

胰岛素

Insulin

2016-07-28

分类

依据作用时间分类

速效

短效

中效

长效

预混



1. Rapid-acting insulin

- 料位号：T01（笔芯）、T07（特充）
- 规格：3ml:300单位
- 英文名：Aapart
- 商品名：诺和锐



1. Rapid-acting insulin



- 料位号: T09 (笔芯)
- 规格: 3ml:300单位
- 英文名: Lispro
- 商品名: 优泌乐

2.Short-acting insulin



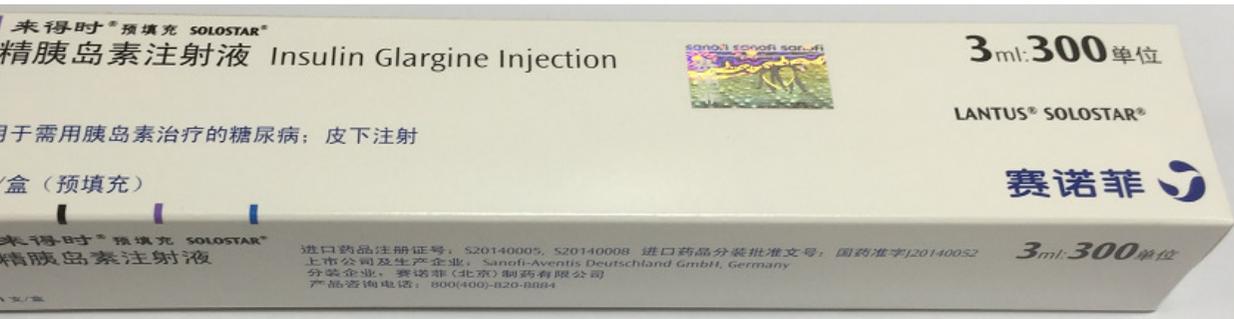
- 料位号: T02 (笔芯)、T11
- 规格: 3ml:300单位、10ml:400IU
- 英文名: Human Regular
- 商品名: 诺和灵R
- 主要成分: 中性胰岛素
- 活性成分: 生物合成人胰岛素

3. Intermediate-acting insulin



- 料位号：T03（笔芯）
- 规格：3ml:300单位
- 英文名：Human NPH
- 商品名：诺和灵N
- 主要成分：低精蛋白胰岛素锌胰岛素（NPH）（混悬液）
- 活性成分：生物和成人胰岛素

