



# The Multidisciplinary Approach to the Development of Clinical Practice Guidelines: Piloting Management of the Patient Requiring Inhaled Nitric Oxide for Acute Pulmonary Hypertension in the Neonatal Intensive Care Unit

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## Clinical Practice Guidelines (CPG)

Concisely communicate recommendations supported by evidence for clinicians to make informed decisions and reduce complications.

Team and family communication can be improved by incorporating equity endorsing models of family centered care in the development process of clinical practice guidelines.

By establishing an evidence supported, standardized method to clinical practice:

- Optimize safety and efficiency
- QI evaluation
- Standardized reevaluation intervals and improvements

## Background

### Poor quality clinical practice guidelines:

- Discordance with guideline recommendations and cited references
- Lack of cited references
- References being other guidelines as opposed to primary sources or systematic reviews
- Author assumptions for access to care and resources available

### Complications of poor clinical practice guidelines:

- Decreased compliance
- Variations in practice
- Recommendations discordant with regional resources
- Risk of inequity in care

## Methods

### Identified clinical interest

variations in practice associated with aPH and inhaled nitric oxide

### Consensus paper published in 2022

- Significant cost and risk of complications of care
- Possible escalation to Extracorporeal Membrane Oxygenation (ECMO) requiring transfer of care

### NICU at the Bernard and Millie Duker Children's Hospital at Albany Medical Center

- Level IV Regional Perinatal Center
- 30,000 births, 300 neonatal transports, 800 admissions/year
- ECMO program in development, requiring patient transfer
- Multidisciplinary Pulmonary Hypertension Team identified stakeholders: Neonatology, Pediatric Cardiology, Respiratory Therapy

## Specific Aim

- Use an evidence based, scientific process to develop and evaluate a clinical practice guideline for the NICU patient requiring inhaled nitric oxide for the management of acute pulmonary hypertension.
- Outline the steps necessary to create and implement evidence-based guidelines in the NICU with a family integrated and equity endorsing approach.

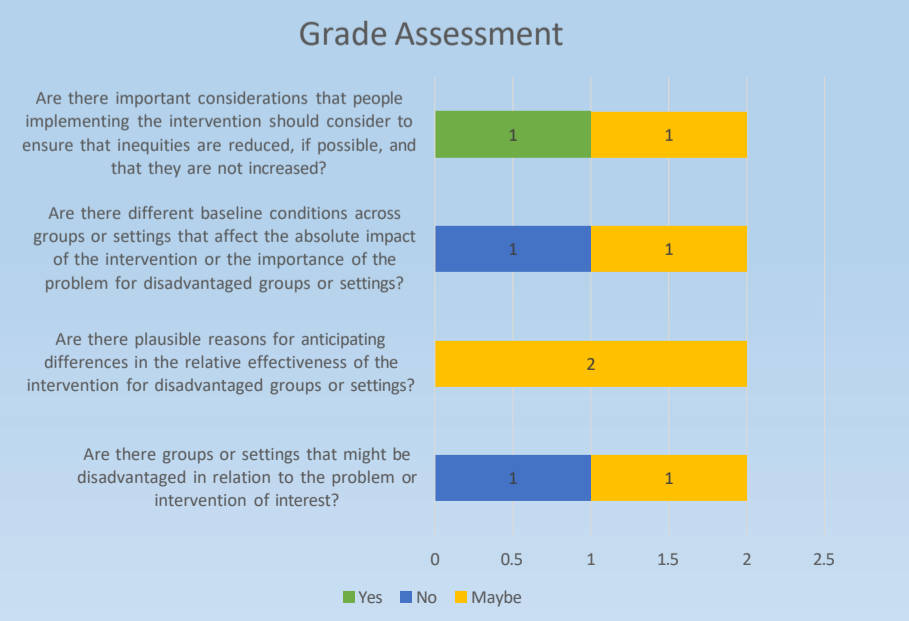
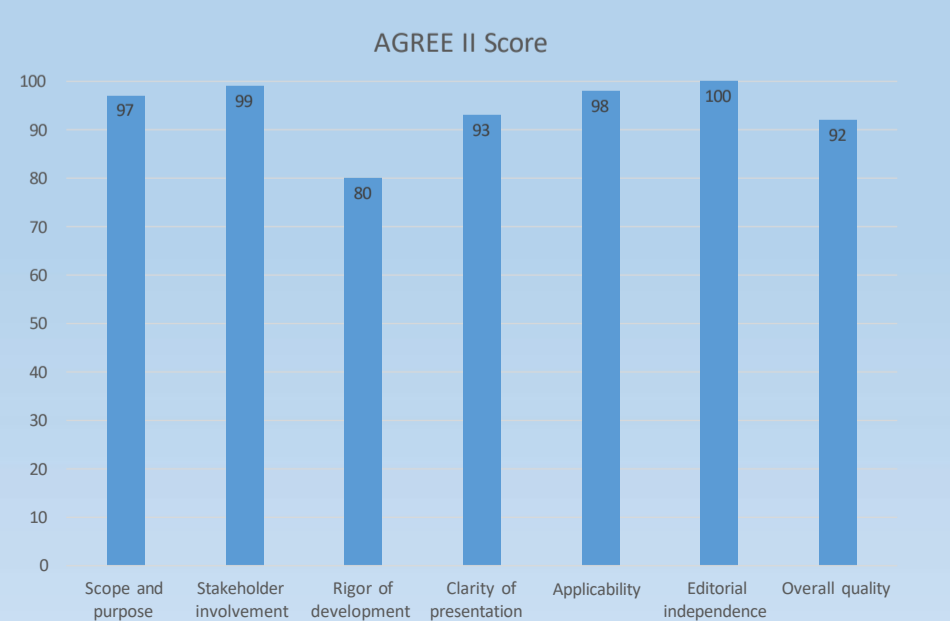
## ELEVATE Clinical Practice

