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From Scientific Evidence to Political Decision: How to Act Better and Faster During Health Emergencies

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Those who were part of that process remember it with anxiety. **The COVID-19 pandemic** represented an extreme, real-time confirmation of the **value of scientific evidence in political decision-making**. For months, even years, governments and administrations worldwide were forced to make nearly immediate, high-impact decisions that would determine the health, social, and economic conditions of their societies, and even the survival of thousands of people. Often, these decisions had to be made in a context of uncertainty and amidst growing media and public pressure. During that period, it became increasingly clear that the ability to access solid evidence made the difference between a correct response and a wrong one. In Spain, as in many other countries, a broad and heterogeneous community of experts worked diligently to generate, interpret, and translate this evidence, putting it at the service of health professionals and crisis managers. That experience offered **valuable lessons**, useful for future health emergencies.

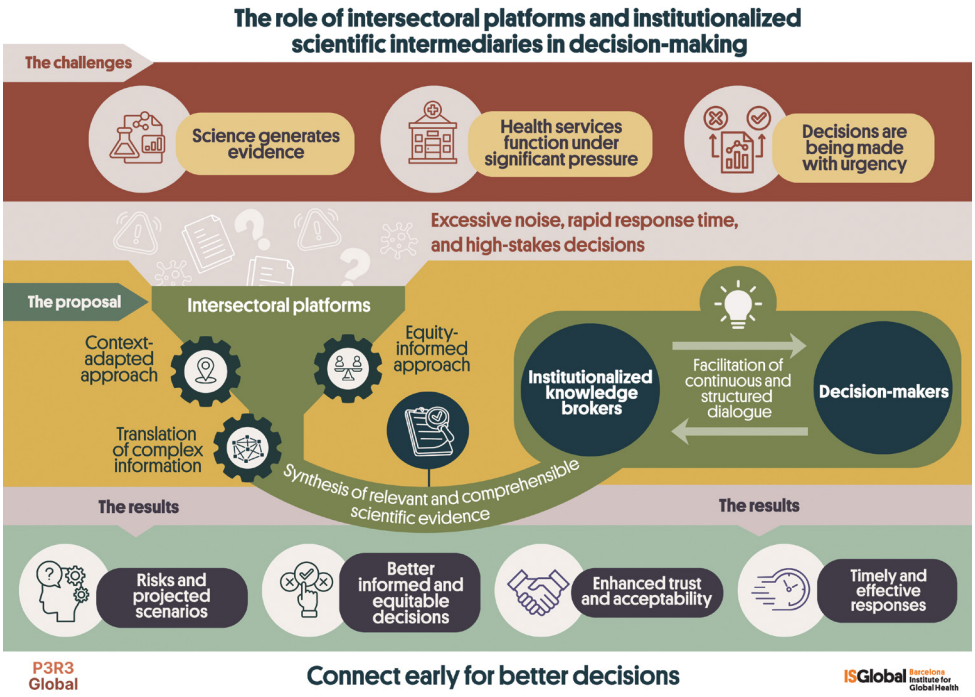
The **interaction between science and politics** is common in any modern system of public management. However, it does not always occur smoothly or adequately. Occasionally, the **lack of a specialized structure** for this function prevents the necessary **agility** in a process where knowledge must be transferred to those responsible for health practice and the planning of interventions, explicitly including public health services and primary and community care for their role as a capillary territorial network and as the first gateway

to the system. This helps to avoid a hospital-centric bias and to reinforce the capacity for early detection and territorial implementation of decisions. This is even more critical when knowledge is generated almost in real-time, as happened with COVID-19. When the exchange of information between the scientific community and public decision-makers is not handled properly, the result is fragmented decision-making, a loss of trust between actors, and a sub-optimal response to the health crisis. In the worst cases, the widespread—and often incorrect—perception that politics acts independently of scientific knowledge generates frustration in society and undermines trust in institutions, which can contribute to the rise of misinformation and its negative consequences.