4. Long-acting insulin



- 料位号：T04（预充）
- 规格：3ml:300单位
- 英文名：Glargine
- 商品名：来得时

料位号：T08（特充）

规格：3ml:300单位

英文名：Detemir

商品名：诺和平



资料来源：说明书

5.Premixed



- 料位号：T05（笔芯）
- 规格：3ml:300单位
- 商品名：诺和锐30
- 主要成分：30%门冬+70%精蛋白门冬
- 活性成分：门冬胰岛素

料位号：T06（笔芯）

规格：3ml:300单位

商品名：诺和灵30R

主要成分：30%可溶中性+70%低精蛋白锌

活性成分：生物合成人胰岛素

料来源：说明书



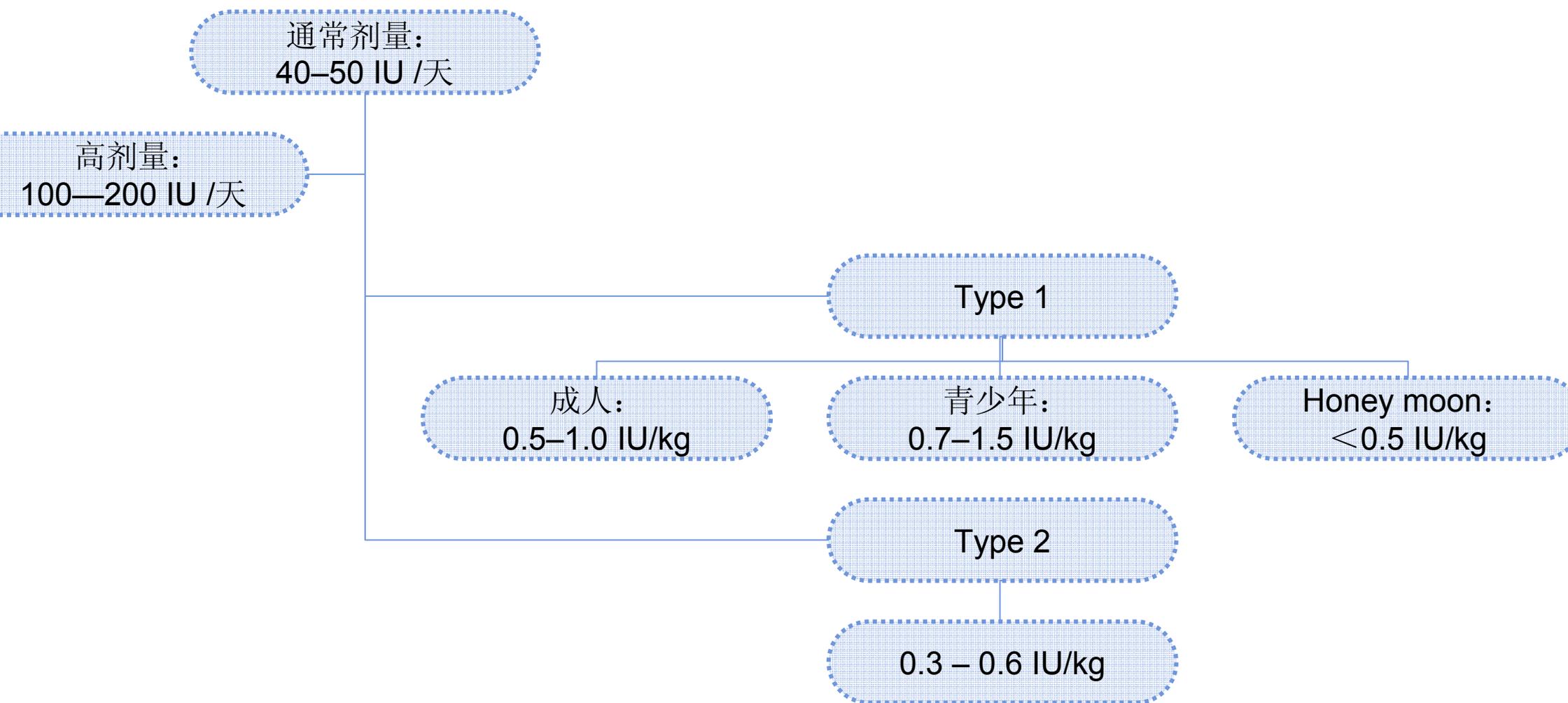
资料来源: UpToDate:Drug information -Pharmacodynamics and Pharmacokinetics

格	通用名	Onset of action 起效时间(hr)	Peak effect 峰效应时间(hr)	Duration of action 作用持续时间(hr)
59	门冬胰岛素	0.2-0.3	1-3	3-5
36	赖脯胰岛素	SubQ: 0.25-0.5	SubQ: 0.5-2.5	SubQ: ≤5
25	生物合成人胰岛素	SubQ: 0.25-0.5	SubQ: U-100: 2.5-5 U-500: 4 - 8	IV: U-100: 2 - 6 SubQ: U-100: 4 - 12 (may increase with d U-500: 13 - 24
25	精蛋白生物合成人胰岛素	1-2	4-12	14-24
32	甘精胰岛素	3-4	No pronounced peak	10.8 to >24 hours (up to ~30 hours)
5	地特胰岛素	3-4	3-9	Dose dependent: 6-23 (≥0.8U/kg, 22-1
7	门冬胰岛素30	10-20 minutes	1-4	18-24
25	精蛋白生物合成人胰岛素 (预混30R)	0.5	2-12	18-24

