

interactive quiz and toolkit

Water in pharma and healthcare

How much risk can you take?

To experience full interactivity you may need to update Adobe Acrobat. [Download here.](#)

Lab water contamination is **avoidable**

This interactive document will take you through four key areas where the impact of contaminated water can be catastrophic — whether measuring therapeutic levels of drugs in patient plasma samples or deciding to pass or fail a batch of API for drug formulation.

To find out more about the applications in these different areas, you can also [download our white papers on HPLC in pharma analysis and Reducing risk in HPLC/LC-MS therapeutic drug treatment and monitoring.](#)

TEAM ELGA VEOLIA

Menu

Pick an area,
test your
knowledge
and learn...

TEST YOUR KNOWLEDGE: THERAPEUTIC DRUG MONITORING

Q

Which of these is the easiest method for therapeutic drug monitoring?

Q

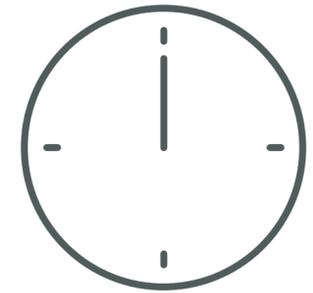
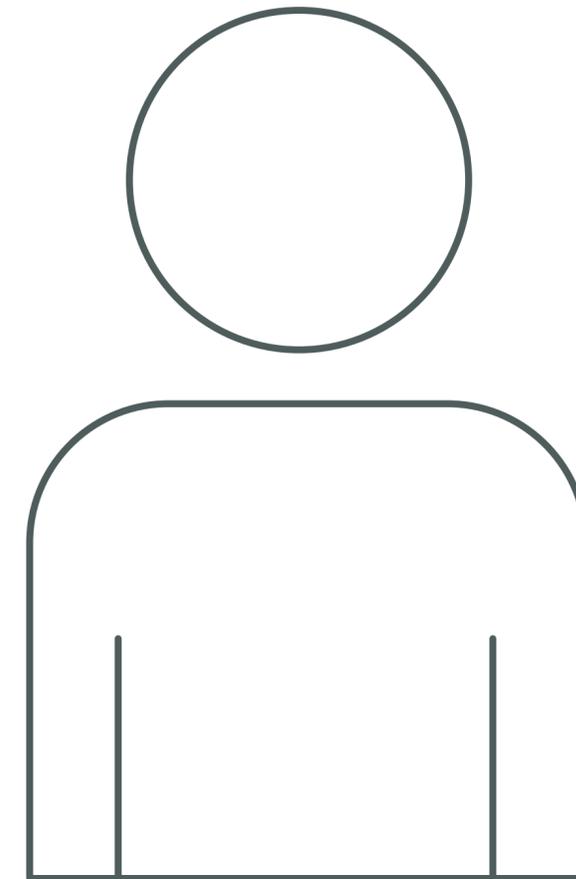
Why is it so important to measure therapeutic drugs accurately?

EXPERIMENT 1

Therapeutic drug monitoring

Therapeutic drug monitoring should be performed when the patient has achieved steady-state concentration, has changed drug therapy, or has had a change in response to treatment e.g. toxicity.²

Establish therapeutic ranges at timed blood collections after steady-state concentrations have been reached (generally 5-7 half-lives after initiation of or change in dosing).²



RESULTS & IMPACT

Therapeutic drug monitoring

Results and impact on background with...

DOWNLOADS

Dive deeper...

LC-MS/MS is fast, flexible, adaptable, and allows the simultaneous quantification of multiple analytes. Discover more about the use of LC-MS for TDM and other applications in our white paper.

[Download whitepaper now](#)



...all difficulties
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...ted water.”

The above quote comes from LC/MS: A Practical User's Guide, by M.C McMaster, and reflects the importance of using water of the highest quality for HPLC analysis.¹



TEST YOUR KNOWLEDGE: ACTIVE PHARMACEUTICAL INGREDIENT (API) MEASUREMENT

Q

What type of water is needed during pharmaceutical manufacture if the API is not sterile, but is intended for use in a sterile, parenteral product?⁴

Q

Why is dissolution key in pharmaceutical analysis?

EXPERIMENT 2

Active pharmaceutical ingredient (API) measurement

You need to avoid contamination that might affect the accuracy of your measurements if you are measuring the level of an API in a tablet during QA.

This is particularly important in the branded versus generics debate, where the vector substance that is carrying the active ingredient can have a key role in making the active ingredient available in the body.⁶ This can be measured via dissolution testing.⁷

RESULTS & IMPACT

Active pharmaceutical ingredient (API) measurement

Results and impact on background with...

