Supplementary material 3

Data sources, operational definitions, and decision rules used to identify, specify, consolidate and classify implementation strategies

Manuscript: Planned and emergent implementation strategies during national scale-up of hepatitis C point-of-care testing in Australia: a retrospective case study

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1. Purpose

This file documents the data sources, coding rules and operational definitions used to produce the consolidated implementation strategy matrix (Supplementary material 2) and the summary analyses reported in the manuscript. It is intended to make the basis for each classification transparent and reproducible. The rules below were applied to the coded record of strategy instances and refined through consensus during analysis; refinements were logged in the audit trail.

2. Data sources and evidence corpus

Table S3.1. Data sources.

Source	Period and volume	Content	Use in the analysis
Core program documents	May 2022 – September 2023; 28 documents, purposively selected	Protocols, standard operating procedures, governance materials, monitoring and communication plans, and materials on service selection, training, quality assurance, connectivity and logistics.	Identification of strategies and of prospective (planned) evidence; specification of actor, action and target; timing.
Meeting records	February 2021 – December 2023; records from 124 meetings of nine governance and implementation bodies	Minutes, agendas and presentations of: National Reference Committee; Implementation Committee; Clinical Advisory Group; Protocol Steering Committee; Aboriginal and Torres Strait Islander reference group (Aboriginal Governance Group); Site Implementation Forum; project team meetings; prison-specific project team meetings; quality assurance and training meetings.	Identification of strategies; contemporaneous evidence of introduction, adaptation and continued activity; timing and actor.
Stakeholder interviews (secondary analysis)	January – February 2024; 30 stakeholders, stratified purposive sampling by role group and jurisdiction	Semi-structured interviews with stakeholders in policy and funding, program partner, service and community roles across six states and territories (Australian Capital Territory, New South Wales, Queensland, South Australia, Victoria, Western Australia). Transcribed, deidentified and checked for accuracy.	Identification of strategies, in particular emergent and adapted strategies; explanation of why strategies were introduced or adapted; illustrative excerpts.
Program-team validation meeting	13 April 2026; one 2-hour meeting	Lead investigator and program management and coordination staff reviewed all consolidated strategies for accuracy, consolidation or splitting, temporality, target and actor, and verified introduction, modification, discontinuation and continued activity through 13 April 2026.	Validation of the consolidated inventory and its classification; extension of ascertainment of continued activity beyond the original data-collection period. Recorded as an analytic validation record, not counted as a primary evidence source.

Documents and meeting records covered periods ending in September and December 2023, respectively; interviews were completed in February 2024. Ascertainment of strategy introduction, modification, discontinuation and continued activity was extended to 13 April 2026 through program-team validation.

Purposive actions identified in these sources were coded as strategy instances. Each instance was assigned a status as recorded in the source: *prospective* (recorded as planned or intended in program documentation or committee records), *introduced* (described as having been put in place) or *adapted* (described as having been modified after introduction). Table S3.2 summarises the coded instances by source stream.

Table S3.2. Coded strategy instances by source stream and status recorded in the source.

Source stream	Source type	Prospective	Introduced	Adapted	Total
Stakeholder interviews	Interview	0	162	36	198
Initial program documentation	Program document	72	0	0	72
Project team meetings	Meeting record	26	0	0	26
Implementation Committee	Meeting record	17	2	0	19
Site Implementation Forum	Meeting record	3	4	0	7
Protocol Steering Committee	Meeting record	1	2	0	3
Clinical Advisory Group	Meeting record	0	2	0	2
National Reference Committee	Meeting record	1	0	0	1
Subtotal: coded instances from primary sources		**120**	**172**	**36**	**328**
Program-team validation records (provisional; S82–S85)†	Analytic validation record	2	2	0	4
Total records in the analytic file		**122**	**174**	**36**	**332**

† Four provisional records were created during the program-team validation meeting (13 April 2026) to preserve traceability when previously consolidated strategies were clarified or split (S82, S83, S84, S85). These records are not counted as primary evidence; links to the underlying primary sources are pending.

