

## Promoting breast milk feeding in a Level 3 NICU....a difficult journey

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## Benefits of Breast Milk

### Goals of today's talk

- I. Benefits of breast milk
- II. Current breastfeeding rates
  - I. Local
  - II. National
- III. Goals for Healthy People 2020
- III. Journey
  - I. Quality improvement groups
  - II. Myth busting research
- IV. Future goals for NICU breastfeeding
- V. Lessons along the way

### Importance of breastmilk

- Breastfeeding strengthens immune system
  - Maternal antibodies
- Decreased risk of respiratory infections
- Less risk diarrhea
- Reduce ear infections → decreased antibiotic exposure
- Decreased death
- Decreased risk of allergies/eczema
- Decreased hospital costs

### Importance of breastmilk

- Decreased risk cavities
- Decreased risk obesity
- Decreased risk diabetes
- Decreased risk cancer
- Decreased risk higher blood pressure in adults
- Improved learning, behavioral, psychological

### Benefits to premature infants

- Immune system
- Skin-to-skin kangaroo
  - Improved sleep time
  - Improved respiratory state
  - Improved milk production
  - Improved weight gain & shorter hospital stay
- Decreased morbidity & mortality

USBC (United States Breastfeeding Committee)  
http://www.usbreastfeeding.org



Not breastfeeding or providing breastmilk is  
costly to our society as well.

#### when breastfeeding fails:

\$475 per non-breastfed infant for extra health  
care costs during the first year of life, to treat  
just three common diseases.

Ball TM, Wright AL. Health care costs of formula-feeding in the first year of life. *Pediatrics*. 1999;103(4 pt 2):870-876.



#### when breastfeeding fails

At least \$14 billion/year in the U.S. for  
premature deaths and other costs of diseases  
and conditions caused when infants are not  
breastfed.

Weimer J. *The Economic Benefits of Breastfeeding: A Review and Analysis*. Washington, D.C.: Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture; 2001. Food Assistance and Nutrition Research Report No. 13.  
Weimer cited a savings of \$3.6 billion annually if breastfeeding rates were increased from their current rates to those recommended by Healthy People 2010 goals. However, if one repeats Weimer's calculations using the most current data on breastfeeding rates, updating the figures for inflation, the true figure would be over \$14 billion today. This figure is an underestimation of the total savings because it represents cost savings from the treatment of only three childhood illnesses: otitis media, gastroenteritis, and necrotizing enterocolitis.



#### Doctors recommend 1-2 years of breastfeeding, but mothers need more support.

AAP, ACOG, AAFP, WHO, CDC, DHHS, and USDA recommend  
that babies get no other food or drink other than human  
milk for their first 6 months & continue to breastfeed for at  
least the first 1-2 years of life.

American College of Obstetricians and Gynecologists Committee on Health Care for Underserved Women and Committee on Obstetric Practice. Special report from ACOG: breastfeeding: maternal and infant aspects. *ACOG Clin Rev*. 2007;12 (Suppl 2): 18S.  
American Academy of Family Physicians. Family Physicians Supporting Breastfeeding (position paper).  
<http://www.aafp.org/online/en/home/policy/papers/breastfeedingpositionpaper.html>. Accessed May 31, 2009.  
American Academy of Pediatrics Section on Breastfeeding. Breastfeeding and the use of human milk (policy statement). *Pediatrics*. 2005;115(2):496-506.  
World Health Organization/UNICEF. *Global Strategy for Infant and Young Child Feeding*. Geneva, Switzerland: World Health Organization; 2003.



#### Doctors recommend 1-2 years of breastfeeding, but mothers need more support.

- only 12% of U.S. mothers are exclusively breastfeeding at 6 months,
- only 21% are still breastfeeding at 1 year.
- The CDC and FDA recently found that 60% of women do not even meet their own breastfeeding goals.

7 U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Breastfeeding: Data and Statistics: National Immunization Survey (NIS). [http://www.cdc.gov/breastfeeding/data/nis\\_data/index.htm](http://www.cdc.gov/breastfeeding/data/nis_data/index.htm). Accessed May 31, 2009.

