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40 **Abstract**

41 *Objective*

42 The Scottish Patient Safety Programme – Pharmacy in Primary Care collaborative is a quality
43 improvement initiative adopting the Institute of Healthcare Improvement Breakthrough Series
44 collaborative approach. The programme developed and piloted High Risk Medicine (HRM) Care
45 Bundles (CB), focused on warfarin and non-steroidal anti-inflammatories (NSAIDs), within 27
46 community pharmacies over 4 NHS Regions. Each CB involves clinical assessment and patient
47 education, although the CB content varies between regions. To support national implementation,
48 this study aims to understand how the pilot pharmacies integrated the HRM CBs into routine
49 practice to inform the development of a generic HRM CB process map.

50 *Methods*

51 Regional process maps were developed in 4 pharmacies through simulation of the CB process, staff
52 interviews and documentation of resources. Commonalities were collated to develop a process map
53 for each HRM, which were used to explore variation at a national event. A single, generic process
54 map was developed which underwent validation by case study testing.

55 *Results*

56 The findings allowed development of a generic process map applicable to warfarin and NSAID CB
57 implementation. Five steps were identified as required for successful CB delivery: patient
58 identification; clinical assessment; pharmacy CB prompt; CB delivery; and documentation. The
59 generic HRM CB process map encompasses the staff and patients' journey and the CB's integration
60 into routine community pharmacy practice. Pharmacist involvement was required only for clinical
61 assessment, indicating suitability for whole-team involvement.

62 *Conclusions*

63 Understanding CB integration into routine practice has positive implications for successful
64 implementation. The generic-process map can be used to develop targeted resources, and/or be
65 disseminated to facilitate CB delivery and foster whole team involvement. Similar methods could be
66 utilised within other settings, to allow those developing novel services to distil the key processes and
67 consider their integration within routine workflows to effect maximal, efficient implementation and
68 benefit to patient care.

69 **Key words**

70 Patient safety; Quality improvement; Variation; Primary care; Implementation

71 **Conflicts of interest:** None

72

73 **Introduction**

74 Studies within the United Kingdom (UK) show 6.5% of hospital admissions are attributed to adverse
75 effects of High Risk Medicines (HRM) - including Warfarin and Non-steroidal anti-inflammatory drugs
76 (NSAIDs).¹ This figure is not dissimilar to international prospective studies and similar causative
77 medicines have been identified as high risk.^{2,3} The pharmacist's potential contribution to patient
78 safety within primary care has been highlighted,⁴ and internationally community pharmacists' roles
79 are expanding to be increasingly integrated within primary care.⁵⁻⁷

80 Within the UK, this transition has resulted in the introduction of new services including community
81 pharmacy minor ailment schemes, with positive feedback from pharmacists and patients.⁸⁻¹⁰ The
82 drive for community pharmacy to provide enhanced patient safety services aligns with the Scottish
83 Government's vision and action plan, Prescription for Excellence.⁶ Within Scotland, a national patient
84 safety programme has since launched within community pharmacy in 2014, called The Scottish
85 Patient Safety Programme - Pharmacy in Primary Care (SPSP-PPC) collaborative.¹¹

86 The SPSP-PPC collaborative is a multi-site quality improvement initiative adopting the Institute of
87 Healthcare Improvement Breakthrough Series collaborative approach - a structured learning model
88 consisting of Learning Sessions to share progress and discuss practice changes and Action Periods
89 where those changes are tested in the health care setting.¹² Participating pharmacy teams were
90 trained in the Model for Improvement which was the guiding quality improvement framework
91 operationalised at pharmacy site level through the application of 'Plan-Do-Study-Act' (PDSA) cycles,
92 as a means to facilitate rapid testing of small-scale changes.¹³

93 The programme aims to improve patient safety by implementing safety interventions using a team-
94 based approach. An ambition of the programme is to make community pharmacy processes safer
95 while strengthening their contribution within primary care. A core component was to reduce the risk
96 associated with the HRMs Warfarin and NSAIDs through the development of Care Bundles (CBs),
97 defined as a "structured way of improving the processes of care and patient outcomes: a small,
98 straightforward set of evidence-based practices".¹⁴ Box 1 provides an overview of the programme
99 structure and the HRM CBs developed.

