Robert Sinto

Formal education

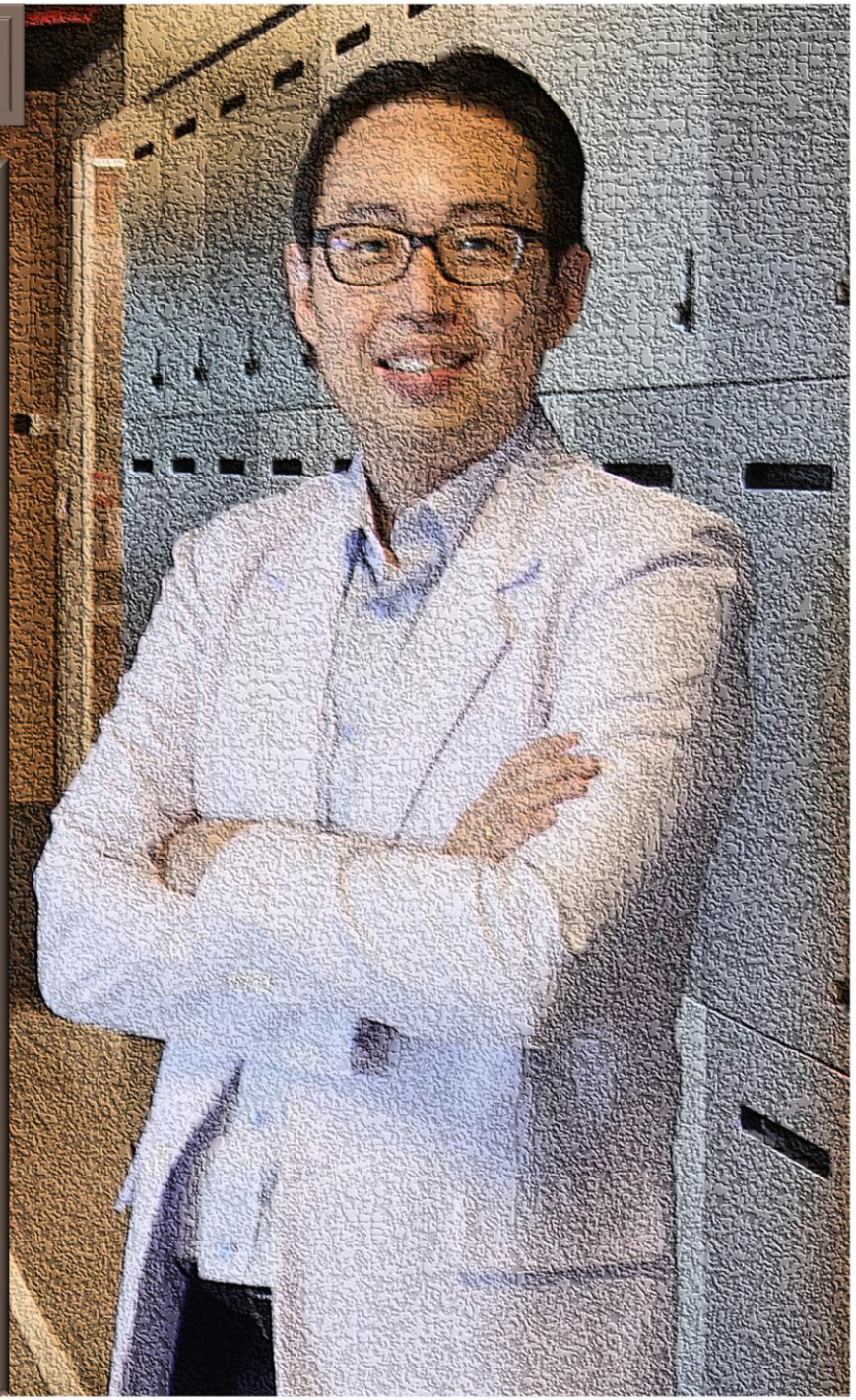
2008: dr. , Universitas Indonesia
2014: Sp.PD, Universitas Indonesia
2018: K-PTI, Universitas Indonesia
2021-now: PhD – DPhil ClinMed., University of Oxford, UK

Informal education

2015:
Clinical training on Transplant-Oncology-Immunocompromised Host Infectious Diseases, Singapore General Hospital, Singapore
2018-2021:
Clinical Epidemiology, Julius Centre UMC Utrecht, University College of London and Autonomous University of Barcelona

Workplace & Position

2016-now:
Department of Internal Medicine, RS Cipto Mangunkusumo - FM Universitas Indonesia
2015-now:
Indonesian College of Internal Medicine (Officer)
2014-now:
The Indonesian Society of Tropical Medicine and Infectious Diseases (Officer)



COVID-19 Research in Indonesia: past, present and future

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May 2022

Disclaimer

- There are no conflict of interest or restriction related to this presentation and/ or related materials.
- The information is current as of the date of the presentation, which means at some point it may (and likely will be) outdated.

Outline

- **Issue on COVID-19 research**
- COVID-19 research in Indonesia: past and present
- COVID-19 research in Indonesia: future

COVID IN PAPERS: A TORRENT OF SCIENCE

Scientists raced to share their work on COVID-19 and the SARS-CoV-2 virus, often through preprints — articles posted online before peer review. They published well over 100,000 articles about the topic, and might even have passed 200,000 in December. There was a sharp increase in articles on all subjects submitted to scientific journals this year. Submissions to publisher Elsevier's journals alone were up by around 270,000 — or 58% — between February and May compared with 2019, for instance. Even so, around 4% of the world's research output was devoted to the coronavirus, accor

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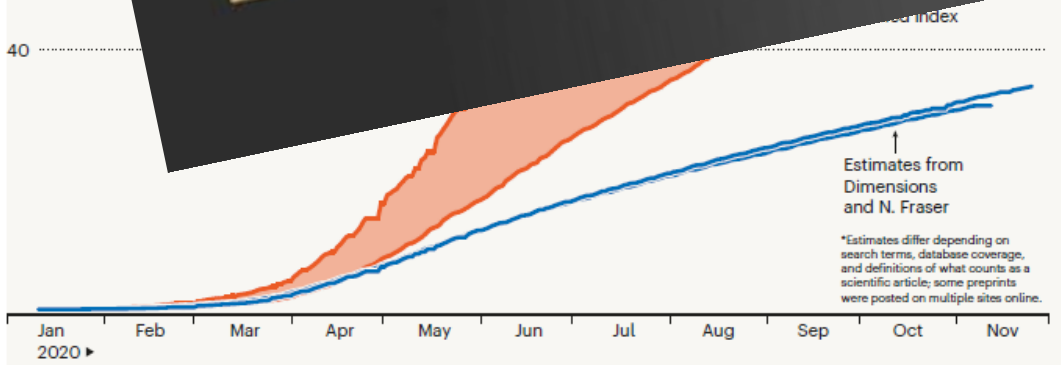

PREPRINT RUSH

More than 30,000 COVID-19 articles were preprints; according to Dimensions, one-tenth of all preprints this year were about COVID-19. More than half of the preprints appeared on medRxiv, SSRN or Research Square.

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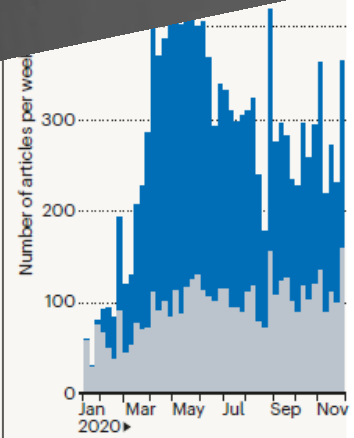


SPEEDY REVIEW

Journals rushed to get COVID-19 articles through peer

UNEQUAL BURDEN

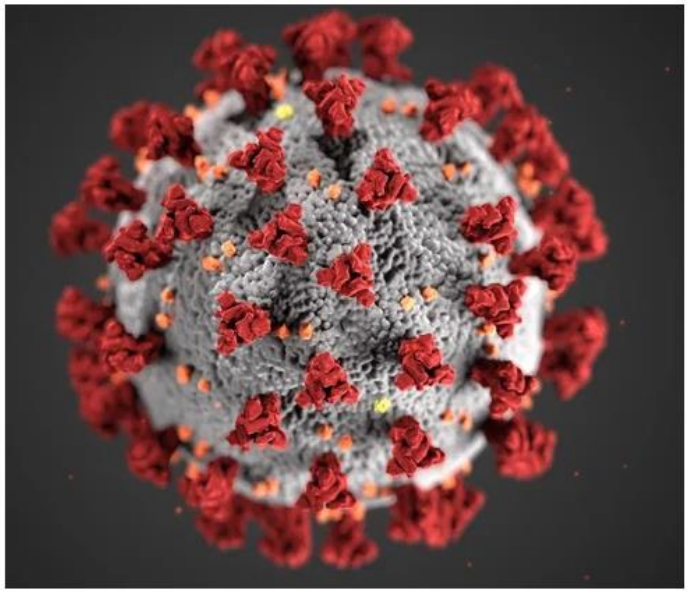
Growth in submissions from female authors trailed behind growth

