



# YOUR BODY'S DISEASE DEFENSES

## BUILDING AND BOOSTING THE IMMUNE SYSTEM

Nina Gallaresi, Executive Director, MHBP

**E**very day while you eat, sleep, work, and play, battles are being fought throughout your body. You rarely feel it. But bacteria, viruses, and other microbes are constantly invading from the outside world.

Your body has a defense system for such invaders. It's called the immune system. Your immune system is made up of trillions of cells and proteins. These are found in your blood and every organ of your body. The immune system learns and changes over your lifetime—even before birth.

### BUILDING YOUR DEFENSES

You're not born with a fully equipped immune system. Fetuses can produce some immune protection. But before birth, "the vast majority of protection against infection comes from the mother," explains Dr. Whitney Harrington, who studies immune system development at Seattle Children's Research Institute.

Germ-fighting molecules made by the immune system, called antibodies, are transferred to the fetus through the placenta. They can also be passed to the baby after birth through breastfeeding. Antibodies stick to germs and stop them from infecting cells.

"The peak risk of severe disease from many infections is under six months of life," says Harrington. That's because the baby's immune system is just starting to develop.

Antibodies that are passed along from the mother can last for many months. They help protect a new baby until their immune system starts to develop.

The immune system builds many lines of defense. The cells of the innate immune system provide an early response to danger. They move through the body looking for signs of damage or infection of other cells. Then they destroy those cells.

Another major defense is called the adaptive immune system. It's activated by signals from the innate immune system

and the infectious germs and makes a powerful response. The cells of this system keep a long-term memory of the germs they fight. They also respond to vaccinations and make all your antibodies.

Researchers have found that, like antibodies, some adaptive immune cells also cross from the mother to the fetus. These cells may start teaching the fetus's immune system about germs the mother has been exposed to.

Harrington and her team have been trying to learn more about these cells. They want to understand when this transfer happens and to use it to maximize immune protection provided by the mother.

Through infancy and childhood, your immune system matures and continues to build its own disease-fighting cells. Exposure to germs in childhood helps the immune system grow stronger over time, Harrington says.

### PROTECTION AS YOU AGE

By the time you've reached young adulthood, you've been exposed to many germs. So your immune system is likely to have a strong response to many infections you encounter.

Vaccines further strengthen your defenses. Vaccines expose your immune system to dead or weakened germs, or just pieces of them. That helps your immune cells learn how to fight these threats and remember them without you getting sick.

Certain vaccines are recommended during pregnancy. These boost protection provided by the mother against deadly diseases during a baby's first months of life. Vaccines are then recommended shortly after birth through adulthood.

Some vaccines require additional shots during adulthood to boost your immune system's memory. And some people—depending on their health, job, or other factors—may need extra vaccines to keep them safe. Keep up with current vaccination recommendations.

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But, like other systems in your body, the immune system can begin to decline as you age. These changes can prevent immune cells from working to the best of their ability.

“With age, immune cells lose their ability to respond rapidly and robustly to infection,” says Dr. Ronald Germain, an immune system expert at NIH.

Other parts of your body, such as the heart or lungs, can accumulate wear and tear with age, too. This reduced function puts older adults at greater risk for developing more severe disease from many infections.

Even a bit more damage from an infection can cause an older adult’s organs and tissues to not perform their jobs well, Germain says. That’s why certain vaccines are especially recommended for people over age 50.



## MAKING BETTER DEFENSES

Researchers are still learning how to improve immune responses and vaccines. Some microbes are very good at hiding from the immune system. Many avoid detection by mutating, or changing, so that previously exposed immune cells can no longer recognize them.

Dr. Shane Crotty at the La Jolla Institute for Immunology and his team are trying to take advantage of the body’s way of keeping up with these changes. They’re studying a part of the adaptive immune system called germinal centers. These are areas in the lymph nodes where immune cells go to develop and learn to produce more effective antibodies. Germinal centers form temporarily in response to infection or vaccination. They don’t just produce antibodies against the germs that are in your body. They also produce antibodies against different versions (variants) of those germs that you haven’t been exposed to. Cells in the germinal centers essentially guess at how the virus may change over time.

