BOLUS FEEDING

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OUTLINE

INTRODUCTION	• Definition of bolus feeding • Types of bolus feeding
WHY BOLUS FEEDING?	• Changing needs of tube fed patients • Patient-centred considerations • General considerations for bolus feeding • Advantages & disadvantages for each method of bolus feeding
WHO TO CONSIDER	• Specific patient groups of bolus feeding
REGIMEN GUIDANCE	• Current guidance for bolus feeding

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1. INTRODUCTION

DEFINITION

- Bolus feeding is the delivery of 100-300ml of feed over a 10-30 minute period. A typical bolus is 200-250ml but individual patients may tolerate more or less than this. Administration is usually by syringe, using the syringe barrel as a funnel to allow the feed to infuse using a plunger or using gravity[1]
- “A bolus feeding regimen should be patient-centred and able to meet nutrition, lifestyle and clinical needs whilst also minimising product wastage and ensuring cost-efficiency”[2]

1. Gandy J. Manual of Dietetic Practice. 5th Edition ed: Wiley Blackwell; 2014. 1016 p.
2. Bino-Aghenzi J, et al. Bolus feeding in adults consensus guide. 2017.

TYPES OF BOLUS FEEDING

There are three main types of bolus feeding[1]

- Bolus feeding using a syringe
  - This method involves the measure of the enteral nutrition product in the syringe being attached to the enteral feeding tube and delivered by pushing down on the plunger. The process is repeated until the desired volume of enteral nutrition product has been given
- Bolus feeding using gravity
  - This method uses a syringe without the plunger with the enteral nutrition product being poured into the barrel, it then flows down the tube and into the patient by gravity
- Bolus feeding using a pump
  - This method uses a pump and a giving set with the enteral nutrition product being administered at a higher rate

1. White S. Understanding Bolus Feeding. Complete Nutrition. 2016.

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2. WHY BOLUS FEEDING?

TRENDS IN BOLUS FED PATIENT POPULATION

- 33% of home enterally tube fed patients were receiving a bolus feeding regimen[1]
- 70% of bolus fed patients resided in their own/family home[1]
- Mean age of patients using bolus feeding is 58 years old[1]
- Bolus feeding is commonly used in cancer patients requiring tube feeding, with 39% of home enterally tube fed cancer patients using bolus feeding in 2010[2]

1. Simons R, et al. A survey of bolus feeding practices in the UK home enteral feeding population. Clin Nutr, 2017; 22:112.
2. Gilbert E, et al. Bolus Feeding in the Nutritional Management of Head and Neck Cancer Patients. Comp Nutr, 2014; 14: 1.

PATIENT-CENTRED CONSIDERATIONS[1]

Would bolus feeding be safe and well tolerated?	Consider diagnosis, medical history, clinical circumstances and feeding regimen
What are the patient's social circumstances?	Consider the patient's daily commitments and activities
What is the availability of care if required?	Consider the availability of the carer (if the patient is not self-caring)
What would the patient prefer?	Consider the patient's preference after discussing advantages and disadvantage
What are the patient/carers strength and dexterity?	Consider if the patient/carer has the physical ability to administer a bolus feed

1. Bond-Ashurst J, et al. Bolus feeding in adults consensus guide. 2017.

GENERAL CONSIDERATIONS FOR BOLUS FEEDING

ADVANTAGES

- May be suitable for patients with a busy lifestyle as they would benefit from greater flexibility and a more typical eating pattern[1]
- Blood glucose control can be made easier for patients with diabetes[1]
- Bolus feeding may encourage gastric emptying and a more usual gut motility pattern[2]

DISADVANTAGES

- May increase carers duties due to increased time needed to administer feed[1]
- Large bolus volumes of feeds are not always well tolerated by some[1]
- May not be suitable for those with a reduced degree of strength or dexterity[1]
- Potential for increased risk of contamination due to increased risk from opening and decanting feed[3]
- Reduces hunger which may not be suitable for patients who are reintroducing oral intake[1]

1. Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.
2. Gilbert E, et al. Bolus Feeding in the Nutritional Management of Head and Neck Cancer Patients. Comp Nutr, 2014; 14:1.
3. White S. Understanding Bolus Feeding. Complete Nutrition. 2016.