### Clinical Practice Guideline (CPG) Development

A multidisciplinary approach to ELEVATE quality care



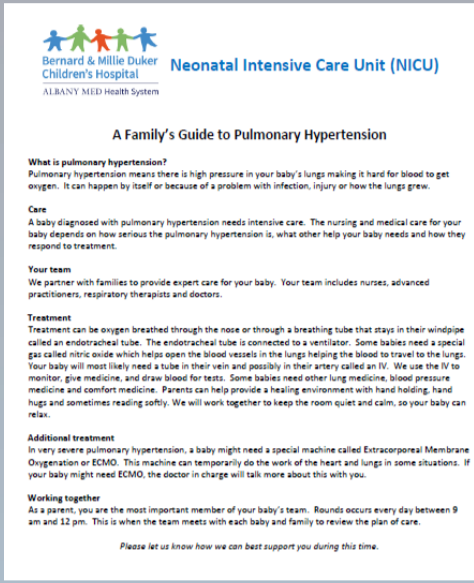
## Quality Measures



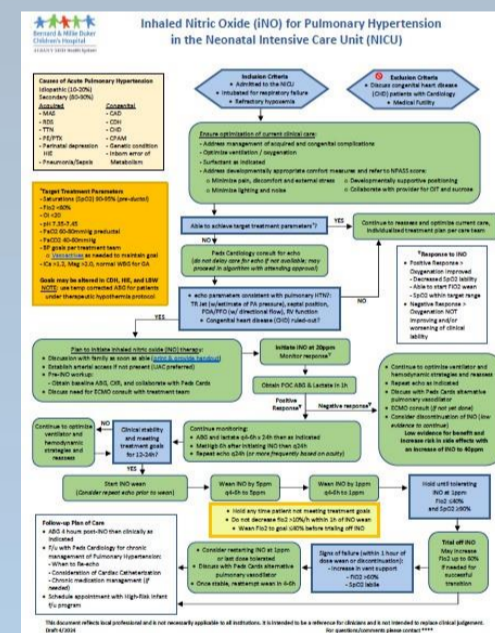
## Patient and Family Advisory Council

- Clarity
- Comprehension
- Family empowerment

*"I suspect the treatment paragraph is focused on "medical" treatment but consider adding to the last sentence to include something that the parents could do to help the baby relax like read quietly or sing softly to help soothe the baby. That might make parents feel more part of the "team" and add a personal touch."*



## Final CPG



Primary goal	Indication	Parental side effect
Cardiac output	Dobutamine	cardiac dysfunction, tachycardia, systemic vasodilation
Cardiac output + pulmonary vascular resistance	Milrinone	cardiac dysfunction, tachycardia, systemic hypertension
Cardiac output + systemic vascular resistance	Dopamine	cardiac dysfunction, pulmonary vasodilation, tachycardia, systemic hypertension
Systemic vascular resistance	Phenylephrine	low dose: poor urine output, moderate dose: cardiac dysfunction, high dose: tachycardia, cardiac dysfunction, hypotension, refractory to dopamine
Systemic vascular resistance	Norepinephrine	tachycardia, tachypnea, systemic hypertension
Systemic vascular resistance	Vasopressin	tachycardia, tachypnea, systemic hypertension, hyponatremia

\* may require secondary agent as indicated in caution with pulmonary hypertension

## Conclusions and Future Considerations

### Limitations

Project timeline associated with DNP program and response rates

### Conclusions

CPG can enhance care delivery especially in the NICU. Readability and applicability are necessary in creating a sustainable, quality guidelines.

AGREE II and GRADE are validated assessment tools. ELEVATE method employs an evidence supported, standardized approach to create quality CPGs including assessment tools and a family integrated approach. Reviewing this process may benefit future projects. Process enhances team communication and collaboration.

### Future considerations

Evaluate guideline post implementation with quality measures. EVALUATE method validation. CPG for postnatal cord blood analysis.

## References

Available upon request.