



## UWS Academic Portal

### Regeneration and health

McCartney, Gerry; Hearty, Wendy; Taulbut, Martin ; Mitchell, Rory ; Dryden, Ruth ; Collins, Charles

*Published in:*  
Public Health

*DOI:*  
[10.1016/j.puhe.2017.02.022](https://doi.org/10.1016/j.puhe.2017.02.022)

E-pub ahead of print: 18/04/2017

*Document Version*  
Publisher's PDF, also known as Version of record

[Link to publication on the UWS Academic Portal](#)

*Citation for published version (APA):*

McCartney, G., Hearty, W., Taulbut, M., Mitchell, R., Dryden, R., & Collins, C. (2017). Regeneration and health: a structured, rapid literature review. *Public Health*, 148, 69-87. <https://doi.org/10.1016/j.puhe.2017.02.022>

#### General rights

Copyright and moral rights for the publications made accessible in the UWS Academic Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

#### Take down policy

If you believe that this document breaches copyright please contact [pure@uws.ac.uk](mailto:pure@uws.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

Public Health

journal homepage: [www.elsevier.com/puhe](http://www.elsevier.com/puhe)

## Review Paper

# Regeneration and health: a structured, rapid literature review



G. McCartney <sup>a,\*</sup>, W. Hearty <sup>a</sup>, M. Taulbut <sup>a</sup>, R. Mitchell <sup>a</sup>, R. Dryden <sup>a</sup>,  
C. Collins <sup>b</sup>

<sup>a</sup> NHS Health Scotland, Glasgow, UK

<sup>b</sup> University of the West of Scotland, Glasgow, UK

## ARTICLE INFO

## Article history:

Received 5 December 2016

Received in revised form

20 February 2017

Accepted 27 February 2017

Available online 18 April 2017

## Keywords:

Regeneration

Housing

Employment

Health

Inequality

Area-based initiatives

## ABSTRACT

**Objective:** To identify and synthesise what is known about the impacts of regeneration on health, health inequalities and their socio-economic determinants.

**Study design:** Rapid, structured literature review.

**Methods:** A rapid, structured approach was undertaken to identifying relevant studies involving a search of peer-reviewed literature databases, an Internet search to identify relevant grey literature, and a review of articles citing two key systematic reviews. The identified citations were screened, critically appraised according to the research design and narratively synthesised.

**Results:** Of the 1382 identified citations, 46 were screened as relevant to the review and included in the synthesis. Fifteen citations were reviews but most of the evidence identified or included within the reviews was of medium or low quality due to a lack of longitudinal follow-up, low response rates or attrition. The evidence base on the impacts of regeneration is generally not of high quality and is prone to bias. However, it is theorised as being an important means of addressing the socio-economic determinants of health. Housing refurbishment (generally, and for specific improvements) seems likely to lead to small improvements in health, whereas rehousing and mixed-tenure approaches have less clear impacts on health and carry risks of disruption to social networks and higher rents. Changes in the social composition of communities (gentrification) is a common outcome of regeneration and some 'partnership' approaches to regeneration have been shown to have caused difficulties within communities.

**Conclusions:** The evidence base for regeneration activities is limited but they have substantial potential to contribute to improving population health. Better quality evidence is available for there being positive health impacts from housing-led regeneration programmes involving refurbishment and specific housing improvements. There is also some evidence of the potential harms of regeneration activities, including social stratification (gentrification and residualisation) and the destabilisation of existing community

\* Corresponding author.

E-mail address: [gmccartney@nhs.net](mailto:gmccartney@nhs.net) (G. McCartney).

<http://dx.doi.org/10.1016/j.puhe.2017.02.022>

0033-3506/© 2017 The Author(s). Published by Elsevier Ltd on behalf of The Royal Society for Public Health. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

organisations. Broader labour market and housing policy approaches are also likely to be important as a context for understanding impacts. Regeneration programmes require careful design, implementation and evaluation if they are to contribute to improved health and reduced health inequalities.

© 2017 The Author(s). Published by Elsevier Ltd on behalf of The Royal Society for Public Health. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Key points

- The socio-economic environment, including the availability, affordability and quality of housing, transport, the physical environment, employment, the social fabric of communities and public services, incorporates important determinants of health and health inequalities.
- Most of the available evidence is drawn from regeneration programmes undertaken against a general policy background which has promoted the sale or transfer of council housing, residualisation of 'social housing', retail property development, employment policy focussed on supply-side interventions and market-led economic policy.
- The available evidence for the impact of regeneration activities is generally not of high quality and so there remains a need for further research. In particular, few studies were identified on employment or community capacity.
- Better quality evidence is available for there being positive health impacts from housing-led regeneration programmes involving refurbishment and specific housing improvements, especially in relation to mental health.
- There is some evidence of potential harms from regeneration programmes including widening inequalities (including gentrification and residualisation), increased rents and the destabilisation of existing networks and community organisations.

## Background

Regeneration is a contested term which means different things to different people.<sup>1,2</sup> The term came to be used in the 1970s as a synonym for previously-used urban policy terms such as 'urban renewal' and 'redevelopment', and in the 1980s became the predominant term to describe a wide range of place-based interventions seeking to address the impacts of economic, social and physical 'degeneration'. Examples from the UK include the Glasgow Eastern Area Renewal Project (1976–1986), the Urban Development Corporations in England in the 1980s, the New Life for Urban Scotland Programme of the late 1980s and 1990s, the Single Regeneration Budget schemes of the 1990s and 2000s in England, the Social Inclusion Partnerships in Scotland which were later incorporated in Community Planning Partnerships and the 'new' Urban

Development Corporations and Urban Regeneration Companies across Britain after 1999.<sup>3</sup>

The lexicon of regeneration emerged alongside the shift towards more market-orientated economic policies in the UK and across Europe, such that it has most often been used to describe urban policy in the period after 1979. A definition of regeneration which has been used by the UK Government is, '...a holistic process of reversing economic, social and physical decay in areas where it has reached a stage when market forces alone will not suffice'.<sup>4</sup> In many areas it, therefore, has involved policies aiming to: increase the quantity and quality of employment; improve the availability and quality of housing; improve the physical environment; provide a range of services for communities; and, more intangibly, to achieve 'social regeneration' including building social support, social networks and social institutions.

Given what is known about the social determination of health, and the importance of the differential experience and embodiment of the socio-economic environment in causing health inequalities,<sup>5</sup> the activities conducted under the heading of 'regeneration' are in principle potentially quite important means of improving health and reducing health inequalities.<sup>6</sup> In particular, gaining good employment is known to be particularly beneficial for health.<sup>7</sup>

However, it is unclear how successful regeneration activities have been across a range of outcomes<sup>8,9</sup> including health.<sup>10</sup> Furthermore, historical regeneration and urban policy decisions have been described as important but negative contributory factors in the high mortality rates in Scotland.<sup>11</sup>

One such problem is of residualisation, where socio-economic diversity within areas is reduced through housing and welfare policies and the application of market forces. The resultant social polarisation of urban areas creates places with concentrated social and economic problems which then become targets for 'regeneration' activities which often means demolition and rehousing, including population dispersal. This creates a pattern of movement of people excluded from society from place to place as social problems become sequentially concentrated and then displaced without dealing with the underlying causes of unemployment, poverty or poor housing.<sup>12,13</sup>

A substantial research effort is currently underway internationally, and specifically within Scotland, to better understand whether, and under what circumstances, regeneration activities impact on health.<sup>14–19</sup>

In particular, there is interest in evaluating the health and social impacts of the Clyde Gateway Urban Regeneration Company which is focused on regenerating an area on the boundary between the city of Glasgow and South Lanarkshire (<http://www.clydegateway.com/>). This particular initiative

aims (over 20 years) to, ‘...lead the way on achieving unparalleled social, economic and physical change across our communities’. It seeks to achieve this through: work to improve the physical infrastructure and environment to make the area more attractive to live and work in; encouraging employers into the area and maximising the growth of existing businesses to generate employment for local people; and an increase in community participation in activities which contribute to both health and skills development.

This review aims to identify and synthesise the literature on the known impacts of regeneration on health and health inequalities and the forms and approaches to regeneration which are likely to be most beneficial. This work has been undertaken to inform an evaluability assessment considering the impacts of the Clyde Gateway Urban Regeneration Company.

## Methods

### Search strategy

The overall approach to identifying relevant literature was pragmatic given that there were existing high-quality systematic reviews previously published in this area and limited time available. There were three strands to the search: review-level evidence was sought from research databases; articles citing key systematic reviews were screened; and a grey literature search using Google Scholar was undertaken.

The Ovid MEDLINE(R) and Embase databases were searched from 1946 to 1974, respectively, until July 22nd 2016. The search focussed on articles which included ‘regeneration’ and either ‘urban’, ‘social’ or ‘economic’ as keywords (Table 1) (the combination of ‘regeneration’ with other terms was necessary to sift out studies pertaining to biological regeneration processes). Two key systematic reviews were identified early in the review (on the health impacts of housing and regeneration<sup>10,20</sup>) and all of the citing articles (both peer-reviewed and grey literature) were identified for screening via Google Scholar. The grey literature was searched using the terms ‘regeneration’ and ‘health’ in Google with the first 100 citations screened for relevance.

### Selection criteria

Within the scope of the review were evaluations of any interventions badged as regeneration which were written in English and which included a description of at least one

impact or outcome (relating to health or any socio-economic determinant of health), in high-income countries. Also included were qualitative studies which aimed to explain the processes of regeneration initiatives. Studies undertaken in non-high-income countries, baseline studies (i.e. examining the population before an intervention or simply describing an evaluation plan or protocol), studies which included only a single cross-section of the population (i.e. not examining any change over time) and discursive or commentary articles were out of scope for the review. A small number of relevant ethnographies examining the processes of regeneration programmes were also identified, summarised and included in the synthesis. The processes of screening, selection, quality appraisal and synthesis were undertaken by a single author.