Programme Structure and Leadership:

- Four NHS Regions were recruited, involving 27 pharmacy sites in total
 - Region 1 (n=5) ◦ Region 2 (n=7)
 - Region 3 (n=5) ◦ Region 4 (n=10)
- National Leads (n=2), Regional Leads (n=8), Programme Officers, Data Analysts, Improvement Advisors and the Evaluation Team comprise the SPSP-PPC Steering Group.

Programme Support:

- Two National Learning Events (NLE) and 2 Local Learning Events (LLE) were attended by teams from each pharmacy site, typically comprising a pharmacist and a member of support staff (the “Away Team”). Concepts of patient safety, safety culture and Quality Improvement methods were taught and the HRM CBs introduced.
- Regional Leads provided local support, and pharmacy resources developed included an SPSP Launch Folder and the SPSP-PPC Knowledge Network website.¹⁵

HRM CBs:

- Region-specific CBs comprising of 4-6 questions relating to a measure of care were developed by the Regional Leads and pharmacy Away Teams using driver diagrams.
- The NSAID CB measures focused on concordance, assessment of side effects, gastro-protection and co-prescribing of other high-risk medications.
- The Warfarin CB measures focused on patients’ knowledge of interactions and side effects, and patients’ use of the warfarin record book and alert card.
- Pharmacy staff compliance with CB measures were documented on run charts, to allow visual representation of pharmacy sites’ improvement and the impact of PDSA cycles.

101

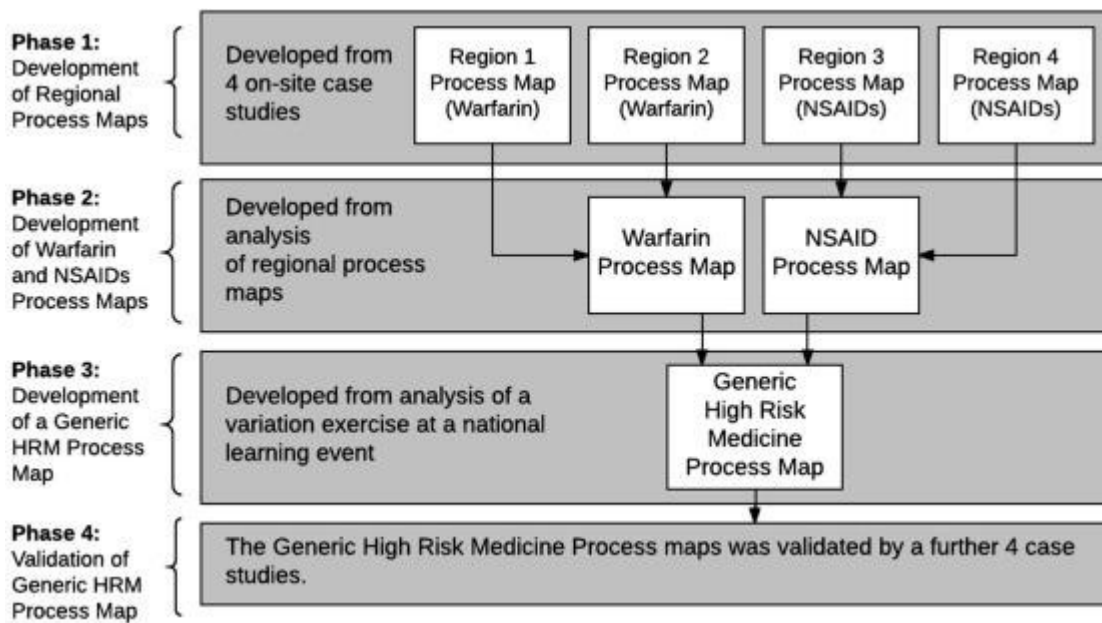
102 An anticipated challenge to the adoption of new services within pharmacy practice is the potential
103 variation of processes, as it is well established that integration within existing workflow can
104 influence successful implementation of health service innovations.¹⁶⁻¹⁸ Variation in pharmacy
105 practice has been identified within other health services,¹⁹⁻²¹ although to our knowledge there has
106 been no research into the extent of process variation within the Scottish community pharmacy
107 setting. Consequently, an understanding of this variation may support national implementation of
108 the HRM CB by allowing consideration of how this novel service could successfully integrate into
109 routine pharmacy practice.

