SPINRAZA™ (nusinersen) injection 12 mg/5 mL

SMA Infant

Brought to you by Biogen

What's next

after a spinal muscular atrophy diagnosis?

Babies as young as **3 days old** have been treated with SPINRAZA*

Starting treatment early may make a difference for your baby

*Includes clinical trial patients.

Not an actual patient.

More than 7,000

infants and children have been treated with SPINRAZA worldwide*

*Based on commercial patients, early access patients, and clinical trial participants through September 2021.

EXPLORE

SPINRAZA Pediatric Clinical Trials

ENDEAR trial (pg.10)
and NURTURE study (pg.12)

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

INDICATION

SPINRAZA® (nusinersen) is a prescription medicine used to treat spinal muscular atrophy (SMA) in pediatric and adult patients.

SELECTED IMPORTANT SAFETY INFORMATION

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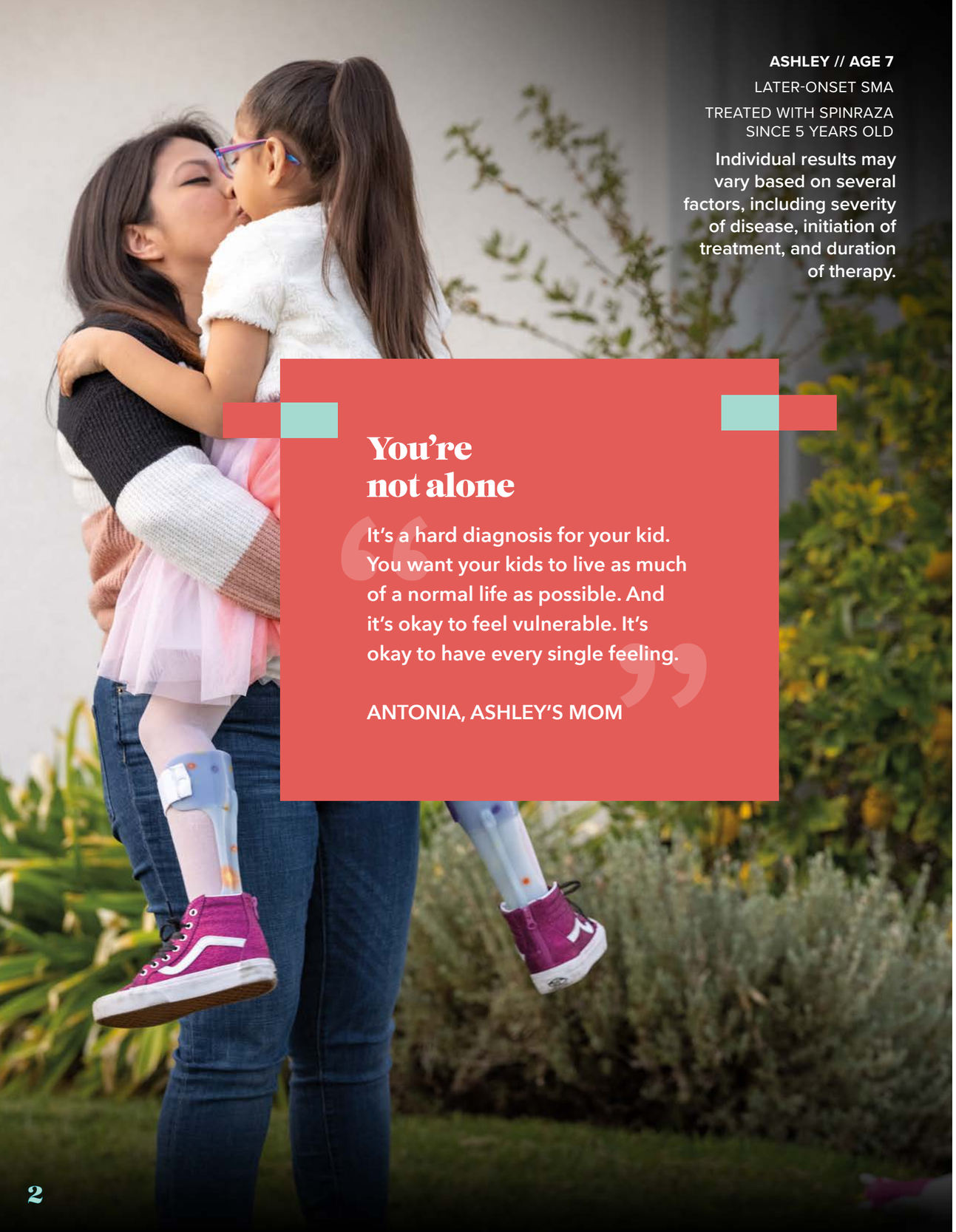
Please see additional Important Safety Information on page 17 and click for full Prescribing Information.



