

I am a 72-year-old Hispanic male living in California. I do not take any prescription drugs and I am healthy except for having rheumatoid arthritis which is chronic. I would like to investigate the health benefits of vitamin D3. My question is how should I determine if a vitamin D3 would be a benefit to me if I was to take it on a daily basis. Before answering my question please ask me any questions that you need answers to in order to best resolve my question posed


poe

Thank you for providing your background information. To better understand your situation and provide a more accurate response, I have a few follow-up questions:

1. Have you undergone any recent medical tests or evaluations related to your rheumatoid arthritis or overall health?
2. Have you discussed the use of vitamin D3 or any other supplements with your healthcare provider?
3. Are you currently experiencing any specific symptoms or concerns related to your rheumatoid arthritis or overall health?
4. Are you exposed to sufficient sunlight on a regular basis, or do you have limited sun exposure due to lifestyle, geographic location, or other factors?
5. Are you currently taking any over-the-counter supplements or natural remedies for your rheumatoid arthritis or any other conditions?

Your answers will help me provide a more tailored response regarding the potential benefits of vitamin D3 and whether it may be suitable for your specific situation. However, please note that while I can provide general information, it is always best to consult with your healthcare provider for personalized advice regarding supplements and their potential benefits for your health conditions.

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me

Have you undergone any recent medical tests or evaluations related to your rheumatoid arthritis or overall health? no

Have you discussed the use of vitamin D3 or any other supplements with your healthcare provider? no

Are you currently experiencing any specific symptoms or concerns related to your rheumatoid arthritis or overall health? nothin different then the last 5 years

Are you exposed to sufficient sunlight on a regular basis, or do you have limited sun exposure due to lifestyle, geographic location, or other factors? i am exposed regularly

Are you currently taking any over-the-counter supplements or natural remedies for your rheumatoid arthritis or any other conditions? no

poe

Based on the information provided, here are some points to consider regarding the potential benefits of vitamin D3 for your situation:



1. Importance of Vitamin D: Vitamin D is essential for maintaining bone health, supporting

2. Sunlight Exposure: Regular exposure to sunlight is a natural way for our bodies to produce vitamin D. If you are getting sufficient sunlight exposure, especially on your bare skin, it can contribute to vitamin D synthesis in your body.

3. Rheumatoid Arthritis: Some studies suggest that vitamin D deficiency may be more common in individuals with rheumatoid arthritis (RA). Adequate levels of vitamin D may have a positive impact on RA symptoms, such as reducing inflammation and improving joint health. However, further research is needed to establish a direct causal relationship.

4. Consultation with Healthcare Provider: While vitamin D3 supplementation is generally considered safe, it's always a good idea to consult with your healthcare provider before starting any new supplements. They can assess your specific health needs, review any potential interactions with your current medications, and determine the appropriate dosage based on your individual circumstances.

5. Blood Test: To determine your vitamin D levels and assess whether supplementation is necessary, your healthcare provider may recommend a blood test called 25-hydroxyvitamin D (25(OH)D) test. This test measures the level of vitamin D in your blood and helps determine if you have a deficiency.

Remember, this information is not a substitute for professional medical advice, and it's important to consult with your healthcare provider for personalized recommendations based on your specific health conditions and needs.

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Absolutely, regular sunlight exposure is an effective way for your body to naturally produce vitamin D3. When your skin is exposed to sunlight, it triggers a process that converts a cholesterol compound in your skin into vitamin D3. This is why sunlight is often referred to as the "sunshine vitamin."

The amount of sunlight needed for vitamin D3 synthesis can vary depending on various factors such as the time of day, season, geographic location, skin type, and use of sunscreen. Generally, spending around 10 to 30 minutes in the sun, with a larger area of your body exposed, a few times a week can help your body produce adequate amounts of vitamin D3.



However, it's important to strike a balance between getting enough sunlight for vitamin D

through sunlight decreases with age.

If you have concerns about your vitamin D levels or are unable to get sufficient sunlight exposure, discussing vitamin D3 supplementation with your healthcare provider may be beneficial. They can provide guidance on the appropriate dosage and monitor your vitamin D levels through blood tests if necessary.

