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Information and Technology as a Pillar of Integrated Care

The 9 Pillars of Integrated Care – Pillar Discussion Series

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Introduction

The International Foundation for Integrated Care (IFIC) hosted the second in IFIC's series on the Nine Pillars of Integrated Care forum discussions in February 2026. The forum brought together perspectives from three distinct health systems – Catalonia (Spain), Wales (UK), and New Zealand/Australia – with additional reflections on Estonia, reflecting decades of combined experience in health informatics, digital health strategy, and care system redesign.
The panel discussion was chaired by IFIC's Chief Executive, Niamh Lennox-Chhugani.

The discussion surfaced rich insights around why technology remains both a powerful enabler and a persistent source of frustration within integrated care, the information produced by technology can be used to drive decision-making and what might be done to unlock the full potential of both. This summary is organised into four sections: the current situation for information and technology in integrated care; the challenges that persist; the solutions that are emerging; and a utopian vision for the future.

The Current Situation: Information and Technology in Integrated Care

The session was introduced by Niamh, who talked about the IFIC Annual Survey 2025 *Connecting Care Information*[1] and the recent work that IFIC have completed revising the Nine Pillars of Integrated Care. Information and Technology is one of the Pillars and validation with a Delphi panel of experts confirmed this. While there was clear support for the importance of information to integration, there was less certainty around the role of technology. The panel were invited to share their reflections on this.

The panellists began by exploring how information and technology currently function within integrated care, and the relationship between the two. A clear consensus emerged: information and technology are distinct but deeply intertwined. Information – the right data, available to the right people, at the right time – is the core enabler of integrated care. Technology, in the 21st century, is the means by which that information is captured, shared, and acted upon at scale. However, the two are frequently conflated, and technology is too often treated as a solution in its own right rather than as a vehicle for meeting information needs.

Technology as Part of the Fabric, Not a Standalone Pillar

All three panellists agreed that information and technology is fundamental to integrated care, but that it is not primarily a technology problem. When IFIC consulted with international experts during the validation of the Nine Pillars, this was the area of least consensus – some saw technology as part of the fragmentation problem rather than the integration solution.
Andrew offered a counterfactual test: if technology were removed entirely, care delivery would collapse. He pointed to COVID-19, where population profiling, risk management, and testing systems were essential across **New Zealand** and **Australia**. Yet because technology is so

[1] https://integratedcarefoundation.org/annual-surveys/ific-annual-survey-2025-connecting-care-information

embedded in daily workflows, people take it for granted. He described technology as "not a single pillar" but "part of the woven fabric of integrated care," drawing on his experience supporting implementation, where he observed the integration between governance, systems, measurement, funding, and models of care across multiple jurisdictions. Leo proposed the 80/20 rule, where governance, culture, behaviours, incentives, information sharing, and workflow redesign account for 80% of the challenge, with technology representing only 20%. However, without that 20%, the 80% cannot scale. She observed that many good projects across the **UK** have demonstrated positive outcomes but failed to sustain or spread precisely because of the inability to share information across professionals, organisations, and sectors. Jordi framed the question directly, integrated care is primarily not a technology problem, but technology choices have "structural power" that can either accelerate or undermine every other pillar of integrated care. Drawing on his experience of six years leading digital health for the **Catalan** government, he argued that we need to agree on care processes, governance, and objectives before turning to technology.

What Exists Today: Progress and Its Limits

The discussion revealed that significant progress has been made in certain areas – particularly in sharing clinical information between secondary and primary care – but that these advances have clear limits, especially when moving beyond the health sector into social care, community settings, and person-centred coordination. **Catalonia** has had a shared care record available across all public sector providers since 2007 and a citizen-accessible personal health folder since 2009, both widely used[2]. This was built on the principle that different systems could agree on common, initially document-based, then more structured information to facilitate transitions across the healthcare system. Jordi's own career began in Badalona, north of Barcelona, where a city council-owned healthcare organisation merged health and social care delivery and governance around the year 2000 – an arrangement that has persisted for 26 years across changes of government, with a single chancellorship covering both health and social care. Andrew noted that diagnostics, laboratory results, radiology, and prescribing now work relatively well internationally, with information flowing between secondary and primary care so that patients are not subjected to duplicate tests. **New Zealand** has implemented system-level measures, national e-prescribing, national e-enrolment. However, he characterised most shared records as fundamentally retrospective – documenting what has happened – rather than prospective care plans enabling multidisciplinary coordination. Leo described **Wales's** experience with the Welsh Community Care Information System (WCCIS), launched approximately ten years ago with the ambition of creating shared care records across NHS and social care. In reality, it became a largely transactional system designed for social care administration – recording assessments, care packages, and client contributions – rather than a longitudinal care planning tool. She noted that electronic records in social care are simply not as mature as in health, and that the language and coding used in social care remain quite different.

