

Società Italiana di Diabetologia

Corso: Diabete Tipo 1.

Com'è cambiato il trattamento insulinico?

Roma 30 – 31 gennaio 2020

Gestione della Terapia Tipo 1 nella Transizione dall'Adolescente all'Adulto

Il Punto di Vista del Diabetologo Pediatra

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Disclosures

Claudio Maffeis dichiara di aver ricevuto negli ultimi due anni compensi o finanziamenti dalle seguenti Aziende Farmaceutiche e/o Diagnostiche:

Astra Zeneca, Abbott, Aboca, Eli Lilly, Novo Nordisk, Roche, Sanofi, Theras, Ypsomed.

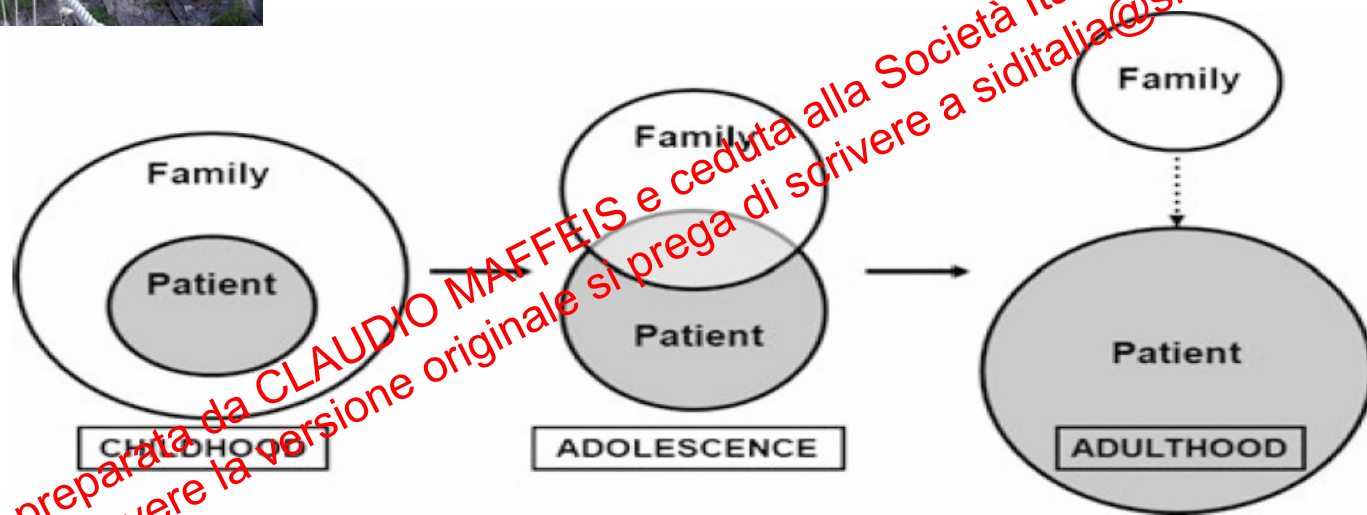
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Transition is defined as the 'purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centred to adult-oriented health care systems' by Blum RW (2002).



From family-managed diabetes care to shared care to self-care



Processo di assunzione di competenze e responsabilità del
paziente inteso come soggetto autonomo dalla famiglia.

Constellation of factors influencing healthcare transition in emerging young adults with type 1 diabetes



Diabetes Care for Emerging Adults: Recommendations for Transition From Pediatric to Adult Diabetes Care Systems

A position statement of the American Diabetes Association, with representation by the American College of Osteopathic Family Physicians, the American Academy of Pediatrics, the American Association of Clinical Endocrinologists, the American Osteopathic Association, the Centers for Disease Control and Prevention, Children with Diabetes, The Endocrine Society, the International Society for Pediatric and Adolescent Diabetes, Juvenile Diabetes Research Foundation International, the National Diabetes Education Program, and the Pediatric Endocrine Society (formerly Lawson Wilkins Pediatric Endocrine Society)

Emerging Adulthood

18-24 anni: fase postadolescenziale

25-30 anni: fase tardiva, in cui vengono assunti i ruoli tradizionali (lavoro, matrimonio, stabilità economica...)

Health Care Transition in Patients With Type 1 Diabetes

Young adult experiences and relationship to glycemic control

Table 3—Factors associated with most recent young adult A1C

Variable	Bivariate model		Multivariate model	
	β (SE)	P value	β (SE)	P value
Mostly/completely prepared for transition	−0.43 (0.18)	0.03	−0.43 (0.16)	0.28
Pediatric A1C in year before transition	0.51 (0.06)	<0.0001	0.49 (0.06)	<0.0001
Age at transition	−0.031 (0.03)	0.19	−0.010 (0.03)	0.72
Current age	−0.06 (0.03)	0.08	−0.07 (0.03)	0.03
Education college or higher	−0.37 (0.21)	0.0002	−0.55 (0.21)	0.01
Male	−0.35 (0.18)	0.02	−0.14 (0.16)	0.37
Living with partner	−0.10 (0.18)	0.26	0.06 (0.21)	0.77
Living with parents	0.22 (0.22)	0.38	−0.31 (0.24)	0.20
Living alone	0.03 (0.24)	0.90	0.09 (0.24)	0.71
Depression	0.70 (0.27)	0.01	0.026 (0.26)	0.92
Anxiety	0.57 (0.25)	0.02	0.18 (0.25)	0.47
Medicaid	0.75 (0.29)	0.02	0.16 (0.30)	0.59

β represents the percent change in young adult A1C. Number of subjects in model = 234; model $R^2 = 0.34$; model adjusted $R^2 = 0.31$; model $P < 0.0001$.

