

When Continuing Professional Development Fails to Change Pharmacy Practice: A Theory of Capability Conversion Linking Reflective Learning, Workplace Opportunity, and Sustained Professional Improvement

Sophie Dubois^{1*}, Thomas Andersen², Lars Petersen³

¹Department of Pharmacy Practice and Continuing Education, Faculty of Pharmacy, Utrecht University, Utrecht, Netherlands.

²Department of Continuing Professional Development, Faculty of Health Sciences, University of Copenhagen, Copenhagen, Denmark.

³Department of Pharmacy Practice and Health Services Research, Faculty of Pharmacy, KU Leuven, Leuven, Belgium.

*E-mail ✉ sophie.dubois@uu.nl

Abstract

Continuing professional development (CPD) is intended to support pharmacists' professional growth and improve practice, yet participation, reflective learning, and knowledge acquisition do not consistently translate into sustained changes in clinical behaviour. Existing educational and implementation frameworks identify important determinants of learning and behavioural change but provide a less explicit account of how acquired learning becomes an authorized, enacted, and maintained professional capability. This theory-development article critically integrates pharmacy CPD scholarship, behavioural theory, implementation research, professional identity, and organizational evidence to develop a capability-conversion account of practice improvement. The theory distinguishes acquired learning, authorized workplace opportunity, enacted professional practice, and maintained capability as analytically separate states. Conversion depends on the interaction of reflective interpretation, accessible resources, legitimate clinical authority, collaborative recognition, and opportunities for repeated performance and feedback. The account identifies conditions under which learning remains unused, intended changes are displaced by competing work, initial enactment is interrupted, or established practices deteriorate. It also distinguishes improvement in a targeted activity from overall patient-facing benefit, recognizing that changed work allocation may generate unintended consequences. The theory assigns differentiated responsibilities to pharmacists, CPD providers, employers, professional teams, and regulators and proposes empirically distinguishable relationships for future evaluation. Its principal contribution is an explanation of why professional development may produce knowledge without changing practice and why initial behavioural change may not become sustained improvement. The relationships are proposed theoretical propositions, not experimentally validated causal effects.

Keywords: Continuing professional development, Reflective learning, Pharmacy practice, Professional agency, Implementation, Sustainability

Introduction

Continuing professional development is embedded in contemporary expectations of pharmacy professionalism,

yet its contribution to practice cannot be established from participation alone. Pharmacists encounter educational opportunities while working within organizational systems that determine when learning is accessible, which activities receive priority, and whether newly acquired knowledge can be incorporated into patient care. International evidence identifies systemic influences on professional development participation, while analysis of continuing pharmacy education offerings demonstrates that educational provision itself varies in the extent to which it incorporates components

Access this article online

<https://smerpub.com/>

Received: 09 May 2026; Accepted: 07 August 2026

Copyright CC BY-NC-SA 4.0

How to cite this article: Dubois S, Andersen T, Petersen L. When Continuing Professional Development Fails to Change Pharmacy Practice: A Theory of Capability Conversion Linking Reflective Learning, Workplace Opportunity, and Sustained Professional Improvement. Ann Pharm Educ Saf Public Health Advocacy. 2026;6(2):143-54. <https://doi.org/10.51847/NPWzufelMX>

of a developmental learning cycle [1]. Educational access and the structure of available activities consequently represent important starting conditions, although neither independently establishes that clinical behaviour has changed [2].

International variation in CPD models and statutory requirements further complicates assumptions about a universal relationship between educational participation and professional improvement [3]. Educational-needs assessment can inform the selection of relevant learning activities, but identifying a learning need does not demonstrate that the resulting knowledge has been applied in a workplace [4].

This article examines the interval between acquired learning and sustained professional practice. Its central question is: under what workplace and professional conditions does CPD learning become enacted and maintained pharmacy practice improvement, and why can participation, reflection, and knowledge gain fail to produce change?

A theory-development approach is appropriate because this question concerns relationships among educational, behavioural, organizational, and temporal conditions rather than the effectiveness of a single intervention. The analysis develops a capability-conversion explanation in which learning becomes consequential through opportunities to exercise professional judgement, undertake authorized action, assess its consequences, and maintain useful practice over time.

The persistent gap between professional development participation and practice change

Participation in CPD is an educational event, whereas practice improvement requires an observable change in professional activity with defensible implications for service quality or patient care. These outcomes occupy different levels of analysis. Attendance records establish exposure; knowledge assessments indicate learning within the assessment conditions; reflective accounts describe interpretation; and implementation measures concern whether intended behaviour occurs in practice. Research applying the capability, opportunity, motivation, and behaviour model to pharmacy professionals demonstrates the relevance of behavioural determinants to the implementation of training in primary care [5]. Such findings support the investigation of implementation conditions, although they do not establish that any particular educational activity causes sustained improvement.

A quasi-experimental evaluation of a pharmacist CPD intervention provides an especially important qualification. Improvement in resolution of targeted drug-therapy problems occurred alongside deterioration in a separate balancing outcome involving heart-failure drug-therapy problems [6]. This pattern challenges the assumption that improved performance on a selected activity necessarily represents an unqualified gain in professional practice. Changes in attention, work allocation, and clinical priorities may affect activities beyond those directly targeted by education.

