

# New tool advances investigations of disease outbreaks

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A new field called genomic epidemiology is taking advantage of the rapidly reduced costs of next-generation DNA sequencing to better inform public health officials faced with ongoing outbreaks.

To combat [disease outbreaks](#), [public health](#) officials often use painstaking fieldwork to try to stay one step ahead of the infectious bugs, linking patients' symptoms to a source of infection to quickly identify the common culprit in related cases.

Now, a new field called genomic [epidemiology](#) is taking advantage of the rapidly reduced costs of next-generation DNA sequencing to better inform public [health officials](#) faced with ongoing outbreaks. In the advanced online edition of *Molecular Biology and Evolution*, authors Didelot et al. developed a versatile computational tool that can rely on genomic data alone or be customized to add weighted information from field epidemiology (such as timing of infectivity, level of infectivity, geographic location, etc.). The research group tested the new tool's reliability against a real-world dataset to reconstruct the transmission of an outbreak of *M. tuberculosis*.

"We're on the edge of an exciting new era in public health epidemiology, as genomics gives us the ability to reconstruct outbreaks in far more detail and with much greater accuracy than ever before. This paper addresses an important question – just how much information about an outbreak can we reliably derive from [genomic data](#) alone – and gives public health officials a new tool for their detective kits," according to

authors Jennifer Gardy, Caroline Colijn, and Xavier Didelot.

With their tool, they found that they were able to capture several aspects of known epidemiology. For example, their method correctly inferred the most likely source case and several key transmission clusters.

While the authors caution that genomics alone cannot truly replace traditional epidemiology, they show the value and potential of using their sequence data analysis tool as a companion method for [public health officials](#) to shed light on outbreaks.

Provided by Oxford University Press

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