

A Guide to:

Drug Treatments for Children in England who have SMA

If your child has SMA and you are considering the possibility of a drug treatment, you may find this information sheet useful.

It covers questions and topics that you may wish to consider in your discussions with your child's clinical team.

Includes:

- What causes 5q SMA
- Are any of the treatments a cure?
- Discussions to consider with your child's clinical team
- Summary of different treatments
- Is more than one treatment possible?
- Can my child switch treatments?
- Other care and management needed
- Further resources and support



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1. What causes 5q SMA

5q SMA is the most common form of SMA. It's known as '5q SMA' due to its genetic cause. It includes the different childhood onset 'Types' or clinical classifications, Types 1, 2 and 3. The treatments described in these pages are only for 5q SMA.

SMA affects a set of nerve cells called the lower motor neurons, which run from the spinal cord out to our muscles. The lower motor neurons carry messages that make it possible for us to move the muscles that we use to crawl and walk, to move our arms, hands, head, and neck, and to breathe and swallow.

For our lower motor neurons to be healthy, we need to produce an important protein called Survival Motor Neuron (SMN) protein. Most people have two working copies of a gene called *Survival Motor Neuron 1 (SMN1)*¹, which means they can produce enough SMN protein. People who have 5q SMA have mutations or deletions in both copies of their *SMN1* gene.

Another gene called *SMN2* is sometimes called the 'back-up' gene. It also produces a small amount of SMN protein, but even in healthy people, only makes approximately 10% of the amount produced by *SMN1*². People can have between 0 – 8 copies of the *SMN2* gene.

Having two faulty *SMN1* genes means that an individual relies on the back-up *SMN2* genes and can therefore only produce very low amounts of the SMN protein. This causes the lower motor neurons in their spinal cord to deteriorate and eventually die. Messages from their spinal cord do not efficiently get through to their muscles, making the muscles weak and therefore making movement more difficult or impossible. Their muscles waste due to lack of use and this is known as 'muscular atrophy'.

Having more copies of *SMN2* means that more SMN protein can be made, usually resulting in the impact of the condition being less severe.

For more information about 5q SMA and its causes:

smauk.org.uk/5atu

Are any treatments for 5q SMA a cure?

There are now three treatments funded by NHS England for children who have 5q SMA, though not all are options for all children. The table and the Q&As that follow, summarise information about the treatments and the criteria for access that have been agreed by NICE (The National Institute of Health and Care Excellence – that assesses and recommends whether a treatment should be funded by the NHS in England) and NHS England.

All three treatments increase the amount of SMN protein found in cells throughout the body. Increasing SMN protein in this way can counteract some of the negative effects caused by the low amounts of this important protein in people who have SMA. However, none of the treatments are a cure because:

- Timing is critical. Although the treatments can rapidly increase SMN protein production after administration, some irreversible damage may have already occurred in the nervous system. This may happen even before a baby is born.
- It is not known whether any of the treatments will have continuing effects as they are all so relatively new (see clinical trials information).



2. Discussions with your child's clinical team

The earlier treatment is started, the greater the effect of the drug is expected to be³. This, in turn, suggests that treatment of those with less severe symptoms (*i.e.*, those who have more healthy motor neurons and muscles) is expected to have the greater effect on outcomes. For those with very severe muscle weakness, there may not be any measurable response with treatment, but observations that there is no further loss of motor ability or strength (stabilisation) is a benefit in itself as, untreated, SMA is a progressive condition with decline in motor abilities over time. You might want to talk with your clinician about how long it might take to see if your child's treatment is proving beneficial.

The table on the following pages outlines a lot of information you may want to go over with your child's clinical team, as the team and you weigh up the risks and benefits of any treatment that may be possible.

If your child is recently diagnosed, when you talk with your child's medical team about these risks and benefits, you may want to ask questions, both for now and the future. For example, you might want to ask about possible benefits that your child may receive from a treatment, and how it might impact their future:

- sitting, standing or walking
- using their arms and hands
- breathing
- eating and drinking
- communicating
- life expectancy.

You may also want to ask about the possibility of your child having a long-term disability and the potential impact that this may have on your child and family. This discussion may include any need for specialist equipment, your home environment, access to education and any impact on independent living.

You may want to think about where and how each treatment is delivered and how often, and how this will impact on your child and your family.

Importantly, your child's clinical team will want to ensure that if you and they agree your child would benefit from treatment, that this starts as early as possible.