### Quality appraisal

Review papers were considered to be high quality if they achieved all of the following: clear research question; explicit search strategy; broad search strategy including several databases and grey literature; explicit inclusion/exclusion criteria; critical appraisal of included studies; attempt to synthesise findings giving greater weight to the highest quality studies; and unlikely to have been biased by conflicts of interest. If a study achieved five or six of these criteria it was considered medium quality and low quality if it achieved less than five.

Other quantitative studies were assessed as high quality if they achieved all of the following: clear research question; low risk of bias arising from recruitment (i.e. response rate  $\geq 70\%$  and no groups systematically excluded) or attrition ( $\geq 80\%$  of initial group followed-up); major confounders accounted for in the analysis (age, sex and socio-economic status as a minimum); longitudinal design following-up the initial exposed population; and results expressed as the difference in outcome over and above the change seen in a comparison group. They were considered medium quality if they had a longitudinal design with a comparison group but did not meet the other criteria above or met the other criteria but had a repeat cross-sectional design. All other quantitative studies were designated low quality.

Qualitative studies were considered high quality if all of the following were adhered to: the research question is clear and suited to a qualitative approach; the data were recorded or transcribed where appropriate; sampling and analysis were appropriate to the methods; and the conclusions were justified by the data. If one or two of these criteria were not achieved, the paper was designated as medium or low quality, respectively. The grey literature was critically appraised according to the typology detailed above.

### Synthesis

The identified papers meeting the inclusion criteria were tabulated and grouped by intervention and the research question, design, quality and results summarised for each. The themes emerging from across the studies of the same intervention and across interventions were identified. A narrative was constructed to describe the learning from across the studies focussing on the consistent results from the highest quality studies and reviews (noting the quality of the

**Table 1 – Database search strategy.**

Search number	Search term	Field searched	Number of citations
1	‘Regeneration’	Keyword	285,712
2	Limit 1 to review articles		185,152
3	‘Urban’	Keyword	306,847
4	‘Social’	Keyword	1,352,564
5	‘Economic’	Keyword	458,027
6	3 OR 4 OR 5		1,939,327
7	6 AND 2		1382

underlying studies on which the reviews were drawn). Where there was more uncertainty (e.g. because of a smaller number of studies, lower quality methods or contradictory findings), this was explained in the narrative. A check was made to ensure that duplicate reporting of original studies between reviews or between reviews and single studies did not lead to spurious conclusions in the narrative synthesis.

## Results

The database search identified 1382 potentially relevant citations whose titles were screened for relevance. After exclusion of irrelevant citations and de-duplication, 81 citations remained and their abstracts screened. There were 255 articles identified by Google Scholar (which includes grey literature) as citing the identified key systematic reviews, and these articles were screened for relevance. Three other relevant papers were identified by colleagues and also screened (Fig. 1).

### Relevant studies

Table 2 details that 15 relevant review papers were identified, seven of which were high quality (although the evidence which they synthesise was mostly lower quality). The high-quality reviews considered the health and socio-economic impacts of: multisite UK regeneration initiatives

(1980–2004), housing interventions, mixed-tenure communities; the pathways linking housing and health; and environmental interventions to reduce the fear of crime. There was also a high-quality review on the economic impacts of housing interventions. Lower quality reviews considered: the impact of household energy efficiency measures on health; the impacts of rural development; the relative impacts of housing refurbishment or demolition; regeneration programmes (generally, recently in the UK, and in Glasgow over the last 15 years); the mechanisms linking housing and health; and the health impacts of residential energy efficiency interventions.

Table 3 details the 31 non-review papers that were identified as being relevant when grouped by intervention. Four papers considered the impact of the New Deal for Communities initiative (and were all of medium quality), five considered the recent housing-led programmes in Glasgow (the GoWell studies, all medium quality); two looked at the Neighbourhood Law programme in Catalonia (one high and one medium quality); three at the Dutch District Approach (DDA; low quality); two at the Neighbourhood Renewal Strategy in Victoria, Australia (low quality); and two at a rehousing programme in Scotland (the Scottish Housing and Regeneration Programme study, medium quality). The remaining 13 papers considered separate regeneration initiatives. There were no high-quality quantitative studies considering the impacts of regeneration programmes (generally because of

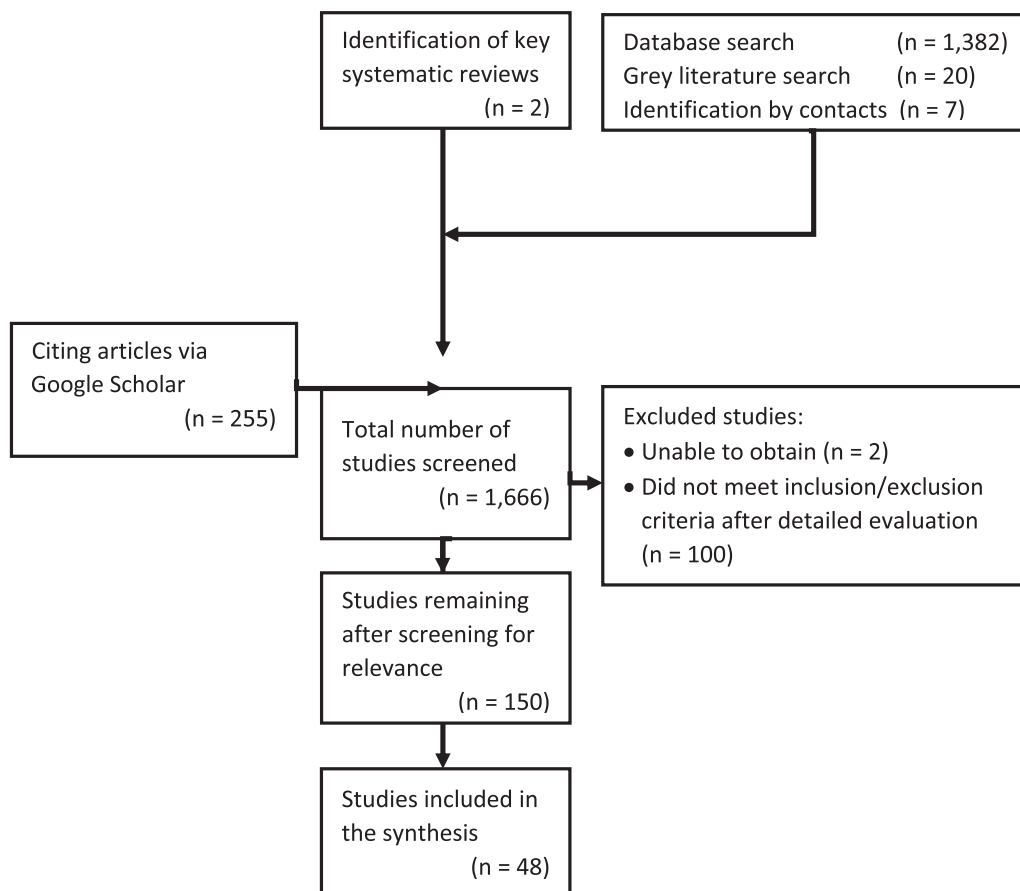


Fig. 1 – Study selection flowchart.

**Table 2 – Summary of review papers.**

Reference	Scope of review	Review type	Study quality	Findings
Thomson 2006 <sup>10</sup>	Health and socio-economic impacts of UK regeneration programmes (1980–2004), but excluding evaluations of a single area.	Systematic review and narrative synthesis.	High-quality review, but included studies were almost all low quality with only one longitudinal study of residents.	<ul style="list-style-type: none"> <li>• The reported impacts on health were mixed with some declines in self-rated health but some improvements in mortality.</li> <li>• Most socio-economic impacts assessed improved in line with national trends.</li> <li>• Greatly increased rents were reported in one study.</li> <li>• Housing improvements leading to increased thermal comfort are positive for health and this is best demonstrated for those with the coldest housing and with respiratory disease.</li> <li>• Housing improvements without targeting have had less clearly demonstrated health benefits, but the available evaluations may not have detected real improvements.</li> <li>• Housing improvements are also linked to improved social relations and reduced school and work absence.</li> <li>• There were few reports of adverse consequences of housing improvements.</li> <li>• The results of the Thomson reviews<sup>20,21</sup> are reiterated.</li> <li>• In addition, the absence of evidence on the impact of changes in housing tenure is highlighted.</li> <li>• The findings of the Moving to Opportunity studies in the USA show that moving people from deprived areas can improve a variety of health and social outcomes.</li> <li>• Most of the available evidence is derived from low-quality cross-sectional studies.</li> <li>• Some positive impacts of mixed tenure were suggested. Kinship relations may have been retained as people change tenure type. The local provision of shared schools and public venues, and shared courtyards across tenures, was important in achieving social benefits.</li> <li>• The evidence in the domains of environmental, safety and economic domains was very mixed.</li> <li>• There is an absence of evidence on health and education impacts, and on other aspects of social capital.</li> <li>• The quality of the available evidence was low.</li> <li>• It is suggested that home security improvements and general environmental improvements are effective in reducing the fear of crime.</li> <li>• There was no evidence that lighting improvements, closed-circuit television, multicomponent environmental crime prevention programmes or regeneration programmes reduced the fear of crime.</li> </ul>
Thomson 2009 and updated in 2013 <sup>20,21</sup>	Housing improvements, health and socio-economic outcomes.	Systematic review and narrative synthesis.	High-quality review including five randomised controlled trials and 28 non-experimental studies.	
Gibson 2011 <sup>23</sup>	Review of systematic reviews theorising the links between housing and health.	Systematic review of reviews.	High quality.	
Sautkina 2012 <sup>48</sup>	Review of the impacts of mixed-tenure housing.	Systematic review.	High quality.	
Lorenc 2013 <sup>24</sup>	Review of the impact of environmental interventions to reduce the fear of crime.	Systematic review.	High quality but included studies were low quality.	

