

## **Module 8: Recognition and Control of Noma**

**Time: 90 minutes**



### **Learning Objective:**

**Control noma in your geographical area by:**

- 1. Building awareness of the disease in the community**
- 2. Identifying and treating affected individuals**
- 3. Promoting prevention strategies**

### **Additional Materials Needed:**

- Flipchart and markers
- PowerPoint presentation
- PowerPoint handout
- Annex handouts
- AEIPI module

### **Brainstorming Session and Discussion:**

Questions to Consider:


1. When you think of promoting oral health, do you even consider that you might be saving a child's life?
2. Do you know of any oral diseases that are life-threatening?
3. Have any of you heard of a disease known as noma? Have you seen it? Would you be able to recognize early warning signs of the disease?

***Begin PowerPoint presentation.***

Slide 1

### Noma- The Face of Poverty

- **Noma:** in Greek, "to devour"
- **Cancrum Oris:** in Latin, "gangrene of the mouth"
- **Ciwon Iska:** in Hausa, "the wind disease"



C.O. Enwomang, Archs of Oral Biol, 1972

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### Noma, also called Cancrum Oris

If you have never heard of noma, our hope is that after this workshop, you'll never forget it. Noma is one of the most tragic and disfiguring infectious diseases worldwide. It marks its victims with a facial deformity that is impossible to disregard and targets children who live in conditions of extreme poverty. Thus, it makes sense that noma is often referred to as the "Face of Poverty". It has many names whose meanings emphasize the degree of the deformity and its rapid development. **(Explain names on slide)**

Slide 2

### Noma

- ❑ Destroys the soft tissues and bones of the face
- ❑ Starts as an ulcer in the mouth
- ❑ RAPIDLY spreads through orofacial tissues
- ❑ Has a mortality rate of **70-90%**
- ❑ Claims **140,000** children per year

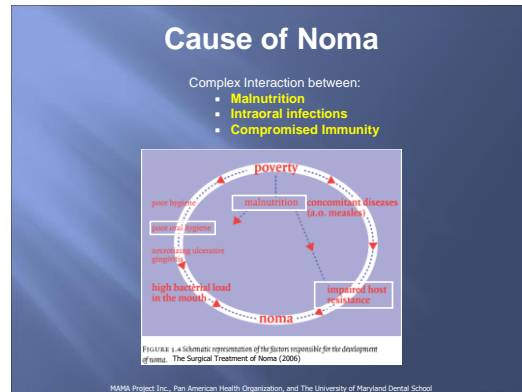


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### What is Noma?

Noma is an infectious disease that destroys the soft tissues and bones of the face. Initially, the lesion starts as an ulcer in the mouth. But if left untreated, the ulcer **RAPIDLY** spreads through orofacial tissues and often perforates the lip or cheek. Approximately, 70-90% of individuals inflicted by noma die due to complications such as pneumonia, sepsis, and/or diarrhea. Across the world, an estimated 140,000 people die per year, primarily in Sub-Saharan Africa.

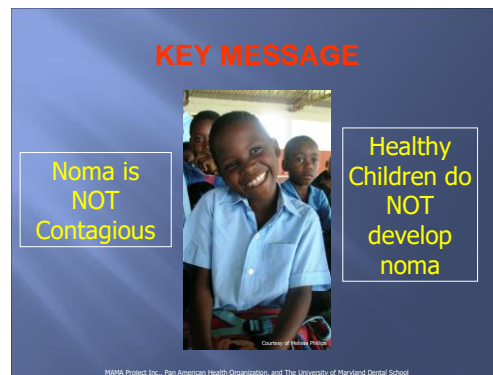
Slide 3



### Cause of Noma

Unlike many other deadly childhood diseases such as measles, noma is not caused by a single pathogen (germ). Instead many different bacteria acting together in a vulnerable child seize the opportunity to overcome the child's weakened immune defense system. Studies have found that noma is the result of 3 crucial factors: malnutrition, intraoral infections, and compromised immunity. Children living in extreme poverty often suffer from all three of these conditions and are at high risk of developing the disease.

Slide 4



### Key Message

Healthy children who are well nourished and do not live in poverty are NOT at risk of developing noma, even if they come in contact with the same causal bacteria.

Noma is not a contagious disease!

Slide 5




### Risk Factors

Noma is not a tropical disease, nor is it a disease of developing countries. Noma is a disease of poverty. It primarily infects children ages 1-6 who live in areas that are socioeconomically deprived. Pervasive poverty is the key risk factor that gives rise to four other primary risk factors:

- 1) severe malnutrition
- 2) poor hygiene and sanitation practices
- 3) limited access to good healthcare
- 4) recent severe infections such as measles or malaria, that further knock down a child's already weakened immune system

We will now discuss each of these risk factors in further detail.