Women

BMED ESTIMATE); PREPRINTS, DIMENSIONS/N. FRASER & B. KRAMER. LB, MEDRXIV, SPEEDY REVIEW: S. AVIV-REUVEN & A. ROSENFELD. PREPRINT AT SSRN HTTPS://DOI.ORG/FNDQ (2020).

retractionwatch.com/retracted-coronavirus-covid-19-papers/

Retracted coronavirus (COVID-19) papers



via CDC

We've been tracking retractions of papers about COVID-19 as part of our database. Here's a running list, which will be updated as needed. (For some context on these figures, see this post, our letter in *Accountability in Research* and the last section of this *Nature* news article. Also see a note about the terminology regarding preprint servers at the end.)

2021. See our coverage here.

217. "Vaccine hesitancy in the University of Malta Faculties of Health Sciences, Dentistry and Medicine vis-à-vis influenza and novel COVID-19 vaccination," published on November 12, 2020 in *Early Human Development*; retracted sometime in March, 2021. See our coverage here.
218. "Vitamin D Level of Mild and Severe Elderly Cases of COVID-19: A Preliminary Report," preprint posted on May 5, 2020 in *SSRN: Social Science Resource Network*; unknown date of retraction.
219. "Vitamin D supplementation could possibly improve clinical outcomes of patients infected with Coronavirus-2019 (COVID2019)," preprint posted on April 9, 2020 in *SSRN: Social Science Resource Network*; unknown date of retraction.
220. "Vitritis and Outer Retinal Abnormalities in a Patient with COVID-19," published on October 6, 2020 in *Ocular Immunology and Inflammation*; retracted on October 7, 2021.
221. "'Weighty woes': Impact of fat talk and social influences on body dissatisfaction among Indian women during the pandemic," published on February 4, 2021 in the *International Journal of Social Psychiatry*; retracted on November 26, 2021. See our coverage here.
222. "Welchen Corona-Experten können Ärzte vertrauen?" published on April 29, 2021 in *MMW – Fortschritte der Medizin*; retracted on September 23, 2021.
223. "Whole-Body Cryotherapy as an Innovative Treatment for COVID 19-Induced Anosmia-Hyposmia: A Feasibility Study," published on January 13, 2022 in the *Journal of Integrative and Complementary Medicine*; retracted on March 9, 2022.
224. "Will the extraction of COVID-19 from wastewater help flatten the curve?" published on January 5, 2021 in *Chemosphere*; retracted on August 24, 2021. Our coverage here.

Expressions of concern

1. "Complete Genome Sequence of a 2019 Novel Coronavirus (SARS-CoV-2) Strain Isolated in Nepal," published on March 20 in *Microbiology*

2022 16/21

during the COVID-
November 12, 2020
March, 2021. See
our coverage here.

206. "Tracking COVID-19 vaccine hesitancy and logistical challenges: A machine learning approach," published on June 2, 2021 in *Plos One*; retracted on July 22, 2021.
207. "Treatment Response to Hydroxychloroquine, Lopinavir/Ritonavir, and Antibiotics for Moderate COVID 19: A First Report on the Pharmacological Outcomes from South Korea" preprint posted May 18, 2020 in *medRxiv*, and withdrawn June 14, 2020.
208. "Trends in Mental Health Symptoms, Service Use, and Unmet Need for Services among US Adults through the First Nine Months of the COVID-19 Pandemic," published in *Translational Behavioral Medicine* on April 5, 2021; EOC published June 11, 2021; retracted on May 5, 2022.
209. "Trends in Suicide Attempts and Suicides Over Fifteen Months of the COVID-19 Pandemic: Data From a Primary Care Surveillance Network in France," preprint posted November 29, 2021 in *Preprints with The Lancet*; retracted on unknown date.
210. "Uncanny similarity of unique inserts in the 2019-nCoV spike protein to HIV-1 gp120 and Gag," preprint posted January 31, 2020 in *bioRxiv* and withdrawn February 2, 2020. More context here.
211. "Unknown unknowns – COVID-19 and potential global mortality," published on March 31, 2020 in *Early Human Development*, retracted on June 11, 2021. More context here.
212. "Use of Antimicrobial Peptides Against SARS-CoV-2: Today is the Future," published on January 20, 2021 in Infectious Microbes & Diseases; retracted on March 1, 2021.
213. "Use of ivermectin in the treatment of Covid-19: A pilot trial," published on March 9, 2021 in *Toxicology Reports*; retracted on May 2, 2022.
214. "Usefulness of Ivermectin in COVID-19 Illness," preprint posted on April 19, 2020 on *SSRN: Social Science Resource Network*, retracted sometime thereafter.
215. "Vaccine hesitancy among Maltese Healthcare workers toward influenza

EDITORIALS

Waste in covid-19 research

A deluge of poor quality research is sabotaging an effective evidence based response

The medical research world is responding to the covid-19 pandemic at breathtaking speed. There has been a maelstrom of global research, with mixed consequences. Positives include the greater provision of open access to covid-19 studies, some increased collaboration, expedited governance and ethics approvals of new clinical studies, and wider use of preprints. But many problems have become evident. Before the pandemic, it was estimated that up to 85% of research was wasted because of poor questions, poor study design, inefficiency of regulation and conduct, and non or poor reporting of results.[1] Many of these problems are amplified in covid-19 research, with time pressures and inadequate research infrastructure contributing.

Trials

An extraordinary number of covid-19 trials have been registered since the pandemic started. The National Library of Medicine registry ClinicalTrials.gov lists 1087 covid-19 studies, and though some will provide useful information, many are too small and poorly designed to be helpful, merely adding to the covid-19 noise. Of the 145 registered trials of hydroxychloroquine, for example, 32 have a planned sample size of ≤100, 10 have no control group, and 12 are comparative but non-randomised. Outcome measures vary widely, and only 50 seem to be multicentre. Strikingly, only one provides a protocol, and even limited registry details reveal unjustified outcome switching.[2]

The imbalance in trial topics is worrying, in particular the paucity of trials on non-drug interventions. Despite non-drug

Preprints

Preprints have provided valuable early access to study results. Postings in MedRxiv have increased over 400% (from 586 for the last 15 weeks of 2019 to 2572 for the first 15 weeks of 2020), while views and downloads have increased 100-fold.[5] Many preprints are poorly reported, however. In systematically reviewing the proportion of asymptomatic covid-19 cases, we found the sample frame of most studies was unclear, missing cases were undocumented, and "asymptomatic" was undefined. We also identified disagreements between text and tables. Many such problems could be corrected before full publication (which doesn't always follow), but poor reporting is complicating the research appraisal and synthesis already occurring.

Access to preprints has also led to irresponsible dissemination as flawed studies are picked up by the media. The preprint of the first reported study of hydroxychloroquine on 20 March 2020—a non-randomised study of 46 patients with inappropriate analyses[6]—has been cited 520 times, while a larger, randomised trial of hydroxychloroquine posted on MedRxiv on 14 April showing no benefits[7] has received far less attention. The unbalanced media attention to the first study has triggered a wave of what is likely to be largely unnecessary or misdirected research: 135 hydroxychloroquine studies have been registered on ClinicalTrials.gov since 20 March.

