



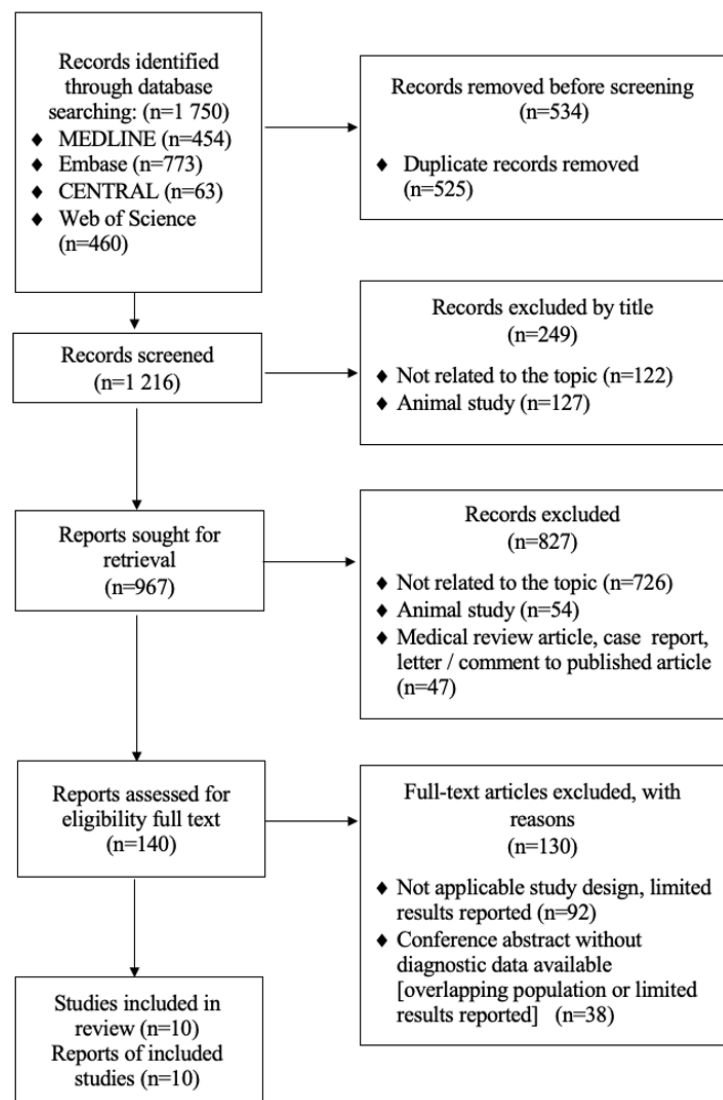
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- ✓ can identify autonomic neuropathy earlier than symptoms of cardiovascular autonomic neuropathy would appear²
- ✓ better indicator than cardiovascular dysfunction tests (Ewing tests)^{3,4}



Illustration of a patient in a hospital bed, connected to medical equipment, including a laptop and a monitor, representing the use of technology in healthcare.



10 articles were used in the quantitative synthesis (n = 2342 diabetic female **87.7 %** LUTS)

Mean age:
52.75 ± 9.2 and 64.7 ± 11.1 years

Mean duration of diabetes:
8.04 ± 0.69 and 12.42 ± 7.3 years

Mean BMI:
22.8 ± 2.4 and 33.2 ± 7.8 kg/m²

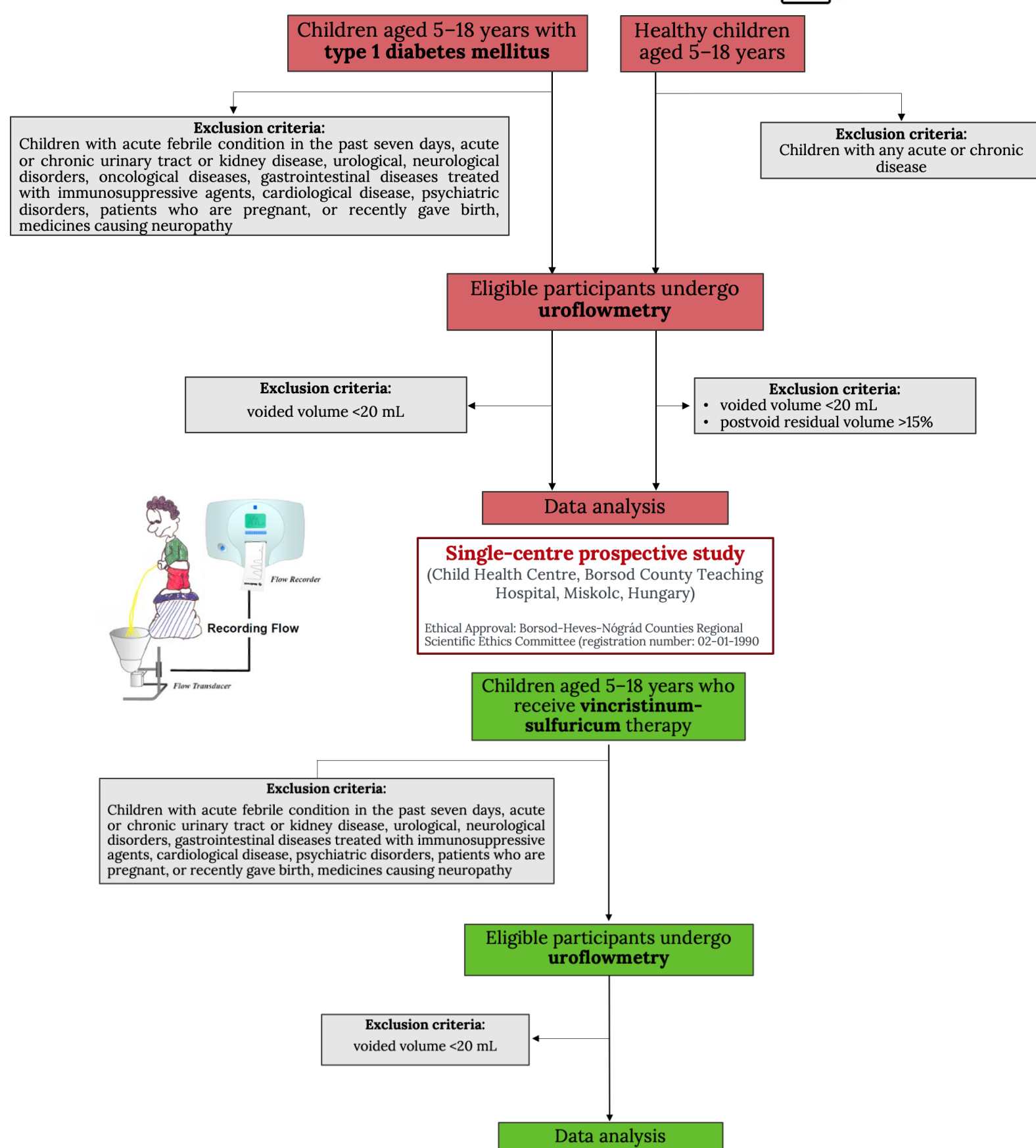
Mean HgA_{1c} value:
6.05 ± 2.38 and 9.1 ± 2.6 %

