

MASK GUIDANCE

Don't Share Air! - Mask Fit Matters

Covid-19 is airborne and highly contagious. You become infected mainly by inhaling aerosols which are exhaled by an infected person ("source"), even if they are vaccinated and feel well.

The virus in these aerosols is more concentrated in the air around the source, but they float and spread like smoke and linger in the air for hours, even if the source has left the room. While social distancing helps, when you're indoors or in outdoor crowds, ultimately everyone is breathing in some of each other's air.

The probability of encountering a contagious person is high, and it's not always apparent.

Covid is contagious for a few days before symptoms start, and about half of all infections are spread by people before they realize they are sick. While Covid tests are helpful, accuracy varies and there are many false negative results. Vaccines reduce the chance that an infection results in a severe case or death, but breakthrough infections are common and they can become severe. Long Covid can happen to vaccinated or unvaccinated individuals who have even mild cases, with potential for damage to the lungs, brain, heart, kidneys and other organs.

So, while it takes a combination of several layers of protection to stop transmission, the most effective measures are those that prevent us from sharing our air.

Masks and ventilation are our first lines of defense against getting infected with Covid-19. But all masks are not created equal - fit and filtration make a big difference in how well your mask will protect you and others.

When everyone present is wearing well-fitted, high-filtration N95, KN95, KF94, FFP2 or elastomeric masks over the nose and mouth, especially when combined with good ventilation and vaccination, the chance of infection is greatly reduced.

A well-fitted mask is one that forms a full and complete seal around the face of the wearer. Ideally, all of the exhaled air passes through the particle or aerosol filtering material that the mask is made of, and none of the air passes through gaps, holes, or loose connections between the wearer's skin and the seal of the mask.

But when wearing masks that don't filter well, like cloth masks, or don't fit well, like unmodified surgical masks, the chance of getting infected or spreading infection to others is higher than with a high-quality mask. Without any mask, it can take only

seconds to minutes to get infected, even when socially distanced, and wearing a mask below the nose is like wearing no mask at all.

Do's and Don'ts

DO's:

- Do choose a well-fitted, high-filtration (N95, KN95, KF94, FFP2 or elastomeric) mask. If these are not available to you, choose a multi-layer mask with a high quality filter that fits you well. Consider a mask brace or fitter.
- Do handle your mask by the straps with clean hands. Avoid touching the inside of your mask so that you don't contaminate it, and avoid touching the outside of your mask so you don't contaminate your hands.
- Do consider shaving or closely trimming a beard. [Some beard styles](#) may cause a gap between your mask and your face which can allow unfiltered air to get inside the mask. If you need to keep your beard, use a mask fitter or brace to press the mask firmly against your face.
- Do keep your mask on, covering your nose and mouth at all times when indoors or in outdoor crowds with others.
- Do go outside or enhance ventilation/filtration of the air and socially distance when taking off your mask to eat and drink.
- Do minimize the amount of time you are unmasked if you must unmask indoors. If you must eat indoors, choose better ventilated locations, lift your mask when taking a bite or sipping fluids (drink through a straw if possible), avoid touching the inside of the mask, and restore your mask while chewing.

DON'Ts:

- Don't wear a mask that fits loosely and leaves gaps, or is too uncomfortable to keep on.
- Don't wear a mask that is damp, soiled, damaged, or has become harder to breathe through.
- Don't remove your mask:
 - While speaking, even if distanced – that's when you emit even more aerosols!
 - When seated – you are still sharing indoor air, regardless of distance.
- Don't crowd, lean in close to people to speak, or sit very close to others.
- Don't turn up the music above conversation level.
- If you choose to dine indoors (very risky!):
 - Don't sit in a crowded, poorly ventilated area.
 - Don't linger – keep duration short.
 - Don't leave your mask off throughout a meal – keep it on when not actively eating or drinking, and if possible, put back on while chewing.

How to Up Your Mask Game:

Choose a mask with the best possible fit and the best possible filtering efficiency. While almost any mask is better than no mask, aim for the best available protection.

Check and Maximize the Fit.

