

**A TRANSCRIPT OF THE THIRD
WEBINAR HOSTED BY THE ASTHMA
AWARENESS AND CARE GROUP
(AACG) ON SUNDAY, 30TH MAY, 2021**

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JENNIFER AKANKALI & DR.
KOSISOCHI CHINWENDU AMORHA**

INTRODUCTION

Hello!

You are welcome to the 2021 Asthma Awareness and Care Group (AACG) Webinar 3.0. We are a group of enthusiasts working to improve asthma awareness and care in Nigeria.

Asthma is one of the top four non-communicable diseases. With prompt treatment and proper management, many asthma-related deaths are preventable.

AACG comprises volunteers, health professionals, caregivers and patients with asthma working to improve asthma awareness and care in Nigeria and beyond.

To know more about us, our activities, and to download our previous webinars, please visit our website <https://www.asthmacaregroup.org.ng>

If you are not a registered member and you are interested in becoming one, ensure you register. It is free and should take less than three minutes to do so.

Let us meet our *Moderator, Convener and Facilitator*.



PHARM. NNEAMAKA JENNIFER AKANKALI
(THE MODERATOR)

Nneamaka is a pharmacist who is passionate about public health with an interest in research. She is currently employed at Safari Care Pharmaceuticals, where she offers pharmaceutical care to the local community, alongside sales management.

Graduating with a Bachelor of Pharmacy (B.Pharm) degree from the University of Nigeria, Nsukka (UNN) is a laudable achievement. However, Nneamaka counts the impact she has made in the lives of people, an even greater achievement.

Asides her various certifications in Leadership and Management in Health, and Clinical Management of HIV/AIDS from the University of Washington, and Procurement and Supply Chain Management of Pharmaceuticals from United Nations Development Programme, Nneamaka is currently pursuing a Master's degree in Vaccinology and Drug development at the Institute for Global Health, University of Siena, Italy.

Her desire to make the world a better place through knowledge sharing is the reason she lends her voice in advocacy for improved awareness and care of asthma under the aegis of the Asthma Awareness and Care Group (AACG). She has also volunteered in the past as a counsellor for Mentally Aware Nigeria Initiative (MANI).

Nneamaka is also passionate about global health solutions to improve accessibility to quality and affordable medicines and healthcare for the underserved. She believes that professional and volunteering opportunities should be seized to learn, improve and add value to the world around her.



DR. KOSISOCHI CHINWENDU AMORHA
(THE CONVENER)

Kosi, Founder of the Asthma Awareness and Care Group (AACG) and Fellow of the West African Postgraduate College of Pharmacists (FPCPharm), is a pharmacist with bias for clinical pharmacy practice, academics and research. He is a lecturer at the Department of Clinical Pharmacy and Pharmacy Management, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka (UNN) where he obtained his Ph.D with distinction.

He completed his Masters in Clinical Pharmacy (M.Pharm) with distinction at the University of Lagos, after obtaining his Bachelor of Pharmacy (B.Pharm) degree from UNN. He also has a Doctor of Pharmacy (Pharm.D) degree from the University of Benin.

His work experiences in the hospital, industry, community and marketing (medical representative) have proven him a versatile young man with an appreciable level of tolerance, management and people skills.

In 2018, his Ph.D thesis, “Pharmacist-led interventions in asthma self-management programmes and the effect on health outcomes in Nigeria” was nominated for the prestigious UNN Vice-Chancellor’s award.

Kosi is passionate about volunteering for worthy causes and teaches others to do same. He strongly believes that there is no success without successors. He is currently the Secretary, Pharmaceutical Society of Nigeria (PSN), Enugu State.



PHARM. OFONMBUK MICHAEL UKPONG
(THE FACILITATOR)

Ofonmbuk is a healthcare service professional who obtained his Bachelor of Pharmacy (B.Pharm) degree from the prestigious University of Nigeria, Nsukka (UNN).

His interest in logistics and improved supply chain of healthcare commodities made him join the team at NewHeights Pharma Ltd. where he works in his present position as a Business Executive.

Before now, Ofonmbuk has garnered experience from the Community and Hospital Pharmacy spheres. These have helped him develop a broad skillset in Public Speaking, Digital Marketing, Good Clinical Practice (GCP) and Project Management.

