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A pharmacist clinician model as part of a collaborative clinical workforce: a philosophical critique.

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1 **Title:** A Pharmacist Clinician Model as Part of a Collaborative Clinical Workforce: A Philosophical
2 Critique

3

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46 **MeSH Key Words:** pharmacists, clinical; autonomy, professional; competence, professional;
47 workforce; clinical skills; competency-based education.

48

1 **Abstract**

2 The term 'clinician' is not reserved for any healthcare professional group. However, there is a general
3 acceptance that a clinician would have the knowledge, skills and behaviours to enable them to
4 clinically assess and manage a patient autonomously. The expectation, in a modern collaborative
5 healthcare system, is that this work would be completed as a part of a planned and integrated multi-
6 disciplinary care delivery structure, where any given clinician delivers a devolved element of that
7 patient's care. Forthcoming changes to regulation and professional development pathways in the UK
8 will have a profound impact on pharmacist professional identity and practice. From 2026, all new UK
9 pharmacist registrants will have full independent prescribing rights. A paradigm shift is expected to
10 enable the development of a *Pharmacist Clinician Model*, incorporating pharmaceutical care needs
11 with wider clinical assessment, diagnostic, and clinical management responsibilities. Consideration is
12 given to this model and its implications. Changes to regulation, policy, education, and the governance
13 required to deliver safe and effective pharmacist clinicians are outlined. A philosophical critique on
14 the nature of being a clinician, and the differentiation of pharmacist clinician roles compared to other
15 healthcare professions, is given. A further examination of the projected risks and expected benefits of
16 this transformative practice model are then explored.

17

18

19 1. Introduction

20 Across the United Kingdom (UK), a significant regulatory change will see all pharmacists at point of
21 registration from 2026 onwards with full independent prescribing rights, akin to those of doctors or
22 dentists.¹ These prescribing rights provide pharmacists with an opportunity to realise the value of the
23 profession as part of a collaborative healthcare team. It necessitates a reconsideration of the division
24 of clinical workload in response to the evolving skillset of pharmacists and seeks to evolve the
25 professional identity of pharmacists as clinicians.

26

27 A recent scoping review by Keller et al, looked to explore how pharmacists perceive their own
28 professional role and identity.² They describe five major identity themes: clinician; dispenser;
29 businessperson; patient counsellor; and physician supporter. While 'dispenser' was noted to be the
30 most prevalent across the sectors, it was viewed by many as undesirable. The pharmacist 'clinician'
31 role was regarded as the most desirable identity but was also considered by many to be aspirational.

32

33 The recent *Collaborative Care Model* argues for the wide-scale professional amalgamation of the
34 pillars of practice namely: clinical practice, management and leadership, education, and research, into
35 all future professional roles.³ It models pharmacists as autonomous caring participants playing their
36 part in a dynamic integrated collaborative response to health. This is a model in which participants
37 have a shared mandate: both the wider role of properly managing public health, and the more specific
38 role, that is caring for the patient in front of them. This contrasts with an 'atomistic' workforce model,
39 in which individuals typically have specialist jobs, often focused on only a singular constituent
40 professional 'pillar'. In the *Collaborative Care Model*, every participant has responsibilities for all four
41 pillars. Everyone is involved to a greater or lesser degree in each of clinical care, education, leadership
42 and research. The *Pharmacist Clinician Model* presented in this paper is an exponent of the
43 *Collaborative Care Model* in practice.

44

45 The aim of this paper is to set out the distinguishing features of a *Pharmacist Clinician Model*, outlining
46 the need for it, and offering a systematic approach to its safe development. We will critique a
47 *Pharmacist Clinician Model* within the collaborative clinical workforce, by exploring:

48

- 49 • Definition of a 'clinician'
- 50 • The need for pharmacists as part of the clinician workforce
- 51 • System requirements to operationalise a *Pharmacist Clinician Model* as part of a
52 collaborative clinical workforce
- Differentiation among clinician professional characteristics

53 2. Definition of a 'clinician'

54 For the purposes of this paper, the term 'clinician' is defined as a healthcare professional leading on
55 the assessment, management and investigation of a given clinical presentation, where the clinician
56 would be expected to have the prerequisite knowledge, skills and behaviours to autonomously and
57 holistically navigate the clinical episode of care to a satisfactory conclusion, meeting a shared desired
58 outcome for the patient^{4,5}. They will be competent to clinically assess patients using clinical history
59 taking and examination skills; undertake clinical procedures and investigations as necessary; and have
60 the legal right to independently prescribe healthcare interventions (including medicines). Ultimately
61 the clinician should be able to formulate a management plan, working with the patient and their
62 carers, that may include reassurance; monitoring; treatment (pharmaceutical or non-pharmaceutical);
63 or onward referral to other healthcare professionals/care settings, as appropriate.

64

65 Building on the definition of a 'clinician' above, the term itself is not a reserved title, nor is it restricted
66 to a particular professional group. Marcum outlines a theoretical model of the necessary intellectual
67 virtues of the clinician.⁶ He sub-divided these to 'reliabilist' virtues e.g. 'knowledge, perception and
68 conceptual faculties', and the 'responsibilist' virtues, which are longitudinally acquired through
69 experience and exposure, and include 'honesty, courage, open-mindedness, humility, fairness,
70 curiosity, tenacity, and integrity', within the patient-facing clinical setting. The paper argues that both
71 are required to produce the clinician who can function across the cultures of science and humanities.

72

73 A clinician is *autonomous* rather than *independent*. A professional is independent if their choices are
74 unlikely to be interfered with during their practice by legal or institutional constraints, or by
75 colleagues. This notion of independence makes no presuppositions about the evaluative basis of
76 individual choice. There are very few examples of independence in any form of healthcare. Autonomy
77 is more substantive, involving the collaborative empowerment to care about things of value, and
78 particularly about other people.⁷⁻⁹ Although intrinsically connected, this concept is somewhat distinct
79 from the clinical responsibility one carries as a member of the clinical team, and the inherent
80 accountability one has for the clinical care they deliver. Autonomy is suited to the intersection of two
81 ideas: the ethos of playing one's part in a collaboration, and that collaboration being designed to
82 empower participants to care about others. Consequently, this distinction between independence and
83 autonomy is that of isolated versus collaborative care delivery.

84

85 As a pharmacist clinician, therefore, autonomy is the empowerment and agency to act on one's own
86 values and skills, being directly accountable for the devolved delivery of patient care (or a component

87 thereof) as part of a collaborative clinical team or healthcare system. Collaborative clinical teams,
88 whether in general practice or hospital-based, would still be expected to have a lead clinician with
89 overarching clinical governance responsibility who would devolve autonomy within that structured
90 clinical service. Traditionally this would be a doctor as a registered medical professional. Within the
91 UK community pharmacy setting, contracts determine the nature of the devolved clinical care they
92 would be accountable for on behalf of the wider collaborative National Health Service (NHS) system.

93

94 Central to a collaborative clinical team model is skills-based, rather than task-based, workforce design.

95 ¹⁰⁻¹³ This enables individuals to be adaptable, making better use of a workers' skills, rather than
96 curtailing individuals to an arbitrary or preordained lists of tasks. It permits skill mix within workforce
97 design – where roles overlap due to overlapping skillsets of the constituent clinicians within that team.

98 This creates a dynamic and responsive collaboration that is fit to meet the needs of the population it

99 serves. Task-based workforce design makes it difficult to be responsive to the needs of the

100 heterogenous population, who present to the clinical team in a varied way. It diminishes the

101 individual's ability to use their own judgement within their job and demands they execute a set of

102 tasks, rather than look to augment and discharge skills to meet the clinical demand. Skills-based

103 workforce design empowers individuals' autonomy within a collaborative healthcare system and

104 develops a more natural and dynamic clinician collaborator. Within this context, clinician workforce

105 design would best be served as skill-based rather than task-based workforce design.

106

107 **3. The need for pharmacists as part of the clinician workforce**

108 This section will have two parts. The first will outline some of the specific drivers for the need to
109 develop pharmacist clinicians giving a contextual vignette of the Scottish NHS and recently reported
110 health statistics for the Scottish population. The Scottish case is being used to draw attention to a
111 more general global healthcare phenomenon. Advantages of pharmacist clinicians will then be
112 outlined, as well as some potential concerns and principled objections.

