

# IDDSI: International Dysphagia Diet Standardization Initiative

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These are NOT official IDDSI resources, educational materials or education programs, and they are NOT meant to replace materials and resources on [www.IDDSI.org](http://www.IDDSI.org).

# What is IDDSI?

- A global initiative to improve the lives of people worldwide living with dysphagia
- Multi-professional committee formed in 2013 with reps from 10 countries
- Independent, not-for-profit entity
- Developed a framework through systematic review & stakeholder consultation
- Provides common standardized terminology to describe food textures & drink thickness
- Provides testing methods to determine flow or textural characteristics of drink & food items
- Appropriate for all ages in all care settings
- Culturally sensitive



# IDDSI Implementation

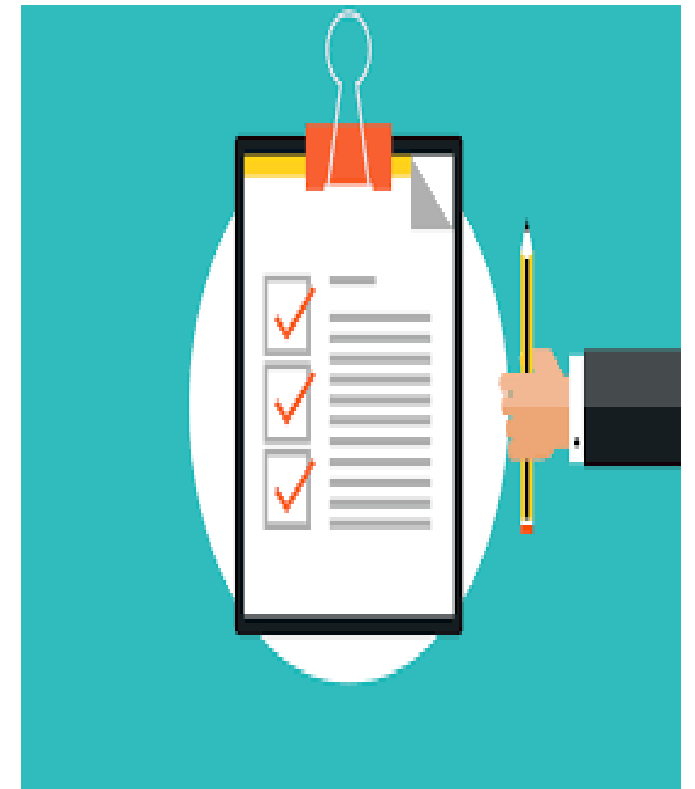
- Endorsed by ASHA and Academy of Nutrition and Dietetics
- Framework released in November 2015
- Official US launch date May 1, 2019
- Association of Nutrition and Dietetics will no longer support the National Dysphagia Diet terminology as of October 2021



# Support for International Standardization

Conducted survey of existing national terminologies & current practice

- 2050 responses from 33 countries
- Diverse respondents: patients, caregivers, healthcare professionals, food service providers, researchers and industry
- Results:
  - Common use of 3-4 levels of food texture (54 different names)
  - Common use of 3 or more levels of drink thickness across the age spectrum (27 different names)



# Why Standardize Dysphagia Diet Framework?

- Improve patient safety
- Improve communication within and between health professionals, providers and patients
- Increase visibility of professional interventions
- Gather opportunities to collect and evaluate treatment outcomes



# Systematic Review – Liquid Findings

- Thick liquids reduce risk of penetration-aspiration, but also increase risk of post-swallow pharyngeal residue
- Literature insufficient to pinpoint specific viscosity boundaries that would indicate increased risk of penetration/aspiration and residue
- Lack of data to determine the exact thickness levels of liquid required for therapeutic benefit (related to penetration/aspiration and/or improved swallowing function)
- Pediatric practitioners reported common use of a drink thicker than water, but thinner than adult nectar thick





# Systematic Review - Solids

- Optimal approach to determining best food consistency comes from careful exploration of tolerance for different foods in a comprehensive clinical assessment
- Thicker, stickier, harder items require greater effort in oral processing & swallowing
- Moisture content of food important to determining food readiness for swallowing
- Both *mechanical properties* of food & *size/shape* of bolus are relevant for choking risk
  - Associated with high choking risk in literature: hard, dry, chewy, sticky, crunchy, crumbly, floppy, fibrous, tough, stringy, round, long, have husks, or consist of multiple textures
- Poor dentition & neurological conditions associated with increased choking risk
- Identified common use of regular foods plus 4-5 levels of modified food textures for management of dysphagia
- Paucity of research on therapeutic benefit of food texture modification for dysphagia management but understood to positively impact risk of choking





# Systematic Review - Solids

## Normal chewing behavior involves:

- No posterior lingual-velar seal during chewing
- Particle size:
  - 2-4 mm represents size of chewed particles that healthy adults naturally masticate & reduce hard foods to for swallowing
    - Influenced the recommended particle size for Minced and Moist
  - 1.5 cm x 1.5 cm represents food texture industry standard “bite sample”; small enough to pass completely into the average adult trachea rather than obstructing it at the laryngeal inlet if accidentally inhaled; associated with reduced asphyxiation risk
    - Influenced the recommended particle size for Soft and Bite-sized



- Bite force
  - Individuals with > 20 teeth (10 paired occlusal units) have normal bite force values
  - Exponential decline in bite force observed with reduction in the number of teeth
- Particles of masticated food collect in pharynx, usually vallecular space, during oral prep
- Regardless of initial state of food, after oral processing & at point of swallow initiation, bolus is a cohesive mass

# IDDSI Framework

- Number of levels based on clinical experience, stakeholder consensus, and expert opinion.
- Dysphagia diet framework consists of a continuum of 8 levels, 0 -7
- Certain food textures share flow properties with thickened liquids, creating an overlap zone in the middle of the framework where the same numbers refer to both food and drink
- Color coded
- Text labels:
  - Liquids = upright triangle
  - Solids = inverted triangle



# Testing Methods

- Food/drink consistency varies based on temperature, moisture, freshness/ripeness, method of cooking, etc., so test under intended serving conditions
- Testing is the **BEST & RECOMMENDED** way to ensure a food/drink is appropriate for any particular IDDSI level
- IDDSI Tests:
  - Flow Test
  - Fork Drip Test
  - Spoon Tilt Test
  - Fork or Spoon Pressure Test
  - Chopstick Test
  - Finger Test
  - Transitional Food Test



# IDDSI Fork Drip Test: Food Classification

- Used to check the correct *thickness* and *cohesiveness* in Levels 3-5 foods
- Assess whether it flows through or how it holds together on the slots/prongs of a fork
- Place a small amount of food on fork & make sure the food holds shape on the fork and does not drip or flow continuously.