Programme principles articulated by the Accreditation Council for Pharmacy Education emphasize purposeful professional development and the relationship between learning and practice [7]. Contemporary discussion of continuing pharmacy education likewise identifies opportunities and challenges for improving educational provision [8]. These contributions inform programme design, but they do not eliminate the need to distinguish the existence of an educational process from its subsequent clinical consequences.

The participation-to-practice gap therefore contains several possible discontinuities. A pharmacist may complete education without acquiring usable knowledge; acquire knowledge without identifying an appropriate application; identify an application without receiving organizational permission; perform a new activity without maintaining it; or sustain a targeted activity without improving the overall quality of care.

These possibilities cannot be adequately differentiated by a single completion indicator. A more informative explanation must identify the condition that failed, the actor able to influence it, and the outcome required to establish that conversion occurred.

Theoretical foundations of capability conversion

The capability, opportunity, motivation, and behaviour model offers an established account of behavioural determinants. Measurement research supports the assessment of these constructs, while also requiring attention to the distinction between self-reported determinants and directly observed behaviour [9].

The updated Consolidated Framework for Implementation Research provides a complementary account of implementation conditions, including characteristics of interventions, organizational settings, individuals, and implementation processes [10]. Its outcomes addendum reinforces the importance of specifying the outcome under examination rather than

treating implementation as an undifferentiated event [11].

These perspectives contribute different explanatory resources. Behavioural theory directs attention to what an individual can and is motivated to perform. Implementation theory expands the analysis to the conditions surrounding that performance. Neither should be treated as evidence that a newly proposed capability-conversion theory has already been validated.

The present account introduces conversion as the conditional realization of acquired professional learning through a legitimate opportunity for action. This interpretation treats a pharmacist's knowledge as potentially valuable even when workplace arrangements prevent its immediate application. Equally, the existence of an opportunity does not establish that the pharmacist possesses the necessary competence, accepts the responsibility, or performs the activity safely.

Capability conversion is thus distinguished from competence acquisition, behavioural intention, implementation occurrence, and sustained performance. Its explanatory value lies in connecting these states while preserving their separate measurement requirements.

Professional improvement provides an additional evaluative condition. Behavioural change is not inherently beneficial; an educationally induced action must remain clinically appropriate, compatible with professional responsibilities, and open to evaluation for unintended consequences. Conversion theory must therefore accommodate ineffective, inappropriate, and displaced practice as possible outcomes of otherwise successful learning.

Reflective learning as a necessary but insufficient condition

Reflection allows professionals to interpret experience, identify discrepancies between current and desired practice, and select learning objectives. It may also expose assumptions underlying routine decisions. A research-informed pharmacy education activity illustrates how evidence can be translated into learning and professional reflection within a particular practice context [12].

These processes matter because newly acquired information requires interpretation before it can guide a clinical action. A pharmacist may recognize that a medication-review procedure, monitoring practice, or communication approach should change, yet remain

uncertain about its relevance to an individual patient or the conditions required for safe application.

Reflection can therefore generate a candidate professional action. It can clarify its purpose, identify anticipated risks, and reveal further learning needs. However, the action still requires a suitable patient encounter, accessible information, sufficient time, and appropriate professional authority.

A reflective account may demonstrate that an individual understands a desirable change without documenting that the change occurred. Similarly, a statement of intention does not establish subsequent performance or maintenance.

The proposed theory locates reflection within a wider conversion process. Reflection contributes to the interpretation and selection of professional actions, while workplace conditions influence whether those actions can be attempted. Subsequent experience may then revise the original understanding, producing a renewed cycle of learning.

The theoretical distinction is consequential for assessment. Reflection should be evaluated for the quality of clinical reasoning it demonstrates; enactment should be assessed through suitable practice evidence. A programme that substitutes reflective documentation for observed professional behaviour risks reporting educational development as achieved clinical improvement.

Workplace opportunity, organizational support, and professional agency

A pharmacist's ability to perform a learned activity depends partly on whether the workplace recognizes that activity as legitimate professional work. A multiple-case study of pharmacists in primary care identifies the relevance of professional identity and role negotiation to participation within clinical teams [13]. International Q-methodology research likewise demonstrates variation in pharmacists' expressed professional role identities, indicating that professional self-understanding cannot be assumed to be uniform across practice contexts [14].

Professional agency has both individual and institutional dimensions. Pharmacists exercise judgement, but the authority to use that judgement is shaped by regulatory arrangements, collaborative relationships, and organizational expectations. A philosophical critique of pharmacist-clinician roles highlights the importance of defining responsibility within collaborative clinical practice [15]. Evidence from medication-review

implementation further demonstrates the relevance of organizational and contextual determinants to service delivery [16].

Opportunity consequently includes more than physical access to a task. It may involve protected clinical time, access to records, an authorized scope of practice, appropriate supervision, and acceptance of the pharmacist's contribution by colleagues.

