EVIDENCE, PRODUCT AND PILOT REPORT

CareGrid

Closing the Medication Loop

A shared, signed medication-change and waste-prevention layer for integrated care

> **CORE PROPOSITION** One reconciled medication view. Every authorised change signed. Every affected service notified. Every next action acknowledged and closed.

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August 2026 | Version 2.0

Independent concept report. Not commissioned or endorsed by NHS England or an NHS organisation. Financial outcomes are hypotheses for controlled evaluation, not savings commitments.

EXECUTIVE DECISION BRIEF

A workflow layer that turns medication visibility into accountable action

England already has electronic prescribing and shared-care viewing. CareGrid addresses the operational gap after a medicine is started, stopped, changed or cannot be supplied.

RECOMMENDATION Run a Lancashire discovery and controlled pilot of CareGrid as a standards-based coordination layer around existing clinical, pharmacy and shared-care systems.

The proposition

- One reconciled medication view is available to authorised care teams across primary care, community pharmacy, acute and tertiary care, mental health, community services, care homes, hospice and hospital homecare.
- The authorised clinician who changes a medicine creates a signed event with the reason, effective time and intended follow-up. The prior state is retained; it is never silently overwritten.
- Affected organisations receive an actionable notification. The nominated pharmacy or relevant medicines service acknowledges it, updates the dispensing/repeat workflow and closes the loop.
- CareGrid records the resolution, any prevented duplicate or obsolete supply and the balancing safety measures needed to prove benefit.

The immediate ask

1. Approve an 8-week multidisciplinary discovery in Blackburn with Darwen / Lancashire and South Cumbria.
2. Test three first use cases: a stopped medicine still due for supply; duplicate supply after discharge; and a care-home repeat/stock mismatch.
3. Build an alpha with synthetic data, complete initial clinical-safety and information-governance work, then enter shadow mode before any live workflow change.

BOUNDARY CareGrid is not a new national prescribing system, not a single unrestricted editable list, and not a claim to eliminate all medicines waste. Patient reporting is an optional later enhancement, not a dependency.

1. THE PROBLEM

Medication information can be visible without the change being owned

The failure is not simply that records are digital or non-digital. It is that medication changes cross organisations without a single accountable event from decision to implementation.

NHS prescribing, dispensing, shared-care and transfer-of-care services already provide important infrastructure. EPS processes prescriptions; Shared Care Records make information viewable; discharge services and clinical standards support reconciliation. Yet an action can still be clinically agreed in one setting while an old repeat, supply instruction or administration record remains active elsewhere. [5]-[13]

Signal	Current evidence	What it means
Scale	1.30 billion community prescription items at £11.6 billion in England, 2025/26. [1]	A small failure rate can create substantial patient and staff burden.
Patient access	45% of 7,029 adults reported a medication-access issue; 19% reported a prescription delay and 23% a pharmacy stock-out. [4]	Survey experiences overlap and are not transaction rates, but the failure is visible to patients.
Digital maturity	93% of trusts have an EPR, but only 30% reported fully integrated, bi-directional flows; shared records are not consistently embedded in workflow. [9]	Access to data does not guarantee that downstream work is completed.
Transfers	NICE expects medicines reconciliation at admission and after discharge; WHO identifies transitions as a medication-safety priority. [13] [14]	The highest-risk moments are precisely where systems and teams change.

THE GAP A medication decision needs a signed source, a defined recipient, a named next action, an acknowledgement and a resolved state. Today those elements are often spread across different systems, messages and local processes.

There is no single official national KPI for a 'late prescription'. Delay may arise before authorisation, during transfer, at pharmacy receipt, during sourcing, while an alternative is agreed or because the patient is unaware that medicine is ready. The pilot should create an end-to-end continuity measure instead of presenting one survey result as a national transaction rate.

2. THE £300M BENCHMARK

Use the national waste figure - and state exactly what it is

The widely used £300 million figure is a historic 2009/10 estimate of gross NHS primary and community prescription-medicine waste in England, not a current audit and not a complete measure of hospital waste.