#### *TJC Perinatal Care Core Measure on Exclusive Breast Milk Feeding*

- Exclusive breast milk feeding during the newborn's entire hospitalization
- Exclusive breast milk feeding during the newborn's entire hospitalization considering mother's choice
- **Excluded Populations:** NICU, galactosemia, TPN, LOS > 120days, clinical trials, death, documented reason, transfer, premature

### TJC Perinatal Care Core Measure on Exclusive Breast Milk Feeding

On November 30, 2012, The Joint Commission announced that the Perinatal Care core measure set would become mandatory for all hospitals with  $\geq 1,100$  births per year, effective January 1, 2014.

### Benefits in NICU population

- Mother's own milk with nutrient supplementation enhances the growth, development, and immunity of premature infants.
- **Extraordinary efforts should be made to use mother's own milk because the advantages of non-nutrient components in human milk are significantly diminished by storage and heat processing.**

— Early Human Development (2006) 82, 781–787

### Benefits in NICU population

An 8 year follow-up

- of 300 premature infants (approximately 1.4 kg and 31 weeks gestation at birth)
- the receipt of breast milk in the NICU was associated with an 8 point advantage

Lucas A, Morley R, Cole TJ, Lister G, Leeson-Payne C. Breast milk and subsequent intelligence quotient in children born preterm. *Lancet* 1992;339:261-4.

### Benefits in NICU population

- Decreased risk of sepsis/ meningitis (57% risk reduction) *Pediatrics* 102; e38
- Decreased risk late onset sepsis & NEC *Pediatrics* 116;400
- Enteral feedings containing at least 50% of breast milk for the first 14 days of life is associated with a **sixfold decrease chance of NEC.** *Journal of Perinatology* 27; 42
- Decreased severe stage ROP *Pediatrics* 116;400
- Increased Bayley Mental Development Index  $\geq 85$ , higher mean Bayley Psychomotor
- Development Index, and higher Bayley Behavior Rating Scale percentile scores for orientation/engagement, motor regulation, and total score *Pediatrics* 118;e115

### Benefits in NICU population

KEY POINTS: Outcomes

- For every 10-mL/kg per day increase in breast milk ingestion, the Mental Development Index (MDI) increased by 0.53 points, the Psychomotor Development Index (PDI) increased by 0.63 points, the Behavior Rating Scale percentile score increased by 0.82 points, and the likelihood of re-hospitalization decreased by 6%. **In other words, at 150 ml/kg/day, there is a potential for increase of the MDI by 7.95 points, PDI by 9.45 points, and Behavior Rating Scale by 12.3 points.** *Pediatrics* 118;e115
- Infants receiving mostly breast milk vs. all formula had a decreased length of stay by 12 days, reached full feeds 7 days faster, and were less likely to be re-hospitalized by 8%. *Pediatrics* 120; e953

### Benefits in NICU population

- feeding 110 ml/kg/day of human milk → increase in Bayley MDI score of 5 points
  - Lucas A, Morley R, Cole TJ, Lister G, Leeson-Payne C. Breast milk and subsequent intelligence quotient in children born preterm. *Lancet* 1992;339:261-4.
- 5-point difference would have a significantly meaningful effect on the outcome of ELBW infants
  - Hack M, Flannery DJ, Schluchter M, Cartar L, Borawski E, Klein N. Outcomes in young adulthood for very-low-birth-weight infants. *N Engl J Med* 2002;346:149-57.

— Early Human Development (2006) 82, 781–787

## Barriers to breastfeeding

### All NICUS

- Separation of mom & baby
- Separation of mom's breasts' and baby's mouth
- Medical care gets in the way
- Premature baby vs. term

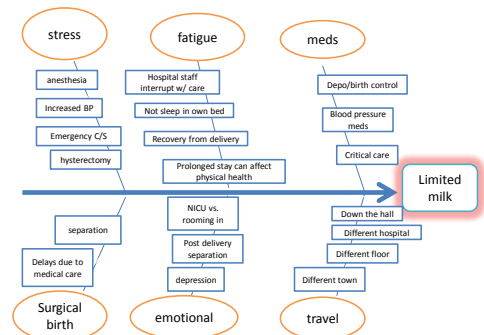
### Journey of improving breast milk use



## Barriers to breastfeeding

- Methods to improve breastfeeding practice
  - Get mom & baby together
  - Get the milk flowing!
  - Be active-not a passive activity
    - All medical personnel need to take active part
    - Not just the job of the LC

