

Nephrology

with Dr Diana Jalal

Talking points

Knowledge

1. What role do the kidneys play in the body?
2. In the US, how many people have kidney disease and kidney failure?
3. What causes vascular dysfunction, and how is the condition measured in patients?

Comprehension

4. What does a translational research approach involve, and why does Diana use this approach?

Application

5. The mechanisms that cause chronic kidney disease (CKD) to increase the risk of cardiovascular disease (CVD) are still not fully understood. What hypotheses do you think nephrologists should investigate to learn more about the links between these two conditions?
6. What questions would you ask Diana to learn more about her research methods?

Analysis

7. What challenges do you think Diana faces when moving her research from cells and animals to humans? How do you think she overcomes these?
8. What do you think Diana is looking for in her clinical trial results to determine whether curcumin and resveratrol improve vascular function in patients with CKD?

Evaluation & Creativity

9. What do you think you would find most rewarding and challenging about a dual career as a clinical and research nephrologist?
10. Using placebos in clinical trials is ethically controversial, as half the participants unknowingly receive no treatment for their condition, which may worsen while they participate in the trial. However, without a control group, researchers cannot scientifically analyse the effects of the therapy. What are your opinions about the use of placebos? Can you think of any way that all participants could benefit from taking part in a trial, while still providing researchers with valid results?
11. The results of clinical trials are often sensationalised by the media, who run headlines such as 'Grapes cure kidney disease!' What responsibility do you think scientists have in countering potentially misleading claims, and how could scientists and journalists work towards more accurate scientific reporting?

Activities

1. Design a clinical trial

Curcumin and resveratrol are examples of nutraceuticals, chemicals found in foods that are believed to have health benefits. Design a clinical trial that will test the effects of a nutraceutical on kidney and/or cardiovascular health. Consider:

- What nutraceutical will you investigate?
- What hypothesis will you test?
- What ethical considerations will you need to take into account?
- What measurements will you collect from participants before, during and after the trial?
- What will participants do during the trial?
- How will you analyse your data?
- If your hypothesis is correct, what results will you expect to see?
- How will your results improve health outcomes for patients?
- What limitations do you expect your trial to have?

2. Announce your clinical trial results

Imagine your clinical trial has yielded positive results – your chosen nutraceutical has been shown to have positive health benefits for the kidneys and/or cardiovascular system. Write a short newspaper article announcing your findings, which should:

- Have an eye-catching headline
- Be interesting and engaging for a non-specialist audience
- Explain the methods and key findings in clear language
- Be scientifically accurate and truthful, avoiding exaggeration or misleading claims
- Suggest what your results could mean for science and patient health.

More resources

- Learn more about the work conducted in Diana's Human Translational Nephrology Lab: jalal.lab.uiowa.edu
- This Futurum article explains how acute kidney injury can lead to chronic kidney disease: www.futurumcareers.com/can-scientists-prevent-kidney-disease
- The National Kidney Foundation has a YouTube channel full of educational videos about kidneys and kidney disease: www.youtube.com/@nationalkidneyfoundation