A qualitative study involving clinical pharmacists in South African public hospitals identifies systemic, relational, and personal factors affecting clinical pharmacy service implementation, including the importance of time and professional trust [17]. Australian qualitative evidence concerning community-pharmacy chronic kidney disease screening similarly illustrates the contextual character of introducing a clinical service [18].

These findings support a distinction between formal authorization and practical opportunity. A pharmacist may legally undertake an activity while lacking the staffing arrangements, information, or collaborative support required to perform it reliably.

Conversely, an available opportunity may not justify action when competence, patient preference, or clinical safety conditions are inadequate. Professional agency includes the responsibility to refrain from inappropriate implementation.

A systematic review of community-pharmacy public-health interventions identifies multiple influences on service uptake, reinforcing the need to examine implementation within particular organizational and health-system settings [19].

Capability conversion therefore involves a relationship between professional readiness and the conditions under which that readiness can legitimately be exercised. Responsibility for failed conversion cannot automatically be assigned to an individual pharmacist when the missing condition is controlled by an employer, professional team, or regulatory institution.

Development of the capability conversion theory

Capability conversion is defined here as the conditional transformation of acquired and interpreted professional learning into authorized clinical action, followed by opportunities for evaluation, adaptation, and continued performance. The theory specifies relationships among states that can be observed separately and proposes mechanisms by which movement between them may succeed, stall, or reverse.

Stakeholder consensus research concerning medication-review implementation provides recommendations for mechanisms of change, while implementation scholarship offers context-sensitive approaches to selecting facilitation strategies [20]. These contributions inform the theoretical construction without establishing that the complete conversion account has been empirically tested. A facilitation strategy may improve an implementation condition without resolving every subsequent requirement for maintaining practice [21].

The first theoretical distinction concerns acquired learning. This state encompasses knowledge, skills, and interpretive understanding developed through education and experience. Its measurement should correspond to the learning construct being assessed; course completion alone is insufficient.

The second concerns authorized opportunity: a clinically legitimate occasion in which the pharmacist has adequate access, resources, recognized responsibility, and permission to apply the acquired learning. Opportunity is relational because employers, colleagues, patients, and regulatory arrangements may influence its availability.

The third concerns enacted practice. Enactment occurs when the relevant professional action is performed. It should be distinguished from a declaration of readiness and assessed through appropriate records, observation, or other practice-linked evidence.

The fourth concerns maintained capability. This refers to the continuing ability and opportunity to perform a clinically appropriate activity across relevant encounters, including adaptation when circumstances change. Repeated performance should be evaluated for quality and consequences, not simply frequency.

The proposed relationships are conditional. Learning may remain unused when opportunity is unavailable. Opportunity may be present without safe enactment when competence or motivation is insufficient. Initial enactment may be interrupted by changing workload, responsibilities, resources, or patient needs. Feedback may support further learning and adaptation, although its effect depends on whether subsequent opportunities permit the revised action.

This account also distinguishes capability maintenance from uncritical repetition. A pharmacist who appropriately discontinues an obsolete or unsafe procedure has not necessarily lost professional capability. Maintenance includes the capacity to reassess an activity and modify or cease it when justified.

A further proposition concerns competing clinical responsibilities. The introduction of one desirable activity may redistribute attention away from another. Sustained improvement therefore requires evaluation of

targeted performance alongside relevant balancing and patient-facing outcomes.

Table 1 specifies the theory's principal constructs and their proposed empirical distinctions.

Table 1. Capability-conversion constructs and proposed empirical discriminators in pharmacy professional development.

Construct	Operational meaning in capability conversion	Necessary condition or proposed relationship	Empirical discriminator
Acquired learning	Knowledge and skills developed through professional education	Learning must be relevant to a potential professional action	Knowledge or performance assessment, separately from attendance
Reflective interpretation	Clinical appraisal of how learning could inform practice	Identifies a candidate change and its conditions	Quality of reasoning and application planning
Authorized opportunity	Legitimate access to resources, role permission, and clinical circumstances	Permits appropriately prepared learning to become actionable	Observed access, time, scope, and available support
Enacted practice	Performance of the relevant professional activity	Requires sufficient readiness and feasible opportunity	Practice-linked observation or documentation
Maintained capability	Continued capacity for appropriate performance and adaptation	Requires recurring opportunity and responsiveness to feedback	Repeated observations across relevant encounters
Conversion interruption	Loss of conditions supporting an intended or established activity	May occur before enactment or after initial adoption	Temporal evidence locating when and why performance ceased
Overall professional improvement	Clinically meaningful consequences of changed practice	Requires assessment beyond the targeted activity alone	Relevant quality, safety, and balancing outcomes

Note: The constructs and relationships constitute the proposed theoretical synthesis. The discriminators describe potential approaches to future empirical assessment, not outcomes measured in this article.

The theory further requires an explicit account of where learning remains unrealized, where action becomes feasible, and where feedback either supports continuation

or reveals a need for revision. **Figure 1** represents these relationships without assuming that every pharmacist follows a mandatory linear progression.

