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Economic Analysis of Cost-Effectiveness of Community Engagement to Improve Health

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Economic analysis of cost-effectiveness of community engagement to improve health

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Background

CHE Discussion Papers (DPs) began publication in 1983 as a means of making current research material more widely available to health economists and other potential users. So as to speed up the dissemination process, papers were originally published by CHE and distributed by post to a worldwide readership.

The new CHE Research Paper series takes over that function and provides access to current research output via web-based publication, although hard copy will continue to be available (but subject to charge).

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The problems of applying the standard framework of economic evaluation to this issue are reviewed in section 1, covering

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6. Attribution of any changes in community (health) to the approaches and methods of community engagement
7. Quantification across the whole range of community engagement

The requirements for economic modelling are briefly reviewed in section 2, based on Beale, Bending and Trueman (2007). We show how this implies that we cannot carry out the traditional form of economic modelling in this case. We have explored three possible options: developing a typology; relying just on effectiveness data from the literature and guesstimating costs; and developing a scenario based on partial information about both costs and benefits.

The second proved too difficult to make any secure estimates so the remainder of the paper focuses on the first and third option.

A typology of costs and benefits is developed in section 3 and spelt out in a little detail for three sub-areas:

1. the impact of community engagement on health and health behaviour;
2. the contribution of community engagement to supporting social networks and social capital formation;
3. other impacts specific to a particular situation, including collective and ideological outcomes (whether of citizenship, obedience or political literacy).

Scenarios were developed in collaboration with the Programme Development Group formed by the National Institute for Health and Clinical Excellence are considered briefly in section 4. Whilst none were judged to be sufficiently robust to be the basis of recommendations, they provided several useful pointers as to the appropriate content of eventual guidance.

A cautiously positive recommendation is provided in section 5, together with a set of questions to ask of any community engagement intervention.

Prologue

Liberty of association is one of the building blocks of a democratic society. The presumption of this exercise is therefore that community engagement in a democratic society is universally a good thing. Such a presumption is not subject to economic analysis (cf. Okun 1975). The issue here is only whether community engagement is a better vehicle for improving the community's health than another approach.

1. Introduction: applying the standard economic evaluation framework to this problem

The standard framework of economic evaluation to assess cost-effectiveness cannot be readily applied to community engagement. Problems include:

1. Multiple perspectives and time frames
2. Identifying and costing activities and specifically the costs of volunteer time
3. Identifying and measuring benefits
4. Identifying comparator communities
5. How the intervention interacts with the community, particularly identifying end gainers and losers and how the former might compensate the latter
6. Attribution of any changes in community (health) to the approaches and methods of community engagement
7. Quantification across the whole range of community engagement

1.1 Multiple perspectives and time frames

There are at least six different perspectives possible: NHS, NHS + social care, government, global, societal (society wide), social (local community). A distinction is made between societal and local social because what is seen as beneficial by a local group may not be beneficial from the perspective of other larger communities. There is also the potential of a ripple effect over time of building community engagement which is then the basis of other activity which, in turn, may have positive or negative effects on the quality of life of either the local or surrounding communities.

Thinking of specific studies, the perspective could be that of the funder of a particular community engagement initiative (e.g. the Lottery) who may have a relatively narrow concern with accountability and reporting. Even the organisation that receives the funding for implementing the initiative may have a relatively narrow concern with the direct costs of managing the project and a similarly narrow brief in terms of the outcomes that will be considered. If, for example, National Institute for Health and Clinical Excellence (NICE) were to commission an evaluation, the correct perspective would be that of the NHS; but given the commitment to take into account the interests of other stakeholders means in this case that it would be important to understand the perspective of funders and the community. But the views of the community members are likely to be a much more diffuse and hence to pose problems in identifying and measuring costs, measuring benefits and identifying any externalities.

There will be similarly diverse audiences for the evaluation. The guidance should be aimed at professionals working in the NHS, central government, other public sector organisations and those in the private, voluntary and community sectors with a direct or indirect role in community engagement and community development. But, given that members of the community in which the intervention is being carried out are themselves stakeholders, then their multiple interests and values have to be taken into account. This is what will present most difficulty in carrying out a cost-effectiveness study.

The relevant time frame for measuring the benefits of community engagement initiatives, as with (say) a programme to discourage smoking, could be very long. Moreover, although we can describe the pathways through which community engagement initiatives might work (Popay 2006), we do not have clear evidence as to when the 'ripple' effect of a community engagement initiative dissipates. This raises the problem of the ways in which studies have measured effectiveness and the appropriate analytic method.

1.2 Identifying relevant activities

Prior to costing activities (whether or not attributable to the intervention), it will be important to define and identify the pre-existing patterns of activity in the community that are relevant to the intervention (whether or not those activities were specifically oriented towards health improvement and whether or not they are to be considered as community engagement).

Any case study of successful or unsuccessful community engagement makes it clear that there are a very large number of factors (activities and/or resources) that are or *could have been* relevant to the

process and outcomes of community activities. There are a number of well known participatory techniques for eliciting, together with the community, the potentially relevant set of activities. But such participatory techniques are not very good at identifying the broader structural factors that might be the most important. For example, high pre-existing levels of education among a community mean that some pre-conditions of successful cooperation are taken for granted in ways that they would not be in a poorer community (or vice versa, in that members of poorer communities know that they have to work together in order to get anywhere in contrast to members of richer communities). At the other extreme of poverty, whilst people are usually pretty good at identifying the proximate external causes of their condition, their understanding of global economic processes is often likely to be limited.

