



Case Study 2: RM Indeterminate



canvas Dx
by cognoa

Know Now. Act Sooner. Because knowing is the earliest intervention.

Integrating Canvas Dx into practice: The following case studies are for illustrative purposes only and are not based on real patients or events. They are not intended to influence clinical decision-making or suggest any particular diagnosis or course of treatment for any particular set of symptoms. They are only intended to illustrate how Canvas Dx can be incorporated into your practice.

Clinical Case Study 2: RM

RM is a 2 year, 3 month old boy being seen by his primary care pediatrician due to caregiver concerns regarding his development and behaviors.

- His mother reports that at age 15 months, RM started having increased temper tantrums because he could not express his needs. Mother reports using time-out and redirection for these tantrums, but states that the tantrums can last up to an hour.
- Mother reports early motor developmental milestones were on time (fine, gross motor).
- His first words were delayed at 18 mo and he currently speaks some sentences. He interacts well with his parents, has good eye contact and at times can be very pleasant and cooperative.
- His diet is somewhat restricted, he won't eat any vegetables and only eats a few fruits. This has resulted in constipation and delayed toilet training; he is trained for urine but will not have a bowel movement on the toilet. When RM is constipated his behavior is much worse, and he has many more tantrums.
- He has very few items of clothing that he can wear; clothing that "feels bad" will set off his tantrums.
- His behavior has resulted in being expelled from one preschool, and parents are concerned about enrolling him in another preschool.



Based on caregiver report and observed behavior the pediatrician prescribes Canvas Dx.

Canvas Dx returns a Low **INDETERMINATE** output for RM

The pediatrician uses this result, in conjunction with his observations of RM, and the family's report of RM's behavioral difficulties to evaluate if RM meets DSM-5 criteria for autism. Because of his complex behaviors, in combination with the **Indeterminate** result, the pediatrician decides RM would benefit from a specialty evaluation to help determine a specific diagnosis. Based on findings in the detailed report, the pediatrician also determines that RM has a mixed receptive-expressive language disorder and suspected sensory integration disorder and risk for ADHD.

The pediatrician forwards the Canvas Dx result, together with the detailed report and an assessment summary he created within his portal, to the specialist to streamline future investigations.

While waiting for the specialist evaluation results, provides referrals for Speech and Language Therapy and Occupational Therapy to begin addressing RM's noted challenges as soon as possible.

The pediatrician discusses the findings and next steps with RM's family and schedules a future meeting with RM and his caregivers in 6 weeks time to discuss progress and any arising concerns.

[Read RM's Detailed Report on the next page >](#)

Detailed Report

NAME Rowan Martinez	DATE OF ASSESSMENT 2023-10-26	SEX Male	DOB 2021-01-01
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Autism Specific Testing

