TEST BANK FOR CLINICAL CALCULATIONS 9TH EDITION BY KEE.MARSHALL

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TEST BANK
Chapter 07: Methods of Calculation for Individualized Drug Dosing
Kee: Clinical Calculations: With Applications to General and Specialty Areas, 9th Edition

OTHER

Body Surface Area by Square Root

1. Order: cyclophosphamide 500 mg/m² 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) (m²)?
   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/m² × 1.78 m² = 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/m² 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 (m²)?
   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 m² = 92 mg
   c. FE: 92 mg/100 mg × 100 mL = 92 mL

   OR

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

3. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give dacarbazine 250 mg/m²/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. \( \sqrt{\frac{70 \times 173}{313}} = \sqrt{3.8677} = 1.97 \text{ m}^2 \)
250 mg/m²/day × 1.97 m² = 493 mg/day

b. Height 70 in, weight 173 lb, intersects 2.02 m²
250 mg/m²/day × 2.02 m² = 505 ≈ 500 mg/day

4. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
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 $\times$ 2.10 m$^2$ = 945 mg/wk

b. Height 66 in, weight 210 lb, intersects 2.04 m$^2$

450 mg/m$^2$/wk $\times$ 2.04 m$^2$ = 918 $\approx$ 920 mg/wk

5. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
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:
\[ a. \sqrt{\frac{66 \times 210}{3131}} = \sqrt{4.43} \approx 2.10 \text{ m}^2 \]
\[ 200 \text{ mg/m}^2/\text{wk} \times 2.10 \text{ m}^2 = 420 \text{ mg/ wk} \]
\[ b. \text{Height 66 in, weight 210 lb, intersects } 2.04 \text{ m}^2 \]
\[ 200 \text{ mg/m}^2/\text{wk} \times 2.04 \text{ m}^2 = 408.00 \approx 400 \text{ mg/ wk} \]

6. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give cisplatin 30 mg/m\(^2\)/day \(\times\) 3 days.

Patient height: 70 in
Patient weight: 80 kg
What is the daily dose with
a. square root method?
b. nomogram?

ANS:
a. \(80 \text{ kg} \times 2.2 = 176 \text{ lb}\)
\[
\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98 \text{ m}^2
\]
30 mg/m\(^2\)/day \(\times\) 1.98 m\(^2\) = 59.4 \(\approx\) 59 mg/day

b. Height 70 in, weight 80 kg, intersects 2.08 m\(^2\)
30 mg/m\(^2\)/day \(\times\) 2.08 m\(^2\) = 62.4 \(\approx\) 62 mg/day

7. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give cisplatinum $80 \text{ mg/m}^2/\text{wk}$.
Patient height: 6 ft 2 in
Patient weight: 186 lb
What is the weekly dose with
a. square root method?
b. nomogram?

ANS:

a. $\sqrt{\frac{74 \times 186}{3131}} = \sqrt{4.39} = 2.09 \text{ m}^2$

$80 \text{ mg/m}^2/\text{wk} \times 2.09 \text{ m}^2 = 167.2 \text{ mg/wk}$

b. Height 74 in, weight 186 lb, intersects 2.10 m$^2$

$80 \text{ mg/m}^2/\text{wk} \times 2.10 \text{ m}^2 = 168 \approx 170 \text{ mg/wk}$

8. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give etoposide 120 mg/m²/wk.
Patient height: 74 in
Patient weight: 70 kg
What is the weekly dose with
a. square root method?
b. nomogram?

ANS:
a. \( 70 \text{ kg} \times 2.2 = 154 \text{ lb} \)
\[ \sqrt{\frac{74 \times 154}{3131}} = \sqrt{3.639} = 1.91 \text{ m}^2 \]
120 mg/m²/wk \( \times \) 1.91 m² = 229.2 mg/wk
b. Height 74 in, weight 70 kg, intersects 2.06 m²
120 mg/m²/wk \( \times \) 2.06 m² = 247.2 \( \approx \) 250 mg/wk

9. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give Cytoxan 600 mg/m²/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
$$\sqrt{\frac{70 \times 187}{3131}} = \sqrt{4.18} = 2.04 \text{ m}^2$$
600 mg/m²/wk × 2.04 m² = 1224 or 1225 mg/wk
b. Height 70 in, weight 85 kg, intersects 2.08 m²
600 mg/m²/wk × 2.08 m² = 1248 ≈ 1250 mg/wk

10. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
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. \(80 \text{ kg} \times 2.2 = 176 \text{ lb}\)
\[
\sqrt{\frac{70 \times 176}{3131}} = \sqrt{3.93} = 1.98 \text{ m}^2
\]
60 mg/m^2/wk \times 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 \times 2.04 m^2 = 122.4 mg/wk

11. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give vincristine 2 mg/m²/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
   \[ \sqrt{\frac{62 \times 165}{3131}} = \sqrt{3.27} = 1.81 \text{ m}^2 \]
   2 mg/m²/wk × 1.81 m² = 3.62 = 3.6 mg/wk
b. Height 62 in, weight 75 kg, intersects 1.78 m²
   2 mg/m²/wk × 1.78 m² = 3.56 ≈ 3.6 mg/wk

12. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give mitomycin 15 mg/m²/week.
Patient height: 65 in
Patient weight: 64 kg
What is the weekly dose with
a. square root method?
b. nomogram?

