

Trailing World Health Assembly Resolution 73.1: Pathway to Quick and Accurate Determination of the Source of Outbreak of COVID-19 in Wuhan, China.

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ABSTRACT

For more than four years now, the objective of determining the source of the outbreak of COVID-19 in Wuhan, China and the route of transmission of the infection to the human population has not been achieved despite existing capacity in molecular epidemiology and World Health Assembly Resolution mandating that objective. This study seeks to ascertain the reasons for failure to achieve that objective and to propose feasible alternative strategies to attain that objective quickly and accurately.

Exploratory research was adopted, applying the tools of input-output device, data extraction, management by objective, rational decision approach and the deductive model. Fitting the objective of determining the source of the outbreak of COVID-19 as expected output, the actions of key players in the pandemic response (fitted as processors) were evaluated for consistence or otherwise in transforming data/inputs to achieve the output/objective.

The study found that the World Health Assembly (WHA) Resolution 73.1 (9 (6)) mandating the World Health Organization (WHO) to pursue the objective of determining the source of the outbreak of COVID-19 was not diligently and committedly implemented; that the WHO and China have deliberately evaded that objective; that previous and ongoing studies focusing on the circulation of SARS-CoV-2 in other countries and similar themes are diversionary and unnecessary workload that depart from the core objective; and that adopting a five-point alternative strategy will ensure the attainment of the core objective within 14 days, including: (i) re-phrasing of the WHA mandate for specificity; (ii) subjecting all possible pathways of transmission to scrutiny; (iii) adopting “confirmed” genetic sequences of SARS-CoV-2 for subsequent use in molecular epidemiology; (iv) establishing a ‘red circle’ of 2 km radius from the Huanan wet market for top-priority epidemiologic investigation; (v) review of Resolution WHA73.1(9 (6)) at upcoming WHA to expressly prescribe unfettered right of access to the international study team and sanction for non-compliance.

The study concludes that determining the source of the outbreak of COVI-19 in Wuhan, China is an important objective that should be accomplished within 14 days considering existing capacity in molecular epidemiology, if avoidable impediments are removed.

Keywords: COVID-19, epidemiologic investigation, origin tracing, pandemic response, SARS-CoV-2, World Health Assembly, World Health Organization

INTRODUCTION

So far, COVID-19 has impacted the global community as the worst pandemic, with 774 834 251 reported cases; 7 037 000 reported deaths as at 3rd March 2024,^[1] as well as other far-reaching socio-economic consequences in different parts of the world.^[2] As a result of this negative impact, two related concerns have arisen from stakeholders: that we harness every experience and lesson learned from the COVID-19 pandemic and the pandemic response; that we apply such experience and lessons learned most effectively to upgrade global capacity for future pandemic prevention, preparedness and control.

Modest progress has been achieved in profiling COVID-19 in nearly all other themes except the origin of the outbreak and the route of introduction of the infection to the human population. It is an indictment on the scientific community that for more than four years running, the source of COVID-19 outbreak and the route of introduction of the infection to the human population in Wuhan, China have not been conclusively determined despite the encouraging mandates of major stakeholders such as the International Health Regulations Emergency Committee^[3], the 73rd World Health Assembly^[4], and despite existing global capacity in cutting-edge epidemiologic investigation^[5] including molecular epidemiology.^[6]

Subscribing to dominant opinion that it is imperative to ascertain the ‘origin’ of the pandemic and the source of infection, this paper seeks to ascertain the reasons that previous efforts in this regard failed; as well as prescribe short and feasible alternative processes that will facilitate the conclusive determination of the ‘origin’ of COVID-19 and the route of introduction of the infection to the human population in Wuhan, China.

METHOD

Exploratory research was adopted, applying input-output device, data extraction, management by objective (MBO), content analysis, rational decision approach (RDA) and deductive model.



Figure 1: Input-Output Device.

Relevant secondary data, extracted from COVID-19 timelines of the World Health Organization (WHO)^[7] and dexvex^[8] are fitted as inputs in the input chamber of the input-output device. The WHO, China, the WHA, Member-States and other major stakeholders are fitted as processors in the central processing chamber of the input-output device. Ascertaining the source of COVID-19 outbreak and the route of introduction of the infection to the human population are fitted as desired objectives/ expected outputs in the output chamber of the input-output device.

Applying MBO and RDA as conveyors and grinders in the processing chamber, policies and actions of the WHO and key players in the global response were evaluated for consistence or otherwise, in processing data/inputs to achieve the outputs/set objectives of confirming the source of COVID-19 outbreak and the route of introduction of the infection to the human population. All relevant documents were content-analyzed, while findings and conclusion were reached through the deductive model.