110 This study aims to understand how the pilot pharmacies integrated the novel HRM CBs into routine
111 practice in order to inform the development of a generic process map that could be used to facilitate
112 national implementation.

113 **Methods**

114 A qualitative case-study method was employed.²² Process mapping was applied throughout the
115 study. This involves exploration of the tasks occurring within a process, with the findings used to
116 develop sequential flow charts of the actions and decisions performed, with arrows depicting the
117 sequence of activities.²³ Due to the complexity of the programme design – with a focus on 2
118 different HRMs and 4 different care bundles operationalized in different regions – a four-phased
119 approach was used. An overview of the methods is shown in Figure 1.

120 **Figure 1. Staged Process Map Development**



121

122 *Phase 1: Development of Regional Process Maps*

123 Pharmacies were selected for case study on-site evaluations based on March 2015 activity data
124 reporting on number of patients delivered the CB, CB compliance and reliability. The top 3
125 performing pharmacies within each NHS Region were identified, and final selection agreed in
126 discussion with the Regional Leads taking account of feasibility of on-site visits. One pharmacy from
127 each participating NHS Region was chosen and contacted to arrange suitable dates.

128 During June and July 2015 case studies were conducted. Data were collected in 3 ways: (1)
129 observation of a simulation of the CB process with pharmacy staff, (2) documentation of resources
130 used and (3) staff interviews. Demographic details of participants collected included gender, job role
131 and duration worked in community pharmacy.

132 The simulation exercise involved pharmacy staff providing a “talk and walkthrough” of the CB
133 process as it would normally be delivered to a patient.²⁴ This allowed for resources used within the
134 pharmacy environment to act as material probes to prompt discussion, and was thought to allow for
135 better understanding of the workflow than with traditional interviews.²⁵ Photographs of relevant
136 pharmacy resources were taken with permission, and identifiable information anonymised. Semi-
137 structured interviews with pharmacy staff were guided by a pre-designed interview schedule
138 (Appendix 1). The Away Team participants were interviewed, followed by a convenience sample of
139 the remainder of the pharmacy staff. Both the simulation exercise and interviews were audio-
140 recorded. The interviews were transcribed using an intelligent verbatim approach and were
141 anonymised to protect participant identity. The resultant data were used to develop a process map
142 for each of the 4 NHS Regions.

143 *Phase 2: Development of Warfarin and NSAID Process Maps*

144 A process map for each HRM (warfarin and NSAIDs) was developed using Lucidchart software.²⁶ This
145 involved visually inspecting the regional process maps to distil commonalities and differences

146 between the sites. This was supported by re-visiting the original audio recordings and documented
147 resources.

148 *Phase 3: Development of a Generic HRM Process Map*

149 To develop a single HRM generic process map, pharmacy staff who attended the National Learning
150 Event (NLE) in November 2015 completed an exercise to assimilate variation in processes between
151 sites. Each Pharmacy Team received a copy of the NSAID or Warfarin Process Map depending on
152 their NHS Region. Steps that were not commonalities were included within each HRM process map
153 to allow participants to comment on. A paper-based variation exercise (Appendix 2) was provided
154 and participants were instructed to provide written comments on the differences between the
155 process maps presented and the processes within their pharmacies.

156 All responses were transcribed using an intelligent verbatim approach, and were coded using NVivo
157 v.10. Initially, inductive content analysis was employed, followed by a deductive process of aligning
158 the codes to the process steps identified within the HRM process maps.²⁷ To allow for comparative
159 analysis of variation, responses were classified according to NHS Region and HRM. Examination of
160 the commonalities between processes was used to create a generic HRM process map detailing the
161 core steps fundamental to successful delivery of the CBs.

162 *Phase 4: Validation*

163 The generic HRM process map was validated against regional process maps developed from a
164 further 4 case studies conducted during October 2015. These involved either on-site or telephone
165 data collection (for Region 1 and 3 due to rural location). To maximise variability, the selection
166 process identified the lower performing pharmacies based on March 2015 reliability data and the
167 final decision informed primarily by discussion with the NHS Regional Leads on feasibility of on-site
168 visits.

169 The same simulation exercise method was applied as before, however for the telephone interviews a
170 verbal explanation of the CB process was recorded and participants were asked to email
171 photographs of any resources used.²⁸

172 The regional process maps developed were compared with the generic HRM process map. Three
173 aspects were considered during the validation: if each site had a process for the core steps, if there
174 were other steps identified, and what order the steps occurred.

