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Intervention during the Perinatal Period: Synthesis of the Clinical Practice Guidelines from the French National College of Midwives

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These clinical practice guidelines from the French National College of Midwives (CNSF) are intended to define the messages and the preventive interventions to be provided to women and co-parents by the different professionals providing care to women or their children during the perinatal period. These guidelines are divided into 10 sections, corresponding to 4 themes: 1/ the adaptation of maternal behaviors (physical activity, psychoactive agents); 2/ dietary behaviors; 3/ household exposure to toxic substances (household uses, cosmetics); 4/ promotion of child health (breastfeeding, attachment and bonding, screen use, sudden unexplained infant death, and shaken baby syndrome). We suggest a ranking to prioritize the different preventive messages for each period, to take into account professionals' time constraints.

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Précis: The key nature of the perinatal period requires that professionals use it to provide validated, prioritized, and adapted prevention interventions to women and their companions.

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Quick Points

- ◆ The importance of the perinatal period for health in later life has been regularly underlined for more than three decades.
- ◆ Current health indicators suggest that promotion of both women's and children's health is less than optimally effective.
- ◆ The CNSF's guidelines for interventions include more than 170 specific recommendations to help professionals promote the health of women and children.
- ◆ To be effective, prevention messages must be harmonized between the professionals working with women, and all professionals must be informed
- ◆ Prevention messages must be adapted to the period (preconception, pregnancy, postpartum) and the needs of the women/couples.

INTRODUCTION

The importance of the perinatal period for the health of families in later life has been regularly underlined for more than three decades. In 1986, the English physician David J Barker and his team published their work suggesting an association between poor perinatal nutrition and the risk of ischemic heart disease in adult life.¹ What was initially named *Barker's hypothesis* and then the DOHaD (developmental origins of health and disease) hypothesis was later confirmed by different scientific findings; the best known of these are certainly those based on the survivors of the major famine in the Netherlands during the last winter of World War II. Women pregnant during this famine gave birth to children at higher risk of metabolic disorders, cardiovascular diseases, chronic hypertension, and lung and kidney disorders.²

Beyond the question of nutrition, the entire set of DOHaD hypotheses concerns the environment in general, including simultaneously the idea of exposures to chemical, biological, and physical agents, but also to behaviors, socioeconomic situations, and emotional environments.³ This perinatal period was sometime extended to the first 1000 days of life (from conception through the end of the second year after birth) to include the effects on organs that remain under development after birth, such as the brain.⁴ These themes are also linked to the concept of *salutogenesis*, which aims to form a continuum moving towards health and well-being. Several mechanisms have been advanced to explain how early life exposure can induce diseases in adults. Historically, the first to be considered were the direct impacts of toxic substances (teratogenic compounds) that impair the formation of developing organs. The nature and extent of the injuries are directly linked to the developmental stage of the embryo or fetus at the moment of exposure (see Figure 1), ranging from malformation, even miscarriage for the earliest exposures, to more subtle impairments of organ function for the later ones.⁵ More recently, researchers have underlined the involvement of epigenetic mechanisms in this context.² If epigenetics enables the organism to adapt to its environment by modulating gene expression, it should also allow the environment to modulate this same expression. In this way, the child's relational environment may also influence his or her emotional health, the regulation of stress response systems, the immune system, and the development of adaptive behaviors. Maternal, neonatal, and child health also play a major role in the subsequent on-

set of noncommunicable diseases (NCD), such as obesity, diabetes, and cardiovascular diseases.⁶

In 2019, 753,000 babies were born in France.⁷ On average, women in France receive 10 prenatal consultations (excluding emergency visits); each is an opportunity to ensure that the pregnancy is proceeding normally and to provide the woman with information and messages about prevention of disease and other harm to children.⁸ Nonetheless, the last French national perinatal survey, conducted in 2016, pointed out the high or rising prevalence of several perinatal risk factors, such as advanced maternal age and use of psychoactive substances. A 2015 survey of household exposures of pregnant women in France found that women used cosmetics (including personal care products) 18 times a day,⁹ although these products can cause exposure to multiple agents possibly harmful for fertility or child development.¹⁰ Béranger et al. (2018) reported frequent exposure to numerous pesticides (25 to 65 pesticides or metabolites detected in each hair sample) in a group of 311 women who had just given birth.¹¹ Several compounds used in homes and possibly toxic for development were included among those most often found in this study. Despite these findings, a recent French study among professionals of the perinatal period in the Auvergne region suggests that most of them did not raise the question of using household use of consumer products during pregnancy with the pregnant women they cared for.¹² Promotion of the infant's health also seems less than effective: 74% of women had chosen to breastfeed at the maternity ward, but only 39% were still breastfeeding 3 months after birth.¹³ Nonetheless, its benefits for the child's health are now well established and WHO in Europe recommends exclusive breastfeeding until 6 months of age, and at least for the first 4 months of life.¹⁴

Finally, there is a real need to develop a written information base of prevention activities to provide to women,¹⁵ from the preconception through the postpartum period, to guide women better in their daily life habits and also provide professionals with content for their interventions. The need to train professionals to support parents is clearly identified in the fourth national environmental health plan (2020-2024) ("My environment, my health"), especially in theme 1 (action 4: "Deepen professionals' knowledge of the associations between the environment and health;" and action 5 "Inform oneself about prevention recommendations both before and after pregnancy").¹⁶ Reports show that the earlier