ASHLEY // AGE 7

LATER-ONSET SMA

TREATED WITH SPINRAZA SINCE 5 YEARS OLD

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

You're not alone

"It's a hard diagnosis for your kid. You want your kids to live as much of a normal life as possible. And it's okay to feel vulnerable. It's okay to have every single feeling."

ANTONIA, ASHLEY'S MOM

Contents

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You hear the words “spinal muscular atrophy,” but what does that mean?

Spinal muscular atrophy (SMA)

is a genetic disorder of the central nervous system (CNS) that will eventually affect all the muscles in the body. It is a progressive disease, which means children and adults with SMA may lose muscle strength over time. For your baby, SMA may affect their ability to reach certain motor milestones such as rolling, sitting, or standing.

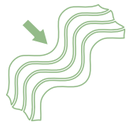
It’s possible that your baby could be permanently losing motor function before showing any symptoms. Some infants with the most severe form of SMA do not survive, or they require permanent ventilation by the age of two.

Because muscle loss is permanent and can happen quickly in infants and children, it’s important to speak with your doctor about treatment for SMA.

You may be wondering,
“what’s happening inside my baby’s body?”

Not an actual patient.

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.



Muscles need signals from the CNS

Motor neurons send signals to muscles from the CNS. These neurons need survival motor neuron (SMN) protein in order to work. Without SMN protein, motor neurons die off. With no signals from the CNS, muscles get weaker and weaker.

SMN1 is mutated in SMA

People with SMA can’t generate enough SMN protein because the *survival motor neuron 1* (*SMN1*) gene is mutated or deleted.

SMA=insufficient SMN protein

People with SMA rely on another gene everyone has, *SMN2*, to make SMN protein. But this gene can’t make enough full-length protein for all the motor neurons.

Measuring motor function regularly can help track disease progression and determine if patients are achieving their goals for treatment

Learn more about SMA at SPINRAZA.com/AboutSMA.

7000+

infants and children have been treated worldwide†

3 days to 80 years

From 3 days* to 80 years old,‡§ there's someone from almost every age group who has received SPINRAZA

*Includes clinical trial patients.
†Based on commercial patients, early access patients, and clinical trial participants through September 2021.
‡Pivotal clinical studies of SPINRAZA included patients from 3 days to 16 years of age at first dose but did not include sufficient numbers of subjects aged 65 and older to determine whether they respond differently from younger patients.
§Based on commercial patients in the US (including Puerto Rico) through December 2020.

SPINRAZA® (nusinersen):

The first FDA-approved treatment for children and adults with SMA

SPINRAZA is a prescription medicine that specifically targets an underlying cause of muscle weakness in SMA. Thousands of children around the world have received SPINRAZA, including babies as young as 3 days old.*

7+ Years

SPINRAZA is supported by 7+ years of safety and efficacy data, evaluated in the longest clinical trial program in SMA to date.

Your healthcare provider is your primary resource for questions related to SMA and SPINRAZA. Be sure to talk to them about your baby's treatment options.

INDICATION

SPINRAZA is a prescription medicine used to treat SMA in pediatric and adult patients.

SELECTED IMPORTANT SAFETY INFORMATION

The most common side effects of SPINRAZA include lower respiratory infection, fever, constipation, headache, vomiting, back pain, and post-lumbar puncture syndrome.

These are not all of the possible side effects of SPINRAZA. Call your healthcare provider for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088.

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What is a pivotal study?

A study used to get FDA-approval for a drug. It is designed to ensure that the efficacy and safety seen in the study are because of the drug.

What is HINE-2?

The Hammersmith Infant Neurological Examination Section 2 is a motor function assessment scale used to measure 8 developmental milestones: head control, sitting, voluntary grasp, ability to kick, rolling, crawling, standing, and walking.

{ENDEAR Pivotal Study}

Consider clinical trial data when making a treatment decision

ENDEAR was a 13-month study in 121 symptomatic children aged less than 7 months with early-onset SMA. It was a randomized, sham-controlled study, which means children were randomly placed into a treated or untreated group.

The study evaluated the effect of SPINRAZA® (nusinersen) on survival without needing permanent ventilation. It also looked at how many children had an improvement in motor milestones according to HINE-2.

Your healthcare provider is your primary resource for questions related to SMA and SPINRAZA. Be sure to talk to them about your baby's treatment options.

Safety

The most common side effects were lower respiratory infection (55%) and constipation (35%). Serious adverse reactions of atelectasis (collapsed lung) were more frequent in the SPINRAZA-treated group (18%) than in the control group (10%)

ENDEAR was the first trial in children with SMA to show **time to death or permanent ventilation, and improvement in motor milestones.**

Compared with untreated patients, children on SPINRAZA had a

63% reduced risk of mortality

68% (28/41) of untreated children died or received permanent ventilation versus **39% (31/80)** of children treated with SPINRAZA

Infants with Type 1 SMA, the most common and most severe type of SMA,

showed improvements in motor milestones that are rarely, if ever, achieved in untreated children.

