

Promoting Benefits of Skin-to-Skin Contact between Mothers and Newborns

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Table of Contents

Abstract..... Page 3

Introduction..... Page 4

Kangaroo Care as a Component of “Baby-Friendly Hospital” Interventions..... Page 9

Methods..... Page 16

Outcomes..... Page 19

Discussion..... Page 23

Conclusion / Recommendations..... Page 24

References..... Page 28

Figures

figure 1: March of Dimes Report Card..... Page 5

figure 2: Table of hours spent on project.....Page 19

figure 3: Educational Pamphlet..... Page 21-22

### Abstract

It is important to develop strong bonds between mother and child early after birth. One way this bond may be initialized is through skin-to-skin contact between mother and newborn during the first hour following birth. Benefits of instant skin-to-skin connection for newborns include enhanced biological transition following delivery, initiation of neuroprotective mechanisms, and allowing for early neurobehavioral self-regulation. For a new mother, benefits include improved recovery following delivery, the strengthening of maternal attachment to the child, and stimulation of breast milk production.

This project focused on increasing awareness of benefits to mom and baby of instant skin-to-skin contact. Data were collected through a literature review and interviews of health care professionals, and were used to develop an educational pamphlet for distribution to expectant mothers. Awareness should be further promoted through distribution of materials and in-person information, particularly through pregnancy support programs, (e.g. Lamaze). Hopefully, through increased awareness, more expectant mothers will request skin-to-skin contact with their newborns following delivery to promote improved birth outcomes and long-term benefits among mothers and children.

## Introduction

During the year of 2014, there were 3,988,076 live births in the United States. Of those births, 8% of infants had a low birth weight (less than 5.5 pounds), and 9.6% were pre-term (less than 37 weeks' gestation). Despite being a developed nation, the infant mortality rate in 2014 was 582.1 deaths per 100,000 live births, which equated to a total of 23,215 deaths (Centers for Disease Control and Prevention, 2017). According to the Centers for Disease Control and Prevention (CDC), the leading cause of infant deaths are congenital malformations, deformations, and chromosomal abnormalities, disorders related to short gestation and low birth weight. Another huge factor contributing to infant deaths is caused from the newborn being affected by maternal complications during pregnancy (Centers for Disease Control and Prevention, 2017). Severe maternal morbidity, which is the most severe complications of pregnancy affect more than 50,000 women in the United States annually. According to the CDC, this trend has been steadily increasing (Centers for Disease Control and Prevention, 2017).

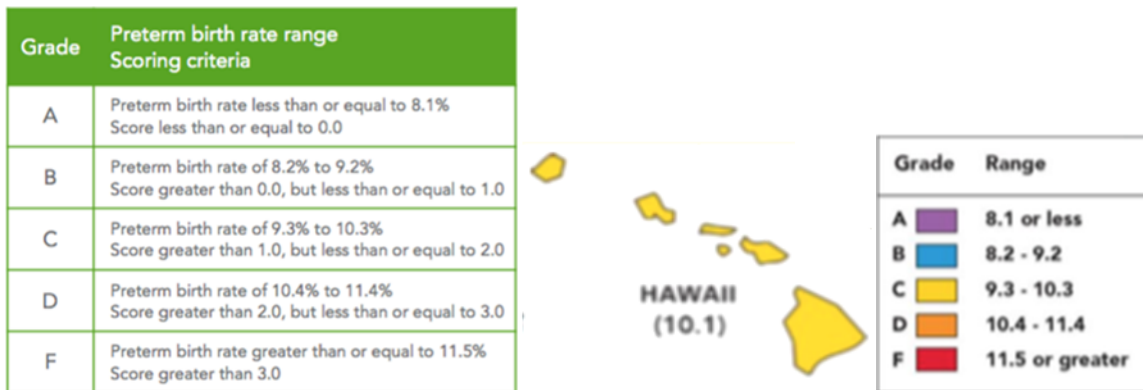
Too many mothers and their children are dying. Approximately eight hundred women die daily from causes related to pregnancy and birth that could be prevented (Centers for Disease Control and Prevention, 2017). It is in the developing countries where approximately 99% of these deaths occur (Centers for Disease Control and Prevention, 2017). During the year of 2012, 6.6 million children died before reaching five years old. Of those deaths, five million of them died during their first year of life (Centers for Disease Control and Prevention, 2017).

In the United States, a major health problem is premature birth. According to the Institute of Medicine, this health issue costs the United States more than \$26 billion per

year (March of Dimes, 2013). Premature birth is the leading cause of newborn deaths. Babies who survive preterm birth many times face challenges throughout their lifespan, such as cerebral palsy, breathing problems, and intellectual disabilities (March of Dimes, 2013). Infants who are born only a few weeks early also suffer frequently from illnesses and have higher rates of hospitalization. Being born at a gestation stage of at least thirty-nine weeks is crucial to an infant's health because various vital organs, especially the brain and lungs, are only completely developed at that stage of thirty-nine weeks.

