

Metformin

Information for children, families and carers

We have given you this factsheet because your child's doctor has recommended that they start a medication called metformin. It explains what metformin is, and what the potential benefits and risks of taking it are. We hope it will help to answer some of the questions you may have. If you have any further questions or concerns, please speak to a member of our team.

What is metformin?

Metformin is a medication that is commonly used for management of type 2 diabetes in children and adults. It is also used in children and young people without diabetes who are at risk of developing diabetes or diabetes-related conditions in the future, such as:

- insulin resistance (when cells in your body don't respond well to insulin, a hormone made in your pancreas that helps your body use sugar for energy)
- pre-diabetes (where your blood sugar levels are higher than normal, but not high enough to be classed as diabetes)
- polycystic ovary syndrome, also known as PCOS (a condition that affects how the ovaries work)

How does metformin work?

Metformin works in two ways:

- it helps the cells (particularly muscle cells) in the body become more sensitive to the effect of insulin
- it prevents the liver from releasing too much sugar into the bloodstream (this means your child's body won't need to make as much insulin, which will reduce their feelings of hunger and lower their risk of developing diabetes in the future)

What are the benefits of metformin?

In children and young people, metformin can:

- reduce their blood sugar levels and insulin requirements
- lower their risk of developing type 2 diabetes in the future

- reduce their feelings of hunger
- help with weight loss over time (alongside diet and exercise plans)
- help with high cholesterol and fatty liver disease (changes in the body that result from excess body weight)
- (for girls with PCOS) regulate hormone balance (this can help some girls have regular periods and have less severe side effects from excess male hormones)

Not all children will respond in the same way to metformin. Although metformin can help with weight loss, it also has other health benefits that you can't see, such as reducing blood glucose and insulin levels, which are very important in the long run.

Are there any risks or side effects?

Metformin is very well tolerated by most children and young people. However, as with all medications, there are some potential side effects, including:

- stomach-ache
- diarrhoea (your child should take lots of small sips of water to keep hydrated)
- nausea (feeling sick)

These side effects are common when children first start taking metformin, but they tend to settle down after a few weeks. To help ease these side effects, we recommend that your child follows the advice below for the first few weeks:

- your child should take metformin with or after food
- your child should slowly increase their dose of metformin (according to their doctor's instructions) to allow their body time to adapt to the medication

Vitamin B12 deficiency

Metformin can cause vitamin B12 deficiency by reducing vitamin B12 absorption in the gastrointestinal tract.

Vitamin B12 is found in meat, fish, eggs, dairy products, yeast extract (such as Marmite) and specially fortified foods, so children will get enough vitamin B12 from their diet and won't need any additional vitamin supplements while taking metformin. However, if your child is on a vegetarian or vegan diet, we recommend they take vitamin B12 supplements (suitable for their age) to reduce their risk of vitamin B12 deficiency while taking metformin.

A doctor will perform a blood test once a year to check your child's vitamin B12 levels while they are taking metformin.

How is metformin given?

Metformin comes in the form of tablets (this is the most common form), a liquid and powder sachets. All forms have the same benefits, but many young people strongly dislike the taste of the liquid form and the powder sachets require some additional preparation. For this reason, we encourage younger children to learn to swallow tablets in order to be able to take metformin in tablet form.

Metformin is best taken with or after a meal. If your child is taking more than one dose of metformin a day, they should take it with their breakfast and dinner.

How long will my child need to take metformin for?

Most children will need to take metformin for several years. This is because metformin helps to prevent complications in the future.

However, some children may be advised by their doctor to stop taking metformin. For example, if:

- they have not benefitted from the medication as expected
- they have made strong and permanent changes to their diet and lifestyle which means they may no longer benefit from metformin

When should my child stop taking metformin?

Sick day rules

Your child should temporarily stop taking metformin if they are feeling unwell. For example, if they:

- have a high temperature (above 38.5°C)
- have severe diarrhoea or vomiting
- have a severe infection that needs antibiotic treatment
- are dehydrated (signs of this include being really thirsty, a dry mouth, going to the toilet less than four times a day, or dark yellow pee)

Your child can then start taking metformin again 24 to 48 hours after they feel better.

During extreme illness, metformin can make the blood more acidic. This can develop into lactic acidosis (a condition in which there's too much acid in the body) and may make your child's illness worse. Signs of lactic acidosis include:

- stomach pain
- muscle cramps
- heavy and deep breathing
- dizziness, drowsiness, or confusion

Lactic acidosis is extremely rare. However, if your child starts to breathe very fast and deeply and becomes dizzy, drowsy (sleepy) and confused, take your child to your nearest emergency department or call **999** for an ambulance straight away.

Planned procedures

If your child is due to have a procedure that uses contrast medium (dye) or a general anaesthetic (medicines that are used to send you to sleep during an operation), they will need to stop taking metformin the day before their procedure. They can then start taking it again 24 to 48 hours after their procedure (if they feel well and are able to eat and drink normally).

How do I order more metformin?

Your child's hospital doctor will ask your child's GP to issue them with a repeat prescription for metformin. You can then place a repeat prescription request with your child's GP and collect the medicine from your local pharmacy.

Contact us

If you have any questions or concerns, please contact us using the details below:

Paediatric endocrine nurse specialists

Telephone: **023 8120 8719**

Email: **PENS@uhs.nhs.uk**

Paediatric endocrine secretary

Telephone: **023 8120 6985**

Useful links

www.medicinesforchildren.org.uk/medicines/metformin-for-diabetes

www.nhs.uk/medicines/metformin

www.nhs.uk/live-well/eat-well

www.nhs.uk/live-well/exercise/exercise-guidelines/physical-activity-guidelines-children-and-young-people

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For help preparing for your visit, arranging an interpreter or accessing the hospital please visit **www.uhs.nhs.uk/additionalsupport**

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