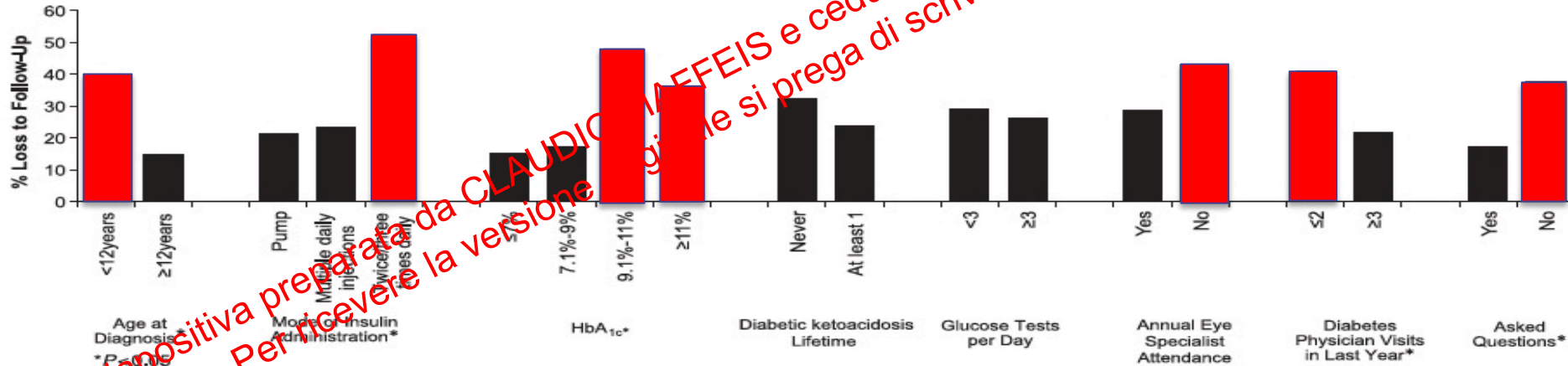
CONCLUSIONS

Contemporary transition practices may help prevent gaps between pediatric and adult care but do not appear to promote improvements in A1C.

More robust preparation strategies and handoffs between pediatric and adult care should be evaluated.

Loss to follow-up 1 year after discharge from pediatric clinic

Condition-related predictors of successful transition from paediatric to adult care among adolescents with Type 1 diabetes

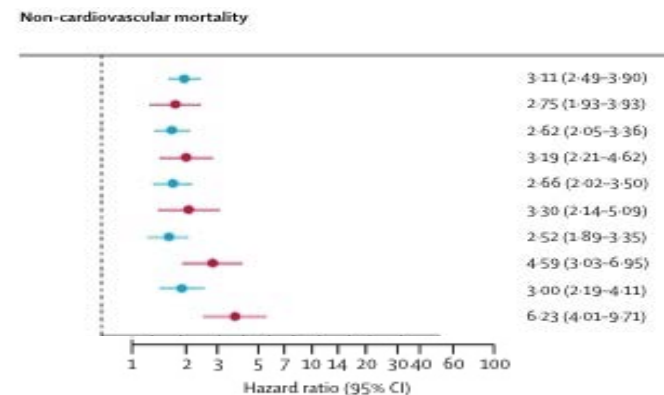
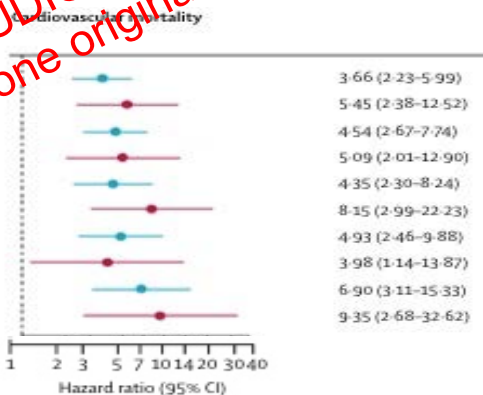
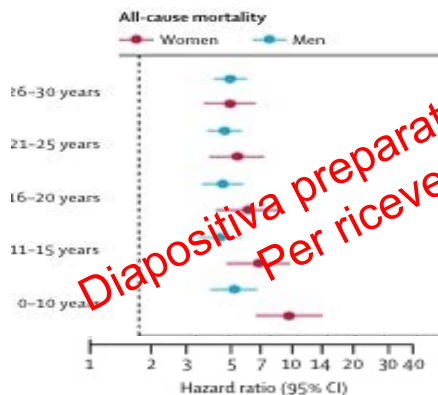
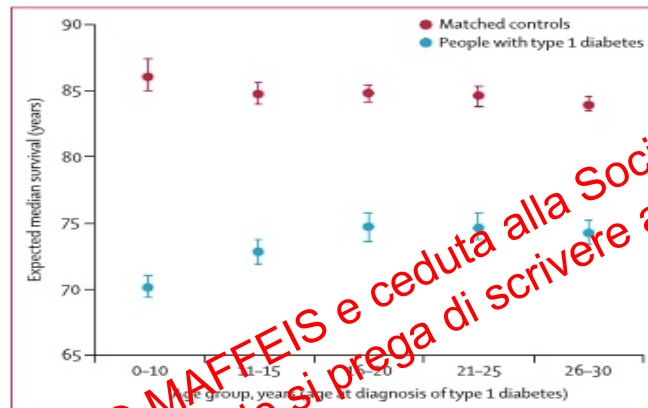


Criticità

- scarse risorse di **tempo** e di **personale**, in particolare infermieristico (mancano gli infermieri dedicati)
- distanza tra gli approcci terapeutici con minor impiego delle **nuove tecnologie** (microinfusori, CGM)
- trattamento dietetico (**calcolo di carboidrati**)
- difficoltà del giovane diabetico ad **accettare la fase di transizione** con la separazione dal centro pediatrico