SYRINGE FEEDING

This method involves the measure of enteral nutrition product in the syringe being attached to the feeding tube and delivered by pushing down on the plunger. The process is repeated until the desired volume of enteral nutrition product has been given.[1]

ADVANTAGES

- Rate of administration is controlled by the user[1]
- Administering medication is easier[1]
- Does not involve holding syringe for a long time[1]
- Can be helpful if gravity feeding is too slow[2]

DISADVANTAGES

- Requires a degree of strength[1]
- Feeding too quickly can result in poor tolerance[1]
- Can be messy[1]
- Syringe replacement is frequent[1]
- May not be suitable for those experiencing nausea and vomiting[1]

1. White S. Understanding Bolus Feeding. Complete Nutrition. 2016.
2. Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.

GRAVITY FEEDING

This method uses a syringe without the plunger – the enteral nutrition product is poured into the barrel, then flows down the tube and into the patient by gravity.[1]

ADVANTAGES

- Syringe is only attached to tube once[1]
- Less frequent syringe changes when plunger not being used[1]
- Prevents excessive force or administering too fast, which may affect tolerance[2]
- May be easiest if dexterity is poor[2]

DISADVANTAGES

- Slow feeds when using narrow bone tubes, e.g. NG tube[1]
- Difficult to hold for long periods of time[1]
- Medication can form a plug and increase risk of blockage[1]
- Flow may be slow with a more viscous feed, if back pressure is high or tube is short[2]

1. White S. Understanding Bolus Feeding. Complete Nutrition. 2016.
2. Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.

PUMP ASSISTED FEEDING

This method of bolus feeding uses a pump and a giving set, allowing the flow rate to be carefully controlled and the enteral nutrition product to be administered at a higher rate.[1]

ADVANTAGES

- Avoids the need for syringe[1]
- Carry out normal daily tasks while feeding[1]
- Less labour intensive for those who can not hold a syringe for the duration of the feed[1]
- Prevents spillage[1]
- Beneficial for large volumes or a specific rate is required[2]

DISADVANTAGES

- Most pumps have maximum rate of 400ml/hr so feeds can take longer than 1 hour[1]
- Increased risk of tube displacement in active patients[1]
- Potential for waste if incomplete bags of enteral nutrition product are used[2]

1. White S. Understanding Bolus Feeding. Complete Nutrition. 2016.
2. Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.

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3. WHO TO CONSIDER

SPECIFIC PATIENT GROUPS

- Head and neck cancer
- Learning disabilities
- Stroke
- Critical care
- Neuro-degenerative conditions

HEAD AND NECK CANCER

- Bolus feeding offers more flexibility to fit within their daily schedule, reducing the risk that feeds are missed and avoids interfering with independence[1]
- Self-caring patients might become fatigued from cancer treatment and may struggle with the frequency and the demands of the feeding regimen[1]
- Cancer treatment may limit the tolerance of bolus feeding due to nausea and vomiting[1]
- Nasogastric tube fed patients might find bolus feeding difficult[2]
- The majority of these patients use oral nutritional supplements (ONS) for bolus feeding[2]

1. Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.
2. Gilbert E, et al. Bolus Feeding in the Nutritional Management of Head and Neck Cancer Patients. Comp Nutr, 2014: 14: 1.

LEARNING DISABILITIES

- Bolus feeding enables flexibility to ensure enteral nutrition products are administered when the patient is in the most suitable feeding position and to fit around activity programmes
- Suitable alternative for patients who cannot tolerate continuous feeding via pump
- Each feeding episode is another activity and chance for interaction
- Patients may not like repeated intervention required for bolus feeding
- Patients with severe scoliosis may not tolerate the volume required for bolus feeding due to altered anatomy

Source: Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.

STROKE

- Bolus feeding offers more flexibility to fit around appointments and may reduce the risk that feeds are missed for those undertaking rehabilitation
- For patients who are agitated/moving around in bed, bolus feeding can allow for an enteral nutrition product to be administered at times when the patient is in the correct feeding position
- Care calls may not be long enough or frequent enough for the patient to meet their nutritional requirements through bolus feeding

Source: Brito-Ashurst I, et al. Bolus feeding in adults consensus guide. 2017.