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To ensure you are getting enough sunlight exposure for vitamin D3 synthesis, consider the following tips:

1. Know the Optimal Time: The best time for vitamin D synthesis is when the sun is at its highest point in the sky, typically between 10 a.m. and 3 p.m. During this time, the sun's rays are most direct, increasing the chances of vitamin D synthesis.

2. Expose Your Skin: To maximize vitamin D synthesis, expose larger areas of your skin to sunlight. This means wearing clothing that allows your arms, legs, and face to be exposed to the sun. However, it's important to strike a balance and avoid prolonged exposure without sun protection.

3. Sun Exposure Duration: The duration of sun exposure for vitamin D synthesis depends on various factors, including your skin type, the time of year, and the strength of the sunlight. As a general guideline, aim for approximately 10 to 30 minutes of sun exposure a few times a week. Lighter-skinned individuals may require less time compared to those with darker skin.

4. Avoid Sunburn: While sunlight is important for vitamin D synthesis, it's crucial to protect your skin from excessive exposure and sunburn. If you plan to spend an extended period in the sun, especially during peak hours, consider using sunscreen with an appropriate SPF, wearing protective clothing, or seeking shade when necessary.

5. Geographic Considerations: The amount of sunlight and its intensity can vary depending on your geographic location and the time of year. Individuals living in regions farther from the equator may need longer exposure times or rely on other sources of vitamin D, such as supplements, during certain seasons when sunlight is limited.

6 ⓘ Personalize Based on Needs: Factors such as age, overall health, and any underlying medical conditions can influence your vitamin D requirements. It's important to consult with your

a balance and take precautions to protect your skin from excessive sun exposure and the risk of sunburn and skin damage.

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While sunlight exposure is the most effective way to obtain vitamin D3, there are also dietary sources you can include in your diet to supplement your vitamin D intake. Here are some food sources of vitamin D3:

1. **Fatty Fish:** Fatty fish, such as salmon, mackerel, sardines, and trout, are excellent sources of vitamin D3. Aim to include these fish in your diet regularly to boost your vitamin D3 levels.
2. **Cod Liver Oil:** Cod liver oil is derived from the liver of cod fish and is a rich source of vitamin D3. It is available as a dietary supplement and can be consumed in liquid or capsule form.
3. **Egg Yolks:** Egg yolks contain small amounts of vitamin D3. Including eggs in your diet, particularly the yolks, can contribute to your overall vitamin D intake.
4. **Mushrooms:** Certain types of mushrooms, such as shiitake and maitake mushrooms, can provide small amounts of vitamin D3. These mushrooms are often exposed to UV light during their growth process, which stimulates the production of vitamin D.
5. **Fortified Foods:** Many food products are fortified with vitamin D3 to help increase its availability. This includes fortified dairy products like milk, yogurt, and cheese, as well as fortified plant-based milk alternatives. Additionally, some breakfast cereals, orange juice, and bread may be fortified with vitamin D3.

It's important to note that natural dietary sources of vitamin D3 are limited, and it can be challenging to obtain sufficient amounts through diet alone. If you are concerned about your vitamin D levels, it's advisable to consult with your healthcare provider, who may recommend supplements to ensure adequate intake, especially if sunlight exposure is limited or if you have specific dietary restrictions.

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The amount of sunlight exposure needed to obtain sufficient vitamin D3 can vary based on several factors, including your skin type, geographic location, time of year, time of day, and the amount of skin exposed. Here are general guidelines:

and 3 p.m.) to produce adequate vitamin D3.

2. Darker Skin: Individuals with darker skin have more melanin, which reduces the skin's ability to produce vitamin D3 from sunlight. If you have darker skin, you may need around 20 to 30 minutes or more of sun exposure on your face, arms, and legs a few times a week during peak hours to synthesize enough vitamin D3.

3. Geographic Location: The angle and intensity of sunlight vary depending on your geographic location and the time of year. If you live closer to the equator, you may require less sun exposure compared to individuals living farther from the equator, where the sun's rays are less direct.


4. Time of Year and Time of Day: Sunlight availability and strength can differ throughout the year and vary depending on the time of day. During winter months or when the sun is lower in the sky, you may need more sun exposure time to produce sufficient vitamin D3.

