INFANT FEEDING CUES: WHEN IS IT TIME TO EAT?

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DISCLOSURES:

- I am a paid consultant for Philips Educational section
- I am a member of a NICU Clinical Innovations Work group
- I have taken the pictures off the internet, Google, and my computer files
- I will not be discussing any off label use of drugs (unless breastmilk and formula now fall into that category ☺)

OBJECTIVES:

- Discuss what it meant by “cue”
- Discuss what are the goals of feeding in the NICU
- Discuss what cue based feedings are

A BIT ABOUT ME

- I am a veteran of the NICU and have >30 years of working there.
- Many things have changed during that time.
- I was very lucky to be working at a Children's hospital with an Academic Medical Center and it was a regional hospital in a rural state so got babies in from all over with all kinds of "stuff".
- I got to do lots of different things during my career and have grown myself and others.
- I am looking for a replacement…any interest?

QUOTE FOR THE DAY

- ‘If you have always done it that way, it is probably wrong’
  - Charles F. Kettering: Founder of Delco and head of research at General Motors.

SO WHAT IS A CUE
LET'S GET THAT OUT OF THE WAY

- Cues are
  - A signal to act or speak
  - A prompt or reminder
  - A response producing stimulus

  - Synonyms include: clue, hint, sign, or reminder

  - What is important to remember about a cue is that there must be someone/someway to give the cue and then someone/someway to be able to respond to the cue

WHAT IS THE CUE?

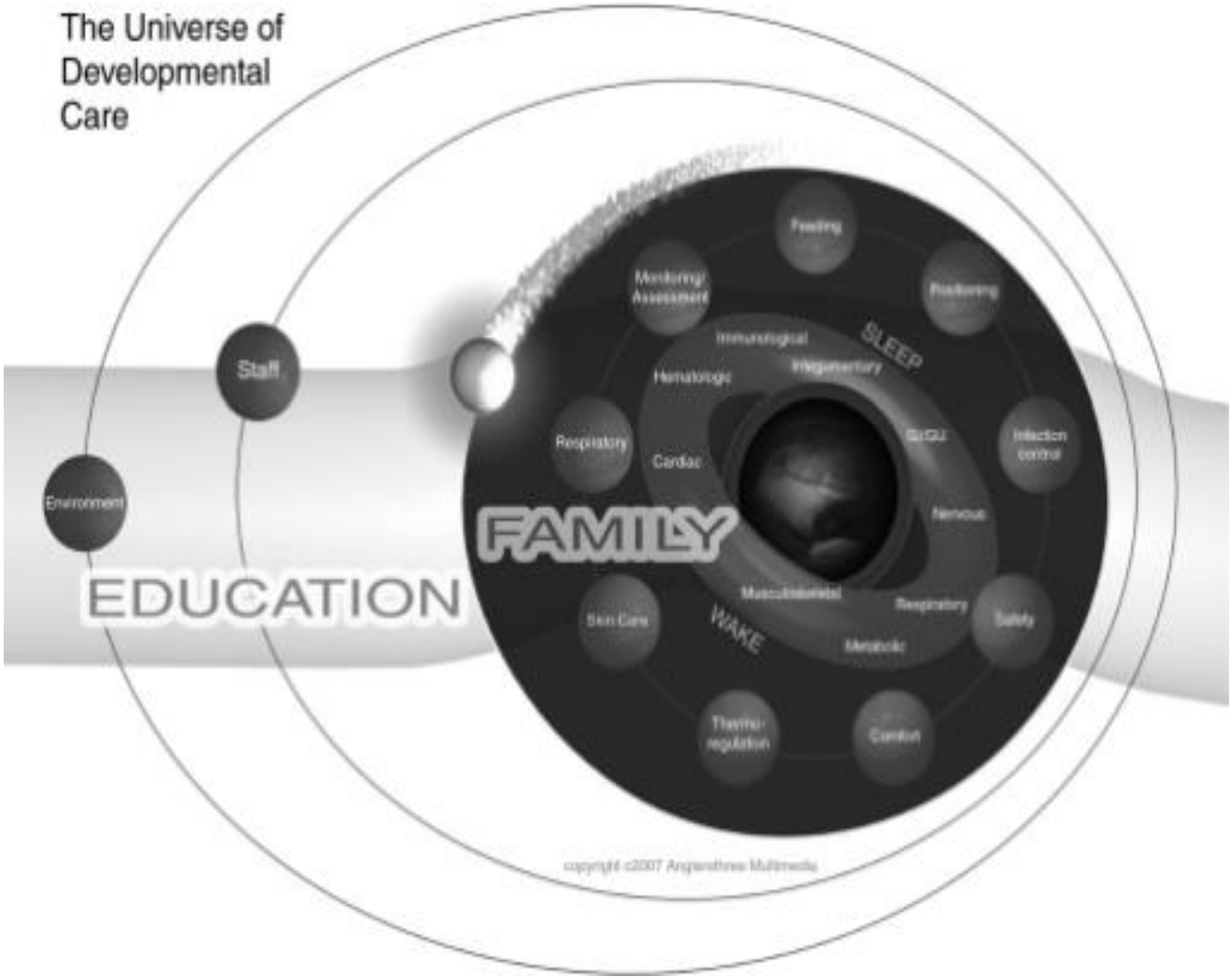
AND HERE?

