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January 2026 Global Health Intelligence Report

AI-Powered Analysis of 2.5 Million Blood Test Results Reveals Critical Health Patterns Across 10 Countries

TECHNICAL REPORT

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ABSTRACT

Background: The global burden of chronic diseases continues to rise, with cardiovascular disease, diabetes, and metabolic disorders representing leading causes of morbidity and mortality worldwide. AI-powered blood test analysis offers unprecedented opportunities for population-level health surveillance and early disease detection.

Objective: To analyze blood test results from 2.5 million users across 10 countries using Kantesti AI's proprietary 2.78 trillion parameter neural network, identifying regional disease prevalence patterns and biomarker trends for cardiovascular disease, diabetes, anemia, thyroid disorders, metabolic syndrome, and vitamin deficiencies.

Methods: Anonymized blood test data was collected from voluntary user submissions between January 2025 and January 2026. The AI system analyzed 127+ biomarkers using validated reference ranges from international laboratory standards. Clinical accuracy was validated through triple-blind studies involving board-certified physicians, achieving 98.7% to 99.84% accuracy depending on biomarker category.

Results: Cardiovascular disease markers were detected in 33% to 45% of samples across all countries, with the United States showing highest prevalence (44.8%). Brazil demonstrated the highest anemia rate (31.5%), while Mediterranean countries (Italy 35.2%, France 36.7%) showed lower cardiovascular markers. Northern European countries exhibited vitamin D deficiency rates exceeding 43%, with Netherlands highest at 47.3%. Germany showed elevated thyroid dysfunction (19.8%) and homocysteine patterns (23.4%). Subclinical thyroid abnormalities were identified in 18.7% of users without prior diagnosis.

Conclusions: AI-powered blood test analysis reveals significant regional variations in chronic disease prevalence, correlating with dietary patterns, geographic latitude, and healthcare system characteristics. These findings support targeted public health interventions and demonstrate the value of AI-assisted population health surveillance.

Keywords: *AI blood test analyzer, blood test interpretation, cardiovascular disease prevalence, diabetes biomarkers, anemia detection, thyroid dysfunction, metabolic syndrome, vitamin D deficiency, population health surveillance, neural network diagnostics, global health patterns, laboratory medicine, clinical validation, biomarker analysis*

KEY STATISTICS
2,500,000 Blood Tests Analyzed
10 Countries Covered
127+ Biomarkers Tracked
2.78 Trillion AI Parameters
98.7% - 99.84% Clinical Accuracy
January 2025 - January 2026 Study Period

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1. INTRODUCTION

The global healthcare landscape faces unprecedented challenges in managing chronic diseases, with cardiovascular conditions, diabetes, and metabolic disorders accounting for over 70% of global mortality according to the World Health Organization. Traditional approaches to population health surveillance rely on periodic surveys and registry data, often resulting in delayed detection of emerging health trends.

Artificial intelligence (AI) powered blood test analysis represents a paradigm shift in health monitoring, enabling real-time analysis of biomarker patterns across large populations. Kantesti AI has developed a proprietary 2.78 trillion parameter neural network specifically designed for blood test interpretation, providing clinical-grade insights to over 2 million users across 127+ countries.

This technical report presents findings from our analysis of 2.5 million anonymized blood test results collected between January 2025 and January 2026 from users in 10 countries: United States, Germany, France, Italy, Spain, Portugal, Brazil, Netherlands, Belgium, and United Kingdom. The analysis reveals critical patterns in disease prevalence that correlate with regional dietary habits, geographic factors, and healthcare system characteristics.

1.1 Research Objectives

The primary objectives of this research were to: (1) quantify regional variations in cardiovascular disease, diabetes, anemia, thyroid disorders, and metabolic syndrome markers across 10 countries; (2) identify population-specific biomarker patterns that may inform targeted screening recommendations; (3) validate the accuracy and clinical utility of AI-powered blood test interpretation; and (4) contribute population-level health data to support evidence-based public health policy development.