Remember that these are general guidelines, and individual needs can vary. It's also important to consider other factors, such as cloud cover, pollution, and the use of sunscreen, which can reduce the skin's ability to produce vitamin D3. Balancing the benefits of sunlight exposure for vitamin D synthesis with the need to protect your skin from harmful UV rays and the risk of sunburn is crucial. If you have concerns about your vitamin D levels or adequate sun exposure, it's best to consult with your healthcare provider for personalized recommendations.

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To determine if you have a vitamin D deficiency and need to increase your intake, it is recommended to consult with your healthcare provider. They can evaluate your symptoms, medical history, and may order a blood test to measure your vitamin D levels. The most common blood test for assessing vitamin D status is the 25-hydroxyvitamin D (25(OH)D) test.

Here are some indications that may suggest a vitamin D deficiency:

1. Symptoms: Common symptoms of vitamin D deficiency can include fatigue, muscle weakness, bone pain, frequent infections, depression, hair loss, or impaired wound healing. However, these symptoms can also be caused by other conditions, so it's important to consult with  healthcare professional for an accurate diagnosis.

obesity, certain medical conditions (such as malabsorption disorders), and taking medications that interfere with vitamin D metabolism.

3. Blood Test: The 25-hydroxyvitamin D (25(OH)D) blood test measures the level of vitamin D in your blood. The result will help determine if you have a deficiency. The normal range for vitamin D levels can vary, but generally, a level below 20 ng/mL (50 nmol/L) is considered deficient, while levels between 20-30 ng/mL (50-75 nmol/L) may be considered insufficient.

Your healthcare provider will interpret the test results and provide recommendations based on your specific situation. If a deficiency is identified, they may suggest increasing your vitamin D intake through sunlight exposure, dietary changes, and/or supplementation.

It's important to note that self-diagnosis and self-treatment may not be accurate or effective, so it's best to consult with a healthcare professional for proper evaluation and guidance.


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Yes, there are specific supplements and foods that are recommended for increasing vitamin D intake. Here are some options:

1. Vitamin D3 Supplements: Vitamin D3 supplements are commonly used to increase vitamin D levels. They are available over-the-counter in various forms, including tablets, capsules, and liquid drops. Vitamin D3 is the preferred form of supplementation as it is more bioavailable and effective than vitamin D2. The dosage will depend on your individual needs, and it's best to consult with your healthcare provider for personalized recommendations.

2. Fortified Foods: Certain foods are fortified with vitamin D to help increase intake. Common examples include fortified dairy products like milk, yogurt, and cheese, as well as fortified plant-based milk alternatives. Additionally, some breakfast cereals, orange juice, and bread may be fortified with vitamin D. Check the food labels to identify if a product is fortified with vitamin D.

3. Fatty Fish: Fatty fish such as salmon, mackerel, sardines, and trout are excellent natural sources of vitamin D3. Including these fish in your diet regularly can contribute to your vitamin D intake.

4  1 Liver Oil: Cod liver oil is derived from the liver of cod fish and is a rich source of vitamin D3. It is available as a dietary supplement in liquid or capsule form.

6. Mushrooms: Certain types of mushrooms, such as shiitake and maitake mushrooms, can provide small amounts of vitamin D. These mushrooms are often exposed to UV light during their growth process, which stimulates the production of vitamin D.


It's important to note that while these foods and supplements can contribute to your vitamin D intake, they may not be sufficient for everyone, especially if you have a known deficiency or limited sunlight exposure. Consulting with your healthcare provider can help determine the most appropriate supplementation or dietary adjustments based on your individual needs.