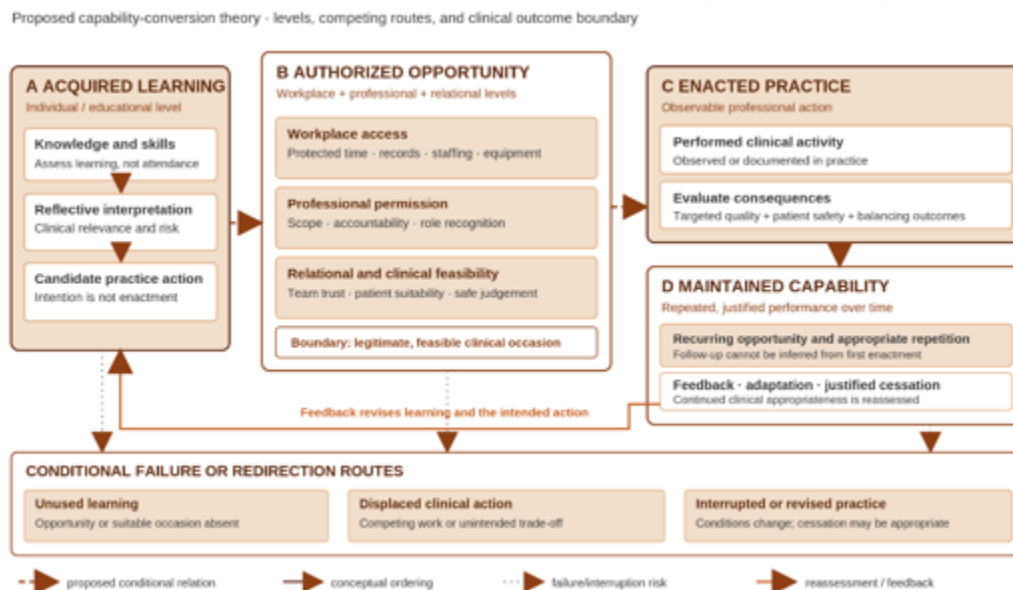


Figure 1. Conditional realization and maintenance of learned pharmacy capability

Conversion mechanisms, enabling conditions, and failure pathways

Capability conversion does not occur at a single moment. It unfolds through a series of conditional transitions in which learning must become actionable, action must become performable, and performance must become worth maintaining. These transitions can fail for different reasons, and the explanation of failure matters because different causes imply different remedies.

Evidence on the implementation of new community-pharmacy services shows that enactment depends on more than educational readiness. Determinants identified in work on pharmacy-based bladder and bowel services included time, training, remuneration, workflow fit, interprofessional relationships, and service-user acceptability [22]. A scoping review of pharmacy point-of-care testing reached a similar conclusion, finding that implementation conditions are distributed across intervention characteristics, organizational structures, staffing, workflow, external policy, and implementation processes [23]. These studies support the proposition that learning may be present while opportunity remains blocked.

One failure pathway is blocked opportunity. In this pathway, the pharmacist has acquired and interpreted learning, but the workplace does not supply the conditions necessary for safe enactment. Time is unavailable, workflow is too rigid, information systems are inaccessible, supervision is unclear, or the pharmacist's role is not recognized by colleagues or managers. The relevant explanatory emphasis is not on unwillingness but on the absence of a usable opportunity structure.

A second pathway is failed enactment. Here, an apparent opportunity exists, yet the desired practice change is not performed or is performed inconsistently. Comparative evidence on implementation strategies for community-pharmacy professional services suggests that strategy effects are heterogeneous and context-sensitive rather than universally transferable [24]. This matters because a workplace can appear permissive while still lacking the reinforcement, facilitation, or local adaptation needed to support actual performance. A nominal authorization to perform a service is therefore not equivalent to enactment.

A third pathway is displaced enactment. In this pathway, the learned activity is performed, but the time and attention required for it are drawn from another clinically

relevant responsibility. Determinants of professional behaviour often coexist and compete, as illustrated in work using the Theoretical Domains Framework to examine antimicrobial prescribing behaviour [25]. Competing priorities, workload pressures, and environmental constraints can redirect attention in ways that produce localized gains alongside losses elsewhere in practice. The quasi-experimental CPD study introduced earlier made this possibility concrete: targeted improvement can coexist with deterioration in a balancing activity [6]. A theory of capability conversion must therefore accommodate trade-offs rather than assume that every successfully enacted change is a net improvement.

A fourth pathway is interrupted conversion. Initial enactment may occur, but the conditions that supported it may weaken before the activity becomes routine. Staffing changes, altered service demand, withdrawal of managerial support, absence of feedback, or revised organizational priorities may prevent repetition across later encounters. In this case the explanation differs from both blocked opportunity and failed enactment because conversion progressed further before it was interrupted.

A fifth pathway is appropriate non-conversion or appropriate cessation. Not every learned practice should be enacted in every circumstance, and not every enacted activity should be sustained. A pharmacist may correctly refrain from acting because patient preference, case complexity, limited evidence, or institutional safety constraints make the learned response unsuitable. Similarly, an enacted procedure may later be modified or discontinued because new evidence, workflow redesign, or patient need indicates that a different practice is preferable. Capability conversion should not be defined so broadly that clinically appropriate restraint is misclassified as failure.

