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Current reality and preferences for continuing professional development of pharmacists in England – supporting pharmacists to achieve their CPD requirements

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### **Rights Retention Statement:**

1 **Current reality and preferences for continuing professional development (CPD)**  
2 **of pharmacists in South London, Great Britain – supporting pharmacists to**  
3 **achieve their CPD requirements.**

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28 **Abstract:**

29 Background: Continuing professional development (CPD) is essential for  
30 pharmacists and is a regulator requirement in Great Britain (GB).

31 Objectives: The aim of this study was to establish current participation in CPD  
32 activity in GB, in terms of format and providers, plus preferences of pharmacists,  
33 including motivators and barriers, and support needed for application of learning.

34 Methods: This study utilised a questionnaire and semi-structured interviews of  
35 pharmacists in South London, England.

36 Results: The majority of responders (n=293/338, 86.6%) had taken part in CPD  
37 activity in the past 12 months. Although face-to-face workshops were the most  
38 preferred activity, digital completion was the most used activity. There was  
39 increasing non-participation with reduced working hours (p=0.003). The employer  
40 was the most commonly used provider. From 19 interviews three main themes  
41 emerged: Engagement, Intervention and Application.

42 Conclusions:

43 It is clear that no single format is preferred by all. There needs to be a strategy to  
44 ensure good utilisation of providers, and CPD based events having an impact on  
45 practice.

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50 **Keywords**

51 Pharmacist, barriers for learning, continuing professional development, education,  
52 motivators, needs analysis,

53 **Introduction**

54 Continuing Professional Development (CPD) is needed to ensure pharmacists are  
55 up to date with current practice and guidelines, and to ensure they are providing  
56 optimal patient care. With increasing new roles for pharmacists such as working in  
57 medical centres or care homes they need to be trained to ensure service provision  
58 and competence, wherever they work (Rouse *et al.*, 2009). This knowledge needs to  
59 be updated regularly to keep up with the changing role, with better critical thinking  
60 and collaboration (Toklu & Hussain, 2013). CPD is the basis of achieving lifelong  
61 learning but is led by the professional to fulfil their individual needs, dependent on  
62 their role and expertise. Achievement of CPD can take place through independent  
63 activity, along with participation in organised continuing education (CE) and training  
64 events.

65 Registrants of the General Pharmaceutical Council (GPhC), the regulator of  
66 pharmacy in Great Britain (GB), are bound by their revalidation requirements, which  
67 include CPD. The GPhC describes CPD as 'a process of continuing learning and  
68 development throughout the life of a professional' (The General Pharmaceutical  
69 Council, 2017a) and revalidation as 'what a future framework of assurance should  
70 look like' (The General Pharmaceutical Council, 2017b). Revalidation, introduced in  
71 2018, includes the creation of 4 CPD entries annually along with a reflection of action  
72 on changing practice after a discussion with a suitable peer who understands the  
73 registrant's role and practice, and reflective report showing how the registrant is  
74 achieving the required standards of pharmacy professionals. Prior to this, only 9  
75 cycles of CPD were required to be completed annually. Although CPD completion is  
76 also required for pharmacy technicians in GB, this study will focus on the pharmacist  
77 population.

78 *Formats of learning activity*

79 Achieving CPD is not just about participating in traditional face-to-face CE activities,  
80 but using a range of formats. The GPhC do not specify how registrants should  
81 complete their CPD requirements, as long as learning is completed and there is a  
82 reflection of how this has impacted practice.

83 Face-to-face attendance activity allows student and instructor interaction plus  
84 immediate feedback, although this is more time and resource intensive (Johnson *et*  
85 *al.*, 2000). It also allows the opportunity for peer discussion. A variety of face-to-face  
86 methods are available including networking meetings, conferences, workshops,  
87 seminars and lectures, thus giving participants choice to ensure information is  
88 presented in a way that is tailored to their learning style and training needs  
89 (Romanelli *et al.*, 2009). A study by Artino (2010) has shown that learners who  
90 perceive that the topic of a course has content importance would rather attend a  
91 face-to-face training. Benefits of attending face-to-face training include networking  
92 for professional development (Author, 2017), along with having the ability to question  
93 an instructor to support learning outcomes (Du Boulay & Luckin, 1999; Lim *et al.*,  
94 2014).

95 The use of technology in education and training is increasing steadily with Electronic  
96 learning (E-learning) packages, participation in online courses, webinars and  
97 podcasts increasing in popularity (Kaplan & Haenlein, 2016). E-learning has  
98 become more common place in recent years, either in addition to, or as a  
99 replacement for traditional face-to-face learning. It is seen as useful for mandatory  
100 learning that needs to be repeated regularly, thereby saving time and money on  
101 face-to-face interventions, and allowing maximum coverage of the population (World  
102 Health Organization, 2015; Buxton & De Muth, 2012). Distance learning is learning

103 delivered where the student and tutor are not co-located (Du Boulay & Luckin, 1999)  
104 and relies entirely on technology for the learning experience. It can provide a more  
105 flexible approach for pharmacists' development, thus allowing pharmacists to learn  
106 at their own pace (World Health Organization, 2015). Webinars are also being used  
107 more frequently with benefits including being able to share a message to a wide  
108 group of participants in various locations (Johnson, Aragon & Shaik, 2000;  
109 Stephenson *et al.*, 2008). Although initially a cost may be incurred from creating the  
110 learning, cost savings are seen when compared to face-to-face learning due to  
111 multiple mass use and venue and resource savings (Wake & Lisgarten, 2003; Wyatt,  
112 2009; Wyatt & Sullivan, 2005). Social media and mobile application use are also  
113 becoming more commonplace especially with younger professionals who have been  
114 termed as 'digital natives' due to their understanding and use of technology on a  
115 regular basis (Ellis *et al.*, 2012). A previous study found that older males have been  
116 seen to hold the greatest interest in distance learning (Driesen *et al.*, 2008).

