AI, aging & antibiotics

Insights from the 3rd Health Economics Conference

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CONFERENCE VENUE

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Shaping the future of health policy

Now in its third edition, the TSE-CEPR Health Economics Conference has become a key forum for advancing research and policy dialogue on the major challenges facing health systems today. It targets the fast-moving intersections between health, economics, and innovation, demonstrating the value of evidence-based approaches in a rapidly changing policy landscape.

Held in Toulouse on June 18–19, this year's event brought together leading economists, policymakers, clinicians, and industry experts to examine the evolving roles of technology, regulation, and markets in shaping health outcomes.

The program featured cutting-edge keynotes from Stanford and MIT experts, exploring the impact of healthier aging on US public finances and drawing lessons from the largest human-AI trial in radiology. Complementing these were timely roundtable discussions on EU pharmaceutical innovation policy and the global fight against antimicrobial resistance. The following is a summary of these four main sessions, highlighting both empirical insights and policy implications.

Table of contents

Shaping the future of health policy 2
Keynote lecture 1 | What's the cost of healthier aging? 3
Keynote lecture 2 | How should radiologists use AI? 4
Roundtable 1 | Can Europe compete? 6
Roundtable 2 | AMR: Markets vs microbes? 9
Final thoughts 12

What's the cost of healthier aging?

Keynote lecture 1 - Health and longevity in the US: Evidence and implications

Liran Einav (Stanford University) With Amy Finkelstein (MIT)

Americans are living longer and healthier. Since the 1990s, the share of the population aged 65+ has increased from about 12% to over 17%. This demographic transformation is increasing pressure on public programs: Medicare and Social Security spending has nearly doubled over the same period. In his keynote talk, Liran Einav (Stanford University) presented ongoing work with Amy Finkelstein (MIT), exploring the impact of improved health and longevity for the elderly and the optimal response for public policy.

Redefining fiscal priorities

The researchers' analysis draws on three decades of data from the Medicare Current Beneficiary Survey, focusing on individuals aged 66+ between 1992 and 2019. They classify respondents into five morbidity levels based on limitations in daily living and other functional measures. They find that, at any given age, today's elderly are in better health and live longer than previous cohorts. Importantly, the years gained are mostly healthy years, with the onset of illness occurring later in life.

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To assess the fiscal implications, the authors map health status to predict healthcare spending, holding technology and policies fixed. Their simulations indicate that better health modestly increases total lifetime healthcare costs and substantially increases Social Security payouts, as longer lives mean longer benefit periods.

Adapting public programs

In the final part of the paper, which is still in progress, the authors use a stylized lifecycle consumption model with stochastic health and mortality to assess the optimal allocation of a fixed public budget between Social Security and Medicare. The model highlights the distinct roles of the two programs: Medicare offers protection against unpredictable, potentially high health expenditures; Social Security provides income smoothing over time. However, the design of these programs can introduce inefficiencies, such as moral hazard, if individuals adjust their behavior in response to expected benefits.

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KEY TAKEAWAYS

- Improvements in health and longevity are reshaping the profile of aging and altering the demands placed on public resources.
- Healthier aging increases lifetime Social Security spending more than healthcare costs, due to extended benefit periods.
- As aging demographics evolve, it's crucial to reassess whether the current allocation between Medicare and Social Security remains appropriate.

How should radiologists use AI?

Keynote lecture 2 – Human-AI collaboration in healthcare

Nikhil Agarwal (MIT)

AI is rapidly transforming healthcare, offering promising tools for clinical decision support, triage, drug discovery, virtual assistants, and many other applications. But how can algorithms be integrated into clinical decision-making without undermining human judgment? In his keynote address, MIT economist Nikhil Agarwal presented ongoing research exploring how radiologists interact with AI tools.

Partners, not competitors

Rather than treating radiologists and algorithms as substitutes, Nikhil and his co-authors consider them as teammates with different strengths and weaknesses. For instance, AI excels at pattern recognition and consistency. In contrast, human radiologists are better placed to see images alongside patients' clinical histories, to which AI may lack access due to data privacy regulations. Human medical understanding can also overcome the lack of real-life examples for training AI, as is the case with rare diseases.

