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1 **Structured Abstract**

2 *Deliberate acquisition of competence in physiological breech birth: a grounded theory study*

3

4 **Problem:** Research suggests that the skill and experience of the attendant significantly affect
5 the outcomes of vaginal breech births, yet practitioner experience levels are minimal within
6 many contemporary maternity care systems.

7

8 **Background:** Due to minimal experience and cultural resistance, few practitioners offer vaginal
9 breech birth, and many practice guidelines and training programmes recommend delivery
10 techniques requiring supine maternal position. Fewer practitioners have skills to support
11 physiological breech birth, involving active maternal movement and choice of birthing position,
12 including upright postures such as kneeling, standing, squatting, or on a birth stool. How
13 professionals learn complex skills contrary to those taught in their local practice settings is
14 unclear.

15

16 **Question:** How do professionals develop competence and expertise in physiological breech
17 birth?

18

19 **Methods:** Nine midwives and five obstetricians with experience facilitating upright physiological
20 breech births participated in semi-structured interviews. Data were analysed iteratively using
21 constructivist grounded theory methods to develop an empirical theory of physiological breech
22 skill acquisition.

23

24 **Results:** Among the participants in this research, the deliberate acquisition of competence in
25 physiological breech birth included stages of affinity with physiological birth, critical awareness,

26 intention, identity and responsibility. Expert practitioners operating across local and national
27 boundaries guided less experienced practitioners.

28

29 **Discussion:** The results depict a specialist learning model which could be formalised in
30 sympathetic training programmes, and evaluated. It may also be relevant to developing
31 competence in other specialist/expert roles and innovative practices.

32

33 **Conclusion:** Deliberate development of local communities of practice may support
34 professionals to acquire elusive breech skills in a sustainable way.

35

36

37 **Keywords**

38 breech presentation, clinical competence, physiological birth, sustainable models of care,
39 constructivist grounded theory, communities of practice

40

41

42 **Deliberate acquisition of expertise in physiological breech birth: a grounded theory study**

43

44 ***Statement of Significance***

45 **Problem**

46 Although the skill and experience of the attendant significantly affect outcomes of vaginal
47 breech births, experience levels are minimal within many contemporary maternity care systems.

48 **What is Already Known**

49 Most mainstream practices recommend supine delivery or caesarean section for breech
50 presentation at term. Some professionals have proposed understanding physiological breech
51 birth as a variation of normal, and advocate the use of upright maternal birthing position. How
52 practitioners develop competence in non-standard practices is unknown.

53 **What this Paper Adds**

54 This paper offers a learning model through which practitioners could be supported to develop
55 skill and expertise in physiological breech birth.

56

57 **1. Introduction**

58

59 Approximately 1:25 women pregnant at term will carry a fetus presenting breech, bottom- or
60 feet-first.¹ Although debates about the safety of vaginal breech birth compared to elective
61 caesarean section have run for decades,² research and advocacy literature indicates that there
62 is a demand for vaginal breech birth,^{3,4} that women have difficulty accessing this service,^{5,6} and
63 that providers experience cultural resistance when attempting to facilitate breech births.^{7,8} Some
64 experienced midwives and obstetricians have advocated a change towards innovative,
65 physiologically compatible practices for vaginal breech birth,⁸⁻¹⁰ commonly involving upright
66 maternal birthing positions, such as kneeling, standing, squatting, or sitting on a birth stool.

67 Recent research has suggested that the safety of physiological breech birth is comparable to
68 methods involving supine maternal birthing positions, and it may afford some maternal
69 benefits.^{11,12} But implementing the option of physiological breech birth requires professionals to
70 learn complex skills not readily available or supported within their local practice settings, with
71 minimal opportunity to practice under the guidance of experienced mentors.

72
73 In a large randomised controlled trial,¹³ the attendance of “a clinician who considers him or
74 herself to be skilled and experienced at vaginal breech delivery, with confirmation by the
75 individual’s Head of Department” (p. 742) reduced the risk of adverse perinatal outcome at
76 breech births to a 0.30 odds ratio compared to births where a clinician meeting this definition
77 was not present ($p=.004$). Yet studies from around the world indicate that obstetric training
78 programmes do not necessarily provide new consultants with the experience and confidence to
79 support vaginal breech births.^{14–18} A recent systematic review¹⁹ reported no evidence that
80 current training programmes improve maternal and/or neonatal outcomes. The review also
81 suggested teaching breech skills as part of an obstetric emergencies training programme may
82 reduce the likelihood of actually attending a breech birth in practice. The aim of this study was to
83 explore how professionals acquire physiological breech experience and skill over the courses of
84 their careers, in order to develop an empirical model which might explain and/or predict how
85 clinicians move towards physiological breech birth competence.