AND NOW

AND AGAIN WHAT IS THE CUE

DEVELOPMENTAL CARE AND FEEDING

- A method of care delivery in the NICU
  - H. Als created this model of NICU care
    - Infant is the best source for guiding their care (1998)
- As Developmental care has grown other theories developed (of course!)


The Universe of Developmental Care
Staff
Environment
EDUCATION
FAMILY
Feeding
Monitoring/ Assessment
Positioning
Immunological
SLEEP
Integumentary
Hematologic
Respiratory
Cardiac
GI/GU
Infection control
Nervous
Musculoskeletal
Respiratory
Skin Care
WAKE
Safety
Metabolic
Thermo-regulation
Comfort
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DEVELOPMENTAL CARE AND FEEDING

- Feeding is an aspect of NICU care that needs to be assessed/addressed in a developmental manner
  - Ludwig & Waitzman (NICU OTs) have focused on NICUs & changing feeding from being a time driven process to an infant driven process

AACN SYNERGY MODEL OF NURSING

- The needs and the characteristics of the patient are matched with the nurse's competencies
  - Nursing will integrate knowledge, skills, experience, and attitudes to meet patient/family needs
  - Change happens from research & experience

CUES AND FEEDING

- Studies have shown that preterm infants had cues 92% of the time but the feeding was scheduled at only 30% of those times
- High risk infants have increased risk for feeding problems and system regulation issues
- Preterm feeding issues can continue into school age
- High re-admission rates for feeding related issues

CUES AND FEEDING

- Using a cue based system for preterms has shown that they get to full feeds 5 days sooner and had greater weight gain at the 36 week mark

FEEDING

- In the NICU feeding is a parameter for deciding discharge
  - The longer a baby is in the NICU the greater the chance for morbidity
  - NICUs have the responsibility to decrease morbidity
  - The skill to feed must meet the ability to gain weight
  - The sooner the baby can feed the more quickly they achieve full feedings & better weight gain

- Goals of feeding:
  - Baby has the skill to intake enough to keep them hydrated and their weight increasing
  - Parents can feed the baby the amount needed

WHAT CAN WE USE AS THE STANDARD FOR FEEDING

WHAT IS THE GOAL OF FEEDING FOR THE NURSE

- Sometimes it is about getting it all in the baby
  - Historically we focused on the volume
  - Feed a rock, pump it, twist and tap
  - It was about what we did…not what the baby did

- If you use the breast as the standard….

COMPETITION

FEEDING

- Sometimes feeding is a major competition in the NICU
  - Between nurses…how much were you able to feed, how come you didn't get the baby to eat it all, if this baby doesn't feed she can't go home
  - Between nurses and parents…let me show you how to do that, let's see if you can get the whole feeding in today

WHAT IS THE GOAL OF A FEEDING FOR A BABY

- Current research has shown that we need feedings to be:
  - Safe
  - Functional
  - Pleasurable
- What do we need to assess on the baby
  - Physiological stability
  - Organizational ability
  - Motor stability
  - Parental ability/attributes

- We need to assess the quality of the feeding not the quantity of it
- Change from the numbers and technology of the feeding to focusing on the infant and their capabilities
  - What is their maturation, medical problems, interactive skills
  - How can I as the nurse support their needs (not mine)
  - Support adaptive feeding process and nurturing interactions with family and caregivers

CULTURE CHANGE

- Change: Need to have variety, process or act of substitution, alteration, variation

