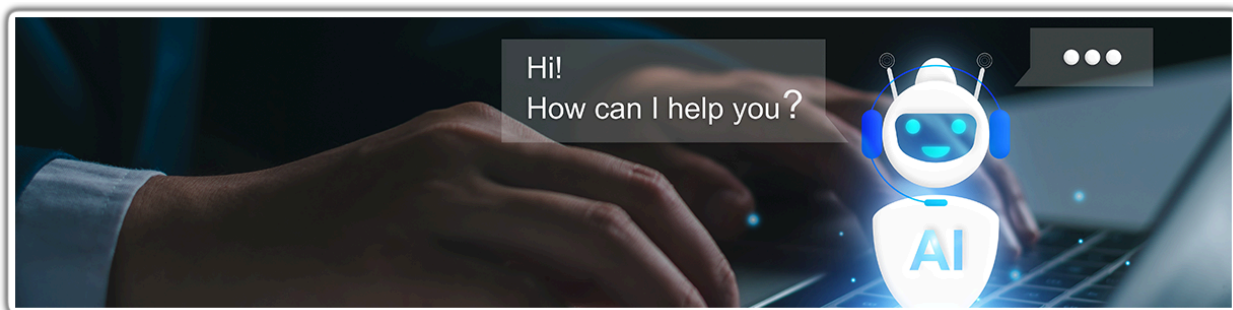




Care Connect AI:

An AI-Powered, Integrated Health and Social Security Ecosystem for Scotland

Executive Summary

Scotland faces interlocking crises in public health and poverty that threaten its future prosperity. An NHS under unprecedented structural strain, coupled with the widest health inequalities in Western Europe, has created a cycle of escalating demand and reactive crisis management. The current siloed delivery of health and social security services is unsustainable, failing to address the root causes of poor outcomes.

This report proposes a transformative vision: the creation of a citizen-centric, AI-powered integrated ecosystem for health and social security. This represents a paradigm shift from treating symptoms towards proactive care, preventative support, and personalised intervention. By ethically harnessing data, Scotland can dismantle service barriers and respond to the holistic needs of its people.

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Introduction and Overview

Scotland faces interlocking crises in public health and poverty that threaten its future prosperity. An NHS under unprecedented structural strain, coupled with the widest health inequalities in Western Europe, has created a cycle of escalating demand and reactive crisis management.¹ The current siloed delivery of health and social security services is unsustainable, failing to address the root causes of poor outcomes.

This report proposes a transformative vision: the creation of a citizen-centric, AI-powered integrated ecosystem for health and social security. This represents a paradigm shift from treating symptoms towards proactive care, preventative support, and personalised intervention. By ethically harnessing data, Scotland can dismantle service barriers and respond to the holistic needs of its people.

The strategy is built upon three pillars:

1. **A Federated Data Environment:** A secure, interoperable data-sharing framework connecting NHS Scotland, Social Security Scotland, and local government. Data remains with the source organisation but is made accessible through a governed gateway, enabling a comprehensive view of an individual's needs without creating a centralised database.
2. **AI-Driven Tools:** A suite of analytical capabilities to turn data into actionable intelligence. This includes predictive models to identify individuals at high risk, intelligent automation to streamline administrative processes, and personalised digital services to empower citizens.
3. **A Robust Ethical Governance Framework:** A foundation of public trust built on transparency, accountability, and citizen control, including an independent oversight body, regular algorithmic audits, and granular consent management.

This strategy offers an actionable blueprint for the Scottish Government to leverage its unique public service landscape and build a healthier, fairer, and more prosperous future.

The Interlocking Crises: Scotland's Health and Poverty Challenge

The problems of an overburdened NHS and the drivers of poverty are not separate issues; they are two sides of the same coin, locked in a mutually reinforcing cycle. Poor health is both a cause and a consequence of poverty, and poverty is the single greatest driver of the unsustainable demand threatening the NHS.

An NHS Under Unprecedented Strain

The NHS in Scotland is facing a chronic, structural crisis driven by deep-seated demographic and epidemiological trends. The system's capacity to meet demand was in decline for years before the COVID-19 pandemic, which acted as a massive accelerant.

