

# Marissa Johnson, MSN, RN, CNL, RNC-LRN, TIP

Over the past 6 years Marissa has been the Clinical Practice Leader in the level 4 NICU at The University of Iowa Stead Family Children's Hospital. In her role she specializes as the developmental care coordinator and staff educator for neuroprotective care. She has been working on updating practice and standards of practice to improve the neuroprotective interventions that align with the most current evidence-based practice. Over the past years her focus had included family partnership, infant feeding, infant positioning, skin-to-skin practices, and trauma informed care. In September of 2023, Marissa took on a new role as the systems manager for quality and patient safety for the children's hospital. When she is not busy at work, Marissa enjoys spending time with her husband, Brad and 2 daughters Kennady (14) and Adley (10), cheering on her daughters' sporting events, boating in the summer, and reading.



# Rediscovering Your Passion, Purpose, and Path Forward

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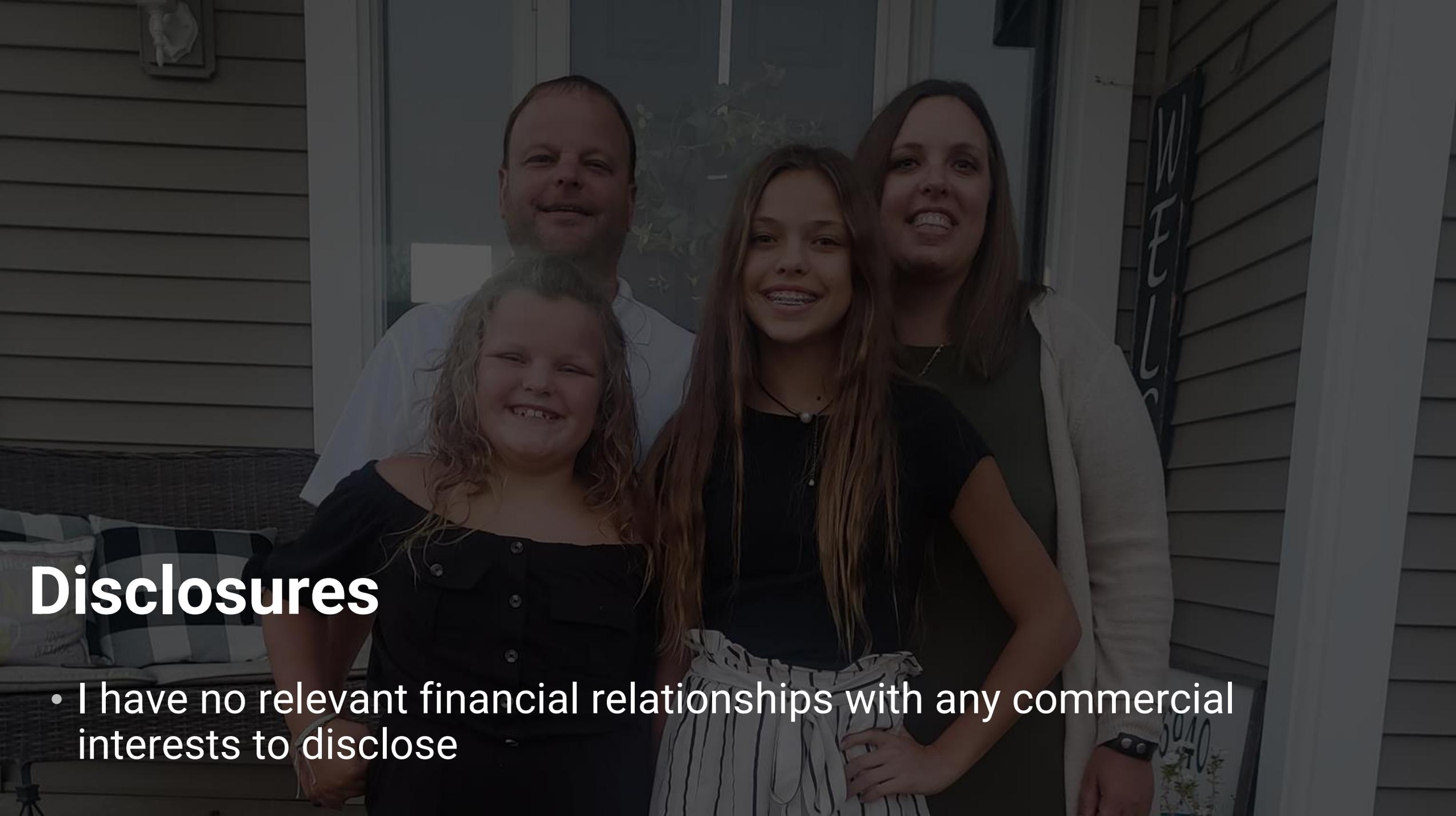
University of Iowa  
Stead Family  
Children's Hospital



