WHIASU
Wales Health Impact Assessment Support Unit
Uned Gymorth Asesu Effaith ar Iechyd Cymru

GIG CYMRU NHS WALES
Iechyd Cyhoeddus Cymru
Public Health Wales

The Public Health Implications of Brexit in Wales:

A Health Impact Assessment Approach

Technical Report: Part 1





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This Health Impact Assessment is in three parts:

1. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Executive Summary**

2. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Main Findings**

3. **The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach. Technical Report**
   a. Technical Report: Part 1 **(this document)**
   b. Technical Report: Part 2

This Health Impact Assessment (HIA) has been undertaken at a time of ongoing uncertainty and a rapidly evolving Brexit agenda. The HIA will continue to be reviewed and monitored post publication to reflect changing context, evidence and events, and where possible updated.

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Contents

1 Introduction

This Technical Report describes the methodology used and detailed evidence base on which the findings of the "The Public Health Implications of Brexit in Wales: A Health Impact Assessment Approach" are based.

This Health Impact Assessment (HIA) is in three parts and consists of:

Executive Summary – this report provides an overview of the HIA, its aim, context, the key findings, suggested future actions and recommendations.

Main Report – this report provides the context, a summary of the methodology, an analysis and appraisal of the evidence, suggested future actions and recommendations.

Technical Report:

Part 1 – this provides a full description of the methodology used for the HIA, findings from stakeholder interviews and workshop, findings from the literature review, and the tools and checklists used in the HIA.

Part 2 – this contains the full community health profile and matrices collating the evidence of impact across the determinants of health and population groups.

2 Health Impact Assessment

The European Centre for Health Policy (1999) Gothenburg Consensus is widely accepted as the seminal definition of Health Impact Assessment (HIA), and defines it as:

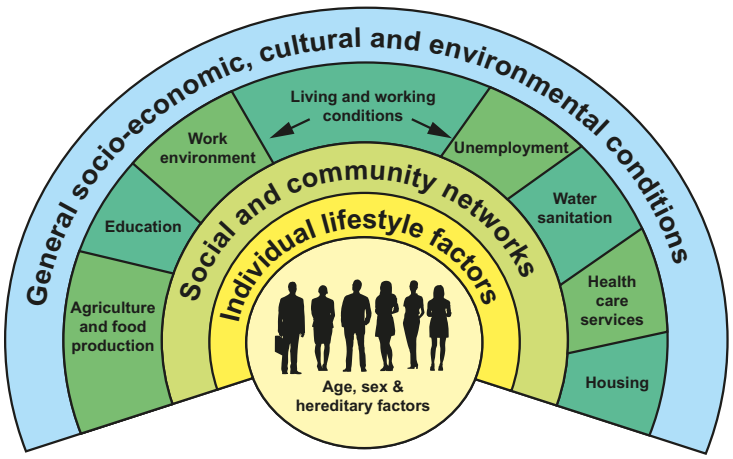
> ***'A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population'***

Health Impact Assessment (HIA) is a process which supports organisations to assess the potential consequences of their decisions on people's health and well-being. Currently, it is not statutory in Wales. However, the Public Health (Wales) Act 2017 has legislated that HIA will become statutory for public bodies in specific circumstances and this will likely take effect from 2019.

HIA provides an evidence based systematic yet flexible and practical framework that can be used to consider the wider effects of local and national policies or initiatives and how they, in turn, may affect people's health and well-being – in the present and in the future. A major objective or purpose of an HIA is to inform and influence decision-making or policy; however, it is not a decision-making tool per se.

HIA, as practised in Wales, is grounded in the WHO definition of health and well-being (WHO, 1948) which encompasses physical, mental and social health and well-being. HIA also views population impact through the lens and framework of the social determinants of health. This framework considers not just the biophysical and environmental health impacts which can be derived from policies, proposals and plans but also assesses the social factors which can have an impact and the population groups which are affected. These factors, such as environment, transport, housing, access to services and employment can all interact to a greater or lesser extent with an individual's lifestyle choices and genetic makeup to influence health and well-being. The diagram below summarises the relationship between these determinants.

Figure 1: A social determinants of health and well-being framework



Source: Dahlgren and Whitehead (1991)

HIA works best when it involves people and organisations who can contribute different kinds of relevant evidence, contextual knowledge and insight. The information is then used to identify measures to maximise opportunities for health and to minimise any detrimental impacts and identify any 'gaps' that need to be filled. HIA can be used to help address the inequalities in health that continue to persist in Wales by identifying any groups within the population who may be particularly affected by a policy or plan or proposal.

HIA is based on triangulation of health intelligence and data, stakeholder knowledge / evidence and a review of the literature including peer reviewed journals. As practised in Wales, HIA is grounded on this mixed methodological approach and embraces community and lay knowledge. Wales emphasises the inclusion of all stakeholders including local community citizens as part of the process. Including this type of qualitative evidence is important to assess individual and community concerns, anxiety and fears, for example, and data can be quantified for use in decision-making and / or mitigation and can give a more holistic, contextual view of impacts.

There are three main types of HIA - prospective, concurrent and retrospective.

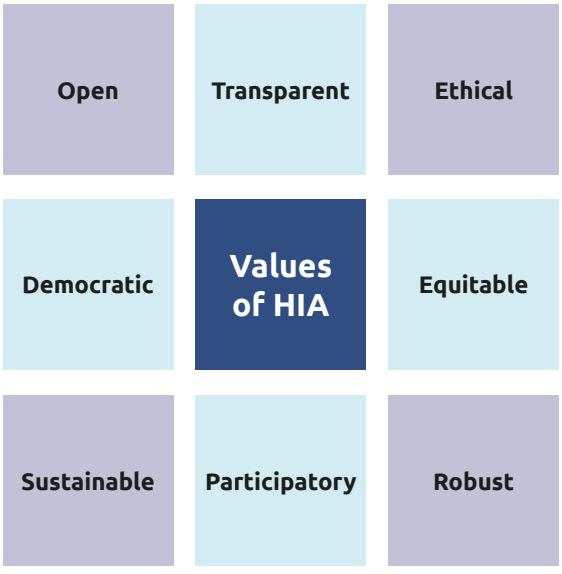
- *Prospective HIA* – at the start of the development of a project, proposal or plan
- *Concurrent HIA* – runs alongside the implementation of the project (or policy)
- *Retrospective HIA* - assesses the effect of an existing project or policy and can be used as an evaluation tool. Retrospective assessments can also be utilised for unexpected events, as a way of learning lessons for future similar events.

HIA is best used prospectively during the development of a proposal. The process should be activated late enough in a proposal's development to be clear about its nature and purpose, but early enough to be able to influence its design and / or implementation.

Within any of the above, HIA can take one of three different forms depending on the focus and the time and resources available - desktop, rapid or comprehensive. A desktop HIA may take only a few hours or a day to execute; a rapid HIA may take a few days to a few months to complete; and a comprehensive HIA is more in-depth / time and resource intensive and can take many months to complete. The most appropriate type to conduct can be decided through a short scoping meeting and discussion of timeframes and resources and levels of stakeholder involvement.

Often, however, any particular HIA may fit in between two of these categories, as the approach taken will be determined by the nature of the proposal, the timescales involved and the human, organisational and financial resources available to undertake the process.

HIA is also based on a number of key principles and values – these include equity, robustness, openness, transparency, ethical use of evidence, participation, sustainability and democracy.



There are a number of ways in which the potential impacts may be described. Where possible, the following should be assessed:

- **The nature of the impact** – how will the proposal affect health and will the impact be positive or negative? Will it be direct or indirect i.e. via a direct pathway as an associated impact

- The **likelihood of the impact** - is the likelihood of the impact of the proposal confirmed, probable or possible? (see Glossary in Main Report)

- **The scale and significance of the impact** - what proportion of the population is likely to be affected? How significant or minimal will the impact be (i.e. will it cause mild distress, improve well-being or lead to deaths)

- **The timing of the impact** - will the impact be in weeks, months, years? In some instances the short term risks to health may be worth the long term benefits

- **The distribution of the effects** - will the proposal affect different groups of people in different ways? A proposal that is likely to benefit one section of the population may not benefit others. In some cases, the assessment will identify ways in which members of the least healthy or most disadvantaged or vulnerable populations could be helped. This can be an important contribution to reducing the health inequalities that exist between some communities

There are five main steps to HIA (Box 1) and, while some may regard it as a linear process, HIAs are most useful and effective when the process is iterative. It is systematic yet flexible to particular timescales and circumstances. The five steps are:

Box 1. HIA Process

1. **Screening:** does the proposal or plan have an impact on population health?
2. **Scoping:** what resources, timeframes, policy windows, evidence need to be considered? Does a Steering Group need to be established? Roles and responsibilities of any Steering Group
3. **Appraisal / Assessment of evidence:** triangulation of qualitative and quantitative evidence and health intelligence
4. **Reporting and recommendations:** construction of HIA report and any non-technical summary
5. **Review and reflection:** including monitoring and evaluation – did the HIA and any findings have an impact on health and well-being or decision making process?

3 Methodology

This HIA is a prospective and comprehensive HIA and was undertaken between July and December 2018.

This section describes how the HIA was carried out, who was involved and the methodological approach taken. The diagram below (Box 2) summarises the process followed.

Box 2. Brexit HIA Process

Scoping

Define scope, resources and type of HIA
Working Group (WG) established to carry out the work.
Strategic Advisory Group (SAG) established to provide steer, advice and governance

Screening

Carried out through two sessions with the WG

Revisit scoping stage – clarified any questions and roles and responsibilities

Evidence gathered

Literature review: Research protocol for robust literature review, utilising protocol developed with the Evidence and Knowledge Service (PHW)

Qualitative evidence: Topic sheet prepared for interviews, using the Health and well-being determinants and population groups checklist.

25 people interviewed and notes transcribed

Participatory workshop held – notes transcribed, circulated and agreed by participants

Health intelligence and data: Demographic and health profile compiled

SAG held – provided steer, advice on approach and governance

Appraisal

Collation, synthesis and analysis of all the information carried out by the WG

SAG held – provided steer, advice on emerging documents and papers and governance

Matrix compiled of the impact/scale/significance/duration of Brexit impacts

SAG held – provided steer, advice and governance. Discussed and agreed key findings and themes

Reporting and Recommendations

Draft report, highlighting key findings and themes of evidence gathered, shared with SAG and wider stakeholders to identify potential Brexit impacts for the population of Wales.

Report finalised and disseminated, informing PHW and stakeholder organisations.

Reflection and Evaluation (Future work to be carried out)

Follow up, monitoring and evaluation

3.1 The Brexit HIA – explanation of process followed

This HIA was iterative and followed the systematic methodology described the Welsh HIA guidance of 'Health Impact Assessment: A Practical Guide' (WHIASU, 2012). Appendix One and Two contain the population and determinants of health and well-being checklists used in the assessment.

A Public Health Wales (PHW) Working Group was established to carry out the HIA; membership of the group can be found at the front of this report. Scoping and screening of the potential public health impacts of Brexit took place.

The Working Group completed a screening paper that preliminarily identified the potential determinants, populations and areas of policy focus that could be affected by Brexit. These were to be explored further and included:

- Health and social care: medicines regulation, recruitment, research and development (R and D)
- Economic conditions: unemployment, skills, working conditions
- Environmental regulations
- Food and farming (land and natural resource management) including food standards
- Indirect impacts on mental well-being, community cohesion, family life

A scoping paper was completed to define the scope of the HIA, governance mechanisms and the types of evidence required to ensure that the HIA and any report based on it was high quality and robust. The following questions were considered as part of the scoping process:

1. What are the timescales? When do crucial decisions need to be made? What financial and human resources are available?
2. What are the geographical boundaries of the project? (Is it necessary to consider the impact on people in other areas or communities that may be affected?)
3. What kind of assessment is necessary and / or possible in the time available – desktop, rapid or comprehensive?
4. Should the assessment be an in-house exercise or should someone be commissioned to do the appraisal?
5. Should a steering group be set up and who should be involved?
6. What elements of the policy / project / plan should the appraisal focus on?
7. Who are the stakeholders?
8. What are the roles and responsibilities?
9. What methods will be used to collect evidence?

A multi-disciplinary Strategic Advisory Group (SAG) was established to provide steer, advice and governance. Membership of the SAG can be found at the front of this report.

The SAG provided guidance on and oversight of the process, the findings and the development of the HIA report. The SAG also advised on a prioritisation process to narrow the scope of the HIA.

Prioritisation was based on the following criteria:

- Evidence of direct impact
- Non-ambiguous or less ambiguous evidence
- Pertinent to Wales
- Potential extent of impact and / or intensity / strength of impact is high
- Opportunity to influence policies / decision-making
- Opportunities for health gain.

Using these criteria, the SAG prioritised the following areas:

- Health care: staffing; medicines; research and development; health protection
- Social care: staffing
- Food: safety and access
- Environmental regulations: air quality and other
- Employment and skills
- Working conditions
- EU funding: community and economic investment.

The following were also added as direct impacts following evidence identified in the literature and HIA workshop:

- Lifestyles: Alcohol and tobacco
- Human rights.

In addition, the following areas were also identified as being priorities due to their importance for population health, although it was recognised that there was less evidence available:

- Mental well-being
- Community resilience and cohesion
- Impacts on health via any potential economic decline.

As part of the HIA the following evidence was gathered:

- A literature review. To ensure that this was high quality in nature, a research protocol was constructed with support from PHW Evidence Service to rapidly identify relevant published evidence. The methodology of the literature review can be found in Appendix Five.
- Qualitative evidence. The HIA captured knowledge and information held by stakeholder organisations and individuals. In total, 25 stakeholders were interviewed across 17 interview meetings and the notes from these were transcribed and analysed using thematic analysis. A multi-sector and multi-disciplinary participatory stakeholder

workshop was also held to gather additional qualitative evidence and knowledge. The workshop took place on 3rd October 2018.

- Health Intelligence and data. A community and demographic profile of Wales was developed utilising recognised Welsh and UK sources such as the Public Health Wales Observatory (see Technical Report: Part 2).

All of the above evidence and data was collated, synthesised and analysed. The evidence analysis was carried out by the Working Group. Two matrices summarising the direct and indirect impacts were completed based on the collated evidence (see Technical Report: Part 2).

