

HYDROTHERAPY POOLS

KEY POINTS

Daily maintenance and regular engineering inspections will reduce the risk of transmission of infection in hospital hydrotherapy pools

Patient hygiene

Maintenance of pool water

Faults and remedial action

POOLSIDE MAINTENANCE

- The pool chamber should be designated a clean area.
- The poolside area should be cleaned daily with pool water.
- The poolside area should be cleaned weekly using a solution containing 200 ppm of free chlorine using appropriate dilution of chlorine-releasing tablets.
- In the event of soiling, the area should be cleaned immediately according to the spillage policy.
- A yearly inspection and maintenance should take place of the pool chamber, to coincide with pool emptying.

PATIENT HYGIENE

- Before using the pool the patient should have defaecated and micturated.
- Patients should shower and remove any creams and lotions before entering the pool.
- Persons who are catheterized or wearing Paul's tubing should have the tube spigotted prior to entry to the pool clean area.
- There should be separate staff and patient showering facilities, swimwear and towels.
- Patients with open infected wounds should be excluded.
- Wounds should be covered with an impermeable dressing

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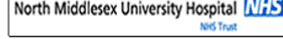
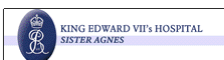
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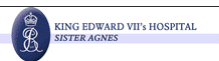











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MAINTENANCE OF THE HYDROTHERAPY POOL WATER

- There should be regular monitoring and record keeping.
- The appearance of the water at the beginning of each day should be noted with respect to colour and turbidity. The pool water should appear clear before a patient enters. The pool water turnover time should not exceed 60 minutes.
- The number of patients treated in the pool at each session should be recorded. Each hour of use should be divided into three 15-minute treatment sessions with a 5-minute break. Patients should not stay in the pool for more than one session.
- Back flushing should occur at a frequency to maintain water quality. The pool volume should be made up with fresh mains water.
- The following points should also be recorded.
 - incidents of pool soiling and remedial action taken.
 - health complaints by staff or patients.
- The kits used for measuring pH, chlorine, and water balance should be kept in a good state of repair. Only the recommended cuvettes should be used and the testing performed in one designated area that has constant incident light.

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WATER TESTING

pH

Should be measured at the beginning of the day, then every 2 hours and finally at the end of each day. It should fall within the range 7.2 - 7.8.

Temperature

Should be recorded twice daily and should be kept between 35.5 and 36°C

Chlorine

The free chlorine should be measured three times a day and should fall between 1.5 and 5.0 mg/L. The total chlorine should be measured once with the free chlorine to give the combined chlorine (total chlorine-free chlorine). Free chlorine should not exceed 1/3 of the total chlorine. Cyanuric acid and total dissolved solids (TDS) should be measured daily. The values should not exceed 200mg/L and 1500mg/L respectively.

Microbiological quality

Should be tested once a week:

Method for taking valid sample

Total bacterial count:

The counts ideally should be below 10 cfu/ml and remedial action should be taken if the counts exceed 100 cfu/ml.

Coliforms, *E. coli* and *Pseudomonas aeruginosa* should be less than 1cfu/100ml.

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POOL FAULTS AND REMEDIAL ACTION

Bathers should be excluded while remedial action is being taken.

Poor water quality

If regular observations indicate discolouration, scale, pH instability or repeated bacterial surges, then the water balance is impaired. This should be checked using one of the available kits. Water balance is maintained by back flushing and pH correction. If pH falls to <7.2, sodium carbonate should be added to restore it to the acceptable range, and if the pH is >7.8, sodium bisulphate should be added. After back flushing and pH correction the pool should be allowed to equilibrate and the pH retested.

Cloudy water

Check with engineering dept and take bacteriology samples. The pool may require backflushing, hyperchlorination or precipitation. This can be dealt with by adding aluminium sulphate to induce precipitation.

Excess combined chlorine, cyanuric acid or total dissolved solids

This should be remedied by back flushing and rechlorination to acceptable values.

Algae growth

The pool surface should be swept. The pool should be hyperchlorinated to a level of 15mg/l for 3-5 hours. If this fails an algicide should be used.

High bacterial accounts

Hyperchlorination at 15mg/l for 3-5 hours.

Pool soiling

The procedure depends on whether the stool is formed and can be removed intact. Close pool, remove stool, hyperchlorinate and re-establish normal disinfectant levels. If a loose stool is dispersed in the pool, the pool should be drained of water, hosed down, refilled and hyperchlorinated to 15mg/l. The pool circulation should continue for 24 hours before bathing is recommenced.

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TROUBLE-SHOOTING GUIDE (PHLS Hygiene for Hydrotherapy Pools 1990)		
Complaint	Possible causes	Action
Cloudy WHITE water	<p>Precipitation of salts</p> <p>Excess air precipitating from solution</p> <p>Carbon dioxide bubbles due to overdosing with bicarbonate</p>	<p>Check water balance and correct by chemical dosing or dilution with mains water.</p> <p>Check filtration plant strainer boxes for air tightness and check that air is not being drawn through surface skimmers or scum lines due to excessive throttling of the control valve(s) in the circulation pump suction header.</p> <p>Check alkalinity level to confirm overdosing and alkalinity adjustment procedures for possible causes.</p>
Cloudy DIRTY water	<p>Inadequate disinfectant level</p> <p>Filter malfunction</p>	<p>Check disinfectant and pH correction dosing systems for faults, particularly with regard to possible chemical injection fitting blockage.</p> <p>Check filtration system for faults.</p> <p>Confirm correct back-wash frequency, duration and flow rate.</p>
Cloudy GREEN water	Overgrowth of algae	<p>Confirm algae by microscopy. Check disinfectant and pH levels. Close pool to bathers and hyperchlorinate. If cyanurates are being used, check cyanuric acid level and reduce by dilution if necessary.</p>
Slime on tiles or fittings	<p>Inadequate disinfectant level</p> <p>Failure to hyperchlorinate when indicated</p>	Close to bathers and hyperchlorinate.
Faecal contamination	<p>Formed stool observed</p> <p>Loose stool dispersed</p>	<p>Close pool to bathers. Remove stool. Hyperchlorinate. Reopen pool when normal disinfectant level has been re-established.</p> <p>Close pool to bathers. Empty pool and hose down. Refill and recommence circulation.</p> <p>Hyperchlorinate. Brush pool surfaces and reopen pool when normal disinfectant level has been re-established.</p>
Unpleasant atmosphere with irritation of eyes	Excessive level of combined halogens due to high bathing load and/or inadequate disinfectant dosage	<p>Check disinfectant and pH levels. Back-wash and replenish with mains water. Check disinfectant and pH correction systems; adjust if necessary.</p>

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REFERENCES

Hygiene for Hydrotherapy Pools. Public Health Laboratory Service. 1990.

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