# Dose & Vial Optimizer — Logic Summary (1‑Pager)

## Overview

The Dose & Vial Optimizer helps healthcare professionals determine the optimal combination of 70 mg and 100 mg vials to meet a patient’s dosing requirement while minimizing waste.

## Inputs

**Inputs:**

• Weight (kg)

• Dose regimen (mg/kg): 2.5 or 1.9

• Fixed vial strengths: 70 mg and 100 mg

• Max vial limit: Default 10

## Step‑by‑Step Logic

1️⃣ Calculate required dose:

R = ceil(W × d)  
 Round up to ensure no underdosing.

2️⃣ Generate combinations:

For x = 0..max, y = 0..max, where x+y ≤ maxVials:

total = 70x + 100y

Keep only if total ≥ R (no underdosing).

3️⃣ Calculate waste:

waste = total – R

waste% = (waste / total) × 100

4️⃣ Rank combinations:

1. Least waste  
 2. Fewest total vials (tie-breaker)  
 3. Lowest total amount (final tie-breaker)

5️⃣ Display results:

• Best (least waste) combination  
 • 70 mg only option  
 • 100 mg only option  
 • Next best mixed option

## Mathematical Equations

Required dose: R = ceil(W × d)

Total (mg): T = 70x + 100y

Waste: Wt = T – R

Waste %: (Wt / T) × 100

## Key Principles

✔ No underdosing

✔ Single-patient use only

✔ Ranking: Least waste → Fewest vials → Lowest total