## Pumping difficulties



## Healthy People 2020

<http://www.healthypeople.gov/2020/topicsobjectives2020>

	2006	2020
Increase infants ever breastfed	74%	Target 81.9 %
Increase infants breastfed at 6 months	43.5 %	Target 60.6%
Increase infants breastfed at 1 year	22.7%	Target 34.1 %
Increase infants breastfed exclusively at 3 months	33.6%	Target 46.2 %
Increase infants breastfed exclusively at 6 months	14.1%	Target 25.5 %
Reduce the proportion of breastfed newborns who receive formula supplementation in the first 2 days of life	24.2%	Target 14. 2 %

### Current breastfeeding rates

### VON data (Nightingale) infants discharged home 2012 <1500 g

Feeding	CHMCA levels	Level 3 NICU 2011	Q1	Q3
Any Human Milk	50.9 %	49.1 %	34.4 %	65.4 %
Human Milk Only	31.1 %	7.8 %	1.3 %	11.9 %
Human Milk and Fortifier/Formula	19.8 %	41.3 %	28 %	52.5 %
Formula Only	49.1 %	50.3 %	30.8 %	64.7 %

### infants discharged home CHMCA

Feeding	2002	2006	2012	ALL INFANTS 2012
Any Human Milk	42.3 %	50.9 %	50.9 %	54 %
Human Milk Only	23.4 %	31.5 %	31.1 %	32.3 %
Human Milk and Fortifier/Formula	18.9 %	19.4 %	19.8 %	21.6 %
Formula Only	57.7 %	49.1 %	49.1 %	46 %

### Infant discharged home

	2008	2012	Level 3C 2012
Any human milk	42.5 %	50.9 %	49.1 % (34.4 % -65.4 %)
Human milk only	27.5 %	31.1 %	7.8 % (1.3%-11.9%)
Human milk and fortifier	15 %	19.8 %	41.3 % (28%-52.5 %)
Formula only	57.5%	49.1 %	50.3 % (30.8%-64.7 %)
No enteral feedings	0 %	0%	0.6 %

### Donor milk

- We started using in 2006
- Mother's Milk Bank of Ohio

Year	Number patients receiving DM	Median weight (g)	Average weight	range
2006	11	910	1057	690-2390
2007	12	824	933	550-2286
2008	25	905	1067	400-4440
2009	17	1019	1272	560-2388
2010				
2011				

### Mythbusting research

### DIFFICULTIES WITH PUMPING

## Quality improvement groups

- VON: Nutrition group 2009
- Breastfeeding Quip
- OPQC
- Breastfeeding MOC

## NICQ 2009 Nutrition Group Data Repository : Timeline

- Jan. 2009: Topic group identified w/ 4 staff
- March 19-22, 2009: VONN meeting in Orlando. Overall aim/goal identified
- March 25, 2009: Group brainstormed ideas, data collection tool to be developed
- March 26, 2009: Data collection tool developed (see below), awaiting minutes from VONN meeting, information from CPQCC and other sources obtained, to be read by April 15, 2009, data on 25 babies to be obtained by April 15, 2009
- April, 2009: Baseline OFC data obtained
- May, 2009 Baseline OFC Data charted on powerpoint, Await data from collection tool

## NICQ 2009 Nutrition Group Data Repository : Timeline

- Use of colostrum clarified at NICU Quip council.
- May, 2009: To be done: Develop an algorithm on when to increase calories, Develop an algorithm on how to increase feeds (review current algorithm in use), Develop an approach to the baby who does not achieve optimal growth as defined in our guidelines (see below). FIRST ALGORITHM TO BE DEVELOPED will be for the baby on full volume feeds who is not achieving optimal growth – how to increase cals and or volume further.