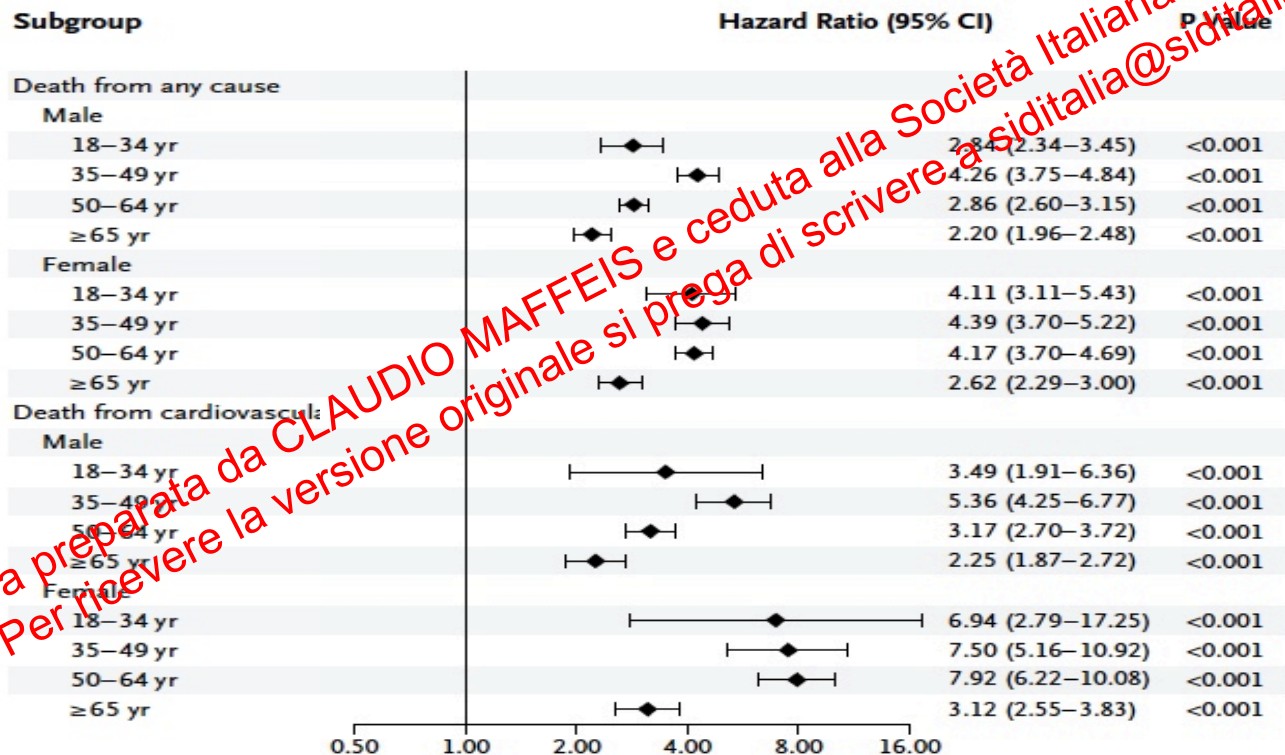
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Excess mortality and cardiovascular disease in young adults with type 1 diabetes in relation to age at onset: a nationwide, register-based cohort study

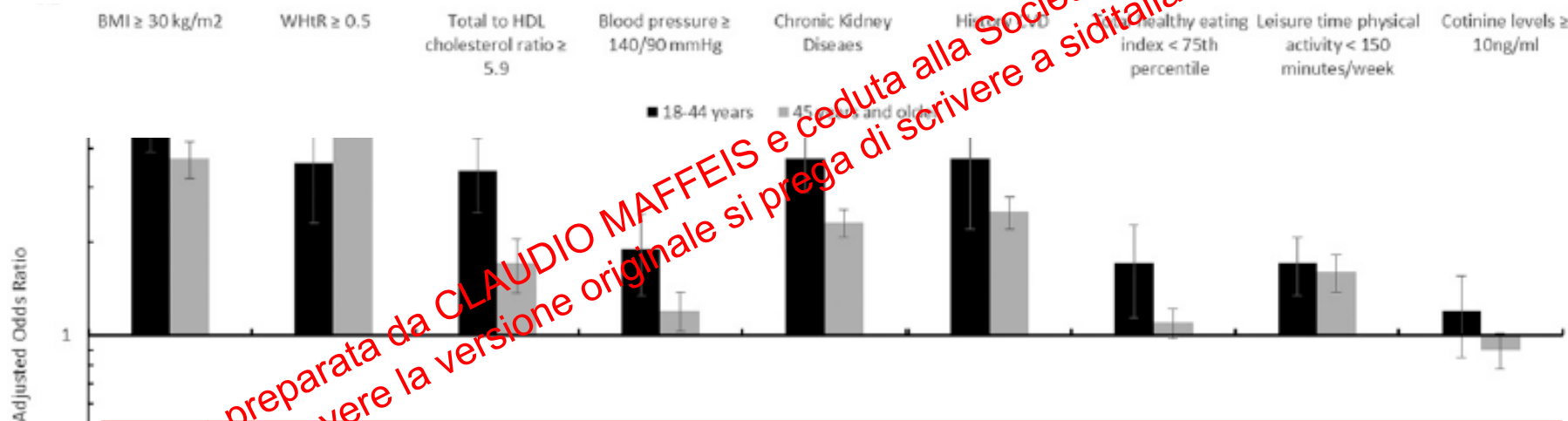


Glycemic Control and Excess Mortality in Type 1 Diabetes

Hazard Ratios for Death from Any Cause and for Death from Cardiovascular Causes According to Age and Sex among Patients with T1D versus Controls



The Cardiometabolic Risk Profile of Young Adults With Diabetes in the U.S.A.



CONCLUSIONS Young adults with diabetes have high rates of cardiometabolic risk factors, which can lead to an increased disease prevalence and mortality rate among these individuals as they age.

Mediation of the Effect of Glycemia on the Risk of CVD Outcomes in T1D: The DCCT/EDIC Study



Adjusted for age, only a few factors (e.g., pulse, triglycerides, albumin excretion rate) explained more than 10% of the effects of glycemia on CVD risk when considered individually.

In multivariable models, these traditional risk factors together mediated up to ~50% of the effect of glycemia on the risk of CVD.

However, the association between HbA1c and the risk of CVD remained highly significant even after adjustment for these risk factors.