87 **2. Participants, Ethics and Methods**

89 *2.1 Research design*

90
91 This study followed a constructivist grounded theory methodology.²⁰ Grounded theory is ideally
92 suited to exploring processes and new understandings of social interaction, grounded in

93 empirical data, and expressed in the form of a theory which can be tested further.²¹ A
94 constructivist approach acknowledges the inevitable influence of personal experience and social
95 network activity in the co-construction of shared realities, and provides a reflexive framework to
96 maintain awareness of these influences throughout the research process.²² The research team
97 included a clinically active midwife, a Senior Lecturer in midwifery, and a Professor of
98 Educational Development who is a nurse. The first author had qualitative research experience
99 and breech experience at a level similar to the participants. The second and third authors, who
100 had previously conducted grounded theory studies, provided methodological familiarity and
101 professional distance from breech practice, which balanced reflexive discussions. Ethical
102 approval was obtained (City, University of London, SHSREC Ref: PhD/15-16/06), and all
103 participants gave consent to participate via an on-line form.

104

105 *2.2 Sampling and Participants*

106

107 This research sought to conduct in-depth interviews with midwives and obstetricians who had
108 attended between 3-20 upright breech births. This range was chosen to capture the experiences
109 of professionals who are still in the process of acquiring competence and proficiency.²³

110 According to Benner,²⁴ professionals in earlier stages of developing competence and proficiency
111 can be expected to engage in more conscious and deliberate planning and reflection, potentially
112 revealing more data about the learning process, than professionals who have reached the level
113 of expertise, wherein analytic processes have been incorporated into more intuitive grasp of
114 complex situations.

115

116 Recruitment involved purposive,²³ network, and social media sampling.²³ Although ability to
117 participate in an interview in English was required, recruitment was international. Information
118 about the research and the researcher (first author) was sent via e-mail to practitioners whose

119 involvement with breech birth was publicly known, eg. through publications or conference
120 activities. Those responding to an expression of interest were also invited to nominate
121 experienced colleagues, who were each sent information about the research. A call for
122 expressions of interest was also posted on social media sites related to breech birth, with
123 permission of the moderators. This process resulted in 52 expressions of interest from
124 professionals who indicated they had the desired range of experience for this study, and 32
125 were invited to participate [Figure 1]. If a potential participant did not respond to a request to
126 schedule an interview, the next suitable participant was approached, until saturation was
127 achieved.²⁵ Participants were selected to represent a heterogeneous range of experience
128 levels, geographical areas and both the midwifery and obstetric professions, in order to distill
129 common elements resonant across diversity through the constant comparative method used in
130 grounded theory research. All participants gave consent via an on-line form. Recruitment
131 stopped when saturation was reached, as described below.²⁵

132
133 A total of 14 professionals were interviewed, including nine midwives and five obstetricians,
134 working in Australia, Brazil, Canada, the Netherlands, New Zealand, the Philippines, the United
135 Kingdom, and the United States. All but one of the midwives described attending breech births
136 in both home and hospital settings. Five midwives and three obstetricians had worked in
137 multiple geographical locations, including the developing world. Some of the participants,
138 especially obstetricians, had significantly more experience with vaginal breech births where the
139 woman births in a supine or lithotomy position but were beginning to change their practice to
140 include upright positions. Three participants had attended over 20 upright breech births by the
141 time the interview took place. The experience level among those interviewed ultimately ranged
142 from five breech births to approximately 30 upright breech births, and this range of experience
143 provided sufficient comparative insight to meet the objectives of this study.

144

145 Eleven of the professionals who expressed an interest in participating were professionally
146 acquainted with the researcher conducting the interviews, through conferences and other
147 networking activities. The potential for bias in sampling was recognised, and the first nine
148 interviews were conducted with participants with whom the researcher had little or no previous
149 contact. However, in the final interviews, participants were theoretically sampled in order to
150 achieve saturation of the emerging categories; this included one participant whose background
151 experience was known to the researcher and particularly relevant to areas requiring deeper
152 exploration at this stage.

153

154 2.3 Data collection

155

156 Individual in-depth interviews were conducted by the first author with all 14 participants, using a
157 semi-structured interview schedule, below.

158 **Semi-structured interview schedule(s):** * = added/modified in second round of interviews

159

160 How did you gain experience with upright breech birth?

161

162 Please describe some/one* of your significant learning experiences.

163

164 * Have you had any difficult breech births? Please describe what happened.