*(continued on next page)*

Table 2 – (continued)

Reference	Scope of review	Review type	Study quality	Findings
Fenwick 2013 <sup>22</sup>	Review of the relative economic costs and benefits of housing improvements.	Systematic review.	High quality.	<ul style="list-style-type: none"> <li>• Most studies did not report the economic impacts robustly or comprehensively.</li> <li>• Three studies reporting a 'balance-sheet' of costs and benefits reported positive economic benefits following the intervention.</li> <li>• One cost-effectiveness study reported that the intervention was not cost-effective based on the impact on short-run changes in self-rated health.</li> </ul>
Bond 2011 <sup>49</sup>	Systematic review of reviews looking at the impacts of mixed-tenure housing.	Systematic review of reviews.	High-quality review of reviews, but all included reviews were low quality.	<ul style="list-style-type: none"> <li>• The available reviews are of insufficient quality to draw conclusions about the impacts of pursuing mixed-tenure approaches to housing policy.</li> </ul>
Jacobs 2010 <sup>50</sup>	Review of the impact of specific housing interventions on health.	Systematic review.	Low (inclusion/exclusion criteria unclear, critical appraisal unclear, synthesis does not clearly give weight to the highest quality studies, competing interests not stated).	<ul style="list-style-type: none"> <li>• 11 interventions were found to have sufficient evidence for implementation (multifaceted intervention to reduce asthma trigger exposure; cockroach control; elimination of damp and removal of mould; radon air mitigation; integrated pest management; smoke-free policies; lead hazard control; installed smoke alarms; pool fencing; safe temperature water heaters; rental vouchers [Housing Choice Voucher Program]).</li> <li>• A wide range of other interventions require more research (e.g. moving people from high to low poverty areas) or have been found to be ineffective.</li> </ul>
Maidment 2014 <sup>54</sup>	Review of the impacts of household energy efficiency measures on health.	Systematic review and meta-analysis.	Low (no critical appraisal, no attempt to give greater weight to highest quality studies).	<ul style="list-style-type: none"> <li>• On average, a small positive effect on health was seen across studies and this was greatest for those on low incomes.</li> <li>• Larger positive impacts were seen in more recent studies and were objective (rather than self-rated) health measures.</li> </ul>
Crawford 2014 <sup>55</sup>	Review of the relative impacts of demolition or refurbishment of social housing.	Narrative review.	Low quality as methods including search strategy, critical appraisal and synthesis approach were not sufficiently described.	<ul style="list-style-type: none"> <li>• Refurbishment of housing can achieve energy efficiency outcomes although there are frequent gaps between the expected and achieved outcomes as people often prefer thermal comfort to reduced energy bills.</li> <li>• Refurbishment of housing carries fewer risks to health resulting from disruption of social networks and increased rents, but similar likely benefits to rehousing.</li> </ul>
Curtis 2002 <sup>59</sup>	Health and health inequality impacts of regeneration and neighbourhood renewal projects.	Narrative review.	Low quality as methods not clearly specified. However, a wider range of relevant studies were identified and synthesised as the review focused on identifying causal pathways, contextual dependencies, socio-economic conditions and the relative importance of different factors.	<ul style="list-style-type: none"> <li>• The creation of high-quality work is positive for health, but 'active labour market policies' have mixed impacts; the creation of low-paid work is common, and work often goes to non-residents.</li> <li>• Housing refurbishment and new housing have mixed impacts—the particular risk of gentrification and displacement of social problems is highlighted.</li> <li>• Transport investment can have mixed impacts depending on the mode of travel impacted and the populations affected.</li> </ul>

Tyler 2010 <sup>51</sup>	Literature review of UK regeneration evaluations (2001–2009), synthesis and creation of theoretical framework to help measure the 'benefits' of regeneration.	Narrative review	Low quality as methods not reported and identified literature only partially described. Review is also framed only in terms of 'benefits' which may have excluded reporting of adverse impacts. However, a large sweep of government-funded evaluations and peer-reviewed literature on the socio-economic impacts of regeneration was included.	<ul style="list-style-type: none"> <li>• There was generally limited reporting of the included evaluations with no comprehensive description of the available literature, critical appraisal or results. The synthesis provided focuses on the development of theories linking regeneration activities to relevant outcomes.</li> <li>• Interventions across all domains were described as being generally poorly evaluated with high risk of confounding.</li> <li>• Interventions to increase employment were largely supply-side orientated and were generally poorly evaluated.</li> <li>• Business support and physical regeneration (e.g. reclamation of land, physical environment changes and road building) activities were common but the impacts were rarely evaluated well, although some evaluations of improvements to the physical infrastructure around canals and rivers were particularly positive.</li> <li>• Housing improvements, particularly those addressing energy efficiency and heating, were generally found to have been successful at achieving their narrow aims.</li> <li>• More specific evidence was identified for particular public service interventions across health (e.g. smoking cessation), crime (e.g. closed-circuit television), education (e.g. classroom assistants) and street cleanliness. However, this evidence is likely to represent only a partial picture of the literature in these areas.</li> <li>• Overall self-reported health declined in intervention areas in contrast to secular trends for Greater Glasgow and Clyde, with a very small increase in well-being in some areas.</li> <li>• There was an increase in GP consultations in some areas.</li> <li>• Diet and physical activity was reported as having improved in some areas, but alcohol use increased.</li> <li>• The review focuses on the theoretical pathways linking housing and health and does not describe the impact of housing or regeneration initiatives.</li> <li>• Three pathways were proposed that would improve health: increased warmth and reduced damp improving respiratory and cardiovascular problems; reduced energy consumption leading to reduced costs and associated stress and anxiety; and greater satisfaction with the home leading to improved social functioning.</li> <li>• One pathway was proposed that would worsen health: draft proofing might increase humidity and lead to greater respiratory symptoms.</li> </ul>
Egan 2013 <sup>32</sup>	Synthesis of findings from the 'GoWell' study of housing-led regeneration in Glasgow (2006–2013).	Narrative review.	Low quality as methods, response rates, etc. were not reported here.	<ul style="list-style-type: none"> <li>• Overall self-reported health declined in intervention areas in contrast to secular trends for Greater Glasgow and Clyde, with a very small increase in well-being in some areas.</li> <li>• There was an increase in GP consultations in some areas.</li> <li>• Diet and physical activity was reported as having improved in some areas, but alcohol use increased.</li> <li>• The review focuses on the theoretical pathways linking housing and health and does not describe the impact of housing or regeneration initiatives.</li> <li>• Three pathways were proposed that would improve health: increased warmth and reduced damp improving respiratory and cardiovascular problems; reduced energy consumption leading to reduced costs and associated stress and anxiety; and greater satisfaction with the home leading to improved social functioning.</li> <li>• One pathway was proposed that would worsen health: draft proofing might increase humidity and lead to greater respiratory symptoms.</li> </ul>
Wiltshire 2010 <sup>64</sup>	Review of the links between housing and health.	Narrative review.	Low quality as the methods are not reported.	<ul style="list-style-type: none"> <li>• Three pathways were proposed that would improve health: increased warmth and reduced damp improving respiratory and cardiovascular problems; reduced energy consumption leading to reduced costs and associated stress and anxiety; and greater satisfaction with the home leading to improved social functioning.</li> <li>• One pathway was proposed that would worsen health: draft proofing might increase humidity and lead to greater respiratory symptoms.</li> </ul>
Willand 2015 <sup>65</sup>	Review of the health impacts of residential energy efficiency interventions.	Realist review.	Not easily critically appraised using review criteria. Aimed to elucidate theoretical pathways. Critical appraisal process not stated.	<ul style="list-style-type: none"> <li>• Three pathways were proposed that would improve health: increased warmth and reduced damp improving respiratory and cardiovascular problems; reduced energy consumption leading to reduced costs and associated stress and anxiety; and greater satisfaction with the home leading to improved social functioning.</li> <li>• One pathway was proposed that would worsen health: draft proofing might increase humidity and lead to greater respiratory symptoms.</li> </ul>

(continued on next page)



Table 2 – (continued)

Reference	Scope of review	Review type	Study quality	Findings
Higgins 2015 <sup>56</sup>	Review of the health impacts of rural development.	Health impact assessment and associated literature review.	Low quality (critical appraisal unclear, weight not clearly given to the higher quality studies).	<ul style="list-style-type: none"> <li>Rural development initiatives may lead to: migration (usually inward) which may change the population composition and potentially lead to new health and social problems in a 'boomtown' scenario; psychosocial stress relating to a change in place identity; changes in social capital (positive or negative); increased employment which if the quality of work is high may improve health; increased local economic activity which may be positive (increased trade for local business and employment) or negative (local businesses being bypassed or increased housing costs); provision of new infrastructure or the coming of existing resources (e.g. water, road links, housing, local services, internet); flooding (if associated with an increase in hard-standing land); increased noise and loss of visual/rural amenity.</li> <li>The overall magnitude of change for small rural communities can be larger than would be the case for urban areas.</li> </ul>
Mitchell 2016 <sup>58</sup>	Review of the links between housing and health inequalities.	Narrative review.	Low quality as the methods are not reported.	<ul style="list-style-type: none"> <li>Identifies the importance of increased social housing, and reduced housing costs and increased housing quality across tenures, for the reduction in health inequalities.</li> </ul>

the risk of bias due to low response rates or attrition in follow-up, or because of a lack of longitudinal data or comparison data) with the only high-quality studies being qualitative. The exception was a cross-over randomised trial of housing improvements in households with children who have asthma which was high quality but of narrow scope.

### Narrative synthesis

The evidence that regeneration programmes improve health or socio-economic outcomes is mixed, reflecting the diversity of interventions and outcomes considered. The high-quality reviews of regeneration and housing interventions<sup>10,20–23</sup> were limited in the extent to which they were able to draw generalised learning from the literature because of the low quality of the available studies and the diversity in interventions and outcomes studies that they encountered. The most robust evidence was for housing refurbishments which improved thermal comfort, and the potential for housing interventions to improve social relations and reduce absences from school or work were also evidenced.<sup>21</sup>

In relation to reducing the fear of crime, improving home security and the general environment were supported, whilst closed-circuit television and more general environmental crime prevention or regeneration programmes were not (Table 2).<sup>24</sup> There was a lack of studies examining initiatives designed to increase employment or enhance community capacity.

