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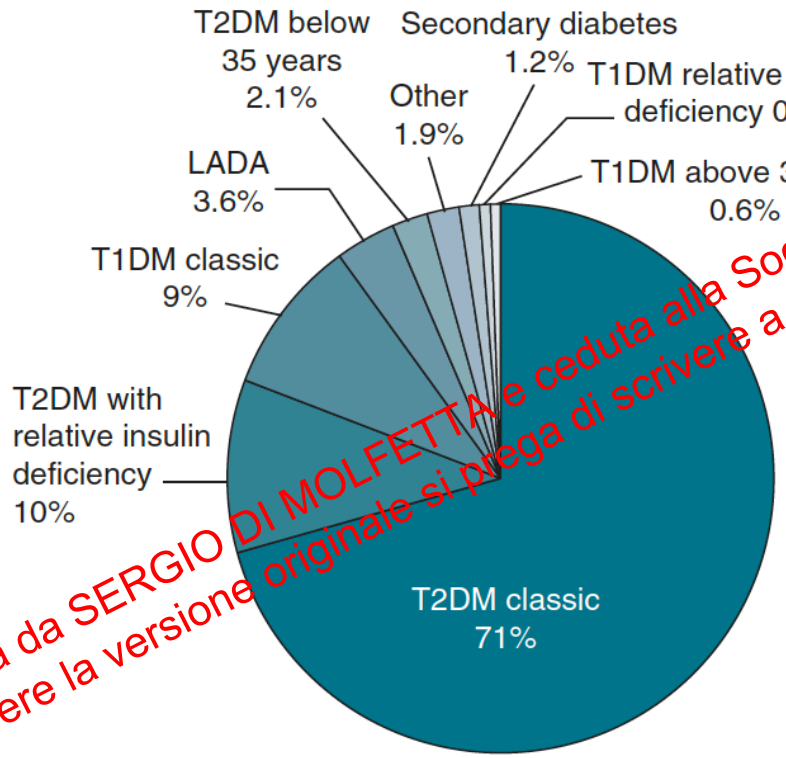
University of Bari Aldo Moro

SPECTRUM OF DIABETES SUBGROUPS



T1DM: age at onset <35 years, C-peptide <0.2 nmol L-1 and GAD antibodies >20; T1DM with realtive insulin deficiency if C-peptide 0.2-0.6 nmol L-1. T2DM: age at onset >35 years, C-peptide >0.6 nmol L-1, GAD antibodies >10; T2DM with relative insulin deficiency if C-peptide 0.2-0.6 nmol L-1. LADA (latent autoimmune diabetes in adults): age at onset >35 years, GAD antibodies >20; LADA light if GAD antibodies 10-20

http://andis.ludc.med.lu.se

PREVALENCE OF TYPE 1 DIABETES

Among the US population overall, crude estimates for 2018 were:

- 26.9 million people of all ages—or 8.2% of the US population—had diagnosed diabetes
- 210,000 children and adolescents younger than age 20 years—or 25 per 10,000 US youths— had diagnosed diabetes. This includes 187,000 with type 1 diabetes
- 1.4 million adults aged 20 years or older—or 5.2% of all US adults with diagnosed diabetes—reported both having type 1 diabetes and using insulin
- 2.9 million adults aged 20 years or older—or 10.9% of all US adults with diagnosed diabetes—started using insulin within a year of their diagnosis

National Diabetes Statistics Report, 2020

Worldwide estimates of incidence, prevalence and mortality of type 1 diabetes in children and adolescents: Results from the International Diabetes Federation Diabetes Atlas, 9th edition

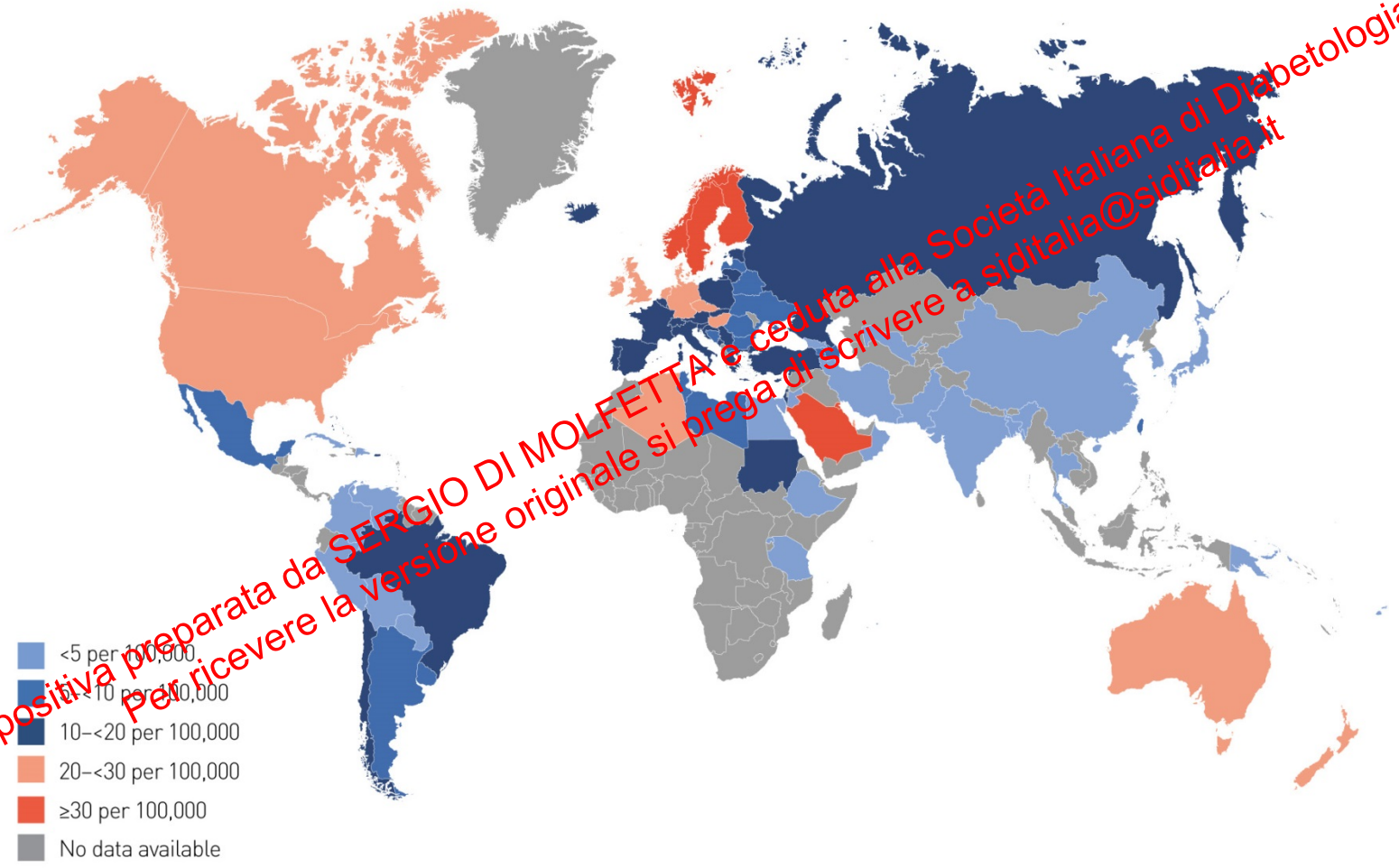
Table 1 – Estimated incident (newly-diagnosed) cases of type 1 diabetes per annum and prevalent (existing) cases in the 0-14 and 0-19 year age-groups by IDF Region after adjustment for mortality.

Region	Number of Countries with Incidence rates available (%)	Total Population (1000s)		Ratio of incidence rates in 15–19 year olds compared to 0–14 year olds	Incident Cases per annum (1000s)		Prevalent Cases (1000s)	
		0–14 year	0–19 year		0–14 year	0–19 year	0–14 year	0–19 year
AFR	3/47 (6%)	455,072	570,177	7.0	4.3	10.3	9.4	25.8
EUR	44/57 (77%)	166,664	217,998	0.7	25.1	31.1	162.6	296.5
MENA	12/21 (57%)	237,086	301,469	1.7	14.4	20.8	82.9	149.4
NAC	8/24 (33%)	107,354	143,931	0.5	18.7	21.9	121.4	224.9
SACA	12/19 (63%)	119,459	160,798	0.7	9.9	12.3	68.4	127.2
SEA	4/7 (57%)	429,779	576,715	1.2	17.1	21.3	101.7	184.1
WP	11/36 (31%)	462,520	611,028	1.1	8.8	11.2	54.4	102.2
World	**94/211 (45%)**	**1,977,936**	**2,582,088**		**98.2**	**128.9**	**600.9**	**1110.1**

AFR: Africa; EUR: Europe; MENA: Middle East and North Africa; NAC: North America and Caribbean; SACA: South and Central America; SEA: South-East Asia; WP: Western Pacific

Patterson CC et al. Diabetes Res Clin Pract. 2019 Nov;157:107842

Map 3.5 **Age-sex standardised incidence rates (per 100,000 population per annum) of type 1 diabetes in children and adolescents aged 0–14 years**



IDF Diabetes Atlas 9th ed, 2019

Trends and cyclical variation in the incidence of childhood type 1 diabetes in 26 European centres in the 25 year period 1989–2013: a multicentre prospective registration study

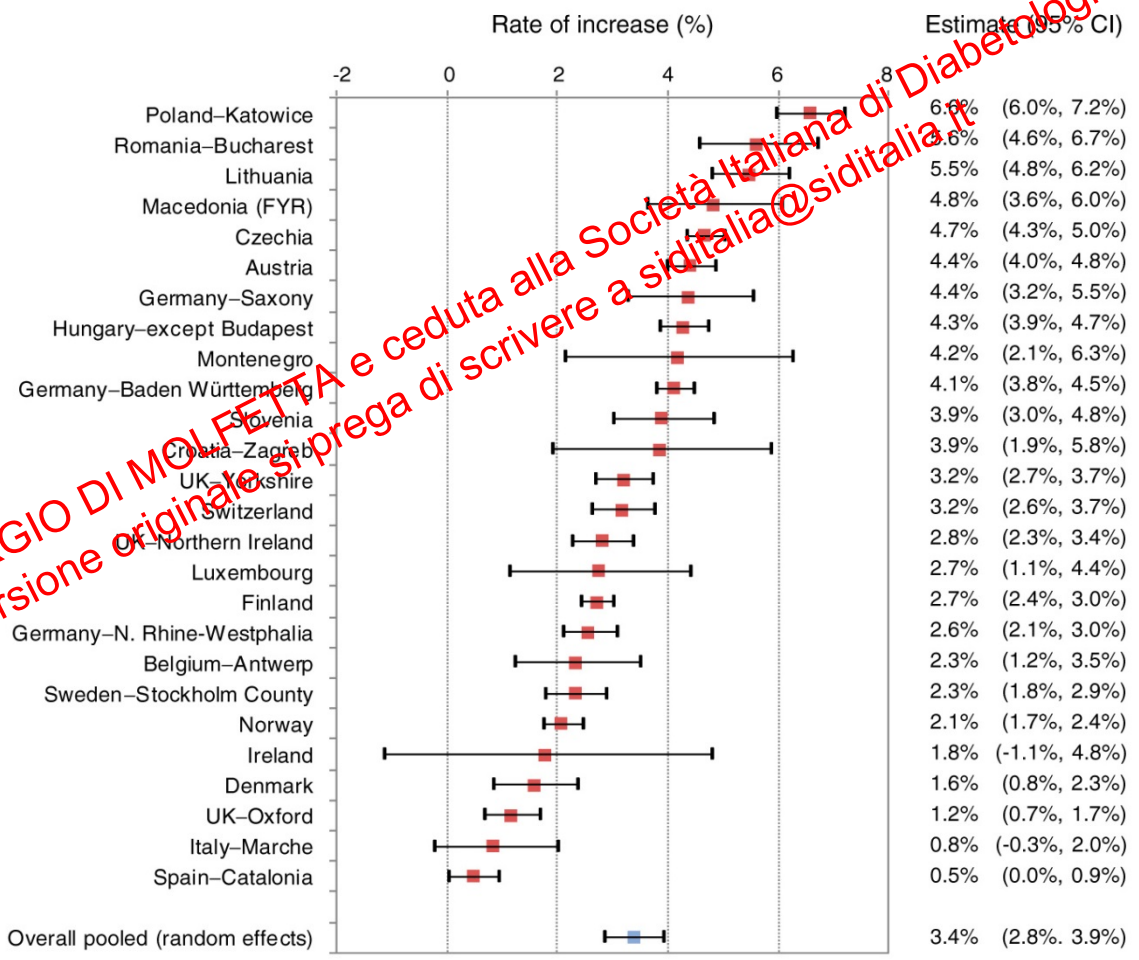


Fig. 3 Estimated rates of annual increase in type 1 diabetes in 26 European centres. Rates of increase in individual centres were derived from Poisson regression analyses with adjustment for age, sex, age × sex interaction and inclusion of a log-linear term for year in the model. The overall pooled estimate was derived from a Poisson regression with centre as a random effect. FYR, Former Yugoslav Republic; N., North