# IDDSI Spoon Tilt Test: Food Classification

- Used to determine the stickiness of foods (adhesiveness) and the ability of the food to hold together (cohesiveness)
- Tilt spoon and observe how the food falls off the spoon



# IDDSI Fork/Spoon Pressure Test: Food Classification



- Assess how the food changes when pressure is applied to the food with the tines/prongs of a fork or the back of a spoon
- Foods in Levels 4 - 7 and transitional foods
- Pressure is quantified by amount of pressure needed to make the thumb nail blanch to white
- The pressure applied to make the thumb nail blanch has been measured at  $\sim 17$  kPa. This pressure is consistent with tongue force used during swallowing (Steele et al., 2014)



# Additional IDDSI Tests: Food Classification

- Finger Test
  - If utensils are not available, you can use your fingers to pick up and break apart food to determine its IDDSI level
- Chopstick Test
  - If forks are not available, chopsticks can be used to pick up and break apart food to determine its characteristics





# IDDSI Transitional Food Testing



- Transitional food: food that starts as one texture and changes into another texture specifically when moisture is applied or change in temperature
- To Assess:
  - Use a sample the size of the thumb nail (1.5 cm x 1.5 cm), and place 1 ml of water on the sample and wait one minute. Apply fork pressure using the base of the fork until the thumbnail blanches to white.
  - It IS a transitional food texture if the sample is:
    - squashed and disintegrated (not original state) when fork is lifted
    - can be easily broken apart using chopsticks with little pressure.
    - breaks apart completely by rubbing the sample between the thumb and finger and does not return to its initial shape.
    - melted significantly and no longer in its original state (e.g. ice chips).

# IDDSI Flow Test – Liquid Classification

- Reliably categorizes a wide range of liquids in agreement with laboratory tests and expert opinion
- Allows for evaluation of liquids that are not typically considered “drinks” like condiments, sauces, soups, nutritional supplements and liquids medication
- Sensitive enough to show changes in consistency with temperature change
- Need stopwatch and specific reference slip tip syringe (also known as Luer slip tip syringe) as there is variability in barrel length/dimensions across brands
  - Measured length of 61.5 mm from the zero line to the 10mL line
  - BD brand was used in development of IDDSI tests



# IDDSI Flow Test

- **Demonstration of how to carry out the IDDSI Flow Test**
- <https://www.youtube.com/watch?v=--KHFRql39M&list=PLa8-IAAnKo0KYX524EQbTM3thWS9G2SCC6&index=1>

# Level $\triangle 0$ THIN

## Characteristics

- Flows like water
- Fast flow
- Can be taken in through any type of nipple, cup or straw



# Level THIN

## Physiological rationale

- Functional ability to safely manage liquids of all types



# Level $\triangle 0$ THIN

## Level 1 Examples

- Water
- Milk
- Tea
- Coffee
- Juice
- Thin 40% Varibar product



Syringe emptied before 10 seconds up

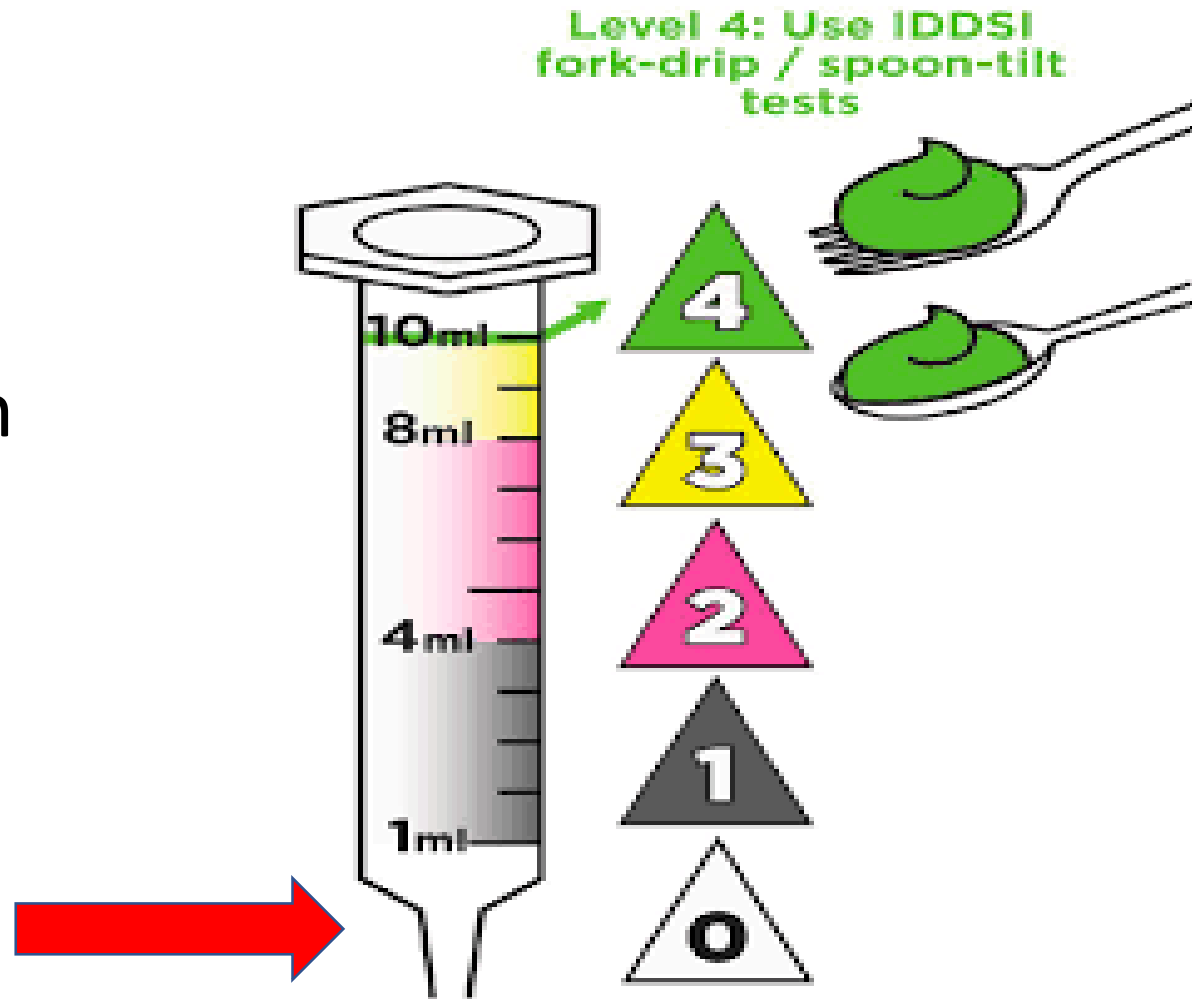


.4 mL

# Level THIN

## Testing Method

- IDDSI Flow Test
  - < 1 mL remaining in 10 mL slip tip syringe after 10 seconds of flow





