

**THE JOURNEY OF EDUCATIONAL TRAINING FROM  
COMPETENCY TO PROFICIENCY OF PEDIATRIC  
INTENSIVE CARE UNIT NURSES (PICU) IN TERTIARY  
CARE HOSPITAL**



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**KING FAISAL SPECIALIST HOSPITAL & RESEARCH CENTER, RIYADH, KSA**

# Objectives

By the end of the presentation, learners will be able to:

- Identify educational training needs of PICU nurses in treating critically ill children (under 5 Years) especially in developing countries.
- Understand the designed curriculum especially for PICU nurses to function proficiently in order to recognize early warning signs.
- Discuss the purpose of practice based project



## *Objectives Cont...*

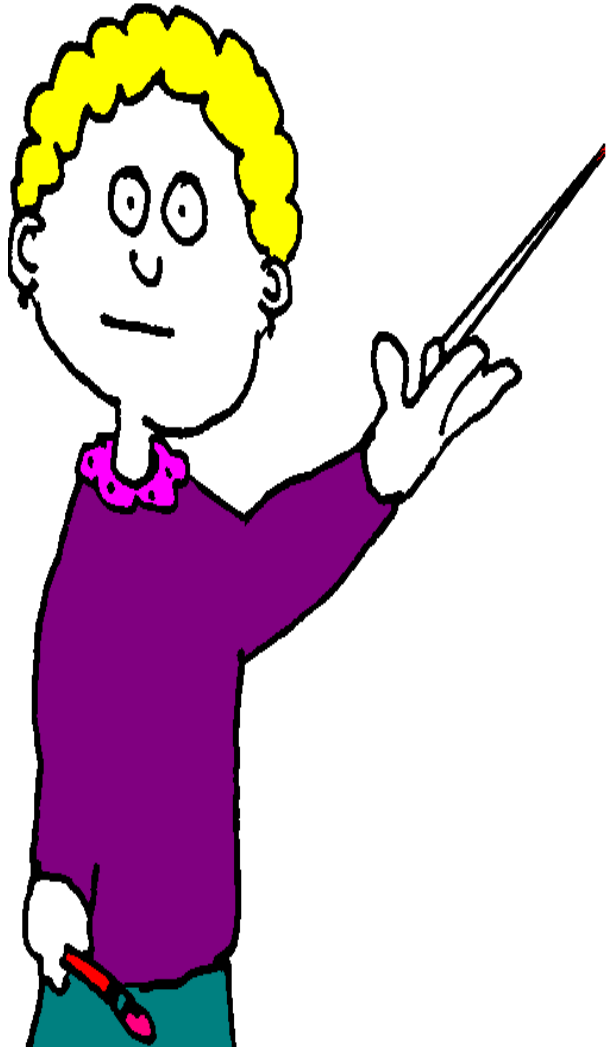
- Share the processes of project implementation & the measures taken for sustainability of project
- Discuss the project outcomes
- Discuss limitations and recommendations





# ISSUE IDENTIFICATION LIST

## Educational training for PICU staff



Infection control rates

Pattern of death in PICU

Staff professionalism

Family involvement during rounds

# Priority Problem

## *Educational Training for PICU Staff*

To identify the gap between knowledge, attitude and skills of  
PICU nurses and technicians

&

To identify the need for educational training for PICU Nurses and  
Technicians and make them competent in this specialty

# Purpose

- To ensure appropriately trained nurses in PICU
- To increase knowledge and make them competent in dealing with Pediatric patients
- To attract nurses into the setting who previously had an intensive care or pediatric nursing experience



# Rationale for Selecting this Issue

## *Past Experience*

PICU inaugurated in 2006

No course or orientation for PICU staff since 2006

No active session were conducted for PICU staff



## *Literature Significance*

Pediatric Critical Care Unit (PICU) plays a very important role in the care of critically ill or injured children. The specialty of PICU has developed and matured over 30 years in the developed countries. There are several reports from the developed countries and very few only are available in Pakistan

*Journal of the College of Physicians and Surgeons Pakistan, 2009*

Cont...

The first report from Pakistan, describing the **Pediatric Residents** experience in PICU rotation.

Pediatric critical care teaching curriculum for **Residents** is based on the spectrum of our common critical care problems along with basic principal of critical care.

*Haque. A, Haider. R & Salat. S. Journal of Pakistan Medical Association, 2010*



**But for Nurses**  
**???**



???

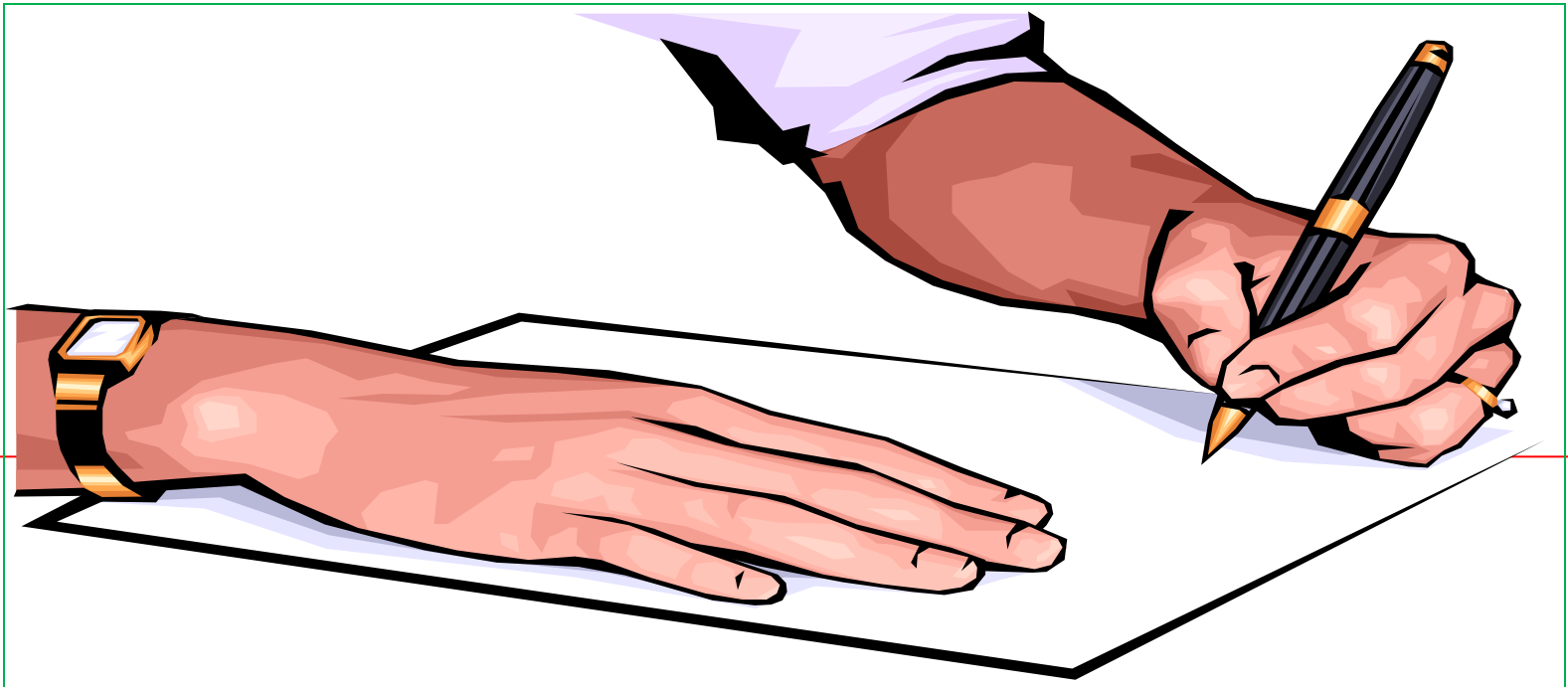
# *Observation*

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Need Assessment Tool

Pre Session Test

# Need Assessment Analyses



## **Pediatric Intensive Care Unit (PICU)**

### **Staff Survey Form**

#### **Consent:**

I am Shaista Rajani Post RN BSCN Yr II student currently doing my senior electives with Dr Anwarul Haque in PICU. For the learning purpose, I would like to conduct a survey from PICU nurses to assess their knowledge and concerns related to PICU therefore I need your consent. You are requested to fill the questionnaire and give your honest response in order to support this study. Please be assured that your information will be kept in confidentiality without disclosing your identity and it will be shared through a consolidated project report/presentation.

