According to a systematic review and meta-analysis of observational studies, hypovitaminosis D is associated with increased risk of hyperglycemia both in diabetic and non-diabetic subjects. In this meta-analysis, the results of 71 studies both on diabetic and non-diabetic subjects provided substantial evidence of association of vitamin D with type 2 diabetes. Type 2 diabetes is among the most common diseases worldwide, which affects more than 422 million individuals globally; this number has been increasing at a rate of 9.2 million annually since 1980 (World Health Organization report, 2016). There is an urgent need to reduce these numbers, and the implementation of early preventive measures provides a good possibility to decrease the prevalence of type 2 diabetes. There are still no promising treatments for those who develop advanced type 2 diabetes. It is suggested that type 2 diabetes is related to modifiable risk factors, thus, by addressing the risk factors through implementation of preventive measures, the risk of type 2 diabetes could be reduced. It is very important to identify these risk factors to rescue those who are at greater risk of the disease.

There is evidence that vitamin D status is associated with type 2 diabetes. Many observational studies have been performed investigating the relationship of vitamin D status and circulating biomarkers of glycemic regulation. To find out whether this association holds, the researchers conducted a systematic review and meta-analysis of cross sectional and longitudinal studies. They searched Pubmed, Medline and Embase, all through June 2017. The studies were selected to determine the effect of vitamin D on the parameters of glucose metabolism in diabetic and non-diabetic subjects. Correlation coefficients from all studies were pooled in a random effects meta-analysis. The risk of bias was assessed using Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. The researchers found significant inverse relationship of vitamin D status with glycemic level in both diabetic ($r = -0.223, 95\% CI = -0.184$ to $-0.261, P = 0.000$) and non-diabetic ($r = -0.073, 95\% CI = -0.052$ to $-0.093, P = 0.000$) subjects. This systematic review and meta-analysis of observational studies support an inverse association between hypovitaminosis D and type 2 diabetes. There is risk of residual confounding in the observational studies and the inconsistency between the studies increases the uncertainty in the causal effect compared to randomized control trials. In the meta-analysis of observational studies, however, the researchers got a clear signal for the harm of hypovitaminosis D for the prevalence and incidence of type 2 diabetes. And, since the deficiency of vitamin D is currently one of the most frequent conditions globally, they suggest future large scale randomized control trials of administration of vitamin D in healthy subjects and patient populations, which would likely to have impacts on the estimates. They also suggest that the randomized control trials should be done with long term administration of vitamin D, as long-term deficiency of this vitamin cannot be justified by its short term administration. A future strategy for the prevention of impaired glycemic regulation could be individualized supplementation of vitamin D.
Calcium in the Prevention of Postmenopausal Osteoporosis

A new clinical guide summarizes the evidence regarding the effects of calcium in reducing the risk of osteoporosis after the menopause. Osteoporosis is common and affects 1 in 3 women. Calcium is vital for strong healthy bones and worldwide scientific societies have issued guidance about the daily requirements from childhood to old age. The European Menopause and Andropause Society (EMAS) has issued a new clinical guide with the aim of raising awareness of the importance of calcium in lowering the risk of osteoporosis. The recommended daily intake of calcium after menopause varies between 700 and 1,200 mg, depending on the endorsing society. It is uncertain whether excessive intake can cause harm. Some epidemiological studies have raised concern about possible cardiovascular risk, dementia or even, paradoxically, fracture. Calcium may be obtained from food or supplements containing calcium salts. Most people should be able to get enough calcium through healthy eating, but this is not always the case. Diets in Southern European have less dairy products than in Northern countries. Data from the National Health and Nutrition Examination Survey (NHANES) database in the USA showed that less than one third of women aged 9 to 71 consumed enough calcium. Supplements are poorly tolerated and therefore not usually taken long term. Another reason for concern are the rates of over prescription of supplements above the recommended upper level of 2,000 mg/day. For example, one study found that 29% of supplements were over prescribed. The European Menopause and Andropause Society (EMAS) confirms that calcium is an essential part of the diet from childhood to old age, and that an approximate assessment of intake should be part of routine health checks. Women need to be more calcium-aware and mindful of calcium-rich foods. But more is not better, and women should be warned that intakes above the recommended levels may be useless or, although still debated, may cause harm.