3. Implementation domains and ERIC taxonomy

Strategy instances were coded to the closest strategy in the Expert Recommendations for Implementing Change (ERIC) compilation [1] and grouped by ERIC cluster [2]. In the manuscript, clusters are labelled with domain names that reflect their content in this case (for example, “Train and educate stakeholders” is labelled “Training operators and assessing competency” because the trained stakeholders were decentralised testing operators). Table S3.3 provides the crosswalk.

Table S3.3. Crosswalk between implementation domain labels used in the manuscript, ERIC clusters and ERIC strategies.

Implementation domain (manuscript label)	ERIC cluster	ERIC strategies represented (number of consolidated strategies)	Strategies (n)	Instances (n)
Developing stakeholder partnerships and governance	Develop stakeholder interrelationships	Build a coalition (3); Capture and share local knowledge (4); Develop academic partnerships (3); Identify and prepare champions (2); Identify early adopters (2); Obtain formal commitments (2); Promote network weaving (2); Use advisory boards and workgroups (5)	23	58
Training operators and assessing competency	Train and educate stakeholders	Conduct educational outreach visits (1); Conduct ongoing training (1); Create a learning collaborative (1); Develop educational materials (1); Distribute educational materials (1); Make training dynamic (1); Provide ongoing consultation (1); Shadow other experts (1); Use train-the-trainer strategies (1); Work with educational institutions (1)	10	87
Changing infrastructure, including testing platforms	Change infrastructure	Change physical structure and equipment (4); Change record systems (4); Change service sites (1)	9	27
Supporting evaluation and iterative learning	Use evaluative and iterative strategies	Assess for readiness and identify barriers and facilitators (1); Audit and provide feedback (2); Develop and implement tools for quality monitoring (1); Develop and organize quality monitoring systems (1); Purposefully reexamine the implementation (3); Stage implementation scale up (1)	9	50
Adapting and tailoring the testing model to context	Adapt and tailor to context	Promote adaptability (6); Tailor strategies (1); Use data warehousing techniques (2)	9	40
Engaging clients and communities	Engage consumers	Increase demand (1); Intervene with patients or consumers to enhance uptake and adherence (3); Involve patients - consumers and family members (1); Use mass media (1)	6	24
Providing technical assistance and troubleshooting	Provide interactive assistance	Centralize technical assistance (2); Facilitation (2); Provide local technical assistance (1)	5	21

Implementation domain (manuscript label)	ERIC cluster	ERIC strategies represented (number of consolidated strategies)	Strategies (n)	Instances (n)
Supporting testing operators	Support clinicians	Develop resource sharing agreements (1); Facilitate relay of clinical data to providers (1); Revise professional roles (3)	5	8
Using funding and financial arrangements	Use financial strategies	Access new funding (2); Fund and contract for the clinical innovation (1)	3	8
Total			**79**	**323**

Instances (n), coded strategy instances linked to the consolidated strategies in the domain. Counts reflect documentation frequency and should not be interpreted as indicators of strategy importance or effectiveness.

4. Specification of strategies

Strategies were specified using the elements of Proctor et al. [3] that were consistently supported by the data (Table S3.4).

Table S3.4. Specification elements.

Element	Definition used in this study	Coding note
Actor	The individual, team, committee or organisational level that enacted the strategy.	Recorded as named in the source (e.g., central program team, training team, program leadership, sites, peer workers, Protocol Steering Committee). Multiple actors are separated by semicolons.
Action	The purposive action undertaken to enhance adoption, implementation, scale-up or sustainment of HCV point-of-care testing.	Reformulated as a concise, verb-led strategy statement preserving meaning and context; separable actions were coded independently.
Target	The person, group, process or structure at which the action was directed.	Recorded as named in the source (e.g., operators, sites, clients, record systems, funders).
Initiating level	The level responsible for initiating or authorising the strategy.	Inferred from the specified actor; see Table S3.5 for categories.
Delivery level	The level at which the strategy was enacted.	Retained from the validated level-of-action field; see Table S3.5.
Temporal position	The national program phase in which the strategy was first introduced and the phases in which it remained active.	First introduction distinguished from continued activity; national program phases interpreted separately from individual service implementation stages (Table S3.6).
Dose/intensity; intended mechanism	Not specified.	Excluded because they were inconsistently documented and described across sources.