Marissa L. Johnson, RN, MSN, CNL, RNC-LRN, TIP

April 27, 2023

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# Disclosures

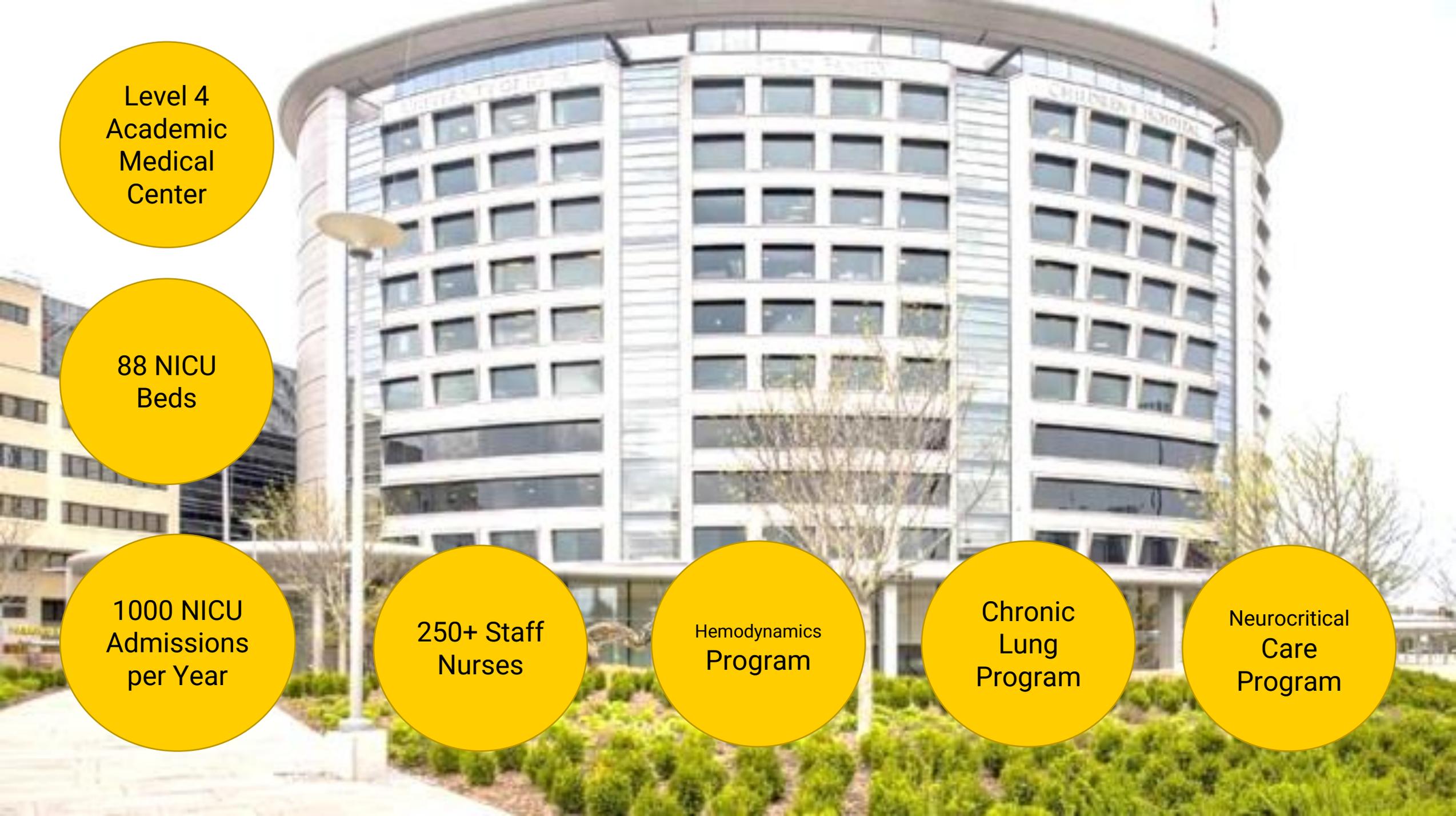
- I have no relevant financial relationships with any commercial interests to disclose

# Objectives

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1. Describe innovative strategy that one Level 4 NICU used to improve their unit culture supportive of neuroprotection and a trauma informed environment.
2. Outline opportunities in your NICU to improve neuroprotective care.
3. Describe attributes to become a trauma informed professional to improve personal and professional well-being.





**Level 4  
Academic  
Medical  
Center**

**88 NICU  
Beds**

**1000 NICU  
Admissions  
per Year**

**250+ Staff  
Nurses**

**Hemodynamics  
Program**

**Chronic  
Lung  
Program**

**Neurocritical  
Care  
Program**



# Our Achievements

# You may better know us by...



# 3 Million

# Survival of Inborn *“Periviable”* Infants 22 - 24 weeks EGA with a *“Proactive Approach”* (2006-2021)



<u>Weeks</u>	<u>22</u>	<u>23</u>	<u>24</u>
<b>Survival</b>	<b>60%</b>	<b>76%</b>	<b>85%</b>
<b>Number of live born infants</b>	<b>74</b>	<b>117</b>	<b>120</b>

**64% survival** at 22 weeks for NICU admissions (69 admissions with 44 survivors)

## Outcomes of Inborn Infants: *Acute Morbidity 2006-2021*

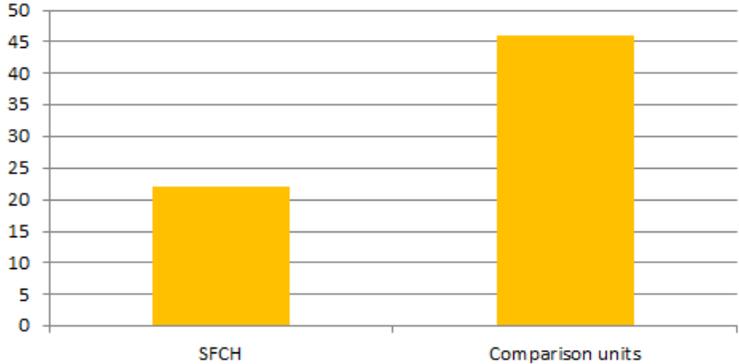


N	Severe IVH	Cystic PVL	VP Shunt	NEC incidence	ROP Laser therapy
22-week NICU admissions 69	23%	6%	3%	12%	9% in survivors (44)
23-week NICU admissions 115	17%	7%	2%	9%	3% in survivors (89)

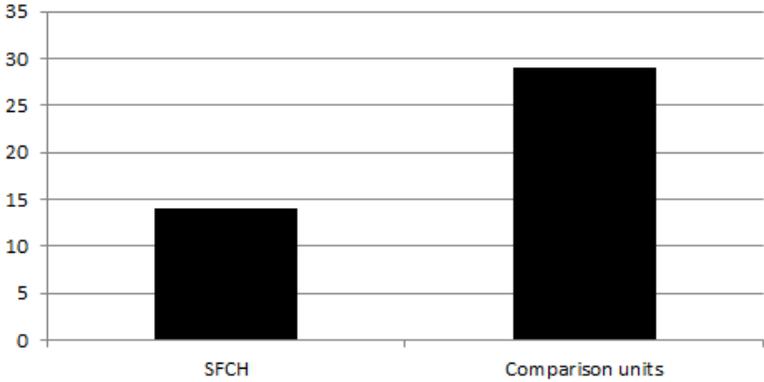
# Clinical Outcomes



Percent of VLBW infants - any ROP



Percent of VLBW infants - any IVH



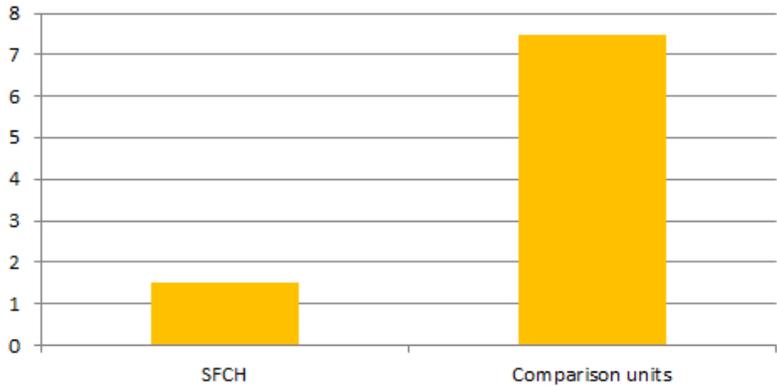
**Current CLABSI rate = 0.5/1000 central line days**

**2022 Falls: Zero**

**Current unplanned extubation rate = 0.75/100 vent days**

**Current 12mo average HAPI Rate: 0.25/patient days**

Percent of VLBW infants - NEC





# It takes a Village

- Baby
  - **Parents**
  - Siblings
  - Extended Family
- **Doctors/NP's/Residents**
  - **Nursing**
  - **Respiratory Therapists**
  - **Pharmacy**
- **Dieticians**
  - Social Work
  - Phlebotomy
  - Rehab Therapy Staff
- Housekeeping
  - Child Life Specialists
  - Nursing Assistants
  - Unit Clerks
  - And More.....