**Risk Factor #1  
Malnutrition**

- Both Severe and Moderately malnourished children are at risk

Lack of essential micronutrients

Nutritionally Acquired Immune Deficiency Syndrome (Nutritional AIDS)

Growth Stunting

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### **Risk Factor #1= Malnutrition**

Undernourished children are prone to suffer from serious infections. All children need the proper amounts of quality foods that include enough carbohydrates, fats, proteins, vitamins and minerals, beginning even before birth.

Unfortunately, many children begin life with a weakened immune system because their mother was malnourished during pregnancy. Children deprived of these nutrients during early development are at risk of acquiring **Nutritionally Acquired Immune Deficiency Syndrome** which increases susceptibility to infections. Nutritionally Acquired Immune Deficiency Syndrome is similar to HIV Acquired Immune Deficiency Syndrome in that both allow opportunistic infections to flourish in their victims.

Surprisingly, many of these children may not look very sick, but a clue to their micronutrient deficiency and “Hidden Hunger” is the slowing of growth early in life. Growth stunting is a marker for a child at risk of developing noma.

Slide 7



### Risk Factor #2 Poor Hygiene and Sanitation


- ❑ Contamination of food & water with human and animal waste
- ❑ Poor personal cleanliness
  - Lack of brushing teeth, bathing regularly, and washing hands and face
- ❑ Custom of bringing livestock into family living quarters

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## **Risk Factor #2 Poor Hygiene and Sanitation**

(Read Slide)

Slide 8



### Risk Factor #3 Recent Immuno-suppressive Infection

- ❑ Common immuno-suppressive infections that are precursors of noma include:
  - Measles
  - Malaria
  - Tuberculosis
  - HIV


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## **Risk Factor #3 Recent Immuno-suppressive Infection**

(Read Slide)

These diseases severely weaken the immune system, making it difficult for the body to fight against bacteria that are normally not strong enough to cause disease. Children who present with noma often have one of these infections or have suffered from one of them in their recent past.

Slide 9



### Risk Factor #4 Lack of Access to Medical Care

- ❑ Barriers
  - Distance to community health clinic
  - Rapid progression of noma allows for limited intervention time

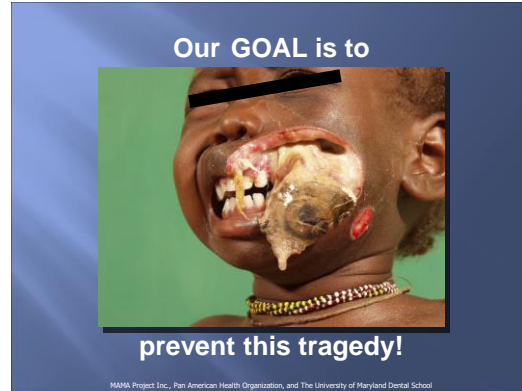
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## **Risk Factor #4 Lack of Access to Medical Care**

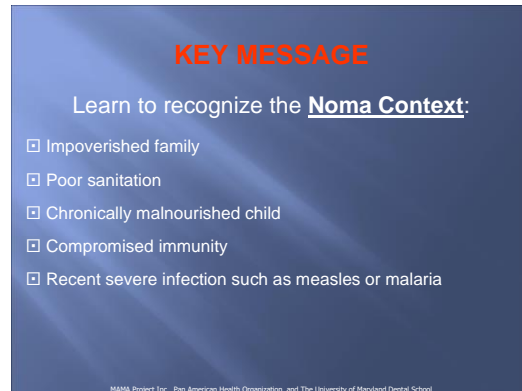
Because many children infected by noma live in rural communities far away from a health clinic, they are not able to receive the appropriate medical care.

In addition, since noma can quickly progress from a small oral ulcer to a large area of facial gangrene in a span of weeks, there is very little time available to medically intervene.

Slide 10



Slide 11



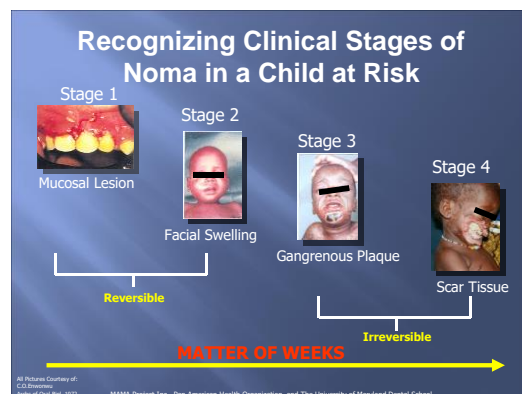
### Recognize the Noma Context

Remember, noma is not seen among healthy children. Instead, it is most commonly identified in children who are malnourished, immune deficient, and have recently suffered from an infection.

(Read Slide)

Whenever you encounter a child in this context, a thorough oral screening should be performed to look for early signs of noma.

