

**Abstract.** Effectiveness of enhancement strategy, acceleration of new case findings in districts using epidemiological indicators and impact on success of sustainable leprosy elimination towards a leprosy-free Thailand were evaluated employing retrospective descriptive and analytical studies of data from a Geographic Information System for Leprosy Control and a leprosy database 2010-2019 for Thailand. Three epidemiological indicators used were (1) new cases found every year for five consecutive years, 2) new cases in children found in any year during five consecutive years, and 3) 10 new cases or more during five consecutive years. Proportion of districts with new cases (25-60%) in districts with epidemiological indicators was significantly higher compared to districts without indicators (7-43%) ( $p$ -value <0.001). Districts with 3 epidemiological indicators had the highest rate of new case findings, following by districts with 2 epidemiological indicators. Among districts with only one epidemiological indicator, indicator 3 was the best for employment in new case findings. Trend of findings of new case with grade 2 disability in 2017-2019 in districts with epidemiological indicators was significantly reduced compared to districts without epidemiological indicators. In 2019, new leprosy cases with grade 2 disability in children were not found and rate of new cases with grade 2 disability was less than 0.3 case/10<sup>6</sup> population. In addition, 60% of 928 total districts were leprosy-free. In conclusion, applying strategy to accelerate findings of new leprosy case in areas with epidemiological indicators is still necessary for leprosy control and elimination under conditions of low prevalence to achieve a sustainable leprosy elimination and goal of a leprosy-free Thailand.

**Keywords:** district, epidemiological indicator, leprosy-free Thailand, new case finding, sustainable leprosy elimination