Experiences gained from the control of previous epidemics and pandemics, as well as other global resilient capacities are fitted as ‘brain box’ and ‘lubricants’ in the storage chamber of the device to moderate the processing activities of stakeholders in the processing chamber of the device.

RESULT

Data Presentation

(All data entries are secured from the COVID-19 Timelines of the WHO [7] and devex [8]).

December 31, 2019:

1. Chinese Health Authorities reported an outbreak of viral pneumonia of unknown cause in Wuhan City, China.
2. Country Office of the WHO in China notified the International Health Regulations (IHR) Desk of the WHO Western Pacific Regional Office about the outbreak.
3. National Health Authorities or several Member-States contacted the WHO seeking more information about the reported outbreak.

January 7, 9, 2020:

1. The cause of the outbreak was identified as a novel coronavirus by Chinese Authorities.
2. The WHO disseminated that the cause of the outbreak was a novel coronavirus as identified by Chinese Authorities.

January 11, 2020:

1. WHO received the genetic sequences for the novel coronavirus from Chinese Authorities.
2. China reported first death from the novel coronavirus.

January 13, 2020:

1. WHO published the first protocol for reverse transcription-polymerase chain reaction (RT-PCR) assay to diagnose the novel coronavirus by WHO partner laboratories.
2. Thailand reported her index case of laboratory-confirmed novel coronavirus imported from Wuhan, China. This is the first recorded transmission outside China.

January 29, 2020:

Australian scientists announced success in growing the novel coronavirus in the laboratory.

January 30, 2020:

The WHO declared the novel coronavirus outbreak a Public Health Emergency of International Concern (PHEIC). Total confirmed cases in China were 9 629 with 213 deaths. Outside of China, there were 98 reported cases and no deaths in 18 countries.

February 8, 2020:

At a press conference, while criticizing the high level of misinformation spreading around the novel coronavirus, the WHO announced her engagement of Facebook, Google, Ten cent, Baidu, Twitter, Tik Tok, Weibo, Pinterest and others to promote accurate information about COVID-19.

February 17, 2020:

China published a report based on data from 44000 confirmed cases of COVID-19 indicating that COVID-19 is not as deadly as other coronaviruses including SARS and MERS; that more than 80% of COVID-19 patients present mild diseases; about 14% lead to severe diseases; about 5% lead to critical diseases including respiratory failure, septic shock and multiorgan failure; and about 2% of reported cases lead to death.

February 24, 2020:

WHO-China Joint Mission on COVID-19 held a press conference which reported on the main findings of the mission. The mission warned that much of the global community is not yet ready, in mindset and materially, to implement the measures that have been employed to contain COVID-19 in China.

February 28, 2020:

The report of the WHO-China Joint Mission was issued as a reference point for countries on measures needed to contain COVID-19.

March 11, 2020;

The WHO declared COVID-19 a pandemic, calling once again on countries to take urgent and drastic action.

April 9, 2020:

WHO marked 100 days since the first case of “pneumonia with unknown cause” was reported.

April 14, 2020:

The US President, Donald J. Trump, in a press conference, blamed the WHO for mismanaging the COVID-19 pandemic response and gave an indication of possible withdrawal of US funding to the WHO.

April 30, 2020:

The Director-General (DG) of the WHO convened the 3rd Expanded IHR Emergency Committee meeting, which on May 1, 2020 issued its recommendations including that “WHO works to identify the animal source of the virus through international scientific and collaborative missions.

May 18, 2020:

The United States formally accused the WHO of deference to China and of mismanaging the pandemic response; and threatened permanent freezing of US funding to the WHO with possible consideration of withdrawal of her membership.

May 18-19, 2020:

The 73rd World Health Assembly (WHA) held virtually and adopted various resolutions (including

resolution WHA 73.1) which:

1. Requested the DG WHO, working with other organizations and countries, to identify the zoonotic source of the virus and the route of introduction to the human population.
2. Requested the DG WHO, to initiate an impartial, independent and comprehensive evaluation of the response to COVID-19 at the earliest appropriate moment and in consultation with Member-States in order to review experience and lessons learned and to make recommendations to improve capacity for pandemic prevention, preparedness and response.
3. And to report on the implementation of the resolutions at the 74th

June 29, 2020:

WHO's first infodemiology conference commenced.

July 31, 2020:

Release of Terms of Reference – Final Draft. WHO-convened Global Study on the Origins of SARS-COV-2: Terms of References for the China Part.