Patterson CC et al. Diabetologia. 2019 Mar;62(3):408-417

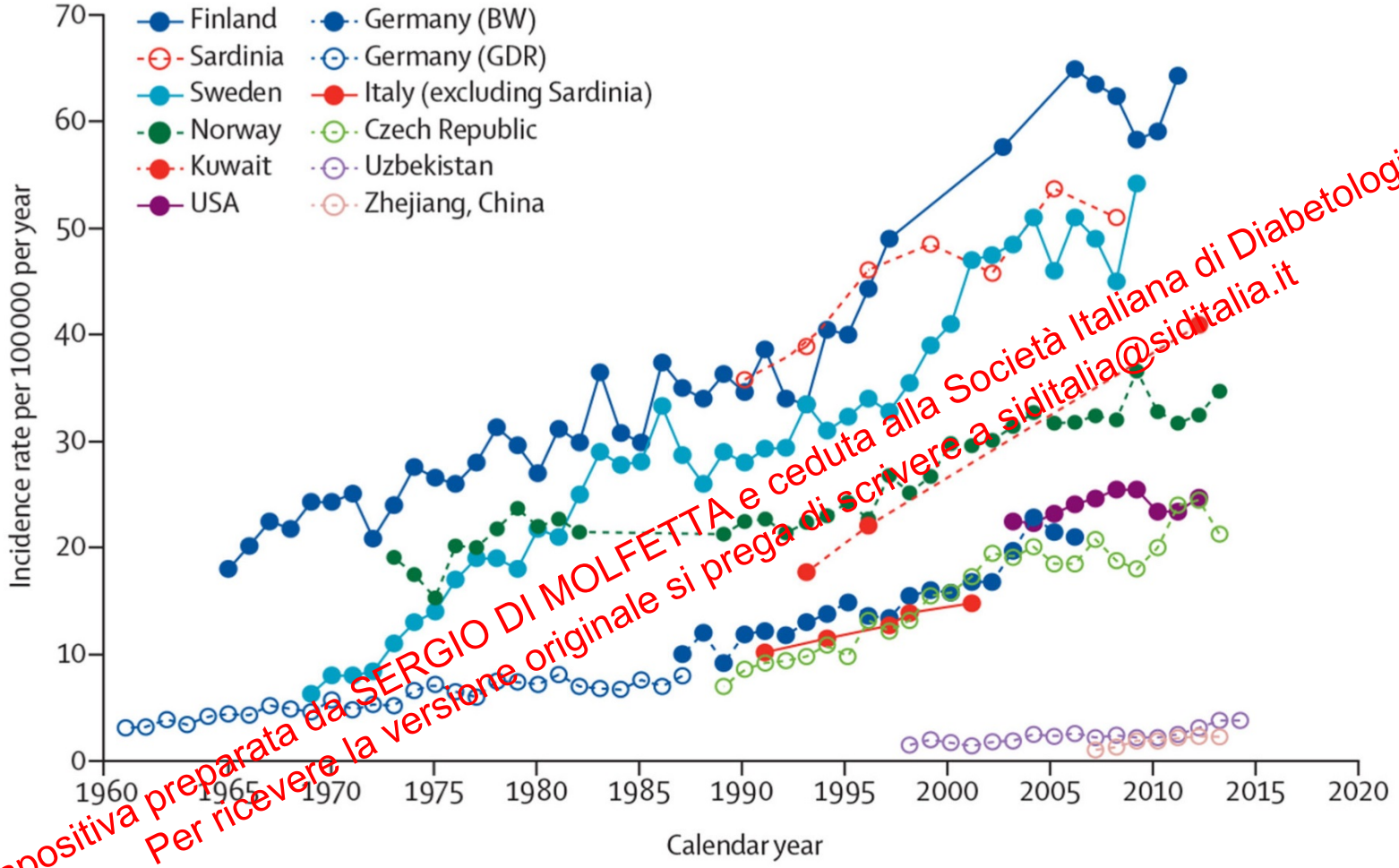


Figure 1: Time trends in incidence of type 1 diabetes
Published data taken from references listed in the appendix pp 1,5–6. GDR=German Democratic Republic (former Eastern Germany). BW=Baden-Württemberg.

Norris JM et al. Lancet Diabetes Endocrinol. 2020 March ; 8(3): 226–238

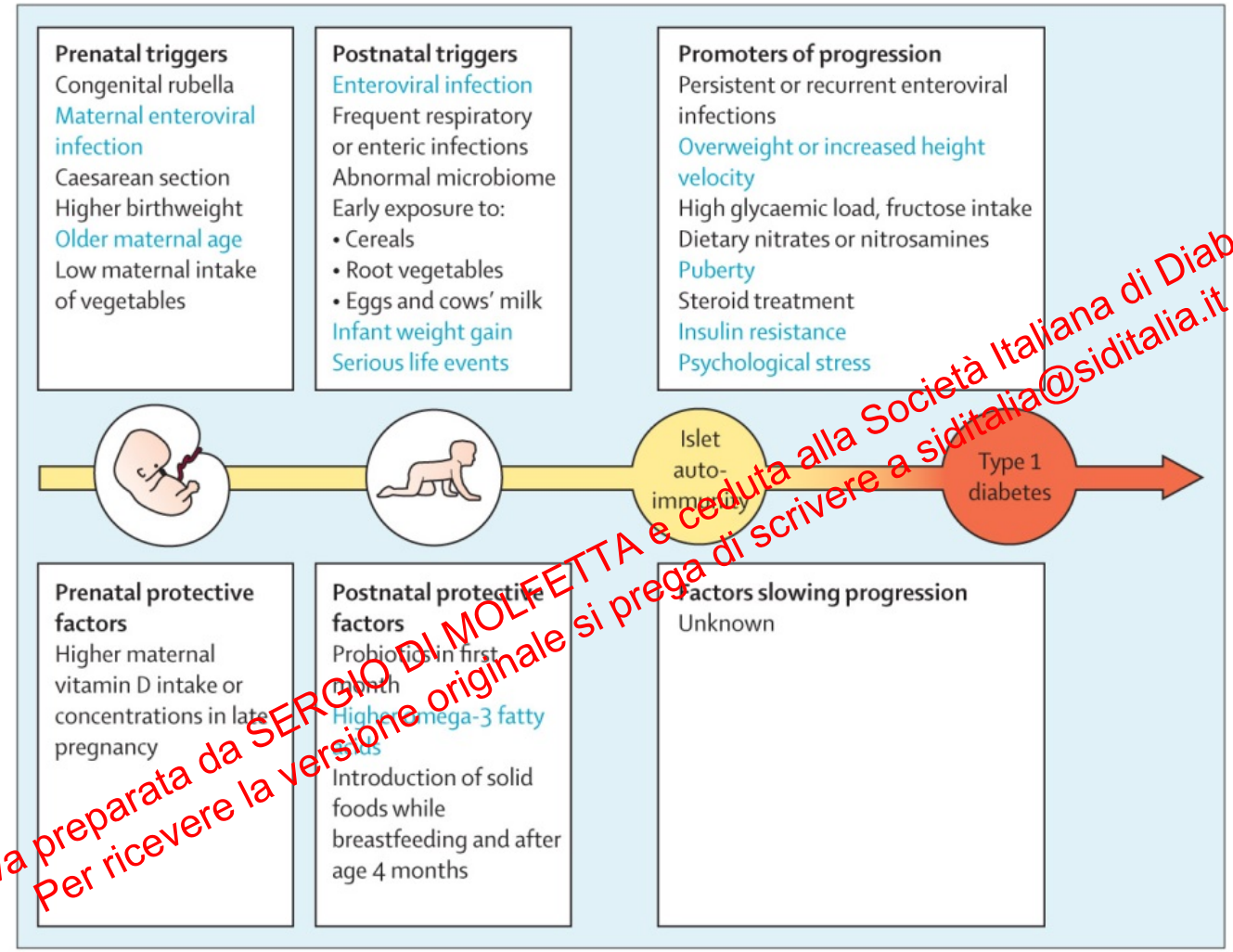


Figure 1: **Environmental triggers and protective factors for islet autoimmunity and promoters of progression to type 1 diabetes for which an association has been suggested**
Triggers and factors with the strongest evidence base are shown in blue.

Rewers M et al. Lancet. 2016;387(10035):2340-2348

Type 1 Diabetes and COVID-19: Preliminary Findings From a Multicenter Surveill

Osagie A. Ebekozien,[1] Nudrat Noor,[1] Mary Pat Gallagher,[2] and

Diabetes Care 2

COVID-19 and Type 1 Diabetes: Concerns and Challenges

Viola Trevisani[1], Patrizia Bruzzi[2], Simona Filomena Madeo[2], Umberto Cattini[1], Lara

International Journal of Diabetes in Developing Countries
https://doi.org/10.1007/s13410-020-00846-z

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Associations of type 1 and type 2 diabetes with COVID-19-related mortality in England: a whole-population study

Commentary

Em *omi Holman, Kamlesh Khunti,*
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Type 1 diabetes triggered by covid-19 pandemic: A pote

Paola

Has COVID-19 Delayed the Diagnosis and Worsened the Presentation of Type 1 Diabetes

Did the COVID-19 Lockdown Affect the Incidence of Pediatric Type 1 Diabetes in Germany?

https://doi.org/10.2337/dc20-1633

*Ivana Rabbone,[1] Riccardo Schiaffini,[2] Valentino Cherubini,[3] Claudio Maffeis,[4] Andrea Scaramuzza,[5] and the Diabetes Study Group of the Italian Society for Pediatric Endocrinology and Diabetes**

Sascha René Tittel,[1,2] Joachim Rosenbauer,[2,3] Clemens Kamrath,[4] Julian Ziegler,[5] Felix Reschke,[6] Johanna Hammersen,[7] Kirsten Mönkemöller,[8] Angeliki Pappa,[9] Thomas Kapellen,[10] and Reinhard Walter Holl,[1,2] for the DPV Initiative

Respiratory infections are temporally associated with initiation of type 1 diabetes autoimmunity: the TEDDY study

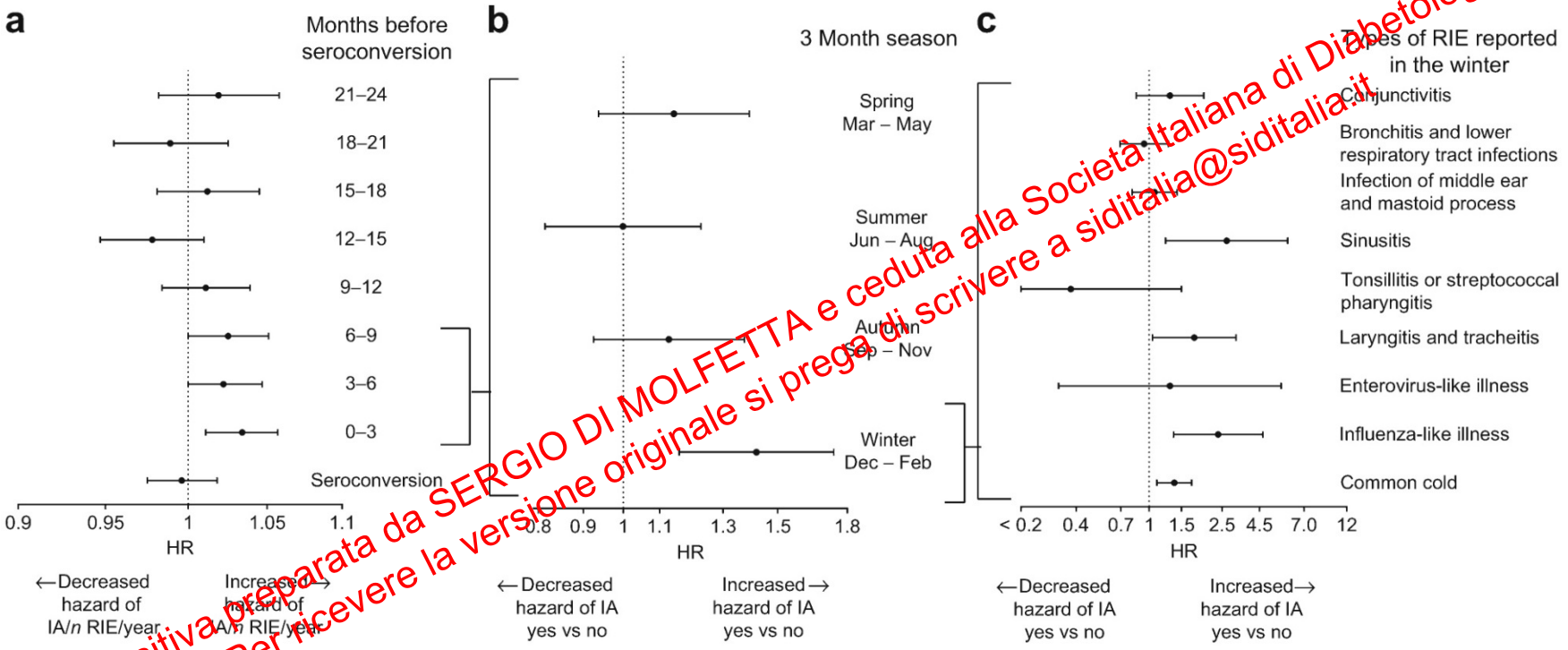


Fig. 2 (**a**) RIEs occurring between 0 and 3 months, 3 and 6 months, and 6 and 9 months before the autoantibody seroconversion period were associated with increased risk of islet autoimmunity ($p \leq 0.05$ for all), whereas RIE rates in the other 3 month periods were not ($p > 0.10$). (**b**) In a multivariate analysis, the presence of a winter but not a spring, summer or autumn RIE, occurring in the 9 month period before seroconversion, was associated with islet autoimmunity. (**c**) In a multivariate analysis, the specific infections in the winter with significant association with islet autoimmunity were sinusitis, laryngitis and tracheitis, influenza-like illness and common cold