Zinc Supplementation Boosts Immune System in Children, Review Finds

Zinc supplements reduce diarrhea and other infections in malnourished children, and may prevent death, according to a new study published in The Cochrane Library. The study is the first Cochrane systematic review to focus on zinc as a means to prevent childhood death, including deaths caused by diarrhea, one of the biggest killers of under-fives. Zinc is a micronutrient with important roles in growth and in the immune, nervous and reproductive systems. The human body cannot make it, so it has to come from our diet. It is estimated that more than 1 in 6 people globally are deficient in zinc and that around 1 in every 58 deaths in children under five is related to zinc deficiency. Zinc deficiency is common in Southeast Asia, sub-Saharan Africa and parts of Latin America. The authors were interested in whether zinc supplements could reduce childhood death and disease, and help support growth. They reviewed data from 80 trials involving 205,401 children aged six months to twelve years, mostly in low and middle income countries. Overall, they concluded that zinc supplementation could benefit children as part of wider programs to address public health and nutrition challenges in these countries. “We should remember that supplements are not a substitute for a well-balanced diet,” said the researchers. “However, in countries where zinc deficiency is common, supplements may help to reduce child deaths and related diseases in the short-term.” Those children who took zinc were less likely to suffer a bout of diarrhea, and when the researchers looked at growth differences, they saw that children who were given zinc were slightly taller by the end of the trials compared to those who did not. However, healthy eating is more important for growth. “Eating foods with balanced energy and protein and multiple micronutrients would probably have a larger effect for many malnourished children,” the researchers said. Although zinc supplements were associated with an increase in vomiting, the researchers think that overall the benefits of giving zinc outweigh the harms. The researchers said, “Policymakers in low and middle income countries need evidence that directly addresses the needs of their own health services. This comprehensive review makes a very valuable contribution to the evidence base around interventions may make an important contribution to improving Global Health.”
Pregnant women with anemia are twice as likely to die during or shortly after pregnancy compared to those without the condition, according to a major international study. The research, published in the journal *The Lancet Global Health*, suggests that prevention and treatment of maternal anemia must remain a global public health and research priority. Anemia affects 32 million pregnant women worldwide, and up to half of all pregnant women in low and middle-income countries (LMICs). Women in LMICs are at increased risk of anemia due to higher rates of dietary iron deficiency, inherited blood disorders, nutrient deficiencies and infections such as malaria, HIV and hookworm. The researchers said, "Anemia in pregnancy is one of the most common medical problems pregnant women encounter both in low and high income countries. We've now shown that if a woman develops severe anemia at any point in her pregnancy or in the seven days after delivery, she is at a higher risk of dying, making urgent treatment even more important." "Anemia is a readily treatable condition but the existing approaches so far have not been able to tackle the problem. Clinicians, policy makers and healthcare professionals should now focus their attention on preventing anemia, using a multifaceted approach, not just hoping that iron tablets will solve the problem." The study, which is the largest of its kind, looked at evidence of the importance of prevention and treatment of maternal anemia, which suggests an independent relationship between severe anemia and maternal death does exist. The researchers said, "The research will help to shape health policies worldwide by providing scientific evidence of the importance of prevention and treatment of maternal anemia, ultimately saving lives and avoiding preventable deaths." Strategies for the prevention and treatment of maternal anemia include providing oral iron tablets for pregnant women, food fortification with iron, improving access to antenatal care in remote areas, hookworm treatment and access to transfusion services.