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**Why are we here?**



# What is Trauma?

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An event, series of events, or set of circumstances an individual experiences as physically or emotionally harmful that can have lasting adverse effects on the person's functioning and mental, physical, emotional, or spiritual well-being.

- can occur outside caregiving relationships (eg, dog bites, natural disasters),
  - within the context of the caregiving relationship (eg, domestic violence, abuse or disordered caregiving because of parental mental illness or substance use disorder),
  - on in the context of relationships outside the family (racism, bias, discrimination, bullying)
- Adverse events that lead to the frequent or prolonged activation of the stress response in the relative absence of protective relationships has been termed “toxic stress” in the pediatric literature. Toxic stress responses result from events that may be long lasting, severe in intensity, or frequent in occurrence.
  - Almost *one-half of American children*, or 34 million younger than 18 years, have faced at least 1 potentially traumatic early childhood experience



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What about NICU? Is it a  
traumatic place?



# Outcomes of Trauma

## WHAT IMPACT DO ACEs HAVE?

As the number of ACEs increases, so does the risk for negative health outcomes

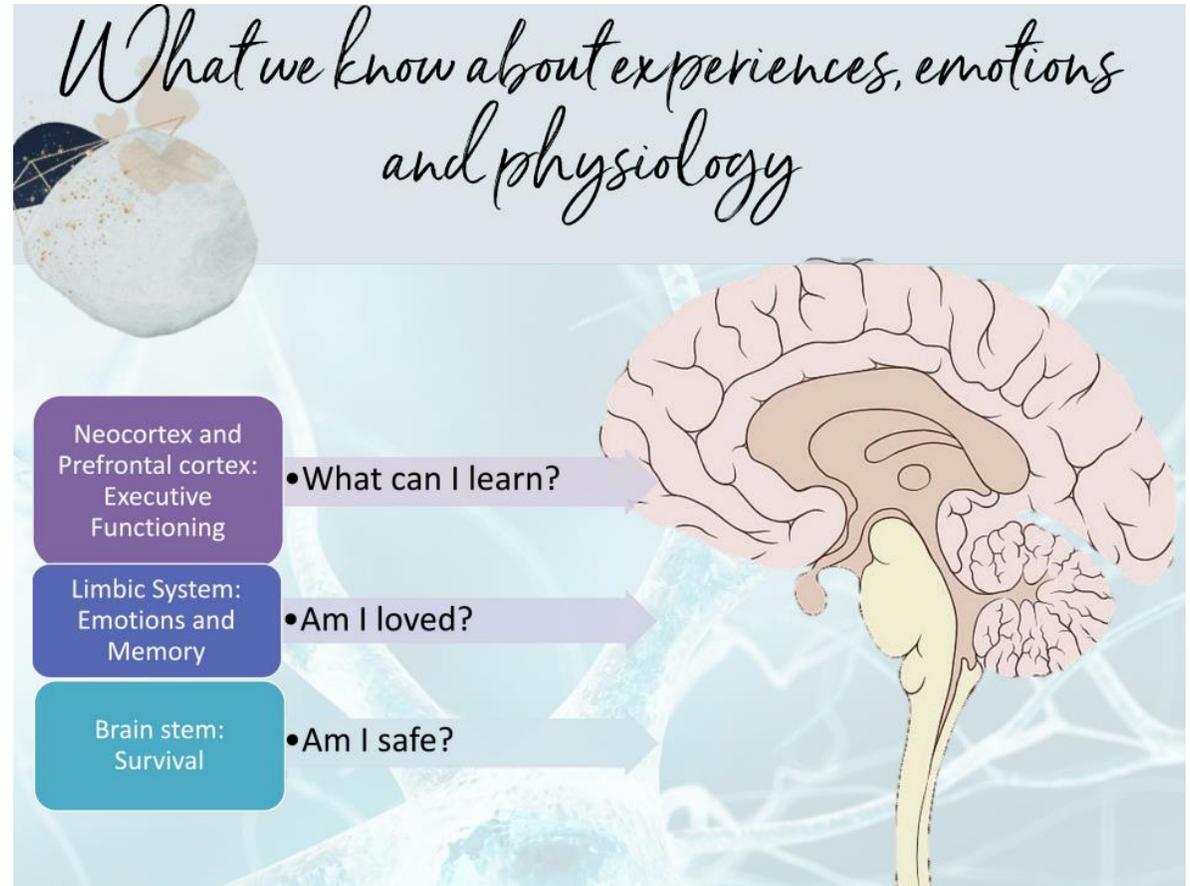


Possible Risk Outcomes:

BEHAVIOR				
 Lack of physical activity	 Smoking	 Alcoholism	 Drug use	 Missed work
PHYSICAL & MENTAL HEALTH				
 Severe obesity	 Diabetes	 Depression	 Suicide attempts	 STDs
 Heart disease	 Cancer	 Stroke	 COPD	 Broken bones

# Brain Development

- The brain develops hierarchically from the bottom up and inside out
- Lowest brain centers are involved with activating defensive stress reactions
- Middle area of the brain, limbic, provides a base for memories and emotions
- Most recently developed, neocortex, self-reflect about emotional experiences and stress



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**What does it take to create a  
trauma free environment?**



# Trauma Informed Care Core Measures



# Pillars of Bedside Developmental Care Training

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## Healing Environment

- Attention to sounds
- Lighting
- Pleasant smells
- Protecting and safeguarding sleep

## Individualized Care

- Positioning
- Infant handling during care times
- Minimizing stress and pain
- Protecting skin
- Optimizing nutrition
- Supporting transfers when able

## Strengthening and Supporting Families

- Welcoming to bedside
- Providing education
- Reading infant cues
- Participation in cares

## Working Collaboratively

- Communication
- Timing of care
- Procedural support
- Two person supported care