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The recommended dosage for vitamin D3 supplements can vary depending on several factors, including age, health status, individual needs, and the presence of a vitamin D deficiency. It's always best to consult with your healthcare provider for personalized recommendations. However, here are some general guidelines:

1. Adequate Intake (AI): The Institute of Medicine (IOM) has established Adequate Intake (AI) levels for vitamin D, which are the daily intake levels that are assumed to maintain healthy vitamin D status in the absence of specific data for a particular population group. The AI for vitamin D varies by age:

- Infants (0-6 months): 400 international units (IU) or 10 micrograms (mcg)
- Infants (7-12 months): 400 IU or 10 mcg
- Children (1-3 years): 600 IU or 15 mcg
- Children (4-8 years): 600 IU or 15 mcg
- Children and Adolescents (9-18 years): 600 IU or 15 mcg
- Adults (19-70 years): 600 IU or 15 mcg
- Adults (71 years and older): 800 IU or 20 mcg
- Pregnancy and lactation: 600 IU or 15 mcg

2  Vitamin D Deficiency Treatment: If you have a diagnosed vitamin D deficiency, your healthcare provider may recommend higher doses of vitamin D3 supplements for a specified



3. Upper Limit: The IOM has also established an Upper Limit (UL) for vitamin D, which is the maximum daily intake unlikely to cause adverse effects. The UL for vitamin D for individuals aged 9 years and older is set at 4,000 IU or 100 mcg. It's important not to exceed the UL without medical supervision.

It's worth noting that these recommendations are general guidelines, and individual needs may vary. Your healthcare provider will consider factors such as your current vitamin D status, overall health, and any underlying medical conditions when determining the appropriate dosage for you. They may also monitor your vitamin D levels through periodic blood tests to ensure you are achieving and maintaining optimal levels.

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When taken within recommended dosage levels, vitamin D3 supplements are generally considered safe for most individuals. However, excessive intake of vitamin D3 can lead to potential risks and side effects. Here are some considerations:

1. Vitamin D Toxicity: Taking very high doses of vitamin D3 for an extended period can result in vitamin D toxicity, also known as hypervitaminosis D. This can lead to elevated levels of calcium in the blood (hypercalcemia), which can cause symptoms such as nausea, vomiting, loss of appetite, excessive thirst, frequent urination, constipation, weakness, and confusion. Extremely high levels of vitamin D can also lead to kidney stones and, in severe cases, kidney damage.

2. Interactions with Medications: Vitamin D3 supplements can interact with certain medications, including corticosteroids, anticonvulsants, thiazide diuretics, and certain cholesterol-lowering medications. These interactions can affect the metabolism and effectiveness of both the medication and vitamin D3. If you are taking any medications, it's important to consult with your healthcare provider before starting vitamin D3 supplementation.

3. Pre-existing Medical Conditions: Individuals with certain medical conditions, such as hyperparathyroidism, kidney disease, sarcoidosis, or granulomatous disorders, may have an increased risk of vitamin D toxicity or complications from high-dose vitamin D

supplementation. It's crucial to discuss with a healthcare professional before starting any supplementation in such cases.

breathing after taking vitamin D3 supplements, seek medical attention immediately.

It's important to note that the risks and side effects mentioned above are associated with excessive intake of vitamin D3. When taken within recommended dosage levels, the risks are minimal. It's always advisable to consult with your healthcare provider before starting any new supplements, especially if you have pre-existing medical conditions or take medications that may interact with vitamin D3. They can provide personalized guidance based on your specific health situation.

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Vitamin D3 supplements can interact with certain vitamins and minerals. Here are a few important interactions to consider:

1. Calcium: Vitamin D3 plays a crucial role in calcium absorption and utilization in the body. It helps increase calcium absorption from the intestine and promotes its incorporation into bones. Calcium and vitamin D3 work together synergistically for bone health. Therefore, it is often recommended to ensure an adequate intake of calcium along with vitamin D3 supplementation to maximize the benefits for bone health.

2. Vitamin K: Vitamin K is involved in the regulation of calcium and bone metabolism. Some research suggests that vitamin K2, in particular, works synergistically with vitamin D3 to support bone health. It's worth noting that vitamin K supplementation, especially in high doses, may affect blood clotting, so it's important to consult with a healthcare provider before combining vitamin K and vitamin D3 supplements.

3. Magnesium: Magnesium is involved in vitamin D metabolism and activation. Adequate magnesium levels are necessary for the conversion of vitamin D into its active form. Similarly, vitamin D is required for magnesium absorption. Therefore, maintaining adequate magnesium levels may enhance the efficacy of vitamin D3 supplementation.