Algorithms outperform three-quarters of radiologists in the experiment, suggesting that humans should follow the AI recommendation.

To inform the search for optimal human-AI collaboration, Nikhil's study involved more than 200 radiologists using AI, the largest such experiment to date. The experiment mimics radiologists' clinical practice as closely as possible, varying radiologists' access to AI prediction and patient history. Certified chest radiologists from Mount Sinai set the "ground truth" for each clinical case.

AI in practice

Algorithms outperform three-quarters of radiologists in the experiment, suggesting that human decision-makers would do better by simply following the AI recommendation. Yet providing physicians with information about the patient's clinical history improves diagnostic accuracy.

Surprisingly, physicians perform worse when provided both the patient's clinical history and the AI prediction (than when given clinical history alone). This suggests that physicians are not appropriately incorporating AI information: "It's not that they are ignoring the AI, but they are not using it right," Nikhil explained.

Human biases

The research considers key behavioral biases that impede human-AI collaboration. The authors find little evidence of "automation neglect" – radiologists pay attention to AI advice. Instead, when the AI prediction is more uncertain, humans tend to give it too much weight. Most importantly, radiologists behave as if AI is using entirely different information to make its predictions, even while being aware that they are both looking at the same image.

> It's not that radiologists are ignoring AI, but they are not using it right.

KEY TAKEAWAYS

- Humans and algorithms must work together, especially when AI lacks access to patient context.
- Biases in how doctors interpret AI recommendations can worsen outcomes.
- Radiologists need to use AI better. Current approaches underestimate information overlap.
- AI diagnosis may soon surpass existing human advantages in the "long tails".

Can Europe compete?

Roundtable 1 – Challenges for EU pharmaceutical innovation policy

Pharmaceutical innovation is leaping ahead, but Europe is being outpaced by the US and China. In this roundtable, chaired by TSE's Jean Tirole, leading experts discussed the structural, regulatory, and strategic challenges in this sector, the EU's latent potential, and the policies it needs to encourage innovators, ensure access, and attract investment.

Stay in the global race

Pedro Pita Barros (Nova School of Business and Economics, Lisbon) opened by comparing the strategies of the world's three major players. The US excels in early-stage innovation, combining strong science with well-developed capital markets, flexible regulation, and close coordination between universities, startups, and investors. China leads in industrial scale-up: it can produce quickly and at low cost, supported by strong state investment and clear national priorities. Europe has a solid scientific base and a trusted regulatory system, placing strong emphasis on patient welfare and public health. With the rise of AI and personalized medicine, Europe's experience in managing and safeguarding health data could also become a significant comparative advantage.

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Still, Europe is struggling to keep pace, held back by fragmentation across countries and policy approaches. It has competing goals – innovation, access, and the financial sustainability of healthcare systems – and is torn between a decentralized patent-based strategy and a more centralized approach focused on public health priorities.

To address these challenges, Pedro called for targeted coordination. Starting with clinical assessments, more integrated capital markets and local innovation ecosystems, and a rethink of procurement practices to prioritize long-term value, joint initiatives focused on unmet medical needs can send strong signals to the industry. He also highlighted the potential of initiatives such as a manufacturing accelerator and the European Health Data Space, alongside stronger roles for patient groups in shaping research priorities.

Make Europe attractive again

Tina Taube (Director of Market Access and Orphan Drug Policy, European Federation of Pharmaceutical Industries) fears that Europe is losing ground. Over the past 30 years, Europe lost 25% of its share of global R&D; and its share of clinical trials fell from 21% to 12%, even as global trials have grown. This not only limits patient access to innovative treatments but also reduces the exposure of healthcare systems to new technologies. Over the past two decades, the investment gap with the US has widened from €2 billion to €25 billion.

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To reverse this trend, Tina called for better policy alignment across the EU. She welcomed the revision of pharmaceutical legislation as a chance to update incentives, clarify manufacturing rules, improve flexibility at the European Medicines Agency, and address supply shortages. She also emphasized the problem of unequal access across Member States. Different pricing, reimbursement, and health system structures mean that even approved new medicines may not reach patients, underscoring the need for more targeted cross-country cooperation.