# Standards of Practice



The Point The Loop UI Health Care

## Neonatology Clinical Practice Guidelines

### Documents

ADMISSIONS/TRANSFERS/DISCHARGE  
CARDIOLOGY  
CONTINUITY OF CARE  
DELIVERY ROOM

### ADMISSIONS/TRANSFERS/DISCHARGE

#### Type

#### Name

	<a href="#">Guidelines for the Care of Premature Infants on Level 10 SFCH</a>
	<a href="#">Birth Weight Limit for Direct Admission to Newborn Nursery</a>
	<a href="#">Problem List for NICU</a>
	<a href="#">Guidelines for Treatment of NICU Patients in the Pediatric Intensive Care Unit</a>



## Departmental Guideline Manual

Department of Nursing – Guideline

DN.G.CWS.02.012

**SUBJECT/TITLE:** Care of the Extreme Low Birth Weight (ELBW) Infant (for infants < 26 weeks gestation and/or  $\leq$  1000 grams)

**PURPOSE:** To describe the standards of care for this at-risk patient population.

**SCOPE:** NICU nursing staff



## Departmental Policy Manual

Department of Nursing – Policy

DN.P.CWS.02.030

**SUBJECT:** Neuroprotective Care for the Premature and Term Infant

**PURPOSE:** To provide patient specific neuroprotective care for premature infants of varying gestations. This is a guide to follow related to the patient's current gestational age (post menstrual age).

**SCOPE:** NICU nursing staff, NICU rehab staff.

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# Infant Cues

## Considerations: Infant Stability and Stress Signs

Infant System	Signs of Stability	Signs of Stress
<b>Autonomic</b>	Steady HR Smooth regular breathing (40-60) Stable oxygen saturations Even skin color Visceral stability	HR 15 beats above baseline or Bradycardia RR above 60 or below 40 Increased WOB; desaturation Color change Hiccups, gag, spit up, BM grunts, diarrhea Tremors or twitches
<b>Motor</b>	Tucking Midline Hands to face or mouth* Hand Grasping * Hand and/or foot clasping* Bracing feet* Energy during care Rooting and suck searching NNS with autonomic stability*	Extended away from midline Arching, flailing, Limp, flaccid Finger or toe splaying Fist in the air Eyebrow raise, worried look, grimacing, blinking Gaze aversion, gape face Delayed or absent rooting Limited non-nutritive sucking skills
<b>State</b>	Restful, stable sleep Smooth transitions between sleep and awake Stirring at caregiving times Establishing skill of waking on own Relaxed alertness for 5-10 minutes Available Consolable	Lacking restful, stable sleep Rapid transitions between awake and sleep Shuts down Awake with no energy; not available Not stirring prior to cares Stressed when awake; difficult to console Inability to wake or sustain wakefulness on own
<b>Attention/Interaction</b>	Autonomic, motor, and state stability during: Skin to skin, at rest, during cares, when held, during tube feedings, with non-nutritive sucking, while orally feeding Able to participate during caregiving with self- regulatory behaviors Engagement – sustaining state and energy	Inconsistent or poor performance Autonomic, motor or state system instability Avoidance/defensive/stress behaviors Passive or disengaged

\*= Key self-regulatory behaviors



# Developmental Care Map

Developmental Care immediately See "Developmental Care for the Premature Infant" for further details					
	<29 weeks	29-30 6/7 weeks	31-32 6/7 weeks	33-36 6/7 weeks	≥ 37 weeks
<b>Family</b>	Welcome to bedside, encourage physical care, encourage journaling, encourage participation in daily rounds, promote caregiver-infant bonding, education starts at admission				
<b>Touch</b>	Positive touch, hand swaddling, skin-to-skin when appropriate				
<b>2-Person Supported care</b>	Encouraged with every interaction	Encouraged with every interaction	Encouraged with every interaction	Painful procedures Infant instability	Painful procedures Infant instability
<b>Activity</b>	Promote rest and sleep  Cluster cares	Promote rest and sleep  Cluster cares	Promote rest and sleep  Cluster cares  Allow for un-swaddled movement up to 2 minutes prior to diaper changes based on infant cues	Quite alertness periods, allow for un-swaddled movement up to 2 minutes prior to diaper changes based on infant cues	Quite alertness periods, allow for un-swaddled movement for at-least 2 minutes prior to diaper changes based on infant cues  ≥ 44wks transfer to pediatric crib
<b>Positioning</b>	Z-flo and/or Dandelion positioners	Z-flo and/or Dandelion positioners	Z-flo and/or Dandelion positioners	Z-flo and/or Dandelion positioners and/or Sleep sack	Sleep Sack, Head z-flo (remove z-flo 48hrs prior to discharge)
<b>Head Positioning</b>	Avoid excessive left or right sided positioning 1st 2 weeks, then q 2-4 hour head re-positioning to avoid cranial molding.	Avoid excessive left or right sided positioning 1st 2 weeks, then q 2-4 hour head re-positioning to avoid cranial molding <small>not to hold S2S after 1 wk, unswaddled</small>	Q 2-4 hour head re-positioning to avoid plagiocephaly	Q 2-4 hour head re-positioning to avoid plagiocephaly	Q 2-4 hour head re-positioning to avoid plagiocephaly
<b>HOB Flat</b>	First 2 weeks of life	1 <sup>st</sup> week of life	Until held	Until held	Until held
<b>S2S</b>	After 2 weeks of life when S2S color green or yellow	After 1 weeks of life when S2S color green or yellow	S2S holding color green or yellow	S2S holding color green or yellow	S2S holding color green or yellow
<b>Horizontal Hold</b>	After 1 weeks of life	After 1 weeks of life	Immediately	Immediately	Immediately
<b>Bathing</b> No tub baths with central line	After 2 weeks of life, no soap	After 1 weeks of life, no soap	Immediately, no soap until 32 weeks	Immediately	Immediately
<b>Sound:</b> live voices, reading, and appropriate music delivery systems	Caregiver voice based on infant cue's	Reading, soft audio or live singing when environment is quiet, and infant is awake. Should not exceed 10 to 15 minutes per hour.	Reading, soft audio or live singing when environment is quiet, and infant is awake. Should not exceed 10 to 15 minutes per hour.	Reading, soft audio tape, or live singing when environment is quiet, & infant awake. Should not exceed 30 minutes per hour (up to 5 hours per day)	Reading, soft audio tape, or live singing when environment is quiet, & infant awake. Should not exceed 30 minutes per hour (up to 5 hours per day)
<b>Vision</b>	Maintain dark environment  Protects eyes from bright lights (eye covers)  Cover isolette with bluebat	Maintain dark environment  Protects eyes from bright lights (eye covers)  Cover isolette with bluebat	Maintain dark environment  Protects eyes from bright lights (eye covers)  Cover isolette with bluebat	<u>Day-Night Cycling:</u>  Day time: < 100 lux of lighting (dim light)  Nighttime: darkness	<u>Day-Night Cycling:</u>  Day time: < 100 lux of lighting (dim light)  Nighttime: darkness