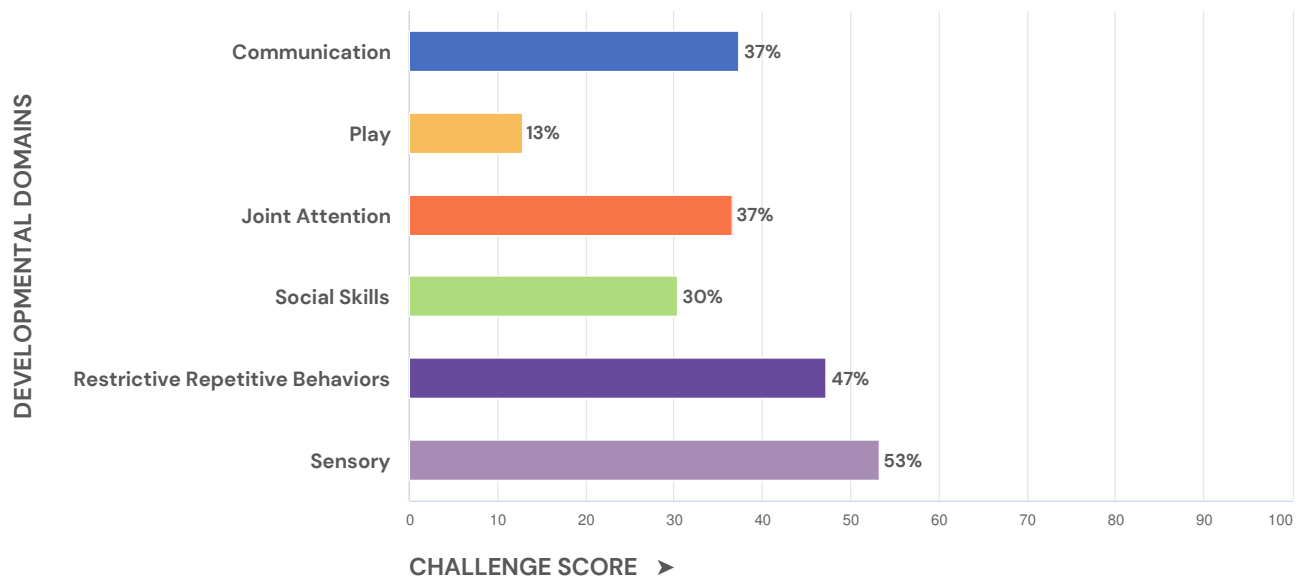
Canvas Dx was completed on 2023-05-15 when Rowan Martinez was 2 years, 5 months old.

Canvas Dx is an FDA authorized Diagnostic device for autism that has been clinically validated for use in children with developmental delay concerns, aged 18 through 72 months. Canvas Dx captures input from a parent/caregiver questionnaire, a healthcare provider questionnaire, and behavioral observations of the child (made by trained video analysts who view home videos of the child that are uploaded by the parent/caregiver).

This detailed report was generated using Canvas Dx item-level inputs for this child.

Summary of Domain Specific Challenges:

Higher scores indicate increased challenge



0% challenge score = maximally neurotypical score. A score of 0% challenge is achieved if the maximally neurotypical response is selected for each relevant question in this domain.

100% challenge score = maximally atypical score. A score of 100% challenge is achieved if the maximally atypical response is selected for each relevant question in this domain.

This graph combines item-level data from the three Canvas Dx inputs. In cases where a behavior was recorded as "not observed" (rather than present or absent) the response was excluded from the count.

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Developmental Domains Overview

Domain	Description	Evidence based therapies ¹
Communication	Includes aspects of nonverbal communication, receptive and expressive language as they relate to autism. For example, gestures, ability to understand spoken language or to communicate needs.	<ul style="list-style-type: none"> • Speech/language therapy • Social skills training • Early intensive behavioral intervention (e.g. ABA, NDBI) • Developmental therapy
Play	Includes aspects of play such as imaginative play, imitation, interest and engagement with other people.	<ul style="list-style-type: none"> • Social skills training • Early Intensive Behavioral Intervention (e.g. ABA, NDBI) • Developmental therapy
Joint attention	Ability to share focus on an object or area with another person (e.g. a parent points to a plane in the sky and says "look, a plane" and child looks at parents and then sky to share the experience)	<ul style="list-style-type: none"> • Social skills training • Early Intensive Behavioral Intervention (e.g. ABA, NDBI) • Developmental therapy
Social skills	Ability to use tools to communicate, interact, and build healthy relationships (e.g. the child's ability to engage in group play)	<ul style="list-style-type: none"> • Speech/language therapy • Social skills training • Early Intensive Behavioral Intervention (e.g. ABA, NDBI) • Developmental therapy
Restricted & Repetitive Behaviors and Interests	Highly restrictive or repetitive behaviors fixated on an interest (e.g. a child spends a lot of time lining up his toys)	<ul style="list-style-type: none"> • Behavioral intervention
Sensory	Related to processing information from the senses, like sight, smell and sound (e.g. a child has hypersensitivity to the tags in clothing)	<ul style="list-style-type: none"> • Occupational therapy*

1. Hyman, S. L., Levy, S. E., & Myers, S. M. (2020). Identification, evaluation, and management of children with autism spectrum disorder. *Pediatrics*, 145(1).