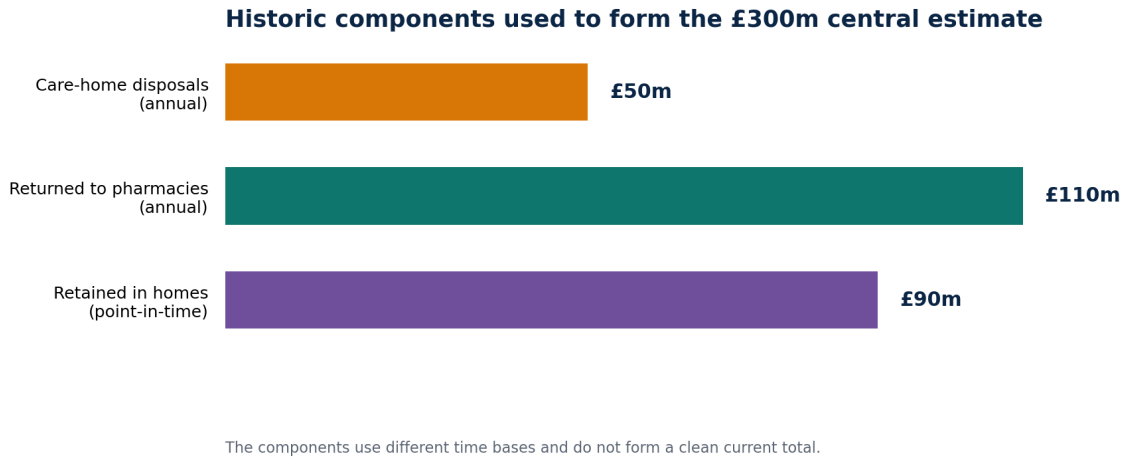

Figure 1. Historic components used in the 2010 national estimate. Values have different time bases and should not be summed as a current 2026 breakdown. Source: [2].

The original study estimated a realistic central gross value of about £300 million after allowing for household disposal, dispensing-doctor returns and disposal costs not captured in the three headline components. It estimated that 30%-50%, or about £100-£150 million, might be cost-effectively avoidable at that time. It also warned that intervention costs may exceed medicine savings, particularly for low-cost items. [2]

HOW CAREGRID WILL USE IT £300m is the size-of-opportunity benchmark. The pilot will measure current local waste pathways directly and will report verified gross medicine value, cash-releasing savings, staff time and safety outcomes separately.

The original research also matters because it rejects a patient-blame narrative

- Therapies are stopped or changed because of ineffectiveness, side effects or disease progression.
- Repeat prescribing and dispensing processes can cause excessive supply independently of patient action.
- Care-system failures can leave vulnerable people without adequate support.
- Some waste is inevitable, including recovery, death and clinically appropriate precautionary prescribing.

3. WHERE WASTE OCCURS

The £300m is distributed across homes, pharmacies and care processes

CareGrid Core addresses medication-state and hand-off failures first; later layers can address stock, traceability, shortages and patient use.

Waste pathway	Typical mechanism	CareGrid response
Stopped or changed therapy	Old repeat remains active; already prepared or scheduled supply continues.	Core: signed change, recipient alert, pause/cancel task, acknowledgement.
Duplicate after transfer	Hospital discharge change and GP/pharmacy record are not reconciled promptly.	Core: transfer event, conflict flag, owned reconciliation, closure.
Repeat oversupply	Quantity, cycle or PRN need is out of alignment with actual regimen.	WasteGuard: duplicate/early/overlap rules plus professional review.
Care-home stock mismatch	Monthly ordering, eMAR, stock and discontinued items are not aligned.	Care Home layer: cycle plan, stock/PRN status, signed changes and pharmacy confirmation.
Home-held excess	Changed regimen, synchronisation problems or unnecessary repeat items accumulate.	Optional patient/carer stock signal plus clinical or pharmacy verification.
Ward and hospital stock	Returns, expiry, transfer and inventory handling create local loss.	Later GS1/Scan4Safety and inventory integration; not Core.
Shortage substitution	Unavailability creates partial supply, alternative sourcing and obsolete orders.	Later Shortage Coordination layer linked to patient-specific continuity plan.
Manufacturing/supply chain	Raw-material, batch, distribution and recall issues.	Future traceability integration; beyond the first CareGrid product boundary.

PRIORITY The first pilot should not chase every category. It should prove that three specific closed loops prevent obsolete or duplicate supply without creating missed essential doses.

4. BUILD ON NHS FOUNDATIONS

CareGrid should extend existing infrastructure, not duplicate it

The credible position is an interoperable workflow and event layer that can be launched regionally and integrated with national services where approved interfaces exist.

Foundation	What it already provides	The remaining CareGrid job
Electronic Prescription Service	Signed electronic prescription workflow, nominations, cancellations, dispense notifications and tracking. [5][6]	Connect medication change context to cross-provider ownership and confirmed downstream action.
Summary Care Record	National view of important GP-derived information including current medication for authorised direct-care staff. [7]	Do not replace; keep provenance and distinguish view from actionable change event.
Shared Care Records	Local multi-provider view of current health, medication and care information. [7]	Embed an operational workflow: recipient, task, acknowledgement, conflict and resolution.
L&SC Shared Care Record	A non-persisted regional view with participating trusts, all GP practices and selected care/social-care partners. [8]	Use as a pilot foundation; test workflow integration rather than creating another read-only portal.
Discharge Medicines Service	Hospital-to-community-pharmacy referral and reconciliation after discharge. [10][11]	Add shared status, timely acknowledgement and measurable closure across the transfer.
NHS App tracker	Patient-visible prescription progress where participating pharmacy data are available. [26]	Reuse status where possible; patient app features remain optional to the Core.
NHSBSA Oversupply Dashboard	Population analytics identifying potential oversupply in selected areas. [27]	Turn a potential signal into an owned intervention and verified outcome.

DEFENSIBLE DIFFERENCE Shared Care Record = view. EPS = prescription transaction. CareGrid = signed medication-change workflow, acknowledgement and waste attribution across organisations.