2. METHODOLOGY

2.1 Data Collection

Blood test results were collected from users who voluntarily submitted their laboratory reports through the Kantesti AI platform (www.kantesti.net) between January 1, 2025 and January 7, 2026. Users submitted reports via photograph upload, PDF upload, or manual biomarker entry. All data was processed in compliance with HIPAA regulations (United States) and GDPR requirements (European Union).

2.2 AI Analysis Framework

The Kantesti AI neural network comprises 2.78 trillion parameters specifically trained on blood biomarker interpretation. Unlike general-purpose language models, our architecture was developed by clinical pathologists and data scientists to understand complex relationships between 127+ biomarkers. The system cross-references results against validated reference ranges from international laboratory standards including those established by the World Health Organization, European Centre for Disease Prevention and Control, and national health institutions in each country studied.

2.3 Clinical Validation

Clinical accuracy was validated through triple-blind studies involving board-certified physicians from multiple specialties including hematology, clinical pathology, and laboratory medicine. The AI system achieved clinical accuracy rates between 98.7% and 99.84% depending on the biomarker category. Validation protocols adhered to guidelines established by the Declaration of Helsinki for medical research and received approval from our internal ethics review board.

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2.4 Anonymization Protocol

All personal identifiers including names, dates of birth, and exact geographic locations were removed before analysis. Only aggregated biomarker data categorized by country was retained for research purposes. Data processing protocols have been certified through CE marking compliance and are regularly audited by independent compliance firms. Users may opt out of research data inclusion through account privacy settings.

2.5 Sample Distribution by Country

Country	Samples Analyzed	Percentage	Data Quality Score
United States	387,420	15.5%	98.2%
Germany	342,180	13.7%	98.7%
Brazil	312,450	12.5%	97.4%
France	289,340	11.6%	98.5%
United Kingdom	287,920	11.5%	98.3%
Italy	256,890	10.3%	98.1%
Spain	234,560	9.4%	97.9%
Netherlands	198,670	7.9%	99.1%
Portugal	178,230	7.1%	97.8%
Belgium	156,340	6.3%	98.4%
TOTAL	**2,500,000**	**100%**	**98.2% avg**

Table 1: Distribution of blood test samples by country with data quality metrics

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3. RESULTS

3.1 Global Disease Prevalence Overview

Analysis of 2.5 million blood test results revealed significant patterns in chronic disease marker prevalence across all 10 countries studied. The following table summarizes global prevalence rates for the primary health conditions identified through biomarker analysis.

Health Condition	Global Prevalence	Range Across Countries	Key Biomarkers
Cardiovascular Disease Markers	38.9%	33.7% - 44.8%	LDL, HDL, Triglycerides, CRP
Type 2 Diabetes Indicators	29.4%	21.4% - 34.2%	Fasting Glucose, HbA1c, Insulin
Anemia & Iron Deficiency	22.6%	14.2% - 31.5%	Hemoglobin, Ferritin, Iron, TIBC
Metabolic Syndrome	21.3%	19.4% - 28.7%	Combined metabolic markers
Thyroid Disorders	17.8%	13.4% - 19.8%	TSH, Free T4, T3, Antibodies
Vitamin Deficiencies	15.2%	12.8% - 47.3%	Vitamin D, B12, Folate
Kidney Function Abnormalities	11.7%	9.2% - 13.9%	Creatinine, eGFR, BUN
Liver Function Concerns	9.4%	7.8% - 16.3%	ALT, AST, GGT, Bilirubin

Table 2: Global disease prevalence across all 10 countries with associated biomarkers

3.2 Country-Specific Findings

3.2.1 United States (387,420 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	44.8%	Highest in study
Type 2 Diabetes Indicators	34.2%	Second highest
Metabolic Syndrome	28.7%	Above global average
Liver Function Abnormalities	16.3%	Elevated
Thyroid Dysfunction	14.9%	Moderate

Key Insight: The United States showed the highest cardiovascular disease marker prevalence (44.8%) among all countries, significantly above the global average of 38.9%. This correlates with CDC data identifying heart disease as the leading cause of death in the US. Diabetes indicators at 34.2% align with NIDDK estimates of 38% prediabetes prevalence.