**Decisions about treatment can be complex.
Each child and family's situation and circumstances are very different, and discussions will be very individual.**

3. Summary of Treatments

- **Nusinersen** is the generic name for the drug, trademarked and manufactured by Biogen as **Spinraza™**
- **Onasemnogene abeparvovec** is the generic name for the drug, trademarked and manufactured by Novartis Gene Therapies as **Zolgensma™**
- **Risdiplam** is the generic name for the drug, trademarked and manufactured by Roche as **Evrysdi™**

We use both these names in this guide.

Spinraza™ (Nusinersen)	Evrysdi™ (Risdiplam)	Zolgensma™ (Onasemnogene abeparvovec)
Who may have access in England?	Who may have access in England?	Who may have access in England?
<p>Criteria were based on the information that was known about each drug's clinical and cost effectiveness at the time of the recommendations for NHS England funding. Information about clinical effectiveness was from clinical trials. All children must have regular medical and physiotherapy assessments and, if the treatment is funded via a Managed Access Arrangement, meet any other requirements – (see below).</p>		
<p>Children who have SMA Type 1, 2 or 3 who:</p> <ul style="list-style-type: none"> • may have an intrathecal injection into the spine in a way that is technically and clinically safe • are not permanently ventilated for more than 16 hours a day* • do not have a tracheostomy* • are not receiving risdiplam • have not had successful Zolgensma™ treatment <p>(*Children who do not meet these criteria but otherwise meet the eligibility criteria would be referred by your clinician for further discussion by the NHS England Clinical Panel).</p>	<p>Children who have SMA Type 1, 2 or 3 who:</p> <ul style="list-style-type: none"> • are not permanently ventilated for more than 16 hours a day* • do not have a tracheostomy* • are not receiving nusinersen • have not had successful Zolgensma™ treatment <p>(*Children who do not meet these criteria but otherwise meet the eligibility criteria would be referred by your clinician for further discussion by the NHS England Clinical Panel).</p>	<p>Children who have SMA Type 1 who:</p> <ul style="list-style-type: none"> • are 12 completed months of age or younger, or children older than this weighing up to 21kgs • do not have antibodies to AAV9 (adeno-associated virus 9) - this is the virus vector used to deliver the gene therapy into the cells of the body • do not have other medical problems that the clinical team think would make the treatment too risky for your child <p>If a child is receiving risdiplam or nusinersen, this will stop. There is currently no evidence to support treatment with more than one medication but there are some global clinical trials investigating this.</p>

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Who may have access in England?	Who may have access in England?	Who may have access in England?
<p>Infants identified with pre-symptomatic SMA are eligible for treatment if they have:</p> <ul style="list-style-type: none"> • 1 <i>SMN2</i> copy (where Type 0 SMA is not yet apparent) • 2 <i>SMN2</i> copies • 3 <i>SMN2</i> copies and an older sibling diagnosed with SMA Type 2 or 3 <p>Infants will be monitored closely for onset of symptoms and treated after SMA symptoms are noted if they have:</p> <ul style="list-style-type: none"> • 3 <i>SMN2</i> copies and no older sibling diagnosed with SMA Type 2 or 3 • 4 <i>SMN2</i> copies 	<p>Infants identified with pre-symptomatic SMA are eligible for treatment if they have:</p> <ul style="list-style-type: none"> • 1 – 4 <i>SMN2</i> copies 	<p>Infants identified with pre-symptomatic SMA are eligible for treatment if they have:</p> <ul style="list-style-type: none"> • 1- 3 <i>SMN2</i> copies and are aged 12 months and under
What is it and how does it work?	What is it and how does it work?	What is it and how does it work?
<p>Spinraza™ is a synthetic antisense oligonucleotide (a small piece of genetic material) that targets the 'back-up' <i>Survival Motor Neuron 2 (SMN2)</i> gene enabling it to produce more functional, full-length SMN protein.</p>	<p>Evrysdi™ is a small molecule drug that targets the 'back-up' <i>Survival Motor Neuron 2 (SMN2)</i> gene and enables it to produce more functional, full-length SMN protein.</p>	<p>Zolgensma™ is a gene therapy that delivers a healthy copy of the <i>SMN1</i> gene to motor neurons. So that the gene can reach the cells, it is packaged together with parts of a virus called AAV9 (adeno-associated virus 9) that transports it.</p>
How is it given?	How is it given?	How is it given?
<p>Spinraza™ is delivered directly into the cerebrospinal fluid (CSF) using a lumbar puncture – a needle is inserted through the skin into the space between the vertebrae (back bones) of the spine. Usually a local anaesthetic, such as 'numbing cream' is used, although occasionally a general anaesthetic may be needed.</p>	<p>Evrysdi™ is given in liquid form with a prescribed dose based on a child's weight. It can be given by mouth, nasogastric or gastrostomy tube. Roche's information does not include the possibility of Evrysdi™ by jejunostomy tube.</p>	<p>Zolgensma™ is injected into the bloodstream (intravenously). A small flexible tube (cannula) is placed into a vein in the arm or leg using a needle. The needle is then removed leaving the cannula in place for the infusion.</p>