After six years of a steadily decreasing preterm birth rate, preterm births began to increase in 2014, and have increased ever since, which now stands at 10.1%. Since 2014, The United States still fall in the category of receiving a C grade (figure 1) (March of Dimes, 2017).

(figure 1)



Kangaroo Care (KC) is the practice of skin-to-skin contact between an infant and parent. It was introduced more than 25 years ago in Bogota, Colombia, as one component of an alternative approach to traditional Neonatal Intensive Care Unit (NICU) care for low-birth weight infants (Nauert, 2015). This practice had been put into effect in response to overcrowded nurseries, scarce and costly resources such as incubators, and high rates of neonatal infection and mortality. The overall approach was termed “Kangaroo Mother

Care” (KMC), and shortly after was interchangeably termed with “Kangaroo Care” (KC). Kangaroo Care has since been adopted in countries around the world where mothers hold their low-birth weight infants upright next to their skin for 24 hours a day. During that time when Kangaroo Care was being implemented and practiced in Bogota, Columbia, frequent and exclusive breastfeeding were promoted. Infants were discharged to go home regardless of their weight as soon as their mother understood how to care for and feed her infant. Kangaroo Care reduced infant mortality and improved mother-infant attachment (Richardson, 1997).

A systematic review focusing on infants with birth weights <2000 g in low-or middle-income countries found a significant reduction in neonatal mortality when Kangaroo Care was started within the first week of life (RR 0.49, 95% CI 0.29 to 0.82) (Jefferies, 2012). A recently updated Cochrane review explored the effectiveness of Kangaroo Care as an alternative to conventional NICUs care of low weight infants. Low birth weight was categorized as being <2500 g. Based on 16 studies (2,518 infants), 11 of which were conducted in low-or middle-income countries, concluded that at discharge, Kangaroo Care reduced mortality (RR 0.60, 95% CI 0.39 to 0.93), severe illness, infections and length of hospital stay (Moore, Anderson, Bergman, Dowswell, 2012). Kangaroo Care also helped to improve mother-infant bonding and breastfeeding and maternal satisfaction. Kangaroo Care is now considered to be an important intervention to decrease morbidity and mortality for low-birth weight infants in developing countries.

In high-income countries, access to modern technology and resources may alleviate the need to use Kangaroo Care to improve survival of low-birth weight infants. Nevertheless, the practice of skin-to-skin contact between the preterm infant and parent

has been adopted in many NICUs in low, middle, and high-income countries. Kangaroo Care is one way of involving both mothers and fathers in the care of their at-risk infant and helps to humanize the NICU experience. Continued research has explored the safety and benefits of Kangaroo Care for the preterm infant in the NICU setting.

During Kangaroo Care, the infant, in only a diaper and cap, is held in an upright prone position against the bare chest of the parent (most often the mother) and covered with a cloth and/or a blanket. The duration of skin-to-skin contact varies but usually lasts one to three hours per session, with cardiorespiratory and temperature monitoring the infant during this time. If the infant requires any wires or tubes, they will be carefully positioned before being covered with a lightweight blanket or wrap. The nurse will take the infant's temperature several times to make sure that the infant's temperature is being maintained. In addition, the nurses will keep an eye on the monitors for any changes. Although most often provided for stable preterm infants who do not require assisted ventilation, Kangaroo Care is increasingly being offered to infants who require support. Kangaroo Care is promoted to infants who weigh as little as 600 g and who are 26 weeks' gestational age or younger at birth, including those who are newly born. It is important that NICUs have guidelines for provision of Kangaroo Care that include gestational age and weight criteria and assessing readiness and tolerance. Other important guidelines for provisions are appropriate physiological monitoring for signs of stability and stress and protocols describing safe transfer of the infant between being isolated to a bonded-parent.

There are identifiable barriers such as policies that prevent the intimate skin-to-skin contact between mother and infant. Barriers to implementation of Kangaroo Care vary from nursery to nursery, and commonly include poor staff knowledge, inadequate

training and education, discomfort with the process, lack of time and/or resources, lack of privacy and parental reluctance. Identification of such barriers is an important step in the successful implementation of Kangaroo Care.

Research that has been conducted identified six main barriers as to why the implementation of Kangaroo Care is slow to be adopted in healthcare facilities. Facilities struggle to implement Kangaroo Care regularly due to the lack of support of the benefits. These benefits include social support, lengthily training time and provide the needed services, medical concerns, access to resources, and the cultural norms related to the newborn care or the facilities being used (Crist, 2017). 86 studies were analyzed, and it was found that numerous healthcare workers stated that newborn care wasn't a top priority in their work environment. One striking commonality was that Kangaroo Care was referred to as the "poor man's alternative" or seen as only associated with developing countries, as opposed to receiving postpartum treatment by western technology.