[2] Piera-Jiménez J, Carot-Sans G, Ramiro-Pareta M, Nogueras M, Folguera-Profitós J, Ródenas P, Jiménez-Rueda A, de Pando Navarro T, Mira Palacios J, Fajardo J, Ustrell Campillo J, Vela E, Monterde D, Valero-Bover D, Bonet T, Tarrasó-Urios G, Cantenys-Sabà R, Fabregat-Fabregat P, Gómez Oliveros B, Berdún J, Michelena X, Cano I, González-Colom R, Roca J, Solans O, Pontes C, Pérez-Sust P. A 25-Year Retrospective of Health IT Infrastructure Building: The Example of the Catalonia Region. J Med Internet Res 2024;26:e58933 URL: https://www.jmir.org/2024/1/e58933 DOI: 10.2196/58933

Interdependencies with Other Pillars

A cross-cutting theme was the deep interdependency between information and technology and the other eight pillars. Jordi observed that technology choices have structural power affecting all other pillars, and made a direct connection with financing: technology currently reflects how healthcare is paid for and organised. Niamh reinforced this circular dependency: healthcare is financed based on available information; information systems reflect current organisational structures; and changing financing requires changing those structures, creating a cycle that is difficult to break. Leo highlighted the connection with culture and behaviours, noting that health and care systems are not sufficiently transparent about what is not working well, making it very difficult to engage with technology providers to articulate what is actually required.

The Challenges: What Is Holding Us Back

Across the discussion, a set of persistent and interconnected challenges emerged. These were not presented as new discoveries – several panellists noted that the same problems have been recognised for decades – but rather as deeply structural issues that continue to impede progress.

Technology Before Process: Getting the Layers Wrong

A recurring theme was that health systems repeatedly introduce technology without first redesigning the care processes it is meant to support, often making practitioners' lives more difficult rather than easier. Jordi described a clear layered model that is too often inverted. The correct sequence is first to define the care process and its objectives; then to identify the roles involved and their specific information needs (noting that too much information is simply noise); then to design the software; and finally to select the supporting technology. He illustrated the consequences of getting this wrong with a concrete example: **Catalonia**'s new integrated care agency wanted to share health diagnostics with social care and vice versa. Jordi challenged them that simply making data available without linking it to a specific care process would deliver value "tending to zero." The real value lay at specific decision points – for instance, the nurse at discharge from surgery who needs access to social determinants of health to decide whether a hip fracture patient goes to a convalescence unit or receives an early discharge with home care services. Leo reflected that the mindset from her first IT project in 1992 – working with IBM to integrate the work of health visitors, social workers, and district nurses using laptop computers with 20 kilobytes of memory – has not fundamentally improved. That project aimed to create a comprehensive assessment, outcomes, and care planning system for community workers, with shared information across different professionals supporting a person in their own home. She argued that most systems and processes are not functioning optimally, and that technology and the information within it should be at the heart of redesigning the way care is delivered – yet the sector continues to introduce technology into unreformed processes. Andrew described the experience of process redesign workshops in **New Zealand**, where different departments each described "my patient comes into my department and we do this" – only to realise they were talking about the same people being forced through different doors. Care pathways are typically disease-specific, but people do not experience life that way: they have multiple health and social issues, and technology needs to support their journey rather than fragment it.

Retrospective Records Without Prospective Planning

A critical gap was identified between what information systems can do today – largely documenting what has already happened – and what integrated care requires: forward-looking, multidisciplinary care planning. Andrew drew the distinction explicitly. While diagnostics, medication management, and prescribing are well served, most shared records are fundamentally retrospective – "here's what's happened to people, here are the clinical notes." He posed the question: what about prospective care, in terms of care planning and enabling a multidisciplinary team to coordinate around a person's future needs? He concluded that this remains a long way off, particularly as integration extends beyond health into social care and allied health environments. Despite **Catalonia's** long-standing shared care record, when the

region undertook a large-scale participatory co-design process – engaging healthcare professionals, social care professionals, patients, and caregivers to inform its digital health strategy – the feedback was clear: while people valued access to allergies, immunisation records, and clinical reports, they lacked coordination and collaboration tools for longitudinal, cross-professional working[3]. The WCCIS experience in **Wales** illustrated this gap directly. Designed as a shared record for health and social care, it became an administrative tool recording assessments and care packages rather than enabling the kind of prospective, outcomes-focused care planning that Leo and her colleagues had envisioned as far back as 1992.