适应症

- 1型糖尿病
- 2型糖尿病
 - 口服降糖药无法达到预期效果（ $\text{HbA1c} > 7\%$ ）
 - 口服降糖药禁忌症
- 妊娠期糖尿病 (GDM)
- 妊娠2型糖尿病
- 合并手术的糖尿病 Surgery in people with diabetes
- 合并急性并发症的糖尿病 Acute illness in people with diabetes

建议剂量



Basal insulin

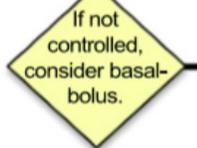
(usually with metformin +/- other noninsulin agent)

Add 1 rapid insulin* injection before largest meal

- **Start:** 4 U, 0.1 U/kg, or 10% basal dose. If $HbA_{1c} < 8\%$, consider \downarrow basal by same amount.
- **Adjust:** \uparrow dose by 1–2 U or 10–15% once twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; \downarrow corresponding dose by 2–4 U or 10–20%.

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- **For hypo:** Determine and address cause; \downarrow corresponding dose by 2–4 U or 10–20%.



Add ≥ 2 rapid insulin* injections before meals (“basal-bolus”[†])

- **Start:** 4 U, 0.1 U/kg, or 10% basal dose/meal.[‡] If $HbA_{1c} < 8\%$, consider \downarrow basal by same amount.
- **Adjust:** \uparrow dose by 1–2 U or 10–15% once twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; \downarrow corresponding dose by 2–4 U or 10–20%.



Change to premixed insulin* twice daily

- **Start:** Divide current basal dose into 2/3 AM, 1/3 PM or 1/2 AM, 1/2 PM.
- **Adjust:** \uparrow dose by 1–2 U or 10–15% once twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; \downarrow corresponding dose by 2–4 U or 10–20%.

high

名	给药时间	性状	泵	IM	IV	哺乳	妊娠:B	开封后保存及
资料来源: UpToDate:Drug information -Administration 胰岛素说明书	紧邻餐前	无色澄明	√ 腹壁	-	√	√	资料有限	<30°C, 4W
胰岛素			√	-	√	不确定是否分泌到乳汁	无显示有不良作用	
合成人胰岛素	注射30min内需进食(碳水化合物)	无色澄明	×	-	√	√	√	T02 <30°C, T11 <25°C,
白生物合成人胰岛素	-		白色/类白色混悬液	×	×	×	√	√
胰岛素	-	无色澄明	-	-	×	√	有限数据显示未有不良作用	<25°C, 4w
胰岛素	-		×	×	×	尚无临床经验		<30°C, 6w
胰岛素30	紧邻餐前	白色/类白色混悬液	×	×	×	√	临床经验有限	<30°C, 4w
白生物合成人胰岛素(30R)	注射30min内需进食(碳水化合物)		×	×	×	√	√	<30°C, 6w