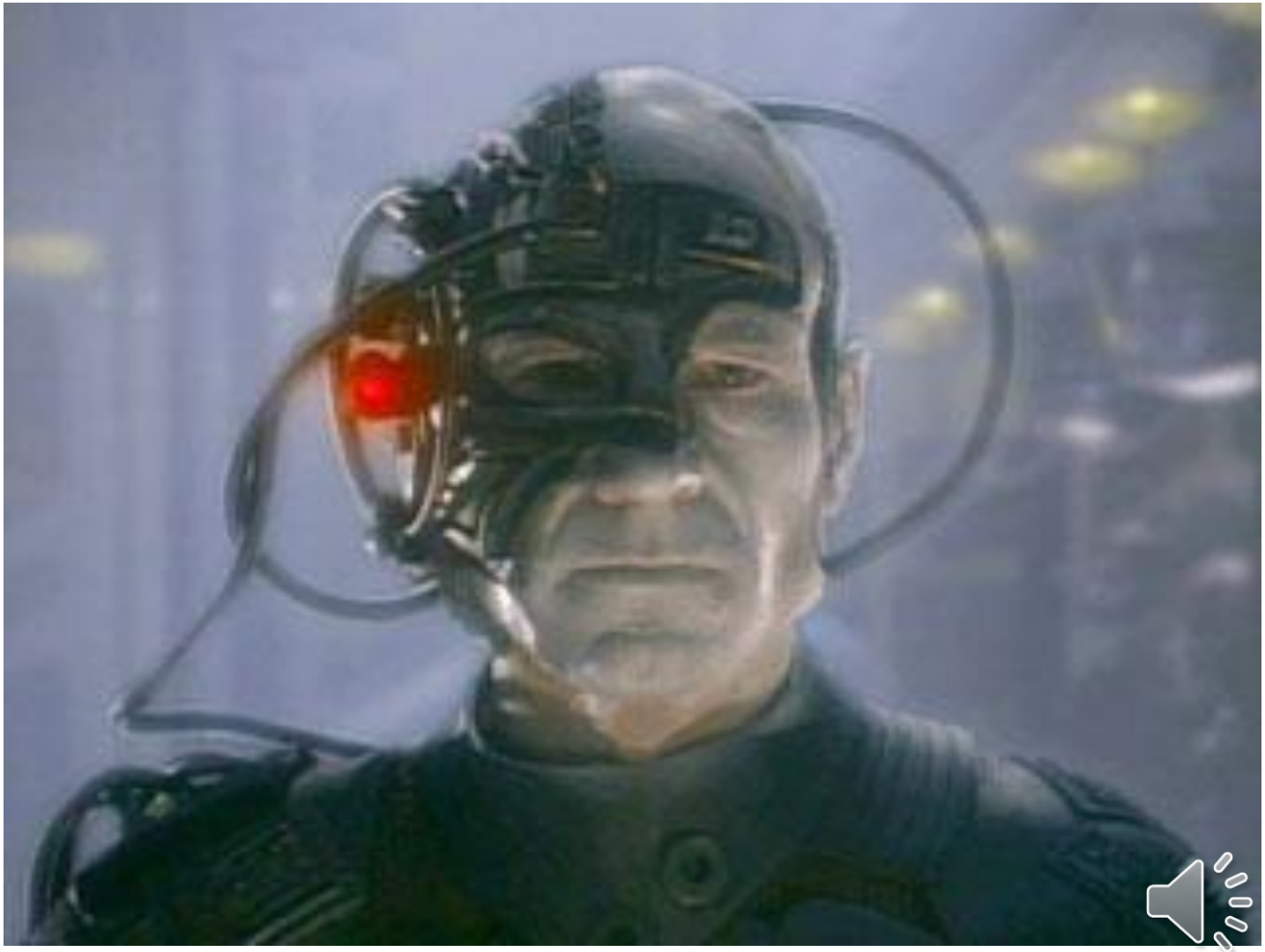
- With feeding in the NICU that means we have to:
  - Shift from the time driven process to letting the infant drive the process


DEF 3
ABC 2
1
GHI 4
JKL 5
MNO 6
PRS 7
TUV 8
WXY 9
0 OPERATOR
BELL SYSTEM

RESISTANCE TO CHANGE

- We have always done it this way (remember the quote at the beginning?)
  - Who still has an iPhone 3? Or a flip phone?

- Why do we seek change in our personnel life but often have a hard time (resistance) with it in the nursing life

