

Call to Action

Vitamin A for the Management of Measles in the United States



March 2020

Experts gathered to discuss the use of vitamin A for the management of measles in the United States (US)

The recommendations in this Call to Action are based on discussions from a November 2019 Summit convened by the National Foundation for Infectious Diseases (NFID). NFID invited multidisciplinary subject matter experts representing pediatric infectious disease, ophthalmology, infection prevention and control, pediatric hospital medicine, public health, healthcare epidemiology, nursing, pharmacy, infectious disease researchers, and those involved in the most recent US measles outbreaks, to discuss the use of vitamin A in US measles management, and specifically:

- Published literature and gaps
- Current understanding of the physiologic role and immune impact of vitamin A
- Current recommendations and adherence
- Key research challenges and needs in the US
- How to best optimize language and practices to help provide clarity to US healthcare professionals and the public

Call to Action

Vitamin A for Measles Management in the US

Overview

Measles is an acute, highly contagious disease that results from infection with measles virus and is an important cause of morbidity and mortality worldwide.¹ Measles was declared eliminated (the absence of endemic virus transmission in a defined geographical area, such as a country or region, for more than 12 months) in the US in 2000. However, outbreaks continue to occur in the US, largely in unvaccinated people. According to the Centers for Disease Control and Prevention (CDC), in 2019 there were more than 1,200 measles cases in 31 states, representing the most cases seen in the US in 25 years.²

Measles is a paramyxovirus transmitted between humans that attacks epithelial structures (e.g., eyes, oropharynx, lungs, and intestines) with the respiratory tract rarely escaping impact. A characteristic rash typically appears 14 days after exposure, generally two to three days after fever and upper respiratory symptoms begin. The infection can result in severe, sometimes permanent, complications including pneumonia, seizures, brain damage, and even death.¹

Measles is the most contagious infectious disease currently known to humans. Ninety percent of susceptible people exposed to the virus become infected, unless they are immune. A measles, mumps, rubella (MMR) vaccine, given in a two-dose series, one at 12–15 months and another at 4–6 years, is the best prevention against measles. Protection of vulnerable individuals who have been exposed to the virus is achieved by giving measles vaccine within 72 hours of exposure, or intramuscular or intravenous immunoglobulin up to day six after exposure, to prevent disease. Treatment of individuals with measles is typically supportive in nature, including acetaminophen or ibuprofen, and intravenous fluids. Additional interventions, such as antibiotics, may be indicated for measles-related complications.¹ There is currently no antiviral medication available specifically for measles treatment.

The management of patients with measles also includes provision of vitamin A for reducing complications and mortality. Vitamin A deficiency affects the severity of measles, delays recovery, can lead to measles-related complications, including blindness, and is associated with a higher rate of deaths.^{3,4,5} Vitamin A has been recommended for decades by the American Academy of Pediatrics (AAP) and the World Health Organization (WHO) for hospitalized children with measles.^{6,7} However, recent studies show that vitamin A has not been used appropriately to treat US children with measles—either by not using vitamin A at all or by using insufficiently low doses.⁸ The reason for this is unknown.

With an increased number of measles cases in the US, existing international guidelines in place, and the known benefits of vitamin A well-documented, why is there low adherence to these recommendations? **It is timely and relevant to refresh the evidence on this topic and urgently disseminate knowledge of this important infectious disease intervention to practicing healthcare professionals in the US.**

In November 2019, NFID convened a Summit that included multidisciplinary subject matter experts from across the US representing pediatric infectious disease, ophthalmology, infection prevention and control, pediatric hospital medicine, public health, healthcare epidemiology, nursing, pharmacy, infectious disease researchers, and those involved in the most recent US measles outbreaks, to discuss the use of vitamin A in US measles management. The following report outlines key discussion points and recommendations from the Summit.