### Specific regeneration programmes

The New Deal for Communities was a nationally funded (but locally designed) regeneration programme which commenced in England in 1999 and continued until the late 2000s. Four studies evaluated its impact and found that self-rated health did not improve differentially to comparison areas. However, some positive results were identified in relation to mental health inequalities, smoking and employment but the studies were limited by low response rates to the surveys.<sup>25–28</sup>

The Glasgow housing-led regeneration programme (involving a mixture of demolition and rehousing [involving >60% of the study population] and housing refurbishment following the transfer of all council housing within the city to a large housing association) involved the investment of £1.3 billion between 2003 and 2016. However, the evidence for positive impacts on health has been limited to small improvements in self-reported mental health (skewed towards areas of more substantial investment). The impacts on self-reported physical health and the social impacts for those being rehoused have been mixed.<sup>29–32,33,34</sup>

The 'Neighbourhood Law' in Catalonia was a regeneration programme focussed on the improvement of public spaces. There was some limited evidence that the investment was well received by residents and that some aspects of self-rated health improved (although this was uncertain).<sup>35,36</sup>

Five billion Euros were spent through the DDA on locally prioritised interventions in deprived areas of the Netherlands (usually on primary schools, housing stock, improving green space and social safety). Unfortunately, the quality of the evaluations of DDA was low, and hence it is difficult to be clear that the findings were not biased. The evidence did suggest

**Table 3 – Summary of non-review papers assessing the impacts of regeneration or ‘area-based initiatives’.**

Reference	Scope of paper	Study type	Study quality	Findings
<b>New Deal for Communities (NDC)</b>				
NDC was a nationally funded regeneration programme (1999–2011) with a total budget of £50 million across 39 deprived areas in England on locally specified initiatives.				
Walthery 2015 <sup>25</sup>	Impact of NDC (2002–2008) compared with non-intervention areas adjusting for baseline socio-economic differences on self-rated health.	Panel survey.	Medium (attrition rate not specified, otherwise high).	<ul style="list-style-type: none"> <li>• No change in self-rated health compared with non-intervention areas except the gap in the measures of mental health did not widen as much in the intervention areas.</li> </ul>
Cotterill 2008 <sup>28</sup>	Impact of NDC initiatives in the West Midlands on mortality and hospitalisations 1995–2003.	Ecological study.	Medium (data were repeat cross-sectional rather than longitudinal).	<ul style="list-style-type: none"> <li>• No consistent differences were identified between NDC and comparison areas; but short follow-up time (&lt;4 years).</li> </ul>
Stafford 2014 <sup>27</sup>	Impact of the NDC on self-rated health and health behaviours (2002–2008).	Repeat cross-sectional study.	Medium/low (response rates now reported, cross-sectional rather than longitudinal data [although the results were unchanged when the data were restricted to those resident throughout]).	<ul style="list-style-type: none"> <li>• There was faster improvement in smoking and employment in the NDC areas than the comparisons.</li> <li>• However, the comparison areas were substantially different to the intervention areas at baseline and there was a substantial drop in the population in rented accommodation in the intervention areas which suggests substantial gentrification.</li> </ul>
Stafford 2008 <sup>26</sup>	Impact of NDC on self-rated health, unemployment, education, crime and perceptions of the physical environment after 2 years.	Longitudinal study.	Medium (original response rates not reported, but attrition low).	<ul style="list-style-type: none"> <li>• The results were only presented for people who did not move in or out of the areas.</li> <li>• Similar, small improvements were seen in the intervention and comparison areas across indicators.</li> <li>• There was evidence of increasing socio-economic inequalities within intervention areas, and women and older people benefited least.</li> </ul>
<b>Glasgow housing-led regeneration programme</b>				
Following transfer of council housing in Glasgow in 2003 to a large housing association, this programme involved substantial demolition of housing, rehousing of residents, new-building and refurbishment of existing stock (amounting to £1.3 billion of spending by 2016).				
Curl 2015a <sup>34</sup>	Impact on self-reported health of specific housing refurbishments.	Longitudinal survey (constructed from linkage between two cross-sectional surveys).	Medium (response rate 45–50%, attrition rates not stated).	<ul style="list-style-type: none"> <li>• Self-reported physical health declined, and mental health improved in the intervention and control groups over time.</li> <li>• Fabric works were associated with improvement, and installation of central heating with a decline, in self-reported physical health.</li> <li>• All forms of refurbishment were associated with improvements in mental health.</li> </ul>
Curl 2015b <sup>33</sup>	Impact on specific self-reported ill-health conditions of specific housing refurbishments.	Longitudinal survey (constructed from linkage between two cross-sectional surveys).	Medium (response rate 45–50%, attrition rates not stated). The analysis also used multiple hypothesis testing which increased the likelihood of	<ul style="list-style-type: none"> <li>• The mean number of self-reported ill-health conditions increased from 0.42 to 0.67 per respondent over the 2–5 year follow-up period.</li> <li>• There was some evidence that recovery from self-reported circulatory disease was</li> </ul>

(continued on next page)

Table 3 – (continued)

Reference	Scope of paper	Study type	Study quality	Findings
			finding associations by chance (Type I error).	associated with installation of central heating, and recovery from self-reported mental health conditions was associated with improvements to the building fabric.
Egan 2013 <sup>30</sup>	Impact on self-reported health of rehousing (associated with demolition) and housing refurbishment between 2006 and 2008.	Longitudinal survey (constructed from linkage between 2 cross-sectional surveys).	Medium (response rate 48–50%).	<ul style="list-style-type: none"> <li>• No relationship was identified between housing improvements and the prevention of ill health.</li> <li>• There was a small improvement in mental health in those rehoused or in refurbished housing compared with controls over 2 years.</li> <li>• Physical health, pain, general health, vitality, emotional health and social functioning did not diverge between groups.</li> </ul>
Egan 2016 <sup>31</sup>	Impact of housing investment on self-reported health.	Longitudinal study.	Medium (low response rates, attrition rates not stated).	<ul style="list-style-type: none"> <li>• Areas with greatest housing investment (&gt;£10,000 per household over 5 years) had the population with the greatest increase in mental health and a lesser decline in self-rated physical health.</li> <li>• There was no difference in the trends in self-reported health outcomes between the populations in the medium- and low-investment areas.</li> </ul>
Egan 2015 <sup>29</sup>	Impact of housing refurbishment; and housing demolition and relocation on the experience of residents in Glasgow.	Longitudinal qualitative study.	Medium (sampling was problematic with almost half lost to follow-up and very unrepresentative of the exposed population [almost all female, high proportion of people not born in Scotland, very high unemployment]).	<ul style="list-style-type: none"> <li>• Most of those followed-up were moved to a new area following housing demolition (&gt;60% of housing was demolished in the study areas).</li> <li>• Residents reported improvements in the physical condition of their housing and benefits relating to this whilst others reported negative impacts from disrupted social networks relating to the change in area of residency.</li> </ul>
<b>Neighbourhood Law (Catalonia)</b>				
This was a 4-year intervention involving investment of 11–18 million Euros in each neighbourhood (population 10–40,000) with most money spent on improvements in public spaces and to build community centres.				
Mehdipanah 2013 <sup>35</sup>	Perceived impacts on groups of residents.	Focus groups.	High.	<ul style="list-style-type: none"> <li>• Focus group participants positively evaluated the regeneration of their area—particularly the increased walkability, the construction of new public spaces and more community programmes.</li> </ul>
Mehdipanah, 2013 <sup>36</sup>	Impact on self-rated health.	Repeat cross-sectional study.	Medium (repeat cross-sectional data).	<ul style="list-style-type: none"> <li>• Self-rated health (but not mental health) improved more in the intervention than comparison areas although the estimates were imprecise and the baseline data was unstable.</li> <li>• The improvements were greater amongst those in manual occupations.</li> </ul>

**Dutch District Approach (DDA)**

Investment of 5 billion Euros between 2007 and 2012 in the 40 most deprived areas in the Netherlands with locally prioritised interventions (focussed mostly on primary schools, housing stock, green space and social safety with lesser investments in employment, income, educational attainment and the social environment).

Jongeneel-Grimen 2014 <sup>37</sup>	Variation in changes in self-rated health across intervention areas depending on the focus of their approach.	Repeat cross-sectional study.	Low (response rates c.60%, cross-sectional rather than longitudinal data).	<ul style="list-style-type: none"> <li>• Areas which focused activities on the physical environment were the only places in which self-rated health did not decline after 2008 and the economic downturn.</li> </ul>
Kramer 2014 <sup>38</sup>	Impact on physical activity trends 2004–2011.	Repeat cross-sectional study.	Low (response rates c.60%, cross-sectional rather than longitudinal data).	<ul style="list-style-type: none"> <li>• Walking increased in the intervention areas, but no more than in the comparison areas.</li> <li>• The comparison areas were substantially less deprived than the intervention areas.</li> </ul>
Jongeneel-Grimen 2016 <sup>39</sup>	Impact on mental health trends 2004–2011.	Repeat cross-sectional study.	Low (response rates c.60%, cross-sectional rather than longitudinal data).	<ul style="list-style-type: none"> <li>• Overall, the mental health trends were generally similar in the intervention and control areas and were somewhat unstable.</li> <li>• The mental health trend for women in intervention areas was better than in the control areas, but the difference was small.</li> <li>• The mental health trend in the areas with the most intensive programmes was better than in control areas but the difference was small.</li> </ul>

**Neighbourhood Renewal strategy (Victoria, Australia)**

Creation of an area action plan through a partnership process with three staff employed in each intervention area.