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How often is it given?	How often is it given?	How often is it given?
<p>Spinraza™ injections are given:</p> <p>On the first day of treatment, day 0; then around day 14; day 28; day 63 – known as ‘loading doses’.</p> <p>Then once every 4 months – known as ‘maintenance doses’.</p>	<p>Evrysdi™ should be taken once daily after a meal, at approximately the same time each day. It is important not to miss any daily doses.</p>	<p>Zolgensma™ is a single, one-time treatment.</p> <p>All children are treated with corticosteroids before and after the treatment, to reduce side effects. Corticosteroids are given for at least three months, usually by mouth. After that time, the treating doctor assesses when and how corticosteroids can be stopped.</p>
Where does my child have to go to get it?	Where does my child have to go to get it?	Where does my child have to go to get it?
<p>Your child would need to be assessed at one of the UK’s specialist paediatric neuromuscular centres. Treatment must take place at a hospital. There may be local arrangements as to where treatment and monitoring actually takes place.</p>	<p>Your child would need to first be assessed at one of the UK’s specialist paediatric neuromuscular centres. Once the treatment has been prescribed it can be delivered to your home. It’s very important to store risdiplam as instructed in the Patient Information Leaflet.</p>	<p>Your child would need to first be assessed at one of the UK’s specialist paediatric neuromuscular centres. A referral is then made to one of the four centres in the UK that offers this infusion service. These are in Bristol, London, Manchester & Sheffield.</p>
<p style="text-align: center;">You can find a list of specialist paediatric neuromuscular centres at:</p> <p style="text-align: center;">smauk.org.uk/sn4j</p>		

Spinraza™ (Nusinersen)	Evrysdi™ (Risdiplam)	Zolgensma™ (Onasemnogene abeparvovec)
How will my child's response be monitored?	How will my child's response be monitored?	How will my child's response be monitored?
<p>Assessments are carried out approximately once every six months by your child's clinician and physiotherapist. They use scales that measure how your child's motor abilities are developing. Scales used depend on your child's age and which scales are the best ones to capture this change.</p> <p>Your feedback about your child is also important and is referred to as the 'Patient Reported Outcome Measures' (PROMs).</p> <p>As part of their care, your child's breathing ability and whether they are needing to have additional ventilatory support with this will also be monitored.</p>	<p>Assessments are carried out approximately once every six months by your child's clinician and physiotherapist. They use scales that measure how your child's motor abilities are developing. Scales used depend on your child's age and which scales are the best ones to capture this change.</p> <p>Your feedback about your child is also important and is referred to as the 'Patient Reported Outcome Measures' (PROMs).</p> <p>As part of their care, your child's breathing ability and whether they are needing to have additional ventilatory support with this will also be monitored.</p>	<p>Following the Zolgensma™ infusion, there are medical and physiotherapy reviews after 4 weeks and 8 weeks. At 12 weeks there is a medical review and physiotherapy standardised assessment which uses scales that measure how your child's motor abilities are developing. Scales used depend on your child's age and which scales are the best ones to capture this change.</p> <p>Assessments are then carried out approximately once every six months by your child's clinician and physiotherapist.</p> <p>Your feedback about your child is also important and is referred to as the 'Patient Reported Outcome Measures' (PROMs).</p> <p>As part of their care, your child's breathing ability and whether they are needing to have additional ventilatory support with this will also be monitored.</p>

