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2 **Title Page**

3

4 **Expertise in Physiological Breech Birth: A mixed-methods study**

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6

7 **Running title:** Expertise in Breech Birth: A mixed-methods study

8

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10

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38

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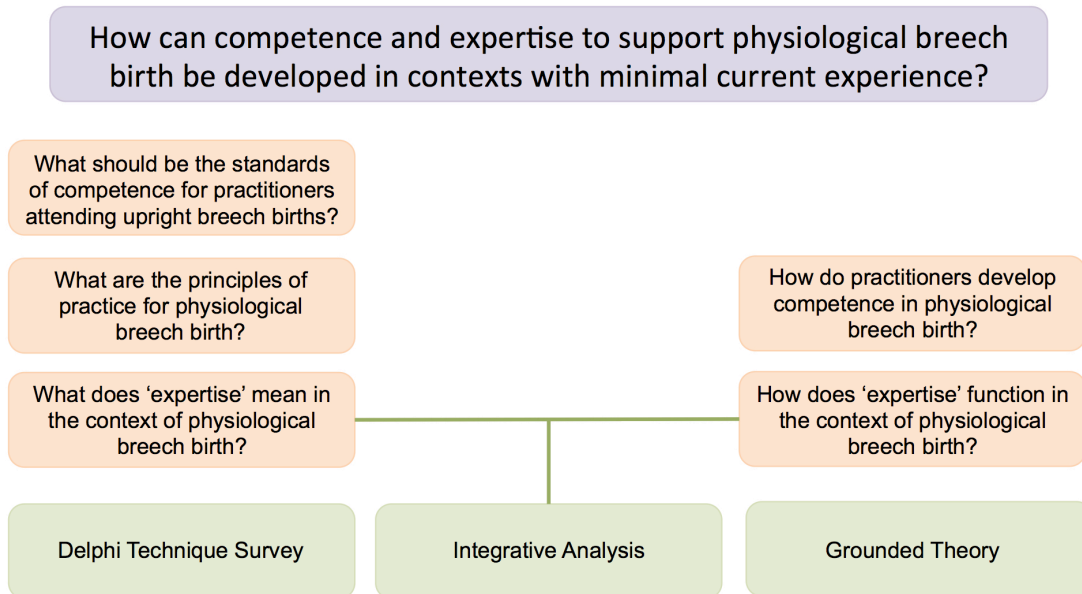
43 **Introduction**

44 The recent Royal College of Obstetricians and Gynaecologists (RCOG)
45 guideline on Management of Breech Presentation¹ refers to “clinical expertise
46 (p4)” as an essential safety factor in vaginal breech birth, similarly to other
47 guidelines globally. When breech expertise is unavailable, the safety and
48 availability of vaginal breech birth decline. Although breech presentation
49 occurs in approximately 1:25 pregnancies at term,¹ only a small portion are
50 born vaginally.² This is attributed to a decline in expertise³ and fear of
51 litigation.⁴ Women’s autonomy to decline surgical delivery and choose a
52 vaginal breech birth is limited by lack of skill and experience.⁴⁻⁶
53 Understanding how breech expertise should be defined, and how it can be
54 both attained and preserved, is essential for the provision of humane and
55 dignified care that protects the autonomy of all.^{7,8}

56
57 Minimal empirical evidence exists to guide identification and evaluation of
58 expertise. The Term Breech Trial⁹ associated attendance by a clinician “who
59 judged him or herself to be skilled and experienced at vaginal breech delivery,
60 confirmed by the Head of Department (p.744)”¹⁰ with a reduction in adverse
61 outcomes when compared with the categories of licensed obstetrician or
62 clinician with over 10 or 20 years experience. But reliance on self-assessment
63 of skill in the trial has been criticized.¹¹ The objective of this mixed methods
64 study was to explore the meaning of expertise in physiological breech birth, in
65 order to understand how it can be developed within contemporary maternity
66 services.