Lönnrot M et al. Diabetologia. 2017 Oct;60(10):1931-1940

Pandemic influenza and subsequent risk of type 1 diabetes: a nationwide cohort study

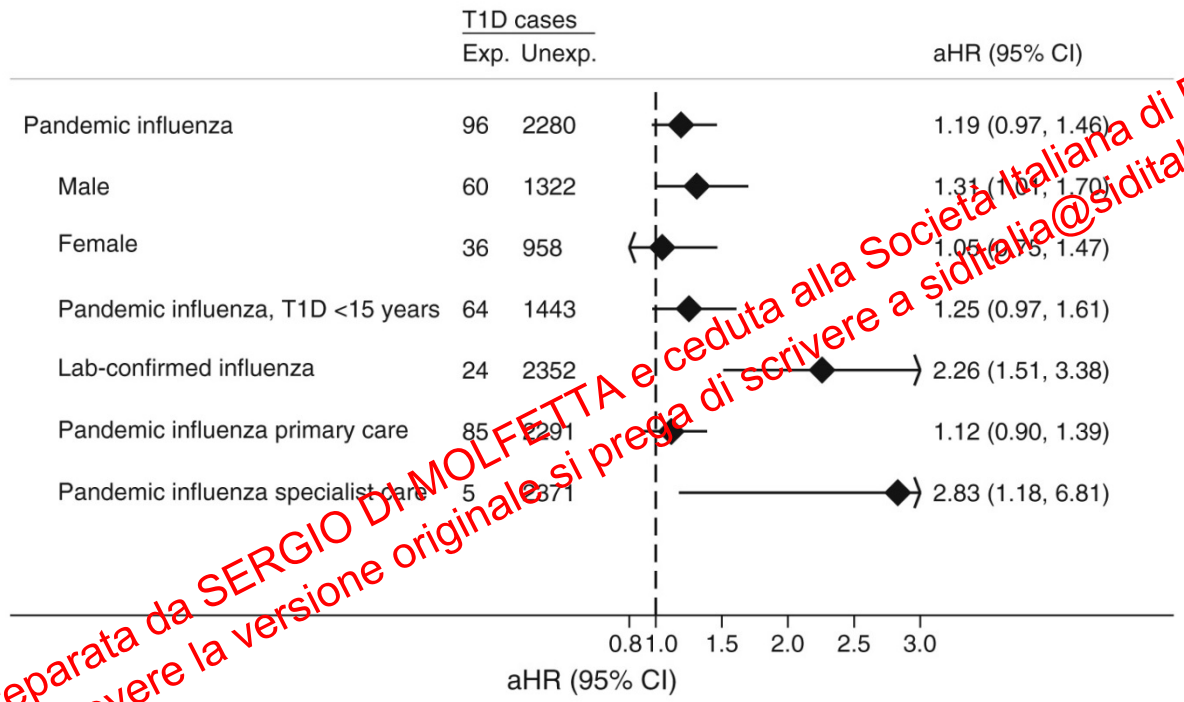
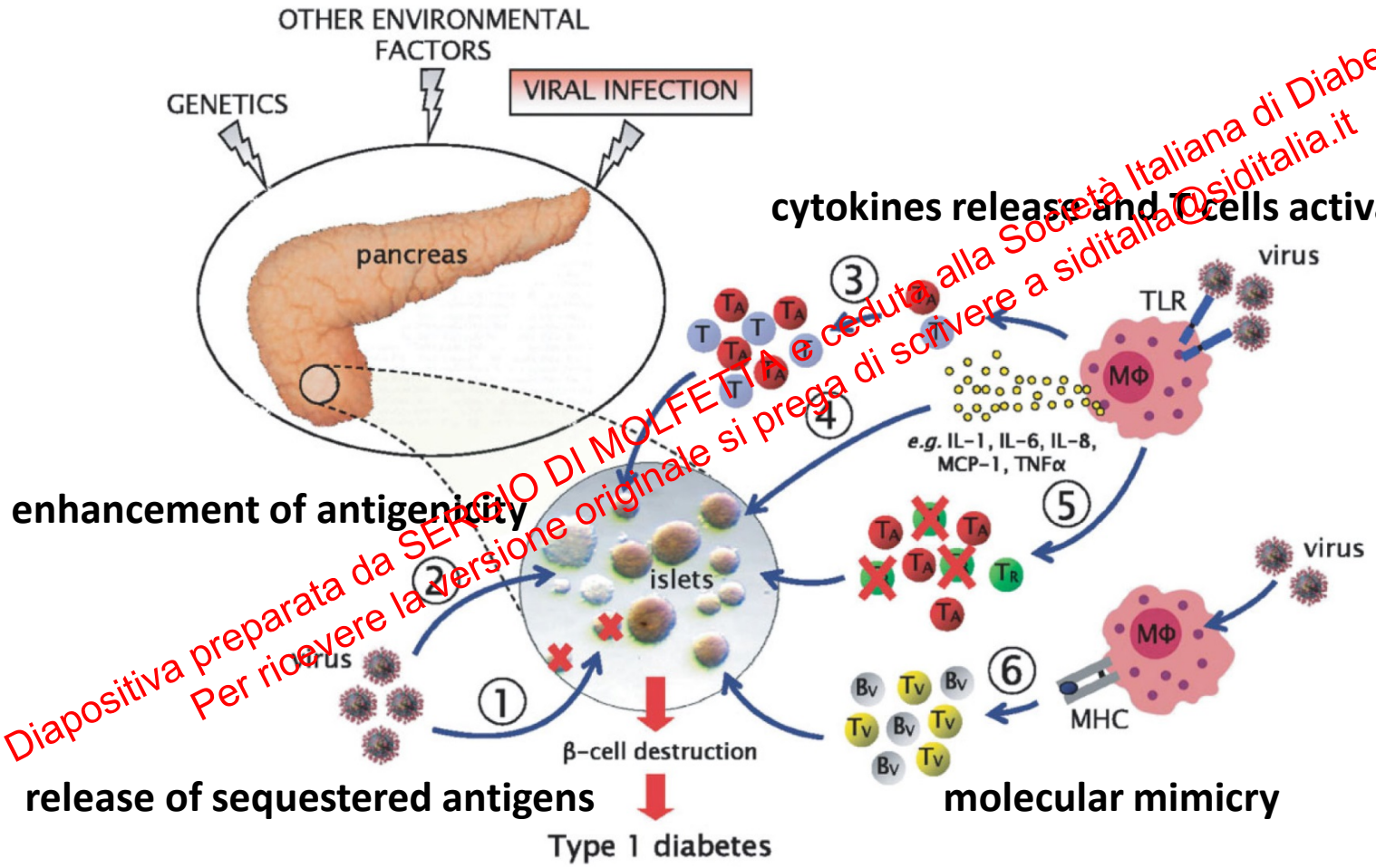


Fig. 2 Association between pandemic influenza diagnosis and risk of type 1 diabetes in up to 2.28 million Norwegian residents under 30 years of age, overall and in subgroups. Incident cases of type 1 diabetes defined as registration of dispensed insulin for at least 6 months and at least one registration of a type 1 diabetes diagnosis from specialist or primary care. Pandemic influenza was defined as a clinical diagnosis of influenza registered in the primary care database, specialist care, or a laboratory-confirmed pandemic influenza (during the pandemic period). HRs were adjusted for year of birth, sex, place of birth, education and pandemic influenza vaccination (except analysis stratified for sex, which was adjusted for year of birth, place of birth, education and pandemic influenza vaccination). Exp., exposed; Lab, laboratory; T1D, type 1 diabetes; Unexp., unexposed

Ruiz PLD et al. Diabetologia. 2018;61(9):1996-2004

VIRAL TRIGGER FOR TYPE 1 DIABETES



van der Werf N et al. Diabetes Metab Res Rev. 2007 Mar;23(3):169-83

Has COVID-19 Delayed the Diagnosis and Worsened the Presentation of Type 1 Diabetes in Children?

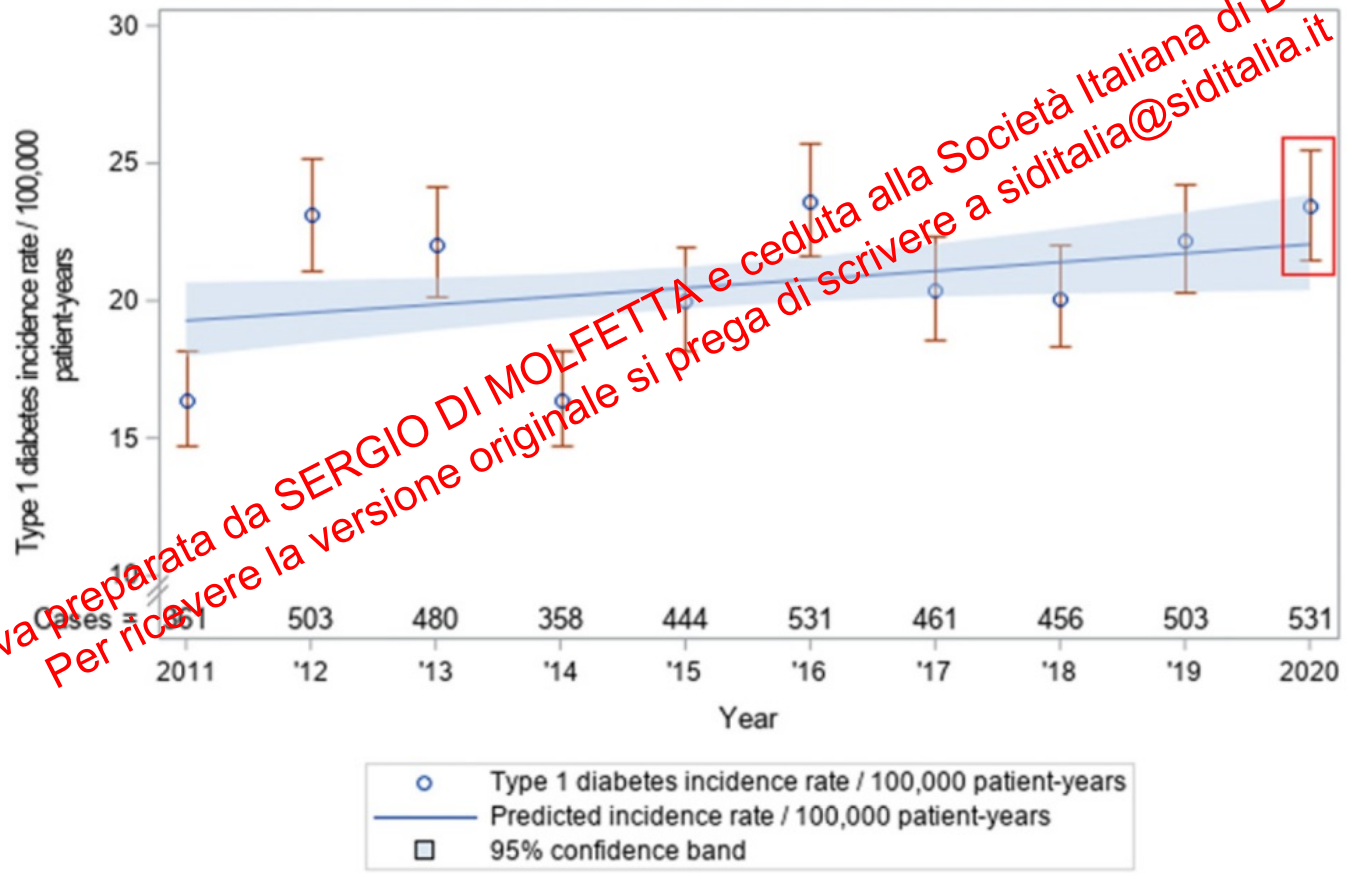
Table 1—Diabetes onset, DKA at onset, and acute complications in the pediatric population (0–15 years) observed during COVID-19 pandemic (20 February–14 April 2020) compared with the same period in 2019

	2020		2019			
	n	%	*n*	%	Δ	*P*
Patients with diabetes onset	160	—	208	—	−48	–
Patients with DKA (pH <7.3)	61	38.1	86	41.3	−3.2	0.08
Patients with severe DKA (pH <7.1)	27	16.9	31	14.9	2.0%	0.09
Proportion of DKA patients with severe DKA	27	44.3	31	36.0	8.3%	**0.03**
DKA episodes in patients with established diabetes	13	—	22	—	−9	—
Severe hypoglycemia episodes in patients with established diabetes	10	—	13	—	−3	—

Severe hypoglycemia was defined as an episode with loss of consciousness or requiring hospitalization. The value in boldface type represents significant difference between groups.

