



**High Flow Nasal  
Cannulae;  
clinical scenarios**

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# Plan

- Clinical case
- Situation awareness
- Choosing intervention
- Evaluating success
- Weaning

# Perception; Situation awareness

## Getting information

- ✓ ABCD
- ✓ Trend analysis
- ✓ Mechanism for deterioration



## Thinking ahead

- ✓ Identify hazards & mitigate risk

- ✓ Intervention
- ✓ Screen for other complications
- ✓ Evaluating success

## Understanding information

- ✓ Risk factors; Prematurity  
Previous respiratory support
- ✓ Severity of illness
- ✓ Direction of travel



## Situational Awareness and Emergent Response Systems in the Context of Stages of Clinical Deterioration in the Hospital

Sashikanth Kodali\*

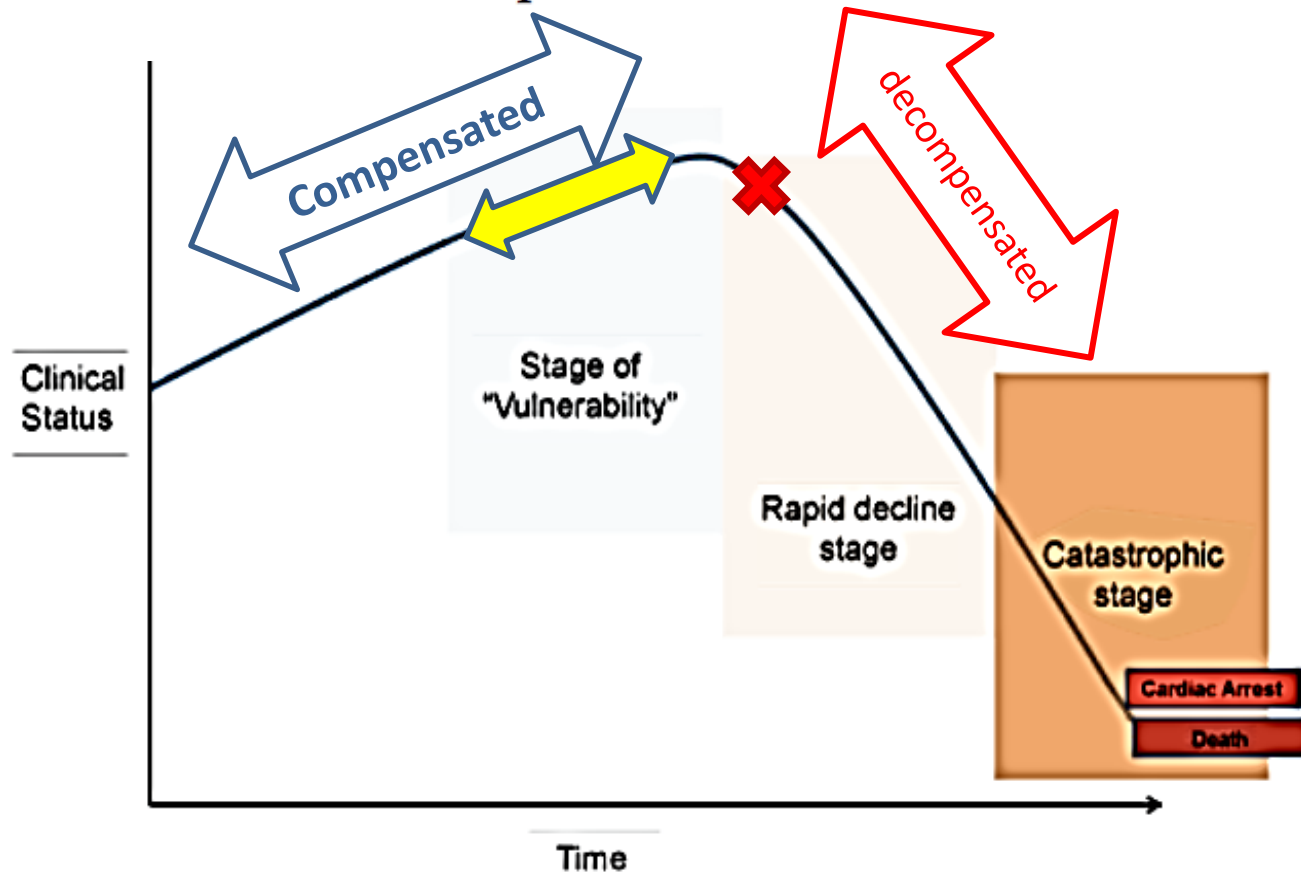


Figure 1: Three stages of clinical deterioration in a hospitalized Patient

# Jack – Wt 3.5kg

- 33/40 now CGA 39/40.