March 30, 2021:

Public release of Report on WHO-convened Global Study on the Origins of SARS-CoV-2. China Part. Joint WHO-China Study Team Report.

May 24-30, 2021:

74th Session of the World Health Assembly held. WHO's Report on Origins of SARS-Cov-2 and source of infection of COVID-19 was presented.

Further Inputs

The importance of determining the source of SARS-CoV-2 and the route of introduction of the infection into the human population in Wuhan in December 2019.

It has been a standing practice in public health intervention to apply epidemiologic investigations to trace, determine and confirm the source of disease outbreaks since John Snow's precedent of 1854, for the obvious reasons of gain in upgrading precise and targeted interventions, among others. Tulchinky [9] reminds us of the pioneering epidemiologic investigations conducted by John Snow on the cholera epidemics ravaging England, and particularly the London Cholera Epidemic of 1854 of which he traced the source to the famous Broad Street water pump. The mere removal of the pump's handle led to the cessation of the epidemic.

The importance of tracing the source of infection for COVID-19 is underscored by the call made on May 1, 2020 by the 3rd Expanded International Health Regulations (IHR) Emergency Committee Meeting which mandated the World Health Organization (WHO) to work through international scientific and collaborative efforts to identify the animal source of COVID-19 outbreak (as shown in data item 17). Similarly, as contained in data item 19, the 73rd World Health Assembly (WHA) adopted Resolution 73.1, which among others, mandated the Director-General (DG) of the WHO to work with other organizations and countries (Member-States) to identify the zoonotic source of the virus and the route of introduction to the human population. The said Resolution 73.1 expressly enumerated five benefits to be gained from successful source-tracing including enabling targeted interventions, providing guidance for preventing infection with

SARS-COV-2 in animals and humans and reducing further risk of emergence and transmission of zoonotic diseases.

The WHO herself,^[10] citing Zhang et al (2020) acknowledged that successful source tracing is essential to provide more understanding towards preventing further SARS-CoV-2 new introductions and re-infections, as well as inform the development of appropriate treatments and vaccines, among other benefits. Hence, the impression being created in some quarters ^{[11] [12]} that demand for source tracing is politically motivated or a blame game that serves no practical value is biased and erroneous.

Implementation of Resolution WHA 73.1 pertaining to source tracing of COVID-19 outbreak by the DG of WHO.

For unbiased analysis, the letters of the said Resolution WHA 73.1 are reproduced here verbatim:

“The Seventy-third World Health Assembly, having considered the address of the Director-General on the ongoing pandemic of coronavirus disease (COVID-19):

9. REQUESTS the Director-General:

(6) to continue to work closely with the World Health Organization for Animal Health (OIE), the Food and Agricultural Organization of the United Nations (FAO) and countries, as part of the One-Health Approach, to identify the zoonotic source of the virus and the route of introduction to the human population, including the possible role of intermediate hosts, including through efforts such as scientific and collaborative field missions, which will enable targeted interventions and a research agenda to reduce the risk of similar events occurring, as well as to provide guidance on how to prevent infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in animals and humans and prevent the establishment of new zoonotic reservoirs, as well as to reduce further risks of emergence and transmission of zoonotic diseases; (11) to report to the Seventy-fourth World Health Assembly on the implementation of this resolution”.^[4]

A thorough scrutiny of the above Resolution will reveal four major features:

1. The resolution conveyed a mandate in respect of the outbreak of COVID-19 in Wuhan, China which escalated to a pandemic;
2. The mandate was to identify the ‘source’ of the outbreak widely thought to be ‘zoonotic’ and the route of introduction to the human population.
3. The mandate was conferred on four parties; the WHO the OIE, the FAO and ‘countries’ (Member-States). No country was given preference or priority over the others.
4. Implementation of the resolution shall be reported to the 74th World Health Assembly, leaving an implementation and report preparation duration of one year.

What implementation processes unfolded pertaining to resolution WHA 73.1(9, (6))?

i). In early July of 2020, the WHO and China (excluding the OIE, FAO and all other Member-States) commenced what they described as “the groundwork for studies to better understand the origins of the virus”. This “groundwork” exercise by WHO and China culminated in the release, on 31st July 2020, of a report/document titled “WHO-convened Global Study of the Origin of SARS-CoV-2: Terms of References for the China Part”. This 9-page document prescribed details of modalities for conduct of subsequent research and investigations on the said Resolution WHA 73.1(9 (6)) by an international study team to be composed subsequently. This Terms Of Reference (TOR) document prescribed, among others, two-phased studies (phase 1: short term study; phase 2: longer term plans) and that “the final composition of the

international team should be agreed by both China and WHO”.

ii). According to WHO records,^[13] on August 17, 2020 the WHO advertised for expression of interest for international experts to participate in the SARS-CoV-2 origins study jointly with Chinese experts. By September of 2020, interested candidates were evaluated and a list of 10 finalists were agreed, shared with China on September 30, 2020 and by October 2020, China conveyed no objection to this list of 10 international experts.

