Clinical Calculations 8th edition Kee Test Bank

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OTHER

Body Surface Area by Square Root

1. Order: cyclophosphamide 500 mg/m^2 in 500 mL of normal saline solution (NSS) over 90 minutes
   Patient height and weight: 5 ft 10 in, 142 lb
   Drug available: cyclophosphamide 100 mg dilute with 5 mL of sterile water; yields 20 mg/mL

   a. What is the patient's body surface area (BSA) (m^2)?
   b. What is the total dose?
   c. How many milliliters should you prepare?

   ANS:
   a. $\sqrt{\frac{70 \times 142}{3131}} = 1.78\,\text{m}^2$

   b. 500 mg/m^2 × 1.78 m^2 = 890 mg

   c. FE: 890 mg/100 mg × 5 mL = 44.5 mL

   OR

   BF: $\frac{D}{H} \times V = \frac{890\,\text{mg}}{100\,\text{mg}} \times 5\,\text{mL} = 44.5\,\text{mL}$

2. Order: cisplatin 50 mg/m^2 in 500 mL of NSS intravenously over 90 minutes
   Patient height and weight: 5 ft 6 in, 160 lb
   Drug available: cisplatin 100 mg/100 mL
   a. What is the patient's BSA (m^2)?
   b. What is the total dose?
   c. How many milliliters should you prepare?

   ANS:
   a. $\sqrt{\frac{66 \times 160}{3131}} = 1.84\,\text{m}^2$

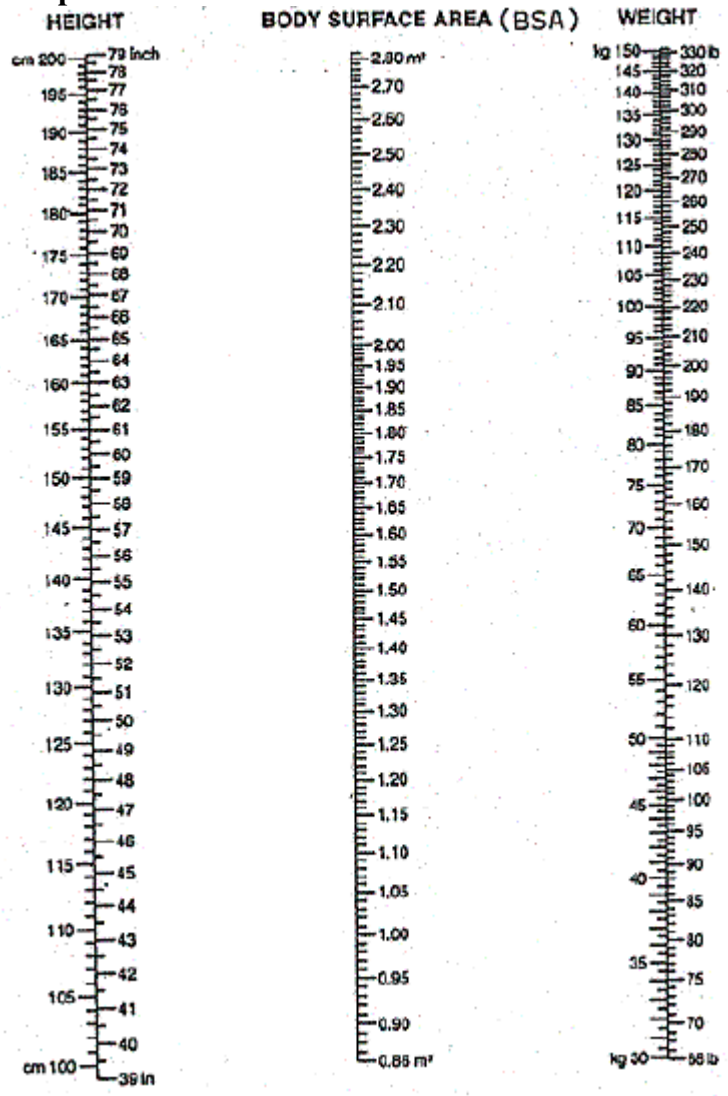
   b. 50 mg × 1.84 m^2 = 92 mg

   c. FE: 92 mg/100 mg × 100 mL = 92 mL

   OR

$$\text{BF: } \frac{D}{H} \times V = \frac{92\text{ mg}}{100\text{ mg}} \times 100\text{ mL} = 92\text{ mL}$$

For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.