ANS:
a. \( \sqrt{\frac{65 \times 141}{3131}} = \sqrt{2.93} = 1.71 \text{ m}^2 \)
\( 15 \text{ mg/m}^2/\text{wk} \times 1.71 \text{ m}^2 = 25.6 \approx 26 \text{ mg/wk} \)
b. Height 65 in, weight 64 kg, intersects 1.75 m²
\( 15 \text{ mg/m}^2/\text{wk} \times 1.75 \text{ m}^2 = 26.25 \approx 26 \text{ mg/wk} \)

13. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give mitoxantrone 12 mg/m\(^2\)/day \(\times\) 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 \(\times\) 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 \(\times\) 1.85 m\(^2\) = 22.2 \approx 22 \text{ mg/day}

14. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give cytosine arabinoside 100 mg/m²/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/m²/day × 1.6 m² = 160 mg/day

b. Height 62 in, weight 130 lb, intersects 1.65 m²
100 mg/m²/day × 1.65 m² = 165 mg/day

15. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give methotrexate 3.3 mg/m$^2$/day $\times$ 7 days.
Patient height: 72 in
Patient weight: 82 kg
What is the daily dose with
a. square root method?
b. nomogram?

ANS:
a. \(82 \text{ kg} \times 2.2 = 180.4 \text{ lb}\)
\[
\sqrt{\frac{72 \times 180.4}{3131}} = \sqrt{4.15} = 2.04 \text{ m}^2
\]
3.3 mg/m$^2$/day $\times$ 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 $\times$ 2.10 m$^2$ = 6.93 $\approx$ 6.9 mg/day

16. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give prednisone 60 mg/m²/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. \[84 \text{ kg} \times 2.2 = 184.8 \text{ or } 185 \text{ lb}\]

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

60 mg/m²/day × 2.06 m² = 123.6 or 124 mg/day

b. Height 72 in, weight 84 kg, intersects 2.10 m²

60 mg/m²/day × 2.10 m² = 126 mg/day

17. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give idarubicin hydrochloride 12 mg/m²/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. $60 \text{ kg} \times 2.2 = 132 \text{ lb}$
$$\sqrt{\frac{60 \times 132}{3131}} = \sqrt{2.53} = 1.59 \text{ m}^2$$
$12 \text{ mg/m}^2/\text{day} \times 1.59 \text{ m}^2 = 19.1 \text{ or } 19 \text{ mg/day}$
b. Height 60 in, weight 60 kg, intersects 1.60 m²
$12 \text{ mg/m}^2/\text{day} \times 1.60 \text{ m}^2 = 19.2 \approx 19 \text{ mg/day}$

18. For the following questions, use the square root method and/or nomogram. Note discrepancies between methods.
Give cytarabine 100 mg/m²/day × 7 days.
Patient height: 64 in
Patient weight: 65 kg
What is the daily dose with
a. square root method?
b. nomogram?

ANS:
æ 65 kg × 2.2 = 143 lb
\[ \sqrt{\frac{64 \times 143}{3131}} = \sqrt{2.92} = 1.71 \text{ m}^2 \]
100 mg/m²/day × 1.71 m² = 171 mg/day
b. Height 64 in, weight 60 kg, intersects 1.69 m²
100 mg/m²/day × 1.69 m² = 169 ≈ 170 mg/day

19. Order: streptozocin 1000 mg/m² in 100 mL D₅W 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 (m²)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:
\[
\frac{\sqrt{62 \times 210}}{3131} = \sqrt{20400} = 2.04 \text{ m}^2
\]
\[2.04 \text{ m}^2 \times 1000 \text{ mg/m}^2 = 2040 \text{ mg}\]
\[
\frac{2040 \text{ mg}}{100 \text{ mg} \times 1 \text{ mL}} = 20.4 \text{ mL}
\]

20. Order: methotrexate 3 mg/m² PO × 2 weekly
Patient’s height and weight: 5 ft 2 in and 130 lb
Drug available: methotrexate tablets 2.5, 5, 7.5 mg
a. What is the patient’s BSA (m²)?
b. What is the total dose?

ANS:
\[
\frac{\sqrt{62 \times 130}}{3131} = \sqrt{8060} = \sqrt{2.57} = 1.60 \text{ m}^2
\]
\[1.6 \text{ m}^2 \times 3 \text{ mg/m}^2 = 4.8 \text{ mg or 5 mg tablet twice a week}\]

21. Order: sargramostim 250 mcg/m²/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 (m²)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:
\[\sqrt{70 \times 285} = \sqrt{19950} = \sqrt{6.37} = 2.52 \text{ m}^2\]
\[2.52 \text{ m}^2 \times 250 \text{ mcg/m}^2 = 630 \text{ mcg}\]
\[\frac{630 \text{ mcg}}{500 \text{ mcg} \times 1 \text{ mL}} = 1.26 \text{ mL}\]

22. Order: clofarabine 52 mg/m² daily and infuse in 250 mL D5W 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 (m²)?
b. What is the total dose?
c. How many milliliters should you prepare?

ANS:
\[
\frac{\sqrt{64 \times 115}}{3131} = \sqrt{7360} = \sqrt{2.35} = 1.53 \text{ m}^2
\]
b. $1.53\text{ m}^2 \times 52\text{ mg/m}^2 = 79.56 \text{ or } 80\text{ mg}$

c. \( \frac{80\text{ mcg}}{20\text{ mcg}} \times 20\text{ mL} = 80\text{ mL} \)