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Citation: Rocca-Ihenacho, L., Yuill, C., Thael, E. & Uddin, N. (2023). The Midwifery Unit Self-Assessment (MUSA) Toolkit: embedding stakeholder engagement and co-production of improvement plans in European midwifery units. *Evidence and Policy*, 19(1), pp. 165-176. doi: 10.1332/174426421X16448363973807

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Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/28181/>

Link to published version: <https://doi.org/10.1332/174426421X16448363973807>

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1 **Title:**
2 **The Midwifery Unit Self-Assessment (MUSA) Toolkit: embedding stakeholder engagement**
3 **and co-production of improvement plans in European midwifery units**

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14

15 **Abstract:**

16

17 **Background**

18 For women with straightforward pregnancies midwifery units (MUs) are associated with
19 improved maternal outcomes and experiences, similar neonatal outcomes, and lower costs
20 than obstetric units. There is growing interest and promotion of MUs and midwifery-led
21 care among European health policymakers and healthcare systems, and units are being
22 developed and opened in countries for the first time or are increasing in number. To
23 support this implementation, it is crucial that practice guidelines and improvement
24 frameworks are in place, in order to ensure that MUs are and remain well-functioning.

25

26 **Aims**

27 This project focused on the stakeholder engagement and collaboration with MUs to
28 implement the Midwifery Unit Self-Assessment (MUSA) Tool in European MUs. A rapid
29 participatory appraisal was conducted with midwives and stakeholders from European MUs
30 to explore the clarity and usability of the tool, to understand how it helps MUs identifying
31 areas for further improvement and to identify the degree of support maternity services
32 need in this process.

33

34 **Key conclusions of the paper**

35 Engagement and co-production principles used in the case studies were perceived as
36 empowering by all stakeholders. A fresh-eye view from the external facilitators on dynamics

37 within the MU and its relationship with the obstetric unit was highly valued. However,
38 micro-, meso- and macro-levels of organisational change and their associated stakeholders
39 need to be further represented in the MUSA-Tool. The improvement plans generated from
40 it should also reflect these micro-, meso- and macro-levels considerations in order to
41 identify the key actors for further implementation and integration of MUs into European
42 health services.

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45 **Key words/short phrases:**

46 Midwifery Units; Co-production; Continuous improvement; Stakeholder engagement

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49 **Key message:**

- 50 • Engagement and co-production principles used in the case studies were perceived as
51 empowering by all stakeholders
- 52 • A fresh-eye view from the external facilitators were highly valued by stakeholders
- 53 • Micro-Meso-Macro levels of change need to be further represented in the MUSA-
54 Tool
- 55 • The high impact actions need to reflect the Micro-Meso-Macro levels to identify the
56 correct players.

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78 **Title:**
79 **The Midwifery Unit Self-Assessment (MUSA) Toolkit: embedding stakeholder engagement**
80 **and co-production of improvement plans in European midwifery units**

81
82 **Manuscript**

83
84 **Background**

85
86 Evidence indicates that midwifery units (MUs) are associated with improved maternal
87 outcomes and experiences, similar neonatal outcomes, and lower costs than obstetric units
88 (OUs) for women with straightforward pregnancies (Scarf et al. 2018). There is growing
89 interest and promotion of MUs and midwifery-led care among European health
90 policymakers and healthcare systems (Rayment et al. 2020). MUs are being developed and
91 opened in countries for the first time or are increasing in number (Rayment et al. 2020). To
92 support the scaling up of midwifery units, it is crucial that implementation support is in
93 place as well as practice guidelines and improvement frameworks, in order to ensure that
94 MUs are and remain well-functioning and to ensure fidelity (Carrol et al. 2007).

95 The Midwifery Unit Standards define a MU as a ‘Unit which offers primary maternity care to
96 healthy women with straightforward pregnancies in which midwives take primary
97 professional responsibility for the care’ (Rocca-Ihenacho et al. 2018:7). One of the core
98 characteristics of MUs is that they should be underpinned by a bio-psycho-social philosophy
99 of care which recognises the physiological, psychological and social needs of women and
100 birthing people with a focus on a positive transition to parenthood (Rocca-Ihenacho et al.
101 2018). This approach to maternity services differs strikingly to a medical-industrial model of
102 care which characterises OUs, focused on a risk-avoidance rather than on practices that
103 create health and wellbeing (McCourt et al. 2016). MUs may be located away from
104 (Freestanding or FMU) or adjacent to (Alongside or AMU) an obstetric service (Table 1)
105 (Rocca-Ihenacho et al. 2018).

