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### Background

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### Methods

#### Data sources and collection
The Hospital Quality Monitoring System (HQMS), was launched in 2011. It is a nationwide mandatory database covering all 1665 tertiary hospitals and is maintained by National Health Commission of China. As part of China's health system reform, the HQMS is designed to monitor the quality of medical care as well as provide metrics for performance appraisal of all tertiary public hospitals. The database is designed to link hospital information systems and automatically compile the inpatient medical record of every public tertiary hospital.

#### Study population
We retrieved 240,401 hospitalization records from the HQMS database between 1st January 2016 to 31st December 2018 based on the diagnosis of inflammatory demyelinating disease (IDD). The study population (denominator) included the entire population, from all ages throughout 2016 to 2018, according to annual reports of the National Bureau of Statistics of China which provides precise and in-depth information on China’s mainland patient population.

#### Case ascertainment
MS was defined by the 2010 International Panel criteria for MS and was identified by ICD-10 code (G35.0). NMOSD was defined according to the ICD-10 code (G36.0); diagnosis is based upon the 2015 International Panel for Neuromyelitis Optica Diagnosis criteria. HQMS requires a Quality Assurance Physician and coder for each medical record, the former reviews the diagnosis, and the coder affirms the ICD-10 code.

### Results

We identified 33,489 hospital admissions for 17,416 patients of NMOSD from 2016 to 2018 (Figure 1). We identified 27,336 hospital admissions for 15,060 MS patients in 2016 to 2018, amongst these patients, 9,879 were newly diagnosed. For NMOSD, 33,489 hospital admissions for 17,416 patients were identified and 11,973 were newly diagnosed.

#### Incidence of MS in China
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#### Incidence of NMOSD in China
We identified 33,489 hospital admissions for 17,416 patients of NMOSD from 2016 to 2018. Amongst these patients, 11,973 people with NMOSD were newly diagnosed: 3796 in 2016, 3923 in 2017, and 4254 in 2018. The overall crude incidence of NMOSD in the Chinese is 0.278 (95% CI, 0.273-0.283), with 0.075 (0.069-0.08) in children, and 0.347 (0.341-0.354) in adults. The age and sex adjusted incidence per 100,000 person years was 0.278 (95% CI, 0.273-0.283), with 0.075 (0.069-0.08) in children and 0.347 (0.34-0.353) in adults. The incidence of NMOSD in adults is significantly higher than children (p < 0.001). Table 1. summarizes the incidence of NMOSD in these different age groups. The peak incidence was among those aged 45–65 years, range from 0.431 (95% CI, 0.41-0.452) to 0.462 (95% CI, 0.44-0.485). A female pre-dominance was observed, where the female to male ratio was 4:7 (95% CI,4.5-4.94, p < 0.001). The latitude gradient discovered for MS risk was not seen in NMOSD in our study (B=-0.05, SE= 0.05, p=0.306).21 The estimated crude incidence of NMOSD per 100,000 person-years varied from 0.159 (0.081-0.237) in Tibet (latitude 30° N) and 0.155 (0.132-0.178) in Heilongjiang (latitude 46° N) to 0.416 (0.383-0.449) in Guangxi (latitude 23° N) and 0.425 (0.387-0.463) in Shanxi (latitude 36° N) (Figure 4).

### Conclusion and Limitations

For the first time, we obtain the national incidence of MS and NMOSD as 0.235 and 0.278 per 100,000 in mainland China. The ratio of NMOSD to MS among the Chinese was 1:21:1.0. The geographical distribution of MS incidence presented a north-south latitude gradient and a west-east altitude gradient. Limitations: As some milder cases of MS and NMOSD may have been missed, the incidence of MS and NMOSD may be underestimated in this study.

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**Disclosure and Conflict of Interest**

**Funding:** National Science Foundation of China, the Advanced Innovation Center for Human Brain Protection, Capital Medical University, China.

**Conflict of Interest:** None.