Attachment 23

Pease Study
Clinical Test Results
Flesch-Kincaid Readability Score –

Pease Study
Clinical Test Results Report

Dear [NAME/NAME OF PARENT OR GUARDIAN],

The following tables show the results of clinical tests that we performed in [your/your child's] blood or serum on |__|__|/|__|__|/|__|__|. The results that are out of normal range are marked red.

These clinical tests are mostly those that your doctor would perform in an office. We advise you to go over the results with your doctor. If he or she has any questions about some of the more specialized tests we did, he or she can contact us at the number provided below.

Because we are providing these results |__|__| months after ATSDR collected [your/your child's] blood, the results may be of limited value to you or your doctor, especially if you are already under treatment or being followed for a particular chronic condition that the results indicate.

Some people will not have results for all chemicals. [You/Your child] may not have a result for a chemical test if [your/his/her] level is lower than the lab's limit of detection (<LOD). [You/Your child] may also not have a result if the blood sample did not pass a lab quality control check. If the reason for missing results is known, it will be included with [your/your child's] results.

You or your physician may contact us with questions about [your/your child's] clinical test results by calling ATSDR at [*study telephone number*].

Thank you for your understanding and your participation in the study.

Sincerely,

Marian Pavuk, MD, PhD Frank Bove, DSc

Co-Principal Investigators
Pease PFAS Health Study

Table 1. Results of your clinical tests for thyroid hormones, glycemic parameters, lipids, and liver function.

*** NOTE: the displayed clinical ranges will be updated when the contract labs are selected.**

Test name	Your Result	Adult Comparison Values	Child Comparison Values
Thyroid Hormones and Antibodies		**Clinical Ranges**	
Thyroid Stimulating Hormone (TSH)		18-19 years: 0.5-4.3 mIU/L [1] >20 years: 0.3-4.2 mIU/L	4-5 years: 0.7-6.0 mIU/L 6-10 years: 0.6-4.8 mIU/L
Total Thyroxin (TT4)		18 -19 years: 5.9-13.2 mcg/dL [2] ≥20 years): 4.5-11.7 mcg/dL **≥50 years:** **≥6.0 ng/dL (check units)** [3]	4-5 years: 6.0-14.7 mcg/dL 6 -10 years: 6.0-13.8 mcg/dL 11 -17 years: 5.9-13.2 mcg/dL
Free T4		18-19 years: 1.0-1.6 ng/dL [2] ≥20 years of age: 0.9-1.7 ng/dL	4-5 years: 1.0-1.8 ng/dL 6-10 years: 1.0-1.7 ng/dL 11-17 years: 1.0-1.6 ng/dL
Total Triiodothyronine (TT3)		18-19 years: 91-218 ng/dL [4] (> or =20 years): 80-200 ng/dL	4-5 years: 92-248 ng/dL 6-10 years: 93-231 ng/dL 11-17 years: 91-218 ng/dL
Other Hormones			
Total Testosterone		Males: [5] 18 years: 300-1,200 ng/dL ≥19 years: 240-950 ng/dL Females: 18 years: 20-75 ng/dL ≥19 years: 8-60 ng/dL	Males: 4-9 years: <7-20 ng/dL 10-11 years: <7-130 ng/dL 12-13 years: <7-800 ng/dL 14 years: <7-1,200 ng/dL 15-16 years: 100-1,200 ng/dL 17-18 years: 300-1,200 ng/dL ≥19 years: 240-950 ng/dL Females: 4-9 years: <7-20 ng/dL 10-11 years: <7-44 ng/dL 12-16 years: <7-75 ng/dL 17 years: 20-75 ng/dL

[1] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/8939
[2] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/36108
[3] https://www.mayomedicallaboratories.com/test-catalog/appendix/criticalvalues/view.php?name=Critical+Values%2FCritical+Results+List
[4] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/8613
[5] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/83686