I, \_\_\_\_\_ have read and understood the consent and I am willing to participate in this survey.

**Code #:** \_\_\_\_\_

**Date:** \_\_\_\_\_

1. What is your designation in PICU?  
☐ RN                      ☐ CCN                      ☐ Sr. CCN
2. How many years of clinical experience you have in PICU?  
☐ 1 -2 yrs                      ☐ 3 – 5 yrs                      ☐ > 5 yrs
3. What do you think should be the clinical experience of adult ICU staff needed to work in PICU?  
☐ 6 months                      ☐ 1 yrs                      ☐ 2 yrs                      ☐ 3 or more                      ☐ Others
4. Have you attended any teaching sessions pertinent to Peds ICU since you working?  
☐ Yes                      ☐ No
5. If "No" then have you felt any difficulty while dealing with PICU patients?  
☐ Yes                      ☐ No
6. Do you think PICU staff need teaching sessions which should be totally based on Pediatric intensive care?  
☐ Yes                      ☐ No
7. Do you think PICU staff need separate teaching module?  
☐ Yes                      ☐ No

# PICU Staff

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**Sr.CCN**

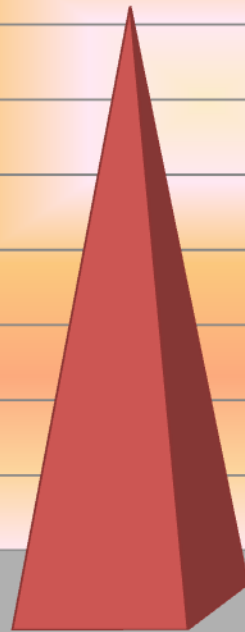
**Sr.CCT**

**CCN**



# PICU Clinical Experience

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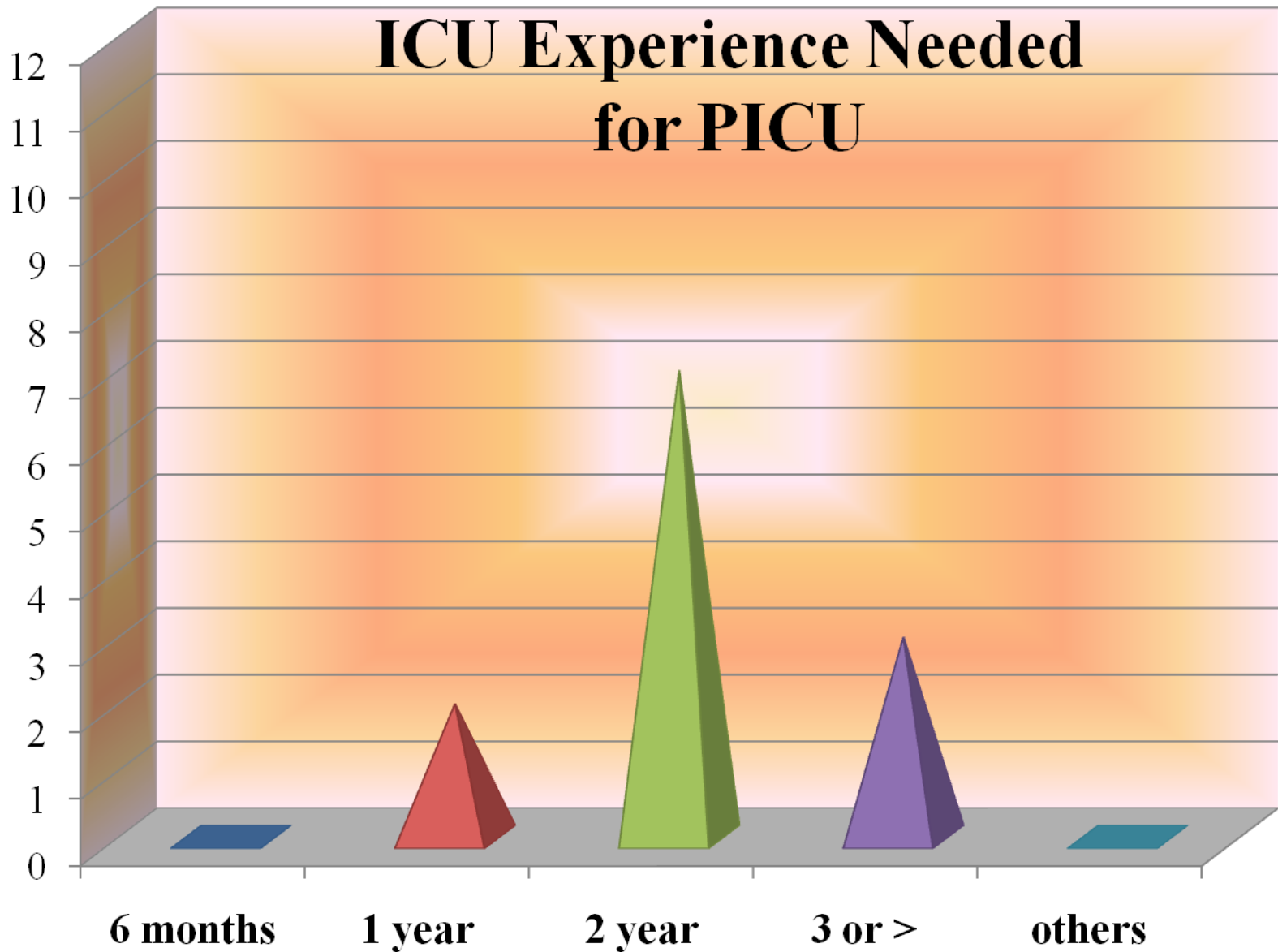
**1-2 yrs**

**3-5 yrs**

**> 5 yrs**

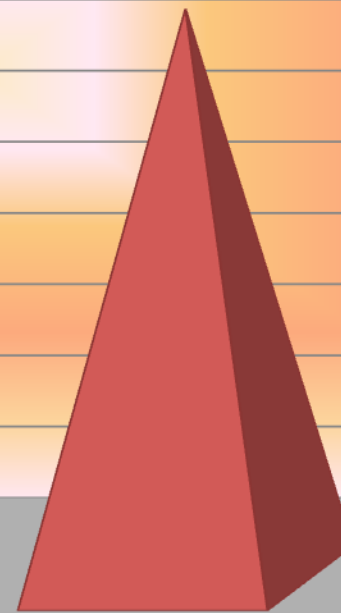
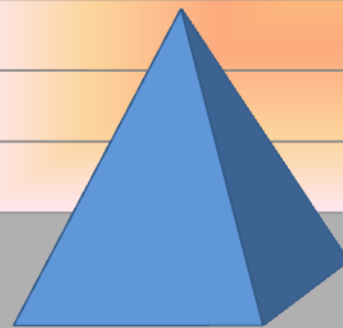