Iron deficiency may increase stroke risk by making the blood more sticky, scientists have discovered. Every year, 15 million people worldwide suffer a stroke. Nearly six million die and another five million are left permanently disabled. The most common type, ischemic stroke, occurs because the blood supply to the brain is interrupted by small clots. In the last few years, several studies have shown that iron deficiency, which affects around two billion people worldwide, may be a risk factor for ischemic stroke in adults and in children. The researchers found that iron deficiency increases the stickiness of platelets, which initiate blood clotting when they stick together. Although a link between iron deficiency and sticky platelets was first discovered almost 40 years ago, its role has been overlooked until now. The researchers studied a group of patients with a rare disease called hereditary hemorrhagic telangiectasia (HHT) that often leads to enlarged blood vessels in the lungs, similar to varicose veins. Normally, the lungs’ blood vessels act as a filter to remove small clots before blood goes into arteries. In patients with abnormal lung vessels, blood is able to bypass the filter, so small blood clots can travel to the brain. The patients in the study who were short of iron were more likely to have a stroke. In addition, the researchers looked at platelets in the lab and found that when they treated these with a substance that triggers clotting, platelets from people with low iron levels clumped together more quickly. The researchers said, "Since platelets in the blood stick together more if you are short of iron, we think this may explain why being short of iron can lead to strokes, though much more research will be needed to prove this link." The next step is to test whether we can reduce high-risk patients’ chances of having a stroke by treating their iron deficiency. We will be able to look at whether their platelets become less sticky. There are many additional steps from a clot blocking a blood vessel to the final stroke developing, so it is still unclear just how important sticky platelets are to the overall process. We would certainly encourage more studies to investigate this link." The researchers studied data on 497 patients with abnormal blood vessels in the lung, known as pulmonary arteriovenous malformations. The study found that even moderately low iron levels, around 6 μmol/L, approximately doubled the risk of stroke compared with levels in the middle of the normal range of 7-27 μmol/L.

World Health Organization data on 312,281 pregnancies in 29 countries across Latin America, Africa, Western Pacific, Eastern Mediterranean and South East Asia. Of these, 4,189 women had severe anemia (a blood count of less than 70 gm/L of blood) and were matched with 8,218 women without severe anemia. Previous studies had suggested that anemia was strongly associated with death, but that this was due to other clinical reasons, and not anemia directly. This analysis is the first to take into account factors that influence the development of anemia in pregnancy which may have been skewing the results of previous studies. The study results showed that, when all known contributing factors are controlled for, the odds of maternal death are doubled in mothers with severe anemia. The relationship was seen in different geographical areas and using different statistical approaches, which suggests an independent relationship between severe anemia and maternal death does exist. The researchers said, "The research will help to shape health policies worldwide by providing scientific evidence of the importance of prevention and treatment of maternal anemia, ultimately saving lives and avoiding preventable deaths." Strategies for the prevention and treatment of maternal anemia include providing oral iron tablets for pregnant women, food fortification with iron, improving access to antenatal care in remote areas, hookworm treatment and access to transfusion services.

Iron deficiency is a readily treatable condition that occurs worldwide, affecting around two billion people. The researchers studied data on 497 patients with pulmonary arteriovenous malformations, a rare disease that affects the lungs. They found that even moderately low iron levels, around 6 μmol/L, approximately doubled the risk of stroke compared with levels in the middle of the normal range of 7-27 μmol/L.
Vitamin D Supplements could Ease Painful IBS Symptoms