175 Informed consent was gained throughout. Under UK research governance arrangements, ethical
176 approval was not necessary as this was a service evaluation of a quality improvement programme.²⁹

177 **Results**

178 *Participants*

179 Of the 27 community pharmacies participating in the SPSP-PPC pilot, 8 pharmacies participated in
180 case studies, representing 30% of all sites. Pharmacy site demographics are shown in Table 1.

181

182 **Table 1.** Pharmacy site demographics

Pharmacy site demographics	All sites (n=27)	Phase 1 case studies (n=4)	Validation case studies (n=4)
Pharmacy type*	N, (%)	N, (%)	N, (%)
Single, independent pharmacy	7 (26%)	1 (25%)	1 (25%)
Small chain	2 (8%)	1 (25%)	0 (0%)
Medium chain	5 (19%)	2 (50%)	1 (25%)
Large chain	13 (48%)	0 (0%)	2 (50%)
Location	N, (%)	N, (%)	N, (%)
Urban	21 (78%)	3 (75%)	3 (75%)
Rural	6 (22%)	1 (25%)	1 (25%)
Range of pharmacy staff numbers †	3-18	5-18	4-11

183 *Small chain defined as 2-4 pharmacies, Medium chain defined as 5-30 pharmacies, Large chain
184 defined as >30 pharmacies

185 †Pharmacy staff numbers were determined retrospectively by telephoning participating pharmacies
186 and asking them to provide a best estimate of number of pharmacy staff.

187 Nineteen staff members participated in the Phase One case studies (4-5 from each site). Of which,
188 84% were female (n=16), 37% were pharmacists (n=7) and the remainder were support staff. Most
189 (74%, n=14) had 10 years or less experience in community pharmacy. For the validation case studies,
190 it was the on-site pharmacist who participated in the simulation exercise.

191 At the time of the NLE variation exercise (Phase 3), one of the pharmacies involved in the phase one
192 case studies withdrew participation. Of the remaining 26 pharmacy sites, all had Away Team
193 representatives who participated in the variation exercise. Forty-one people participated in the
194 variation exercise, participants were mostly female (n=28, 68%), pharmacists or pre-registration
195 pharmacists (n=29, 71%), and most had over 10 years' experience in community pharmacy (n=21,
196 52%). Full demographics of pharmacy staff participants are shown in Supplementary File 1.

197 *Pharmacy Workflow and CB Core Steps*

198 From Phase One it was apparent that each pharmacy had similar dispensary workflow comprising:
199 (1) prescription received by a member of pharmacy staff; (2) prescription details inputted into the
200 Patient Medical Record (3) medicines assembled including generating labels; (4) clinical and accuracy
201 check; (5) medicines prepared for collection; (6) medicine supplied to patient; and (7) patient
202 counselling, if appropriate.

203 To synthesise the regional process maps to a single Warfarin and single NSAID process map (Phase
204 2), three areas of importance were identified: work processes, staff involvement and resources. This
205 is shown in Supplementary File 2. Responses to the variation exercise (Phase 3) where the Warfarin
206 and NSAID process maps were presented to participants, revealed that despite differing local
207 practices (i.e. variable resources used), there were 5 core steps surrounding CB delivery which
208 integrated within each pharmacies local dispensing process, described in Table 2.

209

210 **Table 2.** Description of Core Steps involved in CB Delivery

211

(1) Patient Identification	Identification of patients on an HRM (either Warfarin or an NSAID) and eligible to be delivered the CB, either via the presentation of an HRM prescription or via the electronic Patient Medication Record system.
(2) Clinical Assessment	Clinical assessment of the HRM performed by the pharmacist (e.g. medication suitability, interactions, and contraindications).
(3) Pharmacy CB Prompt	Highlighting during the dispensing process that a patient is to be delivered the CB (i.e. by using alert stickers) to alert the pharmacy team and act as a prompt to deliver the CB.
(4) CB Delivery	Delivering the CB to the patient, for example when they present to the pharmacy to collect their prescription or by a telephone consultation.
(5) Documentation	Documentation that the CB was delivered, although variable systems were adopted within the pharmacy sites.

