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INSIGHTS FOR HEALTHCARE PROFESSIONALS

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Empowering Caesarean section mothers: Care during and after pregnancy

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Professor Priya is a maternal and foetal medicine sub-specialist and holds a PhD in Obstetrics and Gynaecology. She has a special interest in managing high-risk pregnancies, particularly in women with cardiac and hypertensive disorders during pregnancy.

The joys and challenges of welcoming a newborn

The birth of a baby is a joyful and life-changing experience, bringing immense happiness and a deep sense of fulfilment to new parents. However, it can also be a challenging time, especially for new mothers recovering from a Caesarean section delivery. Along with the excitement of welcoming a newborn, mothers often face physical pain, fatigue and emotional adjustments, all while adapting to their new role. Antenatal preparation can ease the recovery process, enabling mothers to focus on bonding with their baby and nurturing their own well-being.

Preparation during pregnancy

All babies should be breastfed, particularly those born by Caesarean section, because breast milk contains nutritional and bioactive compounds that help boost the baby's immunity. Hence, women planning a Caesarean delivery should take proactive steps during pregnancy to prepare for breastfeeding and optimising recovery from surgery. Prenatal breastfeeding education is essential to enhance confidence and increase breastfeeding initiation rates.[1]

Learning alternative breastfeeding positions, such as the 'football hold' or 'side-lying position', reduces pressure on the incision site, ensuring comfort.

For surgical recovery, antenatal exercises such as pelvic floor strengthening and light core exercises can improve physical recovery. Attending childbirth classes focused on Caesarean births can prepare mothers for what to expect. Discussing a post-operative plan with healthcare providers such as early ambulation, wound care, and avoiding heavy lifting can also smoothen recovery.

Breastfeeding positions for Caesarean sections

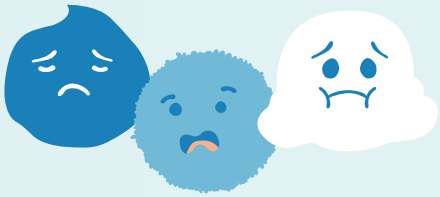
Biological Nurturing

Sidelying

Football hold

Postpartum 'blues' and depression

The emotional shifts after childbirth can be overwhelming, especially within the first few weeks. Many new mothers experience 'baby blues' which involve mood swings, irritability and sadness that usually resolve within 2 weeks. However, if feelings of sadness, fatigue or anxiety persist or worsen, this may be a sign of postpartum depression (PPD), a more serious condition. Recognising PPD is essential, as it can impact bonding and daily functioning. Support from loved ones, professional counselling and medication may be crucial to recovery. It is important to seek help early for someone experiencing the symptoms of PPD, since effective treatments are available and can make a considerable difference for both the mother and the baby.



Maintaining health between pregnancies

Optimising health between pregnancies is key, especially for women who have developed comorbidities such as hypertension or gestational diabetes during a previous pregnancy. Lifestyle modifications such as a balanced diet, regular exercise and stress management can significantly reduce risks in future pregnancies. Addressing these health aspects not only aids recovery but can prevent complications in subsequent pregnancies, leading to a safer, healthier journey for both mother and baby.[4]

Key measures for post-operative recovery

Optimal recovery from a Caesarean section birth involves key steps in wound care, breastfeeding, mobilisation and exercise, and postpartum contraception.

Wound care

- The incision site should be kept clean and dry to prevent infections
- The mother must follow the healthcare provider's guidance on cleaning and changing wound dressings
- Signs of infection such as redness, swelling or discharge must be monitored and the healthcare provider consulted immediately if any of these signs appear

Breastfeeding

- Skin-to-skin contact within the first 24 hours after birth helps with bonding and initiation of breastfeeding[2]
- A drip in the arm, pain or difficulty in mobilisation may make breastfeeding more difficult
- Support from a lactation consultant or midwife may be beneficial

Mobilisation and exercise

- While rest is necessary, light movement is equally important
- Beginning with short, gentle walks soon after surgery may improve blood flow, reduce the risk of clots and aid in digestion[3]
- Resuming exercise can also help with healing, although it should be gradual

Postpartum contraception

- It is essential to consider contraception soon after giving birth as fertility can return as early as 3 weeks postpartum, even before menstruation resumes
- Long-acting reversible contraceptives such as intrauterine devices or implants can be safe and effective choices and are suitable for breastfeeding mothers

The birth of a baby is a joyful experience but not without its challenges, particularly for mothers undergoing Caesarean section delivery.