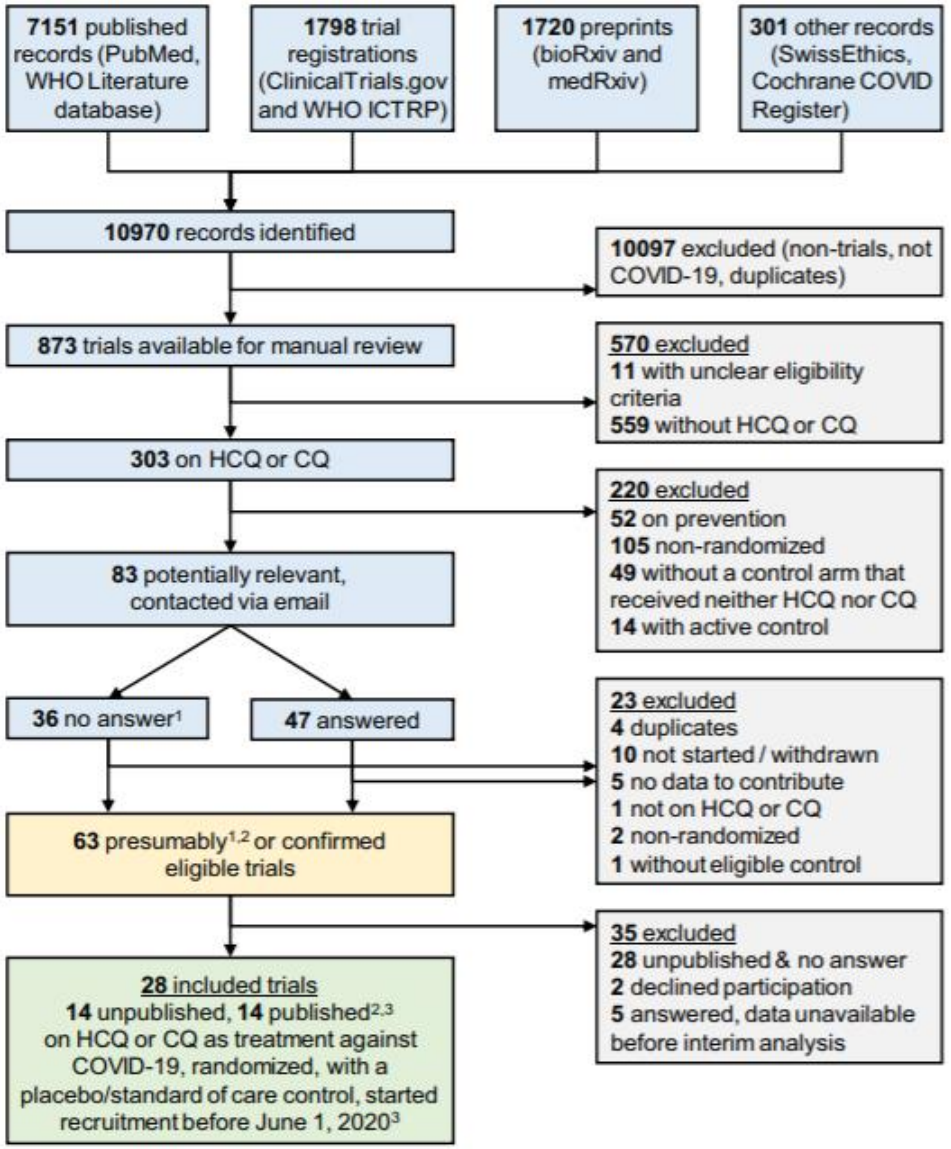
Waste, duplication

nature COMMUNICATIONS

ARTICLE

https://doi.org/10.1038/s41467-021-22446-z OPEN

Mortality outcomes with hydroxychloroquine and chloroquine in COVID-19 from an international collaborative meta-analysis of randomized trials



Nat Commun 12, 2349 (2021).

Ivermectin COVID-19 early treatment and prophylaxis studies

ivmmeta.com 6/10/21

	Improvement	RR [CI]		Treatment	Control	Dose (4d)	
Chowdhury (RCT)	81%	0.19 [0.01-3.96]	hosp.	0/60	2/56	14mg	OT[1] CT[2]
Espitia-Hernandez	97%	0.03 [0.01-0.11]	viral+	0/28	7/7	12mg	CT[2]
Carvallo	88%	0.12 [0.01-1.06]	death	1/33	3/12	36mg	CT[2]
Mahmud (DB RCT)	86%	0.14 [0.01-2.75]	death	0/183	3/183	12mg	CT[2]
Szente Fonseca	-14%	1.14 [0.75-1.66]	hosp.	340	377	24mg	
Cadegiani	78%	0.22 [0.01-4.48]	death	0/110	2/137	42mg	
Ahmed (DB RCT)	85%	0.15 [0.01-2.70]	symptoms	0/17	3/19	48mg	
Chaccour (DB RCT)	53%	0.47 [0.19-1.16]	symp. prob.	12	12	28mg	
Afsar	92%	0.08 [0.00-1.32]	symptoms	0/37	7/53	48mg	
Babalola (DB RCT)	64%	0.36 [0.10-1.27]	viral+	40	20	24mg	OT[1]
Kirti (DB RCT)	89%	0.11 [0.01-2.05]	death	0/55	4/57	24mg	
Bukhari (RCT)	82%	0.18 [0.07-0.46]	viral+	4/41	25/45	12mg	
Samaha (RCT)	86%	0.14 [0.01-2.70]	hosp.	0/50	3/50	12mg	
Mohan (DB RCT)	62%	0.38 [0.08-1.75]	no recov.	2/40	6/45	28mg	
Biber (DB RCT)	70%	0.30 [0.03-2.76]	hosp.	1/47	3/42	36mg	
Elalfy	87%	0.13 [0.06-0.27]	viral+	7/62	44/51	36mg	CT[2]
López-Me.. (DB RCT)	67%	0.33 [0.01-8.11]	death	0/200	1/198	84mg	
Roy	6%	0.94 [0.52-1.93]	recov. time	14	15	n/a	CT[2]
Chahla (CLUS. RCT)	87%	0.13 [0.03-0.54]	no disch.	2/110	20/144	24mg	
Mourya	89%	0.11 [0.05-0.25]	viral+	5/50	47/50	48mg	
Loue (QR)	70%	0.30 [0.04-2.20]	death	1/10	5/15	14mg	
Merino (QR)	74%	0.26 [0.11-0.61]	hosp.	population-based cohort		24mg	
Faisal (RCT)	68%	0.32 [0.14-0.72]	no recov.	6/50	19/50	48mg	
Early treatment	78%	0.22 [0.12-0.39]		29/1,589	204/1,638		**78% improvement**

	Improvement	RR [CI]		Treatment	Control	Dose (1m)	
Shouman (RCT)	91%	0.09 [0.03-0.23]	symp. case	15/203	59/101	36mg	
Carvallo	96%	0.04 [0.00-0.63]	cases	0/131	11/98	14mg	CT^2
Behera	54%	0.46 [0.29-0.71]	cases	41/117	145/255	42mg	
Elgazzar (RCT)	80%	0.20 [0.04-0.89]	cases	2/100	10/100	112mg	
Carvallo	100%	0.00 [0.00-0.02]	cases	0/788	237/407	48mg	CT^2
Hellwig (ECO.)	78%	0.22 [0.05-0.89]	cases	ecological		14mg	
Bernigaud	99%	0.01 [0.00-0.10]	death	0/69	150/3,062	84mg	CL^4
Alam	91%	0.09 [0.04-0.24]	cases	4/58	44/60	12mg	
Vallejos	73%	0.27 [0.15-0.48]	cases	13/389	61/486	48mg	MD^3
Chahla (RCT)	95%	0.05 [0.00-0.80]	cases	0/117	10/117	48mg	CT^2
Behera	83%	0.17 [0.12-0.23]	cases	45/2,199	133/1,147	42mg	
Tanioka (ECO.)	88%	0.12 [0.03-0.51]	death	ecological		14mg	
Seet (CLUS. RCT)	50%	0.50 [0.33-0.76]	severe case	32/617	64/619	12mg	OT^1
Morgenstern (PSM)	80%	0.20 [0.01-4.15]	hosp.	0/271	2/271	56mg	
Prophylaxis	85%	0.15 [0.09-0.25]		152/5,059	926/3,730		**85% improvement**

$Tau^2 = 0.58$; $I^2 = 83.8\%$


By embedding research at the heart of the pandemic response we can achieve two goals: to help end the acute phase of the current pandemic and protect us from the epidemics and pandemics of the future.
Tedros Adhanom
Director-General,
World Health Organization (WHO)

