KEMENTERIAN KESEHATAN REPUBLIK INDONESIA

Perlukah Vaksinasi Influenza dan Pneumococcus di wajibkan pada Jamaah Haji Indonesia?

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Telediskusi, Forum Diskusi Kesehatan Haji

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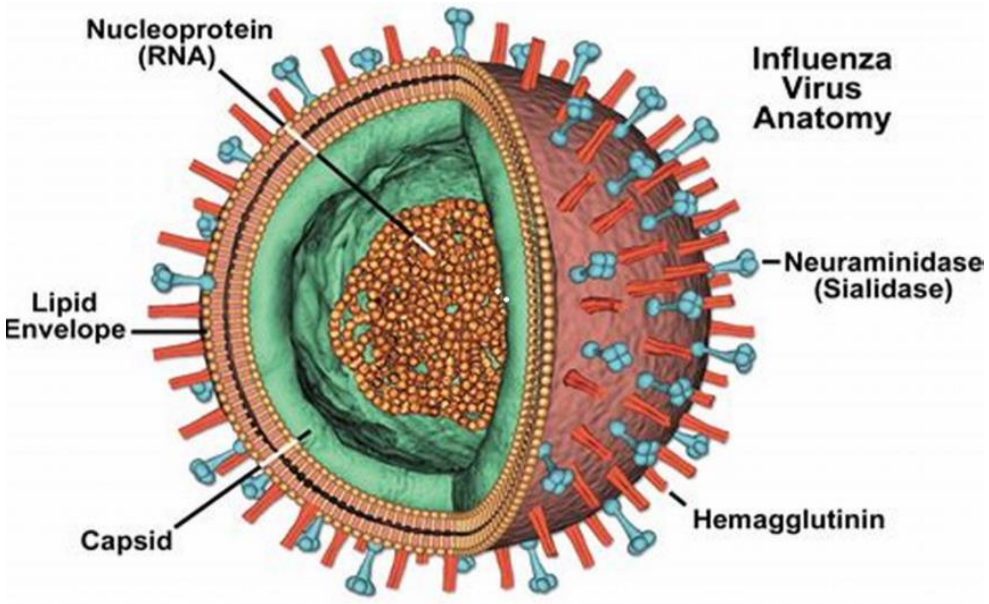
GAMBARAN UMUM TERKAIT PENYAKIT AKIBAT VIRUS INFLUENZA

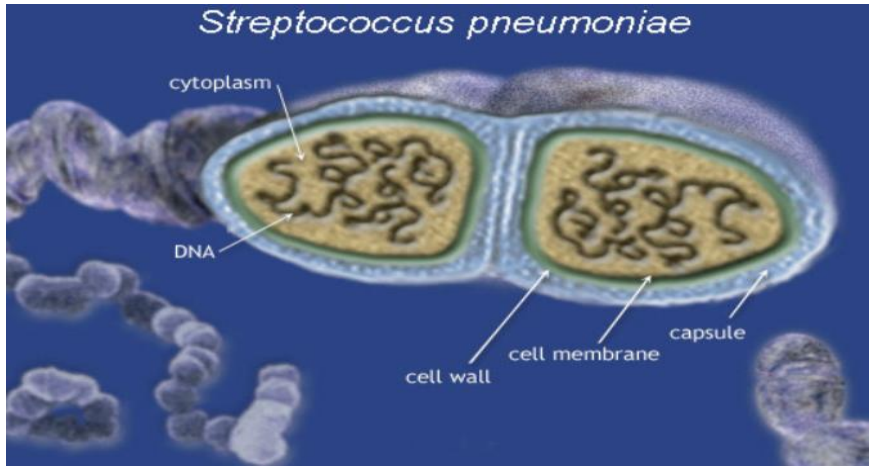
- Virus Influenza adalah salah satu penyebab dari ISPA (Acute Respiratory Tract Infection)
- Penyebab ISPA >> bakteri, atau virus (**Virus Influenza**, Para Influenza, RSV, Corona, dll)
- Untuk melihat dinamika dan mutase Virus Influenza, WHO telah mengembangkan
  >> GIRS (Global Influenza Response and Survaillance System)
  >> Sentinel ILI-SARI >> genome sequencing >> dinamika strain dan mutase Virus Influenza
  >> GISAID (Global Initiative on Sharing All Influenza Data)



- Penamaan menggunakan Kombinasi H dan N
- Ada 17 Jenis H (H1 sd H17), dan 9 Jenis N (N1 sd N9)
- Contoh: H1N1, H5N1, H3N2, dst
- H5N1 → Flu Burung
- H1N1 → Mexican swine flu (pandemi)

GAMBARAN UMUM TERKAIT PENYAKIT AKIBAT PNEUMOCOCCUS

- Penyakit akibat Streptococcus pneumoniae masih menjadi **masalah kesehatan masyarakat di dunia.**
- Bakteri ini dapat menyebabkan penyakit **pneumonia, meningitis, bacteriemia, otitis media, sinusitis, dan bronchitis**.
- WHO memperkirakan 1,6 Juta orang meninggal akibat pneumococcus setiap tahunnya
- Penyakit akibat pneumococcus ini lebih banyak menyerang **anak-anak dan orang tua**, utamanya di negara berkembang.



Struktur capsul

Terdapat 91 serotypes

VAKSIN INFLUENZA??

Trivalent vaccines:
include an influenza A (H1N1) virus, an influenza A (H3N2) virus and one influenza B virus (Victoria)

Tetravalent vaccines:
include an influenza A (H1N1) virus, an influenza A (H3N2) virus and two influenza B virus (Victoria and Yamagata)

VAKSIN PNEUMOCOCCUS?

PCV13 (Prevnar 13) contains thirteen serotypes of pneumococcus (1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, and 23F) which are conjugated to diphtheria carrier protein)

- Digunakan untuk anak

Pneumococcal polysaccharide vaccine (PPSV)—known as **Pneumovax 23 (PPV-23)**—is the first pneumococcal vaccine derived from a capsular polysaccharide
The 23-valent vaccine (e.g., Pneumovax 23) is effective against 23 different pneumococcal capsular types (serotypes 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F and 33F), and so covers 90 percent of the types found in pneumococcal bloodstream infections

- Digunakan untuk dewasa dan orang tua

PARAMETER UNTUK PENILAIAN VAKSIN HAJI??

1. Parameter beban penyakit (diseases burden) sebagai penyebab morbiditas dan mortalitas (terkonfirmasi secara lab / agents penyebab)

2. Efektivitas vaksinasi thd outcome klinis (morbiditas, mortalitas)

3. Paramater lain:
   - Politis ---
   - Ekonomi ---
   - Psikologis ---

Vaksinasi Influenza (Flu vaccine) pada JHI

Vaksinasi Pneumococcus pada JHI

Tujuan:
1. Menurunkan morbiditas
2. Menurunkan mortalitas

Opsi Kebijakan

1. Pendekatan laiseez-faire
2. Pendekatan direction (sangat meganjurkan)
3. Pendekatan mewajibkan (instrumen kebijakan terstruktur)

?