Terminology

The HIA uses specific terminology to describe the impact, using the following descriptors throughout:

Type of impact	
Positive / opportunity	**Negative**
Impacts that are considered to improve health status or provide an opportunity to do so	Impacts that are considered to diminish health status

Likelihood of impact		
Confirmed	Strong direct evidence e.g. from a wide range of sources that an impact has already happened or will happen	Confirmed
Probable	More likely to happen than not. Direct evidence but from limited sources	Probable
Possible	May or may not happen. Plausible, but with limited evidence to support	Possible
Intensity / severity of impact		
Major	Significant in intensity, quality or extent. Significant or important enough to be worthy of attention, noteworthy	Major
Moderate	Average in intensity, quality or degree	Moderate
Minimal	Of a minimum amount, quantity or degree, negligible	Minimal
Duration of impact		
Short term (S)	Impact seen in 0 – 3 years	Short term (S)
Medium term (M)	Impact seen in 3 – 10 years	Medium term (M)
Long term (L)	Impact seen in >10 years	Long term (L)

Based on the findings of the evidence analysis a number of conclusions were drawn. These were discussed with the SAG and future areas for action were identified.

Finally, the last stage of any HIA is to review and reflect on the process carried out and consider any monitoring and evaluation which needs to be in place. It is intended that this work will be reflected on, reviewed and monitored in the short, medium and longer term.

3.2 Interview Process

A series of semi-structured qualitative interviews were carried out between August and October 2018. A total of 17 interviews were carried out involving 25 representatives of 12 organisations. All interviews were face to face with the exception of one telephone interview. Each interview was designed to take between 30-60 minutes. In some cases supplementary information was provided either at the time of the interview or at a later date.

The purpose of the interviews was to identify organisations' preparedness for Brexit and the potential impacts on the health and well-being of specific population groups as a result of the UK's withdrawal from the EU. Interview questions were formulated following an initial rapid literature review. The findings from the analysis of the transcripts were later combined with the outputs of a full literature review, a qualitative stakeholder workshop (held on 3rd October 2018) and the community and demographic profile, in order to formulate the findings of this HIA.

Interview questions were open-ended and designed to facilitate discussion and did not seek to ascertain respondents' political views on the merits or otherwise of Brexit. The interview questions were as follows:

1. Does your organisation have a policy / position statement on Brexit?
2. What are the key issues you have identified?
3. What work has your organisation done so far to prepare for Brexit?
4. What are your plans for transition?
5. What are your plans post exit?
6. Which populations have you identified as being particularly affected as a result of Brexit, either directly or indirectly?

It became clear after the first two to three interviews that where organisations had, or intended to put in place preparations for Brexit, these were in anticipation of a 'worst case' or 'hard' Brexit. Consequently, Questions 4 and 5 were generally not covered in detail as discussion revolved around general planning arrangements (where these existed).

Regarding Question 6, due to the lack of available information from the UK Government on post Brexit arrangements, it was challenging to identify with any degree of certainty whether or how specific populations would be affected either directly or indirectly, by Brexit. However, some interviewees did identify geographical areas and disadvantaged communities as populations of concern.

In a small number of interviews, respondents provided their input irrespective of the interviewer's proposed approach and consequently it was not appropriate to carry out the interview as planned. However, the objective of the interviews were met.

Interview respondents were representatives from the following organisations:

- The Royal College of General Practitioners
- Welsh Government civil service
- Welsh NHS Confederation
- Food Standards Agency Wales
- Welsh Local Government Association (WLGA)
- Royal College of Nursing Wales
- Office of the Future Generations Commissioner
- Chartered Institute of Environmental Health Wales
- British Medical Association
- Royal College of Paediatrics and Child Health
- Social Care Wales
- Public Health Wales.

A separate telephone interview, supported by email correspondence, was also carried out with a private sector Planning and Environment consultant based in England. The purpose of the interview was to obtain advice and guidance and to obtain a private sector – and 'non Welsh' - perspective on the health implications of Brexit and our intended approach to the HIA. No fee was involved in the interview and supporting correspondence.

3.3 Participatory HIA Workshop

The qualitative participant comments referred to within this report are those from the workshop and interviews and form one element of the overall evidence collated, to provide a comprehensive picture of the implications of Brexit in the short, medium and long term. A stakeholder workshop was held on 3rd October 2018. A wide range of key cross sector stakeholders were invited to participate and contribute. Information about the HIA and an overview of the HIA process were sent out in advance with the invitation.

In total, 14 people attended the workshop. The aim of this workshop was primarily to document any contextual knowledge and qualitative evidence from a range of affected bodies, disciplines and sectors who attended, about the potential impacts of Brexit. This included individuals from a range of organisations and disciplines including: public health and allied health care professionals; pharmaceutical; housing, environmental health and planning sectors; and the Office of the Future Generations Commissioner for Wales.

The workshop was run as an open, transparent and interactive process. Participants agreed to the findings being reported.

The session was independently facilitated by the Wales Health Impact Assessment Support Unit (WHIASU) and the participants held discussions as one large group, allowing for transparency of discussions. All comments and views were documented by the facilitators and agreed by the participants.

A summarised narrative record of the workshop is in Section Four of this report and notes taken at the event are in Appendix Three.

The workshop participants were asked to complete a feedback and evaluation form. The findings are contained in Appendix Four.

3.4 Literature review process

The literature review for the HIA was guided by a literature review protocol developed in partnership with Public Health Wales Evidence Service. It was recognised during the development of the protocol that analysis and predictions on the potential impact and outcomes of Brexit on a range of policy areas are varied, and the nature and value of evidence in predicting outcomes of Brexit is strongly contested and highly politicised in current debates. As a result, it was particularly important to take an independent, transparent and robust approach to the use of literature and evidence. The protocol sets out the approach used to identify published sources and this is available in Appendix Five.

Due to the tight timescale of the HIA, the rapidly evolving political environment and evidence development on Brexit, sources have continued to be added to the HIA up to the final drafts of the report.

The literature review process was divided into a number of sections in order to enable different team members to lead on specific themes in the review:

- Laura Morgan conducted grey literature searches on priority direct impacts e.g. food, environment, health care, working conditions, EU funding, economic conditions
- Nerys Edmonds conducted searches of peer-reviewed literature on the impact of Brexit on health, trade agreements and health and economic sanction and health
- Nerys Edmonds provided expert knowledge in term of accessing literature on indirect impacts such as mental well- being.

The Joanna Briggs Institute checklist for text and opinion pieces[1] was applied to grey literature and articles.

1 Joanna Briggs Institute. Critical Appraisal Tools. Available at: http://joannabriggs.org/research/critical-appraisal-tools.html (last accessed 28.11.18)

The literature review had a number of stages and these are summarised in the box below (Box 3):

Box 3. Literature Review process

Stage 1

Rapid scoping of published evidence via internet search, expert contacts, specialist websites i.e. www.parliament.uk/brexit, www.ukandeu.ac.uk, Brexit Health Hub and reference checking for relevant material (**www.publichealthnetwork.cymru/en/topics/brexit-health-hub**)

Stage 2

Systematic search of peer review journals using the following databases: Medline, EMBASE, Proquest

Stage 3

Title and Abstract screening and decision to include / exclude studies based on relevance and quality

Stage 4

For included studies: undertake data extraction into a themed bibliography to include: Authors; reference; organisation; category of evidence; methods; topic key word coding

Stage 5

Review full text and quality assurance of literature: critical appraisal and bias check by lead reviewer. Co-reviewers to review at least 20% of sources and those which are borderline. Further inclusion / exclusion process based on quality and relevance.

Stage 6

For included studies additional notation in bibliography of: critical appraisal tool used and /or any quality concerns, key findings related to Brexit and determinants of health.

Stage 7

Thematic analysis of all included sources categorised by topic (determinants). Comparative analysis of similar sources on key issues i.e. position statements by professional bodies. Critical analysis of strengths and weaknesses of currently available literature

Stage 8

Peer Review: critical review of interim literature review findings by Brexit HIA Working and Advisory Groups

Stage 9

Appraisal and analysis of literature alongside other evidence of impact gathered in the HIA

4 Stakeholder Views: Findings of the HIA Participatory Workshop

This section contains the record of the key findings of the HIA Participatory workshop held on 3rd October 2018. The methodology is described in Section Three of this report.

4.1 Population Groups potentially affected

At the outset, the assembled stakeholder group identified the main vulnerable groups who would be affected by Brexit using the Populations group checklist (See Appendix Two). A range of vulnerable groups were highlighted by the participants as being directly or indirectly affected by 'Brexit'. These were (in no particular order):

- Young adults including students. It was highlighted that for this group Brexit may open up increased access to training and employment opportunities and lead to less competition for university and other educational places. However, at the same time for some within this group, it could reduce access to employment, study and travel in the EU area. It could also have an impact on EU young adults and populations, who wish to live, work and study in Wales. This could have a cumulative effect on Welsh Universities and academia. This group could also feel more marginalised and powerless due to Brexit and a loss of sense of control from being less likely to vote for withdrawal from the EU.
- Welsh holiday makers to Europe. This is in relation to reciprocal health care and potential increased travel costs and those who travel with pets and animals – there were specific concerns about pet passports.
- Small to Medium Enterprise (SME) business owners who import or export to the EU. Withdrawal from the EU could have a negative impact on this group due to the uncertainty of any trade and regulation deals, potential increased paperwork and checks, costs or workforce issues.
- Farmers. Brexit could have a potential positive impact for this group or a negative impact. 85% of land in Wales is agricultural. Brexit could lead to an increased inability to obtain labour or export goods. This could lead to an indirect impact on the general population through food supplies. Farmers could be subject to a cumulative impact – they could be rurally isolated; dependent on EU funding; more likely to experience stress (there is evidence of high depression rates in this group). However, some farmers may believe that there will be benefits from EU withdrawal – including freedom from Common Agricultural Policy (CAP) and associated restrictions. Longer term there could be new opportunities for Welsh land management policy and environmental protections.
- UK nationals returning to Wales. Brexit could potentially have a negative impact on this group. Those returning from the EU to Wales may have higher health care needs and this may have an impact on services and unbalance the medicines allocation system used in the EU.

- All age groups including children and older people. They may believe that they have less influence on decisions that have been made due to the fact that under 18 year olds do not have the opportunity to vote or that they are only a small proportion of society.
- Income related groups. There could be a potential negative impact on: those on low incomes – they tend to be less resilient to economic changes such as inflation; for those in work – there is a potential negative impact from the risk of businesses relocating or the risk of unemployment from an economic downturn; and for those whose work is dependent on EU trade or supply chains.
- Non UK-EU citizens and related groups. This could be a negative impact with increased hate crime, reduced tolerance towards EU nationals in Wales and an associated cultural change post withdrawal.
- Those with life limiting conditions. This is in relation to delays in access to health care supplies and treatment, lack of access to drug and treatment trials and diagnostics.
- Those dependent on medicines e.g. insulin or require frequent health care i.e. those with long term conditions. This could manifest in increased stress and anxiety about reduced access to medicines (a participant stated that 45 million packs of medicine a month are imported from the EU with 37 million packs exported to the EU); delays in supply chains for medicines and equipment.
- Those with rare conditions. This group is very likely to be negatively affected. This is due to loss of access to European Reference Groups, clinical trials. The UK has a small market share, which may make it less likely that EU based pharmaceutical companies will launch products early in the UK market.
- Those taking part in clinical trials. Whilst Brexit could have a negative impact on access to EU based drug and other clinical trials it could also provide an opportunity for new partnerships and research links to be forged outside the EU.
- Women. This group could be potentially negatively impacted due to being in lower income employment such as part time jobs. There may be an increased expectation to provide more care to family members if there are increased workforce pressures on the social and health care services. There may also be mental well-being impacts from having to manage this and / or budgets if there is an economic downturn.
- Those who have addictions e.g. tobacco or alcohol. Brexit could have a detrimental impact on this group arising from changes such as potential reduction in regulation as part of any new trade agreements and any reduction in co-operation in respect to illegal drugs or alcohol exportation. However, there could also be a potential benefit and opportunity post withdrawal through implementing stronger regulations on addictive substances than currently applied in the EU. This could also be applied to salt or sugar in food.
- Specific geographical groups including port areas and communities and those in receipt of EU funding and grants.
- EU nationals living in Wales. Brexit could have a detrimental impact for this group and any within it who have lived and worked in the UK for less than 5 years. This may be eased by more certainty from any post Brexit agreement. There could be a potential fracturing of families – particularly for EU nationals and families in which any children have British citizen status from birth.

The idea of a 'no deal' scenario was also flagged up and participants were asked if the groups affected would be the same or different. There was no differential made as part of the discussions.

4.2 Wider determinants of health and well-being

The participants worked systematically through the WHIASU Health and Well-being Determinants Checklist (Appendix Two) and assessed the health and well-being impacts of withdrawal from the EU. Positive or negative impacts were identified as were any opportunities, gaps or unintended consequences. Questions, comments and any suggestions for mitigation were also documented throughout the process.

The discussions were summarised and transcribed by the facilitators onto flipcharts and circulated to, and agreed by, the group. These are contained in the tables in Appendix Three.

4.3 Lifestyles

A number of potential short term direct unintended consequences and detrimental impacts were highlighted by the workshop participants and these were mainly in relation to food – food security, availability, quality, consumption and price. This is heavily tied to two main direct drivers – trade and the economy and the transposition of environmental and health protection regulation. The potential significant impact of food as a result of related workforce shortages and gaps were highlighted. An example provided is that currently, vets certify 'origin of meat' in Wales. The vast majority of the certificating officers are EU citizens and should they choose to return to the EU post Brexit then this could lead to workforce gaps and thereby delays in certification and delivery that could lead to increased perishability and food wastage.

The workshop participants highlighted indirect negative impacts in relation to lifestyle factors such as alcohol, tobacco and food consumption. Stress caused by economic difficulties post Brexit could lead to increased smoking and drinking and a decrease in healthy food consumption and physical exercise.

However, whilst a number of potential negative and positive impacts of Brexit were highlighted by the participants, they also identified a number of potential opportunities for the future. In relation to the issue of vets as certificating officers, it was suggested that new models of working practice could be explored such as exploring the possibility of Welsh environmental health officers being trained and accredited to undertake this specific role. There is the potential opportunity to increase regulation for alcohol and tobacco (particularly in relation to labelling due to the EU holding copyright of images used for packaging). There are also opportunities for food production and consumption – with a move back to more seasonally related consumption of food; increased sustainable food production (although in reality this is complex and would need investment); and increased opportunities for food producers in Wales and indirectly greater employment opportunities.

4.4 Community and social impacts

Overwhelmingly, Brexit was viewed by the stakeholders as having a direct potential detrimental impact on community and social factors in Wales. There are a number of themes that emerged.

Firstly, the creation of divisions in communities and families between those who voted to remain in the EU and those who voted to leave. The differential voting patterns between younger and older people was highlighted in the discussions. This could lead to resentment between generations and disagreements and blame should Brexit not deliver many citizens' expected results. In terms of community identity, there could be a decrease in levels of tolerance and increased incidence of 'hate crime'.

