

Insuliinta Basal-Bolus

Daawaynta Insuliinka ee degdeg jirka uga shaqeyso iyo midda tartiib jirka uga shaqeyso

Waa maxay macnaha erayga Insuliinka basal-bolus?

Dad badan oo qaba Nooca 1-aad ee xanuunka sonkorowga ayaa isticmaala isku-darka insuliin si tartiib ah jirka uga shaqeyso (basal) iyo mid degdeg jirka uga shaqeyso (bolus). Tan waxaa loo yaqaan insuliinta "basal-bolus". Waxaad barahaaga sonkorowga kala shaqeyn doontaa sidaad ku ogaan lahayd sida loo ogaado inta insuliinta basal-bolus ee aad u baahan doonto maalin kasta.

Hadafkaagu waa inaad isticmaasho insuliinta basal-bolus si aad sonkorta (gulukoosta) dhiigaaga ugu ilaaliso xadka looga baahan yahay. Qoraalkan waxa uu inta badan ku saabsan yahay xisaabinta **insuliinta bolus**.

Insuliinta basal (tartiib jirka u galo/ku jiro)

Waxa loola jeedaa insuliinta aad ugu durto jirka qaabka insuliinta muddada dheer jirka ku jiro ah si loo xakameeyo heerarka sonkorta dhiigga habeenkii iyo inta u dhaxaysa cuntooyinka.

Magacyada insuliinada: Glargine (Lantus/Basaglar)

- Waxay ka shaqeyaan in gulukoosta dhiigga lagu hayo heerkii loo baahnaa inta u dhaxaysa cuntada iyo habeenkii. Waxay la shaqeysaa gulukoosta uu soo daayo beerka.
- Qiyaasta insuliinta ee la qaadanayo maalin kasta inta badan isku mid bay ahaaneysaa. Dhakhtarkaaga ama baraha sonkorowga ayaa kugula talin doona wax ka bedelka qiyaasta marka gulukoosta dhiigu aysan ku jirin xadka looga baahan yahay.
- Waxay socotaa 12-24 saacadood.
- Waxaa la qaataa waqti isku mid ah maalin kasta.

Insuliinta Bolus (mid si degdeg jirka u gasha)

Cirrbad insuliin ah oo la isku duro si qaab degdeg ah loo xakameeyo karbohaydryatyada la cuno iyo/ama si loo yareeyo gulukoosta dhiigga ee sarreysa.

Magacyada insuliinada: Humalog, Novolog

- Waxay ka shaqeysaa in insuliin ku dheeli-tirto qiyaasta saxda ah ee la jaanqaadayso cuntada aad cunayso (kan waxaa loo yaqaan "(Cunto Xakamayn (Carb Bolus")) iyo/ama ay hoos u dhigto sonkorta dhiigga ee kacsan (tani waxaa loo yaqaan "Sonkor Xakamayn (Bolus Correction)").
- Qiyaastu way kala duwanaan doontaa mar kasta oo aad qaadato iyada oo ku xiran sonkorta dhiigga iyo cuntada/qaddarka karbohaydryatyada aad cunayso.
- Waxay jirka ku jirtaa ilaa 3 saacadood.
- Caadi ahaan waxa la qaataa ka hor cuntada iyo cuntooyinka fudud (marka aad cunayso karbohaydryatyada).

Si Aad Wax Badan uga Ogaato

- Qanjidhana hoormoonada (Endocrine) 206-987-2640
- Fadlan weydii bixiyaha daryeelka caafimaadka ilmahaaga
- seattlechildrens.org/patient-education

Adeegyada Turjumaadda ee Bilaashka ah

- Marka aad joogtid isbitaalka, ka codso kalkaalayahaaga.
- Marka aad joogto isbitaalka dibaddiisa, soo wac Khadka Turjumaadda Goyska ee Bilaashka ah, 1-866-583-1527. U sheeg turjumaanka magaca ama faraca aad u baahan tahay.



