

Nutritional Support for Immunity in Selected Eurasian Countries

Bios



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An extensive search and a detailed report were conducted for Russia due to the abundant availability of information. Many, if not all, of the Russian findings also apply to Kazakhstan, Kyrgyzstan, Tajikistan, and Ukraine. Specific additional comments for the individual countries are included in their own sections.

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Immune Support Through Supplementation in Russia

Executive Summary

Russia presents a strong epidemiological and physiological case for immune-supportive supplementation, driven by three converging factors: (1) widespread micronutrient deficiencies affecting immune competence (vitamin D, zinc, selenium, iodine), (2) a persistent seasonal respiratory infection burden with substantial mortality, and (3) an aging population experiencing immunosenescence¹ alongside high rates of chronic disease that compound infection risk. Consumer demand already reflects this need, with a majority of Russians self-administering dietary supplements, though regulatory and market barriers remain. This report evaluates the clinical rationale, population-level need, and commercial opportunity for immune-supporting nutraceuticals in the Russian market.

Dr. Hennen's Summary

"When I look at the research on Russia's immune health landscape, three threads consistently stand out to me: widespread micronutrient deficiencies, a heavy seasonal respiratory infection burden, and an aging population facing immunosenescence. As a scientist who has spent decades studying immune-supportive nutrition, I find this convergence compelling. It's exactly the kind of population-level evidence that points toward a real, measurable need for consistent immune support, not just anecdotal demand."

Ben's Summary

"Put simply, a huge number of Russians are low on key nutrients like vitamin D and zinc, they deal with a rough cold-and-flu season every year, and the population is getting older. All of these things put real strain on the immune system. It's no surprise then that most

¹ Immunosenescence is the natural, gradual decline and remodeling of the immune system as people age. It leads to a reduced ability to fight new infections, lower vaccine effectiveness, and an increase in chronic low-grade inflammation known as "inflammaging". <https://pmc.ncbi.nlm.nih.gov/articles/PMC9261375/>
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Russians already take supplements on their own. This report digs into why that makes sense."

Widespread Micronutrient Deficiencies Undermining Immune Function

Vitamin D deficiency is the most extensively documented immune-relevant deficiency in Russia. A large multicenter registry study found vitamin D deficiency in 55.96% of participants across latitudes of 45°–70°N, with deficiency plus insufficiency reaching 84.01%. A national Phase III registry study similarly found 56.4% deficiency and 27.9% insufficiency, meaning 84.3% of adults aged 18–50 had suboptimal vitamin D status. Seasonal analysis shows deficiency/insufficiency affecting 84.2% of participants in spring versus 62.4% in autumn, with young men (18–25 years) representing the highest-risk subgroup. Regional studies in Russia's North-West similarly found 45.7% deficient and 37.5% insufficient, with associations to female sex, obesity, and low fish intake. Since vitamin D is a well-established modulator of both innate and adaptive immunity, this near-universal insufficiency represents a direct, mechanistically plausible driver of increased infection susceptibility across the population.^{[1][2][3][4][5][6]}

Trace element deficiencies compound this picture. A 2024 study from Sechenov University surveying more than 60,000 Russians across regions found deficiencies in four key immune-relevant micronutrients: cobalt (up to 60% in some regions), selenium (25–45% of Russians), zinc (20–40%), and iodine (40–50%). Researchers noted that zinc deficiency specifically increases susceptibility to colds and infections, while combined deficiencies reduce the body's adaptive capacity even in people living in favorable climates. Older literature confirms selenium intake is structurally low in Russia because domestically grown food has lower selenium content than food produced abroad, particularly in ecologically compromised regions. Zinc insufficiency has similarly been described as "widely distributed" among both adult and child populations across many Russian districts.^{[7][8][9]}

Micronutrient	Deficiency Prevalence	Immune-Relevant Role
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Vitamin D	45–56% deficient; up to 84% deficient+insufficient ^{[1][5][6]}	Innate/adaptive immune modulation, respiratory infection resistance
Zinc	20–40% nationally ^[8] ; "widely distributed" ^[9]	T-cell function, susceptibility to colds/infections
Selenium	25–45% nationally ^[8] ; structurally low dietary intake ^[7]	Antioxidant defense, antiviral immunity
Iodine	40–50% nationally ^[8]	Thyroid-immune axis, metabolic regulation
Cobalt	Up to 60% regionally ^[8]	Reduced endurance, anemia risk