The Role of Vitamin A in Measles Infection

Vitamin A, or retinol, is a micronutrient that is critical in supporting the immune system, vision, reproduction, and cellular communication. It is known as an anti-infective vitamin because of its role in enhancing immune function including immunoglobulin expression and cellular immune response. Diet is the primary source of vitamin A from foods such as milk, eggs, cheese, fortified cereals, leafy green vegetables, orange vegetables, fish, and meat (in particular liver). Less commonly ingested, but high in vitamin A, is cod liver oil. The recommended daily allowance for vitamin A depends on your age and sex. Average daily recommended amounts are listed in micrograms (mcg) of retinol activity equivalent (RAE). Recommendations

are 900 mcg RAE and 700 mcg RAE per day for men and women, respectively. For pregnant and breastfeeding women, the recommendations are higher. For children under 13, the recommendations fall within the 300 - 600 mcg RAE range dependent upon age. Individuals can get the recommended amounts through a balanced diet.⁹

Vitamin A deficiency in the US is rare.¹⁰ It is much more common in low- and middle-income countries because individuals often have limited access to foods containing vitamin A from animal-based food sources and/or do not commonly consume fresh fruits and vegetables.⁹

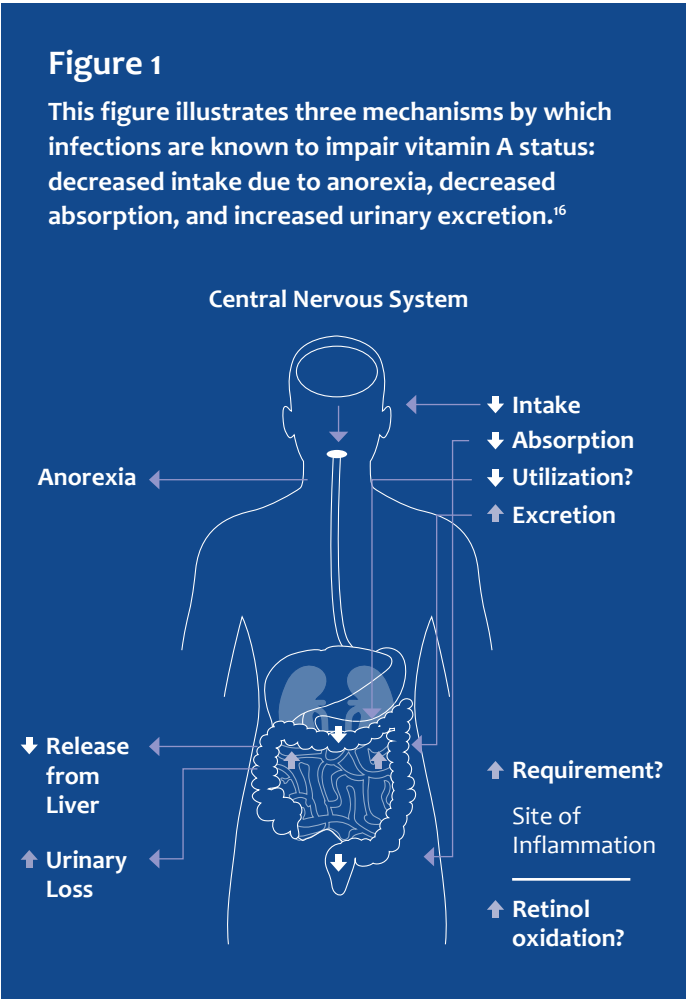
Because of the important role vitamin A plays in immune function, vitamin A deficiency affects the severity of illness and the rates of deaths associated with measles. Studies in low- and middle-income countries have found vitamin A deficiency to be associated with severe measles-related complications and death in children, delaying recovery, and promoting xerophthalmia. Xerophthalmia is the term used to describe the ocular manifestations of vitamin A deficiency including night blindness, severe conjunctival dryness, and Bitot spots (white keratin build up on the conjunctiva and characteristically seen in vitamin A deficiency). In worse case scenarios, corneal ulceration can develop and lead to blindness.^{3,4,5,11}