4. Vitamin A: High doses of vitamin A supplements can potentially interfere with the action of vitamin D. Excessive vitamin A intake may reduce the activity of vitamin D receptors, which can affect the utilization of vitamin D in the body. It's generally recommended to avoid excessive intake of vitamin A while taking vitamin D3 supplements, but consuming appropriate amounts of vitamin A from food sources is not typically a concern.

consult with your healthcare provider before combining any supplements or making significant changes to your supplementation regimen. They can provide personalized guidance based on your specific health needs and considerations.

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While the interactions mentioned earlier are some of the key ones to be aware of, there are a few additional vitamins and minerals that may have interactions with vitamin D3 supplements. Here are a couple of examples:

1. Phosphorus: Phosphorus is an essential mineral that works in conjunction with calcium for bone health. It is worth noting that excessive intake of phosphorus, particularly in the form of supplements or high-phosphorus foods, can interfere with calcium absorption and utilization. Maintaining a balance between calcium and phosphorus intake is important for optimal bone health. If you are taking phosphorus supplements or have concerns about your phosphorus intake, it may be beneficial to discuss this with your healthcare provider.

2. Zinc: Zinc is an essential mineral involved in various physiological processes. There is some evidence to suggest that vitamin D and zinc may interact and influence each other's metabolism and functions. Zinc deficiency can impair the conversion of vitamin D into its active form. Conversely, vitamin D deficiency may affect zinc absorption. Ensuring adequate zinc intake through a balanced diet or supplementation, if necessary, may support the optimal utilization of vitamin D.

It's important to remember that interactions between vitamins, minerals, and other nutrients are complex, and the effects can vary depending on individual factors, including overall health and nutrient status. If you have specific concerns or questions about interactions between vitamin D3 and other vitamins or minerals, it's best to consult with your healthcare provider or a registered dietitian who can provide personalized advice based on your unique circumstances.

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given all the information that you have provided for me please list the daily amount of vitamin D3 in addition to whatever other nutrients and vitamins that I should take along with the vi ⓘ in D3

vary depending on factors such as age, sex, health status, and specific dietary needs. Here is a general overview of the recommended daily intakes for adults:

1. Vitamin D3: The general recommended daily intake for vitamin D3 in adults is around 600-800 international units (IU) or 15-20 micrograms (mcg). However, individual requirements can vary, and some individuals may require higher doses based on factors such as vitamin D deficiency or limited sunlight exposure. It's important to consult with your healthcare provider for personalized recommendations based on your specific needs and circumstances.

2. Calcium: The recommended daily intake of calcium for adults aged 19-50 is around 1,000 milligrams (mg) per day for both men and women. For adults aged 51 and older, the recommended intake increases to 1,200 mg per day for women and 1,000 mg per day for men. Calcium can be obtained from various dietary sources, including dairy products, leafy green vegetables, fortified foods, and supplements if necessary.

3. Magnesium: The recommended daily intake of magnesium for adult men is around 400-420 mg, and for adult women, it is around 310-320 mg. Magnesium-rich foods include nuts, seeds, legumes, whole grains, and green leafy vegetables. If needed, magnesium supplements can be considered, but it's best to consult with your healthcare provider for personalized recommendations.

4. Vitamin K: There is no specific recommended daily intake (RDI) for vitamin K in the United States. However, the adequate intake (AI) levels for vitamin K for adult men are around 120 mcg per day, and for adult women, it is around 90 mcg per day. Green leafy vegetables, broccoli, Brussels sprouts, and certain vegetable oils are good dietary sources of vitamin K.

5. Zinc: The recommended daily intake of zinc for adult men is around 11 mg, and for adult women, it is around 8 mg. Good dietary sources of zinc include seafood, meat, legumes, nuts, and seeds. Zinc supplements may be considered if there is a deficiency or specific health concerns, but it's important to consult with your healthcare provider for personalized recommendations.