165

166 * Have you ever experienced a head entrapment?

167

168 * Do you consider yourself skilled and experienced in breech birth? Why?

169

170 What does 'upright breech expertise' mean to you?

171

172

173 The first nine interviews took place between June and September 2014, and the final five took
174 place between December 2015 and February 2016. Interviews ranged in length from twenty to
175 ninety minutes; one interview was cut short due to clinical activity, with some follow-up

176 exchange via e-mail. Five interviews were done via telephone (audio recording), eight via Skype
177 (audio-visual), and one in person (audio). Consent was verbally confirmed prior to the start of
178 the interview. Notes were made during the interviews. All were recorded and transcribed by the
179 first author, and a transcript was returned to the participant as a courtesy where requested. Only
180 one participant came back with a clarification, correcting the initials of a colleague mentioned in
181 a narrative. Anonymity was maintained with pseudonyms, and data were stored on a password-
182 protected, encrypted laptop and networked university drive, in line with the ethics approvals
183 obtained.

184

185 *2.4 Data analysis*

186

187 Data analysis was facilitated by QSR International's NVivo 10 for Mac software (version 11),
188 which provided flexibility to sort, consider, rearrange, and recode as required throughout the
189 analytic process.²⁹ Analysis began following transcription of the first interview and continued in
190 an iterative fashion throughout the conduct of the research.²⁶ Interviews were first coded line-by-
191 line by the first author, using action-oriented descriptors,²⁷ and over 300 initial codes were
192 identified. As connections and resonances between the codes became apparent, related codes
193 were grouped and arranged into a coding tree in order to focus the analysis. Memos were
194 created and linked to significant codes, chronicling the abductive reasoning behind the
195 groupings,²⁷ and identifying gaps in the data. Tentative analytic categories were built up through
196 this process, and earlier interviews were continually revisited to interrogate the emerging
197 categories further. Following the first nine interviews, an initial framework was developed, which
198 organised the emerging categories into stages. The interview schedule was revised, driven by
199 the emerging theory, and a further five interviews were then conducted using a modified
200 interview schedule. At this point, theoretical sampling of participants with minimal and maximal
201 experience levels within the identified range allowed for testing and saturation of the categories,

202 particularly relating to the trajectory of competence development through stages as experience
203 increased.

204
205 Saturation was judged to have occurred when theoretical categories were sufficiently dense and
206 fully resonant across the diverse sample of participants, with no further insights or dimensions
207 emerging through further analysis.²⁵ Saturation was also observed objectively, by recording the
208 diminishing number coding and category changes during analysis of the later interviews, as they
209 gradually ceased to reveal new properties within the categories under consideration.²⁸

210 211 *2.5 Trustworthiness*

212
213 We employed a number of verification strategies throughout the research, including an audit
214 trail, reflexive discussions, member checking, and network testing. Throughout the research, the
215 team met monthly to review coding activity, discuss the emerging analysis, and resolve
216 inconsistencies. The audit of the iterative decision-making process was maintained through
217 memos, including snapshots of coding trees as emerging categories were built up into
218 theoretical categories, and changes to the tentative theoretical framework. Reflexive awareness
219 of network influences and personal experience was facilitated through memo writing and team
220 discussion.²²

221
222 In order to check for resonance and recognisability, each of the later five interviews ended by
223 sharing a brief summary of the emerging theoretical framework with the participant at the
224 conclusion of the interview. This activity functioned as a form of member checking³⁰ and
225 enabled reciprocal shaping of the theoretical framework in line with constructivist methodology.

226 ³¹ Throughout the analytic process, the emerging theory was also shared informally with other
227 professionals in the first author's international network, and formally at the 11th Normal Labour

228 and Birth Conference in Sydney, Australia, in October 2016. Peer scrutiny and feedback in the
229 early stages of analysis helped shed light on nuances which had not previously been noticed
230 within the data, and later reassured us of the credibility of the results,³² as fewer nuances
231 emerged within and outside of the interviews. Public engagement also prompted consideration
232 of the practical implications and transferability of the model.³³

233

234 3. Results

235

236 Analysis of participants' narratives indicated that these professionals engaged in a process of
237 deliberate acquisition of competence in physiological breech birth, involving five iterative stages:
238 1) affinity with physiological birth, 2) critical awareness, 3) intention, 4) identity and 5)
239 responsibility. Figure 2 depicts these stages as spheres which grow as experience increases,
240 and overlap to illustrate the recursive nature of the trajectory. **Key elements** of each stage are
241 listed in a box alongside each stage, and highlighted in bold in the text below. *Participant quotes*
242 are in italics. Any names used are pseudonyms.