113

114 **3.1 Population healthcare need for pharmacist clinicians**

115 Since 2020, the NHS has faced an unprecedented test to the delivery of care to the public in response
116 to the COVID pandemic.¹⁴ The challenge of service provision during the pandemic was keenly and
117 universally felt by all specialties, disciplines, and sectors of the NHS. To cope with the pressure and
118 demands placed on it, the NHS evolved and adapted in real-time to face up to the clinical need of the
119 age. Now, with the country in a post-pandemic recovery phase, the Scottish Government (SG) have
120 called upon all NHS services to rethink how they can contribute to the burgeoning NHS workload,
121 backlog, waiting lists and clinical pressure being exerted on NHS Scotland services. The SG have set
122 out an NHS Scotland Recovery Plan.¹⁴ Within it they call for new ways of working and innovative
123 thinking as to how services are delivered under unprecedented demand. Further to the recovery plan,
124 and in support of it, the SG has recognised that if the NHS is going to find new ways of working, then
125 it needs to review the workforce it requires for optimal functionality. The National Workforce
126 Strategy¹⁵ will install a national workforce forum to consider these new ways of working and what
127 workforce will be required to deliver future clinical care within NHS Scotland to meet current post-
128 pandemic pressures, as well as addressing the population health need/inequality agenda.

129

130 The Scottish Burden of Disease study¹⁶ and the most recent Healthy Life Expectancy statistics¹⁷ (the
131 number of years a person can expect to live healthy, rather than survive) within Scotland make for
132 concerning reading. Figures predict an ageing population, with 21% total increase in the burden of
133 disease across all disease areas over the next 20 years. The Burden of Disease is calculated as a disease
134 adjusted life year (DALY) where one DALY is equal to a year adversely affected by a disease e.g.
135 hemiparesis post-stroke, or the difference between the predicted life expectancy for an individual and
136 the actual duration of life, in the context of the intercurrent illness. Most of this burden will likely
137 appear in ageing populations residing in primary care due to pressure accumulated from long term
138 conditions. The latest life expectancy figures have also shown a decrease in population life expectancy

139 within Scotland.¹⁸ To summarise, the projections for our population in Scotland are that the
140 population will live with increasing morbidity, decreasing years of healthy life, and an overall decrease
141 in life expectancy. A recent article accepted by *The Lancet* has reported on global mortality data over
142 the last 72 years and reports a similar picture to the Scottish context given.¹⁹ There is a need for
143 clinicians, especially at the front-line of service provision, to improve treatment pathways and
144 optimise benefits from treatment and screening of disease to reverse these pernicious trends.⁵ At a
145 global level, changes in population and patient demographics also map to greater complexity in service
146 provision and would suggest a consequent need to be able to endorse enhanced professional
147 capabilities.^{20,21} Trends are clear and involve increasingly complex clinical and pharmaceutical care.²²

148

149 Pharmacists are well placed to develop their skills as patient-facing clinicians. They join the register
150 with a sound understanding of medicines governance, clinical therapeutics, physiology and
151 pharmacology, and soon - prescribing rights. They have a historical pedigree and centuries old heritage
152 in the clinical assessment and management of patients, and one which should be reinvigorated
153 enabling pharmacists to develop as clinicians.²³

154

155

156 **3.2 Potential advantages**

157 • *Efficiency*: the NHS is stretched, but pharmacist skills are underutilised²⁴. Pharmacist clinicians
158 could autonomously manage more clinical presentations, relieving pressure from other parts
159 of the healthcare system without the requirement for inefficient onward referral. This is likely
160 applicable in all sectors of practice: community, primary care, and secondary care. The growth
161 of pharmacist clinicians would allow work previously completed by pharmacists to be
162 devolved to other members of the pharmacy team e.g. pharmacy technicians and pharmacy
163 support workers. In doing so, conferring professional responsibility, and growing the wider
164 pharmacy professions to ensure a workforce enabled to utilise their skills and capabilities too.

165

166 • *Institutional need and opportunity*: the regulatory changes enabling all new pharmacists to be
167 independent prescribers from 2026 onwards requires a more holistic understanding of their
168 augmented role and a different attitude to patients and risk. Pharmacist prescribing also
169 happens in countries out with the UK setting (Canada, New Zealand and parts of the United
170 States).²⁵ In an overwhelmed healthcare system, more pharmacist prescribers would seem a
171 welcome development.

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- *Non-alienation*: prevention and restriction of pharmacist clinicians applying an augmented advanced clinical assessment skill set has been found to be alienating²⁴ and not being able to work at the full scope of practice has been noted as a cause of burnout²⁶. Distress, as an unintended consequence of an individual being unable to execute the functions of their role as they perceive them, has been found in other healthcare professional settings too.²⁷ The assimilation of clinical pharmacology and therapeutics skills with broader clinical assessment skills, as well as the opportunity to practice care-delivery, is non-alienating. It allows a modality for pharmacist clinicians to be responsive to the values at stake, namely by caring about patients in their totality, by fully utilising their skills. Similarly, the pharmacist clinician risks becoming alienated from their values if they are prevented from caring about people in their totality, by focusing solely on medicines or pharmaceuticals.²⁸ This has been described as a ‘fetishistic end’ – or something which limits the value of the care given for its own sake.²⁹ This is ultimately our objection to the limitations inherent to the focus of pharmacist clinicians solely on medicines. It limits the application of the evolved skillsets, and skills-based workforce design of pharmacist clinicians, and may be conjectured to limit the very development of the evolution of the skillset.
- *Accessibility and equality*: in some sectors of pharmacy practice, utilisation of a *Pharmacist Clinician Model* could reduce potential barriers to accessing healthcare expertise for the general public. In general, most community pharmacies operate a walk-in service allowing patients access to their local pharmacy at a time that suits them. It also redistributes the burden of care delivery and provides another point of access within the collaborative primary care system. In doing so, this potentially also addresses the health access inequality gap,^{30,31} something first described in the 1970s by the *Inverse Care Law*³² where those who need healthcare most, have the least opportunity or ability to access it.
- *Global workforce transformation*: The *Pharmacist Clinician Model* aligns with FIP’s *Brisbane Calls to Action* consensus statement which advocates for: enhanced competency-based training pathways to better address population health challenges; enablement of pharmacists to work at full scope of practice, including prescribing; and optimisation of the skill mix in clinical settings.³³ While it is understood that global collaboration would be expected to accelerate workforce development³⁴, it is also true that many countries do not currently permit prescribing rights for pharmacists. FIP have developed a 2030 strategy which is

206 responsive to the heterogeneity of the global development of pharmacist roles,
207 understanding that sustainable development must be contextualised within each region.³⁵ In
208 2020, FIP produced a set of Global Development Goals which can be used as part of a needs
209 assessment for pharmacy workforce and policy development.³⁶ These have been used in 21
210 countries to map out country-specific pharmaceutical development goals.³⁷
211

212 3.3 Countering potential concerns and principled objections

213 • *Professional identity*: a recent scoping review noted there to be a lack of reviews of
214 professional identity of practicing healthcare professions.³⁸ It went on to report on 160 studies
215 across 17 healthcare professions – four of which related to pharmacist identity. The scoping
216 review reported ‘broad, varied and rich descriptions’ of professional identity, but noted
217 professional identity research to be under theorised and potentially inadequate to capture
218 the complexity involved. Blurring the boundaries between pharmacists and other healthcare
219 professional clinician groups, especially doctors, could create concerns about accountability,
220 liability, and trust. While this is a good reason to have relatively settled roles and expectations.
221 It is not a good reason for the sake of conservatism alone. An alternative role expectation is
222 offered here that could be easily publicised. Pharmacist clinicians are to be trusted with the
223 responsibilities of their role as defined and operating in line with nationally approved
224 curricula, within a professional career framework, and within the expected Standards of
225 Practice as defined by the GPhC Regulator³⁹. As such, they will be accountable and liable for
226 their own clinical decision and actions. There is already evidence that pharmacists operating
227 in NHS England with these augmented skill sets identify as clinicians.⁴⁰ This builds upon a
228 centuries-old heritage of pharmacist roles within the UK, stretching back past the
229 establishment of the Pharmaceutical Society of Great Britain in 1841,⁴¹ all the way to our
230 primordial ancestor – the apothecary, which we share with general medical practitioners⁴².