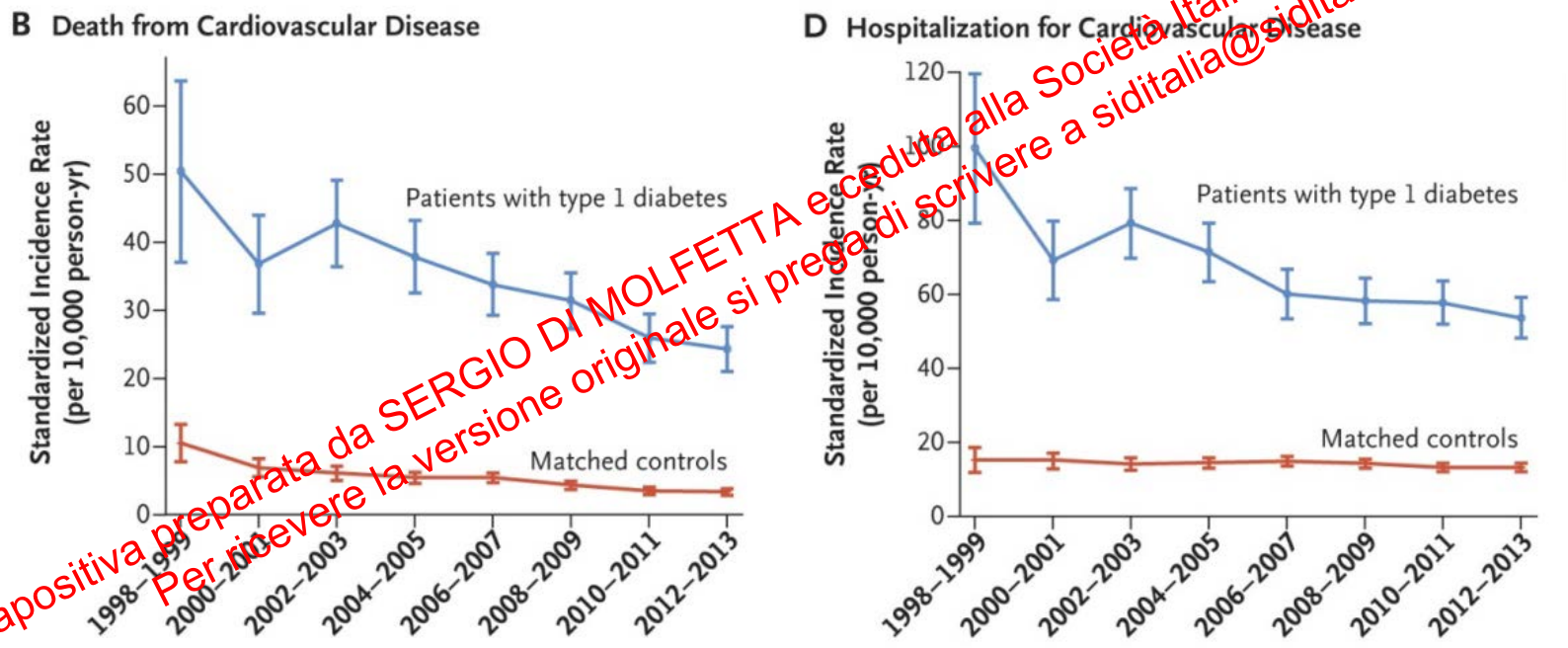
Rabbone I et al. Diabetes Care. 2020 Aug 10;dc201321

Did the COVID-19 Lockdown Affect the Incidence of Pediatric Type 1 Diabetes in Germany?



Tittel SC et al. Diabetes Care 2020 Aug; dc201633

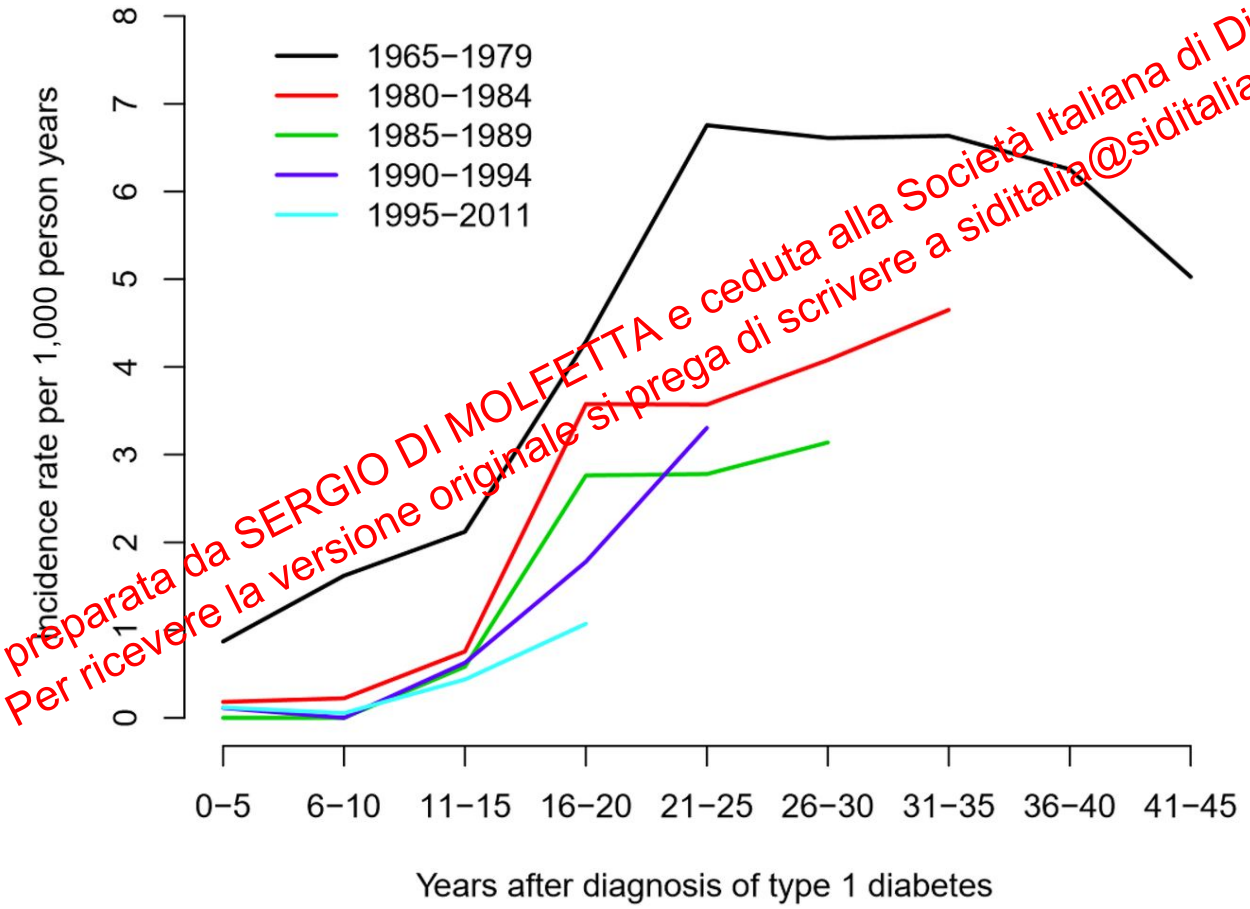
MAJOR CARDIOVASCULAR OUTCOMES IN PATIENTS WITH TYPE 1 DIABETES AND MATCHED CONTROLS



Controls were matched for age, sex, and county. I bars represent 95% confidence intervals.

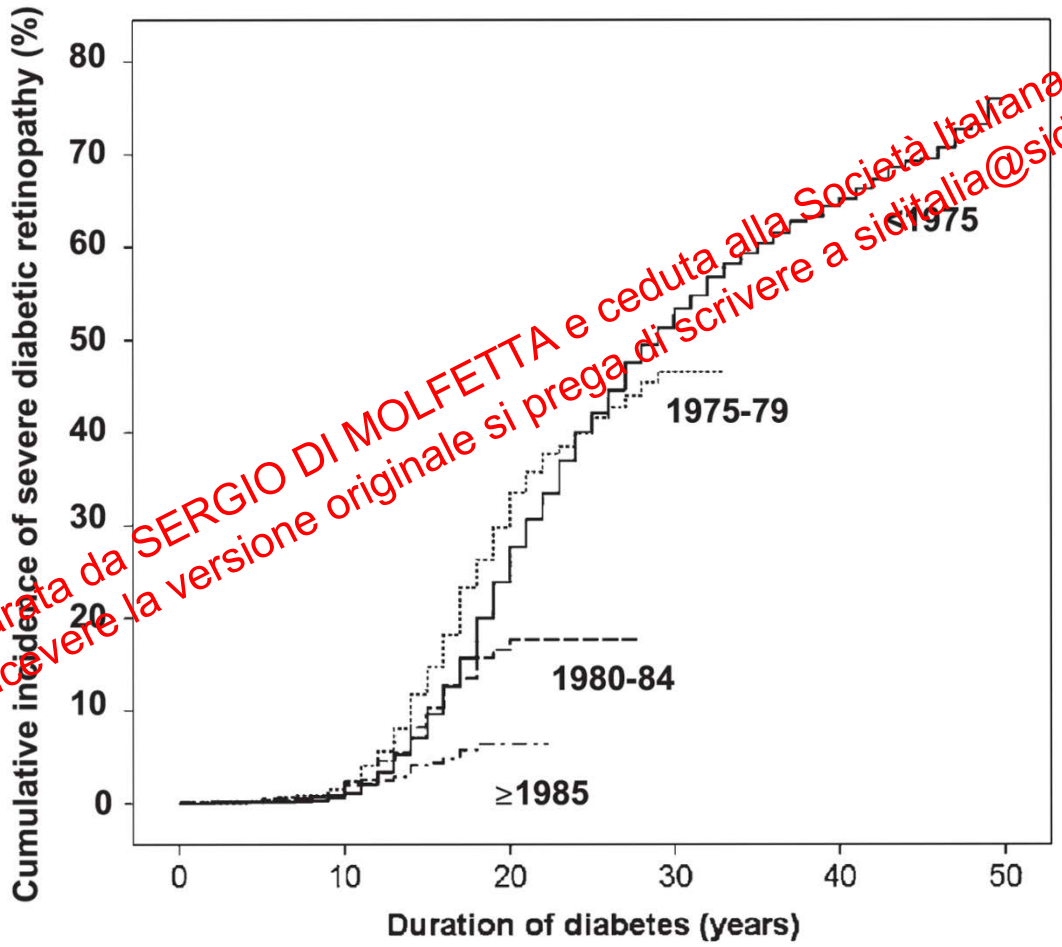
Rawshani A et al. N Engl J Med. 2017 Apr 13;376(15):1407-1418