In the US, studies have shown that hospitalized measles patients are frequently vitamin A deficient, with low serum vitamin A levels correlating with the severity of measles disease.^{12,13,14}

One study among US children with measles showed that children with no known prior vitamin A deficiency exhibited a significant decline in their serum retinol levels during the acute phase of measles. This decline in circulating retinol was associated with increased duration of fever, higher hospitalization rates, and decreased antibody titers. In the study, plasma retinol levels returned to normal during the recovery phase.¹⁴

In the past two decades, research has helped explain the mechanisms involved in the interaction between measles infection and vitamin A deficiency. See Figure 1 below.

However, measuring retinol levels during infection is time consuming, and tests can be costly. In addition, there is a need for clarity on what test to use, and how test results should impact clinical care. The need for additional research remains, as the mechanisms by which vitamin A affects immune function have not been completely examined at the molecular level but vitamin A is inexpensive and, if needed, acts quickly.



History of Vitamin A for Measles Management Globally

In 1932 in London, England, Joseph B. Ellison, MD and colleagues were the first to suggest that vitamins A and D may have a protective effect during measles infection by limiting the severity of pulmonary complications.¹⁷ Since then, studies have shown reductions in morbidity and mortality in children with measles treated with vitamin A in low- and middle-income countries.^{3,18,19}

In contrast, recognition of vitamin A deficiency increased in the 1980s following research published in *The Lancet* from Alfred Sommer, MD and colleagues that found vitamin A deficiency dramatically increased mortality. The study showed that the mortality rate among Indonesian children with mild xerophthalmia was on average four times the rate, and in some age groups eight to 12 times the rate, compared to children without xerophthalmia.²⁰

To demonstrate the link between even mild vitamin A deficiency and pediatric mortality, Sommer and colleagues conducted large-scale, community-based, randomized trials from 1983 through 1992. The first large-scale randomized field trial of the impact of 200,000 international units (IU) of vitamin A supplementation every six months on subsequent child mortality in Aceh, Indonesia, was published in 1986. The results showed a 34 percent reduction in mortality among children age 1–5 years.¹⁸ These results were replicated in subsequent trials in Africa and Asia.

Following this study, questions were posed: was vitamin A deficiency responsible in part for the large number of measles deaths observed in children, and would management with vitamin A reduce measles case fatality? Follow-on studies in several African countries showed that vitamin A in children with measles could reduce fatality by roughly 50 percent, as Ellison had also observed.^{3,19}

Recommendations and Guidelines for Vitamin A in Measles Management—Global and US

Soon after many of the vitamin A trials were published, WHO and The United Nations Children’s Fund (UNICEF) issued a joint statement recommending that vitamin A be administered to all children diagnosed with measles in communities where vitamin A deficiency (serum retinol <10 µg/dL) is a recognized problem and where mortality related to measles is ≥ 1 percent.⁶

In contrast, vitamin A deficiency is not recognized as a widespread or significant problem in high-income economies. As such, vitamin A levels of children with measles have not been extensively studied in the US.

Still, in looking at the WHO/UNICEF joint statement there remained a desire to explore whether US children with measles would benefit from vitamin A even though the US did not meet these specific criteria.

In 1993, the AAP Committee on Infectious Diseases met to review the literature associated with vitamin A and measles in low- and middle-income nations. Although the Committee recognized that the available data were incomplete and insufficient to determine the appropriate use of vitamin A for all children with measles, they did recommend that vitamin A supplementation be considered in select circumstances for US children with measles. At that time, the AAP advised about the limited data on efficacy and safety of vitamin A in US children and cautioned practitioners to select patients carefully, and monitor clinically for side effects (e.g., bulging fontanel, headache, and vomiting).²³

“Plain and simple. To improve clinical outcomes, children with measles need age-appropriate doses of vitamin A.”