5. THE CAREGRID OPERATING MODEL

One reconciled view, backed by versioned and signed change events

A single shared record must not become an unrestricted list that anyone can overwrite. Clinical authority, provenance and history are fundamental safety controls.

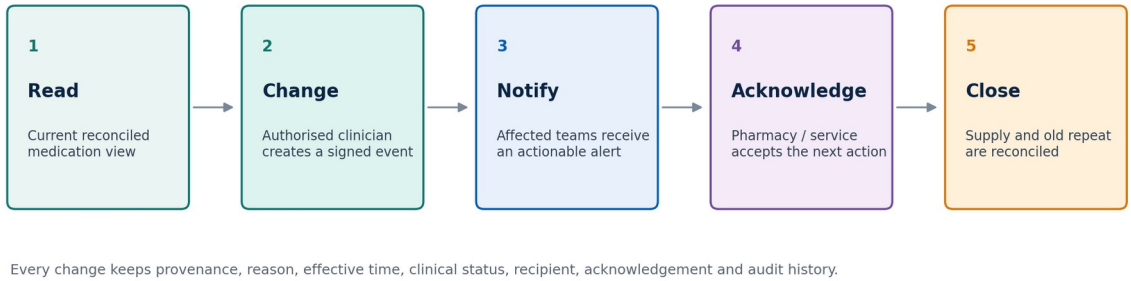

Figure 2. Proposed closed medication loop. CareGrid coordinates the change; authoritative clinical and dispensing actions remain in approved source systems.

The six operating rules

1. Read: authorised staff see the reconciled current view and the source of each medication statement.
2. Change: only an appropriately authorised prescriber signs a start, stop, dose, route, frequency or formulation change; other staff can propose or reconcile within their scope.
3. Notify: CareGrid routes the event to every service affected by the change, including the nominated pharmacy and administration setting.
4. Acknowledge: a named team accepts the next action; silence is visible and escalates according to risk.
5. Close: the old repeat/supply/admin record is reconciled and the outcome is recorded.
6. Learn: one verified waste outcome and balancing safety record are attached to the event.

CLINICAL RECORD PRINCIPLE CareGrid should present a reconciled operational view, not declare itself the sole legal record until governance, architecture and deployment responsibilities are formally agreed.

6. CLINICAL AUTHORITY AND ACCOUNTABILITY

Every edit needs scope, signature and an accountable recipient

The system succeeds only if it is clear who can authorise a change, who can propose one, who must act and how conflicts are resolved.

Participant	Can authorise / edit	Must acknowledge or contribute
GP / independent prescriber	Start, stop or alter within competence; sign reason, effective time and follow-up.	Review conflicting sources, repeat list and outstanding tasks.
Hospital / tertiary prescriber	Create inpatient, discharge, outpatient or hospital-only medication change.	Identify community impact, duration, monitoring and supply route.
Mental-health prescriber	Create and sign psychotropic changes within scope.	Set monitoring, shared-care and hand-back requirements.
Community pharmacist	Record dispensing/supply status and interventions; prescribe only where authorised.	Acknowledge change, hold/cancel/update local workflow, report conflict or shortage.
Hospital pharmacy / homecare team	Record reconciliation, hospital supply and homecare status.	Confirm high-cost/hospital-only supply and hand-off.
Non-prescribing clinician	Propose discrepancy or reconciliation; cannot silently change a prescription.	Identify source, urgency and required prescriber review.
Care-home authorised staff	Record stock/admin status and propose discrepancy within governance.	Update eMAR/workflow after signed instruction; acknowledge receipt and action.
Patient / carer	View, question and optionally report stock/use later; cannot create a clinical change.	Confirm receipt or raise discrepancy when the optional companion is enabled.

A conflict - for example, GP record says 'active' while a discharge event says 'stopped' - should not be resolved by choosing the newest timestamp blindly. CareGrid should display both sources, risk-prioritise the discrepancy, identify the accountable reconciler and preserve the resolution history.

> **NEVER SILENTLY OVERWRITE** Version history and event provenance are safety features. The current view is the result of reconciliation, not the absence of disagreement.

7. EVERY MEDICATION TOUCHPOINT

The first half of the journey: community, admission and inpatient care

Andrew Davies' feedback is central: a 'full medication loop' must include managed care, not only GP practice and community pharmacy.

Touchpoint	Medication event	Required closed-loop action
General practice / PCN	New prescription, repeat authorisation, review, dose or item change.	Signed event; nominated dispenser and affected care team notified.
Community pharmacy	Prescription received, partial supply, owing, no stock, intervention or dispense.	Acknowledge event; update supply state; route conflict; confirm closure.
Urgent / out-of-hours care	Short course, emergency supply or temporary change.	Record intended duration; notify GP/pharmacy; prevent accidental continuation.
Admission	Patient's own drugs, self-medication and medicines reconciliation.	Compare sources; identify discrepancies; record status of medicines brought in.
Inpatient ward	Start, stop, dose/frequency change, formulary substitution.	Keep inpatient purpose distinct; mark which changes continue after discharge.
Inter-ward / inter-hospital transfer	Medication chart and supply responsibility moves.	Transfer unresolved tasks, monitoring and stock/supply state with ownership.
Discharge / TTO	Discharge supply, re-issue of patient's own drugs and community hand-off.	Send signed change set; notify GP and nominated pharmacy; confirm first post-discharge reconciliation.