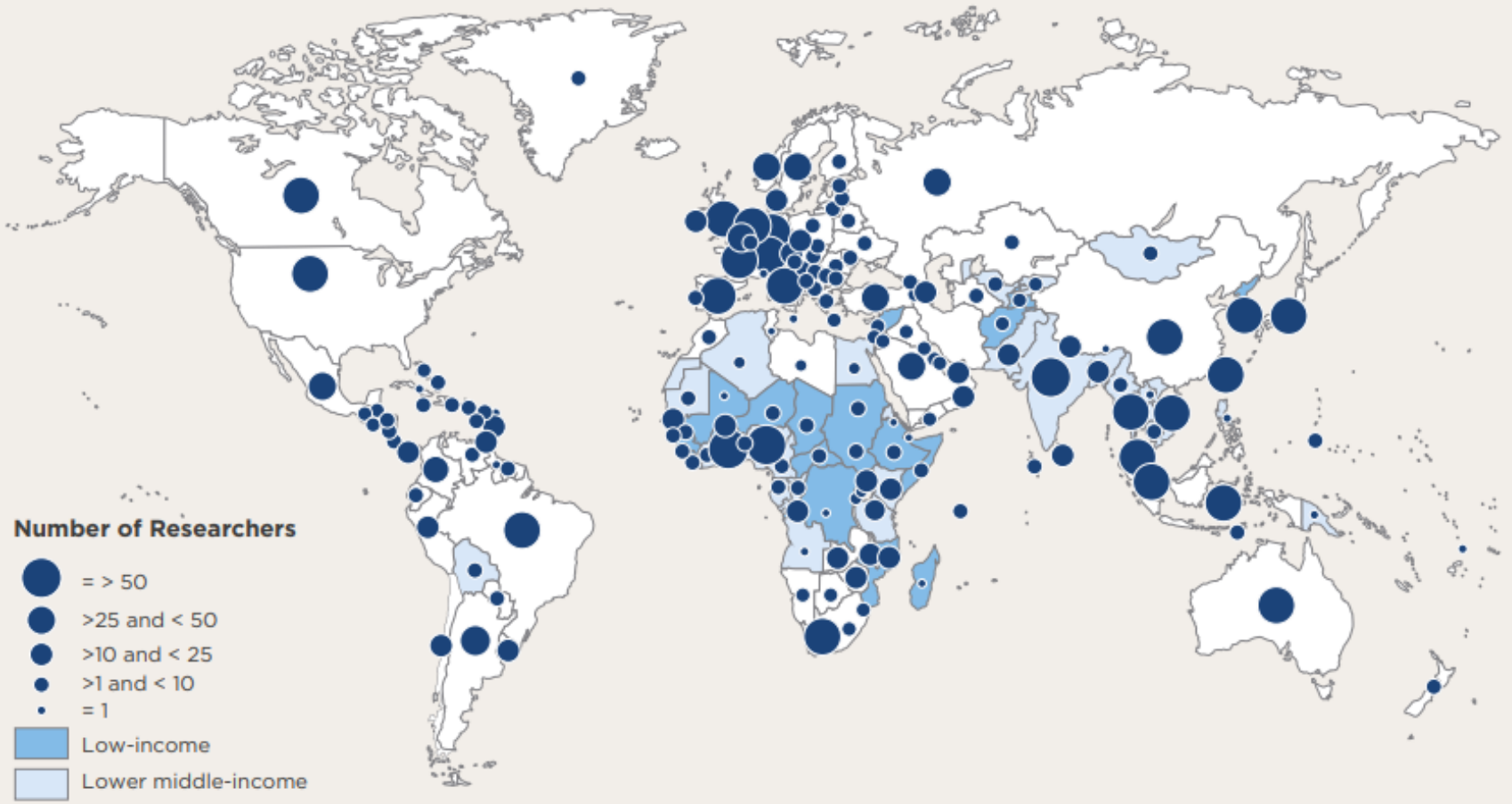
Outline

- **Issue on COVID-19 research**
- **COVID-19 research in Indonesia: past and present**
- COVID-19 research in Indonesia: future

FIGURE 5

Registered researchers across the globe working to combat COVID-19

Over 5,000 researchers from 171 countries are now registered / collaborating to implement COVID-19 R&D.



COVID-19 Research in Indonesia

Pasaribu A, Susanto S, Sinto R



19 April 2022	
Pubmed	(covid-19[MeSH Terms]) AND (indonesia[MeSH Terms])
Embase	covid 19':ti,ab,kw AND 'indonesia'/exp Limit: article, article in press, preprint, short survey
Proquest	ab(covid-19) AND ft(indonesia) NOT (Reports AND Magazines AND Conference Papers & Proceedings AND Blogs, Podcasts, & Websites AND Wire Feeds AND Other Sources AND Books AND Government & Official Publications AND Newspapers) NOT (News AND Conference Proceeding AND General Information AND Report AND Case Study AND Commentary AND Editorial AND Correspondence AND Evidence Based Healthcare AND Letter To The Editor) Indonesia
Scopus	(TITLE-ABS-KEY (covid-19) AND TITLE-ABS-KEY (indonesia)) AND (LIMIT-TO (AFFILCOUNTRY , "Indonesia")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SRCTYPE , "j"))
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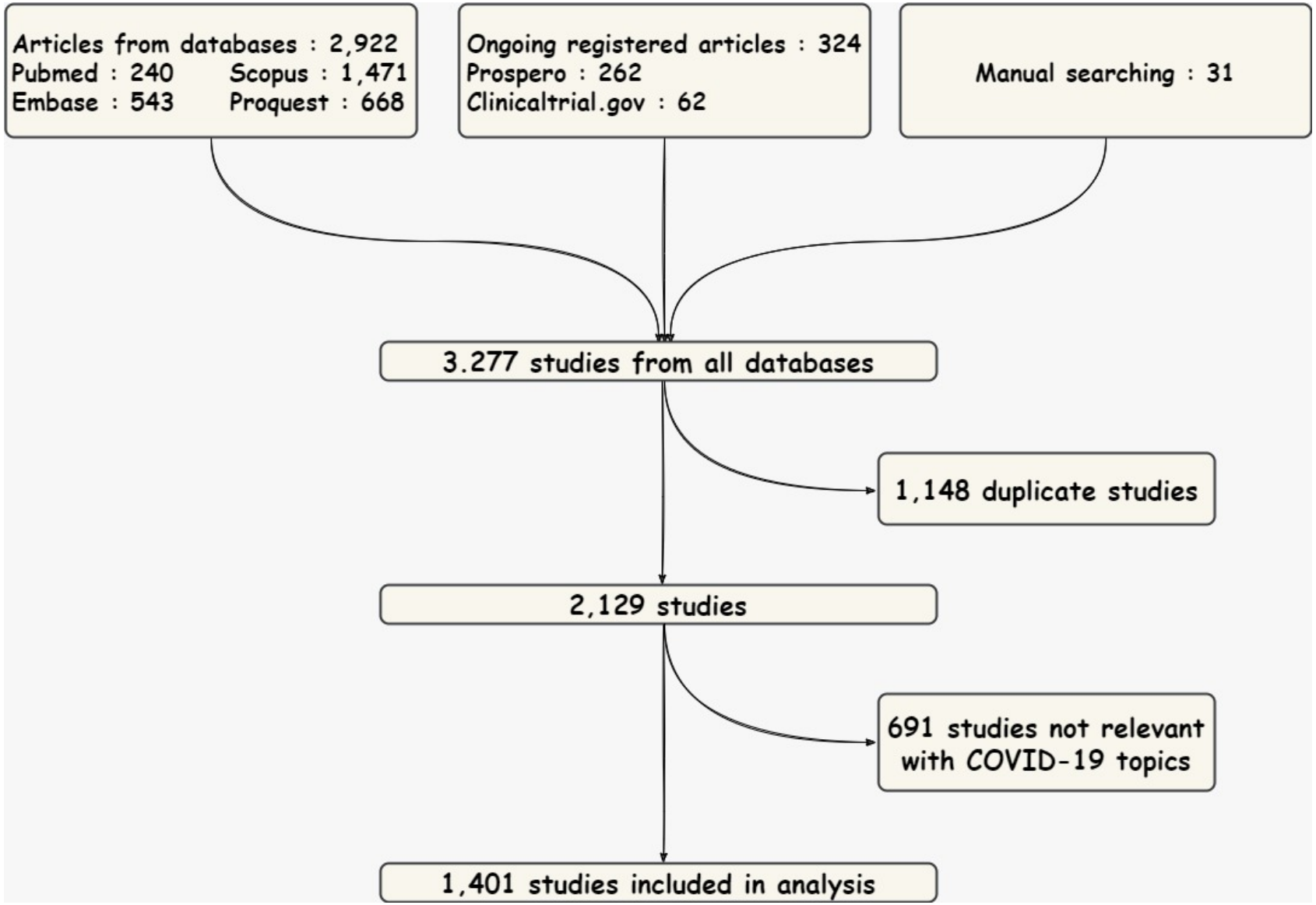


