POLICY DOCUMENT

Policy Title:	Hydrotherapy maintenance
Policy Group:	Maintenance
Policy Owner:	General Manager
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Next Review Due	August 2022
Author:	J Speed
Cross References:	Maintenance Policy, Water Safety Policy, Health and safety policy, Hydrotherapy Manual, Housekeeping policy
Evidence:	Pool Plant operators training manual
	Technical advice from Installers
	PWTAG Guidance
	HSG 179
	Hygiene for Hydrotherapy Pools (Public Health Laboratory Service 1999)
How the implementation will be monitored:	Daily checks prior to use by the therapist.
Action to be considered in the event of a breach:	Re-training, disciplinary action
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Policy Accepted by MT	29th July 2020
Sign-off by CEO	

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Purpose of Policy:

The policy defines the steps that should be taken to maintain the hydrotherapy pool and associated plant in a safe condition at all times

Policy Statement: The management has a duty of care under the Health and Safety at Work act 1974 to provide a safe environment for all persons that come into the building. The Hydrotherapy Pool and associated plant present a risk to health if not carefully managed and maintained. Daily maintenance and regular engineering inspections of hydrotherapy pools, water quality and faults will reduce the risk of transmission of infection in the hydrotherapy pool.

Responsibilities

The Caretaking team under the direction the General Manager has a day to day responsibility for the routine cleaning and maintenance of the hydrotherapy pool and its associated plant. The General Manager having completed CIMPSA pool plant operator's certificate course (this course is designed to provide the necessary underpinning knowledge to understand the requirements of safe pool plant operation) is the responsible person for ensuring that the Hydrotherapy Pool is maintained in line CIMSPA and PWTAG Recommendations and guidance and will maintain up to date knowledge required by attending a three yearly update course.

Caretakers will be required to have attended the three-day “pool plant operator’s certificate course”
The General Manager is responsible for ensuring that there is a programme of planned preventative maintenance in place and that suitable competent contractors are engaged to maintain the equipment within the pool and plant rooms.
The Caretakers are responsible for maintaining a clean and safe environment.

ROUTINE POOL MAINTENANCE

1. CLEANING

The pool area is cleaned at the start of each working day by The Caretaking Team.
The daily cleaning regime includes cleaning and mopping toilets, showers, changing room and pool surround. All cleaning is in line with Infection Prevention and Control Policies and Operational Standards.

The pool decking is cleaned daily.

The pool surround grills are removed and scrubbed in rotating sections

Pool surround channels are checked and scrubbed daily in sections

The balance tank is checked fortnightly and cleaned when required.

All filters are backwashed on rotation

The internal surfaces of the pool are vacuumed on a daily basis

All pool floats are cleaned on a rotation in a solution of 10% chlorine, each float is cleaned a minimum of once a week. This is the responsibility of the Physiotherapy team

2. TEMPERATURE

The pool temperature is normally maintained at 34°C; it is checked and recorded three times daily by caretaking staff.

The ambient temperature of the pool hall is maintained within the range of 25–28°C with an atmospheric humidity level of 50-65% (preferred maximum 60%).

The ambient temperature of the changing rooms and rest area is within the range of 22–26°C

3. POOL TESTING

3.1. Chemistry

It is the responsibility of the caretakers to check and record the pH, water temperature and chlorine level in the pool. A record is kept in the appropriate folder and on the white board in the pool hall (equipment store).

Caretakers are responsible for correct storage of pool chemicals in the plant room.

3.1.1. Acceptable readings and recording

Check	Acceptable reading	Frequency of checks
Chlorine - free/active	0.5-2.0 parts per million (ppm)	x3 daily
Chlorine - total	Nevermore than 50% above the free level	x3 daily
pH	7.2-7.8	x3 daily
Total alkalinity	100-250 ppm	
Calcium hardness	100-300 ppm	x1 weekly
Water balance	Within parameters of the Langelier Saturation Index	x1 weekly
Total Dissolved Solids	Less than 1000 above the incoming water supply	x1 weekly

In addition, the following is documented:

- Chemical additives levels, topping up as required.
- Water condition and clarity, visually inspected remedial action taken if required

3.2. Bacteriological testing

Pool water is tested weekly for the presence of harmful microbes and slime producing microbes including:

- Total bacterial (plate) count
- Coliforms
- Escherichia coli (E Coli)
- Pseudomonas species
- Pseudomonas aeruginosa
- Staphylococcus aureus

This is in accordance with Hygiene for Hydrotherapy Pools (Public Health Laboratory Service 1999). Results are emailed to the General Manager and a copy kept in the maintenance folder.