Now that we have met our Moderator, Convener and Facilitator, let us proceed to Webinar 3.0

WEBINAR 3.0: NEBULIZERS

Pharm. Akankali: Dear AACG, please make welcome our own, Pharm. *Ofonmbuk Ukpong* (*Applause*)

Pharm. Ukpong: Good evening everyone

Dr. Amorha: Well done, *Pharm. Akankali* and good evening, *Pharm. Ukpong*.

Pharm. Akankali: Quickly, *Pharm. Ukpong* will be taking over the chat room. Please remember that chats will be disabled during the presentation and enabled after, for questions and comments.

Pharm. Akankali: Pharm. Ukpong and Dr. Amorha have recommended these videos are watched before the commencement of the webinar.

Pharm. Akankali: <https://youtu.be/1DxvJdFvyPY.com>

Pharm. Akankali: <https://youtu.be/1cZmm2TWc5k.com>

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What is a Nebulizer?

A Nebulizer is a medical device that changes medication from a liquid to a mist so it could be inhaled into the lungs.

How does it work?

Pressurized air passes the tube and turns the liquid medicine into a mist. During an asthma attack or a respiratory infection, the mist may be easier to inhale than the spray from a pocket inhaler. When your airways become narrow - like during an asthma attack - you cannot take deep breaths. For this reason, a nebulizer might be a more effective way to deliver medications than inhalers which require one to take a deep breath.

Nebulizers can deliver short-acting (rescue) or long-acting (maintenance to prevent acute attacks) asthma medication therapy. In addition, more than one medication can be given in the same treatment. Examples of medications used in nebulizers include: salbutamol, ipratropium, budesonide, formoterol.

Components of a nebulizer

A nebulizer comes with the following components:

- Compressor (Main Unit)
- Nebulizer Kit
- Mouthpiece
- Air Tube (PVC, 100 cm)
- AC Adapter
- Air Filters (Package of 5)
- Storage Bag
- Instruction Manual

The following are optional accessories sold separately:

- Nosepiece
- Adult Mask (PVC)
- Child Mask (PVC)