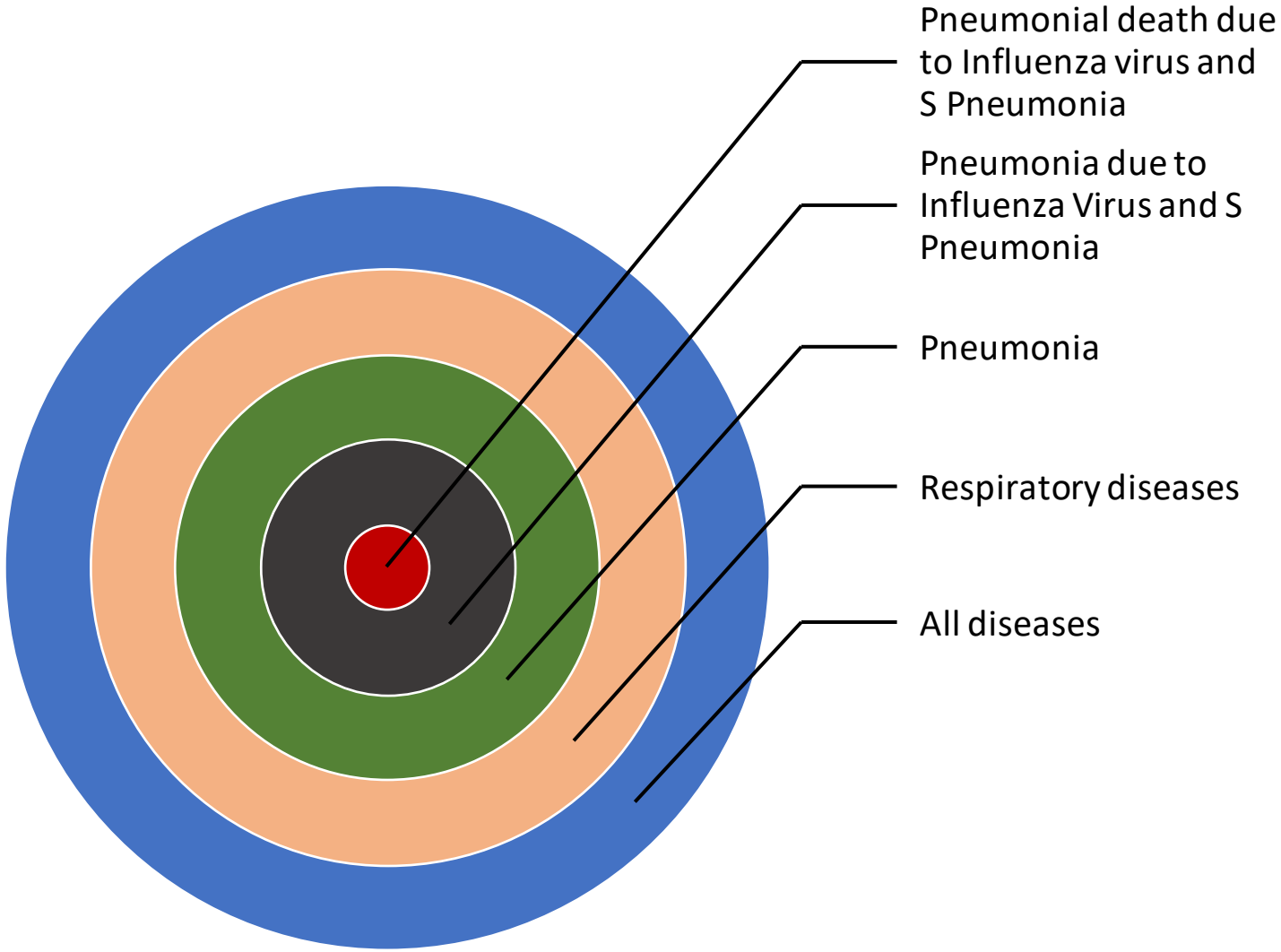
Variabel utk memutuskan

Prevalensi morbiditas dan mortalitas akibat virus Influenza (H1N1, H3N2, Influenza B), akibat S Pneumonia (sesuai strain Vaccine)

1. Tingkat effectivitas Vaksin Influenza dalam menurunkan morbiditas ISPA dan mortalitas akibat pneumonia
2. Tingkat effectivitas Vaskin Pneumonia dalam menurunkan morbiditas pneumonia dan mortalitas akibat pneumonia

Variabel non-epidemiologi:
1. Psikologis (membuat JHI tenang)
2. Politis (konflik kepentingan)
3. Ekonomis (murah vs mahal)

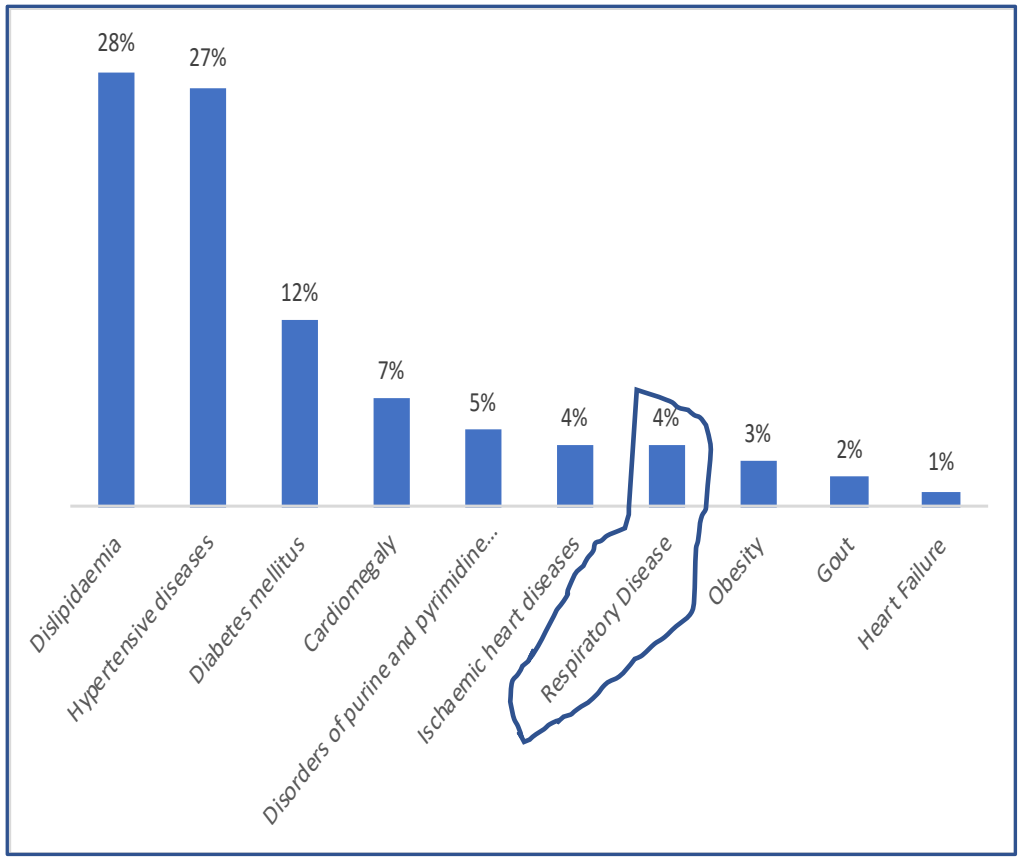
Seberapa besar Vaksinasi Influenza dan Vaksinasi PPV mencegah kesakitan penyakit sal nafas dan kematian akibat pneumonia?



