



appg

ALL PARTY PARLIAMENTARY  
PRO-LIFE GROUP

MARCH '20

# Foetal Sentience & Pain:

## AN EVIDENCE REVIEW

This is not an official publication of the House of Commons or the House of Lords and has not been approved by either House or its committees. All Party Parliamentary Groups are informal groups of Members of both Houses with a common interest in particular issues. The views expressed in this report are those of the group. James Evans, Right To Life UK and CARE contributed to the research and preparation of this Report.

# FROM THE CHAIR

The All Party Parliamentary Pro-Life Group (APPPG) is grateful to all those who gave evidence during our Inquiry and Review into foetal sentience and whether a foetus can feel pain in the womb.

There has been much academic debate and many significant developments in both practice and understanding of this issue over the past decade. Notably, since a Government announcement in 2019, the NHS now recommends pain relief for unborn babies undergoing surgery for spina bifida from 20 weeks gestation – the same age at which some unborn babies may be aborted by dismemberment without pain relief.<sup>1</sup> This has raised questions about the Royal College of Obstetricians

and Gynaecologists (RCOG) position on foetal pain and its guidance which states there is no need to provide analgesia for the foetus when performing an abortion at similar stages of gestation, or indeed any stage of gestation.

While we would not for a moment suggest there is certainty about the time from which a foetus can feel pain, there is nonetheless growing recognition that foetal sentience should be reappraised and taken more seriously.

This shift in concern was eloquently demonstrated as we concluded this Review with the recent publication in the *Journal of Medical Ethics* of an article "Reconsidering Fetal Pain."<sup>2</sup> It is hard to overstate the importance of this article because its lead author, Dr Stuart WG Derbyshire has in the past argued that the scientific evidence does not suggest a need take account of the potential of the foetus to feel pain.<sup>3</sup> Indeed, in 2010 he was part of the RCOG working group which argued that it was not necessary to provide analgesia in the case of abortion during any stage of pregnancy.<sup>4</sup>

Dr Derbyshire's latest article, however, co-written with John C Bockmann PA, argues that the latest developments in neuroscience suggest there is the potential for "an immediate and unreflective pain experience mediated by the developing function of the nervous system from as early as 12 weeks." In this context he suggests a case by case approach in which the "clinical team and the pregnant woman can consider whether fetal analgesia makes sense based on the clinical requirements for the abortion, the age of the fetus and the conscience of the parties involved." His co-author Bockmann, meanwhile, argues that "Fetal analgesia and anaesthesia should thus be standard for abortions in the second trimester, especially after 18 weeks..."<sup>5</sup> This resonates very much with the conclusion of this review.

Given the developments in the last 10 years, this Review recommends that there is now an urgent need for the RCOG to replace their outdated 2010 guidance which states that the provision of analgesia is not necessary for abortion at any gestation.<sup>6</sup> We argue that on the basis of the precautionary principle the current evidence base

is such that it would be prudent to offer women the option of analgesia for the foetus from the start of the second trimester and that this should be required from 18 weeks gestation.

With reference to the precautionary principle, Professor John Wyatt told our Inquiry "I think we should play safe, we should give the foetus the benefit of the doubt. We should assume that it is capable of experiencing pain and unpleasant sensations, and we should then treat the foetus appropriately, which would if necessary be with strong pain relief medication or with anaesthesia."

There has been much discussion in Parliament over recent years recognising animal sentience. It surely cannot be right that the killing of "protected animals" - all vertebrate animal foetuses subject to research from two thirds gestation - is subject to tighter legal regulation dealing with both the place where they are killed and the manner of their killing, to ensure that it is humane, than the law governing the lawful killing of human foetuses.

As Lord Alton of Liverpool states: "The last time the APPG engaged on a study of this particular issue was 1996, and even then considerable concern was expressed that a sentient developing human being could experience pain and suffering in the womb. The science and our knowledge has moved on considerably since then. The case for prudential safeguards and protection of the vulnerable is now overwhelming."

Once again, we thank all those involved with this Review, including the Parliamentary colleagues supporting it who are named below.

**Fiona Bruce MP**

Chair All Party Parliamentary Pro-Life Group

NB. All hyperlinks were checked for accuracy immediately prior to publication.

- 1 An NHS service specification advises this may take place from 19+0 weeks gestation; when gestational limits were raised in the form of a Prime Minister's Question it was suggested the lower limit was 20 weeks gestation. NHS England, *Service Specification: Open fetal surgery to treat fetuses with open spina bifida*, December 2018, 3, 8, <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2018/12/Open-fetal-surgery-to-treat-fetuses-with-open-spina-bifida.pdf>. House of Commons Written Question 214478, answered 6 February 2019, <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2019-01-30/214478/>.
- 2 Stuart W.G. Derbyshire and John C. Bockmann, "Reconsidering Fetal Pain," *Journal of Medical Ethics* 46, no. 1 (January 2020): 3–6, <https://doi.org/10.1136/medethics-2019-105701>.
- 3 For example, in 1996 Dr Derbyshire co-wrote an article describing foetal pain as a 'misnomer', see Stuart W.G. Derbyshire and Ann Furedi, "Do Fetuses Feel Pain? 'Fetal Pain' is a Misnomer," *British Medical Journal Clinical Research* 313, no. 7060 (September 1996): 795, <https://doi.org/10.1136/bmj.313.7060.795a>. In 2006, he argued against informing women of any risk of foetal pain. Stuart W.G. Derbyshire, "Can Fetuses Feel Pain?" *British Medical Journal* 332, no. 7546 (April 2006): 909–12, <https://doi.org/10.1136/bmj.332.7546.909>.
- 4 "Fetal Awareness: Review of Research and Recommendations for Practice — Report of a Working Party," Royal College of Obstetricians and Gynaecologists (RCOG), March 2010, <https://www.rcog.org.uk/globalassets/documents/guidelines/rcogfetalarawareness-wpr0610.pdf>.
- 5 Derbyshire and Bockmann, "Reconsidering Fetal Pain," 3–6.
- 6 RCOG, *Fetal Awareness*, March 2010.

“

The last time the APPG engaged on a study of this particular issue was 1996, and even then considerable concern was expressed that a sentient developing human being could experience pain and suffering in the womb. The science and our knowledge has moved on considerably since then. The case for prudential safeguards and protection of the vulnerable is now overwhelming.”

-Lord Alton of Liverpool

# CONTENTS

<b>From the Chair</b>	2
<b>Summary</b>	6
<b>Introduction</b>	8
<b>Definitions: Sentience &amp; Pain</b>	10
<b>Foetal Sentience &amp; Pain up to 12 Weeks</b>	12
<b>Foetal Sentience &amp; Pain between 12 &amp; 24 Weeks</b>	13
<b>Foetal Sentience &amp; Pain after 24 Weeks</b>	16
<b>What Happens to Foetuses after Birth who Experience Pain in the Womb?</b>	19
<b>Animal Rights v Human Rights</b>	20
<b>Conclusions &amp; Recommendations</b>	22
<b>Appendix 1: List of Witnesses &amp; Written Submissions</b>	26
<b>Appendix 2: Abstract of the Journal Article “Reconsidering Fetal Pain”</b>	26

Chair of the All Party Parliamentary Pro-Life Group:  
**Fiona Bruce MP**

---

This Report is supported by:

<b>Lord Alton of Liverpool</b>	<b>Nick Fletcher MP</b>
<b>Sir David Amess MP</b>	<b>Mary Glendon MP</b>
<b>Miriam Cates MP</b>	<b>Sir John Hayes MP</b>
<b>Chris Green MP</b>	<b>Sir Edward Leigh MP</b>
<b>Derek Thomas MP</b>	<b>Carla Lockhart MP</b>
<b>Bob Blackman MP</b>	<b>Baroness Masham of Ilton, DL</b>
<b>Fiona Bruce MP</b>	<b>Jim Shannon MP</b>
<b>Dr Lisa Cameron MP</b>	<b>Sir Desmond Swayne MP</b>
<b>Sir Jeffrey Donaldson MP</b>	<b>Martin Vickers MP</b>
<b>Baroness Eaton DBE, DL</b>	

# SUMMARY

“  
This Review makes a number of suggestions. The relevant RCOG guidance is nearly 10 years old and in the intervening period new research has become available.”