Regrettably, the COVID-19 pandemic was not an exception, and systemic challenges remain. According to the scientific journal *The Lancet*, the possibility of a flu or coronavirus pandemic with at least one million deaths occurring in the next ten years is nearly one in two (48%) and one in three (28%) in just five years.[1] Given the increase in climate emergencies and the growing overlapping of different threats, the question is no longer whether there will be another crisis, but when and of what magnitude. Therefore, **the time to build trust, collaboration mechanisms, and communication channels between science and politics is now**, not in the middle of the next health emergency.

This document is based on the work carried out by the *P3R3 platform (see Box 1)* throughout 2025. It is **addressed to political leaders and technical authorities of local, regional, and national administrations in Spain**, especially in the fields of public health, civil protection, and research. While specific examples from Catalonia are discussed, this case study is generalizable to other regions. Its purpose is to promote the consolidation of stable structures connecting science, policy, and practice, with the ultimate goal of improving preparedness and response to health emergencies.

1 Global health 2050: the path to halving premature death by mid-century. Lancet. 2024 Oct 19;404(10462):1561-1614



BOX 1.

The P3R3 Platform: An effort to bring together actors and capacities in the preparation of health systems.

P3R3 [Research and Translation Platform for **Prevention, Preparedness, Response, Recovery, and Resilience**] is an interdisciplinary platform focused on the analysis of health systems and their preparation for global health emergencies. It is made up of individuals from various institutions in the fields of science, health practice, decision-making, and citizenship. It was established in Barcelona in January 2025. It is supported by the "la Caixa" Foundation and promoted by ISGlobal, a center for research, education, and translation in global health.

The platform promotes **One Health** and **Planetary Health** approaches and is guided transversally by the principles of equity and impact. Currently, it primarily works on two strategic lines:

1. The translation of scientific knowledge into decision-making and implementation, aiming for more informed, timely, and effective responses.

2. Citizen preparedness, through awareness, education, and the active involvement of communities.

Its scope of action is not limited to Catalonia but covers all of Spain. It also seeks an international projection—especially European—through strategic collaboration with like-minded networks and proposals sharing its commitment to equitable, evidence-based preparedness.

P3R3 is an open, evolving initiative oriented toward the common good, guided by a shared purpose that transcends institutional affiliations.

1. A Discreet but Essential Function

"Often, it is enough to designate and provide real dialogue capacity to well-positioned focal points within the administration, with the training and mandate to act as a link with scientific networks. This can be an effective and low-cost first step."

If one of the great lessons of recent crises is the **need for permanent, reliable, and credible structures that facilitate dialogue between the scientific and political sectors**, the question is how to do it. Interaction between the scientific community and technical teams of public administrations is fundamental, but for it to be effective, structured, stable, and recognized spaces are needed. This interaction cannot be limited to the national level; it must extend to autonomous, regional, and local administrations. The case of Spain, with its high level of decentralization, poses an added challenge. Furthermore, in health emergencies, the effectiveness of these spaces depends on the flow of evidence not remaining confined to central levels or hospital environments. Primary and community care -in coordination with public health services- provides early information, facilitates the equitable implementation of interventions, and feeds back into real-time evaluation.

To begin with, **this dialogue must be bidirectional and interactive**: scientific evidence informs decisions, but the administration's scientific-technical teams, thanks to their specialized training, provide a key vision on the interpretation of this evidence, its applicability, feasibility, and suitability for the operational context. By generating these spaces, it is possible to guarantee a dual purpose: that administrative scientific-technical personnel can access, generate, and critically assess syntheses of scientific evidence; and that scientists generating evidence (whether from academia, health, or public health environments) have a space to transfer their knowledge on the issue being debated.

These **knowledge broker** structures do not replace the leadership of political decision-makers or the operations of administrative technical personnel. They do not dictate or make decisions. Their function is to facilitate that those who must make and apply them have timely, relevant, and context-adapted syntheses of the state of scientific knowledge. The experience of different countries demonstrates the importance of different versions of these systems.

a. The International Experience

There are various models for articulating the link between science and public policy decisions. According to the comparative analysis carried out by the P3R3 platform, the three most common approaches are:

- *Linear model:* science is limited to delivering recommendations to policy.
- *Boundary model*: specific or periodic interaction spaces are created between both communities.
- *Co-production model:* both capacities are integrated continuously and bidirectionally.