Guidelines on facilitating physical and emotional recovery for mothers post Caesarean delivery aid in faster recovery and ensure good health for both mother and baby.

PPD, postpartum depression.

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Elective Caesarean section birth:
A double-edged sword

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Professor André is a paediatrician and a paediatric pulmonologist. He established the service for primary immunodeficiency diseases at the Steve Biko Academic Hospital and is the immediate past Chairman of the Allergy Society of South Africa (ALLSA) and an executive member of the South African Immunology Society (SAIS).

The rising rates of Caesarean section births worldwide

Caesarean section birth (CSB) rates are increasing rapidly worldwide. The International Federation of Gynaecology and Obstetrics recently expressed concern about a "global caesarean section epidemic."[1] CSB is often life-saving for mothers and babies in specific medical circumstances, but emerging evidence on the downstream health consequences (for both the woman and her future offspring) must prompt concern about elective CSB without medical indications.[1]

A Caesarean section is a major operation with added immediate risks when compared to vaginal delivery.[2] The impact of CSB on infants is unfortunately less frequently considered.

The impact of CSB on infant health must be considered

A baby requires three critical steps to transition successfully from placenta-dependent to placenta-independent survival and to ensure long-term health: the spontaneous onset of labour; the process of labour itself; and vaginal passage. The spontaneous onset of labour signals organ maturity while the physiologic processes of labour prepare the infant to self-regulate vital survival functions like circulatory homeostasis, oxygenation, glucose metabolism, temperature regulation and successful breastfeeding. Vaginal passage facilitates the seeding of a beneficial microbiome in the infant while the succession of the early microbiome is determined by early skin-skin care and exclusive breastfeeding.[3] We now know that the character of the early microbiome is a key determinant of lifelong health.

Spontaneous onset of labour

Signals organ maturity in the infant

Labour

Prepares the infant to self-regulate vital survival functions like circulatory homeostasis, oxygenation, glucose metabolism, temperature regulation and successful breastfeeding

Vaginal passage

Facilitates the seeding of a beneficial microbiome in the infant

The human microbiome significantly complements the human genome. The human genome provides approximately 25,000 active protein-coding genes. This is not enough for necessary body functions and longevity. The microbiome contributes additional genetic diversity and biochemical capabilities that far exceed human genomic capacity.[4] Butyrate serves as one of many examples. Butyrate is a short-chain fatty acid that is critical for immune tolerance, colonic epithelial integrity, insulin sensitivity and neuroprotection. It is produced exclusively by gut microbes. Without such microbial functions, essential processes in immune defence, immune tolerance, metabolic regulation, neurologic development and others falter.

The initial microbiome of a CSB infant is always different to that of a vaginally delivered infant. Elective CSB often leads to neonatal intensive care admission,[5] early antibiotic use and failed breastfeeding.[6] These events collectively contribute to early dysbiosis. Dysbiosis is now definitely associated with a wide range of downstream health conditions, including immune deficit, allergies, autoimmune diseases, the metabolic syndrome, neuropsychiatric disorders and others. These long-term risks (largely non-communicable diseases) underscore the unseen costs of unnecessary CSB.

CSB provides life-saving benefits in specific cases, but it also carries risks that extend beyond the immediate postpartum period. For both mothers and infants, these medium- and long-term consequences warrant a more cautious approach. Informed decision-making, prioritising vaginal birth and strategies to preserve the seeding and succession of a diverse andhealthy microbiome should prevail.

A Caesarean section birth often sets off a chain reaction, leading to a higher likelihood of neonatal intensive care admission, antibiotic use, challenges with exclusive breastfeeding, and ultimately unfavourable microbiome development.

CSB, Caesarean section birth.

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Breastfeeding support post Caesarean birth

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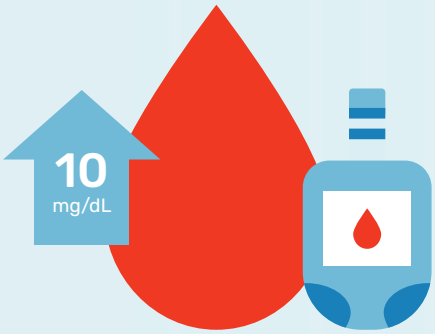
Lynne Bluff has a BSc in Nursing, and is a registered nurse, midwife and an internationally certified childbirth educator. Her philosophy and passion are evidence-based birth, informed choices, skin-to-skin contact and breastfeeding for all mothers and infants.

