice pack arrangement. Table 1: Cold box temperature stability versus number and configuration of ice packs.

| Configuration type | Quantity of ice pack/arrangement | | | No of ice packs (total) |
|--------------------|----------------------------------|------|-----|-------------------------|
| | Base | Side | Top | |
| Polystyrene box | A | 2 | 2 | 4 |
| | B | 2 | 2 | 2 |
| | C | 3 | 2 | 2 |
| | D | 2 | 2 | 6 |

c) Ice pack condition time versus temperature stability.

Configuration E & F were done with different condition times of the ice packs melt at room temperature (as shown by appearance of first water droplet).

d) Method of data analysis : Anova and t-test

Table 2 : Ice packs condition time versus temperature stability

| Configuration type | Ice packs arrangement | | | No of ice packs (total) | Condition time at room temperature |
|--------------------|-----------------------|------|-----|-------------------------|------------------------------------|
| | Base | Side | Top | | |
| E | 2 | 2 | 2 | 6 | 25 minutes |
| F | 2 | 2 | 2 | 6 | 0 minute |

Results

a) Cold box temperature stability versus number and configuration of ice packs.

The mean temperature values of internal cold box are shown in Figure 1 of each configuration. Configuration A using 5 ice packs, reached the mean temperature range between 3.33 to 7.90 °C for 23 hours. While configuration B reached 3.47 to 7.65 °C for 28 hours and configuration C 3.53 to 7.73°C for 35 hours (the longest duration) Differed from Configuration D causing the temperature dropped to less than 2°C for 24 hours (range between 0.867 to 1.467°C only). Statistical analysis of mean temperature range for A,B,C and D were significant difference as p value < 0.05.

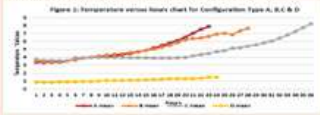



Figure 2: Temperature versus hours chart for Configuration Type E & F.



Discussion

Configurations A, B & C were suitable to be used for packaging and transportation of vaccine samples because the temperature was stable at 2-8 °C throughout the study. The temperature stability was successfully stable in the range of 23-35 hours. However, configuration D was not suitable and should not be used because the temperature dropped to less than 2°C for more than 24 hours. Such persistence and low temperature will affect vaccine potency. Apart of configuration the ice packs used, it is crucial to condition the ice pack before the packaging process takes place.

Conclusion

The study showed that the configuration ice packs and conditioning time do have an effect on cold box temperature stability. Therefore, three options of ice pack configuration are recommended for users depending on the distance and logistics.

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Acknowledgement

Acknowledgement to Phamraris Sdn Bhd and Zueitig Pharma Sdn Bhd

ACHIEVEMENTS

3rd Place



Prevalence of Extended-Spectrum Beta-Lactamase Producing Escherichia coli (ESBL E.coli) Among Healthy Pregnant Women in Selangor: A Descriptive Study

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INTRODUCTION

E. coli is a large and diverse group of bacteria found in the environment, foods, in human and animal intestines. Although most strains are harmless, but *E.coli* is a key species associated in developing antimicrobial resistance (AMR). The major mechanism of AMR is the production of Extended Spectrum Beta-Lactamase (ESBL) enzymes, which confer resistance to penicillins, cephalosporins, and monobactams but not to tetracyclines and carbapenems, leaving limited therapeutic options for AMR infections. This study was aimed to determine the prevalence of ESBL *E.coli* colonization among healthy pregnant women in Selangor.

METHODOLOGY

A total of 100 rectal swabs were collected from healthy pregnant women with a gestational age of 28 weeks from 3 health care clinics. The samples were cultured on selective MacConkey agar supplemented with Augmentin (ampicillin-sulbactam). Lactose fermenting colonies were identified as *E.coli* by Indole test and subjected to Double Disc Synergy Testing (DDST), ESBL confirmatory testing.

RESULTS

Table 1: Prevalence of ESBL *E.coli* among healthy pregnant women in Selangor, 2018.

| Parameter | Value |
|---|-------|
| Total samples received | 100 |
| Total number of ESBL <i>E.coli</i> isolates | 20 |
| Prevalence | 20% |

Table 2: Distribution of ESBL *E.coli* according to age group, ethnicity, parity, education background and employment status.

| Parameter | Value |
|----------------------|----------------------------------|
| Age group | 21-30 years (80%) |
| Ethnicity | Malays (100%) |
| Parity | Primipara (50%), Multipara (50%) |
| Education background | Primary (50%), Secondary (50%) |
| Employment status | Housewife (50%), Others (50%) |

DISCUSSION

Majority of respondents were between the ages of 21-30 years (80%) followed by 31-40 years (20%). Most of them were Malays (83%) followed by Chinese (10%) and Indians (7%). The laboratory findings revealed that the highest rate of ESBL *E. coli* was isolated from the age group of 21-30 years (80%) followed by the age group 31-40 years (20%). The highest prevalence of ESBL *E. coli* was observed among the Chinese ethnicity (80%) followed by Malays (10%). Seventy percent (70%) of ESBL *E. coli* was isolated from swelling pregnant women while 30% was from the non-swinging group.

CONCLUSION

1. The prevalence rate of ESBL *E. coli* colonization among healthy pregnant women attending 3 primary health care clinics in Selangor is 20%.

2. The selective MacConkey agar supplemented with Augmentin is a fast, cheap, economical and have high sensitivity as primary ESBL screening media in diagnostic laboratories.

3. ESBL *E. coli* screening strategies are needed to prevent perinatal transmission which may lead to neonatal sepsis, and ultimately, to curb the establishment of multi-drug resistant strains in the communities and hospitals.

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ACKNOWLEDGEMENT

We would like to thank the Director General of the Ministry of Health Malaysia for his permission to publish this article. We also like to thank the Director of National Public Health Laboratory for her kind continuous support. We thank all bacteriology staffs for their contribution in this project.

3rd place for e-Poster Presentation from Disease Division



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“In the midst of chaos, there is also opportunity.” – Sun Tzu





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