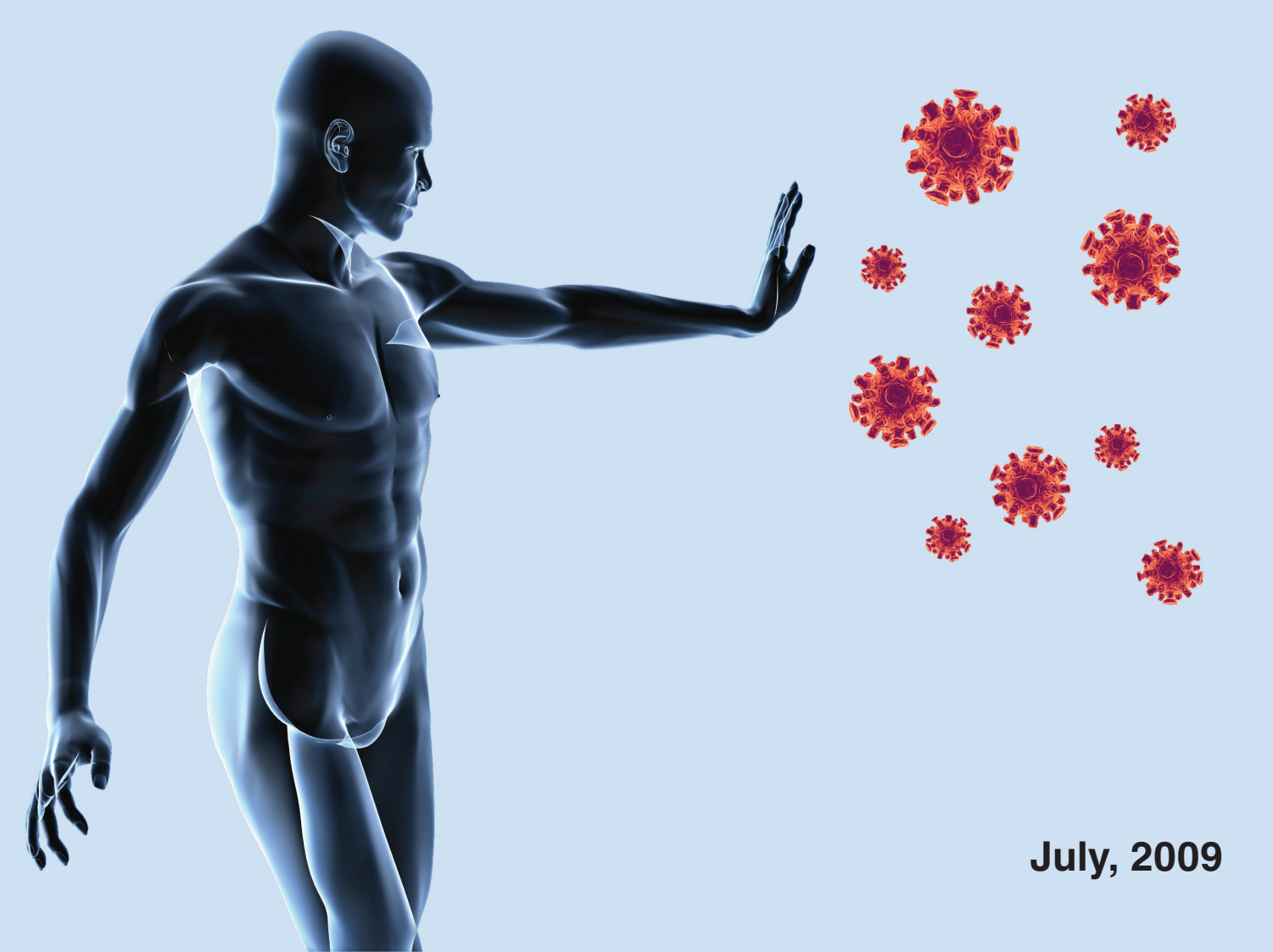
Clinical Education

Evidence Based Nutritional Strategies For Optimal Mucosal Health

(Influenza Prevention)