—Alfred Sommer, MD, MHS
Bloomberg School of Public Health

The AAP Committee revisited that language in 2018 (see: side bar, page 5), recognizing that even in countries where measles is not usually severe, vitamin A should be given to **all** children with severe measles⁷, because:

- WHO recommends it for all children with acute measles, regardless of their country of residence⁷
- Children in the US can have low serum vitamin A concentrations^{12,13,14}
- Low vitamin A concentrations correlate with more severe measles disease^{3,4,5}
- Measles virus can deplete vitamin A stores^{3,4}
- In low- and middle-income countries, vitamin A is associated with decreased mortality and morbidity^{3,4,5}

The AAP Red Book (report of the Committee on Infectious Diseases) states the WHO recommendation but does not tailor it further for the US population.



Red Book: Report of the Committee on Infectious Diseases American Academy of Pediatrics 2018–2021. 31st Edition

Vitamin A. Vitamin A treatment of children with measles in resource-limited countries has been associated with decreased morbidity and mortality rates. Low serum concentrations of vitamin A also have been found in children in the US, and children with more severe measles illness have lower vitamin A concentrations.

WHO currently recommends vitamin A for all children with acute measles regardless of their country of residence. Vitamin A for treatment of measles is administered once daily for two days, at the following doses:

- 200,000 IU for children 12 months or older;
- 100,000 IU for infants 6 through 11 months of age; and
- 50,000 IU for infants younger than 6 months.

An additional (e.g., a third) age-specific dose should be given two through four weeks later to children with clinical signs and symptoms of vitamin A deficiency.

Even in countries where measles is not usually severe, vitamin A should be given to all children with severe measles (e.g., requiring hospitalization). Parenteral and oral formulations of vitamin A are available in the US.



Where We Are Today: Vitamin A and Measles Management in the US

Adherence to Guidelines

Over the past two decades, regardless of the recommendations from AAP, WHO, and others, there has been limited use of vitamin A for measles management in the US. A retrospective, descriptive study from Hester, Spaulding, Stinchfield, et al. looked at patients age 0–18 years admitted between January 2004 and December 2018 to a hospital contributing data to Pediatric Health Information Systems (PHIS). In that study, 52 US children's hospitals reported on average 12 years of data to PHIS, and 34 hospitals reported at least one measles-related admission (median of three admissions per hospital). Of these, only 39 percent reported using vitamin A to help manage measles infection.⁸

Additionally, in hospitals that did administer vitamin A, most children were not receiving the age-based high-dose recommended by WHO and AAP. The majority received 10,000 IUs versus the recommended 50,000–200,000 IUs (see Table 1).⁸ This is currently the only known study in the US evaluating the use of vitamin A in managing measles infection.

Table 1
Summary of Vitamin A Utilization⁸
n=47

	n (%)
Vitamin A Doses	
1 dose	13 (28)
2 doses	32 (68)
3 doses	2 (4)
Vitamin A Route	
Any oral solid	36 (77)
Any oral liquid	10 (21)
Any intramuscular	3 (6)
Vitamin Max Dose (ku)	
10 ku	29 (62)
25 ku	2 (4)
50 ku	6 (13)
Unavailable	10 (21)
Vitamin A Level Obtained (lab)	2 (4)
Days from Admission to Vitamin A	1 (0)
0 days	22 (47)
1 day	19 (40)
>1 day	6 (13)

*For patients with >1 dose of vitamin A the second dose was on average given 1 day after the initial dose. Range (0–2 days).

*For patients with >2 doses of vitamin A the third dose was given 1 day after the second dose.

Vitamin A Prophylaxis vs. MMR Vaccination

In addition to low adherence to published guidelines among US healthcare professionals, it has been reported that some parents are using vitamin A prophylactically despite the lack of evidence to suggest a role in preventing measles. Vaccination remains the only proven preventive measure.

In the 2019 measles outbreak in the US, the majority of cases occurred in Orthodox Jewish communities in New York City and the New York suburb of Rockland County. In both of these areas, a minority of community members who were skeptical about vaccines have been opting out of vaccination for their children, driving vaccine rates down, and allowing the highly contagious virus to spread.

