

Overview

This unit looks briefly at the role of the kidney and then focuses on methods of treating kidney failure and the issues surrounding the lack of organs for transplant. Treating kidney failure using dialysis has many disadvantages and most people with kidney failure would prefer a kidney transplant. There are currently about 8000 people in the United Kingdom needing kidney transplants. This number is greater than the number of donor organs available – usually about 1800 per year. It is often difficult to find a suitable donor for a person who needs a transplant. Each year about 400 patients on the waiting list die and another 500 are removed from the list because they are too ill for a transplant. Most transplanted kidneys are removed – or ‘harvested’ – after the donor has died. Sometimes living people donate one of their kidneys, usually to a close family member whose tissue type is similar.

The activities

There are three activities in this unit. Any of the activities could be used independently of the others. The ideas in the activity ‘Who gets the kidney?’ could be applied to other issues such as IVF treatment.

Kidney quiz – what do you know?

A simple quiz about the kidney. Could be used as homework, cover work or revision.

Living with kidney failure – the options

An investigation of the different ways of dealing with kidney failure and the advantages and disadvantages of each method.

Who gets the transplant?

A decision making exercise highlighting the need to decide on criteria for making decisions rather than relying on ‘gut’ feeling.

Curriculum links (for students aged 14–16)

How Science Works (from POS KS4 for England)

3a recall, analyse, interpret, apply and question scientific information or ideas

3b use both qualitative and quantitative approaches

3c present information, develop an argument and draw a conclusion, using scientific, technical and mathematical language, conventions and symbols and ICT tools

4a about the use of contemporary scientific and technological developments and their benefits, drawbacks and risks.

4b to consider how and why decisions about science and technology are made including those which raise ethical issues, and about social, economic and environmental effects of such decisions

GCSE or equivalent 14–16 specifications

England (GCSE)

AQA Science A 4461

Biology 1a Human Biology: 11.1 How do human bodies respond to changes inside them and to their environment?

AQA Additional Science 4463

Unit Biology 2: 11.7 How do our bodies keep internal conditions constant?

AQA Science B 4462

Biology Unit 1: 11.1 How do human bodies respond to changes inside them and to their environment?

AQA Biology 4411

Unit Biology 1: 11.1 How do human bodies respond to changes inside them and to their environment?

Unit Biology 2: 12.7 How do our bodies keep internal conditions constant?

Unit Biology 3: 13.4 How do exchanges in the kidney help us to maintain the internal environment in mammals and how has biology helped us to treat kidney disease?

OCR Additional Science A (21C science) J631

Module B4 Homeostasis: B4.4 How does the body control water balance?

OCR Biology A (21C) J633

Module B4 Homeostasis: B4.4 How does the body control water balance?

OCR Additional Applied Science (21C science)

AP1 Life Care: AP1.3 – Diagnosis and action plans; AP1.5 – Underlying skills and knowledge

OCR Biology B (Gateway Science) J643

Module B5 The Living Body: Item B5g New for Old

Scotland (SCE standard grade)

Biology

Topic 3: Animal survival: Sub-Topic c – Water and Waste

Wales (WJEC GCSE)

Biology

Biology B 3. Waste products of body functions are removed by the kidneys

NI (CEA GCSE)

Biology

Section 3. 1 Living organisms and life processes: 3.1.3 Animals; 3.1.36 Excretion

Learning objectives

By working through this unit, students should understand:

- how decisions in medicine involve a variety of issues
- that science alone does not provide a method for making decisions about controversial issues
- that technological developments have some benefits, drawbacks and risks
- that in any given situation, there is usually more than one choice available.

Teaching and learning approaches

- Discussing ideas in a small group ✓ (LSS2)
- Gathering information from a variety of sources ✓ (LSS1)
- Creative writing ✓ (LSS4)
- Case-studies' in a variety of contexts ✓ (LSS3)
- Argumentation ✓

For further information about Learning Skills for Science (LSS) click here.

Downloads

Kidney quiz – what do you know?

- Activity sheet – Kidney quiz
- Activity sheet – Kidney quiz answers

Living with kidney failure – the options

- PowerPoint presentation
 - slide 1 – stimulus slide (optional)
 - slide 2 – ways of dealing with kidney failure
 - slide 3 – haemodialysis facts
 - slide 4 – peritoneal dialysis facts
 - slide 5 – transplant facts
- Information sheet – Dealing with kidney failure
- Activity sheet A – Dealing with kidney failure
- Activity sheet B – Dealing with kidney failure (simplified version)
- Activity sheet – Which is best?
- Information cards: transplant, haemodialysis, peritoneal dialysis

Who gets the transplant?

- PowerPoint presentation
 - slide 9 – who should get a kidney?
 - slide 10 – making decisions
 - slide 11 – criteria for making decisions
 - slide 12 – who should get a kidney priority list
 - slide 13 – reaching agreement guidelines
 - slide 14 – criteria used to make the decision
- Activity sheet – Who gets the kidney
- Record sheet – Who gets the kidney?

Acknowledgements

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