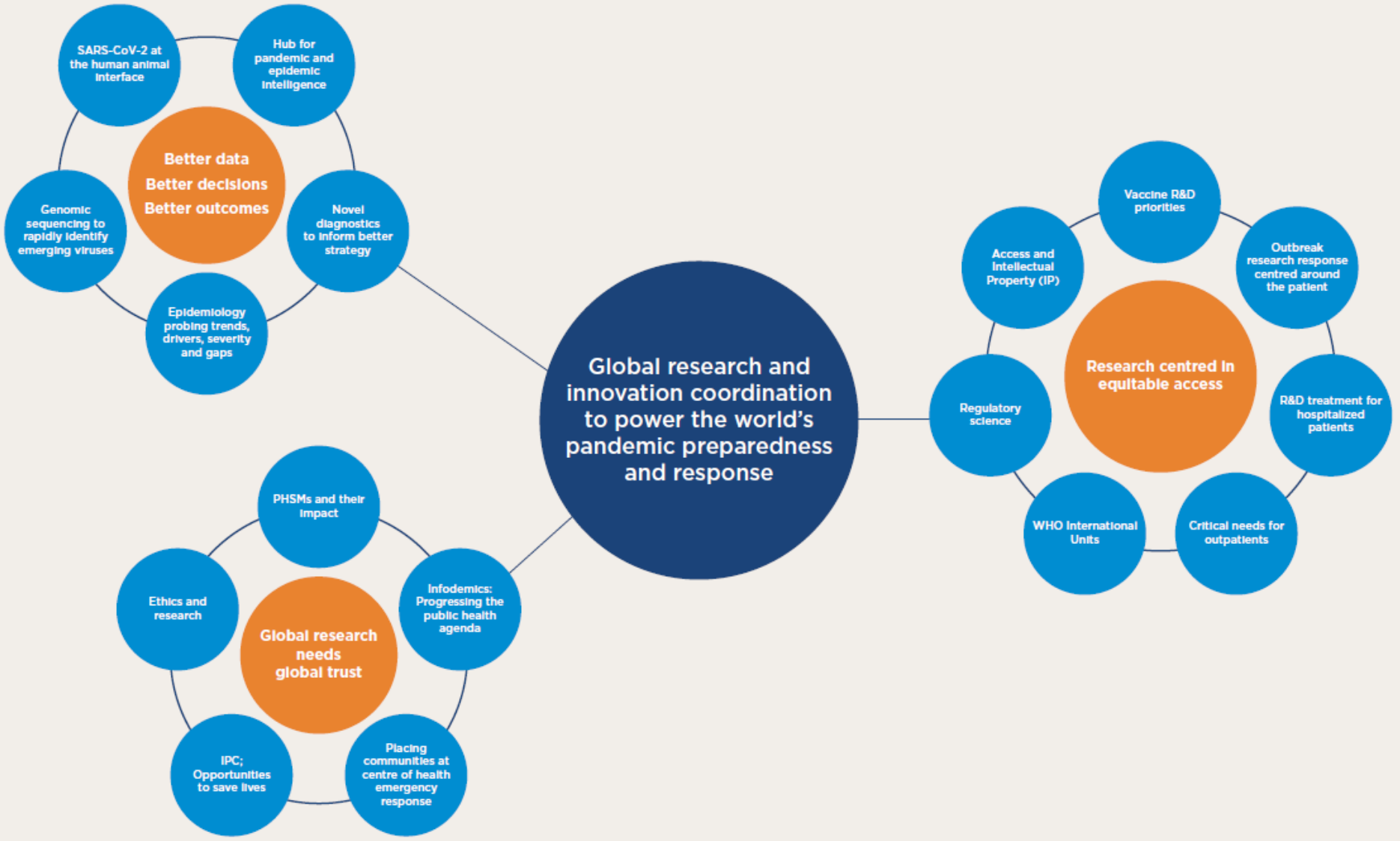
Pasaribu A, Susanto S, Sinto R. 2022.

WHO R&D Blueprint for epidemics

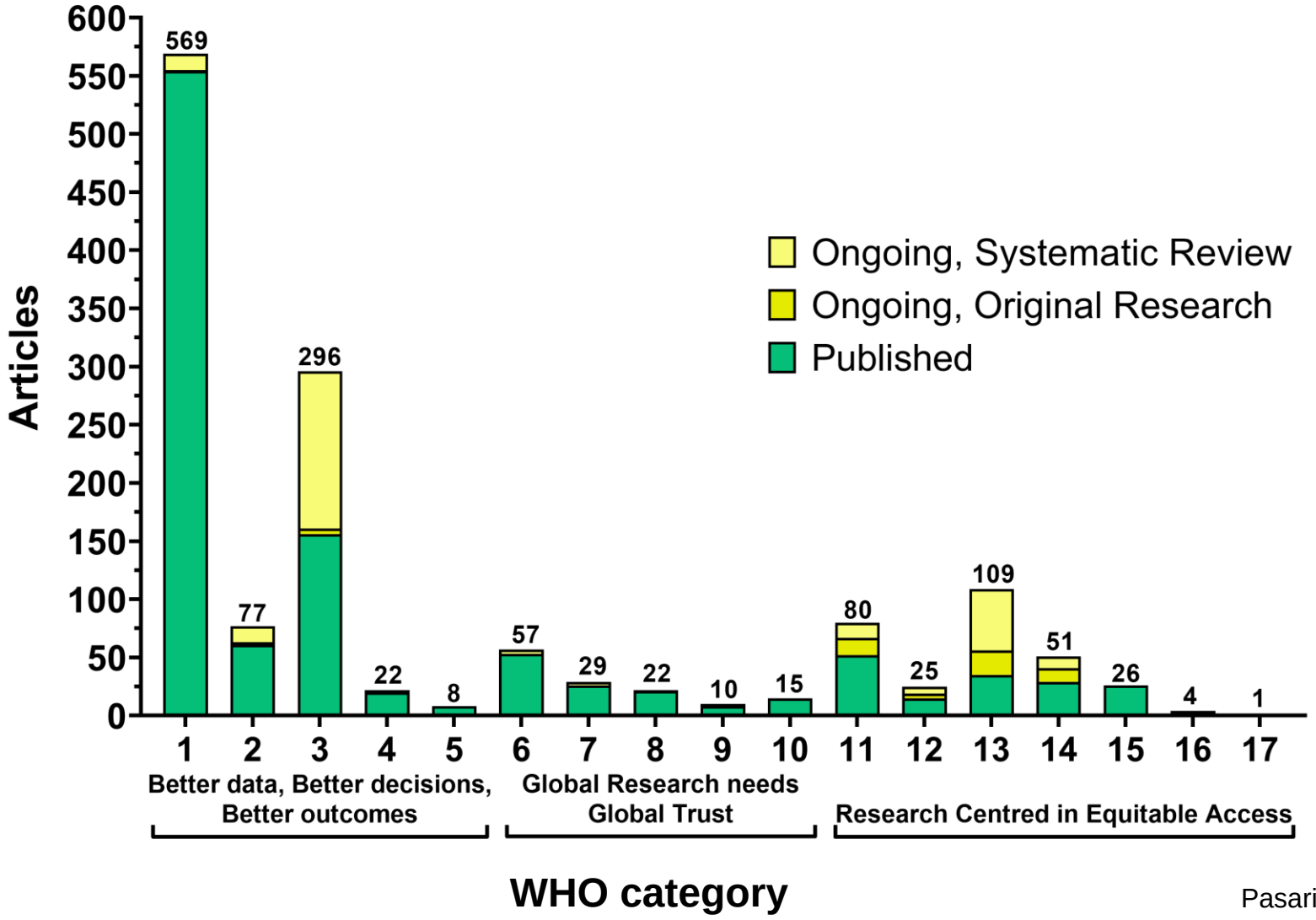
At the request of its 194 Member States in May 2015, the World Health Organization convened a broad network of experts to develop an R&D Blueprint for Epidemics.

A global strategy and preparedness plan was developed to allow for the rapid activation of research before and during epidemics.