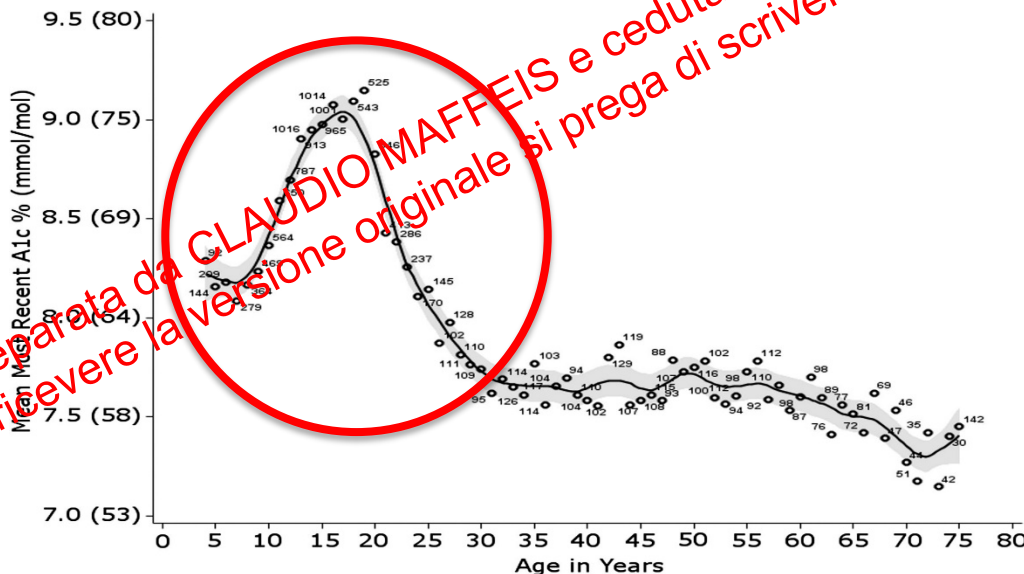


Elevated Cardiometabolic Risk Profile Among Young Adults With Diabetes: Need for Action

Dana Dabelea and Richard F. Hamman

Diabetes Care 2019;42:1845–1846 | <https://doi.org/10.2337/dci19-0032>

Current State of Type 1 Diabetes Treatment in the U.S.: Updated Data From the T1D Exchange Clinic Registry



What are the fundamental determinants of metabolic control?



Insulin regimen

Diet

Exercise

Structure of clinical care teams

Motivation

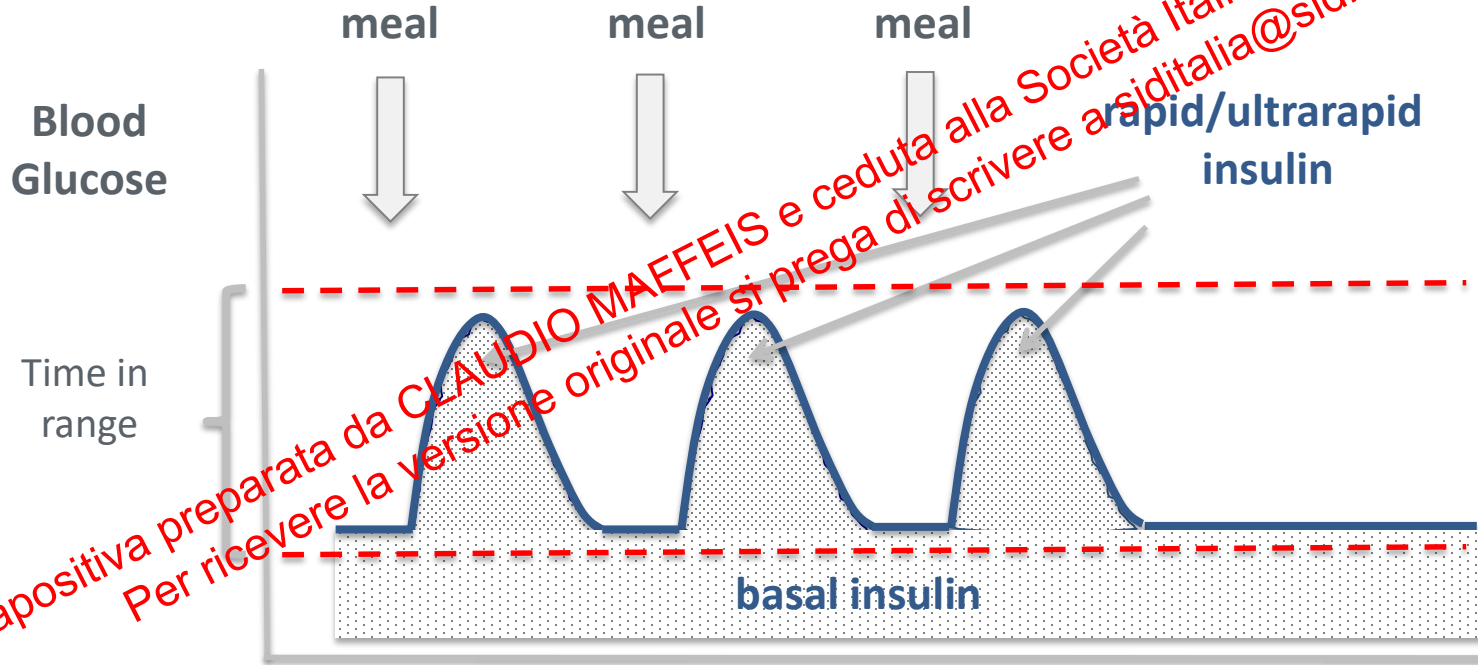
Family support

Mental health

Access to care

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basal bolus



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SWEET-Benchmarking



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Vision: Equal, high quality care for all children with diabetes

Mission: Harmonize care to optimize outcomes in children and adolescents with diabetes mellitus worldwide

Treatment modality, T1DM, all ages, longitudinal

Centre: 10218-IT



* 2 conditions classify a patient to be recognized as having a treatment modality: marked as pump-user or frequency of injections per day >= 1