Secondly, families may become fractured if young people move away from Wales, for example for employment opportunities – this could compound an existing problem of outward migration of young people who move to study and never return. It must also be considered how family relationships are managed when a child is born and brought up in the UK to an EU originating family and what happens should the parents or children decide to return to the EU or remain.

Thirdly, there was a discussion about social care workforce issues. A number of paid carers in Wales are non-UK, EU citizens – should they decide to migrate away from Wales, then there could be a significant gap in social care provision and this would have a significant detrimental impact on families, and people who require care for example those who require daily care, elderly people. This would again compound an existing shortage and supply of workforce.

Finally, there could be a significant detrimental impact on communities should one main area or community employer move from Wales or cease production or trading due to Brexit – caused either by lack of access to markets, reduced investment or an economic downturn. This could compound issues in some geographical or local authority areas in which austerity had led to reduced funding for social care, education and community facilities and activities. It could further exacerbate migration of young people and increase any fracture in families and communities.

In terms of potential positive impacts, the stakeholders at the workshop noted that for communities, Brexit may have had a positive impact in mobilising political and social capital (either remain or leave) and enhancing connectedness in some areas of Wales. There could be further future benefits by building on this in the short to long term through increasing co-production and co-creation opportunities at a local level and reducing the voting age in Wales to include 16 and 17 year olds at a national level. Other policies could also be considered and implemented to attract more Welsh or UK nationals into the care sector to fill workforce gaps – this would need to be considered in more depth to maximise and realise any future benefits for health and well-being.

4.5 Mental well-being

There were discussions around the subject of the potential mental well-being implications derived from Brexit. There are three core interlinked elements to mental well-being – having a sense of control; participation in life; and resilience. The impacts identified by the attendees were evenly spread between positive and negative impacts and unintended consequences. These were not just at an individual level but at a community level too.

Positively, the increased mobilisation of social and political capital was again raised and that it was illustrated by an increased interest in and engagement with, politics and policy decisions by many (particularly young people) and increased incidence of peaceful activism. A number of stakeholders felt that those who voted for withdrawal from the EU may have an enhanced sense of control but the converse could also be true and therefore be a negative impact on those individuals and communities' health and well-being. Increased resilience at a population level was also flagged up as a potential positive impact – by which communities may start to engage and come together to respond to any effects of Brexit.

The subject of resilience fostered conversation about how much society is resilient (or not) to big changes and events. All population groups, classes of society and political spectrums have been affected by Brexit. It was noted that if there is an economic downturn the middle classes may not be as resilient to coping with reduced incomes and the impact of this on their lives, whilst others who voted for withdrawal could feel betrayed if a post withdrawal world does not deliver their expectations or the benefits they anticipated. Likewise some communities may be affected in ways that they did not anticipate such as via mass unemployment events. They may not know how to respond to this nor have the skills or capabilities or structures in place that allow them to mobilise and remain resilient in the face of challenges. This could be an area for further exploration and one participant flagged the potential role of the arts in bringing communities together.

4.6 Living and Environmental impacts

The stakeholders at the workshop identified a number of both positive and negative impacts for living and environmental determinants. These are mainly in relation to regulation and investment.

Positively, the participants noted that in the short term there has already been a commitment (The Future Relationship between the UK and EU White Paper, UK Government, 2018) to maintain current levels of EU regulation in respect of air quality standards and Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) guidelines. Whilst environmental regulations are derived from the EU currently, they will soon be transferred to the UK Government as part of the preparations for Brexit. Participants noted that this could open opportunities for improved standards – mainly in the medium to long term, particularly if this area of competence is devolved to Wales in the future. It was highlighted that the WHO regulations advocate higher air quality standards and lower thresholds than those adopted in the UK now.

It was noted that in relation to air quality standards, the UK and Wales are already not complying with these and that there have been a number of fines laid on the UK by the EU. Whilst there is potential to increase standards for environmental regulations, there is also a potential risk that they could also be relaxed. The stakeholders at the workshop highlighted

this in the context of an economic downturn and austerity. Trade pressures, trade pact negotiation and the need to increase economic output could lead to potential future deregulation to act as an enabler to increase economic development and drivers. It was believed that this is also true in the housing sector. A potential lowering of standards may make the UK and Wales more attractive to housing developer investment but conversely it could increase regional variation and inequality (increased developments in more profitable geographical areas). This could also lead to reduced standards of housing built.

In relation to economic throughput or downturn and its impact on other environmental determinants, housing, householders and investment in the built and natural environment could potentially be negatively affected by Brexit in the short to long term. Participants said that many large infrastructure developments and owners are based in the EU e.g. European Development Fund. Investment opportunities may be more favourable in the EU or other regional areas of the UK rather than Wales if not carefully managed. This could compound existing challenges and inequalities which some areas of Wales will face to obtain funding for infrastructure at a local level e.g. transport, community facilities, health care facilities. Geographical areas such as north and west Wales and the Valleys areas in Wales will lose the ability to apply for EU Structural Funding and any subsequent funding streams after 2020, whilst other areas may obtain City Deals.

It was flagged that for householders, any economic downturn that may occur due to Brexit could impact them negatively in several ways both for the short and long term. This could be via a potential increase in interest rates that could lead to fuel poverty / food poverty; struggles to pay a mortgage; house price changes; lack of availability of affordable housing in their vicinity; or reduced standards in the building industry.

4.7 Economic Conditions

In respect to economic factors that affect health and well-being, the stakeholders at the workshop identified an equal number of potential positive and negative impacts that could be derived from Brexit.

In relation to environmental impact and investment in the built environment and community infrastructure in Wales, it is very clear that trade and the economy have a pivotal role in how Brexit could play out over the next few years. The economy and its status at any given time will have both a direct and an indirect impact on people's health and well-being and this could be positive or negative.

The detrimental impacts and unintended consequences, which the participants highlighted, were mainly around employment (working conditions and regulation); procurement; investment and regeneration; and any potential variation of the economy in Wales. Much legislation and regulation in relation to employment is derived from the EU such as the Working Time Directive and maternity / paternity rights. There is also a risk to health and safety legislation if it is deregulated or eased – this currently provides protections for employees in their workplaces. It was flagged by some of the participants that the political contexts have a key role in shaping future regulation. There could be potential for divergence between devolved and non-devolved policies – with a focus on progressive policies and drivers in Wales but a more deregulation driven focus in England. This could also increase internal competition between the four nations by one nation providing more or

less favourable employment, working or economic conditions than the others. However, in respect to business and trade, many trade policies are UK based and not devolved. If these are unsuccessful in the face of Brexit then there is a probable negative impact and could lead to an economic downturn. As discussed previously, if global or national companies relocate from Wales then there is a real risk to local populations' employment, mental health and well-being and local or regional economic status. Business and EU networks and EU funding and investment have had a beneficial impact on the infrastructure and economic development in Wales and a loss of access to these could have a detrimental impact.

It was also identified by the workshop group that there are opportunity costs from Brexit – much time and resources are being spent on addressing the potential risks from Brexit with many organisations (including PHW) planning for any transition, no deal or other scenarios. These resources could have been directed to other economic or other development opportunities or services instead.

The participants identified a number of potential opportunities for Wales and the Welsh population that could occur due to Brexit. These included thoughts about the potential to establish a new type of business development agency for Wales; that political divergence and more emphasis on social economic policies and working conditions could make Wales a more attractive place to work; and the potential to explore new or alternative models of funding and investment streams. One potential significant positive impact could be in relation to procurement and contracting of services. The participants stated that currently, any public sector contracts are advertised in the EU too. Although many restrictions are placed on tendering and contracting by the UK Government there could be a potential opportunity for more contracts to be awarded to UK companies if the UK system can be more streamlined. There could also be an opportunity to procure more food at a local level.

4.8 Access and Quality of Services

A large number of potential negative impacts or unintended consequences were identified for determinants that relate to access and quality of services. The discussions focussed substantially on the impacts on the public health and health care sector, in areas such as workforce recruitment and retention; research and clinical trials; regulation; supplies of medical equipment and drugs; reciprocal medical care; and service user choice.

Firstly, it was highlighted that health care workforce recruitment and retention is already proving to be challenging in some areas of Wales for a number of clinical and nursing specialties. This could be compounded by Brexit and any loss of the Working Time Directive or any uncertainty could exacerbate this. It was noted that, based on stakeholder experiences, doctors (and particularly junior doctors) have a high risk of burnout and mental health conditions and that Brexit and any increasingly stressful working conditions and longer hours could mean that they leave the profession or leave the country to work elsewhere.

Secondly, the stakeholders discussed the potential negative impact that Brexit (and the uncertainty of it) could have on access to research collaborations / networks, opportunities and clinical trials. Many Welsh fruitful and successful collaborations and relationships could dissipate with European research and development partners.

Thirdly, supplies of equipment and drugs could be hindered and supply chains be broken

(albeit temporarily). Participants specified the potential example of the supply of radioisotopes and other drugs which have a short shelf life and insulin pens which contain 32 different components sourced from 12 different countries. It was also noted that in respect of scanners and equipment, many of the maintenance contractors are from the EU. Any delays in supply chains, or disruption in accessing medication could have a potential short term significant impact on some patients such as those with rare diseases. This could be complicated if the source or clinical specialists are based in the EU. Also, any changes to regulatory frameworks could potentially lead to an increase in the supply of counterfeit drugs to fill gaps.

Fourthly, any continuing reciprocal medical agreements in relation to E111 cards with EU countries would be a positive benefit. However, if there are any adverse changes to these agreements with European nation states it could have potential negative impacts through two channels – via increases in costs when travelling and increased costs for travel insurance (particularly for those who have pre-existing medical conditions or are over 70 years old); and reduced choice for those who elect to travel to an EU state to receive specific treatment.

Finally, from a public health perspective, access to population health data, surveillance and monitoring, and data sharing and communication networks could experience a potential significant negative impact. Many EU systems such as those for infectious diseases, are planned and co-ordinated at a European level. There could be a reduced ability to deal with cross-nation issues such as infectious disease outbreaks through loss of access to surveillance and alerts. It is not only in relation to physical health that loss of networks could have a negative impact – there are many EU mental health networks to which access could be disrupted or restricted.

It was highlighted by the stakeholders that there is potential for disinvestment in public health if there are economic challenges post Brexit – again linking to trade and the economic health of the UK and Wales – with investment more likely to be funnelled into primary and secondary care services rather than preventative approaches to health and well-being. It was also identified that whilst many health care agencies and organisations are planning for Brexit and its potential impact, there are opportunity costs of diverting resources from other health care quality and improvement work streams - which are being halted, delayed or postponed, with the antimicrobial resistance work identified as an example.

4.9 Macro-economic, environmental and sustainability determinants

There were mixed responses in relation to the potential impact of Brexit on these determinants in Wales e.g. government policy, climate change, regeneration and sustainable development.

The attendees at the participatory workshop believed that there could be some negative impacts of Brexit both in the short and the longer term. However, it was also believed that the unique policy context in Wales, driven by devolution, could also provide a number of potential positive impacts and opportunities for the people of Wales.

Positively, the Well-being of Future Generations (Wales) Act 2015 has provided a powerful legislative framework that promotes collaboration, integration, long term thinking, preventative approaches and public involvement. This legislation includes mechanisms for holding public bodies to account through the Office of the Future Generations Commissioner for Wales and the Wales Audit Office. Any new devolved powers, policy frameworks or levers that emerge from work around Brexit or post withdrawal will have to take account of these principles and ways of working. Brexit was also believed to provide a positive opportunity to discuss future devolved powers and the potential to increase these. It was believed that Brexit has provided the space to reflect on policy currently and it could enable new long term opportunities for policy and devolution which may be better and more appropriate to meet Wales' needs in the future. An example of this is the potential opportunity for new land management and resources policy built on existing strategic drivers; and to 'sell' Wales more forcefully at an international level and foster Non-EU relationships and collaboration. There is also the potential to reshape funding for Wales.

One major unintended consequence of Brexit was highlighted. This is that currently there is a huge opportunity cost of the process - many public bodies and agencies are focussed on preparing for withdrawal from the EU and therefore many other policy priorities and / or implementation are on hold or delayed. The attendees also stated that if there are any economic challenges which emerge post Brexit, then there is a risk that GDP and economic development may be prioritised over these other policy priorities once more or take precedence over the implementation of the well-being Goals, the ways of working and sustainable development. It was also noted that in the short to medium term there is a risk to Welsh policy areas as some devolved powers revert to the UK Government i.e. in relation to Common Agricultural Policy (CAP) and that EU relationships, networks and collaboration may diminish.

Climate change was also flagged as a potential area of negative impact for health and well-being. Participants cited a recent Lancet paper (Fahy et al, 2017) which stated that any post Brexit trade deals with nations who do not have the same focus on climate change or carbon reduction, could result in reduced thresholds for emissions or lead to increased distances for importing / exporting food and other products from non EU nations, which could have a long term detrimental impact across the world.

5 Literature Review Findings

Outputs from the literature review include:

- Annotated bibliography of 286 sources (available on request)
- Search results and include / exclude table on peer reviewed literature search on trade, sanctions and health (available on request)
- Search results and include / exclude table on peer reviewed literature search on Brexit and health (available on request)
- Summary table of literature review findings for each directly impacted determinant (see below)
- Rapid review section on the economy, trade and health (see Main Findings report)
- Literature on potential impacts on mental well-being (see Main Findings report)

5.1 Summary tables of literature review findings for directly impacted determinants[1]

5.1.1 Determinant: Health Services: Public Health

Specific area	Sources
Public Health	There is a need for effective coordination between the UK and EU on public health and well-being (Welsh NHS Confederation, 2018) (National Assembly for Wales Research Service, 2018b). There is concern if the UK was to diverge from EU public health regulations (Faculty of Public Health, 2018b) (Brexit Health Alliance, 2018a). Two stakeholders (Faculty of Public Health, 2018b) (Office of Health Economics, 2017) set out options for post Brexit public health arrangements. A peer review article (Fahy, et al., 2017) also discusses possible scenarios. Once EU oversight is removed, the UK could set less stringent standards in relation to some areas. However, freedom from EU law could lead to the introduction of tougher rules on the food and drink industry (Gallagher, 2018). The Welsh Government (Welsh Government, 2018a) favours the UK remaining a member of the ECDC and the EMA. The UK Government (HM Government, 2018) proposes continuing collaboration with the EU's Health Security Committee, the ECDC, alert systems, databases and related public health networks. However, it has also published a number of public health related Technical Advice Notices, in the event of a no deal (Department for Exiting the European Union, 2018).

1 Please note additional sources were added to section in the Main Report in December to reflect peer review and updated evidence.