67

68 **Methods**



69

70 **Figure 1:** Research Design

71

72 We performed an integrative analysis¹² of data from two methodologically
 73 diverse studies [Figure 1]. Data came from a Delphi survey¹³ involving 26
 74 comparatively experienced practitioners and 2 service user representatives,
 75 and a grounded theory interview study¹⁴ involving 14 practitioners moderately
 76 experienced with upright physiological breech birth [Table 1]. The pooled data
 77 set included free text answers to open-ended survey questions from the
 78 Delphi survey; a collection of statements which reached consensus
 79 agreement among at least 70% of the Delphi panel members [Table 2]; and
 80 transcriptions of in-depth interviews from the grounded theory study. Detailed
 81 descriptions of recruitment, methodologies and results of the contributing
 82 studies have been published separately.^{13,14}

83

84 **Table 1:** Backgrounds of participants in mixed-methods expertise study

85

86

Delphi consensus technique study	13 obstetricians, 13 midwives, 2 service user representatives
Settings	Australia, Austria, Brazil, Canada, Germany, Mozambique, New Zealand, United Kingdom, United States of America
Births	20-400 total breech births (mean = 135; median = 100)
Grounded theory interview study	9 midwives, 5 obstetricians
Settings	Australia, Brazil, Canada, the Netherlands, New Zealand, the Philippines, the United Kingdom, and the United States
Births	5-30 upright breech births

87

88 The data were analyzed using a constant comparative method that comes
89 from grounded theory.^{12,15} We began by descriptively coding references to
90 more experienced clinicians, and comparing the patterns we observed to the
91 consensus statements in *Table 2*. These initial codes were then organized
92 into categories reflecting social clinical roles and increasing layers of
93 responsibility associated with some experienced clinicians. This iterative
94 process included highlighting counter-examples and exploring tensions in the
95 data, particularly the doubt multiple participants expressed about the concept
96 of “breech expertise.” Theoretical categories were settled by relating the
97 expansive progression of roles to a central concept of *generative expertise*,
98 and comparing this to *alienating authority*; both are defined below.

99

100 The multiple data sets contributed diverse views¹⁶ of professionals with
101 varying experience levels [*Table 1*]. Integration of this data during analysis
102 enabled a more thorough exploration of processes,¹⁶ particularly the social
103 functions of expertise, than would have been possible from either data set in
104 isolation. Detailed memo writing throughout the analysis maintained an audit

105 trail of key decisions, and reflexive awareness of various sources of
 106 influence.^{15,17} Ethics approval was obtained by the City, University of London,
 107 School of Health Sciences Research Ethics Committee. All participants
 108 consented to participate and transcripts were anonymised prior to analysis.
 109 Clinicians who participated in the Delphi panel are identified by a three-digit
 110 code, e.g. OB104. Clinicians who participated in interviews are identified with
 111 a single-digit code, e.g. MW1. All data were stored and analyzed on a
 112 password-protected, encrypted laptop or central shared university drive, in
 113 line with ethics approval. Each of the three authors contributed to the original
 114 studies, design of this analysis and the writing up of the results. The first
 115 author performed the integrative analysis, in consultation with the other two
 116 authors.

118 Results

120 **Table 2:** Consensus statements: Qualities associated with expertise in physiological breech
 121 birth

122 Percentage of panel in agreement, Likert mean and standard deviation (SD)
 123 *Likert scale: 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree*
 124
 125

<i>Qualities associated with expertise</i>	<i>%</i>	<i>Mean</i>	<i>SD</i>
Ability to anticipate the need to intervene based on careful observation of the birth and progress	100%	4.68	0.48
Keeps current and continues to attend breech births	95%	4.59	0.59
Having encountered and resolved complications successfully	95%	4.52	0.81
Openness to new research	95%	4.50	0.60
Experience with many births both breech and cephalic	91%	4.45	0.67
A special interest in breech birth	86%	4.36	0.73
Known for their empathy, knowledge and compassion	86%	4.23	0.68
Affinity – joy and happiness in the job	86%	4.23	0.69
One who has explored and evaluated a variety of different techniques and approaches to vaginal breech birth	86%	4.23	0.81
Ability to teach others the skills of breech birth	77%	4.18	0.80
Evidence of good outcomes over a significant number of births	77%	4.14	0.89
Attendance at a certain number of breech births	73%	4.14	0.83
Someone who knows how to create the conditions for a real fetus ejection reflex	73%	3.91	1.06
Leadership skills	71%	4.05	0.59
While numbers are helpful as a guideline, expertise is context-dependent. Expertise is more accurately understood through the demonstration of qualities such as those outlined above than by achieving any particular number.	95%	4.59	0.59