Neuroprotective Care for the Premature and Term Infant DN.P.CWS.02.030



# Development Environment Feeding

## Developmental Care Rounds



Post Menstrual Age/Corrected Age: \_\_\_\_\_

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

### **Development**

- Daily skin to skin holding. Today's Kangaroo Color \_\_\_\_\_
- Support me during procedures/interactions
  - I like: \_\_\_\_\_
- Talk, sing, read to me \_\_\_\_\_
- Pleasing sounds \_\_\_\_\_
- Pleasing visuals \_\_\_\_\_

### **Environment**

- **Lighting:** Cover my eyes from direct bright lights
  - Day-Night Cycling:**
    - < 33 weeks: dark lighting
    - ≥ 33 weeks: low lights on during daytime and darkness during night
    - Term: home going lighting as tolerated
- **Positioning:** \_\_\_\_\_
- **Limit Noise:** it can be stressful for me
  - gap/close door when applicable, use soft voices, latch ~~isolate~~ softly

### **Feeding**

- Hold me skin-to-skin daily
- Hold me for tube feedings when able or position side lying
- Offer my \_\_\_\_\_ pacifier during NG/OG feeds when I am showing cues
- Offer, when cueing:
  - Pleasant oral swabbing with \_\_\_\_\_
  - Drops of milk

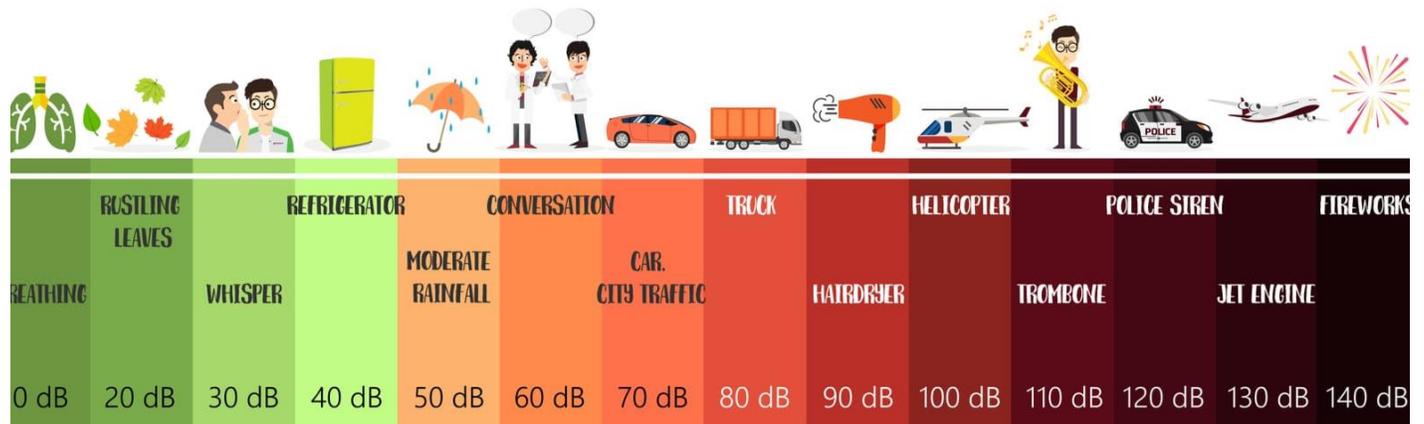
# Positive Touch

- Every touch counts
- Slow, firm, gentle touch
- Safeguard sleep
- Approach
  - Care clustering
  - Infant cues
- Parental
  - Finger holding
  - Hand hugs
  - Skin-to-skin
- Education



# Sound vs Noise

- Negative vs Positive
- Decibels
- Interventions:
  - Lower your voice
  - Educate on cell phone use
  - Educate families



# Lighting



## HOW IS LIGHTING MEASURED?



- 10 lux = Dark
- 100 lux = Dim lighting
- 200 lux = Average restaurant lighting
- 300 lux = Reading a book
- 500 lux = Average retail space lighting

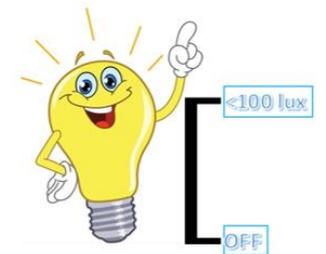
*< 33 weeks*

*≥ 33 weeks*

Maintain dark environment  
 Protect eyes from bright lights (eye hearts)  
 Cover isolette with blanket  
**Lighting Lux Goal:** Less than 10

Day-Night Cycling  
**Day time:** ≤ 100 lux of lighting (dim light)  
**Nighttime:** darkness

- \*Term PMA >37 weeks: encourage homegoing lighting
- \*Critically ill patients and those on stress precautions may require individualized lighting and darkness
- \* Post Term: maintain lights on during daytime



REMEMBER:  
 < 33 WEEKS: LIGHTS OFF AFTER CARES  
 ≥ 33 WEEKS: DAY/NIGHT CYCLE  
 \*CRITICALLY ILL: INDIVIDUALIZED LIGHTING

# Reading

## Eat UP: Why Reading to Your Patients is Important!



### Why read to your patients?

- Instrumental in creating & strengthening neural connections & auditory development 27 weeks and beyond
- Better neurodevelopmental outcomes to last a life-time
- Fewer spells
- Parents are more likely to read after discharge
- Reassure patients of parents present
- Improve parent engagement and empower them to take responsibility for an aspect of their child's development
- Reduce parent stress
- Auditory exposure for patients

**What is cognitive nutrition?** Language-rich interactions are integral to a child's brain development just like food is integral to their physical growth

### How long should you read to your patients?

Gestational Age	27 to <33 wks	> 33 wks
Max reading time / hour	10-15 minutes	30 minutes
Max reading time / day	5 hours	



# Positioning

- Individualized needs
- Tucked and flexed with 360\* of containment
- Supportive positioning products



## NICU Positioning

### IPAT Proper Positioning:

1. Shoulders softly rounded
2. Hands touching/close to infant's face
3. Hips aligned and softly flexed
4. Knees, ankles, feet are aligned and softly flexed
5. Head positioned midline to less than 45 degrees from midline
6. Neck neutral with head slightly flexed forward 10\*



Tucked Position  
Flexed Position  
360° of Containment



Zakys/Pals are used to position around the patient not on top of them!