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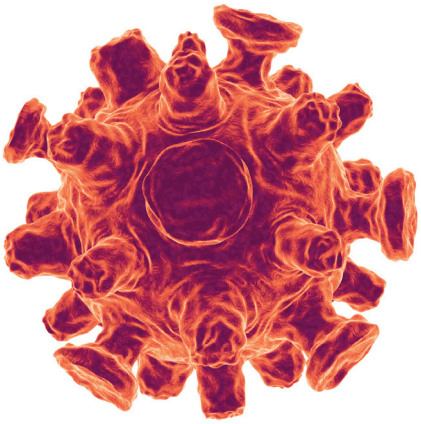


Is Good Hygiene Enough To Protect You In A Flu Pandemic?

As we enter the unfamiliar state of a global flu pandemic, communication between professionals and the public needs to be honest and candid. This means that you will need to expect bad news, confusing changes in policy and conflicting opinions and information over the coming months.

How much preparedness is reasonable? What are the consequences of non-preparedness and do we need to review our opinions each week?

Currently good hygiene practice, whilst not a panacea, is under your control, and has no downside. It is promoted as a key prevention strategy, combined with avoiding contact with infectious people.

The summer has brought a period of modest transmission and a slowly developing consensus that the virus is unlikely to be more 'virulent' than a normal seasonal flu, itself estimated by the department of health to cause 12,000 deaths annually, a number far likely to be exceeded during a pandemic. Prevention is a practicable and sensible route to take, as treatment options are currently limited to anti-virals and the health and stability of the immune system of the infected person. This article is designed to equip you with a scientifically based pro-active prevention programme to reduce your risk of viral infection.

What Are The Dynamics Of Transmission?

There are three types of Flu Virus, Type A, B, C. A & B are the most common. Only genes from the same type can rearrange to make a different form of virus (i.e. A plus A or B plus B). A strange new mix of genes, the Eurasian swine genes, is the reason the H1N1 is different. This means our adaptive immune system has no current memory protection, allowing it to transmit easily. The swine flu virus can reach deep into the respiratory system and even as far as the intestines — findings which could explain why the disease's symptoms are different from those of seasonal flu.[1]

The respiratory tract is the most common route of viral entry, a consequence of the exposed mucosal surface and the resting ventilation rate of 6 litres of air per minute. The huge absorptive area of the human lung (140 square metres) also plays a role. Large numbers of foreign particles and aerosolised droplets – often containing virions (from the Latin *virus* meaning toxin or poison - a sub-microscopic infectious agent that is unable to grow or reproduce outside a host) – are introduced into the respiratory tract each minute. The other route of transmission is from physical contact through the hands, and then touching the mucous membranes of the mouth and nose.

What Are Our Natural Defences?

There are two fundamental characteristics of human resistance to viral infections. Both are interrelated. The first involves resistance or relative susceptibility of the population to the virus, and the second concerns the type of immune response offered by the individual.

In terms of resistance, the reason why we are not more frequently infected is that there are numerous defence mechanisms to protect the respiratory tract. Mechanical barriers abound – for example, the respiratory tract is lined with a mucociliary blanket comprising ciliated cells, mucus-secreting goblet cells, and subepithelial mucus-secreting glands. Foreign particles that enter the nasal cavity or upper respiratory tract are trapped in mucus and carried to the back of the throat, where they are swallowed or spat out.

In terms of immune response, if particles reach the lower respiratory tract, they may also be trapped in mucus, which is then brought up and out of the lungs by ciliary action. The lowest reaches of the respiratory tract – the alveoli – are devoid of cilia. However, these gas-exchanging sacs are endowed with macrophages, whose job it is to ingest and destroy particles. Our secretory IgA (sIgA) provides the first line of immune defence at the mucosal surfaces of the gastrointestinal, respiratory, and genitourinary tracts, where more than 95% of infections are initiated.