126

127

128 *Volume Standards*

129 As expected, participants viewed expertise as dependent on ample clinical
130 experience. The Delphi survey results identified 20 births as an approximate
131 number reasonably associated with acquiring expertise [Table 2]. During this
132 period, professionals encounter most significant complications¹⁴ and develop
133 pattern recognition abilities that enable them to distinguish normal and
134 abnormal breech births. But complications occur unpredictably, and are
135 encountered at variable rates. This integrative analysis suggests the critical
136 ability to recognize and resolve complications [Table 2] is also influenced by
137 time spent in simulation and teaching theory:

138 *I've never attended a vaginal breech birth that's been anything other*
139 *than easy, and that actually used to worry me ... I teach the [obstetric*
140 *emergencies] course here so I get to practice on the dolls and pelvis*
141 *on a regular basis, but I've never had to do most of the maneuvers*
142 *myself. (OB4, >40 total breech births)*

143

144 *The Generative Function of Expertise*

145 *Expertise* can be identified by its on-going function, rather than a static
146 achievement. The participants involved in both studies saw expertise as
147 generating comparatively good outcomes for mothers and babies. But
148 expertise also had another essential function: it imbued confidence and
149 competence in other professionals. Expertise can in this sense be called
150 *generative*. Clinical experience is essential, but according to our integrative
151 analysis, breech expertise develops through social relationships involving

152 distinct social clinical roles.

153

154 *The Social Expressions of Expertise*

155 The generative nature of expertise is expressed in social clinical roles:

156 clinician, mentor, specialist, expert. Practitioners take on increased

157 responsibility and expanded social roles as their experience grows, and each

158 successive role incorporates the one before. Fulfilling these roles also

159 contributes to the continued development of the practitioner's expertise,

160 creating a positive feedback cycle. Expertise results from cumulative and

161 continual learning and practice.

162

163 *Clinician*: The data indicated that generative expertise originates in reciprocal

164 relationships with birthing women, *being willing and teachable from the*

165 *woman and breech baby (MW103).*

166 *The stuff that I've learnt since [training] as an obstetrician has*

167 *probably been more instructive because I've learnt just through the*

168 *process of observation and working with women, rather than being*

169 *taught actively by someone else and being told, "This is the way*

170 *you have to do it" (OB4).*

171 Clinicians with generative expertise increase the likelihood of both planned

172 and successful breech births because their confidence instills the same in

173 birthing women.

174 *I found that my experience was influencing them in the decision*

175 *because all of my women were thinking about vaginal birth (MW3).*

176 Comfort and familiarity with the process of breech birth brings increased

177 flexibility and openness to follow the woman.

178 *As providers gain experience, for sure in my experience, I've gotten*
179 *more comfortable with the mother being in her chosen position*
180 *(MW105).*

181 Enablement of women results in further opportunities to attend breech births
182 through referrals:

183 *So one woman told the other one, and suddenly a lot of breech*
184 *births were appearing from everywhere. I think we attracted the*
185 *breech births (MW9).*

186 Successful breech births attract further opportunities, and these clinicians
187 have the potential to develop into mentors.

188

189 *Mentor:* Comparatively experienced clinicians mentoring others at births
190 increase the likelihood that breech births will occur.

191 *We had a Dutch registrar who was very comfortable with breech*
192 *birth, and I had the opportunity to do a few, instead of the usual*
193 *scenario where the registrar's trying to race women to the operating*
194 *theatre as fast as possible. She used to come into the room and just*
195 *stand there. "I'll help if you need me, but just press on" (MW4).*

196 They are able to *step back and watch it unfold (MW113)*, enabling colleagues'
197 skills to come forward. Some participants described intentionally practising the
198 skill of stepping back, promoting shared responsibility for breech births, and
199 resisting attempts of less experienced colleagues to step aside.