117 Where distance learning is combined with traditional classroom learning, this is  
118 termed blended learning. Blended learning can provide a more flexible approach for  
119 pharmacist development, as it does not fully replace traditional face-to-face learning  
120 (Buxton, 2014). No difference is seen between perceived and actual learning gains  
121 between online and blended learning approaches (Lim *et al.*, 2014). Furthermore,  
122 using a blended approach does not impact outcomes based on gender (Lim &  
123 Morris, 2009).

124 At the same time reading journals, books and manuals as a learning format still  
125 occurs.

126 Due to the variety of formats on offer and the lack of consistent model, it is hard to  
127 identify the format preferred or used by all (Driesen *et al.*, 2008; Bellolio & Stead,

128 2009) or the cost benefits from the activities (Brown *et al.*, 2002) or indeed which  
129 activities are needed if at all. To ensure participation in various learning formats and  
130 CPD opportunities, preferences need to be identified so they can be taken into  
131 account in the design of learning programs (Marriott *et al.*, 2007).

132

### 133 *Providers of pharmacist CPD in Great Britain*

134 In GB, to support CPD requirements, education and training for pharmacists is  
135 currently provided by a number of different organisations. The main providers are  
136 described below, and summarised in Table I.

#### 137 **Table I to be added here**

138 The Centre for Post-graduate pharmacist education (CPPE) is funded through the  
139 National Health Service (NHS) multi-professional Education and Training Fund from  
140 Health Education England (HEE) to provide CPD to all registered pharmacists and  
141 pharmacy technicians in England. Upon registration with the GPhC, there is  
142 automatic enrolment to CPPE services. There is no additional registration fee for  
143 participants and education and training is free at the point of contact. The GPhC, in  
144 their annual report for 2018-2019 state there were 56288 pharmacists on the register  
145 in GB as at March 31<sup>st</sup> 2019 (The General Pharmaceutical Council, 2019).  
146 Participation in CPPE activity is voluntary. Activities on offer include PDF distance  
147 learning packages, online assessments, online e-courses supported by a tutor, e-  
148 learning, e-workshops, focal point face-to-face learning events, self-study guides and  
149 workshops.

150

151 The Royal Pharmaceutical Society (RPS) is the professional membership  
152 organisation for pharmacists in GB. Joining the RPS is voluntary, and attracts an  
153 annual registration fee. The RPS has a national network of Local Practice Forums

154 (LPFs), run by volunteer members from that geographical area, which represent and  
155 support their members locally, including the organisation of face-to-face education  
156 and training events. Centrally, the RPS organise both face-to-face and virtual  
157 education and training events which are open to both members and non-members  
158 usually at a cost (Royal Pharmaceutical Society, 2019), including an annual national  
159 conference and local events, plus webinars.

160

161 Whereas the aforementioned providers cater for pharmacists working in all sectors,  
162 the following two providers focus on community pharmacists. These include 80 Local  
163 Pharmaceutical Committees (LPCs) who are independent representative groups of  
164 community pharmacists within a locality, in England (Pharmaceutical Services  
165 Negotiating Committee, 2019). LPCs tend to organise face-to-face evening  
166 information meetings for their members to cascade local issues and priorities. On the  
167 other hand, the National Pharmacy Association (NPA) is a trade association, which  
168 represents both independently owned community pharmacies and national chain-  
169 owned pharmacies. Pharmacies pay a membership fee to join. The NPA offers a  
170 wide range of training courses, both face-to-face and distance learning, along with a  
171 CPD hub, for all members of the pharmacy team.

172 The United Kingdom Clinical Pharmacists Association (UKCPA) is a fee-paying  
173 member organisation for healthcare professionals who provide direct clinical  
174 pharmacy services, so has more focus on hospital pharmacists. Sharing current  
175 experiences is central to face-to-face UKCPA learning events.

176 Groups are also available representing clinical specialties or for particular  
177 demographic groups. These organisations arrange face-to-face meetings and

178 conferences, as well as alternative formats for learning, such as webinars and e-  
179 learning opportunities.

180

181 Multiple studies have been conducted looking into barriers and motivators for  
182 participation of pharmacists in CPD activities. Facilitators that influence participation  
183 in learning include desire to learn, a requirement to stay licensed or registered to  
184 practice and enjoying a change from routine (Hanson *et al.*, 2007). Staying licensed  
185 may include being able to offer specific services in a pharmacy setting or completing  
186 statutory CPD. Clear outcomes for learning and how it can be applied into practice  
187 and benefit the workplace are essential to facilitate interest in learning (Jubraj, 2009).  
188 Having confidence in the format and process of learning will increase participation,  
189 as well as having support in the workplace (Power *et al.*, 2011). However, it is noted  
190 that hospital pharmacists are more confident in the process of partaking in, and  
191 recording CPD, than community pharmacists.

192 The most common barriers identified are time and location of training and the  
193 associated cost and travel (Buxton & De Muth, 2012; Marriot *et al.*, 2007; Hanson *et*  
194 *al.*, 2007; Donyai *et al.*, 2011). Lack of motivation is also seen as a barrier along with  
195 method of delivery (Marriot *et al.*, 2007; Donyai *et al.*, 2011). Time barriers usually  
196 stem from job or family constraints (Hanson *et al.*, 2007; Author, 2017). Finally, the  
197 quality and facilitation of delivery impacts participation (Marriot *et al.*, 2007; Donyai *et*  
198 *al.*, 2011) along with understanding of CPD processes and technical problems  
199 (Donyai *et al.*, 2011).

200

201 Pharmacists fail to see the relevance of CPD, and decreased engagement is seen  
202 once they are further on in their careers (Attewell *et al.*, 2015). Lack of support and

203 resources for CPD and lack of perceived relevance on practice also has an effect on  
204 participation (Marriott *et al.*, 2007, Donyai *et al.*, 2011; Eden *et al.*, 2009).  
205 Understanding the mechanisms for translating learning into behavioural change and  
206 practice outcomes is crucial to help pharmacists maintain their professional  
207 development (Grimshaw *et al.*, 2002; Auston, 2012). This can be achieved through  
208 measuring all aspects of implementation from barriers and facilitators through to  
209 strategies for implementation and outcome measures (Moullin *et al.*, 2016). Planning  
210 prior to implementation is also key to a successful outcome (Farrell *et al.*, 2012) with  
211 activities being designed with application of learning into practice in mind (Lim &  
212 Morris, 2009).