212

213 During the variation exercise, some participants offered their opinion of the NSAID and warfarin
 214 process maps as a resource. The presentation was commented to be a “clear and logical”
 215 representation of the process, and that “all information was contained in one place”. Participants
 216 mentioned its ease of use, “it is easy to follow workflow chart”, and that it could prompt staff of the
 217 required steps. However, 3 participating pharmacies felt the process map was too complex. Also
 218 unprompted, 4 participants said that provision of a process map could facilitate staff involvement.

219 “Process map - Biggest advantage will be to get other people involved. Even on your days off
 220 everybody can carry on with the care bundle.” (Pharmacy site 4, NSAID CB, large chain
 221 pharmacy)

222 *Integration of the CB*

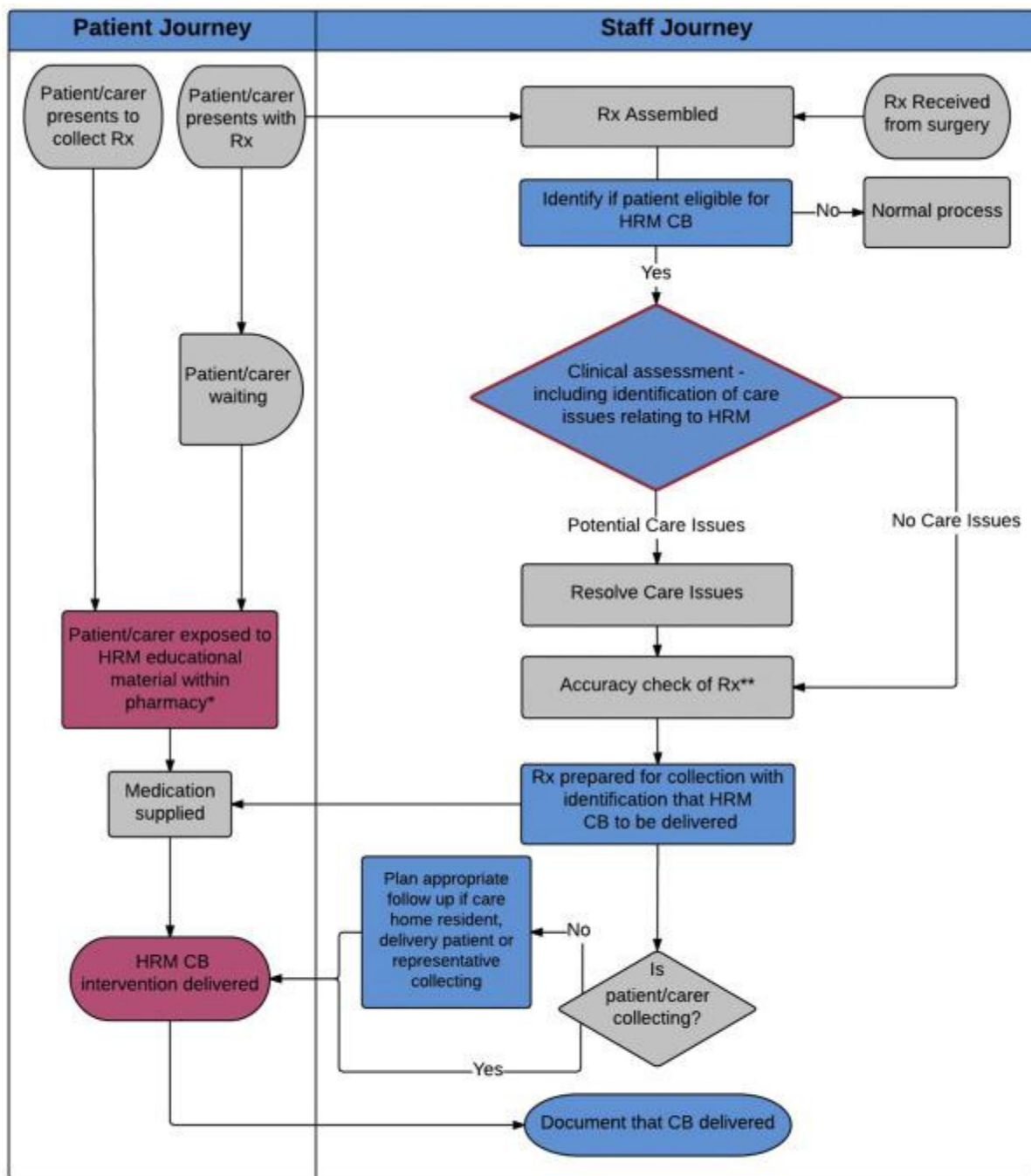
223 The commonalities between the NSAID and Warfarin CB processes and how it integrated into
 224 practice were sufficient to allow a generic process map to be developed, where it is evident that
 225 pharmacist involvement is required only for the clinical assessment stage. The HRM CB generic
 226 process map developed is shown in Figure 2.