The overall team of international study group, comprising of 34 members, was composed as follows: 17 Chinese experts; 10 international experts; and 7 experts and support staff from OIE and WHO combined. Two staff members from FAO participated as observers. The team was co-chaired by Dr. Peter K. Ben Embarak of WHO and Professor Liang Wannian of China.

The international study team worked in China for 28 days for the 1st phase of study from January 14 to February 10, 2021. By March 1, 2021, the study group released her interim report titled “WHO-Convended global study of origins of SARS-CoV-2: China Part, Joint WHO-China Study Team Report, 14 January-10 February, 2021”. Top on the highlights of the report is the team’s assessment of possible pathways of initial transmission of COVID-19 outbreak as follows;

1. Direct zoonotic spillover is considered to be a possible-to-likely pathway;
2. Introduction through an intermediate host is considered to be a likely to very likely pathway;
3. Introduction through cold/food chain products is considered to be a possible pathway;
4. Introduction through a laboratory incident was considered to be an extremely unlikely pathway.

However, the report did not specifically incriminate any animal species as source, host or reservoir of infection, which many observers believe would be achieved in the more detailed 2nd phase of the study.

The much-anticipated 2nd phase of the study, according to Mallapaty ^[14] reporting for NATURE, was abandoned due to the impasse between China on one hand and the WHO and some other members of the study team. The reason adduced was that the pathway of lab incident which was earlier classified as “extremely unlikely” in the international study team’s report emerged as a possible option to be considered in subsequent study in the report of the Scientific Advisory Group for the Origins of Novel Pathogens (SAGO). To further conform this novel shift, it was further reported that by July 2021, the circular sent out by WHO to Member States on proposed activities of the 2nd phase study contained, among the processes, audit of labs in Wuhan. Nevertheless, Mallapaty further reports that some other virus-origin related studies still rolled out but outside “formal WHO-led process”.

iii). During the 74th World Health Assembly that held 24-31 May, 2021, the DG of WHO submitted a 22 page, 80 paragraphs report of the mandates conferred on him by Resolution WHA 73.1. In the said DG’s report, paragraphs 47 and 48 addressed Resolution WHA 73.1(9 (6)) pertaining to studies to determine COVID-19 virus origins. For accuracy, the two relevant paragraphs are reproduced here, verbatim:^[15]

[47]. In collaboration with FAO’s Animal Health Service, OIE’s Working Group on Wildlife and a number of academic research centers around the world, WHO has supported One Health related research initiatives and activities in support of studies on the SARS-CoV-2 origins. This work has included susceptibility studies of different species to SARS-CoV-2, epidemiology studies of SARS-CoV-2 in animals (including transmission between species and within species including humans), and risk assessment associated with contact with pets, livestock, wildlife and animal products. In total, some 20 individual research projects around the globe have been supported. WHO, together with FAO, OIE and UNEP, will issue guidance on reducing risk of transmission of emerging zoonoses in traditional food markets, and has revised guidance on the food safety aspects of COVID-19 for national food safety authorities.

[48]. In July 2020 WHO deployed an advance team to China to plan a number of studies to understand the origins of the SARS-CoV-2 virus. In January 2021 WHO, in collaboration with the Global Outbreak Alert and Response Network, deployed an international team to China to work with Chinese counterparts to review SARS-CoV-2 virus origin studies conducted there since July 2020 and plan for new studies to improve understanding of the origins of the virus. The WHO joint mission team published its report on 30 March 2021, outlining findings on the epidemiology of the early cases, studies of molecular epidemiology using available sequence data from humans, animals and the environment, and studies of possible animal hosts. The report includes a number of recommendations for further studies.

ACTION BY THE WORLD HEALTH ASSEMBLY

[80]. The World Health Assembly is invited to note the report.

ANALYSIS, DISCUSSION AND FINDINGS

Was Resolution WHA 73.1 (9(6)) pertaining to source tracing of COVID-19 outbreak diligently, committedly and successfully implemented by the WHO?