5.1.2 Determinant: Health Services: Health Protection

Specific area	Sources
Health Security: Infectious diseases Antimicrobial resistance	Health security as one of the key issues for health, social care, environmental and related organisations who emphasise the need for 'strong coordination' between the UK and EU (Welsh NHS Confederation, 2018) (Faculty of Public Health, 2018b) (National Assembly for Wales Research Service, 2018b). Lack of UK engagement with the ECDC would be one of the most worrying health outcomes of Brexit although it is unlikely that the ECDC would exclude the UK completely (Gulland, 2016). The Welsh Government is in favour of the UK remaining a member of the ECDC and the EMA (Welsh Government, 2018a). The UK Government (HM Government, 2018) proposes continuing collaboration with the EU's Health Security Committee and related bodies such as the ECDC as well as associated alert systems, databases and networks including the ability for Public Health Wales to provide European Public Health Microbiology (EUPHEM) training. It has also published a number of public health related Technical Advice Notices in the event of a no deal (Department for Exiting the European Union, 2018).

5.1.3 Determinant: Health Services: Rare Diseases

Specific area	Sources
Rare Diseases	There is concern amongst stakeholders over exclusion from European rare disease networks (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018b). It is reported that British medical experts have been removed from leadership roles covered by the European Reference Networks (Leake, 2018). The UK Government (HM Government, 2018) is seeking to participate in specific policies and networks including European Reference Networks and has published a number of public health related Technical Advice Notices in the event of a no deal (Department for Exiting the European Union, 2018).

5.1.4 Determinant: Health Services: Health Protection

Specific area	Sources
Pandemics	Organisations including the Welsh NHS Confederation, and the Faculty of Public Health (Welsh NHS Confederation, 2018) (Faculty of Public Health, 2018b) have identified health security and protection as a key issue There is concern amongst stakeholders about a potential lack of arrangements for pandemic planning post-Brexit (Welsh NHS Confederation, 2018). The Brexit Health Alliance have stated that: "*Post-Brexit, without a formal relationship with ECDC, social networks and professional relationships may fragment and the ability to tackle infectious diseases is likely to decline. After Brexit, if an agreement is not reached on continued UK access to ECDC, creating a bespoke relationship with ECDC would be the next preferred option. This would be a long-term project and would require significant investment in system strengthening*" (Brexit Health Alliance, 2018a) (p.3). The Welsh NHS Confederation Policy Forum emphasises the need for 'strong coordination' between the UK and EU (National Assembly for Wales Research Service, 2018b). Lack of engagement with the ECDC would be one of the most worrying health outcomes of Brexit (Gulland, 2016). The Welsh Government (Welsh Government, 2018a) accepts recommendations from the External Affairs and Additional Legislation Committee relating to continued collaboration on health issues. The UK Government (HM Government, 2018) has stated its intention to continue close collaboration with a range of European health agencies and networks and has published a number of health related Technical Advice Notices in the event of a no deal Brexit (Department for Exiting the European Union, 2018).

5.1.5 Determinant: Health Services: Reciprocal Health

Specific area	Sources
Reciprocal Health	Stakeholders have called for existing arrangements to continue. It is feared that losing access to current arrangements would have a significant impact on UK citizens living in or visiting the EU and put significant strain on the NHS if patients are required to return to the UK for care (Welsh NHS Confederation, 2018). The impact on the workforce on the NHS and on people depending on reciprocal health care arrangements will be 'substantial, and potentially devastating' for those involved (Fahy, et al., 2017) (Fahy & Hervey, 2017). Reciprocal health care coverage and cross-border health care after leaving the EU is likely to have an impact on health in the UK (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). The Welsh Government (Welsh Government, 2018a) (Welsh Government and Plaid Cymru, 2017) has called for existing arrangements to be preserved. The UK Government (HM Government, 2018) has stated its wish to continue with existing arrangements after the UK leaves the EU and has published a number of health related Technical Advice Notices in the event of a no deal Brexit (Department for Exiting the European Union, 2018). The UK Government and the EU have agreed in principle that UK pensioners already living in the EU will be able to use the S1 and EHIC schemes during a transition period but this will only come into effect if the withdrawal agreement is ratified by both the EU and the UK before Brexit day (European Union and United Kingdom Government, 2017).

5.1.6 Determinant: Health Services: Medicines And Devices

Specific area	Sources
Medicines: **Access and supply** **Licensing** **Research and development** **Approvals** **Regulation** **Pharmacovigilance** **Nuclear medicine**	There is a lack of detail from the UK Government regarding post-Brexit arrangements on issues ranging from membership of the EMA and Euratom, transposition of EU law into UK law, to information, safety, access and supply (Welsh NHS Confederation, 2018) (Life Science Industry Coalition, 2017) (Office of Health Economics, 2017). It is likely that the current system of CE marking will remain (CE Marking Association, 2018) (Nuffield Trust, 2017). Stakeholders' views on lack of detail are generally supported by academics (Nuffield Trust, 2017) (Fahy & Hervey, 2017). The industry is united in its wish to stay working together with the EU (McCall, 2018). Although some (Nuffield Trust, 2017) (Fahy & Hervey, 2017) feel there is potential to do things differently which may lead to increased opportunities for collaboration. It is thought the UK will probably leave the jurisdiction of the EMA but seek to work closely with it. There are already precedents for such arrangements (Gallagher, 2018). In March 2017 the UK Government gave notice of its intention to leave Euratom (Peck, 2017). Medicines is one of six areas of concern where leaving the EU is likely to have an impact on health in the UK (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). Currently, the European Medicines Agency (EMA) provides and coordinates licensing, expertise and support for medicines and medical devices throughout the EU (House of Commons Library, 2018). The Welsh Government (Welsh Government, 2018a) has stated its commitment to remain a member of the EMA and other European health organisations. The MHRA has recently consulted on the regulation of medicines, medical devices and clinical trials in a no deal scenario (Department of Health and Social Care, 2018). The UK Government (HM Government, 2018) has stated it wishes to remain a member of the EMA and to continue broadly with existing arrangements (albeit in a slightly different form). It has also published a series of No Deal Technical Advice Notes (Department for Exiting the European Union, 2018) in relation to medicines.

5.1.7 Determinant: Health Services: Research And Development

Specific area	Sources
EU research and development funding such as Horizon2020 and Creative Europe	Between 2008 and 2013, the UK received €8.8 billion of EU science funding (Welsh NHS Confederation, 2018). The UK is a net beneficiary for EU research funding, contributing 11% to the research budget but receiving 16% for projects it leads (Middleton & Weiss, 2016). Stakeholders all support continuing membership of EU funding networks. Universities Wales, the ABPI and the RCN highlight the importance of the European Research Area in research and innovation (Welsh NHS Confederation, 2018) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018b) (Life Science Industry Coalition, 2017) (Brexit Health Alliance, 2018b) (Middleton & Weiss, 2016). The UK is a key contributor to the European life sciences ecosystem (Life Science Industry Coalition, 2017). The UK is the third largest biopharmaceutical research cluster outside the USA and the Association of the British Pharmaceutical Industry have said that it is not in the EU's interest to be disconnected from the UK base (McCall, 2018). It is crucial that UK scientists continue to collaborate with European colleges (Webb, 2016). The UK will only attract the very best researchers if they are confident of access to adequate funding to conduct their research (Watson, 2018). UK universities are already seeing a fall in their share of EU research funding (The Observer, 2017). In addition, some 1,360 academic staff in Welsh universities came from EU countries as at December 2014; any restrictions to the free movement of workers or access to Europe-wide research programmes would severely impact Wales' ability to access academic talent and to engage in cross-border collaboration. The life sciences sector and the pharmaceutical industry are also significantly dependent on EU citizens (Welsh Government and Plaid Cymru, 2017). Research is one of six areas considered to be 'vital' for health and social care (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). The Welsh Government has accepted all the recommendations of the National Assembly for Wales Finance Committee report into the replacement of EU funding streams after Brexit (Welsh Government, 2018f) and has established a central unit to develop future funding arrangements in co-production with partners. If the UK Government does not agree to participate in the future Research and Development Framework Programme, it is unlikely Wales would be able to do so in its own right (Welsh Government, 2018a).

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5.1.7 Determinant: Health Services: Research And Development …continued

EU research and development funding such as Horizon2020 and Creative Europe	The UK will take part in all EU funded programmes until December 2020, subject to a final negotiated agreement (UK Government and European Union, 2018). A UK wide Shared Prosperity Fund will replace EU funding (Uk Government Ministry of Housing, Communities and Local Government, 2018). The UK Government (HM Government, 2018) proposes continued, close collaboration with EU agencies to address public health threats and has published a number of Technical Advice Notes in relation to EU funded research programmes in the event of a No Deal and guaranteeing EU funding awarded to organisations until the end of 2020 (Department for Exiting the European Union, 2018).

5.1.8 Determinant: Health Services: Clinical Trials

Specific area	Sources
Clinical Trials	Around 4,000 clinical trials are authorised each year in the EEA. Approximately 61% of clinical trials are sponsored by the pharmaceutical industry and 39% by non-commercial sponsors, mainly academia (European Medicines Agency, 2018). Stakeholders have all called for patients to continue to benefit from participation in EU clinical trials (Brexit Health Alliance, 2018b) (Life Science Industry Coalition, 2017) (Welsh NHS Confederation, 2018). Drug development and regulation will be challenging and likely take time to resolve fully (Webb, 2016). Researchers claim that Brexit could potentially deny thousands of UK patients the access to pioneering and innovative candidate treatments (Wang & Macaulay, 2017). Clinical trials is one of six areas considered to be 'vital' for health and social care (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). Welsh Government (Welsh Government, 2018a) has stated its desire for current arrangements with regard to health cooperation and collaboration to continue. The MHRA has recently consulted on the regulation of medicines, medical devices and clinical trials post-Brexit (Department of Health and Social Care, 2018). The UK Government (HM Government, 2018) is seeking to ensure that for the EMA, all the current routes to market for human and animal medicine remain available and has published a Technical Notice on how clinical trials would be regulated if there's no Brexit deal (Department for Exiting the European Union, 2018).

5.1.9 Determinant: Health Services: Recruitment, Fitness To Practise, Qualifications

Specific area	Sources
Recruitment, Qualifications and Fitness to Practise	Stakeholders (Welsh NHS Confederation, 2018) have called for a continued domestic and international pipeline of high calibre professions and trainees in health and social care and continued recognition of professional qualifications for people trained in the EU27. Recruitment is one of six areas that the House of Common's Health and Social Care Committee consider to be 'vital' for health and social care (Dr Sarah Wollaston MP, 2016). The Welsh Government states that the NHS in Wales is reliant on EU workers at every level including those delivering social care (Welsh Government, 2017a). The estimated annual recruitment needed from the EU (in England) is 7,000 nurses and 2,000 doctors and public health experts report that losing such significant staffing would have severe impacts on the ability to deliver already over-stretched health care services (Middleton & Weiss, 2016). Evidence collected by the National Institute of Economic and Social Research includes insight from key health and social care sector stakeholders who report that EEA nationals are more likely to work in specialties and locations with weak domestic supply and EEA doctors are well-represented in shortage specialties (National Institute of Economic and Social Research, 2018). The National Institute of Economic and Social Research also estimate that in the short run, the UK may have an additional shortage of around 2,700 nurses and by projecting this shortfall over the remaining period of Brexit transition to 2021 they suggest that there may be a shortfall of around 5,000-10,000 nurses (in addition to current vacancies) (National Institute of Economic and Social Research, 2018). There is evidence to suggest that there is already a reduction in the number of health care staff from the EU working in the UK and that others are planning to leave. The number of people from the EEA on the Nursing and Midwifery Councils register in March 2018 compared with March 2017, fell by 8% (Nursing and Midwifery Council, 2018). There are also concerns and evidence that doctors from the EEA who work in the UK are either considering leaving or are leaving since the referendum result. A survey of 1,193 EEA doctors working in the UK found that 42% were considering leaving since the outcome of the referendum, and a further 23% were unsure whether to stay (Torjesen, 2017). A later survey by the British Medical Association has found that 35% of EU doctors are considering leaving the UK and 78% are not reassured by UK Government statements about the rights of EU Citizens in the event of a "no deal" (British Medical Association, 2018). The possible loss of the Mutual Recognition of Professional Qualifications (MRPQ) Directive (system of reciprocal recognition of professional qualifications between the remaining EEA States and the UK) (Fahy, et al., 2017) and retaining access to the EU Internal Market Information System to facilitate communication exchange on doctors' fitness to practise are highlighted as important (Welsh NHS Confederation, 2018)

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5.1.9 Determinant: Health Services: Recruitment, Fitness To Practise, Qualifications …continued

Recruitment, Qualifications and Fitness to Practise	The Royal College of Nursing in Wales has stated that: "As well as raising the standards of nursing education, the MRPQ Directive has enabled the UK to recruit nurses and doctors from Europe to help fill our own workforce shortages. If the UK decides to move away from these jointly developed standards, the UK may lose important safeguards, lose access to alert mechanisms, and miss out on crucial exchanges between professional regulators" (Royal College of Nursing, 2018) (p.5-6). Significant differences in nursing educational programmes among European countries and consequently, a firm basis for free movement of nurses within the EU/EEA remains incomplete. Consequently, there is an opportunity for these policies to be revised (Hurlow, 2016). Leaving the EU may also create an opportunity for the UK to introduce new standards for professionals who come here to work from elsewhere in Europe (Nuffield Trust, 2017). If EU migration is limited after Brexit, a Department of Health and Social Care "worst case scenario" model predicts a shortage in the UK of between 26,000 to 42,000 nurses (full-time equivalents) by 2025/26 (Gallagher, 2018). There is a potential opportunity to train more UK nationals to work in health care post Brexit although self-sufficiency from training UK health care staff could take "somewhere in the region of 10 or 12 years." (House of Commons Library, 2018). The Welsh Government (Welsh Government, 2017a) states that the NHS in Wales is reliant on EU workers at every level. Its officials continue to engage with the UK Government on timescales for publication of Immigration White Paper (currently due to be published by the end of 2018) (Welsh Government, 2018a). The UK Government's White Paper (HM Government, 2018) is seeking reciprocal mobility arrangements with the EU and is proposing a system for the mutual recognition of professional qualifications. A no deal notice (Department for Exiting the European Union, 2018) sets out workers' rights under EU law.