Skin-to-skin contact is paramount to breastfeeding success

The negative impact of Caesarean delivery on breastfeeding success has been consistently demonstrated by research.[1] Caesarean deliveries are characterised by lower odds of breastfeeding initiation and earlier discontinuation, compared with vaginal births.[1]

Skin-to-skin care is an effective strategy for improving breastfeeding outcomes. Promotion and initiation of breastfeeding can be achieved during skin-to-skin care, along with the extension of the duration and promotion of exclusivity of breastfeeding.[2] Infants receiving skin-to-skin contact were more likely to be breastfed for 1–4 months post birth, tended to be breastfed for longer, had a higher likelihood of being exclusively breastfed and were more likely to be successfully breastfed during their first feed.[3]

Infants receiving skin-to-skin contact had higher blood sugar levels by more than 10 mg/dL.[3]



The difference in blood sugar levels is significant since infants with hypoglycaemia are more likely to be given formula and less likely to be exclusively breastfed, as reported in retrospective observational studies conducted in 10,533 and 10,965 infants, respectively.[4]

Better breastfeeding outcomes with skin-to-skin versus standard care[3]

24% higher

likelihood of breastfeeding 1–4 months post birth

50% higher

likelihood to exclusively breastfeed from 6 weeks to 6 months post birth

32% higher

likelihood of successful breastfeeding at first feed

Skin-to-skin care can greatly improve the birth experience which can have long lasting implications for the psychological health of the mother.[5]

Additionally, separation of the mother and the infant immediately after Caesarean birth is a considerable source of stress.[6] In a systematic review of articles focusing on the impact of intraoperative skin-to-skin contact on the mother and the infant reported decreased levels of biomarkers associated with physiologic stress response and increased neuroendocrine products which are associated with stress buffering.[6]

Breastfeeding support post Caesarean birth

The support needed with breastfeeding post Caesarean birth

It is important to educate healthcare professionals on the benefits of skin-to-skin in theatre immediately post Caesarean, including through formal and informal education, expert mentoring during clinical care, video recording of clinical care, followed by discussing the recordings.[7] For example, video-ethnography based education of Caesarean skin-to-skin in theatre was shown to increase the rate of immediate skin-to-skin care to 83%.[7]

Increase in skin-to-skin care in theatre requires a mindset change away from the attitude that "it has always been done this way". It is imperative to convince the diverse healthcare professionals involved, such as the anaesthetists, nurses, doulas, lactation consultants, surgical staff and marketing personnel at the hospital, so that the entire team feels ownership of the changes that need to be introduced.

Recommendations on breastfeeding post Caesarean birth

Gentle Caesareans are the most appropriate ones to start increasing breastfeeding post birth. Mothers can have their infant skin-to-skin as soon as possible, following which the infant can be allowed to be left on its own and go through the 9 instinctive stages that an infant goes through when they do NOT need to be helped to breastfeed.

Babies do not need help to breastfeed if they are placed skin-to-skin with the mother immediately, and are allowed to go through the 9 instinctive stages.

Stage 1 - The birth cry
Intense crying just after birth.

Stage 2 - Relaxation
Newborn resting/recovering. No activity of mouth, head, arms, legs or body.

Stage 3 - Awakening
Newborn begins to show signs of activity. Small thrusts of head: up, down, from side-to-side. Small movements of limbs and shoulders.

Stage 4 - Activity
Newborn moves limbs and head, is more determined in movements. Rooting activity, "pushing" with limbs without shifting body.

Stage 5 - Rest
Newborn rests, with some activity, such as mouth activity, sucks on hand.

Stage 6 - Crawling
Pushing, sliding and leaping movements which results in baby reaching the mother's breasts.

Stage 7 - Familiarisation
Newborn reaches the nipple area, licking and massaging the breast and nipple.

Stage 8 - Suckling
Newborn latches onto the breasts, rearranging their position until they have a good latch.