FIRST PILOT PATHWAY A hospital-stopped medicine should trigger a signed discharge change, notification to the GP and nominated pharmacy, pharmacy acknowledgement, repeat-list reconciliation and a single closed outcome.

NHS Discharge Medicines Service data explicitly anticipates issues such as a medicine stopped in hospital remaining on the first prescription after discharge, the wrong medicine, strength, dose or formulation, or a discharge medicine being missed. [11]

8. EVERY MEDICATION TOUCHPOINT

The second half: specialist, mental-health, homecare and social-care settings

The medication loop remains open until specialist supply, community administration and long-term-care workflows reflect the authorised change.

Touchpoint	Medication event	Required closed-loop action
Outpatient / tertiary care	Hospital-only, specialist or clinically urgent product initiated or changed.	Identify supply route, monitoring owner, duration and hand-back.
Mental-health inpatient/community	Psychotropic initiation/change, depot, shared-care or physical-health monitoring.	Notify relevant GP, pharmacy and care team with explicit responsibilities.
Hospital homecare / high-cost medicines	Specialist authorisation, delivery, cold-chain and dose-cycle changes.	Synchronise approval, provider, delivery, next dose and discontinuation.
Community nursing / virtual ward	Administration, injectable therapy or home monitoring.	Confirm administration plan, missed-dose risk and escalation owner.
Care home / nursing home	Monthly order, PRN stock, eMAR, administration and resident transfer.	Align signed change, repeat list, pharmacy supply, stock and eMAR.
Hospice / end-of-life care	Rapidly changing symptom-control and anticipatory medicines.	Preserve access while preventing obsolete long-term repeats; apply specialist safeguards.
Social care / supported living	Prompting or administration support and proxy ordering.	Use minimum necessary access; acknowledge operational change within scope.
Ambulance / emergency transfer	Urgent medicines history and treatment during transfer.	Read current provenance; record urgent event for receiving team.

The Lancashire and South Cumbria Shared Care Record already draws from multiple health and care organisations and includes medication information. It is therefore a practical environment in which to test an action layer, while recognising that not all social-care and care-home partners are yet live. [8]

> **DESIGN PRINCIPLE** Every touchpoint does not need the same interface. It needs the same event semantics, appropriate role-based access and a reliable way to accept, decline, query or complete the action.

9. WORKED SCENARIO

Amlodipine is stopped in hospital - the repeat must not continue by accident

The first prototype scenario demonstrates why visibility alone is insufficient.

Moment	Fragmented pathway	CareGrid pathway
Decision	Hospital clinician records the stop in the hospital EPR/discharge letter.	Clinician creates a signed stop event with reason and effective time.
Transfer	GP receives a discharge document; pharmacy may not receive an actionable event immediately.	GP and nominated pharmacy receive the same structured event and context.
Old repeat	Amlodipine may remain on the GP repeat list or pharmacy workflow until manually found.	Prior repeat is flagged 'action required'; no silent deletion occurs.
Ownership	Patient, GP and pharmacy may chase each other to establish the current plan.	Named team accepts the reconciliation task; elapsed time is visible.
Supply	An old item can be prepared, dispensed or delivered.	Pharmacy records hold/cancel/update and whether supply was prevented.
Closure	No shared confirmation that all affected systems now match.	Event closes only after reconciliation and acknowledgement; exceptions escalate.

WASTE OUTCOME If 28 tablets would otherwise have been supplied, CareGrid records the quantity and gross value once - with the source evidence and reason. It does not count the same event again at GP and pharmacy stages.

What the prototype must show

- Current medication view with source, status and last reconciliation time.
- Signed change event and version history.
- Who has been notified and who owns the next action.
- Pharmacy acknowledgement, supply status and conflict response.
- Time-based escalation where acknowledgement is absent.
- Closed-loop outcome, prevented quantity/value and balancing safety result.

10. PATIENT VALUE

The system works without patient input - but it still gives patients a better service

CareGrid's core value is professional coordination. The patient companion can be added only after the medication record and workflow are reliable.

Core patient value	How it is delivered without patient data entry
A more reliable current list	Authorised changes are versioned, signed and reconciled across connected care settings.
Fewer obsolete or duplicate supplies	Old repeats and downstream workflows are flagged and acknowledged when medicine changes.
Less repetition and chasing	Staff share the same event status, owner and next action.
Safer transitions	Admission, discharge and specialist hand-offs carry medication change context and responsibility.
Clearer communications	A patient-facing view can display what changed, which service is acting and when to seek help.
Inclusive access	Core clinical workflows continue even if the patient has no smartphone, lacks capacity or chooses not to engage digitally.

