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## Journal of Prescribing Practice

### Calculation Skills – Cost-effective prescribing & health economics

Ruth Broadhead 28.03.21

Developing an awareness of cost is a fundamental feature of prescribing practice and the Royal Pharmaceutical Society (RPS) (2016) includes this principle within the 'Consultation domain' as a definitive competency for all prescribers. Within the framework, (Competency 2: Consider the options), sub-competency 2.8 states that the prescriber: '*Stays up-to-date in own area of practice and applies the principles of evidence-based practice, including clinical and cost-effectiveness*'. The General Pharmaceutical Council (GPhC) (2019) stipulate that pharmacist independent prescribers should attain minimum prescribing standards against specific learning outcomes. The 'professionalism domain', learning outcome 13, within the GPhC document requires that pharmacists "apply an understanding of health economics when making prescribing decisions" (GPhC, 2019, pg. 8). Similarly, the Nursing & Midwifery Council (2018) and the Health & Care Professions Council (2019) alert their prescribing registrants to prescribe cost-effectively using the RPS competency framework.

The National Prescribing Centre (NPC) (1999) devised the mnemonic EASE to alert the prescriber to consider that prescribed medications should be **E**ffective, **A**ppropriate, **S**afe and **C**ost-Effective. In terms of cost, the use of EASE during the prescribing process prompts the prescriber to consider whether their prescribing decisions take account of budgetary constraints and health economics. Haycox (2009) defines health economics as a valuable tool for improving clinical decisions whereby the prescriber identifies alternative, cost-based options for their patients in respect of drug choice and maps this against clinical efficacy, available resources and patient outcomes.

Cost-effective prescribing is not always about prescribing the cheapest option for patients, but more concerned with maximising drug efficacy and medicines optimisation (Nuttall, 2020). There are finite resources available to prescribers within the NHS and the lower cost product may not be the most appropriate choice for the patient (King's Fund, 2018). It is stated in this report that the prescribing of cheaper, generic drugs should take precedence over the more expensive branded alternatives, and as an example, prescribers should consider 'biosimilars' for some long-term conditions. Biosimilars resemble generic drugs, but these medicines generally cost less than the original biological medicine, but with equal safety and efficacy (NHS UK, 2020). As 'cost-aware' prescribers, therefore, a balance needs to be reached between clinical efficacy and cost-effectiveness when making clinical decisions about medications that are to be prescribed against NHS budgets.

The following drug calculations offer the opportunity for you to consider cost-effective prescribing decisions.

#### **Question 1**

Mrs Smith has chronic venous leg ulcers. She has been prescribed *Dressing X* for the last 60 days with good overall clinical efficacy. The wound dimensions were originally 6cm x 8cm and *Dressing X* was prescribed in 10cm x 10cm pieces to be applied daily. The cost of 10cm x 10cm dressings is £26.22 per box of 20. Mrs. Smith's leg ulcer is healing well, and the wound dimensions are now 2cm x 4cm. *Dressing X* is also available in 5cm x 5cm and cost £18.48 per box of 20. Assuming that the 5cm x 5cm are prescribed for the next 60 days, using one dressing daily, what is the overall cost saving?

#### **Question 2**

Jane has rheumatoid arthritis. A clinical decision has been made to commence biological treatment. *Biological A* is prescribed at 125mg/ml S/C injection once weekly for 4 weeks.

The cost is £1,209.60 for 4 pre-filled syringes. However, *Biosimilar B* is considered as a cost-efficient alternative and is available in vials of 500mg/50ml for IV infusion. Each vial costs £571.67. The dose for *Biosimilar B* is 500mg every 2 weeks. Over a 4-week treatment regime:

- a. What is the weekly cost for *Biologic A*?
- b. What is the weekly cost for *Biosimilar B*?

Assuming *Biosimilar B* is prescribed for Jane:

- c. What is the total cost for 4 weeks?
- d. What is the saving made to the NHS over the 4 weeks by prescribing the *Biosimilar B* rather than *Biological A*?

### **Question 3**

Daniel has been diagnosed with severe hypertension and Drug Y has been prescribed once daily at a cost of £44.20 for 28 tablets. You prescribe Drug Y for 56 days at which point, you will review the patient.

- a. What is the cost of Drug Y for the 56 days?
- b. How much would this treatment cost for 1 year (assume one month = 28 days)?

Daniel returns after 2 weeks having developed an intolerance to Drug Y.

- c. How many tablets will remain unused?
- d. What is the cost of this loss to the NHS?

### **Question 4**

For optimal medicines management, you undertake a review of Ethel's medication prior to discharge following successful admission for a total hip replacement. There are 4 drugs that are considered suitable for deprescribing. These are:

- i. *Drug 1* is currently prescribed on repeat by her GP and is no longer clinically required. The drug is currently prescribed at 100mg tablets three times a day and costs 20p per dose. Over a year (365 days), how much will be saved by the NHS once this drug is discontinued?
- ii. *Drug 2* is taken twice daily by Ethel and is deprescribed prior to discharge from hospital. This has been replaced by *Drug 3* to be taken once daily. *Drug 2* costs £8.90 per dose and *Drug 3* costs £8.90 per dose. What is the total saving per day by deprescribing *Drug 2*?
- iii. *Dressing 1* is deprescribed and replaced by the cheaper generic *Dressing 2* for post-op wound care. The cost difference is £2.40 per dressing. Over 7 days assuming one dressing is used per day, how much will be saved by prescribing generically?
- iv. Ethel developed a post-op hospital-acquired wound infection and was prescribed intravenous antibiotics for 7 days. These are deprescribed at a cost-saving of £94.00 per day. Oral antibiotics are prescribed on Ethel's discharge to be taken at 1g every 6 hours for 5 days. The capsules are 250mg strength and cost £1.25 per capsule.
  - a. How much will a 5-day course of oral antibiotics cost?
  - b. Over the in-patient stay plus the course of antibiotics prescribed to Ethel on discharge, what has been the overall cost of antibiotics for this hospital-acquired wound infection?

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## Answers

### Question 1

**£23.22**

### Question 2

- a. **£302.40**
- b. **£285.83**
- c. **£1,143.34**
- d. **£66.26**

### Question 3

- a. **£88.40**
- b. **£530.40**
- c. **42 tablets**
- d. **£66.30**

### Question 4

i. **£219.00**

ii. **£8.90**

iii. **£16.80**

iv. a. **£100** b. **£758**