3. Give dacarbazine 250 mg/m^2/day × 5 days.
   Patient height: 5 ft 10 in
   Patient weight: 173 lb
   What is the daily dose with

   a. square root method?
   b. nomogram?

   ANS:

   a. $\sqrt{\frac{70 \times 173}{3131}} = \sqrt{3.8677} = 1.97\text{ m}^2$

   250 mg/m^2/day × 1.97 m^2 = 493 mg/day

b. Height 70 in, weight 173 lb, intersects 2.02 m^2
250 mg/m^2/day × 2.02 m^2 = 505 ≈ 500 mg/day

4. Give 5-fluorouracil 450 mg/m^2/wk.
Patient height: 5 ft 6 in
Patient weight: 210 lb
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. $\sqrt{\frac{66 \times 210}{3131}} = \sqrt{4.43} = 2.10\,m^2$
450 mg/m^2/wk × 2.10 m^2 = 945 mg/wk

b. Height 66 in, weight 210 lb, intersects 2.04 m^2
450 mg/m^2/wk × 2.04 m^2 = 918 ≈ 920 mg/wk

5. Give leucovorin 200 mg/m^2/wk.
Patient height: 5 ft 6 in
Patient weight: 210 lb
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:

a. $\sqrt{\frac{66 \times 210}{3131}} = \sqrt{4.43} = 2.10\,m^2$
200 mg/m^2/wk × 2.10 m^2 = 420 mg/wk

b. Height 66 in, weight 210 lb, intersects 2.04 m^2
200 mg/m^2/wk × 2.04 m^2 = 408.00 ≈ 400 mg/wk

6. Give cisplatin 30 mg/m^2/day × 3 days.
Patient height: 70 in
Patient weight: 80 kg
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. 80 kg × 2.2 = 176 lb

$$\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98\,\text{m}^2$$

30 mg/m^2/day × 1.98 m^2 = 59.4 ≈ 59 mg/day

b. Height 70 in, weight 80 kg, intersects 2.08 m^2
30 mg/m^2/day × 2.08 m^2 = 62.4 ≈ 62 mg/day

7. Give cisplatinum 80 mg/m^2/wk.
Patient height: 6 ft 2 in
Patient weight: 186 lb
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. $\sqrt{\frac{74 \times 186}{3131}} = \sqrt{4.39} = 2.09\,\text{m}^2$
80 mg/m^2/wk × 2.09 m^2 = 167.2 mg/wk

b. Height 74 in, weight 186 lb, intersects 2.10 m^2
80 mg/m^2/wk × 2.10 m^2 = 168 ≈ 170 mg/wk

8. Give etoposide 120 mg/m^2/wk.
Patient height: 74 in
Patient weight: 70 kg
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. 70 kg × 2.2 = 154 lb
$\sqrt{\frac{74 \times 154}{3131}} = \sqrt{3.639} = 1.91\,\text{m}^2$
120 mg/m^2/wk × 1.91 m^2 = 229.2 mg/wk

b. Height 74 in, weight 70 kg, intersects 2.06 m^2
120 mg/m^2/ wk × 2.06 m^2 = 247.2 ≈ 250 mg/wk

9. Give Cytoxan 600 mg/m^2/wk.
Patient height: 70 in
Patient weight: 85 kg
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. 85 kg × 2.2 = 187 lb

$$\sqrt{\frac{70 \times 187}{3131}} = \sqrt{4.18} = 2.04\,\mathrm{m}^2$$

600 mg/m^2/wk × 2.04 m^2 = 1224 or 1225 mg/wk

b. Height 70 in, weight 85 kg, intersects 2.08 m^2
600 mg/m^2/wk × 2.08 m^2 = 1248 ≈ 1250 mg/wk