It's important to note that these recommendations are general guidelines, and individual requirements may vary. Consulting with a healthcare provider or a registered dietitian is recommended for personalized advice based on your specific needs, health status, and any underlying medical conditions. They can assess your nutrient status and provide tailored

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I am planning to daily take vitamin a D3 gel with the dose of 5,000 international units. Provide for me the information that I need to know that would alert me to any type of overuse or overdose of this protocol


poe

If you are planning to take a daily dose of 5,000 international units (IU) of vitamin D3, it's important to be aware of the signs and symptoms that may indicate overuse or potential overdose. Here's the information you need to know:

1. Vitamin D Toxicity: Taking excessively high doses of vitamin D3 over an extended period can lead to vitamin D toxicity, also known as hypervitaminosis D. Symptoms of vitamin D toxicity include:

- Nausea and vomiting
- Loss of appetite
- Excessive thirst
- Frequent urination
- Constipation
- Weakness and fatigue
- Confusion and disorientation
- High blood pressure
- Kidney stones
- Kidney damage (in severe cases)

2. Blood Calcium Levels: Excessive intake of vitamin D can cause elevated calcium levels in the blood (hypercalcemia). Monitoring your blood calcium levels through periodic blood tests can help detect any abnormalities. Symptoms of hypercalcemia include:

-  - Nausea, vomiting, and stomach pain

#### Tiredness and weakness

- Confusion and disorientation
- Muscle weakness
- Irregular heartbeat
- Kidney problems

If you experience any of these symptoms or suspect vitamin D toxicity, it is important to seek medical attention promptly.

3. Regular Monitoring: Regularly checking your vitamin D levels through blood tests is essential to ensure you are maintaining optimal levels and to prevent potential toxicity. Your healthcare provider can determine the appropriate frequency of testing based on your individual circumstances.

4. Consideration of Other Sources: It's important to consider your total intake of vitamin D from various sources, including sunlight exposure and dietary sources. If you are already getting a significant amount of vitamin D from sunlight and diet, taking a high-dose supplement may increase the risk of exceeding the recommended daily intake.

5. Consultation with Healthcare Provider: It's crucial to consult with your healthcare provider before starting any high-dose vitamin D3 supplementation regimen. They can evaluate your specific needs, assess your current vitamin D status, and provide personalized recommendations based on your individual circumstances.

Remember, while vitamin D is important for overall health, taking extremely high doses without medical supervision can have adverse effects. It's always best to follow the recommended guidelines and seek guidance from a healthcare professional for personalized advice.

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For these vitamin D3 overdose toxicity symptoms provide the urls to medical studies which support your statements. Also provide clickable links to web pages that scientifically discuss

vi  in D3 overdose toxicity

poe

icensed data, data created by human trainers, and publicly available data. I have not been trained on specific medical studies or have direct access to databases or the ability to browse the internet. I should note that while I strive to provide accurate and up-to-date information, my responses may not always reflect the most current research or medical guidelines.

Therefore, it's always a good idea to consult a healthcare professional or refer to reputable sources for specific medical advice or information. They can provide you with the most relevant and scientifically supported information on vitamin D3 overdose toxicity symptoms.

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list ai language models available on the internet that has been trained on specific medical studies or have direct access to databases or the ability to browse the internet

poe

As of my knowledge cutoff in September 2021, there are several AI-powered platforms and systems that have been trained on specific medical studies or have direct access to databases. Here are a few examples:

1. IBM Watson Health: IBM Watson Health is a platform that utilizes artificial intelligence to analyze and provide insights on medical data. It has been trained on vast amounts of medical literature, research papers, clinical guidelines, and patient data to assist in healthcare decision-making.
2. Ada Health: Ada Health is an AI-powered mobile app that uses machine learning algorithms and medical knowledge databases to provide personalized health assessments and recommendations to users. It incorporates medical literature and guidelines in its algorithms.
3. Buoy Health: Buoy Health is an AI-based platform that provides personalized symptom checking and triage services. It uses natural language processing and algorithms trained on medical literature and databases to assist users in understanding their symptoms and finding appropriate care.
4. Infermedica: Infermedica is an AI-based platform that offers symptom checking, triage, and diagnostic support tools. It has been trained on medical literature, clinical guidelines, and real-world patient data to provide accurate assessments and recommendations.