Kelaheer 2010 <sup>40</sup>	Impact on self-rated health.	Repeat cross-sectional study.	Low (response rates not reported, cross-sectional, convenience sampling).	<ul style="list-style-type: none"> <li>• There was no change in self-rated health in the intervention or comparison areas.</li> <li>• Improvements were reported for the small subgroup who had been involved in the partnership activities.</li> </ul>
Sheild 2011 <sup>41</sup>	Impact on social inclusion.	Repeat cross-sectional study.	Low (response rates not reported, cross-sectional, convenience sampling).	<ul style="list-style-type: none"> <li>• The intervention was not described clearly and seems to have been different in the two intervention areas.</li> <li>• Respondents reported increased service accessibility in one of the two areas.</li> <li>• Trust in the local council decreased in intervention and comparison areas despite increases in trust reported in other layers of government.</li> <li>• There was mixed evidence on the impact on participation.</li> </ul>

**Rehousing in Scotland (SHARP study)**

Impact of rehousing of tenants by housing associations in Scotland during the 2000s.

Kearns 2011 <sup>43</sup>	Impact of on mental health 2 years after rehousing.	Longitudinal study.	Medium (low response rates).	<ul style="list-style-type: none"> <li>• Respondents in the intervention group but not the control group reported improved housing and neighbourhood conditions following the intervention.</li> <li>• Mental health improved more in the control group than in the intervention group with single-adult households doing least well.</li> </ul>
---------------------------	---	---------------------	------------------------------	--

(continued on next page)

Table 3 – (continued)

Reference	Scope of paper	Study type	Study quality	Findings
Petticrew 2009 <sup>42</sup>	Impact of rehousing on self-rated health, housing and neighbourhood conditions after 1 year.	Longitudinal study.	Medium (low response rates).	<ul style="list-style-type: none"> <li>• Self-rated health was unchanged after 1 year.</li> <li>• Reported housing and neighbourhood conditions improved following the intervention.</li> </ul>
<b>Others</b> Walsh 2007 <sup>60</sup>	Examination of routine health and social data in three of the four Scottish regeneration areas (Whitfield, Ferguslie Park and Castlemilk; excluding Wester Hailes because of a lack of data) compared with Scottish trends from the early 1980s to around 2000.	Ecological study.	Low (repeat cross-sectional study, and results not expressed as a difference to the Scottish trends for matched deprivation status).	<ul style="list-style-type: none"> <li>• Unemployment fell across all regeneration areas with the gap to Scotland overall slightly narrowing over time.</li> <li>• Health indicators did not change consistently in the regeneration areas compared with the rest of Scotland.</li> <li>• The exception was improvements across health indicators in Whitfield (Dundee), but that seems to have been associated with marked demolition and gentrification.</li> </ul>
Thomson 2007 <sup>44</sup>	Impact on self-rated health 1 year after a move from demolished damp council housing to new-build housing association properties in West Dunbartonshire.	Longitudinal study.	Medium (55% and 45% response rates in the intervention and control households respectively, attrition not clearly reported).	<ul style="list-style-type: none"> <li>• Small and imprecise improvements in self-rated health were similarly observed in the intervention and control households.</li> <li>• Rents increased in a small sub-sample by a mean of £5.34 more in intervention households and fuel bills were also reported to have increased in both groups.</li> </ul>
Ilan 2011 <sup>63</sup>	Impact of community partnership approaches within a deprived community in Dublin.	Ethnography.	Medium (insufficient methodological detail provided).	<ul style="list-style-type: none"> <li>• Community involvement in regeneration through a partnership working arrangement had limited success because of competing interests across community factions and class divisions.</li> </ul>
Carlisle 2010 <sup>62</sup>	Impact of partnership working in a (deprived) Social Inclusion Partnership (SIP) area in Scotland in the early 2000s.	Ethnography.	High.	<ul style="list-style-type: none"> <li>• Partnership working and community engagement were not achieved because of conflicting aims, rivalry and suspicion between organisations (particularly towards the community representatives), and perceived competition for resources between areas.</li> </ul>
Huxley 2004 <sup>45</sup> and Thomas 2005 <sup>46</sup>	Impact on mental health of the Single Regeneration Budget in South Manchester (£2 million of investment). Other changes, such as housing stock transfer from council to housing trust also occurred at this time.	Longitudinal survey.	Medium (17–18% response rate at baseline and 35% attrition).	<ul style="list-style-type: none"> <li>• There was no difference in changes in mental health between the intervention and control populations after 22 months.</li> </ul>
Jalaludin 2012 <sup>47</sup>	Impact on self-rated health of an urban renewal programme involving housing refurbishment, improvements to the physical environment, external maintenance, community	Longitudinal study.	Low (no comparison group nor was attrition reported, but high response rates).	<ul style="list-style-type: none"> <li>• No change in self-rated health was identified but the perception of the area improved.</li> </ul>

Kleinmans 2014 <sup>61</sup>	<p>engagement, employment training and the creation of a community space in deprived area of Sydney. Impact on older working-age adults of a regeneration programme involving the demolition of 5000 social houses, replacement with more expensive housing for rent and sale and selling of 1500 social houses in Rotterdam, 1999–2014. The programme also involved the creation of neighbourhood houses and an influential senior citizens group (providing mutual aid and advising planning decisions).</p>	<p>Longitudinal study with repeat cross-sectional element.</p>	<p>Low (no comparison group, low response rate [25%], high attrition [75%]).</p>	<ul style="list-style-type: none"> <li>• Seventy-five percent of residents at the start of the intervention were not present by the end of the study period suggesting substantial population change.</li> <li>• Two thirds of respondents report that they did not benefit from regeneration and more reported that the neighbourhood had declined than those who reported that it had improved.</li> <li>• There were some reported declines in social support following the intervention.</li> </ul>
Kramer 2016 <sup>67</sup>	<p>Impact of the Meeting for Care and Nuisance (MCN) intervention on neighbour nuisance and safety in Arnhem.</p>	<p>Realistic evaluation involving a documentary review, qualitative data collection and analysis of routine survey data.</p>	<p>Low (response rates in the routine surveys were c.27%, and were repeat cross-sectional; insufficient methodological detail was provided on the qualitative aspects).</p>	<ul style="list-style-type: none"> <li>• The impact of the programme is not clearly described but there is a clearly developed theory for how it may work.</li> </ul>
Tudor Edwards 2016 <sup>56</sup>	<p>Impact of housing refurbishment (with a mean investment of £3725 per house, focussed on energy efficient boilers and double glazing) on self-rated health in Sunderland as part of the Warm Homes for Health project.</p>	<p>Repeat cross-sectional study</p>	<p>Low (no comparison group, no response or attrition rates reported).</p>	<ul style="list-style-type: none"> <li>• Respondents reported increased improved self-rated health, including mental health.</li> <li>• The use of healthcare services reduced substantially following the intervention.</li> <li>• Fewer residents left rooms unheated following the intervention and energy bills were reported to be lower.</li> </ul>
Jackson 2011 <sup>52</sup>	<p>Impact of the Healthy Housing Programme (involving housing improvements, rehousing and health and social service assessments) on acute hospitalisations in South Auckland.</p>	<p>Longitudinal study.</p>	<p>Low (an assumption was made about continuing residency; no external comparison group, no response rates provided).</p>	<ul style="list-style-type: none"> <li>• Hospital admissions fell substantially in those aged under 34 years, but may have increased for those aged <math>\geq 35</math> years, following the intervention (after accounting for the ageing of the population).</li> </ul>
Heyman 2011 <sup>57</sup>	<p>Impact of an energy efficiency package (with a mean investment of £727 per house, focussed on insulation, heating controls and central heating) in north-east England on heat and self-rated health.</p>	<p>Randomised cross-over trial</p>	<p>Medium (attrition led to differences between the intervention and control groups emerging [controls received the intervention a year later—the attrition rate was 40% over 4 years; analysis was not on an 'intention to treat' basis but a 'per-protocol' basis with a very small percentage of the initially contacted households included in the study]).</p>	<ul style="list-style-type: none"> <li>• Householders in receipt of the intervention increased the heat of their homes rather than reduce their energy bills following the intervention.</li> <li>• There was no improvement in self-rated health following the intervention.</li> <li>• Only a small proportion of the potentially eligible population was recruited to the study.</li> </ul>

(continued on next page)

Table 3 – (continued)

Reference	Scope of paper	Study type	Study quality	Findings
Woodfine 2011 <sup>53</sup>	Impact of housing improvements on children with asthma in Wrexham, Wales.	Randomised cross-over trial.	High (analysis was not on an 'intention to treat' basis but a 'per-protocol' analysis with less than half of eligible children included in the study).	<ul style="list-style-type: none"> <li>• Asthma-specific quality of life amongst children in the intervention group improved more than amongst controls.</li> <li>• General quality of life and school attendance were less clearly impacted by the intervention.</li> <li>• The measures which dealt with community safety were those which had the greatest impact on coping and everyday functioning.</li> </ul>
Whitley 2006 <sup>68</sup>	Impact of an urban regeneration programme in Gospel Oak, London, (involving housing refurbishment, improvements to the physical environment, establishment of a community partnership board, refurbishment of local facilities, housing security improvements), on the recovery of those with mental illness.	Qualitative study.	Medium (research question [to what extent aspects of the urban regeneration programme favourably impacts on ... ] would be better answered with a quantitative approach).	

that areas which focussed on improving the physical environment may have mitigated against declines in self-rated health,<sup>37,38</sup> and that there may have been some small improvements in mental health amongst women and in the areas with the most intensive interventions (although this was against a background of unstable mental health trends in the intervention and control areas).<sup>39</sup>

The evaluations of the Neighbourhood Renewal strategy in Victoria, Australia, were similarly of low quality. Self-rated health did not change in association with the intervention but there were mixed results on perceived participation.<sup>40,41</sup>

Rehousing of tenants by housing associations in Scotland during the 2000s was evaluated, but self-rated health was unchanged after a year and mental health improved more amongst controls, despite reported improvements in housing and neighbourhood conditions in the intervention group.<sup>42,43</sup> This evidence is similar to that from another rehousing intervention in Scotland where changes in self-rated health were no different in intervention areas compared with controls.<sup>44</sup> Some other specific regeneration programmes (the Single Regeneration Budget in Manchester<sup>45,46</sup> and urban renewal in Sydney<sup>47</sup>) were not associated with changes in self-rated health outcomes.