Slide 12



### Clinical Stages of Noma


There are 4 clinical stages of noma. It is very important that we learn to recognize the early signs of disease. If noma is not identified and treated in the early and advancing stages, gangrene can permanently destroy the structures of the face.

(Explain Slide)

Slide 13

### Stage 1: Mucosal Lesion

- Acute Necrotizing Ulcerative Gingivitis
- Associated with:
  - Swollen, sore gums
  - Gums bleed when eating or when teeth are cleaned
  - Bad breath, drooling, spits a lot
  - Does not want to eat
  - Loses weight quickly



C.O. Enwornu, Archs of Oral Biol, 1972

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### Stage 1: Mucosal Lesion

Noma often starts with gum disease. Gums that are weak from poor nutrition are not able to resist the infection. Mild gum disease can progress to Acute Necrotizing Ulcerative Gingivitis (ANUG), which is an intra-oral lesion that has the potential to become an entry point for noma to advance into the gangrenous phase. ANUG is often accompanied by the following symptoms... (read slide) Suspect noma in children with mouth sores or ANUG, ESPECIALLY if malnourished with recent illness such as measles or malaria

### Examples of Acute Necrotizing Ulcerative Gingivitis (ANUG)

ANUG is also commonly referred to as "Trench mouth". This is a painful bacterial infection that involves inflammation (swelling) and ulcers in the gums.

Slide 14

### Examples of Acute Necrotizing Ulcerative Gingivitis




All images courtesy of: Meritt S. Spiller, D.M.D.

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Slide 15

### Stage 2: Facial Swelling



If the immune system is sufficiently weakened the soft tissue against the gingival lesions start swelling.

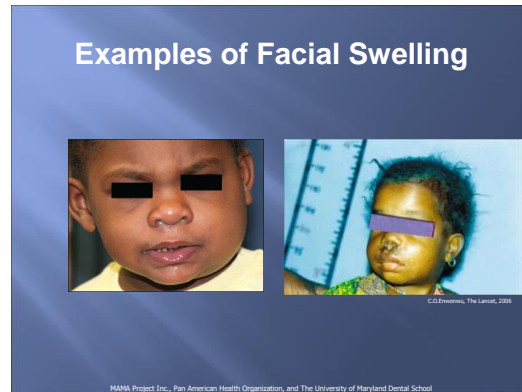
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### Stage 2: Facial Swelling

Stage 2 is characterized by the swelling of the cheek, chin, or lips. The swelling is often accompanied with fever, pain, drooling, and foul breath.

Antibiotics can still save this child's face and life.

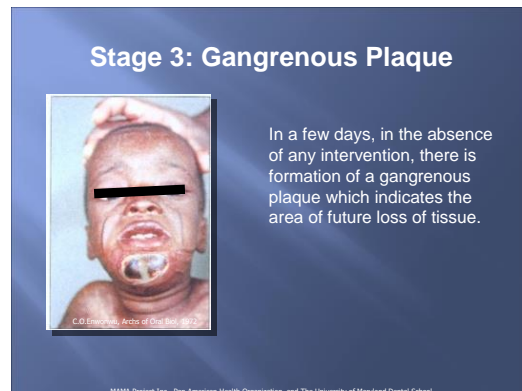
Slide 16



### Examples of Facial Swelling

Often times, the swelling is unilateral, meaning the swelling is on one side of the face

Slide 17



### Stage 3: Gangrenous Plaque

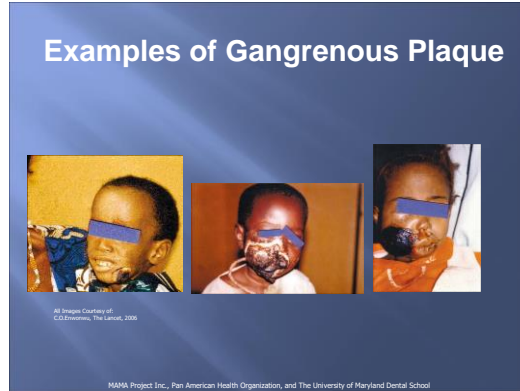
Noma does not stop in the soft tissues of the face. It destroys flesh and bone. During this stage look for:

- 1) Tight skin with dark red swelling
- 2) Black spot (gangrene/necrosis) on the face breaks open, revealing the extent of the permanent tissue loss
- 3) A clear line that separates dead tissue from healthy tissue
- 4) Loose teeth
- 5) Dead pieces of bone around the teeth

Noma breaks through to the surface of the face, usually the cheek, but it can also involve the eyes, lips, and nose.



