Seafood and your health

PREGNANCY
Evidence shows that eating a balanced diet that is high in specific types of seafood has benefits for both you and your baby.

This booklet will help guide your food choices and includes a 14-day meal planner to help you to maintain your health during pregnancy and help the neurological development of your baby.
How can seafood help during pregnancy?

Including seafood in a healthy diet can improve and maintain your health. A healthy diet with high levels of oily fish intake during pregnancy has been associated with longer gestation, increased birth weight and lower hypertension.

It also assists a baby’s brain to develop during pregnancy. If you are pregnant or planning pregnancy, a diet including seafood is a healthy food choice.

Selecting seafood is also a smart choice for lowering cholesterol, and the omega-3 fatty acids in oily fish can actually help to prevent coronary heart disease. In addition to omega-3s, seafood contains many other nutrients beneficial to health, including selenium, iodine, zinc, calcium and vitamin D.

It’s also low in saturated fat, high in protein, and a good source of energy.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>Iron is important for maintaining energy levels and a strong immune system. Mussels, oysters and tinned sardines are good sources of iron.</td>
</tr>
<tr>
<td>Iodine</td>
<td>Iodine is important for growth and seafood is the best natural source of iodine. Oysters, mussels and scallops are good sources of iodine.</td>
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<tr>
<td>Folate</td>
<td>Folate aids the prevention of neural tube defects in growing babies. Oysters and mussels are sources of folate.</td>
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<tr>
<td>Vitamin B12</td>
<td>Vitamin B12 helps the brain to work normally. Sardines, mussels and tuna are good sources of vitamin B12.</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>Vitamin D is good for the immune system and strong bones and muscles. Australian salmon, Atlantic salmon and tuna are good sources of vitamin D.</td>
</tr>
<tr>
<td>Vitamins A and E</td>
<td>Vitamins A and E are powerful antioxidants which help the immune system and eye health. Mussels are the richest seafood source of vitamin A. Atlantic salmon and sardines are good sources of vitamin E.</td>
</tr>
<tr>
<td>Calcium</td>
<td>Calcium is important for maintaining healthy teeth and bones. Australian salmon and sardines are rich sources of calcium.</td>
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</tbody>
</table>

How much seafood do I need to stay healthy?

Evidence suggests that we should aim to consume 600mg of omega-3s per day for men, and 500mg for women.

Some types of seafood contain higher levels of omega-3s than others so the number of serves of seafood you need to eat each week to maintain good health depends on the type of seafood you eat. Generally, one serve of seafood is around 150g.
Adults should aim to include 3500 - 4000mg of omega-3s in their diet each week. This table shows you how much omega-3 is in a 150g serve of a variety of fish and seafood:

<table>
<thead>
<tr>
<th>How much omega-3?</th>
<th></th>
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<tbody>
<tr>
<td><strong>Omega-3s</strong></td>
<td></td>
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<tr>
<td>Omega-3 fatty acids (omega-3s) are essential to our health. Our bodies cannot produce these fatty acids and so we need to eat foods that contain them. The best source of omega-3s is seafood. In fact, the regular intake of omega-3s as part of a healthy diet provides health benefits for conditions such as diabetes, heart disease, arthritis and some cancers.</td>
<td></td>
</tr>
<tr>
<td><strong>How much omega-3?</strong></td>
<td><strong>4000</strong></td>
</tr>
<tr>
<td>Sardine - canned in oil (3766mg)</td>
<td></td>
</tr>
<tr>
<td>Australian salmon - canned (3684mg)</td>
<td></td>
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<tr>
<td>Atlantic salmon (3472mg)</td>
<td></td>
</tr>
<tr>
<td>Farmed rainbow trout (2941mg)</td>
<td></td>
</tr>
<tr>
<td>Sardine - canned in sauce (1323mg)</td>
<td></td>
</tr>
<tr>
<td>Bream (1271mg)</td>
<td></td>
</tr>
<tr>
<td>Oyster (1085mg)</td>
<td></td>
</tr>
<tr>
<td>Mussel (1077mg)</td>
<td></td>
</tr>
<tr>
<td>Mullet (1040mg)</td>
<td></td>
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<tr>
<td>Squid / calamari (876mg)</td>
<td></td>
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<tr>
<td>Smoked salmon (769mg)</td>
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<tr>
<td>Tuna (631mg)</td>
<td></td>
</tr>
<tr>
<td>Snapper (628mg)</td>
<td></td>
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<tr>
<td>Flathead (619mg)</td>
<td></td>
</tr>
<tr>
<td>Barramundi (414mg)</td>
<td></td>
</tr>
<tr>
<td>Prawn (330mg)</td>
<td></td>
</tr>
<tr>
<td>Lobster (267mg)</td>
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<tr>
<td>Basa (115mg)</td>
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<tr>
<td>For example, you may choose to eat 150g of sardines a week to get your omega-3s. Or you may choose to eat 150g of Atlantic salmon and 150g of prawns in a week. Mix it up so you don’t get bored!</td>
<td></td>
</tr>
</tbody>
</table>

Adults should aim to include 3500 - 4000mg of omega-3s in their diet each week. This table shows you how much omega-3 is in a 150g serve of a variety of fish and seafood:
Which fish to choose?