- CPAP for 2/52.
- Home for 3/52
  
- Coryzal for 3/7
- 1/7 not feeding well
- Admitted to ward



# Clinical state



## A & B

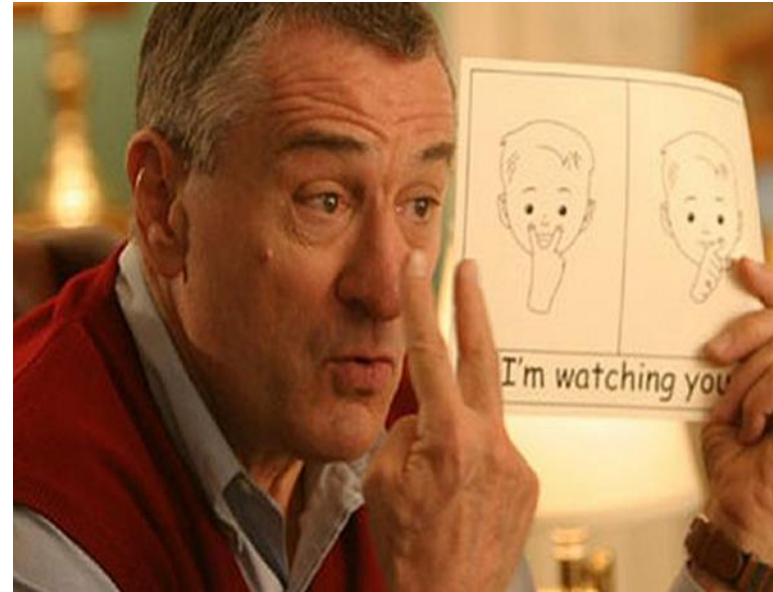
- Coryzal,
- RR 65-75, Mild subcostal recession.
- FiO<sub>2</sub> 0.4 to deliver SpO<sub>2</sub> 94

## CVS

- HR 160-170, adequate capillary refill, BP 70/40

## D

- A little bit more sleepy than usual



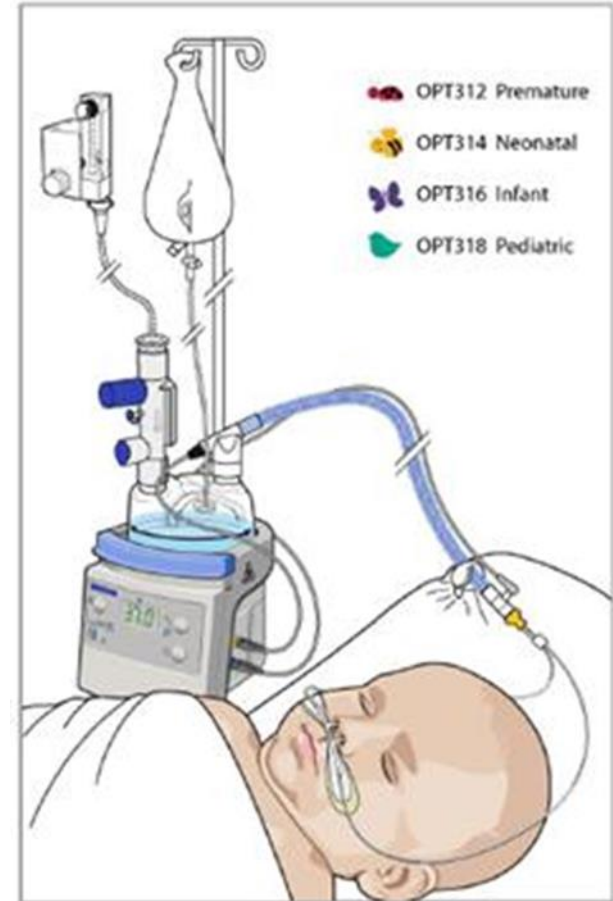


# Labs

- RSV+ve on rapid test screening
- Gases : pH 7.23, PcO2 78, BD -2, Lactate 2
- CRP 15, WCC 16, neut 10, Platelets 200

# What to do now?

- NBM
- Decision making re: support
- Settings
- How long until we review
- Measures success expected





# Within 1 hour

## A & B

- RR 40-45,
- No increased work of breathing.
- FiO<sub>2</sub> 0.35 achieving SpO<sub>2</sub> 98

## CVS

- HR 140. BP 68/40
- Warm well perfused.

## D

- Looks comfortable and a bit more alert.