KNOW YOUR UNIT

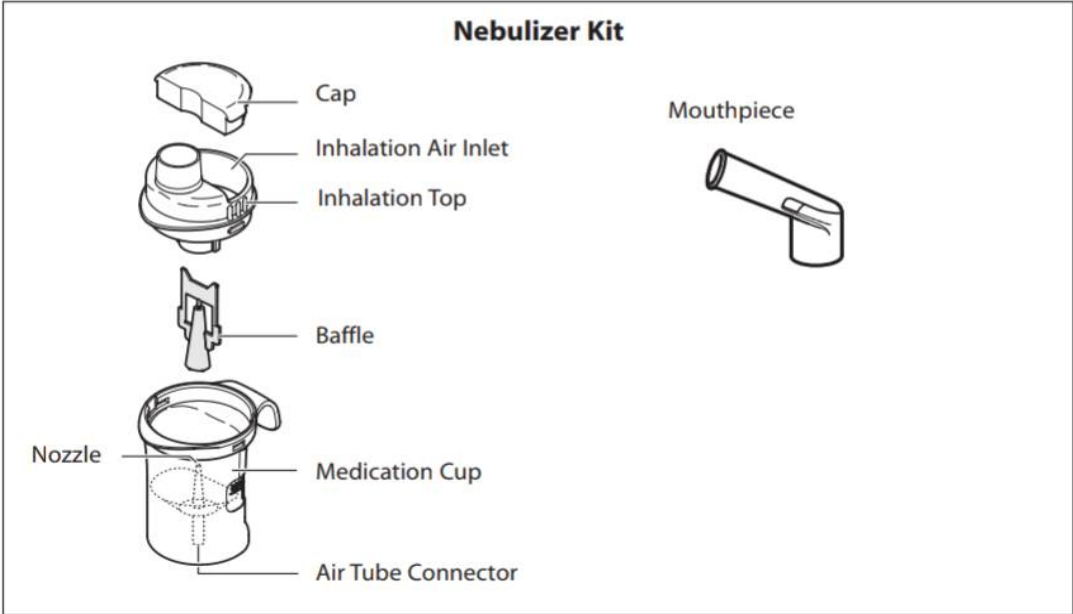
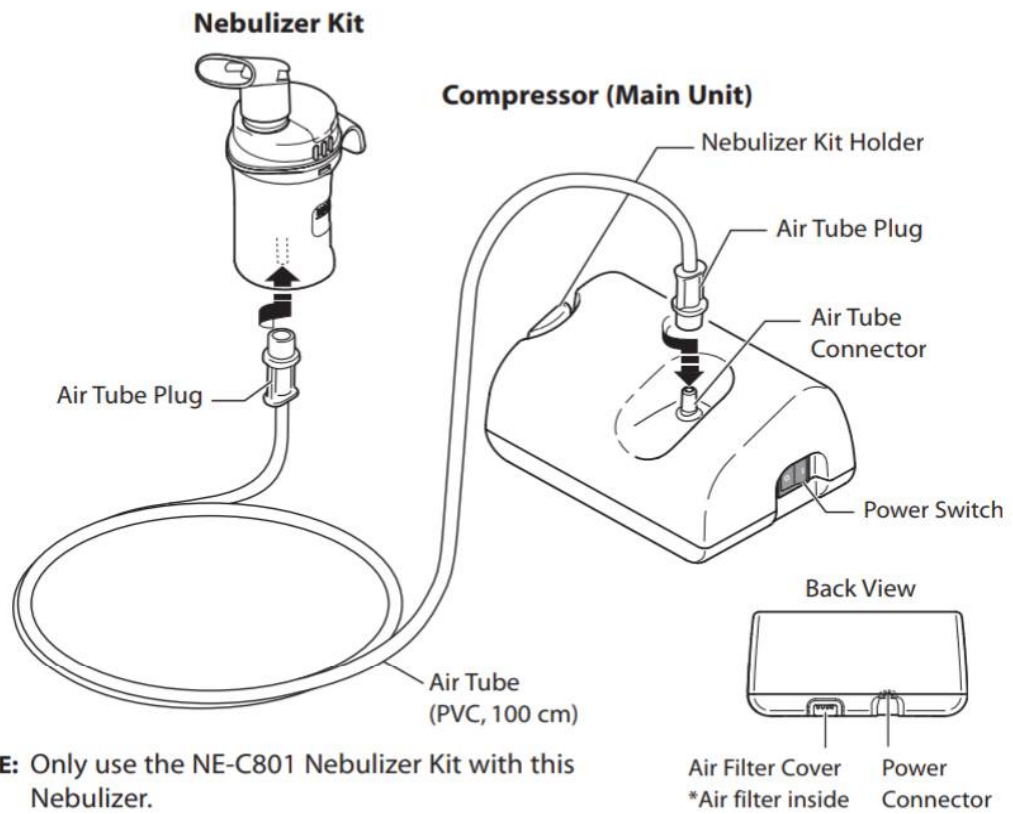


Figure 1: Illustration of typical components of an Omron Nebulizer

To be specific with this discourse, emphasis will be on **Omron® Nebulizers**.



Figure 2: Omron U22 Nebulizer

FEATURES:

- Small and discreet, portable and robust
- Works in any position
- Four hours nebulization time on battery
- Virtually noiseless
- Low medication residue
- High drug delivery rate



Figure 3: C801KD Nebulizer

FEATURES:

- Ideal for infants and children
- Small, compact device
- Easy to maintain
- Kids accessory for more fun treatment
- Child and infant masks included



Figure 4: C28P Nebulizer

FEATURES:

- Short treatment times and efficient medication delivery
- Efficient deposition in the lungs
- Long life compressor
- Water-protected switch



Figure 5: A3 Complete NE-C300-E

FEATURES:

- Complete airway treatment: upper, middle and lower airways
- Reaches deep into the lungs and allows for fast relief of upper airways
- Efficient nebulization of main classes of drugs, either pure or as mixtures
- Fast treatment in less than 5 minutes.

How to use a nebulizer?

There are three stages:

- A. Preparing the Nebulizer for Use
- B. Attaching the Air Tube
- C. Using the Device

A. Preparing the nebulizer for use

1. Insert the power plug on the AC adapter into the power connector on the back side of the compressor. Plug the AC adapter into the electrical outlet.
2. Lift up the mouthpiece and the cap to remove them from the nebulizer kit.
3. Rotate the inhalation top counterclockwise and lift to remove the inhalation top from the medication cup.
4. Add the correct amount of prescribed medication to the medication cup.
5. Make sure that the baffle is securely attached to the inhalation top.
6. Place the inhalation top on the medication cup.
7. Attach the desired inhalation accessory. That is either mouth piece, nose piece, adult mask or child mask. With the above steps completed, the nebulizer is prepared for use.