# ICU Experience Needed for PICU



# Past PICU Educational Sessions

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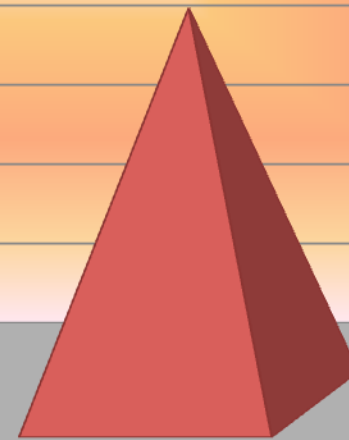
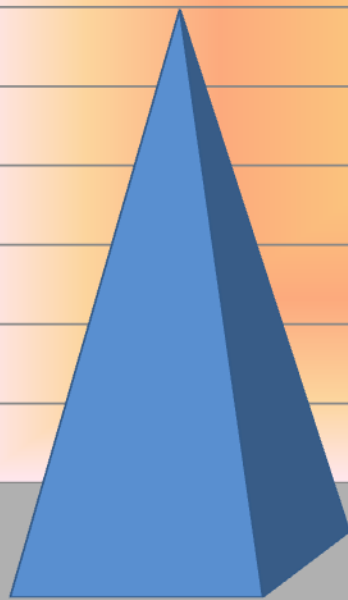


**Yes**

**No**

# Difficulty in Handling PICU Patients

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**Yes**

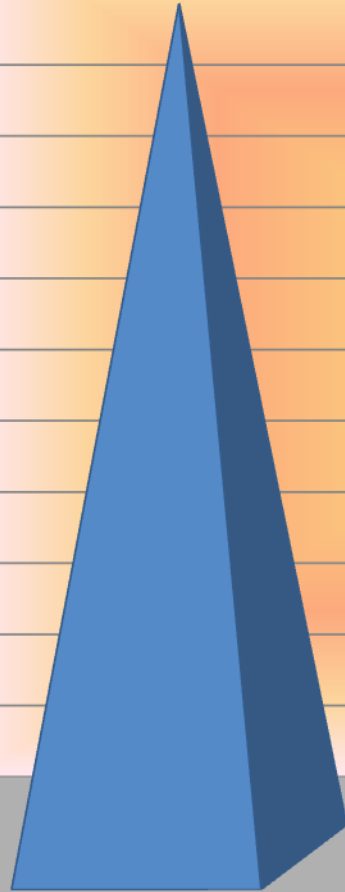
**No**

# Need of Clinical Teaching in PICU

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**Yes**

**No**

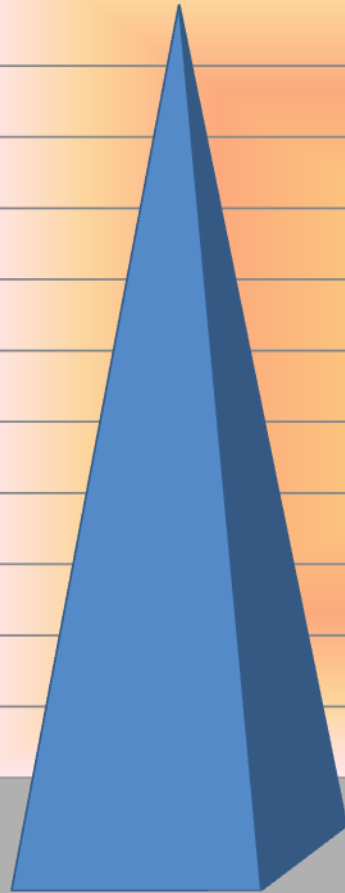


# Need of Separate Teaching Module

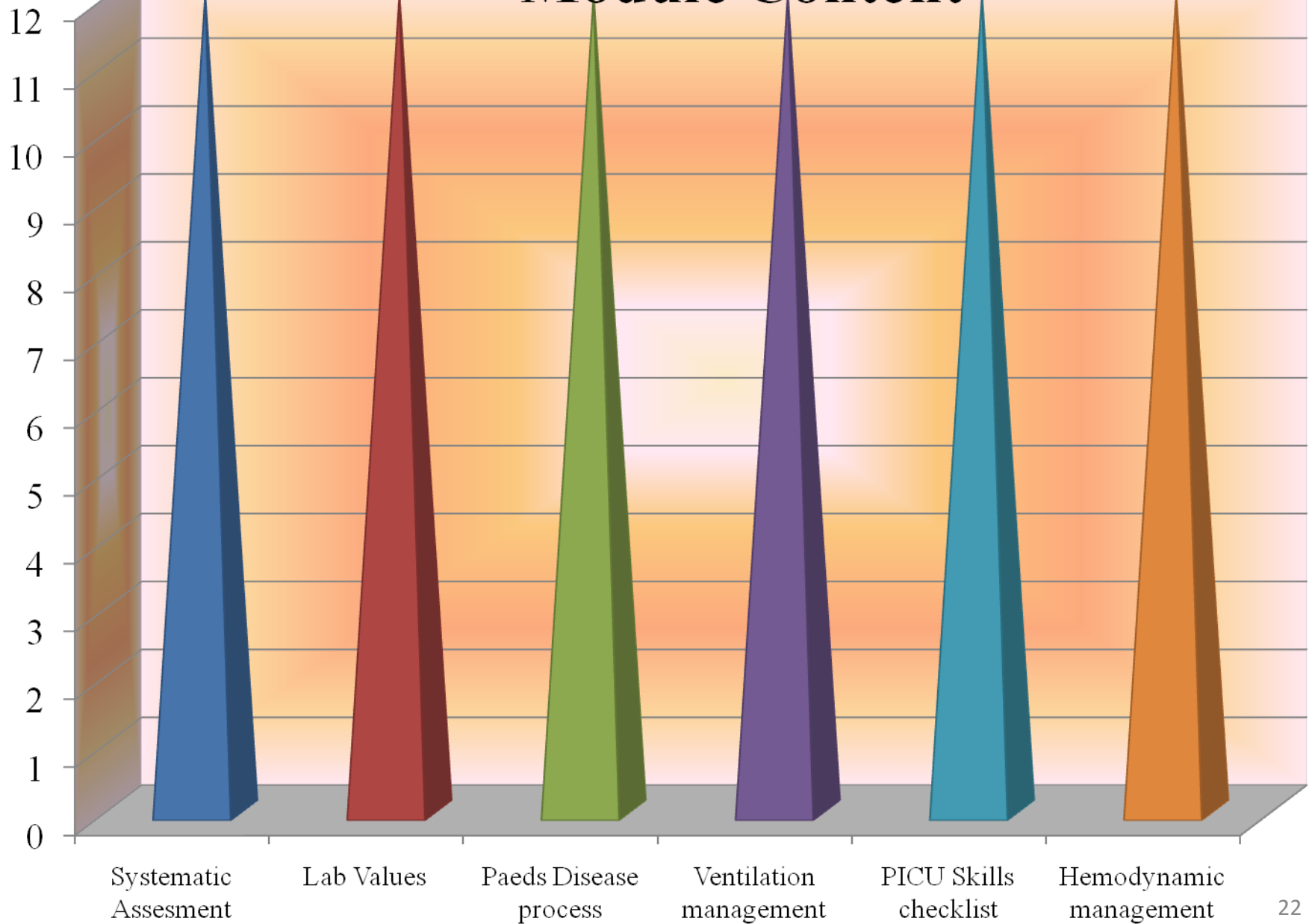
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**Yes**

