HOW TO INITIATE NONINVASIVE VENTILATION PROGRAM: BRINGING THE EVIDENCE TO THE BEDSIDE

Presented by:
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ANALYSIS OF NIV SURVEY IN KSH

The number of physicians included in the survey was 42.

Respond to the questions were as follows:

1- ARE YOU USING NIV?

   YES  31  73.8%
   NO   11  26.2%  (in which 80% is from Pediatric Department)

2- WHICH CASES:

   • COPD  17 ---- 54.8%
   • Pulmonary edema  5 ---- 16.1%
   • Community acquired pneumonia  1 ---- 3.2%
   • Post extubation  5 ---- 16.1%
   • Hypoventilation, obstructive sleep apnea  6 ---- 19.3%
   • Cardiac arrest  5 ---- 16.1%
3- NO, AND WHY?
• Not available 4 ---- 36.3%
• Less patient need 2 ---- 18.1%
• Less information about it 2 ---- 18.1%
• Not effective 1 ---- 9%
• Not familiar with 2 ---- 18.1%

4- DO YOU THINK IT IS EFFECTIVE?
• Yes 39 ---- 92.8%
• No 3 ---- 7.2%
• Most of the physicians have answered YES to the question if they are using NIV 73.8% and majority also concluded that it is effective 92.8%.

• So Interested physicians who answered NO 80% of them are from pediatric department.

• **Indications to use NIV:**

• It is not clear to most of physicians, 54.8% thinks it can be used in COPD and only 16% thinks that it can be used for cases of pulmonary edema. And 16.1% also thinks that it can be used for post extubated patients in cases of respiratory failure to avoid re-intubation.
About 16% of the physicians think NIV can be used for cases like post cardiac arrest where it is not really indicated.

Physicians who have answered NO due to unavailability was 36.3%. and 18.1% are referred to less information and not familiar with it, 9% believed that it is not effective at all.

**Recommendation**

We need more educational effort and workshop to update the practice of NIV. And after finishing the educational and training program, the survey will be repeated and conducted again.
VENTILATOR ASSOCIATED PNEUMONIA ACCORDING TO PATIENT VENTILATOR DAYS IN ICU (MUHARAM TO DHUL HAJJ 1433H)

UCL = 64.75

\( \text{Mean} = 25.71 \)

LCL = -13.33

MONTH
OBJECTIVES:

- Introduction
- Transferring Evidence Into Practice
- Initiating an Noninvasive Ventilation Program
- Clinical Champion
- Knowledge and Training
- Resources
- Practice Guidelines
- Self-Efficacy
- Cost-Effectiveness
- Multidisciplinary Interaction and Communication
- Certification
- Summary
INTRODUCTION

• Noninvasive ventilation (NIV) is under-utilized, despite robust evidence supporting its use in appropriately selected patients with acute respiratory failure.

• Diffusion of NIV into practice requires that clinicians view it as better than invasive ventilation, that it is perceived as compatible with existing approaches to mechanical ventilation, that it is not too difficult to apply, that it is trialable, and that its results are visible.
INTRODUCTION

• Barriers to NIV use:
  – lack of awareness of the evidence,
  – lack of agreement with the evidence,
  – lack of self-efficacy,
  – unrealistic outcome expectations,
  – the inertia of previous practice.

• A flexible, tireless, enthusiastic, and knowledgeable clinical champion is important when initiating an NIV program.
Following these principles, a successful program can be initiated in any acute-care setting.
Rogers developed one of the better known theoretical approaches for diffusion of evidence into practice.

There are 5 elements that affect the adoption of new evidence into practice:
- relative advantage
- compatibility,
- complexity,
- trialability
- observability.