Stage 9 - Sleep
Newborn falls into a lovely sleep.

It is so important for healthcare professionals to appreciate the need of infants to move in order to feed. It is important for infants to use their natural reflexes which are used to be born and to feed. Moving the infant to the breast may block these reflexes. Allowing the infant to move to the breast on their own allows the appropriate reflexes to act and for the infant to latch on instinctively and correctly. This phenomenon is called biological nurturing or reflexive feeding. Biological nurturing decreases the risk of incorrect latching which causes nipple pain, allowing mothers to experience longer and more successful breastfeeding. Therefore, mothers and infants should not be separated in order to facilitate these natural processes.

The natural ability of infants to breastfeed should be facilitated for a better breastfeeding experience. Skin-to-skin contact initiated immediately after Caesarean birth has been demonstrated to be effective in improving breastfeeding outcomes.

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Enhancing the microbiome in the infant born by Caesarean section

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Professor Claudia Gray is an experienced paediatrician with postgraduate qualifications in allergology, nutrition and pharmacology. This unique blend of training has piqued her interest in immune system development and microbial optimisation. She has published extensively in local and international journals.

Denying babies the microbial 'rite of passage'

The importance of a healthy and varied microbiome in the hotpots of the gut, skin and respiratory tract have recently come to light. The microbiome is necessary to encode and produce many functional proteins that are vital to good health and sophisticated immune functioning, proteins which the human host cannot manufacture.[1] A defective microbiome has been associated with myriad diseases, ranging from allergic manifestations to autoimmune disorders and neurological conditions. The newborn baby has a relatively blank microbial canvas which needs to be populated rapidly and correctly for optimum immune development.

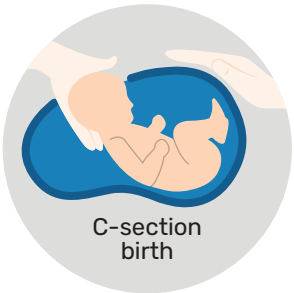
Birth via the vaginal canal rapidly imparts a diverse and generally healthy microbiome to the descending baby. Caesarean section (C-section) can be life-saving for the mother and/or baby but can also lead to short- and long-term consequences from both maternal and infantile perspectives.[2] Babies born by C-section are denied the 'microbial rite of the vaginal passage' and adopt a microbial pattern resembling that of the mother's skin, rather than that of the mother's gut/vaginal canal.[3] Levels of healthy bacteria such as bifidobacteria can take months to years to reach the levels of that in vaginally delivered babies. Helping the baby to rapidly populate a healthy microbial load entails plenty of close contact with parents and healthy siblings, exposure to pets and a healthy outdoor environment, and most importantly, appropriate nutrition.