1.3 Identifying and measuring benefits/outcomes

The measurement of outcomes at an individual level is known to be difficult – and not only in respect of health and health behaviour. But at least the difficulty is contained to the problem of reliability and validity of the measuring instrument and this can be treated as a technical issue. The problem with assessing the outcomes of a specific community intervention is that the benefits/outcomes will, in many cases, be distributed unevenly (with some community members gaining and others losing) because the intervention interacts with the structure and organisation of the community (this is more complex than the problem of a drug impacting on individuals differently).

In general, NICE uses a cost-effectiveness criterion (which is similar to a cost-benefit criterion) in that the net gain across gainers and losers can be calculated – even though the former do not actually compensate the latter. If a group of patients is given a drug which will make people better off on average, then the drug is accepted – even though it is not possible to identify in advance who will benefit and who won't. For example, taking aspirin will prevent clotting and so decrease heart attacks and clotting strokes, but will increase bleeding strokes and cause stomach ulcers. If the benefits enjoyed by the former group exceed the distress caused to latter group, NICE would recommend aspirin intake.

But, more generally, NICE does not take this logic to its (logical) conclusion, because if a drug that gives wide benefits but which has occasional catastrophic adverse effects, then this average net benefit argument is superseded by a stricter Pareto[1] criterion (where no-one should suffer as the result of a change) and the drug is banned.

In this case, the logic of adding up net benefits across individuals cannot be applied at the community level. Consider an intervention that has positive net benefits when aggregated across individuals but will, fairly certainly, give dis-benefits to a known subgroup in society; that inequality is of course destructive/harmful to the process of community engagement itself. So the Pareto criterion should be applied.

It is therefore important to be careful in using statistics summarised across community members: at the very least, one needs an indication of variability of response. Indeed, there will be several occasions where it is more appropriate to provide data disaggregated to (different types of) community members. In particular, it is possible that some community engagement activities will be 'captured' by the wealthier members of the community and that their health is improved but that the poorer members of the community do not benefit. Whilst population health improves, inequalities have been exacerbated; and recommendations that make health inequalities worse should be avoided (NICE 2005a).

We would also want to avoid any interventions where the costs of the intervention to the community in terms of *non*-health outcomes are seen as excessive relative to any possible health gain. It is therefore important in assessing cost-effectiveness to take a broad view of what aspects of health and social welfare might be affected by community engagement. The table in the background paper to the scope of this topic specified the types of intermediate (service improvements, enhanced social capital,

[1] Under the yardstick of Pareto optimality, no-one can be made better off without someone being made worse off. In theory, gainers should be able to pay off losers by giving them the money equivalent of their losses. However, some may not wish to be compensated in this way (eg money will not compensate for the death of a loved one). Under Hicks-Kaldor conditions, gainers have only to compensate losers in theory rather than in practice, and it is this assumption that allows respectability for cost-benefit analysis (and by extension cost effectiveness analysis). Under Rawlsian and Nozickian assumptions, different results pertain.

community cohesion etc) and ultimate outcomes (viz. health gain) that one might anticipate from different approaches to community engagement (Popay J, 2006). Given the broad range of perspectives and audiences, the proposal here is to extend even further the range of outcomes to be considered.

The point here is that the costs and adverse consequences of individual health care interventions are more circumscribed and easily identifiable; similar assessments on a community level will have to be more global. Obviously these would be partly subjective judgements differing between communities as well as between interventions and settings; but the important issue is to develop a *framework* within which those benefits can be identified.

1.3.1 Reducing activity to derive benefit

A particular issue that will strain the applicability of typical health economics approaches to assessing cost- effectiveness is that some interventions that may be successful in improving health may involve a *reduction* in activity, consumption and transactions (see e.g. Schwartz and Schwartz, 1998). The obvious example is a reduction in stress-inducing activity. Indeed, if one believes in man-made global warming then reduction in *any* activity could result in long-term health benefits.

In the case of community engagement the activities themselves are often seen as positive (community engagement is inherently a “good thing”). Even so, such engagement has an opportunity cost that should be balanced against the health outcomes. The only case when there is zero opportunity cost is if participants would not be engaged in any other form of activity if the current form of engagement had not arisen.

1.3.2 Scope of benefits

It is assumed we are not concerned with measuring the overall effectiveness of community engagement in general, but only with specific instances or interventions. In fact, community engagement is rarely seen as compatible with technical efficiency or the cost-effective functioning of the health system (Abelson and Eyles, 2002).

Lasker and Weiss (2003) in their discussion of broad-based community participation and community collaborative practices and partnerships point to the sources of frustration relating to determining effectiveness. "*Thus far, it has been very difficult to document that broad participation and collaboration actually strengthen the ability of communities to improve the health and well-being of their residents*." They cite the following reasons:

- Terms like community engagement, partnership and collaboration mean different things to different people.
- Efforts to engage people and organisations in community problem solving have been too short-term and insufficiently resourced to be fairly evaluated.
- Evaluations have generally looked at end results rather than investigating the impact of the collaborative process on the results.
- The multi-disciplinary nature of the collaborative process complicates the determination of impact by requiring diverse disciplines to work together and learn from each other.