5. Consolidation of strategy instances into distinct strategies

Coded strategy instances were consolidated into distinct implementation strategies according to the following rules:

1. Instances were consolidated when they mapped to the same ERIC strategy, served equivalent implementation functions, involved similar actions and targets, and did not differ meaningfully in origin, level or trajectory.
2. Instances remained separate when consolidation would obscure meaningful differences in actor, target, level, timing, trajectory or implementation function. For this reason, several ERIC strategies are represented by more than one consolidated strategy (for example, five “Use advisory boards and workgroups” strategies corresponding to distinct governance bodies).
3. Links from each consolidated strategy to its source instances and evidence sources were retained for traceability (instance identifiers and source identifiers in the analytic record).
4. The consolidated inventory was reviewed with program management and coordination staff, who confirmed accuracy and, where needed, recommended consolidation or splitting; four resulting records (S82–S85) are provisional pending links to primary sources.
5. Strategy identifiers were assigned during consolidation and retained thereafter; identifiers are therefore non-consecutive.

6. Classification variables and decision rules

Table S3.5. Classification variables, permitted categories and decision rules.

Variable	Permitted categories	Decision rule
Initial origin	Prospectively planned; Emergent in response to implementation; Unclear	Prospectively planned: the strategy was anticipated in the initial program design or in an explicitly documented rollout plan; prospective evidence in any linked instance is sufficient. Emergent: developed in response to needs or opportunities encountered during implementation, with no prospective evidence identified; emergent strategies could still involve deliberate planning before delivery. Evidence source type alone does not determine origin (interview provenance does not automatically imply emergence).
Subsequent trajectory	Implemented substantially as planned; Adapted after introduction; Not applicable (emergent introduction); Discontinued; Unclear	Any adapted instance, or prospective evidence together with later introduced evidence within the same consolidated strategy, indicates adaptation after introduction. Prospective evidence only indicates implementation substantially as planned. No strategy was coded as discontinued or unclear.
Analytic trajectory category	Planned; Planned then adapted; Emergent; Unclear	Derived from initial origin and subsequent trajectory: prospectively planned + implemented substantially as planned = Planned; prospectively planned + adapted after introduction = Planned then adapted; emergent origin = Emergent (whether or not later adapted). Used for summary analyses and Figures 2 and 3.
Initiating level	National program; Jurisdictional/regional; Service; Multiple levels; Unclear	Level responsible for initiating or authorising the strategy, inferred from the specified actor. Separated from delivery level to resolve cases such as nationally delegated work delivered by services.
Delivery level	Central (program); Service (site); Joint (both); Unclear	Level at which the strategy was enacted, retained from the validated level-of-action field. Central: delivered primarily by the central program; Service: delivered primarily by participating services; Joint: shared delivery.
Program phase of first introduction; phases of continued activity	Pre-implementation and planning; Early implementation; National scale-up; Ongoing delivery	The earliest phase in which the strategy was present is treated as the phase of first introduction; later phases in which it was documented or validated as active are recorded as continued activity. Continued activity through 13 April 2026 was verified by program personnel during validation.
Site-level stage of introduction; stages of continued activity	Pre-implementation; Early implementation; Routinisation; Sustainment; Not applicable (program-only)	Coded to distinguish the service implementation lifecycle from national program phases. Program-only strategies (e.g., national governance and funding) were coded as not applicable. Site-level timing was used to interpret strategies but is not reported in the manuscript.
Evidence provenance	Contemporaneous documentary evidence; Retrospective interview evidence; Both; Program-team validation (primary-source link pending); Unclear	Describes where the supporting evidence came from; recorded separately from origin so that the basis for each classification is visible.
Planning implication	Pre-specify; Pre-authorize local configuration; Build capacity to detect and respond	Interpretive strategy-level synthesis based on the function of the strategy and its dependence on local context or on information generated during delivery; not assigned solely from cluster-level proportions. See Table S3.7.
Classification confidence	High; Moderate; Needs validation	High: contemporaneous documentary evidence available (alone or with interview evidence). Moderate: classification based on retrospective interview evidence, or on documentary evidence with residual uncertainty about timing or level. Needs validation: program-team validation only; primary-source link pending.