操作方法

- 准备注射

胶塞消毒，装上针头



- 排除空气

旋转2个剂量，针尖向上排空气，直到刻度回零
有药液出现在针尖，否则重新排空气（不超过6次）

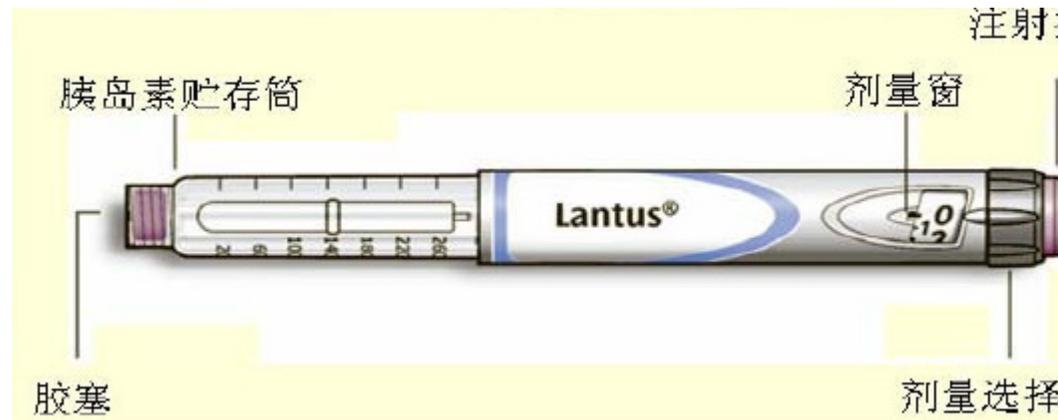
- 选择剂量

- 注射

拔出前，应始终按压注射按钮

- 卸下针头

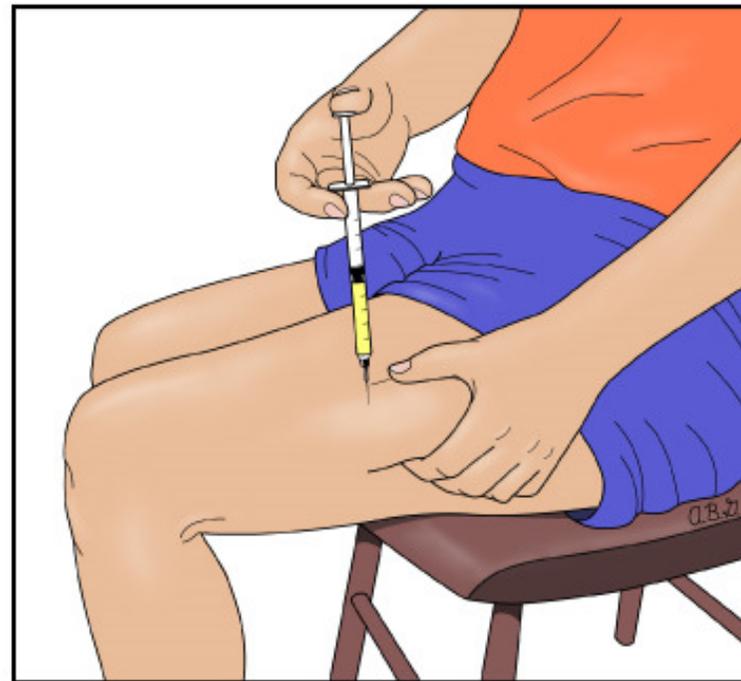
盖上外针帽，丢弃。每次注射必须使用新的针头



皮下给药注射方法

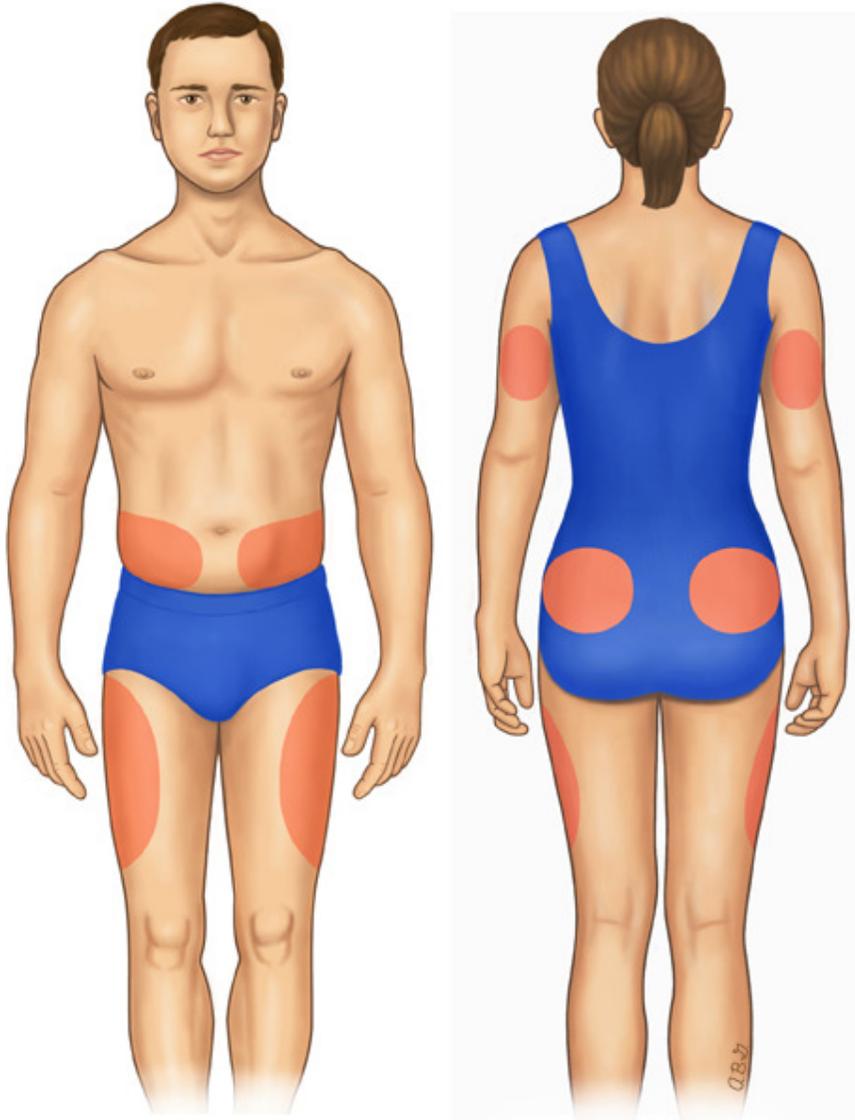
- 针头：5、6mm/8mm
- 捏起皮肤
- 注射后停留5s
- 拔针后有流血或药液漏出，按压部位5-8S

How to give an insulin shot



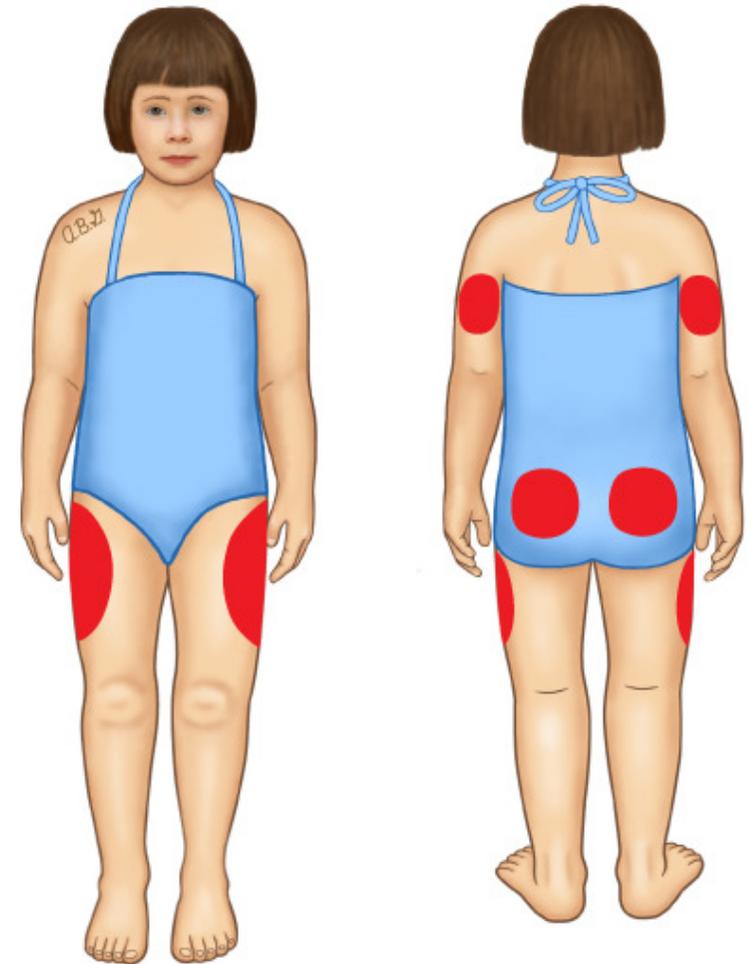
1. Pinch up some skin and quickly insert the needle at a 90° angle (or whatever angle your doctor or nurse tells you). Keep the skin pinched to avoid having the insulin go into the muscle.
2. Push the plunger down all the way. Hold the syringe and needle in place for five seconds.
3. Let go of the pinched skin and remove the needle from the skin. If blood or clear fluid (insulin) is seen where the shot was given, press on the area for five to eight seconds, but do not rub.

