

ANALYSIS OF SOCIAL AND ECONOMIC BURDEN OF TYPE 1 DIABETES CARE IN ITALY

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L. De Sanctis¹, M. Delvecchio², S. Di Molfetta³, A. Girelli⁴, C. Alduini⁵, L. Napolitano⁵, G. Agostoni⁶, G. Fousteri⁶, M. Imbrogno⁶, C. Trimarchi⁶

1. Regina Margherita Children's Hospital, Pediatric Endocrinology, University of Turin, Turin, Italy; 2. Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila, L'Aquila, Italy. 3. Endocrinology Unit, University Hospital "Consortiale Policlinico", Bari, Italy; 4. S.C. Medicina Generale Diabetologia, ASST Spedali Civili Brescia, Brescia, Italy; 5. A.T. Kearney Italy; 6. Sanofi Italy

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INTRODUCTION

Type 1 Diabetes (T1D) is a **chronic autoimmune condition** that typically arises in children and young adults and requires lifelong insulin therapy.

Despite medical advances, T1D continues to place a significant **burden on patients and caregivers**, requiring complex daily management, impacting mental health, social participation and daily life.

In pediatric populations, the disease often presents acutely, with **diabetic ketoacidosis (DKA)** at onset in about **40%** of cases, highlighting the importance of early detection.

Evidence from Italy on the overall social impact of T1D has been fragmented, often limited to treatment costs.

OBJECTIVES

The study aims to estimate the **economic and social impact of T1D** in Italy at every stage of its progression, considering both direct and indirect costs.

The ultimate goals are to raise **awareness** of the disease burden and to inform reflections to strengthen **health and social care policies for T1D**.

METHODS

The analysis was articulated in three phases, all informed by a targeted literature review, national data sources (NHS, ISTAT) and input from pediatric and adult diabetologists.

- The first phase addressed **epidemiology**, consolidating estimates of T1D prevalence and incidence in Italy across disease stages and age groups, while accounting for regional differences in epidemiology and access to care.
- The second phase introduced a **patient segmentation** by stage, age, and presence of complications. These dimensions were selected as they capture key clinical and socioeconomic factors driving disease progression and management needs, and account for variability in resource use and related costs.
- The third phase focused on the **quantification of social costs** across five drivers, providing a comprehensive view of the burden of T1D: (1) *Direct Medical costs*, including insulin treatment, medical devices, specialist visits and lab tests, (2) *Complications*, (3) *Mental health*, (4) *Non-medical costs*, and (5) *Indirect costs* such as productivity loss, missed education, and reduced leisure. Costs were estimated by applying unit costs from national tariffs and published sources to the number of patients within each segment, integrating RWE and clinician insights to ensure robustness.

RESULTS

In Italy, approximately **338,000** individuals are either living with T1D or at risk of developing it. Of these, about **273,000** are clinically diagnosed, with adults accounting for nearly 90% of the population. Among diagnosed patients, 42% present with at least one chronic complication, and around 6% experience acute events, such as severe hypoglycemia or diabetic ketoacidosis, each year.

The **annual social cost** of T1D is estimated at **€2.2 billion**, with the majority sustained by the NHS (72%). Direct medical expenses are the primary cost driver (€1.2 billion), largely attributable to insulin delivery and glucose monitoring devices, which together account for 83% of this category (€996 million). Indirect costs represent the second largest component (€462 million), followed by the management of complications (€419 million), mental health care (€73 million), and non-medical costs (€62 million).

Per-patient yearly costs vary between €4,910 and €11,650, with the greatest burden recorded among children presenting with acute onset and elders living with chronic complications, reflecting both greater medical needs and broader social impact.

Figure 1 – T1D epidemiology and patient segmentation (Italy, k cases)

338,000 individuals at risk or with T1D diagnosis

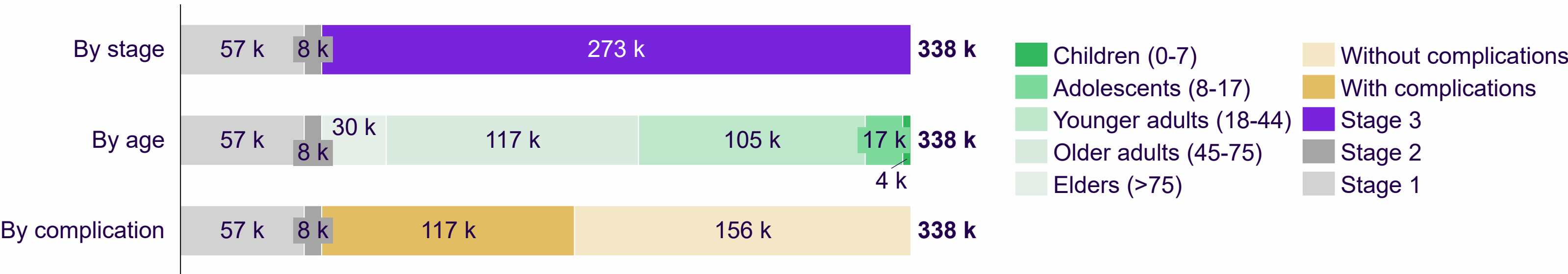


Figure 2 – T1D social cost by driver (Italy, €M per year)