Slide 18



## Examples of Gangrenous Plaque

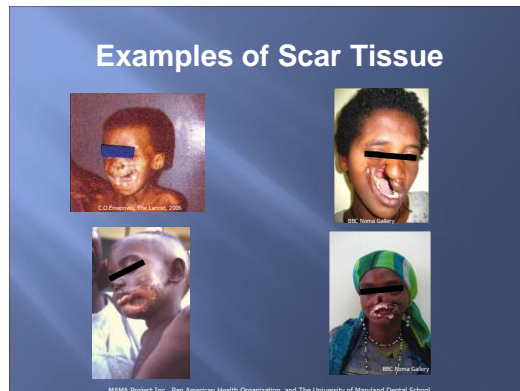
Slide 19



## Stage 4: Scar Tissue

Upon healing, large amounts of scar tissue allow for minimal opening of the mouth. Functional as well as aesthetic sequelae (long-term effects) are extremely distressing. In fact, noma may even be perceived as a curse in some communities.

Slide 20



## Examples of Scar Tissue

Slide 21

**BUT...**

If the infection is treated early it will not progress to deep tissue loss

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### Noma Treatment

The good news is that if the oral infection is treated properly during the early stages of the disease, we can prevent it from progressing to full blown noma! In order to limit the extent of the damage, you must start treatment for noma as soon as it is recognized. The longer the delay, the lower the survival rate, and the worse the physical and psychological trauma will be for the child.


Slide 22

**KEY MESSAGE**

**Early Intervention Treatment**

Stage 1  
  
Mucosal Lesion

AND

Stage 2  
  
Facial Swelling

**Treatment Protocol**

- Oral Hygiene: Disinfect mouth and gingiva with **warm salt water**
- Start oral amoxicillin or metronidazole **IMMEDIATELY** (See charts for doses)
- **All STAGE 2 cases should receive an urgent medical referral**
- Provide nutritional rehabilitation including supplying essential micronutrients and Vitamin A


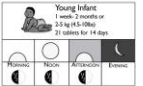
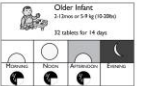
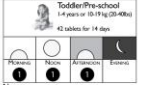
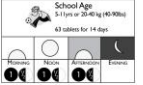
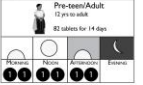
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### Key Message: Early Intervention Treatment

1. Clean Mouth
2. Administer Antibiotics
3. Refer Stage 2 cases **IMMEDIATELY**

Slide 23

**Amoxicillin 250 mg - Moderate Dose**  
Early Intervention Regimen for Moderate Infections

<p><b>Newborn</b> 1-1 week or &lt;1 kg 1-1 tablets for 14 days</p> 	<p><b>Young Infant</b> 1 week - 2 months or 1-10 kg (22-44 lbs) 2-2 tablets for 14 days</p> 	<p><b>Older Infant</b> 2-3 months or 11-15 kg (24-33 lbs) 3-3 tablets for 14 days</p> 
<p><b>Toddler/Pre-school</b> 1-4 years or 16-18 kg (35-40 lbs) 4-4 tablets for 14 days</p> 	<p><b>School Age</b> 5-11 years or 20-45 kg (44-99 lbs) 4-4 tablets for 14 days</p> 	<p><b>Pre-teen/Adult</b> 12 years or older 4-4 tablets for 14 days</p> 

**Notes:**

- Duration of therapy: 14 days for severe, 7 days for moderate infections, 5 days for acute or relapsing, 10 days for chronic.
- If unable to swallow, the child (parent's or mother's) can use the double dose form patterned for oral use.
- **NEVER** give AMOXICILLIN 250 mg Extended-Release or CR/ER form for oral use to a child with severe infection.
- Top of pregnancy: amoxicillin is considered safe for use in a malnourished child to prevent progression to noma. Also include essential micronutrient supplements/Vitamin A triple dose.
- Penicillin allergic: use metronidazole (oral suspension) instead of amoxicillin. Amoxicillin is contraindicated in children with severe penicillin allergy or with another penicillin allergy.
- Seek consultation as soon as possible. Continue treatment while traveling to the clinic or hospital. When child comes to treatment, dispense full number of doses so that treatment can continue in case of delay.
- Amoxicillin is a topical Clean and Soak (antiseptic) solution. Tablets may be crushed and mixed with breast milk, food, liquid or sugar and fed to children with spoon.
- Storing and handling: store in a cool, dry place. Do not use after expiration date.
- Amoxicillin is used for bacterial ear infections, acute lung infections (pneumonia), eye infection after measles, soft tissue, skin, umbilical (wound) and urinary infections. Use double dose for chronic (long-term) infections, not severe acute infections. Therefore, it may be best to begin a course of broad spectrum oral antibiotics such as cotrimoxazole and/or macrolide and amoxicillin while referring to a higher level of care.
- Critical: If diarrhoeal illness, not severe acute infections. Therefore, it may be best to begin a course of broad spectrum oral antibiotics such as cotrimoxazole and/or macrolide and amoxicillin while referring to a higher level of care.
- Category B Safe in Pregnancy

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### Antibiotics: Amoxicillin-Moderate Dose

Educating parents and community leaders on how to use antibiotics EARLY in noma cases can save lives. Illiteracy is a barrier to proper use. Low literacy aids, like the dosage chart on this slide, can help ensure patient compliance.