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How would we know if the treatment is beneficial?	How would we know if the treatment is beneficial?	How would we know if the treatment is successful?
<p>Treatment is considered beneficial and will continue if:</p> <ul style="list-style-type: none"> • your child’s motor ability scales show they are making progress, or their condition has stabilised <i>and / or</i> • whilst on treatment, your child hasn’t become permanently ventilated (defined as 16 hours or more a day for 21 consecutive days in the absence of acute reversible infection or requirement of insertion of permanent tracheostomy) 	<p>Treatment is considered beneficial and will continue if:</p> <ul style="list-style-type: none"> • your child’s motor ability scales show they are making progress, or their condition has stabilised <i>and / or</i> • whilst on treatment, your child hasn’t become permanently ventilated (defined as 16 hours or more a day for 21 consecutive days in the absence of acute reversible infection or requirement of insertion of permanent tracheostomy) 	<p>Treatment is considered successful if:</p> <ul style="list-style-type: none"> • your child’s motor ability scales show they are making progress, or their condition has stabilised <i>and / or</i> • your child’s breathing ability hasn’t declined, and they haven’t had an increasing need for respiratory support <i>and/or</i> your child hasn’t had increasing ‘uncharacteristic’ respiratory infections needing hospital treatment.
How would we know if the treatment isn’t beneficial?	How would we know if the treatment isn’t beneficial?	How would we know if the treatment is unsuccessful?
<p>Treatment may be considered not beneficial if, over two consecutive assessments, your child’s scales show:</p> <ul style="list-style-type: none"> • their motor abilities are declining <i>and / or</i> • whilst on treatment, your child has become permanently ventilated (defined as 16 hours or more a day for 21 consecutive days in the absence of acute reversible infection or requirement of insertion of permanent tracheostomy) <p>In such instances, your clinical team would ask for advice from the NHS England national clinical panel of experts whether this treatment should continue. Your clinical team would discuss this advice with you.</p>	<p>Treatment may be considered not beneficial if, over two consecutive assessments, your child’s scales show:</p> <ul style="list-style-type: none"> • their motor abilities are declining <i>and / or</i> • whilst on treatment, your child has become permanently ventilated (defined as 16 hours or more a day for 21 consecutive days in the absence of acute reversible infection or requirement of insertion of permanent tracheostomy) <p>In such instances, your clinical team would ask for advice from the NHS England national clinical panel of experts whether this treatment should continue. Your clinical team would discuss this advice with you.</p>	<p>Treatment may be considered unsuccessful if your child’s motor ability scales over two assessments show:</p> <ul style="list-style-type: none"> • their motor abilities are declining <i>and/or</i> • their breathing ability is declining, and they have an increasing need for respiratory support <i>and/or</i>, • they have increasing ‘uncharacteristic’ respiratory infections needing hospital treatment. <p>In such instances, your clinical team would ask for advice from the NHS England national clinical panel of experts: whether they consider this treatment has been unsuccessful; whether your child might now be treated with nusinersen or risdiplam.</p>

Spinraza™ (Nusinersen)	Evrysdi™ (Risdiplam)	Zolgensma™ (Onasemnogene abeparvovec)
What do the clinical trials show?	What do the clinical trials show?	What do the clinical trials show?
<p>There are currently no ‘head-to-head’ clinical trials or studies that compare the results of these treatments. When you discuss the options with your child’s clinical team they will use their knowledge of these clinical trials, ‘real world’ data and their own experience. Though follow-up data is being collected for all drug treatments, uncertainties remain about both the long-term outcomes and the specific outcomes for any individual child.</p>		
<p>Spinraza™ has been tested in clinical trials in humans since 2011.</p> <p>It has been consistently shown to have a well understood safety profile and to be well-tolerated in several different trials across 5q SMA populations.</p> <p>In many people who have SMA, when compared to placebo or no treatment, nusinersen has been shown to lead to clinically meaningful improvements in muscle function because Spinraza™ leads to increased SMN protein production.</p> <p>Several trials of Spinraza™ are currently ongoing.</p> <p>You can read more about these clinical trials and their results here: smauk.org.uk/n7yc</p> <p>Biogen advised us that by the end of March 2022, globally more than 11,000 people have been treated with Spinraza™.</p>	<p>Evrysdi™ has been tested in clinical trials in humans since 2015.</p> <p>It has been consistently shown to have a well understood safety profile and to be well-tolerated in several different trials across 5q SMA populations.</p> <p>In many people who have SMA, when compared to placebo or no treatment, Evrysdi™ has been shown to lead to clinically meaningful improvements in muscle function because it leads to increased SMN protein production.</p> <p>Several trials of Evrysdi™ are currently ongoing.</p> <p>You can read more about these clinical trials and their results here: smauk.org.uk/enzl</p> <p>Roche advised us that by the end of March 2022, globally more than 5,000 people have been treated with Evrysdi™.</p>	<p>Since 2014, there is published data from clinical trials in humans, with children treated up to 2 years of age.</p> <p>It has been consistently shown to have a well understood safety profile and to be well-tolerated in these trials.</p> <p>In many children who have SMA, when compared to no treatment, Zolgensma™ leads to clinically meaningful improvements in muscle function because it leads to increased SMN protein production.</p> <p>Several trials of Zolgensma™ are currently ongoing with a wider range of children with SMA, including those who are older and heavier than in the initial trials.</p> <p>You can read more about these clinical trials and their results here: smauk.org.uk/a06o</p> <p>Novartis Gene Therapies advised us that by the end of March 2022, globally more than 2,000 children have been treated with IV Zolgensma™.</p>