Regarding the use of vitamin A, some members of the Orthodox Jewish community began to rely on recommendations from families who gave their children a spoonful of cod liver oil daily, which contains vitamin A, irrespective of measles exposure and as an **alternative** to MMR vaccination. Other members of the community began circulating their own guidance on dosage of vitamin A maintaining that “people who took vitamin A got the measles much later” than those who did not.²⁵ It should be noted that vitamin A does not prevent measles. It is not appropriate for parents to use vitamin A as a preventive measure.

Additionally, a 2019 outbreak of measles in the island nation of Samoa that has caused more than 82 deaths²⁶ has drastically increased social media commentary regarding vitamin use in measles prevention and management. Comments on social media have suggested the use of vitamin A, vitamin C, or selenium to prevent measles. Further education aimed at the general public is required to help distinguish effective vs. ineffective measures in measles management.

Current Challenges

A key goal of the Summit was to better understand underlying challenges related to vitamin A guideline adherence, and research gaps that would, in turn, help provide clarity to US healthcare professionals and the public. From the diverse challenges reported, several common issues emerged.



Issue: Lack of current US-specific data verifying effectiveness of vitamin A for measles management

While the impact of vitamin A on morbidity and mortality rates have been well-documented in low- and middle-income countries, far less is known about the efficacy of vitamin A supplementation in countries with a low measles mortality rate and a population at lower risk for vitamin A deficiency. The children in the studies by Sommer, Hussey, and Klein were substantially different in growth parameters from the average child in the US. Additionally, the current evidence mostly supports the use of vitamin A supplementation in children under age 2 years.^{7,18,19,20} This may lead to confusion regarding recommendations for supplementation in resource-limited versus well-resourced countries and for young children only, or for all children with measles.

Another item that warrants clarification is correlation of vitamin A levels during measles infection. If vitamin A stores are depleted at the time of measles infection, does that warrant use independent of underlying nutritional status? Summit participants discussed baseline vitamin A levels, with differing views on the importance of determining baseline levels prior to treating with vitamin A.

More clarity in this area is warranted. Specifically, is there value in measuring vitamin A levels in measles patients upon admission and prior to supplementation? Is it feasible to get test results back in a timely fashion that are meaningful enough to even consider drawing retinol levels?



Lack of current US-specific data verifying effectiveness of vitamin A for measles management



Confusion around recommendations from WHO and AAP



Confusion around dosing with new unit of measure



Challenges with access and administration of vitamin A



Concerns about vitamin A toxicity



Parental reliance on potentially inaccurate word-of-mouth recommendations



Issue: Confusion around recommendations from WHO and AAP

Fortunately, in the US, most healthcare professionals have never encountered a case of measles. Limited experience with the disease, therefore, may lead to lack of familiarity with the guidelines.

Additional reasons for the low adherence to published recommendations may include guidance that seems contradictory, not applicable to US children, and/or that leaves too much room for interpretation. Specifically, Summit participants noted that:

- The published recommendations are all worded slightly differently.^{6,7}
- The language leaves too much room for interpretation, especially regarding hospitalization. The question was posed: Is vitamin A only for children in the intensive care unit, or for all hospitalized children, or all children including outpatients? The distinction is unclear.
- Recommendations focus on the benefits of vitamin A in resource-limited countries. With such a focus, the rationale may not be clear for US healthcare professionals who rarely treat measles and are often dealing with better-nourished children.
- Recommendations do not consider different age ranges, patient populations, or regions. The most severe cases of measles in California, one of the recent outbreak sites, have been in adults, but the current guidelines only address children.

“It is urgent that we provide clarity on the recommendations so that healthcare professionals do not need to interpret the guidance when they are in the throes of a measles outbreak.”

