

Virtual Nutrition Team (VNT) Guidance

your questions answered

**Swimming with
parenteral or
enteral feeding**



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RECEIVING ARTIFICIAL NUTRITION

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Swimming with parenteral or enteral feeding

The following article is to provide information for people wanting to swim with an enteral tube or an intravenous catheter. It is important that you seek advice from your doctor or nutrition team before participating in swimming.

Scope of article

We will cover swimming (and by implication, immersion in water such as hot tubs) with the following devices for artificial feeding:

1. Nasogastric (NG)/nasoduodenal (ND) or nasojejunal (NJ) tube.
2. Gastrostomy placed at endoscopy (PEG), under X-ray control (RIG) or surgical (SG).
3. Surgically placed jejunostomy (JEJ).
4. Intravenous feeding line: central tunnelled venous catheter (CVC) line or peripherally placed (PICC).
5. Subcutaneous port for intravenous feeding.

Details of how these are inserted and used can be found on the PINNT website.

Apart from NG feeding, all other lines used for feeding require an insertion site incision or wound which must be permitted to heal before any thought of swimming or immersion in water is considered. Your team will have advised on when you can shower after insertion of your line.

We will deal with swimming in swimming pools, lakes, rivers, the sea and hot tubs.

Benefits of swimming

Swimming is a good way of getting aerobic physical exercise. Department of Health guidelines states that just two and half hours a week of aerobic exercise can provide benefits such as:

- Decreased risk of chronic illnesses, such as heart disease, type 2 diabetes and stroke.
- Improved weight control.
- Boosting your mood.
- Exercising longer in water than on land can reduce joint or muscle pain.

Exercising in water offers many physical and mental health benefits and is a good choice for people who want to be more active. However, individuals who require long-term parenteral nutrition (PN) support or have an enteral (EN) feeding tube have to consider swimming options carefully.

What are the risks of swimming or immersion?

Swimming adds further to the risks already present in daily life on land.

- Displacement of the feeding tube.
- Damage to the tube leading to leakage or air entry.
- Infection entering via the line or skin around the entry site leading to more serious blood infections and organ damage.
- Infections of the gut leading to diarrhoea and/or vomiting from infected water.
- Skin, wound, ear, eye, neurological and respiratory infections from infected water.

In addition, some may feel embarrassment at exposing evidence of their line to others when in swimming attire. If regular swimming is undertaken, the prescription for energy requirements may need adjusting upwards as with any other exercise.

What is the evidence that swimming is safe or dangerous for those with a feeding tube?

It is well known that many infectious agents are present in swimming pools, lakes and the sea. Contamination from sewage, birds or animals may contaminate the sea, rivers or lakes. Even in chlorinated swimming pools, bacteria or viruses shed from other people swimming may pose a risk to all those who use pools. It is beyond the scope of this article to describe all the infections which could be encountered. The swimming environment is potentially and particularly dangerous to all those at higher risk of infections such as those with feeding lines. Therefore, preventing your site or line from being infected is really important as sepsis is so dangerous once it has entered the blood stream.

In 2013, Public Health England published a leaflet on how to reduce the risk of illness when open water swimming (lakes, rivers and reservoirs) as these activities can increase the risk of gastrointestinal infections (diarrhoea and/or vomiting) as well as respiratory, skin, ear and eye infections. For further information, please use the link to the leaflet: <http://bit.ly/1nwB6S0>. The leaflet provides practical tips swimmers can take to reduce the risk of illness if you choose to swim in these waters. Gastroenteritis acquired from infected water whilst swimming is also extremely dangerous to those with short bowel syndrome where hydration is often so difficult to maintain. This would be especially worrying if it occurred in a hot climate abroad and thus a long way from your usual centre of care.

There is little scientific evidence for or against the safety of swimming with a line and there are no published data on safety in large groups of patients on intravenous feeding. The following is a summary of the available sources of information on safety.

A study from the Boston Children's Hospital in the USA reviewed the available literature on this subject and also performed a survey of units across the USA. They concluded that in the light of their own bad experience, and the available evidence, that they could not recommend swimming to their children with tunnelled intravenous catheters¹.

Moreover, contributors to this article from PINNT's Virtual Nutrition Team have reported anecdotal evidence that serious infections have followed swimming and that some may have died as a result. They are particularly concerned about the risks of submersion in hot tubs. Swimming with a port seems to be the safest option but there is always some risk associated with swimming.

We also considered whether there might be some patients at greater risk of infections when swimming. Those with a history of recurrent infections, and those on drugs affecting your immune response (e.g. Steroids, Azathioprine or biologicals for Crohn's disease such as Infliximab) should avoid swimming unless a port is inserted. Those on their "last possible line" and/or awaiting small bowel transplant should avoid swimming altogether.