213

214 Although studies have evaluated elements of pharmacists participation in, and  
215 preferences and barriers for participation in learning events in GB, no survey has  
216 been carried out with large numbers (Donyai *et al.*, 2011). This paper seeks to be the  
217 first paper to provide the pharmacists perspective on the main education and training  
218 providers in GB, through analysis of previous participation in activities. In addition,  
219 preferences for participation in terms of format, length and frequency are explored  
220 along with motivations and barriers for participation. With the multitude of providers  
221 and formats on offer, preferences should be considered to ensure future investment  
222 is used to maximise participation, ensure return on investment and to ensure CPD  
223 can be achieved in the best way for learners, and to support providers in the  
224 planning of events. These learns can be used by providers globally. This is needed  
225 in an increasingly financially and time stretched society. Previous studies relating to  
226 motivators and barriers for pharmacists' participation in education have been either

227 qualitative or quantitative. This study intends to combine both research approaches  
228 aiming to bring a more in-depth understanding to the subject.

229 Thus, the aim of this study was to establish current participation in and preferences  
230 of pharmacists in terms of format and provider, plus motivators and barriers, for  
231 participation in CPD activity in GB, and support needed for application of learning.

232

233 **Methods:**

234 This study used structured interviews along with questionnaires. The location under  
235 investigation is South London, England, covering 12 local health authorities. There  
236 are namely Bexley, Bromley, Croydon, Greenwich, Kingston, Lambeth, Lewisham,  
237 Merton, Richmond, Southwark, Sutton and Wandsworth. There is one LPH covering  
238 South London, and 5 LPHs covering the 12 local health authority areas. In 2018,  
239 approx. 1800 pharmacists worked in this area. This included 647 community  
240 pharmacies with 1195 community pharmacists, along with 10 NHS hospitals (Health  
241 Education England, 2018). The questionnaire included questions based on  
242 information from GPhC (2019), previously used local evaluation forms (Author, 2017)  
243 and validated learning style preference tools (Honey, 1992; Deing, 2004; Fleming &  
244 Baume, 2006). No other previous studies could be found that identified the aims of  
245 this present study. This questionnaire received face validation, to ensure suitability  
246 and clarity, through the South London LPH committee members, which consists of  
247 pharmacists from all sectors of the profession (n=8). The survey consisted of 26  
248 Likert scale, tick box multiple choice and open-ended questions, in 7 parts.

249 The questionnaire was added to an online data collection tool, Survey Monkey. A  
250 pilot study aiming for a 5% population (n=90) to ensure content validity was  
251 completed via local contacts and the LPH committee in South London. The pilot

252 received 63 responses between February and March 2015. No problems or  
253 anomalies with the questionnaire were reported, therefore roll out then occurred  
254 starting in September 2015 with the pilot sample included in the data. Using Raosoft  
255 software, (<http://www.raosoft.com/samplesize.html>) based on a sample size of 1800,  
256 317 responses were required to achieve a 95% confidence interval and to limit  
257 sample error. The questionnaire link was circulated through local pharmacy  
258 networks; leads of the 5 LPCs for dissemination to community pharmacies, plus it  
259 was sent to hospital and local health authority Chief pharmacists, who are  
260 responsible for planning and commissioning local health services. It was also posted  
261 out to 250 pharmacies in South London which were known from previous work  
262 (Author, 2019). Three final year pharmacy students on the undergraduate MPharm  
263 programme further helped to collect responses from hospital and community  
264 pharmacists using paper surveys with collection finishing in March 2016. Completion  
265 of the survey was taken as implied consent to take part. Responses were entered  
266 onto Survey Monkey by the lead researcher from paper surveys received. Raw data  
267 was exported from Survey Monkey to Microsoft Excel to be analysed. As the data  
268 was non-normally distributed and ordinal in nature, chi-square tests and Mann  
269 Whitney U tests were used to identify any associations between responses. Sub  
270 analyses were performed to identify potential variances by gender, sector, age and  
271 working hours. Statistical significance was assumed where  $P \leq 0.05$ . Preferences for  
272 learning formats were ranked according to 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> preferences expressed.  
273 These preferences were added to gain an overall preference score. For open ended  
274 questions word counts were used, along with weighted means, where appropriate.  
275 The structured interview consisted of 16 questions with the objective of  
276 understanding the previous experience of training and providers, preferences for

277 completing educational activity, motivators and barriers, as well as multidisciplinary  
278 learning. All questions were face validated by a colleague pharmacist prior to the  
279 start of the study. However, 6 of the questions were used in a previous study  
280 (Author, 2017). No additional pilot was carried out for the additional questions,  
281 although participants were invited to participate in the interview by giving their  
282 contact details when completing the questionnaire. Contact details were given by 74  
283 responders at the end of the survey to participate in the follow up interview. All were  
284 contacted by email to ask if they were willing to take part in the interview, either in  
285 person or by telephone, according to preference and convenience. All who  
286 responded (n=19) were interviewed between May and October 2015.

287 Those who accepted an invitation for the follow up interview were emailed to arrange  
288 a suitable time for the interview. A participant information sheet was sent by email to  
289 those who wished to be interviewed were given in person where face-to-face  
290 interviews occurred. Written confirmation of participation was received via email from  
291 all participants prior to carrying out the interview. The lead researcher travelled to  
292 places convenient for the participant where possible, or conducted the interviews  
293 over the phone. Interviews lasted between about 12-32 minutes, were audio  
294 recorded with further verbal consent of the participants, and were transcribed  
295 verbatim, before being deleted. Analysis of the data was done thematically using an  
296 inductive framework approach (Braun & Clarke, 2006) using 5 phases, consisting of:  
297 familiarisation of the data, generating initial codes (table 1), searching for themes,  
298 reviewing the themes and defining and naming the themes. The transcripts were  
299 read and re-read until all emerging themes had been coded. In addition, all  
300 transcripts were managed and coded using NVIVO 10 software. Although no new  
301 themes were identified after 14 interviews (Francis *et al.*, 2010) all responders were

302 interviewed and included in results. Results are presented in form of themes and  
303 corresponding subthemes underneath. Quotes from interviews are used to illustrate  
304 the findings presented under each theme. This study received ethics approval from a  
305 university ethics committee (1415/018).

