

# Drug Information Center/KAUH

## Drug Dosing in Obesity

Drug name	Type of weight	Obese adults
<b>Acyclovir</b>	IBW	IBW
<b>Amikacin</b>	In underweight and nonobese patients, use of total body weight (TBW) instead of ideal body weight for determining the initial mg/kg/dose is widely accepted (Nicolau, 1995). Ideal body weight (IBW) also may be used to determine doses for patients who are neither underweight nor obese (Gilbert, 2009).	ABW
<b>Amphotrcin B:</b>	ACTUAL (total) Body weight. Note : Use ABW for conventional and liposomal amphotericin products.	Total body weight. Note: Use ABW for conventional and liposomal amphotericin products.
<b>Atracurium</b>	IBW	Morbidly-obese patients should be dosed using ideal body weight or an adjusted body weight (ie, between IBW and total body weight [TBW]) (Erstad, 2004). In a bariatric surgical population of morbidly-obese patients who were administered an induction dose of atracurium based on TBW as compared to IBW, time to recovery of twitch response was prolonged (Kralingen, 2011).
<b>Busulfan</b>	*Chronic myelogenous leukemia (CML): Use actual(total) body weight (TBW).  *Hematopoietic stem cell (HSCT) conditioning regimen: Use ideal body weight or actual body weight, (whichever is lower) for dosing.	*Hematopoietic stem cell (HSCT) conditioning regimen: For obese or severely-obese patients, use of (ABW) an adjusted body weight is recommended.  <i>*ASCO Guidelines for appropriate chemotherapy dosing in obese adults with cancer (Note: Excludes HSCT dosing):</i> Utilize patient's actual body weight (full weight) for calculation of body surface area- or weight-based dosing, particularly when the intent of therapy is curative; manage regimen-related toxicities in the same manner as for nonobese patients; if a dose reduction is utilized due to toxicity, consider resumption of full weight-based dosing with subsequent cycles, especially if cause of toxicity (eg, hepatic or renal impairment) is resolved (Griggs, 2012).
<b>Cyclophosphamide</b>		<i>ASCO Guidelines for appropriate chemotherapy dosing in obese adults with cancer (Note: Excludes HSCT dosing):</i> Utilize patient's actual body weight (full weight) for calculation of body surface area- or weight-based dosing, particularly when the intent of therapy is curative; manage regimen-related toxicities in the same manner as for nonobese patients; if a dose reduction is utilized due to toxicity, consider resumption of full weight-based dosing with subsequent cycles, especially if cause of toxicity (eg, hepatic or renal impairment) is resolved (Griggs, 2012).
<b>Cyclosporine:</b>	IBW	IBW
<b>Daptomycin</b>	IBW	TBW
<b>Enoxaparin</b>	IBW	*DVT prophylaxis: SubQ: In morbidly-obese patients (BMI $\geq$ 40 kg/m <sup>2</sup> ), increasing the prophylactic dose by 30% may be appropriate for some indications (Nutescu, 2009). For bariatric surgery, dose increases may be >30% based on clinical trial data.

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		<p>*DVT treatment (acute) SubQ: Obesity: Use actual body weight to calculate dose, dose capping not recommended; use of twice daily dosing preferred.</p> <p>*ST-elevation MI (STEMI): Obesity: Use weight-based dosing; a maximum dose of 100 mg is recommended for the first 2 doses.</p> <p>*Unstable angina or non-ST-elevation MI (NSTEMI): Obesity: Use actual body weight to calculate dose; dose capping not recommended.</p>
<b>Erythromycin</b>	IBW	IBW
<b>ethambutol</b>	lean body weight  See dosing doses by lean body weight.	IBW
<b>Fluconazole</b>	IBW	TBW
<b>Flucytosine</b>	IBW	IBW
<b>Ganciclovir</b>	IBW	ABW
<b>G-CSF (Filgrastim)</b>	Actual Body weight.	Actual body weight.
<b>gentamicin:</b>	In underweight and nonobese patients, use of total body weight (TBW) instead of ideal body weight for determining the initial mg/kg/dose is widely accepted (Nicolau, 1995). Ideal body weight (IBW) also may be used to determine doses for patients who are neither underweight nor obese (Gilbert, 2009).	ABW
<b>Heparin</b>	IBW	ABW (adjusted body weight)
<b>isoniazid</b>	IBW	IBW
<b>Lepirudin</b>	IBW	TBW (Use actual body weight up to 110 kg)
<b>Lidocaine</b>	IBW	IBW
<b>Lorazepam</b>	IBW	loading doses should be adjusted on actual weight, and maintenance doses should be adjusted on ideal body weight.
<b>Melphalan:</b>	IBW	<i>ASCO Guidelines for appropriate chemotherapy dosing in obese adults with cancer (Note: Excludes HSCT dosing):</i> Utilize patient's actual body weight (full weight) for calculation of body surface area- or weight-based dosing, particularly when the intent of therapy is curative; manage regimen-related toxicities in the same manner as for nonobese patients; if a dose reduction is utilized due to toxicity, consider resumption of full weight-based dosing with subsequent cycles, especially if cause of toxicity (eg, hepatic or renal impairment) is resolved (Griggs, 2012).
<b>Midazolam</b>	IBW	-TBW for initial dose -IBW for continuous dose
<b>Phenytoin</b>	IBW	Use adjusted body weight (AdjBW) correction based on a pharmacokinetic study of phenytoin loading doses in obese patients (Abernethy, 1985). The larger correction factor (ie, 1.33) is due to a doubling of $V_d$ estimated in these obese patients. $\text{AdjBW} = [(\text{Actual body weight} - \text{IBW}) \times 1.33] + \text{IBW}$

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		Maintenance doses should be based on ideal body weight, conventional daily doses with adjustments based upon therapeutic drug monitoring and clinical effectiveness. (Abernethy, 1985; Erstad, 2002; Erstad, 2004)
<b>Procainamide</b>	IBW	IBW
<b>Propofol</b>	Dosage must be individualized based on total body weight and titrated to the desired clinical effect. Wait at least 3-5 minutes between dosage adjustments to clinically assess drug effects. Smaller doses are required when used with opioids.	Induction: IBW Maintenance: IBW or ABW + (.4 × excess weight )
<b>Pyrazinamide:</b>	See dosing. (because the dose according to weight category).	IBW
<b>rifampin</b>	IBW	IBW
<b>Rocuronium</b>	IBW	IBW
<b>Succinylcholine</b>	IBW	TBW
<b>theophylline</b>	IBW	IBW
<b>Thiopental</b>	IBW	Loading Dose use : IBW  Maintenance Dose : Actual Body weight.
<b>Tobramycin</b>	In underweight and nonobese patients, use of total body weight (TBW) instead of ideal body weight for determining the initial mg/kg/dose is widely accepted (Nicolau, 1995). Ideal body weight (IBW) also may be used to determine doses for patients who are neither underweight nor obese (Gilbert, 2009).	ABW
<b>Vancomycin:</b>	Initial I.V dosing should be based on TBW; subsequent dosing adjusted based on serum trough vancomycin concentrations.	ABW
<b>Vecuronium</b>	IBW	IBW

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### **Abbreviations used:**

ABW: adjusted body weight =  $(0.4 (TBW - IBW) + IBW)$

IBW: ideal body weight

Males:  $50 \text{ kg} + 2.3 \text{ kg} [\text{height (inches)} - 60]$

Females:  $45.5 \text{ kg} + 2.3 \text{ kg} [\text{height (inches)} - 60]$

TBW: total body weight



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