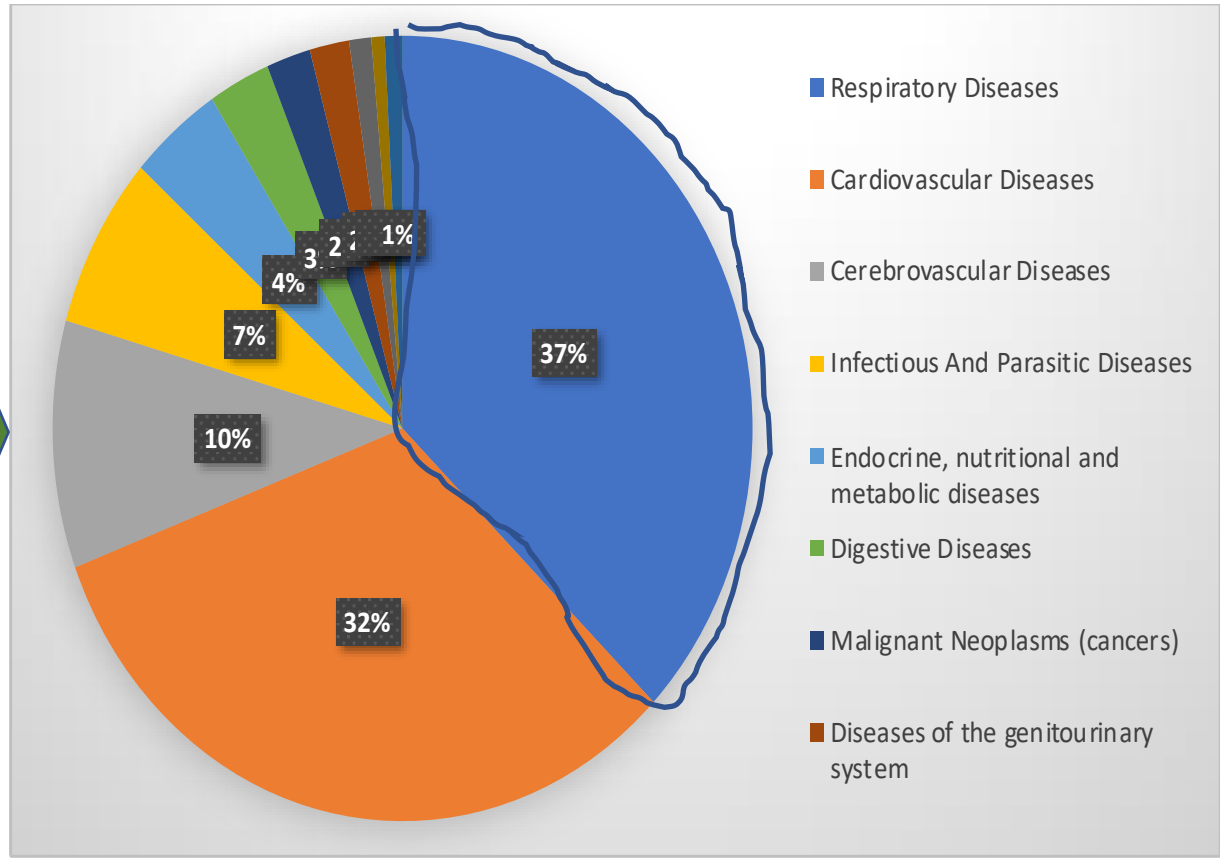
Rumus sederhana:

Jumlah kemtian yang dapat dicegah = Total kematian X proporsi kematian akibat respiratory diseases X proporsi kematian akibat pneumonias X proporsi kematian akibat S Pneumonia, atau Influenza virus (Flu A dan B)

DARI MORBIDITAS PRA HAJI MENUJU MORTALITAS SELAMA HAJI



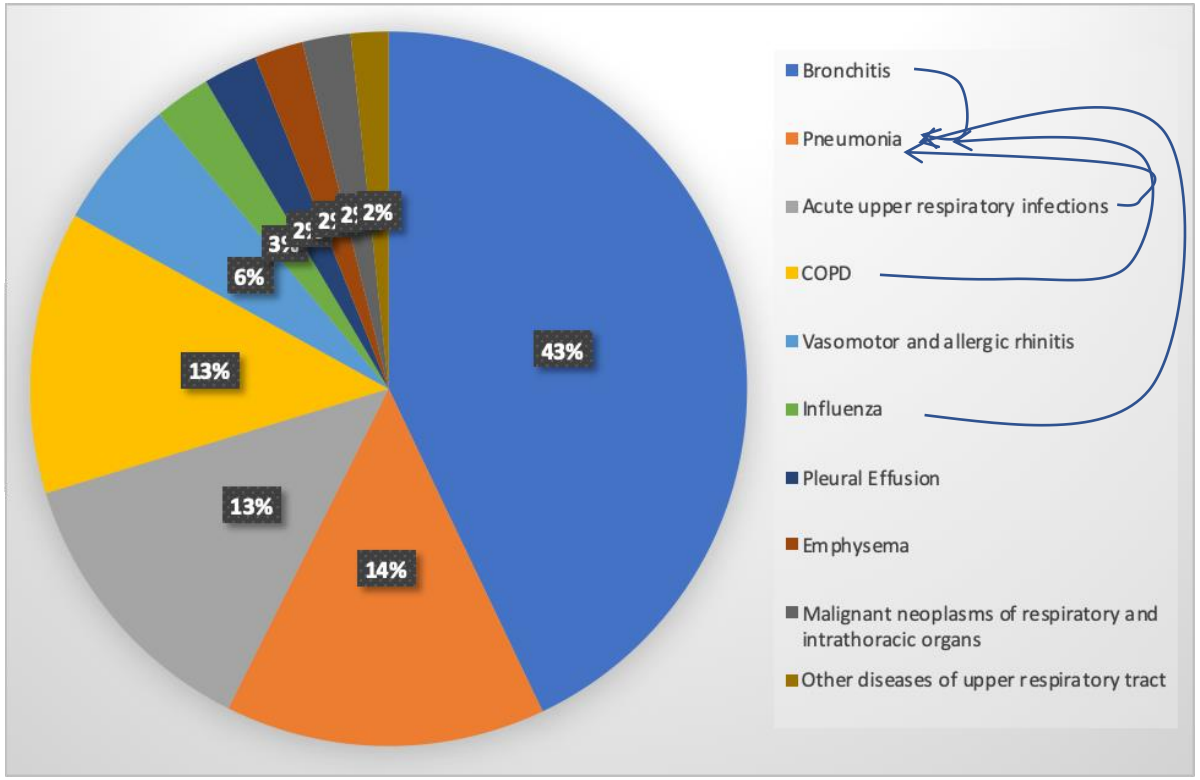
Pola Morbiditas di Tanah Suci ????