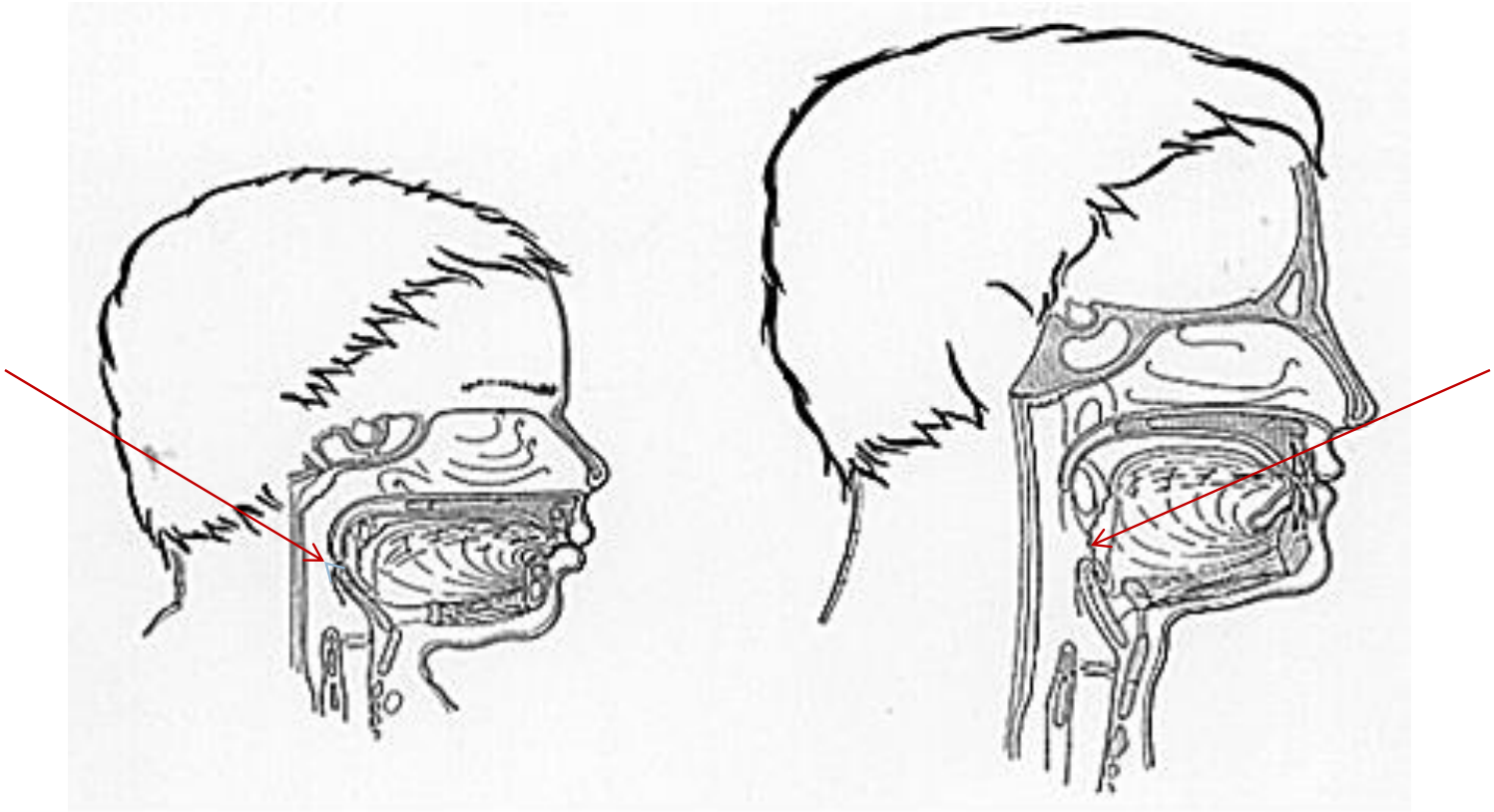


CHANGE PROCESS TAKES WORK

SO LET'S TALK ABOUT HOW WE FEED

- The term infant has:
  - Large soft tissue structures
  - Relatively small openings
  - Shorter passageways with smaller diameters
  - The larynx is in a higher resting position under the tongue base
- AS the features change the neurological control improves

HOW DO WE SWALLOW



HOW WE SWALLOW

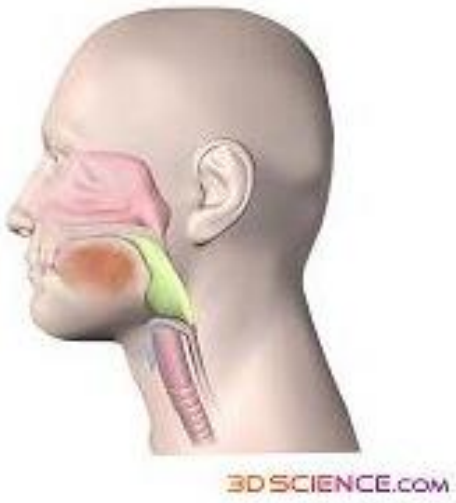
- Oral phase: 4 nerves, 20 muscles; this leads to swallow, have control over it and move to the back of the tongue

- Pharyngeal phase: 5 nerves, 29 muscles, tongue moves back and pressure propels the food bolus to the pharynx, naso-pharynx and trachea close off

HOW WE SWALLOW

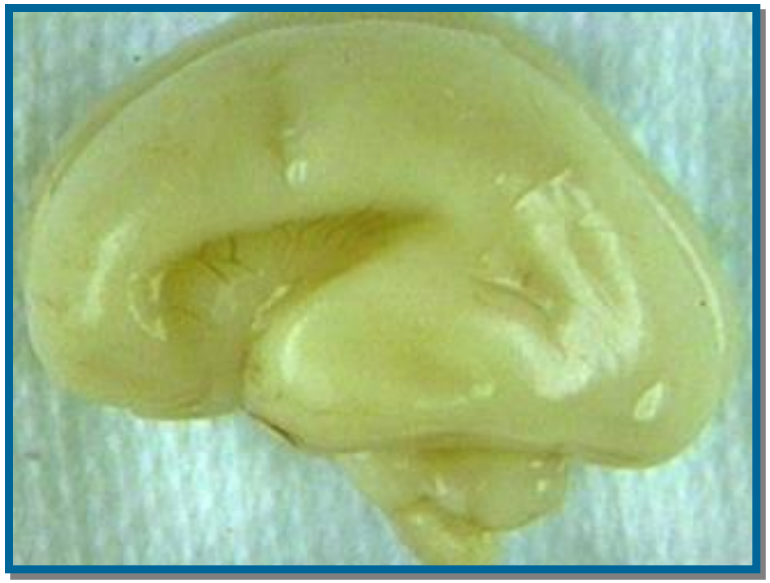
- Esophageal phase: 1 nerve, voluntary use of muscle upper esophagus, involuntary use of lower esophagus, gravity and peristalsis help the movement

SWALLOWING



MATURATIONAL CONCERNS

- Preterm infants have trouble feeding in the NICU and also once discharged
- A 34 weeker only has ~53% of the cortical brain volume when they typically can coordinate the suck swallow breath (SSB)
- Decrease the gestational age = increased poor feeding outcomes



23 week gestation

40 week gestation

A baby's brain at 35 weeks weighs only two-thirds of what it will weigh at 39 to 40 weeks.