# Level SLIGHTLY THICK

## Characteristics

- Thicker than water, thinner than traditional “Nectar Thick”
- Requires a little more effort to drink than thin liquids
- Flows through a straw, syringe, nipple
- Primarily used with pediatrics; similar to most Anti-regurgitation infant formulas



# Level SLIGHTLY THICK

## Physiological rationale

- In pediatrics – reduces flow speed but still able to flow through infant nipple
- In adults – Flows at a slightly slower rate, so used when thin liquid flow is too fast to be controlled safely



# Level SLIGHTLY THICK

## Level 1 Examples

- Some fruit nectars
- Some milks
- Some nutritional supplements
- Infant formula



1.6 mL

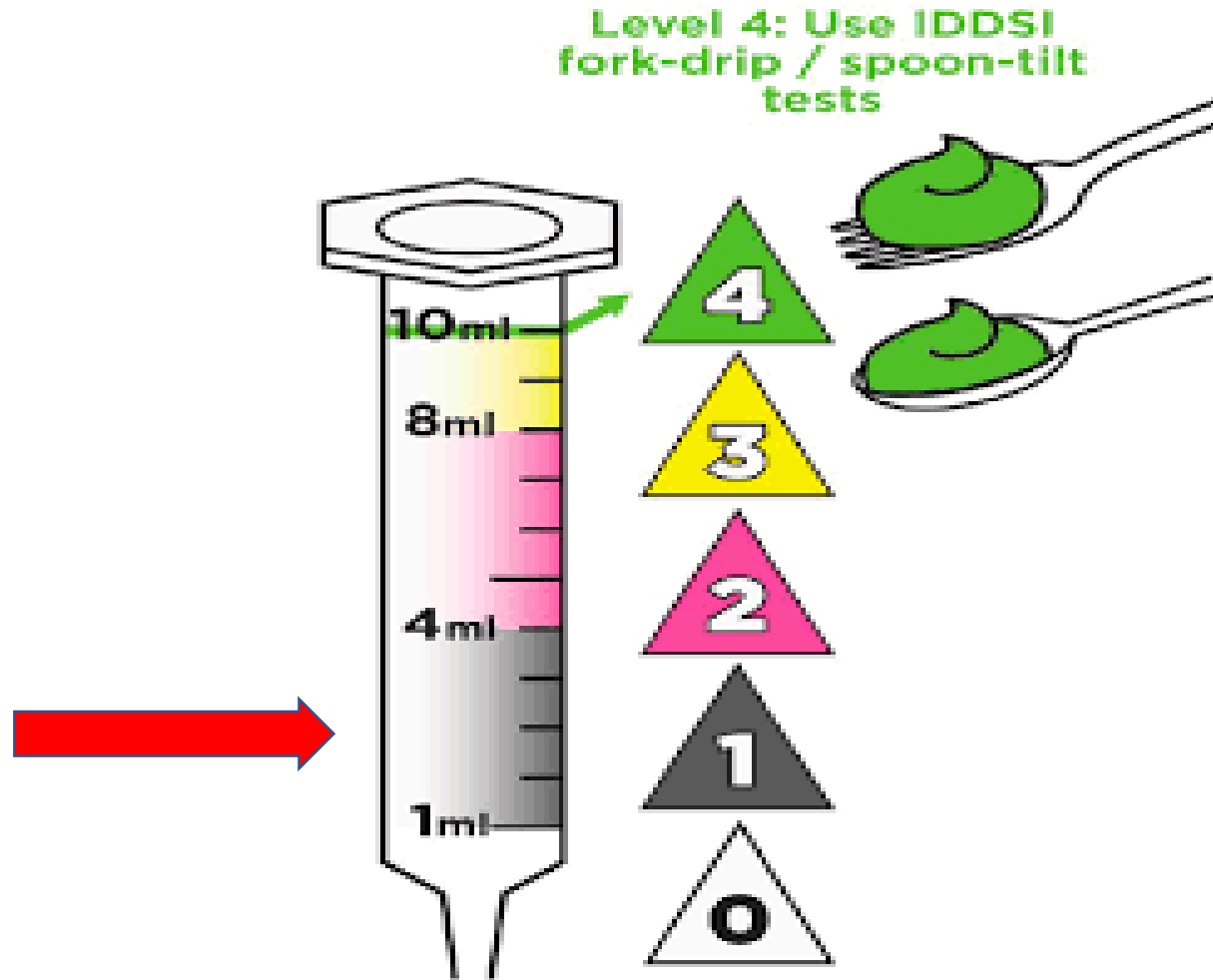


1.2 mL

# Level SLIGHTLY THICK

## Testing Method

- IDDSI Flow Test
  - Between 1-4 mL remaining in 10 mL slip tip syringe after 10 seconds of flow



# Level SLIGHTLY THICK

## Demonstration of Flow Test - Level 1

<https://www.youtube.com/watch?v=5vQzueOjgsM&list=PLa8-lAnKo0KYYX524EQbTM3thWS9G2SCC6&index=3>

# Level MILDLY THICK

## Characteristics

- Flows off a spoon
- Sippable
- Pours quickly from spoon, but slower than thin liquids
- Mild effort required to drink through a standard bore straw

# Level MILDLY THICK

## Physiological rationale

- Flows at a slightly slower rate, so used when thin liquid flow is too fast to be controlled safely
- May be suitable if tongue control is slightly reduced



# Level MILDLY THICK

## Level 2 Examples

- Most consistent with nectar thick liquid
- Yogurt drinks
- Some smoothies
- Some soups
- Nectar 40% Varibar product

