Best Nursing Practice in the School Environment

PART 1

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Objectives
Following the presentation, demonstration and practice, the School Nurse will correctly:
1. Assess pulses
2. Assess breath sounds
3. Demonstrate use of Epi pen, insulin pen, glucagon injection
4. Administer a breathing treatment using a nebulizer
5. Demonstrate how to use an inhaler
6. Demonstrate tracheostomy care and suctioning
7. Demonstrate and discuss pulse oximetry

Pediatric Assessment Triangle
Using visual and auditory cues to determine
SICK OR NOT SICK?
Appearance
Work of Breathing
Circulation
Pediatric Assessment Triangle

Appearance

Student getting enough O2 to brain to respond as usual

**Normal:** Usual cry or speech. Responds to you or the teacher or to environmental stimuli such as lights, noise, etc. Good muscle tone. Moves extremities well.

**Abnormal:** Unusual or absent cry or speech. Decreased response to you, teacher or environmental stimuli. Floppy or rigid muscle tone or not moving.

Work of Breathing

(I can’t hear/see you breathe or the usual for that child)

**Normal:** Breathing appears regular without excessive respiratory muscle effort or audible respiratory sounds.

**Abnormal:** Increased/excessive (nasal flaring, retractions or abdominal muscle use) or decreased/absent respiratory effort or noisy breathing.

Circulation

Can always check capillary refill (if blood returns before you say capillary refill probably OK)

**Normal:** Color appears usual for racial group of child. No obvious significant bleeding.

**Abnormal:** Cyanosis, mottling, paleness/pallor or obvious significant bleeding.
Pediatric Assessment Triangle

All three sides of triangle normal = child is probably OK

One side of triangle abnormal = Don't leave, intervene
Two sides of triangle abnormal = Call for help, intervene
Three sides of triangle abnormal = Call EMS, begin emergency measures

Care of the Student

WITH
A
TRACHEOSTOMY

Materials at the School for Students with a Tracheostomy

Portable suction machine
Catheters for suctioning
Catheters or Yankauer tips for oral suctioning
Trach tubes, same size? Smaller size
Dressings
Trach ties – cloth or Velcro
Tracheostomy Care

Clean procedure
Wash hands
Supplies:
  - Split gauze dressings (sterile)
  - Sterile H2O or NS
  - Sterile Q tips
  - Trach ties

 Signs that a child may need to be suctioned:
  - Rattling mucus sounds from the trach
  - Fast breathing
  - Bubbles in trach opening
  - Dry, raspy breathing or whistling noise from trach
  - Any sign of respiratory distress

Suctioning of Tracheostomy

Sterile procedure
Wash hands
Supplies:
  - Sterile catheter kit
  - Suction machine
  - Suction set at 80 – 100 mmHg
Pre measure so know depth
Suctioning of Tracheostomy

Assess respiratory status before you start
Use catheter ½ size of tube, premeasured
Twirl to insert, no suction during insertion
Rotate catheter between finger and thumb
as it is withdrawn with intermittent suction
No more than 5 seconds with premeasured tubing
Encourage student to cough
Determine post suctioning status
May need to have humidity/O2 reapplied

Rinse catheter with sterile H2O or Saline before suctioning again
OR
Clean/suction mouth with catheter
DO NOT use catheter for trach suctioning after being in student’s mouth
Assess student at the end of procedure

Pulse Oximetry
SpO2

Allow measurement of light through a pulsating arterial vascular bed to calculate percentage of hemoglobin saturated with oxygen
Oxygen saturation is an indicator of oxygen transport in the body
Normal values 96-99% in healthy kids
SpO2 pulse must correlate with nurses assessment of child’s pulse to ensure accuracy (Count pulse for one minute apical)
Pulse Oximetry
SpO2

Underlying PULM/CV problems = greater risk of altered SpO2 values
SpO2 values < 96 can be early warning but child before machine
Best to evaluate a student’s SpO2 values at different occasions and record to obtain a baseline expected for this child?