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107 **INSERT**

108 **Table 1- Definition of Midwifery Unit (Rocca-Ihenacho et al. 2018)**

109
110 Despite strong evidence and policy recommendations for high income countries to scale up
111 the provision of MUs, implementation has been slow (Rayment et al. 2020). In the European
112 Union (EU) and the UK, only 14 countries have implemented MUs and not in a systematic
113 manner (Rayment et al. 2020). OUs remain the norm for birth, and in some European
114 countries, it is illegal to give birth outside of a hospital, meaning that the implementation of
115 Freestanding midwifery units (FMUs) faces significant systemic challenges (Rayment et al.
116 2020). In the UK, MUs are more common than in the rest of Europe, and in Wales all eligible
117 women have access to a local MU (Blotkamp et al. 2019; Aughey et al. 2019).

118

119 The number of AMUs in England has increased by 51% between 2011 and 2016, and births
120 in MUs have increased to 14% from a baseline of 5% in 2010 (Walsh et al. 2018),
121 representing a £10 million savings for the National Health Service (NHS) (calculation based
122 on Schroeder et al. 2012). In France, following the positive impact and the positive
123 outcomes of the implementation of the first five pilot MUs, legislation has passed in 2020
124 for the implementation of an additional 12 MUs (Journal Officiel De La République Française
125 2020). Recent mapping of English maternity services suggests MUs have the capacity to
126 support around 36% of all women during labour and birth, meaning they are still
127 underutilised across the UK and Europe (Walsh et al. 2018; Walsh et al. 2020).
128 Against this backdrop, the Midwifery Unit Network (MUNet), a European community of
129 practice with the objective of supporting the implementation and improvement of MUs
130 across Europe (Newburn and Rocca-Ihenacho 2018), has been collaborating with local
131 stakeholders in Spain, Portugal, Czech Republic and Bulgaria to support the implementation
132 of MUs for the first time. Significant effort has also been applied in Italy, France, Belgium
133 and Switzerland, where MUs exist but are still considered an exception to the norm.
134 MUNet includes 8,000 members in its social media platforms and offers support to its
135 members via networking, conference organisation, training, consultancy and research in
136 collaboration with its academic partner, City, University of London. A core aim of MUNet is
137 to promote an organisational culture that embraces the bio-psycho-social philosophy of
138 care and positive interdisciplinary collaboration (Rocca-Ihenacho et al. 2018; Rayment et al.
139 2020). MUNet promotes midwives' sense of ownership and engagement with the MU,
140 allowing them to take a central role in the continuous improvement of the unit (McCourt et
141 al. 2016).
142 The aim of this project was to: 1) to implement the MUSA Tool in European MUs; 2) to
143 explore the clarity and usability of the tool; 3) to understand how the tool helps MUs to
144 identify areas for further improvement; 4) and to identify the degree of support maternity
145 services need in this process. In this paper we discuss the co-creation of the Midwifery Unit
146 Self-Assessment (MUSA) Tool and the stakeholder engagement activities conducted to
147 ensure that the tool is user-friendly and achieves its aim to support the continuous
148 improvement of MUs across Europe.

149

150 **Development of the Midwifery Unit Self-Assessment (MUSA) Tool**

151 In 2018, MUNet in partnership with City, University of London and the European Midwives
152 Association (EMA) launched the first European Midwifery Unit Standards (Rocca-Ihenacho
153 et al. 2018; Rayment et al. 2020) with the aim of offering quality guidance to those working
154 in or planning a new MU. The development of the Midwifery Unit Standards was a co-
155 produced and evidence-based process to ensure that it was robust and inclusive (Rayment
156 et al. 2020). It included a systematic review and synthesis of relevant evidence, a two-round
157 Delphi survey, case study interviews, stakeholder meetings, and peer review. In 2019, the
158 Midwifery Unit Standards received accreditation from the UK's National Institute for Health
159 and Care Excellence (NICE).