306

307 **Table II to be added here**

308

309 **Results:**

310 The response rate, including the 63 pilot responses was 338 giving a response rate  
311 of 18.8% if 1800 pharmacists in South London is assumed. Despite the low response  
312 rate, the minimum sample size required (317) was achieved. Not all questions were  
313 answered by all responders therefore valid percentages are used for each question.

314

315 *Demographics*

316 The majority of responders were female (n=215, 60.4%). Responses came from all  
317 age ranges and multiple areas of practice. The majority of responders worked over  
318 30 hours (n=225, 66.6%), and 72.8% (n=246) were in employed work, with 68  
319 responders (20.1%) locuming. The demographics of the respondents broadly  
320 reflected current breakdown of pharmacists in GB (Hassell, 2011). The majority  
321 (n=293, 86.6%) had taken part in some form of education and training activity in the  
322 past 12 months. Results did not vary by gender. By sector, those working in primary  
323 care, defined as working in a commissioning or governance role for a local health  
324 authority, (96.4%, n=27/28) and academia (96.3%, n=26/27) were most likely to have  
325 participated. Of the 45 who had not participated in activity during the past year, there  
326 was no obvious connection with gender or sector. However, there was a significant

327 correlation with working hours, with increasing non-attendance with reduced working  
328 hours ( $p= 0.003$ ). The demographics of pharmacist responders can be seen in Table  
329 II.

330

331 **Table III to be added here**

332 *Previous participation*

333 From the 293 responders who had participated in education and training in the past  
334 12 months, the employer was the most frequent organiser of education or training.  
335 Just over half of responders ( $n=147/293$ , 50.1%) had participated in an employer led  
336 event. The employer was most used by academics ( $n=17/27$ , 63%) with community  
337 pharmacists using employer the least ( $n=86/200$ , 43%), compared to 43/90 hospital  
338 pharmacists (47.8%). When taking into account that 246 participants stated they  
339 were employed, 60% ( $147/246$ ) had used employer organised training.

340 CPPE had been used by less than half ( $n=139/293$ , 47.4%), and 34.1% ( $n=100$ )  
341 stated their education or training was self-driven. CPPE was used twice as much by  
342 community pharmacists ( $n=98/200$ , 49%) versus their hospital colleagues ( $n=23/90$ ,  
343 25.6%). The RPS had been used by 29.4% ( $n=86/293$ ) with 19.1% ( $n=56$ ) using an  
344 LPF. There was no difference seen across genders. There was similar usage across  
345 age groups with the exception of those under 25 who used GPhC and RPS more  
346 than other age groups. As expected, LPC and NPA were not used at all by hospital  
347 pharmacists, while UKCPA was used more by hospital than community pharmacists  
348 (8.9%,  $n=8/90$  vs 1%,  $2/200$ ).

349 When looking at the format that had been used, 62.0% ( $n=181/293$ ) had completed  
350 an e-learning package, 54.8% ( $n=160/293$ ) had attended a workshop, 53.4%  
351 ( $n=156/293$ ) had read a journal article and 51% ( $n=149/293$ ) had attended a

352 conference or network meeting. All other formats had been used by less than 50%.  
353 Some variation was seen for various formats across gender, sector and age.  
354 Conferences were attended by 59.1% (n=106/179) of females versus 36.2%  
355 (n=37/102) of males, whereas manuals were used by 17.7% (n=18/102) of males  
356 versus 8.3% (n=15/179) of females. E-learning, workshops and manuals were used  
357 more by community (n=175) than hospital pharmacists (n=81) (69.1% (n=121) vs  
358 46.9% (n=38), 58.3% (n=102) vs 43.2% (n=35) and 16.6% (n=29) vs 4.9% (n=4)  
359 respectively) whereas completing a formalised qualification was about double for  
360 hospital pharmacists compared to community pharmacists (19.8% (n=16) vs 9.1%  
361 (n=16)). Those aged 26-35 were most likely to have undertaken a formalised  
362 qualification. Attendance at workshops and lectures increased with age, as did the  
363 use of webinars. Reading journals was also completed significantly more (P= 0.012)  
364 by the over 55s versus the under 25s (78.6% (n=22/28) vs 46.2% (n=14/30)).  
365 The optimum time for participation in events is seen to be 1-2 hours, except for  
366 daytime or weekend events, which can be longer. Although podcasts would be  
367 acceptable up to 2 hours, shorter appears to be preferable.  
368 Downloading and listening to podcasts appear to be acceptable monthly. Every three  
369 months seems to be optimum for evening events (including lectures and workshops)  
370 or participating in a webinar with 6 monthly being the most accepted for a 1-day  
371 conference, weekday daytime or weekend events.  
372 Attendance at a workshop was the most preferred way of achieving learning, closely  
373 followed by completion of an e-learning package and attendance at a conference.  
374 1<sup>st</sup> preference responses also mirrored overall response for individual formats. Full  
375 breakdown of results is shown in table IV.

376 **Insert table IV here**

377 When looking at demographics, those aged 36-45 were least likely to prefer face-to-  
378 face attendance and they showed the highest preference for e-learning by age group  
379 with females showing preference for e-learning over males. Those aged less than 25  
380 had a higher preference for learning from mobile applications and video websites.  
381 Hospital pharmacists had stronger preferences for attendance at conferences and  
382 lectures than their community colleagues did, although there was no difference seen  
383 by sector for attendance at workshops. All sectors, genders and ages preferred  
384 attendance at workshops to lectures. When comparing by demographic group,  
385 females and hospital colleagues are significantly more positive about peer review  
386 ( $p < 0.05$ ; 0.010 gender, 0.003 sector) than males and community pharmacists.  
387 Linking to learning style preferences, visual learning was preferred, followed by  
388 kinaesthetic learning with over half (55.8%,  $n=177/317$ ) stating they preferred to  
389 learn interpersonally through social interaction.