#### Mixed-tenure housing

Despite there being few quality evaluations, the reviews of the impact of regeneration programmes which aimed to create mixed-tenure housing areas suggested that achievement of positive impacts (particularly on social relations) could be maximised by the provision of shared facilities across tenures (e.g. schools, public venues, courtyards).<sup>48,49</sup> However, the overall impact of mixed-tenure housing remains unknown.<sup>48,49</sup> There is some evidence for positive impacts for people of low socio-economic status moving from more- to less-deprived communities.<sup>23,50</sup>

#### Housing-specific interventions

More tentatively (because the approaches to critical appraisal were not described in the review and so the strength of the evidence cannot be ascertained), it was suggested that a range of very specific housing interventions (e.g. pest control, mitigating radon exposure, installation of smoke alarms, fencing of swimming pools, safe temperature water heaters and a rental voucher scheme) were effective means of improving health outcomes specific to each intervention.<sup>50</sup>

Improving the energy efficiency of housing seems to have consistent small positive effects on health (especially for those on low incomes and for those with specific health conditions and using objective measures of health).<sup>21,51–53,54</sup> Notably, it seems that improved energy efficiency measures tend to result in people choosing to increase the thermal comfort of their housing rather than reducing their fuel bills and carbon emissions.<sup>55–57</sup>

There is little evidence on the impact of changing housing tenure on health<sup>23</sup> and it is suggested (from a low-quality review) that housing refurbishment rather than housing demolition and movement of residents carries fewer risks (of disrupted social networks) and similar

benefits.<sup>55,56</sup> This may fit with findings from Glasgow of a relative decline in self-rated health in a housing-led regeneration programme focussing mostly on people who had been rehoused,<sup>32</sup> and findings from rehousing programmes across Scotland.<sup>42–44</sup> Rehousing can also be associated with a relative increase in housing costs.<sup>44</sup> A lack of social housing, high housing costs and poor housing quality are all suggested as important barriers to improved health and reduced health inequalities.<sup>58</sup>

### **Employment and business support**

There were few studies identified in this area, and those that were, were of low quality. It was suggested that much of the employment created through regeneration initiatives is paid low and goes to non-residents of intervention areas.<sup>59</sup> Supply-side (employability) interventions tended to dominate regeneration-led approaches to increasing employment<sup>59</sup> and these had mixed impacts but were generally poorly evaluated.<sup>51</sup>

Business support measures were commonly identified as part of regeneration activities but were not well evaluated.<sup>51</sup> Despite this, there is some evidence that unemployment fell slightly more quickly in regeneration areas in Scotland during the 1980s and 1990s than the national trends, although compositional change may have been responsible (as the data were cross-sectional).<sup>60</sup>

### **Gentrification (compositional change in the population)**

There is evidence that some regeneration initiatives result in substantial gentrification (the movement of people of lower socio-economic status out of the area as a result of demolitions or increased costs [e.g. higher rents] and the inward movement of people of higher socio-economic status) as a result of regeneration activities.<sup>27,59,60,61</sup>

Although this can be an explicit or implicit objective of some regeneration programmes (particularly if increasing the diversity of housing tenures is part of the intervention), it does mean that there has to be clarity over the population of interest in assessing the impact of regeneration initiatives (i.e. whether it is the original resident population or the newly resident population).

### **Other impacts**

Transport investments were noted to have mixed impacts in low-quality reviews,<sup>51,59</sup> but improvements of the physical environment (particularly around rivers and canals) seemed more frequently to have been evaluated positively.<sup>51</sup> Difficulties arising from partnership working as part of regeneration activities emerged from the literature. The risks to existing community organisations and the creation of factionalism within communities seem to be real and may have undermined some of the regeneration programmes.<sup>62,63</sup>

## **Methodological findings**

It is notable that few studies found changes in self-rated health, but studies considering objective measures of health

were more likely to have reported positive changes.<sup>52,54,57</sup> There are a number of possible explanations: that self-rated health is an insensitive measure with which to measure real changes in health outcomes; that the impact of the interventions was not sufficient to improve self-rated health given that it will be determined by the holistic experience of the socio-economic environment of individuals and the interventions did not sufficiently address all of these determinants or that the time between the intervention and the measurement of the outcome was insufficient to realistically expect change (although the changes observed in other health measures over similar time frames might suggest that this is unlikely).

It is important to consider the populations of interest in the evaluation of regeneration and area-based initiatives. The population resident within an area at the beginning, no matter whether they stay or move outside the area over the course of the intervention, remain of interest if the impacts of gentrification are to be measured and the compositional changes to communities be accounted for. It is also the case that characteristics of the incoming population are of interest and this was rarely measured directly.

Four important limitations were common amongst the available quantitative studies: low response rates at baseline; attrition during the follow-up period; a lack of a suitable comparison group to account for secular trends; and the use of repeat cross-sectional studies which could not identify population movements.

## **Discussion**

### **Main results**

The evidence around the impacts of regeneration activities on health, health inequalities and the socio-economic determinants of health was not of sufficient quality, nor were the interventions sufficiently similar across different contexts, to be able to draw out clear and certain lessons for decision makers. However, there were a number of aspects in which there do seem to be emerging findings that were supported by higher quality studies and/or which were seen across studies.

In relation to housing-led regeneration programmes, there was consistent evidence across studies of varying quality that housing refurbishment was likely to lead to small improvements in health. This was most clearly seen in objective measures of health (e.g. hospital admissions or using clinical health scales) rather than self-rated health measures. Positive impacts were also more clearly evidenced amongst those with existing health problems and amongst lower income groups. Rehousing programmes seem to be less consistently associated with positive health outcomes and this may be related to the mixed consequences for social networks, and the potential for increased rents, that were associated with people moving house.

There was insufficient evidence about the impacts of mixed-tenure approaches except that shared spaces (e.g. shared courtyards, schools and community halls) were essential components if social mixing was to be facilitated.



Changes in the social composition of communities (gentrification and residualisation) was a common outcome of regeneration programmes and one which may have been a desired outcome (e.g. through the creation of mixed-tenure neighbourhoods) or an unintended consequence (e.g. through increased housing rents). Future evaluations of regeneration programmes would be more informative if they captured the impacts for all populations affected (including those who move in or out of affected areas). The specific impact of regeneration activities on housing affordability did not emerge from the literature we identified, but this seems likely to be an important mechanism leading to gentrification.

There was consistent low-quality evidence that improving the energy efficiency of housing leads to people increasing domestic temperatures rather than reducing their fuel consumption and bills. As noted above, housing refurbishment (including that to increase energy efficiency) was associated with consistent small improvement in a variety of health outcomes, but it does not seem likely that this alone would reduce fuel poverty or carbon emissions given the observed behavioural responses. There was also some evidence to support specific measures to control pests, mitigate radon exposure, wire in smoke alarms and install safe water temperature boilers.

The partnership approaches frequently adopted as part of regeneration activities were proved problematic in the few areas where this was studied, as it seemed to create tensions between organisations which were not easily resolved. The degree to which this is due to the particular approaches taken in those areas or something inherent about the impact of agencies engaging with each other and with community organisations in the context of regeneration programmes is unclear. There was an absence of evidence identified in this review around the dominant approaches to employment (supply-side employability initiatives) and on other components of regeneration initiatives (e.g. transport infrastructure).

### Strengths and weaknesses

The review uses an explicit and reproducible search strategy, inclusion and exclusion criteria and critical appraisal and reporting formats—all of which is likely to have reduced selection and reporting bias in the review. However, dual review could not be resourced and there is, therefore, the possibility of error or reviewer bias. This review covers multiple subject areas superficially and the search strategy adopted is likely to have missed important and relevant papers for the research questions. For example, there is a substantial research literature on partnership approaches in general, and partnership working in regeneration programmes specifically, which were not identified in the search and therefore not included. Few studies were identified from outside of Europe, possibly reflecting the limitations of the search terminology used.

The review was also limited by the quality of evidence available for synthesis. Few studies achieved a comprehensive and high-quality evaluation of impact of regeneration, with even the better-designed studies suffering substantial limitations such as low response rates, substantial attrition and/or limited measurement of outcomes.<sup>69</sup>

The repeat cross-sectional studies were prone to selection and gentrification effects (which are likely to overestimate the positive impacts of regeneration). Many studies also had a short follow-up time from the interventions which would reduce the likelihood of changes in relevant outcomes.

Most of the studies identified evaluate the impact of regeneration initiatives from the UK in the last 35 years (partly because of the language limitations made on the search). As such, the evidence has been drawn from rather narrow ideological and policy approaches to regeneration. In relation to housing, there has been some housing refurbishment but usually tied to substantial demolition and new-build by housing associations or the private sector. Labour market interventions were largely supply-side focused with attempts to increase the skills and ‘work-readiness’ of the working-age population, although there were some attempts to stimulate demand through reduced business taxes, support for business start-ups and the provision of premises for business within regeneration areas.