Lack of manpower creates challenges for hospitals in implementing Kangaroo Care. The intent is there but more knowledgeable, trained staff is required. Staff shortages and high turnover rates mean that the retention of trained staff is a challenge. The lack of training in preterm care slowed the buy-in for Kangaroo Care. Usually there are one to two staff members, who are burdened with the responsibility of training staff. If those burdened staff members leave or transfer to a new location, the training and buy-in frequently leaves with them.

Kangaroo Care is not costly, very easily initiated, and may generate an environment for infants that literally can lessen the workload of healthcare employees.

### Kangaroo Care as a Component of “Baby-Friendly Hospital” Interventions

Dr. Susan Ludington has been one of the most credited individuals for introducing Kangaroo Care in the United States (Richardson, 1997). Her work has had a powerful and positive impact to the lives of the infants and their families who practiced skin-to-skin stimulation. In the United States, there were few hospitals that used and practiced Kangaroo Care. Recently, there has been an increase of baby-friendly hospitals, which are hospitals and birthing facilities that convert to exclusive breastfeeding and offer an optimal level of care for infant feeding and mother-baby bonding. Baby-Friendly hospitals and birthing centers demonstrated that they have care practices and policies that fulfill the gold standard for mother and baby care practices that are related to breastfeeding. Initially following birth, babies are kept next to their mothers for breastfeeding to start as soon as baby is ready. Rooming in, which is the practice of healthy babies and their mothers getting to know each other through spending day and night together, is permitted through policies. Furthermore, Baby-Friendly sites do not disburse any type of formula because it has been proven that this type of practice discourages feeding the newborn only mother’s breastmilk (Baby-Friendly USA, Inc, 2012). This has been an effect of the initiative set up by United Nations International Children’s Emergency Fund (UNICEF) and World Health Organization’s (WHO) recommended steps of the Baby-Friendly Hospital Initiative. The United States has been going through flourishing growth of the Baby-Friendly Hospital Initiative due to birthing facilities making a commitment to becoming Baby-Friendly.

WHO and UNICEF set up the initiative of the Baby-Friendly Hospitals initiative to encourage hospitals and birthing centers to revamp and convert to be exclusive breastfeeding hospitals. Kangaroo Care is a vital component in exclusive breastfeeding.

There is a vast array of benefits to Kangaroo Care, many of them that are not known to the general population, new parents, and caregivers. Maintenance of baby's body temperature starts to stabilize by using their mother's warmth, which lets baby to use less calories of their own (Richardson, 1997). Because a mother's breast temperature can rise and fall quickly, this can help to regulate their baby's body temperature (Richardson, 1997). The infant and mother's temperature allow for synchronization of thermoregulation (International Childbirth Education Association (ICEA), 2015). The heart and respiratory rate of the baby receiving Kangaroo Care can be stabilized and regulated (International Childbirth Education Association (ICEA), 2015). The practice of Kangaroo Care aids in the ability of the infant's growth rate to increase from their lengthened time of sleep (Richardson, 1997.) The baby now can utilize their calories towards their growth (Richardson, 1997). An infant placed in an incubator or holding area only allows that infant an allotment of less than two hours of deep sleep at a time (Richardson, 1997). Premature infants do not have the capability to coordinate their breathing and heart rate, meaning that while an infant is crying their respiratory rate will increase but not their heart rate. Researchers found that only after ten minutes of administering Kangaroo Care, coupling (synchronizing) starts to take place (Richardson, 1997). Alpha waves and delta brushes were occurring, which means that new synapses were being formed. This increased brain development that was equivalent to a premature baby in the incubator for approximately four weeks (Richardson, 1997). Kangaroo Care

reduces crying from separation stress and allows early opportunity for baby to crawl to the breast. The infant's blood glucose levels are stabilized as well. Skin-to-skin contact permits the colonization of the newborn to maternal flora, which aids protection against infections and helps promotion of breastfeeding. That helps the increased rate of exclusive breastfeeding.

After birth, mothers experience an increase in oxytocin, a maternal reproductive hormone, during the first hour. The hormone oxytocin increases uterine contractions, which decreases postpartum bleeding and stimulates breastmilk production. During skin-to-skin contact, oxytocin is released in the mother's system, which enhances maternal/newborn attachment and decreases maternal/newborn stress. Beta-endorphins are released from the mother's brain during skin-to-skin contact, which allows for an analgesic response and facilitates a tranquil bonding with her baby. During that time, nurturing and affectionate behaviors are increased towards her infant. Skin-to-skin contact allows maternal recognition of infant's sleep and feeding cycles. Skin-to-skin contact aids in successful and exclusive breastfeeding.

