Pre- and Post-natal Nutrition

Lesson 1.2 Preparing for pregnancy
**Step 1 - Lesson objectives**

In this lesson we’re going to look at the importance of good nutrition prior to becoming pregnant.

This lesson will enable you to:

- List the components of a balanced diet
- State the government guidelines on folic acid supplementation
- Provide guidance on when to take folic acid and how much
- Explain why it’s important to be a healthy weight prior to becoming pregnant
- Explain the importance of stopping smoking and reducing alcohol intake prior to becoming pregnant

**Step 2 - Importance of pre-conception nutrition**

Pregnancy is a time of immense change in a woman's life and most women recognise the importance of eating well and having a healthy lifestyle while they are pregnant.

What many people don't realise is that the nutritional status of the mother prior to conception can also affect the health of her baby and even the chances of conception itself taking place.

In this lesson you’ll learn how nutritional status can be optimised prior to pregnancy, beginning with an exploration of the importance of a balanced and varied diet.

**Step 3 - What do you think?**

The UK Government has summarised its recommendations on healthy eating in a useful tool. Do you know its name?

- The Eatwell Guide
- The Food Pyramid
- The Food Guide Pagoda

**Feedback:** The Eatwell Guide is used to teach the general public in the UK about a healthy balanced diet. You will look at this tool more closely in the next step. The Food Pyramid is used by a number of countries including Germany while the Food Guide Pagoda is Chinese.

**Step 4 - A balanced diet**

During pregnancy the developing baby draws upon the mother’s nutrient stores. For this reason it’s important that a women starts pregnancy with an optimal store of vitamins and minerals. A balanced and varied diet is needed to achieve this optimal store. But what exactly is a balanced and varied diet?
The Government in the UK uses the concept of the Eatwell Guide to show pictorially the different types of food we need to eat to achieve a well-balanced and healthy diet.

The model splits a healthy diet into five key food groups. These are:

- Fruits and vegetables
- Starchy foods which include breads, rice, potatoes and pasta
- Milk and dairy products
- Oils and spreads
- Beans, pulses, fish, eggs, meat and other proteins

**Step 5 - The good groups**

The plate at the centre of the Eatwell Guide provides guidance on the proportion of food groups that should comprise a balanced diet.

If you would like more detailed information on the Eatwell model you can find an interactive version on the NHS website in Resources.

**Fruits and vegetables:** About one third of the food we eat each day should be fruit and vegetables. You may find that many clients do not eat enough fruit and veg. They should be aiming for around five portions a day, for example, three portions of vegetables and two portions of fruit. These can be fresh, frozen, tinned, dried or juiced. Bear in mind that potatoes don't count as a vegetable as they are a starchy carbohydrate.

If you aim for two portions of vegetables at each meal and have the occasional fruit as a snack in between meals, the correct balance can be quite easily achieved.

Fruit juice and/or smoothies should be limited to no more than a combined total of 150 ml per day, due to their high sugar content.

**Starchy foods:** About one third of the food we eat each day should be bread, rice, pasta, potatoes and other starchy foods. They are a good source of energy and the main source of a range of essential nutrients including fibre, calcium, iron and B vitamins. Advise your clients to choose wholegrain varieties whenever possible as this will help manage blood sugar levels, appetite and fibre intake.

**Oils and spreads:** These should be eaten in small amounts and unsaturated fats chosen as much as possible.

**Milk and dairy products:** Have some dairy or dairy alternatives such as soya milk every day. These foods are a great source of protein, vitamins A and B12 and also the mineral calcium.
Non-dairy protein sources: This category covers beans, pulses, fish, eggs, meat and other proteins. Eat more beans and pulses, 2 portions of sustainably sourced fish per week, one of which is oily. Eat less red and processed meat.

Step 6 - Introduction to nutrients

If we eat a balance of food groups as outlined in the Eatwell plate we’ll ensure that we’re getting a balanced intake of nutrients. The nutrients that are needed by our bodies to function properly are:

- Carbohydrate (sometimes abbreviated to CHO)
- Protein
- Fat
- Vitamins
- Minerals
- Non-starch polysaccharide (or fibre)
- And water

Carbohydrate, protein and fat are known as the **macronutrients** because our bodies need them in large quantities.

Vitamins and minerals are known as **micronutrients** because we need them in small quantities. All of the seven nutrients are essential for life.

Step 7 - Maintaining a healthy weight

Being either underweight or overweight can affect a woman’s chances of conceiving and can also have serious consequences for her health during pregnancy and the health of her unborn baby.

**BMI:** Body Mass Index (BMI) is a way of categorising how healthy our weight is when compared to our height. It is calculated by dividing our weight (kg) by our height (m) squared.

The resulting figure is classified as follows:

- Under 18.5 = Underweight
- 18.5 – 24.9 = Normal weight
- 25.0 – 29.9 = Overweight
- 30 or greater = Obese

A woman who plans to become pregnant should aim to have a BMI that is in the normal range (18.5-24.9).