227 *Validation of the Generic HRM Process Map*

228 The generic HRM process map validation (Phase 4) revealed that all sites had a process for each of
 229 the 5 core steps, no additional steps were identified, and the order of the steps was comparable.
 230 Within one pharmacy there was a two-step patient identification process involving both the support
 231 staff and pharmacist. A member of support staff would see an electronic prompt indicating eligibility
 232 during the dispensing process (i.e. that the patient was prescribed a HRM) and would gather
 233 appropriate resources. This prompt did not indicate if the CB had previously been delivered to the
 234 patient. The pharmacist subsequently checked if the patient had previously been delivered the CB; if
 235 yes, it would not be repeated. As this two-step process was not reflective of the majority of sites
 236 process the generic process map was not altered.

237

238 **Figure 2.** High Risk Medicine Care Bundle Generic Process Map



* It is at the pharmacy teams discretion whether to display HRM educational material or not.
 ** Accuracy check may be completed by Pharmacist or Checking Technician

Represents how the care bundle meets the patient	Represent how the care bundle works operationally	Represents a task only a pharmacist can do	Rx = Prescription HRM = High Risk Medicine CB = Care bundle
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239

240

241 **Discussion**

242 The study details how the SPSP-PPC pharmacies integrated the CBs into their working practice.

243 Through the exploration of variation, this study identified 5 core steps fundamental to the delivery

244 of the CBs and suitability for a whole team approach - depicted through a generic process map. The
245 sites followed a similar sequential process, encompassing the core steps, adopted individually to fit
246 within their working systems. Despite the heterogeneity of the participating pharmacies, sufficient
247 commonalities enabled development of a generic HRM process map to assist national
248 implementation.

249 *Strengths and Limitations*

250 The phased development of the generic process map allowed all participating pharmacies to
251 contribute. We believe this method reduced the effects of any bias within the data gathered,
252 however, as with any simulation exercise the Hawthorn effect is an unavoidable bias which may
253 have influenced the data gathered via the “talk and walkthrough” simulation method.³⁰ Additionally,
254 during the on-site simulation exercise there was a tendency for the pharmacist to lead this
255 discussion, although the NLE variation exercise sought input from both pharmacists and support
256 staff participants.

257 The commonalities with the 5 core stages observed between the pharmacies suggest that our
258 conclusions have validity and are generalisable. The heterogeneity of the current sample adds
259 confidence regarding the relevance of the process map nationally. However, the authors appreciate
260 that transferability of findings to all community pharmacies (n= 1,253) in Scotland cannot be
261 assumed, in part due to the heterogeneity of pharmacy characteristics within the UK, such as
262 ownership and size diversity.³¹ Therefore, the generic process map was intentionally designed to be
263 sufficiently high-level to act as a service blueprint,³² which avoids being over-prescriptive and could
264 accommodate local system adoption on a larger scale. This would allow people to adopt a two-step
265 patient identification process, as observed within one of the latter case studies, if they wished.

266 Unlike traditional methods of process mapping which focus on identifying system faults, this study
267 applied process mapping as a “bottom up” approach to understand variation and integration of the
268 CBs.³³ It is acknowledged that other methods of exploring work process variation exist, such as
269 human factors models which aim to understand the complex interactions between people, tasks,
270 technology and the wider environment they work within and how these influence overall system
271 performance and human wellbeing.^{34, 35} However, this requires significant expertise and effort, while
272 process mapping was selected purposefully as its application within improvement and safety
273 initiatives is well established and feasible.^{33, 36}

