Calculating Volume of Gadolinium Based Contrast Agents

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Calculating the volume of GBCA

$$V = \frac{D \times W}{C}$$

V = Volume (ml)
D = dose by weight (mmol/kg)
W = weight (kg)
C = concentration (mmol/ml)

Notes:
1. Recommend rounding to the nearest ml, except for small doses, eg. for children*
   eg. 12.4 ml should be 12ml
       13.9 ml should be 14ml
       *1.2 ml should be 1.2ml
2. OK to round down to nearest vial size in many circumstances to save opening new vial
   eg. if calculated dose of Eovist is 11ml, use 10ml instead

Typical Doses and Concentrations of GBCA's used at UW-Madison

Agent	Typical Dose (mmol/kg)	Concentration (mmol/ml)
Multihance (gadobenate dimeglumine)	0.10	0.50
Omniscan (gadodiamide)	0.10	0.50
Eovist (gadoxetic acid)	0.05	0.25
Ablavar (gadofosveset trisodium)	0.03	0.25

Example Calculations

1. Volume of 0.1mmol/kg of Multihance or Omniscan for 79kg patient

    $V = 0.1 \times 79 / 0.5 = 16$ ml

2. Volume of 0.05 mmol/kg of Eovist for 52kg patient

    $V = 0.05 \times 52 / 0.25 = 10$ ml

3. Volume of 0.03 mmol/kg of Ablavar for 72kg patient

    $V = 0.03 \times 72 / 0.25 = 9$ ml

Volume calculation trick for Multihance, Omniscan and Eovist *only*

- Approximate W (lbs) to be 2 x W(kg)
- For 0.1 mmol/kg of Multihance or Omniscan

$$V = \frac{0.1 \times W\ (kg)}{0.5} \approx \frac{W\ (lbs)}{10}$$

- For 0.05 mmol/kg of Eovist

$$V = \frac{0.05 \times W\ (kg)}{0.25} \approx \frac{W\ (lbs)}{10}$$

Summary

- Know the formula
- Know differences in concentrations and dose
- Approximation **only** for Eovist, Multihance and Omniscan: Volume (ml) = W (lbs) / 10
- When in doubt, use the formula
- When still in doubt, ask for help
- Contrast is a drug and proper dosing is essential

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