Persistent Respiratory Infection Burden

Russia experiences a substantial and recurring seasonal burden of acute respiratory viral infections (ARVI) and influenza. In the most recent 2026 season, Rospotrebnadzor reported 678,000 weekly cases of ARVI and influenza nationally, with double-digit percentage increases across at least 20 regions driven by temperature fluctuations. Historical surveillance shows this is a structural, recurring pattern rather than an anomaly: comparing 2016 to 2015, ARVI incidence rose 5.7%, influenza incidence rose 1.8-fold to 60.5 cases per 100,000, and pneumonia incidence rose 24.0%.^{[10][11]}

The mortality impact of seasonal influenza is significant and likely underestimated by official cause-of-death coding. A modeling study of the 2013/14 through 2018/19 seasons estimated an average of 17,636 influenza-associated deaths annually from circulatory causes and 4,179 from respiratory causes, with the worst season (2014/15) producing an estimated 32,298 circulatory and 6,689 respiratory deaths. Notably, increased influenza vaccination coverage after 2016 was associated with a 16.1% reduction in this mortality burden, demonstrating that immune-protective interventions measurably reduce excess deaths in this population. Physicians quoted in 2026 reporting specifically link "vitamin deficiency" alongside weather changes and lack of sun exposure to seasonal declines in immune resistance, reinforcing the direct clinical connection between micronutrient status and infection incidence in Russian medical practice.^{[12][10]}

COVID-19 further exposed underlying vulnerabilities: analyses of 2020 mortality data found COVID-19 was the third-ranked cause of new morbidity in Moscow and the Central

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Federal Okrug (after respiratory diseases and injuries), and that COVID-19 significantly increased mortality from respiratory diseases, ischemic heart disease, and diabetes—conditions closely tied to immune and metabolic dysfunction.^[13]

Aging Population and Immunosenescence

Russia's demographic profile amplifies the immune-support case. Immunosenescence—the progressive decline and remodeling of immune function with age—combined with inflammaging (chronic low-grade inflammation) increases older adults' susceptibility to respiratory viral infections and worsens outcomes when infections occur. Given that nearly half of Russian adults already carry at least one chronic condition, and that cardiovascular disease, diabetes, and chronic respiratory disease dominate the morbidity profile, the immunological reserve of a large share of the population is already compromised before considering acute infectious challenge. This creates a rationale for senomorphic² and immune-supportive nutraceutical strategies that address both chronic inflammatory burden and acute infection resistance simultaneously.^{[14][15][16]}

Consumer Demand and Market Response

Russian consumers already demonstrate strong self-directed demand for immune support. A 2026 industry survey found approximately 63% of Russians take dietary supplements, though only 24% do so under physician guidance, with health improvement (75%) and disease prevention (51%) cited as primary motivations. The legal supplement market reached 279 billion rubles (894 million packages) in 2025, split between pharmacy sales (224 billion rubles) and online channels (55 billion rubles), with vitamins leading pharmacy sales and magnesium leading marketplace sales. Industry analysis specifically identifies immune health as a primary growth driver, citing rising demand for vitamin C, vitamin D, zinc, and probiotic formulations, along with growing preference for natural and plant-based options.^{[17][18]}

² A senomorphic is a type of therapeutic compound that suppresses the harmful inflammatory secretions of aging cells without killing the cells themselves.