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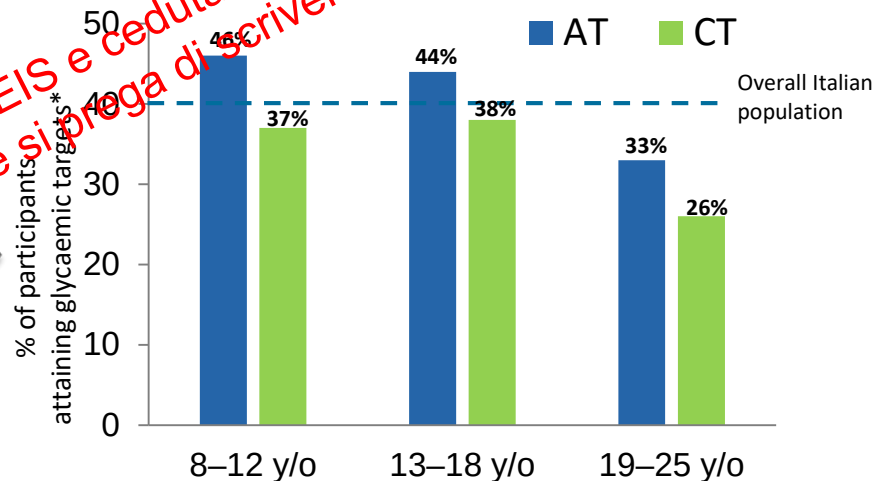
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Teens in Italy

Glycaemic control – HbA_{1c} levels

Teens	8–12 y/o (n=330)		13–18 y/o (n=490)		19–25 y/o (n=189)	
	AT (n=185)	CT (n=145)	AT (n=292)	CT (n=198)	AT (n=146)	CT (n=43)
HbA _{1c} [%], mean (SD)	7.7 (1.0)	7.9 (1.0)	7.8 (1.4)	7.9 (1.2)	7.7 (1.3)	7.5 (1.1)

In the overall Italian population,
irrespective of therapy type,
40% achieved HbA_{1c} targets*



*7.5% (<58 mmol/mol) (ISPAD) for ages 8–12 years and 13–18 years; <7% (<53 mmol/mol) (ADA) for ages 19–25 years

AT, advanced therapy: insulin pump or basal-bolus with analog insulins; CT, conventional therapy: all other regimens; y/o, years old.

main open questions with basal bolus

hypoglycemia

coverage in the afternoon & at night

flexibility

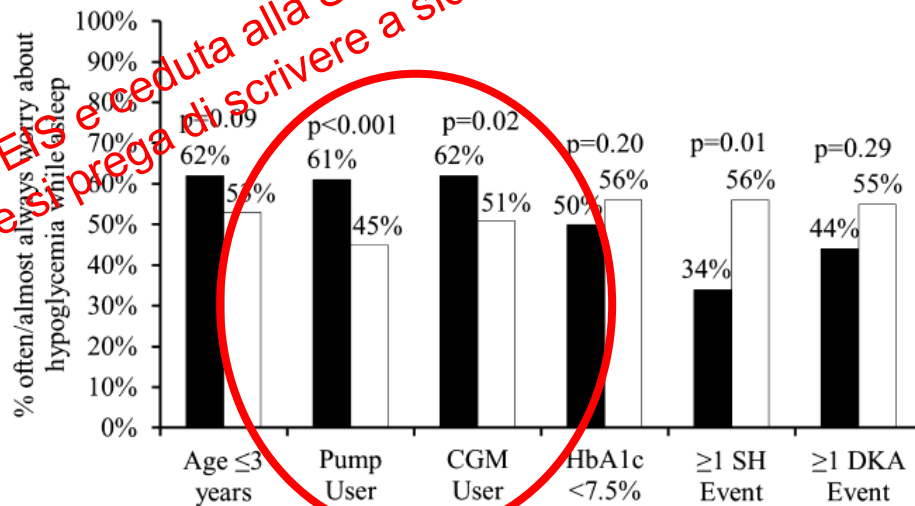
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Nighttime is the worst time: parental fear of hypoglycemia in young children with T1D

parental-reported worries about their child and hypoglycemia

Concern	Percent often or almost always worried (%)
Having a low while asleep	54
Not recognizing/realizing he/she is having a low	47
Having a low	42
Developing long-term complications from frequent low blood sugar	31
Having a low while alone	30
No one being around to help during a low	30
Feeling light-headed or faint	23
Having seizures or convulsions	22
Not having food, fruit, or juice	22
Losing control of behavior due to low blood sugar	19
Feeling dizzy or passing out in public	17
Getting a bad evaluation at school because of something that happens when sugar is low	14
Making a mistake or having an accident at school	10
Embarrassing self or friends/family in social situation	8%
Appearing "stupid" or clumsy	7

Endorsed worry about child having hypoglycemia while asleep*



* = Solid black bar represents yes.

