

Enhanced Covid Avoidance Approach

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Abstract

Non-pharmaceutical Interventions (NPIs), also known as community mitigation strategies, are additional approaches for slowing the spread of pandemic diseases and other illnesses until preferred COVID-19 elimination strategies (vaccinations) and/or preventative medications are fully implemented. NPIs are personal, community and environmental activities to sanitize and allow for proactive protection from the COVID-19 virus and its variants. To avoid infection, it is important to adhere to the 4 W's to avoid COVID-19: Wear a Mask, Wash Your Hands, Watch Your Distance, and Watch Your Vitals (Warning Signs) using a Vital Sign Monitor. Should individuals get exposed or diagnosed as having the virus, when home-bound or in quarantine, they can benefit from the use of remote health monitoring devices, such as the Dyno50. These devices monitor vital signs, such as (1) changes in blood pressure (BP), (2) respiration rate for breathing function, (3) accurate blood oxygen saturation levels (Spo2), (4) high-resolution oral body temperature for fever and basal temperature, and (5) instant medical-grade ECG, tracking of the heart's electrical pattern. These vitals can be monitored multiple times daily in the home and digitally transmit data frequently to physicians, healthcare professionals or caregivers.

Keywords: The 4 W's, NPI's, Non-pharmaceutical Interventions, Vaccinations, SpO2 Low Oxygen Levels, COVID-19 elimination strategies, remote health monitoring of vitals, remote health monitoring devices, Dyno50.

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I. Introduction

The year 2020 introduced the COVID-19 pandemic which overwhelmed health-care systems and forced school and business closings, leading to a global negative economic impact. The year 2021 will continue to be problematic as multiple variants of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that are emerging⁽¹⁾. New mutations have emerged from Brazil, South Africa, and others. A key concern is whether COVID-19 vaccines can safeguard against infection or disease from the new SARS-CoV-2 variants⁽²⁾. Recent COVID-19 vaccines have been developed with efficacy of 94–95%⁽¹⁾. One disadvantage for some of these vaccines is the requirement of low temperature storage. Other new vaccines that do not have temperature requirements can be delivered more easily^{(2) (3) (4)} and perhaps less effective. Vaccinating the world's population must address this pathogen's ever-changing evolution to evade immunity.

A COVID-19 elimination strategy of vaccination is the preferred option. However, until the population can be vaccinated, one measure is to combine vaccines with the 4-W's (Non-Pharmaceutical Interventions NPIs): Wear a Mask, Wash Your Hands, Watch Your Distance, and Watch Your Vitals (Warning Signs) using a Vital Sign Monitor⁽⁵⁾. Individuals who are exposed or diagnosed as having the virus, when home-bound or in quarantine, can benefit from the use of Remote Health Monitoring (RHM) devices, such as the Dyno50⁽⁵⁾ (a product of DynoSense Corp.). RHM devices monitor vital signs, such as (1) changes in blood pressure (BP), (2) respiration rate for breathing function, (3) accurate blood oxygen saturation levels (Spo2), (4) high-resolution oral body temperature for fever and basal temperature, and (5) instant medical-grade ECG, tracking of the heart's electrical pattern⁽⁵⁾. These vitals can be monitored multiple times daily in the home and digitally transmit data frequently to physicians, healthcare professionals or caregivers in hospitals. Medical research combined with personal responsibility in the form of the 4-W's is recommended a solution to end this world-wide pandemic⁽⁵⁾⁽⁶⁾.

Patients who are diagnosed with COVID-19 are required to self-isolate usually for at least two weeks until the infection is clear. During this period, some of these patients will still be at risk for complications, so they need comprehensive home support⁽⁷⁾. Others who have been exposed despite following recommended NPI observance may be quarantined in their homes for a specified period of time. RHM devices can monitor vital signs and keep the patients digitally connected to nurses, doctors, caregivers, and medical staff.

Non-Pharmaceutical Interventions

The 4-W's, which are Non-pharmaceutical Interventions (NPIs), also known as community mitigation strategies, are alternate options to vaccinations and medications ⁽⁸⁾ for slowing the spread of pandemic diseases and other illnesses. A new virus spreading quickly among the population worldwide is a pandemic flu which causes illness among those with little or no immunity to fight it. The 4-W's, both personal and community, are ways of controlling pandemic flu and respiratory illnesses until vaccines or cures are more readily available ⁽⁸⁾.

How the 4 W's (Non-Pharmaceutical Interventions) Work

The impact of a pandemic can be reduced using the 4-W's by delaying the effects of the pandemic to allow time for preparedness and response efforts. The 4-W's can reduce the number of individuals who are exposed and infected. By decreasing the number of infected individuals, fewer people will contract the virus and die, allowing doctors and hospitals to better handle the case loads. If people can avoid contracting the virus, they can continue working and keep businesses and public utilities in operation ⁽⁸⁾.