Motor milestones included:

Head Control

Rolling

Independent Sitting

Standing

51% of SPINRAZA-treated children achieved the definition of **a motor milestone responder** according to HINE-2 at 13 months versus **0%** of untreated children.

Children with at least a 2-point increase in their ability to kick, or at least a 1-point increase in head control, rolling, sitting, crawling, standing, or walking were called motor milestone responders.

SELECTED IMPORTANT SAFETY INFORMATION

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This information is not intended to replace discussions with your healthcare provider.

Please see additional Important Safety Information on page 17 and click for full Prescribing Information.

Learn more about ENDEAR

SPINRAZA.com/ENDEAR.

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What is a supportive study?

A study that is not needed to gain FDA approval, but provides additional information on a drug's safety and efficacy.

What are WHO motor milestones?

A set of 6 milestones established by the World Health Organization that healthy children are expected to achieve by 2 years old.

What is HINE-1?

Section 1 of the Hammersmith Infant Neurological Evaluation for infants between 2 and 24 months of age assesses various items including sucking and swallowing ability.

The natural history of SMA shows infants with Type 1 would not survive or would require permanent ventilation by 13.5 months of age.

{NURTURE Supportive Study}

What starting treatment early meant for infants in a supportive study

NURTURE is an ongoing study in 25 infants 6 weeks of age and younger at the start who have not yet shown symptoms of SMA (presymptomatic). The study is evaluating the effect of SPINRAZA® (nusinersen) on survival without the need for permanent ventilation and on reaching WHO motor milestones.

Limitations include the small participant group size and the single-arm study design, which means all infants received SPINRAZA.

At the initial interim analysis performed after all infants had received SPINRAZA for at least 14 months (median, 25 months; range, 14 to 34 months), 100% (25/25) of infants were alive without the need for permanent ventilation, 100% (25/25) were sitting without support, 88% (22/25) were walking with assistance, and 77% (17/22) of infants were walking independently.

Safety

After a follow-up of over 3.9-5.7 years, 25/25 infants experienced any adverse events (mild, moderate, or severe) and no new safety concerns were identified. Safety was consistent with the SPINRAZA prescribing information.

The NURTURE study shows SPINRAZA results in presymptomatic infants who began treatment at

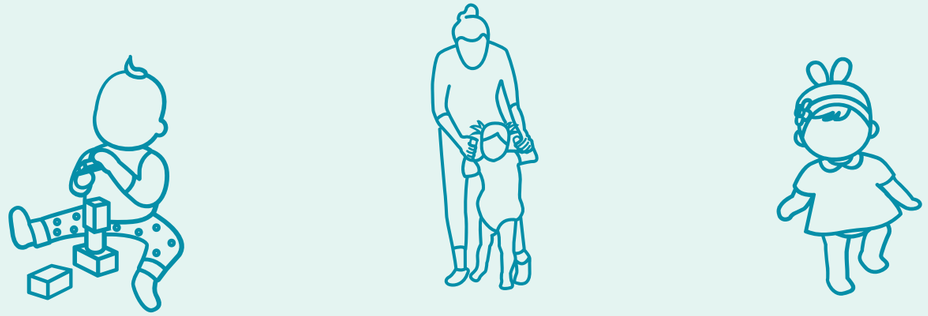
6 weeks of age and younger

100% (25/25) of infants

in the NURTURE study were alive without the need for permanent ventilation after nearly 5 years of follow-up (median, 4.9 years; range, 3.9-5.7 years).

At a median follow-up of 4.9 years (range, 3.9-5.7) children

achieved WHO motor milestones



100% (25/25)
were sitting without support

96% (24/25)
were walking with assistance

92% (23/25)
were walking independently

After a median follow-up of 3.8 years (range, 2.8-4.7), most infants

had good sucking/swallowing ability with:

88% (23/25)
able to suck/swallow well

based on maximal HINE-1 score at the day 778 visit

84% (21/25)
never required tube feeds

92% (23/25)
never needed to suction excess saliva or drool

based on dysphasia assessment at the last available assessment: caregiver assessment of mealtime behavior, last 7 days

SELECTED IMPORTANT SAFETY INFORMATION

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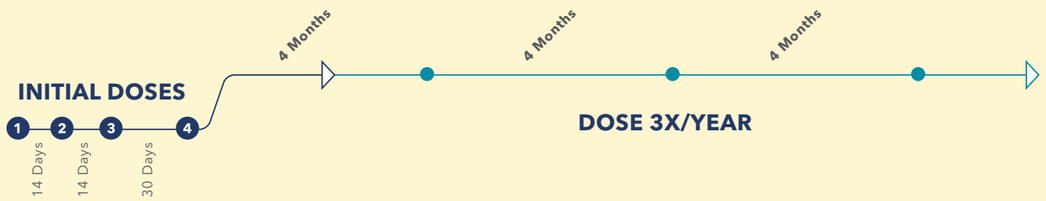
Learn more about NURTURE
SPINRAZA.com/NURTURE.