231

232 • *Cost of training pharmacist clinicians*: while clinical teaching and training is expensive, it is an
233 investment in clinical safety. The clinical training of pharmacists within the UK has already
234 been adapted to incorporate independent prescribing teaching, previously conducted in the
235 post-graduate space, into the undergraduate and pre-registration (FTY) years. More focus is
236 required on robust systems for post-graduate training of pharmacist clinicians. As such,
237 investment in pharmacist training is deemed desirable to capitalise on this underutilised
238 clinical workforce. The costs of this model would include: protected learning time for

239 pharmacists; experienced pharmacist educators to supervise; appropriate clinical supervisors
240 and assessors; and assessment costs. Within NHS England, 300 fully funded places have been
241 offered to support the training of advanced pharmacists as part of training for existing roles.⁴³
242 It is important to acknowledge that every healthcare system (including the NHS) works within
243 a finite funding structure. If funding is to be allocated to a *Pharmacist Clinician Model* then its
244 cost-effectiveness, monitoring as well as research and evaluation are needed to assess its
245 impact. There is good evidence of cost-effectiveness of pharmacist input to clinical care within
246 hypertension.⁴⁴

247

- 248 • *Pharmacists risk management*: this is part of the 'skill set' relevant to the optimal division of
249 responsibilities. Risk aversion is not the same as risk assessment and management – the
250 former a learned response of risk identification and subsequent avoidance. Research has
251 shown newly registered pharmacists are cautious of future prescribing roles.⁴⁵ In keeping with
252 expanding roles, expectations and responsibilities, there is a need to adapt and enhance the
253 pharmacist response to risk in a planned, structured and safe way during training.
254 Interprofessional learning through simulation-based education has been shown to increase
255 trainee pharmacist tolerance of ambiguity.⁴⁶ It is also possible to change the marketing
256 concerning the profession. Over time, this will affect the kind of student that enters pharmacy
257 and the attitude of pharmacists within the profession. Quite generally, the attitudes of the
258 people in a system are partly endogenous to the system. By changing the structures and role-
259 based expectations – especially in ways engineered to be more meaningful, social, responsive,
260 and fulfilling – the attitudes and motivations of the participants will also change.

261 To mitigate some of the risk under a Pharmacist Clinician Model, pharmacists should be able
262 to operate within the governance structure within their clinical setting.⁴⁷ This is likely to be
263 nuanced to the sector of practice, usually hospital, general practice or community pharmacy.
264 Within these structures, pharmacists must prescribe within their sphere of competence, in
265 line with locally approved treatment pathways or protocols. Ideally, pharmacists should
266 have read/write access to all pertinent medical records as well as have access to laboratory
267 results and clinical letters. All clinical encounters must be recorded contemporaneously in
268 the medical/clinical notes. Pharmacist clinicians must have appropriate indemnity insurance
269 to cover their scope of practice activities.

270 **4. System requirements to operationalise a *Pharmacist Clinician Model* as part of a**
271 **collaborative clinical workforce**

272 This section will give an overview of present-day education and training of pharmacists, the need for
273 assurance and regulation to enable the development of a *Pharmacist Clinician Model*.

274

275 As previously mentioned, within the UK from 2026 onwards, pharmacists, doctors and dentists will be
276 the only healthcare professionals who are independent prescribers at the point of registration. The
277 main drivers for this are: optimisation of pharmacist's skills and knowledge; improvement of clinical
278 healthcare capacity within the NHS; and evolution of the pharmacist workforce. The *GPhC Standards*
279 *for the Initial Education and Training of Pharmacists* provide the regulatory expectations for this.¹
280 Regardless of the ultimate career destination of a pharmacist, all new registrants will be trained to
281 cover basic 'clinician' functions - including consultation, prescribing and clinical skills - under the
282 revised GPhC Standards.

283

284 Gearing of previous pharmacist training enabled pharmacists to become 'experts in medicines
285 governance': how to dispense and supply medicines within the law; how to store, stock and transport
286 medicines – including those in the cold chain; and how to control the prescribing choices of medicines
287 within healthcare systems down to individual patient level. Some went on to develop pharmaceutical
288 care skills; however, using blanket phrases to describe the pharmacist profession as 'experts in
289 medicines' without more nuanced thinking and explanation would seem unhelpful. It is also unrealistic
290 to use the term 'expert' to describe a newly qualified pharmacist.⁴⁸ This seems inconsistent with views
291 taken of other healthcare professional registrants – 'junior doctors', for example. Fresh thinking has
292 been called for which looks beyond the historic preserve of pharmacist roles being solely responsive
293 to the 'safe and effective use of medicines'.⁴⁸ There is a spectrum of pharmacist clinical practice which
294 ranges from medicines governance activity, through pharmaceutical care input, to clinician type roles.
295 Figure 1 below depicts the increasing accountability for direct clinical care within each of these roles
296 within the spectrum of clinical pharmacist practice.

297

298 <INSERT Figure 1 here>

299

300 While pharmacist clinical pharmacology, therapeutics, and prescribing skills at registration offer
301 significant advantage in terms of healthcare service provision utility within the multidisciplinary team,
302 further professional-cognitive changes are required in this new pharmacist clinician era: ²³

303

- 304 • *Sequential skills development throughout the pharmacist career:* education and training
305 innovations should be serially utilised to enable sequential skills development throughout the
306 pharmacist career, starting with undergraduate education⁴⁹⁻⁵¹, leading through to
307 opportunities for development of advanced pharmacist practice skills^{52,53}.
- 308
- 309 • *Training within the clinical environment and team:* the profession needs to be realistic about
310 the product of the current training programmes – while undergraduate and Foundation
311 Training Year (the training programme between graduating and registering as a pharmacist in
312 the UK) will now include the prerequisite teaching to allow for prescribing rights at
313 registration – there is an understanding that these skills need to be nurtured, supervised, and
314 preceptored in early pharmacist careers to ensure they are embedded in practice. Supervised
315 learning in clinical practice, including learning with other peer groups, is key to enabling
316 development of pharmacist clinicians, and reflects the modern multidisciplinary environment
317 where such pharmacists will work.
- 318
- 319 • *Training programmes and accreditation of practice:* consideration should be given as to the
320 educational pathways required to support the development, assessment and accreditation of
321 the prerequisite knowledge, skills and behaviours required to deliver competent pharmacist
322 clinician practice. Competency based education (CBE) is the standard for medical colleagues
323 and its application in pharmacist education and training has been acknowledged.⁵⁴ A survey
324 by FIP across 48 countries found that 28 (58%) had or were developing advanced practice
325 frameworks.²¹ Educational pathways have now been developed within the UK by the Royal
326 Pharmaceutical Society (RPS) and would support the development of pharmacists as clinicians
327 as outlined above. These build on the UK Regulator (General Pharmaceutical Council - GPhC)
328 *Standards for the Initial Education and Training of Pharmacists*.¹ Within the UK, a suite of three
329 sequential CBE curricula support the safe development and expansion of the scope and level
330 of pharmacist clinician practice across the four pillars from point of registration throughout
331 the whole pharmacist career (RPS Post-Registration Foundation, Advanced & Consultant
332 Pharmacist Curricula).⁵⁵⁻⁵⁷ Curricula are completed by pharmacists who curate a portfolio of
333 formal written feedback of their observed behaviours in the form of supervised learning
334 events (SLEs). This portfolio is assessed blind by a multidisciplinary panel, with subject matter
335 experts in each of the four pillars. Those deemed to have met the standard are accredited by
336 the RPS at the level of practice assessed in line with a robust governance process. Similarly,
337 the International Pharmaceutical Federation (FIP) have recently published a Global Advanced

338 Development Framework for the pharmacy workforce which also has CBE standards to be met
339 across these four pillars.⁵⁸⁻⁶⁰ There is recognition that the supervision oversight required for
340 pharmacists on training programmes will change according to the level of practice, the risk of
341 the clinical activity, and the complexity of the cases seen. Healthcare systems and training
342 providers will need to be adaptive to ensure robust clinical governance and appropriate
343 clinical supervision is in place to protect patient safety.