A careful perusal of the verbatim report [paragraph 47 and 48] of the Director-General (DG) of the WHO to the 74th WHA shows that the DG did not report success in achieving the objective of determining the origin of SARS-COV-2 and the route of introduction of the infection to the human population in respect of the outbreak of COVID-19 in Wuhan, China in December, 2019. The heavy workload of other extensive studies contained in the DG's report and other reports earlier published by WHO study teams which focused on peripheral issues such as "susceptibility studies of different species of SARS-CoV-2" "reducing risk of transmission of emerging zoonoses in traditional food markets", or even the circulation of SARS-CoV-2 in other countries only add to existing scientific knowledge, but deviate from the core objective of Resolution WHA 73.1 (9(6)).

For the avoidance of doubt, we restate that by the **letters and spirit** of Resolution WHA 73.1 (9(6)), the core objective is to determine the source of COVID-19 outbreak and the route of introduction of SARS-COV-2 to the human population in Wuhan, China as reported in December 2019. Obviously, this core objective has not been achieved. Since the said D-G's report to the 74th WHA did not request for extension of time which would have accorded an on-going status to the project, it can be correctly summarized that WHO has tactically shelved efforts at pursuing this core objective.

The reason for unsuccessful implementation is that Resolution WHA 73.1 (9(6)) was not diligently and committedly pursued and implemented by the WHO and China. First, recall that the resolution expressly "requests the Director-General to continue to work closely with the World Organization for Animal Health (OIE), the Food and Agriculture Organization (FAO) and countries" to implement the resolution. The two rational approaches to kick-start efforts of implementing the resolution would have been that:

WHO holds initial consultative meeting with representatives of the OIE, FAO and representatives of "countries" [preferably, Ministers of Health] to agree a work plan/terms of reference (TORs) for subsequent implementation action.

or

WHO prepares preliminary work plan/tentative TORs and presents before a consultative meeting of the above mandated stakeholders for consideration, review and adoption.

Instead, the WHO, arbitrarily and rashly, teamed up with China, at the exclusion of all other resolution-

mandated stakeholders, to initiate and conclude TORs document for subsequent implementations to guide all other stakeholders including all other Member-States of the WHO. Confirming this arbitrary team-up with China as a deliberate decision, the WHO-China averred on page 2 of the ‘Background’ to the TORs document that:

Building on the recommendation from the 73rd World Health Assembly, WHO, together with the government of China, are setting up an international multidisciplinary team to design, support and conduct a series of studies that will contribute to origin tracing work. [10]

This unilateral action by WHO-China not only shows a deliberate departure from WHA Resolution, but also confirms the accusation earlier made by the United States on May 18, 2020 [see data entry] that the WHO is showing unwarranted deference to China enabling the mismanagement of the pandemic response. Many other countries and experts now share this view.

Secondly, a thorough scrutiny of the TORs document indicates that the TORs were premeditated to ‘guide’ focus away from Wuhan; to regiment subsequent study team and ultimately to exculpate China from initial responsibility for the outbreak and its escalation. The opening paragraph of the ‘Approach’ in the TORs document clearly set the pace, thus:

Where an epidemic is first detected does not necessarily reflect where it started. An outbreak of pneumonia of unknown etiology was identified through surveillance in Wuhan, however, the possibility that the virus may have silently circulated elsewhere cannot be ruled out. For example, some countries have retrospectively identified cases of COVID-19 weeks before the first case was officially notified through surveillance, and unpublished reports of positive sewage samples could suggest that the virus may have circulated undetected for some time. [10]

Even if the virus had been circulating elsewhere undetected, the COVID-19 outbreak had been formally reported in Wuhan. Standard epidemiological practice requires that the source of the reported outbreak must be established. If the source of the reported outbreak is formally established, then information and data on the circulation of the virus elsewhere will make more sense as extra knowledge that may inform better action, but not otherwise. If not for the prodding from China’s overarching influence in the WHO-China arbitrary team-up, it cannot be imagined that the highly exalted WHO will descend to relying on “unpublished reports” to deviate from the focus of a WHA mandate.

In respect of the international study team planned to be composed to carry out the assignment, the TORs document previewed a concurrence in shifting focus away from determining source of infection in Wuhan, thus:

In addition, the international team will also develop study framework and materials that may set the ground for origin tracing work elsewhere. The global origin tracing work is therefore not bound to any location and may evolve geographically as evidence is being generated and hypotheses evolve.