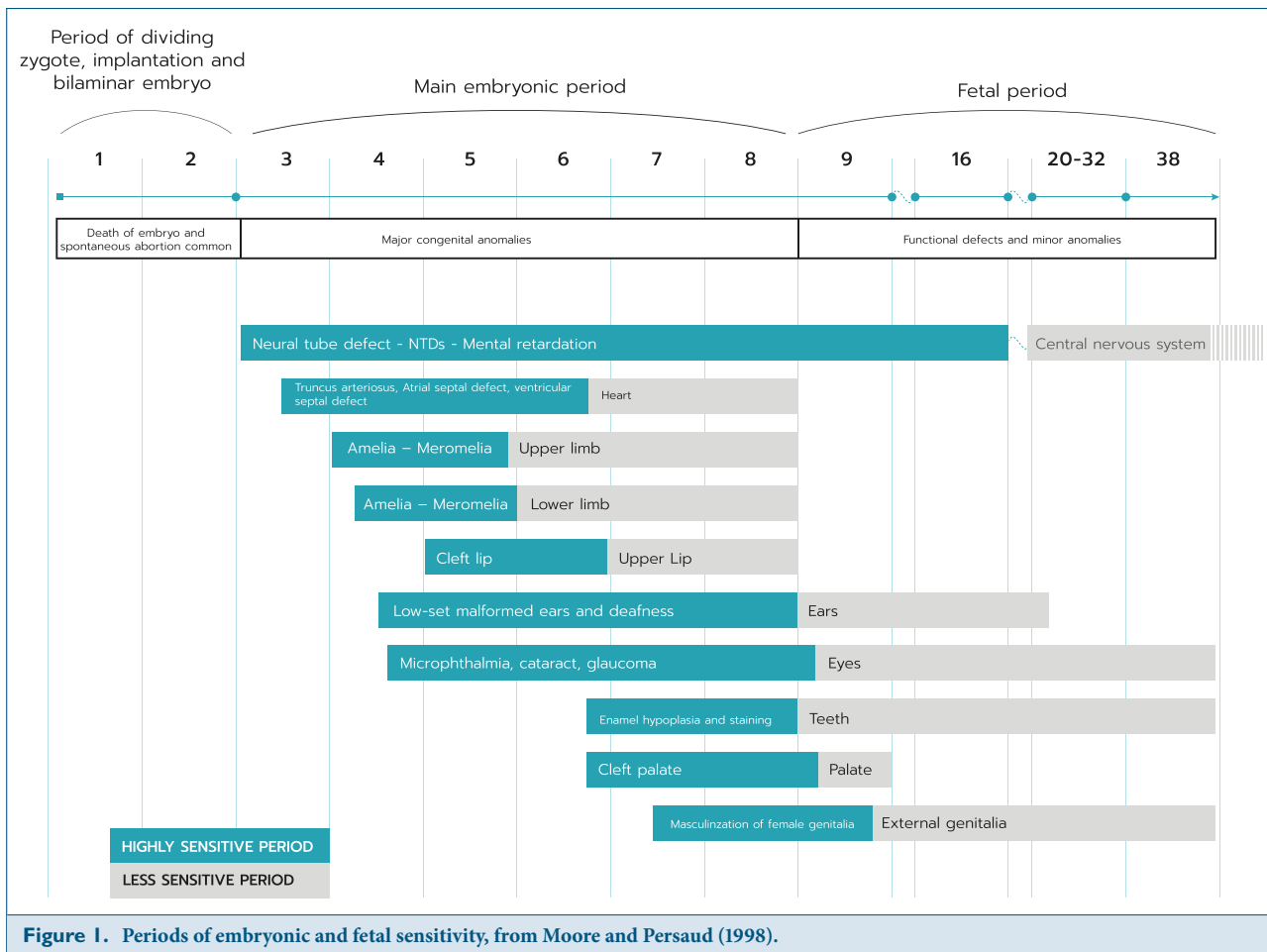


Figure 1. Periods of embryonic and fetal sensitivity, from Moore and Persaud (1998).

NCD prevention takes place, the more the risk of these diseases during life appears to fall.⁶ The Center on the Developing Child at Harvard University notes that the child's good health from conception, and more broadly, that of the mother-to-be before pregnancy, are the basis for the development of a solid cerebral architecture and the acquisition of a broad range of skills and learning abilities.¹⁷ Four complementary dimensions have been highlighted for improving children's physical and mental well-being: (1) the biology of health; (2) the foundation of health; (3) the ability of care providers and communities to promote health and disease prevention; and (4) policies and programs that can influence health results (Figure 2). The recent French report by the Ministerial Committee on "The First 1000 Days" also proposes an approach focused on the needs not only of children but of their families and more particularly their parents, because some families require greater social support to benefit from this window of opportunity for health.¹⁸ Nonetheless, the time available for consultations and care is often very constrained, both in private practice and in hospital settings, and there are multiple prevention messages to be transmitted. Accordingly, the need to deliver these messages must take into account the feasibility of this delivery for professionals.^{19,20}

The objective of these clinical practice guidelines was to define the priority and secondary messages and interventions to be provided to women, as well as to fathers or co-parents,

by the different professionals of the perinatal period. We propose here a ranking of these different prevention messages to prioritize them in view of the time constraints affecting professionals.

METHODS

These clinical practice guidelines were developed according to the method recommended by the French national authority for health (*Haute autorité de Santé*, HAS).² Two members (CB and RB) of the organizing committee were designated by the French National College of Midwives, the sponsor of these guidelines, to develop the specific questions and set up a multidisciplinary working group to answer them.

Four themes were defined, including overall 10 chapters:

Theme 1: Adaptation of Maternal Behavior Around Pregnancy

- Chapter 1, Part 1: *Physical Activity during the Perinatal Period*²¹
- Chapter 1, Part 2: *Beneficial Effects of Maternal Physical Activity during Pregnancy on Fetal, Newborn, and Child Health*²²
- Chapter n°2: *Consumption of Psychoactive Substances during the Perinatal Period*²³

Theme 2: Dietary Behaviors of Women of Childbearing Age, Especially Pregnant and Breastfeeding Women

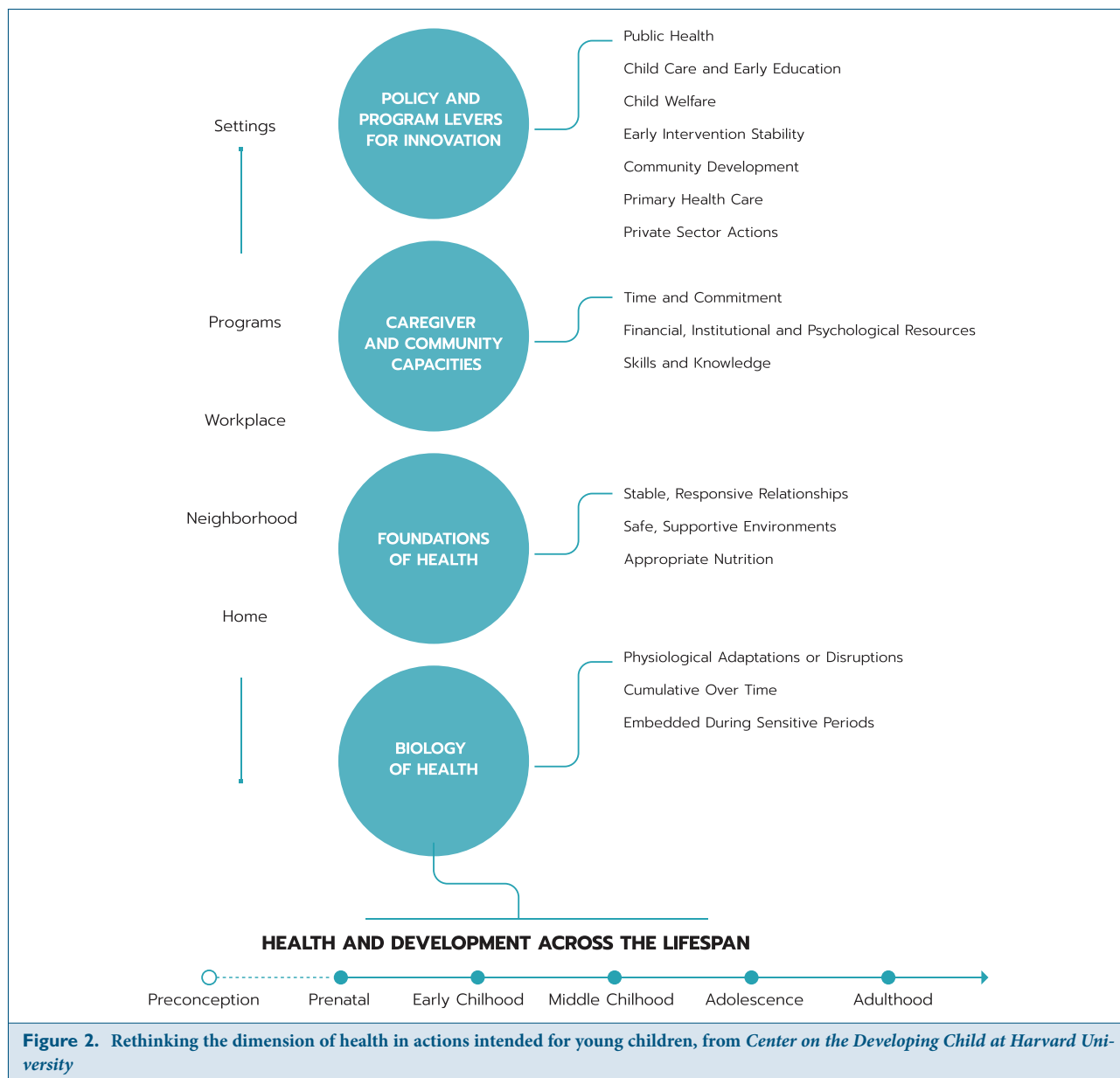


Figure 2. Rethinking the dimension of health in actions intended for young children, from Center on the Developing Child at Harvard University

