Footprints of CAP（Clean Air Practice）Promotion Activities

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Hiroshi Kase

At the end of March 2020, the new coronavirus SARS-CoV-2 infection began to spread.

In the midest of so much complicated information, I wanted to deliver reliable scientific information to my friends and acquaintances (Dear You), so I began to distribute the "New Coronavirus Newsletter" every day. In 2023, the third year since then, the pandemic has not subsided, and the New Corona Newsletter has finally exceeded No. 555 (2023.01.25).

It was August 2020, five months after we started sending out the Newsletter.
With a strong desire to become a bible for "not getting infected" and "not being infected", we have published a booklet "Guidebook for Preventing Infection with the Novel Coronavirus SARS-CoV-2".

Introduction to the booklet
"The most susceptible infectious route is airborne transmission through aerosols, which is generally unrecognized. This is what causes the infection to spread. It is no exaggeration to say that unless we respond based on the importance of airborne transmission, nothing can be done" stated.

This guidebook recommends that the prevention of airborne transmission be given the highest priority among the three routes of SARS-CoV-2 transmission and outlines specific ideas and actions to prevent infection, including the use of CO_2 monitors.

Fortunately, it was well received, and the circle of loyal users gradually expanded, mainly through the word of mouth of DearYou. It has been distributed to several companies, clinics, universities, high schools, sports clubs, etc., with a solid response. Since then, it has been revised and is now in its 8th edition. At the same time, a simplified version of the "Guide to Preventing Infection with SARS-CoV-2," which compiled excerpts from this guidebook into a single A4 sheet, and was revised each time the guidebook was revised, the latest being the 14th edition.

In the fall of 2020, I submitted a newspaper post to several companies under the title

"How not to get infected: Let's prevent airborne infections," but none of them were adopted. Since the beginning of the pandemic, droplet and contact infection control measures have been officially recommended, and airborne transmission has been considered non-existent. There was no predisposition to accept the importance of airborne infections, and it was premature.

In 2021, the Asahi Shimbun Apital dated January 25th reported, " Local governments have begun to measure CO_2 concentrations at restaurants and other establishments to determine whether ventilation is adequate done a countermeasure against the infection of SARS-CoV-2. Examples of Toyohashi City, Aichi Prefecture, and Kanagawa Prefecture was reported to begin renting 400 CO_2 monitors free of charge to restaurants and bars. From around this time, the introduction of CO_2 monitoring and ventilation gradually increased.

At the end of April 2021, the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) finally officially recognaized airborne transmission by aerosols.

May
This website, "PointPath-Land" (https://pointpath.jp/) has been opened.
The main purpose is to promote the "Guidebook for Avoiding Infection" and its idea, but we also aimed to create a place where people can enjoy science and relax, such as "COVID QA," a dialogue related to COVID-19, and "PointPath-Village," a section on nature and hobby.

August,
As the number of people infected with the Delta variant surged, we began to receive a variety of comments and suggestions from Dear You, including encouragement to introduce CO_2 monitors to local schools and specific measures for ventilation, and we began to feel that we are “doing this together”.

One of the major events was the following email (dated August 12) from my college classmate H.A.

"One of the books I bought at Book-Off on the way home was the famous British nurse Florence Nightingale's "Notes on Nursing" (1854), and when I browsed it on the train on

the way home, the importance of ventilation was emphasized in the 1st chapter "Ventilation and Warming." I was surprised to see that it gave specific examples of cases of poor ventilation and described in detail the harmfulness and how to ventilate it."

This amazing email continues. "The following description is even more noteworthy..."
“I was pulling out the text of Dr. Angus Smith's air-testing apparatus in chapter 6. This was written about 160 years ago, and it fits perfectly even with the current coronavirus pandemic, isn't it?”

Dr. Angus Smith's description of the air tester is as follows: " Dr Angus Smith’s air test, if it could be made of simpler application, would be invaluable to use in every sleeping room and sick room. Just as without the use of a thermometer, no nurse should ever put a patient into a bath, so should no nurse, or mother, or supervisor, be without the air test in any ward, nursery, or sleeping room. However, for practical use, it must be as simple and compact as a thermometer."