160 In 2019, researchers from City, University of London collaborated with an international
161 group of advisors and service user representatives to develop the MUSA-Tool with the
162 purpose of helping MU staff to benchmark their settings, performance, organisation of care
163 against each standard. The implementation of the MUSA-Tool includes the principle of co-
164 production with stakeholders in the creation of an advisory group which contributes to the
165 identification of strengths and area for improvement for the MU, based on the results of the
166 completion of the MUSA-Tool.

167

168 The development process involved:

- 169 • Review of existing self-assessment tools and the methodology behind indicators;
- 170 • Meetings with key international stakeholders and experts with experience in
171 creating indicators and self-assessment tools for maternity care;
- 172 • A Delphi survey with two rounds to achieve consensus amongst experts;
- 173 • Expert stakeholder event;
- 174 • Peer review.

175

176 Before the creation of the indicators and self-assessment tool commenced, existing self-
177 assessment tools and methodologies behind the creation of indicators were reviewed and
178 examined (Boesveld et al. 2017; NICE 2019). The research team consulted with the
179 American Associations of Birth Centres (AABC) and Euro-Peristat about the process of
180 developing indicators and a self-assessment tool. A first draft list of indicators was created
181 by tabulating all the MU Standards and identifying an outcome measure. The first round of
182 the Delphi survey was composed of ten sections and 77 proposed indicators which were
183 linked to each of the 29 standards. Experts with experience in developing, evaluating,
184 working in and managing MUs or in the creation of indicators were invited to fill out the
185 survey and to rate the proposed indicators on a scale from 1 to 5 based on the SMART
186 criteria (Specific, Measurable, Attainable, Relevant and Time-bound). Indicators that scored
187 less than 75% in the ranking process were either removed or reviewed. Seventeen of the 77
188 proposed indicators scored lower than 75% and were changed or left out.

189 Results from the open questions/comment sections of the first Delphi round suggested that
190 SMART was not an ideal criterion to rate the draft indicators, so a different rating method
191 was used for the second round. The second survey was composed of 66 proposed
192 indicators. Experts were invited to rate the proposed indicators between 1-5 for clarity and
193 measurability (1 – Not clear and measurable, 3 – Neutral, 5 – Very clear and measurable).
194 Eight of the 66 proposed indicators scored below 75% and again were reviewed or removed.
195 A first draft of the MUSA-Tool was then produced and peer-reviewed by ten experts in
196 developing and managing midwifery units, during a face-to-face stakeholder event. This
197 engagement event with European stakeholders led to a second draft version of the *MUSA-*
198 *Tool* which was then sent for a second round of peer-reviewing to seven international
199 experts in midwifery units. The research team then incorporated all the feedback received
200 and drafted the final First Version of the MUSA-Tool.

201 The resulting tool includes 61 indicators arranged into ten themes (Rocca-Ihenacho et
202 al.,2019) which mirror those of the Midwifery Unit Standards. When completing the MUSA-
203 Tool respondents will select either 'Yes', 'No', 'Partly' or 'Not applicable' to each indicator,
204 and 29 of the indicators have follow-up 'Yes' or 'No' questions in the event that the first
205 response was 'Yes'. Each indicator is also connected to one of the Midwifery Unit Standards,
206 so that users can refer to the Standards for clarification. The MUSA-Tool is formatted into an
207 Excel spreadsheet and can be completed either on a computer or on paper. As a first step
208 into the further development of the MUSA-Tool, the team collected feedback from those
209 working in and managing MUs who would be using the tool. A rapid appraisal was
210 conducted to gather the views of service providers and users on the tool and the
211 stakeholder engagement process to identify the degree of support needed by services in the
212 process of self-evaluation and co-creation of an improvement plan.

213

214 **Use of the MUSA-Tool and stakeholder engagement**

215 Rapid participatory appraisal is the method that has been used to collect qualitative
216 information about deprived areas in the United Kingdom but has also been extended to
217 planning primary care services (Murray et al. 1994). The key aims of rapid appraisals is to
218 gain stakeholders' own views on their needs, translate this information into action and
219 establish partnerships between different health service providers and local communities.
220 Information is collected about a variety of aspects that come together to form a multi-
221 layered pyramid that establishes the micro-, meso- and macro-level contexts of a
222 community or case study of focus. Rapid participatory appraisals are usually conducted
223 within two weeks; however, our appraisal was conducted over a period of three months due
224 to the impact of the first-wave of the COVID-19 pandemic on healthcare services,
225 professionals and the complexity of migrating a face-to-face project online. Our team liaised
226 with the service leaders and staff continuously to ensure that the participation was not
227 adding unnecessary stress to the stakeholders during the pandemic, and online stakeholder
228 events were postponed until the pressure on the services improved. Feedback from our
229 stakeholders reassured us that they found the focus on the positive plans of improving their
230 MU helpful and also they felt part of a community of practice.