Optional companion - later roadmap

- Medicine reminders and app notifications when a dose is due.
- Patient acknowledgement that a dose was taken, skipped or needs help.
- Stock-on-hand and 'still needed' reporting before repeats.
- Plain-language guides, device technique and links to voice assistants or accessibility tools.
- Receipt confirmation and discrepancy reporting.

SAFETY BOUNDARY A patient report is a signal, not an instruction. It must never autonomously stop, change or withhold a medicine. Non-response must never be interpreted as no need.

11. MINIMUM DATA MODEL

The actionable unit is a signed medication event, not a free-text message

A viable integration depends on a small, precise event model that each connected system can interpret.

Object	Minimum fields
Patient identity	NHS number and verified demographic linkage; local identifiers where required.
Medication statement	dm+d/SNOMED-coded medicine, dose, route, frequency, formulation, status, indication where appropriate, source and author.
Change event	Start/stop/modify/reconcile/propose; before and after state; reason; effective time; urgency; intended duration and review.
Clinical signature	Author identity, role, organisation, authentication, time and attestation.
Recipients	Affected organisations/teams, notification time, priority and required response.
Acknowledgement	Accepted/declined/queried/completed, accountable person/team, timestamp and reason.
Supply state	Prescription and item IDs where available, nominated dispenser, partial/owing/ready/dispensed/delivered/returned/cancelled.
Conflict	Competing sources, risk, assigned reconciler, decision and retained provenance.
Outcome	Resolved state, treatment-gap result, quantity/value prevented or additional clinically appropriate supply.
Audit	Every view, edit, route, acknowledgement, override, escalation and export required by governance.

DATA QUALITY The current view must state when and from where it was last reconciled. 'Current' without provenance can create false confidence.

Where exact source-system APIs are unavailable, discovery should prefer safe read-only integration, structured tasks and governed write-back over duplicate manual transcription.

12. INTEROPERABILITY ARCHITECTURE

CareGrid should connect workflows through NHS standards and approved interfaces

The architecture below is conceptual. Interface availability, write-back rights, system-of-record responsibilities and conformance requirements must be validated with NHS and supplier partners.

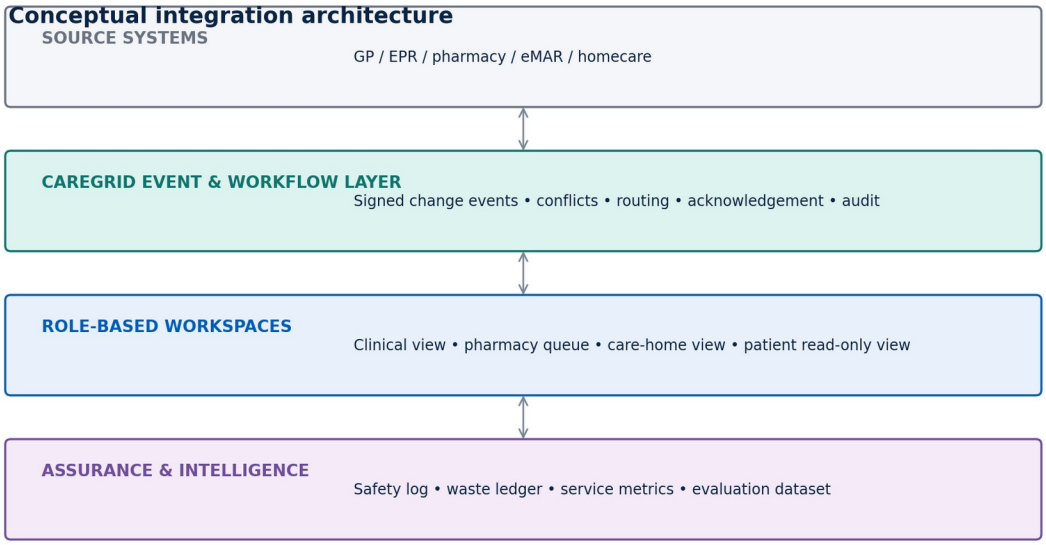

Figure 3. Conceptual CareGrid architecture. This is a discovery hypothesis, not an approved NHS technical design.

Design choice	Proposed basis
Clinical terminology	dm+d and SNOMED CT for medication identity and coded meaning. [6][15][16]
Structured exchange	UK Core FHIR resources and the Medicine and Allergy/Intolerance data-transfer standard. [15] [16]
Transfer of care	FHIR-based acute discharge content and approved transport such as MESH where applicable. [17]
Prescription workflow	EPS prescription/order IDs, cancellation and dispense notification capabilities where approved. [5][6]
Identity and access	NHS number/PDS matching, Care Identity/CIS2 where applicable, role- and purpose-based access.
Regional record	Launch from the L&SC Shared Care Record ecosystem or an agreed embedded/single-sign-on route, subject to governance. [8][9]

13. PRODUCT ROADMAP

Start with one closed loop, then add the layers that address other waste pathways

The roadmap deliberately separates medication-change coordination from adherence, inventory and end-to-end supply-chain traceability.