Nightingale recognised that an air tester like a thermometer was absolutely necessary, whereas at the time there was really no easy way to measure fresh air, and the availability of such a measuring instrument was her dream. Now, about 160 years later, it has become a reality with a CO2 monitor! Fresh air has been visualized as a numerical value ppm, making it easy for anyone to understand it accurately.

This story is introduced to Dear You in New Corona Newsletter No. 352 (August 17, 2021).『Dear You,　… As H.A. stated, "This was written 160 years ago and applies perfectly to the current SARS-CoA-2 pandemic," I believe it contains important things that everyone should practice to protect people from infectious diseases and various illnesses and to improve their health even after SARS-CoV-2. Above all, what was impossible in Nightingale's time is now possible thanks to the science and technology of "ventilation systems and CO_2 monitors".

Nightingale's long-cherished wish can be fulfilled if everyone is willing to do so. I'm telling you to be aware of this. Our activities are of such a nature that if we find even one breakthrough, it will spread naturally. Because anyone can do it if they want to. And the times are moving in that direction.』

Nightingale is said to have learned a wide range of liberal arts from her tutors, including

Greek philosophy, mathematics, astronomy, economics, history, art, music, painting, geography, history, and psychology. In 1860, at the 4th International Statistical Conference (the predecessor of the International Statistical Association), she proposed and adopted a unified standard for sanitary statistics, arguing that "different ways of taking statics do no allow for effective comparative analysis."

Backed by Nightingale's unremitting passion and dedication to the truth, with a firm conviction, refined reason, and objective measures (statistics) that broadened the perspective of humanity as a whole, the "Notes on Nursing " was created. How wonderful!

At the Okinawa Prefectural Public Health Symposium held in 2020 as part of the 200th anniversary of Nightingale's birth, President Yoshihide Kinjo sent the following online message.

COVID-19 and Public Health Activism: What Nightingale Thinks

One of the words left by Nightingale was "Illness is born from the way we live, and is healed by the way we live."

In fact, lifestyle habits (diet, smoking, drinking, exercise, etc.) are risk factor not only infectious diseases but for morbidity and mortality from non-communicable diseases such as cancer, cardiovascular disease, diabetes, etc. Approximately 20% of those with severe COVID-19 are prevalence or elderly with non-communicable diseases such as obesity, hypertension and diabetes. The results showed that even those who recovered had residual sequelae such as myocarditis and neurological symptoms.

…omission...

So far, the world has confirmed the uncertainties of COVID-19 one by one. The doors opened by COVID-19 are leading to a post-coronavirus world, such as collaboration in the relevant scientific fields, socio-economic collaboration, and cooperation among citizens that have emerged in this process. In order to prepare for new health crises and threats, we must continue to ask the question of economy (governing the world and saving people) and hygiene (protecting people's lives) in people with different economic and health circumstances.

Finally, we should reflect on the message of Richard Doll (1912-2005), "Death in old age is inevitable but death before old age is not," and apply both the negative and positive

results of COVID-19 to public health initiatives consider healthy communities.

Thinking about the COVID-19 pandemic, what research-based practice would Nightingale implement?

Very impressive. In New Corona Newsletter No. 380, I asked Dear You "What do you think of CAP as one of the answers? "

On August 28, we launched the Clean Air Practice (CAP) and established the CAP Promotion Secretariat.

I also spoke directly with Hitoe Kanai, founder and director of the Nightingale Institute of Nursing, on the phone about the concept of CAP. "The concept of CAP is not wrong, CAP activities are very good, and I encourage you to go ahead." We receive these words, and they became a emotional support for our promotion activities.

Specific promotion activities include the following goals.
"CAP is a call for a constant breathe of fresh air in the daily cycle of "wake up in the morning, live, work, play, eat and sleep."