The seven steps are completed within 1 - 2 minutes.

B. Attaching the air tube

1. Twist the air tube plug slightly and push it firmly into the air tube connector on the upper side of the compressor.
2. Twist the air tube plug slightly and push it firmly into the air tube connector on the bottom of the nebulizer kit. (This is simply connecting the air tube to the nebulizer kit and to the compressor).
3. Use the nebulizer kit holder as a temporary holder for the nebulizer kit.

Once these steps are taken, you have completed the attachment of air tube. This does not take up to a minute.

C. Using the device

1. Hold the nebulizer kit in an upright position.
2. Turn the power switch to the on position. As the compressor starts, nebulization begins and aerosol is generated (remember the pressurized air passes the tube and turns the liquid medicine into mist or aerosol).
3. Inhale medication as instructed by your physician or licensed healthcare practitioner.
4. Complete the treatment.
5. Turn the power switch to the off position. The compressor turns off and nebulization stops.
6. Disconnect the air tube from the nebulizer kit. Hold the air tube plug and gently pull down to disconnect the air tube plug from the air tube connector on the bottom of the nebulizer kit.
7. Check the air tube. No condensation or moisture should remain in the air tube.
8. Disconnect the air tube from the compressor. Hold the air tube plug and gently pull the air tube plug off the air tube connector on the upper side of the compressor.
9. Unplug the AC adapter from the electrical outlet.

Remember nebulization has been completed, so basically you are just removing all the items you fixed initially.

How to clean a nebulizer after each use

1. Remove the inhalation accessory (mouthpiece, optional masks, or optional nose-piece) from the nebulizer kit.
2. Disconnect the air tube from the nebulizer kit.

3. Gently twist the inhalation top counterclockwise and lift to separate the nebulizer into two sections.
4. Discard remaining medication in the medication cup.
5. Rinse all the parts with hot tap water.
6. Hand dry or air dry in a clean environment using a soft, clean, lint-free cloth.
7. Assemble the nebulizer kit and store it in a dry bag.

Changing the air filter

- If the air filter has changed colour or has been used on average for more than 60 days, **replace it with a new one.**
- If water or medication has spilled on the air filter, **replace with a new air filter, immediately.** This could contaminate the inhalation process.

1. Pull the air filter cover to remove from the back side of the compressor.
2. Remove the dirty air filter.
3. Insert a new air filter.

Storing the device

Place the compressor, the nebulizer kit and the inhalation accessory (air tube, mouthpiece, optional masks and optional nosepiece) in the storage bag. Store it in a safe, clean location.

Question and Answer Session

Questions

1. What is the difference between a mist and a spray?
2. Are all OMRON[®] nebulizers home-use friendly?
3. What is the life span of an OMRON[®] nebulizer and how often should it be maintained?
4. Referring to the different pieces for drug administration (nosepiece, mouthpiece, adult and kids masks), what should one consider before choosing any of these pieces?
5. What role does the 'baffle' play in the nebulization process?
6. What should one consider before choosing a nebulizer?
7. Are there nebulizers that use batteries?
8. Can the air filters be washed for re-use? If not, where can I purchase more if I run out?
9. How often should a nebulizer be used?
10. From what age can children use a nebulizer?
11. What is the current price ranges for the different nebulizers or those available for use in Nigeria?
12. Please explain the dilution of salbutamol for nebulization and the rationale behind the concomitant use of a mixture of salbutamol and menthol crystals in chronic bronchitis.

Answers

1. What is the difference between a mist and a spray?

Pharm. Ukpong: *Mist* is water or other liquid finely suspended in air while *Spray* is a fine, gentle, dispersed mist of liquid. They are nanoparticles with different sizes. *Mist* is smaller than *Spray*. Hence, *Mist* is preferred for better inhalation

Dr. Amorha: *Mist* has very small droplets and *Spray*, large droplets. For *Mist*, the droplets are so small that they quickly reach equilibrium with the surrounding medium. A *Spray*, on the other

hand, has droplets that are large enough to still have their own momentum. They move like bullets. People, sometimes, use them interchangeably but they are not exactly the same.

When you think of *Mist*, think of nebulizers. When you think of *Spray*, think of your Salbutamol inhaler.

2. Are all OMRON[®] nebulizers home-use friendly?

Pharm. Ukpong: Yes! But one has to be cautious too since you will be plugging into an electrical outlet.