#### 390 *Barriers to attendance*

391 The biggest barriers to attendance were time and venue, with finishing work too late  
392 being cited by 47.4% ( $n=152/321$ ) of responders, venues being too far listed by  
393 42.1% ( $n=135/321$ ) and getting home too late being listed by 36.1% ( $n=116/321$ ).  
394 Differences were seen between male and female responders and those working in  
395 hospital and community settings, but no other demographic. Others demographics  
396 included age, role and hours worked per week. Male responders were significantly  
397 more likely ( $p=0.03$ ) to state barriers of finishing work too late, not getting paid to  
398 attend, preferring to complete CPD through non face-to-face methods, and learning  
399 topic having no link to a pharmacy service, compared to female colleagues. Females  
400 stated childcare issues as a barrier in 18.2% of cases versus 4.4% of men. By  
401 sector, community pharmacists stated the following barriers; finishing work too late,

402 venues being too far, not getting paid to attend, not being contractually obliged to  
403 attend, preferring to complete CPD through non face-to-face methods, format of  
404 learning, and previous bad experience, more frequently than hospital colleagues.  
405 These differences were, however, not significant. For all listed barriers, except 'I do  
406 not require the training to do my job', where responses were mirrored, barriers were  
407 perceived to a greater extent by community pharmacists. Full results can be seen in  
408 table V.

409 **Insert table V here**

410 Of the 35 open-ended responses, time featured strongly with timing of events being  
411 a barrier (n=12), along with release for attendance at events if they were daytime  
412 events due to no employer support for attendance (n=4). In addition, cost of some  
413 events was also a barrier (n=6) along with the current training on offer being pitched  
414 at the wrong level due to specialism in role (n=4).

415 From the free text responses (n=289) about motivators for participation in ongoing  
416 education and training, topic was the main factor (n=58), with many citing interest  
417 (n=30), requirement (n=42) and role (n=40) as motivators. Knowledge (n=39) and  
418 CPD (n=36) plus relevance (n=36) also featured strongly.

419 *Tools to support application of learning*

420 After attending a learning event, 72% of responders (n=231/321) said they would  
421 benefit from receiving a copy of the presentation. Over half (58.6%, n=188/321)  
422 asked for case studies and 57.9% (n=186/231) asked for a follow up email with a  
423 reminder of key points. Just less than half (46.7%, n=150/321) felt that completing an  
424 online assessment would be of use. Interestingly, 6 responders (1.9%) said they did  
425 not need any tools after an event. All of these responders were community

426 pharmacists, with 3 being male and 3 females; 3 were employed, 2 were locums and  
427 1 was retired; 2 were less than 25, with 1 each from the other age ranges.

428 *Interviews:*

429 A total of 19 interviews were completed giving a response of 25.7% (19/74). Of those  
430 interviewed 11 were female. Participants included 1 pharmacist working in a GP  
431 surgery, 2 local health authority commissioning pharmacists, 2 academic  
432 pharmacists, and 5 working in a hospital setting with the remaining working in a  
433 community setting. All participants who replied to the initial request for interview were  
434 included.

435 Three main themes emerged from the interviews: Engagement, Intervention and  
436 Application of learning, each with related subthemes (Table 1).

437 **Engagement**

438 Engagement for attendance or participation in a learning event is linked to attraction  
439 for the event, and is supported by enablers for participation and topic. Enablers  
440 include regular planned meetings and ensuring the meeting is relevant to role.

441

442 'The newer therapies around, new ways of treating patients, that's what makes  
443 something relevant to me. It is about practice, basically about information that  
444 improves my practice.' (Interview 16)

445

446 Support service outcomes and personal CPD was also seen as beneficial.

447

448 'I don't normally go to additional training unless it will benefit a service, so it needs to  
449 be necessary information.' (Interview 18)

450 'I am sure there are lots of people who are behind on their CPD entries and actually  
451 that is a really good way to consolidate your learning.' (Interview 5)

452

453 It is also important to provide ongoing learning in protected learning time.

454

455 'I would rather attend, where the mobile is off, no one is disturbing me, and I am  
456 doing something constructive.' (Interview 11)

457

458 The timing and location of meetings drives attendance, echoing the survey results,  
459 along with previous experience of a training provider.

460 'I think location makes a big difference. I know if you can get somewhere really  
461 easily it is less of a barrier after a long day.' (Interview 9)

462 'I think I would trust xxxx, because the ones I have attended I have liked.' (Interview  
463 4)

464

465 However, if participants are not aware of sessions they won't participate so  
466 awareness and advertising of content is essential. Echoing the survey, barriers to  
467 attendance also include family and work commitments, and the need to try and  
468 maintain the correct work life balance.

469 'I like to know who the speakers are and the agenda in advance, because  
470 sometimes you turn up and it is not at all what you thought, so if you have someone  
471 from a different angle to what you wanted covered, and I would also, ideally, like it to  
472 be someone independent.' (Interview 14)

473 'Jobs are getting more stressful, so for many pharmacists, especially community  
474 pharmacists, you are in your pharmacy 8-7 you need a personal life and you need to  
475 be able to go home and relax.' (Interview 5)

476

477 Getting the topic right will attract more attendees to an event. The topic needs to be  
478 described well and be applicable to all, have national or local importance, and must  
479 be current and up to date to attract interest. Cost can also be seen as a barrier for  
480 some individuals if the course is a paid one.

481

482 'I have a feeling that people aren't attracted to the topic or don't think it is relevant for  
483 them, or, the importance of that has not been, they have not understood the  
484 importance of why that topic needs to be done.' (Interview 15)

485 'If I don't work I don't earn ... so cost is a significant factor for me.' (Interview 16)

486

487 **Intervention**

488 The perceived success of the intervention depends on format. When attending a  
489 face-to-face educational event a mixture of teaching methods is useful and the use  
490 of case studies is requested, to supply the application of learning into practice.