Ogaanshaha qiyaasahaaga insuliinta bolus (Humalog/Novolog)

Sidee baad ku ogaan kartaa inta ay tahay qiyaastaada insuliinta bolus ee degdeg jirka ku galo ee aad u baahan tahay wakhtiyada cuntada iyo cuntooyinka fudud?

Is weydii

3-dan su'aalood:

- Immisa garaam oo karbohaydrayt ah ayaad cuni doontaa?
- Waa maxay xadka sonkorta ku jirta dhiiggaaga (BG) hadda?
- Sidee u fir-fircoonaan doontaa saacadaha soo socda?

1. Immisa karbohaydraytyo ayaad cuni doontaa?

Marka hore, isku dar garaamyada karbohaydraytyada cuntada ama cuntooyinka fudud.

Saamiga Insuliinka/Karbohaydraytka

- Waxaad u baahan tahay inaad ogaato saamiga Insuliintaada/karbohaydraytkaaga. Waxay kuu sheegaysaa qiyaasta insuliinta ee aad u baahan tahay inaad u qaadaneyso garaamyada karbohaydraytyada ee aad cuni doonto.
- Waa lagu kala duwan yahay saamiga insuliin/karbohaydrayt - waxay ku salaysan tahay dhererkaaga/miisaankaaga iyo sida jirkaa u qaato insuliinta.
- Tusaalaha saamiga #1: 1 qiyaas oo Humalog/Novolog ah ayaa ku aadayo 10kii karbohaydrayt - 1:10
- Tusaalaha saamiga #2: ½ qiyaasta Humalog/Novolog ee 30-kii karbohaydaraytba - ½:30
- Markaad ogaato nambarka saamiga karbohaydraytyada (saamiga insuliinta/karbohaydraytkaaga), waxaad u isticmaali doontaa si aad u ogaato Cunto Xakamayntaada (Carb Bolus).
- Waa inaad isku durtaa Humalog/Novolog 15 daqiiqo ka hor inta aadan wax cunin. Carruurta yaryar waxay qaadan karaan insuliintan ka dib cuntadooda haddii aan la hubin inta ay le'eg tahay cuntada ama cunnada fudud ee ay cuni doonaan.

Saamiga insuliinta/karbohaydraytkaagu waa: _____

Garaamyada Karbohaydraytkaaga ÷ Saamiga Insuliinka/Karbohaydraytkaaga = Cunto Xakamayntaada (Carb Bolus).

2. Waa maxay lambarka sonkorta (gulukoosta) dhiiggaaga?

Insuliinta Sonkor Xakamayntaada (Correction Bolus) waxa la qaataa marka aad u baahan tahay inaad xakamayso (hoos u dhigto) lambar sonkorta (gulukoosta) dhiigga ee kacsan. Waxaad u baahan doontaa Sonkor Xakamayn (Correction Bolus) marka gulukoosta dhiigaagu ay ka sarreyso lambarka uu go'aamiyay dhakhtarkaagu.

Qiyaasta Xakamaynta/Sixitaanka

Qiyaasta Xakamaynta/Sixitaanka waxay kuu sheegaysaa sida aad ugu nugul tahay insuliinta - waa qiyaasidda inta Humalog/ Novolog aad u baahan tahay si aad hoos ugu dhigto gulukoosta dhiiggaaga ilaa lambarkaaga ama xadka aad u baahan tahay la gaarayo. Lambarka xadka looga baahan yahay insuliintu wuu kala duwanaan doonaa xilliyada maallintii iyo habeen-barka/xilliga hurdada. Qof kastaa wuxuu leeyahay Qiyaas xakamayn/sixitaan, iyaga u gaar ah, oo uu go'aamiyo dhakhtarkoodu. Qiyaasta Xakamaynta/Sixitaanka ee 50 macnaheedu waa in 1 qiyaas oo Humalog/Novolog ah ay hoos u dhigto sonkorta dhiiggaaga illaa 50 buundo.

Qiyaastaada xakamaynta/sixitaanka shakhsiyeed waa: _____

Si aad u xisaabiso Sonkor Xakamayntaada (Correction Bolus), waxaad u baahan tahay inaad ogaato Qiyaasta Xakamaynta/Sixitaanka.