A third factor is that the composition of the international study team and their operating procedures were designed to dilute the impact of members from other countries and overwhelm them with China-WHO opinion. According to the international study teams’ report of March 2021¹³, the team’s composition are as follows: 17 Chinese nationals; 7 experts and supports staff representing the WHO and OIE; and 10 experts from other countries. Two staff members from the FAO participated as mere observers notwithstanding that FAO is a Resolution-mandated stakeholder. We do not understand whom, how and why the FAO was relegated to mere observer status and no complaint arose from that relegation.

For the 28 days that the international study team worked in Wuhan, China, the first 14 days were spent

under quarantine in compliance with COVID-19 protocol. During this period, the foreign experts in the team worked exclusively with Chinese counterparts through electronic means including video/teleconference calls, exchanging information and presentations. For the second 14 days, the international study team, though still under health monitoring, embarked on outdoor activities including meetings, interviews of key informants and site visits. To facilitate its work, the international study team agreed three thematic committees: epidemiology; molecular epidemiology and bioinformatics; and animal and environment. The report, itself, informs us of how decisions and conclusions were reached by the committees and at plenary, thus:

All team members had the same status within the team and all conclusions, and the decisions were formed jointly with the same weight being given to the word of each member.^[13]

The implications are obvious. At plenary sittings, decisions were between 10 experts from other countries and 24 experts from China (17) and WHO/OIE (7). At committee level, decisions were between about 3 international experts from other countries on one hand and about 8 experts from China/WHO/OIE. Little wonder, then, that the international study team appeared like scientists on excursion riding in a bus with China as driver and WHO as bus conductors, which arrived at the destination intended by the driver and bus conductor.

It is not surprising therefore that the release of the international study team's report immediately elicited negative reactions across the globe. The high point of these reactions is the joint statement issued on March 30, 2021 by the government of 14-Member States¹⁶ rejecting the international study team's report through what they called a "shared concern", thus.

It is equally essential that we voice our shared concerns that the international expert study on the source of the SARS-CoV-2 virus was significantly delayed and lacked access to complete, original data and samples. Scientific missions like these should be able to do their work under conditions that produce independent and objective recommendations and findings.^[16]

It appears that the above 'shared concern' and many others, had jolted to a reawakening, both the WHO and some members of the study team, such that a re-inclusion of the pathway of possible laboratory incidents had re-appeared in subsequent report, as well as the WHO circular issued preparatory to the phase 2 of the origin tracing study. This re-inclusion, which China opposed, had stalled further action on the so-called origin tracing study. But why is China vehemently opposed to investigation of laboratory incidents in Wuhan?

A Long Trail of Evasion of Source Tracing by China and the WHO

There are evidences suggesting that both China and the WHO had deliberately evaded source tracing of COVID-19 outbreak from the start. Discounting what transpired before December 31, 2019, the data table shows that outbreak of "viral pneumonia of unknown cause" was officially reported in Wuhan on December 31, 2019 by Chinese Authorities. By 7 – 9 January 2020, the cause of the outbreak was successfully pinned on a novel coronavirus. By the next two days (January 11, 2020), the genetic sequences of the implicated novel coronavirus had already been determined by Chinese Authorities and made available to the WHO. At this period, with the genetic sequences known and reported cases and contacts still fresh, it would have taken between the next 48 – 72 hours for China and the WHO to determine the source of the outbreak and the route of introduction to the human population. This feasible opportunity was deliberately missed.

From mid-January 2020 onwards, a number of independent and joint studies were initiated by China and the WHO. For instance, as shown in data table for February 17, 2020, China published a report of her independent study on the prognosis of COVID-19 using data from 44 000 confirmed cases of COVID-19.

On February 24, 2020, while addressing a press conference, the WHO-China Joint Mission on COVID-19 reported on the main findings of the mission¹⁷. Again, unfortunately, this report missed out on settling the controversy surrounding the source of the viral outbreak. Yet, it dealt with other far-reaching issues including an assessment of countries readiness for COVID-19 containment.

On March 11, 2020, while declaring COVID-19 a pandemic, WHO reported global confirmed cases at 58, 516 and global death at 2,466. All things being equal, WHO would have determined and announced the source of COVID-19 at this occasion of declaration of a pandemic – the outbreak already running into its third month. Similarly, the 3rd Expanded IHR Emergency Committee convened by the D-G of WHO issued on May 1, 2020, its recommendations, including that WHO works to identify the source of the outbreak among other recommendations. Again this recommendation would have spurred the WHO to conclude action on determining the source of the outbreak before the WHA resolution came.