INCIDENCE OF END-STAGE RENAL DISEASE IN PATIENTS WITH TYPE 1 DIABETES



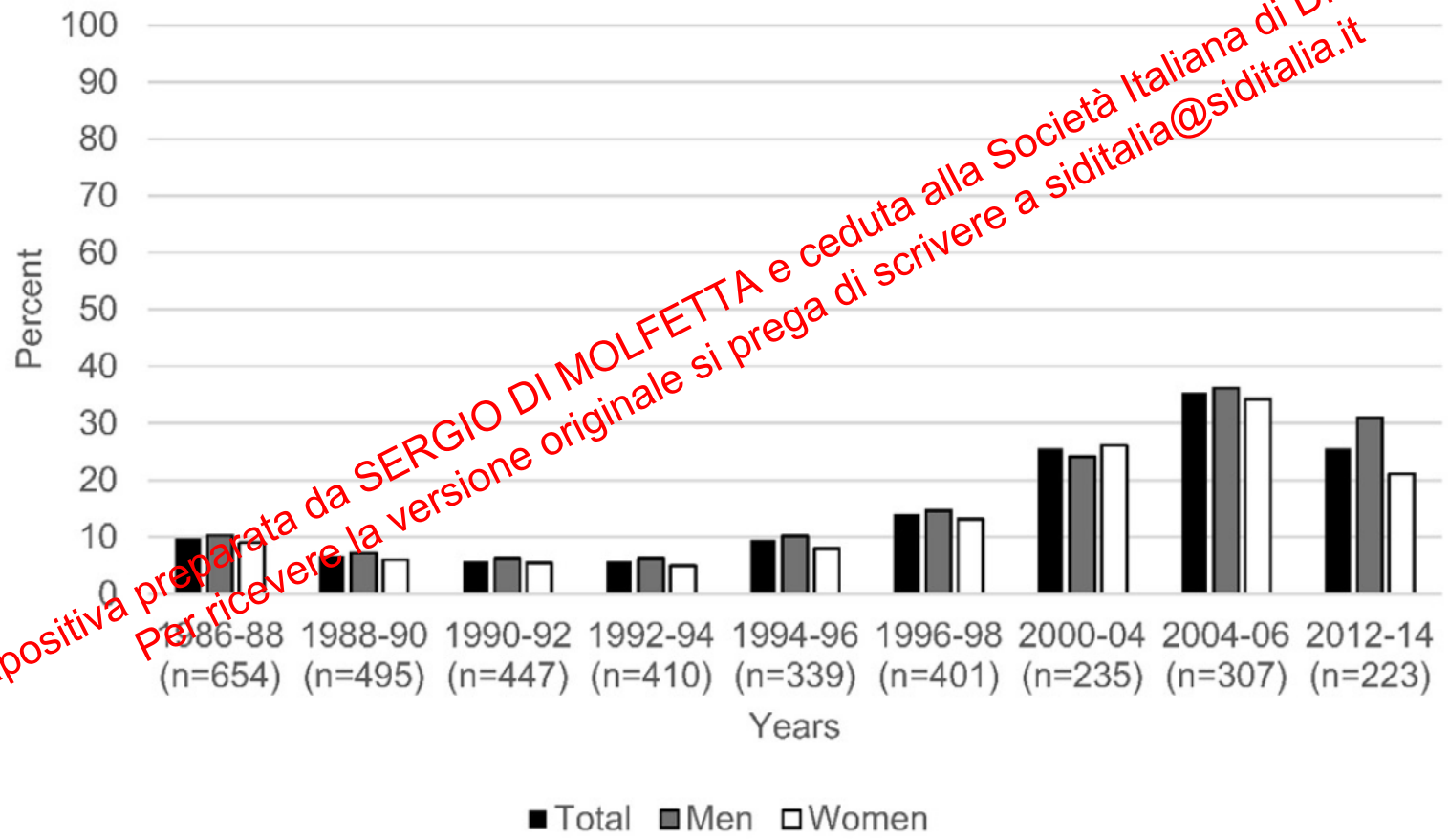
Helve J et al. Diabetes Care. 2018 Mar;41(3):434-439

INCIDENCE OF SEVERE RETINOPATHY IN PATIENTS WITH TYPE 1 DIABETES



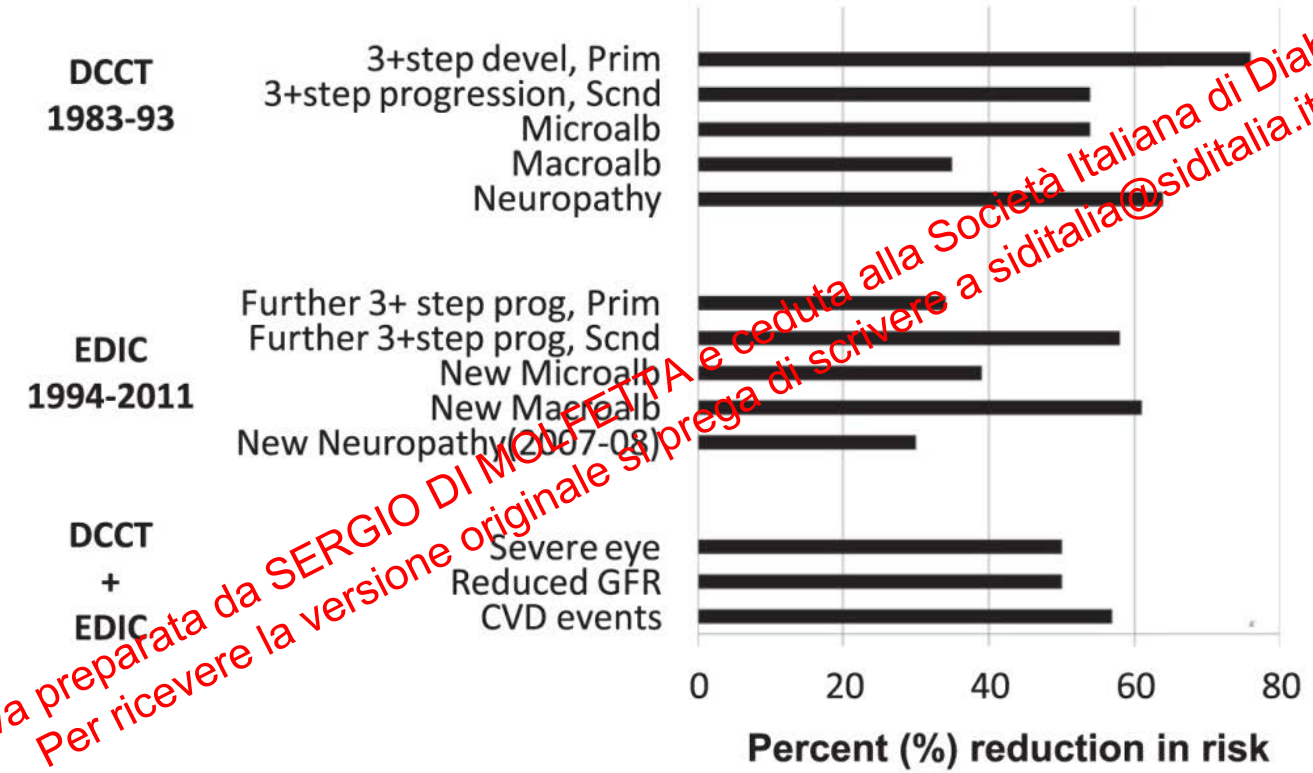
Kytö JP et al. Diabetes Care. 2011 Sep;34(9):2005-7

PROPORTION OF PATIENTS WITH TYPE 1 DIABETES MEETING HBA1C GOALS



Swasey KK et al. J Diabetes Complications. 2018 Apr;32(4):411-417

REDUCTION IN MAJOR COMPLICATIONS IN DCCT/EDIC



3+step devel, Prim: three-step or more development of retinopathy based on Early Treatment of Diabetic Retinopathy scale (ref. 13) in the primary prevention group. Scnd: secondary intervention group. Microalb: microalbuminuria defined as albumin excretion ≥40 mg/24 h. Macroalb: macroalbuminuria defined as albumin excretion >300 mg/24 h. Reduced GFR: estimated GFR <60 mL/min/1.73 m2. CVD events: CVD including myocardial infarctions, stroke, and CVD death.

Nathan DM et al. Diabetes Care 2014 Jan; 37(1):9-16

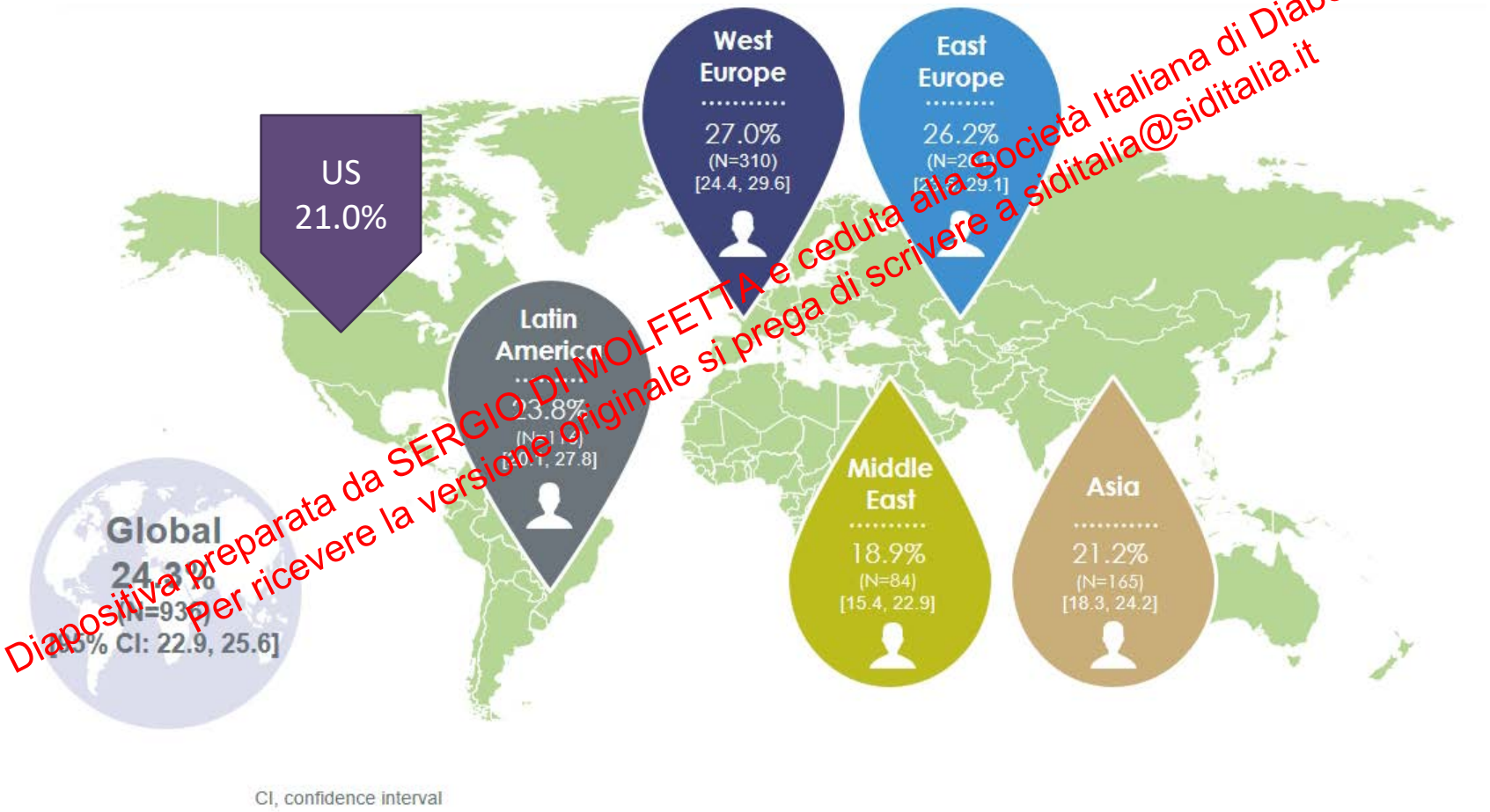
Table 6.3—Summary of glycemic recommendations for many nonpregnant adults with diabetes

A1C	<7.0% (53 mmol/mol)*
Preprandial capillary plasma glucose	80–130 mg/dL* (4.4–7.2 mmol/L)
Peak postprandial capillary plasma glucose†	<180 mg/dL* (10.0 mmol/L)

*More or less stringent glycemic goals may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations. †Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals. Postprandial glucose measurements should be made 1–2 h after the beginning of the meal, generally peak levels in patients with diabetes.

American Diabetes Association. Diabetes Care. 2020 Jan;43(Suppl 1):S66-S76

PROPORTION OF PATIENTS AT HBA1C TARGET <7%



CI, confidence interval

Seufert J. EASD 2019

ASSESSMENT OF GLYCEMIC CONTROL

Glycemic management is primarily assessed with the A1C test, which was the measure studied in clinical trials demonstrating the benefits of improved glycemic control. Patient self-monitoring of blood glucose (SMBG) may help with self-management and medication adjustment, particularly in individuals taking insulin. Continuous glucose monitoring (CGM) also has an important role in assessing the effectiveness and safety of treatment in many patients with type 1 diabetes, and limited data suggest it may also be helpful in selected patients with type 2 diabetes, such as those on intensive insulin regimens (1).