These distinctions identify several enabling conditions. Learning is more likely to convert when pharmacists can recognize a suitable occasion for action, when organizational permission matches legal scope, when records and tools are accessible, when the activity fits workflow, when colleagues recognize the pharmacist's contribution, and when feedback permits revision without abandoning the change at the first difficulty. The pathway from learning to maintained practice is therefore not a single bridge but a set of linked transitions, each with its own vulnerability.

The theory's practical distinctions are summarized in **Table 2**.

Table 2. Conditions that support or obstruct conversion of CPD learning into enacted and maintained pharmacy practice

Workplace condition	Opportunity granted or blocked	Enactment consequence	Maintenance contingency
Protected time for patient-facing or service activity	Grants usable opportunity when pharmacists can apply learning within routine work	Increases likelihood that intended practices are attempted under real conditions	Requires continued scheduling protection or acceptable workflow integration
Access to clinical information, records, and decision supports	Grants informational opportunity needed for context-sensitive action	Enables safer and more confident enactment	Maintenance depends on continued data access and usability
Clear role recognition by colleagues and managers	Grants relational permission and reduces uncertainty about legitimacy	Improves uptake of pharmacist-initiated actions and collaboration	Sustained by trust, role clarity, and visible usefulness over time
Formal scope or policy authorization without local operational support	Grants nominal permission but may block practical opportunity	Produces inconsistent or symbolic enactment	Often deteriorates unless organizational processes catch up
Workflow overload and competing task demands	Blocks practical opportunity despite learning and motivation	Leads to non-enactment, partial enactment, or displacement of other tasks	Sustained practice is unlikely unless priorities are renegotiated
Inadequate staffing or unstable service infrastructure	Blocks repeated use and weakens reliability	Initial enactment may fail or remain sporadic	Interruptions and abandonment become more likely
Feedback on outcomes, quality, or patient response	Strengthens opportunity to refine and justify the practice	Supports adaptation after early enactment	Essential for maintaining, revising, or discontinuing the activity appropriately
Misalignment between learned activity and patient or service need	Creates a clinically inappropriate opportunity state	Appropriate non-enactment may occur	Maintenance should not be pursued when value is low or risks increase
Incentives that privilege one measured activity over broader care	Grants selective opportunity while obscuring competing responsibilities	May improve the targeted task while displacing other important work	Ongoing evaluation must include balancing consequences
Support for local adaptation and implementation facilitation	Converts nominal permission into workable practice conditions	Improves the probability that enactment becomes reliable	Maintenance depends on continued adaptation to changing context

Note: This table presents manuscript-derived theoretical synthesis informed by the approved literature. It distinguishes workplace conditions from their enactment and maintenance consequences and does not report quantitative effect estimates.

Sustained professional improvement and capability maintenance

Initial enactment is not the same as sustained professional improvement. Sustainability research in healthcare consistently shows that continuation depends on factors that are partly distinct from those affecting initial implementation [26]. A change can be introduced successfully and still fail to persist when resources shift, champions leave, routines change, or the activity is no longer perceived as useful.

Longitudinal implementation analysis reinforces the need to separate implementation from sustainment as analytically different phases [27]. This distinction is especially important for pharmacy CPD because professional learning often aims to influence recurring clinical behaviour rather than one-time performance. The relevant question is not merely whether a pharmacist ever used newly acquired learning, but whether the practice

became appropriately repeatable, revisable, and resilient over time.

Maintained capability involves three linked elements. The first is continued readiness: the pharmacist retains or refreshes the knowledge and judgement required for appropriate action. The second is continued opportunity: the workplace still permits and supports enactment in relevant situations. The third is continued evaluative feedback: the pharmacist and organization can detect whether the activity remains useful, needs modification, or should stop.

This three-part account helps explain why maintenance can fail even after a promising start. Readiness may decay if the opportunity to practise disappears. Opportunity may collapse if organizational priorities change. Feedback may be too weak to justify continued effort, leaving the pharmacist unable to determine whether the new practice should be refined or abandoned.

In all three situations, the breakdown is temporal and conditional rather than simply motivational.

Maintenance also has a normative dimension. Sustained improvement should not be reduced to repetition alone. A practice that is repeated without reappraisal may become outdated, misaligned with patient need, or burdensome relative to its benefit. Maintained capability therefore includes the ability to adapt or deactivate a learned practice when the context changes. The theory consequently treats reactivation as a legitimate extension of maintenance: a capability may be dormant because opportunity is temporarily absent, yet still remain part of the pharmacist's professional repertoire and become relevant again when conditions change.

A sustained-improvement claim is therefore stronger than a behaviour-change claim. It requires evidence that the practice continued across relevant occasions, that it remained clinically appropriate, and that its consequences were not undermined by overlooked balancing harms. This distinction protects the article's central guardrail: attendance, reflection, self-rated competence, or even one observed change in practice cannot stand in for sustained patient-facing improvement.