As far back as February 8, 2020, the WHO announced her engagement of nearly all social media giants (Facebook, Google, Tik Tok, Twitter, etc.) to promote accurate information about COVID-19 and counter negative infodemics propagated by so-called conspiracy theorists. Recall that the origin of SARS-COV-2 and the source of infection were at the epicenter of negative infodemics surrounding the COVID-19 pandemic. Four months later on June 29, 2020, WHO-convened first infodemiology conference commenced. If the WHO sincerely intended to establish the true source of the COVID-19 outbreak, this infodemiology conference provided a most appropriate and auspicious platform to debunk the so-called conspiracy theory on COVID-19 with evidence-based proof. This opportunity was not utilized, deliberately.

Hence, the abdication of Resolution WHA 73.1 (9(6)) is only a continuation of previous deliberate evasion by China and the WHO.

What can be Done to Actualize the Objective?

If we “follow the science” as generally advocated,^[18] and follow the practice of established epidemiological investigation process as well,^[19] we will accurately determine the source of COVID-19 outbreak in Wuhan, China, within a reasonable time frame of 14 days and at minimal cost.

a). Define/re-define our objective and mandate clearly.

The most rational objective, in the light of our prevailing circumstances, should be “to determine the source of the outbreak of SARS-CoV-2 in Wuhan, China and the route of introduction of the infection to the human population”. The use of the term “origin tracing” should be de-emphasized as it is ambiguous, diversionary and misleading. Studies focusing on the circulation of SARS-CoV-2 and its related ancestors, siblings and descendants in other countries prior to December 31, 2019 are mere academic exercises that overload us with task-burden but with diminished practical value in the present circumstance. If we correct this misalignment in objective setting, management by objective (MBO) and rational decision approach would enable us shelve all unnecessary ‘overload’. Obviously, it is not rational spending our scarce resource on so-called origin tracing in other countries when we have not determined the source of infection in Wuhan, China.

b). Establish rational hypotheses for epidemiologic investigation.

At present, no study on the so-called origin tracing has established any conclusive findings on the SARS-CoV-2 outbreak in Wuhan, China. It is therefore most rational that all possible sources of outbreak and pathway of transmission remain open for epidemiologic investigation, including:

1. Direct zoonotic spillover

2. Introduction through an intermediate host
3. Introduction through cold/food chain products
4. Introduction through a laboratory incident
5. Any other possible pathway any study group deems proper to consider.

c). Adopt confirmed genetic sequences of SARS-CoV-2 for use in molecular epidemiology.

From our preceding data table, on January 9, 2020, the WHO disseminated that the cause of the outbreak was a novel coronavirus as identified by Chinese Authorities. It is not reported that there was an independent confirmatory exercise by the WHO on the aetiologic agent. A few days later on January 11, 2020, the WHO disseminated to all stakeholders the genetic sequences for the novel coronavirus as received from Chinese Authorities. Again, it was not reported that the WHO subjected the genetic sequences received from Chinese Authorities to any confirmatory process. These omissions might appear negligible at face value, but they have serious practical implications since established scientific processes and official precedent require 'confirmation'.

It is suggested that the genetic sequences for SARS-CoV-2 to be used for official WHO-convened studies should be confirmed by a dual pathway:

1. Confirmation with records of genetic sequences of index case(s) in Thailand, being the first reported confirmed case(s) outside China directly imported from Wuhan as reported on January 13, 2020 (see data entry).
2. Confirmation with genetic sequences of SARS-CoV-2 successfully grown in the laboratory by Australian Scientists as announced on January 29, 2020 (see data entry).

The above two confirmatory processes will provide both in-vivo and in-vitro first order genetic sequences outside of China for background template in molecular epidemiology in subsequent studies. This confirmation will provide the necessary assurance that we are actually 'tracing' the trails of the true candidate 'SARS-CoV-2' and not innocently but erroneously trailing a 'sibling coronaviruses'.

d). Draw a red epidemiologic investigation circle of 2km radius from the point of the cluster of earliest reported cases for detailed epidemiologic investigation without exemption.