The All Party Parliamentary Pro-Life Group (APPPG) set out to review the developing scientific evidence of how fetuses develop in the womb, how the latest evidence correlates with the views of the Science and Technology Committee in 2007 and the Royal College of Obstetricians and Gynaecologists (RCOG) in 2010, and whether there can be improvements in patient care as a result of the latest evidence.<sup>7</sup>

This Review focuses on the evidence presented to the APPPG and draws on wider published research.

These issues are highly contested and there is no academic consensus. While foetal development milestones seem undisputed by those who gave evidence, debate remains over philosophical and conceptual problems about foetal pain that cannot be resolved by scientific evidence.

The Review identified a huge diversity of opinion between experts about when the foetus can experience pain. Some experts assert that the ability to feel pain is linked to the development of the thalamus and argue that one should assume that the foetus can feel pain from between 15 and 20 weeks. Others are of the opinion that pain is associated with the development of the cortex, which happens later, and they believe that the earliest that the foetus can feel pain is approximately 24 weeks.

From reviewing the evidence, arriving at a distinct position on when it is possible to assert

the earliest gestation at which the foetus can feel pain is not possible. What is very clear, however, is that the foetus does manifest stress responses from around 18 weeks gestation of a kind that can be seen in children and adults in relation to whom the stress responses would certainly be associated with pain.<sup>8,9</sup>

This Review makes a number of suggestions. The relevant RCOG guidance is nearly 10 years old and in the intervening period new research has become available.<sup>10</sup> In February 2019, the Government announced that spinal surgery for spina bifida would take place between 20 and 26 weeks of gestation with “*pain relief for the unborn baby...delivered intra-operatively.*”<sup>11</sup> This raises questions about the RCOG position on foetal pain and the guidance for abortion and the lack of analgesia at similar gestations. **The RCOG should review its guidelines having considered the available new evidence and adopt the precautionary principle in future guidance.**<sup>12</sup>

7 Six witnesses gave oral evidence; eleven submitted written evidence during March 2018. Please see details in the Appendix.

8 Citations for the research quoted in this paragraph are included in the remainder of the report.

9 This report uses the spelling ‘foetus’. Where authors use ‘fetus’, we have retained their spelling.

10 Derbyshire and Bockmann, “Reconsidering Fetal Pain,” 3–6.

11 House of Commons Written Question 214478, answered 6 February 2019.

12 The precautionary principle was first invoked by policy makers addressing key environmental issues. The version of the principle adopted in the context of this document aligns with certain academic thinking which considers it a useful tool with which to address medical decision making, advocating reasonable measures be taken to avoid threats that are serious and plausible. The principle acts as a worthwhile alternative to more utility-based approaches to problem solving. See: M. Peterson, “Should the precautionary principle guide our actions or our beliefs?” *Journal of Medical Ethics* 33, no. 1 (January 2007): 5–10, <https://doi.org/10.1136/jme.2005.015495>; David B. Resnik, “The Precautionary Principle and Medical Decision Making,” *The Journal of Medicine and Philosophy* 29, no. 3 (January 2004): 281–299, <https://doi.org/10.1080/03605310490500509>; Jonathan Hughes, “How Not to Criticize the Precautionary Principle,” *The Journal of Medicine and Philosophy* 31, no. 5 (November 2006): 447–464, <https://doi.org/10.1080/03605310600912642>.

# INTRODUCTION

“  
The question is not,  
'Can they reason?'  
nor 'Can they talk?'  
but 'Can they suffer?'”

-Jeremy Bentham, 1789

The **Terms of Reference** of this Review were to:

- Establish and assess the state of current evidence regarding foetal development and activity.
- Compare how current evidence informs clinical practice and whether current legislation is in step with medical advances.
- Assess the effect that developments in the womb have on physiological and psychological development post-birth.
- Assess the current state and effectiveness of the law, information and guidance relating to foetal development and activity.
- Examine how the law, guidance and support for practitioners and families can be developed going forward to reflect the current evidence regarding foetal development and activity.

By way of introduction, it is interesting, for the sake of perspective, to step back and consider wider discussions about sentience over time. During the 17<sup>th</sup> and 18<sup>th</sup> centuries, for instance, it was deemed appropriate by some to cut open live animals without the provision of any kind of pain relief. The justification for this was the belief derived from Cartesian philosophy that, notwithstanding the fact that animals responded as if they were in pain, only rational beings could experience and therefore be troubled by pain.<sup>13</sup>

This perspective was challenged by Jeremy Bentham who argued that the relevance of pain was not dependent on the ability to think rationally, which animals could not do, but rather to feel, which animals could do.<sup>14</sup> He wrote in 1789, “The question is not, ‘Can they reason?’ nor ‘Can they talk?’ but ‘Can they suffer?’”<sup>15</sup> This shift in thought paved the way for animal rights legislation and having some understanding of it is not without relevance to discussions about

how we approach human foetal sentience in the 21<sup>st</sup> century.

There are several schools of thought on what human foetuses feel in the womb, largely dominated by the views of the RCOG, who published a seminal paper in 2010 entitled *Fetal Awareness Review of Research and Recommendations for Practice*;<sup>16</sup> and a key journal article published in the Journal of the American Medical Association (JAMA) in 2005, *Fetal Pain, A Systematic Multidisciplinary Review of the Evidence* by Lee et al.<sup>17</sup>

In 2007, the House of Commons Science and Technology Select Committee reviewed scientific developments relating to abortion, including whether foetuses feel pain and whether that has any relevance to how abortions are conducted. The Committee concluded, “while the evidence suggests that foetuses have physiological reactions to noxious stimuli, it does not indicate that pain is consciously felt, especially not below the current upper gestational limit of abortion. We further conclude that these factors may be relevant to clinical practice but do not appear to be relevant to the question of abortion law.”<sup>18</sup> It should be noted that a minority report disagreed with these conclusions.<sup>19</sup>

This report looks at the key questions around foetal sentience and pain based on the evidence presented to the Review. It highlights the differing views and the evidence presented to the APPPG together with some of the wider publications in the field. Clinically, a pregnancy is dated from the first day of the woman’s last menstrual period (LMP). This day is counted as day 0. This briefing uses the same dating process: that is gestational age (time from LMP) rather than weeks from fertilisation, which is considered to be two weeks less than gestational age.<sup>20</sup>

13 Stephen Gaukroger, *Descartes’ System of Natural Philosophy* (Cambridge: Cambridge University Press, 2002), 180–214. Peter Sandøe, Stine B. Christiansen and Björn Forkman, “Animal Welfare: What is the Role of Science?” in *Animals, Ethics and Trade: The Challenge of Animal Sentience*, eds. Joyce D’Silva and Jacky Turner (Abingdon: Earthscan, 2006), 41.