Lack of Person Agency and the Persistence of Fragmentation

The discussion highlighted that technology continues to serve primarily as a tool for clinicians and organisations, rather than empowering the person at the centre of care. People frequently assume their information follows them between providers and is treated securely – assumptions that are often not met. Andrew argued that technology in health is "still failing people" in terms of giving them genuine agency. It remains primarily a tool for the clinical community. He also identified a dual trust problem: some people believe their information follows them when it does not, while others expect their data is private and secure when breaches have occurred, particularly in cloud environments. He observed that "integration moves at the speed of trust," and that these failures erode trust on both sides. Jordi acknowledged that despite the personal health folder available since 2009, the shared record system has not resolved what he called the "ping-pong match" – patients being referred back and forth between primary care, specialised care, intermediate care, mental health, and social care, with safety risks at every transition including medication reconciliation problems and lost information. Leo gave a vivid example of fragmented home care coordination. A morning carer finds Mrs Jones on the floor, calls an ambulance, and the patient is taken to hospital. Without real-time information sharing, the lunchtime carer may still arrive not knowing what has happened. She observed that people being cared for at home often cannot distinguish between health, social care, and support service staff, making it difficult to identify where things are working well or where improvement is needed.

Vendor Lock-in and Fragmented Technical Landscapes

A structural barrier identified by the panellists was the fragmentation of health information technologies and the power of incumbent vendors. Jordi argued that, unlike other industries, healthcare has not found a common way to represent its major concepts within the technical landscape. This has created a proliferation of different applications requiring point-to-point integrations that default to "the dumbest of the two systems" – like an adult lowering the level of conversation so a child can understand. Electronic health record vendors have become too powerful: they compete to win clients, embed deeply into processes, become almost impossible to remove, and kill innovation around them. For publicly funded healthcare systems, this means money flowing overseas to vendors who block local innovation.

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[3] Piera-Jiménez J, Vilarasau Creus N, Maymó Costa A, Michelena X, Climent Fageda A, Farré A, Herczeg L, Parameswaran L, Carot-Sans G, Valle L. Cocreating Principles for Digital Health Equity: Cross-Sectional, Qualitative Study for Participatory Human-Centered Design in Catalonia J Med Internet Res 2026;28:e84129 URL: https://www.jmir.org/2026/1/e84129 DOI: 10.2196/84129

Digital Inequity: Technology as a Social Determinant of Health

The panellists raised a critical warning that technology itself risks becoming a social determinant of health if digital transformation is not designed inclusively from the outset. Jordi argued that digital transformation in healthcare is fundamentally different from a routine IT upgrade – it involves people and must account for their skill sets, health literacy, and access to technology. He warned that poorly designed digital front doors effectively become a social determinant of health: "Why should I not be accessing the same services as anyone else, if I'm not able to access this technology?" He emphasised that equity must be considered from the very beginning, not retrofitted.

Niamh observed that while digital equity is increasingly on the radar of chief clinical information officers, particularly in the context of population health management, it still feels more like a topic being discussed than one being systematically acted upon.

Workforce Gaps in Health Informatics

A significant gap in workforce development for health informatics was identified across all three systems, though with different characteristics in each. **Wales** has had health informatics graduate training programmes through Digital Health and Care Wales for approximately 15 years, and health informatics is recognised as a specialism within the NHS. However, Leo argued that the challenge goes beyond training specialists. Most front-line and back-office staff now require data analytical competences that are not being adequately developed. She posed a pointed question: what is the point of striving for real-time data insights if the people receiving that information lack the competences to use it? She also observed that students enter health and care practice fluent in personal technology use, only to find themselves working with "lousy tools" that prevent them from applying their digital skills. In **Spain**, medical and nursing graduates continue to complete their studies without any technology training, educated much as they were 50 or 80 years ago. Post-graduate options exist primarily through generalist digital health master's programmes. **Catalonia** has pragmatically built its health informatics team by recruiting Spanish-speaking informaticians from Argentina's Hospital Italiano. Jordi also highlighted the absence of hybrid clinical-informatics leadership roles. In all of Catalonia, only one healthcare organisation – Hospital Clínic de Barcelona – has a Chief Clinical Information Officer. Andrew described the career pathway in **New Zealand** as "patchy" and largely opportunistic rather than systematically planned. A Chief Clinical Information Officer had been instrumental in organising clinical informatics courses for doctors, but this was driven by individual initiative. The Health Quality and Safety Commission's quality improvement work had drawn practitioners into informatics through a measurement lens – curiosity about quality measures leads to engagement with data – but this remained opportunistic rather than a structured career pathway.

Emerging Solutions: What Is Working and What Could Work

Despite the persistence of these challenges, the discussion also surfaced a range of approaches – some already in practice, others proposed – that point towards solutions.

Starting with Process and Information Needs

Jordi's layered model – process first, then information needs, then software, then technology – was offered as a practical framework for getting the sequence right. His example of the **Catalan** integrated care agency demonstrated that the value of information sharing lies not in making data broadly available, but in embedding the right information at specific decision points within care processes. Niamh reinforced this throughout the discussion: the purpose for which information is gathered determines its value, and too often the focus is on secondary use (reporting, payment) rather than primary use (supporting care delivery).