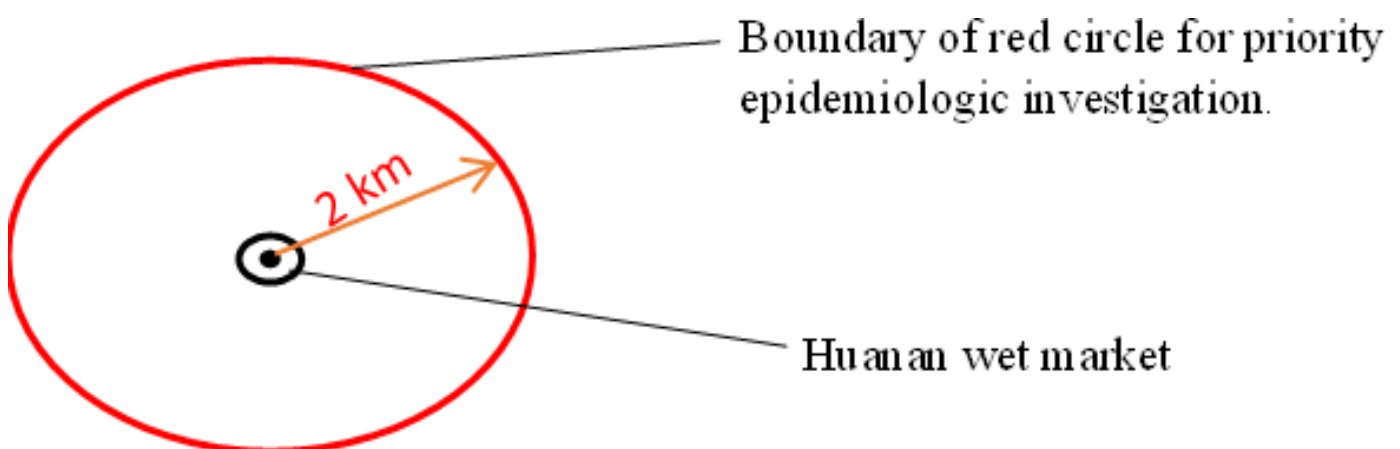


Figure 2: Epidemiologic Red Circle

As consensus opinion appear to converge on the Huanan wet market as the epicenter of the reported outbreak including the Worobey study, [20] the center of the red epidemiologic circle should be placed at the center of the Huanan market. Any structure, facility or institution within 2km radius should be investigated, inside-out and upside down. Since the Wuhan Institute of Virology falls within this red circle, it should be accessed and inspected also.

e). Upcoming WHA should review resolution WHA 73.1 (9(6)) to rephrase the mandate to the DG of WHO to:

1. Reflect the mandate-objective more appropriately as “to determine the source of the outbreak of SARS-CoV-2 in Wuhan, China and the route of introduction of the infection to the human population”.
2. Prescribe unfettered access by the study team to any data, record, site or facility as may be deemed necessary and direct Chinese Authorities to comply accordingly, with sanctions for non-compliance.
3. Direct the DG, WHO to maintain neutrality and impartiality and accord equal status to all Member-States including China.
4. Enjoin the WHO to report successful implementation not later than the next WHA.

CONCLUSION

Determining the source of an outbreak is both an important and standard epidemiologic practice that assists in devising and sharpening most appropriate remedial responses. COVID-19 pandemic will not be an exception. It is an unacceptable indictment of the scientific community that up to the fifth year into the COVID-19 pandemic, the source of the outbreak and route of introduction of the infection to the human population in Wuhan, China, has not been determined. This, despite our fledging and bubbling capacity (including molecular epidemiology) to determine same within record time of 14 days. Obviously, there are errors of commission and omission on the part of key operators and stakeholders.

Undoubtedly, if we adopt as an unwavering objective (output) to determine the source of COVID-19 outbreak in Wuhan, China, and pursue same diligently and committedly adopting the approaches of management by objective (MBO) and rational decision model to manage existing and emerging data, information and experience, our set objective will be achieved in record time of about 14days.

We enjoin the upcoming WHA to own up and review Resolution WHA 73.1 (9(6)) as appropriate. We enjoin Member-States of the WHO to remain vigilant, maintain a unity of purpose and reduce flux in their inter-relation. We enjoin the WHO to be bold, neutral, impartial and committed to the discharge of her mandates and responsibilities without any iota of abdication and deference. We enjoin Chinese Authorities to be more open and accommodating to international study groups. The hardline opposition to the study/investigation of laboratory incidents is unnecessary and misplaced. Even if the worst-case-scenario of laboratory incident is eventually determined as source of COVID-19 outbreak, its implications may not be as serious as feared by China. After all, similar laboratory incidents have occurred in many other countries [21] including the United States and no one was jailed.

If a laboratory incident in Wuhan is eventually implicated, its value will be in informing and upgrading preventive processes in China and in spurring the international community to an awakening and re-examination whether or not the apparent interest in investing in so-called biological laboratories across many countries is a wise choice for humanity.

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