344

345 • *Need for assurance:* The RPS programmes above offer assurance as to the level pharmacist
346 clinicians are operating at. The SLEs pharmacists complete as part of the portfolio give further
347 assurance of clinical activities they are able to undertake. Entrustable Professional Activities
348 (EPAs) have been used in medical education to enable those in training the opportunity to
349 practice under less clinical supervision in instances where they have been signed off by senior
350 clinicians as being competent at a given clinical task.^{61,62} This provides a robust assurance of
351 what individuals are capable of doing and what level of supervision they need and should be
352 considered in pharmacist clinician training.

353

354 • *Need for regulation:* The Nursing and Midwifery Council (NMC – Nursing and Midwifery
355 Regulator in the UK) has recognised the risk associated with advanced nursing practice due to
356 increased complexity and autonomy.⁶³ As such, the NMC have recently put to their Council a
357 set of recommendations on the necessity to regulate advanced nursing practice within the
358 UK.⁶⁴ They have called for a combination of approaches including: development of standards
359 for advanced practice; development of UK-wide shared definition of advanced practice; and a
360 call to establish revalidation of advanced practice for those operating at that level. The RPS
361 Core Advanced Curriculum provides assurance for the first two of these for the pharmacist
362 profession. Given the position statements of other non-medical regulators in the UK, there is
363 now a definitive need for the GPhC to regulate advanced and consultant level practice within
364 the UK.

365

366 • *Need for educational governance:* educational governance structures should be created at an
367 organisational level within the NHS to ensure the quality of the education and training which
368 the NHS delivers its pharmacist employees. Investment in education and training by an
369 organisation is an investment in patient safety and the quality agenda. There is a legal
370 obligation for organisations to ensure that staff are appropriately trained to execute the
371 functions of their job descriptions under the auspices of the Health and Care (Staffing)

372 (Scotland) Act 2019.⁶⁵ This provides assurance of quality and structures to patients, staff and
373 employees. The GPhC Regulator in the UK have also completed a consultation on Standards
374 for Chief Pharmacists which stipulate that every organisation employing pharmacists are
375 required to have a Chief Pharmacist who will be accountable for this educational governance
376 agenda.⁶⁶

377

378 • *Need for workforce planning:* pharmacists are not the only healthcare professional group that
379 are expanding the scope of their practice. Pharmacists are not even the only pharmacy
380 professional group that are looking to expand their practice. The scope of practice for
381 pharmacy technicians, for example, will be expanded under new legislation from the UK
382 Government with the expectation of that pharmacy technicians will now be included in the
383 list of healthcare professionals who can work under the auspices of a Patient Group Direction
384 (PGD – a focused protocol for non-prescribers to be able to issue prescription-only medicines
385 to very specific groups of patients when meeting strict criteria).⁶⁷ With the expected increase
386 in clinical roles, there has recently been a call from medical colleagues working as part of a
387 BMJ Commission on the Future of the NHS to ensure there is ‘task and team design’ and that
388 ‘scope and boundaries of practice’ are considered when new roles are workforce
389 configurations are in the planning stage.⁶⁸ The underpinning necessity for pharmacist
390 clinicians to operative as part of a collaborative care model makes this planning and
391 integration essential.

392

393 • *Need for research and evaluation:* as with any service development, there needs to be
394 consideration of how best to evaluate and monitor any new model once it is introduced.⁶⁸
395 These evaluations should focus on multiple facets of the change including: improvements to
396 population healthcare; acceptability to patients, staff and other service users; evaluations of
397 the implementation of the behaviours both at the individual and system level; evaluation of
398 the career and training pathway.

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401 5. Differentiation among clinician professional characteristics

402 This section will compare and contrast professional characteristics of pharmacist clinicians with one
403 of the other healthcare professional groups that have legal prescribing rights at point of registration,
404 doctors. The professional expectation as set out in this paper suggests both be considered clinicians:
405 the healthcare professional with whom a patient will consult directly in any given healthcare
406 professional contact. We have expounded the case for the development of pharmacist clinicians from
407 clinical capability, through regulatory changes, and linked to population health need. The pharmacist
408 clinician draws upon a composite skill set including clinical assessment, diagnostic, investigative and
409 clinical management skills, which is not restricted to clinical pharmacology and therapeutics. The
410 convergent and divergent characteristics between the professions, and the application of their skills,
411 as part of a collaborative clinical healthcare system will now be discussed.

412

413 5.1 Convergent characteristics

414 • *Care*: a clinician is expected to care about a patient at a human/personal level.⁶⁹ For Blum, this
415 is a condition not merely of caring well, but caring about someone at all. He offers the
416 following analogous example of a teacher: 'if the only object of a teacher's concern is making
417 sure that a pupil understands a certain subject matter, then this teacher does not exemplify
418 teacher caring. To be caring, the concern must involve some regard for the pupil's overall good
419 and a sense of how the good of learning the specific subject matter fits into the pupil's overall
420 good. Without this, one can infer that the teacher values [their] subject matter but does not
421 seem to have a clear sense of the value of [their] pupils as persons in their own right'. Both
422 the system and the individual roles should be designed in ways that empower clinicians to be
423 responsive to patients, to people, as such. The proper end for any clinician, and for any health
424 care professional qua pharmacist, ought to be to care about the person in front of them, and
425 to service this end by drawing on their clinical skill sets.

426

427 • *Core clinician skill*: regardless of professional background, there are some core clinical skills
428 which all clinicians must acquire and practice. The consultative, clinical assessment,
429 prescribing skill and clinical knowledge for the patient cohort and clinical presentations being
430 managed. These core skills can be considered horizontal. The vertical nature of the skill
431 development will be explained below and will differ between professional groups.

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- *Functional operational synergy*: the COM-B model cites that for an actor to implement a behaviour (B), which in this case is a pharmacist clinician with evolved skillset, there needs to be an appreciation of the *capabilities* (C) of the individual; the *opportunity* (O) to practice; and the individual needs to be *motivated* (M) to do so.⁷⁰ If we consider the capability or skill required to undertake an assessment of a sore throat, for example – an assessment which could be undertaken by a variety of trained healthcare professionals (horizontal skill) e.g. general practitioner, pharmacist clinician, advanced nurse practitioner. The degree to which anyone of them undertakes the skill: technical ability; diagnostic ability; concomitant procedural ability; will vary depending on the specialism and, to an extent, the professional cadre of the clinician (vertical skill). Although there is variation in the healthcare professional undertaking the assessment, this can be stratified based on clinical need and staffing available. Having multiple healthcare professionals trained in the horizontal skills here allows for a dynamic and synergistic approach to the functional operation of the clinical service. In terms of the COM-B model, there are multiple actors who have the capability, the dynamic system they work in affords the opportunity, and their professionalism gives the motivation. Overall, this gives continuity of service. The blend of horizontal and vertical skills within the team ensures the continuity of service, while the collaborative nature of the team response to the healthcare need will require upskilling of some members, providing stability, continuity, and support for all.

454 5.2 Divergent characteristics

- *Variation in training*: let us take the example of a trained doctor in any given specialism – say general practice (family medicine – a General Practitioner or GP). The clinical standard of a GP, as an output of a GP training programme, is understood. Within medical education, all junior doctors complete Foundation Training before undertaking specialism-specific training which is designed to expose the trainee to typical presentations within that given area, such that on completion of the training programme, they will be able to autonomously manage these presentations to a senior doctor level. While variation is still to be expected among a cohort of doctors post-training in any given specialism, there is a reasonable expectation that all those who attain certificate of completion of training will have the prerequisite knowledge, skills and behaviours meeting the minimum standard required. Typically, within a general practice setting this would involve a three-to-four-year programme, initially with trainees

466 gaining experience working as middle grade doctors in other specialties, before returning to
467 general practice under supervision to undertake a CBE portfolio, applied knowledge test, and
468 a practical test of clinical skills assessment.⁷¹ The competencies for GP training are specific to
469 that specialty and particular to the knowledge required within general practice. This is a key
470 difference between training in a medical specialty and pharmacist training. For advanced and
471 consultant pharmacist training, there is one single curriculum which sets the standard for that
472 level of practice within the UK but that critically, it is not sector or specialty specific. While this
473 aims to effectively control the standard of practice between sectors, it may lead to intra-
474 specialism variation due to the lack of a stipulated specialism-specific syllabus where we
475 postulate that two pharmacists completing the curriculum to the same level of award, may
476 not necessarily be able to cross-cover each other's jobs, even within the same specialism. This
477 is because the curricula assesses the level to which a pharmacist operates in their own scope
478 and sphere of practice, but does not define the practice itself. In contrast, while some GPs
479 may have special interests, or additional qualifications/diplomas in GP subspecialties, there is
480 an understanding of the basic clinical core work expected of a GP.

