

About this guidance document

This guidance is intended to inform discussion and decision making for physicians and their patients. Many of these tests and screenings are part of basic primary care annual appointments. In 2019, the American Medical Association (AMA) resolved to support research and policy to address the effects of PFAS exposure.

The following suggestions for medical screening tests are based on those previously developed and implemented for a PFAS-impacted community and on peer-reviewed research and scientific assessments using weight of evidence approaches from the National Academies of Sciences, Engineering, and Medicine (NASEM, 2022), Agency for Toxic Substances and Disease Registry (ATSDR, 2021), C8 Science and Medical Panels (2005-2013), and other agencies (see references on reverse side).

Note: These recommendations are intended for those living in communities with contaminated water or who are exposed to other sources of PFAS that substantially increases their internal burden of PFAS. These recommendations are not targeted to those with average levels of PFAS exposure.

Guidance for adult patients

PFAS blood and water tests

- **PFAS blood tests.** A 2022 NASEM report recommended making PFAS blood tests available to people who likely had elevated PFAS exposures and offering additional medical screening for those with elevated levels. The PFAS-REACH Exchange provides resources for obtaining PFAS blood tests (bit.ly/pfas-blood-test).
- **Water testing.** PFAS water testing is advisable in areas with known or suspected water contamination. PFAS water filtration is recommended when PFAS levels exceed drinking water guidelines.

Laboratory tests

- **Lipid panel (cholesterol, LDL, HDL, triglycerides).** PFAS exposure has been associated with higher total and LDL cholesterol and fatty liver.
- **Liver function tests (ALT, AST, GGT).** PFAS exposure has been associated with higher-than-normal liver function tests, as well as hepatotoxicity, including hepatocyte and liver architecture damage.
- **Serum creatinine and urinalysis (including protein, albumin, and cell counts).** PFAS exposure has been associated with chronic kidney disease and kidney cancer. Note that there is enhanced excretion of PFAS in moderate to severe kidney disease, leading to misleadingly lower levels of PFAS in blood serum, especially if there is albuminuria.
- **Thyroid tests (TSH with or without FT4).** PFAS exposure has been associated with thyroid disease.

Clinical examinations

- **Regular examinations for testicular cancer.** Exposure to high levels of PFAS has been associated with increased risk of testicular cancer.
- **Screening for breast cancer (consistent with usual standard of care based on age and other risk factors).** There is some evidence that exposure to PFAS can lead to increased risk of breast cancer.
- **Screening for ulcerative colitis.** Exposure to high levels of PFAS has been associated with increased risk of ulcerative colitis.
- **Blood pressure monitoring during pregnancy.** PFAS are associated with elevated blood pressure during pregnancy and preeclampsia. Encourage home blood pressure monitoring during pregnancy for highly exposed people.

Counseling topics

- **Vaccine response.** PFAS exposure has been associated with decreased antibody response to vaccines. However, there is currently no consensus on whether to measure antibody titers or to revaccinate patients with low vaccine titers. For more information, see the PFAS-REACH [fact sheet](#) on PFAS and vaccines.
- **Breastfeeding.** PFAS can cross the placenta and pass from mother to child during pregnancy. PFAS also accumulate in breast milk, so infants can be exposed through breastfeeding. However, breastfeeding provides clear benefits to both maternal and child health. There is insufficient evidence to broadly weigh the risks and benefits of breastfeeding in highly exposed mothers. Individuals may seek advice and discussion on weighing possible harms from PFAS in breast milk versus benefits of breastfeeding.

Guidance for pediatric patients

Laboratory tests

- **Lipid panel (cholesterol, LDL, HDL, triglycerides).** PFAS exposure has been associated with higher total and LDL cholesterol and fatty liver.
- **Liver function tests (ALT, AST, GGT).** PFAS exposure has been associated with higher-than-normal liver function tests, as well as other evidence of hepatotoxicity, including hepatocyte and liver architecture damage.
- **Thyroid test (TSH with or without FT4).** PFAS exposure has been associated with thyroid disease.

Clinical examinations

- **Screening for testicular cancer during annual examinations (starting around onset of adolescence).** PFAS exposure has been associated with increased risk of testicular cancer.

Counseling topics

- **Vaccine response.** PFAS exposure has been associated with decreased antibody response to vaccines. There is currently no consensus on whether to measure antibody titers or revaccinate pediatric patients with low vaccine titers.
- **Endocrine disruption.** PFAS have been associated with lower levels of sex hormones in young children.

References

Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological Profile for Perfluoroalkyls. U.S. Department of Health and Human Services. 2021. <https://www.atsdr.cdc.gov/ToxProfiles/tp200.pdf>.

American Medical Association. Memorandum from the Speaker of the House of Delegates. Resolutions 901 and 922. 2019. <https://www.ama-assn.org/system/files/2019-11/i19-handbook.pdf>

C8 Medical Panel. Information on the C-8 (PFOA) Medical Monitoring Program Screening Tests Prepared by the Medical Panel for the C-8 Class Members. 2013. http://www.c-8medicalmonitoringprogram.com/docs/med_panel_education_doc.pdf.

Centers for Disease Control and Prevention (CDC). CDC Public Health Grand Rounds: PFAS and Protecting Your Health. 2019. <https://www.cdc.gov/grand-rounds/pp/2019/20191119-pfas-health.html>.

European Environment Agency. Emerging chemical risks in Europe – 'PFAS.' 2019. <http://dx.doi.org/10.2800/486213>.

International Agency for Research on Cancer (IARC). IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Some Chemicals Used as Solvents and in Polymer Manufacture. Lyon (FR): International Agency for Research on Cancer; 2017. PMID: [31829531](https://pubmed.ncbi.nlm.nih.gov/31829531/).

National Academies of Sciences, Engineering, and Medicine (NASEM). 2022. Guidance on PFAS Testing and Health Outcomes. <https://nap.nationalacademies.org/read/26156/chapter/1>

National Toxicology Program (NTP). 2016. Systematic Review of Immunotoxicity Associated with Exposure to Perfluorooctanoic Acid (PFOA) or Perfluorooctane sulfonate (PFOS); Office of Health Assessment and Translation, Division of the National Toxicology Program, National Institute of Environmental Health Sciences: Research Triangle Park, NC. https://ntp.niehs.nih.gov/ntp/ohat/pfoa_pfos/pfoa_pfosmonograph_508.pdf.

Acknowledging stress & addressing uncertainty

Uncertainty about long-term health effects can cause stress among patients who have been exposed to PFAS contamination.

Previous studies have shown that providing results of chemical exposure tests, along with contextual information and steps for action, can make people feel empowered.¹

ATSDR has developed resources for medical professionals to address concerns of residents in communities impacted by contamination: www.atsdr.cdc.gov/stress/resources/clinicians-tip-sheet.html

¹ JG Brody et al. (2006). <https://doi.org/10.2105/AJPH.2006.094813>

Contributors

PFAS-REACH partners



MICHIGAN STATE
UNIVERSITY



Northeastern University
Social Science Environmental Health
Research Institute



Medical partners



Alan Ducatman, MD
Professor Emeritus
West Virginia University

Thank you to the researchers, medical professionals, and community members who reviewed this document.