243

244 3.1: Affinity with physiological birth

245

246 The midwives and obstetricians who participated in this research shared an affinity with
247 physiological birth. This stemmed in some cases from personal predispositions, in others from
248 early exposure to mentors and practice settings oriented towards physiological birth, although
249 both influences appeared to enhance the other. *My own philosophy has always been very pro*
250 *normal birth. Even in cephalic births, I don't do a lot of interventions.* (OB4) The obstetricians
251 particularly reported training in settings where vaginal breech births were perceived as *a normal*
252 *thing* (OB3).

253

254 Their perceptions of breech birth as a physiological process were enhanced by **understanding**
255 **the mechanisms** of normal breech birth.

256 *I went to the pre-conference workshop that [Midwife and Obstetrician Breech*
257 *Experts] taught together ... and I really understood the mechanisms of normal*
258 *breech birth, and I really understood how to identify when there was a problem and*
259 *what to do about it. (MW5)*

260 They contrasted physiological breech strategies to training in their local practice settings which
261 focused on performing interventions.

262 *They only explain what to do, like how to remove the arms. But you need to*
263 *understand the mechanism, otherwise you don't recognise anything. (MW3)*

264 Several participants described repeatedly watching and simulating breech birth videos in
265 order to familiarise themselves with the normal mechanisms.

266

267 These midwives and obstetricians demonstrated **flexibility** in their practice that enabled them to
268 work to the rhythm of physiological births, particularly by *being available*.

269 *Our section rate was down towards 10%. So we did everything vaginally, and it*
270 *was just a matter of being available and being there to do 'em. (OB2)*

271 This type of flexibility was a matter of both character and circumstance, which participants
272 identified as unique in their settings.

273 *The reason that myself and my colleagues are able to do it is because we have*
274 *family set-ups that allow us to drop everything at a moment's notice and come.*
275 *(MW8)*

276 Participants in all settings described diverse ways they created **availability** for breech births
277 which occurred unpredictably, and were continually trying to increase this availability. These
278 included: on-call working; offering to come if available; responding to colleagues' requests for
279 help, even when not on duty; setting up innovative continuity-based teams within maternity care

280 systems where the majority of care was provided by professionals working shifts; negotiating
281 the ability to work across employment borders in collaboration with other breech colleagues.
282
283 Personal flexibility was also evident in participants' **openness to innovation** based on
284 physiological principles, often before such practices had gained acceptance in their local
285 practice settings. For example, several participants discussed initiating resuscitation with the
286 umbilical cord intact. *Leave the cord attached and they do so much better ... But our big*
287 *universities haven't quite caught onto that. (OB2)* Despite participants' personal openness,
288 cultural resistance around breech created barriers to innovation. One participant contrasted the
289 ease with which other specialists were able to introduce new surgical techniques which had not
290 yet been rigorously tested, based on experienced professional judgement, with the resistance
291 faced when trying to introduce upright maternal position for breech births.

292 *I think when you find a new operating way, or a new technique, you do it also. And*
293 *my colleague who is very good in laparoscopy, does not ask, "Hey, Lilith, can I try*
294 *this on Monday? Shall I call you?" You have some experience and you want to*
295 *advance techniques. And [upright breech birth] is a good technique in which I*
296 *really believe, and I cannot make it from a randomised controlled trial clear to my*
297 *colleagues, but I want to try it, yes. (OB5)*

298
299 3.2: Critical Awareness

300
301 For these participants, **critical awareness** initiated a turn away from local practice settings to
302 explore different understandings about breech birth. This turn often involved witnessing less-
303 than-optimal breech practice. Several participants expressed criticism of the actions and
304 responses of professionals they observed managing breech births, but also felt keenly aware of
305 the inadequacy of their own preparation.

306 *No one in the entire hospital knew what to do. A very old guy ... attended the birth*
307 *in a very awful, awful, awful way. And the baby was completely with bruises on the*
308 *entire body. And I felt that something was wrong about that. (MW9)*

309 Early formative events involved **recognising incoherence** in behaviour which undermined the
310 successful physiology they observed.

311 *It was obvious she was cracking on, she was kneeling up, she was beginning to*
312 *feel pressure ... And the consultant just came in and was like, "Right I need an*
313 *epidural put in ..."* She started pushing as the epidural went in, and then she was
314 *numb ... they struggled with the head, and the consultant pulled and pulled and*
315 *pulled (MW1)*

316

317 Recognising the negative effects of fear on professional decision-making, these participants
318 began consciously **distancing fear**.