- 481
- 482 • *Variation in clinical skill:* breadth of horizontal skills acquisition and height of vertical skills
483 attainment, is a key differentiator between professional groups. The nature of which is
484 difficult to determine by sweeping generalisation. The variation in training, as outlined above,
485 postulates a more generalisable post-training product from a GP training scheme⁷¹, for
486 example, than it does a generic RPS Post-Registration Foundation⁵⁵ or Advanced Pharmacist⁵⁶
487 scheme - regardless if hosted in the same specialisms when training, for the reasons given
488 above. This makes comparison unrealistic, heterogeneous, and likely to be determinable only
489 on an individual basis. Other opportunistic considerations of skills acquisition such as
490 environmental and social factors need to be considered along with capability. Perhaps it is
491 better to consider what would be an appropriate level of knowledge, skills and behaviours for
492 any given presentation, such that a clinician would be able to deal with that presentation in
493 accordance with the definition of a clinician given in section 2. At the interface between the
494 professional groups, the lines are blurring. In part due to intraprofessional expansion of the
495 composite skill sets of the professions. The professions overall though, are not
496 interchangeable – they are not analogous. Pharmacist clinicians, for example, will not replace
497 doctors, nor is there an intention (professional or political desire) to do so. There is however
498 a growing confluence of shared clinical skill. Not only is this desirable, but it should also be
499 considered essential in a modern collaborative healthcare system – especially in general

500 practice. It allows for cross-cover and elasticity in any given system in accordance with the
501 section on *functional operational synergy* above. It facilitates collaborative working within
502 teams, responsive to patient needs, ensuring an appropriate skill mix such that patients are
503 seen by appropriately trained, skilled clinicians, of whatever denomination. Beside this there
504 continues to be divergent characteristics between the groups. In the most simplistic terms,
505 there are legal rights reserved only for medical practitioners – for example, medical
506 detainment of patients who need urgent treatment and who are a risk to themselves or others
507 under the Mental Health Act 1983,⁷² or the issuing a death certificate under the 2011 Act ⁷³.
508 These skills are best thought of as horizontal skills. It is easy to see the divergence of the skill
509 sets here as they are beyond the legal scope of practice.

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- 511 • *Divergent skill mix characteristics*: the concept of skill mix also extends to where skills of
512 clinicians differentiate too, and so consideration must also be given to when a nominated
513 healthcare professional group would be the optimal healthcare professional to assess a
514 patient, in each setting, for a particular condition. This is again part of existing SG strategy to
515 ensure that the right care is delivered by the right person, in an appropriate setting and in an
516 appropriate timescale.⁷⁴ Factoring into this is a desire that all clinicians wholly utilise their
517 clinical skill sets as part of an enlarged multidisciplinary team.⁷⁵ Again, within a general
518 practice setting, there is an expectation of medicines management functions being devolved
519 to pharmacy teams including pharmacy technicians and pharmacy support workers; advanced
520 practitioners taking on triage, acute assessment and house visits; while mental health link
521 workers and physiotherapists see patients with mental health and musculoskeletal complaints
522 respectively.⁷⁶ Indeed, about half of all consultations in general practice are conducted by
523 non-GPs – and is essential to allow capacity for GPs to deliver their expert medical generalist
524 work.⁷⁷ Community pharmacy also falls under the wider primary care sector, although distinct
525 from general practice and with a separate NHS contractor status. Expansion of the community
526 pharmacist role has added value to the role, as well as to the wider collaborative care team
527 and patients in primary care. The ‘Pharmacy First Plus’ service in NHS Scotland, where patients
528 may consult with a community pharmacist independent prescriber for any given condition
529 within their sphere of competence to treat, allows patients to be assessed, diagnosed and
530 receive a treatment on prescription, if deemed necessary.⁷⁸ This system aims to reduce
531 approaches to general practices, improves access to care and treatment for patients, as well
532 as expanding the role and (expected) job satisfaction for community pharmacists. There is
533 however a critical difference from the way which community pharmacists and general practice

534 or hospital-based pharmacists work – that is in access to patient medical records. It is critical
535 that pharmacist clinicians, regardless of sector, have access to accurate past medical history
536 such that they are able to make informed decisions about patients care. This would include
537 access to laboratory results. Any pharmacist clinician also needs to be able to write an
538 accurate and contemporaneous note of the clinical encounter, and be able to effectively share
539 this information, and/or refer, between clinicians in different care settings.⁷⁹
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541 **6. Conclusion**

542 This paper sets out the distinguishing features of a *Pharmacist Clinician Model* offering a systematic
543 approach to the safe development of pharmacist clinicians needed within modern healthcare
544 structures. It builds on the interdependencies between professions as part of a collaborative clinical
545 workforce. It articulates what pharmacist clinicians will do for patients, the public, and the wider
546 health service in support of the delivery of healthcare capacity and population health.

547

548 There are several key factors which are essential to enable pharmacist clinician integration including:
549 devolved clinical autonomy; collaborative clinical service structures; a defined scope of practice and
550 core clinical skills; and environmental, social and legislative changes such that pharmacist clinicians
551 are able to apply their knowledge, skills and behaviours in practice. There is an expectation this will
552 deliver efficient and dynamic workforce transformation. One in which a pharmacist can utilise their
553 full range of skills to care for patients, avoiding potential alienation through skills-based workforce
554 redesign.

555

556 Revised educational programmes, with sequential horizontal and vertical skills integration, across the
557 four pillars of practice, are needed to accredit this type of practice. CBE programmes should be
558 preceptored and supervised, and there is a need for robust educational and clinical governance of
559 pharmacist clinician skill. Finally, to assure patients, employing organisations, and clinician colleagues
560 of the level of pharmacist clinician practice, there is a need for regulation of advanced and consultant
561 pharmacist clinician practice.

562

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565

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576 **Declaration of competing interest**

577 None.

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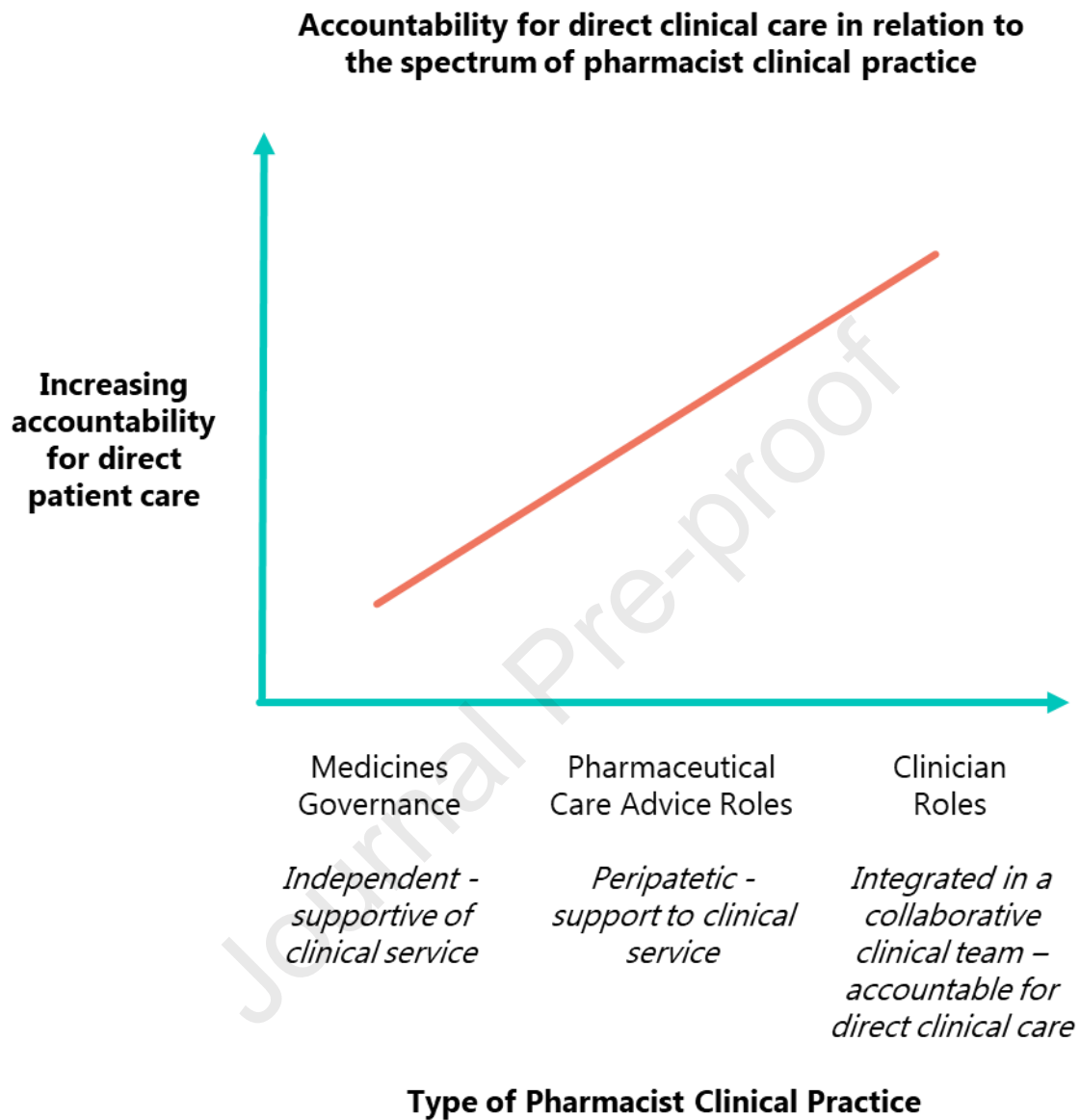
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582