<p>Mean voided volume: 288.21 mL (95% CI: 217.35–359.06; I²= 98%)</p> <p>Mean postvoid residual volume: 93.67 mL (95% CI: 31.35–155.99; I² = 100%)</p> <p>Mean Q_{max}: 18.80 mL/s (95% CI: 15.27–22.33; I²= 99%)</p> <p>Mean P_{det}Q_{max}: 30.13 cmH₂O (95%CI: 25.53–34.73;I²=90%)</p> <p>Mean first sensation: 178.66 mL (95%CI: 150.59–206.72; I²= 97%)</p> <p>Mean maximum cystometric capacity: 480.41 mL (95%CI: 409.32–551.50; I² =98%)</p>	<p>24 studies (n = 3090 women) age range: 19–91 years</p> <p>Mean voided volume: 334 mL (95% CI: 299–350)</p> <p>Mean postvoid residual volume: 12 mL (95% CI: 4–20)</p> <p>Mean Q_{max}: 28 mL/s (95% CI: 27–30)</p> <p>16 studies (n = 1416 women)</p> <p>Mean voided volume: 338 mL (SD: 161)</p> <p>Mean postvoid residual vol.: 15.5 mL (SD: 25)</p> <p>Mean Q_{max}: 23.5 mL (SD: 10)</p> <p>Mean first sensation: 175 mL</p> <p>Mean maximum cystometric capacity : 300–500 mL</p>	<p>5.</p> <p>6.</p> <p>7.</p>
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- ✓ **Lower** mean voided volume Q_{\max} , $P_{\det}Q_{\max}$ values was found in the diabetic group
- ✓ **Higher** postvoid residual volume, maximum cystometric capacity and first sensation of bladder filling was found in the diabetic group

- ✓ **Urodynamics** can detect early changes in urinary function in non-urological diseases such as diabetic or chemotherapy induced neuropathy.
- ✓ Decreased **acceleration of the detrusor muscle contraction** may be a good indicator for early detection of diabetic autonomic neuropathy

- ✓ **Vincristine therapy** can alter the bladder function causing reversible neurotoxicity.



Number of patients with type 1 diabetes (n = 37)

Gender: girls, n = 17; boys, n = 20

Mean age: 13.7 ± 2.1 years

Mean time to Q_{max}: **11.3 sec** ± 6.3

Mean Q_{max}: **31 mL/sec** ± 6.5

Mean Q_{acc}: **2.96 mL/sec²** ± 1.68

Number of patients who received vincristine therapy (n = 8)
Hodgkin's disease, n = 2;
Non- Hodgkin's disease, n = 3;
Acute lymphocytic leukaemia, n = 3
Gender: girl, n = 1; boys, n = 7
Mean age: 12 years \pm 3.8
Bladder wall thickening:
 3 patients (**12 mm**)
Sensation of bladder fullness:
6/8 diminished

Controls (n = 20)

Gender: girls, n =11; boys, n = 9

Mean age: 13.2 ± 1.8 years

Mean time to Q_{max}: 5.8 sec ± 4.7

Mean Q_{max}: 35 mL/ sec ± 6.1

Mean Q_{acc}: 6.03 mL/sec² ± 1.23

Bladder volume at first sensation of bladder fullness:

- **↑ 4/8** (180, 180, 205, 290 mL)
vincristine >10 mg, <5 days before UDS
- **4/8** (15, 25, 35, 50 mL)
vincristine >5 days before UDS

Bladder volume at maximal sensation of bladder fullness:

- **290 mL** (205 mL)
- **140, 185, 220, 530 mL**

- ✓ **Longer** time to maximum flow ($P<0.01$)
 - ✓ **Lower** Q_{acc} ($P<0.01$) in the **diabetic group** was detected compared to healthy children
- Children who were treated with **vincristine** <5 days before urodynamics had:
- ✓ **Increased** bladder volume at first sensation of bladder fullness, bladder capacity, bladder volume at maximal sensation of bladder fullness
 - ✓ **Irregular** and **thickened** bladder wall compared to patients who had vincristine therapy more than 5 days.

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