1.4 What is the comparator or control?

In contrast to a clinical trial where we can compare and contrast with a placebo corresponding to the intervention, it is not clear what would count as a zero intervention. Communities have human members who are acting in large measure in their own interest all the time: this may or may not involve intervening in community affairs. An outside intervention affects that balance but does not mean there was no prior community involvement. However, what we want to assess is the *change* in costs and benefits attributable to community engagement approach. While randomised trials may not be feasible, interrupted time series analysis may be one way forward. However, this methodology presupposes adequate baseline data on costs and effects, data that allow appropriate adjustment for confounding factors and sufficient follow up periods. It is still unclear whether there is sufficient evidence to facilitate such an approach.

In addition, it is important to recognise that there is always some level of community engagement between sentient members of a community so that an outside intervention or even a new activity generated from within the community is affecting the existing balance of community engagement. Yet whilst very few research studies measure levels of activity, even fewer measure *pre-existing* levels of activity.

1.5 How the intervention interacts with the community

There are also some less tangible issues concerned with the way in which any intervention will interact with the history, organisation and structure of the community. In particular, the involvement of individual community members in or withdrawal from community engagement is, in general, neither uniform nor monotone. Beyond this 'random' behaviour, a given cluster of individuals may 'get stuck' for a long period until external changes trigger rapid change. Even where there are only a small number of committed individuals in a group, all of the group can become involved if the proportion is large enough (Cave and Godfrey, 2005). There are, for example, anecdotal reports of campaigns to promote breastfeeding having a 'threshold' effect in which a community changes from one where it is seen to be inappropriate to breast feed in public to one in which it is seen as inappropriate to bottle feed in public. The changeover can be quite dramatic. The change process will also be affected by the extent to which those who are less committed have multiple outside connections to others who are also less committed or to others in groups with only a few committed individuals.

Formally, in the economics of addictive behaviours, it has been shown that where there are strong peer effects (both in terms of peer pressure and peer learning), there can be multiple equilibria, cascade or herd behaviour, punctuated paths of long periods of slow and localised change separated by brief periods of profound or discontinuous adjustment, path dependence or hysteresis (locally irreversible change), cycles, and the sort of S shaped paths often seen in epidemiological dynamic disease models (Cave and Godfrey, 2005) Parallels can be drawn to community involvement.

Policy interventions, whether global or localised, do not produce a constant stream of effects but instead have tipping points and delayed impacts that must work through the network as a whole before producing observable changes. That said, when the impacts come these might be profound.

1.6 Problem of attribution

There is a general problem in deciding which activities are likely to have been the most important in producing any observed benefits (and therefore that should be costed). These will vary with the specifics of every situation. Analogously, that is why history is the most complex social science. Essentially, identifying the most important activities is much easier *post hoc* than *propter hoc*; and even then historians will argue interminably about the correct interpretation of events and processes.

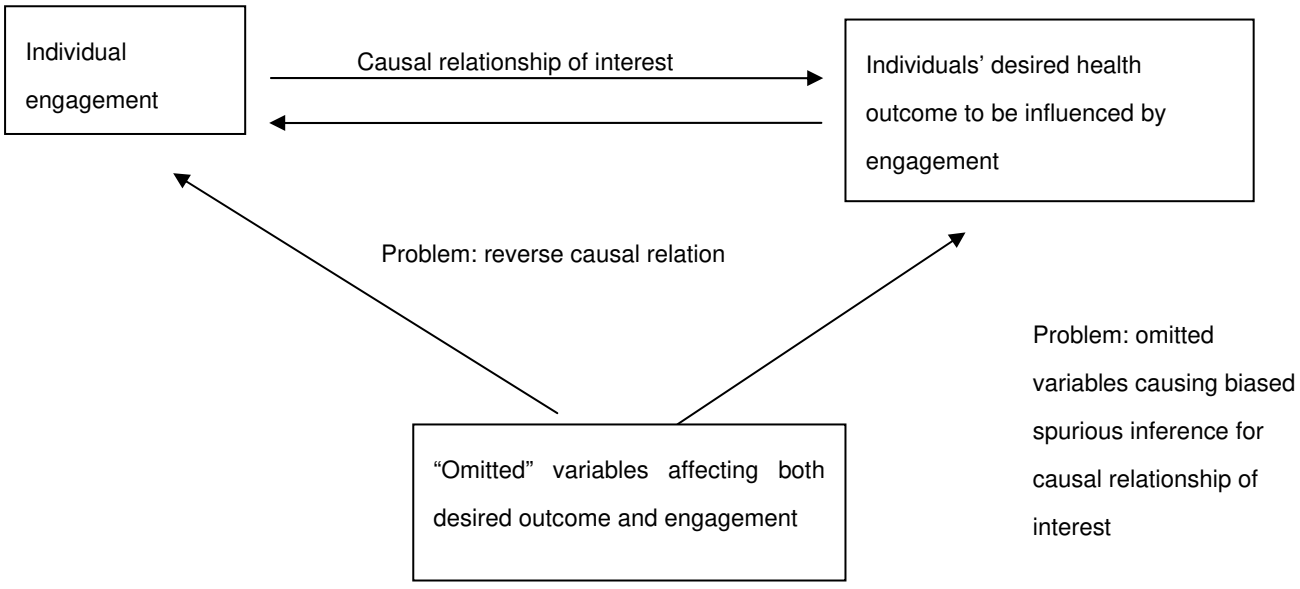

Diagram 1: Engagement as a vehicle: the problem of causality

1.7 Quantification across the range of community engagement

The discussions held by the PDG have raised a version of the Tukey problem: give a child a hammer and they will hit *anything* with it. Several of the case studies that have passed the minimal threshold as acceptable for the economic review of evidence, passed those thresholds precisely because the 'community' activities and intended benefits are relatively easy to identify and cost (or at least propose plausible estimates for those costs and cost savings). But the reason why they are easy to cost (and ascribe benefits) is that they relate to specific events (e.g. prevention of identifiable harmful incidents to identifiable individuals) rather than processes (e.g. improving population diet over a long period). In some cases, the community members (at least the active ones) would claim that the whole community is involved and that the potential harm is perceived – again at least by the active community members – to affect the whole community population; so that, if their activity were successful, one could attribute the harm reduction (at least when measured at the level of that community). But there would then be questions about the harm reduction at societal level rather than for that particular community.