5.1.10 Determinant: Social Care

Specific area	Sources
Social care staffing	There is a lack of robust data on the social care, independent and third sector workforce in Wales. However, the number of EU nationals working in social care is far greater than those working in the NHS (Welsh NHS Confederation, 2018). In 2016, EEA nationals made up 5.4% of the social care workforce in the UK. In Wales their numbers have grown by 56% since 2011 (National Institute of Economic and Social Research, 2018). The current Welsh Government funding arrangement for social care will not cover expected cost increases by 2021-22 (Welsh Local Government Association, 2018). Non-EEA immigration rules are not seen as meeting the needs of the adult social care workforce as many roles may not meet the minimum skills or salary thresholds for a Tier 2 visa (National Institute of Economic and Social Research, 2018). Around 6% of the social care workforce in England are EU nationals. Losing such significant staffing would have severe impact on service delivery (Middleton & Weiss, 2016). While the contribution of EEA nationals to the NHS is important, it is arguably even more so in social care services across the UK (National Institute of Economic and Social Research, 2018). Even if a withdrawal agreement is reached that preserves the rights of pensioners already abroad, increased capacity in the UK health and social care system will likely be necessary to compensate for the fact that future generations of pensioners cannot be cared for in countries such as Spain (Nuffield Trust, 2017). Social care staff are protected by numerous employment rights which, although they will initially be incorporated into UK law, the protection that comes from interpretation of disputes by the European Court of Justice will cease (Fahy, et al., 2017). Social care recruitment is one of six areas that the UK Parliament's Health and Social Care Committee consider to be 'vital' for health and social care (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). The Welsh Government acknowledges that there is no specific data for Wales for numbers of EU nationals in the social care sector although the NHS in Wales is reliant on EU workers at every level (Welsh Government, 2017a). In July it announced £200,000 funding to fund research into how Brexit could impact on the social care workforce and to help the sector plan for any consequences (Welsh Government, 2018). Although it refers to the movement of EU nationals following Brexit the UK Government's White Paper (HM Government, 2018)makes no particular reference to the social care workforce.

5.1.11 Determinant: Food

Specific area	Sources
Safety and Security	Stakeholders (Brexit Health Alliance, 2018a) (Which?, 2018) all advocate future agreement between the EU and the UK specifically via the EFSA (European Food Standards Agency), the ECDC and other relevant EU agencies, systems and databases. The president of NFU Cymru has expressed concerns about continuing cooperation on issues like food safety standards (BBC, 2018). Although there may be public health issues around future trade deals there is also a potential opportunity for government policy to support and encourage production, procurement, provision and consumption of UK-grown foods that support local businesses, human health and the environment (Brexit Health Alliance, 2018a). Future food and farming policy should maintain and incentivise high quality (Which?, 2018). There is concern over whether food attracts enough policy attention in the EU negotiations; arrangements for food security; and the timing of the introduction of the FSA's Regulating our Future programme (Lang, Lewis, Marsden, & Millstone, 2018). Outside the EU, the UK could face high non-tariff barriers to trade, possibly as much as 13-14%. Although lowering tariffs and other trade costs would increase economic activity in the UK the extent of gains would be limited as regulatory structures in countries such as the US, China and India are very different (Dhingra & De Leon, 2018). There are concerns about the affordability of food going forward (Lang, Lewis, Marsden, & Millstone, 2018) (Which?, 2018) (Breinlich, Leromain, Novy, & Sampson, 2017) (Dhingra & De Leon, 2018) (Brexit Health Alliance, 2018a). Alcohol licensing is a devolved matter. In England and Wales a ban on selling alcohol below a 'permitted price' (i.e. the level of alcohol duty plus VAT) has been in place since 28 May 2014. In July 2018, the UK Government stated that a Minimum Unit Price (MUP) "remains under review" and that Public Health England will be commissioned to carry out a review into the impact of MUP in Scotland following the introduction of the Alcohol (Minimum Pricing) Scotland Act 2012. In Wales, the Public Health (Minimum Price for Alcohol) (Wales) Act 2018 received Royal Assent on 9 August 2018 and will enable the introduction of MUP on public health grounds. It is expected to come into force in summer 2019 (Woodhouse, 2018).

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5.1.11 Determinant: Food …continued

Safety and Security	Post-Brexit agreements could be used to steer our food production system in a more beneficial direction (The Health Foundation, 2018). Freedom from EU law will mean the UK could introduce tougher rules on the food and drink industry (Gallagher, 2018). Loss of key food safety posts is already being reported (Messenger, 2018). Food law in the UK current largely consists of directly applicable EU legislation with much of the risk assessment and risk management decisions being undertaken at EU level by specialist agencies and mechanisms for which there is no UK equivalent at this stage (Ainsworth, 2017). Key systems for providing rapid warning of food safety threats, sharing information on food crime and for notifying and tracking food imported from outside the EU are maintained by the Commission (Ainsworth, 2017). The FSA is working to prepare the necessary legislative instruments to incorporate EU Food Safety Law directly into UK law (Ainsworth, 2017). A potential cumulative impact is also identified with regard to the Food Standards Agency major change programme "Regulating our Future" which is concurrent with Brexit (Food Standards Agency, 2017). Replacing the regulatory systems and functions that today happen in EU institutions and the Commission is complex and the regulatory model must be ready from day one of withdrawal in 2019 (Hancock, 2018). The Welsh Government has published its proposals for a new land management policy to replace the CAP in Wales and is working with the Food and Drink Wales Industry Board to develop a successor to the Food and Drink Industry Action Plan specifically looking at post-Brexit arrangements (Welsh Government, 2018h) (Food and Drink Wales, 2018). The UK Government (HM Government, 2018) is proposing the creation of a new free trade area for goods including agri-food goods. The proposals include a common rulebook for agri-food goods. Also included in its White Paper are proposals for UK participation in key EU agencies although the EFSA is not mentioned. There are also a number of no deal technical advice notes on producing and processing organic food, food labelling and safety, farm payments, rural development funding, and developing genetically modified organisms (Department for Exiting the European Union, 2018).

5.1.12 Determinant: Environment

Specific area	Sources
Air and water quality	A range of EU policies relating to water, waste, air pollution and climate change have been transposed and implemented in the UK (Welsh NHS Confederation, 2018). Stakeholders are calling on the UK Government to maintain an aligned approach to the EU on environmental standards and that adopting a divergent approach to health protection and health security would likely lead to weakened environmental protection standards (Brexit Health Alliance, 2018a). There is an opportunity for government policy to support and encourage production, procurement, provision and consumption of UK-grown foods that support local businesses, human health and the environment (Brexit Health Alliance, 2018a). As much as 80% of EU environmental legislation affects local authorities in some way. The environment, climate and energy is one of the WLGA's EU policy priorities (Welsh Local Government Association, 2018). A series of EU directives designed to improve air quality have had a major impact on health. Following restrictions on the sulphur content of fuel, there has been an 80% decline in sulphur dioxide emissions (Fahy, et al., 2017). There is concern from health stakeholder groups that trade negotiators from potential trade partners may seek removal of what they regard as regulatory barriers, including environmental and associated standards (NHS Confederation European Office, 2018a) (Nesbit & Watkin, 2018).The Faculty of Public Health reports that its stakeholders are keen that environmental and other public health standards are not reduced in the quest to reduce barriers to trade (Faculty of Public Health, 2018a). Membership of the EU has significantly protected the environment (Lang, Lewis, Marsden, & Millstone, 2018). Coastal and inland bathing water has improved substantially over the past 20 years. European emissions of sulphur dioxide, black carbon and organic carbon in 2010 were considerably lower than they would have been without EU legislation (Gulland, 2016). Public Health (including environmental protection and communicable diseases) is one of six areas of concern where leaving the EU is likely to have an impact on health in the UK (Dr Sarah Wollaston MP, 2016).

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5.1.12 Determinant: Environment …continued

Air and water quality	The UK and Welsh Governments entered into an Intergovernmental Agreement on the European Union (Withdrawal) Bill and the Establishment of Common Frameworks (UK Government Cabinet Office, 2018). However, the Welsh Government has yet to decide on whether it supports the establishment of a UK-level governance body for environmental issues (Welsh Government, 2018b). The Welsh Government has responded to recommendations from the Climate Change, Environmental and Rural Affairs Committee's Inquiry Report on Environmental Governance Body and Environmental Principles (National Assembly for Wales Climate Change, Environment and Rural Affairs Committee, 2018) . In a consultation document the UK Government outlined its proposed 25 Year Environment Plan (Department for the Environment, Food and Rural Affairs, 2018). The European Union (Withdrawal) Act 2018 (UK Government, 2018) requires the Secretary of State to publish a draft Bill containing environmental principles and a statement of policy, within six months of the EU Withdrawal Bill being passed. The UK Government's White Paper (HM Government, 2018) refers to a number of environmental issues including a proposal that the UK Government would commit to 'high regulatory environmental standards' through a 'non-regression' requirement in a future relationship treaty with the EU and commitments to uphold international environmental cooperation. It has also issued a number of Technical Advice Notices (Department for Exiting the European Union, 2018) linked to energy and climate change in the event of a no deal Brexit.

5.1.13 Determinant: Employment and Skills

Specific area	Sources
Loss of key skilled workers in key sectors linked to health and well-being, due to non UK EU nationals leaving or having higher restricted access to opportunities to work in the UK	**NHS medical and nursing staffing** In November 2017, 1,438 individuals employed directly by the NHS in Wales identified themselves as EU Nationals. This is 2.6% of all staff with a known nationality ((House of Commons Library, 2018). By April 2018 the figure quoted from data from the NHS Electronic Staff Record was 1,462 individuals directly employed by the NHS in Wales identified themselves as EU nationals (1.6% of the total workforce). 6.2% of medical and dental professionals working in the Welsh NHS identify as EU nationals (Welsh NHS Confederation, 2018). There are concerns about the impact on health and social care workforce planning if restrictions on free movement are introduced (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a). One peer reviewed impact assessment anticipates a moderate to major negative impact on recruitment and retention of EU nationals in NHS health care (Fahy, et al., 2017). Any significant changes to immigration rules for European Economic Area (EEA) nationals could have a significant impact on the NHS's ability to recruit (House of Commons Library, 2018). Leaked modelling by the Department of Health and Social Care, seen by the Health Service Journal, showed that a stop to all EEA inflows of staff from 2019 could cause a shortfall of nurses of up to 20,000 by 2025/26, compared to the base case supply (House of Commons Library, 2018). However, this is not an immigration policy the Government has proposed, and it has stated its intention to continue to allow the NHS to recruit the necessary numbers of staff from the EU (House of Commons Library, 2018). The National Institute of Economic and Social Research also estimate that in the short run, the UK may have an additional shortage of around 2,700 nurses and by projecting this shortfall over the remaining period of Brexit transition to 2021 they suggest that there may be a shortfall of around 5,000-10,000 nurses (in addition to current vacancies) (National Institute of Economic and Social Research, 2018). There is evidence to suggest that there is already a reduction in the number of health care staff from the EU working in the UK and that others are planning to leave. The number of people from the EEA on the Nursing and Midwifery Councils register in March 2018 compared with March 2017, fell by 8% (Nursing and Midwifery Council, 2018). There are also concerns and evidence that doctors from the EEA who work in the UK are either considering leaving or are leaving since the referendum result. A survey of 1,193 EEA doctors working in the UK found that 42% were considering leaving since the outcome of the referendum, and a further 23% were unsure whether to stay (Torjesen, 2017). A later survey by the British Medical Association has found that 35% of EU doctors are considering leaving the UK and 78% are not reassured by UK Government statements about the rights of EU Citizens in the event of a "no deal" (British Medical Association, 2018).

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5.1.13 Determinant: Employment and Skills …continued

Loss of key skilled workers in key sectors linked to health and well-being, due to non UK EU nationals leaving or having higher restricted access to opportunities to work in the UK	There is a shortage of UK trained nurses, meaning that there are concerns about staff shortages if immigration rules are tightened or more non UK EU national staff leave (Hurlow, 2016). The Health Committee's 2017 report into Brexit and health and social care quoted evidence from the Chief Executive of Health Education England, Ian Cumming, who stated that self-sufficiency from training UK health care staff could take "somewhere in the region of 10 or 12 years." The Committee concluded that the "requirement for the UK to maintain an immigration system which facilitates swift entry to the UK for the health and social care workforce is likely to continue for many years." (House of Commons Library, 2018). **Social Care** There is a lack of robust data on the social care, independent and third sector workforce in Wales. However, the number of EU nationals working in social care is far greater than those working in the NHS (Welsh NHS Confederation, 2018). In 2016, EEA nationals made up 5.4% of the social care workforce in the UK. In Wales their numbers have grown by 56% since 2011 (National Institute of Economic and Social Research, 2018). Based on the Annual Population Survey, ONS (April, 2017) between 2011 and 2016 the total number of EU nationals in the social care workforce in Wales increased from 1,600 to 2,500 (+56%) (National Institute of Economic and Social Research, 2018). The current Welsh Government funding arrangement will not cover expected cost increases by 2021-22 (Welsh Local Government Association, 2018). Non-EEA immigration rules are not seen as meeting the needs of the adult social care workforce as many roles may not meet the minimum skills or salary thresholds for a Tier 2 visa (National Institute of Economic and Social Research, 2018). Around 6% of the social care workforce in England are EU nationals. Losing such significant staffing would have severe impact on service delivery (Middleton & Weiss, 2016). While the contribution of EEA nationals to the NHS is important, it is arguably even more so in social care services across the UK (National Institute of Economic and Social Research, 2018). Even if a withdrawal agreement is reached that preserves the rights of pensioners already abroad, increased capacity in the UK health and social care system will likely be necessary to compensate for the fact that future generations of pensioners cannot be cared for in countries such as Spain (Nuffield Trust, 2017).

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Loss of key skilled workers in key sectors linked to health and well-being, due to non UK EU nationals leaving or having higher restricted access to opportunities to work in the UK	Social care staff are protected by numerous employment rights which, although they will initially be incorporated into UK law, the protection that comes from interpretation of disputes by the European Court of Justice will cease (Fahy, et al., 2017). Social care recruitment is one of six areas that the UK Parliament's Health and Social Care Committee consider to be 'vital' for health and social care (Dr Sarah Wollaston MP, 2016) (House of Commons Health and Social Care Committee, 2018). The Welsh Government acknowledges that there is no specific data for Wales for numbers of EU nationals in the social care sector although the NHS in Wales is reliant on EU workers at every level (Welsh Government, 2017a). In July it announced £200,000 funding to fund research into how Brexit could impact on the social care workforce and to help the sector plan for any consequences (Welsh Government, 2018). Although it refers to the movement of EU nationals following Brexit the UK Government's White Paper (HM Government, 2018) makes no particular reference to the social care workforce. **Food Safety / Vets** Nearly 50% of veterinary surgeons registering in the UK qualified elsewhere in the EU. Within meat hygiene services, it is estimated that more than 80% of the veterinary workforce is made up of non-British EU citizens (Welsh Government and Plaid Cymru, 2017). **Academia – health and medical research, life sciences** Some 1360 academic staff in Welsh Universities came from EU countries as at December 2014; any restrictions to the free movement of workers or access to Europe-wide research programmes would severely impact Wales' ability to access academic talent and to engage in cross-border collaboration. The life sciences sector and the pharmaceutical industry are significantly dependent on EU citizens (Welsh Government and Plaid Cymru, 2017).

