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Calculation Skills: Medicines Management and Cost Efficiency

In 2013, the annual prescribing spend per person in England was £142 (Nuffield Trust, 2016a). With a population of on 54.3 million in England in 2014 (ONS, 2015), it is crucial that prescribing is appropriate and effective, with processes in place to manage this. Medicine's management is not a new concept, with the National Prescribing Centre defining it in 2002 as: 'a system of processes and behaviours that determines how medicines are used by patients and the NHS'. Primary Care Commissioning [PCC] (2012) highlighted that medicines management is not just about cost but also concerned with the development of new models of treatment to improve patient outcomes and to support adherence.

NB American billion to be used in calculation (1000 million)

Question 1

Based on the figures above, answer the following questions:

(i)   Assuming the prescribing spend per person remained constant, what would have been the total prescribing spend for England in 2014 (to the nearest billion)?

(ii)   PCC (2012) reported a 4.8% prescribing cost inflation in 2010. If this trend continued, what would have been the average prescribing spend per person in England in 2014 (calculate this on the known cost for 2013). Round the answer up or down to the nearest pence. You may find it easier to convert the figures to pence

(iii)   If an average saving of 3% could be made to the prescribing spend per person (based on the 2013 figure) to a third of the population in England (based on the 2014 population figure), what total saving would be made?

Question 2

PCC (2012) reported that the NHS medicines bill for 2010 was £12.9 billion and that 32% of that was generated in secondary care.

(i)   How much did non-secondary care medicines cost the NHS in 2010?

Question 3

One of the key influences on the overall bill for medicines is the number of items prescribed. Polypharmacy can result in a range of unwanted consequences for the patient and the service, making review an important strategy in prescribing. Nuffield Trust (2016b) identified that there were variations in the number of items prescribed per person between the four countries of the UK, with Wales averaging 24 items, England, 19, Northern Ireland, 21 and Scotland 19.

(i)   Taking into account this data and the average spend per person figure identified earlier, what is the average cost per item in England (rounded up or down to nearest pence)?

(ii)   Nuffield Trust (2016a) identified that the average spend per person in Scotland was £176, Northern Ireland £197 and Wales £179. What is the cost difference between the UK country with the lowest average cost per item and the one with the highest?

Question 4

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Enid, aged 80 attended for a review of her medicine regimen which included 9 drugs for a range of conditions, which she received as a repeat prescription, delivered by her local pharmacy. It was discovered that she had not taken the Captopril 12.5mg tablets (supplied 56 tablets monthly at a cost of £2.80*) for 8 months as they made her feel dizzy. She had stopped taking the Omeprazole 20mg capsules (supplied 28 capsules monthly at a cost of £13.92*) after having a hernia repair 6 months previously and only used the emollient cream (supplied one 500ml bottle monthly at a cost of £5.50*) infrequently when her preferred body butter ran out (leaving 5 bottles unused at home).

*Costs based on BNF 70

Assuming that these treatments were no longer appropriate for Enid and no alternatives found to be necessary:

  (i)   What was the total cost of the **unused** medicines?
  (ii)   Assuming Enid's remaining six medicines totalled a cost of £9.50 per month, what percentage saving (based on the cost of the nine medicines) has been made by stopping these three unused medicines from being prescribed (rounded up or down to the nearest pence)?

Answers

Question 1

  (i)   £142 x 54300000 = £7,710,600000 (8 billion when expressed as nearest billion)

  (ii)   2013 100% of the cost = £142
         1% = £1.42
         4.8% = 142p x 4.8 = 682p / £6.82
         2014 cost = £142 + £6.82 = £148.82
  (iii) 3% saving = 1.42 x 3 = £4.26 per person
         3rd of the population = 54.3 million ÷ 3 = 18.1 million
         18100000 x 4.26 = £77,106,000

Question 2

  (i)   12,900,000,000 ÷ 100 = 129,000,000
         32 x 129,000,000 = 4,128,000,000
         12,900,000,000 – 4,128,000,000 = 8,772,000,000
         Non-secondary care cost = £8772000

Question 3

(i) Cost per person = £142, no. Items = 19. Average cost per item = 142 ÷ 19 = £7.47

(ii) England + £7.47

Scotland = £176 ÷ 19 = £9.26

Wales = £179 ÷ 24 = £7.46

Northern Ireland = £197 ÷ 21 = £9.38

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Highest is NI £9.38, lowest is Wales £7.46, difference is 9.38 – 7.46 = £1.92

Question 4

    (i)   Captopril 8 x £2.80 = £22.40
              Omeprazole 6 x £13.92 = £83.52
              Emollient 5 x £5.50 = £27.50
              Total = £133.42

    (ii)   Monthly wastage = 2.80 + 13.92 + 5.50 = 22.22
              Monthly cost of remaining drugs + monthly wastage = original monthly cost
              9.50 + 22.22 = £31.72
              1% = 3172 ÷ 100 = 31.72
              2222 ÷ 31.72 = 70% (rounded down)

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