583 Figures & Tables

584 Figure 1



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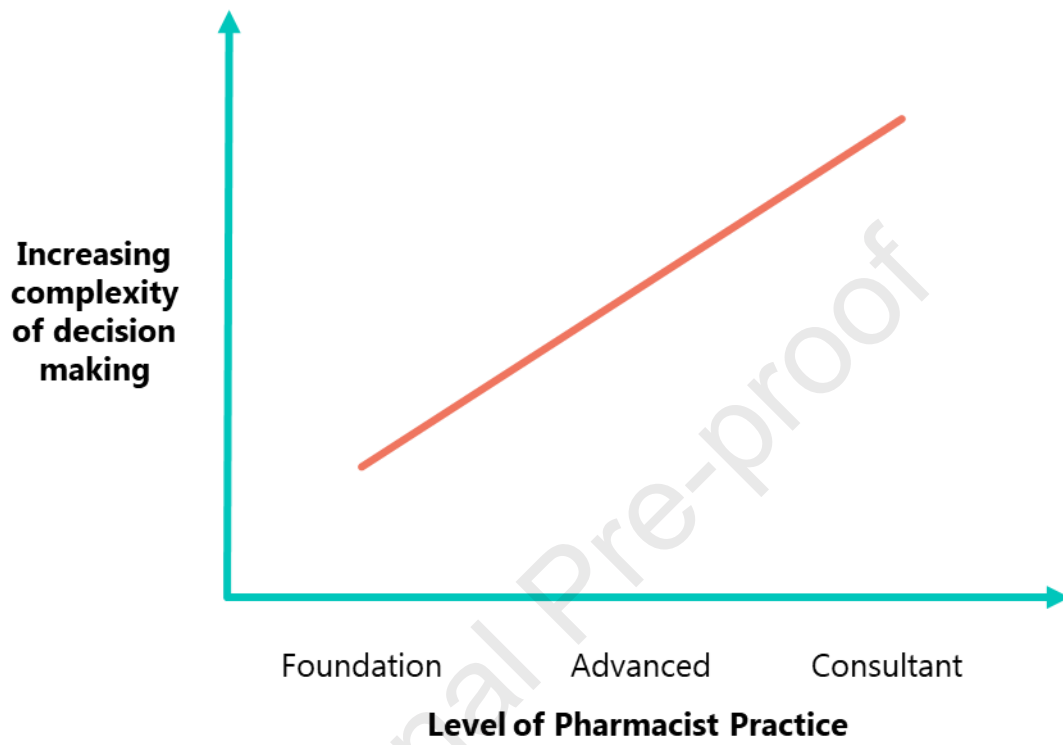
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590 **Figure 2**

Pharmacist clinical decision making at different levels of pharmacist practice



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593 **References**

- 594 1. General Pharmaceutical Council. Standards for the initial education and training of pharmacists.
595 Available at: [https://www.pharmacyregulation.org/sites/default/files/document/standards-for-the-
596 initial-education-and-training-of-pharmacists-january-2021_0.pdf](https://www.pharmacyregulation.org/sites/default/files/document/standards-for-the-
596 initial-education-and-training-of-pharmacists-january-2021_0.pdf). Accessed 2021.
- 597 2. Kellar J, Singh L, Bradley-Ridout G, Martimianakis MA, van der Vleuten CPM, oude Egbrink MGA,
598 Austin Z. How pharmacists perceive their professional identity: A scoping review and discursive
599 analysis. *Int J Pharm Pract.* 2021;29:299-307.
- 600 3. Forsyth P, Radley A, Rushworth GF et al. The collaborative care model: Realizing healthcare values
601 and increasing responsiveness in the pharmacy workforce. *Res Social Adm Pharm.* 2023;19:110-22.
- 602 4. Scottish Government. Realistic medicine: Chief Medical Officer's annual report 2014-15. Available
603 at: <https://www.gov.scot/publications/chief-medical-officers-annual-report-2014-15/>. Accessed
604 2024.
- 605 5. Scottish Government. Realistic medicine - doing the right thing: Chief Medical Officer annual
606 report 2022 to 2023. Available at: [https://www.gov.scot/publications/realistic-medicine-doing-right-
607 thing-cmo-annual-report-2022-2023/](https://www.gov.scot/publications/realistic-medicine-doing-right-
607 thing-cmo-annual-report-2022-2023/).
- 608 6. Marcum J. The epistemically virtuous clinician. *Theoretical Medicine and Bioethics.* 2009;30:249-
609 65.
- 610 7. Mackenzie C, Stoljar N. Relational autonomy: Feminist perspectives on autonomy, agency, and the
611 social self. Oxford University Press: New York, 2000.
- 612 8. Raz J. *The morality of freedom.* Oxford University Press: New York, 1986.
- 613 9. Reath A. *Agency and autonomy in Kant's moral theory.* Oxford University Press: Oxford, 2006.
- 614 10. Kohn ML, Schooler C. The reciprocal effects of the substantive complexity of work and
615 intellectual flexibility: A longitudinal assessment. *Am J Sociol.* 1978;84:24-52.
- 616 11. Clark S. Good work. *Journal of Applied Philosophy.* 2017;34:61-73.
- 617 12. Murphy JB. The moral economy of labor: Aristotelian themes in economic theory. Yale University
618 Press: New Haven, 1993.