Xadka loo baahan yahay ee sonkorta/gulukoosta dhiggaaga ku jiro



Haatanna, aynu ogaano **Sonkor Xakamayntaada (Correction Bolus):**
 (Sonkorta dhiigga ku jirto hadda - xadka sonkorta dhiigga laga rabo inay ku jirta) ÷
 Qiyaasta Xakamaynta/Sixitaanka = Sonkor Xakamayntaada (Correction Bolus)

$$\square - \square$$

Sonkorta dhiigga ku jirto hadda xadka sonkorta dhiigga laga rabo inay ku jirta

Qiyaasta Xakamaynta/Sixitaanka

Maalinta:

HA SIIN Sonkor Xakamayntaada (Correction Bolus) haddii ay ka yar tahay 3 saacadood tan iyo markii cirbaddii ugu dambaysay ee Humalog/Novolog la siiyay.

Waqtiga hurdada/habeen barka:

Cunto Xakamaynta (Carb Bolus) + Sonkor Xakamaynta (Correction Bolus) = Qiyaasta Wadarta Bolus (Humalog/Novolog)

Tusaale:

Wakhtiga	BG	Cunto Xakamaynta (Carb Bolus)	Sonkor Xakamaynta (Correction Bolus)
8 subaxnimo. Quraac	315	Haa	Haa
10 subaxnimo, cunto fudud	170	Haa	Maya (kaliya 2 saacadood laga soo bilaabo qiyaasta bolus ee ugu dambaysay ee lahayd Sonkor Xakamaynta (Correction Bolus))
12 duhurnimo qadada	150	Haa	Maya (kaliya 2 saacadood laga soo bilaabo qiyaasta bolus; ee aan lahayn qiyaas sonkor xakamaynta ah maadaama sonorta/gulukoosta dhiigga hadda xadka laga rabay joogo)
3 galabnimo cunto fudud	298	Haa	Haa (3 saacadood laga soo bilaabo duritaankii u dambeeyay iyo markii heerka gulukoostu sarreeyay)
5 galabnimo casho	236	Haa	Maya (kaliya 2 saacadood laga soo bilaabo qiyaasta bolus ee u dambeysay)
8da fiidnimo	315	Maya	Haa iyadoo la isticmaalayo xadka laga rabo wakhtiga hudada.

3. Dhaqdhaqaaq intee le'eg ayaad samayn doontaa saacadaha soo socda?

- 30-60kii daqiiqo ee kasta ee dhaqdhaqaaqaagu kordho, cun cunto fudud oo karbohaydrayt ah oo ah 15 garaam. Ha qaadan Insuliin aad ku xakamaynayso kaarbohaydaraytyadan.
Ama
- Haddii aad ogtahay in aad shaqaynayso dhawr saacadood gudahood cuntada ama cunto fudud kadib, waxa laga yaabaa in aad u baahato in aad 15 garaam ka jarto wadarta karbohaydraytyada aad ku xisaabinayso cuntadaada ama cunto fudud. Tani waxay ku siin doontaa Humalog/Novolog ka yar inta u dhiganto qiyaastaas.

Tusaalaha qiyaasta Bolus

Gulukoosta/sonkorta dhiiga ku jirta ee ilmahaaga ee quraacda waa 275. Waxa uu cuni doonaa 50 karbohaydrayt ka dibna waxa uu aadayaa dabbaal 60-daqqiyo ah. Saamiga karbohaydraytkiisu waa 1:10. Xadka laga rabo waa 150, Qiyaasta Xakamaynta/Sixitaanka waa 50. Waa maxay qiyaasta Humalog/Novolog?