35 weeks

39 to 40 weeks

- There is a neurodevelopmental process that is the acquisition of eating skills
  - Organization of autonomic function, motor tone, muscle tone, movement patterns, behavioral state, and the ability to regulate it all at once
- Eating skills are developed in the NICU but the infant must transition to a new environment and continue to grow those skills
  - What is done at discharge is not a guarantee that it will continue

HOW WE HELP THE PROCESS

- Non nutritive sucking

- Skin to skin care

- Pacifier with feeding

HOW WE HELP THE PROCESS

- Able to tolerate care & feeding?
  - Maintain tone during cares
  - Tolerate bolus feedings

- Support state
  - Alert able to maintain for at least 10 minutes

- Once feeding begins we need to help the process by continuous assessment of that feeding and infant
  - Parents need to learn about the baby's abilities and support that and assist them in their successful relationship with their infant

SO WHAT ARE THOSE CUES THAT SAY I'M READY

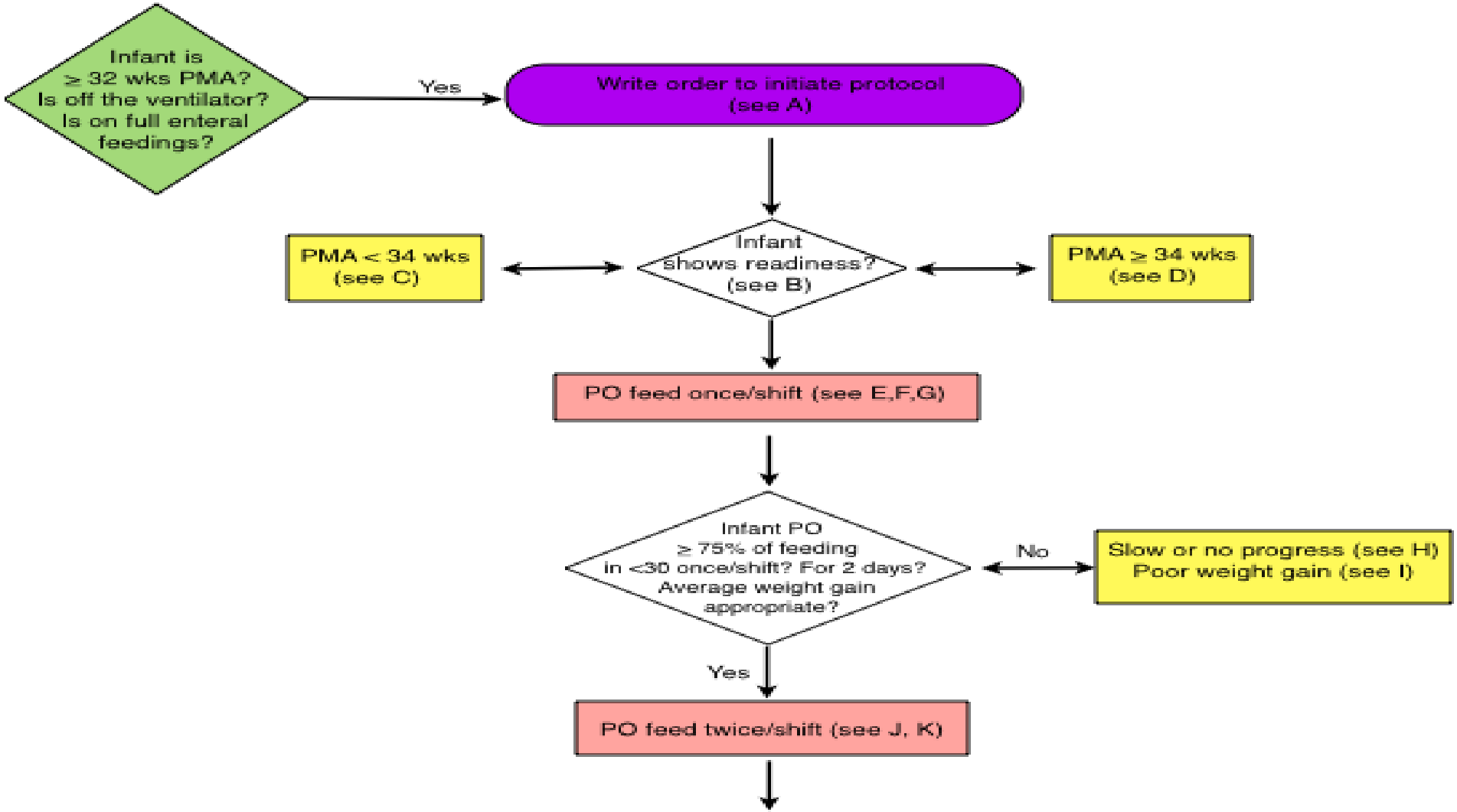
- Behaviors
  - Rooting
  - Sucking
  - Hands to mouth

WHAT SAYS HOLD OFF I'M STRESSED

- Color changes
- Jerky movements
- Arching
- Grimace
- Finger splay
- Gaze aversion
- Yawn, gag, sneezing
- Cough, choke
- Apnea,bradys, desats

TOOLS

- A KEY element is that the bedside caregiver is in “control” of the process along with the infant…the assessment of the cues and the response to them