491

492 'I think you need different styles for different people, there is no one answer.'  
493 **(Interview 10)**

494

495 The opportunity to network enables discussion and the sharing of best practice, and  
496 having an expert speaker supports this learning, bringing different perspectives. The  
497 sharing of anecdotes was seen to support recollection of knowledge and translating  
498 learning into ideas for application of knowledge into practice.

499

500 'Being with like-minded people or people with specialist areas, trying to speak to  
501 them and get their insight.' **(Interview 17)**

502

503 'It is good to help you remember what you are being told when you have a chance  
504 to think about how you will apply it in practice.' **(Interview 1)**

505

506 'It is to do with the speaker, and the way things are said, which makes you  
507 remember' **(Interview 4)**

508

509 Learning independently has pros and cons. Articles and emails or websites are seen  
510 as positive opportunities for learning on your own and in your own time. Flexibility is  
511 the main perceived benefit with independent learning.

512

513 'There are times I sometimes cannot make an event and you don't want to miss out,  
514 so a webinar is one of those good things that I like because I can do it from  
515 home...they are very clever with their IT so you listen but do the case studies with  
516 other people in a group virtually, which I think is an amazing model, because I felt  
517 like I was in a workshop but sitting at home.' **(Interview 5)**

518

519 Whilst technology is seen as a benefit, this is hindered when technology is not  
520 effective and from the lack of human interaction.

521

522 'So if you have questions there is no one to ask if you have problems.' (Interview  
523 18)

524 'You have got the distractions of comments coming up and it goes out of sync, and  
525 maybe some technical glitches, so they are not my favourite.' (Interview 9)

526

## 527 **Application**

528 Application of learning is supported by the appropriate tools and assessment. A  
529 summary of notes or slides enables reflection on the learning, which echoes the  
530 questionnaire responses.

531

532 'A summary of what the actual objectives were after the learning event. Powerpoint  
533 presentations are o.k. but it also requires notes with it. Powerpoints are too brief,  
534 because when you go back to it doesn't help the understanding very well. I will go  
535 back to it if it is relevant.' (Interview 18)

536

537 Assessment of knowledge was seen as a positive.

538 'To help you remember what you know and don't know and will help you. Probably  
539 the day after because then it is fresh in your mind. Maybe online or given as a sheet  
540 during the evening.' (Interview 7)

541

## 542 **Discussion:**

543 The findings collected from the study point out that the provision of education and  
544 training activities, supporting CPD, is a complex situation that needs to be adjusted  
545 for personal preferences and circumstances.

546 The findings from this study build on previous work about motivators and barriers for  
547 participation of pharmacists in educational and CPD activities (Buxton & De Muth,  
548 2012; Marriot *et al.*, 2007; Hanson *et al.*, 2007; Donyai *et al.*, 2011, McConnell *et al.*,  
549 2010). Relevance to role is important along with ensuring the balance between  
550 learning and application into practice. It is seen that there is a need to participate

551 where possible, so planning is important to ensure participants can see the value in  
552 attending, by having a clear understanding of the topic, what learning will be gained,  
553 and how they can use that learning in practice, as found in a previous study by  
554 Author (2017). It is also clear that perceived barriers differ by gender and sector of  
555 work, so these would need to be addressed, dependent on the target audience.

556 It was positive to see that most respondents had participated in an activity to support  
557 their ongoing learning and CPD in the past 12 months. However, it is interesting to  
558 see that the national free system available to all pharmacists, CPPE, had only been  
559 used by just over half. This may be a result of having access to multiple  
560 organisations in addition to employers who offer a large range of support to their  
561 employees. Having seen that non-participation increases with decreased working  
562 hours, the role an employer has on motivating participation in learning cannot be  
563 underestimated. Previous studies have shown pharmacists are more likely to  
564 participate in CPD activities where they have an active interest (Hanson *et al.*, 2007;  
565 Donyai *et al.*, 2011). There may also be a different perception of what is needed as  
566 additional learning or education if this is already embedded in the job, for example  
567 with shadowing, or peer review. The results show that peer review and shadowing  
568 received greater scores when they are used regularly in practice, such as with  
569 hospital pharmacists. This may be, in part, due to the collaborative working nature  
570 and interprofessional element of the hospital role. With the introduction of peer  
571 review into the revalidation system for pharmacists in GB, this may act as a catalyst  
572 for pharmacists to participate in face-to-face events, and to gain feedback, especially  
573 for those community pharmacists who work in isolation. CPD completion is integral  
574 to the new revalidation process, so participation in activities will continue to be  
575 required.

576 Our results show that, although e-learning is the most utilised method for achieving  
577 or delivering training, face-to-face learning is still preferred, where possible, showing  
578 that the format of learning is not the main driver. Being active in the learning process  
579 was, however, seen as a preference. As previously seen in a study by Author (2017),  
580 the topic is a key driver for participation in learning. E-learning may facilitate  
581 participation of fact heaving learning or mandatory learning by employers due to  
582 accessibility. Health and safety topics, for example, can be more easily accessed  
583 through e-learning. A previous study by Gonzalez-Gomez *et al.* (2012) showed  
584 higher female satisfaction with e-learning compared to male students, and our  
585 results echo this. However, with the increasing use of technology, the results show  
586 that younger pharmacists are increasingly using alternative technological methods to  
587 achieve learning as they want theory, whereas older pharmacists prefer the social  
588 interaction of learning in a group environment through lectures or workshops, as  
589 echoed by learning style preference results. However, even though younger  
590 pharmacists are open to technology and online learning they do not want it to  
591 replace face-to-face contact completely (Nesterowicz *et al.*, 2016; Simonds & Brock,  
592 2014). Using technology, as in previous studies by Ikenwilo & Skatun (2014), and  
593 Lim *et al.* (2007), is shown to have positive impact, although is impacted by technical  
594 barriers. Previous studies have shown e-learning to be flexible (World Health  
595 Organization, 2015; Lim *et al.* 2007). This may also overcome some of the barriers  
596 related to venues being too far and getting home too late. Our findings do suggest  
597 though there is a preference for human interaction when using technology which has  
598 also been seen in previous studies (World Health Organization, 2015; Nesterowicz *et*  
599 *al.*, 2016).