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The broader nutraceuticals market reflects this trajectory, projected to grow from current levels to USD 36.8 billion by 2035 at a CAGR of 8.31%, while the immune health supplements segment specifically is forecast to expand through 2031. This growth is occurring despite acknowledged structural headwinds: a strict regulatory environment under Roszdravnadzor requiring product registration and GMP compliance, low baseline consumer education on supplement efficacy versus safety (Russian scientific literature emphasizes efficacy in 40% of publications versus safety emphasis of 66.67% abroad), and persistent counterfeit product concerns.^{[19][18][17]}

Year-Round Benefits Beyond Seasonal Infection Defense

While respiratory infection risk is highest in autumn and winter, the physiological rationale for immune-supportive supplementation in Russia extends across all seasons, because the underlying deficiencies and their downstream effects are chronic rather than episodic. Vitamin D deficiency in Russia persists year-round, with even the lowest-prevalence season (autumn) showing 62.4% combined deficiency/insufficiency, meaning most of the population carries a suboptimal immune substrate at all times, not just during flu season. Because vitamin D receptors are expressed on nearly all immune cells—B cells, T cells, NK cells, dendritic cells, and monocytes—continuous repletion supports baseline innate and adaptive immune competence rather than only acute infection response. Vitamin D also exerts a direct anti-inflammatory effect by inhibiting NF- κ B activity, and clinical research links deficiency to elevated C-reactive protein, a marker of chronic low-grade inflammation that persists independent of infection season.^{[6][20][21][22][23]}

Zinc and selenium similarly provide continuous, non-seasonal benefits. Selenium supports glutathione peroxidase activity and zinc supports superoxide dismutase, and together these minerals provide ongoing antioxidant defense that protects immune cells from oxidative stress accumulated through normal metabolism, not just pathogen exposure. This sustained antioxidant support has been linked to reduced chronic disease risk, including cardiovascular and autoimmune conditions, because unresolved oxidative stress and inflammation compound over time regardless of season. Research on aging specifically identifies zinc and selenium as pivotal in countering the oxidative stress that accumulates

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progressively with age, reinforcing that their value is cumulative and long-term rather than confined to cold-and-flu periods. Clinical evidence also shows that physiological zinc supplementation over 1–2 months restores immune responses and prolongs survival in aging populations, an effect tied to sustained repletion rather than short-term seasonal dosing.^{[24][25][26][27]}

For Russia's population, where nearly half of adults already carry a chronic disease and cardiovascular, metabolic, and inflammatory conditions dominate the morbidity profile, year-round micronutrient adequacy plausibly contributes to controlling chronic inflammatory processes that operate independently of infection exposure. This positions immune-support formulations not merely as seasonal cold-and-flu products but as continuous-use nutraceuticals relevant to chronic disease management, healthy aging, and inflammaging mitigation—a framing well aligned with combination senomorphic and immune-support product strategies.^{[15][16][26][14]}

Clinical and Formulation Considerations

The convergence of evidence points toward several formulation priorities for the Russian market. Vitamin D repletion addresses the most prevalent and best-documented deficiency, with seasonal dosing strategies particularly relevant given the sharp spring-versus-autumn variation in deficiency rates. Combined zinc-selenium-iodine formulations would address the multi-micronutrient deficiency pattern identified in the Sechenov University research, particularly for populations in climatically harsh or ecologically compromised regions where deficiency rates are most severe. Probiotic and immunomodulatory food ingredients are an active area of Russian product development, reflected in a growing "food immunomodulators" market segment encompassing powders, extracts, and encapsulated bioactives for functional foods and clinical nutrition.^{[28][8][6][7]}

For the aging segment specifically, formulations addressing both immunosenescence and inflammaging—potentially combining immune-supportive micronutrients with senomorphic or anti-inflammatory compounds—would align with Russia's dual burden of chronic disease and infection vulnerability in older adults. Given regulatory friction around

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health claims, evidence generation through registered clinical studies would likely be necessary for market differentiation and Roszdravnadzor approval, particularly for novel immune-support claims beyond established vitamin/mineral indications.^{[16][14][17]}

Conclusion

The case for immune-supportive supplementation in Russia is well-supported by convergent evidence: population-wide micronutrient deficiencies with direct immune mechanisms, a measurable and partially preventable seasonal respiratory mortality burden, an aging population facing compounded immunosenescence and chronic disease risk, and physiological benefits that extend across the full calendar year rather than being confined to cold-and-flu season. Existing consumer behavior already reflects recognition of this need, with the majority of Russians self-supplementing, creating both validated demand and a clear opportunity for evidence-based, regionally-tailored, continuous-use immune health products—particularly vitamin D, zinc, selenium, and iodine formulations, and combination products targeting both acute infection resistance and chronic inflammatory burden in older adults.