## Quality improvement groups

Breastfeeding Quip: multi-disciplinary multi-hospital group

- Formulated in 2009. Goal to improve breastmilk available to VLBW infants
- Composed of lactation specialists from local 3 institutions
- Meet monthly

## Quality improvement groups

Breastfeeding Quip: multi-disciplinary multi-hospital group

- Global Aim: Improve provision of mothers own milk as the primary modalities for neonates and all NICU/SCN babies. Process begins with the initiation of prenatal care and ends with exclusive breastfeeding or breastmilk feeding for 6 months

## Quality improvement groups

Breastfeeding Quip

- Specific Aim:
- 100% if infants admitted to the NICU/SCN will be provided mothers own milk.
- 100% of mothers with infants in NICU/SCN will initiate breast pumping within 2 hours after delivery.
- Inpatient OB staff will understand & implement the standard of care for providing breastmilk through education and facilitation of pumping for mothers & babies.
- 100% freshly pumped colostrum will be transported to bedside ASAP
- Appropriate pumps & equipment available to all moms before or immediately after delivery
- prenatal preparation: breast pump equipment & transfer of milk

## Quality improvement groups

Breastfeeding Quip: multi-disciplinary multi-hospital group

- Accomplished to date
- Future goals
- Individual birthing hospitals have also formed their own groups and are working toward baby friendly, removing diaper bags, improving policies.....

## History

- Colostrum and Breastmilk use in the NICU setting
- Involves Akron Children's Hospital, Summa Health System and Akron General Medical Center
- Team of Lactation Consultants, Physicians/Neonatologist, Transport Nurses, Registered Dietitians, Nurses, administration
- Initiated focus group to construct aim statements and Process maps

## Global Aim Statement

- We aim to Improve:  
Provision of Mothers own milk as the primary modalities for neonates and all NICU /SCN babies.
- The Process begins with: Point of Initiation with Prenatal Care.
- The Process ends with: Exclusive breastfeeding or breastmilk feeding for 6 months. (AAP 2005 Position statement on Breastfeeding and the Use of Human Milk)

## Specific Aim Statements

- 100% of infants admitted to the NICU/SCN will be provided mothers own milk.
- 100% of mothers with infants in the NICU/SCN will initiate breast pumping within 2 hours after delivery.
- Inpatient OB staff (L&D, Perinatal, Post Partum, SCN, NICU, Fetal Eval) will understand and implement the standard of care for providing breastmilk through education and facilitation of pumping for mothers and babies

## Specific Aim Statements (continued)

- 100% of freshly pumped colostrum will be transported to the bedside as soon as available.
- Appropriate pumps and equipment will be available to all moms before or immediately following delivery.
- Prenatal preparation includes why, how, when to use the breastpump, use of equipment and transfer of milk.

## Quality improvement groups

### OPQC (Ohio Perinatal Quality Collaborative)

24 Hospitals involved ACROSS THE STATE

- Formulated in 2007
- Main goal to decrease infection
- Currently working on increasing breastmilk to decrease infection rate: Aim: By June 30, 2013 to reduce late onset (>72 hrs) blood stream/CSF infections in infants 22-29 weeks gestational age to < 10% in Ohio NICUs

## Quality improvement groups

- Breastfeeding Maintenance of Certification for physicians
  - Quality projects required by physicians to maintain Board Certified status
  - ABP online project put together
  - Involves spot checking mothers information received for breastfeeding and breastmilk received to infants

## Quality improvement groups

- Breastfeeding Maintenance of Certification for physicians
- PDSA cycles
  1. Survey of mothers and infants
  2. Healthcare survey
  3. Survey of mothers and infants
  4. Staff mandated education
  5. Survey of mothers and infants
  6. Resurvey of difficult questions

## MOC

- Maintenance of certification for Medical staff to be involved. Perform surveys on patients from across local NICUs w/ PDA
- Incorporate work already doing
  1. Patient surveys
  2. Healthcare worker survey
  3. Staff CD
  4. Final survey

## Parent Survey MOC

1. Did you receive information on the importance of breast milk to your infant before delivery? Yes No (please circle one)
2. Did you receive education on the importance of breast milk to your infant after delivery? Yes No (please circle one)
3. If needed, was a breast pump made available to you in a timely fashion? Yes No (please circle one)

## Physician Form for breastmilk MOC

Did this infant receive a first feeding of colostrum?  
Yes No (please circle one)

Did this infant receive any breast milk during the nursery stay?  
Yes No (please circle one)

Was breast milk the exclusive feeding during the nursery stay?  
Yes No (please circle one)

Was breast milk the feeding at discharge?  
Yes No (please circle one)

## Staff survey

- Breast milk should be viewed as an essential medication for babies.
- Provision of breast milk to all NICU babies should be a high priority in my NICU.
- Provision of breast milk to all NICU babies should be a high priority in my NICU.
- I know how to answer common questions moms have regarding getting breast milk production established.