Figure 2. WHO R&D Blueprint for action to prevent epidemics global coordination that powers pandemic preparedness and response

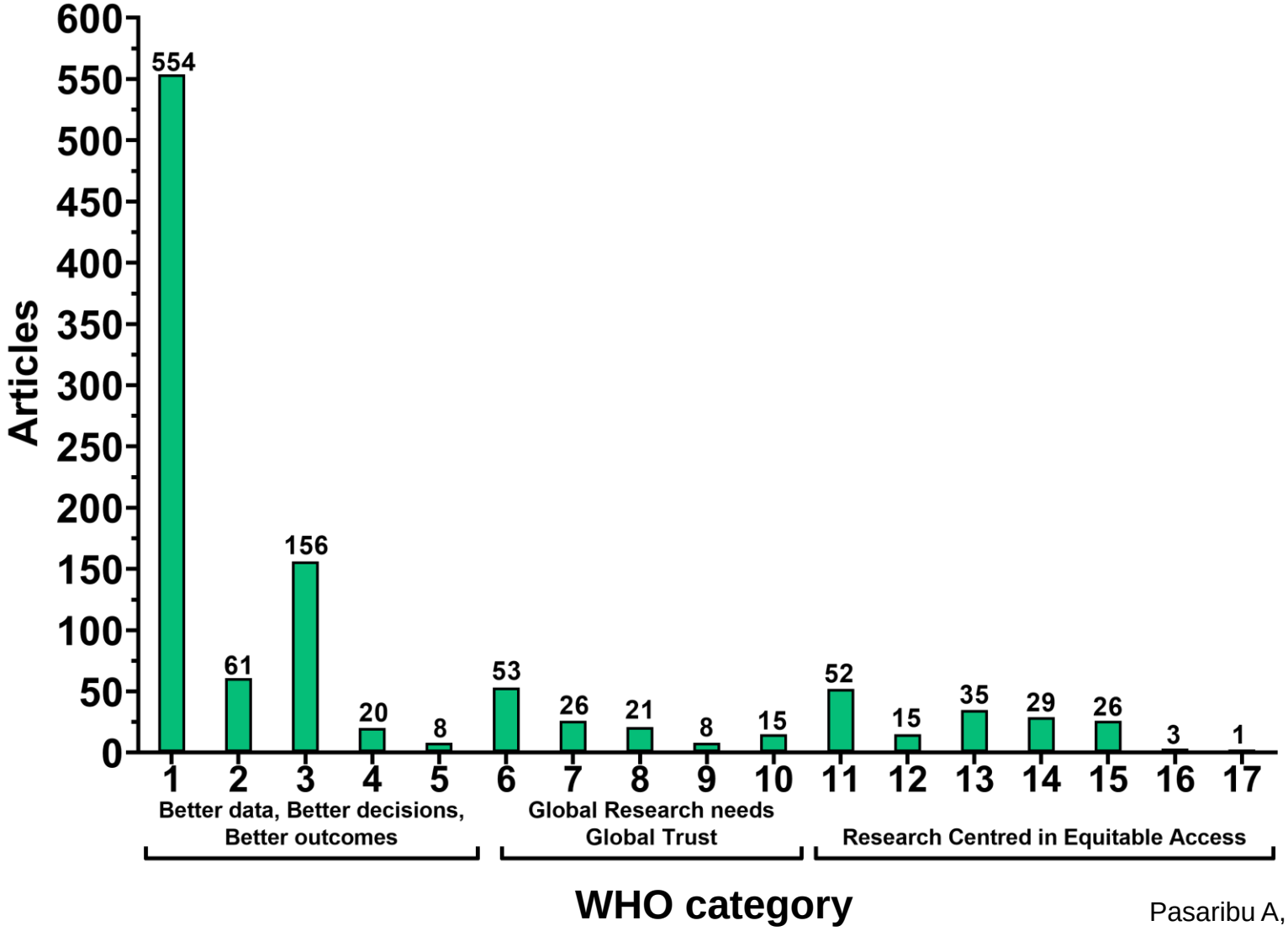


COVID-19 Research in Indonesia: past and present



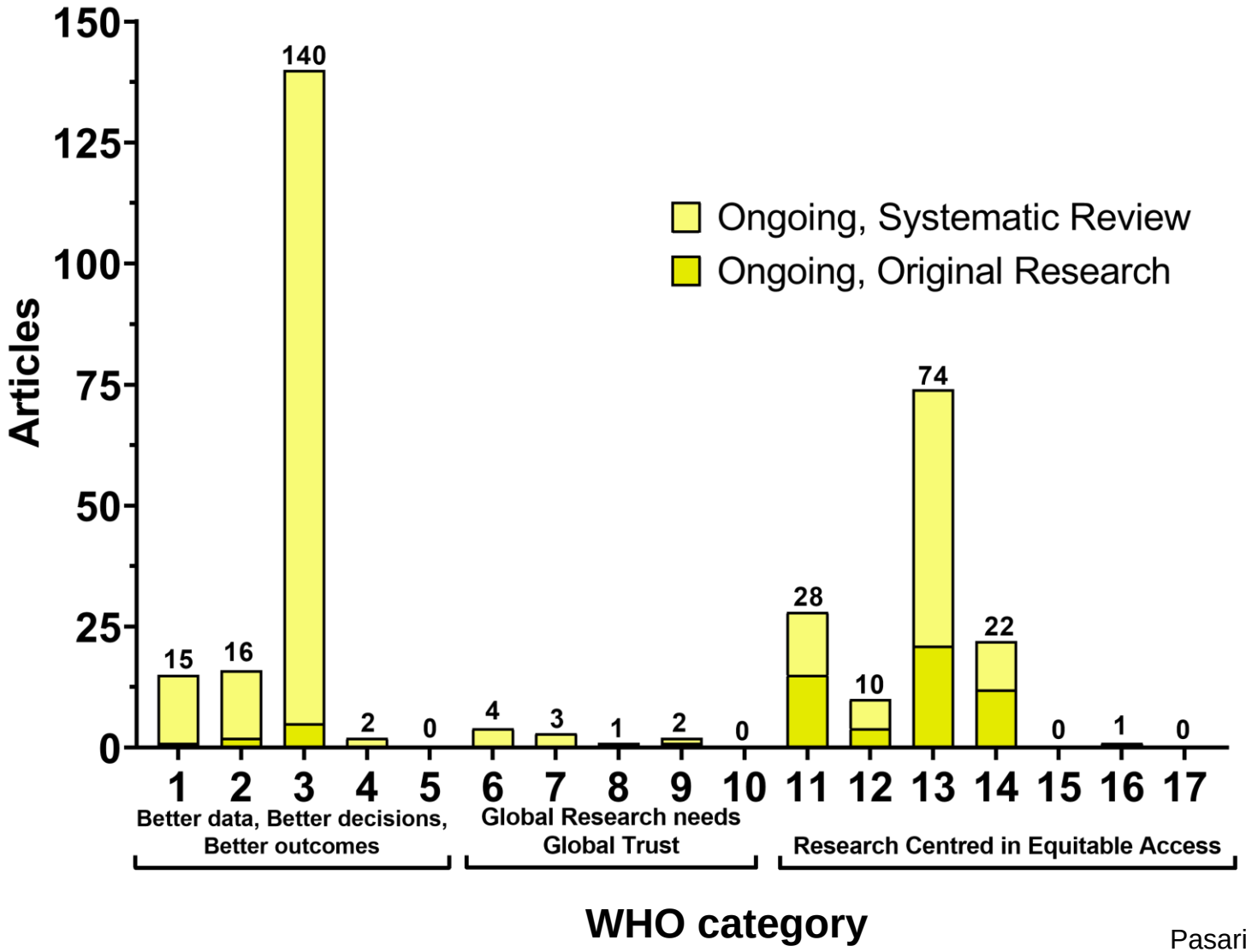
Pasaribu A, Susanto S, Sinto R. 2022.