In the event of bacteriological testing results being found to unsatisfactory, we would take advice from the specialist contractor as to the best course of action and would always carry out a re-test at the earliest opportunity.

Microbiological results and appropriate actions

Microbiological result	Action
Aerobic colony count (or total viable count)	
Aerobic or total colony count at 37 °c >10 cfu/ml	If the colony count is cfu/ml and is the only unsatisfactory microbiological result, and residual disinfectant and pH values are within recommended ranges, the water should be resampled and retested
Aerobic or total colony count at 37 °c >IOO cfu/ml	• Check treatment system and manual testing results records immediately • Implement any remedial action as required • Resample and retest

Coliforms and E coli	
Coliforms and E coli present cfu/100 ml	Occasional positive samples may occur if the spa pool has been sampled immediately after a contamination event before the disinfection system had time to be effective. A repeat sample should be taken whenever coliforms have been detected
Coliforms SIO cfu/100 ml	A coliform count of up to 10 cfu/100 ml is acceptable provided that the residual disinfectant and pH values are within recommended ranges, there are no E coli present and the aerobic colony count is <10ml

Coliforms present on repeat test or if >IO cfu/IOO ml at any time	Coliforms present on repeat test or if ineffective Close spa POOL Shock dose the spa pool with 50 mg/l free chlorine circulating for I hour or equivalent • Drain, clean and disinfect Review control measures and risk assessment • Carry out remedial actions identified • Refill, disinfect and adjust pH to • recommended range; and retest • next day and 2-4 weeks later
Pseudomonas aeruginosa	
P aeruginosa present 10—50 cfu/100 ml with or without raised coliform, E Coli or colony count	Take a repeat sample for testing Scrub walls of balance tank, if any, and cleanse the filter • Chlorinate to 10 mg/l free chlorine, circulate and flush If the repeat sample contains • P aeruginosa the filtration and disinfection processes should be examined to determine where the organism has been multiplying
P aeruginosa present cfu/100 ml With or without raised coliform, E Coli or colony count	• Close spa pool Shock dose the spa pool and balance tank, if any, with 50 mg/l free chlorine circulating for 1 hour or equivalent and flush through • Drain, clean and disinfect Review control measures and risk assessment • Carry out remedial actions identified . Refill, disinfect and adjust pH to recommended range; retest next day and 2—4 weeks later

Legionella	
<100 cfu/l	Under control but maintain control measures
>IOO cfu/l and up to 1000 cfu/l	• Resample and keep under review Review control measures and risk Assessment Carry out remedial actions identified as necessary
>1000 cfu/l	• The immediate closure of pool and exclude public from the pool area • Shut down spa pool • Shock dose the spa pool with 50 mg/l free chlorine circulating for 1 hour or equivalent • Drain, clean and disinfect • Review control measures and risk assessment • Carry out remedial actions identified • Refill and retest next day and 2—4weeks later

4. FILTER CARE

In order to maintain the filter in good condition backwashing and rinsing is required. The strainer baskets in the pumps must be maintained in clean condition.

5. BACKWASHING ROUTINE

Backwashing is carried out weekly or when there is a pressure differential across the filter (usually about .2 Bar) reaches .5 bar. In addition backwashing will be carried out in the event of contamination of the pool water. The backwashing procedure takes 10 minutes, following this procedure the pool will take approximately three hours to return to target temperature. The automatic dosing system will adjust pH and chlorination levels. Only one filter is backwashed each week, in rotation. In the event of a fouling incident in the pool, all four filters would be backwashed.

6. BALANCE TANK

The balance tank is visually inspected six monthly. Once yearly, it is drained, any debris cleaned out, inner surfaces brushed and flushed down with 10mg/l chlorinated water that can be returned to the circulation system via the filters. The balance tank cleaning is done by our appointed contractor.

7. POOL EMPTYING

It is unlikely the pool will require routine emptying as long as all maintenance regimes are carried out. Caretakers, acting on advice from qualified contractors, will be responsible for determining if and when the pool should be emptied.

7.1 Reasons for emptying

- Major service, repair or refurbishment
- Excessive bacteriological contamination

8. Specialist Contractors

The Hospital engages the services of specialist contractors to ensure that all pool plant and equipment is maintained and serviced at regular intervals.
The Main plant and equipment is serviced by contractors who attend site each quarter and provide preventative maintenance of the chemical dosing and filtration equipment within the plant room. (Appendix 1).
Due to their specialist nature both the Hanovia Ultra Violet Lamp system and the Chloridos pool dosing system have separate service contractors engaged to carry out annual service and planned preventative maintenance.
The hospital also engages a contractor who visits weekly to carry out microbiological testing and check that record keeping is in line with recognised guidance. A report is received on a monthly basis.