- **Waiting Times:** The total waiting list for inpatient and outpatient treatments surged from 386,000 pre-pandemic to 718,000 in March 2025.³ Key legal and national standards are consistently missed:
 - **Emergency Care:** The 95% four-hour A&E target has not been met since August 2017.⁴
 - **Cancer Treatment:** The critical 62-day standard for starting treatment after an urgent referral has not been met since 2012.⁴
 - **Elective Care:** The legally binding 12-week Treatment Time Guarantee is comprehensively breached, with only 61.6% of patients treated within this timeframe in mid-2022.⁶
- **Demographic and Epidemiological Pressures:** Scotland's ageing population and the rising prevalence of chronic illness are systematically increasing demand.
 - The number of people aged 75 and over is projected to increase by 341,300 by mid-2047.⁸ This demographic shift alone is projected to drive an 11.8% rise in unplanned hospital admissions by 2034.⁹
 - In 2024, for the first time, half of all adults in Scotland (50%) reported living with at least one long-term health condition—the highest level ever recorded.¹⁰

This evidence points to a crisis of demand, not just capacity. The current model, designed for acute, episodic care, is being overwhelmed by the reality of chronic, complex, and continuous need.

The Chasm of Health Inequality and Poverty

The strain on the NHS is disproportionately concentrated in Scotland's most deprived

communities. Poverty is directly fuelling the NHS crisis.

- **A Stark Health Divide:** Scotland has among the widest health inequalities in Western Europe.¹ The gap in healthy life expectancy between the most and least deprived areas is staggering: 25 years for men and 22 years for women.¹ People in the poorest communities spend over a decade longer in poor health before dying prematurely.¹
- **The Socioeconomic Drivers of Ill Health:** The link between poverty and poor health is causal. Multimorbidity—the presence of two or more long-term conditions—develops 10 to 15 years earlier in those living in the most deprived areas.¹ This premature accumulation of complex health needs is the engine of unsustainable demand.
- **Worsening Poverty:** These health outcomes are driven by worsening socioeconomic conditions. In 2021-24, 1.1 million people in Scotland (20% of the population) were living in poverty.¹³ This poverty is deepening, with nearly one in ten people in *very deep* poverty. In-work poverty is now the norm, with six in ten people in poverty living in a working household.¹³

A Devolved System with a Human Rights Approach

The establishment of Social Security Scotland represents a major achievement in the history of devolution. The agency now administers 16 distinct benefits, supporting an estimated 1.2 million people. Investment in social security is a significant and growing proportion of the Scottish budget, forecast to increase from £4.2 billion in 2022-23 to £6.9 billion in 2025-26.

A defining feature of the new system is its success in building public trust. The 2023-24 client survey revealed a very positive public perception, with 81% of respondents rating their overall experience with Social Security Scotland as "good" or "very good". This high level of satisfaction provides a strong foundation of legitimacy and public consent, which is a critical asset for any future public service reform.

Furthermore, the policies delivered by the agency have had a demonstrable positive impact on tackling poverty.

The Scottish Child Payment (SCP), in particular, is a flagship policy with strong evidence of effectiveness. Scottish Government modelling suggests the SCP will reduce the relative child poverty rate by around five percentage points in 2023/24, lifting an estimated 50,000 children out of poverty. This success demonstrates that well-designed, targeted financial interventions can be a powerful tool for alleviating hardship and promoting equality.

Care Connect AI - A Vision for an Integrated, Proactive System

The current siloed structures of Scotland's public services are failing. A fundamental paradigm shift is required, moving towards a new model designed around the holistic needs of the citizen. This report articulates a vision for an integrated health and social security ecosystem, enabled by a secure federated data environment and powered by the ethical application of Artificial Intelligence.

The primary failing of the current system is its structural inability to see the whole person. Data is trapped in disconnected systems across NHS Scotland, 32 local authorities, Social Security Scotland, and numerous third-sector providers.¹⁸ This fragmentation is a fundamental barrier to effective service delivery, creating confusing journeys for citizens and immense duplication of effort for staff.

For decades, the story of public services has too often been one of fragmentation. Citizens with complex needs find themselves navigating a labyrinth of disconnected departments, forced to repeat their stories to countless professionals in health, social care, and housing.

For the dedicated staff within these services, the picture is equally frustrating: working with incomplete information, chasing data trapped in incompatible systems, and spending valuable time on administrative tasks instead of providing human-centered care. This siloed approach is inefficient, unsustainable, and fundamentally fails to see the whole person.

A new, visionary approach is required—one that leverages technology not to replace human connection, but to amplify it. This vision is Care Connect AI, an integrated ecosystem designed to unify people, departments, services, data, and technologies. It represents a paradigm shift from a reactive, crisis-driven model to a proactive, predictive, and personalized system of public service delivery.

The Digital Foundation: Unifying Data and Technology

The core challenge of modern public services is not a lack of data, but its fragmentation. Information is locked away in thousands of separate systems across the NHS, local authorities, and social care providers, each speaking a different digital language. This makes a holistic understanding of an individual's needs and circumstances almost impossible.

Care Connect AI addresses this by creating a federated data environment. This is not a single, monolithic government database. Instead, it is a secure and intelligent network where data remains with the source organization but can be accessed and shared ethically through a governed gateway. This model respects data ownership while breaking down the technical barriers that prevent collaboration.