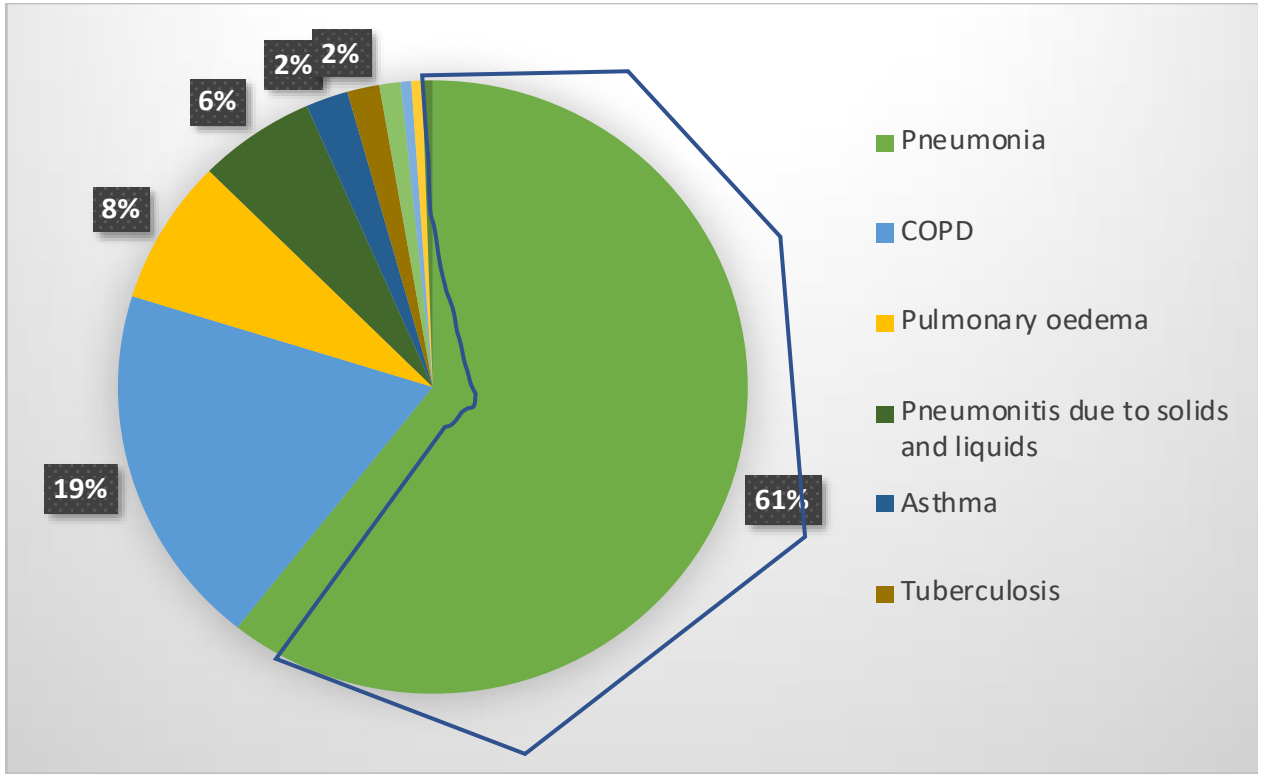
Pola Morbiditas Pra Haji

Pola Mortalitas Selama Haji

DARI MORBIDITAS RESPIRAOTY DISEASES MENUJU MORTALITAS AKIBAT RESPIRATOTY DISEASES



Pola Morbiditas Respiratory Diseases



Pola Mortalitas Respiratory Diseases

Characteristic ILI cases in 2018

	Influenza Negative (n= 1829) (73,6%)		Influenza Positive (n= 654) **(26,3%)**	
	N	%	N	%
Gender				
Male	974	53.25	366	56,05
Female	855	46,75	288	44,10
Age Group				
0-<1 yrs	110	6,01	14	2,14
1-4 yrs	479	26,19	151	23,09
5-14 yrs	701	38,33	329	50,31
15-59 yrs	485	26,52	150	22,93
>60 yrs	54	2,95	10	1,53