Proper positioning promotes SLEEP

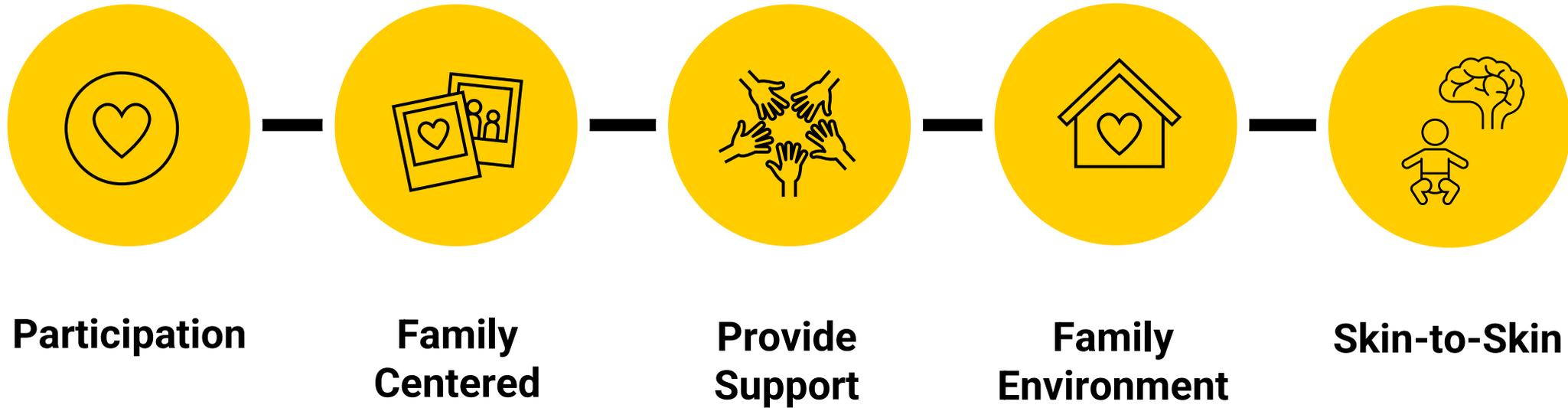
# Infant Feeding



<b><i>Touch</i></b>	<b><i>Smell</i></b>	<b><i>Taste: Initiate if baby is rooting</i></b>
Skin to skin with parents	Held skin to skin by mother	Nuzzling at pumped breast
Held by caregiver	Breast milk on baby's fingers with hands to face	Breast milk on baby's fingers or pacifier with hands to mouth
Hands to face & mouth	Breast milk on upper lip	Colostrum with oral cares Drops of milk



# Family Partnership



**A Premature Baby has Premature Parents**

**WHAT INTERVENTION IS  
THE FRAMEWORK OF  
NEUROPROTECTIVE CARE?**

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# SKIN-TO-SKIN

# Color: Kangaroo at Patient Bedside



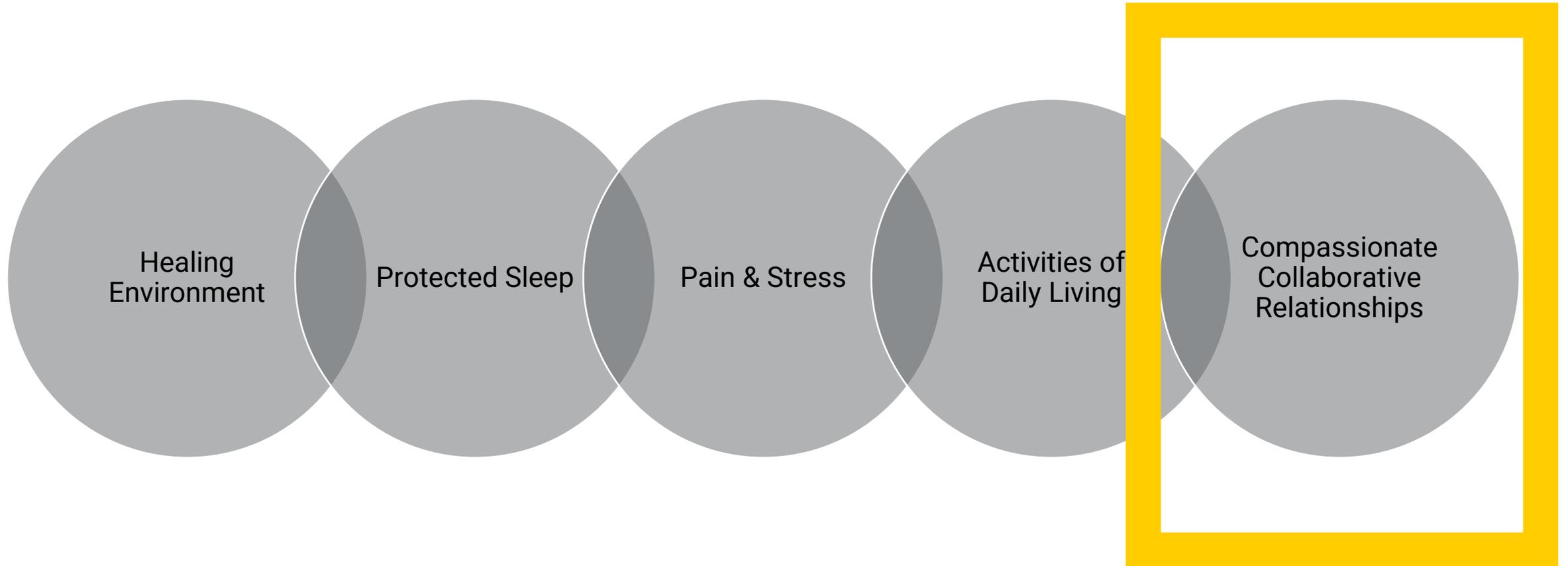
Color System Guidelines		
<p><b>Green:</b></p> 	<p>Infant can be held STS</p>	<ol style="list-style-type: none"> <li>1. PICC line/Peripheral IV</li> <li>2. Broviac</li> <li>3. Nasal Cannula/ RAM Cannula/ High-Flow Cannula</li> <li>4. NAVA or NPCAP</li> <li>5. Conventional or Jet Ventilator (RT and/or 2<sup>nd</sup> nursing staff to be in room for transition)</li> <li>6. Apnea/Bradycardic spells that are baseline for patient</li> </ol>
<p><b>Yellow:</b></p> 	<p>Infants may participate in STS holding after discussion with care team</p>	<ol style="list-style-type: none"> <li>1. Significant ventilator support changes or requiring high levels of FIO2 to maintain oxygen saturation.</li> <li>2. Phototherapy</li> <li>3. Postoperative surgical concerns</li> <li>4. They are having new onset, unexplained or significantly more than baseline apnea/bradycardia/desaturation that are requiring intervention</li> <li>5. Stable medication drips (morphine, milrinone, prostaglandins)</li> <li>6. UVC lines</li> <li>7. aEEG &amp; EEG</li> </ol>
<p><b>Red:</b></p> 	<p>STS care should be delayed for your baby at this time. Hand swaddling is appropriate for your baby.</p>	<ol style="list-style-type: none"> <li>1. UAC, Femoral line, or other arterial line</li> <li>2. Oscillator</li> <li>3. Unstable PPHN/ Stress Precautions</li> <li>4. Unstable chest tube</li> <li>5. ECMO</li> <li>6. <b>Infant under the flat and midline protocol</b></li> <li>7. Parental constraints</li> <li>8. Critical Status or other conditions determined by LIP</li> <li>9. Vasopressor/paralytic (dopamine, dobut, vec, epi, norepi, vasopressin) drips</li> </ol>