319 *It was my first breech, I was alone. My colleague, the [senior] midwife, she told me,*
320 *"I won't do it because I'm too scared. You need to do it because you are the brave*
321 *one." (MW3)*

322 Participants were aware of how communicating about breech as an emergency impacted the
323 behaviour of their colleagues, and consciously chose to communicate about breech as normal,
324 a choice some had also observed in their mentors.

325 *I was like, "Oooh, what do I do? It's coming, but chaos will ensue if I pull that*
326 *[emergency] bell ... so I just pulled the bell as in I was just calling somebody"*
327 *(MW1)*

328 They also reflected on the effect of fear on their own actions.

329 *In that birth, the baby was fine, the baby was coming along ... I think I did*
330 *something, I did an episiotomy and I did the manoeuvre because I was scared.*
331 *(MW3)*

332

333 Participants expressed **academic doubt** about the research and education underpinning
334 mainstream practice for breech presentation.

335 *While I was compiling this data [from a local audit], the Term Breech Trial was*
336 *published suggesting we were killing or maiming 1:20 babies, and I had in my*
337 *hands data from 400 [breech births] that showed that was nonsense. That piqued*
338 *my critical interest, so it became an academic interest as well. (OB1)*

339 They began to read more widely around the research base concerning breech presentation, and
340 questioned the legitimacy of mainstream training methods.

341 *It feels like there's a whole generation of obstetrics that has taken us back to the*
342 *dark ages in terms of breech. We've now got this cookie-cutter recipe for how to do*
343 *vaginal breech, which sounds like it's just recited out of textbooks rather than*
344 *emerging out of the depths of lots of personal experience of people. (OB4)*

345

346 3.3: *Intention*

347

348 Participants' critical awareness catalysed an **intention** to develop personal skill with breech
349 birth. *So I decided to go search for courses and things like that. (MW9)* Only one participant
350 described having received support from their employers to undertake additional learning in this
351 area, but some participants' efforts to gain experience were supported by individual, like-minded
352 colleagues. *What we do is we call each other. We do these births together. (M2)* Some viewed
353 their self-determined intention as similar to other areas of advanced practice within their
354 professions, but were aware that colleagues did not share this view.

355 *That word, "brave," I hear that said to me all the time, and I find that quite insulting.*

356 *It's nothing to do with being brave. I mean, I wouldn't be able to go and look after*
357 *somebody on HDU [High Dependency Unit]. I would need to have extra training.*

358 *And if for some reason or other, I suddenly woke up tomorrow and thought, “All I*
359 *ever wanted was to be is an HDU obstetric nurse,” then I would seek that training.*
360 *If you want to do something and you want to be something, the buck stops with*
361 *you. (MW8)*

362

363 Participants specifically sought out **contact with experts**, professionals regarded as having
364 genuine expertise in both breech practice and teaching skills to others.

365 *During the conference, people would come up to him over and over again and say,*
366 *“Can you show me again?” And I kinda stalked him a little bit and watched him*
367 *doing it again and again ‘cause I really wanted to get it down. (MW5)*

368 In Figure 2, Breech Experts are depicted independently due to their important and on-going role
369 in guiding participants’ deliberate acquisition of competence and the trajectories of their careers:

370 *So I would say that he changed my life in my career, something like this. (OB3)* The influence of
371 Breech Experts operated across multiple practice settings, and a few were mentioned by
372 multiple participants working in different geographic areas, sometimes with reverent language,
373 eg. *guru of breech birth* (OB4). Simulations performed with Breech Experts appeared
374 particularly meaningful.

375 *She put her hands on my hands. And it was minute, minute traction. But it was*
376 *there, and that’s what I needed. In a way, that single act taught me absolutely the*
377 *most of what I understand. (MW8)*

378

379 At this stage, participants were **working outside boundaries** of geography, practice and
380 standard training, in various ways. All participants in this study described travelling beyond their
381 local practice settings, sometimes internationally, to attend breech workshops and conferences.

382 Some travelled to work with Breech Experts, or to settings where breech births were common. *I*
383 *was at a conference and saw his name there so tracked him down and asked if I could come*

384 *and work at his unit. (OB1)* Some remained within the same local geographical area but worked
385 outside normative boundaries in other ways. One midwife and one doctor reported significant
386 early learning experiences while caring for women whose babies had died in utero. For the
387 midwife, attending stillbirths meant practising autonomously within an environment where
388 midwives usually did not attend unsupervised breech births. For the obstetrician, it meant
389 freedom to be slow and careful when applying forceps to an aftercoming head for the first time,
390 knowing the baby could not end up, as she described, *deader than dead* (OB4). For another
391 midwife, gaining breech experience involved working outside local regulation boundaries.

