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From the 100-day cough to the 100-year life

Pertussis, prevention and the future of life course immunisation



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Executive Summary

Europe reported more than a threefold increase in pertussis cases in 2024. In England, cases rose by a staggering 1,600%, exceeding levels seen during the 2012 outbreak, with 58.8% of confirmed cases occurring among those aged 15 and over. As many of the countries affected by this rise in cases are also ageing, there is an urgent need to prioritise solutions that improve detection and reduce infection rates. Coupled with strong life-course immunisation programmes, these measures should be treated as a health security priority.

We interviewed 28 experts from Australia, Austria, Belgium, France, Germany, Hungary, Italy, Spain, Switzerland and the UK to understand how to reduce high rates of infections and increase vaccine coverage. The barriers identified and the solutions needed to prevent illness and strengthen health and economic resilience, are outlined below:

Poor diagnosis

Barrier: Pertussis symptoms in older adults are often not recognised by clinicians, allowing cases to go undetected and increasing the risk of outbreaks that can pose serious danger to infants. Pertussis also causes significant quality-of-life issues, often for months, in older people. Robust data and surveillance systems are therefore essential to enable timely and effective public health responses.

Solution: EU Member States and other high-income countries should establish or strengthen real-time pertussis surveillance systems, with dedicated support for regional and local reporting.

Uneven healthcare professional awareness and low health system prioritisation

Barrier: Low disease awareness, combined with limited understanding of the importance of vaccination, can prevent some healthcare professionals from detecting, treating, and vaccinating against pertussis. Providing targeted training and guidance, coupled with more cost-effective testing would support the containment of outbreaks and improve vaccine coverage rates, particularly among underserved groups.

Solutions

- At the national level, enhance training and guidance for healthcare professionals, particularly those working with at-risk populations, to improve pertussis detection, diagnosis, and vaccine coverage.

- High-income countries should consider integrating pertussis into a multiple PCR test for other respiratory viruses, to reduce the cost of testing and improve testing coverage.

Poor disease awareness among the adult population

Barrier: There is a widespread misconception that pertussis is exclusively a childhood disease. Addressing this requires stronger public education efforts to improve awareness and increase adherence to vaccination. Clear messaging that prompts adults when they are eligible for vaccination or booster doses will also be important in improving uptake.

Solution: National vaccine programmes should be strengthened with a "call and recall system", accompanied by information about pertussis disease, on the benefits of vaccination, and on the risks of not being vaccinated to the older adult and at-risk population.

Lack of national recommendations

Barrier: Recommendations for the pertussis vaccine vary considerably across countries with some not recommending it at all for older adults. Having a strong adult vaccination programme that includes national targets supported by a recommendation is important to safeguard population health in countries that are ageing.

Solution: There should be an EU-wide target to vaccinate adults against pertussis, including receiving boosters, with other high-income countries establishing equivalent national targets.

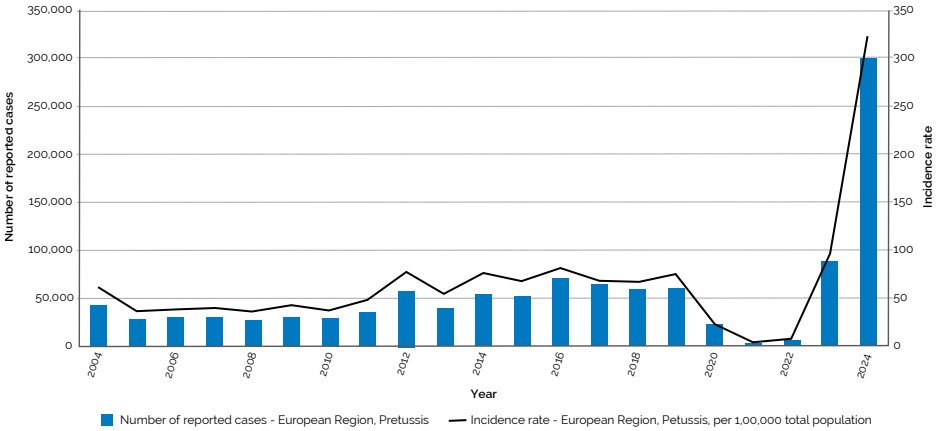
What the data tells us about pertussis

After clean water, vaccination is the most effective public health intervention for saving lives. Yet since the COVID-19 pandemic, that protection has been faltering.