## Staff survey

- Breast milk and formula are equally acceptable for NICU babies.
- Babies that receive breast milk have better long term outcomes than those who receive formula.
- Babies that receive breast milk have a lower rate of necrotizing enterocolitis.
- In the first few days after birth, I should routinely ask moms if they are pumping frequently.

### Results from staff survey

	Strongly disagree /Disagree	Neither agree nor disagree	Strongly agree /Agree
Breast milk should be viewed as an essential medication for babies.	3.6 %	15 %	81.4 %
Provision of breast milk to all NICU babies should be a high priority in my NICU.	2.7 %	6.5 %	91 %
If a mom requests formula, further discussion of breast milk should be discouraged because it may make her feel guilty.	65.6 %	18.8 %	15.5 %
Breast milk and formula are equally acceptable for NICU babies.	67.6 %	18.5 %	13.9 %
Babies that receive breast milk have better long term outcomes than those who receive formula.	5.1 %	21.9 %	72.9 %
Babies that receive breast milk have a lower rate of necrotizing enterocolitis.	<1 %	24.5 %	74.5 %
In the first few days after birth, I should routinely ask moms if they are pumping frequently.		4.2 %	95.8 %
I know how to answer common questions moms have regarding getting breast milk production established.		2.5 %	97.5 %
Even if a mom isn't planning on breastfeeding after discharge, it is still very beneficial to the baby for mom to pump breast milk for at least a month.	<1 %	7.5 %	91.6 %
Breastfeeding provides important long term health benefits for both mother and baby.	<1 %	2.8 %	96 %
Healthcare workers have a responsibility to inform parents of the benefits of breast milk.		2.3 %	97.7 %
Parents will commonly choose to provide breast milk if their healthcare workers inform them that breast milk is the best choice for their baby.		18.6 %	81.6 %

### Results from staff survey

#### KEY POINTS: Outcomes

- Decreased risk of sepsis/ meningitis (57% risk reduction) *Pediatrics* 102; e38
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## Staff survey

- Even if a mom isn't planning on breastfeeding after discharge, it is still very beneficial to the baby for mom to pump breast milk for at least a month.
- Breastfeeding provides important long term health benefits for both mother and baby.
- Healthcare workers have a responsibility to inform parents of the benefits of breast milk.
- Parents will commonly choose to provide breast milk if their healthcare workers inform them that breast milk is the best choice for their baby.

### Results from staff survey

#### KEY POINTS

- Mothers with a desire to provide formula, are still able to provide breast milk after discussion, after counseling session.
- 85% of mothers with an intention to provide formula, were willing to express breast milk to their infants. Race and income did not make a difference. **The mothers who initially desired to provide formula, were able to provide 50% of the milk supply for their infants for the first 3 weeks, up to 32.8% of the milk supply for the entire hospitalization.** Moms were mostly convinced by the benefits discussed for their infants. **All mothers were grateful for the help from staff for assistance in pumping and providing breast milk.** *Pediatrics* 117;e67.

### Results from staff survey

#### KEY POINTS: Outcomes

- For every 10-mL/kg per day increase in breast milk ingestion, the Mental Development Index (MDI) increased by 0.53 points, the Psychomotor Development Index (PDI) increased by 0.63 points, the Behavior Rating Scale percentile score increased by 0.82 points, and the likelihood of rehospitalization decreased by 6%. **In other words, at 150 ml/kg/day, there is a potential for increase of the MDI by 7.95 points, PDI by 9.45 points, and Behavior Rating Scale by 12.3 points.** *Pediatrics* 118;e115
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## Summa Breastfeeding Task Force Group

- BF classes
- BF support group
- Removed formula bags
- Revised BF policy according to Best fed practice (infants are not routinely supplemented due to sleepiness or prolonged periods of not feeding-only supplemented with medical indications or physician orders.
- Skin to skin for ALL babies in L&D-Bf or not, vaginal delivery or c/s and strongly encouraged thereafter
- Improved bf rates (March 2013= 83%!!!!)
- OB staff education of 20 hours BF education for entire staff (includes postpartum. Perinatal, L&D.)
- Summa has increased the BF staff to cover 7 days a week
- We continue on the journey to become baby friendly by 2014