Protect price diversity

Adrian Towse (former Director, Office of Health Economics, UK) emphasized Europe's dual role as both regulator and buyer, whose decisions influence the direction of pharmaceutical innovation. Although the EU grants a single marketing authorization, this does not ensure equal patient access as national health systems vary significantly in funding and organization. Given that creating a common EU health system would require major financial redistribution and remains politically out of reach, access should be improved through differential pricing, with each country paying according to the value it receives.

Efforts to enforce price convergence, particularly at the lower end, risk delaying access and weakening incentives for future development. Instead, EU policy should protect price diversity through regional agreements, pricing zones that prevent reference pricing, and confidential discounts. Group purchasing arrangements, such as those pioneered by the Benelux countries, could serve as a model for flexible cooperation among smaller clusters of states.

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Adrian also cautioned against the current policy emphasis on transparency of production costs and prices. Linking prices to costs or prices paid by other buyers could reduce efficiency and limit access, especially in lower-income countries. Instead, prices should reflect value and remain flexible. Joint procurement should be reserved for clear cases of market failure – such as antimicrobial resistance – or public health emergencies. The pandemic showed that advance commitments can accelerate access and catalyze investment.

Unleash innovators

In his closing remarks, **Jean Tirole (Honorary chair, TSE)** returned to broader industrial policy challenges. Horizon Europe, the EU's main funding program, underinvests in disruptive innovation. Most of its budget is spread widely across large collaborative projects that prioritize broad participation over excellence. This approach tends to dilute results. Fragmentation also affects R&D financing: less than 10% of grants are awarded at the EU level, as member states are reluctant to give up control. Regulatory differences across countries act as informal barriers within the internal market. Financing remains difficult, and collaborative efforts are often weakened by free-rider problems.

KEY TAKEAWAYS

- Fragmentation is Europe's Achilles' heel. Better coordinated efforts across regulation, financing, and procurement can strengthen pharmaceutical innovation.
- Addressing structural constraints through targeted reforms, clear investment signals, and smart use of existing tools can help Europe to remain competitive, delivering innovation and access.

AMR: Markets vs microbes?

Roundtable 2 – Policies against antimicrobial resistance

Antimicrobial resistance (AMR) is one of the most urgent global health threats today. At this roundtable chaired by TSE's Pierre Dubois, experts from academia, regulatory institutions, and the industry discussed key barriers to antibiotic innovation, recent regulatory reforms, the design of pull incentives, and the importance of international coordination.

Tragedy of the commons

John Rex (Editor-in-Chief, AMR.Solutions – F2G Ltd) opened by underlining the scale of the crisis, driven by paradoxical economics. Developing a new antibiotic can take decades and cost billions, but once approved, its use is deliberately limited to delay resistance. This weakens returns for manufacturers, and has led to bankruptcies, distressed sales, and a systematic disincentive to invest.

> The Global Burden of Disease project reports 1.27 million deaths every year attributable to AMR.

The value of antibiotics lies not just in treating individual patients but in the broader societal benefit of reducing transmission. As non-excludable public goods, antibiotics generate large positive externalities, for which we do not pay, as well as negative externalities, like resistance, with costs we do not recover. These are core features of what John termed a "Tragedy of the Antibiotics Commons".

To address this market failure, delinked pull incentives aim to encourage development of new antibiotics and discourage overuse by decoupling the manufacturer's revenue from the volume of drugs sold. Several countries are piloting or proposing such measures, including the UK's subscription model, the EU's General Pharmaceutical Legislation, and the US's PASTEUR Act. In Japan, early-stage discussions are also underway.

The EU toolbox

Aleksandra Opalska (Policy officer, Directorate-General for Health and Food Safety) presented the European Commission's current strategy to combat AMR, which it now considers a key priority.

The Commission's "AMR toolbox" has three components. First, the Directorate-General for Health Emergency Preparedness and Response Authority (HERA) has pushed for a pilot revenue-guaranteed scheme. Unfortunately, plans are on hold due to lack of industry uptake.