9. Audit Arrangements

The hospital engages the services of specialist contractors who carry out microbiological testing of the pool water and make other checks of systems and procedures during their visit and will advise on any remedial action that is required. In addition to this, a specialist contractor is engaged to carry out servicing of the plant and equipment related to the Hydrotherapy Pool. During their service, they will make checks on the records and advise on any shortcomings

10. Equality and Diversity

This policy has been reviewed for adverse impact on people with protected characteristics within the meaning of the Equality Act 2010 and no such impact was found.

Procedures

Action to be taken in the event of contamination

Duty Caretaker should always be contacted immediately

1. STOOLS

1.1. Formed stool

- Hydrotherapy Staff should retrieve stool using net and dispose of in toilet.
- The net used to retrieve stool should be dispose of safely
- No further action is required as long as the pool is operating effectively
- Record with pool water condition readings

1.2. Diarrhoea

If a substantial amount of loose, runny stool is introduced into the water:

- Clear pool immediately
- Call caretakers
- Maintain the disinfectant levels at the top of the recommended range
- Consider adding Flocculent (Kibbled Alum) filter for six turnover cycles (approximately 5 hours)
- Vacuum and sweep
- Follow backwash procedure
- Reopen when temperature and chlorination at acceptable levels (Minimum of 8 hours)
- Record with pool water condition readings

2. VOMIT AND BLOOD

- Clear pool
- Call caretakers
- Vacuum the pool
- Allow pollution to disperse as any infectious particles in it will be neutralised by disinfectant
- Reopen when pH and chemical levels at acceptable levels
- Record with pool water condition readings

Action to be taken in the event of power failure to plant room

In the event of an interruption of the power supply, the pool pump, UV light disinfection system and the dosing system will cease to operate. The UPS will support the control panel functions, although individual circuit breakers may trip.

To restart the pool operation

1. Turn off the power supply to the dosing system. The switch is located to the left of the BECSYS display panel
2. Check all circuit breakers and reset any that have tripped
3. Remove the battery from the nurse call paging unit on the main panel
4. Perform the “rinse” cycle of the pool filter for a maximum of one minute
5. Return to “Filtration” mode
6. Restart the UV system

7. Restore the power on the dosing system
8. Complete usual power cut checks throughout the site
9. Delete “low-level alarm, makeup tank” on pool computer and refit battery in nurse call paging unit

Scope of Work for pool plant servicing by the contractor

To attend site each quarter and provide preventative maintenance of the chemical dosing and filtration equipment within your plant room.

Visit 1

Visual inspection and function of valves.
Visual inspection of pumps and strainers.
Strip down inspection of metering/dosing pumps.
Strip down inspection of injection points.
Calibration check of Chemical Dosing Controller.
Check of pH and Chlorine probe.
Flow cell inspection.
Flow switch inspection and function check.
Flow in Line strainers inspection and function check.
Onsite safety equipment visual and function check.
Onsite personal safety equipment visual check.
Visual inspection of dosing lines (please see note 6)
Visual inspection of UV units.
Visual inspection of Circulation pumps.
Visual inspection of filter and face pipework.

Visit 2

As per visit 1 plus

Inspection of filters, lining and media supported by a written report.
Visual inspection and function check of auto air relief valves.
UV system lamp change and internal cleaning of the chamber and integral strainer unit.

Visit 3

As per visit 1 plus

Staff competency checked and signed off for pool testing.
Written records for plant operation and pool testing checked and recommendations provided.
Conduct an in-depth chemical analysis of the pool water system.

Visit 4

As per visit 1

Balance tank inspection and cleaning supported by a written report.

Protocol to be followed in the event of a need to close the pool

There are situations which may give rise to the need to close the pool for a period of time.

- Failure of the pool plant
- Poor water quality
- Contamination of the water
- Unsafe conditions in the vicinity of the pool

The final decision to close the pool may only be taken by a Manager or authorised person (who must inform management immediately). Hydrotherapy staff should be kept fully informed of the status of the problem.

The Manager will make the decision about the duration of the pool closure based on advice from Assistant General Manager, caretakers or specialist contractor.

The Manager or authorised person should give the information to the reception staff so that they can cancel patients in good time. It will always be our aim to inconvenience patients as little as possible by giving as much notice as possible.

Patients should be offered another appointment at the time of cancellation if it is at all possible.