Estradiol		Males: [6] 10-40 pg/mL Females: Premenopausal: 15-350 pg/mL** Postmenopausal: <10 pg/mL **E2 levels vary widely through the menstrual cycle.	Males: Tanner Stage I <LOD-13 pg/mLL Tanner Stage II <LOD-16 pg/mL Tanner Stage III <LOD-26 pg/mL Tanner Stage IV <LOD-38 pg/mL Tanner Stage V 10-40 pg/mL Females: Tanner Stage I <LOD-20 pg/mL Tanner Stage II <LOD-24 pg/mL Tanner Stage III <LOD-60 pg/mL Tanner Stage IV 15-85 pg/mL Tanner Stage V 15-350 pg/mL
Sex hormone-binding globulin (SHBG)		Males: 10-57 nmol/L [7] Females (non-pregnant): 18-144 nmol/L	Males: Tanner Stage I 31-167 nmol/L Tanner Stage II 49-179 nmol/L Tanner Stage III 5.8-182 nmol/L Tanner Stage IV 14-98 nmol/L Tanner Stage V 10-57 nmol/L Females: Tanner Stage I 43-197 nmol/L Tanner Stage II 7.7-119 nmol/L Tanner Stage III 31-191 nmol/L Tanner Stage IV 31--166 nmol/L Tanner Stage V 18-144 nmol/L
Follicle stimulating hormone (FSH)		Males: [8] ≥18 years: 1.0-18.0 IU/L Females: ≥18 years: Premenopausal Follicular: 3.9-8.8 IU/L Midcycle: 4.5-22.5 IU/L Luteal: 1.8-5.1 IU/L	Males: 4-6 years: ≤6.7 IU/L 7-8 years: ≤4.1 IU/L 9-10 years: ≤4.5 IU/L 11 years: 0.4-8.9 IU/L 12 years: 0.5-10.5 IU/L 13 years: 0.7-10.8 IU/L 14 years: 0.5-10.5 IU/L 15 years: 0.4-18.5 IU/L

[6] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/81816
[7] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/9285
[8] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/8670

		Postmenopausal: 16.7-113.6 IU/L	16 years: ≤9.7 IU/L 17 years: 2.2-12.3 IU/L Females 4-6 years: 3.3 IU/L 7-8 years: ≤11.1 IU/L 9-10 years: 0.4-6.9 IU/L 11 years: 0.4-9.0 IU/L 12 years: 1.0-17.2 IU/L 13 years: 1.8-9.9 IU/L 14-16 years: 0.9-12.4 IU/L 17 years: 1.2-9.6 IU/L
Insulin-like growth factor (IGF-1)		Males: [9] 18-22 years: 91-442 ng/mL 23-25 years: 66-346 ng/mL 26-30 years: 60-329 ng/mL 31-35 years: 54-310 ng/mL 36-40 years: 48-292 ng/mL 41-45 years: 44-275 ng/mL 46-50 years: 40-259 ng/mL 51-55 years: 37-245 ng/mL 56-60 years: 34-232 ng/mL 61-65 years: 33-220 ng/mL 66-70 years: 32-209 ng/mL 71-75 years: 32-200 ng/mL 76-80 years: 33-192 ng/mL 81-85 years: 33-185 ng/mL 86-90 years: 33-179 ng/mL >91 years: 32-173 ng/mL Females: 18-22 years: 85-370 ng/mL 23-25 years: 73-320 ng/mL 26-30 years: 66-303 ng/mL 31-35 years: 59-279 ng/mL 36-40 years: 54-258 ng/mL 41-45 years: 49-240 ng/mL	Males: 4 years: 30-236 ng/mL 5 years: 39-250 ng/mL 6 years: 47-275 ng/mL 7 years: 54-312 ng/mL 8 years: 61-356 ng/mL 9 years: 67-405 ng/mL 10 years: 73-456 ng/mL 11 years: 79-506 ng/mL 12 years: 84-551 ng/mL 13 years: 90-589 ng/mL 14 years: 95-618 ng/mL 15 years: 99-633 ng/mL 16 years: 104-633 ng/mL 17 years: 107-615 ng/mL Females: 4 years: 33-237 ng/mL 5 years: 36-234 ng/mL 6 years: 39-246 ng/mL 7 years: 44-279 ng/mL 8 years: 51-334 ng/mL 9 years: 61-408 ng/mL 10 years: 73-495 ng/mL 11 years: 88-585 ng/mL