RELATIVE ADVANTAGE

• Is the degree to which a new approach is perceived as better. In the case of NIV this can be a major obstacle, because it is difficult for clinicians who have years of experience caring for intubated mechanically ventilated patients to appreciate that NIV might be a better approach for some patients.
COMPATIBILITY

• Is the degree to which a new approach is perceived as compatible with the existing therapy.
• The new evidence should address an issue that clinicians perceive to be a problem.
• Again, for clinicians with many years of experience caring for intubated mechanically ventilated patients there may not be a perception of a problem that would be alleviated by NIV
COMPLEXITY

• Is the degree to which a new approach is perceived as difficult to use. In the case of NIV, complexity can be a major impediment to adoption, because mask fitting and application of NIV can be more complex for the naïve user.
TRIALABILITY

• Is the degree to which the new approach can be tried and modified. NIV lends itself well to trialability, because success may require trials of different interfaces and ventilator settings to achieve the desired outcome.
OBSERVABILITY

- is the degree to which the results of the new approach are visible to others. NIV lends itself well to observability in that it is obvious if the patient can be ventilated without the need for endotracheal intubation. However, observability can be counter-productive if the first attempts to use NIV are not successful.
• Rogers’s diffusion-adoption model suggests 5 steps in the process of bringing evidence to practice:
  – the clinician acquires knowledge of the evidence.
  – the clinician is persuaded of the advantages of the new approach; the clinician engages in activities (eg, workshops and interacting with others who have adopted the new approach) that lead to the choice to adopt the evidence.
OBSERVABILITY

- the clinician incorporates the new approach into everyday practice; the clinician seeks reinforcement of the decision to adopt the new practice, such as experience in positive results or favorably comparing experience with others.

FREQUENCY OF THE MOST IMPORTANT REASONS FOR LOW UTILIZATION OF NONINVASIVE VENTILATION AT INDIVIDUAL HOSPITALS, AS ASSESSED BY THEIR DIRECTORS OF RESPIRATORY CARE.

- Respiratory staff inadequately trained
- Physicians lack knowledge
- Equipment not appropriate
- Poor previous experience
- Other
1- Clinical Champion

• A clinical champion is an early adopter, incorporates NIV into his or her practice, encourages others to use NIV in their practice, and works with organizational leaders to remove impediments to the use of NIV.
2- Knowledge and Training

• Low utilization of NIV is associated with lack of physician NIV knowledge.
• In the survey by Maheshwari et al, directors of respiratory care at institutions with low NIV use rates identified lack of physician knowledge as the main reason.
• If physicians lack the knowledge, NIV will probably not be used, because a physician must write the order to initiate NIV.
• How clinicians become knowledgeable about NIV may depend on the specific education intervention used.

- Conferences and lecture often have little effect.
- Feedback on practice
- Local opinion leaders
- Local consensus on practice has a variable effect.
- One-on-one training reminders
- Combinations of interventions are consistently.
INITIATING AN NONINVASIVE VENTILATION PROGRAM

• Physicians more commonly reported learning about NIV from physician and RT colleagues than from hospital education sessions.

• Fewer than half obtained NIV information from conferences, original research articles, systematic reviews, or the Internet. RTs and nurses can be very influential in improving physicians’ knowledge.

• Patients who might benefit from NIV by reminding them about NIV at the bedsides.

How to Initiate a Non-Invasive Ventilation Program Symposium and Workshop
11-12 December 2012 (27-28 Muharram 1434)
King Saud Hospital, Onaizah

Topics:
- Basic concepts of NIV
- How to initiate NIV
- General indications
- Risks and complications
- Synchronization

Local and National Expert Speakers
Target Audience: ICU physicians, Internal Medicine, Pulmonology, Anesthesia, Surgery and ER Physicians. Nurses, Respiratory Therapists and Technicians

Course Director: Dr. Osama Sobh

Registration and Information:
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Sponsored By:

10 CME Hours
3- Resources

• Additional resources are necessary to initiate an effective NIV program.
• Inadequate equipment has been reported as a barrier to NIV use.
• More frequent NIV use is associated with a greater number of ventilators for NIV.
• It is important to recognize this from the outset and establish a reasonable budget for the program.
  – This will require buy-in from the hospital administration.
RESPIRATORY THERAPIST TIME REQUIREMENT FOR INITIATING NONINVASIVE VENTILATION (NIV).
4- Practice Guidelines

• Clinical practice guidelines are designed to change practitioner performance and to improve the process and outcomes of care.