—Henry H. Bernstein, DO
Hofstra/Northwell Cohen Children’s
Medical Center



Issue: Confusion around dosing with new unit of measure

A Cochrane review of eight randomized controlled trials of treatment with vitamin A for children with measles found that 200,000 IU of vitamin A on two consecutive days reduced mortality from measles in children younger than age 2 years.²⁷ Research from Hester, et al. shows that most children treated in the US are not receiving a high enough dosage of vitamin A—only 10,000 IUs vs. the recommended 100,000–200,000 IUs.^{8,9}

Additionally, vitamin A is listed on many food and supplement labels in IUs even though nutrition scientists rarely use this measure, favoring RAE. Under new FDA regulations which went into effect January 1, 2020, vitamin A is now listed on food and dietary supplement product labels only in mcg RAE and not IUs, which may further add to healthcare professional confusion.⁹

Vitamin A Dosing in Measles [IU to RAE equivalent]

Age	Dose IU	Dose mcg RAE
< 6 months	50,000	15,000
6–11 months	100,000	30,000
≥ 12 months	200,000	60,000

IU = international unit

RAE = retinol activity equivalent



Issue: Challenges with access and administration of vitamin A

In addition to confusion around dosing, there may also be challenges in dispensing vitamin A, which is not prescribed often and has a two-year shelf life. Many hospital pharmacies either do not carry vitamin A, or may only stock one formulation. The stocked vitamin A certainly will not be in the therapeutic high-doses recommended in the guidelines. If pharmacies do not have vitamin A, it will need to be special ordered. Placing special orders may negatively impact time to treatment, and it is unclear that the formulation that healthcare professionals specify (e.g., liquid) will be readily available. Vitamin A is traditionally formulated in oral formulations, and most commonly and cost-effectively, capsules. Questions loom—how do you give larger than usual vitamin A doses to infants or children who cannot swallow capsules? Insurance coverage for vitamin A may also be an issue since vitamin A is not a medication but a nutritional supplement.



Issue: Concerns about vitamin A toxicity

Summit participants emphasized the need to protect children with measles from further morbidity due to high vitamin A doses administered. “First, do no harm” was a commonly heard phrase during the Summit discussions.

Because vitamin A is fat soluble, the body stores excess amounts, and these levels can accumulate. If too much is stored, it can become toxic. The tolerable upper daily dose of 3,000 mcg of preformed vitamin A, more than three times the current recommended daily level, is thought to be safe. However, there is some evidence that this much preformed vitamin A might increase the risk of bone loss, hip fracture, or some birth defects.⁹ The potential for toxicity is real though not commonly described in the literature. Part of the discussion at the Summit centered on the 1993 AAP Red Book Committee review of the vitamin A recommendations in measles management. The topic of vitamin A toxicity was explored because it was noted that potential toxicity occurred in cumulative doses of greater than 1,000,000 IU over two to three weeks. No reports of vitamin A toxicity in children with measles have been documented.²³

Published reports on vitamin A acute toxicity between 1944 to 2000 show 55 cases (50 in ages 0–2 years). The lowest dose that caused toxicity in children 0-2 years was 11,500 IU/kg and the median dose was 47,850 IU/kg.²⁸ There appears to be no evidence of long-term consequences of administration of high doses of vitamin A beyond nausea/diarrhea lasting 24 hours, which many children with measles have upon admission due to the virus, so the difference would be hard to detect. Symptoms of vitamin A toxicity are poor appetite, nausea, vomiting, diarrhea, sensitivity to light, and dry, rough skin⁹, which are also common presenting symptoms of measles.



Issue: Parental reliance on potentially inaccurate word-of-mouth recommendations

Pockets of unvaccinated populations have been growing both in the US and globally, due to lack of confidence in vaccines, allowing for outbreaks of vaccine-preventable diseases such as measles.

During the 2019 measles outbreak in New York, word-of-mouth recommendations advocating vitamin A prophylaxis propagated, regardless of measles exposure and as an alternative to MMR vaccination. Without properly combatting misinformation, this type of false information will continue to spread from outbreak to outbreak within vaccine-hesitant communities.²⁵

Overcoming Barriers: Recommendations

While the challenges are varied, four primary recommendations emerged that may help narrow the education and adherence gap.