14 Helen Proctor, “Animal Sentience: Where are We and Where are We Heading?” *Animals* 2, no. 4 (November 2012), 628–639, <https://doi.org/10.3390/ani2040628>.

15 Jeremy Bentham, *The Principles of Morals and Legislation* (London: T. Payne and Son, 1789), cccix, fn. a.

16 RCOG, *Fetal Awareness*, March 2010.

17 Susan J. Lee et al., “Fetal Pain: A Systematic Multidisciplinary Review of the Evidence,” *The Journal of the American Medical Association* 294, no. 8 (August 2005): 947–54, <https://doi.org/10.1001/jama.294.8.947>.

18 Science and Technology Select Committee, *Scientific Developments Relating to the Abortion Act 1967*, 29 October 2007, HC 1045-I, para 8, 54. See also paras 49–63, 22–26. <http://www.publications.parliament.uk/pa/cm200607/cmselect/cmsctech/1045/1045i.pdf>.

19 Science and Technology Select Committee, *Scientific Developments Relating to the Abortion Act 1967*, Minority Report: 71–76.

20 See also “Clarification of time limit for termination of pregnancy performed under Grounds C and D of the Abortion Act 1967,” Department of Health and Social Care, updated 28 March, 2019, <https://www.gov.uk/government/publications/abortion-clarification-of-time-limit/clarification-of-time-limit-for-termination-of-pregnancy-performed-under-grounds-c-and-d-of-the-abortion-act-1967>.

# DEFINITIONS: SENTIENCE & PAIN

**Key Points:** While foetal development milestones seem undisputed, debate remains over what the foetus experiences in the womb in terms of pain and sentience and how best to measure and interpret that pain. These differences have implications for the way in which abortions are managed.

The timeline for the physical development (e.g., organs, limbs etc) of foetuses is generally not contested by those who gave evidence, but how much a foetus experiences in the womb (sentience) is disputed.

The majority of the discussion concerning foetal pain gravitates towards looking at the maturation of neural pathways as a key indicator for determining at which point a foetus can feel pain. This approach is both logical and understandable given the fact that there must be a point at which the necessary minimal neural development exists, allowing pain and sentience to be possible. There are broadly two schools of thought on which part of the brain is required for pain perception: the thalamus<sup>21</sup> and the cortex.<sup>22</sup> Scientists also disagree about what pain is. It has been suggested that there are three categories of understanding of pain:<sup>23</sup>

- The subjective perception, which is that used by the RCOG. The RCOG define pain as "the unpleasant sensory or emotional response to...tissue damage," but also said that it is "important to consider the psychological aspects of pain. Broadly accepted definitions of pain refer to pain as a subjective experience involving cognition, sensation and affective processes" and suggests that the reaction to pain is a learned response.<sup>24</sup>
- The psychological definition used by Lee et al. in the JAMA article. Lee et al. argue that pain is a "psychological construct" which "may exist even in the absence of physical stimuli, as seen in phantom limb pain."<sup>25</sup>
- The objective observation, where pain is "a protective mechanism for the body...which causes the individual to react to remove the pain stimulus."<sup>26</sup>

In summary, the science is complicated and disputed and there are philosophical questions about what we mean by pain. This is aptly summarised by Professor Maureen Condic in written evidence, and in two other journal articles:

- "In the case of the fetus, science can observe the behavioural, hormonal and neurological responses to painful experiences, but cannot determine the precise psychologic experience of the fetus."<sup>27</sup>
- "Fetal pain remains a controversial subject both in terms of recognising its existence and the time-frame within which it appears."<sup>28</sup>
- "The issue of fetal pain is clouded by complex scientific, political, social, and religious issues, which have driven national groups into debate over their opinions regarding this emotionally charged controversy."<sup>29</sup>

If there were to be acceptance of the foetus being capable of some form of conscious awareness of pain, there would be significant implications for treatment. From a clinical perspective, it would have implications on how the foetus is treated and would mean it should be treated more like a patient, as is routinely done in surgical interventions on the unborn in the womb (e.g. for treatment of conditions like spina bifida). In this context there would be a strong moral argument for preceding abortion after a certain gestation with the use of analgesia or anaesthesia.

“

If there were to be acceptance of the foetus being capable of some form of conscious awareness of pain, there would be significant implications for treatment.

From a clinical perspective, it would have implications on how the foetus is treated and would mean it should be treated more like a patient, as is routinely done in surgical interventions on the unborn in the womb.”

21 Part of the forebrain, responsible for relaying information from the sensory receptors to areas of the brain where it can be processed, see "Thalamus," Encyclopaedia Britannica, <https://www.britannica.com/science/thalamus>.

22 The outer layer of the cerebrum (the cerebral cortex), composed of folded grey matter and playing an important role in consciousness. The cerebral cortex is responsible for the processes of thought, perception and memory and serves as the seat of advanced motor function, social abilities, language, and problem solving. See "Cerebral Cortex," Cambridge Dictionary, <https://dictionary.cambridge.org/dictionary/english/cerebral-cortex>. See also "Higher Cerebral Functions," Encyclopaedia Britannica, <https://www.britannica.com/science/human-nervous-system/Higher-cerebral-functions#ref942112>.

23 Sheila Page, "The Neuroanatomy and Physiology of Pain Perception in the Developing Human," *Issues in Law & Medicine* 30, no. 2 (Autumn 2015): 227–236.

24 RCOG, "Fetal Awareness," 3, 6.

25 Lee et al., "Fetal Pain," 947–54.

26 Dr Page, Oral Evidence, 20 March 2018, Slide 3.

27 Professor Condic, Written Evidence, Question 2.

28 Slobodan Sekulic et al., "Appearance of Fetal Pain Could be Associated with Maturation of the Mesodiencephalic Structures," *Journal of Pain Research* 9, (November 2016): 1031–1038, <https://doi.org/10.2147/JPR.S117959>.

29 Curtis L. Lowery et al., "Neurodevelopmental Changes of Fetal Pain," *Seminars in Perinatology* 31, no. 5 (October 2007): 275–282, <https://doi.org/10.1053/j.semperi.2007.07.004>.

# FOETAL SENTIENCE & PAIN UP TO 12 WEEKS

**Key Points:** Most experts agree that while there is considerable physical development of the foetus in the first 12 weeks, there is little evidence of sentience, or pain, which needs to be managed. A few journal articles affirm that pain receptors start developing from around 7–8 weeks, but there are disputes about what pain is and means.

In the first trimester, the heart begins to beat at 18 days after fertilisation (about 4 weeks gestation), basic structures of the nervous system are established, blood is formed, the foetus begins to move (kicking, stretching, fingers open/close and toes curl) and the first pain reflexes begin.

Since the RCOG report and Lee et al.'s paper in the JAMA argue for pain and sentience much later in pregnancy, they would contend that neither exists before 12 weeks. Evidence submitted presented a range of views:

- Dr Sheila Page, in additional evidence provided, said that foetuses are capable of pain perception as early as 7.5 weeks.<sup>30</sup> In her 2015 journal article, she states that a foetus shows reflex responses around this time and "The principal unit of pain perception is in place and rapidly expanding at 7–8 weeks" and "These responses are observable at 7.5 weeks and continue to develop until birth."<sup>31</sup> It is whether the presence of these responses can be used to infer conscious awareness of pain that is controversial.<sup>32 33 34</sup>

- Dr Martin Ward Platt said, "...clearly there is not a good argument under 12 weeks [for analgesia]."<sup>35</sup>
- The Charlotte Lozier Institute said, "Spino-thalamic circuitry capable of mediating a conscious response to pain develops between 12–18 weeks. Therefore, prior to 12 weeks consultants need not administer any fetal analgesia, and may give muscle relaxants only."<sup>36</sup>

30 Supplementary evidence from Dr Page, sections 1 and 2.

31 Page, "The Neuroanatomy and Physiology of Pain Perception in the Developing Human," 227–236.

32 Sekulic et al. say, "The reaction to touch begins during the 7<sup>th</sup> week of gestation when touching the peri-oral area results in the head turning away." Sekulic et al., "Appearance of Fetal Pain," 1031–1038.