[9] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/62750

		46-50 years: 44-227 ng/mL 51-55 years: 40-217 ng/mL 56-60 years: 37-208 ng/mL 61-65 years: 35-201 ng/mL 66-70 years: 34-194 ng/mL 71-75 years: 34-187 ng/mL 76-80 years: 34-182 ng/mL 81-85 years: 34-177 ng/mL 86-90 years: 33-175 ng/mL ≥91 years: 25-179 ng/mL	12 years: 104-665 ng/mL 13 years: 120-719 ng/mL 14 years: 136-729 ng/mL 15 years: 147-691 ng/mL 16 years: 153-611 ng/mL 17 years: 149-509 ng/mL
Glycemic Parameters		**Clinical Guidelines and Ranges**	
Glucose, fasting, 8-hr		Normal: <100 mg/dL [10] Prediabetes: 100–125 mg/dL Diabetes: ≥126 mg/dL **Critical Value: <40 mg/dL[11]** **Critical Value: ≥400 mg/dL[10]**	
Insulin		<17 µU/ml [3]	
Glycosylated Hemoglobin (HbA1c)		Diabetes Risk [12] Normal: <5.7% Prediabetes: 5.7-6.4% Diabetes: ≥6.5%	<18 years: Criteria for diagnosing diabetes have not been established.
Thyrosine Phosphatase-like Protein Autoantibodies (IA 2)		Negative Antibody: DK<5 [3] Positive Antibody: DK≥5	Store for later
Glutamate Decarboxylase -65 (anti-GAD 65)		Negative Antibody: DK≤33 [3] Positive Antibody: DK>33	Store for later

[10] http://www.diabetes.org/diabetes-basics/diagnosis/?loc=db-slabnav

[1110] https://www.mayomedicallaboratories.com/test-catalog/appendix/criticalvalues/view.php?name=Critical+Values%2FCritical+Results+List

[12] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/82080

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Lipids		**Clinical Guidelines and Ranges**	
Total Cholesterol, fasting		Coronary Heart Disease Risk (CHD)[13] Adult, 18+ years: Desirable: <200 mg/dL Borderline High: 200-239 mg/dL High: ≥240 mg/dL	Child, 2-17 years: Acceptable: <170 mg/dL Borderline high: 170-199 mg/dL High: ≥200 mg/dL
Triglycerides, fasting		CHD Risk[12] Adult, 18+ years: Normal: <150 mg/dL Borderline High: 150-199 mg/dL High: 200-499 mg/dL Very High: ≥500 mg/dL **Critical Value: >1,000 mg/dL**	Child, 2-9 years: Acceptable: <75 mg/dL Borderline high: 75-99 mg/dL High: ≥100 mg/dL Child, 10-17 years: Acceptable: <90 mg/dL Borderline high: 90-129 mg/dL High: > or =130 mg/dL
Low Density Lipoprotein Cholesterol (LDL), fasting		CHD Risk[12] Adult, 18+ years: Desirable: <100 mg/dL Above Desirable: 100-129 mg/dL Borderline high: 130-159 mg/dL High: 160-189 mg/dL Very high: ≥190 mg/dL	Child, 2-17 years: Acceptable: <110 mg/dL Borderline high: 110-129 mg/dL High: ≥130 mg/dL
High Density Lipoprotein Cholesterol (HDL), fasting		CHD Risk[12] Adult, 18+ years: Males: ≥40 mg/dL Females: ≥50 mg/dL	Child, 2-17 years: Low: <40 mg/dL Borderline low: 40-45 mg/dL Acceptable: > 45 mg/dL
VLDL			
Liver Tests		**Clinical Ranges**	
Alanine Aminotransferase (ALT)		15–65 U/L [5]	
Aspartate Aminotransferase (AST)		5–40 U/L [5]	
γ-Glutamyl Transferase (GGT)		Female 5–55 U/L Male 5–85 U/L [5]	
Alkaline Phosphatase (ALP)		Female: 50–136 U/L Male: 40–136 U/L [5]	

[13] https://www.mayomedicallaboratories.com/test-catalog/Clinical+and+Interpretive/8320

Albumin (ALB)		3.4–5.0 g/dL [5] **Critical Value: <1.5 g/dL [5]** **Critical Value: >7.9 g/dL [5]**	
Total Bilirubin (TBIL)		0.0–1.0 mg/dL [5] **Critical Value: >12.9 mg/dL [5]**	
Direct Bilirubin (Conjugated Bilirubin)		0.0–0.3 mg/dL [5]	
Cytokeratin 18 M30 (CK-18 M30)		No evident liver disease [27-28] M30: <200 U/L and M65: <300 U/L TASH (toxicant associated steatohepatitis; consistent with necrosis) M30: <200 U/L and M65: >300 U/L Other liver disease (consistent with apoptosis) M30: >200 U/L	
Cytokeratin 18 M65 (CK-18 M65)			

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