200 *I could stand back because I wanted them to be able to do it when*
201 *there was nobody else. So it was important that I could do it myself.*

202 *But then, "I'm here so that you can do it" (MW7).*

203 When mentors with generative expertise support other clinicians at breech
204 births, their presence brings into the birth space an increased flexibility and
205 openness to follow the woman. They increase the likelihood and safety of
206 breech births among the colleagues they work alongside, and maintain their
207 own proficiency in the process. Some may develop into specialists.

208

209 *Specialists:* Breech specialists are experienced clinicians who have an
210 extended formal role working with breech presentation in a local setting. They
211 provide theoretical teaching in addition to attendance and mentorship at
212 breech births.

213 *In retrospect if somebody had given me a workshop that I now give*
214 *to people who might find themselves in that situation, I would have*
215 *left her [kneeling] and had her just push the baby out spontaneously,*
216 *which she would have done beautifully (OB1).*

217 In the interview data, skilled teaching had the effect of increasing colleagues'
218 confidence to attend breech births, by increasing their conceptual
219 understanding.

220 *[The workshop] left me with the feeling that I really understood*
221 *normal breech birth and how to identify when there was a problem*
222 *and what to do about it (MW5).*

223 The interview data indicated specialists were sought out for reflective
224 supervision activities such as *preparing* for births, *talking through* births and
225 birth videos, and *picking up tips*, each of which were mentioned by multiple
226 participants. Specialists also undertake service activities such as auditing

227 outcomes of breech births, identifying patterns in the experiences of other
228 clinicians. The skilled teaching and reflection provided by specialists with
229 generative expertise function to increase the likelihood and safety of vaginal
230 breech birth by increasing confidence, skill and understanding among
231 colleagues throughout the local maternity care context. Some specialists take
232 on additional leadership and advocacy activities outside their local settings, in
233 the role of a breech expert.

234

235 *Experts: A breech expert is a specialist who mobilizes knowledge across*
236 *multiple settings: Understanding and teaching. Research and mentorship.*
237 *Good outcomes over a high volume (MW105).* Each of these activities
238 potentially increases the availability and safety of vaginal breech birth. Expert
239 clinicians maintain the openness and flexibility characterizing their work with
240 women and colleagues. This involves conducting their own research, being
241 open to the work of others, and trying new methods [Table 2]. Although
242 breech experts are heavily involved in teaching, the data were thick with
243 references to the need to continue learning, from women, colleagues and new
244 research:

245 *We always learn. I think loving it and doing it often make you the right*
246 *person but once you stop being humble in the presence of breech birth*
247 *you will probably become dangerous (MW110).*

248 The role of a breech expert is primarily in the synthesis and dissemination of
249 knowledge about breech birth, in addition to their own experience, highly
250 relevant to the expert's credibility.

251

252 *Alienating Authority*

253 Some of the more experienced clinicians, particularly midwives, expressed
254 doubt about the concept of “breech expertise,” and concern about the effect of
255 *segregating breech into a specialty* (MW102).

256 *I am not a fan of the “expert” model. I am into competence for all as a*
257 *basic skill* (MW101).

258 Analysis of the data revealed an antithetical expression of breech expertise,
259 *alienating authority*, which may help explain this resistance.

260

261 *Alienating authority* claims a mandate through experience or professional
262 hierarchy, but fails to generate consistent availability and safety of breech
263 births. This may involve over-estimation of one’s own skill, disregard of the
264 skills and experience of others, or misrepresentation of skill and its ability to
265 mitigate risks: *Claiming to be an ‘expert’ could mislead* (MW102). Alienating
266 authority is characterized by inflexibility and close-mindedness, which limits
267 continued learning: *They like to do it like they did it all the time.* (OB104). In
268 this data, individuals exhibiting alienating authority were described as
269 exercising more control over birthing women and colleagues: *And then the*
270 *consultant just came in and basically was just like, “Right I need an epidural*
271 *put in ...* (MW1). This type of expertise prioritizes one clinician’s preferences,
272 which may be asserted without relation to the needs and wishes of the
273 birthing woman or colleagues due to the implicit hierarchical nature of their
274 relationship.

