

Lang Doctor's In Training Lesson Plan

Title: "The Asthma Attack"

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Lesson Thread: Important Community Health Issues

Please refer to the "Teaching 101" Lesson on the Community Pediatrics Website for lesson plan context

Objectives:

LSWBAT #1– Lang Scholar Will Be Able To understand basic pathophysiology of an asthma exacerbation as **bronchospasm** and acute worsening of chronic **inflammation**.

LSWBAT #2 – Identify the basic treatments of both acute exacerbations and chronic asthma management – quick relief of bronchospasm (**smooth muscle relaxant**) and inflammation (**systemic steroids**) and chronic management of inflammation (**inhaled steroids**).

LSWBAT #3- Recognize and describe the **signs of respiratory distress** due to an asthma attack

***LSWBAT perform the following DOCTORING SKILL ("DIT" OBJECTIVE) - For DIT's to work as a team to implement the basic steps of acute asthma management on a mock patient having an asthma attack in an Emergency Room.

Supplies:

1. Nebulizer masks with albuterol vials (4-5)
2. Sample MDIs with spacers (4-5)
3. Stethoscopes (1-2)
4. Oxygen saturation monitor (1-2)
5. Regular straws & coffee stirring straws – 20 of each size
6. AV Hookup with Internet

To the Presenter: Arrive 15 minutes before session begins. Write out Lesson Objectives on the board as you will refer to these to guide you through the lesson. Also open the powerpoint to the Do Now Activity. Lay out and organize all supplies. Outline the Word Web (see below) on the board behind the projector screen so as not to waste time once you are ready to use it.

Introducing the Lesson: (10-15 mins)

*****DO NOW ACTIVITY (slide #2): Think about a friend or family member with asthma and write down 3 facts about your current knowledge of Asthma*****

1) Always start lessons reviewing Lang Classroom Rules (Slide #3) – Key Lang Rules to emphasize for this lesson are: *(Feel free to ask scholars to share these rules with you)!!!*

- a. **Excellence:** We are not satisfied with mediocrity. We strive for exceptional quality in our academics, professionalism, and service. We are hard workers who aim to go above and beyond what is expected of us.
- b. **Innovation:** We are creative problem-solvers who think critically and devise out-of-the-box solutions.
- c. **Teamwork:** We listen, help, share, participate, and communicate. Each of us contributes to a positive peer-support network that strives to help every member to reach common goals and aspirations.

2) Review your objectives for the lesson

3) Specifically state that the goal for the lesson, like all DIT lessons, is to learn a doctoring skill(s), point out today's doctoring skill(s)

4) Solicit prior knowledge – at this time REVIEW the DO NOW ACTIVITY (Slide #2)

- i. Think/Pair/Share - Ask students to share with their neighbor the 1-2 facts they wrote down.
- ii. Go around the room and have their partner share the facts.

iii. Organize the facts into the following WORD WEB – “ASTHMA” IN CENTER – BRANCHES ORGANIZED AS FOLLOWS: 1. Basic Pathophysiology – delineate acute and chronic; 2. Consequences of asthma mismanagement; 3. Signs and symptoms of asthma attack; 4. Treatments – delineate acute and chronic.

iv. You will refer back to this chart throughout the talk so don't erase!!!

v. State that in med school we typically learn about the disease by understanding normal first, then pathophysiology, then signs and symptoms of a disease, then what happens when we don't treat it (both acute and chronic consequences) and then finally treatments.

Communicating the New Knowledge... (15-20mins)

1. Start teaching the objectives:

-**Objective #1** – The basic **pathophysiology of asthma** focusing on the point that asthma is both an acute and chronic disease.

a. Refer to back to WORD WEB, start by reviewing class contributions from intro activity.

Discuss the following concepts to teach the basic pathophysiology (Slide #4)...

- Point out the smooth muscles around the small airways (bronchioles)
- Point out the redness and mucus production indicative of inflammation.
- Acute Asthma – Both airway spasm and inflammation is exacerbated making breathing difficult
- Chronic – Underlying inflammation makes baseline breathing difficult when compared to one without asthma. Then in the face of triggers, the underlying chronic condition worsens.
 - **ACTIVITY - Pass around regular straws and coffee stirring straws to demonstrate difference in breathing through normal (no straw) v. chronically inflamed (big straw) v. acutely inflamed and spastic airways (coffee straw) – (make sure noses pinched while trying to breathe through straws!)**
 - **Keep chart of Average 1 min Respiratory Rate of participants as the straw size decreases – Note how RR increases = the first sign of an Asthma Attack!**
 - Point out that it is really important to keep chronic asthma in check as breathing through regular straws is already challenging!
- Define “Triggers” – roach feces, dust mites, air pollution, URIs, **SMOKING**
- Make note of other common illnesses seen in asthmatics – eczema, seasonal allergies, family history of asthma!