10. Give Adriamycin 60 mg/m^2/wk.
Patient height: 70 in
Patient weight: 80 kg
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. 80 kg × 2.2 = 176 lb

$$\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98\,\mathrm{m}^2$$

60 mg/m^2/wk × 1.98 m^2 = 118.8 mg/wk = 119 mg/wk

b. Height 70 in, weight 80 kg, intersects 2.04 m^2
60 mg/m^2/wk × 2.04 m^2 = 122.4 mg/wk.

11. Give vincristine 2 mg/m^2/week.
Patient height: 62 in
Patient weight: 75 kg
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. 75 kg × 2.2 = 165 lb

$$\sqrt{\frac{62 \times 165}{3131}} = \sqrt{3.27} = 1.81\mathrm{m}^2$$

2 mg/m^2/wk × 1.81 m^2 = 3.62 = 3.6 mg/wk

b. Height 62 in, weight 75 kg, intersects 1.78 m^2
2 mg/m^2/wk × 1.78 m^2 = 3.56 ≈ 3.6 mg/wk

12. Give mitomycin 15 mg/m^2/week.
Patient height: 65 in
Patient weight: 64 kg
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. 64 kg × 2.2 = 140.8 or 141 lb

$$\sqrt{\frac{65 \times 141}{3131}} = \sqrt{2.93} = 1.71\,\text{m}^2$$

15 mg/m^2/wk × 1.71 m^2 = 25.6 or 26 mg/wk

b. Height 65 in, weight 64 kg, intersects 1.75 m^2
15 mg/m^2/wk × 1.75 m^2 = 26.25 ≈ 26 mg/wk

13. Give mitoxantrone 12 mg/m^2/day × 3 days.
Patient height: 5 ft 8 in
Patient weight: 150 lb
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. $\sqrt{\frac{68 \times 150}{3131}} = \sqrt{3.25} = 1.8\,\text{m}^2$

12 mg/m^2/day × 1.80 m^2 = 21.6 or 22 mg/day

b. Height 68 in, weight 150 lb, intersects 1.85 m^2
12 mg/m^2/day × 1.85 m^2 = 22.2 ≈ 22 mg/day

14. Give cytosine arabinoside 100 mg/m^2/day × 7 days.
Patient height: 5 ft 2 in
Patient weight: 130 lb
What is the weekly dose with

a. square root method?
b. nomogram?

ANS:
a. $\sqrt{\frac{62 \times 130}{3131}} = \sqrt{2.57} = 1.6\,\text{m}^2$

100 mg/m^2/day × 1.6 m^2 = 160 mg/day

b. Height 62 in, weight 130 lb, intersects 1.65 m^2
100 mg/m^2/day × 1.65 m^2 = 165 mg/day

15. Give methotrexate 3.3 mg/m^2/day × 7 days.
Patient height: 72 in
Patient weight: 82 kg
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. 82 kg × 2.2 = 180.4 lb

$$\sqrt{\frac{72 \times 180.4}{3131}} = \sqrt{4.15} = 2.04\,\text{m}^2$$

3.3 mg/m^2/day × 2.04 m^2 = 6.7 mg/day

b. Height 72 in, weight 82 kg, intersects 2.10 m^2
3.3 mg/m^2/day × 2.10 m^2 = 6.93 ≈ 6.9 mg/day

16. Give prednisone 60 mg/m^2/day × 7 days.
Patient height: 72 in
Patient weight: 84 kg
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. 84 kg × 2.2 = 184.8 or 185 lb

$$\sqrt{\frac{72 \times 185}{3131}} = \sqrt{4.25} = 2.06\,\text{m}^2$$

60 mg/m^2/day × 2.06 m^2 = 123.6 or 124 mg/day

b. Height 72 in, weight 84 kg, intersects 2.10 m^2
60 mg/m^2/day × 2.10 m^2 = 126 mg/day