275

276 Clinicians exercising alienating authority made care decisions based on

277 limiting and inaccurate predictions, undermining trust.

278 *A woman who had been told that she wouldn't actually go into labor*

279 *so that's why she had to have a caesarean section, she came into*

280 *hospital in advanced labor so was very shocked about it all (MW1).*

281 This also applied to alienating teaching and organizational practices:

282 *"You've gotta have the woman flat on her back in lithotomy, and*

283 *she's gotta have an epidural in, and she's gotta have an episiotomy,*

284 *and you have to do this, this and this in this order. You can't do*

285 *anything other than that, otherwise it's all gonna go pear shaped"*

286 *(OB4).*

287 Alienating authority diminished, rather than enabled, shared responsibility and

288 experience throughout the team. This sometimes involved professionals in

289 senior roles assuming authority: *Because there was that superior obstetric*

290 *view, I felt like I needed to defer to him (MW6).* But the evidence also

291 indicated some clinicians eagerly deferred to others during breech births,

292 relinquishing the opportunity to acquire hands-on clinical practice, along with

293 their own clinical responsibility for the births. Alienating authority undermines

294 relational aspects of care. This potentially leads to fewer breech births, less

295 flexibility for women and less confidence among colleagues, contributing to

296 *the dying process (OB104) for breech birth.*

297

298 *Mechanisms of sustainability*

299 In this data, three mechanisms supported the gradual role expansion

300 associated with the development of generative expertise: affinity, visibility and

301 relationship. Individuals functioning with generative expertise were repeatedly

302 described as experiencing *joy, love* and *beauty* in their work with breech
303 births, which contributed to sustaining their interest. Specialists teaching
304 breech skills within and outside of their local contexts created visibility with
305 two important results: increased volume and learning. They were called by
306 colleagues to more births and were sought out by more women desiring
307 vaginal breech births. They were also consulted to *talk through* more births,
308 enabling them to recognize patterns beyond their own personal experience.
309 Finally, their practice was based on relationship and response. This required
310 for each participant some degree of flexibility to follow the woman and the
311 rhythms of physiological birth, involving being on-call wherever possible, even
312 within systems where this was not the norm. Three mechanisms of limitation
313 promoted alienating authority: fear, under-utilized experience, and
314 professional hierarchy.

315

316 **Discussion**

317 Expertise is defined by its on-going function: the generation of comparatively
318 good outcomes, and confidence and competence among colleagues.

319 Generative expertise is developed and expressed in social clinical roles,
320 which expand as experience grows: clinician, mentor, specialist, expert. In
321 most contemporary maternity services, these social clinical roles are either
322 not present, or filled on an *ad hoc* basis by practitioners with an interest,
323 resulting in missed opportunities and inconsistently available services.^{5,6} Our
324 analysis indicates that to develop expertise within a service, clinicians who
325 have an interest in breech birth should be enabled to perform these roles
326 more regularly, increasing the likelihood that a core group attends the 3-6

327 births per year recommended for maintenance of breech skills.¹³ Clinicians
328 attending breech births should receive theoretical training based on
329 recognized standards of practice,¹³ and be supported whenever possible by
330 experienced colleagues who share clinical responsibility, until they are
331 confident in their ability to identify and resolve significant complications.¹⁴
332 Services should recognize that this may take time to develop and require
333 appropriate compensation. Absolute safety cannot be guaranteed, and a poor
334 outcome is not necessarily evidence of incompetence. But adverse outcomes
335 incurred by unsupported clinicians with minimal experience will have a
336 negative impact on continued development of breech services.