Eligibility Color Guidelines	Definitions
Green	Infant can be held S2S
Yellow	Infants may participate in S2S holding after discussion with care team
Red	S2S care should be delayed for your baby at this time. Hand swaddling is appropriate for your baby



# Trauma Informed Care Core Measures

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# 8 Attributes of Trauma Informed Professionals

Attributes	Objectives
<b>Knowledgeable</b>	The learner will understand all ways of knowing that inform a deeper awareness of not only self but also the lived experience of others
<b>Healing Intention</b>	The learner will integrate and apply Jean Watson's 10 caritas processes into his/her personal and professional life
<b>Personal Wholeness</b>	The learner will adopt habits that support personal wholeness and well-being
<b>Courage</b>	The learner will prioritize one's noble purpose and discover the strength and courage that lies within
<b>Advocacy</b>	The learner will recognize opportunities to advocate for self and others respectfully and knowledgeably
<b>Role Model / Mentor</b>	The learner will integrate the qualities of humility and empathy as a role model and mentor to inspire others to greater success
<b>Scholarly</b>	The learner will demonstrate a devotion to learning and consistently share new knowledge willingly and respectfully across a variety of platforms
<b>Leader for Change</b>	The learner will become a confident respectful leader for change both formally and informally

# Healing Intention

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- Connection
- Loving-Kindness
- Being Authentically Present
- Developing Trusting & Caring Relationships





# Healing Intention - Connection



- Lean In
- Fun
- Midwest Nice
- Respect
- Compassion



# Healing Intention – Loving Kindness



O: Observe  
A: Act  
R: Recognize

# Healing Intention – Authenticity



## List of VALUES

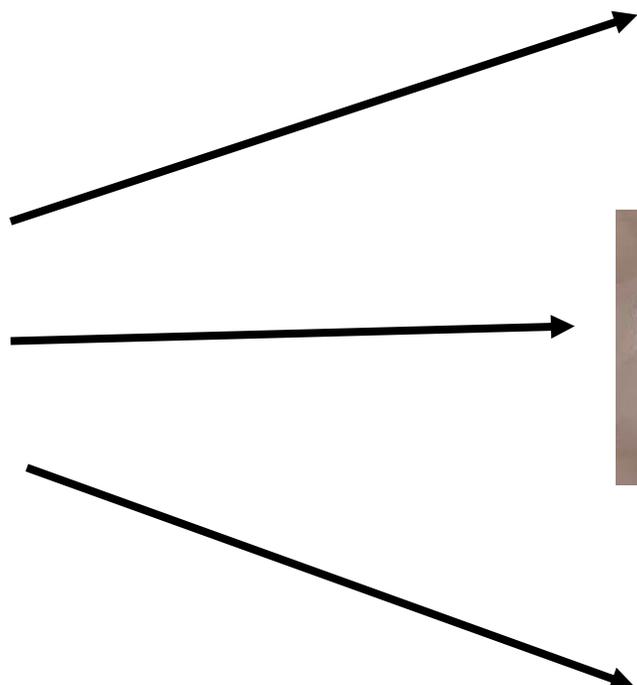
- |                |                     |                      |                        |
|----------------|---------------------|----------------------|------------------------|
| Accountability | Ethics              | Kindness             | Self-respect           |
| Achievement    | Excellence          | Knowledge            | Serenity               |
| Adaptability   | Fairness            | Leadership           | Service                |
| Adventure      | Faith               | Learning             | Simplicity             |
| Altruism       | Family              | Legacy               | Spirituality           |
| Ambition       | Financial stability | Leisure              | Sportsmanship          |
| Authenticity   | Forgiveness         | Love                 | Stewardship            |
| Balance        | Freedom             | Loyalty              | Success                |
| Beauty         | Friendship          | Making a difference  | Teamwork               |
| Being the best | Fun                 | Nature               | Thrift                 |
| Belonging      | Future generations  | Openness             | Time                   |
| Career         | Generosity          | Optimism             | Tradition              |
| Caring         | Giving back         | Order                | Travel                 |
| Collaboration  | Grace               | Parenting            | Trust                  |
| Commitment     | Gratitude           | Patience             | Truth                  |
| Community      | Growth              | Patriotism           | Understanding          |
| Compassion     | Harmony             | Peace                | Uniqueness             |
| Competence     | Health              | Perseverance         | Usefulness             |
| Confidence     | Home                | Personal fulfillment | Vision                 |
| Connection     | Honesty             | Power                | Vulnerability          |
| Contentment    | Hope                | Pride                | Wealth                 |
| Contribution   | Humility            | Recognition          | Well-being             |
| Cooperation    | Humor               | Reliability          | Wholeheartedness       |
| Courage        | Inclusion           | Resourcefulness      | Wisdom                 |
| Creativity     | Independence        | Respect              |                        |
| Curiosity      | Initiative          | Responsibility       | <b>Write your own:</b> |
| Dignity        | Integrity           | Risk-taking          | _____                  |
| Diversity      | Intuition           | Safety               | _____                  |
| Environment    | Job security        | Security             | _____                  |
| Efficiency     | Joy                 | Self-discipline      | _____                  |
| Equality       | Justice             | Self-expression      | _____                  |



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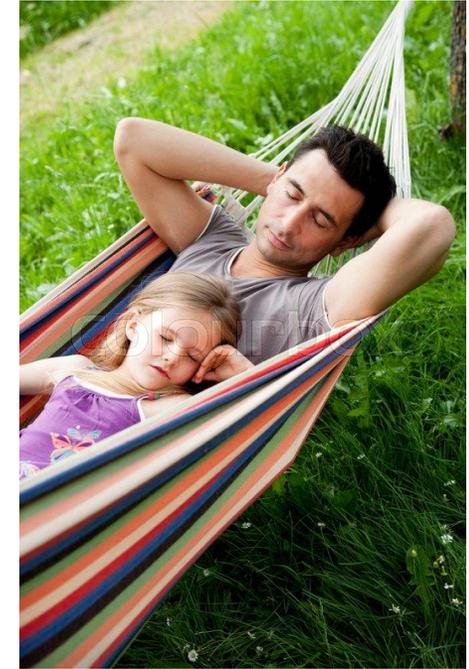
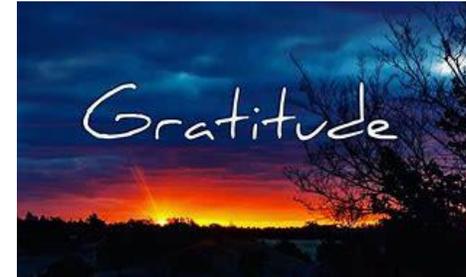