- Chapter n°3: Weight Changes, Nutritional Intake, Food Contaminants, and Supplements in Women of Childbearing Age, including Pregnant Women²⁴

Theme 3: Household Exposure to Substances Toxic for Pregnancy and Development

- Chapter n°4: Domestic Exposure to Chemicals: Household Products, Building Materials, Decoration, and Pesticides²⁵
- Chapter n°5: Use of Cosmetic Products in Pregnant and Breastfeeding Women and Young Children²⁶

Theme 4: Promotion of Child Health

- Chapter n°6: Initiating and Supporting Breastfeeding²⁷
- Chapter n°7: Newborns' Bonding and Attachment, their Rhythms and Needs, Supporting Parents Appropriately²⁸
- Chapter n°8: Young Children and Screens²⁹

- Chapter n°9: Protecting Infants from Sudden Unexpected Infant Death³⁰
- Chapter n°10: Shaken Baby Syndrome (SBS) or Pediatric Abusive Head Trauma from Shaking³¹

The experts in the working group included researchers and health care professionals from various professions that care for women and/or children during the perinatal period (midwives, general practitioners, pediatricians, and child psychiatrists), as well as representatives of various partner professional societies, health agencies, and associations (*Association Française de Pédiatrie Ambulatoire* [French society of outpatient pediatrics], *the Collège de Médecine Générale* [the college of general medicine], as well as an association of patients and users: the *Collectif interassociatif autour de la naissance* [CIANE, the interassociation collective around birth]). The experts responded to the questions based on an analysis of the existing literature, relying (in descending order of priority) on

existing international or national clinical practice guidelines, meta-analyses, literature reviews, and the available scientific articles. The studies were classified according to their level of scientific evidence, in accordance with the classification developed by the HAS.³² Nonetheless, because this classification is based solely on the study design, some levels of evidence (LE) may have been reduced to take possible methodological limitations or contextual elements into account. A grade was attributed to each sentence of the recommendation, based on its LE. In the absence of relevant scientific literature, an expert consensus was formulated. The levels of evidence, the grades, and the formulation of the guidelines were discussed within the working group until a consensus was reached.

In the framework of prevention, the scientific literature is relatively rich in actions and interventions that can be standardized, such as physical activity, dietary interventions, or measures for preventing sudden unexpected infant death (SUID). For prevention messages associated with behaviors, as for the questions related to chemical exposures (household use and cosmetics) and to relationships (attachment and newborn rhythms), the data about interventions are much more limited. The literature principally reports information about exposures and their associated risks, but very few studies make it possible to assess the real effectiveness of messages delivered by professionals about exposures, or even about the risk levels of families. Moreover, for some emerging questions, whether related to research (household chemical use and cosmetics) or to knowledge of the health impact (attachment and the rhythms of the newborn), a foundation of theoretical knowledge is necessary to support the health care professionals likely to face these issues. Finally, the discussions between experts made clear the need to take a position about how to deliver the information, in particular, about communication strategies. For these different reasons, the working group chose to rely on “expert consensus” for some points, including on subjects for which no literature was available, given the multitude of sometimes contradictory messages that are currently conveyed to families.

The texts (1 or 2 by section) were transmitted to a reading group made up of 85 volunteer members, experts on the topic or clinicians working in the hospital, private, or governmental sectors. This group was responsible for giving a written opinion on the substance and the form of the initial version of the guidelines, in particular, on their applicability, acceptability, and readability. Each comment by the reading group was considered by the working group as the texts were finalized.

Each text is the object of a separate article, published independently. This synthesis was drafted for the purpose of summarizing the principal guidelines in the 10 separate chapters and to propose a ranking of the prevention messages according to the different periods, from preconception to the postpartum period. The experts ranked the messages proposed in 3 stages: a first online vote by the working group for each period identified (preconception, first trimester of pregnancy, second and third trimesters (combined), and the postpartum period), votes and comments by the reading group, and a validation of suggested changes by the working group (online vote). These ranking take into account the current context and the potential public health benefits associated with each recommendation.

PRINCIPAL GUIDELINES DURING THE PERINATAL PERIOD

This section collects the principal guidelines during the perinatal period. The complete list of guidelines and their rationales are presented in the individual texts.

Theme 1 - Adaptation of Maternal Behaviors around Pregnancy

Physical Activity (1)

In the Preconception Period

It is recommended that women be offered dietary and lifestyle measures including advice about nutrition and a satisfactory physical activity level before any pregnancy, especially women who are overweight, obese, or have type 2 diabetes (**grade A**). It is recommended to suggest to women that they practice a physical activity of moderate to high intensity at least 5 days a week, while avoiding 2 consecutive rest days (**grade A**). Daily physical activity of 30 minutes to an hour a day can be recommended (**grade B**). Sedentary behavior should be limited to a maximum, if possible, of ≤ 7 hours a day (**expert consensus**). To curb the harmful effect of a sedentary lifestyle, it is recommended to stand up and move for at least one minute every 30 minutes (**expert consensus**).

During Pregnancy

It is recommended that pregnant women: start or continue moderate-intensity physical activity ≥ 150 minutes a week with at least 3 sessions of a greater duration than 30 minutes (**grade A**); start or continue strength-conditioning exercises involving the large muscle groups (once or twice a week) (**grade A**); and limit the time spent being sedentary (≤ 7 h/day) (**expert consensus**).

In the Postpartum Period

In the absence of medical contraindications, it is recommended that physical activity continue (**grade A**) (at least 30 min/day [**expert consensus**]) postpartum, while simultaneously limiting sedentary time (≤ 7 h/d) (**expert consensus**), as during pregnancy. The same guidelines apply to nursing mothers (**grade A**).

Consumption of Psychoactive Substances during the Perinatal Period (2)

To identify possible psychoactive substance (PS) use during the follow-up, it is recommended to ask women and their partner or co-parent about their PS use at each consultation (**expert consensus**).

In the Preconception Period

In the event of PS use by a woman of childbearing age, provide information to her about the impact of this use on pregnancy and the child, and advise her to stop PS use. If necessary, offer to refer her to a specialist. If she does not plan to become pregnant, suggest effective contraception (**expert consensus**).

During Pregnancy

It is recommended to assess the pregnant woman's PS consumption before advising abstinence (**expert consensus**). It is appropriate to ask pregnant women about their use, including during the period around conception (**expert consensus**). If the situation is simple and the risk low or slight (see below),

the professional can manage the situation alone. In all other cases, coordinated networking is recommended (**expert consensus**). If PS use constitutes a risk for the pregnancy (slight to high level of risk), seek the advice of an obstetrician-gynecologist to adapt the pregnancy monitoring methods (**expert consensus**). If PS use constitutes a risk for the baby (moderate or high level), seek the advice of a pediatrician regarding care of the child at birth and to schedule follow-up (**expert consensus**). If PS use is problematic for the health of the woman or her unborn child, offer a referral to an addiction care professional (**expert consensus**).

