

Analytic Study of Emergency Departments' Water from General Hospitals of Syrian Coast

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Background

Contamination of hospital water with potentially pathogenic and chemical pollutants is very common. Hospital water must be free of pathogenic bacteria as coliform, Escherichia coli. [1]

Hospital Water is a Source of Infectious Microorganisms. Patient exposure to waterborne microorganisms in the hospital occurs while showering, bathing, drinking water. It can also occur through contact with contaminated medical equipment such as flexible endoscopes and respiratory equipment that have been rinsed with tap water. The hands of healthcare personnel washed using tap water can also lead to patient exposure. [2,3]

Aim

We aimed to evaluate hospital water properties and safety from the Syrian coast in comparison to the standards of Syrian health ministry S.N.S:45/2007 and WHO standardizations.

Material and methods

Water Samples were taken from 11 general hospitals of Syrian Coast (Latakia and Tartous city) using 500 ml sterile flasks. Free Chlorine, Ammonia, Nitrite, Nitrate, Copper, Iron, Phosphorus, Sulphate, pH, Turbidity, Electrical Conductivity, TDS, sal% were analysed by DR/890 HACH colorimeter. The microbial analysis was performed by filtering 100 ml of water sample on a sterile filter with a 0.45 mm pore size which retains bacteria, incubating this filter on a selective medium and enumerating typical colonies on the filter.

Results

Total number	Permissible Limits by Syrian standards S.N.S : 45/2007	Permissible Limits by WHO standards	Hospital 1	Hospital 2	3 Hospital	4 Hospital	5 Hospital	6 Hospital
E. coli	0/ 100 ml	0/ 100 ml	3 x 10 ³ / 100 ml	2 x 10 ⁴ / ml	3 x 10 ³ / 100 ml	6 x 10 ⁶ / 100 ml	0/ 100 ml	4 x 10 ² / 100 ml
Total coliform	0/ 100 ml	0/ 100 ml	25 x 10 ⁶ / 100 ml	2 x 10 ⁵ / 100 ml	5 x 10 ³ / 100 ml	24 x 10 ⁸ / 100 ml	2x 10 ³ / 100 ml	25 x 10 ⁴ / 100 ml

Summary

Samples of emergency departments water were collected twice in sterilized flasks from 11 general hospitals in the Syrian Coast. The water samples were analyzed for pH, Turbidity, Electrical conductivity, Total Dissolved Solid (TDS), percentage of salts (Sal%), Ammonia, Nitrate, Nitrite, Sulphate, Phosphate, Copper, Iron, Chloride, as well as the microbial analysis. The physicochemical values were within permissible limits according to standard procedure mentioned in Syrian standards S.N.S:45/2007, the microbial analysis showed contamination with E. coli and coliform in six hospitals.

Conclusion

Results indicates that the physicochemical parameters values are within a permissible limits by Syrian standards, while the microbial analysis indicates contamination with E.coli and coliforms in six hospitals, which could pose a risk to the on patients' health and the medical staff. Hospitals tanks should be cleaned and sterilized routinely.

References

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