Implications for CPD design, employers, and professional regulators

If capability conversion depends on multiple conditions, responsibility for professional improvement cannot rest solely with the individual learner. Educational, organizational, and regulatory actors influence different parts of the pathway, and their responsibilities should be differentiated accordingly.

For CPD providers, the main implication is that educational quality should be designed with enactment in view rather than confined to information transmission. Principles for CPD programming already emphasize purposeful learning and practice relevance [7]. The present theory extends that implication by arguing that providers should help learners identify the kinds of opportunity conditions a practice change will require, the settings in which it may be inappropriate, and the kinds of feedback that would allow appraisal after enactment. Educational activities should therefore prepare pharmacists not only to know what to do, but to judge when it can be done and what organizational supports are necessary.

For employers and managers, the theory assigns responsibility for the practical opportunity structure.

Where role recognition, time allocation, staffing, workflow design, or access to records remain inadequate, learning may remain unused despite motivated and capable pharmacists. Evidence from pharmacy implementation studies indicates that structural and relational conditions are central to whether new services and behaviours are taken up [17]. Employers should consequently avoid treating CPD completion as evidence that practice change has already occurred. Their responsibility is not exhausted by funding attendance; it includes creating conditions in which relevant learning can be enacted, monitored, and maintained.

For professional teams and collaborating clinicians, the implication concerns recognition and negotiated authority. Pharmacists are more likely to apply new learning when colleagues understand and accept the contribution being proposed. Capability conversion therefore depends partly on interprofessional trust and clarity about responsibility. Team-level resistance can neutralize educational gains even where individual competence is adequate.

For regulators and professional bodies, the theory suggests that recertification or developmental expectations should not equate documented participation with improved practice. Regulatory systems may justifiably require professional development, but they should remain cautious about assuming that completion data alone provide evidence of quality improvement. The stronger regulatory objective is to foster conditions under which learning can be translated responsibly into practice, while preserving mechanisms for accountability when translation fails.

Performance and incentive arrangements require special care. Evidence from the Pharmacy Quality Scheme in England shows that quality-oriented policy instruments can shape implementation environments in complex ways [28]. A conversion perspective therefore cautions against incentive models that reward a narrow visible activity without assessing how that activity interacts with other responsibilities. A scheme that promotes one behaviour at the expense of broader patient care may generate apparent success while degrading overall practice quality.

The implications for evaluation are equally important. Outcomes should be matched to the state being assessed. Participation records evaluate exposure. Knowledge tests evaluate learning under specified conditions. Reflective narratives evaluate interpretive reasoning. Practice-linked observations evaluate enactment. Repeated

measures and appropriate balancing outcomes evaluate maintenance and broader improvement. Collapsing these into a single metric obscures the location of success and failure.

Results and Discussion

This article proposed a capability-conversion theory to explain why CPD learning may not become sustained pharmacy practice improvement. The theory contributes a structured distinction among acquired learning, authorized opportunity, enacted professional action, and maintained capability, while identifying blocked opportunity, failed enactment, displaced enactment, interrupted conversion, and appropriate non-conversion as analytically different pathways.

The account complements rather than replaces existing behavioural and implementation perspectives. COM-B remains useful for explaining how capability, opportunity, and motivation shape behaviour [5]. Comparative implementation evidence helps explain why strategies that work in one service or setting may not transfer cleanly to another [24]. Sustainment research clarifies that initial adoption and long-term continuation should not be conflated [27]. The present theory's contribution is to connect these insights to the specific educational problem of how learning becomes consequential professional practice.

A central strength of the theory is that it prevents overinterpretation of educational indicators. Pharmacy scholarship often has access to participation records, course evaluations, reflective outputs, and self-reported competence more readily than direct evidence of practice change. Those data remain useful, but they represent different states in the conversion pathway. The theory therefore provides a way to respect the value of educational outcomes without treating them as surrogates for patient-facing improvement.

The theory also provides a more discriminating explanation of null or mixed findings. If a CPD programme increases knowledge but no practice change follows, the explanation may lie in blocked opportunity rather than in educational failure. If practice changes but patient-facing improvement is not observed, the issue may be displacement, inappropriate enactment, or a weak outcome measure. If early improvements disappear, the relevant mechanism may concern maintenance rather than initial implementation. By locating failure more precisely, the theory helps avoid

reflexive blame directed at individual pharmacists for conditions they do not control.

Boundary conditions remain important. The theory is not a claim that every professional-development activity should culminate in a measurable patient-care change. Some learning maintains readiness for infrequent but important situations; some learning refines judgement rather than introducing a visible new task; and some learning appropriately confirms that current practice should remain unchanged. Nor does the theory imply that pharmacists should enact every learned possibility. Patient preference, service constraints, legal scope, uncertain evidence, and safety considerations may make non-enactment the correct professional response.

The article also has limits. It is a theory-development manuscript rather than an empirical test. The proposed relationships are derived from critical integration of approved literature and are not validated causal estimates. Several supporting sources are qualitative, conceptual, or context-specific. The theory therefore offers an explanatory structure and a set of discriminating propositions, not a quantified prediction model.