Sometimes, several models can coexist in the same administration in a *hybrid* format. There are also different possibilities regarding the affiliation of these structures: they can be located **within the government apparatus** —such as offices or units in ministries— or **outside of it**—such as independent committees, academic networks, or mixed platforms. This location is not irrelevant, as it can determine how the structure relates to the decision-making process and how it is perceived externally.

During the COVID-19 pandemic, several countries developed or adapted different configurations of these models that can be used as examples. The linear model of the **United Kingdom** features the Scientific Advisory Group for Emergencies (SAGE). **Germany**,

following the boundary model, has worked with the Robert Koch Institute as a reference technical body in public health. Using the co-production model, **Canada** promoted the *CanCOVID* network as an agile space for connecting science and policy. **New Zealand**, on the other hand, stood out for an integrated approach combining scientific advice, compassionate communication, and inclusive community participation. In **Europe**, the *Joint Research Centre* (JRC) acts similarly to the boundary model, with research sites in various member countries providing knowledge and science to the European Commission.

The experience of these countries offers numerous **examples of success** in interventions during past health emergencies. These are cases in which a rapid response was offered based on the evidence available up to that moment, or in which a more efficient recovery was facilitated after a crisis. The UK's **SAGE** advised the government on the 2009 H1N1 pandemic flu outbreak, allowing for a calibrated response and an evidence-based vaccination strategy.[2] SAGE also played a role in 2010 during the eruption of the Eyjafjallajökull volcano in Iceland. Its scientific advice was essential to determine safe ash concentration levels for aircraft operation, allowing the airspace to be reopened safely in phases, minimizing economic impact without compromising traveler safety.[3]

New Zealand offers other interesting precedents. The Chief Science Advisor to the Prime Minister and the scientific team of the National Geological Agency played essential roles during the response to the Christchurch earthquake (2011) and during the subsequent reconstruction. They determined 'red zones' where it was too dangerous to rebuild based on soil liquefaction and future seismic risk, allowing clear and transparent scientific evidence to facilitate a difficult political decision.[4]

b. The Case of Spain: The National Office of Scientific Advice

Spain has recently opted for an approach similar to the UK's: a model combining the presence of science professionals within the administrative structure with external scientific consultation mechanisms. In February 2024, to implement lessons from pandemic management, the **National Office of Scientific Advice (ONAC)** was created. This executive body of the Government of Spain aims to strengthen the role of scientific knowledge in the design and implementation of public policies.

ONAC has promoted the **incorporation of scientific advisors in the 22 ministries**, fostering stable links between the science system and the executive branch. The goal is to improve access to scientific evidence that can be strategic for ministerial decision-making. To this end, it maintains links with universities, research centers, and scientific societies to access expert knowledge and "translate" it into the rhythms and languages used in political decision-making spaces. Additionally, the Office has developed a mechanism for **public calls addressed to the scientific community** to collect, synthesize, and transfer relevant evidence regarding specific questions raised by policymakers. This participatory and transparent approach reinforces its legitimacy and operational utility.

A concrete example of the utility of this approach was the process of the **State Pact against the climate emergency**, during which ONAC has been channeling contributions from the scientific community to inform the design and content of the agreement, thus strengthening the evidence base around the strategic commitments undertaken.

Finally, ONAC has promoted the creation of the Permanent Group for Scientific Advice in Crisis Management, as

2 Cabinet Office, 2010. The 2009 Influenza Pandemic. An Independent Review of the UK response to the 2009 influenza pandemic.