Gulukoosta/sonkorta dhiigga ee hadda: 275
 Saamiga Kaarbohaydraytyada: 1:10
 Garaamka karbohaydraytyada la cunay: 50
 Qiyaasta Xakamaynta/Sixitaanka: 50
 Xadka la rabo: 150

Xusuuso 3-dii su'aalood:

- Immisa garaam oo karbohaydrayt ah ayaad cuni doontaa? 50
- Waa maxay gulukoosta/sonkorta dhiiggaagu hadda? 275
- Sideed u fir-fircoonaan doontaa saacadaha soo socda? 60 daqqiyo oo dabaal ah.

Xalka:

Tallaabada 1. Ogoow Cunto Xakamayntaada (Carb Bolus) .

Garaamyada Kaarbohayraydhiyayt ee KA YAR 15 garaam oo hawlo qorshaysan oo loo qaybiyay Saamiga Insuliin/Kaarbohayraydhiyayt = **Cunto Xakamaynta (Carb Bolus)**

50 Kaarbohayraydhiyaytka la cunay
-15 Laga Garay 15 daqqiyo oo dhaqdhaqaaq ah
35 Baddelka Kaarbohaydaraydyada la cunay

Saamiga Kaarbohaydaraytka: $10 \overline{) 35}$ ^{3.5} Cunto xakamaynta (Carb bolus) Baddelka Kaarbohaydaraydyada

Tallaabada 2. Ogoow Sokor Xakamayntaada (Correction Bolus) .

(Sonkorta dhiigga ku jirto hadda - xadka sonkorta dhiigga laga rabo inay ku jirta) ÷ Qiyaasta Xakamaynta/Sixitaanka = **Sonkor Xakamayntaada (Correction Bolus)**

275 Sonkorta dhiigga ku jirto hadda
- 150 Waxaa laga jarayaa sonkorta dhiigga ee xadka la rabo
125 Qaddarka laga sarreeya xadka la rabo

Qiyaasta xakamaynta/sixitaanka: $50 \overline{) 125}$ ^{2.5} Sonkor Xakamaynta (Correction bolus) Qaddarka ka sarreeya xadka la rabo

Tallaabada 3. Ogoow Qiyaasta Wadarta Bolus

Cunto Xakamaynta (Carb Bolus) + Sonkor Xakamaynta (Correction Bolus) = **Qiyaasta Bolus** Humalog/ Novolog

3.5 + 2.5 = 6 halbeeg

3.5	+	2.5	=	6 qiyaas
Cunto Xakamaynta (Carb Bolus)		Xakamaynta/Sixitaanka Bolus		Wadarta qiyaasta Humalog/Novolog

W aka beddelista qiyaasta insuliinta:

- Qaado xiisadaha lagu barto sida loo sugo garoojooyinka ama qiyaasaha insuliinta si aad u beddesho qiyaastaada insuliinta.
- Maalin kasta wac Khadka Gulukooska Dhiigga (Blood Glucose Line), ka dibna same sida lagu faro.
Blood Glucose Line 206-987-2640
ama iimayl u dir endonurse@seattlechildrens.org
Waxa kale oo aad wici kartaa Blood Glucose Line wakhti kasta oo aad u baahan tahay in lagaa caawiyo qiyaasta insuliinta.

Qiyaasta Maanta (Basal)

Lantus/Basaglar (basal)	Waqtiga hurdada (8-10 fiidnimo/habaynimo.)
	Subax (8-10 subaxnimo)

Qiyaasta Maanta (Bolus)

Humalog/Novolog	___ qiyaastood ee _____ garaam oo karbohaydraytyo ah
	Qiyaasta Xakamaynta/Sixitaanka waa _____
	Xadka laga rabo maalinta waa _____
	Xadka laga rabo waqtiga hurdada/ bartamaha habeenka waa _____

Seattle Children's waxay bixisaa adeegyo turjumaan oo bilaash ah kuwaasoo loogu talagalay bukaanada, xubnaha qoyska iyo wakiilada sharciga ah ee ah dhagoolaha ama dadka maqalku ku adag yahay ama ku hadla luuqad aan ahayn luuqadda Ingiriisida. Seattle Children's waxay macluumaadkan kuugu diyaarin doonaan qaabab kale markii aad codsato. Ka wac Xarunta Dhigaalada Qoyska Iambarka 206-987-2201. Buug-yarahan waxaa dib u eegay shaqaalaha caafimaadka ee Seattle Children's. Si kastaba ha noqotee, baahiyahaagu waa kuwo gaar ah. Kahor inta aadan tallaabo qaadin ama aadan isku haleyn macluumaadkan, fadlan la hadal bixiyaha daryeelka caafimaadkaaga.
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Basal-Bolus Insulin

Long-acting and rapid-acting insulin therapy

What do the words basal-bolus insulin mean?

