

Issue to address	Strategy for success	Solution	Evidence from documentary analysis	Evidence from interviews	Evidence from workshops
Facilitating use and engagement across groups of users.	<p>Adoption: Fitting into current context.</p>	<p>Ensuring the intervention is easy to use and access, is integrated into current IT systems, and aligns to agendas.</p>	<p><i>Any reports must not only be quick and easy to understand for all practice staff but also add value to make them worth taking time to read.</i> (40)</p>	<p><i>“...it comes back to how easy it is to access things within the electronic health record... and how things are presented to the prescriber, it needs to be clear. It needs to be easy to access and see, and it needs to be relevant and tailored.”</i> Researcher, PProTeCT research team.</p>	<p><i>Making sure there is buy in from the correct people and it doesn't mean more work, it's for the patients' benefit.</i></p> <p>Participant group notes</p>
	<p>Maintenance: Engaging hearts and minds.</p>	<p>Using PINCER/CDS for planning and prioritisation.</p>	<p><i>Engagement with the dashboard involved a process of sense-making in which pharmacists considered it added value to their work. The intervention helped to build respect, improve trust and develop relationships between pharmacists and GPs.</i> (11)</p>	<p><i>“You need that kind of return on investment for time for staff. They have to feel as though what they are doing is worthwhile as well. They have to be I suppose kind of professionally and almost emotionally engaged, they need to be thinking well this is important as my role as</i></p>	<p><i>PINCER - help with planning and prioritisation (generating caseloads), matching to clinical capacity.</i></p> <p>Participant group notes</p>

				a professional.” Researcher, PRoTeCT research team.	
Low engagement across the practice team with a focus on the pharmacist to implement the intervention.	Maintenance: Building resilience	Engage across the practice team with resources.	<i>The pharmacy leads discussed how they worked collaboratively with the GP prescribing leads and engaged the rest of the CCG pharmacy team, who subsequently engaged the practice teams. The importance of engaging GPs and the wider team for the implementation of PINCER was pointed out. (4)</i>	<i>“...so training pathways to involve [...] not just for the pharmacists, so the culture of primary care is aware of it so that the relevant members in a practice, practice manager, GP etc. when if you were to say that your way of working was akin to or follow the principles of PINCER, that people would understand that that was sort of the gold standard of practice.”</i> Pharmacist, Health Education Organisations	<i>Engagement with GPs and practice team - but work needs to be resourced - incentivised etc - stratification</i> <i>PINCER using searches that are in clinical systems - not reliant on additional software</i> <i>Get those searches centrally located</i> Participant group notes
Misalignment of IT capability and infrastructure between secondary and primary care.	Maintenance: Achieving engagement with secondary care for alignment of prescribing safety guidelines.	Updating IT systems in secondary care to match those in primary care and involving stakeholders of both sectors, including patients and the	<i>Although it was possible to access data from some primary care systems, we found poor two-way transfer of data between hospitals and primary care</i>	<i>“We have also got the bizarre situation of hospitals having pharmacists who review a prescription before a patient goes home but then don’t input that information</i>	<i>IT in secondary care not up to date to support Optimise RX or PINCER</i> Participant group notes

		public, in aligning these systems.	<i>necessitating workarounds, which in turn led to the opportunity for new errors associated with duplicate and manual information transfer.(13)</i>	<i>on to our clinical systems so we then have to do it ourselves so we're duplicating the work rather than actually coordinating it so I think there's huge benefits could be realised by having a much more integrated prescribing pattern between secondary and primary care." GP, professional body representative</i>	
Overcoming the perception of having to choose between PSI-based interventions.	Maintenance: Emphasising the complementarity of the interventions in enhancing safety.	Publish prescribing safety data that incorporates prescribing safety indicators used in the interventions.	<i>Overall, this data supports the contention that an internal locus for change can be cultivated using a number of complementary and synergistic implementation strategies.(14)</i>	<i>"...the complementary in that if you use [CDS] well, and it covers the indicators set for PINCER you will have less need for PINCER going forward.. If you can share that message with prescribers saying if you use both together, then what you find is that you're going to get actually you're going to fix this problem once and for all." NHS Organisation, National</i>	<i>Emphasising PINCER and OptimiseRx complementing each other in enhancing safety, i.e. PINCER acting as safety net, OptimiseRx stopping patients being "PINCER patients".</i> Participant group notes

Supplementary table 1 Summary of findings.