600 Attendance at events may be affected by age as our study showed that those  
601 between the age of 36-45 having least preference to face-to-face attendance. A  
602 previous study (Author, 2017) identified that this could be due to childcare or caring  
603 responsibilities. In addition to age, ease of access to venues and geography of an  
604 area may also impact participation as a study in Western Australia showed  
605 pharmacists used journals most commonly, followed by reference books then the  
606 internet as sources of education (Clifford, 2011). Our results showed that those over  
607 55 are more likely to use journals as a format for CPD.

608 The results emphasise that the intervention needs to provide the opportunity to learn  
609 according to individual educational needs, whilst enabling participants to share  
610 thoughts and experiences, in order to translate the learning into practice. The  
611 findings in this paper echo previous work showing that a variety of activities included  
612 in the training event allows a wider range of learning styles to be accommodated  
613 (Hayes & Allinson, 1996).

614 With regards to gender, previous research by Driesen *et al.* (2008) showed that  
615 women prefer lectures to workshops, as they disliked active involvement, however  
616 our study differs, showing involvement is preferred to ensure learning is achieved.

617 Our results looked at preferences by sector. Due to their target audiences, it is not a  
618 surprise that community pharmacists had strong preference for LPC and NPA  
619 whereas UKCPA had greater participation as a provider for education and training  
620 from hospital pharmacists. CPPE and employer were also preferred by community  
621 pharmacists. The content of sessions by CPPE may also be felt to not be  
622 appropriate for the hospital pharmacists, as topics are general, so if the pharmacist  
623 specialises in a certain area, more detailed training may be required. A study by  
624 Nesterowicz *et al.* (2016) showed that hospital pharmacists were more confident in

625 completing CPD than their community colleagues which may also explain the  
626 increase in completion of formalised qualifications in hospital pharmacists compared  
627 to community pharmacists. Hospital pharmacists were also seen as statistically more  
628 activist than their community colleagues which may explain their support of peer  
629 review. It was seen that academics had the most participation of all demographic  
630 groups, which is positive, reflecting job requirements to teach material that is  
631 relevant and up-to-date.

632 Our results have shown for the first time the level of use of training providers in the  
633 GB, and the correlations between demographics and learning preferences. Although  
634 demographics and learning style preferences had an influence on participation and  
635 format preference, learning needs to be individually led to support differences.  
636 Flexibility supported by a range of formats and opportunities is required, to support  
637 the learning of all pharmacists. The need to ensure participation is important to allow  
638 the attendees to apply their learning. The opportunity to network and share is also  
639 important to increase knowledge, as well as motivating individuals, as also  
640 previously identified by Herrera *et al.* (1996). This study echoes that the speaker or  
641 facilitator is also key to engage participants as seen by Copeland *et al.* (1998).  
642 Opportunities for hands on application will allow for practice improvement after the  
643 intervention (Driesen *et al.*, 2007), although long term application of learning and  
644 achievement of learning outcomes still needs further research (Asarbakhsk &  
645 Sandars, 2013; Salter *et al.*, 2014).

646 It must be noted that none of the providers are being used to their full capacity.  
647 Therefore providers are encouraged to continue using various formats of learning,  
648 and should evaluate the impact of these through uptake and regular feedback. With  
649 the employer being the main provider, more awareness is needed of alternative

650 opportunities to ensure value for money for those who are funding activity, especially  
651 when this is government funded. With the introduction of revalidation, a focus on  
652 collaborative working, to ensure peer review conversations, and impact on practice  
653 will be required. Rather than just attendance or participation, a change in practice will  
654 be needed, so activities need to be designed in a variety of formats to ensure  
655 learning can be applied to practice while embedding peer review. Therefore, a  
656 strategy is required for provision to match revalidation requirements. Our results  
657 show that providers need to consider relevance to practice and use examples that  
658 can increase knowledge but are also applicable to the pharmacist role.

659 These findings remind us that a one-off education or training event may be  
660 insufficient to embed new learning into practice, so activities prior to and after the  
661 event are useful in helping to enable pharmacists to retain learning and apply them  
662 into practice. These findings will support planning of CPD interventions globally.

663 Comparing to a previous literature review regarding attitudes and participation in  
664 CPD activities in GB (Donyai *et al.*, 2011), this is a large sample size, and combines  
665 qualitative and quantitative results, along with information of providers and  
666 preferences for different formats, including digital provision. However, although a  
667 large sample of pharmacists has been surveyed, they are all from one location, as in  
668 previous studies, so this may be considered as a limitation of the study. Although the  
669 demographics broadly represent those on the GPhC register (Hassell, 2011), other  
670 factors such as location, working patterns or travel time may be different in various  
671 parts of GB. This study is also limited as, although preferences were identified,  
672 knowledge actually gained from the various formats was not investigated. Future  
673 studies may also benefit from multivariate analysis to study confounding factors.

674 The study brings together new and previous research to highlight the ingredients  
675 needed to ensure maximum participation in educational events through the  
676 understanding of current experiences and expectations of pharmacy professionals.  
677 Thus, these findings will support pharmacists to continue to achieve CPD required to  
678 maintain revalidation with the GPhC.