274 *Implications*

275 The methodology applied has allowed understanding of how the CB process integrated into routine
276 practice. Understanding integration of novel innovations into practice is an important consideration
277 of both local and international significance. Within Scotland, evaluation of a national platform, the
278 Pharmacy Care Record system, suggested a lack of integration into practice when only 13.7% of
279 pharmacists used the system daily.³⁷ For quality-related initiatives in Canada, integration into
280 community pharmacy practice was identified as one of six supporting factors,³⁸ and incompatibility
281 with the layout and workflow of the pharmacy was a cited barrier to the provision of written
282 medicine information to patients in an Australian study.³⁹ The authors propose that further
283 application of the methodological approach outlined in this study within community pharmacy could
284 mitigate barriers for future innovations, especially considering the drive for community pharmacies

285 to offer more clinical services. This could become of greater importance as the emergence of
286 eHealth technology, such as automatic dispensing and electronic prescribing, may challenge and
287 reshape traditional workflows.^{34, 40-43}

288 Furthermore, the development of the generic process map may allow senior leaders to visualise the
289 process in practice and thus facilitate strategic decision making when considering the national
290 implementation of the CBs. The identification of the CB core stages allows for the targeted
291 development of resources and offers understanding to the degree of facilitation required for
292 national implementation. For example, the findings of this study highlighted that variable
293 documentation methods were adopted by the pilot pharmacies, and consequently national
294 implementation may be facilitated by an update of the eHealth system already available nationally
295 within Scottish community pharmacies.⁴⁴

296 The generic HRM process map highlights the scope for whole team involvement with the HRM CBs,
297 which was an unexpected but positive finding. Within the UK, a potential link has been identified
298 between the involvement of support staff and pharmacy engagement with public health
299 initiatives,^{45, 46} and internationally the potential benefits of support staff involvement has been
300 recognised. Reviews of community pharmacy services in the United States found involvement of
301 technicians in work that does not require professional judgement lessens the “dispensing burden”
302 and helps overcome time constraints.^{47, 48} In New Zealand, a survey of pharmacists and pharmacy
303 technicians revealed support for technicians adoption of more advanced roles,^{49, 50} and Australian
304 community pharmacists and strategists considered task delegation as “essential” for successful
305 implementation of clinical pharmacy services.⁵¹

306 However, results from the wider SPSP-PPC evaluation indicate that although whole team
307 involvement was possible, in reality, the onus was often on the pharmacist to deliver the CBs.⁵²
308 Within the UK, although task delegation is reported to be widely employed within community
309 pharmacies and support staff are considered competent to absorb further roles, barriers to task
310 delegation exist and include concerns over accountability, with mixed views about the
311 reconfiguration of the skill mix within community pharmacies.^{53, 54} As participants within this study
312 reported positively that the process map could encourage staff involvement, the generic process
313 map could be disseminated to pharmacies as an operational tool to facilitate implementation by
314 promoting whole-team engagement and task delegation. The use of process maps in community
315 pharmacy has previously been suggested to improve efficiency, identify support staff roles and
316 ensure higher skilled staff perform tasks only themselves can do,⁴⁷ echoing some of the participants
317 comments within this study.

318 The feasibility of developing a generic process map for the CBs, derived in this study from different
319 HRM areas, suggests potential adaptability of the process to varying clinical contexts. Scope
320 therefore lies, once nationally implemented, for the CBs clinical content to be adapted in light of
321 emerging safety concerns. This could be a promising platform to allow for seamless translation of
322 evidence into practice and would benefit from further research.

323 *Conclusions*

324 As community pharmacies’ contribution within the primary care health sector is increasingly
325 recognised, an understanding of how novel services and approaches to healthcare delivery can

326 integrate into routine practice is crucial. The methods employed in this study were successful in
327 determining the core steps involved, and the contribution of resources and staff members. Overall, it
328 provides an understanding of the extent of variation when considering the adoption of a CB
329 approach to drive quality improvement in patient care. Similar methodology may be utilised further
330 within this, and other settings, to allow those developing novel services to distil the key processes
331 and consider their integration within routine workflows to effect maximal, efficient implementation
332 and benefit to patient care.

333 **Author Contribution**

334 RN co-ordinated the research project. RN, PB, AW, MB contributed to study design. EDC, AA-G, AA
335 and NW undertook data collection. NW, RN, EDC, AA-G and AA contributed to data analysis. NW
336 developed the Warfarin, NSAID and generic HRM process map, wrote and prepared the final
337 manuscript and RN contributed to writing the first draft. All authors edited and approved the final
338 manuscript.