**No**



# Module Content

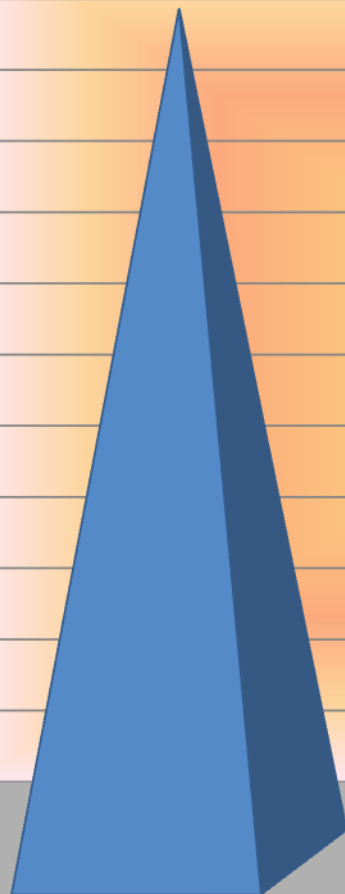


# Need of Separate PICU Course

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**Yes**

**No**



**Pre-Test Questions**  
**Pediatric Respiratory System**

Date: \_\_\_\_\_

Name: \_\_\_\_\_

**Circle the correct answer:**

Internal and cellular respiration takes place in the:

1. Lungs
2. Larynx
3. Pharynx
4. Tissues
5. Epiglottis

The respiratory system consists of two tracts:

1. Anterior posterior
2. Upper lower
3. Lateral and bilateral

Under normal conditions, the rate and depth of breathing are adjusted by homeostatic control mechanism for CO<sub>2</sub>, not O<sub>2</sub>.

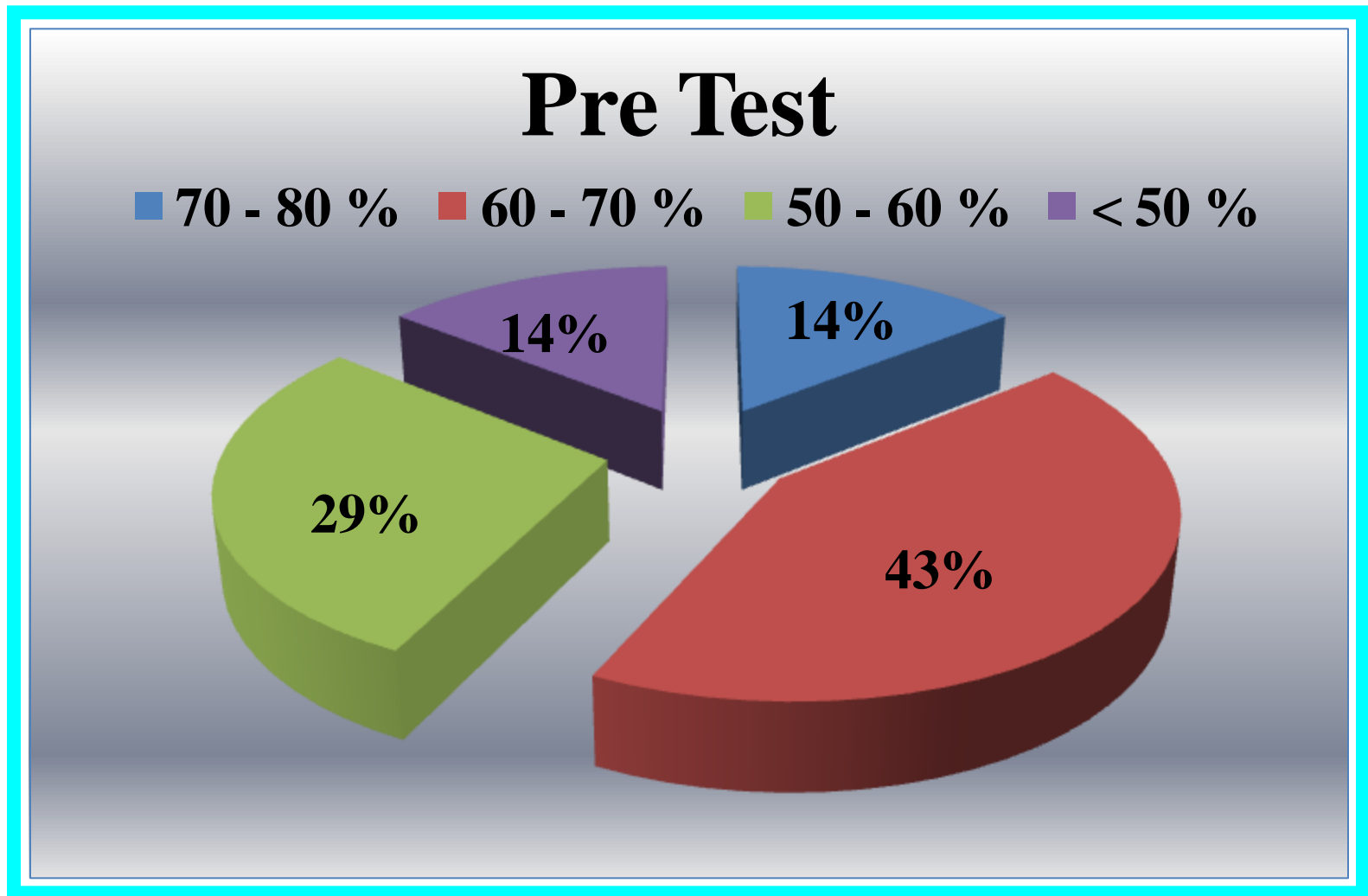
1. True
2. False

The inner surfaces of the airways (trachea, bronchi, and bronchioles) are lined with smooth muscle.