SIgA functions at three anatomical levels in relation to mucosal epithelium:

1. SIgA antibodies prevent adhesion and entry of antigens into epithelium tissues.[2]
2. SIgA antibodies in the lamina propria bind and excrete bacteria and viruses to the lumen.[3]
3. SIgA antibodies in transit through the epithelium can inhibit virus production[4] or neutralise proinflammatory antigens.[5,6] A protective effect of SIgA against respiratory and gastrointestinal viral infections is an important part of prevention.[7]

Because influenza virus infection is essentially an attack on a superficial extravascular tissue, the ability of antibodies to prevent injury to the involved respiratory epithelium is believed to result primarily from the secretory immunoglobulin A (sIgA) generated by the local epithelium. By neutralising the virus at the portal of entry before replication, infection, and dissemination can occur, mucosal immunity could confer better protection against influenza than serum antibodies, the method developed for vaccination.

Nutritional Medicine To Optimise Prevention

SIgA Optimisation

1. Try to maintain adequate SIgA levels. These can be measured using a salivary test. The use of Saccharomyces Boulardii has been shown in animal and human studies to be an effective promoter of SIgA.[8] It also reduces epithelial permeability and limits the cytokine cascade, reducing the symptoms of an over enthusiastic defence.[9]
2. Probiotics also increase SIgA and improve immune tolerance, as well as restricting viral and pathogen adhesion and penetration.[10]

"The role of IgA in the defence of mucosal surfaces has now expanded from a limited role of scavenger of exogenous material to a broader protective function with applications in immunotherapy."

Vitamin D Optimisation

Activated vitamin D, 1,25(OH)2D, a steroid hormone, has profound effects on human immunity including the prevention of influenza.[11] 1,25(OH)2D acts as an immune system modulator, preventing excessive expression of inflammatory cytokines and increasing the 'oxidative burst' potential of macrophages. Perhaps most importantly, it dramatically stimulates the expression of potent anti-microbial peptides called cathelicidins, which exist in neutrophils, monocytes, natural killer cells, and in epithelial cells lining the respiratory tract where they play a major role in protecting the lung from infection. [12]

Vitamin D appears to both enhance the local capacity of the epithelium to produce endogenous antibiotics and – at the same time – dampen certain arms of the adaptive immune response, especially those responsible for the signs and symptoms of acute inflammation, such as the cytokine storms, operative when influenza kills quickly.[13]

Colostrum Supplementation

The efficacy of a 2-month treatment with oral colostrum in the prevention of flu episodes compared with anti-influenza vaccination was evaluated. Groups included healthy subjects without prophylaxis and those receiving both vaccination and colostrum. After 3 months of follow-up, the number of days with flu was 3 times higher in the non-colostrum subjects. The colostrum group had 13 episodes versus 14 in the colostrum + vaccination group, 41 in the group without prophylaxis, and 57 in non treated subjects. Part 2 of the study had a similar protocol with 65 very high-risk cardiovascular subjects, all of whom had prophylaxis. The incidence of complications and hospital admission was higher in the group that received only a vaccination compared with the colostrum groups. Colostrum, both in healthy subjects and high-risk cardiovascular patients, **is at least 3 times more effective than vaccination to prevent flu and is very cost-effective.**[14]

In many instances, flu starts from the intestinal tract, and protection in situ may be one of the advantages given by colostrum.