What possible side effect can there be with these treatments and what warning and precautions are given?

Any drug, even ones that are commonly prescribed or sold over the counter, may cause possible side effects. Side effects of medications must all be noted and reported during their clinical trials, so this may mean a side effect is reported that is not directly related to the drug being tested but, for example, is the result of an unconnected infection or illness the patient is experiencing at the time – perhaps one they experience on a regular basis. Side effects are also picked up through the ongoing systems that are in place to monitor medications and their use in the ‘real world’. All possible known side effects are always listed in the Patient Information Leaflet or Summary of Product Characteristics that accompany a medication; they are grouped as ‘very common’ / ‘common’ / ‘uncommon’ / ‘rare’.

➤ The Black Triangle Scheme

New medicines and vaccines that are under additional monitoring have an inverted black triangle symbol (▼) displayed in their package leaflet and summary of product characteristic, together with a short sentence explaining what the triangle means – it does not mean the medicine is unsafe. Both Evrysdi™ and Zolgensma™ are subject to this scheme. If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in the package leaflet. You can also report side effects as follows:

➤ The Yellow Card Scheme

Reporting side effects of medications is hugely important in order to protect people and is everyone’s responsibility. This is done via the Yellow Card Scheme which applies to all three treatments. If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in the package leaflet. You can also report side effects directly via the Yellow Card Scheme www.mhra.gov.uk/yellowcard or search for MHRA Yellow Card in the Google Play or Apple App Store. You should also report side effects to the relevant pharmaceutical company.

➤ Warnings and Precautions

These are also described in any Patient Information Leaflet

In the following summary, we describe very common and common side effects for each treatment. We refer to warnings and precautions that clinicians have advised us to highlight. We do not cover rare or very rare side effects or where the frequency of the side effect is not known. We also give you the link to the Patient Information Leaflet for each treatment.

Your child’s clinical team will discuss warnings, precautions and possible side effects with you before you decide whether to go ahead with treatment. They will arrange for any necessary tests before treatment. They will explain any signs or symptoms you need to look for following treatment. They will also monitor other aspects of your child’s health and wellbeing. You can discuss any questions or concerns you may have with your child’s clinician.