Source : Report Activities Influenza Surveillance 2018, NIHRD

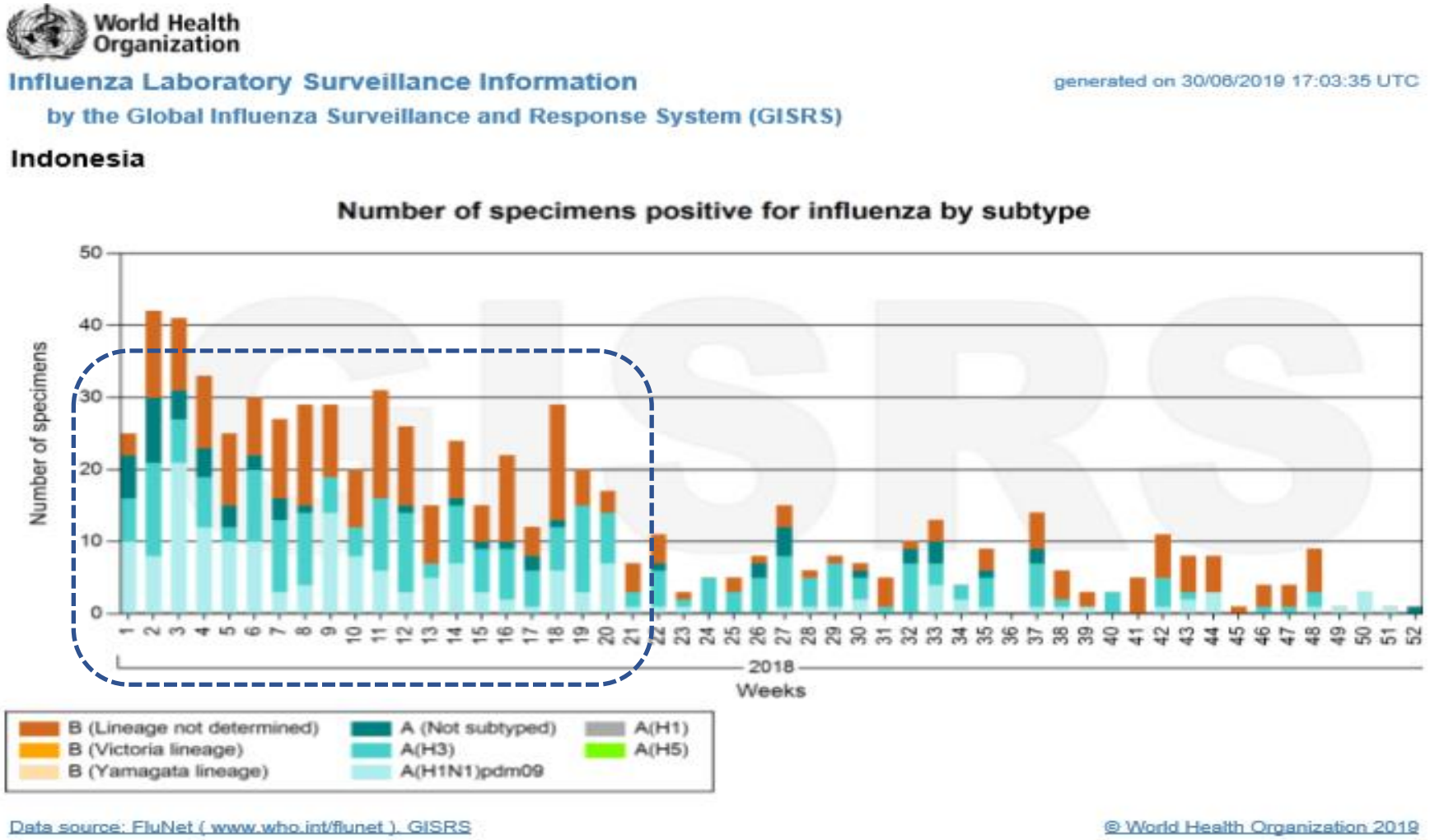
Characteristic SARI cases in 2018

	SARI Cases (N=716) n (%)	Positive Influenza (N=121) **(14,5%)** n (%)
Gender		
Male	411 (57)	67 (55)
Female	305 (43)	54 (45)
Age Group		
< 1 yrs	176 (24.6)	14 (11.6)
1 – 4 yrs	236 (33.0)	44 (36.4)
5 – 14 yrs	126 (17.6)	27 (22.3)
15 – 49 yrs	94 (13.1)	10 (8.3)
50 – 64 yrs	45 (6.3)	14 (11.5)
>65 yrs	39 (5.4)	12 (9.9)

Source : Report Activities Influenza Surveillance 2018, NIHRD

Influenza Virus Circulation in Indonesia in 2018

Cuaca berpengaruh

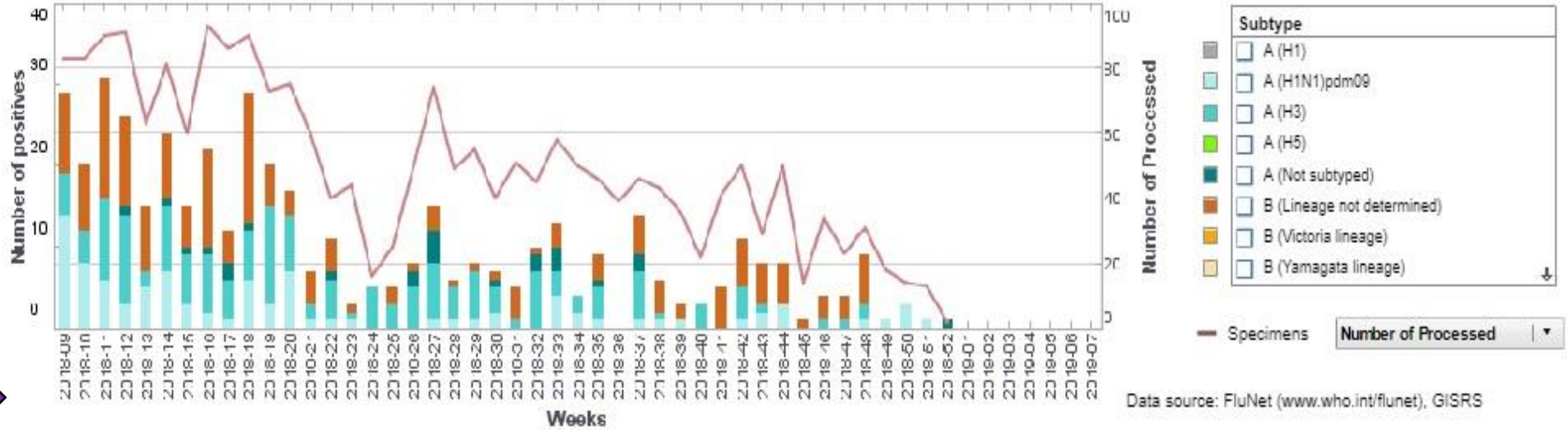


Influenza surveillance report

Menu | Graphs for: Indonesia | Period: 2018-09 to: 2019-07 | generated on: 27-Feb-2019 04:42 | Click here to open the report by Age Groups

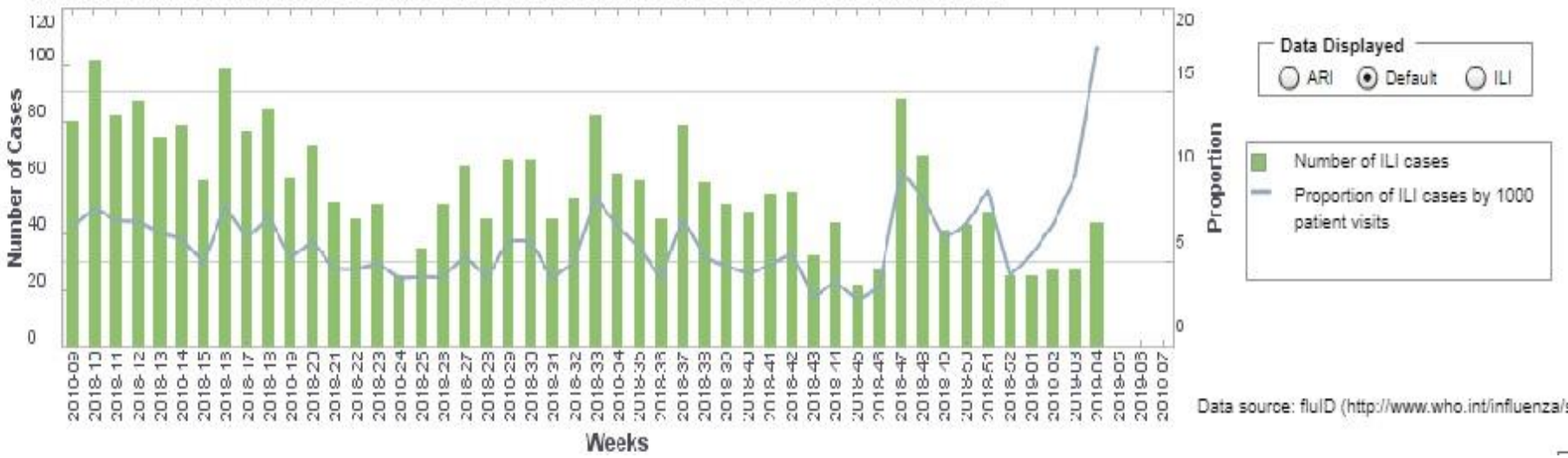
ISPA Sepanjang tahun

Number of specimens positive for influenza by subtype



Data source: FluNet (www.who.int/flunet), GISRS

Number of influenza-like illness (ILI) cases and proportion of ILI cases by 1000 patient visits



Data source: fluID (http://www.who.int/influenza/surveillance_monitoring/fluid)