ORAL FEEDING CLINICAL PATHWAY
Infant is ≥ 32 wks PMA? Is off the ventilator? Is on full enteral feedings?
Yes
Write order to initiate protocol (see A)
PMA < 34 wks (see C)
Infant shows readiness? (see B)
PMA ≥ 34 wks (see D)
PO feed once/shift (see E,F,G)
Infant PO ≥ 75% of feeding in <30 once/shift? For 2 days? Average weight gain appropriate?
No
Slow or no progress (see H) Poor weight gain (see I)
Yes
PO feed twice/shift (see J, K)

Oral Feeding Readiness (Immediately Prior to Feeding)		
Able to hold body in a flexed position with arms/hands toward midline.	Yes	No
Awake state.	Yes	No
Demonstrates energy for feeding - maintains muscle tone and body flexion through assessment period.	Yes	No
(Offering infant finger or pacifier) Attention is directed toward feeding - infant searches for nipple or opens mouth promptly when lips are stroked ad tongue descends to receive the nipple.	Yes	No
Baseline oxygen saturation >93%	Yes	No

Ability to Coordinate Swallowing				
Manages fluid during swallow without loss of fluid at lips (i.e., no "drooling").	All of the feeding	Most of the feeding	Some of the feeding	None of the feeding
Pharyngeal sounds are clear - no gurgling sounds created by fluid in the nose or pharynx	All of the feeding	Most of the feeding	Some of the feeding	None of the feeding
Swallows are quiet - no gulping or hard swallows.	All of the feeding	Most of the feeding	Some of the feeding	None of the feeding
Airway re-opens immediately after swallow - no sounds of inspiratory stridor (high pitched crowning, "yelping" behavior) after swallow.	All of the feeding	Most of the feeding	Some of the feeding	None of the feeding
A single swallow clears the sucking bolus - multiple swallows are not required to clear fluid out of throat.	All of the feeding	Most of the feeding	Some of the feeding	None of the feeding
Coughing or choking sounds.	No event observed		At least one event observed	

Name:	Date:
Adjusted age:	Number of days oral feeding:

Time						
State Prior to Disturbed Prior to Feed						
Engagement/Readiness cues/Feeding skills Rooting						
Mouthing						
Sucking						
Crying						
Active						
Suck, swallow, breathing coordination						
Effective latch						
Other						
Disengagement/Distress cues/Feeding difficulties Change in heart rate, saturation, apnea						
Increased work of breathing						
Suck, swallow, breathing incoordination						
Fatigue/Decrease tone						
Irritable						
Other						

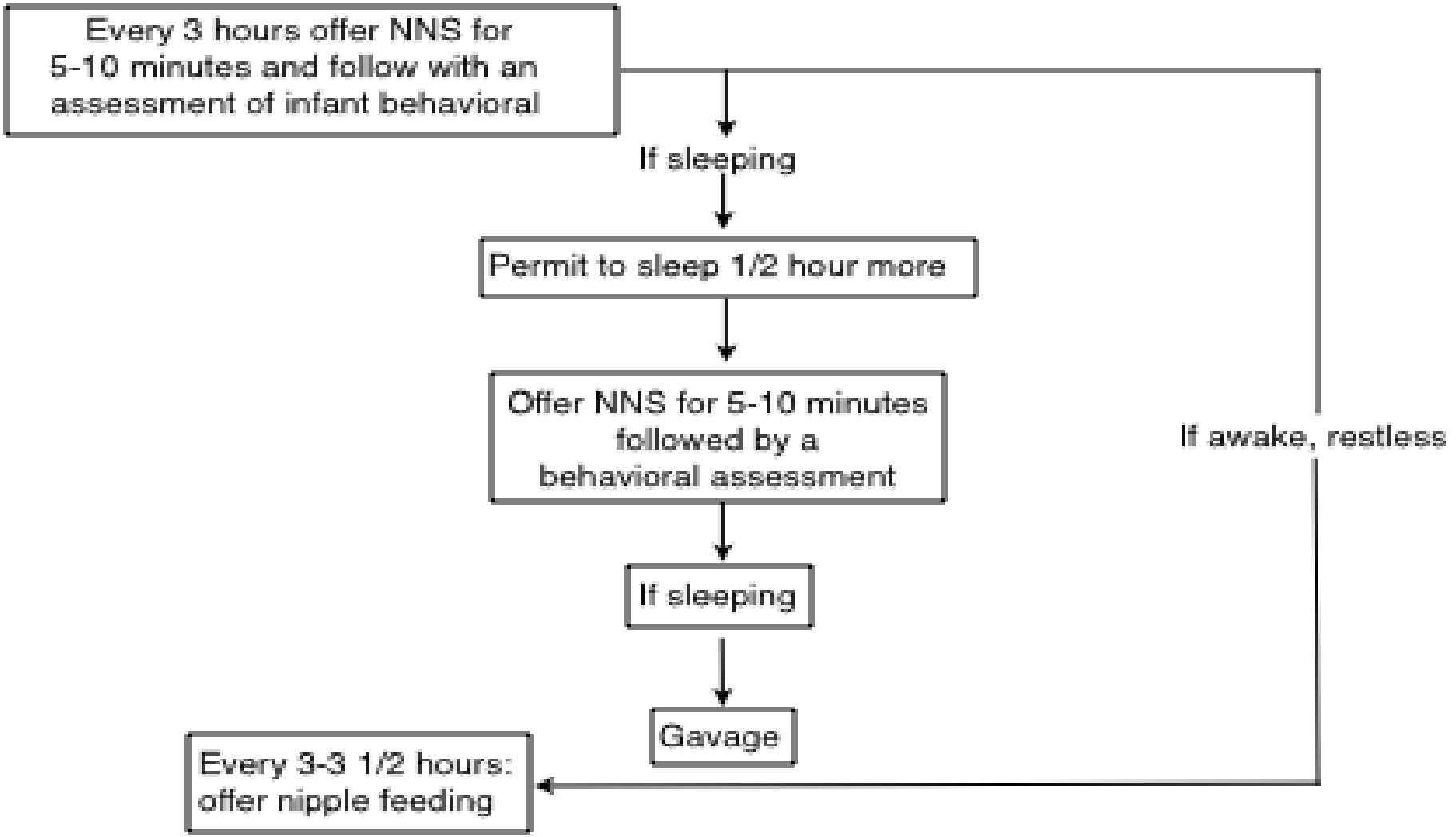
Premji (2004)