Layer	Capability	Value
1. CareGrid Core	One reconciled view; signed change; notification; acknowledgement; reconciliation; audit.	Prevents obsolete/duplicate supply and missed hand-offs.
2. WasteGuard	Duplicate, early, overlap, conflict and quantity rules with professional review.	Targets repeat oversupply without autonomous withholding.
3. Transfer of Care	Admission/POD, inpatient intent, discharge/TTO, DMS and first-post-discharge closure.	Reduces discrepancies and repeat continuation after transfer.
4. Care Home Stock	Monthly cycle, eMAR, PRN stock, discontinued items, proxy-order status and pharmacy confirmation.	Reduces stock mismatch and unnecessary returns.
5. GS1 / Scan4Safety	Pack, batch, expiry, location, recall and patient association where standards and data permit.	Improves traceability, inventory and expiry control. [20]
6. High-cost / Homecare	Authorisation, provider, delivery, dose-cycle and discontinuation coordination.	Protects continuity and avoids high-value duplicate or obsolete supply.
7. Shortage Coordination	Patient-specific shortage status, alternatives, source, owner and resolution.	Reduces chasing and unsafe gaps; complements national shortage work. [25]
8. Patient Companion	Reminders, dose acknowledgement, stock/use report, guides and accessibility channels.	Adds adherence and patient-confidence value without making Core dependent on engagement.
9. Waste Intelligence	Verified waste ledger, failure hotspots, environmental proxy and outcomes dashboard.	Supports ICB commissioning, learning and scale decisions.

SEQUENCING Do not begin with blockchain or raw-material-to-patient traceability. Begin where data and accountable clinical workflows can prove a measurable local outcome; integrate broader traceability when the foundation is safe and useful.

14. VALUE CASE

Safety, staff time, medicine value and environmental benefit should be measured together

A waste-only business case can create the wrong incentives. The primary outcome is the right medicine, in the right regimen, at the right time.

Value domain	Expected mechanism	Pilot measure
Patient safety	Fewer conflicting lists, missed changes and unsafe gaps at transfer.	Discrepancy resolution, treatment-gap days, incident/hazard log.
Patient experience	Fewer repeat histories, visits and status-chasing contacts.	Contacts/visits per case, certainty score, complaints.
Professional workload	Clear ownership and fewer ad-hoc calls/messages between services.	Time per case, chasing contacts, queue volume and rework.
Medicine waste	Obsolete, duplicate or misaligned supply is intercepted before dispensing/delivery.	Verified quantity, gross ingredient/reimbursement value and reason.
Environmental impact	Avoided manufacture, freight, packaging and disposal where supply is genuinely prevented.	Conservative product/quantity proxy; do not claim a carbon total without a validated method.
System learning	Recurring transition and repeat-process failures become visible.	Failure rate by pathway, setting, cause and time-to-resolution.

NHS England states that medicines account for around 25% of NHS emissions and asks systems to address overprescribing and oversupply while improving care. This supports the direction of CareGrid, but it does not mean that preventing 1% of medicine spend automatically prevents 1% of NHS emissions. [21]

ECONOMIC EQUATION Net value = verified avoided medicine value + released staff capacity + attributable downstream cost avoided - technology, implementation and additional clinical-review cost.

Report gross medicine value, cash-releasing savings and resource benefit separately. Additional clinically appropriate supply triggered by better reconciliation can be a positive safety outcome even if it raises medicine spend.

15. SAFETY, GOVERNANCE AND TRUST

Medication coordination is safety-critical from the first prototype

CareGrid should enter discovery with a Clinical Safety Officer, a safety plan and explicit governance assumptions - not add assurance after a working product is built.

Risk	Minimum control
Wrong person / record	Verified identity matching, duplicate-record controls and manual escalation.
Unauthorised medication edit	Strong authentication, role/scope checks and clinical signature.
Newest event is not clinically correct	Conflict display, accountable reconciliation and no blind timestamp resolution.
Notification not actioned	Named recipient, acknowledgement clock, risk-based escalation and fallback.
Pharmacy acts on stale event	Version/status check at action time and immutable audit history.
Unsafe cancellation or withholding	No autonomous stop/cancel; approved source-system action and human confirmation.
Sensitive information over-shared	Purpose limitation, minimum necessary view, RBAC/PBAC and locally agreed exclusions.
Digital downtime	Business continuity, local fallback, queued reconciliation and recovery audit.
Automation bias / inequity	Explainable rules, human override, false-alert review and stratified outcomes.

Assurance route before live use

- DCB0129 product clinical-risk management and support for deploying organisations' DCB0160 obligations; hazard log and safety case. [22]
- DTAC assessment across clinical safety, data protection, technical security, interoperability, usability and accessibility. [23]
- Data Protection Impact Assessment, controller/processor or joint-controller model, data-sharing agreements and retention schedule.
- Data Security and Protection Toolkit-aligned controls, penetration testing, incident response and supplier assurance. [24]
- Regulatory classification assessment, including whether any decision-support function meets medical-device criteria.