Personal NPIs

Protecting one's self and others from respiratory illnesses like the flu starts with the individual. It is important for individuals to adhere to the 4-W's ⁽⁵⁾⁽⁶⁾.

CDC Advice:

- If sick, or displaying symptoms of COVID, stay home
- Use a tissue to cover coughs and sneezes
- Use a sleeve to cover coughs and sneezes if tissue unavailable
- Use soap and water to wash hands often
- Alcohol-based hand sanitizers can substitute for soap and water
- Wear a mask, or double up by layering two masks
- Wear a plastic face shield in addition to wearing mask(s)

Community NPIs

Social Distancing

- Isolate the sick to prevent them from infecting others
 - People with influenza-like symptoms should voluntarily stay home for the infectious period, approximately 7–10 days after becoming ill
 - The sick should not go to work or to grocery stores, or attend public gatherings ⁽⁶⁾.
- For those who are not showing obvious signs of virus, observe social distancing ⁽⁶⁾ interventions in restaurants, grocery stores, schools, workplaces, businesses, and at public events
 - Stand a minimum of 6 ft. apart from others
 - When shopping, allow two grocery cart lengths between customers when in line
 - Observe one way arrows in grocery aisles to avoid facing others when shopping
 - When dining outdoors, sit a minimum of 6 ft. from other tables
 - Avoid public events unless otherwise advised

Environmental NPIs

Environmental NPIs include routine surface cleaning to help eliminate viruses and bacteria from frequently touched objects and surfaces ⁽⁸⁾. When sick or infected individuals cough, sneeze, or talk, they can spread viruses to others through droplets that emanate from the nose and mouth. Viruses also may spread when by touching contaminated surfaces or objects, and then touching eyes, nose, or mouth. A flu virus on a surface can live for up to 48 hours, while on the hands for just 3-5 minutes. Routine surface cleaning is a non-pharmaceutical effort that provides an extra layer of protection even if people are vaccinated ⁽⁶⁾.

Keep the environment free of contagious bacteria/germs ⁽⁶⁾

- In public restrooms, avoid touching surfaces with your bare hands
- Routinely clean frequently touched surfaces, to include:
 - Doorknobs
 - Desks
 - Toys
 - Light Switches
 - Faucet handles
 - Refrigerator handles
 - Toilet flush handles

Limited Indoor Activities

To reduce the spread of COVID or other respiratory illnesses, it has been necessary to limit indoor attendees in such as places of worship, childcare centers, schools, concerts, festivals, sporting events, conferences, and other settings where people gather in close contact ⁽⁵⁾

Monitoring Health Vital Signs in Patients with COVID-19

A recent study showed that patients with COVID-19 deteriorate more rapidly than in other viral pneumonias ⁽⁹⁾ ⁽¹⁰⁾ ⁽¹¹⁾. Some individuals who have COVID-19 have dangerously low levels of oxygen. The study suggests that early warning systems could be enhanced by accounting for the degree of oxygen usage for patients with COVID-19 ⁽⁹⁾ ⁽¹⁰⁾ ⁽¹¹⁾. This has potential implications for the ability of early warning scores to identify deteriorating patients ⁽⁹⁾. RHM's, such as the Dyno50, can be a valuable aid in tracking health vitals for home-bound patients ⁽⁵⁾. Results are accurate, clinically tested, completed in 30 seconds, and AI algorithms have personalized health insights by synchronizing with the DynoLife app ⁽⁵⁾.

Remote patient monitoring: Comprehensive Care at Home ⁽⁷⁾

To detect changes in blood oxygen levels, medical devices can be sent to a patient's home to monitor vital signs to daily assess symptoms. Data from these remote health monitoring devices can be sent to health professionals for consistent monitoring ⁽⁷⁾. There are two tracks for patients with COVID-19: one for lower-risk patients, and one for patients with moderate to high-risk comorbidities for complications ⁽⁷⁾ ⁽⁸⁾. High risk patients use RHM devices several times daily at home to measure vital signs. To assess any changes in their biometric data, patients are monitored 24/7 with one goal being detection of significant changes in the patients' vitals as soon as possible. COVID-19 patients living at home self-isolate as they recover, so they need to stay connected with their health care team, especially if a concerning diagnosis is detected ⁽⁷⁾ ⁽⁸⁾.

II. Conclusion

A combination of careful observance of the 4-W's (NPIs), Wear a Mask, Wash Your Hands, Watch Your Distance, and Watch Your Vitals using a Vital Sign Monitor, whether personal, environmental, or community may stave off the exposure and contraction of the COVID-19 virus. For individuals who are exposed or are diagnosed as having the virus and are home-bound or in quarantine can benefit from the use of remote health monitoring devices, such as the Dyno50. Interactions with health care teams reassure patients and affirm that they are being monitored and cared for ⁽⁷⁾ ⁽⁸⁾.

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