CRITICAL CARE

- Bolus feeding may increase the likelihood of a patient receiving their full prescribed volume of enteral nutrition product, whereas continuous feeding may be interrupted or delayed due to medical treatments or interventions[1]
- More nursing time may be required to undertake bolus feeding in this setting[2]

NEURO–DEGENERATIVE CONDITIONS

- Bolus feeding can be titrated against oral intake; if oral intake reduces, bolus feeding can be increased[2]
- Patient may feel full and uncomfortable if large volumes of feed are given at one time[2]

1. Aguilera-Martinez R, et al. Effectiveness of continuous enteral nutrition versus intermittent enteral nutrition in intensive care patients: a systematic review. JBI Datab Syste Rev Imple Repo. 2014; 12(1): 281-317.
2. Brito-Ashurst I, et al. Bolus feeding adults consensus guide. 2017.

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4. REGIMEN GUIDANCE

KEY CONSIDERATIONS FOR BOLUS REGIMENS

- Starter regimen
  - Start on a reduced volume and gradually increase
- Volume and frequency:
  - Consider using the largest volume for each bolus the patient can tolerate in order to reduce the frequency of the feeding
  - Fit feeding within a patient's daily routine
- Hydration:
  - When there are long breaks between feeds, ensure hydration is maintained through water flushes
- Nutritionally complete:
  - Ensure sufficient intakes of macronutrients, micronutrients and electrolytes are being met and consider the contribution from medications

See full guideline for full regimen guidance for bolus feeding

GENERAL ADMINISTRATION GUIDELINES FOR BOLUS FEEDING

- Wash hands
- Prepare enteral nutrition product and equipment in clean area
- Check label and date of enteral nutrition product
- Ensure the patient is in at least 30 degree sitting position when administering
- Check safe position of feeding tube prior to using the tube
- For a low profile gastrostomy attach extension
- Flush tube with at least 30ml of water pre and post bolus feed
- Air dry equipment after usage
- Reseal any left-over enteral nutrition product, refrigerate and reuse within 24 hours

Source: Bates-Antuono J, et al. Bolus feeding in adults consensus guide. 2017

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GUIDELINES FOR SYRINGE FEEDING

Equipment

- 60ml enteral feeding syringe and/or bolus feeding set
- Extension set (for low profile gastrostomies)

Instructions

- Complete general administration steps, as previously shown
- Close clamp on tube if present
- Draw enteral nutrition product up syringe
- Attach syringe to tube or extension and open clamp
- Gently push plunger which should take 20 seconds
- Close clamp if present before removing syringe
- Refill and repeat
- Flush with water then disconnect the syringe

See full guideline for full regimen guidance for syringe feeding

GUIDELINES FOR GRAVITY FEEDING

Equipment

- 60ml enteral feeding syringe and/or bolus feeding set
- Extension set (for low profile gastrostomies)

Instructions

- Complete general administration steps, as previously shown
- Close clamp on tube if present
- Take plunger out of enteral syringe
- Secure barrel of the enteral syringe or end of bolus set
- Pour enteral nutrition product into syringe slowly and hold upright, open clamp if present
- Hold syringe at comfortable height above the feed tube each syringe should last on average 20 seconds
- Refill syringe until the prescribed volume of enteral nutrition product has been given then flush with water

See full guideline for full regimen guidance for gravity feeding

GUIDELINES FOR PUMP-ASSISTED FEEDING

Equipment

- Feeding pump
- Giving set
- Extension set (for low profile gastrostomies)

Instructions

- Complete general administration steps, as previously shown
- Connect the prescribed enteral nutrition product to the giving set or decant into reservoir
- Connect giving set to enteral pump
- Prime giving set, ensure enteral nutrition product is throughout the length of the giving set
- Programme the pump to deliver the required amount of enteral nutrition product
- Attach giving set to feeding tube and open clamp
- Start pump, pump will beep when finished
- Close clamp and disconnect then administer water flush

See full guideline for full regimen guidance for pump-assisted feeding

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