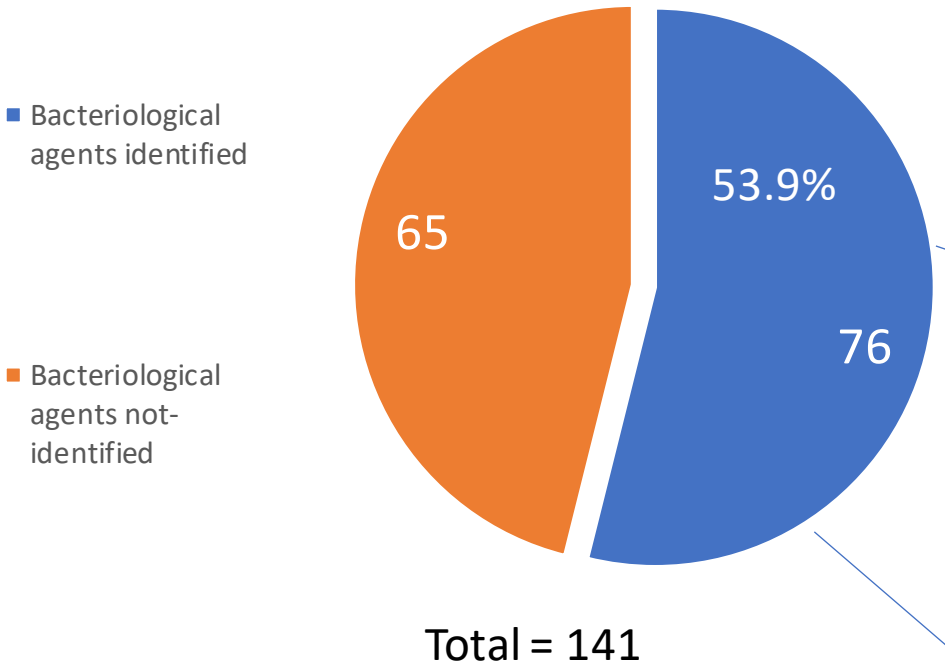
POLA ETIOLOGI PENYAKIT SALURAN NAFAS PADA JAMAAH HAJI

Table 2
A Summary of Studies addressing the Prevalence of Respiratory Viruses among Pilgrims using Cell Culture, data presented as percentage of the total number of included pilgrims in each study.

Reference	[43]	[44]	[49]	[26]	[27]
Study Design	Cross-sectional study (Saudi Arabia)	Cross-sectional study (Saudi Arabia)	Cross-sectional study (Saudi Arabia)	Cross-sectional airport study (Iran)	Cross-sectional airport study (Iran)
Number of Included Pilgrims	761	500	105	225	275
Influenza A	4.5	0.6	1.9	5.1	
H1N1					1.1
Influenza B	2	5.4	11.4	5.1	
Influenza overall	6.5	6	13.3	5.1	1.1
Parainfluenza 1	2				
Parainfluenza 2	1.7				
Parainfluenza 3	2.2				
Parainfluenza overall	5.9	0.8	0		
Adenovirus	4.7	0	36.2		
Respiratory syncytial virus	2.4	1.4	1.9		
Herpes virus	2.6				

Others than virus (bacateria, fungi)	???	???	???	??	??

Survei Pasien Pneumonia yang dirawat di RS KAS Tahun 2010



Nationality	No. of positive cases (%)
Indonesian	14 (18.4)
Saudi	13 (17.1)
Pakistani	9 (11.8)
Indian	7 (9.2)
Egyptian	5 (6.6)
Malaysian	4 (5.3)
Syrian	3 (4)
Others*	21 (27.6)

*Others: includes 14 nationalities

Pathogens	No.	%
C. albicans	25	(27.5)
P. aeruginosa	19	(20.9)
L. pneumophila	13	(14.3)
K. pneumoniae	8	(8.8)
S. aureus	7	(7.7)
S. pneumoniae	5	(5.4)
A. baumannii	4	(4.4)
C. pneumoniae	4	(4.4)
E. coli	1	(1.1)
Morexella spp	1	(1.1)
Enterococci spp	1	(1.1)
S. maltophilia	1	(1.1)
M. pneumoniae	1	(1.1)
M. tuberculosis	1	(1.1)
Total	91	(100)

Figures in parentheses are percentages

SURVEI JAMAAH HAJI INDONESIA

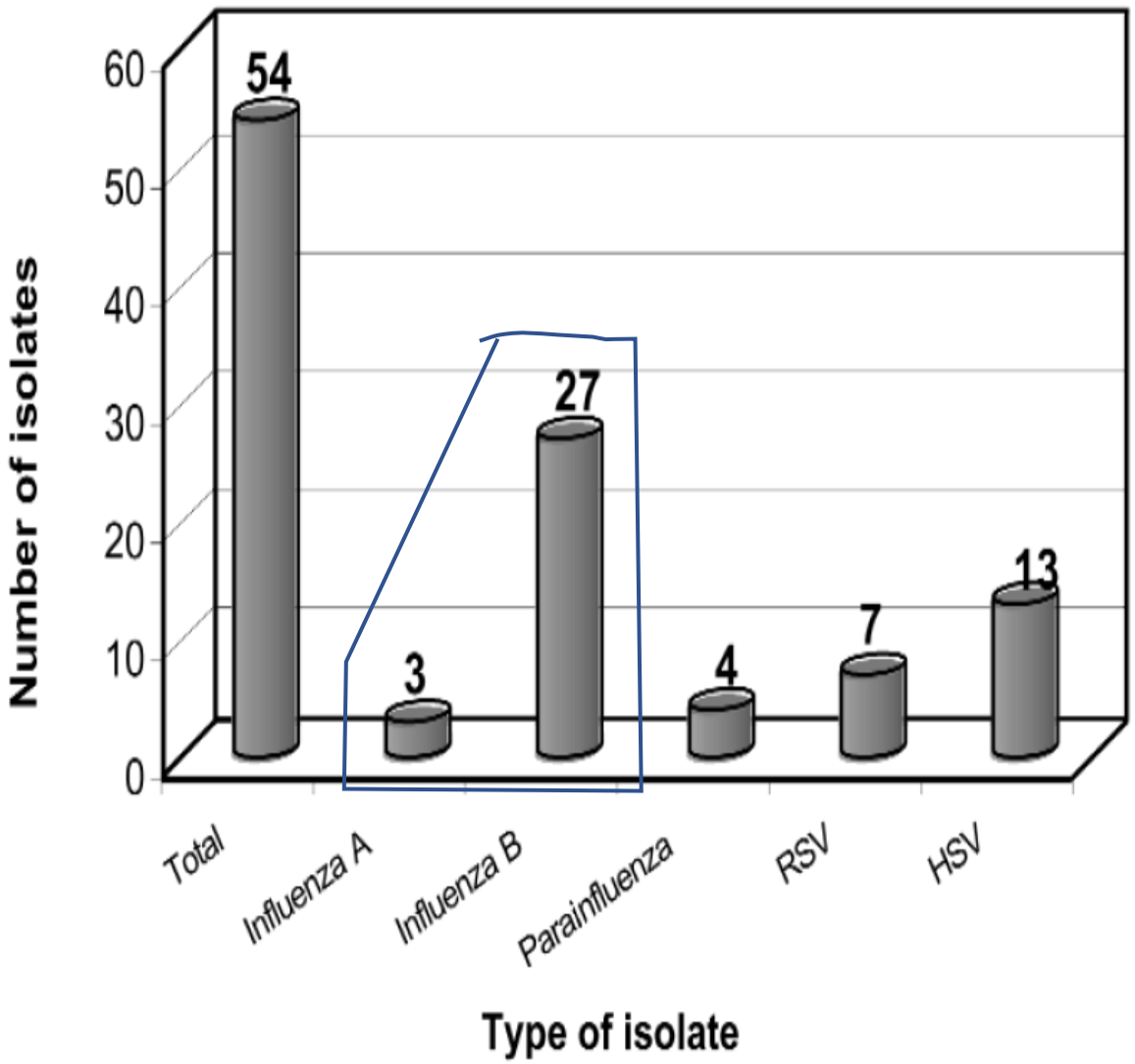
The Hajj is an annual pilgrimage to Mecca and one of the largest gathering of people in the world. Indonesian pilgrims mostly consisted of the older age persons, who are prone to acquire infections during the Hajj ritual. We investigated the dynamics of Streptococcus pneumoniae colonization and its antibiotic susceptibility among Indonesian pilgrims during the Hajj in 2015. This was a prospective study in hajj pilgrims aged >18 years old departing from Indonesia to Mecca. Nasopharyngeal swabs were collected before departure and upon arrival at the airport for the same subjects. S. pneumoniae strains were identified using conventional and molecular tools and antibiotic profile was determined using a disk diffusion method. Among 813 Hajj pilgrims who participated the study for both pre-Hajj and post-Hajj, the mean age was 53 years, the prevalence of S. pneumoniae carriage before- and after-the Hajj were 8.6% and 8.2% respectively. Serotype/serogroup 16F, 6A/B, 3, 18, and 23F were the five most common S. pneumoniae serotypes before Hajj, whereas serotypes 3, 34, 13, 4, and 23F were the commonest serotypes after Hajj. Serotype 3 was identified as the highest acquisition during Hajj in Indonesian pilgrim. There was an increase in the percentage of isolates susceptible to sulphamethoxazole/trimethoprim after Hajj (42.9% versus 57.4%; p= 0,089) . The study provided overview of the dynamic change of S. pneumoniae serotype acquisition in Indonesian Hajj Pilgrims. Along with data of vaccination serotypes coverage and antimicrobial susceptibility, these findings may contribute to vaccination's policy in the future.