Origin was classified by WN and independently reviewed by GF; temporal and level classifications were coded by GF and validated by ED, the lead investigator (JG) and program staff (DS, SC, SHH, JA, KS, MM). Categories that were permitted but not used are indicated in the decision rules.

7. Program phases

Four national program phases were distinguished (Table S3.6). Individual services entered implementation at different times, and preparation, adaptation and routine delivery overlapped across phases; national program phases were therefore interpreted separately from service-level implementation stages (pre-implementation, early implementation, routinisation, sustainment).

Table S3.6. National program phases used for temporal classification.

National program phase	Period	Definition
Pre-implementation and planning	2021	Design, governance, funding, protocol development and preparation before service activation.
Early implementation	2022	Initial deployment and testing at the first 37 services.

National program phase	Period	Definition
National scale-up	2023–2025	Expansion of the network (46 additional services opened in 2023, 27 in 2024 and 15 in 2025) alongside refinement of implementation arrangements.
Ongoing delivery	2026 to 13 April 2026 (last ascertainment date)	Continued operation, support and reconfiguration of the established network.

8. Planning implication categories

After strategy-level coding, each strategy was assigned to one of three practice-oriented categories that describe how the function it served could be handled in prospective scale-up planning (Table S3.7). Assignment was based on the function of the strategy and its dependence on local context or on information generated during delivery, not solely on cluster-level proportions of planned and emergent strategies. These categories informed the planning considerations presented in Table 2 of the manuscript. They are analytic classifications from this case and are not estimates of strategy effectiveness or of universal “plannability”.

Table S3.7. Planning implication categories.

Category	Definition (rationale for assignment)	Corresponding question in Table 2 of the manuscript	Strategies (n)	%
Pre-specify	The core function, governance arrangement, infrastructure, agreement, training system or monitoring requirement can be defined and resourced before rollout.	What should be standardised?	38	48
Pre-authorize local configuration	The need is foreseeable, but the precise actor, workflow, setting or delivery form depends on local context.	What should be locally configurable?	26	33
Build capacity to detect and respond	The action depends on performance data, implementation problems or opportunities identified during delivery.	What capacity is needed for adaptation?	15	19
Total			**79**	**100**

9. Provisional records and audit status

Of the 79 consolidated strategies, 75 are linked to verified primary sources. Four strategies (S82 and S83, change record systems; S84, build a coalition; S85, access new funding) were clarified or split during program-team validation; their supporting record is the validation entry and the link to the underlying primary source is pending. Their classification is marked “Needs validation” in Supplementary material 2. Classification confidence for the remaining strategies was High for 36 strategies and Moderate for 39 strategies, the latter comprising 37 strategies supported by retrospective interview evidence only and two strategies (S74, S76) supported by documentary evidence with residual uncertainty about timing or level.

References

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2. Waltz TJ, Powell BJ, Matthieu MM, et al. Use of concept mapping to characterize relationships among implementation strategies and assess their feasibility and importance: results from the Expert Recommendations for Implementing Change (ERIC) study. Implement Sci. 2015;10:109. doi:10.1186/s13012-015-0295-0

3. Proctor EK, Powell BJ, McMillen JC. Implementation strategies: recommendations for specifying and reporting. Implement Sci. 2013;8:139. doi:10.1186/1748-5908-8-139