- 619 13. Rodrigues M, Fernández-Macías E, Sostero M. A unified conceptual framework of tasks, skills and
620 competences. Available at: [https://joint-research-](https://joint-research-centre.ec.europa.eu/document/download/806566f3-82b9-45fc-8092-78d66c36d7e5_en#:~:text=We%20start%20from%20the%20concept,the%20ability%20to%20perform%20tasks)
621 [centre.ec.europa.eu/document/download/806566f3-82b9-45fc-8092-](https://joint-research-centre.ec.europa.eu/document/download/806566f3-82b9-45fc-8092-78d66c36d7e5_en#:~:text=We%20start%20from%20the%20concept,the%20ability%20to%20perform%20tasks)
622 [78d66c36d7e5_en#:~:text=We%20start%20from%20the%20concept,the%20ability%20to%20perfor](https://joint-research-centre.ec.europa.eu/document/download/806566f3-82b9-45fc-8092-78d66c36d7e5_en#:~:text=We%20start%20from%20the%20concept,the%20ability%20to%20perform%20tasks)
623 [m%20tasks](https://joint-research-centre.ec.europa.eu/document/download/806566f3-82b9-45fc-8092-78d66c36d7e5_en#:~:text=We%20start%20from%20the%20concept,the%20ability%20to%20perform%20tasks). Accessed 2024.
- 624 14. Scottish Government. NHS Scotland recovery plan. Available at:
625 <https://www.gov.scot/publications/nhs-recovery-plan/>. Accessed 2022.
- 626 15. Scottish Government. Health and social care: National workforce strategy. Available at:
627 <https://www.gov.scot/publications/national-workforce-strategy-health-social-care/>. Accessed 2022.
- 628 16. Public Health Scotland. Scottish burden of disease study: Forecasting the future burden of
629 disease: Incorporating the impact of demographic transition over the next 20 years. 2022.
- 630 17. National Records of Scotland. Healthy life expectancy 2019-2021. 2022.
- 631 18. National Records of Scotland. Life expectancy continues to fall in Scotland. Available at:
632 <https://www.nrscotland.gov.uk/news/2022/life-expectancy-continues-to-fall-in-scotland>. Accessed
633 2022.
- 634 19. Schumacher AE, Kyu HH, Aali A et al. Global age-sex-specific mortality, life expectancy, and
635 population estimates in 204 countries and territories and 811 subnational locations, 1950–2021, and
636 the impact of the COVID-19 pandemic: A comprehensive demographic analysis for the global burden
637 of disease study 2021. *Lancet* 2024. [https://doi.org/10.1016/S0140-6736\(24\)00476-8](https://doi.org/10.1016/S0140-6736(24)00476-8)
- 638 20. International Pharmaceutical Federation. *Advanced practice and specialisation in pharmacy:*
639 *Global report 2015*. FIP: The Hague, 2015.
- 640 21. Bates I, Bader LR, Galbraith K. A global survey on trends in advanced practice and specialisation
641 in the pharmacy workforce. *Int J Pharm Pract*. 2020;28:173-81.
- 642 22. Bader LR, Bates I, Galbraith K. Trends in advanced practice and specialisation in the global
643 pharmacy workforce: A synthesis of country case studies. *Int J Pharm Pract*. 2020;28:182-90.

- 644 23. Rushworth GF. *Innovations in Education and Training to Enable Development of Pharmacists as*
645 *Clinicians*. PhD Thesis: Robert Gordon University, 2023.
- 646 24. Rushworth GF, Jebara T, Tonna AP, Rudd I, Stewart F, MacVicar R, Cunningham S. General
647 practice pharmacists' implementation of advanced clinical assessment skills: A qualitative study of
648 behavioural determinants. *Int J Clin Pharm*. 2022;44:1417-24.
- 649 25. Cope LC, Abuzour AS, Tully MP. Nonmedical prescribing: Where are we now? *Ther Adv Drug Saf*.
650 2016;7:165-72.
- 651 26. Blue CL, Gould ON, Clarke C et al. Burnout among hospital pharmacists in Canada: A cross-
652 sectional analysis. *Can J Hosp Pharm*. 2022;75:326-34.
- 653 27. Mausz J, Donnelly EA, Moll S, Harms S, McConnell M. Role identity, dissonance, and distress
654 among paramedics. *Int J Environ Res Public Health*. 2022;19:2115.
- 655 28. Araújo-Neto FdC, Dosea AS, Fonseca FLd et al. Perceptions of formal pharmacy leadership on the
656 social role of the profession and its historical evolution: A qualitative study. *Explor Res Clin Soc*
657 *Pharm*. 2024;13:100405.
- 658 29. Maguire B. Efficient markets and alienation. *Phil Imp*. 2002:1-19.
- 659 30. Campbell D. Worst-off find it harder than well-off to access NHS care, survey finds. 2024.
660 Available at: [https://www.theguardian.com/society/2024/mar/04/worst-off-find-it-harder-than-](https://www.theguardian.com/society/2024/mar/04/worst-off-find-it-harder-than-well-off-to-access-nhs-care-survey-finds)
661 [well-off-to-access-nhs-care-survey-finds](https://www.theguardian.com/society/2024/mar/04/worst-off-find-it-harder-than-well-off-to-access-nhs-care-survey-finds). Accessed 2024.
- 662 31. Marmot M. The health gap: The challenge of an unequal world. *Lancet*. 2015;386:2442-4.
- 663 32. Tudor Hart J. The Inverse Care Law. *Lancet*. 1971;297:405-12.
- 664 33. International Pharmaceutical Federation. The FIP Brisbane calls to action: The consensus from
665 the FIP workforce symposium "Accelerating towards 2030: Workforce transformation for better
666 health". Available at: <https://www.fip.org/file/5644>. Accessed 2024.
- 667 34. Bush PW. The journey to advanced clinical pharmacy practice: Global collaboration will
668 accelerate the pace. *Adv Med Pharmaceut Dent Res J*. 2021;1:3-4.

- 669 35. International Pharmaceutical Federation. *The FIP global roadmap 2030: Sustainable*
670 *advancement for pharmacy worldwide. high-level report by the FIP bureau*. FIP: The Hague, 2022.
- 671 36. International Pharmaceutical Federation. FIP development goals. Available at:
672 <https://developmentgoals.fip.org/>. Accessed 2024.
- 673 37. Aqqad F, Meilianti S, John C, Koudmani D, Akel M, Bates I. Needs assessment of global
674 pharmaceutical development goals: An explanatory mixed-methods study of 21 countries. *Int J*
675 *Pharm Pract*. 2024;32:29-38.
- 676 38. Cornett M, Palermo C, Ash S. Professional identity research in the health professions-a scoping
677 review. *Adv Health Sci Educ Theory Pract*. 2023;28:589-642.
- 678 39. General Pharmaceutical Council. *Standards for pharmacy professionals*. GPhC: London, 2017.
- 679 40. McDermott I, Astbury J, Jacobs S, Willis S, Hindi A, Seston E, Schafheutle E. To be or not to be:
680 The identity work of pharmacists as clinicians. *Sociol Health Illn*. 2023;45:623-41.
- 681 41. Liaw S, Peterson G. Doctor and pharmacist - back to the apothecary! *Aus Health Rev*.
682 2009;33:268-78.
- 683 42. Anderson S. A history of pharmacy in Great Britain. Available at:
684 <http://www.bshp.org/aboutus/PharmaceuticalHistory.asp>. Accessed 2023.
- 685 43. Royal Pharmaceutical Society. Collaborative supported e-portfolio programme to advanced
686 pharmacist practice in England. Available at:
687 [https://www.rpharms.com/development/credentialing/core-advanced-pharmacist-](https://www.rpharms.com/development/credentialing/core-advanced-pharmacist-curriculum/collaboration-between-rps-nhse-wt-e-centre-for-advancing-practice-and-cppe)
688 [curriculum/collaboration-between-rps-nhse-wt-e-centre-for-advancing-practice-and-cppe](https://www.rpharms.com/development/credentialing/core-advanced-pharmacist-curriculum/collaboration-between-rps-nhse-wt-e-centre-for-advancing-practice-and-cppe). Accessed
689 2024.
- 690 44. Dixon DL, Johnston K, Patterson J, Marra CA, Tsuyuki RT. Cost-effectiveness of pharmacist
691 prescribing for managing hypertension in the United States. *JAMA Netw Open*. 2023;6:e2341408.