General attention to cleanliness was also raised. Thus it would be inadvisable to share towels after swimming. Those with a history of MRSA infections should consider washing their clothes and towels at a higher temperature than usual.

Thus there is certainly no conclusive evidence that swimming is a safe practice but some that suggests risk for patients with a PN feeding catheter so it is vital that appropriate preventative measures are taken.

So can I swim with my feeding tube line?

Nasogastric tubes

These are easily pulled out partially or completely in everyday life and this risk is increased by swimming, particularly for children playing with others in a pool or the sea. Many children start off being discharged from hospital with an NG feeding tube which is later replaced by a PEG or RIG. These are less visible but more secure so it would perhaps be better to wait for the PEG or RIG to be placed before swimming if possible. If swimming with a NG tube, the external fixation should be with a suitable waterproof material.

It is important that the correct checks are made of the position of the feeding tube before starting feeds or administering drugs after swimming in case the tube has been partially displaced. If in doubt, consult the nurse responsible for looking after your tube. There is no increased risk of infections associated with NG tubes and swimming.

Gastrostomies

Whatever method has been used to place the gastrostomy feeding tube, the incision or wound **must** be allowed to heal properly (at least one month after placement) before exposing it to swimming. There should be no evidence of an infection (redness, pain, oozing around the site). If you do have an infection, then get this treated before swimming. If you have some leakage from the tube insertion site but you do not have an infection, then you can swim but it is

advisable to cover the site and tube with a plastic dressing. There is no absolute need to cover the insertion site or external part of the feeding tube before swimming but protecting it from accidental removal by concealing it under a swimming costume or T-shirt is sensible.

Gastrostomy tubes (PEG/RIG) or jejunostomy tubes (placed at surgery or by endoscope) are more secure but all require an incision which must have been given sufficient time to heal. Balloon retained gastrostomies and buttons can be displaced more easily than those with an internal flange if inadvertent traction is exerted during exposure and play whilst swimming. Balloon retained skin level "buttons", more often used in children, provide a less visible alternative and are probably less likely to be displaced during exercise such as swimming. They can usually be replaced without difficulty immediately after displacement although the trauma caused by forced removal of an inflated balloon may make replacement more hazardous and painful. Displacement of a jejunostomy requires urgent hospital care.

If infection around the insertion site should occur, it is less likely to be a serious problem than with an intravenous line.

Intravenous/parenteral nutrition

As with gastrostomies, all lines or ports need an incision to allow the placement of the line. The incision **must** be allowed to heal completely before considering swimming. At least 3-4 weeks should be allowed after line insertion.

Ports are safer than lines with an external section but infection of the overlying skin could still lead to infection of the port device and blood if the correct procedures are not carried out before inserting the feeding line needle.

For all those with an external section of their catheter, it is important to seek advice from your team about the best way to "waterproof" the insertion site and the end of the line where connections are made. It is at these two points that infections are most likely to gain access as in all patients who don't swim too.

Always ensure that the insertion (exit) site and catheter end are properly disinfected as soon as possible after each swim and before connecting to the PN with the administration set.

Any suspicion of infection around the exit site or of infection in the blood stream (fever, shivers, rigors, collapse etc.) should immediately be communicated to your nutrition team contact at the hospital. Do not swim with an exit site infection.

What do nutrition teams/healthcare professionals advise?

In the United States, a survey (already referred to above) was conducted in 2013 to determine the swimming practices of home PN programs¹ (Units/centres). Twenty-five HPN programs were contacted via email and asked if they allowed their patients with CVCs to swim and if yes, where and what dressing/covering did they require?

Sixteen programs responded and of those, three programs allowed their patients with un-accessed ports that were well healed to go swimming and five allowed patients to go swimming with un-accessed ports or tunnelled catheters (Hickman®, Broviac®). Two programs allowed patients to go swimming with cuffed peripherally inserted central catheters (i.e., PICCs) and two allowed minimal swimming but did not specify a restriction on the type of lines. One programme allowed swimming without restrictions while three programmes did not allow any swimming of any sort. One programme did not allow infants to go in the water but did allow older patients to swim and one had not had the question/situation arise.

For the programs that did allow swimming, two programmes allowed any body of water; two allowed oceans or pools; one allowed oceans, pools, and private hot tubs; six only allowed pools; and one programme did not specify. Dressing or line covers varied among the programmes and there was no consistency in the products recommended, but Tegaderm® and AquaGuard® were both mentioned. Programmes which allowed their patients' to swim recommended cleaning their site after swimming and changing their dressing immediately after swimming. As mentioned above, the authors of this paper (from Boston Children's Hospital) also reviewed the literature and concluded that they could not support requests for children with central feeding catheters to go swimming.

