Calculating IV prescribed drug dose in ml/hr

- Example: An IV of dextrose 5% in water containing 2 mg of Isuprel (isoproterenol) and a total volume of 1,000 ml is to be infused at a rate of 5 mcg per minute. At how many ml per hour will you infuse the IV?

To find the prescribed ml/hour:

- Step 1 – Write down the dosage rate
- Step 2 – Write down the IV strength
- Step 3 – Write down the conversion factors
- Step 4 – Reduce units
- Step 5 – Perform the math
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Example 1: An IV of dextrose 5% in water containing 2 mg of Isuprel (isoproterenol) and a total volume of 1,000 ml is to be infused at a rate of 5 mcg per minute. At how many ml per hour will you infuse the IV?

To find the prescribed ml/hour:

Step 1 – Write down the dosage rate
Step 2 – Write down the IV concentration
Step 3 – Write down the conversion factors
Step 4 – Reduce units
Step 5 – Perform the math

\[
\begin{align*}
5 \text{ mcg} & \times \frac{1 \text{ mg}}{1000 \text{ mcg}} \\
1 \text{ min} & \times \frac{1 \text{ hr}}{60 \text{ min}}
\end{align*}
\]

\[
5 \times \frac{1}{1000} \times \frac{1}{60} \times 1000 \times 1 \times 60 = \frac{300,000}{2,000} = 150 \text{ ml/hr}
\]

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Step 5 repeated
Another way to perform the math
• Reducing the numbers

\[ \frac{5 \times 1000 \times 1 \times 60 \text{ ml}}{1 \times 2 \times 1000 \times 1 \text{ hr}} = \frac{5 \times 1 \times 1 \times 30 \text{ ml}}{1 \times 1 \times 1 \text{ hr}} = \frac{150 \text{ ml}}{1 \text{ hr}} = 150 \text{ ml/hr} \]
Example 2: An IV of dextrose 5% in water containing 2 mg of Levophed (norepinephrine bitartrate) and a total volume of 250 ml is to be infused at a rate of 7 mcg per minute. At how many ml per hour will you infuse the IV?

To find the prescribed IV ml/hour:

Step 1 – Write down the dosage rate
Step 2 – Write down IV concentration
Step 3 – Write down the conversion factors
Step 4 – Reduce units
Step 5 – Perform the math

\[
\frac{7 \text{ mcg}}{1 \text{ min}} \times \frac{1 \text{ mg}}{2 \text{ mg}} \times \frac{1 \text{ hr}}{60 \text{ min}} = \frac{7 \times 250 \times 1 \times 60 \text{ ml}}{1 \times 2 \times 1000 \times 1 \text{ hr}} = \frac{105,000 \text{ ml}}{2000 \text{ hr}} = 52.5 \text{ ml/hr} \text{ rounds to 53 ml/hr}
\]
Calculating IV prescribed drug dose in ml/hr

Step 5 repeated
Another way to perform the math
• Reducing the numbers

Step 5

\[
\frac{7 \times 250 \times 1 \times 60 \text{ ml}}{1 \times 2 \times 1 \times 1 \text{ hr}} = \frac{7 \times 1 \times 1 \times 15 \text{ ml}}{1 \times 2 \times 1 \times 1 \text{ hr}} = \frac{105 \text{ ml}}{2 \text{ hr}} = 52.5 \text{ ml/hr}
\]

Round the final answer to a whole number.

53 ml/hr