Calculation Skills : Acne Rosacea

NICE (2016) define acne rosacea as an inflammatory skin condition, which is chronic in nature. It can involve the forehead, eyes, nose, cheeks and chin. Signs and symptoms include thickened skin, telangiectasia, erythema, pustules, facial flushing, facial swelling and ocular rosacea (Culp & Scheinfeld, 2009). Nice (2016) identify that there are five key types of acne rosacea:

- Papulopustular rosacea which presents as erythema to the centre of the face with papules and/or pustules
- Erythematotelangiectatic rosacea which presents as facial flushing, erythema to the centre of the face, with or without telangiectasia
- Ocular rosacea, presenting as inflammation of the eye and eyelid
- Granulomatous rosacea which presents as hard, uniform papules, red, yellow or brown in colour
- Phymatous rosacea characterised by irregular, thickened skin

Individuals can experience a number of types concurrently and with differing degrees of severity.

Question 1

Zoe has moderate papulopustular acne rosacea and is to be prescribed Mentronidazole 0.75% cream for topical application for 9 weeks. The treatment is available in amounts of 15 gram, 30 gram and 40 gram.

(i) How much mentronidazole (in mg) will each available pack size contain?

(ii) Express the amount of metronidazole in each pack size in grams

Question 2

Andrew has severe papulopustular acne rosacea and requires oral oxytetracycline or tetracycline 500mg twice daily, for 8 weeks. Oxytetracycline is available as 250mg tablets in pack sizes of 28 tablets (£12.50). Tetracycline is available as 250mg tablets in a pack size of 28 tablets (£25.65).

(i) How many tablets will Andrew need for his course of treatment?

(ii) If oxytetracycline is chosen as the preferred treatment option, what would be the cost (assuming packs are not split) of the treatment?

(iii) What would the difference be in cost between using oxytetracycline and tetracycline for the 8 weeks?

Question 3

Yvonne also has severe papulopustular acne rosacea but prefers a once daily dose, so it is agreed that she will be prescribed Lymecycline 408mg once daily for 12 weeks. Lymecycline is available in pack sizes of 28 408mg capsules (£9.18) and 56 408mg capsules (£18.36)

What will be the cost of the course of treatment (using the available pack sizes most cost effectively)?

Question 4

Benjamin has mild renal impairment and is prescribed Doxycycline 100mg daily for 6 weeks for moderate papulopustular acne rosacea.

(i) How much Doxycycline (in grams) will he have taken in total on completion of the course of treatment?

(ii) If Benjamin's treatment was extended for a further 3 weeks, what percentage of his overall treatment would he have received in the first 6 weeks? Round your answer up or down to the nearest decimal point .

Answers

Question 1

(i) Calculate 0.75% of 1gram

0.75 ÷ 100 = 0.0075g per gram of cream

0.0075 x 1000 = 7.5mg

0.75% = 7.5mg per gram

15 gram pack = 15 x 7.5 = 112.5mg

30 gram pack = 30 x 7.5 = 225mg

40 gram pack = 40 x 7.5 = 300mg

(ii) 15 gram pack = 112.5mg = 0.1125g

30 gram pack = 225mg = 0.225g

40 gram pack = 300mg = 0.3g

Question 2

(i) Daily dose = 2 x 250mg tablets twice per daily = 4 tablets

Course = 8 weeks = 8x7 days = 56 days

56 x 4 = 224 tablets

(ii) 224 tablets ÷28 (pack size) = 8 8 x £12.50 = £100

(iii) Tetracycline = 8 x £25.65 = £205.20 Oxyteracycline = £100 Difference = 205.20 – 100 = £105.20

Question 3

No. capsules required = 12 (weeks) x 7 (days) x 1 (capsule) = 84

3 x 28 = 84 3 x 9.18 = £27.54

56 + 28 = 84 18.36 + 9.18 = £27.54

Cost = £27.54

Question 4

(i) 6 (weeks) x 7 (days) x 100 (mg) = 4200mg = 4.2g

(ii) 9 (weeks) = 100%

1 (week) = 100 ÷ 9 = 11.1

6 (weeks) = 6 x 11.1 = 66.6%

References

Culp, B. & Scheinfeld, N. (2009) Rosacea – A Review, *Pharmacy & Therapeutics,* 34(1): 38-45

NICE (2016) *Clinical Knowledge Summaries: Rosacea – Acne,* available at: http://cks.nice.org.uk/rosacea-acne#!scenario