This article defines both the simple and complex situations.²³ The different levels of risk correspond to different products and quantities of consumption:

Low risk

- No psychoactive substance use other than alcohol or quit > 1 year before pregnancy
- Alcohol consumption \leq WHO* threshold, quit before pregnancy, or during the first 3 weeks of pregnancy

Slight risk

- Stopped using cannabis on discovery of pregnancy
- History of cocaine, amphetamine, or opiate use, quit > 1 year ago
- Alcohol consumption above WHO* threshold, quit before the third week of pregnancy

Moderate risk

- Alcohol consumption below the WHO* threshold, continuing after the third week of pregnancy
- Cannabis: < 1 joint per day or < 4 joints on 1 occasion, continuing after the third week of pregnancy
- Cocaine, amphetamine, or opiate use in the year prior to pregnancy and one single type of substance used other than tobacco

High risk

- Consumption of large amounts of alcohol (> 30–40 g per occasion or > 70 g of alcohol per week) during pregnancy; 1 standard glass of alcohol corresponds to 10 g of alcohol
- History of children with fetal alcohol spectrum disorders (FASD)
- Moderate-risk consumption, but in association with psychiatric disorders or physical/sexual violence during this pregnancy
- Cannabis: \geq 1 joint per day or > 7 joints per week and/or > 4 joints per occasion, continued after discovery of pregnancy
- Heroin, cocaine: any consumption during pregnancy
- Multiple substance use (regardless of amounts)

At Delivery

Local and regional anesthesia is possible regardless of the substance used, as long as there is no medical contraindication (**expert consensus**). The prescription of analgesics must take history of or current opioid dependence into account (**expert consensus**). As a reminder, nalbuphine (NUBAIN®) is contraindicated in patients taking methadone or buprenorphine.

In the Postpartum Period

If opioid replacement therapy, alcohol, cocaine, or amphetamines are used near the time of birth:

- It is advisable to monitor the baby for floppy infant syndrome and/or withdrawal (**expert consensus**).
- Prioritize parent-child closeness and nondrug methods: reduction of stimuli, holding, skin-to-skin contact, swaddle bathing, swaddling, etc. (**expert consensus**).
- In the case of PS consumption by breastfeeding mothers
- Alcohol: Advise against breastfeeding in the event of ongoing regular consumption. In the event of occasional consumption of an alcoholic beverage, it is advisable to wait at least 2 hours before breastfeeding (**expert consensus**).
- Cannabis: Advise against breastfeeding in the event of ongoing use (**expert consensus**).
- Heroin, cocaine, and amphetamines: Breastfeeding is contraindicated (**expert consensus**).
- Methadone or buprenorphine: Recommend breastfeeding (**expert consensus**).

Theme 2 - Dietary Behaviors of Women of Childbearing age, Especially Pregnant and Breastfeeding Women

Weight Changes, Nutritional Intake, Food Contaminants, and Supplements in Women of Childbearing age, including Pregnant Women (3)

Concerning Weight Changes

Address the notion of weight changes and the value of improving weight status for pregnancy and the child during the preconception period (**grade B**). Discuss the value of a varied and balanced diet with all women, and especially with women planning a pregnancy (**grade B**). It is also important to examine the father's (**grade B**) or co-parent's (**expert consensus**) weight status and diet to consider the family's food practices. Weight loss in the preconception period should be encouraged for women with a BMI > 25, and more strongly for those with higher BMI levels (**grade B**). It is nonetheless necessary to remain vigilant concerning women who follow restrictive diets or had excessive weight loss (**grade B**).

Intentional weight loss during pregnancy, however, is not recommended (**grade B**). At the beginning of pregnancy, it is recommended to define an optimal gestational weight gain based on the initial BMI and follow its course through the pregnancy (**grade A**). Identify inappropriate food consumption, including beverages (**expert consensus**). Diet guidelines are the same as when not pregnant (**expert consensus**).

Concerning nutrition during pregnancy

- Fruit and vegetables: Current average consumption of the "fruit and vegetable" food group should be encouraged, especially from the subgroups "fresh fruit" and "fresh vegetables" (**expert consensus**).
- Fish and shellfish: Current average consumption of oily fish should be increased. Eat two portions of fish a week, including one with high omega-3 content, varying the types of fish and the place of origin, and giving preference to fish at or near the beginning of the food chain (**expert consensus**).
- Starches and whole foods: consumption of refined starch should be reduced. Whole-food starches should be eaten daily (**expert consensus**).

- Legumes (pulses): The current average consumption of legumes should be increased considerably. They should be eaten several times a week. Prefer legumes high in vitamin B9 (especially lentils, split peas, and fava beans). Limit soy-based foods to no more than once a day because of their high phytoestrogen content (**expert consensus**).
- Nuts: Eat a small handful of unsalted nuts a day (hazelnuts, walnuts, pistachios, and almonds in particular) (**expert consensus**).
- To prevent the risk of nutrient deficiency, women on a restrictive/weight-loss diet should be closely monitored and ideally referred to a dietician or nutrition specialist, as part of a holistic approach (**expert consensus**).

Concerning Vitamins, Minerals, and Supplementation during Pregnancy

- Folic acid, or vitamin B9, must be routinely prescribed before conception, ideally as soon as pregnancy is planned and through 12 weeks of gestation, at 0.4 mg a day for the general population and 5 mg a day for women at risk of neural tube defects (antiepileptic drugs, history of neural tube defects) (**grade A**).
- Routine iron supplements are not recommended, but screening for anemia should be done universally in the sixth month of pregnancy, and in the first trimester for women with risk factors (**expert consensus**).
- Vitamin D should not be routinely prescribed for pregnant women. It must however be prescribed for women at risk of vitamin D deficiency: women due to give birth between March and June (winter pregnancy), women who wear clothes that cover the whole body, have little exposure to sunlight, or eat a diet low in vitamin D (**grade B**).
- Prefer iodized salt during pregnancy. If the salt is not iodized (cafeteria meals, for example) find other sources of iodine (**expert consensus**).
- While breastfeeding, foods rich in vitamins A and C are recommended (**expert consensus**).

To Prevent Toxic Contamination of Food, It Is Recommended To

- Encourage consumption of unprocessed fresh or frozen produce (**expert consensus**).
- Avoid heating food in plastic containers that might release pollutants that could contaminate the food (**expert consensus**).
- Limit the use of aluminum items (packaging, food containers, kitchen utensils, etc.) for storing or cooking food (aluminum is released on contact with acids). Use glass container for storing food in the refrigerator or in a cupboard (**expert consensus**).
- Use containers made of cardboard or glass (**expert consensus**).