Dr. Amorha: Yes! Patients normally have their nebulizers at home while they go to school, work etc. with their inhalers (rescue inhalers). People, in reality, rarely move around with their nebulizers.

3. What is the life span of an OMRON[®] nebulizer and how often should it be maintained?

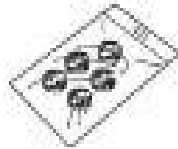
Pharm. Ukpong: Omron[®] gives three years warranty on their products, especially the blood pressure monitors. I am certain about that. For nebulizers, there is warranty too. As long as it is in use, it should be maintained properly. Pay attention to the filters mentioned earlier. The air filters should be changed on average of 60days. Medical devices do not expire.

Dr. Amorha: Hence, the need for proper use and storage as you have explained. Devices, just as humans, go through wear and tear. The way these devices are handled would determine how long they could last.

KNOW YOUR UNIT

Components:

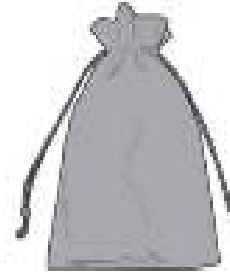
Air Filters
Package of 5



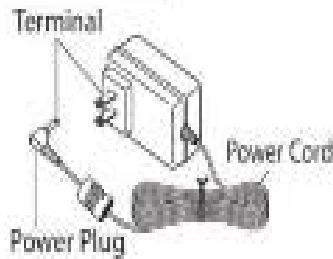
Instruction Manual



Storage Bag



AC Adapter



Accessories and Replacement Parts

	Model No.
AC Adapter	C30AC
Adult Mask (PVC).....	9920
Child Mask (PVC).....	9921
Air Filters (Package of 5)	C30FL
Air Filter Cover	C801FC
Air Tube (PVC, 100 cm)	C801AT
Nebulizer Kit Set	C801NEB
Includes Nebulizer Kit, Mouthpiece and Air Tube	
Nosepiece.....	C911
Mouthpiece.....	C910

Figure 6: Know your unit

4. Referring to the different pieces for drug administration (nosepiece, mouthpiece, adult and kids masks), what should one consider before choosing any of these pieces?

Pharm. Ukpong: The different devices were made for people to choose which they would be comfortable with. The mask is made of PVC. For added flexibility, the parts that contact the patient are composed of either PVC or polypropylene, making the Omron[®] nebulizer machine suitable for use in patients with latex allergies. In some people with allergies, the mouth piece or nose piece can be an alternative.

Dr. Amorha: Nice! Furthermore, you would prefer the kids masks for young children. They usually find this more convenient. For an adult having *severe asthma attacks*, the adult masks would come in handy.

(It might not be as easy as him stepping out of a chess game with his son, as shown in the advert before this presentation ... Someone else might help put the mask over his face).

Age, manual dexterity, costs, severity of an attack would be considered.

5. What role does the 'baffle' play in the nebulization process?

Pharm. Ukpong: The baffle is the mechanism behind the mist production

Dr. Amorha: I am not baffled by this response!

Pharm. Ukpong: If the baffle gets missing maybe during fixing or cleaning, just know you would not get the nebulization complete. In fact, nebulization would not take place.

Dr. Amorha: No baffle, no nebulization.

6. What should one consider before choosing a nebulizer?

Pharm. Ukpong: Age, Severity of attack, Environment (sometimes ... not everybody has electric power in their house).

Dr. Amorha: True! You would also need to consider costs.

Pharm. Ukpong: Yes. They are more expensive compared to inhalers

Dr. Amorha: Yes. However, you would not need to purchase the nebulizer device, often. When you have to get one or recommend for someone, ensure you get the one that is durable, suitable for you or them ... and pocket-friendly. You can make a pick from different ranges of products.

7. Are there nebulizers that use batteries?

Pharm. Ukpong: Yes. U22 uses battery... no need to plug into an electrical outlet before use

Dr. Amorha: Way to go! This would be useful when there is erratic power supply or one is travelling. Useful in rural settings, too.

8. Can the air filters be washed for re-use? If not, where can I purchase more if I run out?

Pharm. Ukpong: Air filters **should not** be washed for re-use. That is why the device comes with extra five air filters for replacement. New Heights Pharma Ltd has her head office in Maryland, Lagos. If you need to make purchase, you can reach out to me directly or visit the company website you will see contacts there you can reach out. It comes in a pack of 30.