The long-term benefits of Kangaroo Care for infants and children are tremendous. At the age of three months, infants who received Kangaroo Care smiled more often (Stuard, 2016). At three to six months, infants had a higher quality of emotional and cognitive regulatory abilities (Nauert, 2015). When being measured at six and twelve months, infants undergone less infections compared to their peers who did not receive skin-to-skin contact (International Childbirth Education Association, (ICEA), 2015). At one-year-old, children who received the practice of Kangaroo Care were ahead of their peers in social, linguistic, and fine and gross motor skills (Nauert, 2015). Studies have

also proven that Kangaroo Care helped with earlier urinary continence, improved brain maturation and attachment, self-regulation, and twice as likely to be breastfed as opposed to infants contained in the incubator (Nauert, 2015). During infancy, mother-infant interaction plays a key role that predicts secure attachment during the preschool years (Nicole-Harpor, Harvey, & Stein, 2007).

Currently, Hawaii's preterm birth rates are worsening and continues to remain greater than the national preterm birth rate goal. The goal of the March of Dimes is to reduce preterm birth rates to 8.1% by the year 2020 (March of Dimes Foundation, 2016). According to Hawaii's 2016 premature birth report card, Hawaii's preterm birth rate was 10.1% based on the 2014 preterm birth rates (March of Dimes Foundation, 2017). In the 2017 report card, the preterm birth rate of Hawaii rose to 10.5% and has now dropped from a C grade to a D grade (March of Dimes, 2017). This becomes an issue because the earlier babies are born, the more prone they are to having complications, birth defects, and neurological problems. Many of these issues are due to three primary factors impacting maternal health: lack of healthcare access, smoking, and alcohol consumption. The March of Dimes is one of the few nonprofit organizations in Hawai'i that works to promote awareness of Kangaroo Care. March of Dimes works in conjunction with the Hawaii Department of Health (DOH) to educate and address barriers to reducing high risk behaviors among pregnant women. They also have a campaign called *Healthy Babies Are Worth the Wait* consumer education campaign, which encourage women and health care providers to avoid scheduling a delivery before 39 weeks of pregnancy unless medically necessary.

This decade study shows improved autonomic functioning, neuroendocrine response, and many long-term positive impacts in the child's life, even up to 10-years later (Nauert, 2015). This skin-to-skin method has once again proved to have positive long-lasting impacts, not only cognitively; but biologically, physically, and emotionally (Nauert, 2015). This Kangaroo (skin-to-skin) Care has outcomes of positive effects. It is a practice that should be implemented to help increase awareness at every office, hospital, home, or program that has an audience of mothers, infants, children, and sexually active aged individuals.

Many parents as well as individuals who are unfamiliar with children or birth are not aware of this type of nonmedical intervention. Kangaroo Care is an affordable practice because all it takes is the dedication of time of the parents and infant. Although infants had minimal time exposure to skin-to-skin stimulation, it is still a benefit. Some exposure is better than no exposure at all.

If there was more access to the knowledge of benefits and implementation of Kangaroo Care to an array of audiences, there would be a positive impact. Numerous infants could benefit from an extremely cost-effective method that has proven to heighten the growth of babies in many aspects. In contemporary times, there has been a reliance on technology to provide the essential needs for the survival of infants. Kangaroo Care has proven that it is the primary requirement for the regulation of all physiological needs. The absence of it may lead to dysregulation and adaption to adversity.

Kangaroo Care can begin immediately after the birth of baby. However, if the infant's condition is not stable, Kangaroo Care can begin shortly after they are more stable. A baby who is on a mechanical ventilator or a baby who has major health issues

could benefit from these initially short sessions of Kangaroo Care. As baby starts to get more stable, the sessions of Kangaroo Care should be increased to a minimum of an hour with no maximum set of hours. It may be practiced for twenty-four hours a day, if time permits.

To get ready to implement the practice of Kangaroo Care, having a comfortable area padded with pillows to sit to support and position baby, would be most accommodating. Although Kangaroo Care is usually practiced sitting down, it may also be practiced while standing up. While in the hospital, mothers are usually provided with some type of privacy curtain to ease the implementation and initiation of Kangaroo Care. By having that partition, it makes it easier for mother to prepare her upper half of her body bare skin to hold baby. If there is no curtain or partition available, a wrap or stretchy shirt may be offered. A wrap or stretchy shirt with a large opening that baby can be tucked inside of is used to help with the privacy and intimacy of bonding.