For instance, cases of pertussis are rising significantly among older adults, with recent evidence showing marked increases in regions like Europe and the US. The WHO European Region has reported a threefold increase in pertussis cases. In England, cases rose by 1,600% in 2024 compared with the previous year (there were 14,905 cases reported in 2024 compared with 856 in 2023), exceeding levels seen during the 2012 outbreak. Between 2018-2024, 58.8% of confirmed cases were found in those aged 15+. Moreover, maternal vaccination coverage, crucial for protecting newborns, fell from 70% in 2017 to 66% in 2024. France, which recorded almost no cases during the pandemic, reported 36,938 cases by the end of 2024. The rise is attributed to both vaccine-induced and natural immunity over time, coupled with many older adults having not received boosters.

The value of vaccination is being undermined at a time when many of the countries affected are ageing. The effects of immunosenescence, which make older adults more susceptible to disease and infection, mean that strengthening existing adult immunisation programmes is increasingly important. Ensuring high coverage rates, alongside regular booster uptake among previously vaccinated individuals, will be critical. Historical factors also continue to shape vaccination perception. In the 1970s, the UK experienced nationwide concern over a reported link between the whole cell pertussis vaccine and neurological problems, which was associated with the deaths of more than 30 children. Within a few years, vaccine coverage fell by around 50% (from 80% to 30%), while cases rose from approximately 2,000 to more than 65,000. This makes robust approaches to detecting pertussis and preventing widespread infection particularly important. It is also critical to ensure immunocompromised populations are vaccinated to support healthier, not just longer, lives.

Figure 1: Pertussis reported cases and incidence by year



Source: WHO Immunisation Data portal, World Health Organisation, WHO 2025

The pertussis surge defies the expected disease cycle, which assumes a small peak in infections every three to five years driven by waning immunity over time. The ongoing effects of the COVID-19 pandemic are visible: lower rates while restrictions were imposed, disrupted routine vaccination schedules, including the unavailability of booster shots (such as in Germany), followed by waning immunity, once restrictions were lifted.

What is Pertussis?

Pertussis, or "whooping cough", is a highly contagious bacterial infection of the respiratory system. It can affect anyone though the risk of hospitalisation is highest for infants, older adults and people with chronic respiratory diseases like chronic obstructive pulmonary disease (COPD), asthma or immunosuppression – usually due to pneumonia. In the UK, 11 infants died of pertussis 2024, with 27 of the 33 deaths since 2013 being linked to mothers who were unvaccinated during pregnancy.

Symptoms include mild fever, runny nose and cough, which gradually develops into a hacking, violent cough, followed by whooping (the sound that some people make as they draw in breath between coughing) and in some instances, vomiting. Coughing may last for several weeks or months which is why it is also referred to as the "100-day cough". In infants and young children whooping cough can lead to dehydration, breathing difficulties, pneumonia, seizures, and in some instances death. While less severe in adults, it can cause sore ribs, hernia, middle ear infections and urinary incontinence resulting in the need for hospitalisation.

We know that every $1 invested in adult immunisation yields up to $19 in return. Economic modelling in China suggests that every $1 invested in preventing pertussis generates around $20 in economic and healthcare savings. It is also estimated that the total annual economic burden of pertussis among those aged 50-54 and 85+ in the UK is £238 million every year. Therefore, tackling rising pertussis through strengthened vaccination programmes could deliver significant benefits. Rising rates of infections and low coverage rates, raise urgent questions about what can be done to prevent pertussis. To answer this question, we interviewed 28 experts from Australia, Austria, Belgium, France, Germany, Hungary, Italy, Spain, Switzerland and the UK.

What is contributing to the increase in pertussis cases?

We have identified poor diagnosis, uneven healthcare professional awareness and low health system prioritisation, poor awareness among the adult population, a lack national recommendations and standalone vaccine for pertussis as key barriers to reducing pertussis cases and improving vaccine coverage rates.

Poor diagnosis

Lack of diagnosis is a persistent barrier to the treatment of pertussis, owing to nonspecific symptoms and low clinical suspicion. Primarily in adults, symptoms often go undetected by clinicians because some people present without the characteristic "whoop", making it clinically indistinguishable from other respiratory conditions. Because of this, symptoms go overlooked or undiagnosed, leading to further outbreaks.

"The main obstacle is that the symptoms in adults are nonspecific – prolonged cough, mild fever – so it's often attributed to a cold or bronchitis."

Public Health expert, Spain

This has a knock-on effect on surveillance among adult populations because even where reporting obligations exist, they depend on physicians diagnosing pertussis in the first instance.

"We have significant diagnostic difficulties, and therefore cases of whooping cough, even though they exist, are not identified, not diagnosed, and not reported."

Academic, Italy

"The reporting requirement for pertussis is correct and is reliably enforced in Germany via the diagnosis code. The crux of the matter lies in the period prior to reporting: pertussis is massively underdiagnosed by doctors."