392 *So I asked this OB-GYN to be with me, and here ... the medical board is very*
393 *against home births, so we were illegal midwife and also our illegal OB-GYN*
394 *attending breech home birth. (MW9)*

395
396 Having set their intention and broadcast it in various ways, participants began **attracting**
397 **breeches**. Combinations of accident, attention, receptiveness and word of mouth meant they
398 found themselves attending more breech births than they previously expected or thought
399 possible. *So one woman told the other one, and suddenly a lot of breech births were appearing*
400 *from everywhere! (MW9)* Some participants attributed clusters of early experiences to chance;
401 others actively created conditions that made it more likely that they would be involved in breech
402 births, particularly by discussing their interest and extra training with their colleagues. *That*
403 *basically came about from talking to the staff of my interest and pure luck that I was on shift*
404 *when the women came in. (MW1)*

405

406 3.4: Identity

407

408 As colleagues in their local practice settings became aware of the participants' interest,
409 association with breech birth became part of these participants' professional **identity**, even

410 before the participants owned such an association as part of their personal identity. *I had a*
411 *phone call in the middle of the night when I wasn't on call ... someone had decided I was the*
412 *breech expert that night [laughing]. (OB4)* Despite some having attended a relatively modest
413 number of births, participants were already beginning to operate recognisably as **specialists**.
414 This term was used by some participants when referring to experienced mentors who were
415 known for their skill with breech within the participants' local practice settings.

416 *I had the luck to be resident where breech positions were accepted and especially*
417 *because two gynaecologists were specialised in it because they had a lot of*
418 *experience. (OB5)*

419 But awareness of this special association with breech was not always positive. *Lots of people*
420 *think we're mavericks. (MW8)* While all participants in this research demonstrated an affinity for
421 physiological birth, critical awareness and intention to develop breech skills, these later stages
422 in the deliberate acquisition of competence featured more frequently in the narratives of more
423 experienced participants. In data from less experienced participants, the same stages were
424 recognisable, but in the form of shadow data³⁴, where participants speak about others, rather
425 than themselves, eg. *[She] is well-known for her breech. (MW6)*

426
427 A core feature of sustaining breech identity and practice was establishment of a **community of**
428 **practice** with other supportive breech-experienced professionals.

429 *By e-mail or occasionally by phone and sometimes just serendipitously when we*
430 *catch up with one another ... we review cases, more out of interest than ... some*
431 *critical appraisal format. (OB1)*

432 They forged relationships with like-minded colleagues within their practice settings.

433 *Then another consultant came along [here], who was really open to midwifery as a*
434 *skill, and we'd just naturally found each other, like you do. (MW8)*

435 These collaborative professional associations enabled them to grow and change, acquiring
436 additional clinical flexibility.

437 *Especially one [colleague] ... she is really progressing and pushing me in a new*
438 *way to see things from another point of view. And she supports me and I her to do*
439 *things differently. Because you need support. (OB5)*

440 However, sometimes cultural resistance meant they could not access support locally.

441 *I think the last 20 years, if you've been prepared to stand up and be counted as an*
442 *obstetrician who does vaginal breech births, you were painted as a bit of a feral*
443 *risk taker ... It wasn't the sort of thing that you walked into the tea room and said,*
444 *"Ahh, I just did a fabulous breech!" (OB4)*

445 Therefore, they also maintained connections with the Breech Experts and peers they had
446 encountered outside their local practice environment. *Some of the other midwives were really*
447 *scathing ... I ended up ringing up [a Midwife Breech Expert] and talking through to her. (MW6)*

448
449 As their experience and understanding grew, the participants found **increasing confidence**.
450 Unexpectedly, this seemed to occur along with, or as a consequence, of the establishment of
451 breech identity, rather than preceding it. Participants were often receiving referrals from other
452 professionals before feeling fully confident as specialists themselves. Self-confidence increased
453 following successfully resolving complications.

454 *I did the [manoeuvre] for the very first time, and it worked like a charm and this 10*
455 *1/2 pound baby just popped right out. It was very affirming that what I had learned*
456 *actually worked in practice. (MW5)*

457 Confidence to trust their own experience, intuition and problem-solving ability also grew as they
458 learned in practice that the rules they had been taught to follow do not always work.