### How it fits with the rest of the literature

The importance to the health of the socio-economic environment, including the availability, affordability and quality of housing, transport, the physical environment, employment, the social fabric of communities, and public services, is not in doubt (reflecting the World Health Organisation's recommended ‘Health in All Policies’ approach).<sup>70</sup>

Increasing the availability of high-quality work has a particularly strong evidence base in relation to the positive impact that it has on population health.<sup>7</sup> However, many of the recent supply-side interventions focussing on the ‘employability’ of people claiming benefits have had little or no impact on increasing employment.<sup>71–75</sup> Adams and Thomas, having reviewed the evidence of active labour market policies in Scotland, concluded that:

‘Scotland experienced numerous active labour market policies and a veritable industry of labour market ‘initiatives’; yet in every single case they have been supply-side induced, and in every single case we conclude that they have failed. The national fall in unemployment levels has clearly been a function of the improved macroeconomic situation since 1997 while the spatial inequalities have been effectively maintained’ (pp.38–39).<sup>76</sup>

In addition to the limited impact at a population level, there is also evidence that the design and implementation of these interventions may reinforce inequalities, in several ways. Cost-pressures and payment by results may create systematic incentives for providers to give most help to those closest to the labour market (‘creaming’), while committing less time and money to those who are judged to have weaker prospects (‘parking’).<sup>77,78</sup> Even where creaming and parking is absent, the ‘work first’ focus of these programmes means that limited attention is given to issues such as caring responsibilities or health problems, increasing the risk that where participants with these characteristics secure work, it is more likely to be unsustainable and fail to reduce the risk of household poverty.<sup>79,80</sup>

However, the impact of regeneration activities is much more complex and although there is great potential for it to

improve health and reduce health inequalities, it is not currently well evidenced as having occurred within the recent context. The potential impacts of different forms of regeneration and the variety of pathways and mechanisms that are likely to operate have been comprehensively detailed.<sup>23,51,58,59,64–66</sup> These are useful resources for the design and implementation of future evaluations of regeneration programmes and there is clearly an ongoing need for high-quality evaluations to be undertaken.

### Implications

It cannot be assumed that regeneration activities will improve health or reduce health inequalities simply because they aim to address the aspects of the social determinants of health.<sup>81</sup> However, there is great potential for them to have substantial impacts, both positive and negative. Implementing future regeneration programmes in the context of a robust evaluation framework (including the use of comparison groups, capturing a range of outcomes for all the affected populations over time [i.e. longitudinal studies], and investigating potential negative impacts) is therefore important.

This review provides some evidence on some aspects of regeneration which are more or less likely to have positive impacts and could be used as one consideration in prioritising and designing regeneration activities and evaluation approaches. For example, where regeneration involves substantial population movement it seems less likely to achieve positive results.

More generally, there was a limited amount of critical assessment of the impact on regeneration outcomes of the wider policy context within which regeneration policy has been framed over the past three and half decades. Across this period, regeneration projects which have sought to ameliorate or to reverse economic, social and physical declines have done so in a context in which wider policies have been intensifying many of those problems—for example, through increasing and spatially concentrating poverty, fostering deindustrialisation, deprioritising need as the basis for resource allocation, promoting ‘labour flexibility’ and residualising social housing. Indeed, regeneration policies have themselves often been vehicles for promoting such policies.<sup>3</sup>

This may go some of the way towards explaining why, after so many years and so much investment in activities which one would expect to have brought about tangible improvements in so many places, the evidence for the socio-economic and health benefits of regeneration policies is as limited as we have found it to be. An implication of this is that place-based ‘regeneration’ initiatives which were cast within a different wider policy context might well prove to be different in their outcomes.

### Conclusions

The evidence base on the impacts of regeneration is generally not high quality and is prone to bias. However, regeneration is theorised to be an important means of improving the socio-economic determinants of health. Housing refurbishment (generally, and for specific improvements) seems likely to lead to small improvements in health, whereas rehousing and

mixed-tenure approaches have less clear impacts. Changes in the social composition of communities (gentrification) are a common outcome of regeneration, and some partnership approaches to regeneration have been shown to have caused difficulties within existing community organisations. Future regeneration programmes should, therefore, be cautious about pursuing approaches that focus on rehousing populations; activities which may exacerbate gentrification or residualisation and should be very wary of destabilising community organisations. Supply-side employment policies are unlikely to be effective at increasing employment. Robust evaluation should be built into future programmes so that a greater understanding of how best to improve the socio-economic environment through local area-based initiatives is gained.

### Author statement

#### Ethical approval

None sought.

#### Funding

This work was not funded but formed part of the work plan for the lead author's employers.

#### Competing interests

None declared.

### REFERENCES

1. Furbey R. ‘Urban regeneration’: reflections on a metaphor. *Crit Soc Policy* 1999;4:419–45.
2. SURF. *What do we mean by regeneration?*. 2005. Available at: <http://www.scotregen.co.uk/scotregen/what-do-we-mean-by-regeneration/> [Accessed 25 July 2016], 32.
3. Tallon A. Introduction: the decline and rise of UK cities. In: *Urban regeneration in the UK*. 2nd ed. London: Routledge; 2013. p. 3–24.
4. ODPM. *Assessing the impact of spatial interventions. Regeneration, renewal and regional development. ‘The 3Rs guidance’*. 2004.
5. Krieger N. Theories for social epidemiology in the 21st century: an ecosocial perspective. *Int J Epidemiol* 2001;30:668–77.
6. Cave B, Curtis S, Aviles M, Coultts A. *Health impact assessment for regeneration projects. Volume II selected evidence base*. 2001.
7. Roelfs DJ, Shor E, Davidson KW, Schwartz JE. Losing life and livelihood: a systematic review and meta-analysis of unemployment and all-cause mortality. *Soc Sci Med* 2011;72(6):840–54.
8. Carley M. *Community regeneration and neighbourhood renewal: a review of the evidence*. 2002.
9. Collins C. What's the problem with communities these days?: learning networks, root causes and solutions. *Community Dev J* 2010;46–52.
10. Thomson H, Atkinson R, Petticrew M, Kearns A. Do urban regeneration programmes improve public health and reduce health inequalities? A synthesis of the evidence from UK policy and practice (1980–2004). *J Epidemiol Community Health* 2006;60(2):108–15.

11. Walsh D, McCartney G, Collins C, Taulbut M, Batty GD. *History, politics and vulnerability: explaining excess mortality*. 2016.
12. Pearce J, Vine J. Quantifying residualisation: the changing nature of social housing in the UK. *J Hous Built Environ* 2014;**29**(4):657–75.
13. Andersson R, Turner LM. Segregation, gentrification, and residualisation: from public housing to market-driven housing allocation in inner city Stockholm. *Int J Hous Policy* 2014;**14**(1):3–29.
14. Beck SA, Hanlon PW, Tannahill CE, Crawford FA, Ogilvie RM, Kearns AJ. How will area regeneration impact on health? Learning from the GoWell study. *Public Health* 2010;**124**(3):125–30.
15. Egan M, Kearns A, Mason P, et al. Protocol for a mixed methods study investigating the impact of investment in housing, regeneration and neighbourhood renewal on the health and wellbeing of residents: the GoWell programme. *BMC Med Res Methodol* 2010;**10**:41.
16. Hunter R, Tully M, Kee F. Development of an evaluation framework to measure the public health impact of a natural experiment: the PARC study. *J Sci Med Sport* 2012;**15**:S309.
17. Parry J, Judge K. Tackling the wider determinants of health disparities in England: a model for evaluating the new deal for communities regeneration initiative. *Am J Public Health* 2005;**95**(4):626–8.
18. Smith NR, Clark C, Fahy AE, et al. The Olympic Regeneration in East London (ORIEL) study: protocol for a prospective controlled quasi-experiment to evaluate the impact of urban regeneration on young people and their families. *BMJ Open* 2012;**2**(4) (pagination): Arte Number: e001840. ate of Pubaton: 2012.
19. White J, Greene G, Dunstan F, et al. The Communities First (ComFi) study: protocol for a prospective controlled quasi-experimental study to evaluate the impact of area-wide regeneration on mental health and social cohesion in deprived communities. *BMJ Open* 2014;**4**(10) (pagination): Arte Number: e006530. ate of Pubaton: 2014.
20. Thomson H, Thomas S, Sellstrom E, Petticrew M. The health impacts of housing improvement: a systematic review of intervention studies from 1887 to 2007. *Am J Public Health* 2009;**99**(S3):S681–92.
21. Thomson H, Thomas S, Sellstrom E, Petticrew M. Housing improvements for health and associated socio-economic outcomes (review). *Cochrane Database Syst Rev* 2013:2.
22. Fenwick E, Macdonald C, Thomson H. Economic analysis of the health impacts of housing improvement studies: a systematic review. *J Epidemiol Community Health* 2013;**67**:835–45.
23. Gibson M, Petticrew M, Bamba C, Sowden AJ, Wright KE, Whitehead M. Housing and health inequalities: a synthesis of systematic reviews of interventions aimed at different pathways linking housing and health. *Health Place* 2011:175–84.
24. Lorenc T, Petticrew M, Whitehead M, et al. Environmental interventions to reduce fear of crime: systematic review of effectiveness. *Syst Rev* 2013;**2**:30.
25. Walthery P, Stafford M, Nazroo J, et al. Health trajectories in regeneration areas in England: the impact of the New Deal for Communities intervention. *J Epidemiol Community Health* 2015;**69**:762–8.
26. Stafford M, Nazroo J, Popay JM, Whitehead M. Tackling inequalities in health: evaluating the New Deal for Communities initiatives. *J Epidemiol Community Health* 2008;**62**:298–304.
27. Stafford M, Badland H, Nazroo J, et al. Evaluating the health inequalities impact of area-based initiatives across the socioeconomic spectrum: a controlled intervention study of the New Deal for Communities, 2002–2008. *J Epidemiol Community Health* 2014;**68**:979–86.
28. Cotterill S, Parry J, Richardson M, Mathers J. Quasi-experimental evaluation of the health impacts of the New Deal for Communities Urban Regeneration scheme. *Crit Public Health* 2008;**18**(3):311–32.
29. Egan M, Lawson L, Kearns A, Conway E, Neary J. Neighbourhood demolition, relocation and health. A qualitative longitudinal study of housing-led urban regeneration in Glasgow, UK. *Health Place* 2015;**33**:101–8.
30. Egan M, Katikireddi SV, Kearns A, Tannahill C, Kalacs M, Bond L. Health effects of neighborhood demolition and housing improvement: a prospective controlled study of 2 natural experiments in urban renewal. *Am J Public Health* 2013:e1–7.
31. Egan M, Kearns A, Katikireddi SV, Curl A, Lawson K, Tannahill C. Proportionate universalism in practice? A quasi-experimental study (GoWell) of a UK neighbourhood renewal programme's impact on health inequalities. *Soc Sci Med* 2016;**152**:41–9.
32. Egan M, Tannahill C, Bond L, Kearns A, Mason P. *The links between regeneration and health: a synthesis of GoWell research findings*. 2013.
33. Curl A, Kearns A. Can housing improvements cure or prevent the onset of health conditions over time in deprived areas? *BMC Public Health* 2015;**15**:1191.
34. Curl A, Kearns A, Mason P, Egan M, Tannahill C, Ellaway A. Physical and mental health outcomes following housing improvements: evidence from the GoWell study. *J Epidemiol Community Health* 2015;**69**:12–9.
35. Mehdipanah R, Malmusi D, Muntaner C, Borrell C. An evaluation of an urban renewal program and its effects on neighborhood resident's overall wellbeing using concept mapping. *Health Place* 2013;**23**:9–17.
36. Mehdipanah R, Rodriguez-Sanz M, Malmusi D, Muntaner C, Diez E, Bartoll X, Borrell C. The effects of an urban renewal project on health and health inequalities: a quasi-experimental study in Barcelona. *J Epidemiol Community Health* 2013;**68**:811–7.
37. Jongeneel-Grimen B. *General health effects of area-based initiatives in Dutch deprived neighbourhoods. Should we invest in the neighbourhood environment or its residents?*. Amsterdam: University of Amsterdam; 2014.
38. Kramer D, Droomers M, Jongeneel-Grimen B, Wingen M, Stronks K, Kunst AE. The impact of area-based initiatives on physical activity trends in deprived areas; a quasi-experimental evaluation of the Dutch District Approach. *Int J Behav Nutr Phys Act* 2014;**11**:36.
39. Jongeneel-Grimen B, Droomers M, Kramer D, Bruggink J, Oers HV, Kunst AE, Stronks K. Impact of a Dutch urban regeneration programme on mental health trends: a quasi-experimental study. *J Epidemiol Community Health* 2016;**70**:967–73.
40. Kelaher M, Warr DJ, Tacticos T. Evaluating health impacts: results from the neighbourhood renewal strategy in Victoria, Australia. *Health Place* 2010;**16**:861–7.
41. Shield M, Graham M, Taket A. Neighbourhood renewal in Victoria, Australia: an effective way to address social inclusion. *J Soc Incl* 2011;**2**(2):4–18.
42. Petticrew M, Kearns A, Mason P, Hoy C. The SHARP study: a quantitative and qualitative evaluation of the short-term outcomes of housing and neighbourhood renewal. *BMC Public Health* 2009;**9**:415.
43. Kearns A, Whitley E, Mason P, Petticrew M, Hoy C. Material and meaningful homes: mental health impacts and psychosocial benefits of rehousing to new dwellings. *Int J Public Health* 2011;**56**:597–607.
44. Thomson H, Morrison D, Petticrew M. The health impacts of housing-led regeneration: a prospective controlled study. *J Epidemiol Community Health* 2007;**61**(3):211–4.
45. Huxley P, Evans S, Leese M, Gately C, Rogers A, Thomas R, Robson B. Urban regeneration and mental health. *Soc Psychiatry Psychiatr Epidemiol* 2004;**39**(4):280–5.