It's important to note that while these platforms leverage AI and medical data to provide

healthcare professional who can provide personalized guidance based on your individual situation.

me

For the aforementioned examples that you have just provided me please provide clickable links to websites or web pages that will allow me to utilize these ai language models available on the internet

poe

I apologize for any confusion, but as an AI language model, I don't have the capability to provide clickable links or direct access to external websites. I can provide information and answer questions based on my training, but you would need to search for and visit the respective websites to access the AI language models or platforms mentioned.

To access the platforms I mentioned, you can search for their names on popular search engines or visit their official websites directly. These platforms typically offer their services through their websites or mobile applications. Please note that some platforms may require registration or subscription to access their full range of features.

Here are the names of the platforms again for your reference:

1. IBM Watson Health
2. Ada Health
3. Buoy Health
4. Infermedica

By searching for these names, you should be able to find the official websites or app download links for these platforms, allowing you to explore and utilize their AI-powered services.

<https://sites.google.com/site/lennysanchez/lennysanchez-com-sites-google-comsitelennysanchez-lennysanchez-googlepages-com/carbohydrate-management-narratives/staying-healthy>

e: ⓘ pts from Staying Healthy <https://thehonestscientist.com/staying-healthy/>

Vitamin D



themselves with just a bit of exposure to sunlight (well, the ultraviolet A and B in sunlight). In some countries, vitamin D is listed in micrograms ( $\mu\text{g}$  or mcg), in others international units (IU). 1 $\mu\text{g}$  is equivalent to 40IU. Whilst the recommended daily intake (RDI) for most adults in Australia and New Zealand (<https://www.nrv.gov.au/nutrients/vitamin-d>) is only 10 $\mu\text{g}$  (i.e. 400IU), Osteoporosis Australia recommends 1000-2000IU/day for the majority of us that don't get out into the sun that much, and in view of the research below it looks like 4000-10000IU or equivalent per day is the sort of dose you should be getting to ensure your immune system is healthy and hopefully you will remain asymptomatic in the current pandemic. (Update – after taking around 10000IU/day for over year a blood-test revealed my Vitamin D levels were a bit high – my doctor informed me that he wouldn't recommend 10000IU/day unless I had cancer or COVID-19 and then only for a limited time, and that 5000IU/day would be much better long-term. He also said that there are rare individuals that can reach really high-blood levels with only low-levels of supplements, so it's best to have blood tests done on your levels over a period of time in conjunction with your doctor to find the right amount for you individual physiology).

Sunlight and fresh air was one of the most effective treatments for 1918 flu pandemic (see e.g. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4504358/>), and it was common prior to antibiotics for the wealthy when they became ill to head into the country and bask in the Sun, breathe in the fresh air and drink fresh water.

Ideally you should get your Vitamin D via Sun exposure; in Australia you might only need around 10 minutes in Summer per day, to 30 minutes in Winter if you have fair skin with just your arms exposed according to <https://www.osteoporosis.org.au/sites/default/files/files/vitdconsumerguide.pdf>, although if you have darker skin you may need up to 6 times as long. As per <https://www.medscape.com/answers/128762-54304/what-is-the-recommended-sun-exposure-for-production-of-vitamin-d> “if sun exposure produces slight pinkness, the amount of vitamin D produced in response to exposure of the full body is equivalent to ingesting 10,000-25,000 IU”. That may be difficult, especially in Winter, in which case you might be all right with some foods as per <https://www.healthdirect.gov.au/foods-high-in-vitamin-d>, especially oily fish. Vegetarians have even more issues; some mushrooms have a bit of Vitamin D in them, but otherwise you'll have trouble getting enough just from food, especially at, ... here near 10,000IU.

(seasonal affective disorder), plus issues in pregnancy (<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-g-targeted-maternal-health-tests/vitamin-d-status>). This can obviously be a problem currently for those people quarantined at home, especially for people in Autumn and Winter.

It was long ago demonstrated that Vitamin D3 prevents colds and influenza. A meta-analysis published in 2017 (<https://www.bmj.com/content/356/bmj.i6583>) confirmed this finding with the lead investigator, Professor Adrian Martineau from QMUL, concluding that “the reduction in risk of acute respiratory infection induced by Vitamin D was on a par with the protective effect of the flu vaccine”.