ESPGHAN (The European Society for Gastroenterology, Hepatology and Nutrition) has also considered this problem and as yet unpublished advice can be summarised as below:

“Children on long term PN are restricted in many ways. They should be encouraged to undertake normal daily activities whenever possible as long as this does not expose them to an increased risk. Recreational swimming including submerging the well healed tunnelled CVC in water would be a welcome activity. Existing evidence does not demonstrate the safety of swimming but the evidence is of low quality.” They note that in the USA, only 3/16 centres which responded to a questionnaire did NOT allow swimming of any sort.

UK units/centres take a similar view but prefer to give patient centred individual advice depending on the circumstances. They recommend that children with well healed tunnelled catheters are allowed to swim, provided that a water resistant dressing is used to cover the whole catheter. Immediately after swimming, the catheter site should be cleaned and disinfected, and the dressing changed.

Most large UK home parenteral nutrition (HPN) units/centres allow their PN patients to swim **once their catheter is healed** (Advice varies from at least 21 days to 30 days after line placement). Most recommend the **use of an occlusive transparent dressing** during swimming. **Immediately after swimming the insertion (exit) site to be cleaned and disinfected, and the dressing changed.** Swimming should be discouraged in those with high risk of infections and those on their “last” line before transplantation.

Please note that a surgically implanted port that does not have a needle accessing it and has a healed site does not need to be covered before swimming. If you are an enthusiastic swimmer you may prefer this type of catheter. However you still need to consider where you are swimming.

Where can I swim?

Avoid poor quality water.

Public swimming pools in the UK must comply with the Pool Water Treatment Advisory Group (<http://pwtag.org/>) guidance. Local councils are responsible for monitoring compliance. It is possible to ask to see copies of your local swimming pool's reports.

You can check the water quality of the **beach** you are going to by checking the government website (www.gov.uk/quality-of-local-bathing-water) and only swimming when the water quality is 'excellent' (3-star rating).

Rivers and stagnant pools are a risk to swimmers due to infections present from sewage and wash out after heavy rain (e.g. Leptospirosis or Weil's disease). The cleanliness of rivers is unpredictable. If you are swimming abroad, you will need to find the local sources of information for the area you are visiting but err on the side of caution. If in doubt, do not swim.

Hot tubs are not advised. Hot tubs are a potential source of infections due to the concentration of human bodies using them in relatively low volumes of water, and because the water is so warm. The level of microorganisms growing in this warmer water makes them too risky for patients with an CVC's and most patients with an enteral tube. A study (2011) reported that *Pseudomonas aeruginosa* was common in hot tubs even when the chlorine concentration was well above the recommended levels.

How do I protect my CVC and exit site during swimming?

You should seek the advice of your main unit/centre about this. There are several suitable products which can be used to protect the line and its exit site from water. First coil your external line so it can fit under a dressing. Choose a WATERPROOF dressing, not just a semi permeable one. These can be obtained from Boots or other high street pharmacies. Always remove the dressing after swimming and clean the line and exit site. When accessing your line next, apply a new Bionector® in case the Curoc cap failed to prevent water coming into contact with the surface of the Bionector®.

For those planning to do any water sports on a regular basis, a dry suit should be purchased to keep water away from your line and surrounding skin. A suitable short sleeved version is recommended by units/centres and can be purchased from www.hammond-drysuits.co.uk

Those with stomas should also seek advice although swimming should be possible.

In conclusion

- Always consult the nutrition teams/healthcare professionals and obtain their advice and permission before swimming.
- Always protect the intravenous exit site.
- Immediately after swimming clean the exit site and change the dressing.
- Change the Bionector® before using the line again.
- Always choose your swimming location carefully.
- Ensure you or your child are properly immunised against the usual infections but in particular polio.
- Take all the usual safety measures appropriate for swimming in a pool or sea.
- Ensure that the pool is properly maintained and clean enough to swim in.
- Try to find out whether the beach or lake has up to date reports on the quality of the water.
- Do not swim in stagnant water.
- Avoid rivers particularly just after it has rained.
- Do not immerse in hot tubs.
- Do not swim if you or your child has had diarrhoea and don't swim until 48 hours after it has stopped.
- Do not swallow the water.
- Do not swim with an open wound or skin infection.
- Keep ears as dry as possible and dry them thoroughly after swimming.

This article has been prepared by members of the Virtual Nutrition Team of PINNT, led by:

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For further details on the VNT and its members visit:

<http://pinnt.com/About-Us/Virtual-Nutrition-Team-VNT.aspx>

References:

1. Miller J, Dalton MK, Duggan C, Lam S, Iglesias J, Jaksic T, et al. (2014) Going with the flow or swimming against the tide: should children with central venous catheters swim? *Nutr Clin Pract* 29:97-109





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