9. How often should a nebulizer be used?

Pharm. Ukpong: It is often used when there is an asthma attack and when the pocket inhalers are not effective.

Dr. Amorha: Exactly! In addition, we need to remember that larger doses of medications can be delivered via nebulizers. Despite the faster relief, there could be more side effects with the nebulized salbutamol, for instance. Hence, the frequency should be dependent on the prescription by the physician. Prescription is usually based on the severity of the disease state and the individual. It is individualized. Some patients get better after single nebulization. Others might need to be nebulized up to four times in a day.

A patient who is well-controlled would have less need for nebulizations.

10. From what age can children use a nebulizer?

Pharm. Ukpong: From two years and above.

Dr. Amorha: Yes, when it occurs later. Sometimes, it occurs earlier. Paediatricians can use a nebulizer for quick respiratory relief in children, which includes babies/infants. We have saline spray or saline drops (sold in pharmacies) for managing flu in infants. In cases of severe flu, these infants can be nebulized with normal saline.

Other medications can also be nebulized for babies/infants, as prescribed by the Paediatrician. The kids masks would be used for them.

11. What are the current price ranges for the different nebulizers or those available for use in Nigeria?

Pharm. Ukpong: Currently we have:

- Omron C28 Nebulizer: ₦35,000 - ₦40,000
- Omron C801 kid: ₦32,000 – ₦38,000

12. Please explain the dilution of salbutamol for nebulization and also the rationale behind the concomitant use of a mixture of salbutamol and menthol crystals in chronic bronchitis.

Pharm. Ukpong: Okay ... The essence of dilution is to increase the volume of the medicine to provide enough nebulization time.

Dr. Amorha: True. The diluent is key! For nebulization, the most favoured diluent is *normal saline*. Inhalation of nebulized water can provoke bronchoconstriction in some asthmatic patients. Although there are arguments that this rarely occurs, it is safer to use normal saline.

Pharm. Ukpong: Yes, *normal saline*!

Dr. Amorha: Salbutamol comes as 2.5 mg and 5 mg nebulules.

Dr. Amorha: For the 2.5 mg nebulules, dilute to a final volume of 2 mL with normal saline.

For the 5 mg nebulules, dilute to a final volume of 2.5 mL with normal saline.

Dilutions should be as specified by the health professional.

As for the rationale for the use of salbutamol and menthol crystals in chronic bronchitis ... Menthol crystals release powerful vapour when added to hot water. It is for this reason that they are widely used in aromatherapy. They can relieve coughs, colds, flus. Importantly, they could reduce congestion in the nose and lungs and could be helpful in some respiratory disorders, like chronic bronchitis.

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Dr. Amorha: Over to you, *Pharm. Akankali*.

Pharm. Ukpong: Thank you, Sir.

Pharm. Akankali: Thank you so much *Pharm. Ofonmbuk Ukpong* and *Dr Kosi Amorha*, for tackling our “*exam questions*”.

I think it is fitting to say that your answers have won you both a distinction

Pharm. Akankali: To our lovely AACG members, thank you for staying up with us till this hour. We encourage you to read through the chat as there is a lot to learn from it. If you have further questions, please feel free to drop them in the group and our resident nebulizer experts, *Pharm. Ukpong* and *Dr. Amorha*, will be glad to answer them.

Dr. Amorha: Thank you for the top-notch moderation, *Pharm. Nneamaka Jennifer Akankali*. You are always wonderful at moderating!

Pharm. Akankali: Thank you *Dr Kosi Amorha* for the opportunity and compliments. They are well-received.

Dr. Amorha: Thank you for your time, efforts, and A+ delivery, *Pharm. Ofonmbuk Michael Ukpong*. I enjoyed every bit of your presentation.

Pharm. Ukpong: Thank you, Sir. Glad this was possible despite the tight schedule.

Pharm. Ukpong: Thank you, *Pharm. Akankali*. With that introduction I can't wait to become the President

Dr. Amorha: Dearest AACG members, thank you for staying with us. Your questions and comments are appreciated. We encourage us to make out time to see the videos, again.

Dr. Amorha: *Breathe well ... Lead a normal life.* Thank you! Pharm. Akankali, please re-post the two videos.

Pharm. Akankali: <https://youtu.be/1DxvJdFvyPY.com>

Pharm. Akankali: <https://youtu.be/1cZmm2TWc5k.com>

USEFUL REFERENCES

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Omron nebulizers guide manual