In many other cases that have been reviewed for their relevance for economic evaluation, and, in particular, the example scenarios that were chosen for illustrative analyses by the PDG and are considered briefly in section IV below, the 'community engagement' approach often involves encouraging (individual) community members to be good neighbours (in the one case, identifying vulnerable older people for whom some specific inputs can be provided to reduce their risk of falling; in the other case, encouraging cyclists to wear helmets to avoid head injuries if they fall or are knocked off). Referring back to the typology originally proposed (Popay 2006), it is clear that, although the older people involved as volunteers did the needs assessment which helped to identify the problems and their solutions, and some carried out the block warden work on hazard awareness, much of this is at the lowest level of providing information. Indeed, where it is entirely an individual activity, one could question whether or not these should be described as community engagement rather than as simply good neighbourliness.

2. Economic modelling and its application in this case

The few studies that have been retained in the cost-effectiveness reviews have, rather obviously, had great difficulty in following the standard approach to evaluation. This raises the question of whether struggling to impose a standard economic modelling approach – which relies on a range of data from such cost-effectiveness reviews – is a sensible approach in the first place.

We first provide an introduction to economic modelling (taken from http://guidance.nice.org.uk/page.aspx?o=420946) and then consider its applicability to this case.

2.1 Introduction to economic modelling

"Economic models use data about the past to estimate relationships between factors that are believed to affect costs and outcomes. Projections are then made to obtain estimates of future costs and outcomes under given scenarios which encompass predefined conditions. However, the relationships between factors are subject to uncertainties and these introduce errors into any forecasts made using a model. The uncertainties may originate from a number of sources, including:

- The strength of available evidence;
- The relationship between intervention and effect (i.e. causality versus correlation);
- The fact that past behaviour is not necessarily a good marker for future behaviour;
- Unforeseen events in the future having a dramatic effect on predictions.

Further, the scenario under which projections are made may be unrealistic. It should be noted that the greater the number of future years over which a model is required to generate estimates, the greater the likely error in the already error-prone estimates of the model.

All models, of whatever form, are based on simplifications. If relationships between factors involved in determining future outcomes were straightforward then a model would not be needed. A model allows the user to focus on the key elements of a scenario, i.e., those factors and relationships that are believed to have the greatest impact on outcomes. Model output then allows the user to make informed decisions based on the likely major outcomes of a scenario.

When building a model, the modeller must always decide what to include and what to exclude. There will always be elements that cannot be included within a model. The modeller also needs to make decisions as to what to represent in detail and what to approximate. These are very important decisions that can only be made in light of the intended use of the model and are, unfortunately, invariably influenced by the availability of data. The structure of a model and data incorporated into it determines its usefulness. A model may be valid and useful for one purpose, but invalid and useless for another purpose.

Rather than regarding models as black boxes that will predict the future, it is better to regard them as tools to support thinking. Used in this mode, they can provide insights into the comparative performance of different scenarios."

From: BEALE S, BENDING M, TRUEMAN P (2007)

2.2 Applying these principles to community engagement approaches and methods

In terms of economic modelling of the cost-effectiveness of community engagement approaches and methods, the scarcity of evidence make it necessary to 'borrow' data from other studies and model their application to the specific intervention being considered. The key imperative is that we have sufficient data to be able to develop a 'decision rule' i.e. a statement of the circumstances under which it would be appropriate to follow one procedure rather than another. With sufficient data from a range of different types of approaches/methods, we would be able to make an attempt to provide estimates of cost-effectiveness across at least those types of community engagement. However, it is abundantly clear, from both the reviews of health promotion and the wider social determinants, that there is only a very small number of studies which can be even considered as providing some

relevant information on both costs and benefits for community engagement (Mason et al 2006). None of them is sufficiently precise to provide the basis for a decision rule. Moreover, even if there were one or two cases in which one could have sufficient confidence in the data used to be able to make a 'not-harmful and probably beneficial' judgement and agree that the costs are sufficiently small to guesstimate that the intervention was probably cost-effective, the wide range of possible community engagement interventions ranging from information to pro-active community control (see typology in Popay, 2006), would make it impossible to extrapolate from one situation to another. On this basis, the view of the authors is that economic 'modelling', as traditionally pursued, i.e., extrapolating from studies with real data to other examples in the same area, is neither appropriate nor feasible.

Instead, three different approaches to 'modelling' cost-effectiveness have been considered:

1. First, in the context of the range of different types of community interventions, set out a typology of costs and of effects that would be required to support economic modelling of the cost-effectiveness of community engagement initiatives.