33 The RCOG say, "information about tissue stimulation has reached the spinal cord from 8 weeks." RCOG, "Fetal Awareness," 8.

34 Marc Van de Velde et al. say, "Peripheral receptors develop from the seventh gestational week. From 20 weeks' gestation peripheral receptors are present on the whole body." Marc Van de Velde et al., "Fetal and Maternal Analgesia/Anesthesia for Fetal Procedures," *Fetal Diagnosis and Therapy* 31, no. 4 (April 2012): 201–209, <https://doi.org/10.1159/000338146>.

35 Dr Ward Platt, Oral Evidence, 27 February 2018.

36 Charlotte Lozier Institute, Written Evidence, Question 2.4.

# FOETAL SENTIENCE & PAIN BETWEEN 12 & 24 WEEKS

**Key Points:** There are differing views on which part of the brain controls pain sensations, when foetal pain starts and whether analgesia should be used in the second trimester. There is a general consensus that there is a foetal stress response starting between 16 and 20 weeks, although there is still disagreement about whether this means pain is experienced by the foetus. Neonates born at 22–24 weeks demonstrate pain responses.

During this period, thumb sucking begins, swallowing, facial muscles move, the foetus' eyes are shut, but are sensitive to light. All senses have developed (including hearing) and memories (subconscious) begin from this point onwards, including sounds remembered and recognised.

The thalamus develops between 8 and 16 weeks and functions as the main relay centre in the brain for sensory impulses going from the spinal cord to the cerebral cortex. A number of experts argue that the thalamic activation can mediate some limited form of awareness of pain.<sup>37 38</sup> The Charlotte Lozier Institute states that there is an "enormous and diverse body of data from both animal and human studies that indicates cortical circuitry is not required for a conscious experience of pain, and spino-thalamic circuitry is sufficient for this experience."<sup>39</sup>

The RCOG and Lee et al. in the JAMA paper argue there is no pain nor sentience until after 24 weeks gestation. Other experts argue there is evidence of foetuses beginning to experience pain later into the second trimester. One position is that "an early form of pain may appear from the 15<sup>th</sup> week of gestation onward...not related to any determined structures of the nervous system."<sup>40</sup> There is evidence of sensory structures for pain being present throughout the skin by 20 weeks.<sup>41 42</sup> Since the RCOG study was published, a 2013 study used functional magnetic resonance imaging (fMRI) to study the brains of healthy human foetuses still within the womb, between 24–39 weeks gestation. They found that functional neuronal connections sufficient to experience pain already exist by

24 weeks gestation.<sup>43</sup> The most recent journal article concluded "we no longer view fetal pain (as a core, immediate, sensation) in a gestation window of 12–24 weeks as impossible based on the neuroscience."<sup>44</sup>

Furthermore, we know that live births can occur towards the end of this time period. Professor John Wyatt reported in his oral evidence that he has "cared for a large number of babies from 22 and 23 weeks" gestation<sup>45</sup> and Dr Ward Platt reported that 60% of foetuses born in Newcastle at 23 weeks also survive if they are in the special care unit.<sup>46</sup> Evidence from the experience of neonates born at this stage of gestation suggests that they do experience pain once born: in written evidence, the British Association of Perinatal Medicine wrote "foetuses born as early as 22 weeks gestation do show physical and physiological responses to pain, and there is no reason to think that foetuses at this gestation are any different."<sup>47</sup>

Evidence indicates there is an hormonal stress response by foetuses between 16 and 20 weeks gestation.<sup>48</sup> Many witnesses cited evidence that when a needle is inserted into the womb and touches a foetus, the foetus demonstrates a "stress response" with increased levels of cortisol and  $\beta$ -endorphin concentrations,<sup>49</sup> which decrease

when pain-relievers are supplied.<sup>50</sup> Professor Condic said that the increases in these stress hormones were identical when comparing a 20 week foetus, a premature infant (20-25 weeks) and an adult.<sup>51</sup> However there is wide variation of views on what such a stress response means:

- The RCOG agree that there is a "stress response" by 18 weeks, but they do not conceive that this means "a negative emotional perception."<sup>52</sup>
- Lee et al. in the JAMA paper also note that there may be stress responses in a foetus (from 16 weeks) but says this is not indicative of pain: "Neither withdrawal reflexes nor hormonal stress responses to invasive procedures prove the existence of fetal pain, because they can be elicited by nonpainful stimuli and occur without conscious cortical processing" (i.e. without conscious awareness).<sup>53</sup>
- Giannakouloupoulos et al. studied fetuses from 20-34 weeks and argue for a stress response but note, "it is not possible to conclude that the fetus experiences pain". They go onto conclude, "Just as physicians now provide neonates with adequate analgesia, our findings suggest that those dealing with the fetus should consider making similar modifications to their practice. This applies not just to diagnostic and therapeutic procedures on the fetus, but possibly also to termination of pregnancy, especially by surgical techniques involving dismemberment."<sup>54</sup>
- Van de Velde et al. also said, "stress responses do not necessarily signify pain... However, the converse is the null hypothesis, i.e. in the absence of a stress response the fetus is unlikely to experience pain... recommended to provide adequate pain relief during potentially painful procedures during in utero life."<sup>55</sup>

Clearly it is not possible to prove the existence of foetal pain, but the critical question remains whether it is a reasonable possibility.

Foetal stress responses are an indicator of the possibility, but not necessarily the actuality of a pain response. This, however, does not justify acting as if there is no pain. If an adult bangs their thumb with a hammer, for example, the majority of the initial physiological responses are largely involuntary reflexes, but that in itself does not invalidate the pain experience, which is very real. The respondents to the Review were unanimous in promoting analgesia but varied as to when this should be used:

- The Christian Medical Fellowship suggested that there should be analgesia from 16 weeks on the precautionary principle;<sup>56</sup>
- Dr Ward Platt suggested around 18 weeks<sup>57</sup> and also said from a clinical perspective, "Once you get beyond 12 weeks then the argument for providing appropriate analgesia then becomes if you like progressively more strong. I would emphasise this business of progressively more strong argument, I could not give you a sharp cut-off: 'above that yes, below that no'. I think that would be the wrong way to look at it. I would be at variance with the notion of a continuum of development."<sup>58</sup>
- Dr Carlo Bellieni recommended analgesia from 20 weeks based on his own research.<sup>59</sup>
- Professor Condic said "At least seven independent studies have concluded that anaesthesia is warranted in cases of fetal surgery, beginning well before the second trimester" with one paper concluding that "the fetus is extremely sensitive to painful stimuli, and that this fact should be taken into account when performing invasive medical procedures on the fetus. It is necessary to apply adequate analgesia to prevent the suffering of the fetus."<sup>60</sup>

Those who argue for analgesia agree that the precautionary principle for pain management is needed in cases of either surgical intervention or abortion. As one author said, "it seems prudent to avoid pain during gestation."<sup>61</sup> However, the RCOG stated in 2010 that "there appeared to be no clear benefit in considering the need for fetal analgesia prior to termination of pregnancy, even after 24 weeks."<sup>62</sup> Lee et al. in the JAMA paper agreed saying, "Fetal anaesthesia or analgesia should not be recommended or routinely offered for abortion because current experimental techniques provide unknown fetal benefit and may increase risks for the woman."<sup>63</sup>

However, two of the authors of written submissions claimed that they knew of RCOG consultants who do provide an anaesthetic prior to a foeticide by potassium chloride.<sup>64</sup>

In February 2019, the Government acknowledged that new NHS spinal surgery treatment for babies in the womb who have spina bifida, available since April 2019, will take place with pain relief administered before foetal surgery between 20 and 26 weeks of gestation.<sup>65</sup> An NHS Service Specification suggests this may take place from 19 weeks.<sup>66,67</sup>

//

## In February 2019, the Government acknowledged that new NHS spinal surgery treatment for babies in the womb who have spina bifida, available since April 2019, will take place with pain relief administered before foetal surgery between 20 and 26 weeks of gestation."