Gla-300 vs. Gla-100: summary at 26-week

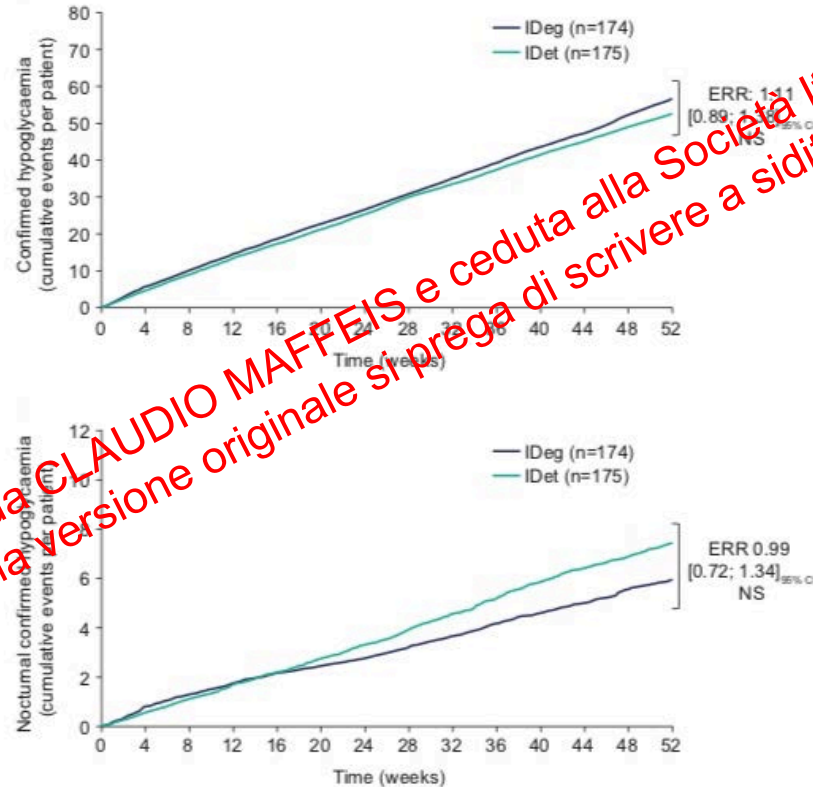
efficacy data

- **Similar reduction in HbA1c** (-0.4% for Gla-300, -0.4% for Gla-100; $p=0.965$)
 - Similar proportion of responders (HbA1c <7.5% and HbA1c <7.5% without severe and/or documented [SMPG <54 mg/dL] symptomatic hypoglycemia)
- **Similar reduction in FPG**
- **Increased mean daily basal insulin dose in Gla-300-treated patients** (8% higher at week 26) versus Gla-100-treated patients

safety data

- **Similar incidence and rates** of anytime (24 hour) and nocturnal **hypoglycemia** and a **numerically lower** percentage of patients reporting **severe hypoglycaemia** (6.0% vs. 8.8% patients, respectively)
- **Numerically lower** proportion of patients with at least one **episode of hyperglycemia with ketosis** (6.4% vs. 11.8% patients, respectively)
- **Low and similar number of patients experiencing injection site reactions** (4.7% vs. 5.7% respectively)
- **Similar incidences of adverse events**

Insulin degludec in combination with bolus insulin aspart is safe and effective in children and adolescents with type 1 diabetes

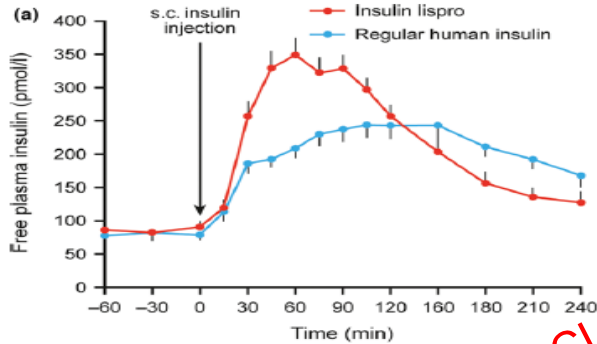


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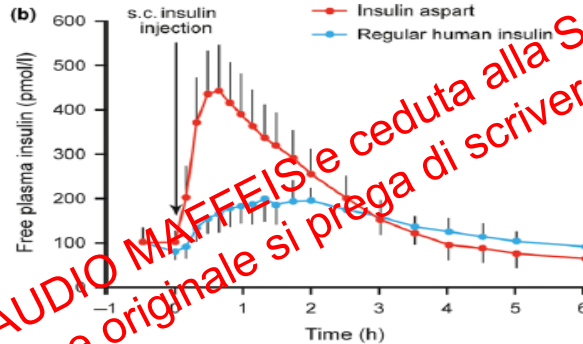
Lispro vs Aspart vs Glulisine

Pharmacokinetic profiles

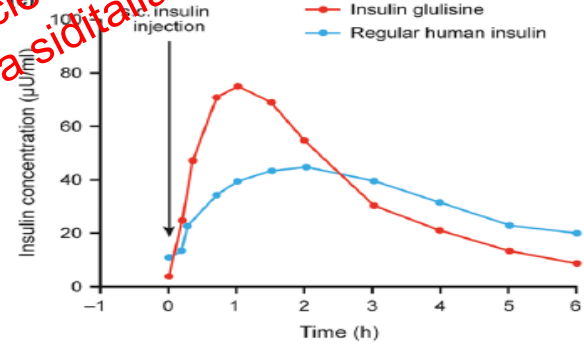
Insulin Lispro



Insulin Aspart



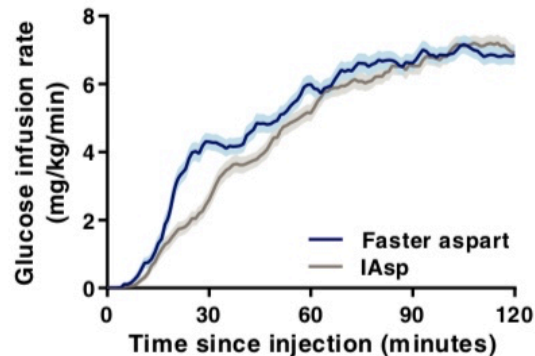
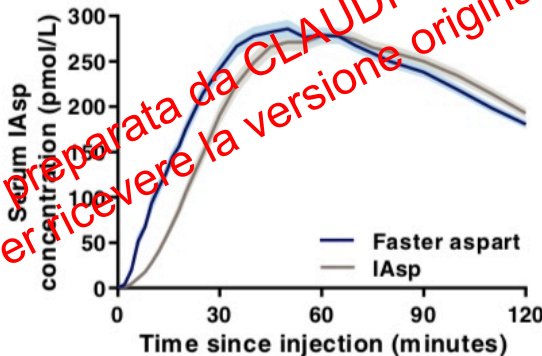
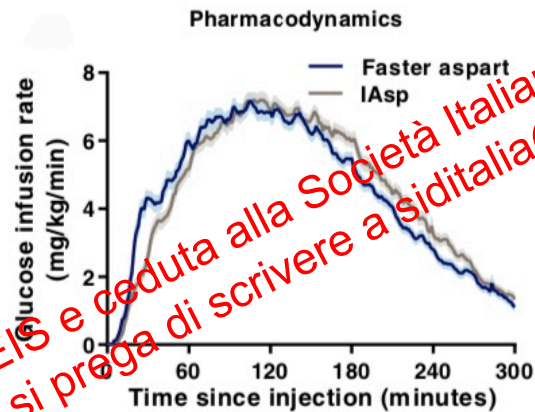
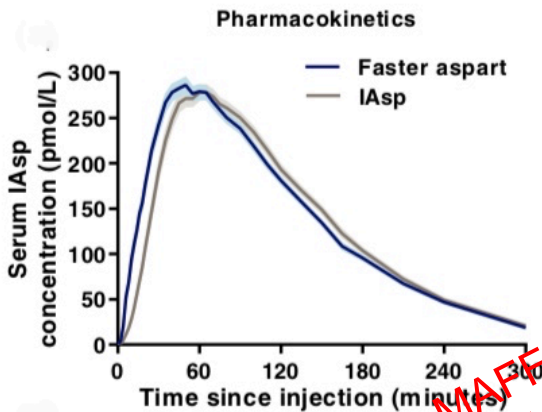
Insulin Glulisine