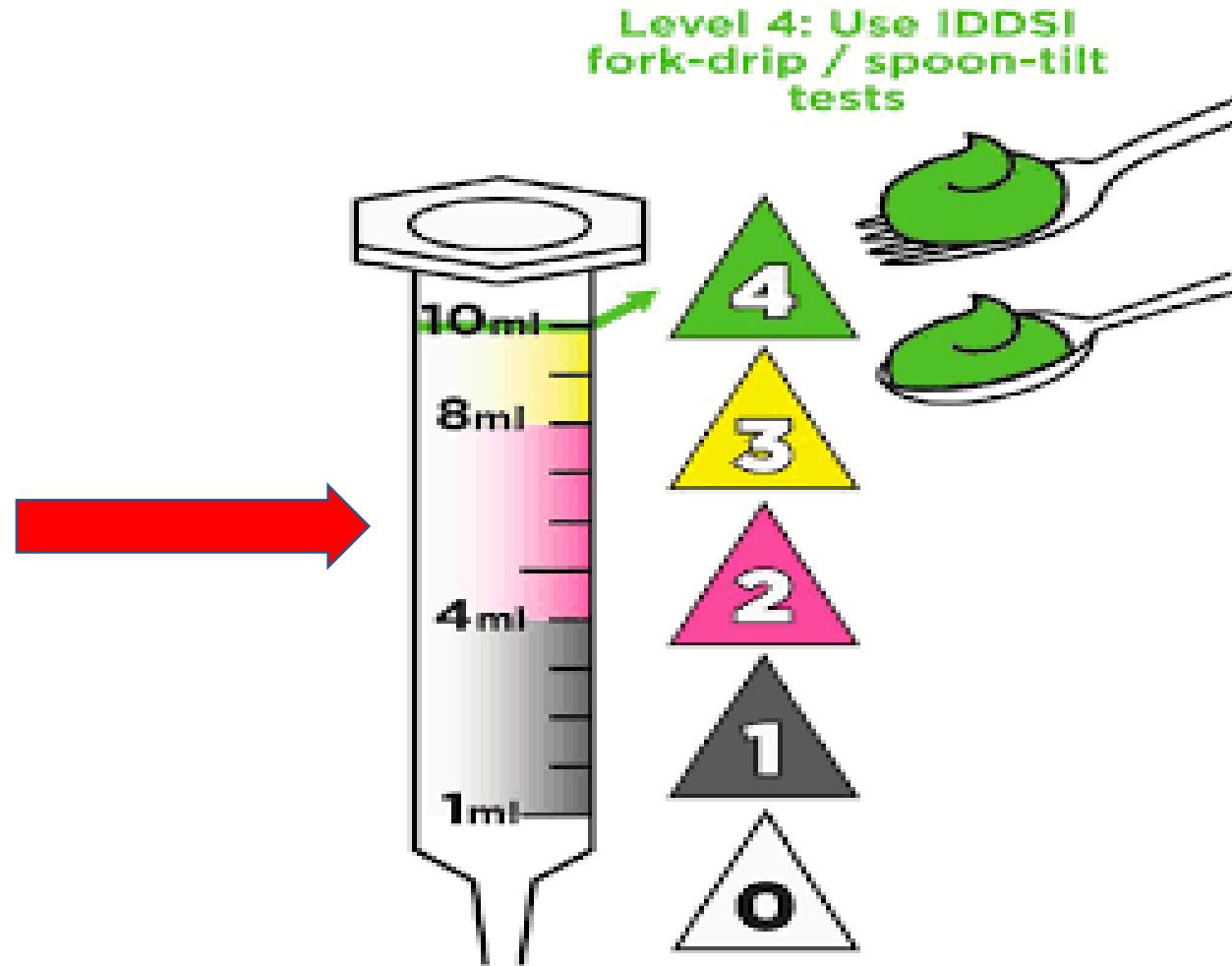


mL: 4.8 / 7.2 / 3.0 / 5.6 / 4.2 / 4.2 / 6.7

# Level MILDLY THICK

## Testing Method

- IDDSI Flow Test
  - Between 4-8 mL remaining in 10 mL slip tip syringe after 10 seconds of flow



# Level MILDLY THICK

## Demonstration of Flow Test - Level 2

<https://www.youtube.com/watch?v=WuM-KCoBv4M&list=PLa8-IAAnKo0KYYX524EQbTM3thWS9G2SCC6&index=4>

# Level MODERATELY THICK/ LIQUIDISED

## Characteristics

- Can be drunk from cup
- Moderate effort required to suck through a standard bore or wide bore straw
- Cannot be molded on plate because it will not retain its shape
- Can be eaten from spoon
- Cannot be eaten with fork because it drips slowly through the prongs in dollops
- No oral processing or chewing required – can be swallowed directly
- Smooth texture with no bits (lumps, fiber, husks, gristle, etc)

# Level MODERATELY THICK/ LIQUIDISED

## Physiological rationale

- May be suitable if tongue control is insufficient to manage Mildly Thick drinks
- Allows more time for oral control
- Need some tongue propulsion effort
- Pain upon swallowing

# Level MODERATELY THICK/ LIQUIDISED

## Level 3 Examples

- Most consistent with honey thick liquid
- Infant “first foods” like runny rice cereal or runny pureed fruit
- Some sauces and gravies
- Some syrups
- Some blenderized soups
- Some smoothies
- Thin Honey 40% Varibar product
  - Upper boundary of Level 3
  - Honey 40% Varibar behaves like Level 4