The promotion activities of the CAP are:
(1) CAP campaign: First, each indivisual need to recognize the importance of CAP. Governments, local governments, and related organizations also need to mobilize in the CAP campaign.
(2) Standardization of CO_2 monitoers, ventilation equipment (air purifiers, air conditioners with ventilation functions etc.).
(3) Establish operational regulations for ventilation and ventilation efficiency in response to SARS-CoV-2 in buildings and develop necessary legislation.
(4) Budgetary measures for CO_2 measuring instruments, ventilation equipment, and ventilation systems: Position these as prior investments in society after the end of SARS-CoV-2 infection.

On August 12, Takeshi Hondo, Associate Professor of Tohoku University, and 38 other expert volunteer in Japan issued an "Urgent Statement of Scientists Calling for Measures against SARS-CoV-2 Infections Based on Recent Findings" urging the government to strengthen infection control measures, particularly aerosol airborne transmission.

During the summer and fall, with the help of Dear You colleagues, we developed various activities aimed at proposing infection prevention measures and promoting the CAP.

- ☐ September 26: Invited to a meeting of the Rotary Club of Tokyo Ikebukuro to talk about infection prevention measures and CAP.
- ☐ November 28: Architects Tsutomu Abe, Toshio Ojima, and Hiroshi Ota held a roundtable discussion with CAP promotion members and exchanged valuable view on housing construction, new urban infrastructure, and the CAP proposal.
- ☐ Proposal for "Basic Infection Prevention Measures and CAPs to End the Explosion of SARS-CoV-2 Infections" was provided to 12 prefectural governors , including the Tokyo metropolitan area, 14 municipal mayors, the chairman of the Tokyo Metropolitan Medical Association, and other leaders - the Cabinet Office's Task Force on Infection diseasese, the minister in charge of infectious disease control (submitted six times), and 12 Diet members of the ruling and opposition parties. In addition, since this piriod coincided with the LDP presidential election, the proposal was submitted to all presidential candidates.

  While most were confirmed that they had read the proposal directly, overwhelming number of the Diet from both the ruling and opposition parties did not respond. Many of the local governments did responded. Most of them agreed with the purpose of the proposal but the majority of them indicate that they would consider them as part of their respective local government’s infection control measures.

  In Suginami-ku Ward, Tokyo, thanks to the efforts of the Councilor I.I., a supplementary general account budget for “Implementation of Infection Prevention Measures by Distributing CO_2 Monitoring Devices," was passed at a special council meeting, and it was decided that approximately 5,000 CO_2 monitors will be distributed to restaurants and facilities in the ward.

  F.T., Toshima-ku Ward Councilor, S.K., Machida City Councilor and H.E., Omachi City Councilor supported the proposal and activities, and encouraged the coucil and the field to improve ventilation by introducing CO_2 monitors.
- ☐ In October, through the intercession of S.K., Machida City Councilor and I.S., National Diet member, I held a Zoom meeting (October 11) with two officials in charge of SARS-CoV-2 infection control at the Ministry of Health, Labour and Welfare (MHLW) to discuss proposals for infection prevention measures and CAP activities.

At the meeting, I heard the MHLW's views on the five requests submitted in writing in advance. The requests are: (1) Implementation of measures to make ventilation control by CO2 monitors mandatory in the infection prevention certification system of each municipality, (2) Consideration of measures to support the promotion of CAP by the MHLW at that time, (3) Thorough awareness and further enhancement of the subsidy system for equipment necessary for ventilation control by CO_2 monitors. (4) Standardization of CO2 monitors as a policy and a system to link them with smartphones, (5) The CAP presents a new form of politics and society in which the leadership of the national and local governments and the awareness and voluntary action of individual citizen work together.

In response, MHLW first expressed the following views on infection prevention measures:

1. As basic infection prevention measures, avoiding the 3Cs (especially the 5 high-risk situations), wearing masks, and washing hands are effective, and we request thorough implementation of these measures.
2. Regarding specific ventilation procedures, based on previous findings and the standards of the Building Sanitation Act, we have prepared the following materials and leaflets summarizing point to keep in mind, such as "ventilating at least once every 30 minutes" and "keeping the CO_2 concentration below 1,000" on our website.
3. The Building Sanitation Act requires owners of specified buildings such as entertainment halls, department stores, and offices above a certain size to maintain and manage them in accordance with the Building Environmental Sanitation Management Standards, which stipulate standards for air quality.
4. Considering the importance of ventilation as a countermeasure against SARS-CoV-2 infections, owners of specified buildings are informed through local governments and other organizations about "continuing appropriate maintenance management based on laws and regulations" and "re-inspecting of ventilation equipment."