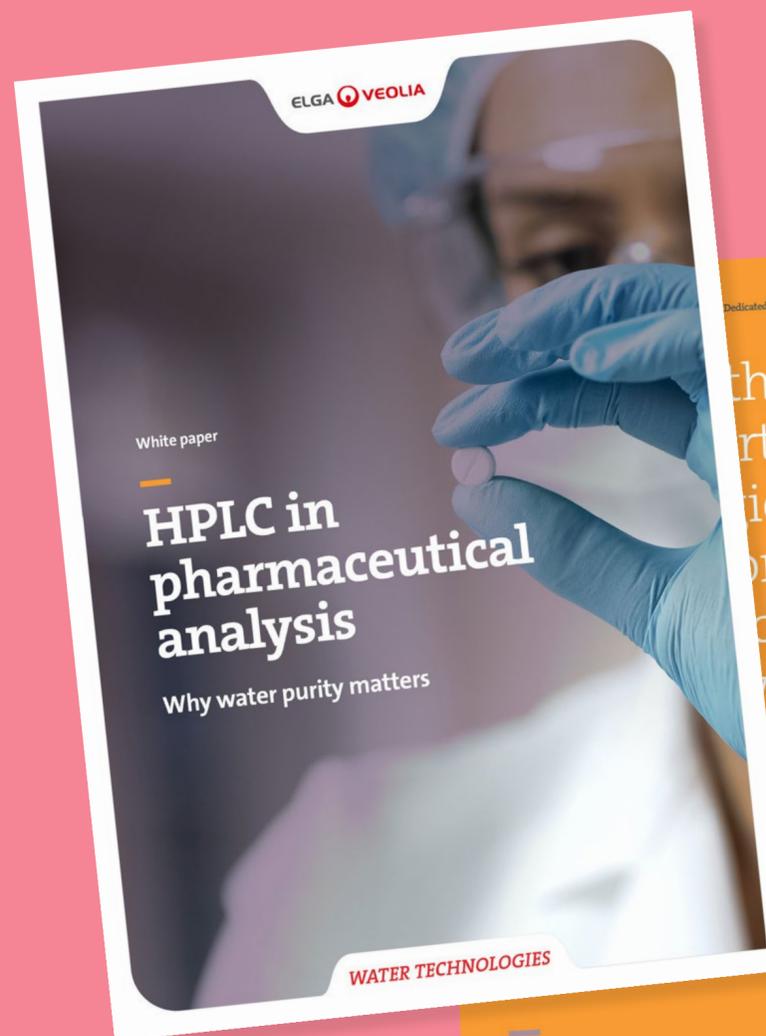


DOWNLOADS

Dive deeper...

Discover in our white paper why ultrapure water – and choice of other types of water – is critical for HPLC applications in pharmaceutical manufacture.

[Download whitepaper now](#)



“Guideline on the quality of water for pharmaceutical use” published by the European Medicines Agency on 13 November 2018



Manufacture	Minimum acceptable quality of water
ulation	Purified*
coating	Purified
in formulation prior to non-sterile lyophilisation	Purified
in formulation prior to sterile lyophilisation	WFI
Water used during manufacture of medicinal products	

Table 4

requirements	Minimum acceptable quality of water
ygogenicity in API or the it will be used.	Potable water*
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ygogenicity in API or the it will be used.	Potable water**
ygogenicity in API or the it will be used.	Potable water*
use in a sterile, non-	Purified water
parenteral use	Purified water
use in a sterile, parenteral	Purified water with an endotoxin limit of 0.25 IU/ml and control of specified organisms.
Water for injection	

Table 5



TEST YOUR KNOWLEDGE: FORENSIC TOXICOLOGY

Q

What is the most accurate type of sample to detect drug use?



Click to reveal more on the sample types commonly used to detect illicit drug use

EXPERIMENT 3

Forensic toxicology

Establishing a person's exposure to drugs of abuse or pharmaceuticals is important for many situations including forensics, clinical applications or in doping control.

Drug analysis is usually carried out on body fluids, such as urine or blood samples. But in recent years, remarkable advances in sensitive analytical techniques has expanded opportunities for using drugs in less conventional samples, including hair.¹²

RESULTS & IMPACT

Forensic toxicology

Impact on results with



DOWNLOADS

Dive deeper...

Ultrapure water is key to accurate drug analysis of all sample types, whether dealing with doping in sport or drug-related crime. Find out more in our white paper.