Your mask should create a tight seal all around with no air leaking around the edges.

Do a fit test:

1. Put on the mask, making sure the nose wire is rounded tightly against the bridge of your nose.
2. If the mask has two straps, make sure one strap is above your ears and one below.
3. Lightly hold the mask in place and inhale sharply. While inhaling, see if you feel a sensation of air or coolness around the edges of the mask, especially the area around your nose.
4. Next, without holding the mask, exhale normally and pay attention to whether the flow of air goes around the edges of the mask or through the mask.
5. If you feel air leaking around the edges, adjust the mask and try again:
 - Try to round the nose wire around the pad of your thumb or finger to smooth out the sharp peak and see if it helps.
 - Devices like strap adjusters, earloop toggles, or an external mask brace can help seal the leaks. Avoid under-mask brackets as they can worsen the fit.
 - The [knot-and-tuck technique](#) may improve the fit of medical masks, but avoid crossing the earloops as this can worsen side gaps.
 - If your eyeglasses are fogging or your eyes feel drier than normal when you wear the mask, you may still be having some upwards leakage of air when you breathe out. Facemask tape products can help.
 - After adjusting, if the mask is still leaking, try a different model.

For best filtering, choose the highest possible quality of material that has been designed for respiratory protection.

Ensure authenticity: Avoid fakes - see Resources below.

Add eye protection: Infection by particles entering the eyes is also possible anytime you are in a space that has airborne particles. Combine a mask with non-fogging goggles or other eye protection for improved safety. Even using prescription or non-prescription glasses provides some defense against infection.

Which Types of Masks are Best, and Where to Find Them:

Best

PAPR - Powered Air Purifying respirators.

- A PAPR consists of an enclosed headgear (half mask, mask or hood) with a fan, filter and power source.
- It pumps in filtered air for you to breathe.
- Some models also filter your exhaled air, but traditional PAPRs (e.g. 3M) may not have filtered exhalation valves. These models as-is will only protect you, but not others, but they can often be combined with another mask.

Top Quality

Elastomeric half facepiece or full facepiece reusable respirators.

- Full facepiece respirators also provide eye protection.
- Very protective for health care workers with heavy exposure to Covid-19, but anyone can wear these.

High Quality

Respirators.

- N95, KN95, KF94, FFP2 masks are classified as respirators.
- Worn correctly, they provide about 95% filtration of airborne particles.

Good

Surgical masks of high quality (ASTM 3) **WITH** modifications.

- According to CDC, surgical masks are only intended for droplet/splash protection. They are NOT classified as respiratory protection against aerosols and therefore are not generally adequate against Covid, though modifications can improve their protectiveness.
- The material filters very well, but they fit so loosely that they block less than 50% of aerosols.
- [Knot-and-tuck technique](#) or use of earloop toggles brings filtration efficiency up to ~75% (see video in Resources).
- Sealing the leaks by adding a mask brace brings filtration efficiency up to ~90%.
- Avoid crossing the earloops or wearing a mask bracket underneath the mask as this may worsen fit.

Layering cloth AND surgical masks in the right combination.

- Well-fitted, 3-ply 100% cotton mask with adjustable nose wire worn over a 3-ply/ASTM3 surgical mask.
- The cotton mask acts as a brace over the surgical mask.
- Pros: Good in a pinch. Up to ~85 – 95% filtration efficiency.

- Cons: Harder to breathe; filtration varies with different products.

Fair:

- Well-fitted 3-layer cotton mask with a nose wire.
- Well-fitted 2-layer cotton mask with a filter pocket and a nose wire.
- Unmodified surgical mask.

Poor: (mostly decorative)

- Single layer cloth masks or gaiters, made of materials that don't block the light.
- 2-3 ply cloth masks with no modifications: ~20–21% filtration efficiency.
- Valved masks (don't protect others).
- Any product that fits loosely, leaving gaps.

Notes: Anything that sits below the nose or mouth does not provide protection. Face shields can provide partial eye protection and can help extend the life of a mask or respirator, but they do not block aerosols.