- 37 Christian Medical Fellowship, Written Evidence, Question 1.1.
- 38 Professor Condic, Oral Evidence, 20 March 2018, Slide 2.
- 39 Charlotte Lozier Institute, Written Evidence, Question 3.1.
- 40 Sekulic et al., "Appearance of Fetal Pain," 1031-1038.
- 41 Lowery et al., "Neurodevelopmental Changes of Fetal Pain," 275-282. See also Van de Velde et al., "Fetal and Maternal Analgesia/Anesthesia for Fetal Procedures," 201-209.
- 42 A number of the respondents concluded that foetal pain was highly likely from 20 weeks gestation: Dr Houghton, Written Evidence, Questions 2.1 and 2.2; Medical Ethics Alliance, Written Evidence, Question 1.1, Christian Medical Fellowship, Written Evidence, Questions 1.1 and 2.2, Professor Condic, Oral Evidence, 20 March 2018, Slide 2; Dr Page, Supplementary Evidence, and Dr Ponesse, Oral Evidence, 20 March 2018, Slide 31.
- 43 Moriah E. Thomason et al., "Cross-Hemispheric Functional Connectivity in the Human Fetal Brain," *Science Translational Medicine* 5, no. 173 (February 2013): Research Article 24, <https://doi.org/10.1126/scitranslmed.3004978>.
- 44 Derbyshire and Bockmann, "Reconsidering Fetal Pain," 3-6.
- 45 Professor Wyatt, Oral Evidence, 20 March 2018.
- 46 Dr Ward Platt, Oral Evidence, 27 February 2018.
- 47 British Association of Perinatal Medicine, Written Evidence, Question 2.2.
- 48 Christian Medical Fellowship, Written Evidence, Question 2.1 and Roland Brusseu and Arielle Mizrahi-Arnaud, "Fetal Anesthesia and Pain Management for Intrauterine Therapy," *Clinics in Perinatology* 40, no.3 (September 2013): 429-442, <https://doi.org/10.1016/j.clp.2013.05.006>.
- 49 Xenophon Giannakouloupoulos et al., "Fetal Plasma Cortisol and  $\beta$ -Endorphin Response to Intrauterine Needling," *Lancet* 344, no. 8915 (July 1994): 77-81, [https://doi.org/10.1016/S0140-6736\(94\)91279-3](https://doi.org/10.1016/S0140-6736(94)91279-3). Note that their research was on fetuses between 20-34 weeks.
- 50 K.J.S. Anand and P.R. Hickey, "Pain and Its Effects in the Human Neonate and Fetus," *New England Journal of Medicine* 317, no. 21 (November 1987): 1321-1329, <https://doi.org/10.1056/NEJM198711193172105>.
- 51 Professor Condic, Oral Evidence, 20 March 2018, Slide 7.
- 52 RCOG, "Fetal Awareness," 14-15.
- 53 Lee et al., "Fetal Pain," 947-54.
- 54 Giannakouloupoulos et al., "Fetal Plasma Cortisol and  $\beta$ -Endorphin Response to Intrauterine Needling," 77-81.
- 55 Van de Velde et al., "Fetal and Maternal Analgesia/Anesthesia for Fetal Procedures," 201-209.
- 56 Christian Medical Fellowship, Written Evidence, Question 2.4.
- 57 Dr Ward Platt, Oral Evidence, 27 February 2018.
- 58 Dr Ward Platt, Oral Evidence, 27 February 2018.
- 59 Dr Bellieni, Written Evidence, Question 2.4.
- 60 Professor Condic, Written Evidence, Question 3, quoting from Sekulic et al., *Op Cit*. Charlotte Lozier Institute quoted from the same paper about the need for pain medication about the 15<sup>th</sup> week; Charlotte Lozier Institute, Written Evidence, Question 2.1.
- 61 Lowery et al., "Neurodevelopmental Changes of Fetal Pain," 275-282.
- 62 RCOG, "Fetal Awareness," viii.
- 63 Lee et al., "Fetal Pain," 947-54.
- 64 Dr Houghton, Written Evidence, Question 3.3; Christian Medical Fellowship, Written Evidence, Question 3.2.
- 65 See "Spinal surgery for babies in the womb on the NHS," NHS England Announcement, 22 December, 2018, <https://www.england.nhs.uk/2018/12/spinal-surgery-for-babies-in-the-womb-on-the-nhs>; See also: House of Commons Written Question 214478, answered 6 February 2019.
- 66 NHS England, *Open Fetal Surgery to Treat Fetuses with Open Spina Bifida*, 3, 8.
- 67 As one 2020 article says: "Given the evidence that the fetus might be able to experience something like pain during later abortions, it seems reasonable that the clinical team and the pregnant woman are encouraged to consider fetal analgesia." One of the authors argues that analgesia should be case dependent; the other that "Fetal analgesia and anaesthesia should thus be standard for abortions in the second trimester, especially after 18 weeks when there is good evidence for a functional connection from the periphery and into the brain." Derbyshire and Bockmann, "Reconsidering Fetal Pain," 5.

# FOETAL SENTIENCE & PAIN AFTER 24 WEEKS

**Key Points:** Those who believe the cortex is key to pain perception argue that pain is not experienced until later than 24 weeks, but even this is disputed. The RCOG argue that fetuses never experience consciousness while in utero. However, in the third trimester, evidence of what the fetus feels and experiences can be extrapolated from the experience of premature neonates, where there is evidence of pain responses and responses to external stimuli. There is also evidence that neonates at 37 weeks have more extensive and generalised pain responses to noxious stimuli compared with adults, which could have significant implications for earlier gestation fetuses.

In the last trimester, fetuses demonstrate turning their head from side to side, exhaling and inhaling fluid, and having a regular wake /sleep pattern. From around week 34, the activity is the same as that of a newborn.