2. Second, to base the modelling on areas of known effectiveness form the literature. The leading contenders were (a) studies from the USA and Canada on bicycle helmets, where the effects were known but there was insufficient information on either the intensity or the duration of the intervention, so costs could not be calculated; (b) Tenant Management Organisations, for which the same applied, and in addition, almost none of the benefits related to directly to health - although the longer term outcomes may well have beneficial health impacts - and those that did had long gestation periods; (c) a vaccination program for Harlem NY, where the resources used were again not spelt out so we could not get costs, and in addition, the benefits were in unknown probabilistic terms: it is not clear what the probability of an epidemic was; and it could not be determined in quantitative terms what the health benefits were. Also this last intervention was said to be not very applicable to the UK's very different health system. In view of these problems, this second approach was not pursued.

3. Third, because of the lack of evidence on cost-effectiveness, two possible alternative supplementary approaches were considered, both implying more involvement of the committee in the process of making the economic judgement:

Alternative A: :
The researchers were to provide:

- approximate costs of different types of community engagement
- examples of several different problems that could be tackled by these types of engagement
- qualitative estimates of the magnitude of the effect of community engagement on the quality of life dimensions (e.g. in three to five categories (huge, big, middling, small, negligible)).

The committee would then be asked to verify or otherwise the size of the effect; and make their own judgement about the costs and consequences of each type of community engagement. These judgements would then be fed back to researchers for their view as to whether their trade-offs are appropriate and iterate it back to them. The problem was that there was no way of 'anchoring' the costs in reality.

Alternative B:
Scenarios are developed of possible types of community engagement, drawing on real-life examples, but providing sufficient detail at least for costing purposes, asking the PDG to provide guesstimates of effects where there is insufficient real data.
In asking PDG members for their own projects, it was possible to obtain an approximate idea of benefits and also of costs. Neither estimate would be 'perfect', but both benefits and costs would be in the right ballpark.

Alternative B was the path followed. In the end though, in later discussion after tabling scenarios of this type, even Alternative B was not seen as generating evidence that was seen as acceptable on its own by the PDG; and so section 4 only sets out general pointers from the discussions.

3. Typology of costs and benefits

3.1 Costing community contributions

In most community interventions, there will be some elements that can be costed using conventional accounting methods such as capital outlays on buildings and infrastructure and current expenditure on rental, utilities, office materials and meals/ refreshments. But there are some more 'unconventional' issues which arise when costing the labour inputs of volunteers, which are considered in this section.

Thus there will be several elements of the community engagement process that involve contributions of effort and non-labour contributions without directly involving any monetary transactions. These will be both at the inception/ implementation stage and in sustaining the intervention.

Some analysts have simply presumed that because no money changes hands, then the volunteer input is costless. But whilst that might be appropriate in an accounting exercise, it is not sensible in terms of the use of the totality of human and material resources available.

The relevant economic tool is the concept of opportunity cost: i.e. what else could have been done with the resources had they not been used in this particular fashion? This implies attaching a cost to those resources that reflects the next best opportunity that has been foregone. The problem then becomes what to use as the appropriate wage rate to assess opportunity cost of the volunteer effort put into initiating, implementing and sustaining the intervention. There are conventional rules for costing *individual* time; using for example the minimum wage rate or the average wage; and the choice will clearly change the calculations substantially. But it is not clear how these apply to an activity which only makes sense when collectively shared, nor when some of the individuals will say that, if they weren't involved, he or she would prefer to be doing nothing. In either case, one could carry out a sensitivity analysis with different wage rates to examine this.

Further, the review has shown that there are only a very limited number of cases where comprehensive cost data have been collected at the same time as information on benefits/outcomes. In technical terms, assuming that the different types of costs can be identified probably the only eventual solution would be to simulate the impact of different assumptions about costing using both the limited data that can be collected on site and findings from elsewhere. But the utility of a sensitivity analysis depends on there being a reasonably narrow range of possible values for each of the different types of cost (otherwise the simulations will lead to such widely different answers that the results would be of no or very limited use to a decision maker).

3.2 A typology of benefits

One obvious approach to constructing a typology of possible impacts for any specific intervention is to brainstorm what those impacts might be with relevant stakeholders. Thus, one might categorise the potential impacts of community engagement into, for example, increases in knowing how to do things (taking into account the shift from skills to competencies, the shift from manual labour to service employment and the increasingly perceived role of the informal economy), increased intra-community networking, increases in communality (learning to live together and common objectives) and empowerment (learning to be, the development of personality and autonomy).

The problem with such an approach – and the reason why different groups of stakeholders will generate different typologies – is that they start with community engagement and move outwards. An alternative approach is possible that takes things the other way round. That is, in order to define the impact and possible scope of externalities of community engagement, economic evaluation has to start from a model/typology of not only health benefits but also wider aspects of the quality of life which community engagement might be expected to influence. There are several approaches to the modelling and measurement of the quality of life and this is not the place to discuss these in detail. Instead, a more pragmatic position and one that is theoretically appropriate for diverse communities can be adopted involving a loose framework that includes all possible dimensions of the quality of life, which ensures that in any specific evaluation nothing is left out. However, a study that assesses a large number of outcomes increases the risk of making spurious statistical inferences. Therefore, primary and secondary outcomes need to be specified at the outset. If a summary measure is used,

care must be taken not to over-interpret 'significant' differences on specific dimensions of the summary scale.