Recommendation: Clarify AAP Red Book recommendations on vitamin A for measles management

While there is notably more research to be done, current evidence suggests that the benefits of vitamin A for measles management outweigh the risks. The literature shows significant benefit for reducing measles case fatality and severity by administering age-appropriate high-dose vitamin A supplements, without serious side effects.^{3,17,19} Thus, a healthcare professional making a clinical decision WHO should consider prescribing high dose vitamin A per WHO guidelines.

However, as currently written, the recommendations in the US leave too much room for interpretation and should be clarified. Summit participants recommended that the AAP Red Book Committee consider clarifying the following:

- 1) Population—consider using either “all children” or “all hospitalized children;” consider removing terms like “acute measles” and “severe measles,” which may not be helpful if the clinician has never seen measles
- 2) Age range—do the recommendations apply to all children ages 0 to 18 years, or only those under age 5 years? Should adults with measles receive vitamin A?
- 3) Dosing—consider converting dosing to RAE, and adding formulations
- 4) Safety—consider providing clarity around safety of high doses of vitamin A



Suggested Recommendation

After carefully considering the risks and benefits, Summit participants agreed that the US recommendations should include the following:

- Vitamin A should be prescribed for **pediatric patients** in the US with a confirmed measles diagnosis. A thorough history of recent vitamin A supplementation should be taken prior to recommending vitamin A.
- At time of diagnosis, vitamin A should be given by mouth once daily for two days at the following age-based doses:
 - 200,000 IU for children 12 months or older (60,000 mcg RAE)
 - 100,000 IU for infants 6 through 11 months of age (30,000 mcg RAE)
 - 50,000 IU for infants younger than 6 months (15,000 mcg RAE)
 - An additional dose should be given in two to four weeks for children known to be previously vitamin A deficient or those who have eye complications caused by measles
- These recommendations are based on studies demonstrating improvements in mortality and morbidity from children with measles in resource-limited countries; there were limited adverse events in these trials.
- Measles infection is associated with inducing a decrease of vitamin A, which is necessary for immune function and epithelial cell integrity.

Recommendation: Conduct further research on vitamin A for measles management within the US

Measles is in a unique period in the US, with an increased number of infections, yet low outbreak case counts, making studies challenging. Nevertheless, a research agenda on the topic is imperative. The immunology behind vitamin A is complicated, and the lack of research on the impact of vitamin A on measles morbidity and mortality in the US compared with the rest of the world is limited. While Summit participants acknowledge that healthcare professionals must make decisions based on the best available data, the group advocated for additional research moving forward.

The group recommended, as feasible, large-scale, randomized trials that evaluate the efficacy of a vitamin A protocol for use in hospitalized pediatric patients with measles in the US. Assessing outpatients with mild to moderate measles and the impact that vitamin A might have on patient outcomes such as days of illness and immune impact would also be an important study.

Recommendation: Educate healthcare professionals about the role of vitamin A and MMR vaccine in measles management

There are many ways we can educate healthcare professionals about guidelines for vitamin A for measles management and current low adherence rates including webinars, review articles, posters, and presentations at scientific conferences. NFID is committed to educating healthcare professionals on measles prevention and management, including MMR vaccination as the best way to prevent measles and vitamin A as the best management approach to reduce complications from measles. NFID encourages other organizations to join forces in these educational efforts.

Recommendation: Provide clear, direct messaging to parents about measles prevention and management

The primary message to parents is clear: vitamin A does not prevent measles. MMR vaccine is a safe and effective way to protect you and your family from measles. Parents **should not** forego MMR vaccine and instead use vitamin A as a preventive measure. Opportunities exist to:

- Educate parents about vaccines, and specifically MMR vaccine
- Clearly state what is known to be effective in measles management (vitamin A) and what is not (vitamin C, vitamin D, selenium, etc.)
- Explain that vitamins are not all alike and should not be conflated for the treatment of measles, and that parents should consult with healthcare professionals for measles management
- Educate about good sources of vitamin A (e.g., a healthy diet). Adequate dietary vitamin A intake is very important to support the immune system and should be used with vaccination, not as a substitute for vaccination

“Vitamin A does not prevent measles, but it can impact the outcome.”