Those who argue the cortex is key to pain also argue that pain is experienced in this trimester because, as Lee et al. in the JAMA paper set out, the connections to the cortex in the brain do not start to appear until 23–30 weeks. Lee et al. conclude "Evidence regarding the capacity for fetal pain is limited but indicates that fetal perception of pain is unlikely before the third trimester," but the authors do not contest pain after 30 weeks.<sup>68</sup> The RCOG says that "there is good evidence for claiming that the cortex is necessary for pain experience but not sufficient," because they consider that the pain experience only fully kicks in after birth.<sup>69</sup> Dr Ward Platt said, "The physical component [of pain] requires an active and functional cortex to generate it."<sup>70</sup>

However, arguing for the cortex as the main source of consciousness is problematic because of the evidence of consciousness possible in the absence of a cortex, as illustrated by the purposive and goal-directed behaviour in anencephalic children.<sup>71</sup> Dr Page strongly argued that "the cortex is not necessary for pain perception...the cortex only elaborates pain perception."<sup>72</sup>

Researchers have studied the reactions to pain of newborn infants born prematurely, arguing that there is little difference between the reactions of babies born at 23, 24 or 25 weeks. "Over the last 20 or more years, researchers have accumulated good observational, experimental and pathophysiological reasons to consider that babies at these gestations do feel pain, that they benefit from analgesia, and that pain experiences in early life cast neurophysiological and behavioural shadows far down childhood... there is no reason not to treat the 23-week fetus like a 24- or 25-week fetus, just as we do for babies."<sup>73</sup> Professor Vivette Glover said that pain was "highly likely" experienced from 26 weeks: "The area of uncertainty is earlier, from 10–26 weeks. From my view there is a lot of uncertainty, and there's a lot of disagreement...in this area."<sup>74</sup>

Indeed, there is evidence that fetuses may be more sensitive to pain than adults. A 2015 study of newborn babies less than seven days old showed that responses to potentially painful stimuli are significantly greater in newborn babies

compared with adults.<sup>75</sup> The press release said, "...some people have argued that babies' brains are not developed enough for them to really 'feel' pain, any reaction being just a reflex – our study provides the first really strong evidence that this is not the case."<sup>76</sup> Professor Condic said, "the earlier fetuses are delivered, the stronger their response to pain, due to the absence of later-arising brain circuits that inhibit pain responses in older infants and adults."<sup>77</sup> Dr Jonathan S. Ponesse also suggested that there is a "lack of inhibition of pain" in fetuses that is present in adults.<sup>78</sup>

## The Evidence around Wakefulness / Consciousness

The RCOG has argued against the need for pain management because of the belief that the fetus lives in a state of unconsciousness, stating: "that the fetus never experiences a state of true wakefulness in utero and is kept, by the presence of its chemical environment, in a continuous sleep-like unconsciousness or sedation."<sup>79</sup> This position is significantly influenced by the extensive review of evidence conducted by Mellor et al., largely informed by observations of foetal lambs.<sup>80</sup>

This position has been relied upon for informing parents that their foetus will not experience pain and to make the case that there is no need for any pain management in either in utero surgical interventions or abortions. It is, however, a position that is no longer adopted by the NHS in surgical interventions for spina bifida.

Other academic evidence suggests that there are well-defined periods when a foetus is active and sleeping, beginning at 28 weeks of gestation, and that these periods can be distinguished by 30 weeks on the basis of electroencephalography (EEG), recording electronic activity in the brain.<sup>81</sup> Dr Bellieni writes that "fetuses are awake about 10% of the total time in the last gestational weeks, and they can be aroused by external stimuli."<sup>82</sup> Conversely, Lee et al. in the

JAMA paper comment that "wakefulness alone is insufficient to establish consciousness, as unconscious patients in a persistent vegetative state may also have wakeful EEGs."<sup>83</sup>

Respondents to the Review presented an opposite view to the RCOG arguing there is evidence for consciousness later into pregnancy:

- Professor Glover argued that that there may be uncertainty before 26 weeks, but "In the last trimester, the foetus responds, learns, and it's equivalent to a preterm foetus."<sup>84</sup>
- Dr Ward Platt said that he thought there was "consciousness over the weeks from 23 into 24 into 25... I think it is a progressive developmental progress and process, and the notion of pain as experienced by us is probably developing during this time."<sup>85</sup> In a published journal article, he has disputed the RCOG position of no consciousness before birth, arguing "...the everyday experience of pregnancy – the felt behaviours and responses of the unborn baby, especially to sound – as well as much primary research literature on the human fetus, contains strong evidence for an opposite view. There is extensive literature, in humans, on fetal sleep and wakefulness, fetal motility, fetal memory, fetal hearing, fetal breathing and its control and fetal behaviour – and these are just examples that scratch the surface. None of this work is easily reconciled with the notion of a permanently unconscious human fetus."<sup>86</sup>
- Professor Wyatt said that there was a link between what the foetus and premature babies experience and said "...I think from my observation of extremely premature babies that they are sentient, they are conscious, and they are responsive to their environment."<sup>87</sup>
- Written and oral evidence highlighted uterine reactions to sound,<sup>88</sup> sensitivities to different languages,<sup>89</sup> suggestions of memory to taste and scent,<sup>90</sup> and the impact of dancing.<sup>91</sup>

68 Lee et al., "Fetal Pain," 947–54.

69 RCOG, "Fetal Awareness," 10.

70 Dr Ward Platt, Oral Evidence, 27 February 2018.

71 Professor Condic, Oral Evidence, 20 March 2018.

72 Dr Page, Oral Evidence, 20 March 2018.

73 Martin Ward Platt, "Fetal Awareness and Fetal Pain: The Emperor's New Clothes," *Archives of Disease in Childhood – Fetal and Neonatal Edition* 96, no. 4 (February 2011): F236–7, <http://dx.doi.org/10.1136/adc.2010.195966>.

74 Professor Glover, Oral Evidence, 20 March 2018.

75 Sezgi Goksan et al., "fMRI Reveals Neural Activity Overlap Between Adult and Infant Pain," *eLife* 4, e06356 (April 2015), <https://doi.org/10.7554/eLife.06356>.

- 76 See "Babies feel pain 'like adults'," Oxford University News, 21 April, 2015, <http://www.ox.ac.uk/news/2015-04-21-babies-feel-pain-adults>.
- 77 Professor Condic, Oral Evidence, 20 March 2018, Slide 6.
- 78 Dr Ponesse, Oral Evidence, 20 March 2018.
- 79 RCOG, "Fetal Awareness," viii. See also pages 11, 20 and 23.
- 80 David J. Mellor et al., "The Importance of 'Awareness' for Understanding Fetal Pain," *Brain Research Reviews* 49, no. 3 (November 2005): 455–471, <https://doi.org/10.1016/j.brainresrev.2005.01.006>.
- 81 Anand and Hickey, "Pain and Its Effects in the Human Neonate and Fetus," 1321–1329; Also referenced by Carlo V. Bellieni, Silvia Vannuccini and Felice Petralgia, "Is Fetal Analgesia Necessary During Prenatal Surgery?" *Journal of Maternal-Fetal and Neonatal Medicine* 31, no. 9 (May 2018): 1241–1245, <https://doi.org/10.1080/14767058.2017.1311860>.
- 82 Bellieni, Vannuccini and Petralgia, "Is Fetal Analgesia Necessary?" 1241–1245; See also Lowery et al., "Neurodevelopmental Changes of Fetal Pain," 275–282.
- 83 Lee et al., "Fetal Pain," 947–54.
- 84 Professor Glover, Oral Evidence, 20 March 2018.
- 85 Dr Ward Platt, Oral Evidence, 27 February 2018.
- 86 Ward Platt, "Fetal Awareness and Fetal Pain: The Emperor's New Clothes," F236–7.
- 87 Professor Wyatt, Oral Evidence, 20 March 2018.
- 88 Dr Ward Platt, Oral Evidence, 27 February 2018; Peter G. Hepper, B.S. Shahidullah, "Development of Fetal Hearing," *Archives of Disease in Childhood – Fetal and Neonatal Edition* 71, no. 2 (September 1994): F81–7, <https://dx.doi.org/10.1136%2Ffn.71.2.f81>.
- 89 Dr Page referred to Utako Minai et al., "Fetal Rhythm-Based Language Discrimination: A Biomagnetometry Study," *NeuroReport* 28, no. 10 (July 2017): 561–564, <https://doi.org/10.1097/WNR.0000000000000794>.
- 90 Dr Bellieni, Written Evidence, Question 1.1; See also: Julie A Mennella, Coren P. Jagnow, Gary K. Beauchamp, "Prenatal and Postnatal Flavor Learning by Human Infants," *Pediatrics* 107, no. 6 (June 2001): e88, DOI: <https://doi.org/10.1542/peds.107.6.e88>. Peter G. Hepper, "Memory in utero?" *Developmental Medicine & Child Neurology* 39, no. 5 (May 1997): 343–6, <https://doi.org/10.1111/j.1469-8749.1997.tb07442.x>.
- 91 Dr Bellieni, Written Evidence, Question 1.1; See also: Carlo V. Bellieni et al., "11- to 15-Year-old Children of Women Who Danced During Their Pregnancy," *Biology of the Neonate* 86, no. 1 (July 2004): 63–5, <https://doi.org/10.1159/000077676>; J. I. P. de Vries; B. F. Fong, "Normal fetal motility: An overview," *Ultrasound in Obstetrics & Gynecology* 27, no. 6 (June 2006): 701–11, <https://doi.org/10.1002/uog.2740>.