Dr. Hennen's Summary

"Taken together, the data on Russia tells a clear story to me as a researcher. This isn't a population with a seasonal cold problem; it's a population with a year-round nutritional gap that happens to get worse in winter. Vitamin D deficiency alone affects the majority of adults in every season I examined, and when you add zinc, selenium, and iodine shortfalls on top of that, you're looking at a population whose immune systems are working without the raw materials they need, all year long."

Ben's Summary

"The big takeaway from all this Russia data is that it's not just a winter thing. Most people there are low on vitamin D, zinc, and a few other key nutrients pretty much year-round. Winter just makes it more obvious because that's when colds and flu hit hardest."

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Consistent, daily support makes a lot more sense than only stocking up when you're already getting sick."

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Immune Support Through Supplementation in Kazakhstan.

Year-round immune support in Kazakhstan is justified primarily because the country's core deficiency — vitamin D — is structural rather than seasonal. Deficiency affects 57% of adults nationally, rising to 60% among those with chronic conditions, and reaches up to 90% in northern regions due to long winters and low year-round ultraviolet exposure.^{[1][2][3]}

Why deficiency isn't just a winter problem

Even outside peak winter months, vitamin D status remains poor across Kazakhstan's population, including infants (92.8% deficient at 0–28 days, still 84% by 1–6 months) and children broadly (56% pooled prevalence, 65% among infants). Notably, children from wealthier households show higher deficiency than poorer households, likely reflecting more indoor, sun-avoidant lifestyles rather than a purely climate-driven or seasonal pattern — reinforcing that lifestyle and behavioral factors sustain deficiency across all seasons.^{[4][5][6][7]}

Immune mechanism supporting continuous use

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Vitamin D receptors are expressed on nearly all immune cells, including T cells, B cells, NK cells, dendritic cells, and monocytes, so ongoing repletion supports baseline immune competence and anti-inflammatory tone continuously, not just during acute infection windows. This matters because deficiency has been directly linked to disease progression in chronic infections: one Kazakhstani study found vitamin D deficiency in nearly 95% of active pulmonary tuberculosis cases versus 43.7% in controls, illustrating how sustained low status undermines immune defense against chronic as well as acute pathogens.^{[8][9][10]}

Link to chronic disease burden

Kazakhstan also carries one of the highest rates of premature NCD mortality in the WHO European Region (648.31 deaths per 100,000 among ages 30–69). Because immune and metabolic pathways are interconnected, year-round supplementation addressing both may offer compounding benefit for the 60% of Kazakhstanis with chronic conditions who are also vitamin D deficient, rather than benefit limited to cold-and-flu prevention.^{[11][1]}

Consumer and market alignment

This case is reinforced by market behavior: over 90% of Kazakhstanis have taken a supplement course at some point, and demand for combined "check-up plus vitamins" formats rose 21% quarter-over-quarter with repeat-purchase rates exceeding 36%, suggesting consumers already gravitate toward continuous, non-seasonal supplementation habits rather than one-off winter purchases.^{[12][13]}

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Immune Support Through Supplementation in Kyrgyzstan

Year-round immune support in Kyrgyzstan is warranted because its core deficiencies — iron, folate, and vitamin D — are structural and dietary in origin, persisting across the calendar year rather than fluctuating mainly with cold-and-flu season.^[1]

Iron deficiency as a continuous immune constraint

Iron deficiency affects roughly half of Kyrgyzstan's female population: 55.9% of non-pregnant women of reproductive age and 46.5% of adolescent girls, alongside 47.0% of children aged 6–59 months. Since iron is essential for lymphocyte proliferation and the function of iron-dependent immune enzymes, this isn't an infection-season problem — it's a year-round drag on immune competence that only continuous repletion can meaningfully address. Folate deficiency compounds this, affecting 83.6% of adolescent girls and 83.2% of non-pregnant women, further limiting the nutritional-immune reserve available at any point in the year.^[1]