231 We conducted the rapid appraisal in collaboration with four MUs (two AMUs and two
232 FMUs) across Europe in order to explore the usability of the MUSA-Tool in practice. The
233 locations were selected based on maximum variability and motivation, and both FMUs and
234 AMUs were included. A call was sent to MUNet partners and stakeholders via our Facebook
235 Group, and four MUs located in Belgium, Spain, Northern Ireland and Switzerland
236 responded with interest in participating in the evaluation project. In order to take part, the
237 MUs had to agree to:

- 238 • Complete the self-assessment tool
- 239 • Conduct a local stakeholder engagement to identify areas for improvement within
240 the unit and high impact actions after stakeholder engagement
- 241 • Identify short, medium- and longer-term improvement high impact actions

- 242 • Implement three to five short term high impact actions within six months
- 243 • Participate in a follow-up call with a researcher to discuss the experience of using
- 244 the MUSA-Tool
- 245 • Complete a second self-assessment after six months to identify which high impact
- 246 actions had been implemented

247

248 **Self-assessment and co-creation of high impact actions**

249 Basic background information was gathered via the form completed to apply to be part of
250 the project and some further information was gathered via email or a telephone call (see
251 table 2). Version 1 of the MUSA-Tool was sent to the MUs and support was offered in
252 completing it if necessary. Due to the COVID-19 pandemic, the FMU in Northern Ireland
253 decided to suspend the participation in view of the temporary closure of the FMU. The
254 remaining three MUs required some support (by LRI and ET) in completing the MUSA-Tool
255 in the form of a call to clarify some of the items of the tool.

256 The completed tools were then returned to the research team who evaluated the responses
257 and identified some key themes and areas for improvement in the MUs but did not share it
258 with the participating units until the stakeholder engagement took place to ensure co-
259 production and full participation of the stakeholders. The MU Teams were asked to organise
260 a stakeholder event to discuss the findings of the MUSA-Tool and identify they key high-
261 impact actions. The MUNet experts within the team (LRI and ET) offered support in the
262 identification of the high-impact actions in the form of face-to-face or virtual participation.
263 The three MUs received a different degree of support: the MU in Belgium received face-to-
264 face support during a stakeholder event (LRI and ET); the MU in Spain received support
265 during a two-hour video conference call (LRI); and the MU in Switzerland received no
266 additional support.

267 The MU teams were asked to organise an event for key stakeholders, including
268 obstetricians, neonatologists, service managers and service users to evaluate the responses
269 to the MUSA-Tool, discuss areas for improvement, and identify short-medium- and longer-
270 term actions. Two MUs managed to organise the stakeholder events, and a variety of
271 people attended, collaborating in the creation of the improvement plans. For instance, the
272 Belgian stakeholder event was attended by most of the MU team of midwives, the manager
273 of the MU, the head of obstetrics (of the hospital) and link obstetrician for the midwifery
274 unit and the midwifery manager of labour ward. The results of the self-assessment tool
275 were discussed, and a timely and measurable plan was made for improvements of the MU.
276 ET and LRI participated in the stakeholder event in Belgium face-to-face, which was
277 beneficial for gaining a better understanding of the support needs and how to develop the
278 MUSA-Tool further in terms of explanations, information-giving and synchronous support.
279 ET and LRI only disclosed their impressions and identification of high impact actions after
280 the team had discussed their views and priorities. It was clear that having outsiders coming
281 with a fresh-eye approach was useful to the team. A very positive discussion about the
282 MUSA-Tool responses arose during the stakeholder event, and this led to creating the initial

283 short-, medium- and longer-term actions with an identified lead and deadline for each
284 action. A short report was also provided by ET to the team, summarising some of the key
285 points of the discussion.

286 Similarly, the virtual meeting with stakeholders in Spain was very effective and led to the
287 identification of several improvement actions. On the other hand, the actions identified by
288 the Swiss team were less articulated and the lack of co-production with the interdisciplinary
289 team and MUNet was felt as a limitation due to the absence of outsiders' fresh-eye
290 impressions on the service. A summary of the high impact actions across the three case
291 studies was produced and is available in Table 3.