One possibility is that the framework to structure an economic analysis of community engagement initiatives could be based on the OECD social well-being approach, and specifically to include the following:

Table 1: A set of dimensions of the quality of life

Dimensions of the quality of life	Aspects that could be considered
BEING	Autonomy
	Health
	Knowledge
DOING	Employment
	Healthy Behaviour
	Leisure
HAVING	Income
	Status
RELATING	Parenting
	Social Networks
	Social Capital
SURVIVING	Global Responsibility

Standard measures have been proposed and developed for many of these (see for example, Boarini R, et al 2006), but these tend to be at the macro level. It would probably be more appropriate for those to be used as *guidelines* for the evaluators to develop their own measures in conjunction with all the stakeholders including the community, rather than to adopt them automatically.
Some of the aspects that are identified are less likely to be outcomes of community engagement than others. For simplicity, topics have been grouped according to the emphases in the literature on community engagement. Any typology is inevitably pragmatic and there will be overlaps. Tentatively, a threefold division is proposed:

1. the impact of community engagement on health and health behaviour;

2. the contribution of community engagement to supporting social networks and social capital formation;

3. other impacts specific to a particular situation, including collective and ideological outcomes (whether of citizenship, obedience or political literacy).

3.2.1 Health and health behaviour outcomes

Assessing the impact of community engagement on health depends on whether one takes an external 'objective' view as to what counts as health (and the reduction of inequalities) or one that is informed by those engaged in the health improvement activity. In addition, where the community has been engaged in improving service delivery, then it may also be appropriate to measure the intermediate outcomes of the quality of health care.

If an objective view is taken, then the measure(s) proposed by the project initiators would normally be the most appropriate measure.

But, given that much of the literature suggests that the engagement is itself a crucial factor in any health improvement or any improvement in health care service delivery, it would only seem appropriate to focus on the views of those participating. In addition, where the community has been engaged in improving service delivery, then it may also be appropriate to measure the intermediate outcomes of the quality of health care. The problem is that those actively involved may not agree that any of the standard scales or measures is appropriate. The only standard way round this situation would be to ask those involved to develop their own criteria for what would count as health improvement or improvement in the service delivery; but that runs up against the problem of changing

membership of the 'core' group of activists. One could limit their involvement in the cost-effectiveness analysis to specific stages in the evaluation but that seems contrary to the spirit of community engagement.

One would expect that the kinds of issues that would be considered would include:

- a health status measure specific to the nature of the intervention chosen by the community
- self-reported improvement in perceived health status
- people feeling that they own services
- community sees change that they have influenced and there is a positive feedback about change
- small scale informal, locally based services that are responsive to local need
- good communication between agencies and community (eg there is a clear route for local community planning to influence policy, community planning partners, clear accountability)

3.2.2 Social networks and social capital formation

On the macro scale there are modules developed by the General Household Survey, or that used on the Office of National Statistics Omnibus Survey that could be used to measure a baseline and follow-up levels of social capital and social network formation. Even so, one may want to consider supplementing these with indicators to reflect active communities and local people's real involvement at the strategic level (eg how often were decisions actually influenced by local people?).

On the micro scale, there are a large number of possible issues concerned with people's sense of involvement in decisions, wider and more meaningful participation, etc. One could develop a standard set of interview questions – which may have to be modified in any specific context – along the following lines (see Box below):

Non-technical actions/decisions

Selecting intervention
Deciding level and distribution of community effort in implementing intervention
Deciding level and distribution of community cash contributions, if any, to implementation of health interventions
Deciding wage to be paid, if any, for labour used in implementation
Deciding on any compensation to be paid for other community resources used in implementation of health intervention

Deciding on usage access rules (e.g. who uses health improvement facility and when)
Deciding sanction measures for misuse of health improvement facilities

Raising internal (to community) funds for maintenance
Deciding on maintenance system, policies and rules
Deciding on level and distribution of community effort towards maintenance
Deciding on level and distribution of community cash contributions towards maintenance
Deciding on nature, level and extent of any sanctions imposed for not participating in maintenance

Overall participation in non-technical decisions

Technical

Deciding on physical site
Deciding on scale of intervention
Deciding design
Deciding time frame for start up
Raising external (to community) funds for implementation and maintenance

Overall participation in technical decisions

The possibility arises that not only will the community have different objectives and values but that they will value the process as much as the outcome. This can be considered within the same framework so long as one is not theological about what counts as an outcome.

Finally, there might be scope for exploring the extent to which communities of interest are recognised/ involved, the skills/work of local people are acknowledged, and the extent of trust/ belief/mutual respect/understanding between the community and the agencies.

3.2.3 Other impacts specific to a particular situation

Partnership working

Community engagement on one intervention may facilitate community engagement in another if communities become active partners with agencies and the agencies themselves become more joined up. The issue here is how to identify the added value of partnership working. This will be specific to each situation.

Citizenship

A broad notion of citizenship would be about the nature of social membership within modern political collectivities (Turner, 1993) as distinct from particularistic forms of commitment to society. Turner (1990) suggests that, even in Europe, at least four rather different forms of citizenship can be identified depending on whether citizenship has been developed from above or below (and therefore whether citizenship is active or passive) and the extent to which citizenship is developed in a private or public space. Other authors also argue that current concepts of citizenship are too diverse to summarise in a unitary concept.

At one extreme there is the totalitarian's position. The function/role of community for nationhood has of course been recognised by many a dictator; taking Orwell's 1984 account, by continued repetition of the same message populations can be coerced into believing that there is no alternative. In contrast, the liberal wing argues that community engagement should further democratic citizenship through learning experiences that are aesthetic, promote curiosity, involve the solving of people's own problems and use democratic processes.