[Download whitepaper now](#)



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TEST YOUR KNOWLEDGE: WATER IN THE HOSPITAL ENVIRONMENT

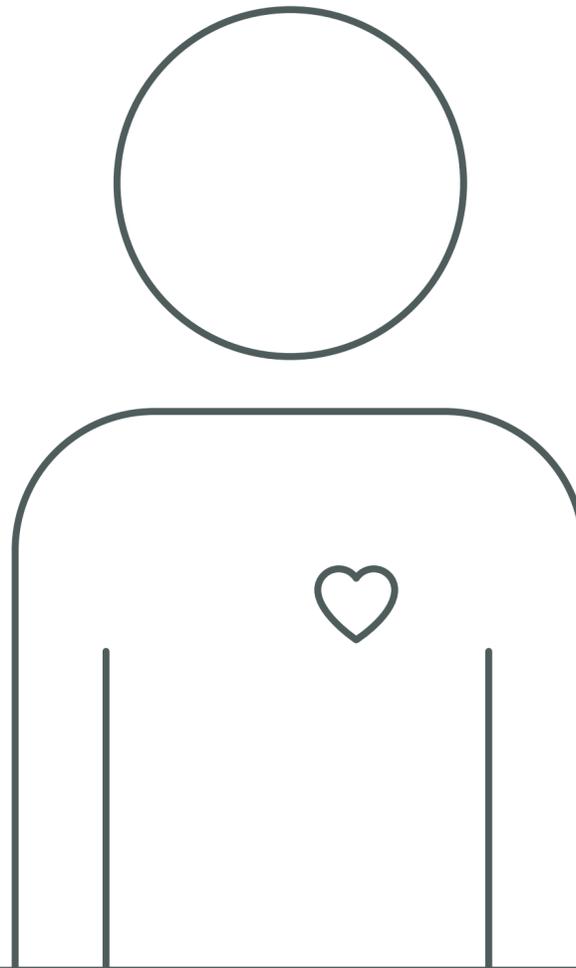
Q

In which of these application areas does ultrapure water play a key role in the hospital environment?

TEST YOUR KNOWLEDGE: WATER IN THE HOSPITAL ENVIRONMENT

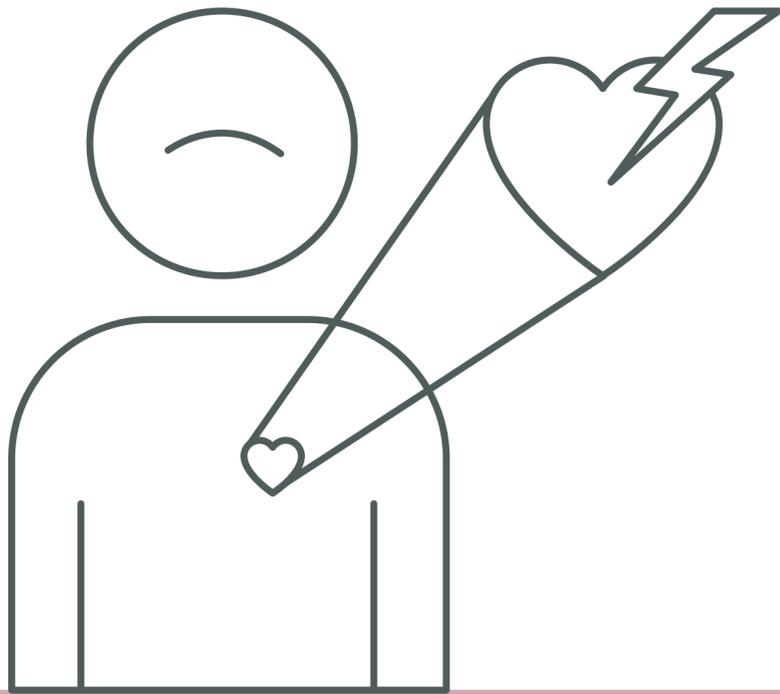
Here we imagine a scenario where a patient has suffered a heart attack, and we consider the role of water in the overall diagnosis and management of their condition.

Click on the coloured icons to find out the key areas where pure water plays a part in the care pathway of a heart attack patient



HOSPITAL INSIGHT

Heart patient scenario



Let's consider the role of water in the overall diagnosis and management of a heart patient's condition in more detail.

DOWNLOADS

Dive deeper...

From analysis of patient samples after a heart attack to the precision medicine prescribed for recovery, ultrapure water is key. Read more about the applications in our white papers.

Water in LCMS applications

[Download whitepaper now](#)

Water in pharma applications

[Download whitepaper now](#)



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