Academic, Germany

Poor detection perpetuates transmission chains, as unvaccinated adults can pose a greater risk to infants. One expert from Germany reported that coughs are typically only investigated if they persist for more than eight weeks. By that point, the window for effective antibiotic treatment of pertussis has usually closed, increasing the risk of ongoing

transmission and more severe complications. As such, experts felt data reporting must be strengthened.

"Monitoring vaccination rates is a system that simply doesn't work in Italy… We need real-time monitoring to understand what's happening in the country, and know how to intervene."

Academic, Italy

"We urgently need valid figures. We have Sentinel surveys[1], but that's not enough."

Academic, Austria

Uneven healthcare professional awareness and low health system prioritisation

"We need to improve our knowledge…It is surprising how little our colleagues know about this infectious disease."

Academic, Germany

Awareness of the disease and importance of vaccination differ by specialty, with paediatricians and rheumatologists reported having greater awareness in managing cases compared with general practitioners, due to frequency of exposure. Midwives and obstetricians were also reported to have greater awareness and ability to detect pertussis during epidemics, suggesting capacity exists. It was noted that improved awareness has emerged from the COVID-19 experience, with enhanced polymerase chain reaction (PCR) testing capacity and respiratory pathogen testing infrastructure.

"Awareness levels [for healthcare providers] depend on medical specialty. Paediatricians demonstrate adequate knowledge, while other specialties show limited familiarity due to infrequent exposure to the disease."

Healthcare professional, Belgium

Still, experts noted that PCR testing is costly and difficult to utilise especially in deprived areas where access is impeded by the cost of PCR tests.

[1]When data are not available or accessible for an entire population, sentinel surveillance can be used for public health action. Sentinel surveillance is a targeted monitoring system that collects high-quality data on specific diseases from a network of selected sites (e.g., hospitals). Most sentinel surveillance systems report data on the number of new cases of influenza-like illness or acute respiratory infection Some networks report both.

"In many cases, healthcare systems do not have the diagnostic capabilities. For example, it is due to the costs: a PCR test is not cheap, but we would need it for clarification."

Academic, Switzerland

Moreover, some experts from Belgium. Spain and France further mentioned inequities in vaccination – especially for pregnant women (and women from lower socioeconomic backgrounds) which is further compounded by poor healthcare provider confidence in recommending the vaccine. Lack of awareness about the risks pertussis poses during pregnancy, leads to an insufficient vaccination programme.

"Unfortunately, not enough is being done. Even though [vaccination during pregnancy] was only introduced five years ago."

Academic, Switzerland

"OBGYN doctors are caring for the pregnant, [but] they don't know about [Pertussis]."

Healthcare professional, Hungary

A challenge for healthcare professionals is that pertussis in adults doesn't rank as a priority within healthcare systems facing multiple competing demands. This leads to a deprioritisation of pertussis diagnosis and low vaccine coverage as it doesn't generate the same urgency as infant cases. 24 EU /EEA countries recommend the vaccine for pregnant women to protect newborns. Although ad-hoc data reporting of nine countries finds that for 2024, maternal immunisation coverage ranged between 1.6% and 88.5% suggesting while childhood protection may be prioritised over adult immunisation, significant under-vaccination occurs.

"Pertussis is far down the list of priorities. Other infectious diseases regularly are more in focus."

Academic, Germany

Poor disease awareness among the adult population

There is a widespread misconception that pertussis is exclusively a childhood disease of historical rather than contemporary relevance. Experts also pointed to awareness fluctuating, rising during outbreaks when media coverage increases, then declining again during inter-epidemic periods.

The general public, though, tends to associate pertussis with a childhood illness that no longer exists – they don't realize it can affect adults too."

Public health expert, Spain

Similarly, symptoms in adults are not always severe enough so most forego seeking medical attention. Since COVID-19, experts also identified a general reluctance to undergo testing after the increase in testing during the pandemic.

"The general population is also not aware that pertussis also affects adults. And so, you may not be aware of this disease, so you may not ask your doctor if you have it."

Academic, Spain

"[There is a rise] in stigma since COVID with having swabs and being checked and labelled."

Public health expert, UK

Misinformation and vaccine hesitancy were also raised as factors contributing to low vaccination rates. In particular, experts highlighted the influence of anti-vaccine movements originating in the United States and unsubstantiated claims linking aluminium-containing vaccines (including pertussis vaccines) to a range of chronic disorders. Some experts also expressed concern about the role of social media in amplifying and rapidly spreading misinformation.

"We must prepare for a possible negative influence from the US... But it will spread fast via social networks. We already see effects on measles in Canada."