- 692 45. McIntosh T, Munro K, McLay J, Stewart D. A cross sectional survey of the views of newly
693 registered pharmacists in Great Britain on their potential prescribing role: A cautious approach. *Br J*
694 *Clin Pharmacol.* 2011;73:656-60.
- 695 46. Tallentire VR, Smith SE, Kerins J, McColgan-Smith S, Power A, Stewart F, Mardon J. Investigating
696 how interprofessional simulation influences tolerance of ambiguity. *Curr Pharm Teach Learn*
697 2022;14:1506-11.
- 698 47. NPA. Knowledge article: Independent prescribing principles: Ensuring appropriate assurance and
699 governance of prescribing activities + professional indemnity requirements. Available at:
700 [https://www.npa.co.uk/information-and-guidance/knowledge-article-independent-prescribing-](https://www.npa.co.uk/information-and-guidance/knowledge-article-independent-prescribing-principles-ensuring-appropriate-assurance-and-governance-of-prescribing-activities-professional-indemnity-requirements/)
701 [principles-ensuring-appropriate-assurance-and-governance-of-prescribing-activities-professional-](https://www.npa.co.uk/information-and-guidance/knowledge-article-independent-prescribing-principles-ensuring-appropriate-assurance-and-governance-of-prescribing-activities-professional-indemnity-requirements/)
702 [indemnity-requirements/](https://www.npa.co.uk/information-and-guidance/knowledge-article-independent-prescribing-principles-ensuring-appropriate-assurance-and-governance-of-prescribing-activities-professional-indemnity-requirements/). Accessed 2024.
- 703 48. Forsyth P, Rushworth GF. Advanced pharmacist practice: Where is the united kingdom in pursuit
704 of this 'Brave new world'? *Int J Clin Pharm.* 2021;43:1426-30.
- 705 49. Jebara T, Thomas I, Cunningham S, Rushworth GF. Pharmacy and medical student IPE placement
706 week. *Clin Teach.* 2022;19:143-9.
- 707 50. Innes C, Rushworth G, Addison B et al. An innovative general practice-based pharmacy
708 longitudinal clerkship: Using theory to characterise its development, implementation and initial
709 evaluation. *Educ Prim Care.* 2021;33(3):173-9.
- 710 51. Innes, Cunningham, Addison et al. General practice-based undergraduate pharmacy longitudinal
711 clerkship: A theoretically underpinned qualitative evaluation. *Int J Clin Pharm.* 2022;44:1123-31.
- 712 52. Rushworth GF, Innes C, Macdonald A et al. Development of innovative simulation teaching for
713 advanced general practice clinical pharmacists. *Int J Clin Pharm.* 2021;43:817-24.
- 714 53. Rushworth GF, Jebara T, Tonna AP, Rudd I, Stewart F, MacVicar R, Cunningham S. General
715 practice pharmacists' implementation of advanced clinical assessment skills: A qualitative study of
716 behavioural determinants. *Int J Clin Pharm.* 2022;44:1417-24.

- 717 54. Austin Z, Andriole DA, Rhoney DH. Is it time for competency-based education to move forward in
718 pharmacy education? *Am J Pharm Educ.* 2023;87:100550.
- 719 55. Royal Pharmaceutical Society. Post-registration foundation pharmacist curriculum. Available at:
720 [https://www.rpharms.com/Portals/0/Foundation%20Curriculum/RPS%20Post-
721 registration%20Foundation%20Curriculum-FINAL.pdf?ver=gPy42LspTywTVu6VgEg4dA%3d%3d](https://www.rpharms.com/Portals/0/Foundation%20Curriculum/RPS%20Post-
721 registration%20Foundation%20Curriculum-FINAL.pdf?ver=gPy42LspTywTVu6VgEg4dA%3d%3d).
722 Accessed 2022.
- 723 56. Royal Pharmaceutical Society. Core advanced pharmacist curriculum. Available at:
724 <https://www.rpharms.com/development/credentialing/core-advanced-pharmacist-curriculum>.
725 Accessed 2021.
- 726 57. Royal Pharmaceutical Society. Consultant pharmacist curriculum. Available at:
727 [https://www.rpharms.com/Portals/0/Consultant/Open%20Access/RPS%20Consultant%20Pharmacist
728 t%20Curriculum%202020_FINAL.pdf?ver=huDM4dXTEjtXpcaPQD3j8w%3d%3d](https://www.rpharms.com/Portals/0/Consultant/Open%20Access/RPS%20Consultant%20Pharmacist%20Curriculum%202020_FINAL.pdf?ver=huDM4dXTEjtXpcaPQD3j8w%3d%3d). Accessed 2023.
- 729 58. Meilianti S, Galbraith K, Bader L, Udoh A, Ernawati D, Bates I. The development and validation of
730 a global advanced development framework for the pharmacy workforce: A four-stage multi-methods
731 approach | international journal of clinical pharmacy. *Int J Clin Pharm.* 2023;45:940-51.
- 732 59. International Pharmaceutical Federation. *FIP global advanced development framework
733 handbook: Supporting advancement of the profession*. FIP: The Hague, 2020.
- 734 60. International Pharmaceutical Federation. *Competency-based education in pharmacy and
735 pharmaceutical sciences: A FIP handbook to support implementation of competency-based education
736 and training*. FIP: The Hague, 2022.
- 737 61. Ten Cate O. Entrustability of professional activities and competency-based training. *Med Educ.*
738 2005;39:1176-7.
- 739 62. Ten Cate O. A primer on entrustable professional activities. *Korean J Med Educ.* 2018;30:1.
- 740 63. Nursing and Midwifery Council. Advanced practice review. Available at:
741 <https://www.nmc.org.uk/about-us/our-role/advanced-practice-review/>. Accessed 2024.

- 742 64. Nursing and Midwifery Council. Advanced practice: Our recommendations for additional
743 regulation. Available at: [https://www.nmc.org.uk/news/news-and-updates/advanced-practice-our-
745 recommendations-for-additional-regulation/](https://www.nmc.org.uk/news/news-and-updates/advanced-practice-our-
744 recommendations-for-additional-regulation/). Accessed 2024.
- 746 65. Scottish Parliament. Health and Care (Staffing) (Scotland) Act 2019. Available at:
747 <https://www.legislation.gov.uk/asp/2019/6/enacted>. Accessed 2022.
- 748 66. General Pharmaceutical Council. Consultation on draft standards for chief pharmacists. Available
749 at: [https://www.pharmacyregulation.org/about-us/getting-involved/consultations/consultation-
751 draft-standards-chief-pharmacists](https://www.pharmacyregulation.org/about-us/getting-involved/consultations/consultation-
750 draft-standards-chief-pharmacists). Accessed 2024.
- 752 67. Department of Health. New powers for dental and pharmacy staff to free up appointments.
753 Available at: [https://www.gov.uk/government/news/new-powers-for-dental-and-pharmacy-staff-to-
755 free-up-appointments](https://www.gov.uk/government/news/new-powers-for-dental-and-pharmacy-staff-to-
754 free-up-appointments). Accessed 2024.
- 756 68. Dixon-Woods M, Summers C, Morgan M, Patel K. The future of the NHS depends on its
757 workforce. *BMJ*. 2024;384:e079474.
- 758 69. Blum L. Vocation, friendship, and community. In: Flanagan O, Rotty A, eds. *Identity, Character,
759 and Morality: Essays in Moral Psychology Revised*. MIT Press: Massachusetts, 1993.
- 760 70. Michie S, van Stralen MM, West R. The behaviour change wheel: A new method for
761 characterising and designing behaviour change interventions. *Implement Sci*. 2011;6:1-11.
- 762 71. Riley B, Haynes J, Field S. *The condensed curriculum guide*. RCGP: London, 2007.
- 763 72. UK Government. Mental Health Act 1983. Available at:
764 <https://www.legislation.gov.uk/ukpga/1983/20/contents>. Accessed 2024.
- 765 73. Scottish Parliament. Certification of Death (Scotland) Act 2011. Available at:
<https://www.legislation.gov.uk/asp/2011/11/contents>. Accessed 2024.
74. Scottish Government. Right care right place. Available at:
<https://www.gov.scot/publications/right-care-right-place-2/>. Accessed 2022.

- 766 75. Royal College of General Practitioners. Fit for the future: A vision for general practice. Available
767 at: [https://www.rcgp.org.uk/getmedia/ff0f6ea4-bce1-4d4e-befc-d8337db06d0e/RCGP-fit-for-the-
future-report-may-2019.pdf](https://www.rcgp.org.uk/getmedia/ff0f6ea4-bce1-4d4e-befc-d8337db06d0e/RCGP-fit-for-the-
768 future-report-may-2019.pdf). Accessed 2024.
- 769 76. Scottish Government. The 2018 General Medical Services contract for Scotland. Available at:
770 <https://www.gov.scot/publications/gms-contract-scotland/>. Accessed 2021.
- 771 77. Marshall M, Ikpoh M. The workforce crisis in general practice. *Br J Gen Pract.* 2022;72:204-5.
- 772 78. Scottish Government. Community pharmacy - national career pathway and introduction of a
773 common clinical conditions independent prescribing service (NHS pharmacy first plus). Available at:
774 [https://www.sehd.scot.nhs.uk/pca/PCA2020\(P\)16.pdf](https://www.sehd.scot.nhs.uk/pca/PCA2020(P)16.pdf). Accessed 2024.
- 775 79. Shaikh A. Writing patient notes: A guide for pharmacists. *Pharm J.* 2023;310.
- 776
- 777