“Germinal centers are one of the most amazing things your immune system does,” says Crotty. Take the COVID vaccines

as an example. The COVID vaccines developed against the original virus caused people to make antibodies that guarded against other variants.

“All the antibodies anybody developed against other variants from vaccination came from germinal centers,” Crotty explains.

Germinal centers can last in the body for up to six months. And the longer they’re around, the more varied the antibodies they produce.

Crotty and his team are testing if changing the way vaccines are given can help germinal centers last longer. Their recent study tested an experimental HIV vaccine in animals. Researchers gave the vaccine in many small doses over time. This produced antibodies that were more varied and lasted longer than those from the single large vaccine dose.

As researchers continue looking for new ways to protect you from disease, staying current on your vaccines and living a healthy lifestyle are the best ways to boost your defenses.

## VACCINATIONS IN OLDER ADULTS

Staying up to date on vaccines is especially important for older adults. Our immune system helps the body fight infection, but it gets weaker as we age. Vaccines help to strengthen the immune system.

In addition to an annual flu vaccine, other vaccines that are important to older adults include COVID-19, pneumonia, shingles, and TDP (tetanus, diphtheria, and pertussis).

It’s best to get the flu vaccine by the end of October, so you’ll be protected when flu season starts. But it’s not too late to get the shot even a few months later. Certain flu vaccines are designed especially for people ages 65 and older.

Studies show that COVID-19 vaccines make it less likely you’ll get seriously ill or need to go to the hospital if infected with the virus. They also reduce the risk of getting the disease. New booster shots targeting the Omicron variants became available in fall 2022.

The pneumococcal vaccine is recommended for all adults ages 65 and older. It protects against serious infections like pneumonia. As for other vaccines, the TDP booster shot should be given every 10 years. And the shingles vaccine is safe and effective for healthy adults ages 50 and older.

Protect yourself by keeping your vaccines up to date. Talk with a health care provider about which ones you need and if they can be taken together. Learn more about vaccines for older adults.

## HOW TO HELP YOUR IMMUNE SYSTEM

- **Eat a healthy diet.**
- **Make time for physical activity.** Experts recommend that adults get at least two and a half hours of moderate exercise each week.
- **Maintain a healthy weight.**

- **Get a good night's sleep.** Most adults need at least seven hours or more of sleep each night, and kids and teens need even more.
- **Quit smoking.** Get free help at [smokefree.gov](https://smokefree.gov), call 1-800-QUIT-NOW (1-800-784-8669), or text QUIT to 47848.
- **Manage stress.**
- **Limit drinking alcohol.**
- **Wash your hands often to avoid getting sick.** Use hand sanitizer if soap and water are not available.
- **Stay up to date with the recommended vaccines.** Go to <https://www.cdc.gov/vaccines/schedules/>

VACCINE	PROTECTS AGAINST
Influenza	Seasonal flu
Tdap	Tetanus, diphtheria, pertussis
Zoster	Shingles
Varicella	Chicken pox
HPV	Human papilloma virus and HPV related cancers
Pneumococcal	Pneumococcal bacterial disease, ear infections, pneumonia, blood stream infections
MMR	Measles, mumps, rubella