Theme 3 - Household Exposure to Substances Toxic for Pregnancy and Development

Domestic Exposures to Chemical Substances: Household Products, Building Materials, Decoration, and Pesticides (4)

To Reduce Existing Contamination in the Home

Air the home regularly (**grade C**) for a minimum of 10 minutes twice a day per room (**expert consensus**). Air when do-

ing housework, do-it-yourself work, pest treatment, cooking food, and using room fragrances (**expert consensus**). Verify the ventilation systems in the home (**expert consensus**): clean the ventilation grills regularly, do not block the ventilation grills, and have the controlled mechanical ventilation system maintained every 3 years by a qualified professional. It is recommended to dust the home (**grade C**): clean with a clean microfiber cloth or a vacuum cleaner (**expert consensus**). If the home is old and may have lead, a high efficiency filter on the vacuum cleaner is recommended (HEPA filter). Wash hands before each meal and after every contaminating procedure (smoking, pest treatment, cleaning, renovation work, etc.) with soap and water even if gloves were worn.

Reduce Emissions Inside the Home

- Create a no-smoking environment at home: do not smoke at home – promote smoking cessation for all persons living there (**expert consensus**).
- Prevent carbon monoxide poisoning: each year (or twice a year for solid fuel), have the combustion devices verified and the flues mechanically swept by a qualified professional; never use mobile space heaters continuously; never use power generators, barbecues, or braziers indoors, including in the garage or basement (**expert consensus**).
- For cleaning, renovation, and repair/do-it-yourself work (**expert consensus**): wear gloves; adhere to the conditions for use; limit the number of products; do not mix products; avoid spray products; avoid products with a danger pictogram; prefer products that meet approved criteria or are graded A+ (for do-it-yourself and renovation work); keep the products in an empty or ventilated space).
- Unpack new furniture and store it in an uninhabited room or outside before setting it up. Otherwise, air the room more often after setting it up (**expert consensus**).
- Do not use insect repellents on skin except when there is a risk of vector-borne diseases. Wash hands after application (**expert consensus**).
- Room fragrances must be avoided (**expert consensus**).
- Textiles must be washed before their first use (**expert consensus**).

For Pregnant or Breastfeeding Women and Children, in Addition to the Preceding Recommendations (**expert consensus**):

- Never participate in renovation work, do-it-yourself work, decoration, or pest treatment, while pregnant or breastfeeding.
- Wait, if possible for at least 3 months, before moving the newborn into a renovated room.
- Limit the use of cleaning products.

Use of Cosmetic Products by Women Either Pregnant or Breastfeeding and for Young Children (5)

The following recommendations are prioritized. Reduce the number (**grade B**), frequency of use (**grade B**), and quantity applied (**expert consensus**) of all cosmetic products used by women in the perinatal period for themselves, but also for their children (**grade B**). Prefer simple products, with a short

list of ingredients, without perfume, and rinsable (**expert consensus**). Prefer products with trustworthy ecolabels (eg, Cosmebio, Ecocert, Nature & Progress, Cosmos, Natrue) (**expert consensus**). Avoid the use of essential oils, perfumes, nail polish/remover, and hair dyes during pregnancy (**expert consensus**). Smartphone apps can be used by women, once they have been informed of the value of reducing cosmetic use and of the apps' limitations (**expert consensus**).

In children younger than 3 years, avoid industrial wipes. Prefer water and an appropriate soap if needed (**expert consensus**). When necessary, use cosmetic products intended for children younger than 3 years (**expert consensus**). Store cosmetics in a safe place, either high up, or in a locked closet (**expert consensus**).

Theme 4 - Promotion of Child Health

Initiating and Supporting Breastfeeding (6)

Exclusive breastfeeding is recommended for children for the first 4 to 6 months of life (**grade B**). Afterwards, it is recommended to continue breastfeeding while adding complementary foods (**grade B**).

Professional Training

Professionals should keep themselves up to date about the current data about the benefits of breastfeeding. This is essential for them to be able to answer the questions of families and professionals and to evaluate the impact of each breastfeeding practice or plan (**expert consensus**). Breastfeeding training for professionals should include knowledge of its physiology and understanding of barriers to it to avoid inconsistent information (**expert consensus**). The number of professionals specialized in breastfeeding to ensure that women can initiate and sustain it in optimal conditions is 1 per 700 births (**expert consensus**).

During Pregnancy

It is recommended that information on breastfeeding be included in childbirth and parenting education sessions (**grade B**).

Immediately Postpartum

Initiation of breastfeeding and safe skin-to-skin placement is recommended in the first 2 hours after childbirth, as soon as the mother and infant are medically stable, including after cesarean birth (**grade A**). It is recommended that the signs of a good latch, or position of the breast in the infant's mouth, and of effective breastfeeding, be taught and monitored (**expert consensus**).

During the Postpartum Period

Implementing the following 3 predictors of effective breastfeeding initiation is recommended: skin-to-skin contact, first breastfeed, and rooming-in (sharing a room) of newborn and mother (**grade A**). Showing mothers different breastfeeding positions and effective methods of draining all quadrants of the breast is recommended (**expert consensus**). The midwife should assess at least 2 parameters: the latch, or position of the breast in the infant's mouth to ensure good stimulation of milk production, and breastfeeding effectiveness, that is, the effective transfer of milk at each moment (**grade C**). It is recommended that a supplementary bottle not be given unless it

is medically necessary (**expert consensus**). It is recommended that a supplementary bottle not be given for any of the following reasons: fatigue, infant crying, fear of inadequate breastfeeding (**expert consensus**), a weight on day 3 lower than birth weight (**grade B**), a weight on day 15 lower than birth weight if the weight is increasing and the dyad is receiving specialized help (**expert consensus**).

Women who encounter difficulties (cracks, engorgement, mastitis, perception of lack of milk, difficulties latching or positioning, etc.) should be referred to professional breastfeeding support services (**expert consensus**). Continuing follow-up until breastfeeding is well established and comfortable for the mother-infant pair is recommended (**expert consensus**).

Any pain or damage in the nipple should be treated immediately (**expert consensus**). When a nipple is cracked, the first treatment methods are improving the latch and positioning (**grade C**) and applying human milk (**grade B**). In the case of mastitis and/or abscess, continuing breastfeeding is recommended (**grade C**).

Bonding and Attachment with the Newborn according to His or Her Rhythms and Needs, Support the Parents Appropriately (7)

About the Baby's Rhythms and Needs

It is recommended that active sleep be described to parents, who should be informed that it does not require parental intervention (**expert consensus**) and that they should use the baby's awake phases for interaction (**expert consensus**). It is recommended that parents be informed that children must reach the age of 4 to 6 months before they can adopt a circadian rhythm (**expert consensus**).

In the first months, infants need to spend time being held by their parents (**expert consensus**). It is always appropriate to try to sooth them by holding and rocking them but to leave them alone without becoming alarmed if the soothing measures fail (**expert consensus**). A specific consultation is justified when there is inconsolable and/or unusual crying for a cumulative total of more than 3 hours a day or if the crying is unbearable for the parents (**expert consensus**). Babies need the availability of their mothers or other attachment figures for the first 3–4 months. This availability must be somewhat circumscribed beyond that, or when parents have legitimate complaints and are exhausted (**expert consensus**).

The framework of falling asleep and sleeping (the ritual) must be established gradually from 6 months onwards, bearing in mind that the child will always seek to extend it if the separation is difficult. It is up to the parents to remain firm, attentive, and kind (**expert consensus**).

Establishing Secure Attachment

It is recommended that parents be informed that meeting the infant's needs promotes secure attachment and thus autonomy and not dependence (**expert consensus**).