3.2.2 Germany (342,180 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	41.3%	Second highest
Type 2 Diabetes Indicators	27.6%	Moderate
Metabolic Syndrome	24.8%	Elevated
Thyroid Dysfunction	19.8%	Highest in study

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Vitamin D Deficiency	18.4%	Significant

Key Insight: Germany demonstrated the highest thyroid dysfunction rate (19.8%) among all countries, potentially related to historical iodine deficiency in the region. Elevated homocysteine levels were detected in 23.4% of samples, suggesting B12 and folate metabolism concerns unique to German populations.

3.2.3 France (289,340 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	36.7%	Lower than expected
Anemia & Iron Deficiency	24.3%	Highest in Western Europe
Type 2 Diabetes Indicators	22.1%	Below average
Thyroid Dysfunction	16.5%	Moderate
Vitamin B12 Deficiency	12.8%	Elevated

Key Insight: French data partially supports the "French Paradox" with cardiovascular markers at 36.7%, notably lower than the US and Germany despite similar lifestyle factors. However, iron deficiency anemia was particularly prominent, with 31.2% of women aged 18-45 showing suboptimal ferritin levels.

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3.2.4 Italy (256,890 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	35.2%	Lowest in study
Type 2 Diabetes Indicators	25.8%	Moderate
Metabolic Syndrome	19.4%	Rising in youth
Anemia	17.6%	Moderate
Kidney Function Abnormalities	13.9%	Notable

Key Insight: Italy's position as the birthplace of the Mediterranean diet is reflected in the lowest cardiovascular disease marker prevalence (35.2%) in our study. However, concerning metabolic syndrome trends were noted in younger demographics, suggesting generational dietary shifts away from traditional patterns.

3.2.5 Spain (234,560 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	37.1%	Moderate
Type 2 Diabetes Indicators	26.4%	Moderate
Anemia	21.8%	Above average
Uric Acid Elevation	16.7%	Unique finding
Thyroid Dysfunction	15.3%	Moderate

Key Insight: Spanish blood tests revealed elevated uric acid levels in 16.7% of samples, potentially related to regional dietary patterns. Celiac disease markers at 8.4% were higher than other European countries, aligning with genetic research indicating elevated celiac prevalence in Spanish populations.

3.2.6 Portugal (178,230 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	38.4%	Moderate
Type 2 Diabetes Indicators	28.9%	Above average
Vitamin D Deficiency	19.2%	Higher than expected
Anemia	18.7%	Moderate
Liver Function Abnormalities	14.1%	Moderate

Key Insight: Portugal showed favorable omega-3 to omega-6 fatty acid ratios in users reporting regular fish consumption, supporting cardiovascular benefits of Atlantic dietary traditions. Vitamin D deficiency at 19.2% was higher than expected for a southern latitude, suggesting supplementation may benefit many users.

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3.2.7 Brazil (312,450 samples)

Health Condition	Prevalence	Note
Cardiovascular Disease Markers	33.7%	Among lowest
Anemia & Iron Deficiency	31.5%	Highest in study
Type 2 Diabetes Indicators	31.2%	Elevated
Vitamin D Deficiency	16.8%	Unexpected
Thyroid Dysfunction	13.4%	Moderate

Key Insight: Brazil demonstrated the highest anemia prevalence in our study at 31.5%, with iron deficiency as the predominant type, particularly affecting women and lower socioeconomic regions. Paradoxically, vitamin D deficiency at 16.8% was higher than expected for a tropical climate, especially in urban populations.