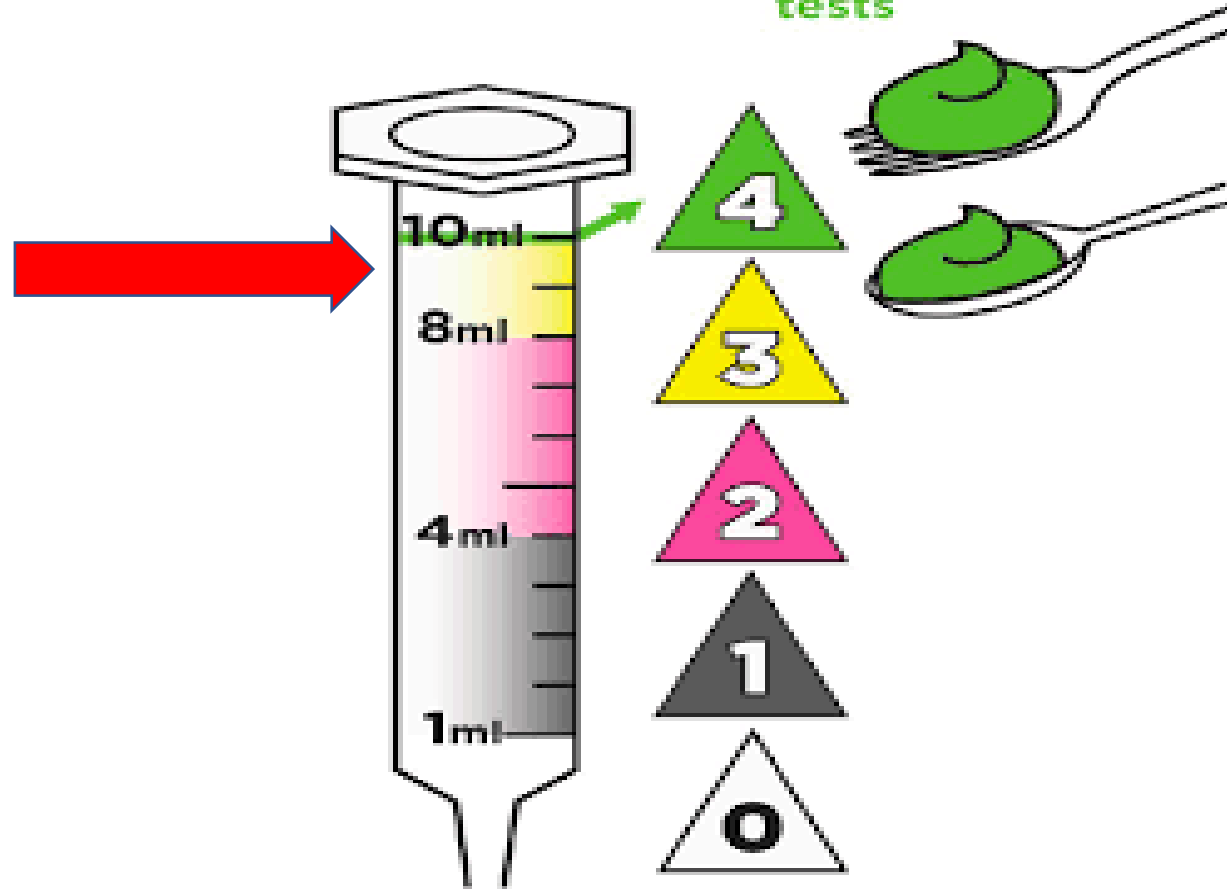


# Level MODERATELY THICK/ LIQUIDISED

Level 4: Use IDDSI  
fork-drip / spoon-tilt  
tests

## Testing Methods

- IDDSI Flow Test
  - More than 8 mL remaining in 10 mL slip tip syringe after 10 seconds of flow





# Level MODERATELY THICK/ LIQUIDISED

## Testing Methods

- Fork Drip Test
  - Drips slowly in dollops through prongs of fork 3
  - When fork pressed on surface, tines/prongs of fork do not leave clear pattern on surface
  - Spreads out if spilled onto flat surface
- Spoon Tilt Test
  - Easily pours from tilted spoons

Level  MODERATELY THICK/  LIQUIDISED

**Demonstration of Flow Test & Fork Drip Test - Level 3**

<https://www.youtube.com/watch?v=u2QxsjjQVvw&list=PLa8-lAnKo0KYYX524EQbTM3thWS9G2SCC6&index=5>

# Level 4 EXTREMELY THICK/ 4 PUREED

## Characteristics

- Eat with a spoon
- Not from a cup or through a straw
- Does not require chewing
- Can be piped, layered or molded because it retains its shape
- Shows very slow movement under gravity but can't be poured
- Falls off spoon in a single spoonful when tilted and continues to hold shape on a plate
- No lumps
- Not sticky
- Liquid must not separate from solid



# Level 4 EXTREMELY THICK/ 4 PUREED

## Physiological Rationale:

- If *tongue control is significantly reduced*, this category may be easiest to control
- Requires less propulsion effort than levels 5-7 but more than Liquidized/Moderately thick (Level 3)
- No biting or chewing is required
- Increased oral and/or pharyngeal residue is a risk if too sticky
- Any food that requires controlled manipulation or bolus formation are not suitable
- Pain on chewing or swallowing
- Missing teeth, poorly fitting dentures



# Level EXTREMELY THICK/ PUREED

## Level 4 Examples:

- Yogurt with no lumps (no real fruit or granola)
- Pudding and custard
- Jarred baby food
- Thick smooth soup
- Fruit Smoothies
- Dips: hummus, smooth guacamole, bean dip
- Mashed potatoes (no lumps)

## NOT:

- Peanut butter



# Level 4 EXTREMELY THICK/ 4 PUREED

## Testing Methods:

1. Fork Pressure Test
  - Smooth (no lumps and minimal granulation)
  - When a fork is pressed on the surface the tines/prongs of a fork can make a clear pattern on the surface, and/or the food retains the indentation from the fork
2. Fork Drip Test
  - Sample sits in a mound/pile above the fork; a small amount may flow through and form a short tail below the fork tines/prongs, but it does not flow or drip continuously through the prongs of a fork
3. Spoon Tilt Test
  - Cohesive enough to hold its shape on the spoon
  - A spoonful must plop off the spoon if the spoon is titled or turned sideways; a very gentle flick may be necessary to dislodge the sample from the spoon, but the sample should slide off easily with very little food left on the spoon. A thin film remaining on the spoon after the Spoon Tilt Test is acceptable, however, you should still be able to see the spoon through the thin film
  - May spread out slightly on a flat plate