The key to this unification is interoperability—the adoption of common technical and data

standards that allow different systems to communicate seamlessly. By establishing a "common language" for data, based on international standards like FHIR (Fast Healthcare Interoperability Resources), Care Connect AI ensures that information can flow securely and meaningfully between a GP's office, a social worker's case file, and a housing officer's records. This creates the trusted digital foundation upon which a new model of service delivery can be built.

A New Model of Care: Unifying People and Services

With data connected, Care Connect AI enables a fundamental redesign of how services are delivered, placing the citizen at the very center.

For citizens, this means a "no wrong door" approach to public services. Instead of navigating a complex bureaucracy, they interact with a single, coherent system that understands their holistic needs.

A "Digital Front Door" can provide a single point of entry, empowering individuals with access to their own information and greater control over their care. This ends the frustrating cycle of repeating sensitive information and allows for the delivery of coordinated, "wrap-around" support tailored to their unique situation.

For professionals, Care Connect AI dissolves the walls between departments and disciplines. It empowers multidisciplinary teams with the complete, real-time information needed to make the best decisions. A social worker can see that their client has missed several GP appointments; a hospital discharge team can coordinate directly with community care providers to ensure a safe transition home. This collaborative environment breaks down the professional hierarchies and cultures of mistrust that can hinder effective data sharing, fostering relationships built on a shared goal: the wellbeing of the individual.

The Power of AI: From Insight to Intervention

The "AI" in Care Connect AI is the engine that turns unified data into actionable intelligence, enabling a shift from reactive problem-solving to proactive prevention.

- **Predictive Analytics for Early Intervention:** By analyzing integrated health and social data, machine learning models can identify individuals or families at high risk of future crises—such as an avoidable hospital admission, rent arrears, or a mental health emergency. Scotland's SPARRAV4 tool, for example, already uses AI to analyze health records to predict the risk of emergency admission, allowing for preventative interventions. Care Connect AI expands this capability, creating a safety net that enables support to be offered before a crisis occurs.
- **Intelligent Automation to Free Up Professionals:** A significant portion of a skilled professional's time is consumed by administrative tasks. Care Connect AI uses technologies like Natural Language Processing (NLP) to automate the summarization of clinical notes, transcribe client conversations, and draft routine reports and

applications. This automation doesn't replace professional judgment; it liberates it, allowing social workers, doctors, and nurses to spend less time on paperwork and more time on the high-value, empathetic interactions that matter most.

- **Personalized and Proactive Services:** The system can proactively identify a citizen's eligibility for benefits they aren't claiming and even pre-populate application forms, shifting the administrative burden from the individual to the state. AI-powered chatbots can provide citizens with instant, 24/7 answers to common queries, improving accessibility and reducing the load on call centers.

The Bedrock of Trust: An Ethical Framework

This visionary approach is only possible if it is built on a non-negotiable foundation of public trust. The use of personal data and AI in public services requires a commitment to radical transparency, robust accountability, and meaningful citizen control.

The Care Connect AI model is underpinned by a strong ethical governance framework with several key safeguards:

- **Transparency and Fairness:** All algorithms used for decision support must be subject to regular, independent audits to identify and mitigate bias, ensuring that the system actively reduces, rather than amplifies, existing inequalities.
- **Human-in-the-Loop:** AI is a tool for decision support, not automated decision-making. The final judgment in any critical decision affecting an individual's life or liberty will always rest with a qualified human professional.
- **Citizen Control:** Individuals must have clear, accessible information about how their data is being used and the ability to provide or withdraw consent, giving them genuine agency in the system.

By embedding these principles from the outset, Care Connect AI is designed to earn and maintain the confidence of the people it serves.

Ultimately, Care Connect AI is more than a technological solution; it is a new philosophy for public service. It leverages the power of artificial intelligence to break down long-standing silos, fostering a unified ecosystem where data flows securely, professionals collaborate seamlessly, and services are designed around the holistic needs of every citizen. It is a vision for a future that is not only more efficient and sustainable, but also more connected, proactive, and profoundly human.

The Policy Mandate for Change: Aligning with UK and Scotland's Data Strategy

The creation of Care Connect AI is not a speculative leap into the unknown but the logical and necessary implementation of established national policy. High-level data strategies from both the UK Government and the Scottish Government provide a clear and compelling mandate for precisely this type of transformation.

These strategies articulate a shared understanding of the problem of data fragmentation and a unified vision for a more connected and intelligent future for health and social care.

Scotland's first dedicated "Data Strategy for Health and Social Care" establishes a clear roadmap for transforming how data is accessed and used to improve health and wellbeing. The strategy identifies the lack of consistency in data recording and the resulting poor interoperability as primary barriers to progress.