B. Quality of nippling scale

1. Nipples with a strong coordinated suck throughout feed
2. Nipples with a strong coordinated suck initially but fatigues with progression
3. Nipples with consistent suck but has difficulty coordinating swallow, some loss of liquid or difficulty in pacing

   Benefits from external pacing
4. Nipples with a weak/inconsistent suck, Little to no rhythm, may require some rest breaks
5. Unable to coordinate suck-swallow-breathe pattern despite pacing, may result in frequent or significant A/Bs or large amounts of liquid loss and/or tachypnea significantly greater than baseline with feeding

- McCain used a flow chart and behavioral state assessment
  - Nippled every 3-3.5 offered NNS first for 5-10 minutes
  - State looked at sleep, drowsy, awake, fussy
- White-Traut had a tool that used auditory, tactile, visual stimulation for 10 minutes and then 5 minutes of vestibular to achieve an alert state


Every 3 hours offer NNS for 5-10 minutes and follow with an assessment of infant behavioral
If sleeping
Permit to sleep 1/2 hour more
Offer NNS for 5-10 minutes followed by a behavioral assessment
If sleeping
Gavage
Every 3-3 1/2 hours: offer nipple feeding
If awake, restless

SUPPORT FOR THE FEEDING

- What is going on in the environment
- What is the baby's sucking pattern
  - Organized & Mature by ~37 weeks 10-30 burst of SSB
  - Organized & immature ~32-33 weeks with variable bursts, pauses, rests, swallows. Start at 2-5 sucks and increases to 3-10 sucks

SUPPORT FOR THE FEEDING

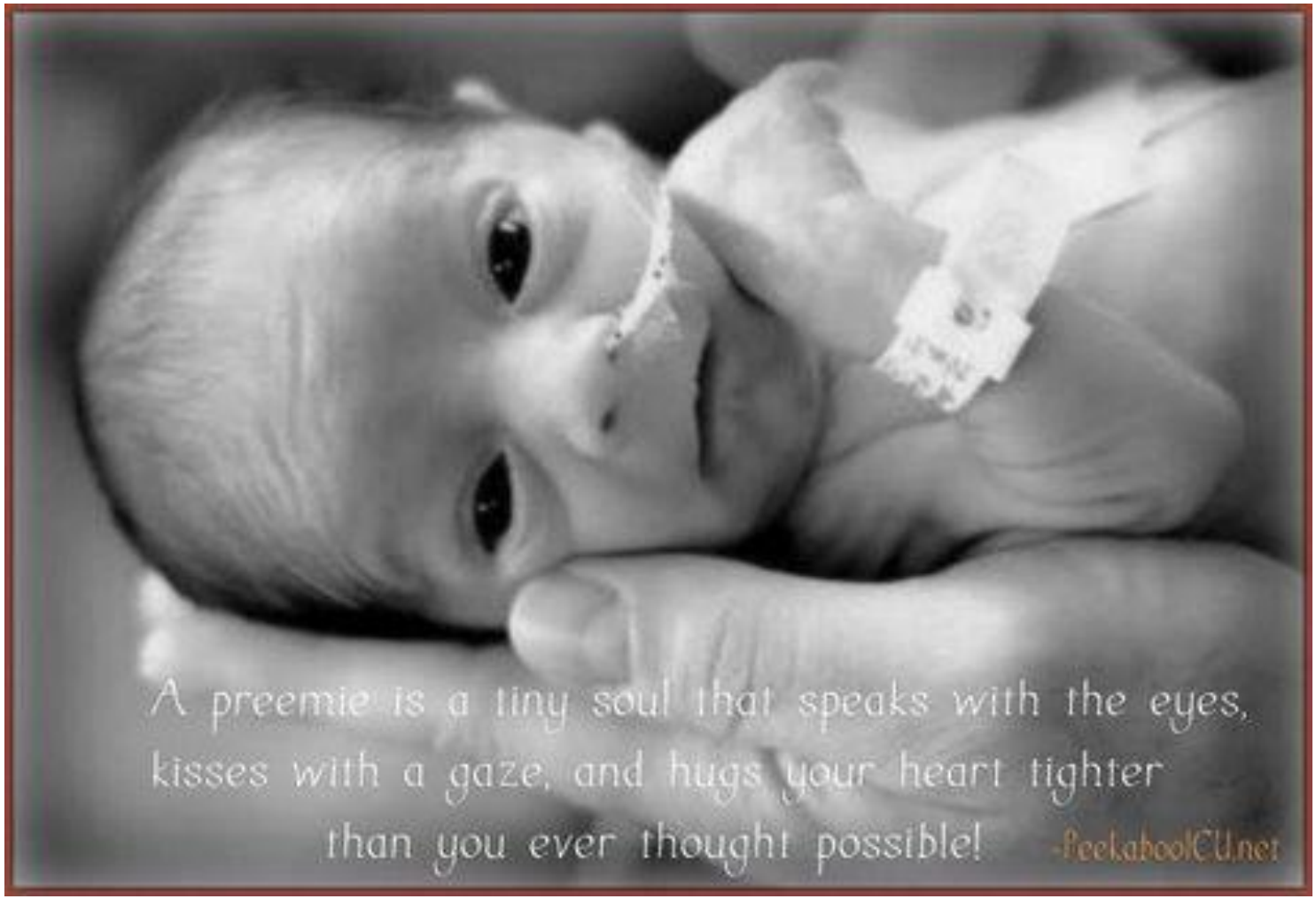
- Be collaborative and work with the OT, SLP
- What are the tools such as nipples, positioning
- Family integration
  - Starting from the beginning…they can hold the pacifier in the mouth and help their baby.