1. True
2. False

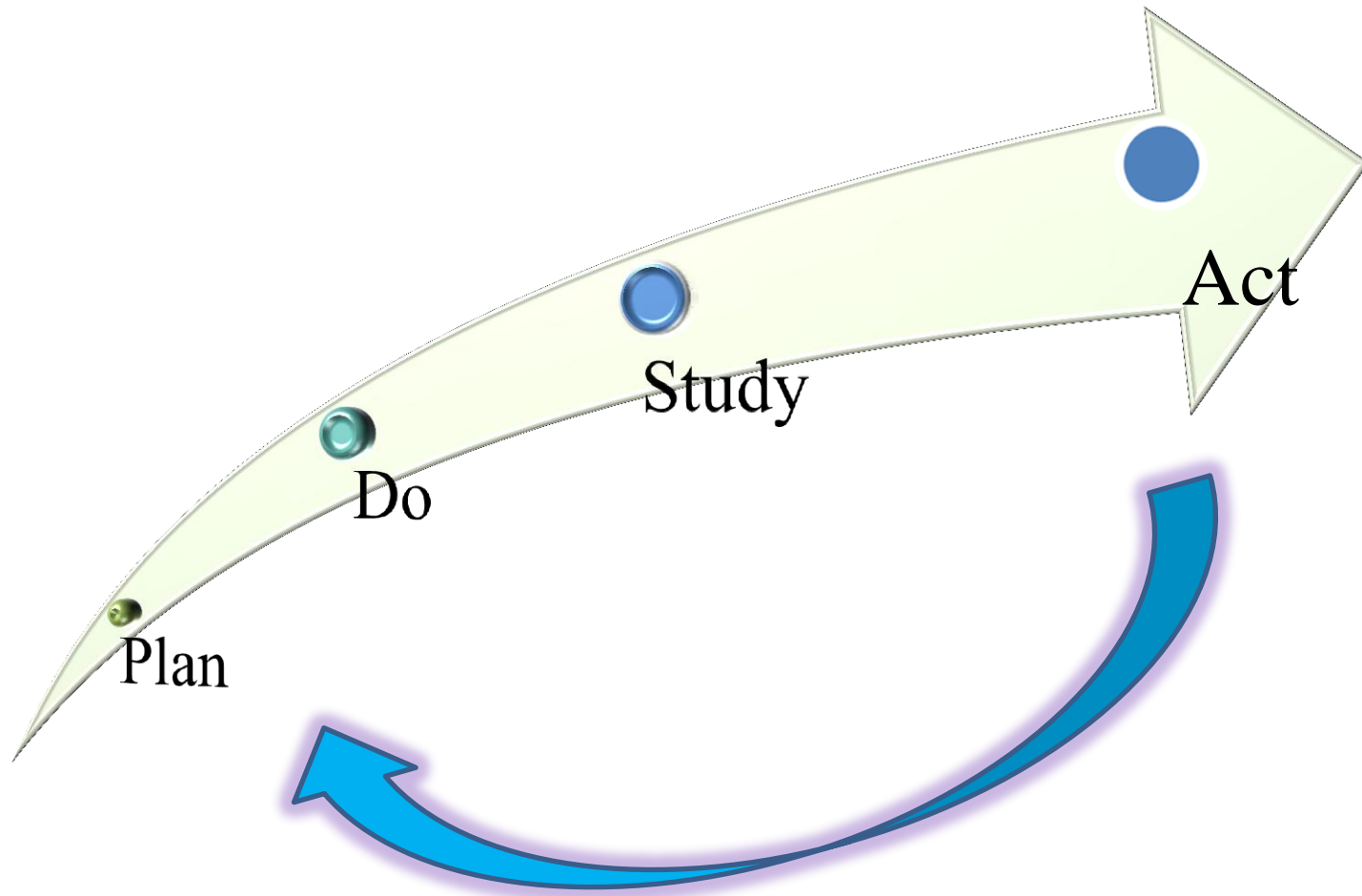


# Pre Test Result : n=12



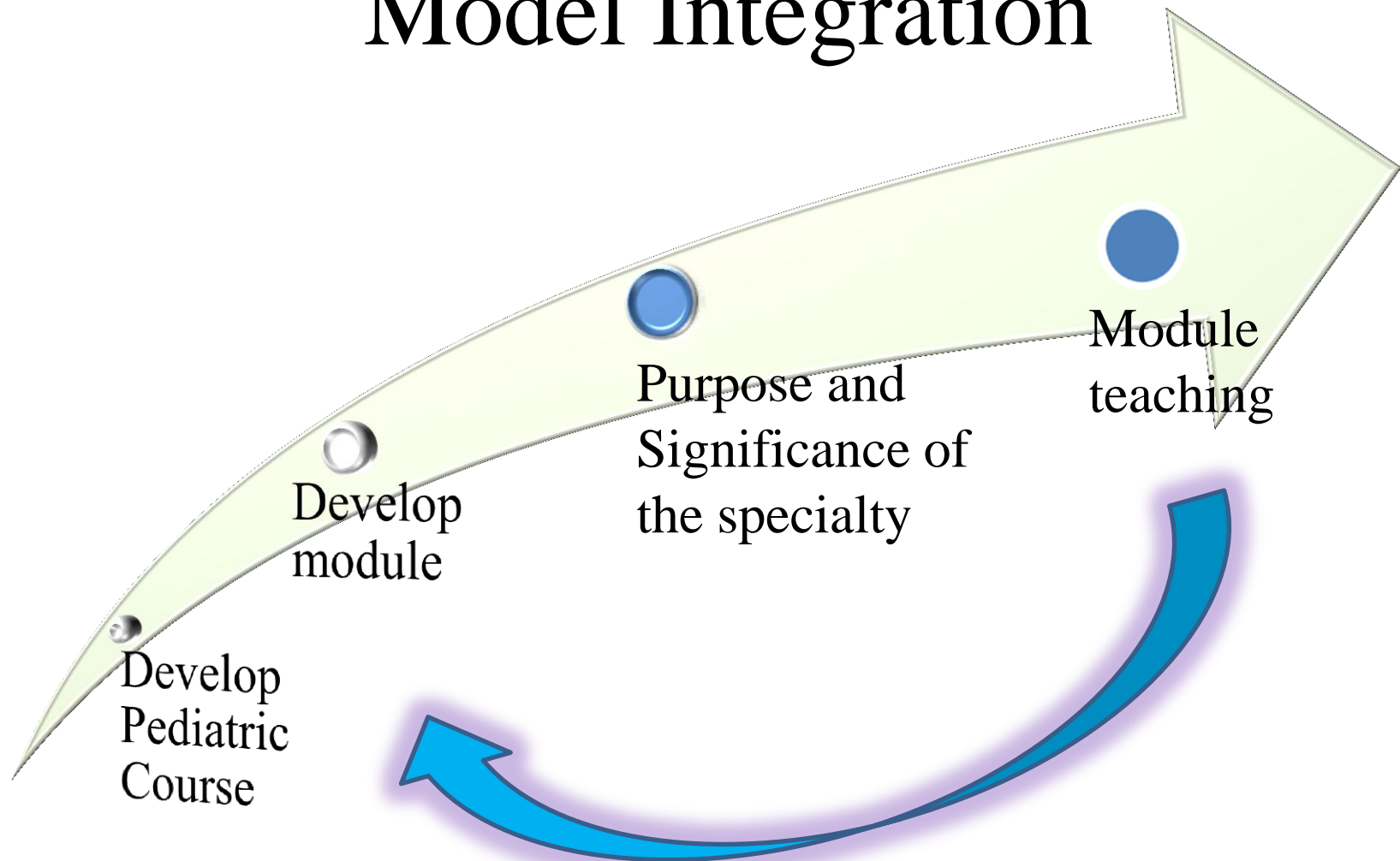
# PDSA

## The Model for Improvement



# PDSA

## Model Integration



# Model of Nursing Student Evolution to Proficient Novice RNs

This model is based on [Benner, 1984](#) and [Dreyfus, 1980](#) models

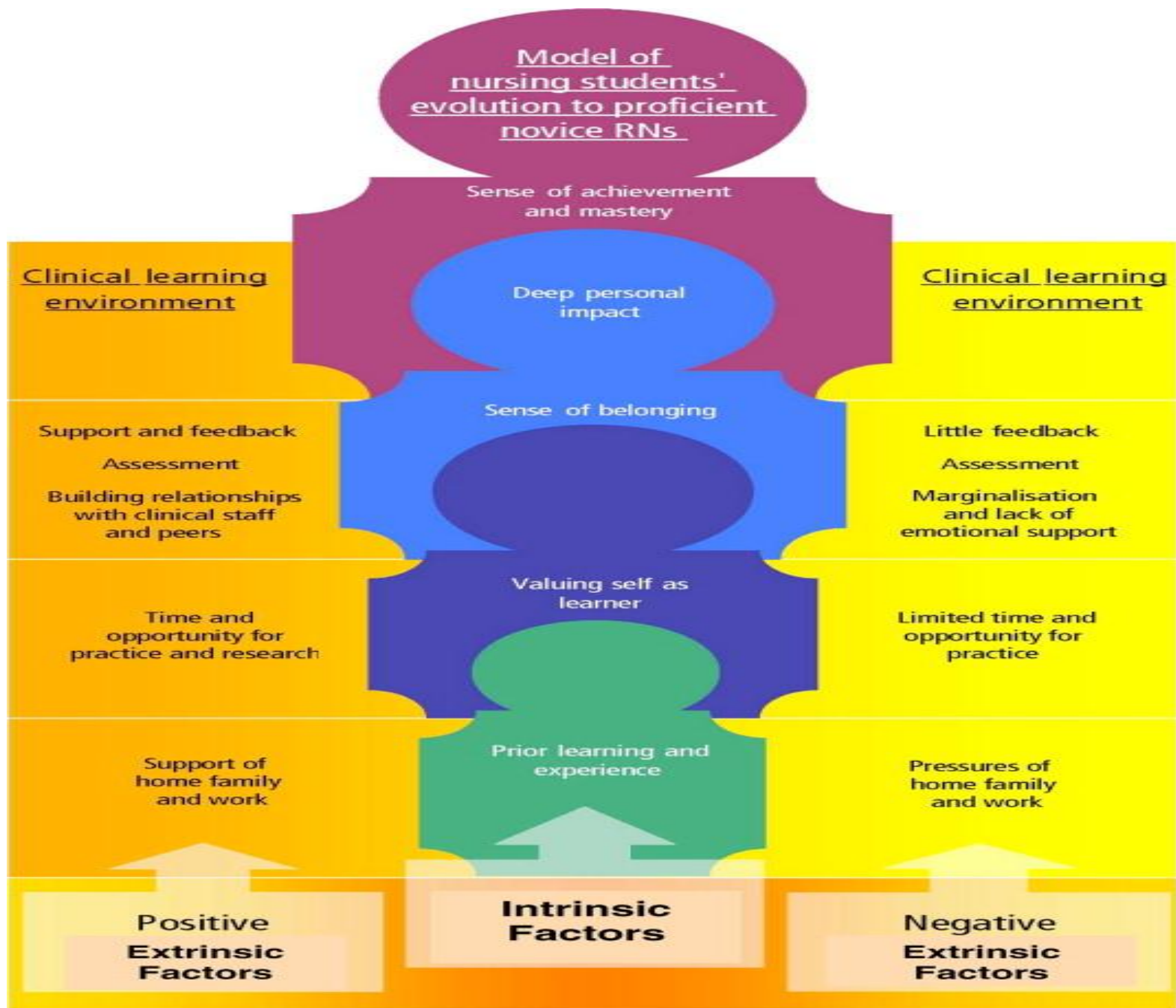
It has an implications for future curriculum development, staff development, and evidence based practice in relation to clinical teaching and learning.

*Kay Edgecombe & Margaret Bowden, 2008*

# Integration

- The term used ‘proficiency’ as Benner, 1984 to perceive situations as a whole to understand the situations and be able to make decisions.
- The desired curriculum outcome is to get staff to a level of proficiency that enables them to function competently.