Public health expert, France

However, this view was not shared by all interviewees. Experts from Spain noted that anti-vaccine movements have relatively little influence and that public trust in vaccines remains high. Many participants also agreed that while vaccine hesitancy presents a barrier, it is not necessarily the most significant one. Instead, low public perception of risk was widely identified as the more critical factor affecting vaccine uptake.

Lack of national recommendations

If a vaccine isn't recommended, then coverage will be low. Of the countries interviewed, Spain, and the UK do not recommend the vaccine for older adults. France, Germany and Switzerland have a general recommendation to get one booster. Austria, Belgium, Hungary and Italy have a general recommendation to get a booster every 10 years, but have varying reimbursement levels. In Australia, it is only recommended if previous doses have been missed. Many identified the recommended vaccination and booster schedules being insufficient.

"[There is] a lack of booster reminders for the recommended 10-year intervals."

Healthcare professional, Belgium

"No, the German Standing Committee on Vaccination recommendation is not appropriate. A single vaccination in adulthood is certainly not enough."

Healthcare professional, Germany

Experts emphasised the need for a proper adult vaccination programme that included Pertussis.

"There should be a push for a proper adult vaccination programme. Unlike the childhood vaccination programme in Italy, which is well organised and funded, for adults there are only vaccination recommendations but no formal programme. Vaccination should be integrated as a fundamental part of a healthy lifestyle."

Academic, Italy

Coverage rates among adults are not known, and the European Centre for Disease Prevention and Control (ECDC) do not routinely collect data for adolescents or adults.

Views were mixed on whether pertussis vaccination schedule should be expanded to include older adults and at-risk groups. Some stakeholders argued that the cost-effectiveness of such an expansion has yet to be demonstrated, citing limited data on vaccination benefits in at-risk populations. Others emphasised that individuals with chronic respiratory conditions, such as asthma or COPD, face a higher risk of complications from pertussis and other respiratory infections and should therefore be vaccinated.

"I would even extend the recommendation: all vulnerable patients should be vaccinated."

Academic, Germany

" If we were to immunise older people, what age would that be? How would you have to repeat it? Like everything... it might be a good idea, but how much is it going to cost, how much does it save, etc., is very important."

Public health expert, UK

Do we need new vaccines for pertussis?

While most experts expressed general satisfaction with combination vaccines for routine paediatric immunisation, some identified specific scenarios where standalone pertussis vaccines might offer theoretical advantages, particularly for pregnant women requiring repeat vaccinations and adults needing frequent boosters where there may be increased reluctance to combine vaccines or where combining vaccines could lead to potential interference effects. None, though, felt a burning needs.

"Adults do not need a triple vaccine as a booster. A separate pertussis vaccine should be available for this purpose."

Academic, Germany

Some thought that the transition from whole-cell to acellular vaccines while reducing adverse effects and improving public acceptability, had come at the cost of shorter-lasting immunity. Others dismissed this as contrary to available data. In any case, reverting to whole-cell vaccines was seen as impractical because of the side effects of whole-cell pertussis vaccines. Ultimately, because acellular vaccines meet the threshold for efficacy such as set out by the European Medicines Agency, the benefits of reducing adverse side effects and improving confidence in the vaccine outweighs the benefits of longer lasting immunity. Experts noted that public opinion mattered: it would be very difficult to reintroduce a vaccine that made people sick for days even if it were more effective.

"Even if there are substantial benefits to the whole cell vaccine, it would be very difficult to reintroduce something like that because of public opinion."

Healthcare professional, Hungary

Waning immunity was raised as a fundamental challenge affecting all age groups and all vaccines. It could impact public perception of vaccine efficacy. Public expectation, therefore, must be managed.

"I don't think any vaccine is 100%... [a vaccinated individual may go] 'Well, I got vaccinated, Still got it. See? Vaccines don't work.' And it's a misunderstanding."

Public health expert, Australia

What happens next?

Based on the insights from our experts, the following recommendations would ensure adult pertussis prevention is strengthened. These recommendations also strongly align with and support the call for greater cross-border health security within the European Economic Area and to build more resilient economic systems by preventing illness and death.

Poor diagnosis

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We recommend:

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We recommend:

- There should be an EU-wide target to vaccinate adults against pertussis, including receiving boosters, with other high-income countries establishing equivalent national targets.

About ILC

ILC is the UK's leading authority on the impact of longevity on society. We combine evidence, solutions and networks to make change happen.

We help governments, policy makers, businesses and employers develop and implement solutions to ensure we all live happier, healthier and more fulfilling lives. We want a society where tomorrow is better than today and where future generations are better off.

ILC wants to help forge a new vision for the 100-year life, where everyone has the opportunity to learn throughout life, and where new technology helps us contribute more to society.

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