Supplement	Dose: Adult & Adolescent	Dose: Child 2-7	Dose: Baby 0.5- 2
Saccharomyces Boulardi	1-2 daily with food[8]	½- 1 daily with food[8]	¼ - ½ capsule with food[8]
Lactobacillus: Plantarum, Rhamnosus, Salivarus	1-2 daily with food[7]	1 daily with food[7]	¼ - ½ capsule daily with food[7]
Emulsified Vitamin D 400 iu	N/A	N/A	1 drop per day. Do not exceed 2,000iu daily.[11]
Emulsified Vitamin D 2000 iu	3-5 drops per day. In conjunction with sunlight exposure[11] – aim to achieve 10,000 iu daily	1-2 drops per day. In conjunction with sunlight exposure[11] – aim to achieve 4-5,000 iu daily	N/A
Colostrum spray for lactose intolerant Pts*	2 x 4 sprays under the tongue daily[14]	1 x 4 sprays under the tongue daily[14]	2 sprays under the tongue or into liquid food daily[14]
Laktoferrin with Colostrum*	2 capsules daily at night[14]	1 -2 capsules daily at night[14]	½ capsule mixed into food at night[14]
ProMulti Plus: BRC	2-3 per day	N/A	N/A
Childrens Multi-Vi-Min: ARG	N/A	1-3 per day	N/A
Aqueous Multi Plus: BRC	N/A	N/A	½-1tspn daily mixed in food or drink

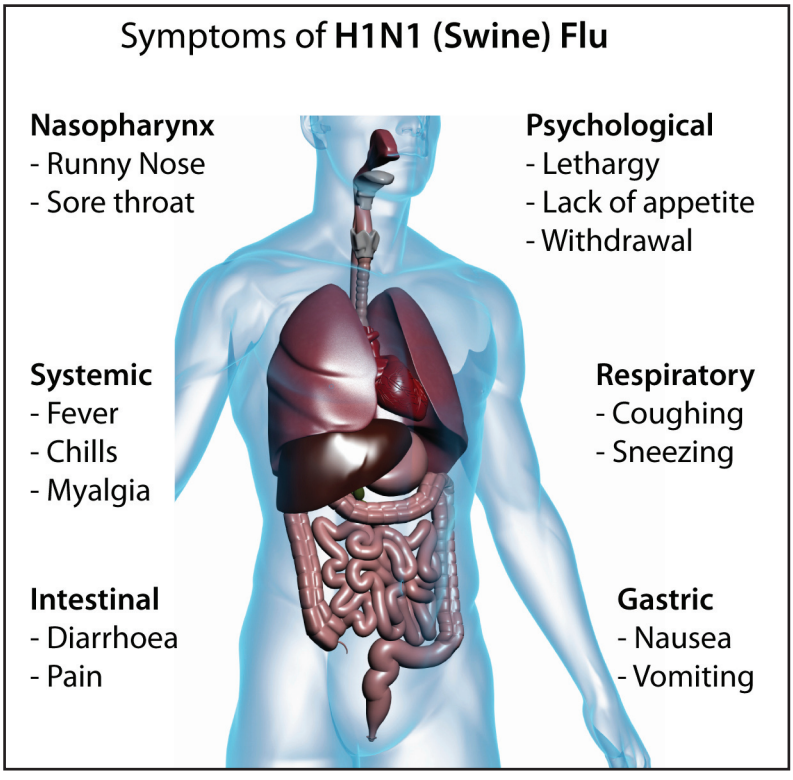
Key: primary secondary * either/or

If suspicious that you, a family member or a patient has contracted H1N1influenza, the symptoms shown on the image will present within 1-2 days. At present most infected individuals appear to be able to stage a recovery after 3-4 days even without any anti-virals.

Older patients, young children and people with co-morbid conditions are at more risk of symptom progression.

Visit NHS website for the Symptom Checker: www.nhs.uk/Conditions/Pandemic-flu/Pages/Symptoms.aspx

The food we eat influences our immune health so therefore eat nutrient-dense wholefoods, avoiding refined processed and sugary foods and keep hydrated. See the paper by Kaminogawa.[16]



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For more information on the recommendations provided in this summary document please contact the technical team at Nutri-Link on **08450 760 402** or email **info@nleducation.co.uk.**

Scientific References

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Disclaimer

The advice provided in this short review is based on current scientific reviews, animal and human studies. It must not replace advice from your medical practitioner.

If you contract H1N1 please contact your medical practitioner for relevant advice.