Infants who are transitioning from intrauterine to extra-uterine with complications will be dealing with many stresses and traumatization. While baby is going through this tough experience, their mothers usually are bombarded with feelings of depression, anxiety, guilt, anger, and fatigue. These previously mentioned arrays of common emotions can contribute to the confidence level that a mother may have to interact with her baby. After the birthing of a baby, the mother does usually have an instinctual want to hold and comfort their baby. By practicing Kangaroo Care, it helps to alleviate some of the previously mentioned feelings, by making the mother feel reconnected and needed by baby. For NICU babies, it has been proven by research that by practicing Kangaroo Care,

it makes bonding with their infant easier while improving the aptness to care for a medically fragile child (Beatty, 2016).

While moms are busy implementing and practicing Kangaroo Care with their baby, dads may have the feeling as though they are not able to help in any way, which is a common feeling for fathers to experience. Dads, who contribute with the practicing of Kangaroo Care, have the feeling of empowerment and significance by being able to provide for their infant. Furthermore, fathers gain confidence and learn vital knowledge with caring for their child and become a part of baby routine and schedule. While practicing skin-to-skin contact, father's skills are improved to practice practical skills relevant to caring for their infant. Kangaroo Care also contributes to helping with fathers build a lasting bond with their baby.

Particularly for NICU babies, it isn't uncommon for parents to feel that there is little that they can do. But, Kangaroo Care provides that opportunity and pathway for parents to practice something positive for their precious newborn. While practicing skin-to-skin contact, it is extremely important to dedicate concentration on this precious moment, while paying attention to the feeling of baby's skin, baby's smells, baby's breath, the tiny noises baby makes, and the minimal weight of baby on mother, father, or caregiver's chest.

The Standard Components of Kangaroo Care are:

- Have a room warm enough allowing for mother and infant dyad to be undisturbed. Neonatal examination, injections, weighing, and measuring of the infant may be delayed for the first hour.
- Ensure skin-to-skin contact between mother and infant from birth

- Have unrestricted access to allow for the breastfeeding with no required time schedules.

Since Kangaroo Care has been around for many years; even though it is not widely practiced and implemented, there has been a whole plethora of names used interchangeably with Kangaroo Care. Some other names used are mother-infant interaction and birth physiology. In addition to those names there are a couple other commonly used names, which are rooming-in and sensitive period.

On the island of O’ahu there are five birthing facilities: 1) Kapi’olani Medical Center for women and Children (KMCWC), 2) Queen’s Medical Center (QMC), 3) Castle Medical Center (CMC), 4) Kaiser Permanente, and 5) Tripler Army Medical Center (TAMC). Out of these five birthing facilities, there is only one hospital that is designated as a Baby-Friendly Hospital, meaning that they are an exclusive breastfeeding hospital with no substitution or introduction of formula in any way. That hospital is Castle Medical Center (CMC). The four other hospitals are working on becoming a dedicated Baby-Friendly Hospital. They also have been incorporating instant skin-to-skin contact, meaning that they encourage Kangaroo Care for the first hour following birth.

These hospitals mentioned above have gone through a training called “Nurturing in a Nutshell.” This is a weeklong process and training to teach and instill adequate knowledge on skin-to-skin stimulation between the newborn and a bonded parent.

### Methods

The goal of my project was to learn about kangaroo care, identify how it is being practiced in Hawai‘i hospitals, and develop a brochure that can be used to educate patients about the benefits and practices of Kangaroo Care. To do this, I performed a

literature review, conducted interviews, and then used the information to design a patient-education brochure.

The literature review consisted of research on impact of kangaroo care on neonatal and maternal health using online databases like scholar.google.com, CDC, and PubMed. Keywords such skin-to-skin contact, kangaroo care, rooming in, birth physiology, sensitive period, and mother infant interaction, were used in searching for articles. To analyze these results, I had to group the articles into categories such as infant and mother benefits, the process of skin-to skin bonding, and the effects of skin-to-skin bonding. I then identified the relationships between the articles and summarized them.

In addition, I conducted in-depth interviews with a neonatal nurse practicing kangaroo care in a local hospital. I initially met this nurse after networking with others at Kapi‘olani Medical Center for Women and Children (KMCWC). I interviewed her a total of 12 times, which equated to about 30 hours. In these interview sessions we covered topics which involved her experiences teaching skin-to-skin, the difficulties with incorporating skin-to-skin contact as a practice, the behaviors of the infants with their mothers, and the benefits she can see with the skin-to-skin bonding. The interviews were then analyzed into similar categories that were used with the literature review.