The MHLW's position on the CAP was as follows.

"In the general situation of SARS-CoV-2 infection, it is believed that the route of infection is droplet infection and contact infection, and that airborne infection is not occurring. On the other hand, as you probably know, some studies have shown that aerosols can also be transmitted through air. However, the scientific finding is not yet

clear, and we do not under the impression that ventilation can prevent infection. On the other hand, as has been mentioned at government meetings, there are cases where clusters are occurring due to the three Cs, so I feel that thorough ventilation in light of this is one style of reducing the risk of infection, and I feel that it is good to prepare the environment in this way. So, it is quite difficult for the government to officially approve and push CAP activities, but I would like to share the issue of CO2 meters with the MHLW jurisdiction and receive it as a requirement. Thank you for telling us about CAP activities."

The response of the MHLW was sincere and positive about infection control and CAP and showed the direction to make it a matter for consideration within the ministry.
It should be noted that 18 days after this meeting, on October 29, 2021, the MHLW officially recognized the airborne route of SARS-CoV-2 transmission.

It should be noted that 18 days after this meeting (October 29, 2021), the MHLW officially recognized the aerosol route of SARS-CoV-2 transmission, which was posted on MHLW website. The importance of aerosol transmission and ventilation to prevent it has finally been recognized by MHLW as a countermeasure against SARS-CoV-2 infection (although at this point, the MHLW also stated that aerosol transmission is not airborne).

Subsequently, ventilation and CO_2 monitoring have gradually been added to infection control measures, and the public's perception has changed. While Takeshi Hondo and his colleagues have done a great job, I believe that our proposals and CAP dissemination activities have also made a certain contribution.

In the fifth wave caused by the Delta variant that began around late June 2021, Japan succeeded in converging. However, the outbreak of the Omicron variant that occurred at the beginning of the year in January 2022 reached a record high of more than 200,000 new infections per day in February 2022. The government did not restrict activities in order to prioritize social and economic activities, leaving infection control measures to the people on their own initiative. If this situation continued, containment of SARS-CoV-2 was not easy, and the arrival of the next wave could not be suppressed, so the wave of the SARS-CoV-2 epidemic had to continue repeatedly for the time being.
With the end of the pandemic, people's strong desire to “return to normal life" has given up, and they have no choice but to continue to pursue an appropriate balance between controlling infections and maintaining social and economic activities.

"We can end COVID-19, we can return to normal life." We have continued to disseminate , practice, and spread this message.

In an article titled "Science Still in a Race Against The Coronavirus" in the New York Times on August 12, 2022, Sarah Covey, an evolutionary biologist at the University of Chicago who studies immunity, viral evolution, and epidemiology, noted, "We need investment toward much better ventilation and filtration in our public buildings." "That not scientifically exciting. It's just important and cost-effective."

In addition, the September 28 issue of Chemistry World, a monthly scientific journal published by the Royal Society of Sciences, published an Editorial, "Can we clean Covid from the air around us?" It stated that "It's time to freshen up the air" , "COVID has brought our attention back to the challenge of 'fresh air indoors' advocated by Florence Nightingale in her 'Notes on Nursing'" and "Meteorologists, epidemiologists, and astronomists need to ensure adequate ventilation of large indoor areas." All relevant disciplines, including engineers and medical professionals, should cooperate," said Marel Leomana, an indoor environmental engineer.

The February 8, 2023 issue of Nature discussed the need for science to make indoor air a fresh air environment, stating that "proper science on indoor air is necessary."

When we notice it, the world seems to be indeed moving in the same direction as our activities. It is a path that Florence Nightingale had already paved some 160 years ago.

Equally for everyone who notices and acts, a healthy and safe society free from infection will come from beyond