Many people with Type 1 diabetes use a combination of long-acting (basal) and rapid-acting (bolus) insulin. This is called “basal-bolus” insulin. You will work with your diabetes educator to learn how to figure out how much basal-bolus insulin you will need every day.

Your goal is to use basal-bolus insulin to keep your blood glucose in target range. This handout is mostly about calculating **bolus insulin**.

Basal insulin (long acting)

Refers to the insulin you inject as background insulin to control blood glucose levels overnight and between meals.

Insulin name: Glargine (Lantus/Basaglar)

- Works to keep blood glucose in the target range between meals and through the night. It works with the glucose that is released by the liver.
 - Dose usually remains the same from day to day. Your doctor or diabetes educator will recommend an adjustment when blood glucose is not in target range.
 - Lasts 12-24 hours.
 - Taken at the same time every day.
-

Bolus insulin (rapid acting)

An insulin injection given as a burst to quickly counter carbs eaten and/or to lower high blood glucose.

Insulin names: Humalog, Novolog

- Works to provide insulin in the right amount for the food you are eating (this is called a “Carb Bolus”) and/or to lower high blood glucose (this is called a “Correction Bolus”).
 - Dose will be different each time you take it depending on blood glucose and the food/amount of carbohydrates you are eating.
 - Lasts about 3 hours.
 - Usually taken before meals and snacks (when you eat carbohydrates).
-

To Learn More

- Endocrine
206-987-2640
- Ask your child’s healthcare provider
- seattlechildrens.org/patient-education

Free Interpreter Services

- In the hospital, ask your nurse.
- From outside the hospital, call the toll-free Family Interpreting Line, 1-866-583-1527. Tell the interpreter the name or extension you need.



Figuring out your bolus (Humalog/Novolog) insulin doses

How do you know how much rapid acting bolus insulin you need for mealtimes and snacks?

Ask yourself these 3 questions:

- How many grams of carbohydrates are you going to eat?
- What is your blood glucose (BG) now?
- How active are you going to be during the next few hours?

1. How many carbs are you going to eat?

First, add up the grams of carbohydrates in the meal or snack.

Insulin/Carbohydrate Ratio

- You need to know your Insulin/Carbohydrate Ratio. It tells you how many units of insulin you need to take for the grams of carbs you are going to eat.
- Everyone has a different insulin/carbohydrate ratio – it's based on your size/weight and your body's sensitivity to insulin.
- Ratio example #1: 1 unit of Humalog/Novolog per 10 carbs – 1:10
- Ratio example #2: ½ unit of Humalog/Novolog per 30 carbs – ½:30
- Once you know your carb ratio number (your insulin/ carbohydrate ratio), you will use it to figure out your Carb Bolus.
- You should inject Humalog/Novolog 15 minutes before you eat. Young children can get this after their meal if it is uncertain how much of the meal or snack they will eat.

Your insulin/carb ratio is: _____

Grams of Carbohydrates ÷ Insulin/Carbohydrate Ratio = Carb Bolus

2. What is your blood glucose number?

The Correction Bolus is taken when you need to correct (lower) a high blood glucose number. You will need a Correction Bolus when your blood glucose goes above the number determined by your doctor.

Correction Factor

Your Correction Factor tells you how sensitive you are to insulin – it is an estimate of how much Humalog/ Novolog you need to lower your blood glucose down to your target number. You will have a different target number for daytime and bedtime/middle of the night. Everyone has a Correction factor, unique to them, determined by their doctor. A Correction Factor of 50 means that 1 unit of Humalog/Novolog lowers your blood glucose by 50 points.