3 SAGE 10, Royal Aeronautical Society 2010. Scientific advice and evidence in emergencies.

4 Cabinet Office. 2011-2016. Cabinet papers and other cabinet material that was published by the Canterbury Earthquake Recovery Authority (CERA).

part of the National Security System. Its purpose is to guarantee that decisions in emergency situations are based on the best available evidence.

c. Local and Regional Mechanisms are Failing

The examples mentioned so far are mostly at the national level. However, Spain has a key specificity: **a high degree of political decentralization and the transfer of key competencies**—such as health, civil protection, or education—to the autonomous communities. For this reason, it is essential to adapt the scientific-political-technical dialogue mechanisms to the level of the autonomous regions, through the creation of structures that facilitate internal articulation and coordination with national, European, and international institutions.

The reality in many autonomous communities is that these structures continue to be informal or occasional. In case of an emergency, advisory mechanisms are created to work on specific topics to provide answers to the questions asked by those who make decisions.

Unfortunately, these mechanisms do not always respond to the needs of the process.

Catalonia constitutes an example of these limitations. In its 2022 report,[5] the COVID-19 Scientific Advisory Committee in Catalonia highlighted that this autonomous community was one of the European regions with the highest excess mortality during the pandemic, as well as one of the most affected in terms of infections and healthcare staff overload. All this despite the high commitment shown by the system's professionals. The same report points out that the technical response was insufficient and poorly coordinated at the start of the pandemic, due in part to the lack of formal spaces for scientific-technical advice and institutional coordination that would allow for clear, transparent, and understandable decision-making.

Finally, the report also points out that the initial model relied excessively on diagnostic capacities and hospital utilization variables, and that primary care remained invisible during the first weeks. Among its proposals, it highlights the reinforcement of formal coordination mechanisms between public health, primary care, and hospitals, taking advantage of the territorial capillarity of health centers as sentinel spaces and providing them with diagnostic support tools. For this reason, any architecture for knowledge translation and scientific-technical advice must explicitly incorporate primary care in coordination with public health services, avoiding hospital-centric responses that delay detection, increase inequities, and overload the levels of greater complexity.

Not all experiences were negative. In the same region, the **Technical Committee of PROCICAT** —the organ of the Civil Protection Territorial Plan of Catalonia, which brings together around thirty public bodies to coordinate the emergency— was constituted during the pandemic with an operational character. Its main function was to analyze and assess interventions, although it did not act as a formal permanent scientific-technical advisory body. Likewise, the *Multidisciplinary Collaborative Group for the Scientific Monitoring of COVID-19*, was created in 2020 in Catalonia, by initiative of ISGlobal and the Official College of Physicians of Barcelona, with the support of ACER, to facilitate scientific advice. It remains active today.

These lessons reinforce the **urgency of establishing stable mechanisms for dialogue between science, policy, and practice** in the Catalan context,

5 Comitè Científic Assessor de la COVID-19 a Catalunya. (2022). El sistema de salut a Catalunya front a futures pandèmies. Generalitat de Catalunya – Departament de Salut. Available at: https://salutpublica.gencat.cat/web/.content/minisite/aspcat/sobre_lagencia/comite_assessor_covid19/El-sistema-de-salut-a-Catalunya-front-a-futures-pandemies.pdf

with operational capacity both in times of peace and crisis. This is a lesson that can be extended to other autonomous communities. Without specialized referents or coordination mechanisms, efforts to bring scientific evidence to decision-making run the risk of being slow, fragmented, or reactive. However, **building this capacity does not necessarily require complex structures**. Often, it is enough to designate and provide real dialogue capacity to well-positioned focal points within the administration, with the training and mandate to act as a link with scientific networks. This can be an effective and low-cost first step.

2. The Value of Good Intermediaries

"Of all the structures that could benefit from a more fluid and better-founded dialogue between science and politics, that of the autonomous—and, to a lesser extent, local—administrations is possibly the most urgent."