292

293 **INSERT**

294 Table 3- Improvement plans and high impact actions identified by stakeholders

295 **Lessons for further development of the tool**

296 Several strengths have emerged during this evaluation. Midwives thought that the tool was
297 structured well and straightforward, as well as an effective guide and motivator for
298 assessing different aspects of the functioning of the MU, which they had not considered
299 before. This made the teams enthusiastic about expanding their plans and empowered
300 them to have a wider approach to service improvement. The teams from Belgium and Spain
301 concluded that this was a useful exercise that should be repeated every three years,
302 depending on the service context. The MUSA-Tool was transferrable, not just to the
303 improvement plan, but also to other midwives; however, familiarity and confidence with the
304 Midwifery Unit Standards was key to its successful use. All of the MUs reported that the tool
305 reflected the Midwifery Unit Standards and strongly communicated the philosophy of care
306 that is promoted by them.

307 Discussions with the midwives about using the tool revealed that there were accessibility
308 issues, including language barriers for those who speak English as a second language. Some
309 stakeholders found the tool to be content heavy and some aspects of the tool more
310 applicable for a British maternity service context, meaning there was mismatch between
311 tool components and their organisational culture or MU team structure. Additionally, the
312 Swiss FMU was a private unit, while the other two AMUs were part of national health
313 services. The Midwifery Unit Standards and MUSA-Tool have been primarily based on a
314 publicly-funded, nationalised health service context, meaning they could be less suitable for
315 private systems, which carry different considerations when organising care.

316 Support from MUNet in-between self-assessment and improvement plan creation,
317 especially for identifying high impact areas and establishing timeline, was crucial. The level
318 of support was equally important, in that it appeared to determine the MUs ability to
319 complete the self-assessment and improvement plan. The Belgian MU, which received face-
320 to-face support, completed the self-assessment twice and generated both short- and long-
321 term high impact actions, without the need for additional support during implementation.

322 The Spanish MU, which received a two-hour video consultation completed the tool once
323 and generated actions with a timeline but requested additional support during
324 implementation. Finally, the Swiss MU, which received no additional support, completed
325 the self-assessment, with some clarification needed, and generated high impact actions
326 without a clear timeline.

327

328 **Areas for improving the MUSA-Tool**

329 Through collaboration with the MUs, we identified how to further improve the MUSA-Tool
330 by eliminating some redundancies, clarifying the language and including a step-by-step
331 guide about how to use it and the available support by MUNet with the MUSA- Tool.

332 More work with EU partners is needed to address the feedback about the requirement to
333 adapt the Midwifery Unit Standards further to the European context and especially to
334 privately-funded health care services. To what extent these concerns can be ameliorated
335 through translating the Midwifery Unit Standards and MUSA-Tool into other languages and
336 using locally salient terminology also remains to be seen. Translation of each document into
337 Italian and Spanish is now complete, and Brazilian Portuguese, Czech, Dutch/Flemish and
338 French is currently underway. For the English version, we did not conduct a literacy test for
339 readability in this phase but plan to do one as part of the next round of improvement.

340 Besides translation, improving the electronic interface of the MUSA-Tool will also work
341 towards greater accessibility and usability. We plan to create supporting materials both in
342 the form of a video guidance and an interactive page on the MUNet website for
343 stakeholders to guide the use of the tool. We are exploring IT solutions to develop an
344 interface for the tool that is visually easier to navigate, and which can generate suggestions
345 for high impact actions based on the answers to the self-assessment. Ideally, this interface
346 will incorporate a multi-level perspective, so that high impact action suggestions consider
347 the micro-, meso- and macro-level contexts in which MUs are operating.

348 MUNet is working on developing a more structured way of supporting the MUs that would
349 like to receive additional personalised support. This could be in the form of consultancy and
350 training, both face-to-face and remote. As we have presented, stakeholder engagement is
351 key for the successful implementation of the self-assessment tool, as the process requires
352 in-depth familiarity with and understanding of the Midwifery Unit Standards and connected
353 indicators. While we recognise the importance of engagement and consultation, more work
354 is still required to identify the optimal levels of each and how they might require to be
355 tailored around the needs of the MU and local context.