46. Thomas R, Evans S, Huxley P, Gately C, Rogers A. Housing improvement and self-reported mental distress among council estate residents. *Soc Sci Med* 2005;60(12):2773–83.
47. Jalaludin B, Maxwell M, Saddik B, Lobb E, Byun R, Guierrez R, Paszek J. A pre-and-post study of an urban renewal program in a socially disadvantaged neighbourhood in Sydney, Australia. *BMC Public Health* 2012;12:521.
48. Sautkina E, Bond L, Kearns A. Mixed evidence on mixed tenure effects: findings from a systematic review of UK studies, 1995–2009. *Hous Stud* 2012;27(6):748–82.
49. Bond L, Sautkina E, Kearns A. Mixed messages about mixed tenure: do reviews tell the real story? *Hous Stud* 2011;26(1):69–94.
50. Jacobs DE, Brown MJ, Baeder A, et al. A systematic review of housing interventions and health: introduction, methods and summary findings. *J Public Health Manag Pract* 2010;16(5):S5–10.
51. Tyler P, Warnock C, Provins A, et al. *Valuing the benefits of regeneration. Economics paper 7: volume II – logical chains and literature review.* 2010.
52. Jackson G, Thornley S, Woolston J, Papa D, Bernacchi A, Moore T. Reduced acute hospitalisation with the healthy housing programme. *J Epidemiol Community Health* 2011;65:588–93.
53. Woodfine L, Neal RD, Bruce N, et al. Enhancing ventilation in homes of children with asthma: pragmatic randomised controlled trial. *Br J General Pract* 2011.
54. Maidment CD, Jones CR, Webb TL, Hathway EA, Gilbertson JM. The impact of household energy efficiency measures on health: a meta-analysis. *Energy Policy* 2014;65:583–93.
55. Crawford K, Johnson C, Davies F, Joo S, Bell S. *Demolition of refurbishment of social housing? A review of the evidence.* London: UCL and Urban Lab; 2014.
56. Tudor Edwards R, Bray N, Burns P, Jones A. *Warm homes for health end of study briefing.* 2016. p. 2016.
57. Heyman B, Harrington B, Heyman A, The National Energy Action Research Group. A randomised controlled trial of an energy efficiency intervention for families living in fuel poverty. *Hous Stud* 2011;26(1):117–32.
58. Mitchell R, White J, Hearty W, Hands T, Lowther M. *Housing and health inequalities.* 2016.
59. Curtis S, Cave B, Coultas A. *Regeneration & neighbourhood change.* 2002.
60. Walsh D, Whyte B, Gordon DS. Changing places? A comparative analysis of area-based health trends in Scotland through the 1980s and 1990s. *Public Health* 2007;121(12):889–97.
61. Kleinhans R, Veldboer L, Jansen S, van Ham M. *Ageing in a long-term regeneration neighbourhood: a disruptive experience or successful ageing in place?.* 2014. p. 8660.
62. Carlisle S. Tackling health inequalities and social exclusion through partnership and community engagement? A reality check for policy and practice aspirations from a Social Inclusion Partnership in Scotland. *Crit Public Health* 2010;20(1):117–27.
63. Ilan J. Reclaiming respectability? The class-cultural dynamics of crime, community and governance in inner-city Dublin. *Urban Stud* 2011;48(6):1137–55.
64. Wiltshire S. *A select review of literature on the relationship between housing and health.* 2010.
65. Willand N, Ridley I, Maller C. Towards explaining the health impacts of residential energy efficiency interventions – a realist review. Part 1: pathways. *Soc Sci Med* 2015;133:191–201.
66. Higgins M, Arnot J, Farman P, Wares J, Aboud S, Douglas MJ. *Health impact assessment of rural development: a guide.* 2015.
67. Kramer D, Harting J, Kunst AE. Understanding the impact of area-based interventions on area safety in deprived areas: realist evaluation of a neighbour nuisance intervention in Arnhem, The Netherlands. *BMC Public Health* 2016;16:291.
68. Whitley R, Prince M. Can urban regeneration programmes assist coping and recovery for people with mental illness? Suggestions from a qualitative case study. *Health Promot Int* 2006;21(1):19–26.
69. Howden-Chapman P, Chapman R, Baker MB. Valuing social housing needs to take a broader view. *J Epidemiol Community Health* 2013;67(10):803–4.
70. Closing the gap in a generation. *Health equity through action on the social determinants of health.* Final Report of the Commission on Social Determinants of Health. Copenhagen: World Health Organisation; 2008.
71. Anderton B, Riley R, Young G. *The new deal for young people: early findings from the pathfinder areas.* 1999. Research and Development report ESR34.
72. Brewer M, Browne J, Chowdry H, Crawford C. *The lone parent pilots after 24–36 months: the final impact assessment of in-work credits, work search premium, extended schools childcare, quarterly work focused interviews and new deal plus for lone parents.* 2009. DWP Research Report No. 606.
73. *Work Programme Evaluation: the participant experience report.* 2014. DWP Research report No. 892.
74. Hanslucck C. *The new deal for lone parents: a review of evaluation evidence.* 2000.
75. Knight G, Salis S, Francavilla F, Radu D, Hevenstone D, Mocca E, Tousley B. *Provider-led pathways to work net impacts on employment and benefits.* 2011. DWP working paper No. 113.
76. Adams J, Thomas R. Active labour market policy in Scotland: does it make a difference? *Int J Manpow* 2007;28(1):30–41.
77. Rees J, Whitworth A, Carter E. Support for all in the UK work programme? Differential payments, same old problem. *Soc Policy Adm* 2014;48(2):221–39.
78. Carter EWA. Creaming and parking in quasi-marketised welfare-to-work schemes: designed out of or designed in to the UK work programme? *J Soc Policy* 2015;44(2):277–96.
79. Brussig M, Knuth M. Germany: attempting to activate the long-term unemployed with reduced working capacity. In: Lindsay C, Houston D, editors. *Disability benefits, welfare reform and employment policy.* London: Palgrave Macmillan; 2013. p. 153–77.
80. Whitworth A, Griggs J. Lone parents and welfare-to-work. Conditionality: necessary, just, effective? *Ethics Soc Welf* 2014;7(2):124–40.
81. Macintyre S, Petticrew M. Good intentions and received wisdom are not enough. *J Epidemiol Community Health* 2000;54(11):802–3.