Open Platforms: Learning from Other Industries

The most fully articulated solution came from Jordi's proposal for an open platform model in healthcare, drawing on the Apperta Foundation's 2016 work. Using the analogy of smartphone platforms, Jordi argued that healthcare should adopt a platform economy model, as iOS/Android, Spotify, and Amazon have done. Open specifications and a conformance model would allow any developer to build solutions that run across the system. Citizens would grant access permissions to their records – just as smartphone users grant apps access to their contacts – maintaining control and transparency. This would make data more "liquid," permeating across the healthcare system, unlocking a local ecosystem of innovation rather than sending money overseas to locked-in vendors. Andrew echoed this with his "plug point" metaphor: just as an electrical appliance plugs into any standard wall socket and works, vendors should comply with common data standards and a common lexicon so that information flows automatically. Clinicians and users should not bear the burden of making systems interoperate. He combined this with a call for democratised measurements – driven by what populations want to measure about the effectiveness of their care, rather than top-down metrics imposed by policymakers. Niamh shared the example of the OpenSAFELY platform, run out of Oxford University, where anonymised but real-world health data is being used by researchers and technology developers. She suggested this type of open, trusted data infrastructure must be part of the future.

AI for Coordination and Administrative Relief

The discussion-oriented AI towards reducing administrative burden and supporting the mechanics of coordination, rather than replacing human care. Leo proposed that care coordination is essentially a function – logistical mechanics that, with good data and information, a technology system could perform. This would free the human coordinator to be the communicator and relationship-builder, giving the person and their family the agency to coordinate their own care. Technology could enhance the coordination role while letting carers focus on providing care and receiving real-time feedback loops. She noted that despite all the technology introduced over the years, the administrative burden on practitioners "just goes on and on" – suggesting current deployments have not yet fulfilled this promise, but that AI could change this.

Niamh described her own emerging work on a thought experiment exploring agentic AI as an actor within relational care. As she and Leo agreed, the discussion came full circle: the goal is technology enabling the mechanics of coordination while humans focus on caring.

Inclusive Design and Digital Equity Interventions

Catalonia has addressed digital equity through two practical approaches: first, large-scale participatory co-design processes involving citizens, patients, caregivers, and professionals in the design of digitally enabled services from the outset; and second, deploying digital kiosks with full connectivity in isolated villages and communities in the Pyrenees – which Jordi described as "the most brutal environment that you can find" – ensuring that rural and digitally excluded populations are not left behind.

Building the Workforce

While workforce development was identified primarily as a challenge, some emerging approaches were noted. **Wales**'s established health informatics training pathway, **New Zealand**'s quality improvement route into informatics, and **Argentina**'s Hospital Italiano as a training ground for Spanish-speaking informaticians all represented different models. Leo argued that data analytical competences need to be embedded across undergraduate curricula for all health and care professions, not confined to specialist training – but only if systems provide the tools for graduates to actually use their knowledge in practice.

A Utopian Vision: What Would the Ideal Look Like?

In closing, the panellists were challenged by an audience question to describe their ideal system of technology and information for integrated care – to dream big and not hold back.

Their visions, while distinct, shared a common thread: a future in which the person is at the centre, information flows freely and securely, and technology serves human needs rather than organisational structures.

Jordi shared a vision of an open platform with common specifications and a conformance model, modelled on iOS/Android. Citizens grant permission for secure access to their records, data becomes liquid across the entire health and social care system, and a local ecosystem of innovation is unlocked rather than revenue flowing overseas to locked-in vendors. The platform would break the current vendor stranglehold, democratise innovation, and make integrated care fundamentally easier to achieve.

Andrew sees democratised measurements driven by populations rather than policymakers, so communities can define what matters to them. A “plug point” for data where any compliant system interoperates seamlessly through common standards and a shared lexicon. Equity of access giving people genuine agency over their own information and care journey. Frictionless and appropriate information sharing for those providing care and support, so that information flows to where it is needed without requiring users to make it happen.

Leo hopes for one record from the point of a person’s birth to the day they die, covering health, social care, well-being, environment, genomics, and lifestyle – controlled by the citizen, accessible wherever they happen to be within the world. No duplication, no missing information, no organisational or professional boundaries, no need to repeat one’s story. The record updates itself as life happens. All built on Jordi’s premise of the open platform – acknowledging that every health and care system has bits of this, but only the bits.

Finally Niamh wants to see a “fairly mundane utopia” where there is a personal care record under the individual’s control, with access to the same information that clinicians see, and the ability to decide what to share and with whom. The person – or their family caregiver – becomes their own care coordinator, because “it is my information, it is not their information, it is not their organisation’s information.” AI handling the administration so that professionals have time to care. This should be ordinary but nonetheless still feels far from reality ,and would free up a huge amount of time and effort to focus on what really matters to people.