Spinraza™ (Nusinersen)	Evrysdi™ (Risdiplam)	Zolgensma™ (Onasemnogene abeparvovec)
What side effects can it have?	What side effects can it have?	What side effects can it have?
<p>Side effects related to the lumbar puncture may occur while nusinersen is being given or afterwards. Most of these side effects are reported within 72 hours of the procedure.</p> <p>Very common: may affect more than 1 in 10 people:</p> <ul style="list-style-type: none"> • back pain • headache • vomiting 	<p>Very common: may affect more than 1 in 10 people:</p> <ul style="list-style-type: none"> • diarrhoea • rash • headache • fever <p>Common: may affect up to 1 in 10 people:</p> <ul style="list-style-type: none"> • nausea • mouth sores • bladder infection • joint pain 	<p>Very common: may affect more than 1 in 10 people:</p> <ul style="list-style-type: none"> • increases in liver enzymes seen in blood tests. <p>Common: may affect up to 1 in 10 people:</p> <ul style="list-style-type: none"> • vomiting • fever <p>An infection (e.g., cold, flu or bronchiolitis) before or after Zolgensma™ treatment may lead to more serious complications.</p>
Warnings and precautions	Warnings and precautions	Warnings and precautions
<p>Spinraza™ (and other therapies that work in the same way) can affect:</p> <ul style="list-style-type: none"> • the levels of platelets in the blood which are necessary for clotting. • how well the kidneys work. <p style="text-align: right;"><i>(continued over)</i></p>	<p>Based on findings in animals, it is advised that Evrysdi™ may reduce male fertility while on treatment and for up to 4 months after the last dose.</p> <p>If your child has reached puberty, your clinician will also discuss that because of the risks to any pregnancy, Evrysdi™ may only be prescribed for anyone sexually active if there is agreement to use contraception.</p> <p style="text-align: right;"><i>(continued over)</i></p>	<p>Zolgensma™ can:</p> <ul style="list-style-type: none"> • lead to an increase in enzymes (proteins found within the body) produced by the liver or injury to the liver – though actual liver failure is very rare. • lower blood-platelet counts (thrombocytopenia). • raise levels of a heart protein called troponin-I that may indicate injury to the heart. <p>As part of the Zolgensma™ treatment, to help manage any increase in liver enzymes that your child could develop they will be given a corticosteroid</p> <p style="text-align: right;"><i>(continued over)</i></p>

Spinraza™ (Nusinersen)		Zolgensma™ (Onasemnogene abeparvovec)
Warnings and precautions (continued)	Warnings and precautions (continued)	Warnings and precautions (continued)
<p>For more information, please see the Spinraza™ Patient Information Leaflet:</p> <p>medicines.org.uk/emc/product/2715/pil</p>	<p>For more information, please see the Evrysdi™ Patient Information Leaflet</p> <p>medicines.org.uk/emc/product/12582/pil</p>	<p>medicine such as prednisolone 24-hours before and for about 2 months or longer after treatment.</p> <p>As corticosteroids can affect the body's immune (defence) system, your child's doctor may decide to delay giving some vaccinations while your child is receiving corticosteroid treatment.</p> <p>For more information, please see the Zolgensma™ Patient Information Leaflet</p> <p>medicines.org.uk/emc/files/pil.11572.pdf</p>
<p>More information can also be found at</p> <p>smauk.org.uk/uhrt</p>	<p>More information can also be found at</p> <p>smauk.org.uk/2mkz</p>	<p>More information can also be found at</p> <p>smauk.org.uk/836u</p>

4. Can my child have more than one treatment at a time?

The NHS does not fund more than one treatment at a time.

If the 'one off' Zolgensma™ treatment has been unsuccessful - as described above - another treatment may be possible.

5. Can my child switch between Spinraza™ and Evrysdi™?

In January 2022, NICE published guidance on this question (we mostly use NICE's wording⁴ in this answer):

Both nusinersen (Spinraza™) and risdiplam (Evrysdi™) are only available under Managed Access Agreements (MAAs). An MAA is put in place when a medicine shows promising potential but there is significant uncertainty in the longer-term clinical evidence. MAAs provide a way for people to receive promising new treatments, while further evidence is collected to assess the long-term benefits of a new medicine.

Based on the evidence available when NICE (The National Institute of Health and Care Excellence) made its decisions about recommending whether the NHS should fund risdiplam and nusinersen, the long-term benefits for people were still very uncertain. The MAAs have been designed to allow enough time for additional evidence to be generated for NICE.

At the end of the MAA period, NICE will consider the new evidence and review whether the medicine should continue to be recommended for use by the NHS. While most treatments recommended for managed access go on to be recommended for routine use on the NHS, there is no guarantee of this.

If people switch between nusinersen and risdiplam, it's likely to be difficult and may not be possible to collect reliable evidence relating to the impact of each individual treatment. As a result, it's possible that the evidence generated under the MAA is insufficient to enable NICE to recommend one or both drugs for use on the NHS.

Your child's treating clinician will consider very carefully with you whether there is a clinical reason for your child to switch from one treatment (treatment A) to another (treatment B), as switching back to treatment A is only likely to be advisable if:

- treatment B is causing side effects that preclude the administration of treatment B **and/or**
- there is demonstrable deterioration in motor or respiratory (breathing) function following the switch to treatment B.

Given the complex nature of decisions around switching treatments, the treating clinician will have these discussions face-to-face with the parent(s) and their child. It is also recommended that the treating clinicians seek advice from the **NHS England Clinical Panel** of SMA experts in the event that there may be a case for switching back to treatment A.