Vitamin D deficiency driven by lifestyle, not just winter

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Vitamin D deficiency or insufficiency affects 25.4% of young children, rising to 39.3% of adolescent girls and 51.1% of non-pregnant women. Notably, children in the wealthiest households show higher deficiency (52%) than those in poorer households — a pattern pointing to indoor, sun-avoidant lifestyles rather than a purely seasonal, winter-driven effect. This means year-round supplementation is relevant regardless of season, and should be positioned across income levels rather than targeted only at lower-income or rural populations.^{[2][1]}

Chronic respiratory disease adds a non-seasonal dimension

Approximately 1 million Kyrgyzstanis — a substantial share of the roughly 6 million population — live with chronic respiratory disease, driven largely by smoking and household air pollution from stove heating, with COPD prevalence reaching 37% in highland regions versus 10% in lowlands. This chronic lung vulnerability persists year-round via ongoing indoor air pollution exposure (not just winter heating), and it amplifies the severity of any acute respiratory infection encountered — meaning sustained immune and anti-inflammatory support offers protective value well beyond the winter infection window.^{[3][4]}

Practical implication

Because these vulnerabilities — iron/folate deficiency, lifestyle-driven vitamin D deficiency, and chronic lung disease — operate continuously, immune-support strategies framed around sustained, year-round use (particularly iron-inclusive multi-micronutrient formulations for women and girls) are better aligned with Kyrgyzstan's health profile than products marketed only for seasonal cold-and-flu protection.^{[3][1]}

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Immune Support Through Supplementation in Tajikistan

Year-round immune support in Tajikistan is warranted because its dominant deficiencies — anemia/iron deficiency, iodine deficiency, and chronic low-grade inflammation — are structural and dietary in origin, meaning they persist continuously rather than fluctuating with cold-and-flu season.^{[1][2][3]}

Anemia and iron deficiency as an ongoing immune constraint

Anemia affects up to 29.9% of women of reproductive age and 39.8% of children aged 6–59 months in more recent assessments, with a strong maternal-to-child transmission pattern — children of anemic mothers show 34.6% anemia prevalence themselves. Because iron directly supports lymphocyte function and antibody production, this level of deficiency represents a constant, non-seasonal limitation on immune defense that only sustained repletion can address, rather than something that spikes only in winter.^{[4][5]}

Chronic inflammation compounds the picture

A study assessing nutritional status among Tajik children and women found that while vitamin D deficiency was moderate (12.4%), underlying inflammation was very high, affecting 64.0% of the study population. This combination suggests immune dysregulation in Tajikistan is chronic and multifactorial — a state of persistent low-grade inflammation coexisting with micronutrient shortfall — reinforcing that supplementation should be framed as ongoing anti-inflammatory and nutritional support rather than a seasonal cold-prevention measure.^[3]

Iodine deficiency causes cumulative, not acute, harm

Iodine deficiency remains a nationwide risk due to naturally low iodine content in Tajikistan's soil and food supply, with women of reproductive age and children under 5 most vulnerable to irreversible neurodevelopmental harm. Because these effects accumulate over time rather than resolving with acute treatment, iodine and broader micronutrient support functions as a continuous public-health necessity rather than a seasonal intervention.^[2]

Practical implication

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Given the severity and non-seasonal nature of these deficiencies, iron-inclusive multi-micronutrient formulations targeting women of reproductive age and young children represent the highest-value, year-round intervention for Tajikistan, with iodine-fortified support and anti-inflammatory formulation additions offering further benefit given the documented population-level inflammation.^{[1][2][3][4]}

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Immune Support Through Supplementation in Ukraine

Ukraine's need for immune-supportive supplementation is shaped by the compounding effects of a pre-existing noncommunicable disease burden, wartime disruption of chronic disease management and vaccination programs, severe psychosocial stress, and degraded nutritional and health-system infrastructure. These factors together create both an acute and chronic rationale for year-round immune support, distinct from the seasonal cold-and-flu framing common in stable health systems.