American Diabetes Association. Diabetes Care. 2020 Jan;43(Suppl 1):S66-S76

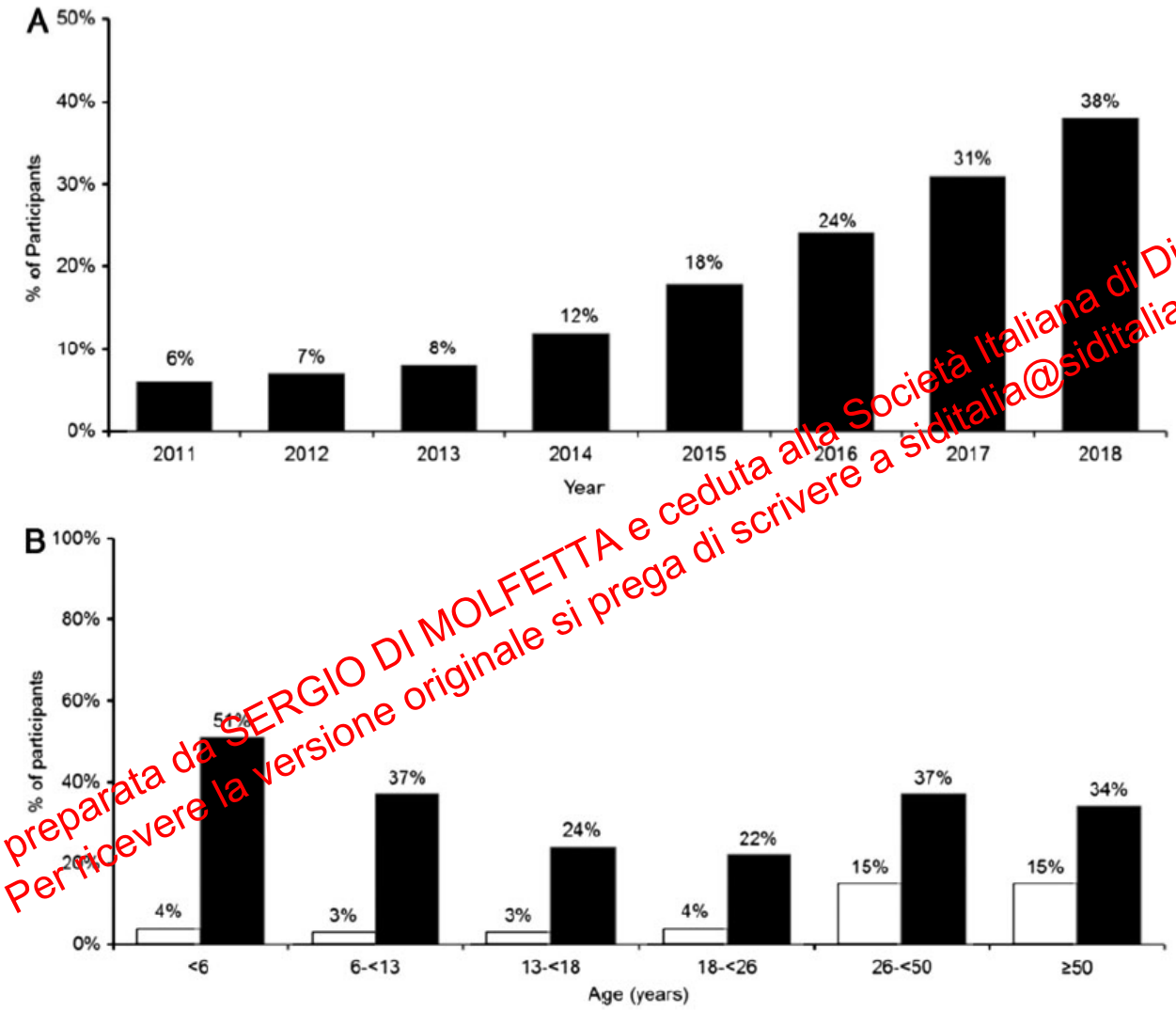
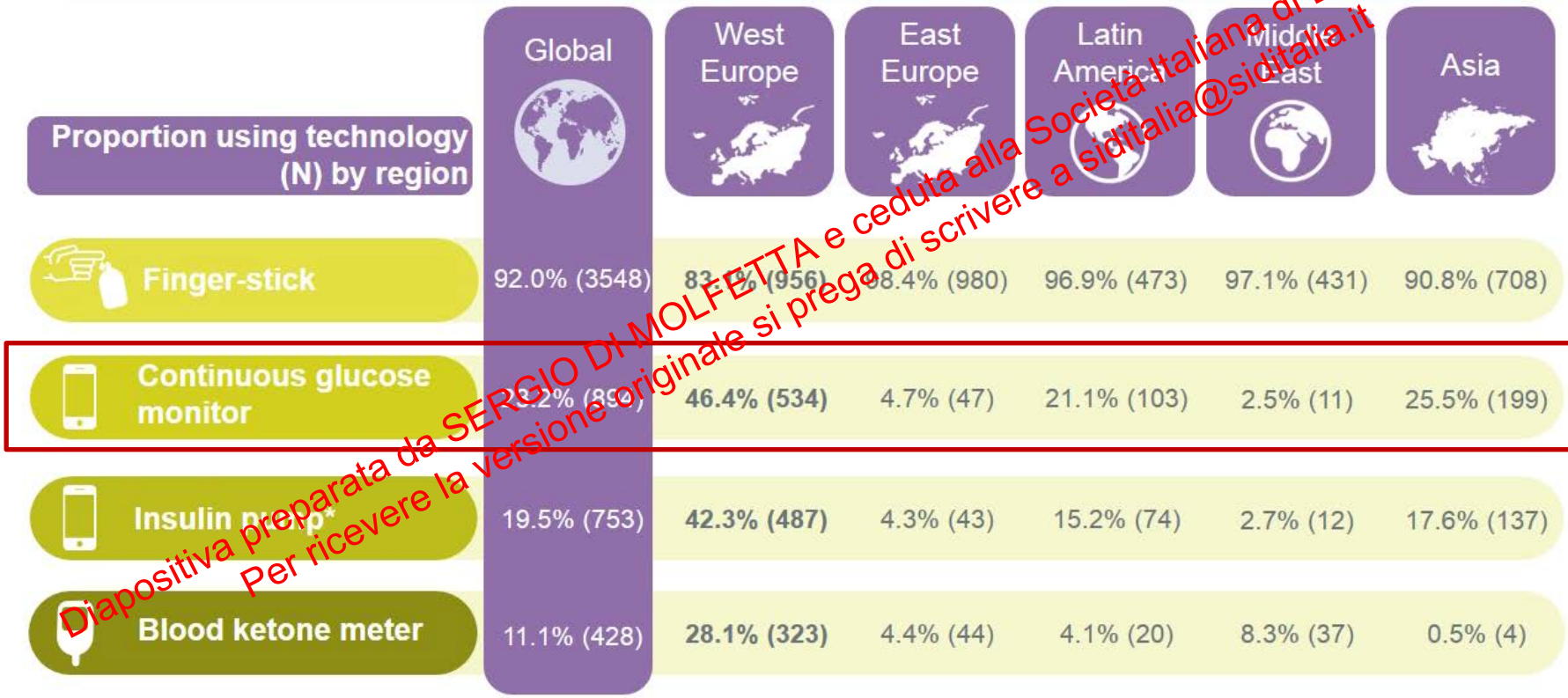


FIG. 1. **(A)** CGM use over time. **(B)** CGM use in 2010–2012 versus 2016–2018. Solid white represents 2010–2012 (7% use of CGM overall). Solid black represents 2016–2018 (30% use of CGM overall). CGM, continuous glucose monitoring.

Foster NC et al. Diabetes Technol Ther. 2019 Feb;21(2):66-72

TECHNOLOGY USE IN TYPE 1 DIABETES BY REGION



Proportion using technology (N) by region	Global	West Europe	East Europe	Latin America	Middle East	Asia
Finger-stick	92.0% (3548)	83.4% (956)	88.4% (980)	96.9% (473)	97.1% (431)	90.8% (708)
Continuous glucose monitor	23.2% (894)	**46.4% (534)**	4.7% (47)	21.1% (103)	2.5% (11)	25.5% (199)
Insulin pump*	19.5% (753)	**42.3% (487)**	4.3% (43)	15.2% (74)	2.7% (12)	17.6% (137)
Blood ketone meter	11.1% (428)	**28.1% (323)**	4.4% (44)	4.1% (20)	8.3% (37)	0.5% (4)

*Insulin pump use data presented here related to the question: 'Does the patient use the following technology at home?'

Seufert J. EASD 2019

Table 1—Key metrics for CGM data analysis and reporting

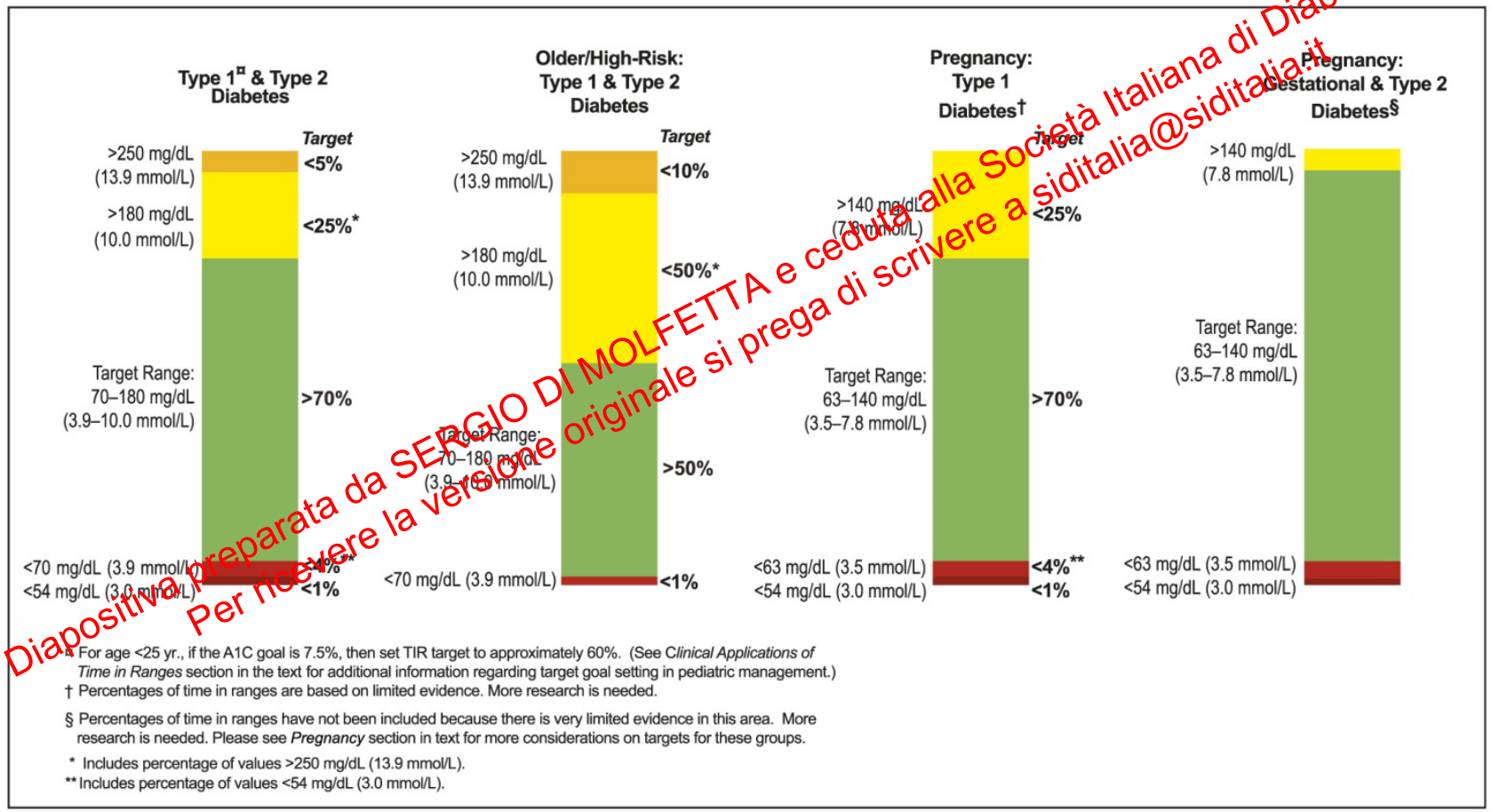
CGM metric	Measures	ATTD consensus
1	Mean glucose	√ (calculated)
	Severe hypoglycemia*	Clinical diagnosis: event requiring assistance (level 3)
	Percentage of time in hypoglycemic ranges, mg/dL (mmol/L)	
2	Clinically significant/very low/immediate action required	<54 (<3.0) (level 2)
3	Alert/low/monitor	<70–54 (<3.9–3.0) (level 1)
	Percentage of time in target range, mg/dL (mmol/L)	
4	Default	70–180 (3.9–10.0)
	Secondary	70–140 (3.9–7.8)
	Percentage of time in hyperglycemic ranges, mg/dL (mmol/L)	
5	Alert/elevated/monitor	>180 (>10) (level 1)
6	Clinically significant/very elevated/immediate action required	>250 (>13.9) (level 2)
	Diabetic ketoacidosis*	Clinical diagnosis: ketones, acidosis, and usually hyperglycemia (level 3)
	Glycemic variability	
7	Primary glycemic variability	CV
	Stable	CV <36%,
	Unstable	CV ≥36%
	Secondary glycemic variability	SD
8	eA1C	√ (calculated)
9	Three time blocks: sleep, wake, 24 h	12:00 A.M.–6:00 A.M., 6:00 A.M.–12:00 A.M., 12 A.M.–12:00 A.M.
	Recommended data sufficiency	
10	Collection period (minimum no. of weeks)	2
11	Percentage of expected CGM readings (minimum percentage)	70–80 (10 of 14 days)
12	Episodes of hypoglycemia/hyperglycemia (minimum no. of minutes) (with beginning and end of episode defined)	15 min
13	Area under the curve	√ (calculated)
14	Risk of hypoglycemia and hyperglycemia	LBGI/HBGI recommended
15	Standardized CGM visualization of data	AGP recommended

*Severe hypoglycemia (level 3) and diabetic ketoacidosis (level 3) are not key CGM metrics per se. However, these conditions are included in the table because they are important clinical categories that must be assessed and documented.