Other externalities

Interventions directed at redressing health inequalities will often target specific sub-groups in a community and, in so doing, potentially alienate the remainder of the community. For example, projects for the homeless or travellers intending to improve their living conditions will almost certainly improve their health but, where they incite NIMBYism, may have an overall negative impact on that community. (NIMBY: "not in my backyard") But rather than being a surprise after the event, this can be monitored if the framework proposed in box 3 is used as a baseline for describing the community situation.

4. Drawing lessons from scenarios

It was proposed that we consider a number of possible scenarios as tabled by the Project Development Group. These were in brief:

- Falls Scenario (Institute for Health Improvement). The Healthy Communities Collaborative established an initiative to help reduce falls among elderly people. Citizens were trained to perform basic improvement techniques in the three geographic areas: Easington, Gateshead and Northampton. Each area had five teams of 10-20 participants per team with an average age of 70. The teams partnered with housing and public works authorities to improve lighting, redesign doorways and install shower grab rails; convinced local businesses to sell bulk orders of non-slip bath mats, sturdy shoes, reading glasses and night lights.
- Floods Mitigation. A local community approved plans for flood defences, an emergency response plan and a solution to disposal of sewerage.
- Healthy Diets. An initiative tailored by school-children who had researched the problem of poor nutrition and come up with proposals to improve the food choices on offer in school canteens, tuck shops and vending machines and to encourage healthy eating among their peers through a range of educational and practical means.
- Tenants Management Organisation. TMOs are tenant controlled organisations that operate in public housing estates. Key responsibilities range from management, maintenance and repair of property. Many TMOs have more extensive roles, which include enhancing the capital infrastructure and promoting the general wellbeing of the local community.

A fundamental problem in assessing effects is that there are many possible confounders. This is for several reasons, among which two stand out:

- Positive outcomes tend to take place over a longish period when there may be several other concurrent interventions of facilitating factors. These may be hard to identify and quantify, making it difficult to isolate the impact of community engagement itself.
- The nature of community involvement may change over the period. For example, early enthusiasm developed through participation in a specific community engagement initiative may later develop into protective activity by the community against some outside interventions (NIMBYism).

These problems apply to both the Floods Mitigation and Tenants Management Organisation, for which health effect is also more difficult to identify, particularly as this was not the main purpose of the initiatives. Limited data was available to support more detailed analysis of the impact of Healthy Diets scenario. There is more possibility of identifying the effects of community engagement when we are looking at prevention of harm through accidents such as the Falls Scenario rather than at the achievement of positive healthy outcomes, which tends to be a longer term process. This is because these are specific events, where there is, in principle, clear attribution.

In order to use this scenario, however, we would have had to make a series of assumptions about the costs and cost savings due to a reduction in falls; and be convinced about the quality of data for the outcome measure. Doubts were expressed over several of these items and so the scenario was not pursued in detail. There was also a concern not to be pushed to force the limited evidence into a rigid cost-effectiveness framework and so instead, the remainder of this section considers the general lessons about cost-effectiveness that can be derived from these scenarios.

4.1 Costs of community engagement

Costs should be considered from at least the following three perspectives:

1. NHS and social care – direct NHS and social care costs in community, primary and secondary care; and administration of programme; health benefits for all members in the community
2. Government – other costs to local authorities and public works; and administration of

programme

3. Societal – including the costs of local volunteers and any impact on community members whether positive or negative, and any impacts on the wider society.

The costs for NHS and social care and for other government departments are, in principle, relatively easy to specify, and it is possible to assign 'opportunity costs' for the labour input of local volunteers (although that would only be relevant from the societal or local social perspectives). But there are two other dimensions that were seen to be more intractable:

- given the importance of the processes of building and then sustaining a partnership involving community members, it has been argued that, *when considering the costs of local volunteers participating in the CE activity, it is more relevant to consider the costs and benefits as perceived by the community* (El Ansari and Phillips, 2004).
- Many scenarios presume that new partnerships/relationships will be developed between the different stakeholders; where these also involve changes in organisational structure, *the cost of these organisational changes and associated benefits, although very difficult to cost should be taken into account*.

4.2 Costs of disengagement

The bulk of the literature considered has focussed on the costs and consequences of community engagement; yet there is considerable concern amongst political actors about the consequences of 'disengagement' both in terms of apathy about the political process and about social exclusion. Although no specific cases were cited, it was therefore proposed that *those evaluating CE interventions should take into account the costs of disengagement* in terms, for example of lack of civic participation, loss of faith in local governance structures or even increased disorder.

4.3 Outcomes

Because nearly all the scenarios only had very limited – or unreliable data - on outcomes, and although there may well still be substantial benefits, *the major criterion is simply whether there is any cost saving through the intervention*. This is particularly pertinent *where it is seen as impossible to deliver the outcome without community engagement; then the only issue is whether there are cost savings*. The most striking example provided was the flood defences scenario where previous attempts by the Environment Agency to persuade communities of the value of flood defences had failed, whilst subsequent facilitation of the community partnership had led to agreement so that the flood defences were constructed with a considerable potential benefit in terms of cost savings if a flood had happened. Further, in facilitating a project with economic net benefits (from a cost-benefit analysis) to occur using engagement but not otherwise puts this scenario in the "4th quadrant" in a cost-effectiveness analysis for health gains. That is, there are small health benefits as well as 'cost savings', the cost savings being the net benefits from the cost-benefit study. That is a more powerful result than had the project simply generated cost savings.