SPINRAZA™ (nusinersen) injection 12 mg/5 mL

{Dosing}

How SPINRAZA® (nusinersen) is delivered directly to where SMA starts

SMA is a disease of the central nervous system (CNS), and SPINRAZA is delivered directly to the CNS through a method called intrathecal injection. The solution is delivered into the lower back to reach the fluid of the spine. The procedure is always done by healthcare professionals experienced in administering lumbar punctures and may include sedation to help your child feel more comfortable.



The recommended dosage of SPINRAZA is 12 mg (5 mL) per administration.

The SPINRAZA dosing schedule begins with 4 initial loading doses. The first 3 occur in 14-day intervals and the fourth dose 30 days after the third dose. After these initial doses, SPINRAZA is administered in maintenance doses 3 times per year.

Blood and urine testing

Because an increased risk of bleeding and kidney damage has been seen with similar medications, your child may be at similar risk while receiving treatment with SPINRAZA. It is recommended that your child takes blood and urine tests once before starting treatment and again before each dose to monitor for signs of these risks.

Watch Emma,

7-year-old with SMA, explain how SPINRAZA targets an underlying cause of muscle weakness.

Watch at SPINRAZA.com/HowSPINRAZAWorks.

SPINRAZA™ (nusinersen) injection 12 mg/5 mL

Familiar faces

"He got his first dose right around 3 weeks old. Our care team includes a bunch of familiar faces we see every 120 days now. It's comforting to see the same people every visit—people that we've gotten to know over the last couple of years."

CHRISTINE, CAMDEN'S MOM

Learn about other children who have been treated with SPINRAZA.

Watch at SPINRAZA.com/Stories.

CAMDEN // AGE 4

PRESYMPTOMATIC SMA

TREATED WITH SPINRAZA SINCE 3 WEEKS OLD

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SELECTED IMPORTANT SAFETY INFORMATION

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{Support}

SMA360°: How Biogen surrounds you and your family with the support you need

SMA360 Support services from Biogen

Once your child is prescribed SPINRAZA® (nusinersen), you can access SMA360° support services from Biogen. Biogen's SMA360° support program provides services that address nonmedical barriers to access, like treatment logistics.*

Your SMA360° team consists of

Family Access Manager (FAM)

and a

Lead Case Manager (LCM)

Together, they can help you and your family **coordinate your child's treatment, understand your insurance benefits, and guide you toward any financial assistance you may be eligible for.** Remember, your child's doctor is your primary resource for any questions related to SMA and SPINRAZA.

*SMA360° is intended for US residents only.

SELECTED IMPORTANT SAFETY INFORMATION

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Important Safety Information

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Before taking SPINRAZA, tell your healthcare provider if you are pregnant or plan to become pregnant.

Please click for full Prescribing Information.

This information is not intended to replace discussions with your healthcare provider.

Continue reading to learn about getting your child started on SPINRAZA

SPINRAZA™ (nusinersen) injection 12 mg/5 mL

When considering treatment options for your child, you may be asking,

"What does starting SPINRAZA® (nusinersen) look like?"

Not an actual patient.

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

Access resources for getting started with SPINRAZA.

Find at SPINRAZA.com/GettingStarted.

Getting your child started on SPINRAZA

Make an appointment

First, you'll need to make an appointment with a healthcare provider (HCP) who can prescribe SPINRAZA.

Discuss the potential benefits and risks

Then, you can discuss the potential benefits and risks of treatment and address any concerns you may have. Together, you can determine whether SPINRAZA might be right for your child.

Fill out a Start Form

If you decide that it is, you and your HCP can fill out a Start Form, and your HCP will submit it to Biogen.

Scheduling and preparing your first dose

The hospital pharmacy will order SPINRAZA. You may receive a call to confirm the order then SPINRAZA will be shipped directly to your treatment location with your permission.

The Biogen SMA360° team will reach out to help you

Once a Start Form is submitted, a member of the Biogen SMA360° team will reach out to help you navigate the logistics of getting your child's first SPINRAZA dose.

SELECTED IMPORTANT SAFETY INFORMATION

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SPINRAZA™ (nusinersen) injection 12 mg/5 mL

CAMERON // AGE 4

EARLY-ONSET SMA

TREATED WITH SPINRAZA
SINCE 7 WEEKS OLD

Individual results may vary based on several factors, including severity of disease, initiation of treatment, and duration of therapy.

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Biogen

225 Binney Street, Cambridge, MA 02142

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