—Patricia A. Stinchfield, RN, MS, CPNP, CIC
Children’s Minnesota



Summary

With the increased number of measles cases in the US, guidelines in place, and the benefits of vitamin A documented, now is the time to urgently disseminate this information to healthcare professionals and the public.

Bottom line: All children in the US presenting with measles should receive an age-appropriate dose of vitamin A as part of a comprehensive measles management protocol. Multiple studies in populations in which vitamin A deficiency is prevalent have shown this simple, quick means of improving vitamin A status can dramatically reduce the risk of serious complications and death from measles, with minimal detectable incidence of side effects.

Additionally, AAP and other professional organizations need to revisit their guidelines in order to provide the utmost clarity to healthcare professionals.

Lastly, a research agenda for better understanding the mechanism of vitamin A in measles management within the US, and other resource-rich countries, needs to be established.

Now is the time for action: professional associations and medical experts on the front lines of infection prevention and control are stewards of public health. Implementation of the recommendations outlined in this Call to Action must be considered. It is a shared responsibility to protect and educate our communities how to best manage the impact of measles as a vaccine-preventable disease.

Participants

The following individuals participated in the 2019 NFID Measles and Vitamin A Summit, which served as the basis for this Call to Action. NFID expresses sincere appreciation for the following experts who volunteered their time in the development of this Call to Action.

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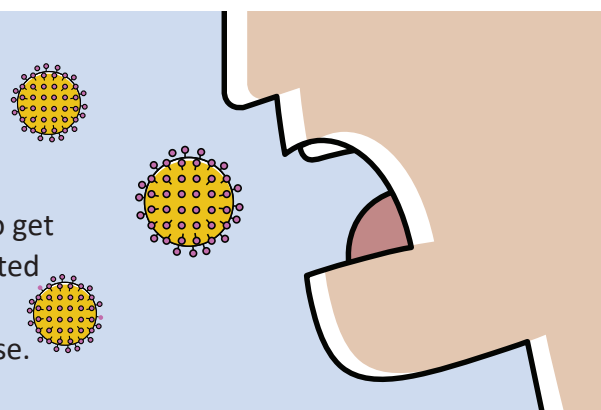
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3 THINGS PARENTS NEED TO KNOW ABOUT MEASLES AND VITAMIN A



Measles is making a comeback around the world

Every year, measles is brought into the US by unvaccinated travelers who get infected by the virus while in other countries. Anyone who is not vaccinated is at risk of getting measles. Misinformation continues to circulate about the role that vitamins, specifically vitamin A, plays in managing the disease.



1. Vitamins do NOT prevent measles



Only the measles vaccine can prevent measles—All children should get 2 doses of MMR (measles-mumps-rubella) vaccine to prevent measles



Vitamins should NOT be used to prevent measles

2. Giving high doses of vitamins may be dangerous



Routinely getting an overload of vitamins can actually hurt you—For example, too much vitamin A can cause dizziness, nausea, headache, coma, and even death



Due to the danger of overdoses, high-dose vitamin A should only be used in the management of measles **under the direct supervision of a healthcare professional once a diagnosis is confirmed**

3. The best way to prevent measles is through vaccination



Stay up-to-date with all recommended vaccines, including MMR



Stay healthy by exercising and eating a balanced diet. The best sources of vitamin A include: milk, eggs, cheese, fortified breakfast cereals, leafy green vegetables, orange vegetables, and fish.

#GetVaccinated to #PreventMeasles

LEARN MORE AT
www.nfid.org/measles



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