Time in ranges

Danne T et al. Diabetes Care. 2017 Dec;40(12):1631-1640

CLINICAL TARGETS FOR CGM DATA INTERPRETATION



¤ For age <25 yr., if the A1C goal is 7.5%, then set TIR target to approximately 60%. (See *Clinical Applications of Time in Ranges* section in the text for additional information regarding target goal setting in pediatric management.)

† Percentages of time in ranges are based on limited evidence. More research is needed.

§ Percentages of time in ranges have not been included because there is very limited evidence in this area. More research is needed. Please see *Pregnancy* section in text for more considerations on targets for these groups.

* Includes percentage of values >250 mg/dL (13.9 mmol/L).

** Includes percentage of values <54 mg/dL (3.0 mmol/L).

Battelino T et al. Diabetes Care. 2019 Aug;42(8):1593-1603

PHARMACOLOGIC THERAPY FOR TYPE 1 DIABETES

Recommendations

9.1 Most people with type 1 diabetes should be treated with multiple daily injections of prandial and basal insulin, or continuous subcutaneous insulin infusion. **A**

9.2 Most individuals with type 1 diabetes should use rapid-acting insulin analogs to reduce hypoglycemia risk. **A**

9.3 Patients with type 1 diabetes should be trained to match prandial insulin doses to carbohydrate intake, premeal blood glucose, and anticipated physical activity. **C**

American Diabetes Association. Diabetes Care 2020;43(Suppl.1):S98–S110

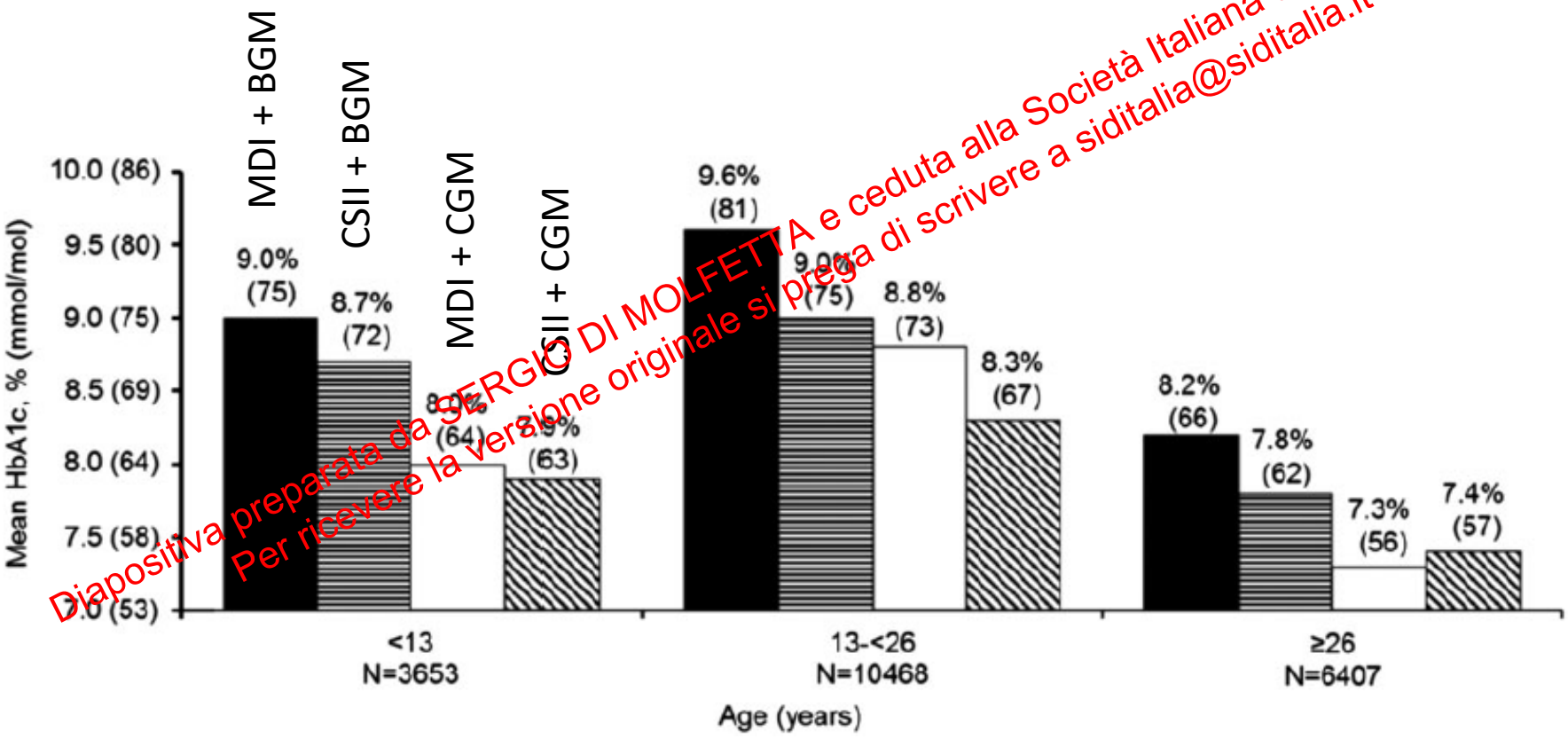
CURRENT INSULIN TREATMENT FOR TYPE 1 DIABETES

Proportion taking insulin (N) by region	Global	West Europe	East Europe	Latin America	Middle East	Asia
Insulin pump*	19.9% (769)	**43.3% (498)**	4.5% (45)	15.2% (74)	**3.2% (14)**	17.7% (138)
Basal insulin†	73.0% (2818)	54.0% (621)	9[illegible].3% (89[illegible])	81.4% (397)	80.2% (356)	69.9% (545)
Intermediate-acting NPH	9.9% (383)	**1.3% (15)**	2[illegible].[illegible]% (217)	15.4% (75)	10.6% (47)	**3.7% (29)**
Long-acting analogues	63.1% (2435)	**52.7% (6[illegible]6)**	68.5% (682)	66.0% (322)	69.6% (309)	66.2% (516)
First generation	38.0% ([illegible])	[illegible].1% (323)	43.3% (431)	45.7% (223)	**69.4% (308)**	**23.2% (181)**
Second generation	25.1% (9[illegible])	24.6% (283)	25.2% (251)	20.3% (99)	**0.2% (1)**	**42.9% (335)**
Premix†	5.6% (215)	**1.0% (11)**	5.0% (50)	**0.6% (3)**	16.7% (74)	9.9% (77)
Short-acting insulin†	72.0% (2776)	**54.2% (623)**	**90.2% (898)**	71.9% (351)	75.2% (334)	73.1% (570)
Short-acting analogues	60.5% (2336)	**52.9% (608)**	66.4% (661)	60.7% (296)	63.7% (283)	62.6% (488)
Regular human insulin	11.6% (448)	**1.4% (16)**	**23.8% (237)**	11.7% (57)	11.5% (51)	11.2% (87)

*Insulin pump use data shown relate to the question: "How does the patient take insulin?' †Alone or in combinations, including patients with pump and pens/injections, sometimes pump and sometimes injection. T1DM, type 1 diabetes; NPH, neutral protamine Hagedorn

Seufert J. EASD 2019

BENEFITS OF PUMP AND CGM USE ON HBA1C LEVELS ACROSS AGE GROUPS



Foster NC et al. Diabetes Technol Ther. 2019 Feb;21(2):66-72

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American Diabetes Association. Diabetes Care 2020;43(Suppl.1):S98–S110

HYPOGLYCEMIA

6.10 Individuals at risk for hypoglycemia should be asked about symptomatic and asymptomatic hypoglycemia at each encounter. C

6.11 In patients taking medication that can lead to hypoglycemia, investigate, screen, and assess risk for or occurrence of unrecognized hypoglycemia, considering that patients may have hypoglycemia unawareness. C

6.13 Glucagon should be prescribed for all individuals at increased risk

ularly with the availability of intranasal and stable soluble glucagon available in autoinjector pens. E

6.14 Hypoglycemia unawareness or one or more episodes of level 3 hypoglycemia should trigger hypoglycemia avoidance education and reevaluation of the treatment regimen. E

6.15 Insulin-treated patients with hypoglycemia unawareness, one level 3 hypoglycemic event, or a pattern of unexplained level 2 hypoglycemia should be advised to raise their glycemic targets to strictly avoid hypoglycemia for at least several weeks in order to partially reverse hypoglycemia unawareness and reduce risk of future episodes. A

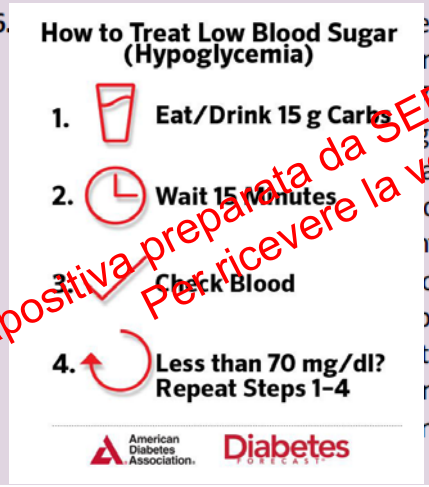


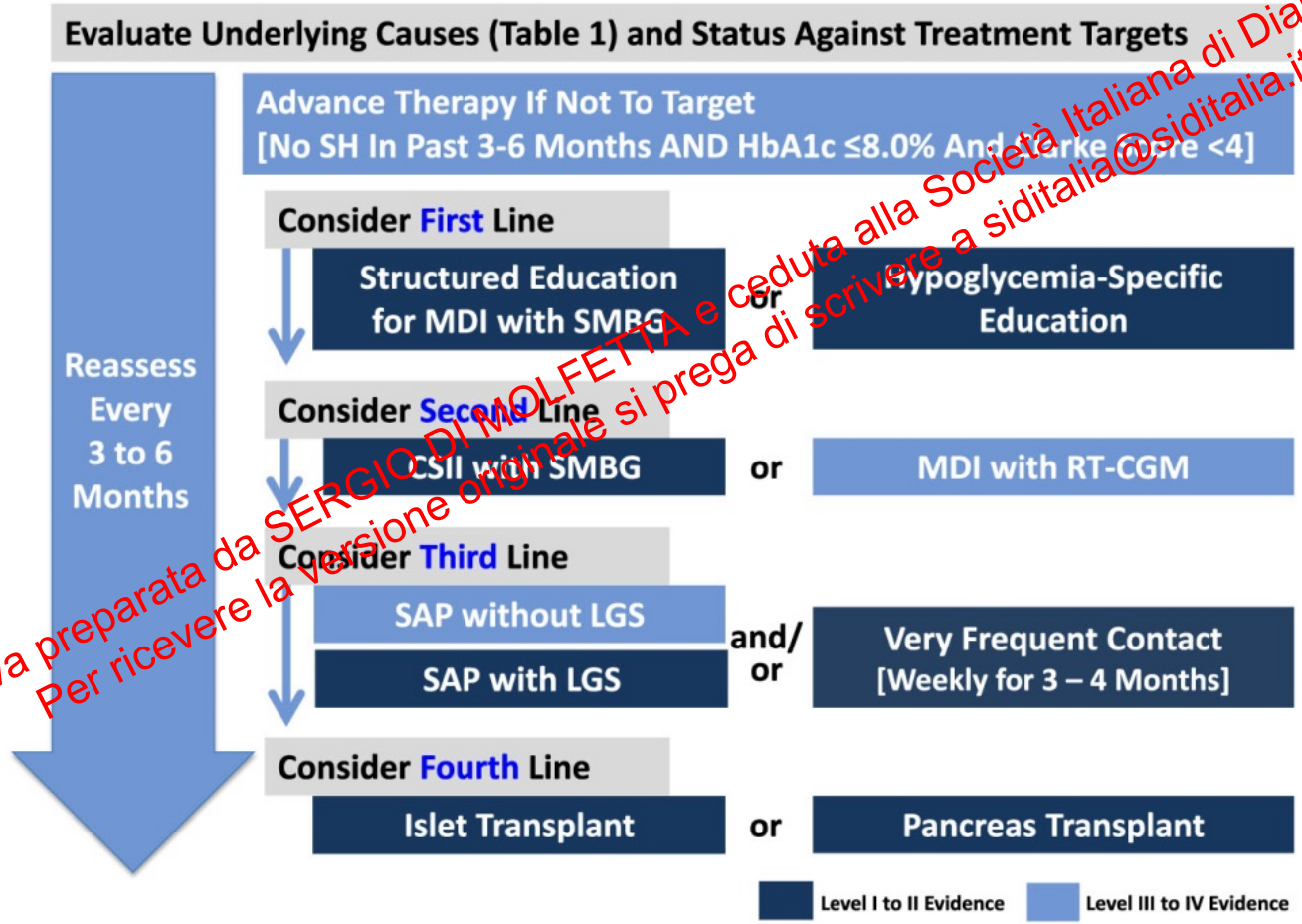
Table 6.4—Classification of hypoglycemia

	Glycemic criteria/description
Level 1	Glucose <70 mg/dL (3.9 mmol/L) and ≥54 mg/dL (3.0 mmol/L)
Level 2	Glucose <54 mg/dL (3.0 mmol/L)
Level 3	A severe event characterized by altered mental and/or physical status requiring assistance for treatment of hypoglycemia

Reprinted from Agiostratidou et al. (51).