Amoxicillin is a safe oral antibiotic that is effective against most common bacteria encountered in the community. This chart gives doses appropriate for moderate infections.

Slide 24

### Amoxicillin 250 mg - High Dose

Emergency Early Intervention Regimen for Noma, Severe Peritonsillitis, and other Severe Infections

<b>Newborn</b> 6-1 week or <2 kg 22 tablets for 14 days	<b>Young Infant</b> 1 week, 2 months or 2-4 kg (4.5-10kg) 42 tablets for 14 days	<b>Older Infant</b> 2-12 years or 5-14 kg (10-30kg) 64 tablets for 14 days
<b>Toddler/Pre-school</b> 1-4 years or 10-17 kg (22-37kg) 84 tablets for 14 days	<b>School Age</b> 5-11 years or 20-45 kg (45-99kg) 120 tablets for 14 days	<b>Pre-teen/Adult</b> 12 years to adult 168 tablets for 14 days

**Notes:**

- At the age of 6 years, use high-DOSE (250mg tablets). Continue 14 days.
- If a child is severely ill and unable to swallow, crush the tablets. Do not use patients life and face permanent damage to the face.
- Reserve AMOXICILLIN 250 mg Emergency Stock in CHD for use in a high-risk area to avoid treatment delays.
- Use remaining pills as soon as possible following treatment or make it in a makeshift child to prevent progress to noma. Also include essential micronutrient supplements, Vitamin A (1mg daily), Zinc (10mg daily) and folic acid (5mg daily).
- Preventable with Amoxicillin recommended if both are available. Amoxicillin/Clavulanic acid is another available option with or without metronidazole.
- Swallow tablets as soon as possible. Continue treatment while traveling to the clinic or hospital. When child comes to treatment, depend full number of doses so that treatment can continue in case of delay.
- Amoxicillin is a topical Chlor- and alkali powderized contents. Tablets may be crushed and mixed with breast milk, food, liquid or sugar and fed to children with spoon.
- Sting with food is not necessary but can help if not able to swallow.
- Amoxicillin is used for respiratory, ear infections, bronchitis, lung infections (pneumonia), eye infection after measles, skin, soft tissue, oral/dental (pain) and urinary infections. Use double dose for other than dental treatment.
- Crush if malnourished child may not express signs of why. Therefore, it may be helpful to begin a course of broad spectrum oral antibiotics such as cotrimoxazole and/or metronidazole and amoxicillin while waiting for higher level of care.
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**Antibiotics: Amoxicillin-High Dose**  
 This chart gives recommendations appropriate for severe infections, including noma.

Slide 25

### Metronidazole 250 mg

Emergency Early Intervention for Noma and Suspected Pre-Noma Lesions, and other Infections

<b>Newborn</b> 6-1 week or <2 kg 7 tablets for 14 days	<b>Young Infant</b> 1 week, 2 months or 2-4 kg (4.5-10kg) 14 tablets for 14 days	<b>Older Infant</b> 2-12 years or 5-14 kg (10-30kg) 14 tablets for 14 days
<b>Toddler/Pre-school</b> 1-4 years or 10-17 kg (22-37kg) 28 tablets for 14 days	<b>School Age</b> 5-11 years or 20-45 kg (45-99kg) 70 tablets for 14 days	<b>Pre-teen/Adult</b> 12 years to adult 112 tablets for 14 days

**Notes:**

- At the age of 6 years, use high-DOSE (250mg tablets). Continue 14 days.
- Reserve METRONIDAZOLE 250 mg Emergency Stock in CHD for use in a high-risk area to avoid treatment delays.
- Use remaining pills as soon as possible following treatment or make it in a makeshift child to prevent progress to noma. Also include essential micronutrient supplements/Vitamin A (1mg daily), Zinc (10mg daily) and folic acid (5mg daily).
- Preventable with Amoxicillin recommended if both are available. Amoxicillin/Clavulanic acid is another available option with or without metronidazole.
- Swallow tablets as soon as possible. Continue treatment while traveling to the clinic or hospital. When child comes to treatment, depend full number of doses so that treatment can continue in case of delay.
- Amoxicillin is a topical Chlor- and alkali powderized contents. Tablets may be crushed and mixed with breast milk, food, liquid or sugar and fed to children with spoon.
- Sting with food is not necessary but can help if not able to swallow.
- Metronidazole is also used for trichomonas vaginalis, giardiasis, amoebic liver abscess, bacterial vaginosis, and bacterial infections with other antibiotic, genital, or skin surface.
- Crush if malnourished child may not express signs of why. Therefore, it may be helpful to begin a course of broad spectrum antibiotics such as cotrimoxazole and/or metronidazole and amoxicillin while waiting for higher level of care.
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**Antibiotics: Metronidazole-Moderate Dose**  
 Metronidazole and/or amoxicillin together or separately are effective in stopping early noma.