Examples of seafood that are excellent, very good, or good sources of omega-3s.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Excellent sources of omega-3s</strong></td>
<td><strong>Very good sources of omega-3s</strong></td>
<td><strong>Good sources of omega-3s</strong></td>
</tr>
<tr>
<td>Atlantic salmon</td>
<td>Bream</td>
<td>Barramundi</td>
</tr>
<tr>
<td>Trout</td>
<td>Mussels</td>
<td>Snapper</td>
</tr>
<tr>
<td>Sardines</td>
<td>Oysters</td>
<td>Smoked salmon</td>
</tr>
<tr>
<td>Canned salmon</td>
<td>Mullet</td>
<td>Canned tuna</td>
</tr>
</tbody>
</table>

What about mercury?

The good news is that most common fish species available in Australia are perfectly safe to consume while pregnant or planning pregnancy. However, these are some recommendations during pregnancy and for children under six years (Note: a child’s serving size is 75g, rather than the 150g recommended for adults).

- 2 – 3 serves/week of any fish/seafood EXCEPT orange roughy, catfish, shark or billfish (swordfish/broadbill/marlin) OR
- 1 serve/week of orange roughy (sea perch) OR catfish THEN no other fish that week OR
- 1 serve/fortnight of shark (flake) OR billfish THEN no other fish that fortnight

Mercury recommendations from Food Standards Australia New Zealand
14-day meal planner

This 14-day meal planner has been developed with a dietitian to help you to maintain your health during pregnancy and help the neurological development of your baby.

Menu suggestion: week one
(Choose one item for each meal)

Breakfast
Cereal and reduced fat milk
Poached eggs on toast
Whipped eggs with pink salmon

Lunch
Tuna bean salad
Canned salmon salad
Tuna Caesar wraps
Tuna and green bean sushi rolls

Dinner
Baked bream with tasty rice noodles
Linguine with grilled trout and broccolini
BBQ garlic prawn skewers

Dessert
Fruit (2 pieces)
Low fat yoghurt (200ml tub)
Small bowl of low fat ice-cream
A handful of nuts
Menu suggestion: week two
(Choose one item for each meal)

**Breakfast**
Cereal and reduced fat milk
Sardines on toast
Boiled eggs and tomato slices on toast

**Lunch**
Tuna and salad roll
Potato salad
Coleslaw and bean salad
Caesar salad (no dressing)

**Dinner**
Salmon with mushroom and asparagus pasta
Baked bream with spinach pasta and green salad
Barbecued trout with avocado and tomato salad

**Dessert**
Fruit (2 pieces)
Small bowl of low fat custard
Low fat yoghurt (200ml tub)
A handful of nuts
**Recipes**

**Tuna and bean salad**  
*(Serves 2)*

**Ingredients:**
- 1 small tin tuna
- 1 small tin 4 bean mix
- 5 cherry tomatoes, quartered
- ¼ red capsicum, diced
- ¼ red onion, diced
- Low fat mayonnaise

**Method:**
Drain tuna and beans. Combine in a bowl and mix through diced vegetables. Add low-fat mayonnaise to taste.

**BBQ trout with avocado and tomato salad**  
*(Serves 2)*

**Ingredients:**
- 2 trout fillets (150g each)
- Olive oil
- Salt and black pepper
- 2 tbsp red wine vinegar
- 2 cloves garlic crushed
- ½ tsp extra virgin olive oil
- Sea salt and black pepper to taste

**Avocado and tomato salad**
- 2 avocados, skin removed and chopped into chunks
- Juice of 1 lemon
- 3 tomatoes de-seeded and sliced
- ¼ cup of basil leaves roughly chopped
- 1 bunch of rocket leaves, rinsed

**Method:**
1. Combine dressing ingredients in a small jar with a lid and shake well.
2. Salad: Place tomato and basil in a small bowl; add dressing and mix to combine. Pour lemon juice over the avocado and then toss the avocado through the tomato mixture. Garnish with rocket leaves and season with salt and pepper if desired.
3. Heat the barbecue until it is very hot. Brush the salmon fillets with a little olive oil and season the skin liberally with salt. Place fish skin-side down on the barbecue and cook for about 5 minutes; turn over when crisp and cook another 5 minutes or until cooked through.
4. Serve with salad.
BBQ garlic prawn skewers
(Serves 2)

Ingredients:
12 prawns
1 garlic clove, minced
1 tbsp olive oil
¾ zucchini, sliced
4 small mushrooms, sliced
8 cherry tomatoes
¼ red capsicum

Method:
Pre-heat the BBQ. Soak prawns in garlic and olive oil while you chop vegetables. Thread prawns and vegetables onto skewers, and BBQ until prawns turn pink.