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486

487 **Appendices**

488 **Appendix 1.** Phase 1 semi-structured interview guide:

- 489 1) Are you involved in the warfarin/NSAID programme?
490 a. If yes,
491 i. What are you doing? How are you doing it?
492 ii. What is going really well?
493 iii. Challenges and how you've overcome them
494 b. If no, the interviewer give brief explanation of what's being done
495 i. How do you think you could be involved
496 ii. Have you been affected by it in any way?
497
- 498 2) How disruptive is this evaluation process – can we do anything differently?

499

500 **Appendix 2.** Phase 3 variation exercise questions:

501 Q1: What are the differences between this model and the processes within your site? Can you
502 explain why this is?

503 Q2: Which steps in the process map do you find challenging and how are these overcome?

504 Q3: What advantages/disadvantages can you see in this approach? Would you consider
505 reviewing/revising your processes in light of this process map?

506

507 **Supplementary Files**508 **Supplementary File 1.** Demographics of pharmacy staff participants

	Phase 1 Case Study Participants					Phase 3 Pharmacy Away Team Participants (n=41)
	Region 1, (n=5)	Region 2, (n=4)	Region 3, (n=5)	Region 4, (n=5)	Total (n=19)	
Gender						
Male	0	1	0	2	3	13
Female	5	3	5	3	16	28
Duration worked in Community Pharmacy (years)						
<1	0	0	1	0	1	3
1 – 5	1	0	4	1	6	8
6 – 10	3	2	0	2	7	9
11 - 15	0	0	0	0	0	6
16 – 20	1	0	0	1	2	4
>20	0	2	0	1	3	9
Unknown	0	0	0	0	0	2
Job Role*						
Pharmacist	1	2	1	3	7	29
Support staff	4	2	4	2	12	12

509 Pharmacy Away Team demographics collected from NLE registration documentation.

510 *Pharmacist includes pre-registration pharmacists, which in the UK is a trainee who has completed
511 their Masters of Pharmacy undergraduate degree and is participating in a one-year placement prior
512 to becoming a fully qualified pharmacist. Support staff includes pharmacy technicians, dispensing
513 assistants and medicine counter assistants.

514

515

Step	Variation	Outcome
Work processes		
Process for delivering the care bundle if the patient/carer didn't present themselves to collect the prescription.	Region 3 and 4 did not stipulate a process for this. The other regions did which involved asking for the patient to attend or telephone the pharmacy.	Deemed important and included in both HRM process maps.
This display of an HRM educational poster was identified as optional.	Region 4 made a conscious decision not to display an educational poster as was not deemed appropriate. All other regions did.	Included but annotated within both HRM process map to show optional.
Consulting Warfarin Record Book during care bundle delivery.	Region 1 specifically required the warfarin yellow book to deliver the care bundle.	Included but annotated within the Warfarin HRM process map to show optional.
Process for repeating the care bundle to patients.	Region 2 did not repeat the care bundle, Region 1 would repeat only in the presence of changes. Region 3 and 4 did not stipulate if the Care Bundle was repeated.	Included with both HRM Process maps to allow others at the NLE validation exercise to elaborate if repeating to patients or not.
Staff Involvement		
Pharmacy support staff involvement was variable throughout all four regions	Involvement included: identifying eligible patients, delivering the care bundle, facilitating enrollment of patients who got medication delivered and documentation.	Only HRM clinical assessment required pharmacist involvement, this was annotated within both HRM process maps.
Resources		
Various staff resources used throughout all four regions. Alert stickers were used to flag an HRM prescription to staff during dispensing and to highlight at point of collection that the care bundle should be delivered.	<ul style="list-style-type: none"> ◦ NSAID stickers ◦ Speak to Pharmacist stickers ◦ SPSP HRM Stickers ◦ Warfarin Stickers ◦ Warfarin Patient List ◦ Care Bundle Checklist ("in house") ◦ Enrollment stickers ("in house") 	Staff resources were included within the corresponding HRM Process map to ascertain resources used by other staff. Resources created "in house" for sole use in that pharmacy were not included.
Various Patient resources used throughout all four regions.	<ul style="list-style-type: none"> ◦ Warfarin Yellow Book ◦ NSAID Safety Card ◦ Medicines Sick Day Card 	Patient resources were included within the corresponding HRM process map to ascertain resources used by other staff.