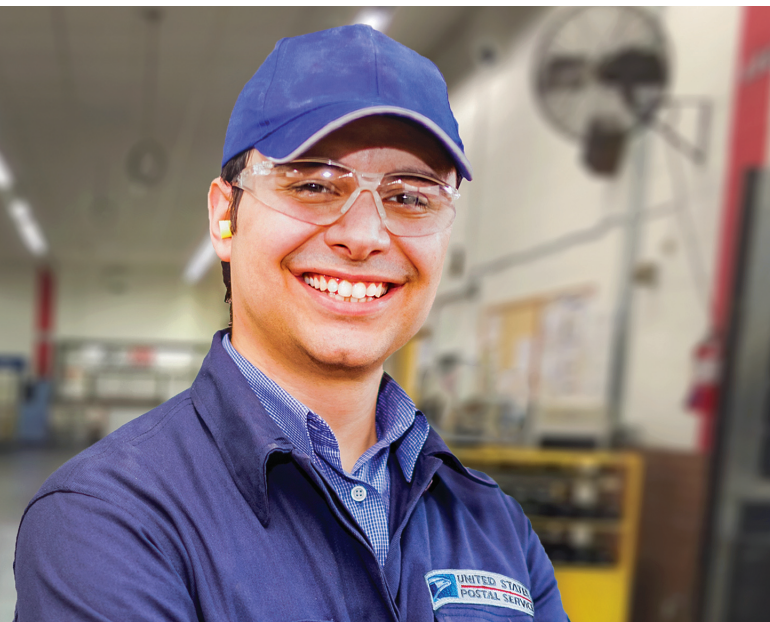
## MHBP RESOURCES TO ASSIST YOU

MHBP covers preventive care at 100% when received from a network provider, including the following immunizations according to CDC recommendations.

Your health matters and we are here to help. If you need help locating a provider, use the Find a Provider tool on MHBP.com. If you have a health concern or need advice on what to do and where to go, MHBP offers a 24/7 Nurse Line. Call 800-556-1555.

If you have any questions or would like more information, please call MHBP at 800-410-7778.

Sources: National Institutes of Health: <https://newsinhealth.nih.gov/> | MHBP.com



## HEALTH PLANS THAT WORK AS HARD AS YOU DO.



### PLANS TO FIT YOUR LIFE AND BUDGET

#### MHBP STANDARD OPTION

**Comprehensive coverage at an affordable price**  
 The MHBP Standard Option is setting a higher standard for federal employee health plans — at a lower cost. The plan's low copayments keep your costs down and out-of-pocket expenses predictable. With network providers, the plan pays 100 percent for annual exams, lab tests, maternity care and more. For services like diagnostic tests or surgery, this plan has you covered.

#### MHBP CONSUMER OPTION

**Part health plan, part savings account that's there when you need it**  
 The MHBP Consumer Option is a high-deductible health plan with a health savings account (HSA). The plan will deposit up to \$2,400 per year for a Self and Family or Self Plus One enrollment (\$1,200 Self Only) into your HSA for you. Use it to pay for health expenses, or watch your savings grow as they roll over. It's up to you. Network preventive care is covered at 100% with no deductible. After you meet your deductible, you pay low copayments — or nothing at all — for covered care.

#### MHBP VALUE PLAN

**A plan with your health care needs and budget in mind**  
 The MHBP Value Plan is our most affordable plan. It provides you with valuable protection against an unforeseen illness or event. The Value Plan balances low cost and high satisfaction. That makes it a great choice for healthy people who don't typically need a lot of medical services. Plus, you pay nothing for preventive care from network providers. Including things, like an annual exam, screenings, immunizations and well-child visits.




I started at the Post Office in 1976 as a Mail Handler. **First thing I did was join the Union, second thing I did was sign up for the Mail Handlers Benefit Plan [MHBP].**  
 - Paul H., MHBP member

They've treated us like family. **It's just been the right fit for us.**  
 - John G., MHBP member

You can't put a clock on your needs for health care and for answers. **So, I can reach out at any time during the day and get the service that I need.**  
 - Michael H., MHBP member



### CONNECT WITH MHBP

 Call 1-800-410-7778 (TTY: 711) 24 hours a day, 7 days a week (except major holidays).

Or visit [MHBP.com/Live](https://MHBP.com/Live) to schedule a one-on-one phone consultation, start a live chat, register to attend a webinar or learn more about MHBP plans.



**INTERESTED IN MHBP?**  
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\* This is a summary of the MHBP plans. There may be fees associated with a Health Savings Account (HSA). These are the same types of fees you may pay for checking account transactions. Please see the HSA fee schedule in your HSA enrollment materials for more information. Before making the final decision, please read the 2023 Official Plan Brochures (R1 71-007 or R1 71-016). All benefits are subject to the definitions, limitations and exclusions set forth in the 2023 Official Plan Brochures.  
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