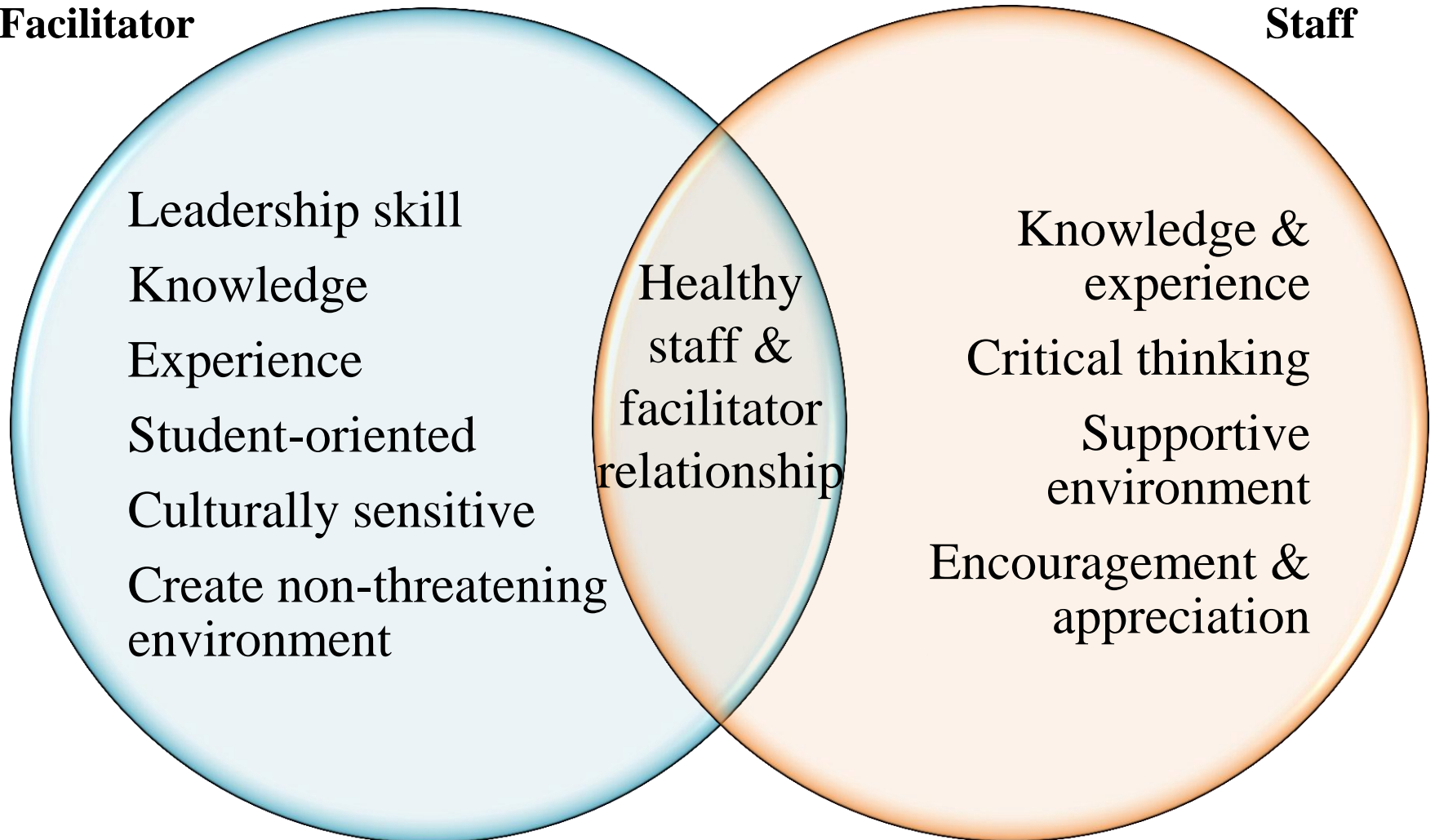
*Kay Edgecombe & Margaret Bowden, 2008*



# Modification

**Facilitator**

**Staff**





# ACTION PLAN





### “Action Plan”

GOALS	OBJECTIVES	STRATEGIES	ACTIVITIES	TARGET GROUP	WHO	WHERE & WHEN	RESOURCES REQUIRED	RESOURCES AVAILABLE	DRIVING FORCES/CONSTRAINTS	MARKETING	DEADLINE STATUS OF PLAN
<p>To ensure appropriate trained pediatric nurses</p> <p>To increase knowledge and make PICU staff competent in dealing with Pediatric patients</p> <p>To develop capacity of nurses into the setting who previously had an intensive care or pediatric</p>	<p>By the end of electives I will be able to:</p> <p>Identify the prioritized issue in PICU</p> <p>Discuss the prioritized issue with preceptor</p> <p>Develop the need assessment tool</p> <p>Analyze the need assessment tool</p>	<p>Educational sessions</p> <p>Clinical practice</p> <p>Staff clinical observation</p> <p>Ongoing assessment at bed side</p>	<p>Lecture/interactive sessions.</p> <p>Multimedia presentation.</p> <p>Group activity</p> <p>Demonstration of respiratory assessment</p> <p>Summary of discussion with manager</p>	PICU staff (Sr.CCN, CCN, Sr.CCT)	Shaista Rajani (Post RN BScN student)	<p>June 7-11, 2010</p> <p>June 15, 2010</p>	<p>Multimedia</p> <p>Laptop</p> <p>Tape recorder</p> <p>Cassette</p> <p>Paper and Pens</p>	<p>Multimedia</p> <p>Laptop</p> <p>Tape recorder</p> <p>Cassette</p> <p>Paper and Pens</p>	<p><u>Forces:</u></p> <p>HN &amp; CNI Support</p> <p>Faculty Preceptor Co-preceptor</p> <p><u>Constraints:</u></p> <p>Staff Attendance</p> <p>Duty schedule</p> <p>Staff shortage</p> <p>Unpredictable city crises</p>	Announcements during sessions	Final draft of overall plan is complete

**“Action Plan”**

GOALS	OBJECTIVES	STRATEGIES	ACTIVITIES	TARGET GROUP	WHO	WHERE & WHEN	RESOURCES REQUIRED	RESOURCES AVAILABLE	DRIVING FORCES/CONSTRAINTS	MARKETING	DEADLINE STATUS OF PLAN
nursing experience	<p>Develop teaching module on identified educational need.</p> <p>Develop pediatric critical care nursing course guideline</p> <p>Plan teaching session to teach the developed module.</p> <p>Conduct session for PICU nurses to teach the module.</p> <p>Evaluate the staff for the effectiveness of session</p>					<p>ICU Lounge/ Class room/ PICU</p> <p>09<sup>th</sup> June, 2010 (1400-1600hrs)</p> <p>14<sup>th</sup> June, 2010 (1400-1600hrs)</p> <p>22<sup>nd</sup> &amp; 23<sup>rd</sup> June, 2010 (1400-1600hrs)</p> <p>24<sup>th</sup> June, 2010 (1400-1600hrs)</p>					

**“Action Plan”**

GOALS	OBJECTIVES	STRATEGIES	ACTIVITIES	TARGET GROUP	WHO	WHERE & WHEN	RESOURCES REQUIRED	RESOURCES AVAILABLE	DRIVING FORCES/CONSTRAINTS	MARKETING	DEADLINE STATUS OF PLAN
	Formulate sustainability plan and handover to respective Staff or head of the PICU  Discuss the developed pediatric critical care nursing course guideline with manager					June 23-24, 2010  June 29, 2010					

Key:

PICU (Pediatric intensive care unit)

HN (Head Nurse)

CNI (Senior Clinical Nurse Instructor)

Sr.CCN (Senior Critical Care Nurse)

Sr.CCT (Senior Critical Care Technicians)

# IMPLEMENTATION



## **Pediatric Intensive Care Nursing Course**

**Title:** Pediatric Intensive Care Nursing Course

**Duration:** 4 months

- 2 hours/week
- **Total:** 8 hours/month

**Modules:** 4 modules

**Number of students per course:** minimum 10 and maximum 20

**Location of the Course:** PICU/ICU

**Course Co-coordinator:** CNI/ PICU TL or Educator

**Eligibility Criteria:**

- 1 year ICU experience
- CCN & Sr.CCT
- Complete PICU CBO checklist

**Rational for the course:**

- Ensure appropriately trained pediatric nurses
- Develop capacity of nurses into the setting who previously had an intensive care or pediatric nursing experience
- Allow for beds to be opened by having sufficient nursing staff
- To improve and maintain the quality of care in PICU

### **Course Philosophy:**

The course will provide:

- A structured teaching program to develop a sound knowledge base whereby theory and practice will be linked.
- A practitioner who will be able to care for the critically ill child and its family in a safe and appropriate manner
- Facilitation of evidence based practice in PICU

### **Organization & Structure of the course:**

The course will comprise of four modules:

**Module One:** Pediatric Respiratory System, Diseases & its management, Invasive/noninvasive Ventilation & its management

**Module Two:** Pediatric Cardiac System, Diseases & its management

**Module Three:** Pediatric Neuro-Muscular Diseases & its management

**Module Four:** Pediatric Renal System, Diseases & its management

## **Pediatric Intensive Care Nursing Course**

### **Module One**

#### **“Pediatric Respiratory System”**

**Unit I & II:** 1 WEEK

Anatomy & Physiology

Pediatric Respiratory Assessment

**Unit III & IV:** 1 WEEK

Upper Airway Diseases

Lower Airway Disease

**Unit V & VI:** 1 WEEK

Neuromuscular Respiratory Distress

Septic and Cardiogenic Respiratory Distress

**Unit VII:** 1 WEEK

Invasive/noninvasive Ventilation & its management

PALS overview

Staff Clinical Observation

# **Pediatric Intensive Care (PICU)**

## **Respiratory System Module**

**Prepared By**

***Ms. Shaista Rajani***

**RN, BScN**

***Dr. Anwarul Haque***

**Assistant Professor, Pediatric Intensivist**

**Date: 17<sup>th</sup> May 2010**



# In Service Sessions



# Assessment at bed side





The image features three human hands, one at the top, one on the left, and one at the bottom, positioned to form a triangular shape. The hands are light-skinned and appear to be reaching towards each other. The background is a vibrant green field with rolling hills under a bright blue sky filled with fluffy white clouds. The word "Sustainability" is written in a white, serif font across the center of the image, overlapping the hands and the landscape.