Survei 2003 (ISPA)

In total, 5,004 patients presented to the National Guard Mina hospital outpatient clinic, on days 10 and 11 of the pilgrimage. Of these, 2,032 patients were triaged as having URTI symptoms during all 5 days. Patients presenting with URTI symptoms on days 10, 11 and 12 of the Hajj pilgrimage were referred to be swabbed. Owing to the high flow of patients and the quick turnaround time, only 500 patients were screened and had the questionnaire data completed. All 500 samples and questionnaires were included in this study.

In total, 54 (10.8%) samples were positive and 446 were negative for viruses. Over half of the patients (52.8%) were male, and 47.2% were female. Only 25 patients were below 10 years of age, and the majority were 20 to 40 years old (Table 1).

Of the 54 positive samples, 27 (50%) were influenza B, 3 (5.6%) were influenza A, 4 (7.4%) were parainfluenza, 7 (13.0%) were RSV, and 13 (24.1%) were HSV (fig.).



Retrospective study:
Effectiveness of Flu Vaccine for Preventing Acute Respitaory Infection (USA)

Effectiveness of Seasonal Influenza Vaccines in the United States During a Season With Circulation of All Three Vaccine Strains

John J. Treanor,[1] H. Keipp Talbot,[2] Suzanne E. Ohmit,[5] Laura A. Coleman,[6] Mark G. Thompson,[7] Po-Yung Cheng,[7] Joshua G. Petrie,[5] Geraldine Lofthus,[1] Jennifer K. Meece,[6] John V. Williams,[2,3] LaShondra Berman,[7] Caroline Breese Hall,[1] Arnold S. Monto,[5] Marie R. Griffin,[2,4] Edward Belongia,[6] and David K. Shay[7] for the US Flu-VE Network

[1]Department of Medicine, University of Rochester Medical Center, New York; [2]Department of Medicine and Pediatrics, and [3]Department of Pathology, Microbiology, and Immunology, Vanderbilt University School of Medicine, and [4]Mid-South Geriatric Research Education and Clinical Center, VA Tennessee Valley Health Care System, Nashville, Tennessee; [5]Department of Epidemiology, University of Michigan School of Public Health, Ann Arbor; [6]Marshfield Clinic Research Foundation, Marshfield, Wisconsin; and [7]Influenza Division, Centers for Disease Control and Prevention, Atlanta, Georgia

Background. Influenza vaccines may be reformulated annually because of antigenic drift in influenza viruses. However, the relationship between antigenic characteristics of circulating viruses and vaccine effectiveness (VE) is not well understood. We conducted an assessment of the effectiveness of US influenza vaccines during the 2010–2011 season.

Methods. We performed a case–control study comparing vaccination histories between subjects with acute respiratory illness with positive real-time reverse transcription polymerase chain reaction for influenza and influenza test-negative controls. Subjects with acute respiratory illness of ≤7 days duration were enrolled in hospitals, emergency departments, or outpatient clinics in communities in 4 states. History of immunization with the 2010–2011 vaccine was ascertained from vaccine registries or medical records. Vaccine effectiveness was estimated in logistic regression models adjusted for study community, age, race, insurance status, enrollment site, and presence of a high-risk medical condition.

Results. A total of 1040 influenza-positive cases and 3717 influenza-negative controls were included from the influenza season, including 373 cases of influenza A(H1N1), 334 cases of influenza A(H3N2), and 333 cases of influenza B. Overall adjusted VE was 60% (95% confidence interval [CI], 53%–66%). Age-specific VE estimates ranged from 69% (95% CI, 56%–77%) in children aged 6 months–8 years to 38% (95% CI, −16% to 67%) in adults aged ≥65 years.

Conclusions. The US 2010–2011 influenza vaccines were moderately effective in preventing medically attended influenza during a season when all 3 vaccine strains were antigenically similar to circulating viruses. Continued

Case-control study:
Effectiveness of PPV to prevent Pneumonia

Effectiveness of the pneumococcal polysaccharide vaccine in preventing pneumonia in the elderly

A. Domínguez*,#, C. Izquierdo¶, L. Salleras*,#, L. Ruiz¶, D. Sousa+, J-M. Bayas§, M. Nebot#,ƒ, W. Varona**, J-M. Celorrio## and J. Carratalà¶¶ for the Working Group for the Study of Prevention of CAP in the Elderly++

ABSTRACT: **The objective of our study was to evaluate the effectiveness of the 23-valent pneumococcal polysaccharide vaccine (PPV) in preventing hospital admission for community-acquired pneumonia (CAP) in people ⩾65 yrs of age.**

We conducted a matched case–control study in patients with CAP admitted to five Spanish hospitals. Cases were persons aged ⩾65 yrs admitted to hospital through the emergency department, who presented a clinical and radiological pattern compatible with pneumonia, assessed using established criteria. We matched each case with three control subjects by sex, age (±5 yrs), date of hospitalisation (±30 days) and underlying disease. The study period was May 1, 2005 to January 31, 2007. The PPV immunisation status of cases and controls was investigated. Adjusted ORs for vaccination were calculated using logistic regression analysis.

A total of 489 cases and 1,467 controls were included in the final analysis. The overall adjusted vaccination effectiveness for all patients was 23.6% (95% CI 0.9–41.0). The adjusted vaccination effectiveness for immunosuppressed patients was 21.0% (95% CI -18.7–47.5).