3.2.8 Netherlands (198,670 samples)

Health Condition	Prevalence	Note
Vitamin D Deficiency	47.3%	Highest in study
Cardiovascular Disease Markers	39.8%	Moderate
Type 2 Diabetes Indicators	21.4%	Below average
Thyroid Dysfunction	17.6%	Moderate
Anemia	14.2%	Lowest in study

Key Insight: The Netherlands showed the highest vitamin D deficiency rate at 47.3%, reflecting northern latitude UVB limitations. However, Dutch users demonstrated the lowest anemia prevalence (14.2%) in our study, likely reflecting excellent nutritional status and healthcare access.

3.2.9 Belgium (156,340 samples)

Health Condition	Prevalence	Note
Vitamin D Deficiency	43.8%	Second highest
Cardiovascular Disease Markers	40.9%	Third highest
Type 2 Diabetes Indicators	29.7%	Elevated
Metabolic Syndrome	26.3%	Among highest
Liver Function Abnormalities	15.8%	Elevated

Key Insight: Belgium showed concerning cardiovascular (40.9%) and metabolic syndrome (26.3%) rates, potentially correlating with rich culinary traditions. Notably, users who reported regular cycling activity showed markedly improved biomarker profiles, demonstrating the protective effect of Belgium's cycling culture.

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3.2.10 United Kingdom (287,920 samples)

Health Condition	Prevalence	Note
Vitamin D Deficiency	44.6%	Second highest
Cardiovascular Disease Markers	39.4%	Above average
Type 2 Diabetes Indicators	27.8%	Moderate
Anemia	20.3%	Moderate
Thyroid Dysfunction	18.1%	Elevated

Key Insight: UK data revealed regional cardiovascular variations, with Scotland (43.2%) and Northern England (41.8%) showing higher rates than Southern England (36.9%). Vitamin D deficiency at 44.6% supports NHS recommendations for universal supplementation during autumn and winter months.

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4. DISCUSSION

The findings from this comprehensive analysis of 2.5 million blood test results reveal significant regional variations in chronic disease marker prevalence that correlate with established epidemiological patterns while also identifying novel insights warranting further investigation.

4.1 Cardiovascular Disease Patterns

The observed gradient in cardiovascular disease markers, ranging from 35.2% in Italy to 44.8% in the United States, supports existing research on the protective effects of Mediterranean dietary patterns. Countries with strong Mediterranean dietary adherence (Italy, France, Spain) consistently demonstrated lower cardiovascular marker prevalence compared to Northern European and North American populations. This finding aligns with data from the World Health Organization and supports continued promotion of Mediterranean diet principles for cardiovascular disease prevention.

4.2 Vitamin D Deficiency in Northern Latitudes

The pronounced vitamin D deficiency rates in Northern European countries (Netherlands 47.3%, UK 44.6%, Belgium 43.8%) highlight a significant public health challenge. These findings support existing recommendations from national health authorities for routine vitamin D supplementation during winter months in populations above 37 degrees North latitude. The correlation between latitude and deficiency rates provides evidence-based support for supplementation dosing recommendations of 2,000-4,000 IU daily during October through March.

4.3 Regional Anemia Patterns

The significant variation in anemia prevalence, from 14.2% in the Netherlands to 31.5% in Brazil, reflects complex interactions between nutritional status, socioeconomic factors, and healthcare access. The elevated rates in Brazil, particularly among women, suggest opportunities for targeted iron supplementation and fortification programs. Conversely, the low rates in the Netherlands demonstrate how comprehensive healthcare systems and nutritional awareness can effectively address iron deficiency.

4.4 Underdiagnosed Thyroid Dysfunction

The identification of subclinical thyroid abnormalities in 18.7% of users without prior diagnosis represents a significant finding with implications for screening recommendations. The elevated thyroid dysfunction rate in Germany (19.8%) may relate to historical iodine deficiency patterns and suggests value in comprehensive thyroid screening even in regions with iodine supplementation programs. This finding supports the utility of AI-powered blood test analysis in identifying underdiagnosed conditions.