16. LANCASHIRE PILOT

Use the existing regional record as the foundation for a tightly bounded workflow test

Lancashire and South Cumbria has a live Shared Care Record and a defined medicines-optimisation programme, making it a credible discovery environment rather than a blank-slate technology pitch. [8][30]

Pilot element	Proposed design
Geography	Blackburn with Darwen with Lancashire and South Cumbria partners; final footprint agreed in discovery.
Participants	2-3 GP practices, 3-5 community pharmacies, one acute discharge/medicines team and one care home; include mental-health and homecare stakeholders in discovery even if not live in phase 1.
Use cases	1) stopped medicine still due for supply; 2) duplicate/obsolete first prescription after discharge; 3) care-home repeat/stock mismatch.
Population	Adults on repeat medicines within participating pathways; explicit exclusions and high-risk safeguards agreed by CSO.
Stage 0	8-week discovery: workflow maps, data availability, user research, information governance, safety concept and baseline.
Stage 1	12-week alpha with synthetic data and usability testing; no live clinical decisions.
Stage 2	8-12 week shadow mode: generate events/alerts without changing care; compare with professional judgement.
Stage 3	Six-month controlled live pilot after safety/governance gates; monthly safety review and independent evaluation.

WHY SMALL The challenge is workflow, authority and integration - not whether a dashboard can be coded. A small multi-setting pilot exposes the real hand-offs while keeping clinical risk and evaluation tractable.

Health Innovation North West Coast supports the discovery, development and deployment of innovations across Lancashire and South Cumbria and is a suitable convening/evaluation partner alongside the ICB, care providers and community pharmacy leadership. [29]

17. EVALUATION FRAMEWORK

Prove continuity and waste prevention without moving risk elsewhere

A pilot should measure a full medication journey and attribute value to one verified intervention, not count clicks, alerts or duplicated savings claims.

Outcome	Definition	Source
Change acknowledgement	% of routed signed changes accepted/queried within the risk-based time window.	CareGrid event log
Closed-loop completion	% of change events reconciled in all in-scope downstream workflows.	CareGrid + source evidence
Continuity failure	Intended medicine unavailable or unresolved by the clinically safe date.	Case review and supply data
Discrepancy resolution	Time from detected conflicting medication state to signed reconciliation.	Event and audit log
Verified prevented supply	Quantity/value not dispensed or delivered because an obsolete/duplicate instruction was corrected.	Prescription/dispense evidence
Treatment-gap days	Days without an intended medicine, especially time-critical/high-risk items.	Clinical review
Chasing workload	Calls, messages and repeat contacts needed to establish status or responsibility.	Telephony/work logs
False / low-value alert rate	Alerts not requiring change, including duplicate notifications and stale conflicts.	Professional adjudication
User acceptability	Task completion, usability, trust and reported rework across each role.	Usability study/interviews
Equity and inclusion	Completion and outcome differences by relevant population/channel characteristics.	Evaluation dataset

Evaluation design

- Establish at least 8-12 weeks of baseline and record seasonal/shortage context.
- Use shadow mode to estimate alert precision and hazards before live intervention.
- Use matched comparison or stepped-wedge rollout where feasible; pre/post alone is vulnerable to external supply changes.
- Independently adjudicate a sample of prevented-supply outcomes and safety cases.
- Set scale thresholds only after baseline: benefit, no safety deterioration, acceptable workload and credible net value.

18. DELIVERY AND ADOPTION

Discovery should answer the questions procurement will ask later

The route to adoption is clinical and operational evidence first, integration and assurance second, then a scale business case.

Gate	Evidence required	Decision
Discovery	Validated user journeys, touchpoints, authority model, baseline, integration map and pilot protocol.	Select one workflow and committed partners.
Alpha	Usability, synthetic end-to-end event flow, data model, initial safety case and DPIA.	Enter shadow mode or redesign.
Shadow	Alert precision, workload, conflict patterns, hazard controls and technical reliability.	Approve bounded live test.
Pilot	Continuity, safety, verified waste value, staff time, equity, implementation cost and acceptability.	Stop, adapt or expand.
Regional scale	Repeatable integrations, commissioning model, support/SLAs, benefits realisation and exit plan.	ICB adoption case.
National pathway	Standards conformance, product assurance, multi-region evidence and national-service alignment.	Partnership / procurement route.

Partners needed at the table

- ICB medicines optimisation, digital, shared-care-record, finance, analytics, commissioning, IG and patient-safety leads.
- GP, community pharmacy, hospital pharmacy, acute discharge, mental-health, care-home and homecare professionals.
- Patient and public representatives - especially people with complex regimens, carers and digitally excluded groups.
- NHS national product/data owners and clinical-system/pharmacy suppliers for interface and assurance discovery.
- An independent evaluation and health-economics partner.

COMMERCIAL DISCIPLINE Do not price or promise national savings before the integration scope, support model and attributable benefit are known. The first sale is a discovery/pilot partnership with explicit decision gates.