Our results suggest that the PPV may potentially reduce hospitalisations for pneumonia in the elderly and supports vaccination programmes in this age group.

KEYWORDS: **Case–control study, effectiveness, elderly, pneumococcal polysaccharide vaccine, pneumonia**

AFFILIATIONS
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¶¶IDIBELL-Hospital Universitari de Bellvitge, Dept of Infectious Diseases, University of Barcelona L'Hospitalet de Llobregat, Barcelona,
+Hospital Juan Canalejo, Dept of Infectious Diseases, La Coruña,
**Hospital Royo Villanova, Dept of Preventive Medicine, Zaragoza, and
##Hospital Ernest Lluch, Dept of Preventive Medicine, Calatayud, Spain.
++For a list of members of the working group for the Study of Prevention of CAP in the Elderly, see the Acknowledgements section.

PENELITIAN Dr. Kabat (UNAIR)

Tabel-3 Perbandingan IgG, IgM, IgA Kelompok V(-) dan V(+) Sebelum dan Sesudah Haji

	V(-) rerata SBH	V(+) rerata SBH	p	V(-) rerata SSH	V(+) rerata SSH	p
IgA	284.45	296.12	0.887	262.33	317.8	0.003
IgG	1878.22	1862.42	0.126	2146.26	2672.44	0.001
IgM	176.25	170.22	0.086	216.76	264.22	0.042

(SBH = sebelum haji; SSH = sesudah haji)

Tabel-8 Perbandingan IgA, IgG, IgM Kelompok V(-) Sakit dan Kelompok V(+) Sakit Sesudah Haji

	V(-) SSH Sakit rerata	V(+) SSH Sakit rerata	p
IgA	245.66	290.08	0.038
IgG	1582.42	2644.84	0.000
IgM	168.24	228.24	0.000

Kesimpulan Penelitian Dr. Kabat:

- Vaksinasi dengan vaksin virus influenza pada calon jama'ah haji dapat menurunkan angka kesakitan pada jama'ah haji. Vaksinasi Influenza dapat meningkatkan ketahanan tubuh humoral dan seluler, termasuk kenaikan γ- INF.
- Jamaah dapat terlindungi dari infeksi virus yang kemungkinan banyak dijumpai pada sekitar lingkungan jama'ah haji dengan kelembaban yang rendah, hunian yang padat, perubahan suhu.

Seberapa besar Vaksinasi Influenza dan Vaksinasi PPV mencegah Mortalitas Akibat Penyakit Saluran Nafas??

Rumus sederhana:
Jumlah kematian yang dapat dicegah = Total kematian X proporsi kematian akibat respiratory diseases X proporsi kematian akibat pneumonia X proporsi kematian akibat S Pneumonia, atau Influenza virus (Flu A dan B)

1

Jumlah kematian yang dapat dicegah dengan Vaksinasi Influenza =
Vaksinasi Influenza = 450 X 0.37 X 0.61 X (0.108*0.60) = 6.58 kematian (7 kematian)

Catatan:
Dampak Vaksinasi Influenza bisa lebih besar dari ini, karena infeksi Virus Influenza boleh jadi merupakan triger untuk terjadinya URI, lalu kemudian ditumpangi agen lain (bakteri) untuk menjadi Pneumonia

2

Jumlah kematian yang dapat dicegah dengan Vaksinasi PPV =
Vaksinasi PPV = 450 X 0.37 X 0.61 X (0.054*0.24) = 1.32 kematian (2 kematian)

Catatan:
Dampak Vaksinasi PPV bisa lebih besar dari ini, S Pneumoniae tidak hanya menyebabkan Pneumonia, tetapi bisa menyebabkan infeksi yang lain (sepsis, meningitis)

Seberapa besar Vaksinasi Influenza dan Vaksinasi PPV dapat mengurangi Morbiditas Penyakit Saluran Nafas??

Rumus sederhana:
Jumlah morbiditas yang dapat dicegah = Total kesakitan X proporsi kesakitan akibat respiratory diseases X proporsi kesakitan akibat S Pneumonia, atau, Influenza virus (Flu A dan B)

1

Jumlah kesakitan yang dapat dicegah dengan Vaksinasi Influenza =
Vaksinasi Influenza = Total kesakitan X 0.43 X (**0.263***0.60) = **6.78% X Total Kesakitan, atau 15.78% dari Total ISPA (URI)**

2

Jumlah kesakitan yang dapat dicegah dengan Vaksinasi PPV =
Vaksin PPV = Total kesakitan X 0.43 X (**0.086***0.24) = **0.88% X Total Kesakitan, atau 2.06% dari Total ISPA (URI)**

→ Secara Total mengurangi beban morbiditas sebesar **= 7.66% dari Total Kesakitan, atau 17.84% dari Total ISPA (URI)**

VARIABEL NON-EPIDEMIOLOGI

No.	Variabel	Keuntungan	Kerugian
1	Psikologis	Di Era Covid-19 (new normal), jamaah harus dibuat tenang, percaya diri, tetapi tetap berperilaku new-normal	
2	Politis	Kemenkes mendapat cum (credit points) terkait upaya perlindungan jamaan (preventive)	Bisa dipolitisasi (digeser ke isu proyek, kepentingan pengusul, dll)
3	Ekonomis	Bisa untuk bargain ke penyedia vaksin untuk menyediakan vaksin murah Fasyankes bias memberikan pelayanan vaksinasi	Bila diserahkan jamaah, memberatkan Calon JH ?? Bila diproyekkan anggaran pemerintah, fisible kah?

Vaksinasi Influenza (Flu vaccine) pada JHI

Vaksinasi Pneumococcus pada JHI

Tujuan:
1. Menurunkan morbiditas
2. Menurunkan mortalitas

Opsi Kebijakan

1. Pendekatan laiseez-faire
2. Pendekatan direction (sangat meganjurkan)
3. Pendekatan mewajibkan (instrumen kebijakan terstruktur dan biaya pemerintah)

?

Variabel utk memutuskan

Prevalensi morbiditas dan mortalitas akibat virus Influenza (H1N1, H3N2, Influenza B), akibat S Pneumonia (sesuai strain Vaccine)

1. Tingkat effectivitas Vaksin Influenza dalam menurunkan morbiditas ISPA dan mortalitas akibat pneumonia
2. Tingkat effectivitas Vaskin PPV dalam menurunkan morbiditas pneumonia dan mortalitas akibat pneumonia

Variabel non-epidemiologi:
1. Psikologis (membuat JHI tenang)
2. Politis (konflik kepentingan)
3. Ekonomis (murah vs mahal)

REKOMENDASI

1. Tindak lanjut Forum Diskusi ini dibuat **POLICY BRIEF** terkait Vaksin Influenza dan Vaskin Pneumococcus pada Jamaah Haji
2. Perlu dilakukan studi terkait dengan:
    - Studi etiologi Morbiditas ISPA dan Pneumonia, dan juga Kematian Akibat Pneumonia pada JHI
    - Studi Kohor Efektivitas Vaksin Influenza, dan Vaksin PPV
    - Studi Kasus-Kontrol Efektivitas Vaksin Influenza, dam Vaksin PPV

Terima kasih