



# PARAMEDICS MORE LIKELY TO MISS STROKE DIAGNOSIS IN WOMEN THAN IN MEN

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WOMEN who are admitted to hospital with stroke are more likely than men to arrive by ambulance, but are less likely to receive stroke-specific management during their journey, with women under 70 more likely to be diagnosed by paramedics with conditions other than stroke, according to research published today by the *Medical Journal of Australia*.

The study authors, led by Dr Xia Wang from the George Institute for Global Health at the University of New South Wales, wrote that paramedics should re-consider their assessment of women during pre-hospital emergency medical service care.

"Improving paramedic training in symptom recognition, particularly in women, may reduce time to treatment and improve outcomes for people with stroke," they wrote.

Wang and colleagues analysed data from linked Admitted Patient Data Collection and NSW Ambulance for people admitted to New South Wales hospitals with a principal diagnosis of stroke at separation, between 1 July 2005 and 31 December 2018.

"Of 202 231 people hospitalised with stroke (mean age, 73 [SD, 14] years; 98 599 women [51.0%]), 101 357 were conveyed to hospital by ambulance (50.1%)," they reported.

"A larger proportion of women than men travelled by ambulance (52.4% v 47.9%), but time between the emergency call and emergency department admission was similar for both sexes.

"The likelihood of being assessed as having a stroke or subarachnoid haemorrhage was similar for women and men, but women under 70 years of age were less likely than men to be assessed as having a stroke.

"Women were more likely than men to be assessed by paramedics as having migraine, other headache, anxiety, unconsciousness, hypertension, or nausea. Women were less likely than men to be managed according to the NSW Ambulance pre-hospital stroke care protocol, but the likelihood of basic pre-hospital care was similar for both sexes."

The authors wrote that stroke is more frequently missed in women than in men, because atypical clinical manifestations are more frequent in women, and implicit bias in evaluations by health care providers is also possible.

"We found that women subsequently diagnosed with stroke were more frequently assessed by paramedics as having stroke mimics (eg, headache or migraine, anxiety, unconsciousness) than men, contributing to delayed recognition and treatment of stroke, consistent with the findings of other studies," wrote Wang and colleagues.

"We found that the stroke care protocol was less likely to be invoked during ambulance transport for women than men. Although the absolute difference was small (women, 49.5%; men, 51.4%), in-hospital treatment may be delayed for a considerable number of women.

"Further, delayed initiation of effective treatment, such as reperfusion therapy, could have greater consequences for women because stroke outcomes are generally poorer for women than men, although women derive at least equivalent benefit from appropriate treatment.



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"Awareness of these differences could have both clinical and financial consequences, given the costs of death and disability, including those of long term care."

Wang and colleagues concluded that:

"Paramedics should re-consider their assessment of women during pre-hospital emergency medical service care. Improving paramedic training in symptom recognition, particularly in women, may reduce time to treatment and improve outcomes for people with stroke."

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