At the beginning of 2025, the P3R3 platform was launched, an initiative of ISGlobal with the support of the "la Caixa" Foundation and other institutions and entities *(see more details in Box 1)*. This initiative brings together actors from the scientific field and health practice, with administrative officials and representatives of civil society. It is not an academic initiative or a governmental body, but a shared space for intersectoral collaboration, born from the conviction that **no single sector can guarantee an effective response to complex crises on its own**. Specifically, the experience of the P3R3 platform suggests that an effective dialogue between science and policy must incorporate some fundamental components:

- **Pre-established relationship channels**, created in times of calm and not improvised in the middle of a crisis.
- **Mutual trust and respect between the roles of science and policy**: science informs, policy decides.
- **Effective intermediaries**, capable of understanding both the nature of scientific recommendations and the complexity of political decisions.
- **Agile coordination mechanisms** that allow for the convening of expert opinion, the synthesis of evidence, the management of discrepancies, and the rapid provision of applicable guidance.
- **A clear mandate**, sustained by internal legitimacy and the operational link with decision-making processes.

For these recommendations to be truly solid and generate the necessary trust, these intermediate instruments must adopt **rigorous and transparent methodologies**. The content of this dialogue must be clear regarding the level of scientific consensus on which it relies. It must be subject to considerations of effectiveness, acceptability, and equity, using recognized methodologies such as the *GRADE approach*, which allows for evaluating the quality of available evidence and making suggestions appropriate to the degree of consensus they arouse, so that the robustness and traceability of the proposals are guaranteed.

The P3R3 Platform is an example of a tool of enormous utility for the management of health crises, from the everyday ones to the most complex. But its true value resides in the capacity to act as a complementary piece to other elements of the chain: an intermediate instrument of trust, which achieves a synthesis of scientific evidence that is understandable and applicable for those who make decisions. Its main function is twofold: on one hand, to quickly synthesize the vast —and often contradictory

and non-consensual— body of available evidence, which in emergency situations has a high degree of uncertainty; on the other, to translate this complex information into practical recommendations that consider not only scientific effectiveness, but also social acceptability and equity in implementation.

By being pre-established spaces for intersectoral collaboration with a clear mandate, improvisation in the middle of a crisis is avoided and it is guaranteed that the dialogue flows on a basis of trust and mutual respect, maintaining the principle that science informs, but policy decides.

Despite the existence of spaces like the P3R3 Platform, which act as intersectoral nodes for **the synthesis and translation of knowledge, the presence of institutionalized knowledge broker figures within the administrations themselves is essential**. While instruments like the Platform guarantee a robust and plural synthesis of evidence, the internal focal points of the institutions are those who will act as the necessary receiving channel to effectively, continuously, and operationally integrate this flow of information into specific decision-making processes.

a. Institutionalizing Science in Regional and Local Decision-Making

Of all the structures that could benefit from a more fluid and better-founded dialogue between science and politics, that of the **autonomous** —and, to a lesser extent, local— **administrations** is possibly the most urgent. This is the conclusion reached by the P3R3 platform after a year of strategic evaluation in which the set of responsibilities of health authorities in crisis situations was considered.

The recommendation made by the group is that all autonomous communities —starting with Catalonia, the first case study of the analysis— establish focal points or liaison bodies within their government structures to facilitate science-policy dialogue in the field of preparedness and response to crises.

This exercise must begin by establishing a clear mandate and providing adequate resources (initially small, but scalable according to need).

How to operationalize this intermediation mechanism?

The **structure** that fulfills the proposed function does not have a predetermined size or format. It could be a specialized unit, an interdepartmental working group, or even one or more individuals designated for this task within the administration. The key is that this structure is strategically positioned and operatively empowered to respond agilely, bring together all stakeholders, and generate trust among its own members and toward external actors. Furthermore, it must have a certain executive capacity or influence so that its recommendations translate into effective political decisions.

In the health field, these focal points or units should incorporate from the design stage a permanent operational link with (i) the public health authority or agency, (ii) the leadership or management of primary and community care, and (iii) the hospital network, in order to ensure the coherence of protocols, referral circuits, and a shared information system.