Next, I used all the information to design a patient-education brochure on kangaroo care. Each panel in the pamphlet covered a different category that was in the literature review and interviews. Specifically, the pamphlet included information on the availability of free benefits to mothers, their infants, and/or caregivers. Readers of the pamphlet may see the progressive positive differences that implementing the practice of Kangaroo Care will bring them. It consisted of a brief history of Kangaroo Care, what

Kangaroo Care encompasses, the benefits, why it should be implemented and practiced. Birthing facilities that are working on implementing being a baby friendly hospital will be included. The pamphlet will also show relative, relatable pictures that apply to the population intended to read this information. After compiling all the information into a working brochure, I disseminated the draft to parents and other health professionals to provide me with feedback.

Finally, after suggestions were given, I applied the necessary edits and contacted multiple facilities who would possibly be interested in displaying this pamphlet. Programs like Women, Infants, and Children (W.I.C.), or hospitals like Kapi‘olani Medical Center for Women and Children (KMCWC) and Queen’s Medical Center (QMC) labor and delivery (L&D) were called and proposed the possibility of launching this intervention. Though this intervention mainly includes having them display and precipitate the brochure, I also promoted them to further spread awareness of skin-to-skin contact by encouraging them to create a program within their facility that can deliver and implement the knowledge and practice to patients. By having these programs promote Kangaroo Care, in addition to giving them the brochure, we could see a drop in infant mortality, illnesses, sickness, and see an increase in bonding between mother and child, and a cognitive and behavioral gain throughout the infant’s childhood. Whether the infant is pre-term, full-term, healthy, or in need of health help; the benefits of Kangaroo Care will be appreciated by any parent, infant, and caregiver.

The table (figure 2) below identifies how time was spent working on this project.

figure 2

<u>Hours</u>	<u>Tasks</u>
55	Literature Research
30	Interview
30	Formatting and Developing Pamphlet

### Outcomes

The final product of this project was to develop an informational pamphlet (figure 3a, 3b) to raise awareness about a practice that has many benefits to mother and baby.

The information presented on this pamphlet was gathered through research and personal experience with Registered Nurse, Tessa Carter. Information has been drawn from conducted studies and peer reviewed scholarly articles and journals. Mrs. Carter's personal experience through her work with the Labor and Delivery Department at Kapi'olani Medical Center for Women and Children has been significant with the development and creation of this pamphlet.

The target audiences for this pamphlet are parents, potential parents, parents-to-be, caregivers, and programs and offices that provide services for mothers and babies. These specific populations were chosen because they are the ones who would most likely benefit from and implement this type of practice of skin-to-skin stimulation. Programs such as Women Infant Children (WIC), Parents As Teachers (PAT), and Lamaze classes are programs that work with the target population where the material could be easily accessed and distributed. Offices such as pediatrician and obstetrics and gynecology

(OBGYN) were also a target location because they also service the target population where the material could be readily available and accessed.

The goal of this project was to develop a pamphlet, which could then be available for distribution. The distribution of the pamphlets did not go as planned, this was due to the deficiency of knowledge from the nurses, head nurses, and supervisors about hospital policies regarding Kangaroo Care as well as increasing awareness and implementing the practice of Kangaroo Care. This led to a halt in the pamphlets being distributed to hospitals state wide. Hospital staff could not direct me to someone who could aid in the disbursement of the pamphlets. Instead, five mothers and ten peers were asked to review the pamphlet and comment on how appropriate it was to the target populations of potential parents, parents to be, caregivers of infants, and programs and offices that provide service for mothers and babies. There is still hope to try to connect with the right contact to get this pamphlet available to the target population one way or another.

I originally intended to shadow my mentor during her work hours, but permission was not granted due to patient confidentiality. Instead, Mrs. Carter shared her personal experiences during our interviews and discussions, and this information was reviewed and used in the pamphlet development.

figure 3a

# Promoting Benefits of Skin-to-Skin Contact Between Mothers and Newborns



Pamphlet Developed and Adapted by:

Jennifer Kefauver

Tessa Carter

2017

The Baby-Friendly Hospital Initiative (BFHI) is established by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF), which are trying to implement worldwide by having birthing facilities convert to exclusive breastfeeding, optimal level of care for infant feeding and mother-baby bonding.

## O'ahu Birthing Facilities

Castle Medical Center (CMC) ☎(808) 263-6500

Kaiser Permanente Moanalua Medical Center  
☎(808) 432-0000

Kapi'olani Medical Center for Women and Children (KMCWC) ☎(808) 933-6000 |

Queen's Medical Center (QMC) ☎(808) 748-4080

Tripler Army Medical Center (TAMC)  
☎(808) 433-6661

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## What is Instant

### Skin-to-Skin Bonding?

Skin-to-skin contact means placing the dried, naked, unclothed newborn lying flat, downward on the mother's bare chest with warmed, light blankets covering the newborn's back.