Slide 26

### Oral Disinfectant Mouth Wash

- Start by gently cleaning the gums and teeth with a damp cloth soaked in clean, warm water
- Rinse mouth with **warm salt water** or any available oral disinfectant
  - Note: If using hydrogen peroxide, mix 1 part hydrogen peroxide with 5 parts water
- Use 4 cups each day until the bleeding stops. Rinse and spit. Do not drink the salt water!
- When well, clean mouth and rinse with water or salt water at least daily to keep the gums strong.



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**Oral Disinfectant Mouth Wash**  
 When you recognize a child who may have noma, it is important to first disinfect his/her mouth.


(Read Slide)

Salt water rinses (1/2 teaspoon of salt in 1 cup of water) may soothe sore gums. Hydrogen peroxide, used to rinse the gums, is often recommended to remove dead or dying gum tissue.

Slide 27

### Specific Nutritional Deficiencies Associated with Noma:

- Vitamin A
- Zinc
- Selenium
- Protein
- Other minerals and vitamins, including B's C, D, and more



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## Important Vitamins and Minerals

Children with noma have deficient levels of the following vitamins and minerals. Vitamin A is especially important because it boosts immunity and speeds healing. Nutritional therapy should include a full complement of multiple vitamins and minerals as well as nutritious food.

Slide 28

### Late Intervention Treatment

Stage 3



Gangrenous Plaque

▫ Treatment Protocol

- Provide Early Intervention Treatment
- **Bring the child to a specialist as soon as possible. If unable follow these steps:**
  - 1) Gently pull away dead skin with tweezers, being careful not to remove adherent gangrenous plaque
  - 2) Wash the inside of the sore with hydrogen peroxide diluted one part hydrogen peroxide to five parts cooled boiled water. (Be sure you measure the hydrogen peroxide carefully. Too strong a solution will cause further tissue damage.) You can also clean the wound with an iodine solution.)
  - 3) Prepare a dressing by:
    - Soaking cotton gauze in salt water.
    - Squeezing out the extra water so that it is damp.
  - 4) Place dressing in the wound and cover it with a dry bandage.
  - 5) Every day, remove the bandage, wash the wound with dilute (1:3) hydrogen peroxide, and put in a new dressing. Do this until the wound does not smell anymore and there is not more dark dead skin.

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## Stage 3: Late Intervention Treatment Protocol

(Read Slide)

Slide 29

### Late Intervention Treatment

Stage 4



Scar Tissue

▪ Treatment Protocol:

- **Surgery** to release the scar, and close the wound
- **Dental care**, including possibly jaw wiring to hold the mouth in a function position during healing
- **Physical therapy and speech therapy** to restore function
- **Counseling**, especially if the family believes that noma is a curse

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## Stage 4: Late Intervention Treatment Protocol

(Read Slide)

Slide 30

### Treat the illness that provoked the occurrence of Noma

- If child has malaria treat with anti-malarial drugs.
- Look for any other illness, especially **measles and tuberculosis**, and treat appropriately

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### Treat the Underlying Infection

Remember that noma is often (but not always) preceded by a disease that severely weakens the immune system. It is important to not only treat the immediate symptoms of noma, but also the underlying infection that may have set in motion the development of noma.

Slide 31

### These Oral Diseases can allow a Portal of Entry for Noma:



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### Oral Disease Allow a Portal of Entry

Any oral disease that disrupts the oral mucosa can be a noma precursor in a child at risk.

Slide 32

### Treatment is Good

### BUT

### PREVENTION is BETTER

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Slide 33



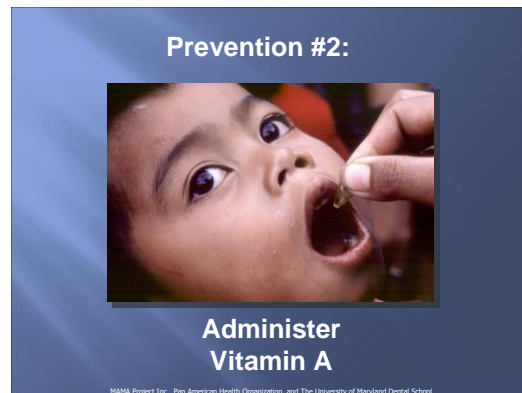
### Prevention #1: Teach Good Nutrition

Undernutrition contributes to more than 1 in 3 child deaths<sup>1</sup>. As mentioned before, malnutrition is one of the primary risk factors of noma. Teaching good nutritional customs that are sustainable with the resources available in the community is essential.

(Explain Slide)

<sup>1</sup>World Health Organization. Countdown to 2015 Decade Report

Slide 34



### Prevention #2: Administer Vitamin A

One of the highest yield public health prevention interventions that can be preformed in communities with noma is to administer vitamin A to all children.