Future empirical work could test the theory in several ways. Longitudinal mixed-methods studies could trace pharmacists from CPD participation through attempted enactment and later maintenance, identifying where transitions fail and which actors control the missing conditions. Comparative implementation studies could examine whether interventions targeting opportunity structures outperform those targeting education alone when learning has already been established. Evaluation studies could add balancing outcomes to determine whether gains in one domain produce losses elsewhere in practice. Service-specific studies could also examine whether different forms of role recognition and organizational permission alter the likelihood that reflective learning becomes enacted behaviour. Finally, outcome overviews remind us that pharmacist-led services vary in their demonstrated effects across clinical, behavioural, economic, and humanistic domains [29]. Capability conversion should therefore be studied in relation to well-matched outcome measures rather than assumed from implementation success alone.

Conclusion

Continuing professional development fails to change pharmacy practice when learning is treated as if it were

already action, when opportunity is assumed rather than organized, and when initial enactment is mistaken for sustained improvement. The capability-conversion theory developed here explains practice change as a conditional process linking acquired learning, authorized opportunity, enacted professional behaviour, and maintained capability. It identifies several distinct pathways through which conversion can stall, be displaced, be interrupted, or be appropriately withheld, and it distributes responsibility across pharmacists, employers, teams, CPD providers, and regulators. Its practical value lies in clarifying what must be measured at each stage and what conditions must be created if professional learning is to become durable patient-facing practice improvement.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Alhaqan A, Smith F, Bates I. A global evidence review of systemic factors influencing participation in pharmacy professional development activities. *Res Social Adm Pharm.* 2021;17(3):488-96. doi:10.1016/j.sapharm.2020.04.019
2. Murry LT, Whittington B, Travlos DV. Continuing professional development activities provided by continuing pharmacy education providers. *Am J Pharm Educ.* 2024;88(4):100685. doi:10.1016/j.ajpe.2024.100685
3. Ballaram S, Perumal-Pillay V, Suleman F. A scoping review of continuing education models and statutory requirements for pharmacists globally. *BMC Med Educ.* 2024;24(1):343. doi:10.1186/s12909-024-05322-4
4. Ozucelik Y, Collins JC, Pace J. Identifying the educational needs of pharmacists engaging in professional development: A global systematic review. *J Am Pharm Assoc* (2003). 2025;65(5):102418. doi:10.1016/j.japh.2025.102418
5. Seston EM, Willis SC, Fenton C, Hindi AMK, Moss A, Stearns S, et al. Implementation of behaviour change training in practice amongst pharmacy professionals in primary care settings: Analysis using the COM-B model. *Res Social Adm Pharm.* 2023;19(8):1184-92. doi:10.1016/j.sapharm.2023.04.123
6. Sidhu S, Gorman SK, Slavik RS, Ramsey T, Bruchet N, Murray S. Positive and negative impacts of a continuing professional development intervention on pharmacist practice: A balanced measure evaluation. *J Contin Educ Health Prof.* 2017;37(4):215-22. doi:10.1097/CEH.0000000000000166
7. Murry LT, Asokan A, Baumgart G, Bosworth J, Capobianco L, Chapman L, et al. Principles for continuing professional development (CPD) programs: A statement by the ACPE CPD Advisory Committee. *Am J Pharm Educ.* 2023;87(11):100578. doi:10.1016/j.ajpe.2023.100578
8. Murry LT, Hughes PJ, Singh RM, Travlos DV, Engle JP. Current and future opportunities and challenges in continuing pharmacy education: A 2024 update. *Am J Pharm Educ.* 2024;88(10):101281. doi:10.1016/j.ajpe.2024.101281
9. Keyworth C, Epton T, Goldthorpe J, Calam R, Armitage CJ. Acceptability, reliability, and validity of a brief measure of capabilities, opportunities, and motivations ("COM-B"). *Br J Health Psychol.* 2020;25(3):474-501. doi:10.1111/bjhp.12417
10. Damschroder LJ, Reardon CM, Opra Widerquist MA, Lowery J. The updated Consolidated Framework for Implementation Research based on user feedback. *Implement Sci.* 2022;17(1):75. doi:10.1186/s13012-022-01245-0
11. Damschroder LJ, Reardon CM, Opra Widerquist MA, Lowery J. Conceptualizing outcomes for use with the Consolidated Framework for Implementation Research (CFIR): The CFIR Outcomes Addendum. *Implement Sci.* 2022;17(1):7. doi:10.1186/s13012-021-01181-5
12. Hikaka J, Parore N, McIntosh B, Haua R, Mohi K, Anderson A. Translating research into a relevant education activity to fulfil pharmacists' continuing professional development requirements. *Explor Res Clin Soc Pharm.* 2024;13:100422. doi:10.1016/j.rcsop.2024.100422
13. Lake JD, Barnsley J, Lofters A, Austin Z. A Goffmanian analysis of impact of unclear