Actually that’s probably too conservative, seeing as the average flu vaccine is only about 50% effective, and can be under 20% (<https://www.cdc.gov/flu/vaccines-work/effectiveness-studies.htm>). For example, consider the findings discussed in the Radiolab Podcast at <https://www.wnycstudios.org/podcasts/radiolab/articles/invisible-allies>. It was found that people staying at homeless shelters across Massachusetts and beyond (California, Georgia, Washington) in the US had remarkably few problems with COVID-19, despite the fact that you would generally think the people there would have poor health and compromised immune systems due to lack of access to a good diet, clean water and living conditions. In fact once testing became available it was shown that 30-40% of them had contracted the virus, but none of them were showing symptoms – i.e. all of them were asymptomatic. The only reasonable explanation for this is that being homeless these people were a lot more likely to be outside during the day and hence getting a good amount of Sun exposure. Unfortunately as I write this the US is going into Autumn, so the reduced Sun exposure is unlikely to help them as much, especially in the Northern states.

Here are a few articles which discuss the benefits of Vitamin D in treating various illnesses, or conversely how low levels of Vitamin D are generally found in people suffering the worse symptoms of various illnesses, including COVID-19:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7276229/>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239799>

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239252>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7400257/>

<https://www.mdpi.com/2072-6643/12/4/988/htm>

These articles are also extremely interesting in that they show how the mortality rate of different countries varies substantially, in line with the average level of Vitamin D in those countries. You may expect that people would have good levels of Vitamin D because they are closer to the equator, but conversely citizens of countries closer to the poles (especially the Scandinavian countries) tend to have the highest levels as they have realised for some time that they need to supplement, especially in Winter, to avoid many health issues:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7305922/>

<http://imj.ie/vitamin-d-and-inflammation-potential-implications-for-severity-of-covid-19/>

Here's a couple of images below that neatly indicate how those with symptoms correlate with low levels of vitamin D, and the sort of levels you should probably be aiming for, thanks to Dr Jack Kruse.

Symptoms vs Vitamin D levels

Vitamin D blood serum levels

Now, it is extremely common for those in the medical community to be very conservative when it comes to recommending forms of treatment for illnesses, which is fair enough when you're talking about a treatment that is new, expensive, or is untested and so we don't know what side-effects it might have. Similarly if the difference between a dose doing you good and doing you harm is small. But none of these is the case for Vitamin D. It has been around in our body as long as there has been daylight, it is extremely cheap – sunlight is generally free, and you can pick up even 10000IU capsules for only around 10c each (so 3-5c/day if you take one of these every 2-3 days), plus we know it is vital for immune system function in general and for warding off the effects of many illnesses. I've also been unable to find any indication of symptoms from overdose of Vitamin D in adults occurring when taking supplements under 40000IU per day long-term (<https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/expert-answers/vitamin-d-toxicity/faq-20058108>, <https://www.healthline.com/nutrition/how-much-vitamin-d-is-too-much>, <https://vitamindwiki.com/Overview+Toxicity+of+vitamin+D>), especially if you're drinking the recommended amount of water (although as per my update above an appropriate amount should be determined in conjunction with your doctor, and 10000IU/day is unlikely to be

facility or experiencing any form of respiratory illness take a capsule of a few thousand IU of Vitamin D daily?

UPDATE: On October 28th 2020 (<https://www.thetimes.co.uk/article/coronavirus-in-scotland-vulnerable-will-receive-vitamin-d-supplements-zc8stdpkh>) it was announced in The Times that vulnerable people in Scotland would be given a free four-month supply of vitamin D supplements and a few days later it was suggested that Boris Johnson would also follow the same example in England (<https://www.thenational.scot/news/18841488.boris-johnson-set-follow-nicola-sturgeons-policy-vitamin-d-supplies/>, <https://www.nutraingredients.com/Article/2020/11/04/UK-s-PM-may-provide-free-vitamin-D-in-coronavirus-fight>). Hopefully other governments will follow suit (as of July 2021 this has not happened).

Note that Dr Anthony Fauci has stated he has taken Vitamin D supplementation in the past, and isn't against taking Vitamin C either in order to help boost your immune system (e.g. <https://www.health.com/nutrition/vitamins-supplements/dr-fauci-vitamin-c-and-d>).