Pharmacokinetic (PK) studies carried out in people with Type 1 diabetes show that all three rapid-acting insulin analogues have similar PK and pharmacodynamic (PD) profiles.

They demonstrate peak plasma insulin concentrations approximately double those of RHI, and a time to maximum concentration less than half that of RHI, with concentrations of the analogues falling more rapidly, returning to levels <20% of peak concentrations at about 4 h

A Pooled Analysis of Clinical Pharmacology Trials Investigating the Pharmacokinetic and Pharmacodynamic Characteristics of Fast-Acting Insulin Aspart in Adults with T1D.

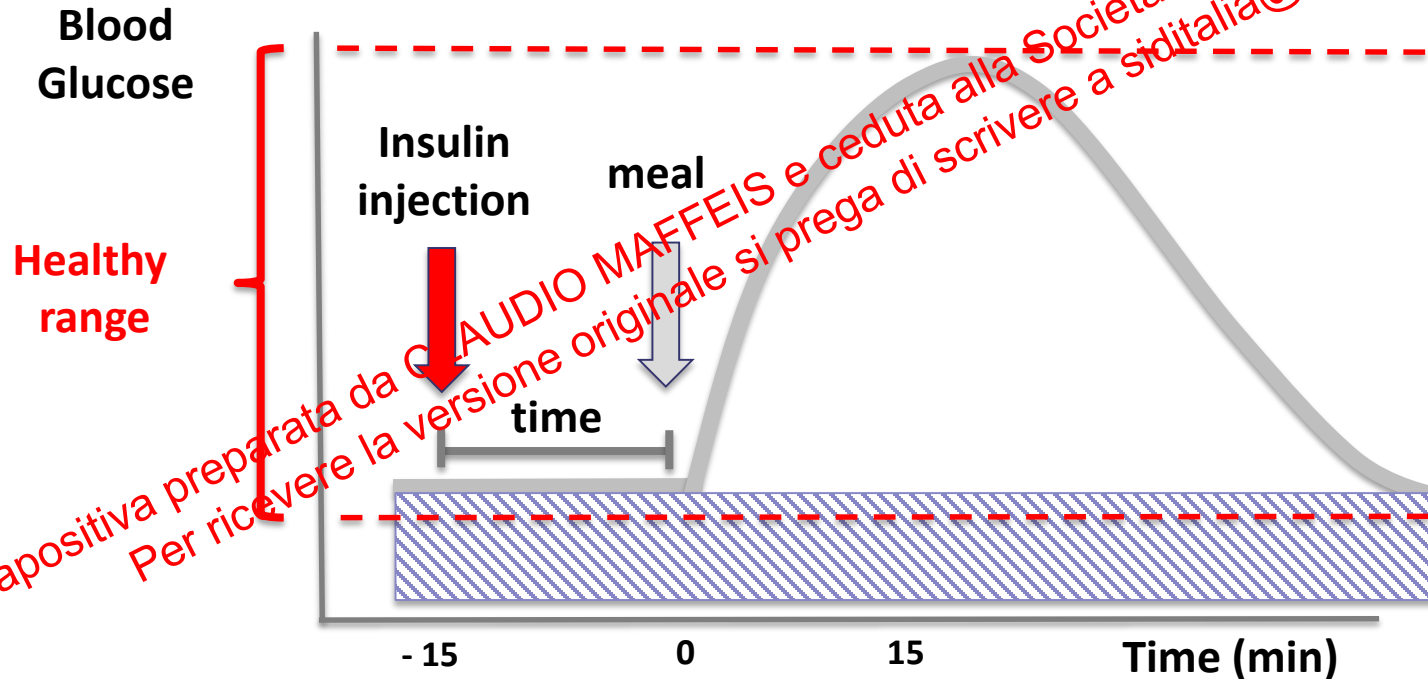


flexibility of administration

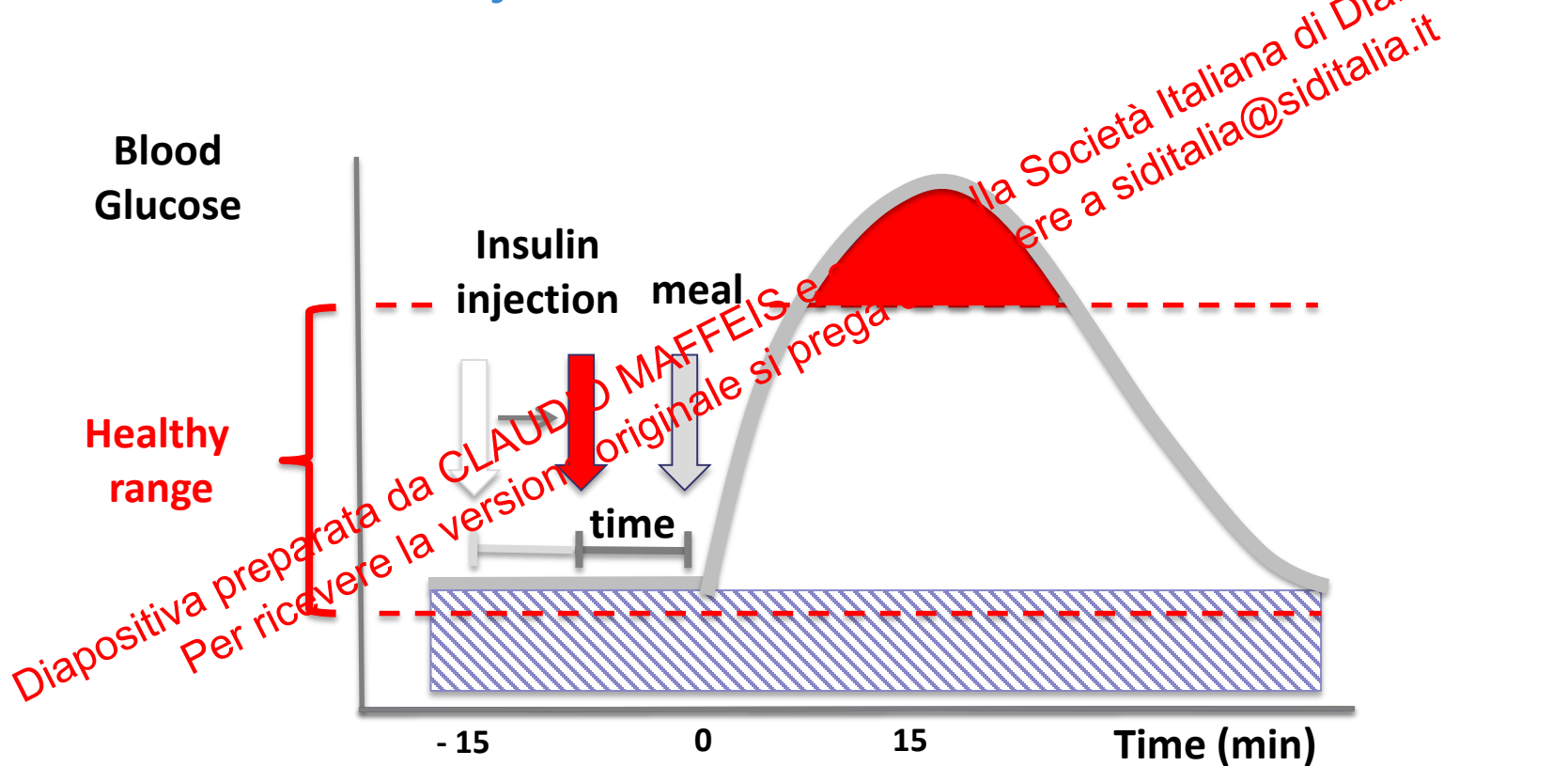


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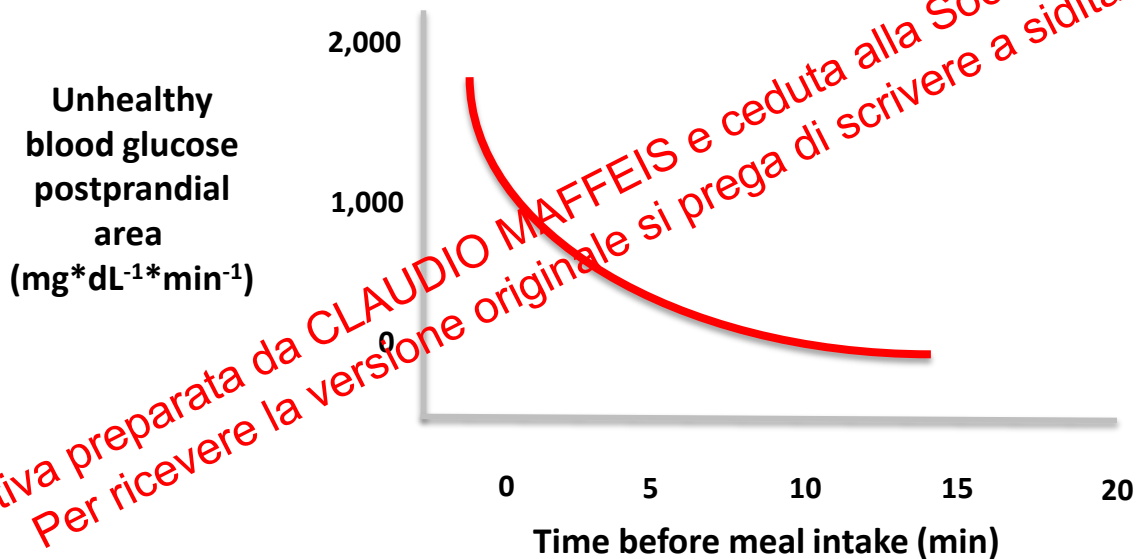
Time interval requirement between subcutaneous insulin injection and food intake



Blood glucose profile if time interval between subcutaneous insulin injection and food intake is reduced



Relationship between short time of preprandial insulin injection before meal intake and unhealthy blood glucose



Conclusioni

Il passaggio del giovane dal Centro Diabetologico Pediatrico a quello dell'Adulto presenta delle criticità, legate anche al prolungato processo di maturazione psicologica delle nuove generazioni.

Questo ha conseguenze rilevanti sulle modalità di autogestione del diabete e il rischio di complicanze a breve e lungo termine e sulle necessità di assistenza, che dovrebbe essere multidisciplinare.

L'ampio uso della tecnologia nei giovani comporta una modifica nell'approccio alla cura sia da parte del paziente che del diabetologo.

Take home message

I nuovi analoghi lenti, caratterizzati da una maggiore durata d'azione, promuovono una migliore “basalizzazione” nella giornata e una riduzione del rischio di ipoglicemia notturna oltre ad una maggiore flessibilità d'uso nei pazienti in trattamento MDI.

Gli analoghi rapidi (sia in MDI che con microinfusore) consentono una più agevole gestione della glicemia in fase postprandiale purché conta dei carboidrati e mantenimento dei tempi di attesa siano applicati correttamente e con costanza.

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GRAZIE