

When to use U-500

- Require large dose of insulin
- Variability/impairment of absorption
- Multiple daily dosing of large dose of insulin
- Lipodystrophy
- Price

Lipodystrophy



Doctorsgate.com

Insulin U-100 vs U-500

U-100

4 ml/day



- The vial is 10ml and contains 1000 units
- 100 units/ml

U-500

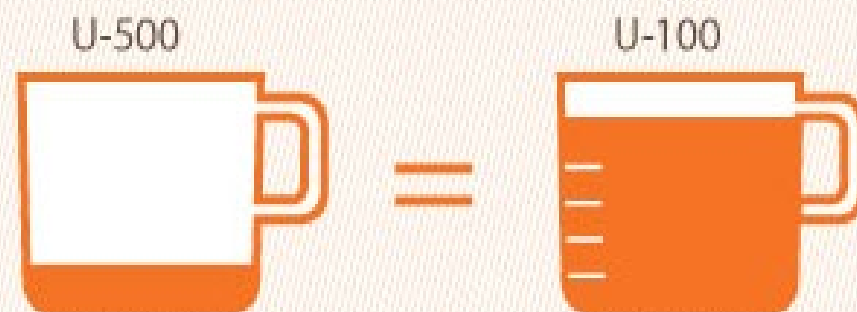
<1ml/day

5 times more concentrated than U-100 insulin, allowing 1/5 the insulin volume to be injected

- The vial is 20 ml and contains a total of 10,000 units
- 500 units/mL

THE SAME DOSE

This example shows the difference between the amount of U-500 and U-100 insulin for the same dose.



This shows the same dose.

One vial of Humulin R U-500 contains as many units of insulin as 10 vials of U-100 insulin.



Introduction of Insulin in the United States by Lilly

Product	Concentration	Introduction
Insulin	U-10	1923
Insulin	U-20	1923
Insulin	U-40	1925
Insulin	U-80	1925
Regular Insulin	U-500	1952

Regular Insulin U-500 introduced in 1952

Regular Insulin	U-500	1952
Lente® Insulin	U-40	1954
Lente® Insulin	U-80	1954
Semilente® Insulin	U-40	1957
Semilente® Insulin	U-80	1957
Ultralente® Insulin	U-40	1957
Ultralente® Insulin	U-80	1957
Regular Insulin	U-100	1973
NPH Insulin	U-100	1973
Protamine Zinc Insulin	U-100	1973
Lente® Insulin	U-100	1973
Semilente® Insulin	U-100	1973
Ultralente® Insulin	U-100	1973



Additional information available to the profession on request.

The first
name in
Insulin therapy



400495

Eli Lilly and Company
Indianapolis, Indiana 46206

Less than 200U of
insulin
prescribed per day

↓
U100 insulin therapy
(NPH, regular, lente,
lispro, glargine,
aspart, mixtures)

200U or greater of insulin/day*

↓
U-500 exclusively

↓
200U-300U/day

↓
Twice daily
(Pre-breakfast & pre-dinner)

↓
300U-750U/day

↓
Three times a day
(Pre-breakfast, pre-lunch, pre-dinner)

↓
750U-2000U/day

↓
Four times a day
(Pre-breakfast, pre-lunch, pre-dinner.
Bedtime dose slightly less than pre-
meal)

↓
>2000U

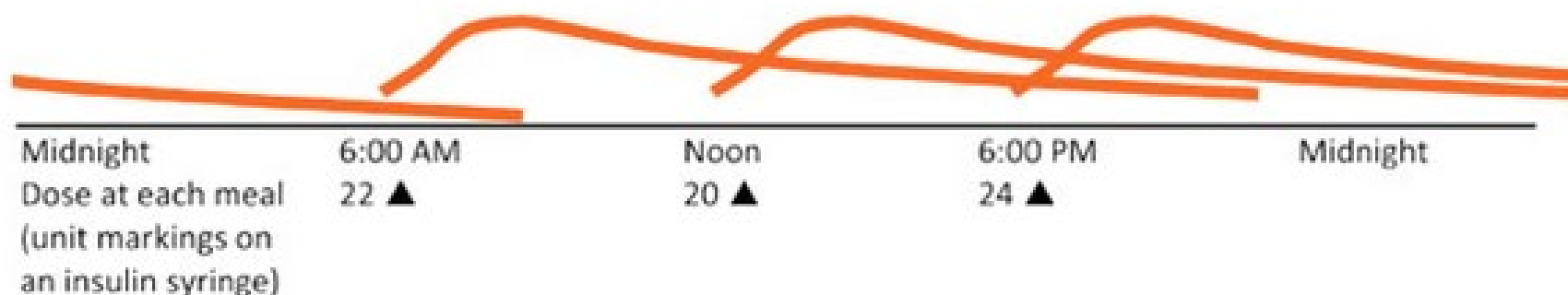
↓
Consider delivery of U-500
Via infusion pump

How does it work?