“

However, arguing for the cortex as the main source of consciousness is problematic because of the evidence of consciousness possible in the absence of a cortex, as illustrated by the purposive and goal-directed behaviour in anencephalic children.”

# WHAT HAPPENS TO BABIES AFTER BIRTH WHO EXPERIENCE PAIN IN THE WOMB?

**Key Points:** While respondents did not go into detail about what happens if pain is experienced by a foetus, academic evidence suggests that pain experienced in utero can have long-term effects post birth.

It is generally acknowledged that the long-term effect of pain on a developing foetus or infant will vary significantly according to the exposure and nature of the noxious stimuli. In 1987, Anand suggested that untreated pain in premature infants led to a poorer health and development outcome in these infants, saying,

*"In the long term, painful experiences in neonates could possibly lead to psychological sequelae."<sup>92</sup> The Charlotte Lozier Institute said, "...it is well established that painful experiences in premature infants have long-term negative impact on neural development and function indicating that pain clearly has 'meaningful' systemic consequences for the nervous system."<sup>93</sup>*

Other journal articles imply long term reactions to pain and possible anxiety related conditions: *"Exposure of the fetus and premature newborn to pain has been associated with long-term alterations in pain response thresholds, as well as changes in behavioural responses related*

*to the painful stimuli."<sup>94</sup> A 2014 journal article discusses the pain management of very pre-term babies (24-32 weeks) and the impact that painful procedures can have: "greater exposure to neonatal pain-related stress has been associated with altered brain microstructure and stress hormone levels, as well as with poorer cognitive, motor, and behavioural neurodevelopment in infants and children born very preterm."<sup>95</sup> Given the earlier statements about the equivalence of a foetus of the same gestation age to a premature infant, this has implications for treatments in the womb.*

92 Anand and Hickey, "Pain and Its Effects in the Human Neonate and Fetus," 1321–1329.

93 Charlotte Lozier Institute, Written Evidence, Question 2.1, referencing Manon Ranger and Ruth E. Grunau, "Early Repetitive Pain in Preterm Infants in Relation to the Developing Brain," *Pain Management* 4, no. 1 (March 2014): 4:57–67, <https://dx.doi.org/10.2217%2Fpmt.13.61>.

94 Quote from Lowery et al., "Neurodevelopmental Changes of Fetal Pain," 275–282. See also Van de Velde et al., "Fetal and Maternal Analgesia/Anesthesia for Fetal Procedures," 201–209.

95 See also Jillian Vinall and Ruth E. Grunau, "Impact of Repeated Procedural Pain-Related Stress in Infants Born Very Preterm," *Pediatric Research* 75, no. 5 (May 2014): 584–587, <https://doi.org/10.1038/pr.2014.16>.

# ANIMAL RIGHTS v HUMAN RIGHTS

Having begun this review with a reference to animal rights, it is perhaps appropriate to conclude by referring back to them. One of the most surprising facts resulting from this investigation is that the killing of “protected animals” (all vertebrate animal foetuses subject to research from two thirds gestation) is subject to tighter legal regulation - dealing with both the place where they are killed and the manner of their killing, to ensure that it is “humane” - than the law governing the lawful killing of human foetuses.

The definition of “protected animals” - including foetuses from two thirds gestation - is set out in Section 1 of the Animal Scientific Procedure Act 1986, while the law defining the place and the manner in which these animal foetuses may be killed is set out by Section 2(7), Section 15A and Schedules 1 and 2 of the Act. By contrast there are no statutory provisions governing the manner in which human foetuses should be aborted in order to guarantee them a “humane death”.

This is particularly striking in Great Britain where babies with a disability can be aborted up to term. It is strange but true that in these situations a dog foetus at seven weeks gestation will have more protections in law than a human foetus.<sup>96</sup> How odd that we should go to great lengths to define in law what constitutes a “humane” way of killing a dog or a rabbit in the womb but not bother to provide comparable legislation to guarantee human foetuses a “humane death”.

“

It is strange but true that in these situations a dog foetus at seven weeks gestation will have more protections in law than a human foetus.”

<sup>96</sup> “Animal (Scientific Procedures) Act 1986,” United Kingdom Public General Acts, <http://www.legislation.gov.uk/ukpga/1986/14/contents>.

# CONCLUSIONS & RECOMMENDATIONS

“  
The Review has highlighted significant areas of scientific, clinical and philosophical concern, and changes in clinical practice, which should lead the RCOG to review its 2010 guidance.”

## CONCLUSIONS

### **Establish and assess the state of current evidence regarding foetal development and activity**

The Review has confirmed that foetal sentience and pain cannot be resolved by scientific evidence alone. They depend upon prior philosophical and social commitments to humane attitudes in the treatment of vulnerable sentient beings. The evidence before us was mixed and disputed, but there are growing grounds for thinking that foetal pain needs to be taken much more seriously.

### **Compare how current evidence informs clinical practice and whether current legislation is in step with medical advances**

Professor Wyatt said, “I think we should play safe, we should give the foetus the benefit of the doubt. We should assume that it is capable of experiencing pain and unpleasant sensations, and we should then treat the foetus appropriately, which would if necessary be with strong pain relief medication or with anaesthesia.”<sup>97</sup>

The RCOG and Lee et al. in the JAMA recommend that no analgesia or anaesthesia is needed for the foetus in utero, nor for abortions. The evidence above suggests that this position is far from universally supported which has implications for abortions. Moreover, the NHS has recently started to provide intrauterine surgery for spina bifida, with pain relief.

### **The law currently takes no account of potential pain:**

- a) Between 14 and 24 weeks, abortions are often via surgical dilatation and evacuation (D&E),<sup>98</sup> described by the RCOG as “where the fetus is removed in fragments”<sup>99</sup> and is likely to experience some pain sensations, increasing with gestation. 7,487 cases of D&E were reported after 15 weeks in 2018.<sup>100</sup>
- b) After 22 weeks, abortions involve foeticide,<sup>101</sup> where potassium chloride is injected into the heart of the foetus to cause immediate cardiac arrest, so that there is not a live birth; or into the fluid around the foetus in which case it can take several hours for the foetal heart and movement to stop.<sup>102</sup> 1,081 cases of foeticide were reported after 20 weeks in 2018.<sup>103</sup>

What is the most appropriate response to the pain data considered by this investigation? There is a dynamic between the scientific and clinical approaches to care for/of foetuses. For the scientific approach, absolute objectivity is the priority; for the clinical approach, patient care is the absolute priority and this becomes a relevant concern *in utero* as the foetus develops the ability to autonomously feel, separately from the responses of its mother, even whilst the foetus is dependent, as is a newborn baby, on its mother. Scientific knowledge can inform and improve clinical practice causing medical practitioners to follow the best practice in caring for and treating their patients. Nevertheless, effective patient care should always err on the side of caution in the face of scientific uncertainty. **The Review has highlighted significant areas of scientific, clinical and philosophical concern, and changes in clinical practice, which should lead the RCOG to review its 2010 guidance.**

<sup>97</sup> Professor John Wyatt, Oral Evidence, 20 March 2018.