337

338 The RCOG breech guideline¹ recommends, “Guidance for the ...
339 management of vaginal breech birth should be developed in each department
340 by the healthcare professionals who supervise such births (p7).” Similarly, our
341 research reminds us that breech expertise resides within individuals rather
342 than institutions. Enabling keen and experienced practitioners to lead the
343 design of care models that meet personal and local needs may result in safer,
344 more accessible, and more sustainable services. Our data suggest this will
345 involve supporting experienced individuals to work flexibly, in order to attend
346 more breech births, mentor colleagues, provide formal teaching, and share
347 knowledge with wider research and practice networks.

348

349 In contexts where these social clinical roles are not recognized, small
350 numbers of vaginal breech births dispersed across many different
351 practitioners, with little or no experienced mentorship, disables the

352 development of any significant expertise. This leads to over-reliance on
353 formulaic management plans, lacking the flexibility of a living art, and has
354 safety implications for the vaginal breech births that do continue to occur.
355 Additionally, this research indicates that when these social clinical roles are
356 not available within local care contexts, practitioners who wish to develop their
357 own skills with breech may look to experienced practitioners perceived as
358 experts, who are otherwise alienated from mainstream practice. The lack of
359 open, collaborative dialogue and shared learning between the mainstream
360 and its margins may also have negative safety consequences. Similarly, care
361 should be taken within institutions not to segregate specialists as the only
362 breech attendants, possessing an exclusive skill set. Such circumstances
363 replicate the problematic model of alienating authority. Specialist roles should
364 support the wider maternity care team and be accountable to them.

365
366 A recent systematic review suggested that experienced mentorship in clinical
367 practice is an important corollary to breech training, associated with higher
368 rates of attendance at actual vaginal breech births.¹⁸ Models of specialist care
369 provision have been explored with good results in areas such as twin
370 pregnancy and birth¹⁹ and birth after caesarean section.^{20,21} While much work
371 has been done on the benefits of models of continuity of carer provided by
372 midwives,^{22,23} less research has addressed the impact of continuity of
373 obstetric carer, and trusting, stable relationships within the professional team.
374 Continuity has been identified in qualitative research as a significant factor
375 influencing the success of complex physiological birth,²⁴ and the organization
376 of obstetric and specialist midwifery services to provide greater levels of

377 relational continuity deserves further research.²⁵ Evaluation of a breech
378 team's performance should include feedback from women and colleagues as
379 well as perinatal outcomes, to ensure that the influence of specialists is
380 generating comparatively better outcomes, competence and confidence
381 throughout the entire service.

382

383 The strength of this research is the integration of data from 26 participants
384 who are perceived as experts, 14 participants who are at an earlier stage of
385 developing upright physiological breech skills, and 2 service user
386 representatives. The participants worked in various international maternity
387 care settings. This variety may increase the applicability of the findings across
388 settings. But the heterogeneity of the sample means that the findings are not
389 oriented toward implementation in any specific setting, and will therefore
390 require further local work to implement successfully. Additionally, the methods
391 used in this study do not enable us to verify our findings by demonstrating an
392 association with improvement in outcomes. The implementation and effect of
393 breech roles and teams remains to be tested predictively in practice. The
394 opposing belief among a portion of participants that identification of specialists
395 would limit, rather than expand, availability of breech births requires careful
396 consideration in any setting intending to trial a breech team. A further
397 limitation is that the participants in the research were all oriented to
398 physiological breech birth,²⁶ involving upright maternal positioning.^{27,28}

399 Although many of the participants developed experience within settings where
400 this practice was not normative, the social clinical roles may not function in the
401 same way in maternity care contexts where women and/or their attendants

402 are not able to utilize upright birthing positions.

403

404 In conclusion, specialist teams may facilitate the development of generative
405 expertise within maternity care settings, and this may help preserve women's
406 autonomy in the provision of safe, respectful and dignified maternity care.⁸

407 Organizational systems should be put in place for flexible working, enabling
408 specialists to support women and colleagues at breech births wherever
409 possible, provide teaching and exchange lessons learned with other breech
410 specialists. Any implementation of breech teams must be fully evaluated.

411 Such evaluation should include the views of service users, colleagues and
412 managers regarding the usefulness the care model, opportunities and barriers
413 to implementing it, and perinatal outcomes.

414

Author Version

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