

Hospitals and clinics contribute 7% of S'pore's carbon emissions

The sector's footprint is 20% less intensive than that of other advanced economies

Shabana Begum
Correspondent

Hospitals and clinics in Singapore emit 4.1 million tonnes of planet-warming greenhouse gases each year, which is nearly 7 per cent of the country's emissions in 2022.

This is the key finding of a study by the NUS Yong Loo Lin School of Medicine and the Ministry of Health (MOH), which sought to provide the most comprehensive assessment of the healthcare sector's emissions to date.

The production and use of medicine and medical devices – such as anaesthetics and asthma inhalers – contributed to the bulk of the emissions, at 32 per cent, according to the study led by the NUS Centre for Sustainable Medicine (CoSM).

Other contributors, each accounting for between 5 per cent and 20 per cent, included the construction of hospitals, ambulance transport, procurement of equipment and services, IT operations, electricity use and the burning of waste.

The study also found that Singapore delivers healthcare with a carbon footprint that is 20 per cent less intensive than that of other advanced economies.

The NUS-MOH report was released on Sept 17 at a forum for Western Pacific health ministries working on sustainable healthcare,



Emissions by ambulance fleets and from the manufacturing of vehicles accounted for 5 per cent of Singapore's healthcare-related emissions. The production and use of medicine and medical devices contributed to the bulk of the emissions, at 32 per cent. ST PHOTO: DESMOND WEE

organised by the World Health Organisation and the university.

Speaking at the event in Parkroyal on Beach Road, Senior Minister of State for Health Tan Kiat How pointed out that Singapore's healthcare carbon footprint for each person remains above the global average – on a par with Japan and South Korea.

"We face tight constraints, such as our rapidly ageing population that requires more specialised care, relatively high accessibility to healthcare services, and high standards of care," Mr Tan said.

Professor Nick Watts, director of CoSM, hopes the healthcare sector's emissions can eventually be reduced by 90 per cent.

"You can't get to absolute zero. Most of our medicine is petroleum-based. But you can reduce emissions for the rest (of the healthcare sector), which can also save money. And you can invest that back into the healthcare system."

Globally, healthcare is responsible for about 4 per cent to 5 per cent of greenhouse gas emissions – more than the aviation and shipping industries combined.

Some of the major global warming culprits in hospitals are gases used for anaesthesia and L-shaped metered dose inhalers release hydrofluoroalkanes – gases that are 1,000 times more powerful than CO₂. An alternative is the circle-shaped dry-powder inhaler, which releases 90 per cent less greenhouse gases.

Recognising this problem, public hospitals reduced the use of desflurane and nitrous oxide by up to 45 per cent between 2018 and 2023, by switching to less pollutive anaesthetics.

The report urged hospitals and clinics to continue switching to

less pollutive anaesthetic gases and inhalers.

The common L-shaped metered dose inhalers release hydrofluoroalkanes – gases that are 1,000 times more powerful than CO₂. An alternative is the circle-shaped dry-powder inhaler, which releases 90 per cent less greenhouse gases.

Other steps include reducing the amount of expired medication in hospitals, doing away with overprescribing, and opting for reusable devices instead of disposable ones where possible.

The construction and maintenance of hospitals and clinics, such as the new Woodlands Health Campus, contributed 19 per cent of healthcare-related emissions in Singapore, according to the report.

Non-medical services such as lab equipment, laundry, cleaning and catering services accounted for 17 per cent of emissions. The report said healthcare providers can prioritise environmental criteria when they procure services to help their suppliers reduce emissions.

IT operations account for 13 per cent of emissions due to the reliance on energy-intensive data centres and servers to run Singapore's comprehensive and secure digital health services, said the report.

Electricity and water usage, as well as the burning of hospital waste, made up 14 per cent of emissions. The study noted that a few hospitals are addressing the waste issue.

In 2024, Tan Tock Seng Hospital ran a programme for patients to drop off their empty medicine strips for recycling.

Emissions by ambulance fleets and from the manufacturing of vehicles accounted for another 5 per cent of Singapore's healthcare-related emissions. Ways to lower transport emissions include switching to electric ambulances and expanding telemedicine where possible, said the report.

For the study, CoSM created a model that quantifies the emissions from hospitals, specialist and outpatient clinics, primary care, administrative offices and other healthcare services delivered by all providers in Singapore between April 2023 and March 2024. Both public and private healthcare providers were included.

The model used over 19,000 emissions-related data points to calculate the sector's carbon footprint. Healthcare spending data also contributed to the count.

The National University Health System's chief sustainability officer Eugene Liu noted that emissions from existing infrastructure and hospital supply chains are the most difficult to reduce.

nshab@sph.com.sg