€ 2.2 billion of annual social cost

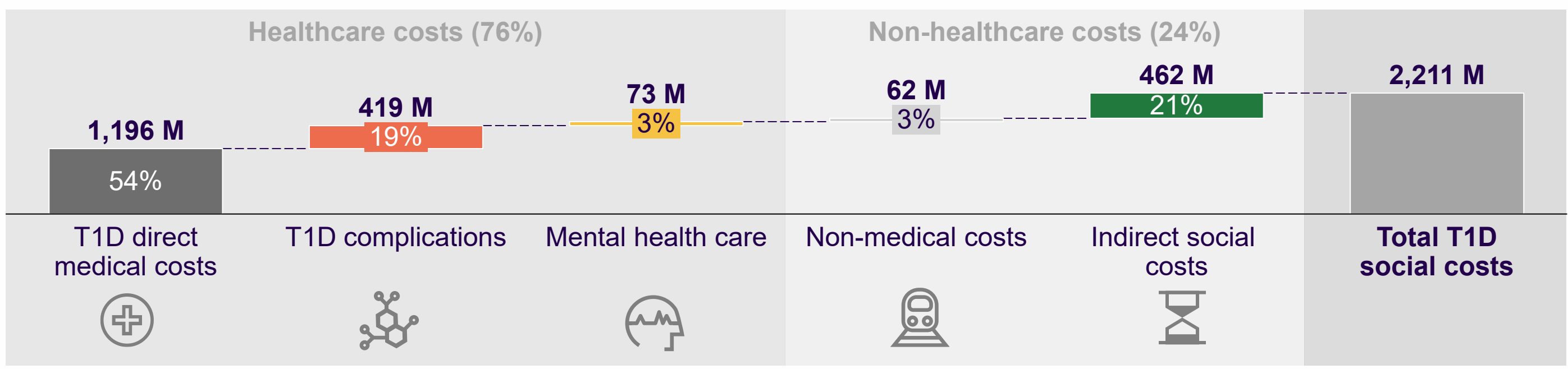
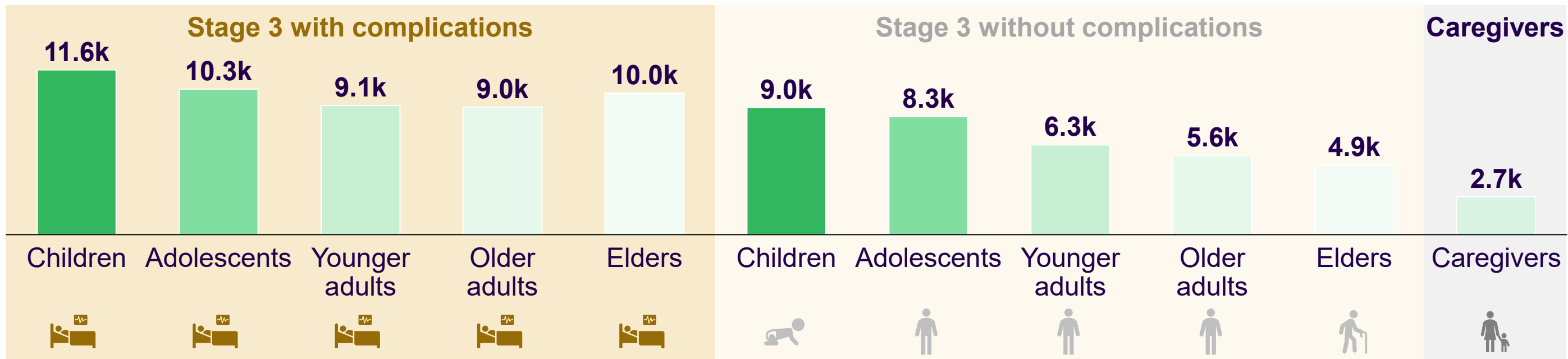


Figure 3 – Social cost per T1D segment and caregivers (Italy, €k per year)

€ 4,910 - € 11,650 range of annual social cost per patient



CONCLUSIONS

Type 1 diabetes imposes a substantial burden on patients, caregivers, and society, affecting individuals across all ages and stages of the disease.

By providing the first holistic quantification of the social cost of T1D in Italy, this study establishes a framework to evaluate the potential additional value of early detection, delayed clinical onset, and pancreatic beta-cell preservation.

The findings highlight how structured screening and monitoring programs can enable timely diagnosis and stage-appropriate management of T1D, helping to prevent acute events such as DKA and reduce related hospitalization costs, thereby mitigating the broader social and economic burden of the disease.

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CONFLICT OF INTEREST

L. De Sanctis declared no conflict of interest. M. Delvecchio, S. Di Molfetta and A. Girelli received honoraria from Sanofi Italy to participate in the study. C. Alduini and L. Napolitano have served as consultants for Kearney Italy and received consulting fees from Sanofi Italy related to this study. G. Agostoni, G. Fousteri, M. Imbrogno and C. Trimarchi are employees of Sanofi Italy.

CONTACT INFORMATION

For further information, please contact Clara Trimarchi Trimarchi Clara.Trimarchi@sanofi.com. Sanofi Italy, Viale L. Bodio 37/b, 20158 Milano MI