Ukraine's immune vulnerabilities are chronic and structural rather than confined to a seasonal infection window, making continuous immune support particularly relevant. The 84% NCD-driven mortality burden and pervasive disruption of chronic disease management mean that a large share of the population carries ongoing, non-seasonal immune and metabolic dysfunction that requires sustained nutritional support, not episodic winter intervention. Chronic psychological stress from prolonged war exposure operates continuously across the year, and its immunosuppressive effects via sustained inflammatory and cortisol dysregulation are not tied to season, reinforcing the case for year-round rather than seasonal immune-support strategies. Populations recovering from trauma, amputation, and surgical intervention require sustained immune and wound-healing support throughout extended rehabilitation periods that span all seasons, not just winter. Given that vaccination and preventive care gaps are persistent and structural rather

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than seasonal, continuous micronutrient and immune-support supplementation may partially offset gaps in formal preventive care access, particularly in front-line and displaced populations with the least consistent access to conventional health services.^{[1][2][3]}

Ukraine's case for immune-supportive supplementation is shaped by a pre-existing high NCD burden, wartime disruption of chronic disease and vaccination care, chronic psychosocial stress, and elevated infectious disease risk from damaged infrastructure. Because these vulnerabilities are structural and persist across the full calendar year rather than being confined to a seasonal infection window, continuous, year-round immune-support strategies are better aligned with Ukraine's health profile than seasonal cold-and-flu-focused interventions, particularly for displaced, front-line, and war-injured populations.

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Summary of the Year-Round Benefits of Immune System Supplementation in Eurasian Countries

Immune-supportive supplementation isn't just a seasonal cold-and-flu intervention — it's a continuous-use strategy, because:

- Vitamin D deficiency persists year-round (even the lowest-prevalence season shows 62.4% deficiency/insufficiency), sustaining a chronically compromised immune substrate^[1]

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- Vitamin D receptors are present on nearly all immune cells and exert ongoing anti-inflammatory effects via NF-κB inhibition, independent of infection exposure
- Zinc and selenium provide continuous antioxidant defense (via superoxide dismutase and glutathione peroxidase) that counters cumulative oxidative stress from normal metabolism and aging, not just pathogens
- Physiological zinc repletion sustained over 1–2 months restores immune function and prolongs survival in aging populations — an effect tied to ongoing use, not seasonal dosing
- **Kazakhstan** — near-universal vitamin D deficiency (57% of adults, up to 90% in northern regions), heavy NCD mortality, and a large seasonal ARVI burden, with year-round vitamin D repletion justified by structural (not just seasonal) deficiency.
- **Kyrgyzstan** — severe iron/folate deficiency in women (up to 56–84%), chronic respiratory disease tied to household air pollution (~1 million affected), with year-round iron and vitamin D support justified by lifestyle-driven, non-seasonal deficiency patterns.
- **Tajikistan** — high anemia/iron deficiency (up to 40% in children, 30% in women), nationwide iodine deficiency risk, and 64% population-level inflammation, supporting continuous rather than seasonal supplementation given irreversible developmental risks.
- **Russia** — Given nearly half of Russian adults already have a chronic disease, year-round micronutrient adequacy connects directly to managing inflammaging and chronic inflammatory burden, not just acute infection risk^{[8][5]}
- **Ukraine** — pre-war NCD burden (84% of morbidity) compounded by wartime disruption of chronic care, chronic psychosocial stress, and infrastructure-driven infectious disease risk, arguing for year-round immune support tied to chronic disease management and trauma recovery rather than seasonal cold/flu framing.

Dr. Hennen's Summary

"Across every country I reviewed for this report (Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Ukraine) the same conclusion kept emerging from the research. These aren't seasonal problems that show up for a few months and disappear. They're structural, nutritional, and immune gaps that persist all year, whether driven by geography, diet, lifestyle, or in Ukraine's case, the added burden of war. That's precisely why I believe continuous, year-round immune support is the more scientifically sound approach, rather than framing these products as something you only reach for during cold-and-flu season."

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Ben's Summary

"There's one thing I want you to remember from this whole report. Every single country we looked at has the same underlying issue. People are missing key nutrients their immune systems need, and it's not just a winter problem. Whether it's vitamin D in Russia, iron in Kyrgyzstan and Tajikistan, or the added stress of war in Ukraine, the fix is the same: consistent, year-round support instead of waiting until flu season to do something about it."

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