COVID-19 Research in Indonesia: past (published)



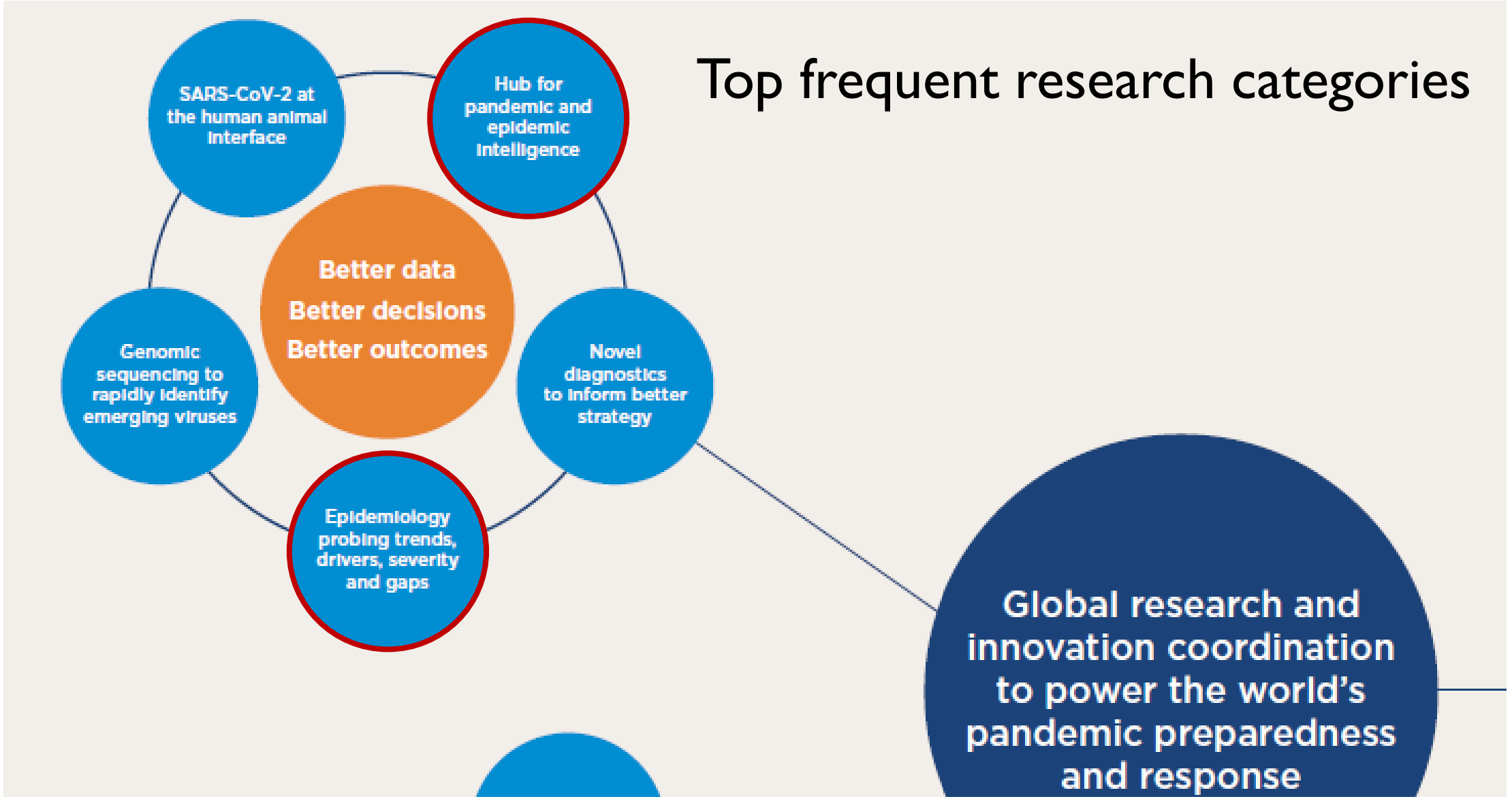
Pasaribu A, Susanto S, Sinto R. 2022.

COVID-19 Research in Indonesia: present



Pasaribu A, Susanto S, Sinto R. 2022.

Top frequent research categories



Top frequent research categories:

Hub for pandemic and epidemic intelligence

- Environment: rainfall or vegetation coverage
- Social: health seeking behaviour, health & risk literacy
- Cultural: beliefs on disease causation & prevention
- Economic factors: travel patterns, trade routes
- Agriculture & nature: human-animal interaction, consumption, production, sale

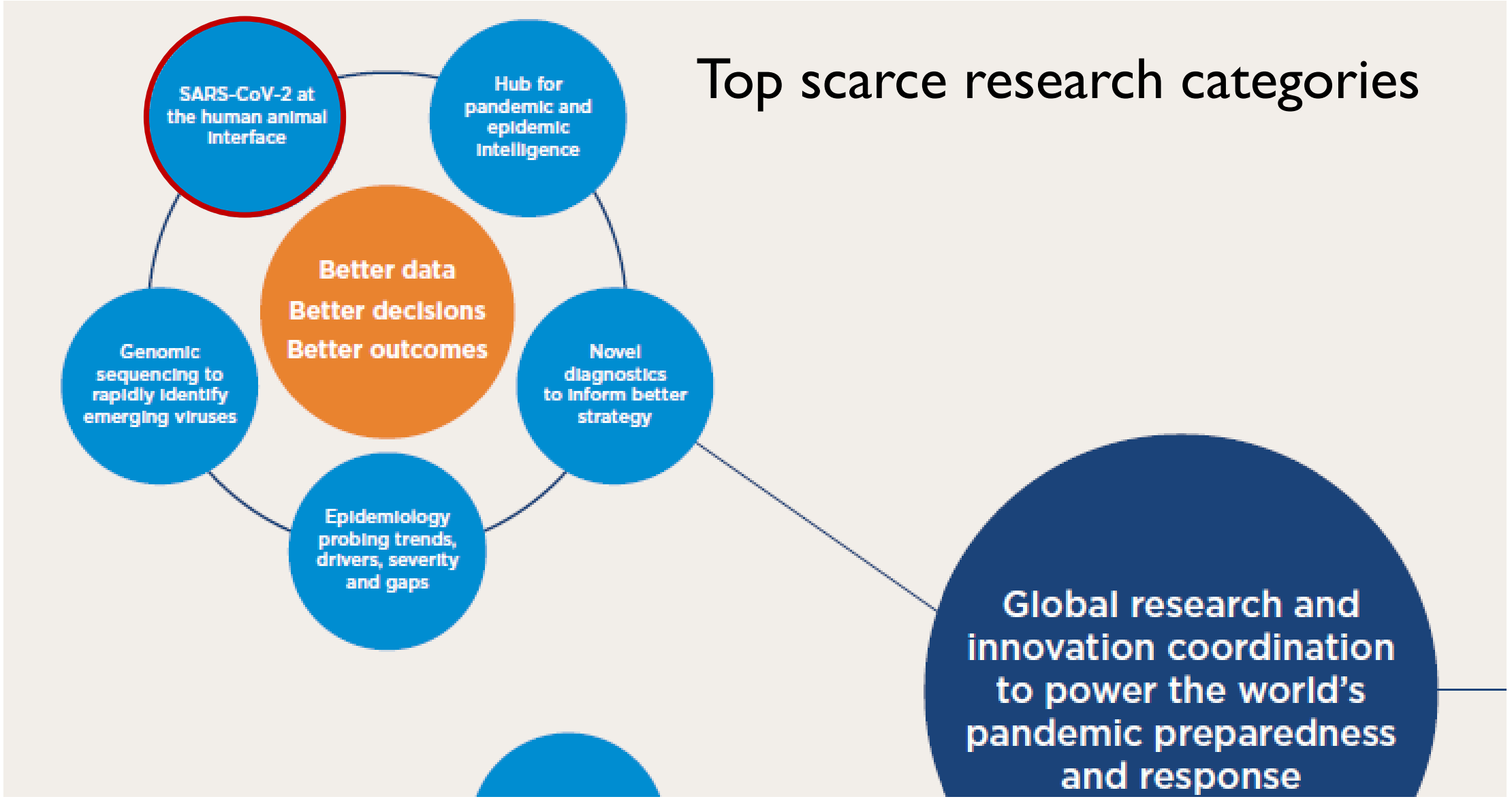
WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top frequent research categories:
Epidemiology of COVID-19