## AGMC Breastfeeding Task Force Group

- Summer 2010 : "banned the bag"
- We started an AGMC multidisciplinary Breastfeeding taskforce in Oct 2010
- 2012: All patients the breastfeeding information folder.
- In Fall 2012 we approached administration on becoming a Baby Friendly Hospital
- Grants 3 Kangaroo/Skin to skin chairs for the AGMC NICU.
- OLCA grant:gave 11 "Medications in Mothers Milk 2012" to our delivering OB and pediatric offices & an informational pamphlet of Lactation services.

## AGMC Breastfeeding Task Force Group

- In 2012 we started much more detailed breastfeeding statistics vs just at one month for Joint Commission.
- We take part in the OPQC human milk study.
- We updated our breastfeeding policy in 2011.
- Breast milk collection policy in 2012.
- Resident OB/GYN, and family practice presentation in 2013.
- OB Core new nursing orientation yearly.
- We offer outpatient consultations free of charge.

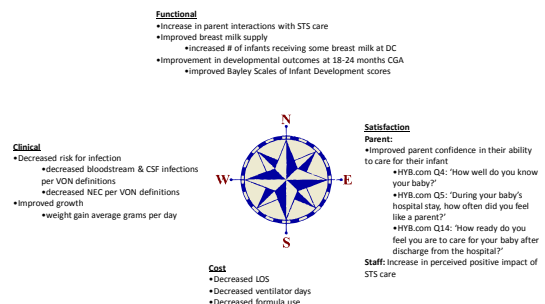
## "Kangaroo care" enhanced in NICU

- Barriers
  - "POD" unit
    - Not private rooms
    - Limit screens
    - Limited chairs
    - Loud and noisy
  - Equipment & monitors are intimidating
  - Incubator vs. crib
  - Mother's clothing choice during visit

## Skin to skin policy

- POSSIBLE exceptions
  - Unstable mechanically ventilated patients
  - HFOV
  - Chest tubes
  - Arterial lines (peripheral/ umbilical)
- no minimum/ maximum times

## Skin-To-Skin Care Value Compass



5/7/2013

## Skin-To-Skin Care Therapy

(sometimes called 'Kangaroo Care')

### Parents – please consider Skin-to-skin Care with your baby

- Skin-to-skin Care is not just another nice way to hold your baby. It has proven therapeutic effects to benefit you and your baby. When you hold this way, your baby lies skin-to-skin on your chest.
- It is an opportunity to give your baby something only you can give
  - It helps you form strong bonds with each other
  - It helps breast milk production
  - It reminds the baby of the environment of the womb and this is calming
  - It helps babies
    - breathe more regularly
    - keep a regular heart rate
    - increase the amount of oxygen in the blood
    - decrease abnormal breathing episodes
    - reduce infections
    - gain weight faster
    - sleep deeper and longer
    - go home sooner and
    - have better mental and motor development
  - What to do to prepare for Skin-to-skin Care
    - Wear a shirt or blouse that opens in the front
    - Plan for sessions that can last 15 hours or more
    - Have something to eat and drink and use the rest room right before you start so that these things don't interrupt your session unnecessarily
  - What can you do while doing Skin-to-skin Care?
    - Rest, read a book, listen to music, play handheld video games
    - Ask your baby's nurse for a sling to help support your baby so you can use both your hands at the same time if you wish.
  - There are a few situations when it is not a good idea to do Skin-to-skin care with your baby. Your baby's nurse will help you decide if it is OK for you and your baby. Ask them about it.

### Future goals and lessons along the way

## Putting it all together

- Prenatal, intrapartum/ immediate postpartum discussions
- Ongoing care
  - STS
  - Early expression
  - Hands on expression
  - Core competencies
  - Lactation consult
  - Donor milk
- Various improvement groups: multidisciplinary; local, regional, national

## Discoveries

- Not easy to sustain change, if you can get change
- Education
  - All different backgrounds
  - Different personal experiences
- Reality of life
- Family issues