You will find a very useful BMI calculator on the NHS website which is in Resources.

**Underweight:** If a woman is underweight (BMI less than 18.5) she is less likely to be ovulating regularly and so be less likely to conceive. Aiming to gradually
increase her weight to within the healthy range will increase her chances of becoming pregnant.

**Overweight:** Being overweight or obese before conception is linked with an increased risk of complications during pregnancy.

Obesity increases the risk of blood clots, gestational diabetes, pre-eclampsia and high blood pressure. Women who are obese are also more likely to need a caesarean section.

Risks to the baby include miscarriage, neural tube defects, larger birth weight, still birth and obesity and diabetes in later life.

**Dieting during pregnancy:** In order to limit the possible complications from obesity it is important that a woman loses excess weight before she conceives, as dieting when pregnant is not recommended.

**Step 8 - Knowledge check**

Match the body mass index to the correct classification category.

| Underweight | 24 |
| Obese       | 38 |
| Normal      | 17 |

**Feedback:** A BMI of 17 is categorised as underweight, 24 is categorised as normal weight and 38 is categorised as obese.

**Step 9 - Losing weight**

If a woman wishes to lose weight in preparation for pregnancy she should do so gradually. Extreme weight loss through crash dieting will leave the body’s nutrient stores depleted. As we have already seen, these need to be in an optimal state at the start of pregnancy as the foetus will draw upon these stores as it grows.

A weight loss of 1–2 lb (0.45–0.9 kg) per week is ideal and this should be achieved by eating healthier and being more active.

**Step 10 - What do you think?**

Is the following statement accurate?

A woman who has a healthy, balanced diet as outlined in the Eatwell plate should not need to take any vitamin or mineral supplements before or during pregnancy.

- True
- False
Feedback: A balanced diet is very important and will provide adequate vitamins and minerals for the majority of the population. However there are extra requirements for certain nutrients during pregnancy and our diet is unable to provide the required optimal levels. This is particularly the case for folic acid, which we will look at in the next step.

Step 11 - Folic acid

Folic acid is also known as vitamin B9 and is needed in the body to make new cells. It’s also known as folate, which is the naturally occurring form of the vitamin. During pregnancy the development of the baby’s spinal cord requires a regular supply of folic acid. Inadequate levels of folic acid can lead to neural tube (spinal) defects such as spina bifida and anencephaly.

Step 12 - Supplementing with folic acid

Each year in the UK roughly 900 pregnancies are affected by neural tube defects or N-T-Ds. Over 70% of these could be prevented if women followed the Department of Health’s guidelines regarding folic acid supplementation.

How much folic acid is needed?
For most women the recommended dosage is 400 micrograms per day.

Certain women are at higher risk of having a child with a neural tube defect and their health professional may recommend a higher dosage of 5 mg per day. These include women with diabetes, epilepsy, and those who have an NTD themselves or have previously given birth to a child with an NTD.

When should it be taken?
If she is not already doing so, a woman should start taking a folic acid supplement as soon as she starts trying to become pregnant. This is because the spinal cord develops very early in pregnancy, often before a woman even realises she is pregnant. If a woman waits to start supplementation only when she finds out she is pregnant, it may be too late.

Because at least 40% of pregnancies are unplanned, some health bodies recommend that all women who could become pregnant should routinely take a folic acid supplement.

Supplementation should continue until the 12th week of pregnancy.

What about dietary sources?
Folate, the natural form of folic acid, is found in a number of foods such as green vegetables, beans, pulses and yeast extract.

Food manufacturers also add folic acid to certain foods, such as breakfast cereals. However the amount of folic acid that is needed to prevent neural tube defects is about three times the amount that people routinely achieve through diet alone.
The cooking and storage of food also leads to a loss of the vitamin content within the food. For these reasons supplementation is recommended.

Are there any side effects?
Folic acid is water-soluble and so the body will eliminate any excess.

It does not have any side effects in women of child-bearing age, although very high intakes may have side effects in older adults.

**Step 13 - Knowledge check**

1. What other name is folic acid known as?
   - Vitamin B6
   - Vitamin B9
   - Vitamin D

   **Feedback:** Folic acid is also known as vitamin B9.

2. How much folic acid should a woman planning to become pregnant take?
   - 400 gg
   - 400 mg
   - 400 mcg

   **Feedback:** The recommended dose is 400 mcg.

**Step 14 - Smoking and alcohol**

Most women are aware of the need to stop smoking and avoid alcohol once they become pregnant. However it is more beneficial to implement these changes pre-conception. This also allows a woman time to adapt to the changes and adjust to her new routine.