- professional identity and role negotiation of pharmacists in primary care: A multiple case study. *Res Social Adm Pharm.* 2024;20(8):768-77. doi:10.1016/j.sapharm.2024.04.016
14. Watson KE, Schindel TJ, Meilanti S, Tsuyuki RT, Al Hamarneh YN. An international portrait of pharmacists' professional role identities: A Q-methodology innovative study. *Explor Res Clin Soc Pharm.* 2025;19:100616. doi:10.1016/j.rcsop.2025.100616
 15. Rushworth GF, Forsyth P, Radley A, Duggan C, Sampson R, Cunningham S, et al. A pharmacist clinician model as part of a collaborative clinical workforce: A philosophical critique. *Res Social Adm Pharm.* 2024;20(9):918-25. doi:10.1016/j.sapharm.2024.06.006
 16. Michel DE, Tonna AP, Dartsch DC, Weidmann AE. Experiences of key stakeholders with the implementation of medication reviews in community pharmacies: A systematic review using the Consolidated Framework for Implementation Research (CFIR). *Res Social Adm Pharm.* 2022;18(6):2944-61. doi:10.1016/j.sapharm.2021.07.017
 17. Crafford L, Kusurkar RA, Bronkhorst E, Gous A, Wouters A. Getting time and building trust: Unveiling the systemic, relational, and personal factors influencing clinical pharmacy service implementation in South Africa, a qualitative study. *BMC Med Educ.* 2024;24(1):1179. doi:10.1186/s12909-024-06187-3
 18. Korsá A, Krass I, Van C, Tesfaye W, Gisev N, Tran A, et al. Australian pharmacists' experiences and perspectives in implementing a chronic kidney disease screening service in community pharmacies: A qualitative study. *Explor Res Clin Soc Pharm.* 2025;20:100643. doi:10.1016/j.rcsop.2025.100643
 19. Mumbi A, Mugo P, Barasa E, Abiiró GA, Nzinga J. Factors influencing the uptake of public health interventions delivery by community pharmacists: A systematic review of global evidence. *PLoS One.* 2024;19(8):e0298713. doi:10.1371/journal.pone.0298713
 20. Michel DE, Tonna AP, Dartsch DC, Weidmann AE. Implementation of medication reviews in community pharmacy: Reaching consensus on stakeholders' recommendations for mechanisms of change using the nominal group technique. *Int J Clin Pharm.* 2024;46(3):714-26. doi:10.1007/s11096-024-01708-y
 21. Graham EL, Amador-Fernández N, Benrimoj SI, Martínez-Martínez F, Palomo-Llinares R, Sánchez-Tormo J, et al. Unravelling facilitation complexity in community pharmacy: A pragmatic tool for implementation strategy selection. *Res Social Adm Pharm.* 2025;21(5):408-16. doi:10.1016/j.sapharm.2025.02.002
 22. Uren A, Watson M, Dawson S, Williams A, McLeod H, Chandler D, et al. Identifying the key determinants of a community pharmacy based bladder and bowel service. *Res Social Adm Pharm.* 2024;20(10):1006-13. doi:10.1016/j.sapharm.2024.07.003
 23. Abdellatife OE, Makowsky MJ. Factors influencing implementation of point-of-care testing for acute respiratory infectious diseases in community pharmacies: A scoping review using the Consolidated Framework for Implementation Research. *Res Social Adm Pharm.* 2024;20(6):1-24. doi:10.1016/j.sapharm.2024.02.009
 24. Seda V, Moles RJ, Carter SR, Schneider CR. Assessing the comparative effectiveness of implementation strategies for professional services to community pharmacy: A systematic review. *Res Social Adm Pharm.* 2022;18(9):3469-83. doi:10.1016/j.sapharm.2022.03.019
 25. Talkhan H, Stewart D, McIntosh T, Ziglam H, Abdulrouf PV, Al-Hail M, et al. Exploring determinants of antimicrobial prescribing behaviour using the Theoretical Domains Framework. *Res Social Adm Pharm.* 2024;20(4):401-10. doi:10.1016/j.sapharm.2023.12.009
 26. Zurynski Y, Ludlow K, Testa L, Augustsson H, Herkes-Deane J, Hutchinson K, et al. Built to last? Barriers and facilitators of healthcare program sustainability: A systematic integrative review. *Implement Sci.* 2023;18(1):62. doi:10.1186/s13012-023-01315-x
 27. Nevedal AL, Opra Widerquist MA, Reardon CM, Arasim M, Jackson GL, White B, et al. Understanding pathways from implementation to sustainment: A longitudinal, mixed methods analysis of promising practices implemented in the Veterans Health Administration. *Implement Sci.* 2024;19(1):34. doi:10.1186/s13012-024-01361-z
 28. Schafheutle EI, Moss AA, Hindi AMK, Gibson J, Lovatt E, Robinson K, et al. Do pay-for-performance

- schemes improve quality in community pharmacy? A mixed-methods study exploring stakeholder perspectives on implementation of the nationwide Pharmacy Quality Scheme (PQS) in England? PLoS One. 2025;20(4):e0319215. doi:10.1371/journal.pone.0319215
29. Fares R, Bardiau M, Chaballe C, Crunenbergh R. The outcomes of pharmacist-led pharmaceutical care within community pharmacies: An overview of systematic reviews. Res Social Adm Pharm. 2025;21(5):332-9. doi:10.1016/j.sapharm.2025.01.015