# Healing Intention – Developing Trusting & Caring Relationships

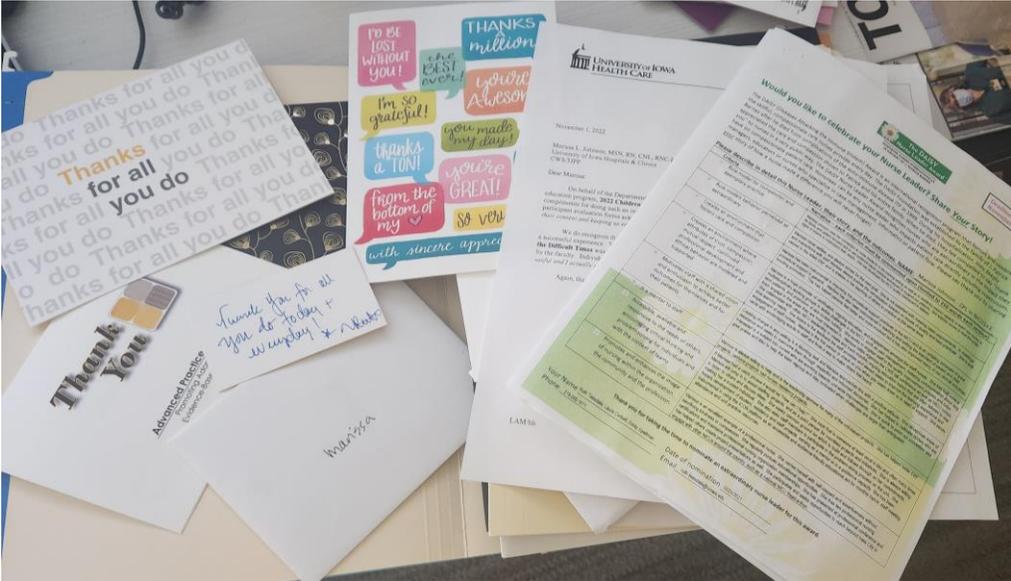
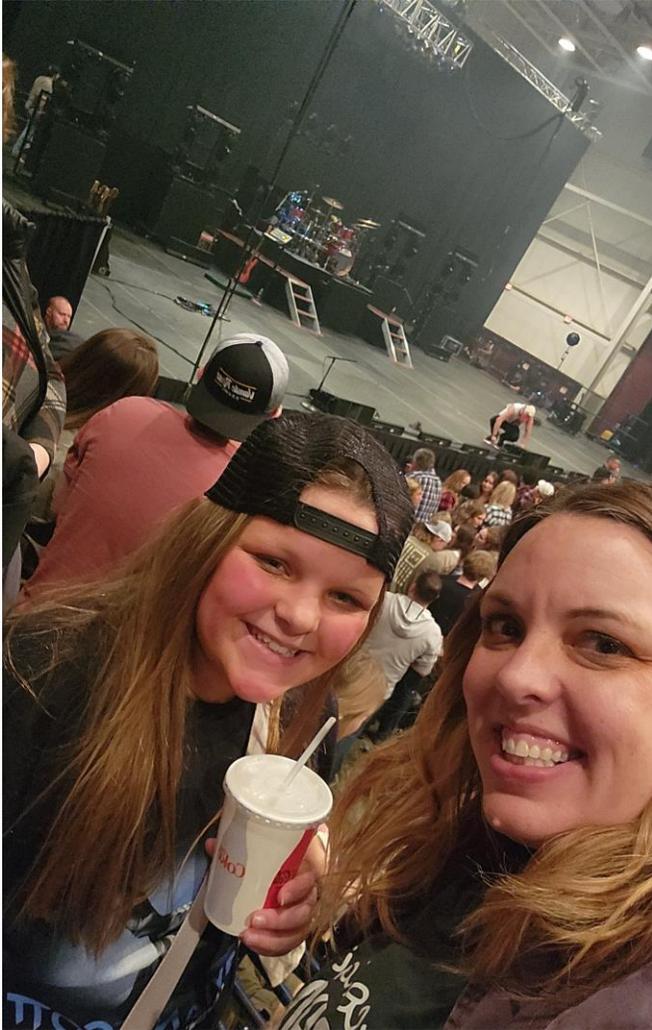


# Personal Wholeness

1. *Meditation*
2. *Environment*
3. *Nutrition*
4. *Movement*
5. *Nature*
6. *Mind*
7. *Rest*
8. *Creativity*
9. *Service*
10. *Gratitude*

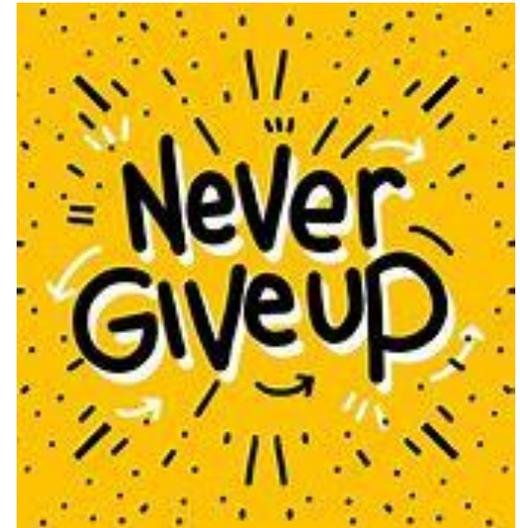


# Personal Wholeness



# Courage

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# Leader for Change



What is BOUNDARY

Be aware

Of what is

Unacceptable and

Normalize saying no.

Do what is best for you

And know that it's not your

Responsibility to sacrifice

Yourself for others

[OurMindfulLife.com](http://OurMindfulLife.com)



[https://www.youtube.com/watch?v=cDDWvj\\_q-o8](https://www.youtube.com/watch?v=cDDWvj_q-o8)

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# What are your next 3 small steps?



“Anxiety and excitement are the same feelings...Just a different mindset.”



# THANK YOU



**Marissa L. Johnson, MSN, RN, CNL, RNC-LRN, TIP**  
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