Parents should be informed about the symptoms and frequency of perinatal depression. It is recommended to screen for perinatal depression and if necessary refer the parent concerned to a specialist, including contact with the general practitioner (**expert consensus**). Overall, the baby's durable withdrawal from the relationship is a warning sign that perinatal professionals must know; it can be observed from the age of 2 months (**expert consensus**). This symptom is not a diagnosis

itself but justifies a more intense follow-up and exploration of the factors involved (**expert consensus**).

Appropriate Support for Parents

The emotional security of pregnant women/mothers and their partners must be approached with the same rigor as their physical safety (**expert consensus**). In summary, parents with psychological vulnerability require specialized follow-up and a coordinated health care pathway (**expert consensus**). Each complex situation must be coordinated by a reference professional specialized in pregnancy (**expert consensus**). Overall, it is recommended to explain to the woman/couple how the health care system works and the role of each professional, especially if specific support appears to be needed during the postpartum period (**expert consensus**).

It is important to screen for first-trimester anxiety (**grade B**), for it is an important indicator of the risk of postpartum emotional disorders (**LE2**). The psycho-emotional status of the pregnant woman and the future father (or partner) must be assessed throughout the follow-up, especially at the moment of the early prenatal interview (EPP) and during the 8th month (**expert consensus**). The parents' potential stress factors must be collected to look with them for the ways and means to reduce them (**expert consensus**). As for somatic problems, for factors of fragility identified prenatally, particular attention and early and prolonged pediatric follow-up must be set up for the child, without awaiting the onset of a disorder (**expert consensus**). The contents of the transmissions or memos to other professionals are written or reviewed with the woman (or the couple) and must contain only useful elements (**expert consensus**). A professional should not be placed in the position of facing a situation with a strong emotional charge alone (team, psychiatrist in second line or in first line if accepted) (**expert consensus**).

Young Children and Screens (8)

During pregnancy, it is recommended to encourage parents to think about and question their own screen use (quantity, media content, and context of use) (**expert consensus**). It is recommended that parents set up family rules for technology use, including their own use in their young children's presence, and differentiating rules by siblings' ages (**expert consensus**).

Parents should be made aware of the infant's wake-sleep cycle and needs (**expert consensus**) and encouraged not to leave screens on in the background either at the maternity unit or once they are home (**grade B**). Recommend that parents put their smartphones/tablets aside and in silent mode while caring for, playing with, and during other activities with the child (**expert consensus**). The moments of parent-child interaction must be interrupted as little as possible by nonessential requests and distractions (**grade B**). Recommend to parents that they avoid leaving the television on in living areas if no one is watching it and that they designate places (bedrooms) and times/events (meals, before bedtime, in automobiles) as screen-free to promote parent-child interactions (**grade B**).

From 0 to 24 months, screen exposure is not useful for the child's development and must therefore be minimal (**grade B**). Video calls with distant family members or friends are an exception as long they are relatively short (**grade B**). At and after

24 months, it continues to be advised that children not be exposed to screens; it is nonetheless possible to accompany one's child in age-appropriate interactive activities, preferring those with long shots and a slow pace (**grade B**). It is recommended that a young child never be left alone in front of a screen without being monitored or without parental control of its content (**grade B**). It is recommended that children not be calmed or soothed or put to sleep by looking at or playing with a screen (**expert consensus**).

Prevention of Sudden Unexplained Infant Death (SUID) (9)

It is recommended that professionals providing perinatal and early childhood health care be trained in SUID prevention (**expert consensus**).

Concerning Psychoactive Substances

The fetus should not be exposed in utero, nor the infant after birth, to smoke, alcohol, or other drugs. Appropriate care or referrals should be offered, depending on the addictions of the future parents (**grade B**).

Concerning Sleep Position and Bedding

Infants should always be placed in a supine position (on their back) for all periods of sleep (**grade B**); infants should always be placed for bed in a way that ensures their freedom of movement (**expert consensus**):

- in an approved bed, ideally one with slats or bars
- in pajamas and in a baby sleeping bag of the appropriate size, correctly closed
- without any bonnet, necklaces, chains, or pacifier clips
- on a firm mattress that fits the edges of the bed
- with no soft objects near the infant and no bedding accessories (bumper pad, etc.)
- in a room that is ventilated and not overheated (18-20°C).

Pacifier use at bedtime should not be advised against (**grade C**). Breastfeeding should be well established before a pacifier is introduced (**grade B**). The baby should sleep in the parents' room, on a separate but nearby sleep surface, regardless of whether the child is being breastfed, at least for the first 6 months (**grade B**). This recommendation is applicable regardless of the parents' smoking status (**expert consensus**).

Infants taken into the parents' bed for feeding or comfort should be put back into their own bed when the parents are ready to go back to sleep (**grade B**). Parents should be informed, regardless of whether the child is breastfed or not, of the excess risk of sharing the same sleep surface, in particular when (**expert consensus**):

- One or both parents are smokers, even if they do not smoke in bed.
- The mother smoked during pregnancy.
- The infant is younger than four months, regardless of the parents' smoking status.
- The infant was born preterm and/or with a low birth weight.
- The bedding is inappropriate (eg, water beds, couches, or armchairs).
- There are soft bedding accessories, such as pillows and blankets.

- There are others sharing the bed (eg, twins or multiples).
- The parents have consumed alcohol and/or psychoactive substances or sedatives.
- One of the adults in the bed is not a parent.

Shaken Baby Syndrome (10)

It is recommended that the mother, and insofar as possible, the father be informed that (**expert consensus**):

- They should always try to calm the baby's crying.
- Despite their efforts at soothing the baby, he or she may cry for several hours a day without it necessarily being abnormal.
- Crying can irritate, even anger, adults and lead them to shake the child to make him or her be quiet.
- If the adult is overwhelmed, irritated, or feels that they may become so, they should put the child on his or her back in bed, leave the room, and then ask for help.
- There is no danger in playing with a child: play, which must be appropriate to the child's age, is necessary for his or her development.

Make sure that anyone to whom a baby might be confided knows how to care for him or her; and that this person is aware of shaken baby syndrome and of what should be done in the case of extreme irritation or exasperation (**expert consensus**).

TIMING AND PRIORITY OF PREVENTION MESSAGES

Figure 3 summarizes the principal times for consultation and discussion before, during and, after pregnancy, regrouped into 4 distinct periods: the preconception period, the beginning (first trimester) and end (second and third trimesters) of pregnancy and the postpartum period. Figure 4 proposes a ranking of the themes, according to their priority, over these 4 periods (**expert consensus**).

HOW TO COMMUNICATE PREVENTION MESSAGES

Mothers/couples sometimes have priorities very distant from those of professionals, and the time available for consultation is generally very constrained, which can lead the professional to be quite directive in the discussions. It is nonetheless necessary to answer the patients' questions before being able to begin delivering these messages, otherwise couples are not likely to be receptive to them. If the early prenatal interview is a special moment for talking with couples, it often occurs rather late in prenatal care (after the first trimester). For some subjects, it is therefore useful to organize a time for listening during consultations or care, to encourage the couples to ask their questions or express their concerns, but also to promote the development of a bond — a relationship of trust. One solution for practitioners is perhaps to plan to deliver messages over the course of several consultations (for example, with a checklist in the patient file), to enable more flexibility in the discussions and to raise each subject when the patient is most receptive.