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5.1.13 Determinant: Employment and Skills …continued

Future job security in sectors linked to exports / exposure to changes in tariff and non-tariff barriers	The Centre for Economics and Business Research (CEBR - March 2014) found that 200,000 jobs in Wales depend on exports to the EU, around 14% of the workforce. (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a). Food and live animals accounted for around 5% of the total exports of goods to the EU from Wales in 2015 (though in 2014, 90.7% of total exports of Welsh food and drink went to the EU with only 9.3% going to non-EU countries) (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a). Agricultural share of employment in Wales is higher than the UK with 4.1% of employment (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a). The conclusion of the Assembly External Affairs and Additional Legislation Committee in 2017 was that: *"Manufacturing plays a greater part in the Welsh economy than elsewhere in the UK and the principal market for Welsh manufacturers is the EU. The imposition of tariffs poses significant risks for this sector, especially for manufacturers that exist within global value chains.* *There are significant risks to the trade in agricultural products, particularly if the UK has to rely on WTO rules for a period of time (which appears likely). Welsh farmers do not want to see agriculture (which is culturally and economically important to Wales) traded off in favour of broader UK objectives such as access to service markets"* (National Assembly for Wales External Affairs and Additional Legislation Committee, 2017a). 21% of men with low education and 17% of men with mid-level education in Wales are projected to be working in very highly exposed industries if trade terms revert to WTO rules. Low education workers in regions where very highly exposed industries are major employers of workers may be particularly vulnerable if these exposed industries shrink as a result of new trade barriers because these workers may have fewer transferable skills (Levell & Keiller, 2018). Analysis of large and regionally important companies by Cardiff university in 2017 found that *"For a number of firms the prospect of Brexit resulting in significant disinvestment from Wales (and the UK) – and in some cases potentially complete exit – was a real one. The companies in this bracket tended to be multinationals with a large presence in Wales; a number of these in the aerospace systems and services, automotive, transportation etc., and electrical engineering etc. sectors"* (Welsh Economy Research Unit, 2017).

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5.1.13 Determinant: Employment and Skills …continued

Future job security in sectors linked to exports / exposure to changes in tariff and non-tariff barriers	The Cardiff University also found that *"respondents in sectors that are non-EU oriented, may see Brexit as a relatively minor problem. Sectors here include construction and civil engineering, paper and wood, business services and TV production. Even here of course there is the prospect of impact should the UK economy overall experience slower growth as a result of Brexit"* (Welsh Economy Research Unit, 2017). CBI analysis of a "no deal" scenario highlights agriculture and forestry facing significantly higher tariff barriers on exports. Food and drink exports are estimated to experience a large 30% average increase in non-tariff barriers, aerospace a 11% rise in non-tariff barriers and metals a 7.4% increase (Confederation of British Industry, 2017). Airbus is a major employer in North Wales and has highlighted the risks for future competitiveness and security of its operations in the UK due to Brexit (Airbus, 2018).
Opportunity for increasing skills in Wales	The Health Committee's 2017 report into Brexit and health and social care quoted evidence from the Chief Executive of Health Education England, Ian Cumming, who stated that self-sufficiency from training UK health care staff could take "somewhere in the region of 10 or 12 years." The Committee concluded that the "requirement for the UK to maintain an immigration system which facilitates swift entry to the UK for the health and social care workforce is likely to continue for many years." (House of Commons Library, 2018).
Risks to investment in employability and skills due to loss of EU funds and programme access in Wales	European Structural and Investment Funds have invested significantly in skills and employability programmes in Wales. The funds support 5,000 people a year into work and help around 21,500 people annually gain qualifications (Welsh Government and Plaid Cymru, 2017). Potential future loss or change of access for young people to ERASMUS + programme (Welsh Government and Plaid Cymru, 2017).

5.1.14 Determinant: Working Conditions

Specific area	Sources
This section looks at working conditions for health workers and other workers	It has been identified that longer working hours are associated with negative health outcomes such as enhanced risk of coronary heart disease and stroke, therefore this directive is viewed as protective for health (Steadman, 2018). In the literature, the Welsh NHS Confederation call for the retention of the existing UK Working Time Regulations (1998), and protection of existing workers' rights, as well as retaining employment Directives in UK law for the current and future workforce. The Welsh NHS Confederation also outlines areas where EU legislation currently applies including a Directives on measures to improve safety and health at work, occupational health and safety, sharp injuries in the hospital and health care sector and the manual handling of loads (Welsh NHS Confederation, 2018). Fahy et al. (2017) assess the impact of three potential scenarios for Brexit and conclude that under a "Soft Brexit", workers' rights in the NHS (and by extension all workers' rights) are likely to remain the same, under a "hard Brexit" rights are likely to be diminished and under a "failed Brexit" (same as "no deal" with trade with EU based on WTO rules) there would be no protection for existing rights and the European Court of Justice would cease to adjudicate on disputes (Fahy, et al., 2017). The authors also raise concerns over the ability of future trade deals to subject the NHS to investor-state dispute settlement mechanisms, which could allow corporations to contest domestic policies on working conditions by arguing that such policies are non-tariff barriers to trade or investment. The literature review identified that a number of authors view working conditions as potentially affected by future trade agreements, presenting risks and opportunities for workplace related health (Steadman, 2018) (Nuffield Trust, 2017) (Rimmer, 2016). The TUC has stated that that although equality, employment and health and safety standards will remain in place on the day we leave it will not stop future governments from repealing or watering down these rights further down the line (Trade Union Congress, 2016). However, others argue that specific provisions on labour market regulation are not typically part of international trade deals and leaving the EU may create an opportunity for the UK to introduce new standards for professionals who come here to work from elsewhere in Europe (Nuffield Trust, 2017). Although there are concerns about workers' rights post-Brexit for low-skilled workers, agency workers and the self-employed, there are 'promising signs' from the UK Government regarding references to 'good work' (The Health Foundation, 2018). It is unlikely that the entirety of the Working Time Rules could be repealed if the UK left the EU and EEA. However, if the UK chooses to retain the Directive past rulings would still apply (Rimmer, 2016).

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5.1.14 Determinant: Working Conditions …continued

This section looks at working conditions for health workers and other workers	In Wales women are still more likely to be in low-pay occupations than men and the difficulty of balancing caring responsibilities while moving up the career ladder is one of the drivers of the inequality faced by women (Equality and Human Rights Commission, 2018). The Welsh Government should ensure public bodies have due regard to socio-economic disadvantage as part of their strategic decision-making; and incorporate the United Nations Convention on the Rights of Persons with Disabilities fully into Welsh legislation (Equality and Human Rights Commission, 2018). The National Assembly for Wales is concerned about the loss of the EU Charter of Fundamental Rights post-Brexit (National Assembly for Wales External Affairs and Additional Legislation Committee, 2018a). The Welsh Government has accepted the recommendations of two Committee reports calling on the UK Government to protect the human rights and equalities standards and other protections that Welsh citizens have benefited from as being citizens of the EU (National Assembly for Wales Research Service, 2018d) (Welsh Government, 2018a). After signing an Intergovernmental Agreement (IGA) the Welsh and UK Governments began discussions about entering into an agreement to endorse the existing framework of equal treatment legislation (UK Government Cabinet Office, 2018). The UK Government says it would maintain current employment and workplace rights (HM Government, 2018) (Department for Exiting the European Union, 2018).

5.1.15 Determinant: EU Funding: Structural Funds

Specific area	Sources
European Social Fund (ESF) European Regional Development Fund (EDRF)	Wales currently receives £680m a year in overall EU funding (Welsh Government and Plaid Cymru, 2017) which is split between West Wales and the Valleys, which gets the majority of the funding due to lower levels of economic output, and East Wales. The funding is allocated by the Welsh Government through the Wales European Funding Office. Although EU funding is a relatively minor source of direct investment in health, it has contributed to factors affecting the wider determinants of health such as employment and training schemes in order to tackle poverty and contribute to the well-being of the Welsh people (Welsh NHS Confederation, 2018) (Brexit Health Alliance, 2018a). Losing access to EU funding and structural support for disadvantaged areas would risk widening health inequalities within the UK (British Medical Association, 2018a). Any replacement EU Structural Funds should adhere to the key principles that underpin EU Cohesion Policy in order to address the 'persistent' gap between the economic performance of areas of need and areas of opportunity (Welsh Local Government Association, 2018). However, there is an opportunity to 'do things better' including the development of a Single Fund, combining capital and revenue, and more streamlined and simplified processes (Welsh Local Government Association, 2018). The requirement for ERDF and ESF funding to be 'match-funded' means that funding partners, particularly from the private sector as well as central government departments, may choose not to invest in projects without the security of knowing that 50% of the funding was being provided through EU structural funds (Sheffield Political Economy Research Institute/The UK in a Changing Europe, 2016). Individual opinion statement that the UK Government would have more money to give to areas like Wales if the UK leaves the EU (BBC, 2016). Resources (including EU agencies, funding programmes, networks and health in overseas aid) is one of six areas of concern where leaving the EU is likely to have an impact on health in the UK (Dr Sarah Wollaston MP, 2016). The Welsh Government has set out its objection to the Shared Prosperity Fund as a UK-wide programme (Welsh Government, 2017b).

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5.1.15 Determinant: EU Funding: Structural Funds …continued

European Social Fund (ESF) European Regional Development Fund (EDRF)	The Welsh Government has accepted the recommendations of the External Affairs and Additional Legislation Committee Inquiries Wales Future Relationship with Europe and The Future of Regional policy - what next for Wales? (Welsh Government, 2018g) and the Finance Committee report into the replacement of EU funding streams after Brexit (Welsh Government, 2018f). The UK will take part in all EU funded programmes until December 2020, subject to a final negotiated agreement (UK Government and European Union, 2018). The UK Government has announced a UK wide Shared Prosperity Fund to replace EU structural funding (UK Government Ministry of Housing, Communities and Local Government, 2018). The UK makes no reference to structural funding in its White Paper (HM Government, 2018) although it has published a number of Technical Advice Notes (Department for Exiting the European Union, 2018) guaranteeing EU funding awarded to organisations until the end of 2020.

5.1.15 Determinant: EU Funding: Common Agricultural Policy (CAP)

Specific area	Sources
Direct payments to farmers Rural Development Programme	The Welsh food and farming sector supports over 240,000 jobs, with nearly 52,000 employed on Welsh farms alone. Up to 28 percent of people in Welsh rural communities work in the agricultural industry (Farmers' Union of Wales and NFU Cymru, 2018). Farmers' unions and the CBI are all calling for agricultural support post-Brexit to be maintained at current levels and a transition period of 10 years to allow for adjustment to new agricultural policies (Farmers' Union of Wales, 2016) (NFU Cymru and CBI Wales, 2018). The Country Landowners' Association Cymru supports the development of an over-arching UK-wide Food, Farming and Environmental Policy framework that includes the interests of Welsh rural businesses (Country Landowners Association, 2016). Unless new agricultural subsidies are introduced, farmers would be among the 'big losers' following Brexit (Centre for Economic Performance, 2018). Resources (including EU agencies, funding programmes, networks and health in overseas aid) is one area of concern where leaving the EU is likely to have an impact on health in the UK (Dr Sarah Wollaston MP, 2016). Welsh farmers and landowners currently benefit from around £274 million each year in direct subsidies under the CAP and this funding will (in due course) cease (Welsh Government and Plaid Cymru, 2017). Not only is EU funding hugely important to Wales in terms of driving economic growth and jobs, it also enables the Welsh Government to leverage additional resources from both public and private sources (Welsh Government and Plaid Cymru, 2017). The Welsh Government has accepted the recommendations of a number of Committee reports to ensure that the interests of the farming industry are safeguarded (Welsh Government, 2018g) (Welsh Government, 2018a) (Welsh Government, 2018f). The UK Government's Agriculture Bill (Department for the Environment, Food and Rural Affairs, 2018) will authorise new expenditure to provide support for the land management sector once the CAP comes to an end until the Welsh Government introduces its own legislation. As the first step towards this the Welsh Government issued a consultation (Welsh Government, 2018h). The UK will take part in all EU funded programmes until December 2020, subject to a final negotiated agreement (UK Government and European Union, 2018).

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5.1.15 Determinant: EU Funding: Common Agricultural Policy (CAP) …continued

Direct payments to farmers Rural Development Programme	The UK Government has announced a UK Wide Shared Prosperity Fund to replace EU funding (UK Government Ministry of Housing, Communities and Local Government, 2018). Although details of how the fund will operate are currently unclear. The UK Government's White Paper (HM Government, 2018) proposes the introduction of a new Facilitated Customs Arrangement to remove the need for customs checks and controls between the UK and the EU and include a common rulebook for agriculture, food and fisheries products. It has published a number of Technical Advice Notes (Department for Exiting the European Union, 2018) relating to EU funding and farming.

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Appendices

Appendix One: WHIASU Population Groups Checklist[2]

(Please note that this list is a guide and is not exhaustive)

The target groups identified as vulnerable or disadvantaged will depend on the characteristics of the local population and the nature of the proposal itself. The most disadvantaged and / or vulnerable groups are those which will exhibit a number of characteristics, for example children in living poverty. This list is therefore just a guide and it may be appropriate to focus on groups that have multiple disadvantages.

Age related groups*

- Children and young people
- Older people

Income related groups

- People on low income
- Economically inactive
- Unemployed / workless
- People who are unable to work due to ill health

Groups who suffer discrimination or other social disadvantage

- People with physical or learning disabilities / difficulties
- Refugee groups
- People seeking asylum
- Travellers
- Single parent families
- Carers
- Lesbian, gay, transgender and bisexual people
- Veterans
- Homeless
- Sex workers
- Black and minority ethnic groups**
- Religious groups**
- Language / culture**

Geographical groups

- People living in areas known to exhibit poor economic and / or health indicators
- People living in isolated / over-populated areas
- People unable to access services and facilities

* Could specify age range or target different age groups for special consideration.
** May need to specify.

The impact on the general adult population should also be assessed. In addition, it may be appropriate to assess the impact separately on men and women.