- Skin-to-skin contact begins immediately after the birth of the baby for 60-90 minutes.
- There is a physiological need for both mothers and babies to be together during the first moments, hours, and days following birth. Maternal and infant health outcomes are significantly improved during these times spent together.
- Continuous, early skin-to-skin contact, which is usually with the mother, provides a habitat for optimal early adaption to extra-uterine life.
- If the mom is unable to perform skin-to-skin, the father or caregiver may perform skin-to-skin contact.
- This practice is often used for premature newborns but may be very beneficial for healthy term infants.
- Infants who need resuscitation after birth, instant skin-to-skin bonding may be delayed until the infant is stabilized and breathing room air.

Other names used for instant skin-to-skin bonding:

- Birth physiology
- Kangaroo care
- Mother-infant interaction
- Rooming-in
- Sensitive period

figure 3b

### Infants Benefits

Newborns receiving skin-to-skin contact enhances the basic biological needs, initiates neuroprotective mechanisms, and allows early neurobehavioral self-regulation of a newborn.

- Thermoregulation that allows infants body temperature to synchronize with mothers
- Improved cardio-respiratory stability along with oxygen saturation levels
- Blood glucose levels are stabilized
- Enhances brain development
- Permits colonization of the newborn to maternal flora, which aids protection against infections and helps promotion of breastfeeding
- Allows early opportunity for baby to crawl to the breast
- Rates of exclusive breastfeeding are increased
- Reduces crying from separation stress
- Allows infant-maternal bonding
- Displays more deep sleep and quiet alert states, which aids in infant weight gain

Long term benefits have shown children who have had instant maternal infant skin-to-skin bonding have better organized sleep, improved neuroendocrine response to stress, advanced autonomic nervous system functioning, and enhanced cognitive control.

### Mothers Benefits

- After birth, the first hour is guided by an increase in oxytocin, a maternal reproductive hormone
- During skin-to-skin an elevation of oxytocin is released, which enhances maternal/newborn attachment and decreases maternal/newborn stress
- Oxytocin increases uterine contractions which decreases postpartum bleeding and stimulates breastmilk production
- Beta-endorphins are released from the mother's brain during skin-to-skin, which allows an analgesic response and facilitates a tranquil bonding with her baby
- Increases nurturing and affectionate behaviors towards infant
- Successful and exclusive breastfeeding
- Maternal recognition of infant's sleep and feeding cycles

### Newborns' Nine Instinctive Behaviors During Skin-to-Skin Care After Birth

Name	Description
Birth cry	Occurs after birth as newborn's lungs expand
Relaxation	Exhibits relaxed hands without mouth movements
Awakening	Exhibits small movements of the head and shoulders
Activity	Exhibits mouthing, sucking, and rooting movements
Rest	Has periods of rest between any stage
Crawling	Approaches the breast with short periods of action, reaching the breast and nipple
Familiarization	Licks the nipple, touches and massages the breast
Suckling	Attaches and suckles
Sleep	Falls into restful sleep

Adapted from "Newborn Behavior: Evidence for Breast Milk, Skin-to-Skin, & Possible Model for Caring Early Self-Regulation," by A. Gilkerson, L. Udo, P. Schetter, M. Gilkerson, K. Udo, and E. Udo, 2014, *Annals of Behavioral Science*, 40, p. 2.

### Initiating Instant Skin-to-Skin

Initial steps to promoting instant skin-to-skin bonding would begin with a room warmed to a comfortable temperature for both mother and infant. Immediately after birth, baby should be dried with a soft material and placed directly on mother's chest for immediate skin-to-skin bonding. To allow for successful bonding and initiation of breastfeeding, all clinical examinations and interventions that may disrupt both mother and infant bonding should be delayed for the first hour.



## Discussion

Literature suggests that awareness of Kangaroo Care is low (International Childbirth Education Association (ICEA), 2015). Some of the barriers to skin-to-skin contact during the neonatal period are the lack of parental education on the benefits of skin-to-skin contact, the lack of staff education on the significance and techniques needed to implement this type of practice, and the inadequate policies and procedures to support skin-to-skin contact. Two other vital factors that play a role in tackling the obstacles to Kangaroo Care are cultural barriers such as having visitors come to visit after the birth of baby, which disrupts the intimate bonding during the most crucial hour, which is the first hour following birth.

Similarly, another article states that there is a lack of knowledge and underlying factors with mothers (March of Dimes, 2013). The preterm birth rate in Hawaii is 12.2%, the rate of women smoking is 15.5%, and the rate of uninsured women is 9.4% (March of Dimes, 2013). If these rates could be lowered by providing support and referrals to pregnant women, it would be a great stepping stone in the right direction. If these percentages were improved, it doesn't just contribute to improved infant health, but also healthcare and economic expenditures.