Particular attention must be paid to how personal questions are asked (**expert consensus**), such as those concerning

psychoactive substance use, emotions, or a history of violence. These subjects are best raised once a bond of trust or confidence has been established with the woman, in the second part of the interview or on a second or third meeting. Taking the patient's clinical history by starting with these questions can sometimes risk blocking, even offending or upsetting the woman. Similarly, it can be interesting to ask the woman's permission to raise a personal subject before asking the question directly ("I'm going to need to raise some personal subjects concerning you; will you give me permission to ask you questions about ... ?").

Finally, the discussion must remain kind-hearted and compassionate, avoiding any judgment. As a recent study on smoking suggested, guilt-inducing discourses in prevention can have counterproductive effects.³³ It is also necessary to take into account the family's deprivation level and cultural habits. This is particularly true for food; the consumption of fruit and vegetables or better quality food are often equivalent to more money or a particular (high) sociocultural identification.³⁴ The priority is thus to work on prevention activities that cost nothing extra for the families and are open to all sociocultural backgrounds. For example, screens can also be perceived as a means of learning the local language for the children of families that do not speak it, or can be difficult to avoid with older siblings or when the entire family lives or sleeps in one room. Beyond the application of these several pieces of advice derived from the practice of motivational interviews, professionals can consider more complete training.

The production of supports for interviews or preformulated questionnaires based on the guideline texts was not one of the objectives of these clinical practice guidelines. Other professional societies might usefully develop such materials. It is nonetheless important to note that some appropriate information tools are already available in French. Two French websites cover a substantial portion of the topics discussed in these clinical practice guidelines in a more accessible or popularized style: *mpedia* (<https://www.mpedia.fr/>), and a site on the first 1000 days of life (<http://1000-premiers-jours.fr>), developed by *Santé publique France*, the French public health agency. There are also some scales and validated questionnaires that can be used routinely for screening, such as the Edinburgh scale (EPDS) to screening for postpartum depression (Teissedre, 2004) or the ADBB to evaluate a young child's withdrawal from a relationship (<https://www.echelle-adbb.fr>).

The concept of uncertainty is a characteristic element of epidemiologic research, based on probabilities. It is sometimes difficult to explain to families, which often expect firm and permanent responses. Uncertainty can be due to a lack of consistent scientific data. In this case, it is necessary to explain in a balanced but accurate manner the absence of scientific consensus. The risk may be to induce a breach of trust between the families and the practitioner in the event of discordant messages over time or between the professionals solicited, with the risk of families seeking information from other potentially less reliable sources. Uncertainty can also be linked to a lack of knowledge on the subject by some of the professionals questioned, which is utterly normal, in view of the diversity of the themes covered and the

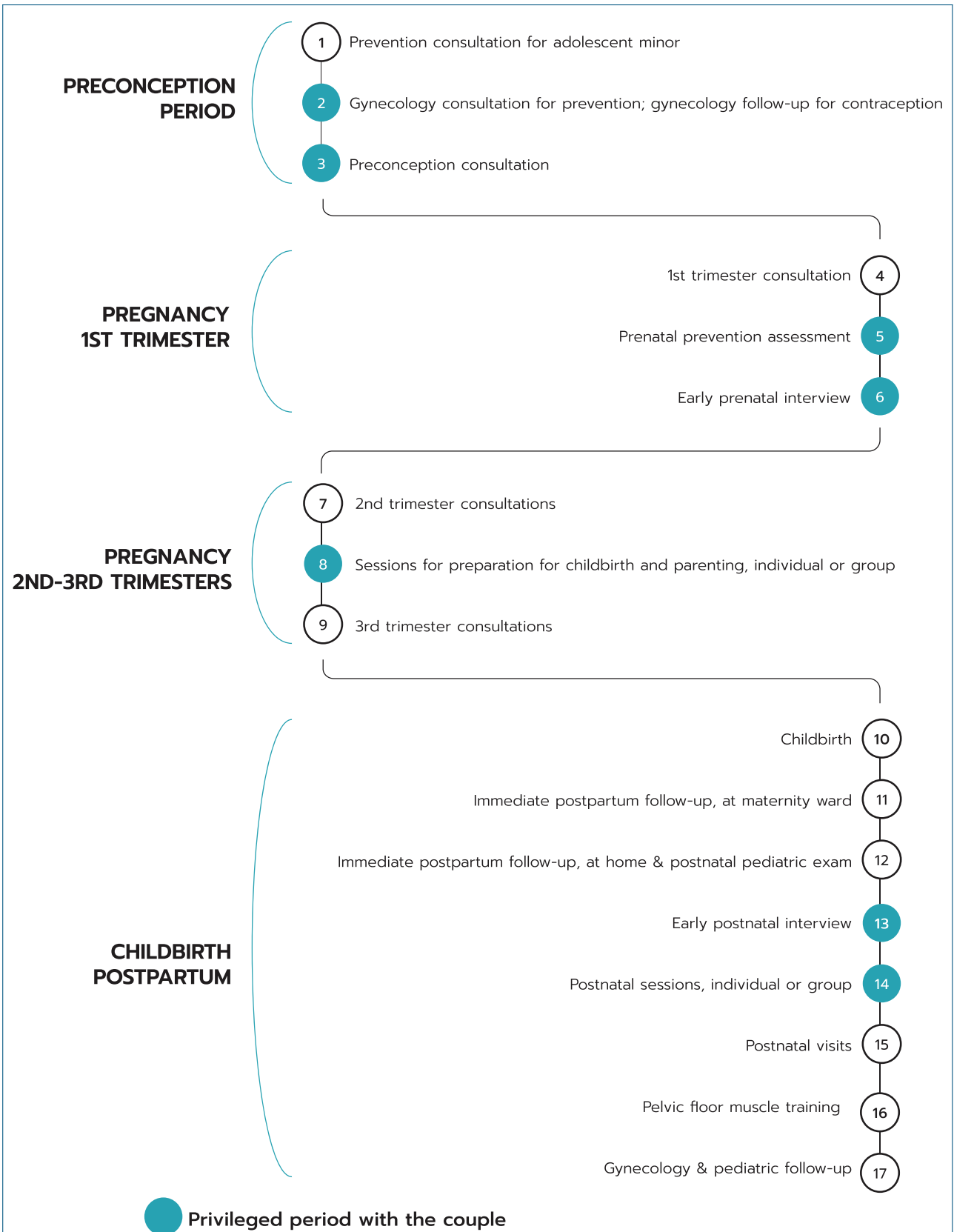
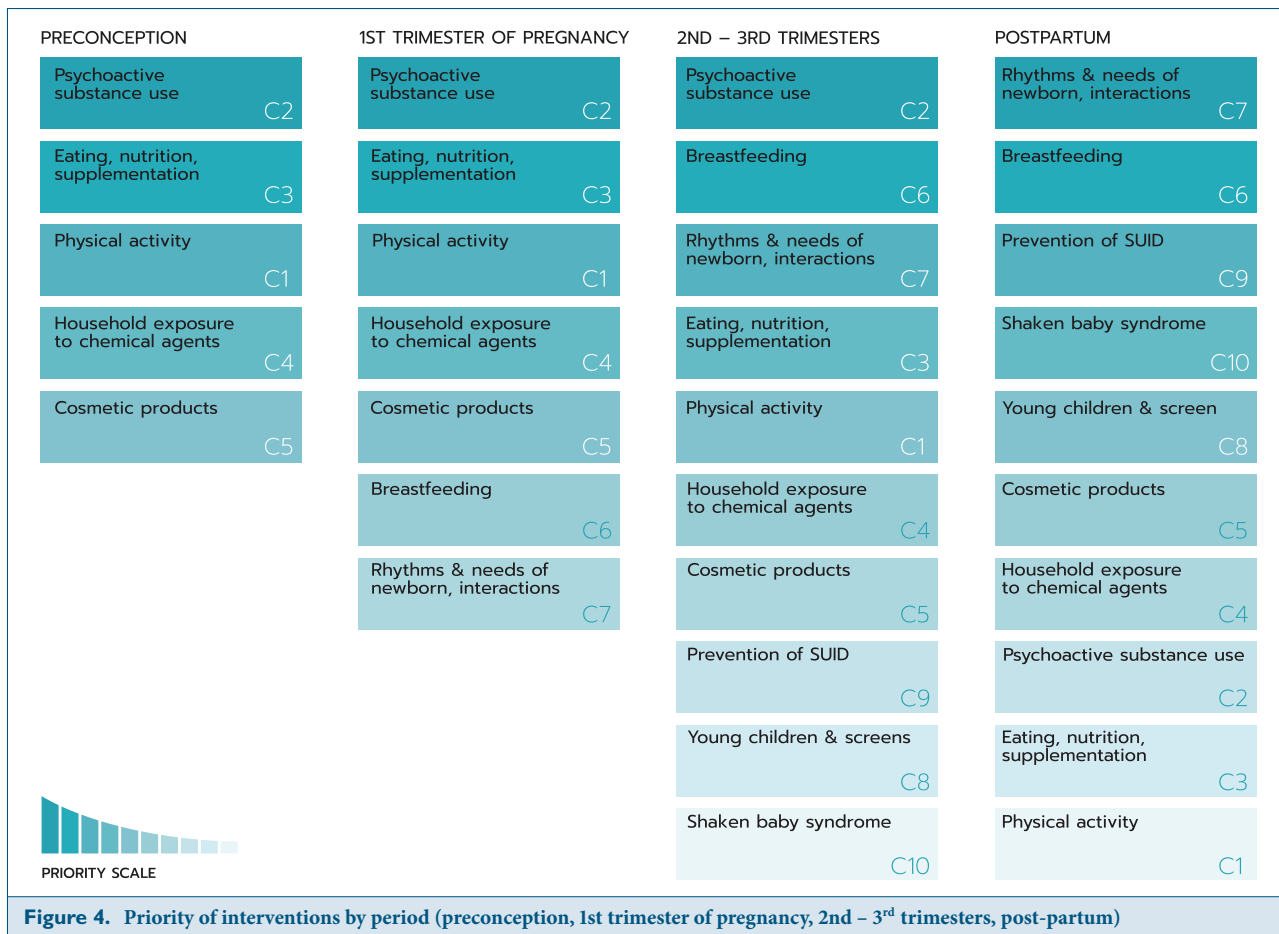