<sup>98</sup> “The Care of Women Requesting Induced Abortion,” RCOG, November 2011, para 7.7, Figure 7.1, 60, 63, <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/the-care-of-women-requesting-induced-abortion/>.

<sup>99</sup> RCOG, “Fetal Awareness,” 21.

<sup>100</sup> “Abortion Statistics 2018: Data Tables,” Department of Health and Social Care (DHSC), June 2019, Table 7a, <https://www.gov.uk/government/statistics/abortion-statistics-for-england-and-wales-2018>.

<sup>101</sup> RCOG, “The Care of Women Requesting Induced Abortion,” 57.

<sup>102</sup> “Feticide: Including Fetal Demise,” British Pregnancy Advisory Service, <https://www.bpas.org/abortion-care/abortion-treatments/the-abortion-pill/feticide/>.

<sup>103</sup> DHSC, “Abortion Statistics 2018: Data Tables,” Table 7a.

## Assess the effect that developments in the womb have on physiological and psychological development post-birth.

The evidence presented to the Review suggests, from academic papers, that there may be long-term effects on individuals who are exposed to painful stimuli in utero, but there is a lack of scientific data.

## Assess the current state and effectiveness of the law, information and guidance relating to foetal development and activity

Nine years on from the publication of the RCOG report, current evidence raises questions about the RCOG position concerning the point at which babies can feel pain, especially as pain medication is being provided to babies undergoing foetal surgery for spina bifida between 19 and 26 weeks of gestation. The Government has said that it has "brought this issue to the attention" of the RCOG, but that "it is for the RCOG to consider whether to revise its guidelines having considered the available evidence."<sup>104</sup> We call on the RCOG to do so.

# RECOMMENDATIONS

## Examine how the law, guidance and support for practitioners and families can be developed going forward to reflect the current evidence regarding foetal development and activity.

There are a series of policy and practical implications that could be considered:

### Provision of information:

- There is an argument for providing updated information on the development of the foetus to mothers facing invasive procedures (including abortion) affecting the foetus during pregnancy, as some consider that "women, their partners and fathers of their unborn children are inaccurately served" by the current RCOG guidelines.<sup>105</sup>

### Clinical guidelines:

- Given the precautionary principle and evidence highlighted by this review, the RCOG guidelines should be changed.
- During abortion/foetocide, diagnostic and therapeutic procedures, the pregnant woman should be made aware that, from the second trimester, the risk of pain at this stage cannot be ruled out and offered the option of analgesia for the foetus and that the use of analgesia should be required from 18 weeks gestation.<sup>106</sup>

### Policy development:

- An independent group of experts drawn from a range of organisations/medical practitioners should conduct a further review of the scientific evidence on foetal pain and awareness. Professor Condic said, "My professional assessment is that the RCOG guidelines on fetal development 2010 presents an incomplete and inadequate analysis of the development of fetal pain response that does not provide accurate and complete information to parents and should not be used as the basis of medical practice."<sup>107</sup> The review should take wide-ranging evidence in open session so there is full transparency.

## APPLICATION

### England and Wales

In considering the impact of this research it is important to be mindful that in England and Wales 5,301 abortions took place between 18 and 24 weeks in 2018.<sup>108</sup> It is also important not to forget that abortion is legal in Great Britain up to birth in cases of disability. This is particularly concerning because the scope for foetal sentience becomes greater and greater the older the foetus. 203 abortions took place after 24 weeks in 2018.<sup>109</sup> If only a portion of foetuses in these contexts experienced pain during the process of termination it would be deeply concerning.

104 House of Commons Written Question 269708, answered 1 July 2019, <https://www.parliament.uk/business/publications/written-questions-answers-statements/written-question/Commons/2019-06-26/269708/>.

105 Dr Houghton, Written Evidence, Question 3.1.

106 Derbyshire and Bockmann, "Reconsidering Fetal Pain," 3–6.

107 Professor Condic, Written Evidence, Question 4.

108 DHSC, "Abortion Statistics 2018: Data Tables," Table 5.

109 *Ibid.*

## APPENDIX 1: LIST OF WITNESSES AND WRITTEN SUBMISSIONS

The following individuals submitted oral and written evidence:

- Maureen Condic, Associate Professor of Neurobiology and Adjunct Professor of Pediatrics at the University of Utah School of Medicine
- Vivette Glover, Professor of Perinatal Psychobiology at Imperial College London
- Sheila Page, Associate Scholar, Charlotte Lozier Institute
- Jonathan S. Ponesse, Developmental Pediatric Neurologist, Children's Hospital of Eastern Ontario & Ottawa Children's Treatment Centre; Assistant Professor and Pediatric Neurologist, Department of Pediatrics, University of Ottawa
- Martin Ward Platt, Consultant Paediatrician, Royal Victoria Infirmary at Newcastle upon Tyne, Honorary Clinical Reader in Neonatal and Paediatric Medicine at Newcastle University

- John Wyatt, Emeritus Professor of Neonatal Paediatrics at University College London and previously Consultant Neonatologist at University College London Hospitals NHS Foundation Trust

The following individuals submitted written evidence:

- Anscombe Bioethics Centre
- British Association of Perinatal Medicine
- Dr Carlo Bellieni
- Charlotte Lozier Institute
- Christian Medical Fellowship
- Church of England
- Dr Mark Houghton (Retired GP)
- Medical Ethics Alliance
- Dr Peter Saunders
- One individual and one organisation requested to stay anonymous

## APPENDIX 2: ABSTRACT OF THE JOURNAL ARTICLE "RECONSIDERING FETAL PAIN"

During the period in which the report was being commissioned, an article, "Reconsidering Fetal Pain", by Stuart WG Derbyshire and John C Bockmann, was published. Clearly this is very relevant, and we felt it would be appropriate to include the abstract (below).

*"Fetal pain has long been a contentious issue, in large part because fetal pain is often cited as a reason to restrict access to termination of pregnancy or abortion. We have divergent views regarding the morality of abortion, but have come together to address the evidence for fetal pain. Most reports on the possibility of fetal pain have focused on developmental neuroscience. Reports often suggest that the cortex and intact thalamocortical tracts are necessary for pain experience. Given that the cortex only becomes functional and the tracts only develop after 24 weeks, many reports rule out fetal pain until the final trimester.*

*Here, more recent evidence calling into question the necessity of the cortex for pain and demonstrating functional thalamic connectivity into the subplate is used to argue that the neuroscience cannot definitively rule out fetal pain before 24 weeks. We consider the possibility that the mere experience of pain, without the capacity for self reflection, is morally significant. We believe that fetal pain does not have to be equivalent to a mature adult human experience to matter morally, and so fetal pain might be considered as part of a humane approach to abortion."*



appg

**ALL PARTY PARLIAMENTARY  
PRO-LIFE GROUP**

MARCH '20 © ALL RIGHTS RESESRVED