2 Wales Health Impact Assessment Support Unit (2012) Health Impact Assessment: A practical guide

Appendix Two: WHIASU Health and Well-Being Determinants Checklist[3]

1. Lifestyles	• Diet • Physical activity • Use of alcohol, cigarettes, non-prescribed drugs • Sexual activity • Other risk-taking activity
2. Social and community influences on health	• Family organisation and roles • Citizen power and influence • Social support and social networks • Neighbourliness • Sense of belonging • Local pride • Divisions in community • Social isolation • Peer pressure • Community identity • Cultural and spiritual ethos • Racism • Other social exclusion
3. Mental Well-being	Consider: • Does this proposal support sense of control • Does it enable participation in community and economic life • Does it impact on emotional well-being and resilience
4. Living / environmental conditions affecting health	• Built environment • Neighbourhood design • Housing • Indoor environment • Noise • Air and water quality • Attractiveness of area • Green space • Community safety • Smell / odour • Waste disposal • Road hazards • Injury hazards • Quality and safety of play areas

3 Wales Health Impact Assessment Support Unit (2012)Health Impact Assessment: A practical guide

5. Economic conditions affecting health	• Unemployment • Income • Economic inactivity • Type of employment • Workplace conditions
6. Access and quality of services	• Medical services • Other caring services • Careers advice • Shops and commercial services • Public amenities • Transport including parking • Education and training • Information technology
7. Macro-economic, environmental and sustainability factors	• Government policies • Gross Domestic Product • Economic development • Biological diversity • Climate

Appendix Three: Notes from the Participatory Workshop

Wednesday 3 October 2018

Vulnerable groups

Group	Positive	Negative
Young adults	Opportunities for young people for increased training and less competition for university places?	Less opportunity for: • employment • study • travel Less likely to have voted for Brexit so may feel particularly powerless / marginalised Note possible cumulative impact of increased tuition fees, rising house prices, austerity
Students	Universities marketing towards students outside of the EU e.g. Far East, China	Less opportunity to study abroad Less opportunity for EU students here Perceptions of Welsh Universities might change – less welcoming, diverse and inclusive?
Everyone	Uncertain	Uncertain
Business owners – especially SMEs	-	SMEs who export / import Added paperwork / costs / barriers Workforce issues Uncertainty
Farmers	Some farmers wanted to leave the EU as didn't like restrictions etc – will feel that there are benefits LONG TERM New opportunities for policy on land management that meets Wales' needs better? / incentives on environmental protection	85% land agriculture Inability to get cheap labour / export goods Hit on multiple fronts (rurally isolated, high depression rates dependent on EU funding) Uncertainty – stress The CAP review Risk to food supply
UK nationals returning to UK	-	Medicines, health and social care need or returners may impact on health and social care services / unbalance the system NHS / social care has evolved since they left UK so difficulty negotiating the system

All age related vulnerable groups	-	Probably have less influence on decisions being made e.g. children / older adults
Equality groups / inclusion	-	Cultural change, reduced tolerance / rise in discrimination / hate crime stats
People dependent on medicines / require health care e.g. insulin –	Opportunities to forge relationships with other countries in clinical trials etc?	Anxiety / worry Lack of access to medication (45 million packs of medicine / month imported from EU, 37 million packs exported to EU Clinical trials access (especially rare diseases) – will research and trials come to the UK? Access to diagnostics, genomics, treatments (the medicines / equipment / staff may be in short supply)
People with life limiting illness	-	If access to health care, treatment, trials, diagnostics affected
People with rare conditions	-	Likely to be worst hit by loss of access to clinical trials / small market share making it less likely that pharmas will launch products here
People on clinical trials	Opportunity for new research links outside of EU	Could impact on number of trials in UK and limit access to trials Could impact current trials?
Women	-	Lower income jobs (also applies to men in this situation) Increase in caring roles if rising demand on social care If austerity, they have increased pressure to manage home budgets
People with addictions	Stronger regulations on these - further and faster than EU - could have positive impacts (could also be case for sugar and salt in food)	Change in EU requirements Reduction in cooperation Potential reduction in regulation on products with increased risks to user Potential increased access with associated increased use

Geographical groups	-	Areas dependent on one major employer Query on where investment will go Rural areas / isolated areas, already with less services EU structural funded areas Port towns / docks delays
Income related groups	-	People on low income – less resilient to economic changes / inflation People in work – businesses relocating risk of unemployment / relocation People whose work is dependent in some way on EU trade
EU Nationals	-	Settled in UK – facing uncertainty in their lives. Families with children born in the UK and parents from EU countries. Stigma associated with being an EU national in the UK at this point in time?

Social Determinants

1 Lifestyle

	Positive	Negative
Alcohol	Opportunity to increase regulation	Could increase due to stress and economic difficulties, might already be happening due to the uncertainty around Brexit Reduced mental well-being could increase use
Physical activity	-	Barriers such as time and money could increase Reduced mental well-being could reduce activity levels use
Food	If an increase in sustainable food production (but this is complex in reality and requires investment which has largely come from EU e.g. new centre for food in Aberystwyth (WEFO funded Gundell) – importance of packaging (and R&D) Increase seasonal food Opportunity to increase regulation e.g. alcohol, sugar, salt Increased opportunity for employment in local food industry (don't have to be a vet but a certified officer) Opportunity for new small, local businesses to produce and sell homegrown food	Potential impact on access, quality and price Will prices rise or fall? People's finances may affect whether they can make healthier food choices Possible inflation - impact on people already in food poverty Reduced mental well-being could reduce healthy eating Lack of vets to certify 'origin of meat' as majority are EU citizens – will this lead to perishable food being disposed of if delays in certifying – increased food waste?
Tobacco	We could increase regulation on tobacco	Could increase due to stress Lose pictorial images on packaging (copyright with EU). What packaging will be used in the transition period – will it revert to branded packaging?
Food hygiene	Work force issues / opportunities – change of nature of role to certifying officer	Over 90% of official vets are from EU or elsewhere. Many returning to EU
Lifestyle	-	Potential longer commute to work or increased working hours with increased risk of unhealthy lifestyle, plus mental health issues / stress associated with this

2 Society and community

	Positive	Negative
Communities	Some communities may feel 'better' and more connected since Brexit	If one main employer or global company, increased risk people will move away for new jobs and fracture communities If economic downturn, then reduced investment in local authorities and reduced funding for social care / community activities (opposite if economic prosperity) Communities less equipped to deal with adversity as community structures are now different, families are fragmented, parents working, don't know neighbours etc. – may become more fractured if people have to go further for work / relocate somewhere where they don't know people Port towns – may experience particular changes Impact on people who didn't vote either way in the referendum? What do they think now? A blame culture if Brexit doesn't turn out well? Disagreements within families, friendship groups, work colleagues relating to the way people voted – blame and hostility
Social care	Opportunity to attract more UK nationals into the care sector	Many carers are non UK, EU citizens so reduction in workforce Negative impact on people that require daily care e.g. elderly, isolated, long term ill health, poor mobility
Community identity / relationships	Opportunity to increase connectedness of communities by increasing co-production / co-creation – some parts of community will feel they have 'taken back control'	Tolerance reduced- discrimination increasing Younger people may chose to move away if feel don't identify with the society that has been created by Brexit
	-	Q: Welsh language? – Challenge of Welsh language standard on top of Brexit and workforce pool
The arts	Role for the arts in helping to bring together divided communities / help people make sense of a new reality / develop a new shared identity	-
Port towns	-	May be issues for port towns due to customs etc.

3 Mental well-being

	Positive	Negative
Sense of control	Some people felt a sense of control by voting for – or against loss of control	Sense of betrayal if 'no deal' plus impact Many others feel loss of control / uncertainty over the future Brexiteers feeling betrayed if end up with a soft Brexit? Government 'Control & Command' for Brexit so increase sense of loss of control and reduced Mental Well-being People who voted against may feel ignored given the extremely close voting % for and against Brexit
Mental health services	-	Potentially increased demand and harder to provide – loss of staff / funding Loss of European mental health network? Not sharing information and best practice
Participation	Peaceful activism and engagement in politics has increased	-
Participation	Communities may start to engage in community life more. Help support to engage in this Potential to enhance resilience in communities. 'All in it together' / 'Get on with it' Post war generations may not have the life skills to deal with adversity (as communities did during the wars) Opportunity for general increase in involving public in policy decisions and respecting their views – co-production	Ability to interact in economic life i.e. mortgage impact / debt levels

Resilience	War time / siege mentality where people brought together in times of hardship	Q: How equipped is society to be resilient to big changes? Classes to be affected - lower / middle / upper middle class? Mitigation: How to build social support? Potential mitigation is the role of arts in communication of Brexit and how communities feel, bringing people together Art can help 'make sense of things' and to build a common identity Sense of 'all in it together' not there if people see others are to blame. And do we have the skills / capabilities / structures to allow communities to come together in times of hardship? After 70 years of peace? We don't know our neighbours like we used to etc Middle classes – may not have experienced hardship before so may not have the networks or resilience to cope with it / less able to adjust e.g. increase in inflation and impact on mortgages?
Emotional well-being	Opportunity – arts and health / well-being	People who lose jobs Resentment against 'leave voters' if experience adverse effects form Brexit

4 Living / environmental conditions affecting health

	Positive	Negative
Environmental Regulations	Devolved legislation area of EU law – UK Government will lead in the interim but potential for ↑ power to Wales ? Opportunity to raise standards	Possibly most vulnerable to a no deal scenario due to future trade pressures Potential for less power to Wales? Potential deregulation if austerity and focus shifts to increasing economic output / will we need to continue to align with EU to enable that trade deal?
Air Quality EU regulations	Short term – commitment to maintain current levels in White paper	We are already not complying ↓ e.g. EU Court of Justice fines for air quality levels If not part of EU – who will oversee / enforce and hold government to account? Potential for lower or raised standards – WHO regulations are higher
Waste /Housing / Infrastructure / Rail	-	Many owned / delivered by European firms – EDF / Arriva Investment into infrastructure for education / transport etc becomes centralised to popular areas (England / London, Wales / Cardiff) depending on political views – may support more regional investment

Housing	A lower regulatory environment may attract more developers to Wales	Investment needed – already inequalities in terms of the areas that developers will invest in Housing – many developers would be keen to see a lowering of standards but impacts on peoples health / sustainability (NOTE: Grenfell tower may have a greater impact on quality / regulations – but probably only on fire safety, not across the board ?) Risk of increased fuel poverty Risk of reduced standards if reduced investment in an area Risk of reduced standards of house building in order to increase investment by companies
Primary schools / FE colleges / hospitals / street neighbourhood level / transport infrastructure	-	Already a challenge to get investment in areas in Wales – risk to investment and spread of investment (SE / London vs Wales / Regions), becomes more political. Loss of EU structural funds invested in North and West Wales and Valleys City deals PFI for Wales, 21st century schools and hospitals – already a challenge to get bidders

5 Economic conditions affecting health

	Positive	Negative
Working conditions	Higher welfare / working conditions could make Wales more attractive place to work	Risk to social contract / EU working conditions laws e.g. European working time directive / maternity / paternity. Rights, regulations – uncertainty Risk to health and safety legislation – protecting factor. Noted trend for deregulation in UK / England – highly dependent on political context Will the focus on Brexit mean that other significant issues are not addressed: i.e. A.I. future workforce Political diversity between England and Wales, may magnify these effects Deregulation agenda to attract more businesses already in play before Brexit – loss of EU means some of the restrictions are removed so this could happen faster Would greater divergence between England and Wales attract or put off staff / businesses from coming here? Potential for internal competition between 4 nations
Informal economy	-	Expansion of grey economy in some communities more affected
Business	Is there a need for a "Wales Development Agency" to sell 'Wales'?	Business and other EU networks have been beneficial to Wales Many trade policies are UK based and not devolved Risk of mass unemployment event if global companies leave Will Wales be less attractive for global investment? Loss of jobs in local government – budget in this sector contracting already

Economy	Impact on economy and potential to go either way	Impact on economy and potential to go either way Risk of localised contraction Prosperity Fund may not be devolved and UK lead Risk that global companies relocate Where to chose to invest in the budget dependent on the government of the day e.g. how much to invest in welfare in order to offset Brexit issues?
Regeneration – EU funding	Perspectives / perception - EU funding not always perceived as benefitting communities - potential for an alternative model	Regeneration of areas been previously EU funded, therefore risk of reduced funding in future Perception that communities are not aware of what EU funding has done for their area Shared Prosperity Fund – not clear that Wales will have a say over how its share is invested – may be a centralised decision
- Procurement	Tendering obtaining contracts for public sector contracts - could be easier – though many restrictions are actually imposed by UK Opportunity for contracting so that UK system can be more streamlined (no longer advertise in EU) with increased UK contracts Procurement of food locally	Currently over certain level has to go out to all Europe

6 Access and quality to services

	Positive	Negative
Health care	-	Workforce issue Public health perspective: data; surveillance; monitoring data sharing – communication Access to research and Randomised Control Trials EU workforce may leave due to uncertainty Risk of disinvestment in public health if economic difficulties and revert to biomedical approaches (secondary care focus) Decrease in surveillance and planning for infectious diseases as used to rely on EU level coordination and systems
	-	R&D / collaboration - Many relationships will dissipate and collaboration with European partners
	-	Regulation of health care workforce - impact on restriction to practise Re-validations for nurses – linked to PDAs etc Increasingly more complex to recruit EU citizens
	Organ / stem cell donation – implications for impact on Wales. Big exporter of organ donation – still be accepted? Impact on EU patients?	-
	-	Drugs supply for rare diseases – some patients have to move to the source of the drug as short life span of medicine – more complex if in EU / also to access specialists in their condition Potential to disrupt radioisotope supply
	-	Insulin pens; 32 component parts, 12 different countries – need free flowing import / export

	-	Risk re: reciprocal agreement – E111 cards for travel – increased cost when travelling Less choice – used to be able to elect to go to an EU country for certain treatment Increased cost of / need for travel insurance
	-	Scanners and equipment many maintenance contracts are from EU and R&D staff needed for it Diagnostics are undertaken in different laboratories across the EU so may lose access to these
	-	Reduced choice re: location of operations (EEA)
	-	Change in regulatory framework – increase in fake medicines
	-	Opportunity cost. Other quality improvement work on hold due to Brexit e.g. antimicrobial resistance Many EU networks e.g. European mental health network, which will be stopped / disrupted and can impact on health and social care Reduced ability to deal with cross border issues e.g. health protection incidents Potential to lose access to surveillance and alerts Reduced investment in public health approaches – instead focus on 'tried and tested' health care approach – Darzi report on impact if disinvestment in public health

