Prevalence of vascular complications in children with type 1 diabetes in Ireland

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BACKGROUND

- Screening guidelines for vascular complications in children with type 1 diabetes (T1DM) are based on results from Diabetes Control and Complications Trial (DCCT) and its follow-up, the Epidemiology of Diabetes Interventions and Complications (EDIC) trial.
- These studies established conclusively that early and intensive diabetes care improves long term outcomes.

Table 1. Screening, risk factors and interventions for vascular complications per ISPAD 2014

	When to commence screening	Screening methods	Risk factors
Retinopathy	Annually from age 10 years or at onset of puberty if this is earlier, after 2 to 5 years diabetes duration	Fundal photography or mydriatic ophthalmoscopy (less sensitive)	Hyperglycaemia High blood pressure Lipid abnormalities Higher BMI
Nephropathy	Annually from age 10 years or at onset of puberty if this is earlier, after 2 to 5 years diabetes duration	Urinary Albumin/creatinine ratio or first morning albumin concentration	High blood pressure Lipid abnormalities Smoking
Neuropathy	Unclear	History and physical examination	Hyperglycaemia Higher BMI
Macro vascular disease	After age 10 years	Lipid profile every 5 years, blood pressure annually	Hyperglycaemia, High blood pressure, Lipid abnormalities, Higher BMI

OBJECTIVES

- To establish screening practices and prevalence of vascular complications in a cohort of paediatric patients with T1DM in Cork University Hospital (CUH)

METHODS

- A retrospective review of all data currently available over the last 24months in the paediatric diabetes clinic in CUH was carried out and compared to ISPAD Guidelines 2014.
- n=313 children with DM1 in Cork University Hospital were identified and screened for:
  - **Nephropathy** - Urine Albumin to Creatinine Ratio (UACR)
    - > 2.5 - 25 mg/mmol in males
    - > 3.5 - 25 mg/mmol in females
  - **Retinopathy** - Retinal Screening. Fundal photography or ophthalmoscopy
  - **Blood pressure** – systolic and diastolic levels (>130mmHg and/or >80mmHg)
  - **Dyslipidaemia** – Lipid profile including Total cholesterol (>5mmol/L)
    - LDL cholesterol (>2.6 mmol/L)
    - Triglycerides (>1.7 mmol/L)
    - HDL cholesterol (<1.1 mmol/L)
  - **HbA1c,** mmol/mol (IFCC) was also measured as a proxy indicator of associated complications.

RESULTS

- Gender 165/148 (52.7% male)
- Age 1-18 years (mean 11.99±3.7SD)
- Mean HbA1c: 68.3±15SD mmol/mol
- Age of diagnosis T1DM 0.7 – 15.6 years
- Duration of T1DM 0.4 - 15 years

Table 2. Breakdown of screening results

Variable screened	Screened according to guidelines	Eligible for screening	Actual number screened	Percentage screened
HbA1c	Everyone	313	311	99.36%
BP	≥10 years old	237	205	86.50%
Lipids	≥10 years old	237	178	75.11%
UACR	≥10 years old and diabetes duration >2 years	214	139	64.95%

- **HbA1c** 235 patients (75%) >58mmol/mol with 26% (81 patients) at the high risk (>74.9mmol/mol) (Fig. 1)

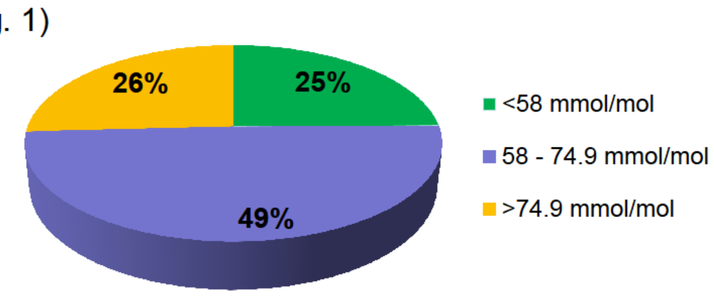

Figure 1. Percentage of patients with different level of HbA1c

- **Retinal screening** showed 2% (6 children) as having background retinopathy.
- **BP screening** 26% (81 cases) having an elevated systolic BP (>130/80).
- **Lipid screening**
  - ↑ total cholesterol - 32% (100 children)
  - ↑ LDL cholesterol - 33% (103 children)
  - ↑ triglycerides - 11% (34 children)
  - suboptimal HDL cholesterol - 3% (10 cases)
- **Urine albumin to creatinine ratio**
  4% (12 cases) had a UACR >2.5 (3.5) mg/mmol

CONCLUSION

- The results of this cohort study are consistent with the international literature.
- They identify what routinely happens in the Paediatric Diabetes Clinic and highlights the vascular risk profile of these children.
- These baseline data will be followed prospectively for the next 10 years and will help to inform clinical care and service development of children with T1DM in Ireland.

REFERENCES

ISPAD Clinical Practice Consensus Guidelines 2014

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