Your personal correction factor is: _____

To calculate your Correction Bolus, you need to know your Correction Factor.

Your target blood glucose



Daytime:

Bedtime/middle of the night:

Now, let's figure out your **Correction Bolus**:

(Current blood glucose - target blood glucose) ÷ Correction Factor = Correction Bolus



Current blood glucose

target blood glucose

Correction Factor

DO NOT give a Correction Bolus if it has been less than 3 hours since the last Humalog/Novolog injection was given.

Carb Bolus + Correction Bolus = Total Bolus Dose (Humalog/Novolog)

Example:

Time	BG	Carb Bolus	Correction Bolus
8 a.m. breakfast	315	Yes	Yes
10 a.m. snack	170	Yes	No (only 2 hours since last bolus dose with correction bolus)
12 p.m. lunch	150	Yes	No (only 2 hours since bolus dose; no correction dose as blood glucose now on target)
3 p.m. snack	298	Yes	Yes (3 hours since last injection and blood glucose high)
5 p.m. dinner	236	Yes	No (only 2 hours since last bolus dose)
8 p.m.	315	No	Yes using bedtime target.

3. How much activity will you be doing in the next few hours?

- For every 30-60 minutes of increased activity, eat an extra 15-gram carb snack. **DO NOT TAKE INSULIN TO COVER THESE CARBS.**
Or
- If you know you are going to be active within a few hours after a meal or snack, you may want to subtract 15 grams from the total number of carbohydrates you are counting for your meal or snack. This will give you less Humalog/Novolog for that dose.

Bolus dose example

Your child’s blood glucose at breakfast is 275. He is going to eat 50 carbs and then he is going to a 60-minute swim practice. His carb ratio is 1:10. His target is 150 and his Correction Factor is 50. What is the dose of Humalog/Novolog?

Current blood glucose: 275 Carb Ratio: 1:10
Grams of carbs eating: 50 Correction Factor: 50
Target: 150

Remember the 3 questions:

- How many grams of carbohydrates are you going to eat? 50
- What is your blood glucose now? 275
- How active are you going to be during the next few hours? 60 min. swim.

Solution:

Step 1. Figure your Carb Bolus.

Grams of Carbohydrates LESS 15 grams for planned activity divided by Insulin/Carbohydrate Ratio = **Carb Bolus**

50 Carbs eaten
- 15 Minus 15 for activity
35 Adjusted carbs eaten

$$\text{Carb ratio: } 10 \overline{) 35} \begin{array}{l} 3.5 \text{ Carb bolus} \\ 35 \text{ Adjusted carbs} \end{array}$$

Step 2. Figure your Correction Bolus.

(Current blood glucose - target blood glucose) ÷ Correction Factor = **Correction Bolus**

275 Current blood glucose
- 150 Minus target blood glucose
125 Amount over target

$$\text{Correction factor: } 50 \overline{) 125} \begin{array}{l} 2.5 \text{ Correction bolus} \\ 125 \text{ Amount over target} \end{array}$$

Step 3. Figure your total Bolus Dose

Carb Bolus + Correction Bolus = **Bolus Dose** Humalog/ Novolog

3.5 + 2.5 = 6 units

3.5	+	2.5	=	6 units
Carb Bolus		Correction Bolus		Total dose Humalog/Novolog

Basal-Bolus Insulin

Adjusting insulin dosages:

- Take insulin dose adjustment class to learn how to change insulin doses on your own.
- Call into Blood Glucose Line daily, then as instructed.

Blood Glucose Line 206-987-2640

or email to endonurse@seattlechildrens.org

You may also call into the Blood Glucose Line any time you need help with insulin dosages.

Today's Dose (Basal)

Lantus/Basaglar
(basal)

Bedtime (8-10 p.m.)

Morning (8-10 a.m.)

Today's Dose (Bolus)

Humalog/
Novolog

_____ unit per _____ grams carbs

Correction Factor is _____

Daytime target is _____

Bedtime/middle of the night target is _____