*Emerging literature/evidence base for sensory integration treatments.

Strength Identification

Healthcare provider reported:

- The healthcare provider reports that the child often uses hand signals to convey a message: The child spontaneously uses a variety of hand signals or gestures to get what they want.
- The healthcare provider reports that the child consistently looks back and forth during conversations.
- The healthcare provider reports the child socially picks up or shows objects to connect with others. The child will regularly bring objects to show others to share interest.
- The healthcare provider reports the child imitates actions of caregivers, e.g. vacuuming, household tasks and incorporates it into own play.
- The healthcare provider reports that the child does not engage in repetitive whole-body movements.

Caregiver reported:

- The caregiver reports that the child usually starts playing on their own with toys, crafts, games, or other activities without the caregiver's help.
- The caregiver reports that the child understands the words and phrases that the caregiver says to them well: The child is able to understand more than 50 words but not if used in a new or unusual way.
- The caregiver reports that the child usually responds, looks up, or pays attention to the caregiver when the caregiver starts talking to them.
- The caregiver reports that the child often tends to show concern or try to comfort others when they are upset, sick, or hurt. The child will use different ways to comfort others.
- The caregiver reports that the child usually plays back-and-forth social games like "patty-cake" or "Simon says". The caregiver reports that the child enjoys social games like this.
- The caregiver reports that the child often copies or imitates the way they do things around the house. The child will act out or copy a wide range of things that they see.
- The caregiver reports that the child usually uses a variety of expressions that are appropriate to the mood or situation.
- The caregiver reports that, when playing alone or with toys, the child usually pretends or makes up stories and characters.

Observed / reported behaviors and history of concern

SOCIAL COMMUNICATION AND SOCIAL INTERACTION	
DSM-5 COMPATIBLE DOMAINS	IDENTIFIED DOMAIN SPECIFIC CHALLENGES FOR THIS CHILD
Social-emotional reciprocity	<ul style="list-style-type: none"> • The healthcare provider reports the child mostly smiles but not with a lot of people. • The healthcare provider reports the child sometimes offers comfort without prompting and only in certain situations.

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	<ul style="list-style-type: none"> • The caregiver reports that the child rarely looks people in the eye during conversations or other social interactions. • The caregiver reports that the child sometimes shows things, like toys, to the caregiver or other people to share their interest and not just for getting help. • The caregiver reports that, when smiled at, typically, the child only smiles back if told to, or with familiar people. • The caregiver reports that the child only sometimes tends to share their excitement or happiness with the caregiver and other people: The child's sharing of joy is limited to certain activities, people or situations.
<p>Nonverbal communication</p>	<ul style="list-style-type: none"> • Videos show some deficits with social emotional reciprocity. <ul style="list-style-type: none"> • The healthcare provider reports the child mostly smiles but not with a lot of people. • The healthcare provider reports the child sometimes offers comfort without prompting and only in certain situations. • The healthcare provider reports that child sometimes shakes head "no" when asked a question or a request is made but not always. • The healthcare provider reports that the child sometimes points to communicate things of interest from a distance. The child both points at things and looks at others to get their attention but doesn't always make eye contact. <ul style="list-style-type: none"> • The caregiver reports that the child rarely looks people in the eye during conversations or other social interactions. • The caregiver reports that, when communicating, the child sometimes uses gestures such as waving "hello" or "good bye", clapping, giving a thumbs-up, or other similar hand signals: The child uses a few gestures. • The caregiver reports that, when smiled at, typically, the child only smiles back if told to, or with familiar people. • The caregiver reports that, when communicating, the child only sometimes naturally shakes their head to mean "No" and nods their head to mean "Yes" without being told to. • The caregiver reports that the child sometimes points to show something the child is interested in that is far away, such as an airplane in the sky, or a toy across the room, but generally, the child doesn't check back to make sure you are paying attention. <ul style="list-style-type: none"> • Videos show some deficits in nonverbal communication.