17. Give idarubicin hydrochloride 12 mg/m^2/day × 3 days.
Patient height: 60 in
Patient weight: 60 kg
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. 60 kg × 2.2 = 132 lb

$$\sqrt{\frac{60 \times 132}{3131}} = \sqrt{2.53} = 1.59\,\text{m}^2$$

12 mg/m^2/day × 1.59 m^2 = 19.1 or 19 mg/day

b. Height 60 in, weight 60 kg, intersects 1.60 m^2
12 mg/m^2/day × 1.60 m^2 = 19.2 ≈ 19 mg/day

18. Give cytarabine 100 mg/m^2/day × 7 days.

Patient height: 64 in
Patient weight: 65 kg
What is the daily dose with

a. square root method?
b. nomogram?

ANS:
a. 65 kg × 2.2 = 143 lb

$$\sqrt{\frac{64 \times 143}{3131}} = \sqrt{2.92} = 1.71\,\text{m}^2$$

100 mg/m^2/day × 1.71 m^2 = 171 mg/day

b. Height 64 in, weight 60 kg, intersects 1.69 m^2
100 mg/m^2/day × 1.69 m^2 = 169 ≈ 170 mg/day

19. Order: streptozocin 1000 mg/m^2 in 100 mL D_5W over 2 hours
Patient's height and weight: 5 ft 2 in and 210 lb
Drug available: streptozocin 1 g powdered vial, reconstitute with 9.5 mL NS; yields 100 mg/mL

a. What is the patient's BSA (m^2)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:
a. $\sqrt{\frac{62 \times 210}{3131}} = \sqrt{4.16} = 2.04\,\text{m}^2$

b. 2.04 m^2 × 1000 mg/m^2 = 2040 mg

c. BF: $\frac{D}{H} \times V = \frac{2040\,\text{mg}}{100\,\text{mg} \times 1\,\text{mL}} = 20.4\,\text{mL}$

20. Order: methotrexate 3 mg/m^2 PO × 2 weekly
Patient's height and weight: 5 ft 2 in and 130 lb
Drug available: methotrexate tablets 2.5 mg, 5 mg, 7.5 mg

a. What is the patient's BSA (m^2)?
b. What is the total dose?

ANS:
a. $\sqrt{\frac{62 \times 130}{3131}} = \sqrt{\frac{8060}{3131}} = \sqrt{2.57} = 1.60\,\text{m}^2$

b. 1.6 m^2 × 3 mg/m^2 = 4.8 mg or 5 mg tablet twice a week

21. Order: sargramostim 250 mcg/m^2/day, dilute in 50 mL and infuse over 2 hours

Patient's height and weight: 5 ft 10 in and 285 lb
Drug available: sargramostim 500 mcg/mL

a. What is the patient's BSA (m^2)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:

a. $\sqrt{\frac{70 \times 285}{3131}} = \sqrt{\frac{19950}{3131}} = \sqrt{6.37} = 2.52\,m^2$

b. 2.52 m^2 × 250 mcg/m^2 = 630 mcg

c. $\frac{630\text{ mcg}}{500\text{ mcg}} \times 1\text{ mL} = 1.26\text{ mL}$

22. Order: clofarabine 52 mg/m^2 daily and infuse in 250 mL D_5W over 2 hours
Patient's height and weight: 5 ft 4 in and 115 lb
Drug available: 20 mg/20 mL

a. What is the patient's BSA (m^2)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:

a. $\sqrt{\frac{64 \times 115}{3131}} = \sqrt{\frac{7360}{3131}} = \sqrt{2.35} = 1.53\,m^2$

b. 1.53 m^2 × 52 mg/m^2 = 79.56 mg or 80 mg

c. $\frac{80\text{ mg}}{20\text{ mg}} \times 20\text{ mL} = 80\text{ mL}$