Vitamin D supplements could help to ease painful irritable bowel syndrome (IBS) symptoms, a new study published in the European Journal of Clinical Nutrition. Scientists reviewed and integrated all available research on vitamin D and IBS -- a condition which affects 2 in 10 people in the UK. The study showed a high prevalence of vitamin D deficiency in IBS patients -- regardless of their ethnicity. The researchers also assessed the possible benefits of vitamin D supplements on IBS symptoms. Whilst they believe more research still needs to be conducted, their findings suggested supplements may help to ease symptoms which can include abdominal pain, bloating, diarrhea and constipation. Vitamin D was shown to have the most benefit on quality of life in IBS. The researchers said, "The study provides an insight into the condition and, importantly, a new way to try to manage it. It is evident from the findings that all people with IBS should have their vitamin D levels tested and a large majority of them would benefit from supplements." "Irritable bowel syndrome is a poorly understood condition which impacts severely on the quality of life of sufferers. There is no single known cause and likewise no single known cure." Irritable bowel syndrome is a debilitating functional disorder of the gastrointestinal (GI) tract. Little is known about why and how the condition develops, although it is known that diet and stress can make symptoms worse. The symptoms often cause embarrassment for patients meaning many live with the condition undiagnosed. IBS accounts for 10 percent of visits to GP surgeries and the condition has a significant and escalating burden on society as a consequence of lost work days and time spent on regular hospital appointments. Vitamin D is essential for general wellbeing, including bone health, immune function, mental health as well as gut health. Vitamin D inadequacy can be remedied relatively easily with supplements if diagnosed. Low vitamin D status has already been associated with the risk of colorectal cancer and has been implicated in inflammatory bowel disease.

Vitamin D3 could Help Heal or Prevent Cardiovascular Damage

A new study shows that vitamin D3 could help restore damage to the cardiovascular system caused by diseases like hypertension and diabetes. The study shows that vitamin D3 -- which is made by the body naturally when skin is exposed to the sun -- can significantly restore the damage to the cardiovascular system caused by several diseases, including hypertension, diabetes and atherosclerosis. Vitamin D3 supplements are available over-the-counter. The study was published in the International Journal of Nanomedicine. "Generally, vitamin D3 is associated with the bones. However, in recent years, in clinical settings people recognize that many patients who have a heart attack will have a deficiency of D3. It doesn't mean that the deficiency caused the heart attack, but it increased the risk of heart attack," the researchers said. "We use nanosensors to see why vitamin D3 can be beneficial, especially for the function and restoration of the cardiovascular system." The researchers have developed unique methods and systems of measurements using nanosensors, which are about 1,000 times smaller in diameter than a human hair, to track the impacts of vitamin D3 on single endothelial cells, a vital regulatory component of the cardiovascular system. A major discovery from these studies is that vitamin D3 is a powerful stimulator of nitric oxide (NO), which is a major signaling molecule in the regulation of blood flow and the prevention of the formation of clots in the cardiovascular system. Additionally, vitamin D3 significantly reduced the level of oxidative stress in the cardiovascular system. Most importantly, these studies show that treatment with vitamin D3 can significantly reduce the damage to the cardiovascular system caused by several diseases, including hypertension, atherosclerosis, and diabetes, while also reducing the risk of heart attack. These studies were performed on cells from Caucasian Americans and African Americans, yielded similar results for both ethnic groups. "There are not many, if any, known systems which can be used to restore cardiovascular endothelial cells which are already damaged, and vitamin D3 can do it," the researchers said. "This is a very inexpensive solution to repair the cardiovascular system. We don't have to develop a new drug. We already have it." These studies are the first to identify the molecular mechanism of vitamin D3-triggered restoration of the function of damaged endothelium in the cardiovascular system. While these studies were performed using a cellular model of hypertension, the implication of vitamin D3 on dysfunctional endothelium is much broader. The dysfunction of endothelium is a common denominator of several cardiovascular diseases, particularly those associated with ischemic events. Therefore, the authors suggest that vitamin D3 may be of clinical importance in the restoration of dysfunctional cardiac endothelium after heart attack, capillary endothelium after brain ischemia (stroke), hypovolemia, vasculopathy, diabetes and atherosclerosis. This suggestion is strongly supported by several clinical studies which indicate that vitamin D3 at doses higher than those currently used for the treatment of bone diseases, may be highly beneficial for the treatment of the dysfunctional cardiovascular system.