**Alcohol:** The official guidelines from the National Institute of Health and Clinical Excellence (NICE) are that women in the first 3 months of pregnancy and women trying to become pregnant should avoid alcohol completely because it may increase the risk of miscarriage, as well as **be harmful to the unborn baby.**

There is also evidence that alcohol can reduce **fertility in both men and women.**

**Smoking:** Smoking during pregnancy increases the risk of having a baby with a low birth weight or a pre-term birth. If a woman smokes it therefore makes sense to stop as soon as she starts planning a pregnancy, rather than **waiting until she is pregnant.**

You can find more information on smoking and pregnancy from - [https://www.nhs.uk/smokefree/why-quit/smoking-in-pregnancy](https://www.nhs.uk/smokefree/why-quit/smoking-in-pregnancy)
**Step 15 - What do you think?**

Lucy is 34 years old and is hoping to become pregnant for the first time within the next 6 months. She has no medical conditions and doesn’t smoke. Her BMI is 26.5. She’s provided a record of her food intake for 1 day.

Based on the information you have about Lucy, what steps do you think she should be taking now to prepare her body for pregnancy?

**Option 1:** Hmm, although she doesn’t smoke and is healthy, there are some other steps she could take to increase her chances of having a healthy baby.

**Option 2:** Lucy is she’s healthy and doesn’t smoke so is should start trying now for a baby.

Let’s consider the other areas Lucy should think about. Her BMI is 26.5 which classifies her as slightly overweight. What does this mean for Lucy?

**Option 3:** Although her BMI indicates that she is slightly overweight, this is not a major issue and she’ll need the extra energy once she’s pregnant to support the baby.

**Option 4:** Lucy’s BMI indicates that she is slightly overweight, this is not a major issue, but ideally she should try to reduce her weight to the normal range before she becomes pregnant.

Lucy is healthy and doesn’t smoke, so this a great start. However there are some steps she could take to further increase her chances of having a healthy pregnancy. Let’s consider her weight first. Lucy has a BMI of 26.5 which classifies her as slightly overweight. What does this mean for Lucy?

**Option 5:** Although her BMI indicates that she is slightly overweight, this is not a major issue and she’ll need the extra energy once she’s pregnant to support the baby.

**Option 6:** Lucy’s BMI indicates that she is slightly overweight, this is not a major issue, but ideally she should try to reduce her weight to the normal range before she becomes pregnant.

Ideally, Lucy should try to reduce her weight to within the normal range before she becomes pregnant. If possible Lucy should also eliminate alcohol from her diet now, rather than waiting until she becomes pregnant. Alcohol consumption can affect fertility as well as increasing the chances of miscarriage.

Lucy needs to achieve a better balance of food groups in order to optimise her nutrient stores. Look at Lucy’s food diary again. What would you recommend for her?

**Option 7:** Lucy should switch to wholegrain where possible to increase her fibre intake, but she’s eating a good amount of fruits and vegetables.
**Option 8:** Lucy has consumed a number of foods from the ‘foods high in sugar and/or fat’ food group. She should try replacing some of these foods with healthier alternatives such as fruit or nuts would really boost her vitamin and mineral intake.

The starchy foods Lucy is choosing are not wholegrain which means her fibre intake will be low. She should switch to wholegrain varieties of cereals and breads to address this.

At the moment her diet contains just 1 to 2 portions of fruit and vegetables, when the recommendation is at least 5. Increasing her intake of this food group would increase her intake of antioxidants, minerals and vitamins including folic acid.

Finally, she has consumed a number of foods from the ‘foods high in sugar and/or fat’ food group. Replacing some of these foods with healthier alternatives such as fruit or nuts would really boost her vitamin and mineral intake.

To supplement her diet, Lucy should also start taking 400 micrograms of folic acid each day and continue until she is 12 weeks pregnant. This will dramatically reduce the chances of her baby being born with a spinal defect such as spina bifida.

**Step 16 - Lesson assessment**

1. According to the Eatwell Guide, fruit juices and smoothies should be limited to how much per day?
   - 100 ml
   - 150 ml
   - 300 ml
   - 500 ml

2. A BMI of 25 is classified as ‘normal’.
   - True
   - False

3. What is the recommended folic acid dosage for women who have a higher risk of having a child with a neural tube defect?
   - 4 mg
   - 4 g
   - 5 mg
   - 500 mcg

4. Folic acid supplements help prevent neural tube defects such as spina bifida.
   - True
5. Alcohol consumption can reduce fertility in men.

- True
- False

Step 17 - Lesson summary

Now that you have completed this lesson, you should understand that:

- In the pre pregnancy period it is important to ensure nutrient stores are optimised by consuming a varied and balanced diet as outlined by the Eatwell Guide
- A woman should aim to have a healthy B-M-I before pregnancy
- If a women wishes to lose weight this should be done gradually and crash dieting should be avoided
- A folic acid supplement should be taken as soon as a woman starts trying to become pregnant and should continue to be taken up until week 12 of pregnancy
- Women should stop smoking and avoid alcohol while trying to become pregnant.