# Plan: What now

- Rest for a period of time
- Wean FiO<sub>2</sub> to achieve SpO<sub>2</sub> >94

- Weaning

**Strategies for the withdrawal of humidified high flow nasal cannulae (HHFNC) in preterm infants (Protocol)**

Farley RC, Jardine LA, Hough JL



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COLLABORATION®**

# Our experience

- Wean FiO<sub>2</sub> to 0.30
- SpO<sub>2</sub> >94
- Flow 1-2/L min
- If clinically improved convert to NC
- Monitor effect
- If significant IWOB restart .
- Rest for 3-6hrs then and wean more gradually

# Molly -20kg

- 10 years old cerebral palsy, epilepsy
- Neuromuscular scoliosis
- PEG fed
- Previous PICU x 2
  
- Unwell 2/7
- Vomiting
- Pyrexia
- Admitted & IVAB



# Clinical state



## A & B

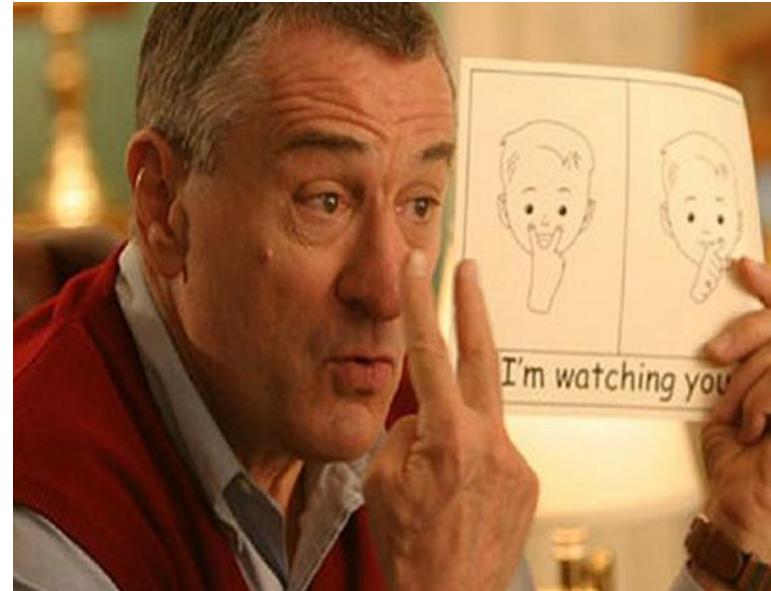
- RR 35- 40, Mild tracheal tug, moderate subcostal recession
- FiO<sub>2</sub> 0.5 to deliver SpO<sub>2</sub> 92

## CVS

- HR 135-145, peripherally cool

## D

- Increased seizures



# Labs

- Gases : pH 7.25, P<sub>c</sub>O<sub>2</sub> 58, BE +2, HCO<sub>3</sub> 35. Lactate 3
- CRP 48, WCC 22, neut 18, Platelets 240



# Plan: What to do now?

- NBM
- Decision making re: support
- Settings
- How long until we review
- Measures success expected

# Within 1 hour

## A & B

- RR 40,
- Increased work of breathing.
- FiO<sub>2</sub> 0.60 achieving SpO<sub>2</sub> 90

## CVS

- HR 150. BP 68/40
- Pale

## D

- Agitated when handled.

# Plan: What now

- CXR
- Physio
- Pragmatic prediction
- Discussions re escalation
- PICU review
  
- Paltered norm; Ability to compensate
- Restrictive lung
- Aspiration pneumonia

**ALL SICK  
CHILDREN  
ARE NOT EQUAL**

# Trouble shooting- ↑ pCO<sub>2</sub>

- Is it compensated
- Is this an ex-prem
- Is the child breathing enough, assess effort
- Does the child need suction
- Are the nostrils patent
- INCREASE FLOW, CONSIDER INCREASE SUPPORT

# Trouble shooting- ↓ paO<sub>2</sub>, spO<sub>2</sub>

- Is there venous mixing
- Good enough BP, Hb
- Reactive lungs?
- Is the child breathing enough, assess effort
- Does the child need suction
- Are the nostrils patent
- INCREASE FiO<sub>2</sub>, CONSIDER INCREASE SUPPORT

# Barriers to HFNC

***“HFNC [NHF] treatment can be safely used in a regular pediatric ward with a 1:4 nursing ratio”***

Mayfield et al. (2014)

Infection



“ Mayfield et al. *J Ped & Child Health*. 2014. ”



# Take home message

- HFNC easy to set up & maintain
- Helps mucociliary clearance
- Is not NIV; Does not increase the patients acuity
- Early initiation beneficial
- Success/failure evident within 60 minutes
- Can reduce requirement for intubation/ventilation
- Wean/discontinue based on clinical assessment