459 *It gives you a new perspective when you realise it isn't quite the way that you were*
460 *taught and that the sky won't fall in if the woman isn't flat on her back with her legs*

461 *in stirrups. It's okay if you don't cut an episiotomy, and it's okay if you don't put*
462 *forceps on and ... you know, all that high intervention stuff we were taught as*
463 *trainees. (OB4)*

464 Confidence also grew as they successfully applied transferable knowledge of physiological
465 cephalic birth to their breech practice.

466 *My colleague wanted at first to do it the way she learned it, so asked the woman to*
467 *lie down on the bed, and then after two times pushes, she said, "Well, no, this is*
468 *not going to work," and asked her to sit on the birthing chair. (MW2)*

469

470 3.5: Responsibility

471

472 Increased **responsibility**, and awareness of that responsibility, characterised the final stage in
473 the deliberate acquisition of competence.

474 *When you learn breech skills and you get to the point where others consider you*
475 *experienced ... with that, for me and my colleague, has come a massive sense of*
476 *responsibility. (MW8)*

477 Participants sensed others' increased expectations of their abilities, and their colleagues'
478 doubts.

479 *Well, it's complicated because everybody thinks it's complicated, so you get real*
480 *sore on your shoulders doing the birth. So everyone is a little bit shaky, and*
481 *everybody says, "She's doing it." So that makes me sometimes a little bit more*
482 *nervous than it should be. (OB5)*

483 Participants at this stage exhibited noticeable **markers of experience**, which distinguished
484 them as the most breech experienced practitioners in their local settings, even amongst
485 professionals with comparatively more years of experience. They were able to make
486 comparisons between experiences: *What I had found to work with larger babies [at home] did*

487 *not work for that one. (MW5)* Their familiarity with the mechanisms and patterns of breech
488 labours underpinned an ability to anticipate complications occurring. *I've seen so many normal*
489 *breeches as well ... so I know when I need to intervene now. (MW7)* These more experienced
490 practitioners also described being able to improvise solutions in particularly complex situations,
491 where simpler methods proved inadequate.

492 *I did what felt instinctively right to me, and I ... turned it posteriorly. It wasn't a*
493 *conscious decision to do that ... just felt which way it felt like it would go ... and*
494 *then as I turned it the other way, it was already delivering its own arm. (MW8)*

495 Participants exhibiting markers of experience had all attended at least 10 breech births and had
496 managed multiple complications successfully.

497
498 Participants became increasingly involved in **supporting others** to develop breech knowledge
499 and skills within their local services. *I've also been at [other births], trying to encourage other*
500 *midwives, just by being in the room. (MW4)* Their capacity to describe physiological patterns,
501 problems and solutions enabled them to teach others, which they did both formally and
502 informally. *Then afterwards, I'm like, "I'm really not an expert in this, but I know the theory, so*
503 *let's do it all together."* (MW7) Supporting colleagues' up-skilling involved continued flexibility
504 and availability to support breech births clinically to ensure the safety of the service. *And then I*
505 *have to be there because I think a lot of trouble comes from people who don't know how to do*
506 *breeches and they want to pull. (OB2)*

507
508 Some participants also became involved in **leading change** at local levels and beyond. They
509 organised conferences and training days similar to those they had attended when they first set
510 their intention to develop breech competence. Leading change often required them to become
511 aware of institutional politics.

512 *It was about teaching the managers. I actually think that trying to start from the*
513 *bottom up in this particular instance, with lost skills, is not helpful. You have got to*
514 *engage the consultants and the senior management. (MW8)*

515 Critical awareness also expanded with experience, and some discussed access to skilled
516 support for a vaginal birth as a human right. *We understand breech birth as a reproductive right.*
517 *So the women have the right to have a vaginal birth if they have a bottom-first breech. (MW9)*
518 They also understood the need to think strategically beyond their local situation, although this
519 sometimes attracted additional cultural resistance.

520 *I can't get enough volume for other people to learn at my private hospital. So I*
521 *went to the university, thinking people could just refer 'em there. The problem is*
522 *that their paediatricians, they're all hyperventilating when the baby comes out.*
523 *(OB2)*

524 Finally, the evidence indicated that some participants were beginning to be regarded as
525 specialists with expertise valued beyond their local practice settings. *On the back of [the*
526 *conference], we've had so many requests, "Will you come and talk to us about what you've*
527 *done, how you've done it?" (MW9)* This suggests that, for some practitioners, iterative
528 engagement in this model develops into the deliberate acquisition of expertise, and an
529 expanded professional identity as a Breech Expert.