American Diabetes Association. Diabetes Care. 2020 Jan;43(Suppl 1):S66-S76

ALGORITHM FOR PROBLEMATIC HYPOGLYCAEMIA



Choudhary P et al. J Diabetes Care. 2015 Jun;38(6):1016-29

Table 4.1 (cont.)– Components of the comprehensive diabetes medical evaluation at initial, follow-up, and annual visits

		INITIAL VISIT	EVERY FOLLOW-UP VISIT	ANNUAL VISIT
PHYSICAL EXAMINATION	▪ Height, weight, and BMI; growth/pubertal development in children and adolescents	✓	✓	✓
	▪ Blood pressure determination	✓	✓	✓
	▪ Orthostatic blood pressure measures (when indicated)	✓		
	▪ Fundoscopic examination (refer to eye specialist)	✓		✓
	▪ Thyroid palpation	✓		✓
	▪ Skin examination (e.g., acanthosis nigricans, insulin injection or insertion sites, lipodystrophy)	✓	✓	✓
	▪ Comprehensive foot examination			
	• Visual inspection (e.g., skin integrity, callous formation, foot deformity or ulcer, toenails)**	✓		✓
	• Screen for PAD (pedal pulses–refer for ABI if diminished)	✓		✓
	• Determination of temperature, vibration, or pinprick sensation, and 10-g monofilament exam	✓		✓
LABORATORY EVALUATION	▪ A1C, if the results are not available within the past 3 months	✓	✓	✓
	▪ If not performed/available within the past year	✓		✓
	• Lipid profile, including total, LDL, and HDL cholesterol and triglycerides#	✓		✓^
	• Liver function tests#	✓		✓
	• Spot urinary albumin–to–creatinine ratio	✓		✓
	• Serum creatinine and estimated glomerular filtration rate+	✓		✓
	• Thyroid-stimulating hormone in patients with type 1 diabetes#	✓		✓
	• Vitamin B12 if on metformin (when indicated)	✓		✓
	• Serum potassium levels in patients on ACE inhibitors, ARBs, or diuretics+	✓		✓

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Very-high-risk	People with any of the following: Documented ASCVD, either clinical or unequivocal on imaging. Documented ASCVD includes previous ACS (MI or unstable angina), stable angina, coronary revascularization (PCI, CABG, and other arterial revascularization procedures), stroke and TIA, and peripheral arterial disease. Unequivocally documented ASCVD on imaging includes those findings that are known to be predictive of clinical events, such as significant plaque on coronary angiography or CT scan (multivessel coronary disease with two major epicardial arteries having >50% stenosis), or on carotid ultrasound. DM with target organ damage,[a] or at least three major risk factors, or early onset of T1DM of long duration (>20 years). Severe CKD (eGFR <30 mL/min/1.73 m^2). A calculated SCORE ≥10% for 10-year risk of fatal CVD. FH with ASCVD or with another major risk factor.
High-risk	People with: Markedly elevated single risk factors, in particular TC >8 mmol/L (>310 mg/dL), LDL-C >4.9 mmol/L (>190 mg/dL), or BP ≥180/110 mmHg. Patients with FH without other major risk factors. Patients with DM without target organ damage,[a] with DM duration ≥10 years, or another additional risk factor. Moderate CKD (eGFR 30–59 mL/min/1.73 m^2). A calculated SCORE ≥5% and <10% for 10-year risk of fatal CVD.
Moderate-risk	Young patients (T1DM <35 years; T2DM <50 years) with DM duration <10 years, without other risk factors. Calculated SCORE ≥1 % and <5% for 10-year risk of fatal CVD.
Low-risk	Calculated SCORE <1% for 10-year risk of fatal CVD.

<55 mg/dl

<100 mg/dl

<115 mg/dl

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Recommendations for the treatment of dyslipidaemias in diabetes mellitus

Recommendations	Class[a]	Level[b]
In patients with T2DM at very-high risk[c], an LDL-C reduction of ≥50% from baseline and an LDL-C goal of <1.4 mmol/L (<55 mg/dL) is recommended.[34,418,432]	I	C
In patients with T2DM at high risk,[c] an LDL-C reduction of ≥50% from baseline and an LDL-C goal of <1.8 mmol/L (<70 mg/dL) is recommended.[418]	I	A
Statins are recommended in patients with T1DM who are at high or very-high risk.[c] [427]	I	A
Intensification of statin therapy should be considered before the introduction of combination therapy.	IIa	C
If the goal is not reached, statin combination with ezetimibe should be considered.[33,299]	IIa	B
Statin therapy is not recommended in premenopausal patients with diabetes who are considering pregnancy or are not using adequate contraception.	III	C
Statin therapy may be considered in both T1DM and T2DM patients aged ≤30 years with evidence of end organ damage and/or an LDL-C level >2.5 mmol/L, as long as pregnancy is not being planned.	IIb	C

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Mach F et al. Eur Heart J. 2020 Jan 1;41(1):111-188

HYPERTENSION MANAGEMENT IN DIABETES

TABLE 1. Summary of Blood Pressure Goals and Initial Choice of Antihypertensive Agent for Patients With Diabetes Endorsed by Different Professional Societies or Expert Groups

Recommendation (Year)	Blood Pressure Goals (mmHg)	First-Line Pharmacological Treatment
ADA (2018)	<140/90 (<130/80*)	ACEI/ARB†, thiazide-like diuretic, or dihydropyridine CCB
ACC/AHA (2017)	<130/80	No preference
JNC 8 (2014)	<140/90	Non-black: ACEI/ARB, thiazide-like diuretic, or CCB Black: thiazide-like diuretic or CCB
VA/DoD (2014)	<150/85 (140/89**)	Thiazide-like diuretic (chlorthalidone or indapamide)
CDA (2013)	<130/80	ACEI/ARB‡, thiazide-like diuretic, or dihydropyridine CCB
ESH/ESC (2013)	<140/85	ACEI/ARB†, thiazide-like diuretic, or CCB

**May be appropriate for individuals at high risk of CVD. **Suggested for patients who can tolerate the antihypertensive medications necessary to reach this goal. †Recommended if hypertension is associated with proteinuria and suggested if hypertension is associated with microalbuminuria as the preferred first-line agent. ‡Recommended in the presence of known kidney disease, including microalbuminuria, or CVD.*

Passarella P et al. Diabetes Spectr. 2018 Aug; 31(3): 218–224

Incidence, prevalence, costs and quality of care of type 1 diabetes in Italy, age 0–29 years: The population-based CINECA-SID ARNO Observatory, 2002–2012

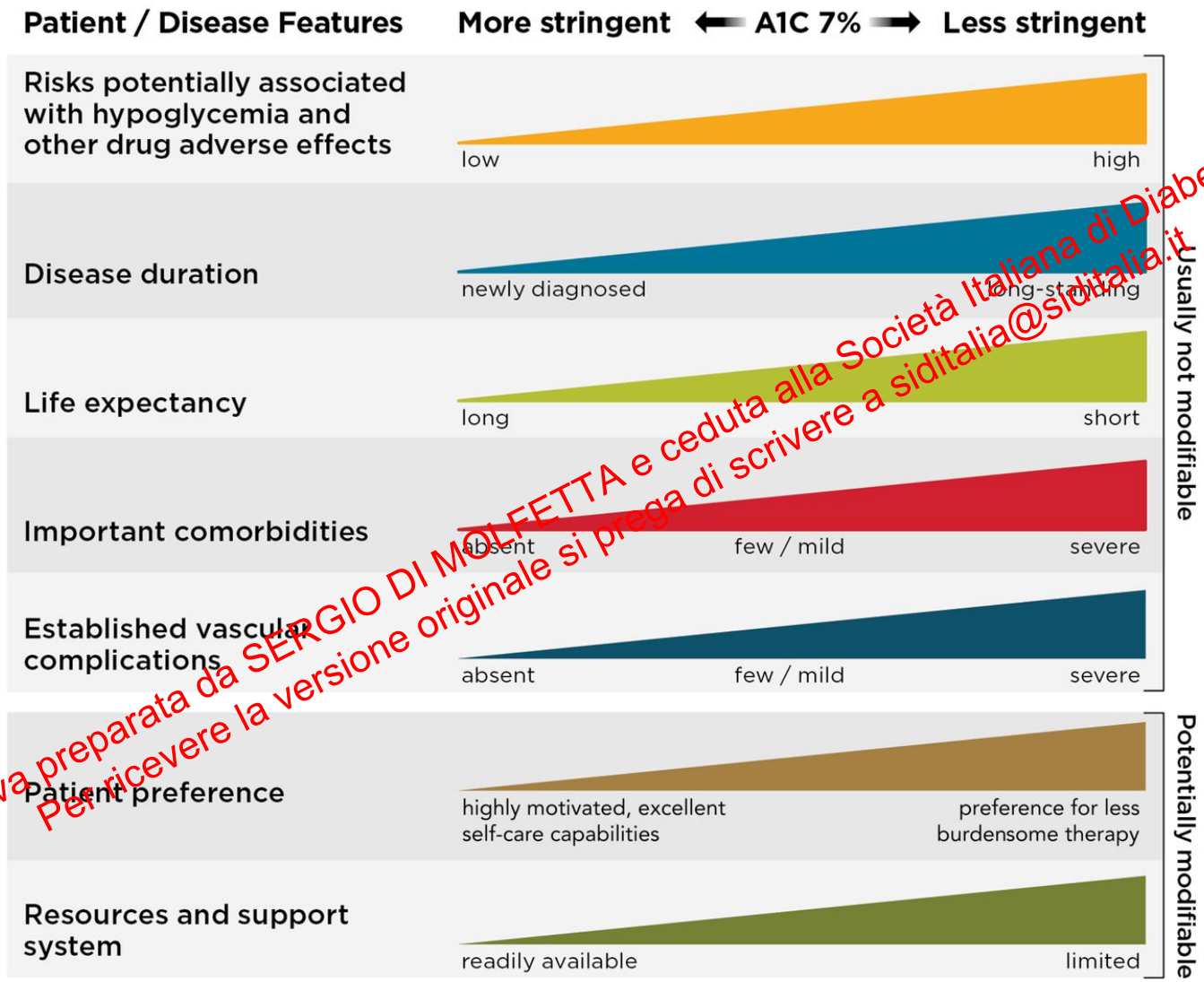
Incidence rates/100,000 (95% CI)

year	0–14 years	15–29 years	0–29 years
2003	14.6 (11.7–18.3)	15.8 (13.0–19.3)	15.3 (13.2–17.7)
2004	19.2 (15.8–23.4)	13.9 (11.2–17.1)	16.3 (14.1–18.8)
2005	18.6 (15.5–22.3)	17.3 (14.4–20.6)	17.9 (15.7–20.3)
2006	14.0 (11.4–17.2)	16.7 (14.0–20.0)	15.4 (13.5–17.7)
2007	16.9 (14.0–20.4)	21.6 (18.4–25.2)	19.3 (17.1–21.8)
2008	15.0 (12.3–18.3)	18.7 (15.8–22.1)	16.9 (14.9–19.2)
2009	16.2 (13.6–19.4)	15.6 (13.1–18.6)	15.9 (14.1–18.0)
2010	17.0 (14.3–20.2)	19.2 (16.4–22.4)	18.1 (16.1–20.4)
2011	16.0 (13.5–18.9)	18.8 (16.1–21.8)	17.4 (15.5–19.5)
2012	14.7 (12.3–17.6)	16.7 (14.3–19.7)	15.8 (14.0–17.8)
P value*	0.57	0.07	0.66

* Cochrane - Armitage test for trend

Bruno G et al. Nutr Metab Cardiovasc Dis. 2016 Dec;26(12):1104-1111

Approach to Individualization of Glycemic Targets



American Diabetes Association. Diabetes Care. 2020 Jan;43(Suppl 1):S66-S76