Developing, maintaining, and understanding relationships	<ul style="list-style-type: none"> • The healthcare provider reports the child mostly smiles but not with a lot of people. • The healthcare provider reports the child sometimes offers comfort without prompting and only in certain situations. • The healthcare provider reports that the child sometimes points to communicate things of interest from a distance. The child both points at things and looks at others to get their attention but doesn't always make eye contact.
	<ul style="list-style-type: none"> • The caregiver reports that the child sometimes shows things, like toys, to the caregiver or other people to share their interest and not just for getting help. • The caregiver reports that the child sometimes points to show something the child is interested in that is far away, such as an airplane in the sky, or a toy across the room, but generally, the child doesn't check back to make sure you are paying attention. • The caregiver reports that the child only sometimes tends to share their excitement or happiness with the caregiver and other people: The child's sharing of joy is limited to certain activities, people or situations.
	<ul style="list-style-type: none"> • Videos show some deficits in developing, maintaining, and understanding of relationships.

RESTRICTIVE OR REPETITIVE BEHAVIORS	
DSM-5 COMPATIBLE DOMAINS	IDENTIFIED DOMAIN SPECIFIC CHALLENGES FOR THIS CHILD
Stereotypic or repetitive behaviors	<ul style="list-style-type: none"> • The healthcare provider reports abnormal playing with toys or objects with some repetitive use of objects but doesn't interfere with other activities.
	<ul style="list-style-type: none"> • Videos show some examples of restricted, repetitive behavior.
Ritualized or inflexible behaviors	<ul style="list-style-type: none"> • The caregiver reports that the child sometimes seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a few sensory interests, but this does not interfere with playing, or with other activities.
Highly restricted, fixated interests	<ul style="list-style-type: none"> • The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time.

	<ul style="list-style-type: none"> The caregiver reports that the child sometimes seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a few sensory interests, but this does not interfere with playing, or with other activities.
Hyper- or hyporeactivity or unusual interest in sensory input	<ul style="list-style-type: none"> The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time. The healthcare provider reports the child sometimes has sensory issues, that is, upset, angered, or irritated by particular sounds, tastes, smells, sights or textures, But his or her reaction is mild.
	<ul style="list-style-type: none"> The caregiver reports that the child sometimes predictably gets upset by certain common noises, smells, sights, textures, flavors, or movements, however, they do not get very upset. The caregiver reports that the child sometimes seeks out, or becomes distracted with, sensations like touching, smelling, looking at, or listening: The child has a few sensory interests, but this does not interfere with playing, or with other activities.

To meet DSM-5 diagnostic criteria for autism a child must have persistent deficits in each of the three social communication and interaction domains PLUS at least two of the four restricted, repetitive behavior domains

Developmental history:

- In relation to the child’s development, the caregiver reports that the child met all milestones, but with a few concerns.
- The healthcare provider reports some uncertainty regarding developmental challenges/behavior before age 3 when compared with children the same age.

Clinically significant impairment in social, occupational, or other important areas of current functioning:

- The healthcare provider reports the child exhibits unusual sensory interests, and these behaviors take up a lot of time.

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Assessment summary prepared by Dr. Light Beacon MD

Rowan Martinez is a 2 years, 5 months old who was assessed due to developmental concern.

ICD-10 CODES

- F80.9 Developmental disorder of speech and language, unspecified

RECOMMENDATIONS

- Occupational Therapy
- Referral to specialist for additional assessment
- Speech & Language Therapy

NOTES

Suspect sensory integration disorder and risk for ADHD

Parents to provide update in 6 weeks as to access of services recommended. Referral sent to specialist for neuropsych testing and determination of definitive diagnosis.

PROVIDER NAME Dr. Light Beacon MD	
SIGNATURE Dr. Light Beacon MD	DATE 2023-10-26 09:53PM UTC

Signature Line

Electronically Signed by Dr. Light Beacon MD at 2023-10-26 09:53PM UTC. This note is a complete document once electronically signed.

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