7 Macro-economic environmental and sustainability factors

	Positive	Negative
Carbon footprint	-	Increased carbon footprint as increased distance to import food and other products from deals with other non EU countries
Government policy	Power of legislation WFGA. Wales '5 ways of working' so can challenge / hold to account Need to 'sell' Wales to the world e.g. Wales ahead of England in terms of primary care data available for analysis	Opportunity cost. Other policy priorities on hold due to Brexit e.g. housing / AI / skilling for jobs for the future If economic problems – GDP may continue to be prioritised over well-being goals and sustainable development Reduced collaboration across EU when could always have collaborated with non-EU countries even as an EU member An outward looking Wales is at risk if increasingly difficult to develop new relationships Quality of government work reduced – ability to use 5 ways of working when working across so many issues under tight timeframes?
Devolution	Potential increase in powers for Wales	Potential for policy areas to be "held" by UK government in lengthy transition
Climate change	-	Climate change – Lancet paper, big issue, distracted by Brexit Trade deals i.e. US do not have same focus on this as EU Loss of focus on this affects whole world, not just Wales / UK (impact worse on S hemisphere) May increase carbon footprint if importing range of goods from further afield
Pandemics	-	Poorer response as reduced collaboration with closest neighbours
'Shared Prosperity Fund'	Possible opportunity to reshape Wales funding	No indication from UK that this will be devolved or what allocation will be for Wales

Agriculture policy	Long term new opportunities for policy on land management that meets Wales' needs better?	Short to medium term – CAP taken back by UK government
Northern Ireland	-	Potential for damage to community relations and economy / violence / terrorism an increased risk if tensions resurface as a result of Brexit

Appendix Four: Brexit HIA Participatory Workshop Evaluation Results

Wednesday 3rd October 2018

1. What did you learn during the workshop?

1. More about the wider impacts of Brexit outside my normal area of work.
2. A few nuggets of useful thoughts that I hadn't considered.
3. That this is possibly even more complex than I already thought. Also, a lot around medical issues / challenges e.g. medication supply.
4. Seeing HIA process in action.
5. Highlighted the multi-faceted considerations in what is an extremely complex HIA. Provided greater awareness of wide ranging public health implications.
6. I learnt loads of things! Widened my thoughts on areas to look at.
7. More of the specifics around implications of Brexit – more worms out of the can!
8. Too much to go into detail. Got reinforcement of the sheer scale of the potential impacts. Was very evident.
9. Lots! Things outside my current working and sector – specific issues / opportunities.
10. How to run a participatory workshop.
11. I learnt a lot about some of the wider implications and stats that I wasn't aware of e.g. vets.
12. The amount of thinking and concern about Brexit in different industries.

2. What do you feel were the positive outcomes resulting from this workshop?

1. Feedback from participants reinforced findings of early work / research / interviews.
2. Have a much better understanding of the issues and feel reassured that I have looked at the issues from all angles and have a good handle on it.
3. A well-rounded overview and understanding of the potential impacts.
4. Seeing variety of views. Understanding how my areas of expertise link into a big complex topic of Brexit.
5. Yes – discussions, meeting colleagues, ongoing commitment to influence wider discussion.
6. That there may be some issues in Brexit depending on how certain areas are handled / developed etc.
7. A few more positive potential impacts of Brexit that hadn't occurred to me. Anything to put health higher up on the agenda in the context of Brexit is beneficial. Health impacts of Brexit should be more in public consciousness.
8. The ability to capture such a broad range of views and specialist information to be

included in the HIA.

9. Opportunity to discuss some of the wider picture – not sector specific.
10. Allowed everyone to have a voice and to share knowledge and experience.
11. The shared learning and understanding.
12. Lots of knowledge around the room on the HIA.

3. What do you think worked and what didn't?

1. Informal participative approach worked well as did capturing everything on flip chart which enabled participants to review.
2. Better to start with the issues first and then the people instead of people first?
3. All worked well.
4. Format.
5. No comment.
6. I think the format worked well – lots of open discussion.
7. Having a wide range of organisations who were able to contribute to discussions from different perspectives.
8. All appeared to work well.
9. Great facilitation – difficulty seeing the write-up board (which was addressed).
10. Relaxed and friendly atmosphere.
11. Open discussion as opposed to doing it on each table.
12. A huge amount covered – possibly some areas not covered in depth?

4. What were your expectations prior to the session? Did the session meet them? (Please rate from 1-10 where 1 = not at all, 10 = very much met them.)

1. 10 - session was as expected.
2. 9 - thought it was great, although expected more of a debate.
3. 10
4. 10
5. 8
6. 8 / 9 - I wasn't really sure what to expect and how much I could contribute.
7. I didn't know what to expect so can't score this!
8. 9
9. 8
10. 10 - engaged audience.
11. 10
12. 10 - to feed in.

5. Any other comments you wish to make?

1. Enjoyable session.
2. No comment.
3. No comment.
4. Please add cycling and walking information to your parking instructions!
5. No comment.
6. No comment.
7. No comment.
8. No thanks!
9. No comment.
10. No comment.
11. Very interesting and informative session.
12. No comment.

Appendix Five: Literature Review Protocol

Introduction

This protocol sets out the process that will be followed for a literature review on the impact of Brexit on the social determinants of health and population health and well-being in Wales.

Purpose

This literature review will inform a Health Impact Assessment on the Public Health implications of Brexit in Wales. The findings from this literature review will be combined with qualitative stakeholder views generated from interviews and focus groups, and a population health profile in order to identify specific potential impacts on health and well-being resulting from Brexit.

Background

The Wales Health Impact Assessment Support Unit (WHIASU) and the Policy, Research and International Development (PRID) Directorate of Public Health Wales (PHW) are exploring the potential public health implications of Brexit for Wales and carrying out a health impact assessment (HIA) as part of this work in order to plan, influence and advocate for population health.

The purpose of the work is to better inform key decision makers to prepare for the potential differential health and well-being impacts that may occur in Wales when the UK withdraws from the European Union and any transition / implementation period.

There is currently a high degree of uncertainty with regards to the future relationship with the EU and the legal and regulatory arrangements that will exist.

Analysis and predictions on the potential impact and outcomes of Brexit on a range of policy areas are varied, and the nature and value of evidence in predicting outcomes of Brexit is strongly contested and highly politicised in current debates.

As a result, it is particularly important for this HIA on the potential impact of Brexit on population health to take an independent, transparent and robust approach to the use of literature and evidence. This protocol sets out the approach to the use of published sources as part of the HIA.

Research question and key areas of interest

Research question

What does the literature say about the impact that Brexit (or other countries leaving economic and / or social pacts) might have or has had on the social determinants of health?

Social determinants of health

Using recognised HIA methodology (WHIASU, 2012) a HIA Screening was carried out at the initiation of the HIA and this identified the key social determinants of health that may be impacted on by the UK withdrawal from the EU. These include:

- Health and social care
- Lifestyles: food, alcohol, cigarettes
- Social and community relationships, family roles and relationships, community cohesion, discrimination, racism
- Mental well-being
- Living environment, built environment, housing, air quality / environment
- Health and social care
- Access to services, in particular social care
- Economic conditions, employment, key economic sectors e.g. agriculture
- Gross domestic product
- Government policy

Therefore, this literature review has a focus on the impact of Brexit on these determinants.

Studies of the health impact of other trade agreements

For example: HIA on Trans Pacific Trade Partnership.

Previous evidence on countries leaving economic and / or social pacts

This may include historical examples of nation states leaving economic and / or social pacts, or when a nation state has been sanctioned politically and economically e.g. Russia, North Korea, South Africa, Iran.

Definitions

The Oxford English Dictionary defines **Brexit** as "the (proposed) withdrawal of the United Kingdom from the European Union, and the political process associated with it".

There is no universally agreed definition of a **Hard Brexit** but the Cambridge Dictionary defines it as a Brexit in which the United Kingdom stops being a member of the European single market and gets full control of its own law-making and immigration.

Again there is no universally agreed definition of a **Soft Brexit** but the Cambridge Dictionary defines the term as a Brexit in which the United Kingdom's relationship with the European Union is a close as possible to what it was before Brexit.

https://dictionary.cambridge.org/dictionary/english/hard-brexit

https://dictionary.cambridge.org/dictionary/english/soft-brexit

Review team

Lead reviewer: Laura Morgan
Co reviewer: Nerys Edmonds / Amy Hookway
Evidence Analyst: Amy Hookway

Methods

The literature review will include the following stages:

Stage 1: Rapid scoping of published evidence via internet search, expert contacts, specialist websites e.g. **www.parliament.uk/brexit**, **www.ukandeu.ac.uk**, **Public Health Wales Brexit and Health** hub and reference checking for relevant material.

Stage 2: Systematic search of peer review journals via databases including Medline, HMIC, Psychinfo.

Stage 3: Title and Abstract screening

Stage 4: For included studies undertake data extraction into a themed bibliography to include: Authors; Reference; Organisation; category of evidence; methods; topic key word coding.

Stage 5: Review full text and Quality Assurance of literature: critical appraisal and bias check by lead reviewer. Co-reviewers to review at least 20% of sources and those which are borderline. Further inclusion / exclusion process based on quality

Stage 6. For included studies add in critical appraisal tool used / any quality concerns and key findings related to Brexit and determinants of health bibliography.

Stage 7: Thematic analysis of all included sources structured by topic (determinants). Comparative analysis of similar sources on key issues e.g. position statements by professional bodies. Critical analysis of strengths and weaknesses of currently available literature.

Stage 8: Peer review: Critical review of interim literature review findings by Brexit HIA Working and Advisory Groups

Stage 9: Appraisal and analysis of literature alongside other evidence of impact gathered in the HIA

Inclusion / Exclusion Criteria

Population

Include: Population of Wales and UK, publications focusing on the impact of Brexit across a range of priority population groups; populations affected by major changes in other trade or social pacts / treaties.

Exclude: Impact of Brexit on other European countries.

Types of Publication

Type of publication	Include / Exclude in literature review
Analysis and Policy papers from UK Governmental Departments, UK Treasury, UK Parliament, Welsh Government, National Assembly for Wales	Include
Statistical modelling of the impact of a range of Brexit scenarios from respected, independent, governmental organisations, peer review articles	Include
Papers from Governmental Agencies e.g. Food Standards Agency	Include
Peer review journal articles	Include Review or primary research Editorials – treat as stakeholder opinion
Analysis by policy organisations e.g. IFS, Institute of Rural Affairs	Include
Position statements and reports by professional Bodies e.g. BMA, NHS Confederation, Brexit Health Alliance	Include as Stakeholder Opinion element of HIA
Position statements and analysis from trade and industry bodies and organisations e.g. Life Science industry Coalition	Include as Stakeholder Opinion element of HIA
Newspaper articles	Treat as contextual information
Opinion pieces	Treat as contextual information or as stakeholder opinion

Limits

- Limited to English language.
- Sources published after January 2016 with a focus on articles published within 12 months of the publication of the HIA.

Search strategy for peer reviewed sources

Electronic searches

For an unbiased assessment, this search needs to be as comprehensive as possible. The following databases will be searched:

- MEDLINE
- Embase
- Proquest

Sensitive search, using database subject headings – MESH, EMBASE, HMIC and wide ranging free text, keywords and synonyms will be used.

1.1.2 Search Strategy Planner

Please see below.

Critical appraisal

Critical appraisal of full-texts of included studies will be undertaken by the first reviewer.

The second reviewer will review a random sample of 20% or a minimum of 10 studies whichever is greater.

Where available appropriate critical appraisal tools will be used to assess the quality of publications identified including:

- Joanna Briggs Institute checklist for text and opinion pieces
- CASP tools
- Public Health Wales Questions to assist with the critical appraisal of a modelling study

Where no appropriate critical appraisal tool exists, peer review by members of the Working and Advisory Groups will be used.

Where there is major concern about the quality of studies / reviews these will be discussed by the reviewers and may lead to exclusion.

Where there is disagreement this will be resolved by discussion with the Working Group. The outcome of this process will be recorded.

Any concerns about quality will be noted in the bibliography.

Outputs

- A literature review section for the HIA
- A detailed bibliography of included studies; including: authors; reference; organisation; category of evidence; methods; topic key word coding; critical appraisal tool used / any quality concerns; key findings related to Brexit and determinants of health; critical appraisal tool used

Search Strategy: Impact of Brexit on social determinants of health

	Population / Problem / Patient	Intervention or Exposure	Comparison / Control	Outcomes / Effects
From the research question	**This is the who** Wales UK Young people Older people Farmers People in need of social care People on low income People at risk of unemployment EU Citizens living / working in UK	**This is the what** Brexit UK departure from EU / European Union	**With what is the intervention being compared?** None	Health Well-being Population health Health and social care Lifestyles: food, alcohol, cigarettes Social and community relationships, family roles, community cohesion, discrimination, racism Mental well-being Living environment, built environment, housing, air quality / environment Health and social care Access to services, in particular social care Economic conditions, employment, key economic sectors e.g. agriculture Gross domestic product Government policy
Synonyms				'Social Determinants of Health'
MeSH / Thesaurus terms				

Search Strategy: The impacts on health when a nation state leaves an economic and / or social pacts, or when a nation state has been sanctioned politically and economically

	Population/ Problem/Patient	Intervention or Exposure	Comparison/ Control	Outcomes/ Effects
From the research question	**This is the who** Population Young people Older people Farmers People in need of social care People on low income People at risk of unemployment	**This is the what** Trade agreement Treaty Sanctions (economic or political)	**With what is the intervention being compared?** None	Health Social determinants of health Well-being Population health Health and social care Lifestyles: food, alcohol, cigarettes Social and community relationships, family roles, community cohesion, discrimination, racism Mental well-being Living environment, built environment, housing, air quality/ environment Health and social care Access to services, in particular social care Economic conditions, employment, key economic sectors e.g. agriculture Gross domestic product Government policy
Synonyms				'Social Determinants of Health'
MeSH/ Thesaurus terms				


Public Health Wales
what we do
We exist to protect and improve health and wellbeing and reduce health inequalities for people in Wales. We work locally, nationally and internationally, with our partners and communities, in the following areas:
Health Protection
Providing information and advice and taking action to protect people from infectious diseases and environmental hazards
Microbiology
Providing a network of microbiology services which support diagnosis and management of infectious diseases
Health Improvement
Providing information, advice and taking action, across sectors, to promote health, prevent disease and reduce health inequalities
Screening
Providing screening programmes which assist the early detection, prevention and treatment of disease
Health intelligence
Providing public health data analysis, evidence finding and knowledge management
Policy, research and international development
Influencing policy, supporting research and contributing to international health development
Safeguarding
Providing expertise and advice to help protect children and vulnerable adults
NHS quality improvement and patient safety
Providing the NHS with information, advice and support to improve patient outcomes
Primary, community and integrated care
Strengthening public health impact through policy, commissioning, planning and service delivery

WHIASU
Wales Health Impact Assessment Support Unit
Uned Gymorth Asesu Effaith ar Iechyd Cymru

GIG CYMRU NHS WALES
Iechyd Cyhoeddus Cymru
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