-**Objective #2** – Treatments for the acute and chronic asthmatic (Slide #5)

a. CHRONIC -

i. Inhaled Corticosteroids

ii. Albuterol only as needed

b. ACUTE -

i. Albuterol – bronchial smooth muscle relaxer

ii. Oral or IV Steroids – to calm the airway inflammation ASAP.

c. Use the diagrams and slide #4 again to model what each medication is targeting.

i. *I like to use the door stopper analogy; lungs and bronchioles like a door—door shuts w/ exacerbation, albuterol blows door open, inhaled steroids acts as a door stopper to avoid the door closing entirely.*

d. If time allows - Model using a pump with aerochamber, note that this chamber makes it possible to get medicine to the distal airways where asthma happens.

-**Objective #3** – Recognizing an asthmatic in respiratory distress. (Slides #7 - #10)

1. Signs of Respiratory Distress in an Asthmatic –

a. Fast breathing – respiratory rate = respirations per minute

- i. **Refer to straw activity to show how Resp Rate increased as Diameter of straw decreased**
- b. Low O2 sat – show this picture of an Oxygen Sat monitor (Slide #7) – and point out the one or two we have brought along.
- c. Nasal flaring (Slide #8), suprasternal tugging with subcostal retractions (Slide #9) – Use these images – and model if possible
- d. Wheeze (Slide #10) – Try this online demonstration <http://www.youtube.com/watch?v=YG0-ukhU1xE> (or demonstrate a high pitched / musical / expiratory sound yourself)

Applying New Knowledge via the THE DIT OBJECTIVE ... (20 mins)

1. First you must teach the Key Aspects of **Acute** Asthma Management:
 - a. Demonstrate how to put together a nebulizer machine with albuterol vial and how to hook it up to Oxygen.
 - b. Demonstrate how to hook up an O2 sat monitor and interpret normal results
 - c. Demonstrate how to take a respiratory rate and look for signs of respiratory distress – Fast breathing, Nasal Flare, Retractions, etc

2. Assessing and Managing the Acute Attack: First test for understanding of above information by walking through following scenario with large group:
 - a. You are the MD in the emergency room, a 3 year old is brought in by her mom and mom is scared she is breathing fast. You take the respiratory rate which is 60 and you see signs of respiratory distress.
 - i. First, what are signs of respiratory distress?
 1. Fast Breathing, Flaring, Retractions, Belly Breathing, Desats!
 - ii. Next... What would you do FIRST???
 1. Assess for respiratory distress, attach oxygen saturation monitor, give albuterol

3. Finally, give students the opportunity to practice managing the acute asthmatic with the equipment we have for demonstration:
 - a. Break class into two to three groups to work as a team to manage a mock patient (**the presenter**) in respiratory distress due to asthma.
 - b. Make sure to step them through the proper evaluation – assess respiratory rate, O2 sat with monitor, and signs of distress. Then administer albuterol ASAP. Then consider systemic steroids.
 - c. Allow scholars to handle the equipment and take turns.
 - d. Assign roles - Patient (**the resident / presenter**), RN, MD, Mom, Respiratory Therapist - this is a nice opportunity to revisit the Lang Rules of Teamwork and also show how in the medical profession we are always working in teams, especially in emergency settings.
 - e. Congratulate them on a job well done by demonstrating improvement in patient's mock clinical status if they go through the proper steps.

Summarize the lesson (5 mins)

Prior to wrapping up the lesson, revisit the word web or ask a few of the scholars to talk through what they have learned from the lesson today.

Always leave time for student questions

Homework: (Note to presenter - this will be coordinated by Sandhya and/or Ryan via email. However, if time remains at the end of the lesson, feel free to remind the group we will be emailing them a homework assignment!)

***Homework targeting the theme: What would you do if you were the MD?

“Asthma remains one of the most common diseases in children and is especially prevalent in NYC. You just learned how asthma affects the lungs and how the medicines work to treat asthma. Given all that you now know... why do you think asthma remains such a big problem in our community? What would you do to get more kids, especially teenagers, to manage their asthma better?”