• Guidelines and protocols have been used as a link between evidence and practice, to promote best practice, to improve uniformity of care, to reduce error rates, and to promote collaboration and a multidisciplinary approach to care.
• Sinuff et al conducted a survey of Canadian clinicians’ attitudes toward clinical practice guidelines in the ICU.
  – They found that many Canadian institutions locally develop guidelines, and many ICU physicians and nurses reported using them.
  – Clinicians preferred simple formats such as pre-printed orders, algorithms, and electronic methods to access guidelines

5- Self-Efficacy

- The application of NIV is as much an art as a science.
- Typically, clinician skills and confidence improve with experience.
- It is important to deal with contradictions and unrealistic expectations.
- When initiating an NIV program, it is important to have realistic expectations.
  - NIV, even in the hands of the most skilled clinician, does not avoid intubation in all cases.
  - Extrapolating from randomized controlled trials and observational studies, it is reasonable to expect an NIV failure rate of 20–40%, so clinicians who are naïve to NIV should not be discouraged if their initial applications are not successful.
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• NIV success is better with certain conditions (eg, COPD exacerbation or acute cardiogenic pulmonary edema) than with others (eg, pneumonia or acute lung injury).

• To improve clinician confidence while initiating the program, it is reasonable to use NIV only in cases where it is more likely to succeed, in patients with COPD exacerbation or acute cardiogenic pulmonary edema.

• The program can also be limited to times when staffing is best, and it can be limited to specific units where the staff are specifically trained in NIV application.
It is important to know not only when to start NIV but also when it is not succeeding and alternatives (eg, intubation) should be considered.

It is not in the best interest of staff confidence or patient outcomes to struggle with NIV if the patient’s condition is deteriorating despite the clinical team’s best efforts.

It is important to appreciate that complications can occur despite our best efforts to avoid them.
6- Cost-Effectiveness

• When the NIV program is being developed, its cost effectiveness will probably be questioned.

• A superficial analysis might suggest that the cost of additional equipment and staff time is prohibitive, and this might be an obstacle to developing the program.
INITIATING AN NONINVASIVE VENTILATION PROGRAM

7- Multidisciplinary Interaction and Communication

• For optimum success, the multidisciplinary nature of NIV application must be recognized.

• It is typically the physician’s responsibility to select patients for NIV, with input from RTs and nurses.
  – In North America, RTs usual select the NIV equipment and often tailor the ventilator settings to the individual patient’s needs.

• RTs and nurses work together to coach the patient, adjust the interface, and assure patient adherence.
  – In countries without RTs these responsibilities are assumed by nurses, physicians
Hospitals may choose to develop a formal certification program as part of the NIV program.

- This might include written and hands-on testing of RTs, physicians, and nurses.

Certification of RTs should include:
- mask fitting
- selecting appropriate ventilator settings
- monitoring the response to NIV
- adjusting the interface and ventilator settings

Certification of physicians should be directed at appropriate patient selection.

Certification of nurses should be directed at issues such as patient monitoring and facial skin care.
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Summary

• For NIV to become an accepted therapy, clinicians must come to view it as better than alternative therapies.
• NIV must be perceived as compatible with existing approaches to mechanical ventilation
• it must not be too difficult to use
• it must be trialable
• its results must be visible
INITIATING AN NONINVASIVE VENTILATION PROGRAM

• Barriers to NIV include
  – lack of knowledge
  – lack of agreement with the evidence
  – lack of self-efficacy
  – unrealistic outcome expectations
  – the inertia of previous practice
INITIATING AN NONINVASIVE VENTILATION PROGRAM

• A clinical champion and one-on-one
• Hands-on training are important
• Adequate personnel and equipment resources are necessary when implementing an NIV program.
• Guidelines and protocols may be useful
• Success with NIV improves with experience
INITIATING AN NONINVASIVE VENTILATION PROGRAM

• The available evidence suggests that NIV is cost-effective.

• For optimum success, the multidisciplinary nature of NIV application must be recognized.

• Following these principles, a successful NIV program can be initiated in any acute-care setting.
THANK YOU!!!