679

680 **Conclusions:**

681 Pharmacists want to participate in activity where possible, and the drivers for this are  
682 topic, interest and gaining CPD. Barriers to be overcome include timing of event and  
683 location, so the use of technology should be explored, as currently e-learning is the  
684 most used format, so will continue to grow in the future. Planning in advance is  
685 crucial. It is seen that face-to-face learning is still preferred, although there is an  
686 increasing emergence of online learning. Therefore, continued work is still needed to  
687 ensure preferences are taken into account when planning learning programmes, to  
688 allow uptake and flexibility of opportunities, but also to ensure social interaction and  
689 the ability to ask for help when required. There needs to be a strategy to ensure  
690 good utilisation of providers. To support application of learning into practice,  
691 pharmacists should be given information, where available, and their knowledge  
692 should be tested, to ensure learning. Where applicable, the sector and gender of  
693 attendees should also be included in the planning to ensure their unique motivators  
694 and barriers are taken into account. Further work needs to be completed to compare  
695 the results found in the South London local health authorities with other areas of the  
696 country, and globally to identify factors that may cause differences in results, and to  
697 identify similarities and differences globally. Future work should also compare  
698 participation in events by provider in other countries. Work with different healthcare

699 professionals would also be useful to identify similarities and differences across  
700 professions. A framework needs to be created to ensure knowledge is gained from  
701 the learning programmes on offer, and that this is measured and evaluated.

702

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Provider in GB	Target audience in GB	Provider abbreviation
The Centre for Postgraduate Pharmacist Education	All registrants of the GPhC	CPPE
The General Pharmaceutical Council	Registrants	GPhC
Local Pharmaceutical Committee	Community pharmacists	LPC
Local Practice Forum	Members of the Royal Pharmaceutical Society in a local geography	LPF
The National Pharmaceutical Association	Community pharmacists	NPA
The Royal Pharmaceutical Society	Members	RPS
The United Kingdom Clinical Pharmacy Association	Those working in clinical practice	UKCPA

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 882 **Table I:** Summary of providers

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<b>code</b>	<b>subtheme</b>	<b>theme</b>
regular/planned meetings are beneficial relevance to role local location timing of events influences attendance length of events influences attendance scheduled events give protected learning time good advertising and awareness needed registering ties you in CPD is a driver learning is mandatory and needs to be completed experience or trust in provider	Enablers	
although you registered things might come up family commitments stop attendance if you finish work too late you can't attend pharmacists finish work too late work/life balance needed	Barriers	
current/up to date topic interest in topic topics should be applicable to all local topics increase attendance a clear description of the topic is needed case studies are useful	Topic Ingredients	Engagement for intervention



Between 15-30 hours	n=68 (20.1%)	Not currently working	n=7 (2.1%)
Up to 15 hours	n=18 (5.3%)	Retired	n=6 (1.8%)
No hours	n=7 (2.1%)	Student	n=2 (0.6%)
No response	n=20 (5.9%)	No response	n=9 (2.7%)

914 **Table III:** Demographics of pharmacist responders

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	1 <sup>st</sup> preference	2 <sup>nd</sup> preference	3 <sup>rd</sup> preference	Total of responders choosing this option (out of 323)
Attendance at a workshop	66	55	32	153 (47.4%)
Completion of e-learning package	52	44	38	134 (41.5%)
Attendance at a conference/network meeting	51	31	29	111 (34.4%)
Attendance at a lecture/seminar	36	31	39	106 (32.8%)
Reading a downloaded presentation	26	14	27	67 (20.7%)
Reading journal(s)	14	17	20	51 (15.7%)
Participation in a webinar	13	18	17	48 (14.9%)
Role play/ patient simulation	12	7	12	31 (9.6%)

Mobile application(s)	9	13	6	28 (8.7%)
Small group discussion	8	22	20	50 (15.5%)
Completion of a workbook	7	27	15	49 (15.2%)
Listening to a Podcast	7	9	11	27 (8.4%)
Reading book(s)	6	8	9	23 (7.1%)
Information websites	6	8	17	31 (9.6%)
Video Websites e.g. YouTube	4	10	14	28 (8.7%)
Peer review	3	3	4	10 (3.1%)
Social Media	2	4	8	14 (4.3%)
Laboratory based activity	1	2	3	6 (1.9%)

926 **Table IV:** Overall preference for learning format

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Barrier to attendance	Overall Response (n=321)				
	Male (n=115)	Female (n=198)	Community (n=197)	Hospital (n=83)	
I finish work too late	47.4% n=152	58.3% n=66	41.1% n=81	62.4% n=121	28.9% n=24
Venues are too far	42.1% n=135	40.9% n=46	42.9% n=85	47.2% n=92	34.9% n=29
I would get home too late	36.1% n=116	37.4% n=42	36.4% n=71	41.1% n=79	34.9% n=29
I do not get paid to attend	28.7% n=92	35.7% n=40	24.8% n=48	36.6% n=70	18.1% n=15
No interest in subjects on offer	26.5% n=85	24.4% n=28	27.8% n=54	24.9% n=49	22.9% n=18
Not advertised with sufficient notice	23.4% n=75	21.7% n=24	24.8% n=49	26.9% n=52	18.1% n=15
Not needed for my job role	16.8% n=54	13% n=15	19.2% n=37	14.2% n=28	14.5% n=11
I do not get accredited to attend	16.2% n=52	17.4% n=20	14.7% n=28	18.3% n=35	12.1% n=10
I prefer to complete	14.0% n=4	19.1% n=22	10.1% n=20	18.3% n=36	1.2% n=1

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my training through non face-to-face methods					
Childcare issues	13.1% n=42	4.4% n=5	18.2% n=36	13.7% n=27	12.1% n=10
I do not require the training to do my job	12.8% n=41	12.2% n=14	12.6% n=25	10.7% n=21	10.8% n=9
My employer supplies all the training I require	12.1% n=39	15.7% n=18	10.1% n=20	14.7% n=29	10.8% n=9
I am not contractually obliged to attend	12.1% n=39	10.4% n=12	12.6% n=25	13.7% n=27	8.4% n=7
No link to a pharmacy service	10.0% n=32	15.7% n=18	6.6% n=13	11.2% n=22	7.2% n=6
Format of learning does not appeal	9.7% n=31	10.4% n=12	7.6% n=15	10.2% n=20	3.6% n=3
Previous bad experience	8.7% n=28	10.4% n=12	9.1% n=16	10.7% n=21	3.6% n=3
Caring responsibilities	5.3% n=17	5.2% n=6	5.1% n=10	6.1% n=12	4.8% n=4

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932 **Table V:** Barriers for attendance at training events

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