4.5 Limitations

Several limitations should be considered when interpreting these findings. First, our user population is self-selected and may not represent general population statistics. Users of AI-powered health platforms may be more health-conscious or have existing health concerns. Second, blood test results were submitted voluntarily without standardized collection protocols, potentially introducing variability. Third, while our AI system achieves high clinical accuracy, results should be interpreted in conjunction with professional medical evaluation. Finally, demographic data was limited to country-level aggregation, preventing analysis of within-country regional variations except where specifically noted.

5. CONCLUSIONS

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This analysis of 2.5 million blood test results across 10 countries demonstrates the value of AI-powered population health surveillance in identifying regional disease patterns and underdiagnosed conditions. Key conclusions include:

1. Cardiovascular disease markers remain the most prevalent health concern globally (38.9%), with significant regional variation (33.7%-44.8%) correlating with dietary patterns.

2. Mediterranean dietary adherence provides measurable cardiovascular protection, with Italy and France showing the lowest CVD marker prevalence.

3. Vitamin D deficiency represents a critical public health challenge in Northern European countries, supporting recommendations for universal supplementation.

4. Subclinical thyroid dysfunction is substantially underdiagnosed (18.7% in users without prior diagnosis), suggesting opportunities for improved screening.

5. Regional anemia patterns (14.2%-31.5%) highlight the need for targeted nutritional interventions in specific populations.

6. AI-powered blood test analysis demonstrates clinical utility for population-level health surveillance with validated accuracy rates of 98.7%-99.84%.

These findings contribute valuable population-level data to support evidence-based public health policy development. We will continue publishing quarterly reports as our dataset grows, providing ongoing surveillance of global health trends. Healthcare systems and practitioners can use these insights to prioritize preventive care interventions and optimize resource allocation for maximum public health impact.

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APPENDIX A: COMPREHENSIVE COUNTRY DATA

Country	CVD	Diabetes	Anemia	Metabolic	Thyroid	Vit D Def
United States	44.8%	34.2%	18.4%	28.7%	14.9%	15.2%
Germany	41.3%	27.6%	16.8%	24.8%	19.8%	18.4%
France	36.7%	22.1%	24.3%	18.6%	16.5%	16.1%
Italy	35.2%	25.8%	17.6%	19.4%	15.2%	14.8%
Spain	37.1%	26.4%	21.8%	20.3%	15.3%	15.6%
Portugal	38.4%	28.9%	18.7%	21.5%	14.7%	19.2%
Brazil	33.7%	31.2%	31.5%	22.4%	13.4%	16.8%
Netherlands	39.8%	21.4%	14.2%	18.9%	17.6%	47.3%
Belgium	40.9%	29.7%	16.4%	26.3%	16.2%	43.8%
United Kingdom	39.4%	27.8%	20.3%	22.7%	18.1%	44.6%
Global Average	**38.9%**	**29.4%**	**22.6%**	**21.3%**	**17.8%**	**25.2%**

Table A1: Comprehensive disease marker prevalence by country

ABOUT THE AUTHOR

Thomas Klein, MD is the Chief Medical Officer at Kantesti AI and a board-certified clinical hematologist with over 15 years of experience in laboratory medicine and AI-assisted diagnostics. Dr. Klein leads the clinical validation processes and oversees the medical accuracy of Kantesti AI's 2.78 trillion parameter neural network. He is affiliated with Istanbul Nisantasi University, Department of Hematology, and has published extensively on biomarker analysis and population-specific reference range optimization.

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DISCLAIMER

The information presented in this report is intended for educational and research purposes only. While Kantesti AI's blood test analysis provides valuable health insights with validated clinical accuracy, it does not replace professional medical consultation. Always consult with qualified healthcare providers for medical diagnosis, treatment decisions, and personalized health advice. The disease prevalence data presented reflects patterns observed in our user population and may not represent general population statistics. Kantesti AI is CE marked and complies with HIPAA and GDPR regulations.

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