For new and expecting parents, an integral part of basic education is teaching them the best practices in labor and birth. Educating on skin-to-skin contact is effective in helping parents make informed decisions on beneficial implementation of practices on Kangaroo Care. Since educating helps to increase the awareness that the risks are minimal as opposed to the alternative of the standard open-crib care, crying from separation-stress will be decreased, and vital signs and sugar levels will stay stable.

### Conclusion / Recommendations

The health of mothers and their babies are imperative to creating a healthy world. Kangaroo Care has an outcome of positive effects. The key element to positive and effective Kangaroo Care is to never separate a newborn from their mother for creating that intimate bond while the infant is sleeping naked on the mother's chest. The benefits for a premature baby are even more crucial. Kangaroo Care helps to promote family health in time of great stress.

After much time has been put into reading and understanding the supporting evidence of the benefits and importance of Kangaroo Care, to furthering that knowledge from a health care provider's firsthand experience with Kangaroo Care, and then using all of that information to develop a pamphlet, I recognize the need for this topic to be more addressed and spoken about. Though the best time for mothers to implement Kangaroo Care is within the first hours/day of birth, there is a lack of knowledge, support, and manpower to help them start it. A suggestion could be that in addition to making this topic more aware to the staff of birthing facilities and pediatrics and OBGYN offices, it could be taught to nurses who do home visits. Though home-visit programs are minimal and not well practiced in the United States, having these nurses be knowledgeable and actually implement kangaroo care in their practice would not only spread the awareness of Kangaroo Care but also increase the need for home nurse visits. There has been research evidence that home nurse visits for new moms are beneficial. (Science Daily, 2016) In other countries, especially European countries, this type of program where nurses visit the home of new mothers is widespread. If there could be an increase in this type of program, it would help lessen visits to the emergency room, increase

breastfeeding rates, and assist mothers in dealing with stressors of being a new mom. Most importantly, there would be a nurse in the comfort of the mother and baby's home that can provide personal assistance, information, and knowledge on the practice of Kangaroo Care. There will be that dedicated time that the nurse is present for the sharing of benefits and implementation of skin-to-skin contact.

Even though the separation of mother and infant after birth is common and a standard practice in the Western culture, especially in the United States, there is evidence to show that this disruption of separation may have harmful effects throughout the infant's lifespan ((Moore, Anderson, Bergman, and Dowswell, 2012).

These factors and issues need to be considered and something needs to be done to tackle them. What mothers and babies need after birth are each other. We need to raise awareness on the benefits of Kangaroo Care. There needs to be more material that is readily available and accessible.

Informational, educational pamphlets could be disseminated with the help of programs such as Women Infant Children (WIC), Parents As Teachers (PAT), and Lamaze classes that work with the target population where the material could be easily accessed and distributed. Offices such as pediatrician and obstetrics and gynecology (OBGYN) were also a target location to disseminate material because they also service the target population where the material could be readily available and accessed.

Since Kangaroo Care is an intervention that is very easily applied, this practice needs to be applied to infants throughout the world. For new and expecting parents, an integral part of basic education is teaching them the best practices in labor and birth, with Kangaroo Care being a part of that teaching.

Another step that could help to raise awareness is by putting up posters that explain Kangaroo Care and the many benefits. Nurses could also sign up for workshops that instill the adequate knowledge and techniques to advocate and implement Kangaroo Care. There could also be a video that is mandated to be watched prior to the intake paperwork process to being admitted to the birthing facility.

I would recommend newly formed hospital policies that include facing cultural barriers, buying-in to this practice, and the steps to incorporate it. A proposal needs to be created that shows policy makers for the hospital the positive outcomes and cost effectiveness of incorporating Kangaroo Care into their practice. It is obvious that some might feel that it is too much of a deviation from what is already practiced and would be too cumbersome to accept, teach, and implement, however these thoughts could easily be argued by showing them the evidence obtained from the literature review. In addition, policies of other working hospitals that incorporate Kangaroo Care can be shared and then adapted to fit the hospitals preferences. From then one could start the interventions simply by distributing the pamphlet to the staff of hospitals. Once attention and interest is gained a workshop could be held to teach them how simple skin-to-skin practices are. Comfortability of the practice would eventually be obtained and ideally Kangaroo Care would become a well-known practice.

Because Kangaroo Care is an intervention that is very easily applied; this practice needs to be applied to infants throughout the world. Another plus about Kangaroo Care is that the cost of it is minimal to none and the effect of it is long-term and positive. The long-term ramification is so profound. The enhanced level of stimulation provided by this contact seems to positively influence the development of the brain and deepen the

relationship between mother and child. This early and continuous contact of KC provides an optimal habitat for adaption to the extra-uterine life. Although this practice was initially created and used on newborns, this practice is beneficial to infants who are full term as well.

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