

Promoting Vitamin A in Prevention and Early Treatment of Noma Ulcer and Nutritional Blindness

Noma Ulcer and Nutritional Blindness share many common attributes. Those who fall victim to these two dreadful illnesses are almost always young children suffering from poverty, poor hygiene and malnutrition. The factors that appear to contribute:

- Malnutrition causes an Acquired Immune Deficiency Syndrome (“Nutritional AIDS”)
Of all of the micronutrient deficiencies experienced by malnourished children, the lack of Vitamin A and also Zinc are arguably the most damaging to the child, because of disastrous effect that is felt by the immune system. Both antibody production and cellular immune function are impaired; leaving the child vulnerable to infectious disease including opportunistic pathogens such as would threaten a victim of AIDS from HIV infection
- Vitamin A deficiency prevents maturation of epithelial cells
Therefore, tissues of the skin, eye, mouth, nose, respiratory, genital, urinary, and digestive tract are fragile, easily infected, and do not heal. Protein deficiency and Zinc compound this problem
- Serious infections like measles often precede both Noma Ulcer and Nutritional Blindness
Overwhelming infections rapidly deplete the body’s stores of Vitamin A leading to compromised mucosal barriers to infection.

Therefore, when a malnourished child comes to the hospital with severe measles, diarrhea, pneumonia, or impending loss of the cornea and permanent blindness, it is the widely accepted standard of care to immediately administer three mega-doses of Vitamin A - 50,000 International Units per dose for a non-breast fed infant under 3 months, 100,000 International Units per dose for 3-12 month old child; 200,000 International Units per dose for a child over 12 months-on days one, two and fourteen. (three doses within the first 14 days). This results in a dramatic drop in mortality from diseases like measles, and also prevents permanent Nutritional Blindness

This dose is safe and is recommended by international agencies such as UNICEF, WHO, Sight and Life Foundation, and Helen Keller Foundation.

Globally, Noma Ulcer is a forgotten disease. Granted, it does not kill or injure as many children as the diseases which are usually mentioned in the list of severe infections that warrant the series of three mega Vitamin A doses. However, in areas where it is common, such as in Northwest Nigeria, it is an enormous problem. It is usually fatal or leaves its young survivors with disfiguring scars and tissue loss. Vitamin A mega-dose treatment would be expected to impact and interrupt the natural history of the interaction of malnutrition and infection that leads to Noma Ulcer in the malnourished child.

Vitamin A mass distribution to infants and children every 4-6months has been shown to prevent Nutritional Blindness and death from infectious disease. The incidence of Noma Ulcer in communities benefiting from this proven intervention would be expected to be lower as well. We might even dream of Noma Ulcer eradication in those communities if Vitamin A supplementation could be combined with oral hygiene promotion, Zinc supplementation, improvement in protein

malnutrition, intestinal parasite eradication and early village-based detection and treatment of oral anaerobic infections in children.

Regarding the cost of resources: Mega-dose Vitamin A capsules are very inexpensive, usually less than \$.05 US (5 cents) per capsule. They are readily available from UNICEF, Sight and Life Foundation, and from pharmaceutical companies such as MedPharm. Capsule distribution can be incorporated into immunization campaigns, and with mass intestinal parasite eradication program. Other medications such as metronidazole tablets, for anaerobic infection, albendazole for intestinal parasites, and Zinc Oxide for fortification of dental powder are low cost, easily obtainable and safe. What is needed is a coordinated, organized and sustained effort to bring resources and training to the village level. Responsible people in the villages can become empowered to administer preventive as well as timely curative care.

There is no need for the terrible diseases Noma Ulcer and Nutritional Blindness to exist in the future. Research that has been done, especially in recent years, that has solved many mysteries of the pathogenesis of these horrible conditions. Now is the time for those of us who care about past, present and future victims of severe malnutrition to work to change the circumstances that deny children their right to sight and life.

Priscilla Benner, MD
Director, MAMA Project, Inc.

September 9, 2006
No-Noma Federation Annual Meeting