Figure 3. Consultations, assessments, and interviews offered around the perinatal period in France



rapid progress of scientific knowledge. It is important not to hesitate to refer families toward reliable information sources that are adequately accessible. The professional can offer to find out more and provide them with information the next time, in another contact. This last approach is desirable when the professional does not have reliable sources of information sufficiently accessible and understandable to provide to families.

GENERAL COMMENTS

In view of the diversity of possible prevention messages, we had to make choices and favor the topics that the working group considered to be either most useful for the couples or the most complex for professionals. Some themes were therefore not dealt with here, including those of the effects of radiofrequency-type electromagnetic waves (wi-fi, Bluetooth, mobile telephony, babyphones, microwaves, Linky electricity counters), for which the current scientific consensus tends toward an absent or limited health risk in the framework of normal household use.^{35,36}

These clinical practice guidelines also did not deal with questions of medication use and vaccination during the perinatal period. It nonetheless appears necessary to remind women not to practice self-medication and to adhere to their doctor's prescriptions.³⁷ For vaccines, families should be systematically reminded of vaccination in accordance with the

national guidelines, as well as of the safety of the vaccines available on the market.³⁸ These points must be considered as high priority, regardless of the follow-up period.

Setting up small groups of women during their prenatal care (for example, at a childbirth and parenting preparation class, and for physical or leisure activities) makes it possible to create a social bond between the participants, promoting both information sharing but also a system of mutual assistance. This strategy of strengthening social ties has also proved interesting for the prevention of postpartum depression.³⁹ This strategy could be particularly useful for isolated or vulnerable women. These groups already exist through the preparation for childbirth and parenting classes and could be developed in the postpartum period with general or theme-based postnatal sessions (eg, carrying the baby, massaging the baby). Facilities where parents and young children could meet might also be developed, as proposed in the French report on the Child's First 1000 Days.¹⁸

Currently, the transmission of information between the different health care professionals working with pregnant women remains quite inadequate, especially between private practitioners and hospital staff; this is a loss of opportunity for pregnant women and their children. The designation of a practitioner (private or hospital) as the coordinator during pregnancy could allow information to be centralized and provided to all of those who could participate in a coordinated network. Some work is currently underway to assess the

utility of a medical file shared between the private and hospital sectors.⁴⁰

For the questions related to chemical exposures (in particular, chapters 3, 4, and 5), we chose to consider exposure sources rather than chemical compounds. The advantage is that we are able to simplify the messages and prevention activities for the public and cover a large number of important exposures by single messages. This approach nonetheless has the disadvantage of requiring a larger body of knowledge: knowing the health impact of an exposure is no longer sufficient, it is also necessary to master the sources associated with it and estimate the risk level associated with each source.

The ranking of priorities between prevention messages is always delicate to formulate. It is closely linked to scientific knowledge and current practices. It must sometimes be adapted to a family's particular context, to take into account their deprivation level or their lifestyle. One must nonetheless remain vigilant about the sometimes large gap that can exist between the perceived risk and the real risk, among both the public and the professionals who transmit these prevention messages. Analysis and deconstruction will be sometimes necessary to avoid messages or activities that are not constructive, and sometimes even inappropriate. The case of pesticide residues in food is a representative example: some strategies aimed at limiting exposures (eg, the Environmental Working Group's "dirty dozen"⁴¹) could have counterproductive effects since the benefit of increased consumption of fruit and vegetables generally exceeds the risks associated with eating pesticide contaminated products.⁴² It thus appears best to promote approaches and reasoning based on benefit-risk analyses.

CONCLUSIONS

The perinatal period provides a key opportunity for supporting the development of the child and of the adult in the making, but also for the mother's health and well-being. Reports show that the earlier noncommunicable disease prevention takes place, the more the lifetime risk of these diseases appears to fall.⁶ The principal difficulties encountered by professionals are linked to the significant number of topics to cover and the lack of time to do so. This implies the need to maintain up to date a minimum theoretical knowledge base and have a rather specific idea of the relative importance of the different subjects. The rationales and the guidelines presented in this synthesis and in the different long texts aim at supporting professionals in their practice by helping them to respond to these issues. Beyond the messages per se, the timing and manner of delivering them play an important role in their acceptance and assimilation. It is also primordial for health professionals to improve their response to each situation by adapting to the woman, the couple, and their concerns.

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