A practical option would be to consider the creation of a body similar to the ONAC, but adapted to regional levels. This would be the ideal instrument for science to be present in the decision-making spaces of public administrations and to guarantee a continuous dialogue between the technical sectors of the administrations and the scientific field. An intermediary like the P3R3 platform could act as a facilitating instrument in the health and social sectors, although the new autonomous bodies should cover all areas of public policy that can benefit directly from scientific knowledge. Only through this articulation between external synthesis and internal reception capacity oriented toward intervention can it be ensured that scientific evidence is converted into agile public policies with real impact.

In the specific case of Catalonia, this idea is in line with the recommendations of the report from the Commission of Experts for the Transformation of the Administration of the Generalitat de Catalunya (CETRA).[6] It proposes creating a scientific advisory unit attached to the Department of the Presidency, together with a network of **scientific advisors in the other departments**. These advisors would be selected through public calls and would contribute to translating scientific knowledge into useful guidance for public policies. The official proposal reinforces the viability and institutional interest in moving in this direction.

What role would the regional scientific advisory offices play?

In addition to facilitating the translation of evidence into policy, these spaces must also support the application of knowledge in health practice and public health. It is essential to **integrate clinical research into political strategies** and promote the funding of **specific studies on the population's vulnerability to complex crises**.

Fostering transdisciplinary dialogue between scientists and policymakers is fundamental to understanding and addressing the growing complexity of health emergencies, and it must be built in **"times of peace"**: preparing for potential crisis scenarios, ensuring that channels and relationships of trust are pre-established and not improvised. The dialogue must be bidirectional, guaranteeing that local professionals, communities, and citizens are an essential part of the debate on these policies.

During the COVID-19 pandemic, Catalonia, Madrid, the Basque Country, or the Valencian Community created scientific-technical advisory bodies, such as the **COVID-19 Scientific Advisory Committee in Catalonia**, to guide decisions on treatments and measures; the **Scientific Advisory Group of the Madrid Health Ministry** to inform mass screening strategies and hospital management; the **Technical Advisory Commission of the Health Ministry** of the Valencian Community; or the **Scientific Advisory Committee of the Civil Protection Plan** of Euskadi (LABI) to provide scientific analysis for decisions on mobility and economic activity restrictions. Keeping these channels active or with the capacity for rapid reactivation is key for future crises. Furthermore, they could play a useful role in the recovery phase after a crisis, ensuring that the documents, protocols, and lessons learned generated during emergencies are preserved, updated, and kept accessible to key actors. It is not desirable to start from scratch every time a new threat is faced.

Good preparedness is not limited to the accumulation of medical countermeasures, personnel, and emergency plans. It also requires invisible infrastructures: **networks, roles, and relationships** that ensure, when they are most needed, agile, legitimate, and evidence-based decisions. It is essential that science informs decision-making at every level of government (regional and local), but this institutionalization must be precisely designed to complement, and not duplicate, already existing national or regional scientific advisory mechanisms. In the health field, this complementarity is achieved by linking advice with the public health authority and with primary and community care as a capillary network for implementation.

Redundancy in structures can be as dangerous as their absence. Two fundamental principles must inform this exercise: first, wherever decisions are made, science must be present. Second, the structures (national, regional, local, as well as non-governmental) must be **complementary** to each other, and a **coordination** exercise must be carried out between them to ensure more effective use.

6 Estrategia 5 de la Propuesta 6.3. Comisión de Expertos para la Estrategia de Transformación de la Administración de la Generalitat y la Mejora de los Servicios Públicos (CETRA). Final report. Generalitat de Catalunya, Noviembre 2025. Available at: https://presidencia.bibliotecadigital.gencat.cat/handle/20.500.14623/969.

We are not proposing that scientists should govern, nor that policymakers must follow every academic publication to the letter. But we do firmly believe that science-informed decision-making is possible, desirable, and necessary. Building the mechanisms that make this process viable, in a respectful, pragmatic, collaborative way, and generating trust in service of the preparedness and response of public systems, is a shared responsibility.

Let us not wait for the next crisis to create what we could have already built today.

FOR MORE INFORMATION:

— What is the National Office of Scientific Advice? https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/presidencia/paginas/2024/onac.aspx

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