Implementation of Virtual Hospital Appointments Significantly Lowers Carbon Emissions.

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Abstract

Introduction: Virtual appointments have been considered in our department for many years, as a strategy to lower carbon emissions. The advent of COVID-19 prompted urgent implementation as in person appointments were limited.
We performed a prospective audit to assess the effectiveness of this approach in lowering carbon footprint.

Objective: To determine the difference of CO_2 / CO_2 equivalents (CO_2-e) emitted from clinical appointments during the COVID-19 pandemic.

Method: Audit study of all surgical clinic appointments from 18/03/20 - 31/03/21at the Upper River Valley Hospital, New Brunswick, Canada. Mileage was calculated as round trip from patient postcode to hospital address.
CO_2 / CO_2 equivalents (CO_2-e) emitted calculated from previously published data - mobile phone CO_2-e; 0.0092751142 g/minute, laptop; 0.269216134 g/minute, standard car emissions 128.002 g/km.
Results were analysed statistically.

Results: 266 in-person appointment (30%), 612 virtual appointments (70%).
Mean distance to facility was 38.80 km (range: 6.6-546km) in-person visit, 40.06km (6.6-566km) virtual visit [p =0.57].
Male: female ratio 1:1.3, in person visit, 1:1.2 virtual, p = 0.60.
Mean CO_2-e per patient / kg;
9.9 (0.84-69.89) in-person appointments, versus $2.5xE^{-4}$ (9.27 xE^{-5} -0.61), virtual appointments
$p < 0.0001$.

Discussion: There is a highly significant reduction in carbon footprint with implementation of virtual general surgery clinic appointments. This is a positive development in the effort against climate change, and should be supported as part of hospital practice. Factors such as quality assurance, patient and physician satisfaction need to be determined.

Keywords: Climate change, carbon emission, outpatient appointments, general surgery, virtual care.