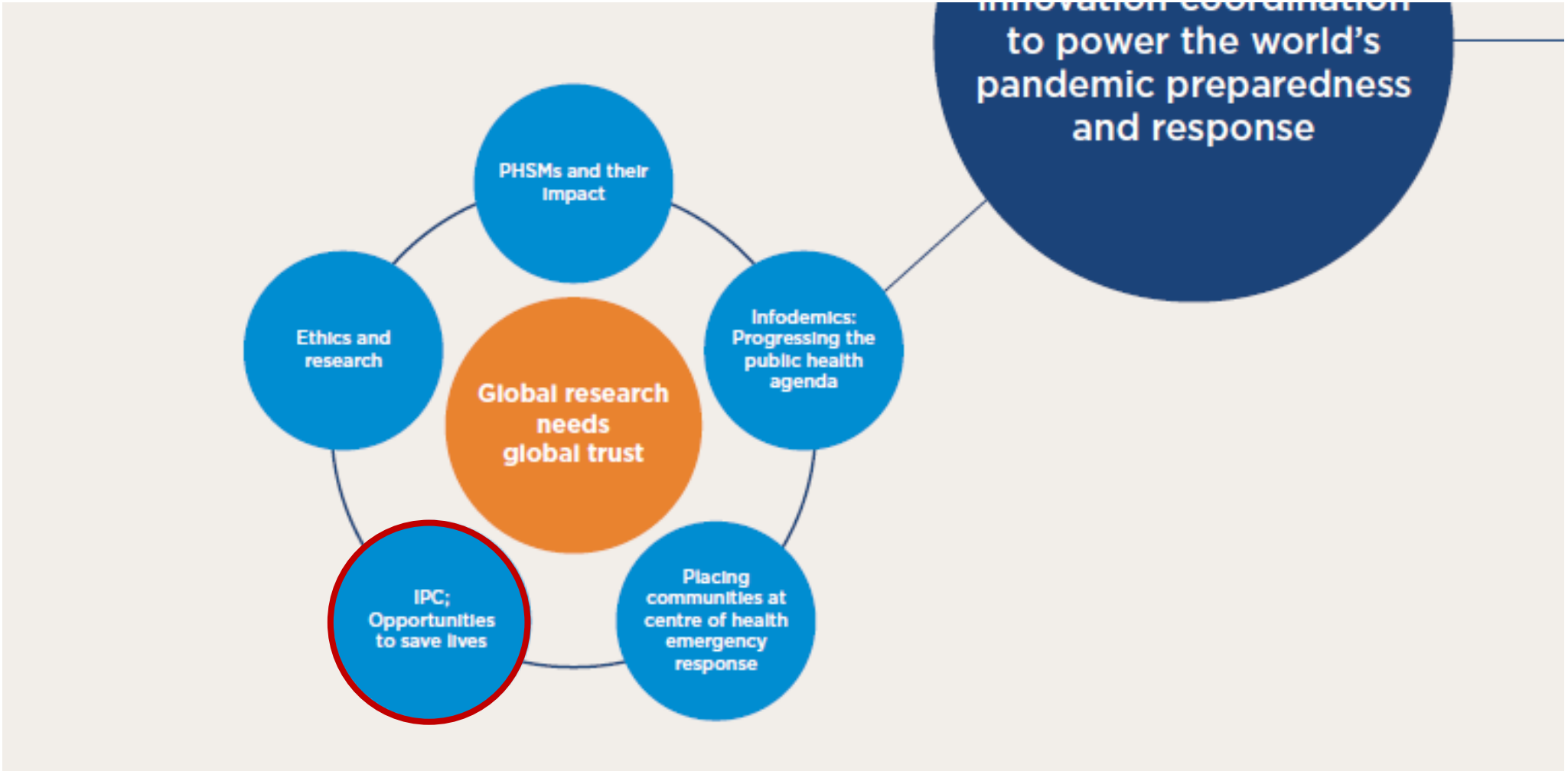
- Past and current trends
- Drivers of transmission and severity
- Emergence of VOCs with increased or decreased virulence and immune escape; age (and different levels of immunization coverage); co-morbidities and non-communicable diseases, obesity and immunosuppression.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories



Top scarce research categories



Top scarce research categories

Outline

- **Issue on COVID-19 research**
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- **COVID-19 research in Indonesia: future**

Top frequent research categories:
Epidemiology of COVID-19

Critical research priorities

- Better understanding of the implications of viral evolution on key epidemiological parameters, vaccine-induced and natural immunity on transmission and disease severity
- This highlights the need to strengthen surveillance and sequencing capabilities and the conduct of studies on variants of interest (VOIs) and VOCs.
- Lastly, there is a need to further assess the most effective and efficient combination of PHSMs to prevent transmission of SARS-CoV-2, its variants and future respiratory pathogens.
- Additional understanding of post-COVID-19 condition (or long COVID) in different populations and the value of current and future vaccines is needed together with the development and evaluation of novel, cheaper treatments that will prevent progression to severe disease.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
1. Human-animal interface

Several knowledge gaps remain

- Identification of coronavirus related to SARS-CoV-2 in potential hotspots of emergence
  - Which are the coronaviruses of possible public health interest circulating in areas known to be prone to the emergence of these viruses?
  - Susceptibility studies in animals
  - What species are susceptible to SARS-CoV-2 and can transmit the virus and what are the determinants of susceptibility in animals and spillover?

- Surveillance in animal populations
  - What is the prevalence and what are the epidemiological consequences of SARS-CoV-2 infections in farmed, captive, and free-living animal species?
  - What animal species have or could become a SARS-CoV-2 maintenance or reservoir host?

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
1. Human-animal interface

Several knowledge gaps remain

- Virus evolution predictions in susceptible species
  - How might we predict and detect novel SARS-CoV-2 variants or recombination of coronaviruses which have a spillover risk to humans and/or animals?

- Risks linked to trade and consumption of potentially infected animal species
  - What are the risks linked to trade and consumption of potentially infected animal species?
  - What are the communities or occupational groups at increased risk?

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
2. Infection prevention and control

Critical research priorities

To better understand, prevent and control HWs' infections, it is critical to implement the following activities:

- Develop and implement surveillance with standardized methods for reliable estimation of HW cases and outcomes, identification of occupational vs community acquisition and exposure settings
- Perform surveys and qualitative studies on the role of working conditions, such as overload, excess working hours, variations in post-infection return-to-work criteria, on the epidemiology of reinfection
- Conduct observational studies about vaccinated HWs' compliance with IPC measures

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
2. Infection prevention and control

Critical research priorities

- It is necessary to improve PPE international standards, design processes, with a user-centric approach, taking into consideration physical differences, gender and users living with disabilities, and to focus on the lifecycle of PPE and non-medical masks, optimizing logistics, waste management, degradable materials, decontamination and reuse, recyclability, minimizing the environmental impact and promoting innovation.
- There is also a need to generate high-quality evidence on medical masks vs respirators effectiveness and adverse events in the context of prolonged use, repeated use and in combination with other PPE. Moreover, it is essential to increase the quality of non-medical masks, including adequate standards for manufacturing, mass production, optimal use, standard sizing, performance assessment, decontamination, and communication strategies to the public.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
2. Infection prevention and control

Critical research priorities

- Human factors, such as those that drive users' preferences (e.g. which PPE to use, where and when), reasons hindering PPE adherence (e.g. comfort, communication, breathing), users' acceptability of decontamination methods also in relation to different environments, are important to consider and understand.
- Finally it is critical to define strategies for IPC/PPE de-escalation in relation to COVID-19 pandemic scaling back.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
3. WHO International Units

- It is important to standardize assays in disease detection, surveillance, viral evolution and immune evasion, vaccine immunity and efficacy.
- This also applies to post-COVID-19 condition (long COVID) or post-COVID period.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
3.WHO International Units

Critical research priorities

- Standards for other assays for Fc-mediated functions and cell-mediated responses also need to be developed and provided.
- While the WHO BioHub is recognized as a key facilitator in streamlining the preparation of candidate materials for WHO International Standards (ISs), a framework for source bulk materials collection is very much needed.
- The work with funding organizations to provide a preparedness framework for known priority pathogens and for Disease X should be a priority at the global level.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

Top scarce research categories:
4. Access and intellectual property

- A key barrier to access is intellectual property (IP).
- Cons: only with shared knowledge, IP and data will the world leverage the collective efforts necessary to advance scientific discovery, technology development and the broad sharing of the benefits of scientific advancement and its applications based on the right to health.

WHO. How global research can end this pandemic and tackle future ones. 2022.
WHO. COVID-19 Research and Innovation. 2022.

What does the future hold?

- Short-term research goal: may be to help end this pandemic through strong surveillance, treatment and vaccines.
- Long-term goal: must be investment towards UHC that includes PHC and pandemic preparedness as part of a sustainable long-term vision for any country.
- Research has (and will do again) saved the lives and livelihoods of people right across the world. This requires constant and long-term investment, building on the existing global R&D infrastructure and research achievements.

WHO. How global research can end this pandemic and tackle future ones. 2022.