U-500 insulin starts working the first hour after it is injected and lasts up to 12 hours.

Example:

This is a typical dose schedule for U-500 insulin.



Your glucose goals: Fasting and before meals _____ 2 hours after meals _____ A1C _____

Check your blood glucose: Bring your logbook and meter to every visit. Times to check are marked below with ↓.

Eat and take your U-500 insulin at regular times. Your doses are listed below. Mealtimes are marked with ▲.

HbA1c $>10\%$ \rightarrow Increase TDD by 10%

HbA1c 8–10% \rightarrow Maintain same TDD

HbA1c $<8\%$ \rightarrow Decrease TDD by 10–20%

TID Dose Proportions

BEFORE BREAKFAST

40%

BEFORE LUNCH

30%

BEFORE DINNER

30%

BID Dose Proportions

BEFORE BREAKFAST

60%

BEFORE DINNER

40%

TID Initial Dose Proportions: 40:30:30¹

INSULIN DOSE TO ADJUST	PLASMA-EQUIVALENT GLUCOSE VALUE*	SMPG (mg/dL)	DOSE TITRATION [†]
PRE-BREAKFAST	MEDIAN [‡] PRE-LUNCH SMPG	≤70 [‡]	-10%
		71-130	No change in dose
PRE-LUNCH	MEDIAN [‡] PRE-DINNER SMPG	131-180	+5%
PRE-DINNER	MEDIAN [‡] PRE-BREAKFAST SMPG	181-220	+10%
		>220	+15%

BID Initial Dose Proportions: 60:40¹

INSULIN DOSE TO ADJUST	PLASMA-EQUIVALENT GLUCOSE VALUE*	SMPG (mg/dL)	DOSE TITRATION [†]
PRE-BREAKFAST	MEDIAN [‡] PRE-DINNER SMPG	≤70 [‡]	-10%
		71-130	No change in dose
		131-180	+5%
PRE-DINNER	MEDIAN [‡] PRE-BREAKFAST SMPG	181-220	+10%
		>220	+15%

Sidebar 2. Example Rx: “U-500 insulin, inject SQ 150 units tid”

The proper way to label the Rx is:

Insulin regular U-500

Sig: Inject 0.3 mL (150 U) SQ 3 times daily

Concentrated insulin. Do not adjust dose.

The dose is correctly expressed in both volume and total number of units.

Verify instructions using cross-multiplication ($150 \text{ U} \times 1 \text{ mL}/500 \text{ U} = 0.3 \text{ mL}$) and/or with a dose-equivalence chart.

Rx: prescription; Sig: write; SQ: subcutaneously.

Example: If your diabetes care team wants you to get 100 units of insulin, you will draw up to the 20-unit mark on an insulin syringe to get that amount of U-500 insulin (it is 5 times more concentrated).

Tuberculin syringe:

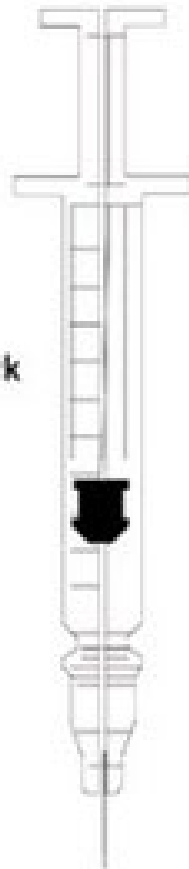
100 units of U-500

= 20 units of U-100

= 0.2 ml on the syringe

Your dose: ____ units

Draw up to: ____ ml mark



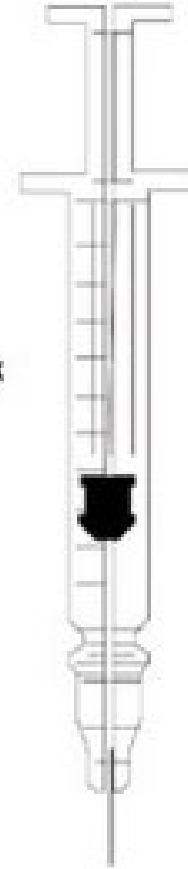
U-100 insulin syringe:

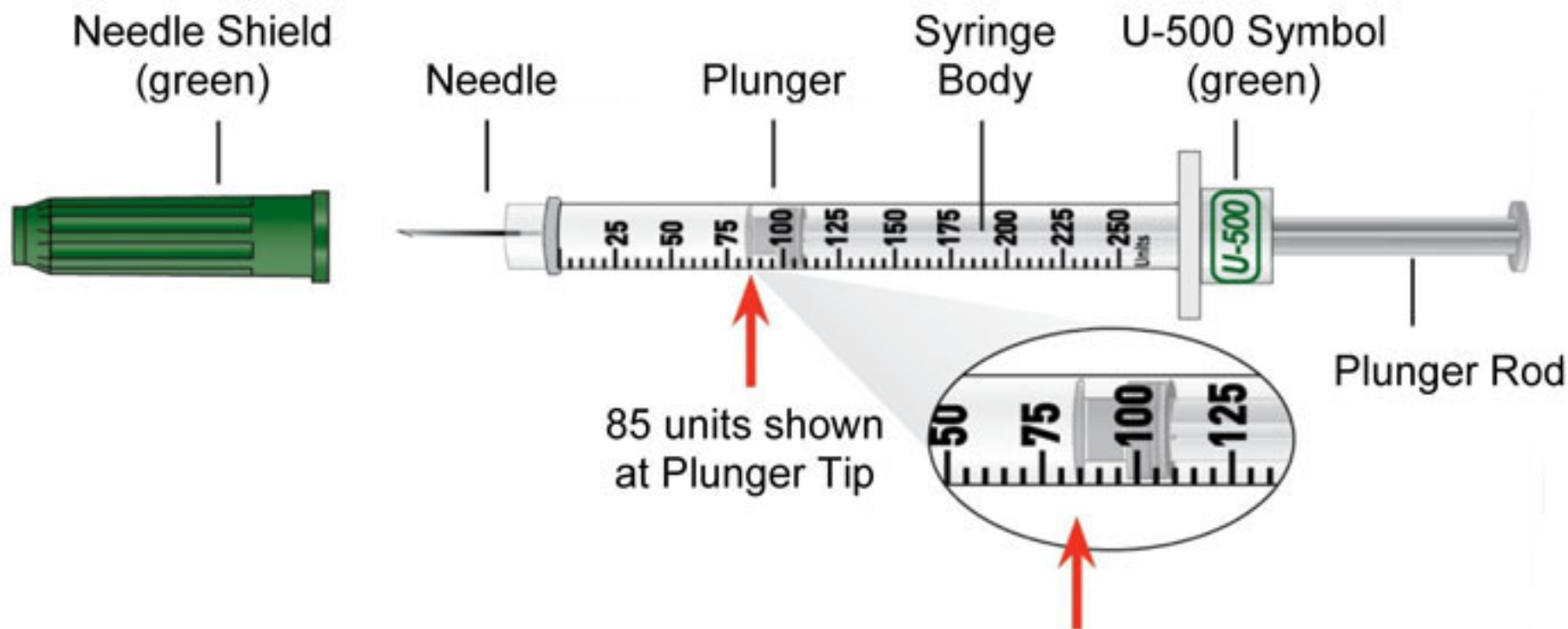
100 units of U-500

= 20 units of U-100

Your dose: ____ units

Draw up to: ____ unit mark





If this is your dose of Humulin R U-500	Fill a U-100 insulin syringe up to this marking	Fill a tuberculin syringe up to this marking
25	5	0.05
50	10	0.1
75	15	0.15
100	20	0.2
125	25	0.25
150	30	0.3
175	35	0.35
200	40	0.4
225	45	0.45
250	50	0.5
275	55	0.55
300	60	0.6
325	65	0.65
350	70	0.7
375	75	0.75
400	80	0.8
425	85	0.85
450	90	0.9
475	95	0.95
500	100	1.0

U-500R initiation



HbA1c >10% → Increase TDD by 10%

HbA1c 8–10% → Maintain same TDD

HbA1c <8% → Decrease TDD by 10–20%



TDD 150–300 units	Twice daily injections (60/40) Three daily injections (40/30/30, 45/35/20, 40/40/20, or 33/33/33)
TDD 300–600 units	Three daily injections (as above) Four daily injections (30/30/30/10) CSII (50% as basal infusion and 50% as bolus)
TDD >600 units	Four daily injections (25/25/25/25 or 30/30/30/10) CSII