19. RISKS AND LIMITS

CareGrid can close coordination gaps; it cannot solve every medicines problem

A credible pitch states where the intervention helps and where complementary policy, clinical or supply-chain action is still required.

Limit	Implication
Not all waste is avoidable	Recovery, death, progression and appropriate contingency supply will still create unused medicines.
Data visibility is not data quality	A shared view can reproduce stale or incorrect source information unless reconciliation is owned.
Interoperability is uneven	Approved APIs, write-back and real-time events vary by supplier and setting; manual duplication must be avoided.
A notification can create another inbox	Route into existing work patterns where possible; measure workload and alert precision.
Clinical authority varies	Role/scope and local governance determine who may sign, propose, reconcile or acknowledge.
Supply shortages remain external	CareGrid can coordinate the patient response but cannot manufacture stock.
Patient adherence is separate	The Core does not know whether a medicine was taken; companion features and clinical support come later.
Environmental attribution is complex	Avoided quantity is not a validated carbon calculation; use conservative methods.
National shared-record policy is evolving	CareGrid must align with Connecting Care Records and Single Patient Record direction, not create a competing silo.

CLAIM WE CAN DEFEND CareGrid is designed to reduce medication discrepancies, obsolete or duplicate supply and unresolved hand-offs in the workflows it covers. Its effect size must be established by a controlled pilot.

20. CONCLUSION AND ASK

Turn a medication change into a completed, auditable action across the whole care network

CareGrid's opportunity is larger and more defensible than a prescription tracker: it closes the clinical and operational loop that tracking alone cannot close.

England has extensive digital prescribing and shared-record infrastructure. Lancashire and South Cumbria already has a Shared Care Record capable of showing medication information. The remaining opportunity is to make each important medication change actionable across organisational boundaries - with clinical authority, provenance, notification, acknowledgement, reconciliation and measurable closure. [5]-[9]

That model aligns with Andrew Davies' central point: the loop must include acute, tertiary and mental-health care alongside GP practice, community pharmacy, care homes, homecare and other settings. It also gives patients a clear benefit without relying on their input: a more reliable medication list, fewer discrepancies and less chasing. Patient reminders, dose acknowledgement and stock reporting can be added once the professional workflow works.

> **THE ASK** Convene an 8-week Lancashire discovery with the ICB, Health Innovation North West Coast, community pharmacy, GP practices, an acute discharge team, mental-health and care-home representatives to define the first closed-loop pilot.

Four outputs from discovery

1. An agreed cross-setting medication-change and acknowledgement workflow.
2. A minimum data and interoperability specification using NHS standards.
3. A clinical-safety, information-governance and assurance plan.
4. A controlled pilot protocol with baseline, balancing measures and independent evaluation.

CareGrid in one line

One medication view. Every change signed. Every service notified. Every action acknowledged. Every loop closed.

View the interactive CareGrid prototype

APPENDIX A

Evidence register

This register separates source evidence from CareGrid product and pilot hypotheses. Figures with different years, geographies and denominators are not combined.

Evidence	Finding used	Limitation / use
NHSBSA 2025/26 [1]	1.30bn community prescription items; £11.6bn cost.	Current scale, not waste, adherence or delay.
National waste study [2]	~£300m gross primary/community waste in 2009/10; 30%-50% potentially cost-effectively avoidable.	Historic; not a 2026 audit; not complete hospital waste.
Healthwatch poll [4]	45% any medication-access issue; 19% prescription delay; 23% pharmacy stock-out.	7,029 adults; overlapping experiences; not transaction rates.
EPS [5][6]	>95% of England prescriptions produced electronically; signed workflow, cancellation and tracking capabilities.	EPS is not a clinical prescribing system and does not itself create a cross-provider medication-change closure workflow.
Shared Care Records [7] [8]	Medication and other current information can be viewed across participating care organisations.	Local coverage and workflows vary; regional view may be non-persisted/read-only.
Digital maturity [9]	93% trusts have EPR; 30% fully integrated bi-directional flows; shared records not consistently embedded in workflow.	Provider self-report/assessment; demonstrates implementation gap, not CareGrid effect.
DMS [10][11]	Supports communication and reconciliation after discharge; data spec includes stopped medicine still on first prescription.	Service/process foundation; no claimed national effect size here.
NICE / WHO [12]-[14]	Reconciliation and transition safety are established priorities.	Standards/guidance, not proof that CareGrid works.
Care-home proxy access [18]	Current process can lack confirmation that an acute request note was actioned.	Specific proxy-access workflow; supports need for acknowledgement, not a national prevalence estimate.
Green Plan [21]	Medicines account for around 25% of NHS emissions; systems should address oversupply while improving care.	Does not support a direct spend-to-carbon conversion.

METHOD NOTE This is a rapid evidence and product synthesis, not a systematic review. It prioritises original national research and official NHS, government, NICE, standards and WHO sources. Product architecture, timelines, targets and savings are proposals for validation.

APPENDIX B

Sources and links

Links were checked during preparation in August 2026. Archive cited versions before a formal business case, safety case or evaluation protocol.

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APPENDIX B CONTINUED

Sources and links

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