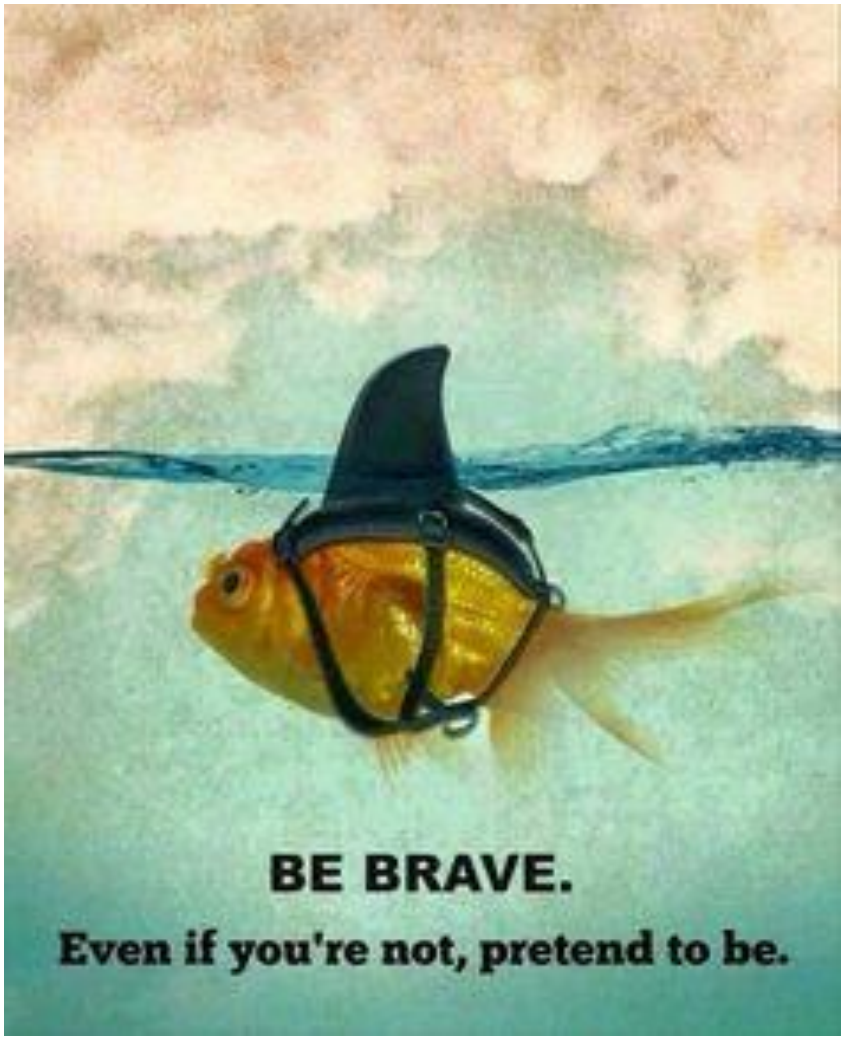
SUPPORT FOR THE FEEDING

- Need to redefine what success is….
  - is it the volume or
  - the baby and their eating process

LUDWIG'S THOUGHTS

- Eating should be enjoyable
  - It is a bonding experience, a nurturing experience not a medical intervention
- Connection is so important
  - We need to be connected to others
- Think of the environment
  - What is your home like? Are you thriving? We thrive in a environment that serves us.


A preemie is a tiny soul that speaks with the eyes,
kisses with a gaze, and hugs your heart tighter
than you ever thought possible!
-PeekabooICU.net


BE BRAVE.
Even if you're not, pretend to be.

A SMALL NUMBER OF REFERENCES TO GET YOU STARTED

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