Voluntary Blood Testing Program for PFAS

POST-TEST CONSULTATION ADVICE FOR GPS

People eligible for the Voluntary Blood Testing Program for PFAS are also eligible for a free GP consultation both before and after their blood test.

During the return visit to discuss *Per- and Poly-fluoroalkyl Substances* (PFAS) blood test results, the following is suggested for discussion with the patient:

- Consider the result with regard to the table (below) that includes pooled Australian comparison points.
- Answer questions about PFAS and blood testing based on the information below as appropriate.
- Reiterate that testing currently does not indicate the likelihood of disease or otherwise in that person.
- Encourage avoidance of future PFAS exposure according to local guidance:
  - For Williamtown, NSW, refer to the Department of Defence's Human Health Risk Assessment (HHRA) Fact Sheet; and the NSW Environmental Protection Agency website: http://www.epa.nsw.gov.au/MediaInformation/williamtown.htm.
  - For Oakey, QLD, refer to the Department of Defence's Human Health Risk Assessment (HHRA) Fact Sheet; and the QLD Government website: https://www.qld.gov.au/environment/pollution/management/investigation-pfas/oakey/index.html.
- GPs should investigate and manage all current and future illnesses as usual, in accordance with history and examination.
- Patients should be referred as appropriate to psychological, mental health, counselling or other support services.

Interpretation of results

No valid reference ranges exist for PFAS in humans. The results will be reported in terms of comparison with the previously published general population data from Australia (Table 1 and Table 2).

Table 1: Estimated 95th percentile for the Australian population, 2011–2012[1]

Compound	Age group	ng/mL
PFOS	0–4 years	13
	5–15 years	18
	16–30 years	20
	31–45 years	25
	46–60 years	29
	61+ years	37
PFOA	0–4 years	9
	5–15 years	8
	16–30 years	8
	31–45 years	8
	46–60 years	8
	61+ years	10

[1] Aylward LL, Green E, Porta M, Toms LM, Den Hond E, Schulz C, et al. Population variation in biomonitoring data for persistent organic pollutants (POPs): an examination of multiple population-based datasets for application to Australian pooled biomonitoring data. Environ Int. 2014;68:127-38. Epub 2014/04/15.

Table 2: Interpretation of individual results

Compound	Interpretation	
PFOS and PFOA	≤95th percentile by age range	This is consistent with background exposure in the general population of that specific age-group. Patient should be reassured.
	>95th percentile by age range	Suggestive of previous exposure to PFAS at levels higher than the general population — educate on precautionary strategies to limit exposure, noting no conclusive evidence of adverse health effects
PFHxS, PFBS, 62FTS, PFHxA, PFHpA, PFNA and PFDA	Several additional fluoroalkyl substances were measured in the current panel. These included PFHxS, PFBS, 62FTS, PFHxA, PFHpA, PFNA and PFDA. The toxicology of these compounds in humans is not well studied, and only reported here for research purposes.	

Note: A PFAS blood test does not measure the blood level precisely. Two tests taken from the same person at the same time may report levels that differ by up to 20% or more as a result of the test methodology.

Discussion points

- All Australians are expected to have detectable levels of PFAS in their blood. A broad range of levels would be expected in all communities due to background exposures.
- There has been testing of pooled blood in Australia to assess the range of levels in the community and this has been used to document changes at the population level over time. This testing did not identify results for individuals.
- A "normal" PFAS range for an individual is not available in Australia or internationally.
- An individual's blood result can be compared to historic pooled community levels.
- Blood levels are not predictive of health problems in individuals. There is no consistent evidence of PFAS resulting in specific health impacts therefore levels considered higher than the Australian general population may have no impact on the individual. For this same reason, a PFAS blood level below which minimal risk is predicted does not exist.
- There is currently no practical treatment available to lower levels of PFAS in the blood.
- It is not possible to determine the source of PFAS found in an individual's blood.
- PFAS have a very long half-life in humans and persist in the body for many years. The blood level will usually reflect cumulative exposure over this extended period. PFAS levels cannot tell when the exposure occurred.
- A PFAS blood test will only tell you the current level of PFAS in an individual's blood and does not provide a reliable history of previous or future levels.
- The PFAS test does not measure the blood level precisely. Two tests taken from the same patient sample may report levels that differ by plus or minus 20% or more as a result of the test methodology.
- The same level in two different individuals may not mean the same level of exposure, due to toxicokinetic differences.
- Requests for other tests (e.g. thyroid functions) should be solely based on the patient's clinical presentation.

Testing Frequency

The half-life for various PFAS compounds varies depending on the compound and the animal species. For humans, studies suggest it takes most of the PFAS substances about five years for levels to go down by half, so frequent blood monitoring is of no clinical value and should be discouraged. Population level blood tests will sometimes be undertaken to monitor the exposure of a community over time to determine if exposure reduction measures are working.

If individuals present with test results which have been repeated, these should be interpreted in the context of the analytical variability of the test, which may differ by plus or minus 20%.

Examples

Scenario	Interpretation	Discussion Points
An 18 month old, fully breastfed infant with a serum PFOS of 8 ng/mL.	This is within the range of levels expected in any Australian community as a result of non-specific background PFOS exposures. Most Australian children under 4 years old will have blood levels less than 13 ng/mL.	Children born in Australia would be expected to have detectable levels of PFOS in blood, acquired during the pregnancy. PFOS is present in breast milk in very low levels, however the significant health benefits of breast feeding are well established and far outweigh any potential health risks to an infant from any PFOS transferred through breast milk. This blood level is unlikely to cause harm.
A 35 year old adult with a serum PFOS of 210 ng/mL.	This is higher than the range of levels expected as a result of non-specific background PFOS exposures, therefore; additional specific exposure sources are likely. Most adults in the 31 to 45 year age group will have blood levels under 25 ng/mL. Similar and higher levels have been noted in Australian adults who have had occupational exposures or lived in contaminated environments.	Additional specific exposure(s) have likely occurred at some stage during the previous 10 or more years. There may or may not be recent exposure. The most significant exposure pathways for adults are the consumption of water and food containing PFOS. Those living in recognised contaminated areas should follow local precautionary advice to limit further exposure. Evidence concerning elevated levels is still being evaluated but currently no consistent or conclusive findings of harm in humans have been reported. There is currently no specific treatment recommended. Repeat blood testing is of no clinical value. In the absence of ongoing exposure, blood levels of PFOS will fall slowly over many years.

Further information

Please contact Dr David Kanowski on (07) 3377 8779 or Dr Lee Price on (07) 3377 8672 at Sullivan Nicolaides Pathology (Sonic Healthcare), who is the pathology provider for the Voluntary Blood Testing Program for PFAS, for further information on PFAS blood testing.