# Sustainability

### Sustainability Plan

GOALS	STRATEGIES	ACTIVITIES	TARGET GROUP	WHO	WHEN	RESOURCES AVAILABLE	DRIVING FORCES/ CONSTRAINS
To ensure appropriate trained pediatric nurses	Educational session for PICU staff every month.	Lecture/interactive sessions.	PICU (pediatric intensive care unit) staff	Clinical nurse instructor (CNI)	Activities to be held on 16 <sup>th</sup> July, 2010	<u>Human Resource</u> CNI	<u>Forces:</u> CNI
To increase knowledge and make PICU staff competent in dealing with Pediatric patients	Prepared course guide lines for PICU	Multimedia presentation.	(Sr.CCN, CCN, Sr.CCT)	Head Nurse (HN)		HN	HN
	Prepared pediatric respiratory assessment module and presentations	Demonstration of respiratory assessment on Peads at bedside.		PICU team leaders (TLs)		TLs	TLs
To develop capacity of nurses into the setting who previously had an intensive care or pediatric nursing experience	Clinical observation at bedside	Session Pre test and post tests papers		Post RN BSCN YR I students ( Ms. Nausheen and Ms. Amreen)		PICU staff <u>Material Resource</u> Pediatric respiratory module	Peads Intensivists (Dr Anwarul Haque) <u>Constrains:</u> Staff duty scheduling
To facilitate Staff in developing future pediatric related modules	Discuss project and sustainability plan with Critical Care Area Manager, Clinical nurse instructor, Head Nurse and PICU team leaders				29 <sup>th</sup> June, 2010	Powerpoint presentations Sessions Pre test and post test papers	Staff Turnover Unpredictable city crises

A stylized illustration of a magnifying glass. The lens is a large, bright white oval with a thick black border. Inside the lens, the word "EVALUATION" is written in a blue, serif, all-caps font. The text has a slight reflection effect below it. The handle of the magnifying glass is a light brown color with a black grid pattern, extending from the bottom right of the lens. The background is a light purple color with several sharp, triangular rays of light in shades of pink and purple emanating from behind the lens. The entire image is framed by a thick black border.

# EVALUATION

# Evaluation

- *Formative:*

- ✓ Post session test
- ✓ Clinical assessment at bed side
- ✓ Session evaluation

- *Summative:*

- ✓ Module Evaluation Audit Checklist

**Post-Test Questions**  
**Pediatric Respiratory System**

Date: \_\_\_\_\_

Name: \_\_\_\_\_

**Circle the correct answer:**

Is the amount of air which passes in and out the lungs during each cycle

- 1- Inspiratory capacity
- 2- Tidal volume
- 3- Vital capacity
- 4- Lung capacity

Stridor is heard in:

- 1- Pneumonia
- 2- Asthma
- 3- Croup
- 4- Pulmonary edema

PH= 7.2, PCO<sub>2</sub>= 40, HCO<sub>3</sub>=18, PO<sub>2</sub>= 90

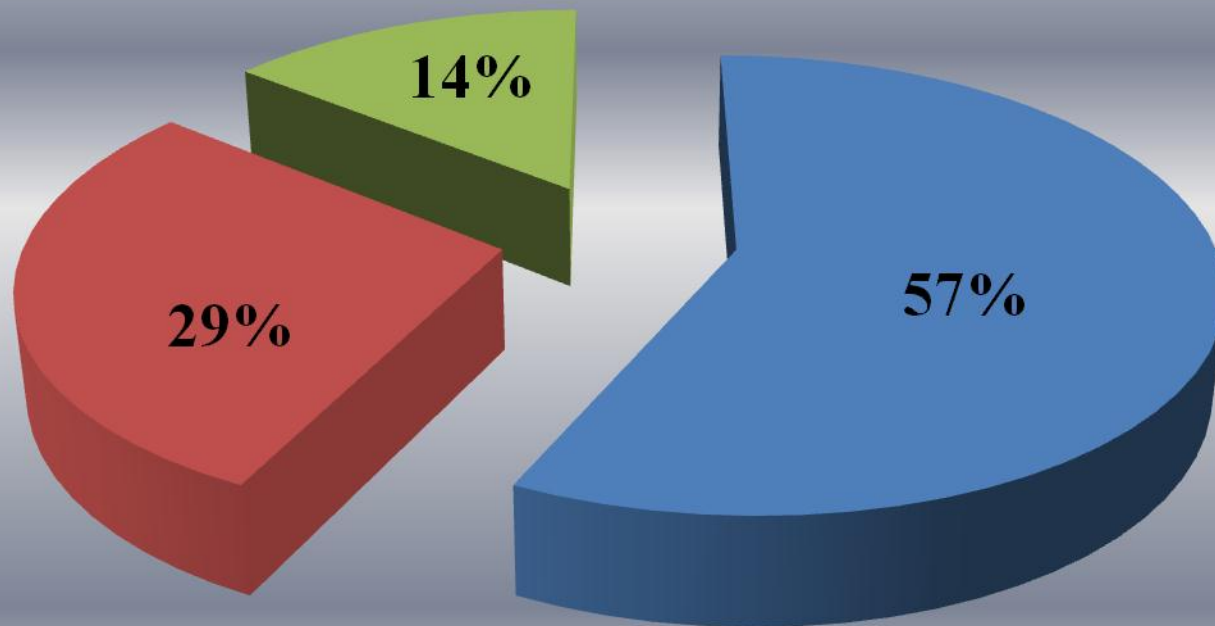
- 1- Respiratory acidosis
- 2- Metabolic alkalosis
- 3- Metabolic acidosis
- 4- Respiratory alkalosis

PH=7.5, PCO<sub>2</sub>=30, HCO<sub>3</sub>=22, PO<sub>2</sub>= 80

- 1- Respiratory alkalosis

# Post Test

■ > 80 % ■ 70 - 80 % ■ 60 - 70 %





### Staff Clinical Observation

Name: \_\_\_\_\_

Department: \_\_\_\_\_

Observe head to toe assessment techniques of PICU staff

4= Excellent

3= Good

2= Fair

1= Poor

Observe skills according to organizational policies:

- Following standard precautions

4= Excellent

3= Good

2= Fair

1= Poor

- Care of ventilated patients

4= Excellent

3= Good

2= Fair

1= Poor

- Suctioning via OETT/TT

4= Excellent

3= Good

2= Fair

1= Poor

- Routine care ( eye care, mouth care, back care, positioning, catheter care)

4= Excellent

3= Good

2= Fair

1= Poor

- Care of invasive lines

4= Excellent

3= Good

2= Fair

1= Poor

- Monitoring of invasive lines

4= Excellent

3= Good

2= Fair

1= Poor

# Limitations

- It was a challenge for me to run this project alone for the first time
- Time duration for project was short
- PICU staff duty scheduling was difficult
- Staff relieving issues
- Module was too lengthy
- Census of Peads patients were very high due to which too much time was spent on rounds



# Recommendations

- These types of projects should be run in the wards/critical care areas
- Other modules should be developed
- Proper designed orientation course for PICU should be planned through Nursing Education Service department.
- Staff should be given frequent educational sessions to strengthen their knowledge and practices

# Conclusion

Educating, nurses training and ensuring high quality care in the PICU determine the quality of critical care. The need of the competent nurse in Pediatric critical care specialty in developing countries has to be enhanced that will enable them to recognize early warning signs and ultimately curb children mortality rate.



# References

- Edgecombe, K., & Bowden, M. (2008). The ongoing search for best practice in clinical teaching and learning: A model of nursing students' evolution to proficient novice registered nurses . *Nurse Education Practice*, 9(2), 91-101.
- Haque, A., Haider, R., & Salat, S. (2010). Teaching paediatric critical care medicine to paediatric residents. *Journal of Pakistan Medical Association*, 60 (4), 319-321.
- Haque. A., & Bano, S. (2009) Clinical profile and outcome in a paediatric intensive care unit in Pakistan. *Journal collection Physician Surgical Pakistan*, 19 (8), 534-535.  
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- Institute of health care improvement. (2005).PDSA Model for improvement. Retrieved June 20, 2010, from <http://www.lifebridgehealth.org/sinaibody.cfm?id=4398>

Thank You!