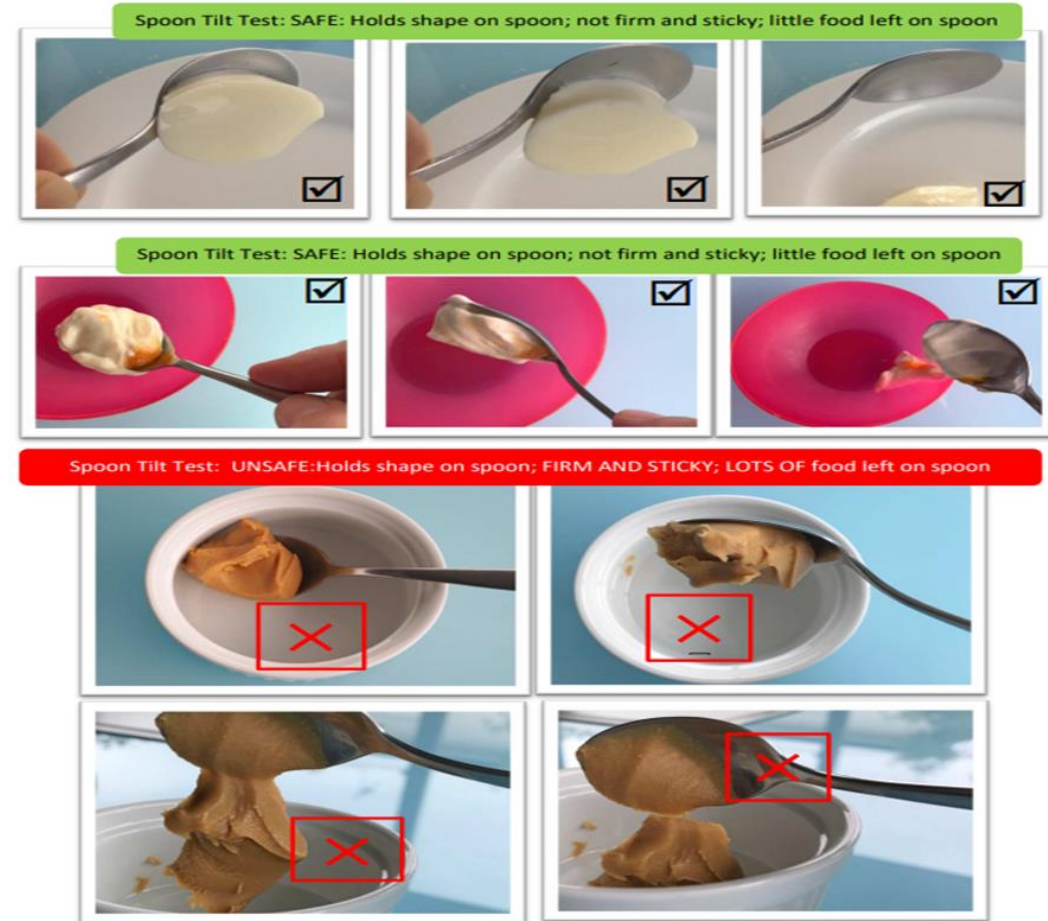
Level  4 EXTREMELY THICK/  4 PUREED

**Demonstration of Testing Methods:**

**<https://www.youtube.com/watch?v=QgzIEAPZKy8&list=PLa8-lAnKo0KbXKHgo1U8vwXihv5ahAMKj&index=1>**

# Level EXTREMELY THICK/ PUREED

## Demonstration of Testing Methods:

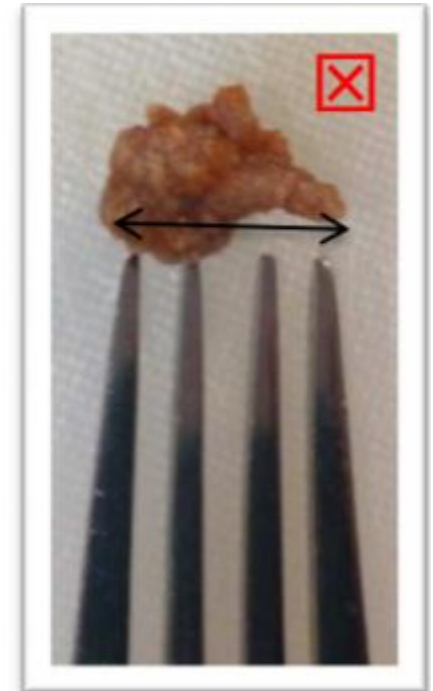




# Level MINCED AND MOIST

## Characteristics

- Eat with a fork/spoon
- Can be scooped and shaped (e.g. into a ball shape) on a plate
- Soft and moist with no separate thin liquid
- Small lumps visible within the food
- Adult, equal to or less than 4mm width and no longer than 15mm in length
- Lumps are easy to squash with tongue



# Level MINCED AND MOIST

## Physiological Rationale:

- Biting is not required
- Minimal chewing is required
- Tongue force alone can be used to separate the soft small particles in this texture
- Tongue force is required to move the bolus
- Pain or fatigue on chewing
- Missing teeth, poorly fitting dentures



# Level MINCED AND MOIST

## Level 5 Examples:

- Finely minced or chopped meat
- Mashed fish
- Steamed or boiled vegetables
- Finely minced fruit
- Cut pasta/noodles (4mm by 4mm) with lots of sauce
- Rice Krispies softened cereal with drained milk

## NOT:

- Sticky foods
- Foods with skin, bones, pits/seeds, strings
- Crumbly foods
- Fruit where juices break away



# Level MINCED AND MOIST

## Testing Methods:

### 1. Fork Pressure Test:

- Particles should easily separate between and come through the tines/prongs of a fork
- Can be easily mashed with little pressure from a fork (pressure should not make the thumb nail blanch to white)

### 2. Fork Drip Test:

- When scooped with a fork it sits in a pile/mound and does not easily fall through the tines/prongs of a fork

### 3. Spoon Tilt Test:

- A full spoonful must slide/fall off the spoon when tilted or turned sideways with very little food left on the spoon
- Scooped mound may spread very slightly on a plate

# Level MINCED AND MOIST

**Demonstration of Testing Methods:**

<https://www.youtube.com/watch?v=BcYuDst-t14>

# Level MINCED AND MOIST

*Minced & Moist food must pass all three tests!*



## **IDDSI Fork Test**

*Paediatric*, equal to or less than 2mm width and no more than 8mm in length

*Adult*, equal to or less than 4mm width and no more than 15mm in length

4mm is about the gap between the prongs of a standard dinner fork



**Soft enough to squash easily with fork or spoon**

**Don't need thumb nail to blanch white**

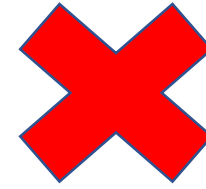


## **IDDSI Spoon Tilt Test**

Sample holds its shape on the spoon and falls off fairly easily if the spoon is tilted or lightly flicked

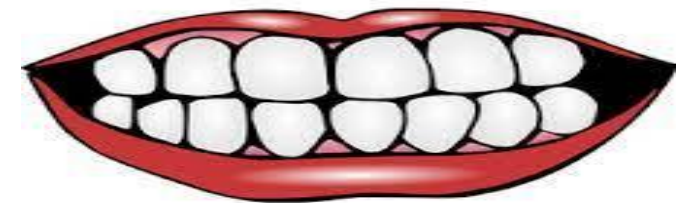
Sample should **not** be firm or sticky

# Level SOFT AND BITE-SIZED



## Description:

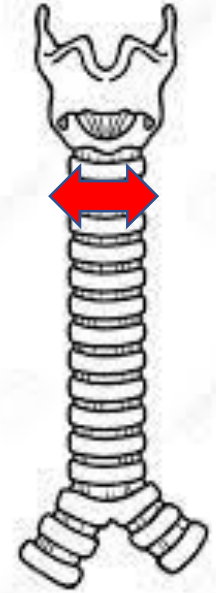
- Can be eaten with a fork, spoon or chopsticks
- Can be mashed/broken down with pressure from fork/spoon
- A knife is NOT required to cut food
- Soft, tender and moist throughout but with no separate thin liquid
- Chewing is required before swallowing
- 'Bite-sized' pieces as appropriate for size and oral processing skills
  - Pediatric, 8mm pieces (no larger than)
  - Adults, 15 mm = 1.5 cm pieces (no larger than)