530

531 **Discussion**

532

533 In this study, the deliberate acquisition of competence in physiological breech birth involved five
534 iterative stages: affinity with physiological birth, critical awareness, intention, identity and
535 responsibility. The findings lend further support for the development of specialist breech teams
536 within each maternity care setting, as suggested by the consensus of experienced breech
537 professionals in previous research.²³

538

539 Unique to this research is the finding that specialist identity association with physiological
540 breech practice does not appear to be a linear progression following achievement of a certain
541 number of births, a prescribed training programme, or formal recognition. All but one of the
542 participants, the least experienced, received referrals and requests to assist other professionals
543 with aspects of breech care. This suggests the demand for breech specialists exists across very
544 disparate maternity care environments, and is felt by professionals as well as service users. The
545 participants' regard as somewhat specialised among their peers was evident, despite in most
546 cases a modest amount of actual breech experience. In this model, the notion of specialist
547 practice is reconceptualised, from an association with lengthy clinical experience, to one of
548 engagement within a community of practice. This model resonates with Ericsson's theories of
549 expert performance.³⁵ According to Ericsson, observed expert performance correlates with
550 active engagement in deliberate practice, including feedback and guidance from teachers, time
551 for problem-solving and evaluation, and opportunities for repeated performance to refine
552 behaviour, rather than greater professional experience.³⁵ The deliberate acquisition of
553 competence model presented in this paper also has the potential to be refined and tested in
554 other areas where specialist skill and greater continuity might enhance safety and service
555 provision, such as home birth, physiological twin birth and vaginal birth after caesarean section.

556

557 Lave and Wenger describe how members of a community of practice acquire an identity
558 association by virtue of successfully navigating and negotiating participation in that community,
559 within which learning and development continually occurs.^{36,37} Through their engagement with a
560 breech community of practice, participants in this research acquired a professional identity
561 association with breech specialist practice, often through the eyes of their non-participating or
562 more peripheral colleagues in the first instance. The model suggests that formal identification of
563 a multi-disciplinary breech team may be sufficient within many contexts to initiate the attraction

564 of enough breech births to develop and maintain the team's expertise, although the practicalities
565 of how this occurs will inevitably vary between settings. If implementing a breech team model,
566 services should be aware of a window of vulnerability. Despite early professional identity
567 association, in this research only participants who had attended approximately 10 or more births
568 exhibited the markers of experience associated with taking on increased responsibility, due to
569 having successfully encountered and resolved multiple complications. This corresponds to
570 consensus research indicating that professionals gain competence to practice autonomously
571 after attending approximately 10-13 breech births,²³ and appropriate support mechanisms
572 should be in place as individuals within the team approach this level of experience.

573
574 With time and flexibility, the presence of a clearly identified group of experienced practitioners
575 may enable further members of the local maternity care team to engage in situated learning with
576 internal specialists or external breech experts. Such models of training and care should be
577 rigorously monitored and evaluated if implemented. Many of the participants felt a heavy burden
578 of responsibility, which in several cases was made heavier by feelings of professional isolation
579 and cultural resistance to vaginal breech births in general. Team and workplace conflict has
580 been shown to have a detrimental effect on safety,³⁸ and may furthermore reduce professional
581 resilience,³⁹ leading to a reduction in the necessary flexibility and affinity required to facilitate
582 physiological breech births.

583
584 This study has a few limitations. The in-depth interviews with a broad international sample of
585 fourteen midwives and obstetricians practicing in a variety of settings enabled the discernment
586 of similar stages across settings, but the heterogeneous nature of the participants' practice
587 settings may have obscured other important aspects because they were not able to be
588 expressed in certain contexts; this may affect transferability of the model. The results describe
589 general principles of breech specialist skill development, but lacks specific practical detail

590 necessary for implementation in individual organisations. While the results suggest deliberately
591 organising breech training and services to involve flexible specialist teams may be fruitful, they
592 do not present evidence that such a strategy will be effective, nor do they provide safety data
593 concerning the impact of any changes on outcomes for mothers and babies. These questions
594 should be explored in future research.

595

596 **Conclusion**

597

598 The results of this research suggest that institutions wishing to implement the option of
599 physiological breech birth may begin by identifying a multi-professional team of individuals with
600 aptitude and flexibility, who may be supported to develop into breech specialists within a local
601 community of practice, with guidance from internal and/or external breech experts. The five
602 stages of deliberate competence acquisition identified were distinct enough across a variety of
603 contexts to inform training and organisational development programmes based on this empirical
604 model. Institutions may also consider implementing policies which reduce the burdens of
605 isolation and disproportionate responsibility on those who attend breech births. Training models
606 based the stages described in this research may enable more sustainable provision of vaginal
607 breech birth support within contemporary maternity services. The impact and safety of such
608 models should be explored in further research and evaluation.

609

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611

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617

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