Second, a 2023 Council Recommendation on AMR promotes action on prevention, control, education, surveillance, and reduction targets for antibiotic use in each Member State.

Finally, and most significantly, the EU is revising its pharmaceutical legislation. The first pillar of this reform targets inappropriate use through stricter prescription rules (over-the-counter access is still permitted for 8% of antibiotics in the EU), stewardship plans, educational outreach, package size (to reduce the amount of unused antibiotics at home), and environmental measures in line with the One Health approach.

> "39% of surveyed Europeans believe antibiotics kill viruses. This shows there is still a huge AMR knowledge gap.

The second pillar is the Transferable Exclusivity Voucher (TEV). This incentive mechanism would grant one year of data protection to developers of game-changing antimicrobials, to be used within the same company or sold to another firm. TEVs would be limited to a small number of priority products for a (15-year) trial period, followed by review. The TEV is still under negotiation with the European Parliament and Council.

Aleksandra noted that the EU's shift to pull incentives reflects a recognition that previous push-based funding failed to generate sustainable innovation. The EU aims to become a global leader on AMR, but international cooperation will be essential to its success.

Investors' perspective

Henry Skinner (CEO, AMR Action Fund) provided insights from the financial sector. Small biotech firms – often with just a handful of employees – depend heavily on access to capital to develop products and run costly clinical trials. However, these firms face chronic lack of investment due to poor commercial returns. Over the past two decades, capital has fled antibiotics for more lucrative therapeutic areas such as oncology, diabetes, and obesity.

Recent policy developments – such as the UK's subscription model and the EU's proposed measures – are steps forward but remain limited in scale. "*This is a global problem, and we need to think about global solutions,*" Henry argued, advocating for a collective financial commitment from high- and middle-income countries. National efforts are welcome, but unless a broader international framework is established, the fundamental problem of underinvestment will persist.

The engine for progress is finance.

He closed with a stark warning: to meet global needs, the world must approve one new antibiotic per year for the next decade. Without a collective solution to bring investment back, the antibiotics pipeline may collapse.

Designing pull incentives

Pierre Dubois (Director, TSE Health Center) concluded by raising two central policy questions:

How large should pull incentives be? – Policymakers must balance limited public budgets against the need to stimulate innovation. Should all new antibiotics be rewarded equally or should incentives reflect varying societal needs?

How to delink revenue from sales volume? – Subscription models are one option but can lead to free riding as a single country's contribution may be insufficient. A global public good should be subsidized by a global coalition. A voucher mechanism – such as the TEV – can mitigate this collective action problem and be less costly for public finances.

KEY TAKEAWAYS

- Antibiotic innovation is a public good. Market forces alone are unlikely to deliver sufficient investment.
- A collective response is needed. No single country can solve this global public health challenge.
- Policy incentives must be designed to reward antibiotics' societal value while discouraging overuse.

Final thoughts

The 2025 conference underscored the complexity and urgency of building more resilient, equitable, and innovation-ready health systems. Key themes emerged across many sessions, including the growing fiscal pressure from demographic change, the societal costs of market failures, the complexities of physician behavior, and the promise and pitfalls of new technologies.

While the challenges are substantial, the research and discussions presented in Toulouse point to practical ways forward. Smarter incentives, improved data sharing, targeted regulatory reform, and better alignment between public and private actors will all be critical to progress.

More content – program, slides & replays

- Program available on the webpage of the 3rd Health Conference
- Full list of contributions to the Conference including academic presentations during parallel and plenary sessions (slides available for download)
- Replays available on TSE Youtube channel (playlist TSE Health Center)

Thank you

TSE thanks all the speakers of the conference for their contributions, as well as the "Investment for the Future Program" (Bpifrance for ARPEGE), the European Research Council (ERC), the Centre for Economic Policy Research (CEPR), as well as the partners of the TSE Health Center (bioMérieux, GERS GIE, Leem) for their support. TSE also extends its sincere thanks to all those who contributed to these conference summaries.

Save the date

4th Health Economics Conference, June 16–17, 2026 - Toulouse