Slide 35

**Focus on Vitamin A**

- Functions
  - Improves Immunity
  - Vision (night, day, color)
  - Skeletal Growth
  - Fetal Development
  - Fertility
- **Vitamin A Prevents Infections and Improves Growth**

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### Focus on Vitamin A

(Read Slide)

Slide 36

### Vitamin A can also Prevent Nutritional Blindness

**Xerophthalmia**  
Dry Eye

**Bitot Spots**

**Hazy dry cornea poor quality — Keratomalacia**

**Gelatinous cornea, bulging, about ready to rupture. If that happens, the eye will be permanently blind.**

**Same eye, healed by timely Vitamin A capsules. Scar remains, but vision is good.**

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### Vitamin A Prevents Nutritional Blindness

Vitamin A not only promotes and maintains healthy teeth, skeletal and soft tissue, mucous membranes, and skin, but ALSO prevents Nutritional Blindness.

Slide 37

#### Vitamin A Mega-Dose Capsules

**200,000 International Units/Capsule**  
**Prevention & Treatment Doses**

**Repeat this dose as recommended for emergency indications**

Age:	UNITS /Dose	Capsule	Notes:
<b>Infants less than 6 months:</b> Non-breast-fed, or breast-fed if mother has not received supplemental vitamin A	50,000	1/4 (2 drops)	Breast milk provides Vitamin A
<b>Infants 6 to 12 months:</b> Every 4-6 months	100,000	1/2 (4 drops)	Give eggs, milk, greens, fruits, colored vegetables
<b>Children over 12 months:</b> Every 4-6 months	200,000	1	Not safe for girls or women who may become pregnant!
<b>Mothers within 6 weeks after delivery</b>	200,000	1	

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### Administration of Vitamin A Mega-Dose Capsules

Slide 38

### Recommendations for Vitamin A Administration (2002 IVACG)

Population	Amount of Vitamin A to be administered	Time of Administration
Infants 0-5 months	3 doses of 50,000 IU each with at least 1 month interval between doses	At each DTP contact (6,10, and 14 weeks) otherwise at other opportunities
Infants 6-11 months	100,000 IU as a single dose every 4-6 months	At any opportunity (e.g., measles immunization)
Children 12 months and older	200,000 IU as a single dose every 4-6 months	At any opportunity
Postpartum Women	2 doses of 200,000 IU at least 1 day apart	As soon after delivery as possible and not more than 6 weeks later.

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### Recommendations for Vitamin A Administration

Note: This dosage regimen may be too aggressive compared to recommendations made by your Ministry of Health. Vitamin A should be given to all target groups according to the dosage schedules endorsed by your Ministry of Health.

Slide 39

**Prevention #3:**



**Micronutrients**


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### Prevention #3: Micronutrients

Slide 40

**Micronutrients**

- ☐ Government mandated food fortification  
Flour \* Sugar \* Salt \* Milk \* Margarine
- ☐ Focused supplements for women and children
- ☐ Multivitamins and mineral tablets
- ☐ Home food fortification with micronutrient powders



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### Micronutrients

Often these foods are fortified with the following micronutrients:

Flour: Iron and Vitamin B

Sugar: Vitamin A

Salt: Iodine and sometimes Fluoride


Milk and Margarine: Vitamin D & A

Iron supplements should be provided for children. Folate and Iron supplements should be provided for prenatal women.

Slide 41

**Recognizing Malnutrition**

THESE TWO CHILDREN ARE MALNOURISHED



<ul style="list-style-type: none"> <li>• Acute Marasmus</li> <li>• Wasting</li> <li>• Too Thin</li> <li>• Can be Moderate or Severe</li> </ul>	<ul style="list-style-type: none"> <li>• Kwashiorkor</li> <li>• Protein Deficient</li> <li>• Swollen</li> <li>• Always Severe</li> </ul>
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### Recognizing Malnutrition

(Explain distinguishing characteristics of each child).



Slide 42

### Chronically Malnourished Children

- ❑ May not look as ill as wasted or swollen children
- ❑ Growth Stunting
- ❑ "Hidden Hunger"



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## Chronically Malnourished Children

In communities where malnutrition is a public health problem and food insecurity is the norm:

**ALL** women and children need to be given essential micronutrients.

This includes:

- *visibly malnourished children* (such as in the acute "marasmus" or "kwashiorkor" illustrations),
- *chronically malnourished children* (growth stunting/ hidden hunger)
- *children who appear healthy*

Micronutrients (Vitamins and Minerals) are needed to prevent and treat malnutrition, especially in those at risk.