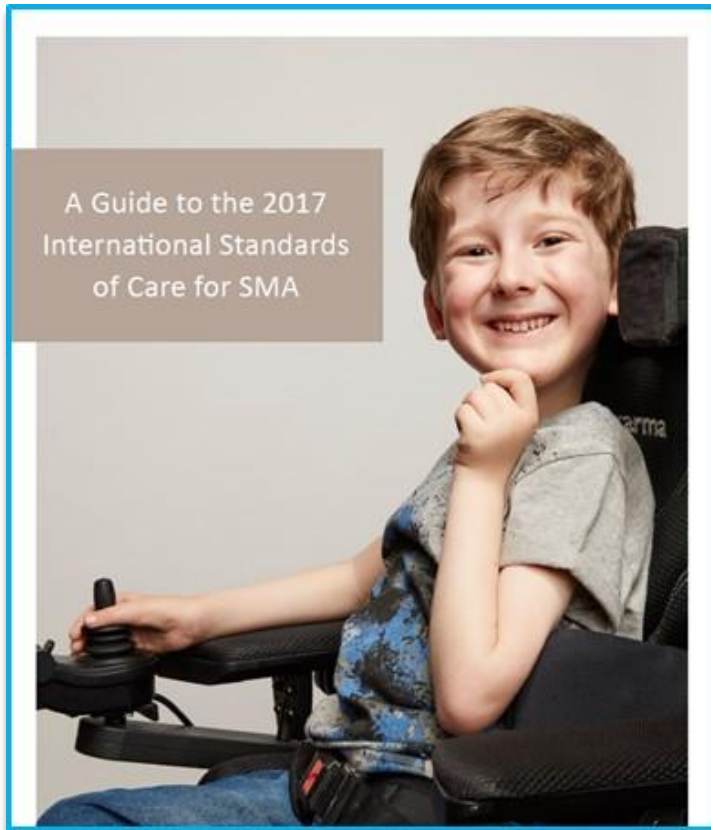
Where a switch between treatments is necessary, there should be:

- a gap of four months between stopping treatment with nusinersen and starting treatment with risdiplam

- a gap of 15 days between stopping treatment with risdiplam and starting treatment with nusinersen (this may be shortened exceptionally).

It may be necessary for nusinersen loading doses to be administered again, if you were to switch from nusinersen to risdiplam and then switch back again.

6. Is any other care and management needed as well as a drug treatment?



None of the treatments are a cure for 5q SMA and it is essential that your child also has the best supportive care possible. This remains important for managing your child's condition and will help to optimise the impact of the treatment. Care may include breathing support, nutritional support and advice, physiotherapy, spinal, bone and palliative care.

Palliative care is an active approach to care, aiming to support the physical, emotional, cultural, spiritual and practical needs of a child and family from the point of diagnosis onwards. The overall aim is to achieve the best quality of life for any child and their parents and carers.

The International Standards of Care for SMA (SoC)^{5,6} set out recommendations for all these aspects of care. There is a family guide⁷ to these – see the resources section on the next page for the link to this.

7. Further Resources and Support

➤ **SMA UK treatment and research-related information**

- This website section tells you about other research developments: smauk.org.uk/treatments-research
- You can keep up to date by signing up for SMA UK's monthly E-news: smauk.org.uk/about/newsletter-sign-up

➤ **SMA UK condition-related information**

- You'll find a wide range of other leaflets and resources in this section of the website: smauk.org.uk/support-information
- If your child has been recently diagnosed, you may find one of these guides helpful: smauk.org.uk/c1k3
- Living With SMA has a wide range of information and ideas for daily living: smauk.org.uk/living-with-sma

➤ **Standards of Care for Spinal Muscular Atrophy (2017)**

- You can read or download 'A Guide to the 2017 International Standards of Care for SMA' here: smauk.org.uk/da0t

8. References

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Our thanks to the writers and reviewers who assist us in our information production. A list of who this includes may be requested from information@smauk.org.uk

We make every effort to provide information that is complete, correct and up to date. We signpost to recommended and trusted organisations where relevant. We cannot, though, guarantee we always get it right.

Our healthcare information is not intended to replace that provided by your healthcare team. Medical advice for any individual should always come from their own medical team.

If you have any feedback about this information, please do let us know at: information@smauk.org.uk

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