Microbiota similar to vaginal microbiota

Diversity

Bifidobacteria dominate

Lower risk of immune diseases



Microbiota similar to maternal skin

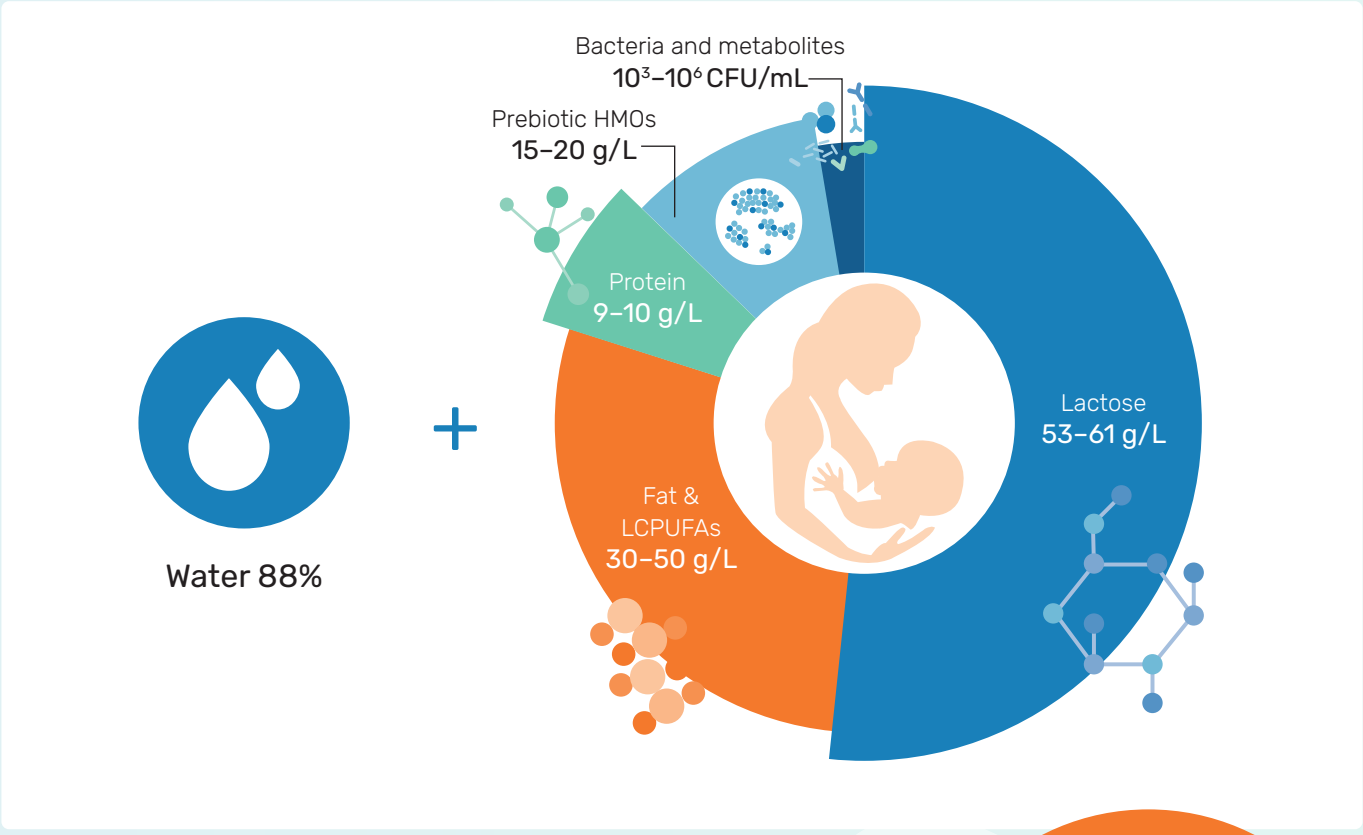
Delayed colonisation of beneficial bifidobacteria (up to 3 years)

Higher risk of immune diseases

The microbial gold of breast milk

In addition to carefully proportioned carbohydrates, fats and proteins, breast milk contains a significant level of prebiotics and probiotics which act synergistically to optimise the gut microbiome of the infant. The prebiotics 'human milk oligosaccharides' (HMOs) are a diverse group of complex indigestible sugars, which escape digestion in the small intestine and progress to the colon, where they act as a food substrate for the gut bacteria. The HMOs strengthen the gut barrier, prevent the adhesion of pathogens and provide fuel for propagation of diverse and healthy bacteria in the baby's gut.[4]

In addition, breast milk is rich in probiotics (beneficial bacteria) and contains up to a million bacteria/bacterial fragments per mL, with a dominance of healthy bifidobacteria. Bifidobacteria form a major part of the infant microbiome, and influence immune maturation, maintain gut integrity and inhibit pathogens. Together, the prebiotics and probiotics are termed 'synbiotics' implying their 'synergistic' effect in maintaining a healthy gut microbiome. This microbial 'soup' is a miraculous antidote to the microbial deficiency due to C-section delivery.



Optimising nutrition post C-section delivery

Breastfeeding should be encouraged at all times, except when medically contraindicated.[5] Whilst C-section delivery has been shown to deny the infant an initial microbial advantage, it has also been shown to significantly impact the rates of breastfeeding, the very intervention which can speed up microbial catch-up. If breast feeding is contraindicated, insufficient or delayed, specific infant formula milks enriched with synbiotics, which mirror the prebiotic and probiotic composition of breast milk, should be on offer.

Breastfeeding may be more challenging post C-Section. Hence anticipatory guidance around breastfeeding and additional support should be provided. In those unable to breastfeed, specialised formula milks with 'breast milk-like' synbiotics should ideally be offered.

C-section, Caesarean section; CFU, colony-forming unit; HMO, human milk oligosaccharide; LCPUFA, long-chain polyunsaturated fatty acid.

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