Baked bream with tasty rice noodles
(Serves 2)

Ingredients:
2 bream fillets (120g each), skin on
3 lemons, juiced
4 green onions, thinly sliced
2 small carrots
1 zucchini
Cooking oil spray (canola or olive oil)
Handful of snow peas
200g rice stick noodles
⅓ cup rice milk
2 tbsp chopped dill
1 clove garlic, crushed

Method:
1. Preheat oven to 180°C/160° fan-forced. Spray bream fillets with oil.
2. Place skin-side down in a roasting pan. Drizzle with 2 tbsp lemon juice. Cover with foil and bake for 10-12 minutes or until cooked through. Sprinkle with half the onion
3. Meanwhile, use a vegetable peeler to cut carrot and zucchini into long ribbons.
4. Put noodles in a heat proof bowl and cover with boiling water for 10 minutes to soften. Drain.
5. Spray a large non-stick frying pan with oil. Add vegetable ribbons and snow peas and cook over medium heat, stirring, for 1-2 minutes. Add noodles, remaining lemon juice, rice milk, dill, garlic and remaining onions. Toss to combine; do not boil.
6. Place noodles onto plates and top with bream to serve.
Salmon with mushroom and asparagus pasta  
(Serves 2)

**Ingredients:**
- 200g pasta, fresh e.g. fettuccine or spaghetti  
- ½ cup (125ml) chicken stock
- 3 tbsp (60g) butter  
- ¼ cup (60ml) low-fat cream
- 2 tbsp extra virgin olive oil  
- Salt flakes and freshly ground black pepper
to taste
- 2 salmon fillets (150g each)  
- 1-2 spring onions  
- 1/2 cup (125ml) chicken stock
- 150g button mushrooms, sliced  
- 2 tbsp fresh tarragon leaves
- 1 bunch asparagus

**Method:**
1. Bring a large pan of salted water to the boil. Add pasta and cook according to directions. (Note for fresh pasta this may only take a few minutes).
2. Meanwhile, place two large frying pans on the cook-top and heat. Melt 1 tbsp of oil and 1 tbsp of butter in one pan. Heat the remaining butter in the other pan.
3. When butter has foamed and melted, add fish fillets, skin-side side down to the pan with both butter and oil. Cook until golden and half-cooked through, then turn over and cook the other side.
4. In the other pan, sauté spring onions and when soft, add mushrooms.
5. Meanwhile chop asparagus into 3-4cm lengths and add to pasta pan.
6. When mushrooms are softened, add chicken stock and cream to this pan and bring to the boil, simmer. Season to taste with salt and pepper. Drain pasta and asparagus and toss through mushroom sauce.
7. Squeeze lime over the fish. Place the pasta in a bowl, top with a piece of fish and sprinkle with tarragon leaves.

*As an alternative to button mushrooms replace with 150g punnet exotic mushrooms (shiitake, white enoki, pink cloud’s ear, gold oyster)
Baked bream with spinach pasta and green salad
(Serves 4)

Ingredients:
- 4 bream fillets (150g each)
- 1-2 tbsp butter, melted
- 1 lime, juiced
- 4 tbsp olive oil
- 2cm to 3cm ginger, grated
- 4 cloves of garlic, crushed
- 1 tbsp coriander, chopped
- 2 tomatoes, chopped
- ½ brown onion, chopped
- 1 cup of button mushroom, finely chopped
- ½ cup basil, finely chopped
- Salt and pepper, to taste
- 2 litres water
- Spinach pasta
- Garden salad

Method:
1. Combine melted butter, wine, lime juice and olive oil in a large bowl and stir together. Add grated ginger, crushed garlic, and chopped coriander, tomatoes, onion, button mushrooms, basil, salt and pepper. Stir thoroughly. The result should be a thick combination, but still contain plenty of juice.
2. Pour half of the marinade into a shallow baking dish, and place bream fillets on top. Place the rest of the marinade over the top of the fish so it is completely covered. Cover with aluminium foil, and refrigerate for 2 hours.
3. Preheat the oven, and cook for 20 minutes at 180°C, covered with aluminium foil.
4. Bring 2 litres of water to the boil. Cook spinach pasta for 12 minutes or until tender.
5. Drain water and serve 4 portions on a plate. Place a marinade covered fillet on pasta and serve with fresh garden salad.
For more information on seafood and health please visit www.cessh.curtin.edu.au

For more information on health during pregnancy, visit:

Food Standards Australia and New Zealand www.foodstandards.gov.au

National Health and Medical Research Council www.nhmrc.gov.au