A key priority is therefore to begin working towards common information standards and principles to make it easier to exchange data across sectors. The Scottish strategy also echoes the imperative of building a trusted and secure ecosystem where data is shared and managed transparently, with robust information governance and cyber security processes.

Both strategies candidly acknowledge the scale of the challenge. They recognise that the current data landscape is diverse, fragmented, and of differing levels of maturity, and that implementing a common approach will be a major, multi-year undertaking requiring a shared commitment across all organisations.

By framing Care Connect AI as a direct delivery mechanism for these national strategies, the initiative can harness this high-level political will. It moves from being a standalone project to a cornerstone of a national mission, leveraging the authority of existing policy to overcome institutional inertia and secure the cross-departmental buy-in essential for its success.

Architectural Blueprint: A Federated Data Environment

This report proposes a national Federated Data Environment—a secure, ethical, and interoperable ecosystem to connect health and social security data. This is not a single, monolithic database; it is an architecture that respects organisational autonomy while enabling the seamless flow of information.

A central challenge in unifying data for analysis is how to gain powerful, cross-silo insights without creating a single, monolithic database of sensitive personal information. Such a centralised repository would represent a high-value target for cyberattacks and would likely

face insurmountable opposition from the public due to privacy concerns.

The architectural solution to this challenge is a federated data platform. This is a decentralised system that enables participating organisations to collaboratively analyse their respective datasets without ever centralising the raw data.

In this model, each entity—be it an NHS hospital, a local council, or a third-sector provider—retains full control and ownership of its data within its own secure IT environment. This approach is fundamentally privacy-preserving by design, as it ensures sensitive information does not leave the custody of the trusted organisation that collected it.

This preservation of local data sovereignty is critical for complying with stringent privacy regulations and, most importantly, for building the public trust that is essential for the project's success.

Core Principles:

- **User-Centricity:** The system must be designed around the citizen's journey.²¹
- **Federated, Not Centralised:** Data remains with the source organisation. Integration is achieved by making data securely queryable through standardised Application Programming Interfaces (APIs), not by moving it to a central repository.²³
- **Openness and Interoperability:** The ecosystem will be built on open standards, such as the HL7 Fast Healthcare Interoperability Resources (FHIR) standard, to ensure different IT systems can communicate .
- **Trust by Design:** Privacy and security must be embedded into the architecture from the outset.²⁶

Technical Components:

1. **The Citizen Identity Spine:** Expanding the use of the Community Health Index (CHI) number to become the standard unique identifier across health, social care, and social security .
2. **A Standardised Data Layer:** Implementing national information standards to ensure data is consistent and understandable across different systems.²⁹
3. **The Secure API Gateway:** A central digital gatekeeper that manages and audits all requests for data between organisations, enforcing governance rules without holding the data itself.
4. **The AI and Analytics Engine (National Safe Haven):** A highly secure, controlled environment where anonymised or pseudonymised data can be used to develop, train, and validate AI models without compromising individual privacy .

Conclusion and Strategic Recommendations

Scotland's public services are at a tipping point. The siloed, reactive models of the 20th century are failing to meet the complex, interconnected needs of the 21st. Continuing this approach is a path to escalating costs and worsening outcomes.

The vision articulated in this report—for an integrated, AI-powered health and social security ecosystem—offers a transformative alternative. By strategically harnessing data, Scotland can redesign its public services around the citizen, shifting the paradigm from crisis management to proactive, preventative, and personalised support.

To embark on this path, the following strategic recommendations are proposed:

1. **Establish a Cross-Government Transformation Taskforce:** Appoint a dedicated Cabinet Secretary for Public Service Integration to drive this strategy across government, chairing a joint taskforce of senior leaders from health, social justice, local government, and digital directorates.
2. **Commit to a Long-Term, Ring-Fenced Funding Settlement:** Secure a ten-year, ring-fenced funding settlement to support all phases of the implementation roadmap, providing the stability required for such a fundamental national infrastructure project.
3. **Legislate for Ethical Data Sharing:** Introduce a "Data for Public Good (Scotland) Bill" to provide a clear, modern legal framework for secure and ethical data sharing. The Act will formally establish the Joint Data Governance Board and codify the principles of citizen consent, transparency, and accountability.
4. **Launch a National Conversation on Data for Wellbeing:** Initiate an immediate, wide-ranging public engagement campaign, involving citizen juries and public consultation, to co-design the ethical framework that will govern the ecosystem and build the social contract required for success.

By adopting these recommendations, the Scottish Government can take the decisive first steps towards a future where public services are truly integrated, intelligent, and empowering—a future that ensures a healthier, fairer, and more prosperous Scotland for generations to come.

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