Pulses

Rates: School age:
60 – 100 (<10 yrs)
50 – 90 (>10 yrs)
Too fast, too slow, absent

Sites: Brachial, Radial, Carotid, Femoral, Pedal

General Circulation

Circumstances involved:
- after medication, physical activity, emotional situation
Pulses:
- absent, weak or thready, easily palpated, or bounding?
Skin color and temperature
Blood pressure school age: 90 – 105 / 55 – 65
Care of the Student

With
Respiratory
Issues

During Assessment
Have student sitting upright as possible
Breathe slowly in through nose and out through mouth
Listen anteriorly and posteriorly
Compare breath sounds before and after inhaler and/or breathing treatment
Respiratory rate, retractions, nasal flaring, skin or nail color evaluation
O₂ saturations need to be 96% or greater

Lung Sounds
Vesicular – peripheral lung; soft and swishing sound
Bronchial – trachea and bronchi; louder, coarser and of longer duration than vesicular
Bronchovesicular – sternal border of the major bronchi; moderate in pitch and intensity
Adventitious Breath Sounds

**Coarse crackles** – discontinuous, explosive, interrupted. Loud, low in pitch. Pulmonary edema, pneumonia

**Fine crackles** – discontinuous, explosive, interrupted. Quieter, lower and shorter than coarse crackles. Heart failure, atelectasis

**Wheeze** – continuous, of long duration; high pitched, musical, hissing. Narrowing of airways, asthma, COPD. Heard on inhalation and/or exhalation.

**Rhonchi** – continuous, of long duration, low pitched, snoring. Production of sputum (may clear with coughing/suctioning)

Types of Inhalation Devices - Asthma Inhalers

- **Metered** – dose inhaler (MDI) uses a chemical propellant to push the medication out of the inhaler.
- **Nebulizers** deliver fine liquid mists of medication through a tube or a "mask" that fits over the nose and mouth, using air or oxygen under pressure.
- **Dry powder inhalers (DPIs)** deliver medication without using chemical propellants, but they require a strong and fast inhalation.

Nebulizer Treatments

**Nebulizers** are electric- or battery-powered machines that turn liquid asthma medicine into a fine mist. This mist comes through a tube that is attached to a mouthpiece or facemask. Can take up to 15 minutes for a treatment.
**Steps to Using a Nebulizer**

1. Add medication (liquid only) to the cup
2. Close the cup and connect its tube to the air compressor
3. When the compressor is turned on, it will vaporize the medicine, creating a mist
4. The mist is inhaled by the student through the mouthpiece – treatment lasts until all liquid is gone
5. Encourage student to take deep breaths during treatment
   - Important to clean the cup & mouth piece after each use – use lemon-free soap and water; dry on a clean towel

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**MDI**

Remove the cap
Shake well for 5 seconds
Breathe out all the way, keeping your chin up
Insert MDI between your teeth, close lips tightly
Press canister once
Breathe in slowly to fill lungs (if hear hoot, too fast)
Hold breath for 10 seconds, wait 1 minute to repeat if needed
Clean as instructions say, at least once per week
Keep track of how much med left in inhaler

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**MDI with SPACER**

Long tubes acts as a holding chamber with one way valve
Decrease the need for coordinated inhalation
Reduce delivery to the mouth
Reduce SE of inhaled steroids
Mask until 6 at a minimum
MDI with SPACER

Shake the inhaler well before use (3 - 4 shakes)
Remove the cap from inhaler, and from spacer
Attach the inhaler to the spacer
Exhale
Put spacer mouthpiece between teeth and close your lips around it
Press the top of inhaler once
Breathe in very slowly until a full breath has been taken. Hearing whistle sound, indicates breathing is too fast (some have alerts, some not)
Hold breath for about ten seconds, then breathe out.

Dry Powder Inhaler

1. To load a dose, hold the Flexhaler with mouthpiece up to ensure proper loading of the medication. Twist the brown grip fully in one direction as far as it will go and then fully back again. You will hear a click. The Flexhaler is now loaded with a dose.
2. Turn your head away from the inhaler and breathe out as much air as you comfortably can.
3. Place the device in your mouth and breathe in forcefully and as deeply as you can to fill your lungs.
4. Hold your breath for 10 seconds.
5. Take the DPI away from your mouth and exhale slowly.
6. If more than one dose is prescribed, repeat steps 1 through 5 for each dose.
7. When your treatment is complete, replace the white cover and twist it completely to close.