### Prevention #4: Improved diet for pregnant and nursing mothers

Pregnant and nursing mothers need to eat a healthy, balanced diet to ensure good health from themselves and their children. Maternal short stature and iron deficiency anemia contribute to at least 20% of maternal deaths. In addition, maternal undernutrition increases the chances of low birth weight, which then increases the probability of neonatal deaths due to infection.<sup>1</sup>

<sup>1</sup>World Health Organization. Countdown to 2015 Decade Report

Slide 43

### Prevention #4:




### Improved diet for pregnant and nursing mothers

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Slide 44

**Prevention #5:**



**Breastfeeding**

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### Prevention #5: Breastfeeding

Breastfeeding plays an integral role in the survival and development of a child and also improves the well-being of the mother.

Slide 45

**Breast Milk is PERFECT Food!**

- It is clean, convenient, and FREE!
- Helps the womb **stop bleeding** following birth
- Protects baby from infections or illnesses** by passing on the mother's defenses against disease through her milk



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### Breast Milk is PERFECT Food


(Read Slide)

Slide 46

**KEY MESSAGE**

**Breastfeeding Saves Lives**

- Start Breastfeeding within the **FIRST HOUR** of birth
- Exclusive breast feeding** for first 6 months
- Continue breast feeding** for at least two years
- Wean slowly
  - Start with easily digested foods
  - Every few days add something new:
    - Mashed fruits, vegetables, eggs, meats, and fats



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### KEY MESSAGE: Breastfeeding Saves Lives

(Read Slide)

One of the biggest mistakes that caregivers make is to give infants sugar water or tea starting at birth. This deprives babies of the best antibody-rich breast milk that mothers produce right after delivery.

Slide 47

**Prevention #6:**



**Personal Hygiene**

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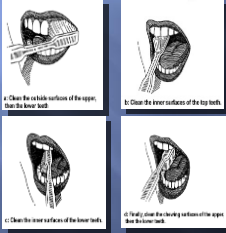
### Prevention #6: Personal Hygiene

Staying clean is of great importance in the prevention of many kinds of infections.

Slide 48

**Oral Hygiene**

**Proper Brushing Technique**



a. Clean the outside surfaces of the upper front teeth.  
b. Clean the inner surfaces of the top teeth.  
c. Clean the inner surfaces of the lower teeth.  
d. Brush over the biting surfaces of the upper front teeth.

**Keep Mouth Clean Starting at Infancy**

- Clean baby's gums after each feeding using a clean soft cloth
- Clean baby's teeth using a small soft bristled toothbrush
- Avoid feeding bottles to prevent tooth decay and gum disease
- Rinse child's mouth after every meal

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### Oral Hygiene

A main component of personal hygiene is oral hygiene.

(Read Slide)

Slide 49

**Personal Hygiene**

- Wash your hands and child's hands and face before and after each feeding with CLEAN water
- Bathe Regularly



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### Personal Hygiene

Many common infections are spread from person to person simply because people fail to wash their hands with clean water and consequently transmit dangerous germs to one another.

Slide 50

**Prevention #7:**



**Community Wide Infection Control**

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### **Prevention #7 Community Wide Infection Control**

Community wide infection control includes three main interventions

1. Immunizations
2. Deworming
3. Insecticide Treated Bed Nets

Slide 51

**Infection Control Interventions**

<b>Immunizations</b> (Especially MEASLES)	→	Limits the frequency and spread of common infectious diseases like measles, tuberculosis, and tetanus
<b>Deworming</b>	→	Control Intestinal Parasites
<b>Insecticide Treated Bed Nets</b>	→	Prevent Malaria spread by Mosquitoes


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### **Infection Control Interventions**

(Read Slide)

Slide 52

**Prevention #8:**



**Sanitation**

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### **Prevention #8: Sanitation**

Slide 53

### Clean Water and Food

- Keep community water sources free of contamination
- Water must be boiled and covered to prevent contamination in the home
- Wash and dry dish and spoon before and after use and cover utensils with a clean cloth
- Germs grow quickly in food that is not consumed immediately, so store after no more than 2 hours



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### Clean Water and Food

(Read Slide)

Be vigilant to keep rivers and streams clean upstream from any place where drinking water is taken.

Slide 54

### Waste Disposal

Dispose properly of all human waste to stop the spread of diseases.



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### Waste Disposal

It is important not to defecate or throw garbage near any water source.

Slide 55

### Keep Livestock out of Home

Do not allow animals in areas where children sit, play or sleep.



Build Fences!



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### Keep Livestock out of Home

In order to prevent the spread of infectious diseases, it is very important that pigs and other livestock do not come into the house or places where children play.

Slide 56

**With Prevention and Control of Noma in Communities:**

- Many other common disease that lead to death will be prevented
- The lives of many women and children will be saved
- School performance will improve
- A healthier environment will lead to a higher quality of life



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**With Prevention and Control of Noma in Communities:**

(Read Slide)

**Discussion:**

- 1) Now that you have been introduced to the disease of noma, have any of you seen early warning signs of noma in the community?
- 2) Ask for repetition of Key Messages
- 3) What prevention strategies can you promote in your communities?