# Level SOFT AND BITE-SIZED

## Physiological Rationale:

- Biting is not required
- Chewing is required
- Food piece sizes designed to minimize choking risk
- Tongue force and control is required to move the food and keep it within the mouth for chewing and oral processing
- Tongue force is required to move the bolus for swallowing
- Pain or fatigue on chewing
- Missing teeth, poorly fitting dentures





# Level SOFT AND BITE-SIZED

## Level 6 Examples:

- Fruit cup with soft fruits like peaches, banana, papaya, pear
- Small banana chunks
- Soft chunks of cream-filled chocolates (Reese's, Musketeers)
- Soft brownies or cookies without chunks
- Moist cakes or pies
- Cottage cheese, soft cheese

NOT:

- Sandwiches, bread



# Level 6 SOFT AND BITE-SIZED

## Testing Methods:

### 1. Fork Pressure Test:

- Pressure from a fork held on its side can be used to 'cut' or break apart or flake this texture into smaller pieces
- When pressed with the tines of a fork to a pressure where the thumb nail blanches to white, the sample squashes, breaks apart, changes shape, and does not return to its original shape when the fork is removed

### 2. Spoon Pressure Test:

- Pressure from a spoon held on its side can be used to 'cut' or break this texture into smaller pieces
- When pressed with the base of a spoon, the sample squashes, breaks apart, changes shape, and does not return to its original shape when spoon is removed.

# Level 6 SOFT AND BITE-SIZED

Demonstration of Testing Methods:

<https://www.youtube.com/watch?v=1wfODug5BmQ>

# Level **6** SOFT AND BITE-SIZED

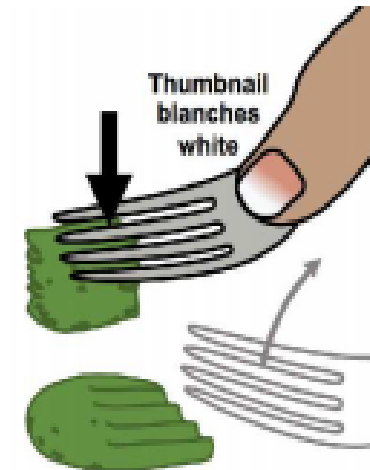
*Food pieces no bigger than 8mm x 8mm lump size for children*



*Food pieces no bigger than 1.5cm x 1.5cm bite size for adults*



**Soft & Bite-Sized food must pass *both* food piece size and softness tests!**



# Level **7** EASY TO CHEW

## Description:

- Normal, everyday foods of soft/tender textures
- Any method may be used to eat these foods
- Foods may be of a range of sizes
- Does NOT include: hard, tough, chewy, fibrous, stringy, crunchy, or crumbly bits, pips, seeds, fibrous parts of fruit, husks or bones
- May include 'dual consistency' or 'mixed consistency' foods with liquids if also safe for Level 0, and at clinician discretion



# Level **7** EASY TO CHEW

## Physiological Rationale:

- Requires the ability to bite soft foods and chew and orally process food for long enough that the person forms a soft cohesive ball/bolus that is 'swallow ready'. Does not require teeth.
- Requires the ability to chew and orally process soft/tender foods without tiring easily
- May be suitable for people who find hard and/or chewy foods difficult or painful to chew and swallow
- This level could present a choking risk for people because food pieces can be of any size.



# Level **7** EASY TO CHEW

## Level 7 Examples:

- Tender meat or fish
- Steamed or boiled vegetables
- Soft fruit
- Softened cereal
- Rice
- Pancakes with syrup
- Spaghetti
- Soft bread/sandwich





# Challenging Foods to AVOID

- “hard or dry food, tough or fibrous foods, chewy, crispy, crunchy food, sharp or spiky, pips and seeds, bone or gristle, sticky or gummy food, and stringy food”

- Including:

- Bagels, baguettes, and other tough breads
- Marshmallows
- Rice Krispie treats
- Tough chocolates and gummy candy
- Jell-O, fruit roll-ups
- Nuts, seeds, dried fruits
- Hard candies
- Rice cakes, Mochi
- Chewing gum
- Raw vegetable sticks
- Whole grapes, cherries, most berries, olives, and other items that could roll back and block the airway
- Mango, pineapple may be too fibrous
- Popcorn
- Corn chips, hard/spiky potato chips
- Pretzels (even soft pretzel may be too chewy)
- Crackers





# Level **7** EASY TO CHEW



## Testing Methods:

### 1. Fork/Spoon Pressure Test:

- Pressure from fork/spoon held on its side can be used to 'cut' or break apart into smaller pieces
- When a sample the size of a thumb nail (1.5x1.5cm) is pressed with the tines of a fork/back of spoon to a pressure where the thumb nail blanches to white, the sample squashes, breaks apart, changes shape and does not return to its original shape when the fork is removed.



# Level **7** REGULAR

## Description:

- Normal, everyday foods of various textures
- Any method may be used to eat these foods
- Foods may be hard and crunchy or naturally soft
- Foods may be of a range of sizes
- Includes hard, tough, chewy, fibrous, stringy, dry, crispy, crunchy, or crumbly bits
- Includes food that contains pips, seeds, pith inside skin, husks or bones
- Includes 'dual consistency' or 'mixed consistency' foods and liquids



# Level **7** REGULAR

## Physiological Rationale:

- Ability to bite hard or soft foods and chew them for long enough that they form a soft cohesive ball/bolus that is 'swallow ready'
- Ability to chew all food textures without tiring easily
- Ability to remove bone or gristle that cannot be swallowed safely from the mouth



# Level **7** REGULAR

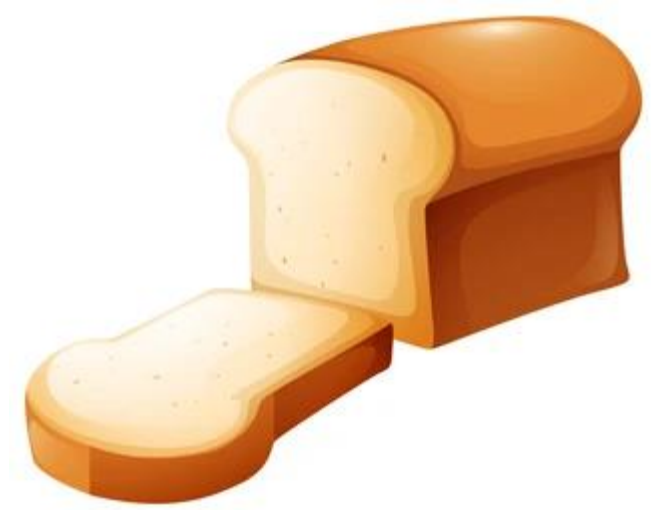
## Testing Methods:

- No testing indicated at this IDDSI level



# Bread

- Not approved until Level 7
- A frequently identified source of choking
- If bread/sandwich is pre-cut to fall below the maximum size guideline of Level 6 (1.5 cm for adults), then a clinician may allow on a case-by-case basis.
- Bread can't be easily mashed or broken down into particles of 4mm or smaller, due to its fibrous nature so not appropriate for Level 5 (Minced & Moist).
- Substitution:
  - Moisten pieces of bread and wet and put in fridge
  - <https://www.youtube.com/watch?v=W7bOufqmz18>



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# Transitional Foods

- Transitional food: food that starts as one texture and changes into another texture specifically when moisture is applied or change in temperature
- IDDSI levels 5-7
- Examples:
  - Ice cream wafers
  - Graham crackers
  - Waffle cones
  - Ice Chips
  - Pringles
  - Veggie Sticks



# Medications



- Pills, tablets and capsules would be considered a choking risk for people who require Level 4 - Pureed/Extremely Thick
- Cutting or crushing of medication may have critical adverse effects
  - Enhanced dissolution can alter bioavailability of drug
  - Sub-therapeutic drug levels due to loss of the dose during crushing and transfer
- Regardless of thickening agent used, as liquid viscosity increases, drug dissolution decreases, significantly impeding bioavailability of some drugs
  - Dissolution impeded most with xanthan gum based thickeners





# Thick Liquid Musings

Chichero, 2013

- Liquids don't affect water bioavailability, regardless of thickening agent or level of thickness...yet dehydration is associated with thick liquid use
- Thirst increases with increasingly viscous liquids in healthy people
- Flavor deteriorates with increasing thickness, regardless of thickening agent
- Satiety progressively increases with increasingly viscous liquids, reducing amount of thick liquid consumed as compared to thin
- Poor compliance – only 35% still using thickened liquids 5 days after recommendation made (Leiter, 1996)
- Thickening milk with xanthum gum thickener (Haddle et al., 2015)
  - Protein interacts with thickener & increases liquid viscosity...so use less thickener
  - Minerals slowed rate of thickening & contributes slightly to increased viscosity...so allow for longer standing time before serving





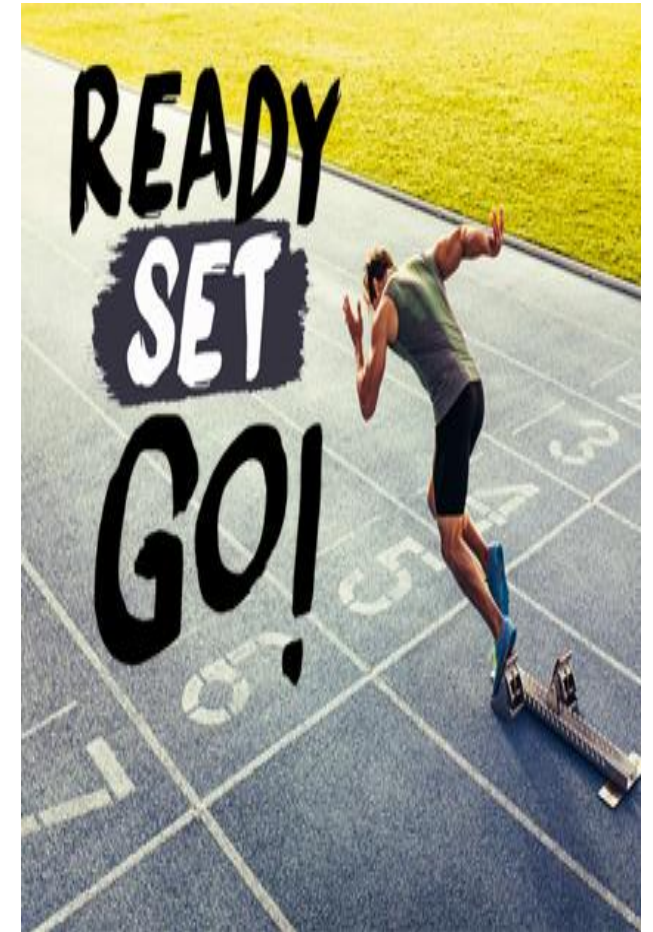
# Liquid Musings – “Goldilocks Thick”

- Prescribe the minimal amount of thickness needed for swallowing safety and aggressively pursue treatments to improve functional return to normal, non-thickened liquids (Chichero, 2013)
- Consider free water protocol – now several systematic reviews to support its use (Gilmann et al., 2017; Kaneoka et al., 2017; Loeb et al., 2006)
- Consider carbonated beverages (Chichero, 2020 DRS presentation)
  - They trigger nociceptors in the oral cavity
  - From moment carbonated liquid enters the oral cavity, hyoid bone begins to lift, likely subsequently impacting speed of triggering pharyngeal swallow
  - The colder the carbonated beverage, the quicker nociceptors triggered








# OhioHealth IDDSI Implementation

- OhioHealth Rehabilitation Hospital launched in Dec. 2020
- OhioHealth IP
  - Morrison tentative plans:
    - Identify multidisciplinary transition team 2021
    - Begin transition work in 2022
    - Roll out 2023
  - OhioHealth IP sites using Aramark may begin work sooner
- OhioHealth OP
  - Looking to Fall/Winter 2021 training & implementation
- OhioHealth Home Care
  - Starting to see IDDSI recommendations from other hospital systems; beginning discussion of training



# Mapping NDD to IDDSI: Liquids











## NDD

	Thin
	(Naturally thick liquids, e.g. infant formula, supplements)
	Nectar-thick 51-350 mPa.s @50/s ✓
	Honey-thick 351-1750 mPa.s @50/s ✓
	Spoon-thick >1750 mPa.s @50/s ✓

## IDDSI

	0 Thin
	1 Slightly Thick
	2 Mildly Thick
	3 Moderately Thick
	4 Extremely Thick

# Mapping NDD to IDDSI: Food

NDD		IDDSI
 Regular	≈	 7 Regular
 Dysphagia Advanced ✓	≈	 6 Soft & Bite-Sized
 Dysphagia Mechanically Altered ✓	≈	 5 Minced & Moist
 Dysphagia Pureed ✓		 4 Pureed
		 3 Liquidised