Caring for your dry powder inhaler

Keep your dry powder inhaler in a dry place at room temperature.
Never place the DPI in water.
Never shake or breathe into the DPI.
Never use a spacer device with your DPI.
Read instructions, there are three different DPI
Care of the Student
WITH
ALLERGIES

Emergency Injections

Epinephrine injection (Epi Pen and Epi Pen Jr)
used to treat life-threatening allergic reactions from insect bites, foods, medications, latex, etc.
Epinephrine is a sympathomimetic agent; it works by relaxing muscles in the airways and tightening the blood vessels

When to use Epi Pen

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<tr>
<th>Head</th>
<th>Skin</th>
<th>Stomach</th>
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<tbody>
<tr>
<td>Feeling very anxious</td>
<td>Itching</td>
<td>Vomiting</td>
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<td>Confusion</td>
<td>Fever</td>
<td>Nausea</td>
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<td>Diarrhea</td>
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<td>Pasive-ness</td>
<td>Swelling</td>
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<td>Swelling of lips and/or tongue</td>
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<td>Tingling of lips or tongue</td>
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<td>Weak pulse</td>
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<td>Fast heartbeat</td>
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<td>Itching</td>
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<td>Tightness/dyspnea</td>
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<td>Coughing</td>
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<td>Hoarseness</td>
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<td>Wheezing</td>
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<tr>
<td>Difficulty breathing</td>
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<td>Coughing</td>
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Steps to using an Epi Pen

Epi Pen Auto Injectors

The EpiPen® Schools® program helps improve access to epinephrine in the event a person experiences a life-threatening allergic reaction (anaphylaxis) in the school setting.

Official EpiPen® app lets you do the following:
• Create Allergen Profiles so you know who is allergic to what
• Keep track of all your EpiPen® and EpiPen Jr® Auto-Injectors
• Call 911 in case of an emergency straight from the app

Child can get 2 carrying cases when register Epi Pen on website

Care of the Student

NEEDING EMERGENCY INJECTIONS
Emergency Injections

Glucagon Emergency Kit
Hormone that raises the level of glucose in the blood

For rescue of insulin dependent diabetic who is unconscious due to presumed hypoglycemia
Mixing of a pre-filled syringe to a vial of powered glucagon is done just prior to injection
Small children (under 20 kg or 44 lbs) are given ½ mL (half the syringe); older children or adults are given 1 mL (the whole syringe)

Place student on their left side prior to injecting as may cause vomiting
Give in a large muscle: thigh, buttocks or arm
Call 911 after administering
Can be readministered after 15 minutes if child not awake (if so ordered)
Blood glucose checks every 10 – 15 minutes following injection
When student is conscious and can swallow, give fast acting glucose and follow with protein/ carb combo, ie peanut butter crackers

Glucagon App
http://www.lillyglucagon.com/#faq

• Walk through each step of administering Glucagon using the touch-screen simulator
• Use Glucagon in an actual emergency with step-by-step guidance, including an audio option that can help you follow the instructions
• Keep track of the locations of your emergency kits in the kit log and set expiration date reminders
Diastat/Diazepam Rectal Gel

- Diazepam rectal gel is used to stop seizures lasting more than 20 minutes or more than a certain number of seizures in a day.
- A specific dosage is prescribed for each student.
- The medication comes prepackaged and ready to be administered rectally.
- Two forms available DiaStat and DiaStat Acudial

- Child and Adult preparedness plan

Directions for Administration

- Place the student having seizures on their side
- Apply lubricating jelly to the rectal tip
- Insert the syringe tip into the anus until the rim is snug against the opening
- Inject contents, and hold buttocks together for short period of time, 3-5 seconds
- See website for complete instructions and DISPOSAL instructions
Diastat Nasal Spray

- Development stopped
- Absorption not acceptable

References

Epinephrine Injection –

How to Read SpO2, Konica Minolta Sensing, Inc.,
www.windward.hawaii.edu/factstaff/miliefsky-mozz%20142L/aboutpulseoximetry.pdf

Ghacagon Emergency Kit –

How to Use Your Inhaler –
asthma.ca/adults/treatment/spacers.php

Nebulizer Treatments: How does a Nebulizer Work –
www.buzzle.com/articles/portable-nebulizer-machine.html

Diazepam Rectal –

Pediatric Nursing Procedures. 2013 Bowden and Greenberg