356

357 ***Micro-, meso- and macro-level considerations***

358 Adopting a multi-level perspective to service implementation, evaluation and improvement
359 is beneficial because it displays how complex interactions between stakeholders,
360 institutions and societies shape individual and organisational actions, as well as practice
361 outcomes (Currie, et al. 2012). In general, there is limited theoretical work on how
362 institutional and regulatory factors impact the implementation of midwives' full scope of
363 practice (Smith, et al. 2019).

364 From the implementation of the tool and work with stakeholders, it emerged that the
365 MUSA-Tool does not consider the micro-, meso- and macro-level perspectives of institutions
366 and organisations (Scott 1995) within MUs' improvement. Micro-level changes, such as
367 increasing visibility of the MU within a hospital by installing signs or becoming more
368 strategic through promotion of the MU online, are examples of short- and medium-term
369 high-impact actions which the MU staff is able to lead on and achieve. Other high impact
370 actions might be more difficult for MU staff to enact. Often there are limitations, regulations
371 or laws that are beyond MUs' control which make it all but impossible for midwives to
372 implement alone. These actions may require input from strategic players who operate at
373 the meso- and macro-levels: for instance, midwives may have a marginal role in antenatal
374 care despite having the remit and skills due to role division within the maternity services
375 (meso); or midwives might not be able to discharge infants because there are laws stating
376 this is legally done by neonatologists (macro). Each have implications on how MU staff
377 respond to certain indicators on the self-assessment tool.

378 Incorporating the recognition of the different levels is necessary in order to clarify at which
379 level improvement actions operate and which stakeholders must be involved. For infant
380 discharge, this requires changes to regulations at national level, implicating health care
381 professionals, policymakers, lawmakers and politicians. We found that, without this
382 incorporation, it is not straightforward to what extent a 'No' response is linked to meso- or
383 macro-level constraint nor can these constraints be considered when comparing individual
384 unit's responses and improvement plans. Clarifying indicators and actions by micro-, meso-
385 and macro-level will not only contextualise the tool for researchers and MU users, but also
386 organise larger scale improvement for MUs by clarifying which stakeholders need to be
387 engaged.

388

389 **Conclusions**

390 We conducted three stakeholder engagement case studies to gain feedback on the usability
391 and impact of a newly developed self-assessment tool based on the Midwifery Unit
392 Standards. In this paper we reported the stakeholders' experiences of using the MUSA-tool
393 and the high impact actions identified during the engagement events. Our rapid appraisal is
394 the first to explore the use of a self-evaluation and improvement tool in a variety of MU
395 settings, contributing to the implementation of the standards beyond the UK and into other
396 European countries. We expect to see an evolution of the Midwifery Unit Standards and,
397 consequently, of the MUSA-Tool, as more research on MUs located in European countries is
398 undertaken and published.

399 Support and facilitation were regarded as crucial for clarifying aspects of completing the
400 tool and useful in providing an expert fresh-eye view on the performance of the MU.

401 Stakeholder engagement was also quoted as paramount to develop a MU improvement
402 plan. Micro-, meso- and macro levels of organisational change and their associated

403 stakeholders need to be further represented in the MUSA-Tool. The improvement plans

404 generated from the self-assessment also must reflect the micro-, meso- and macro levels to

405 identify the key actors for further integration of MUs into European health services and
406 increase the chance of success. Future research on MUs and their improvement should
407 reflect the structural considerations of health care innovation and implementation.
408

409 **Research Ethics Statement:**

410 The authors of this paper have declared that research ethics approval was not required
411 since the paper does not present or draw directly on data/findings from empirical research.
412

413 **Contributor Statement:**

414 LRI and ET conducted the stakeholder engagement; NU conducted the analysis of the case
415 studies responses to the MUSA-Tool, CY conducted the rapid appraisal and all authors
416 contributed to the first and final drafts.
417

418 **Conflict of interest statement:** The Authors declare that there is no conflict of interest
419

420 **Funding details:** This work was supported by City, University of London under the The
421 Higher Education Innovation Funding (HEIF) Scheme.

422 **Acknowledgements:**

423 We would like to acknowledge the participation of all the stakeholders from Northern
424 Ireland, Belgium, Spain and Switzerland (not named to ensure anonymity and
425 confidentiality)
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