Where to give an insulin shot



The shaded areas can be used for insulin shots. You should change areas so that you do not use the same area each time. Insulin gets into the blood more quickly when injected into the belly, as compared to the arms or legs.

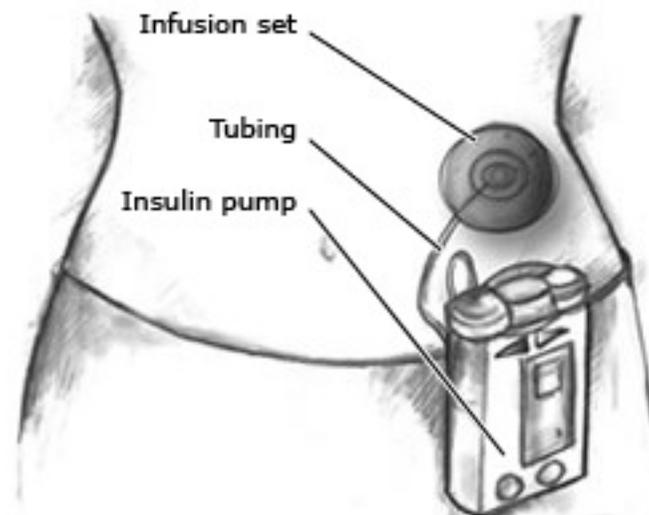
Where to give your child an insulin shot



The shaded areas of the body (as shown above) can be used for insulin shots. You should change areas so that you don't give your child an insulin shot in the same part of the body each time. In children who are school-age and older, you can also give an insulin shot in the belly.

胰岛素泵

Insulin pump



An insulin pump is a device that delivers insulin to a person with diabetes. The insulin goes from the pump, through the tubing, and into the body through a small needle or thin plastic tube. The infusion set is the connection between the tubing and the body.

Reproduced from: US Department of Health and Human Services. National Diabetes Information Clearinghouse: Alternative Devices for Taking Insulin. <http://www.niddk.nih.gov/health-information/health-topics/Diabetes/alternative-devices-taking-insulin/Pages/index.aspx> (Accessed May 25, 2016).

静脉滴注

药名	规格	配置后保存时间(hr)	用法
普通胰岛素	3ml:300单位	48	+NS/G5W 浓度：0.1-1.0U/mL
预混胰岛素	3ml:300单位	24	+NS/G5W/G10W及40mmol/L 氯化钾 浓度：0.05-1.0U/mL
重组人胰岛素	3ml:300单位 10ml: 400单位	24	+NS/G5W/含40mmol/L 氯化钾 10%葡萄糖 浓度：0.05-1.0U/mL

药物过量-不同程度低血糖

- 轻度：

口服15-20g糖类食物，以葡萄糖为佳

建议患者随身携带糖块、糖果、饼干、或含糖果汁

- 严重（失去意识）：

胰高血糖素0.5-1mg，皮下/肌注（专业受训人员操作）

或50%葡萄糖20-40ml，静脉注射

恢复意识后建议口服碳水化合物及留院观察

药物过量-不同程度低血糖

- 每15min监测一次血糖

血糖值 (mmol/L)	处理措施
≤ 3.9	再次给与口服葡萄糖
> 3.9	距下次就餐时间大于1hr, 予含淀粉/蛋白质食物
≤ 3	50%葡萄糖60ml, 静脉注射

THANK YOU

For Your Attention.