How to Care for Your Masks

- High quality N95/KN95/KF94 respirators can be reused if they are taken care of according to the following guidelines.
- Reuse surgical masks only if they are clean and dry, with minimal wear and tear.
- Store used respirators or surgical masks in a clean, breathable paper bag at normal room temperature and reuse after five or more days.
- To maintain hygiene, handle your mask only by the straps, with clean hands when putting it on, and clean your hands after storing or disposing of a used mask.
- For daily use, cycle between 5 - 7 (or more) masks. Label bags for each mask by the day of use and replace each mask in the labeled bag after each use, making a non-penetrating checkmark on the outside of the bag each time, to keep track of the number of times used.
- Most high quality N95/KN95/KF94 respirators can be reused about five times, (other than those with changeable filters which are designed for re-use, e.g. Envomask N95). It is not recommended to use them for more than a total of about 40 hours.
- Inspect masks before reuse. Discard a mask if it is damaged, soiled, looking worn-out, or becoming more difficult to breathe through or to adjust due to changes in shape, loosened straps, or any other reasons.
- Carefully fold disposable masks in half without shaking them out, with the inside surfaces touching each other, then cut the strings with scissors to prevent risks to wildlife.

- Dispose of masks carefully in a covered trash can, or place in a plastic bag first if only open receptacles are available, and keep out of reach of children or animals. At this time, surgical masks cannot be recycled.
- Do not expose used masks to excessive heat (hair dryers, microwaves, ovens)
- Do not clean masks with disinfectants, sanitizing wipes, bleach, alcohol, etc, and do not wash respirators and surgical masks.
- Wash and fully dry cloth masks after every use, by machine if possible, in the warmest water and highest dryer setting for the fabric type, using any kind of laundry detergent or soap. Cloth masks can be machine washed with the rest of your laundry.
- Follow manufacturers' care instructions for elastomeric or other reusables.

RESOURCES

[World Health Network Graphics: Covid is Airborne – The science behind safer indoor gatherings](#)

[World Health Network Resources: Ventilation, Filtration and Masks](#)

[Graphics – Explainer Comics: The Quest of the Virosols](#)

ABOUT MASKS

[Risk of Covid-19 infection with and without masks](#)

[American Mask Manufacturers Association graphics: Choosing the Right Mask](#)

[CDC: Understanding the difference between surgical masks and respirators](#)

[What is a PAPR?](#)

[Eyes can be infected by Covid-19: 4 things to know](#)

[National Library of Medicine Graphics: How to \(and how not to\) wear a face mask](#)

[Wearing a mask under the nose is equivalent to not wearing one at all](#)

[Face mask fit modifications: mask braces and layering](#)

[How to Knot and Tuck Your Surgical Mask to Improve Fit](#)

[Mask Nerd Video: Layering and Mask Fitters \(braces\)](#)

[DIY How to do a Mask Fit Test at Home: Poor Man's Fit Test](#)

[DIY Performing Respirator Fit Test Without a Commercial Kit \(figure 2\)](#)

[Facial Hairstyles and Respirator Fit](#)

WHERE TO BUY AUTHENTIC MASKS AND ACCESSORIES

[ProjectN95.org Non-profit clearinghouse for verified products, proceeds are used to provide equitable access](#)

[3M Aura](#)

[Powecon KN95](#)

[KN95 and KF94](#)

[EnvoMask Reusable N95 with soft gel seal and changeable filter](#)

[Fix The Mask – Mask brace to improve surgical mask fit](#)

[Facemask Tape - Cabeau](#)

[Facemask Tape - Pro Face Mask Tape](#)

HOW TO SPOT FAKES

[CDC: How to identify a NIOSH-approved N95](#)

[Mask Nerd: Mask Product Comparison Data – Look at Filtration Efficiency Column](#)

HOW TO IMPLEMENT A SAFE REUSE STRATEGY TO REDUCE THE RISK OF SELF-CONTAMINATION

[CDC: Implementing Filtering Facepiece Respirator \(FFR\) Reuse, Including Reuse after Decontamination, When There Are Known Shortages of N95 Respirators](#)

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