4.4 Limited possibility of making cost-effectiveness statements

We have already argued that the standard approach to cost-effectiveness is only of limited relevance because the practice of community engagement is intertwined with the liberty of association which is one of the building blocks of a democratic society. We have also suggested that, because of the difficulties of assessing outcomes over the long term, *it is easier to identify savings where there are specific instances of harm reduction* (bicycle helmets, falls, hypothermia, etc.)

5. Conclusion

As the preceding material shows, any community engagement intervention is complex. To conclude we set out the kinds of questions that need to be asked of any community intervention in order to specify the circumstances of the intervention.

What is its aim/objective? What factors or determinants does it aim to influence?

The espoused aim or objective of the funders will be clearly stated; the extent to which those involved in the community share those aims or objectives may be more difficult to ascertain. Any intervention should include provision for collecting information on these issues several times during the life-cycle of the intervention

What theoretical framework or values underpin the design, content and/or delivery of the approach and/or engagement method?

The protocol for the intervention should have identified the theoretical framework or values that inform the design, content and delivery of the approach. It will be important to ascertain the extent to which these frameworks (whether of theory or values) are congruent with those of the communities. This should become pretty obvious during the initiation stage of the intervention and would therefore be documented in the inception report. But in any case, the community engagement would presumably have included some kind of focus groups etc on these issues and the report from that would be sufficient.

Characteristics of intervention

How does the content influence effectiveness?
[Note this will be a particularly important consideration for a multi-site or multi-setting intervention.]

The content will of course depend on the aims and objectives of the interventions themselves and on the composition of the target community (see below)

How does delivery influence effectiveness?
[Note this will be a particularly important consideration for a multi-site or multi-setting intervention.]

Does effectiveness depend on the intervener (that is, on whether the intervener is a community member or a public sector professional, and if the latter, on what job title or status he or she has) or on other factors such as age, gender, sexuality or ethnicity? What are the significant features of an effective intervener?
[Note this will be a particularly important consideration for a multi-site or multi-setting intervention.]

The nature of the intervention will be different if it is carried out by one or more professional(s) or by one or more community member(s). It is probably not very sensible to differentiate between the influences of the content, the delivery, the intervener and the site/setting.

Does the site/setting influence effectiveness, and if so, how?
[Note this will be a particularly important consideration for a multi-site or multi-setting intervention.]
Community engagement has been found to be effective across a wide range of sites and settings from the poor shanty towns in developing countries to Rotary Clubs in rich over-developed countries. Almost certainly, the type of community engagement method that is most appropriate will vary according to the site and the setting. Note that there is a difference between this and the varying impact of the interventions on sub-groups of the target community because the community is not divisible.

Does the intensity (or length) of the approach or engagement method influence the effectiveness or duration of the effect?
[Note this will be a particularly important consideration for a multi-site or multi-setting intervention.]

The intensity of the approach will influence the effectiveness of the effect although not necessarily in the intended direction. There are several anecdotal stories of supposedly successful “light touch”

interventions.

Does the impact vary according to the target community (for example, in terms of their age, gender, ethnicity or the nature of their disadvantage)?

It is highly likely that the impact will vary according to the characteristics of different sub-groups within the community; and possibly the most important characteristics that have been omitted here is people's attachment to their community (often reflected through home ownership). The intervention should have designed its monitoring and evaluation instruments to include information on standard socio-demographic characteristics. If possible, one would want to be able to ensure that these instruments have included not only housing tenure, but also length of residence in the community, how long a home-owner, and whether or not there is any intention to move (evaluations of Neighbourhood Warded interventions showed that this was one of the most crucial determinants of involvement and satisfaction with the community.

To what extent is effectiveness influenced by the level of participation and control in the approach or engagement method?

The levels and range of participation can be measured crudely through measures such as levels of attendance at any meetings relevant to the intervention. These need not be restricted to those that were formally part of the intervention specification. More sophisticated measurement of participation and, eventually, of the extent of community control of the intervention would probably best be accomplished through focus group discussions etc. That said it will be crucial to be aware of the influence of changing membership of the 'active core' group might have on the responses obtained whichever method is used. One possible way of tracing this is for one of the 'paid' community workers to keep a log/record of these kinds of changes; but there is no obvious way to factor in these changes quantitatively.

Is there any differential impact on inequalities in health within and between disadvantaged groups?

Other constraints

What are the barriers and facilitators to implementation (for example, resistance from professionals, members of the public, policy drivers, funding or staff)?

This will be a situation where it is important to take account of the different perspectives. The intervention protocol should have included an assessment of the barriers and facilitators from their perspective as part of the risk assessment for designing and implementing the intervention; and interim or final reports on the intervention should indicate whether those assessments changed during the course of the intervention.

How acceptable is the approach or engagement method to the target community?

In principle, the acceptability of the approach or engagement method can be ascertained through questionnaires; and that should have been included in the intervention protocol. It is much more difficult to assess whether the approach is the most acceptable because that would involve hypothetical questions. In general, the research literature suggests that different cultures, different generations within cultures and men and women within different generations within cultures find different approaches most acceptable.

It might be important also to consider the adverse or unintended outcomes of the approach or engagement method (for example, disruption of community cohesion, damage to the self-esteem and/or the subjective health state of individuals engaged).

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