Recorded penicillin allergy linked to increased risk of 'superbug' infections

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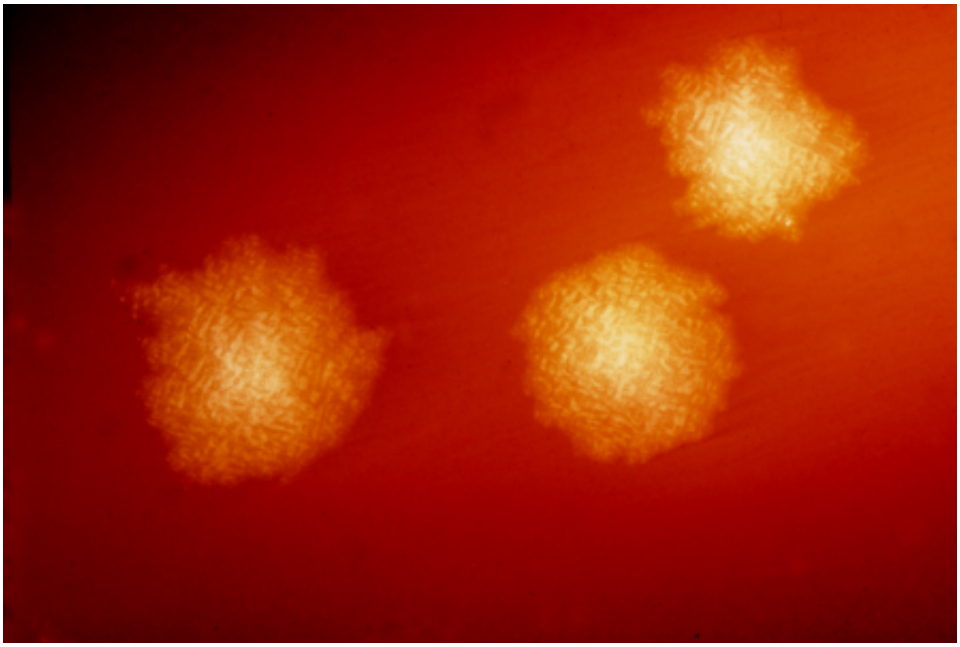

This photograph depicts Clostridium difficile colonies after 48hrs growth on a blood agar plate; Magnified 4.8X. C. difficile, an anaerobic gram-positive rod, is the most frequently identified cause of antibiotic-associated diarrhea (AAD). It accounts for approximately 15–25% of all episodes of AAD. Credit: CDC

Patients who have a penicillin allergy recorded in their medical records are at an increased risk of developing the drug resistant 'superbug' infection MRSA and healthcare-associated infection C difficile, finds a study published by *The BMJ* today.

The risk is largely due to the use of more 'broad spectrum' antibiotics as alternatives to penicillin, which may be fuelling the development of drug resistant bacteria.

The researchers argue that addressing penicillin allergies "may be an important public health strategy to reduce the incidence of MRSA and C difficile among patients with a penicillin allergy label."

Penicillin allergy is the most commonly documented drug allergy, reported by about 10% of patients. However, previous studies have shown that more than 90% of patients with listed penicillin allergies can be safely treated with penicillins.

To evaluate the public health consequences of a penicillin allergy label, researchers at Massachusetts General Hospital in Boston examined the relation between penicillin allergy and development of MRSA and C difficile.

Using data from the Health Improvement Network (THIN), an electronic medical record database of 11 million UK patients, they identified 64,141 adults with a documented penicillin allergy and 237,258 matched adults of similar age and sex, with recent penicillin exposure but without a penicillin allergy.

None of the participants had any history of MRSA and C difficile infection, and were followed up for an average of six years, during which time use of antibiotics and cases of doctor diagnosed MRSA and C difficile were recorded.

A total of 1,345 participants developed MRSA and 1,688 developed *C. difficile* over the follow-up period.

After adjusting for several known risk factors, the researchers found that

a penicillin allergy label was associated with a 69% increased risk of MRSA and a 26% increased risk of C difficile.

Once documented, a penicillin allergy was associated with increased use of alternative 'broad spectrum' antibiotics, which act against a wider range of bacteria.

The results show that increased use of broad spectrum antibiotics accounted for more than half (55%) of the increased MRSA risk and more than one third (35%) of the increased C difficile risk among patients with a listed penicillin allergy.

This is an observational study, so no firm conclusions can be drawn about cause and effect, and the researchers cannot rule out the possibility that other, unmeasured factors may have affected their results. However, they point out that this was a large, representative sample and the findings remained consistent after further analyses to test the strength of the results.

As such, they conclude that patients with a documented penicillin allergy "have an increased risk of new MRSA and C difficile that may be modifiable, to some degree, through changes in antibiotic prescribing."

As infections with resistant organisms increase, "systematic efforts to confirm or rule out the presence of true penicillin allergy may be an important public health strategy to reduce the incidence of MRSA and *C. difficile*," they add.

More information: Risk of methicillin-resistant Staphylococcus aureus and Clostridium difficile in patients with a documented penicillin allergy: population-based matched, *The BMJ*, DOI: 10.1136/bmj.k2400 , www.bmj.com/content/361/bmj.k2400

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