

# Understanding the Impacts of Care Farms on the Health and Well-being of Probation Service-users: A Pilot study

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## Scientific summary

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Background: Care farming (also called social farming) has been defined as the use of commercial farms and agricultural landscapes to promote mental and physical health through normal farming activity. Through a supervised, structured programme of farming-related activities, care farms (CF) provide health, social or educational care services for a range of vulnerable groups. The type of farming activities (e.g. horticulture and livestock farming), other activities (e.g. gardening, conservation, woodwork, and metal work) and well-being and skills interventions provided (e.g. health promotion, counselling, and skills qualifications) differ across farms. A wide range of service-users access CFs including those with long term conditions such as dementia, depression, learning disabilities, substance misuse and behavioural issues as well as probation service-users. It is estimated that there are about 230 care farms in the UK.

The evidence for the effectiveness of care farming is relatively recent (within the last 10 years). The complexities and multi-faceted nature of care farms means randomised controlled study designs (RCTs) are challenging. In light of this, our study synthesised the published and unpublished literature using a mixed-methods systematic review design.

In addition to this systematic review, we wanted to understand the feasibility of assessing the cost-effectiveness of care farms in improving quality of life. Offenders (referred to here as probation service-users) serving community orders (CO) are an important user group for CFs in the UK; 27% of CFs in England were working with probation in 2012. In England, there is a policy emphasis on the use of COs, whereby those who have committed lower-risk offences are sentenced by court to serve their punitive order in the community rather than in prison. COs may be spent on a CF or other location such as picking litter, cleaning-up public spaces or helping in a charity shop. Randomly allocating service-users to CF or comparator CO location would not be acceptable within probation services, so an RCT design is not appropriate. Instead, we tested feasibility of a natural experiment using

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statistical analysis (propensity analysis) to account for differences between CFs and comparator locations.

Our study therefore, aimed to i) synthesise existing evidence to better understand the impacts of care farms and ii) establish the feasibility of conducting a future natural experiment to determine cost-effectiveness of CFs in improving quality of life and reducing reconvictions among probation service-users serving COs.

Our research questions:

1. What is the existing evidence of impact of CFs and potential mechanisms of impact for different groups?
2. How can recruitment of probation service-users undertaking COs on CFs and in comparator settings be maximised?
3. What are the optimum ways to collect baseline and follow up data, cost data and individual reconviction data from the Police National Computer (PNC)?
4. What are the impacts of CFs on probation service-users' lives and how appropriate are our measures in identifying changes in quality of life, health and well-being?
5. What is the extent of variation between the activities and approaches used on different CFs?
6. What is the influence of seasonality?
7. What are the potential confounders and how can these best be measured?
8. What is the feasibility of measuring key parameters to undertake a cost-effectiveness analysis of CFs in comparison with other CO settings for probation service-users?

### **Design and Findings: Systematic Review**

To answer research question 1, we conducted a systematic review using a sequential exploratory approach to mixed methods synthesis. This method identifies main concepts from theories, synthesising qualitative data to compare with the theoretical concepts and then interrogating the quantitative data to test any qualitative findings.

**Methods:** We searched 22 health, education, environmental, criminal justice and social science electronic databases, databases of grey literature and care farming websites across Europe. There were no language restrictions.

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**Selection criteria:** We included a broad range of study designs: randomised and quasi randomised controlled trials; interrupted time series and non-randomised controlled observational studies; uncontrolled before and after studies and qualitative studies. We excluded single subject designs, reviews, overviews, surveys, commentaries and editorials. Study participants were those that typically receive support at a CF, including people with mental ill health, learning difficulties, health problems, substance misuse, probation service-users and disaffected youth. Only those attending for a single day were excluded.

**Data collection and Analysis:** Each screening stage involved two independent reviewers. Studies that were potentially eligible after title and abstract screening, underwent full paper screening. Disagreements were discussed and resolved by consensus at each stage. The Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) was used to document the review process. We used an adapted version of the COREQ tool to assess qualitative studies and the EPOC and EPHP tools to assess the risk of bias in quantitative studies. No studies were excluded based on quality.

**Results:** Our search methods identified 1659 articles of which 14 qualitative, 12 quantitative and one mixed methods study met the inclusion criteria. In addition, we identified 15 theories quoted in connection with care farming. We created four logical models explaining how care farming might work for: i) all service-user groups; ii) mental ill-health and substance misuse combined; iii) disaffected youth and iv) learning disabilities. These models comprised 5 key theoretical concepts (restorative effects of nature; being social connected; personal growth; physical well-being; mental well-being), five CF components (being in a group; the farmer; the work; the animals; the setting) and 15 categories of mechanisms (achievement and satisfaction; belonging and non-judgement; creating a new identity; distraction; feeling valued and respected; feeling safe; learning skills; meaningfulness; nurturing; physical well-being; reflection; social relationships; stimulation; structure; understanding the self.). We identified 12 different outcomes, both process (secondary) and primary, that we expected to find when testing the logic models against the quantitative studies. One key theoretical concept 'restorative effects of nature' was

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underrepresented in the intervention components and mechanisms reported within the qualitative studies. The types of mechanisms appeared to differ according to different service-user groups suggesting that care farming may work in different ways according to different needs. Across the 14 studies, 24 different outcome measures were reported and a number of studies reported results for mixed service-user groups. We found no evidence to indicate that CFs improve quality of life and limited evidence that they might improve depression and anxiety. There was some evidence to suggest that care farms can improve self-efficacy, self-esteem, affect and mood with inconsistent evidence of benefit for social outcomes. All of the studies had a high risk of bias. The results should be treated with caution.

### **Design and Findings: The Pilot Study**

We tested the feasibility of conducting a future natural experiment to assess cost-effectiveness of care farms compared to other CO sites in improving quality of life. As a pilot, the study was not powered to determine effectiveness, but designed instead to identify feasibility.

**Setting:** The pilot study was conducted in three Centres. Each Centre was a probation service region in England and included a CF, at least one comparator CO project and the probation service.

**Participants:** adult probation service-users (18 years and over) serving a community order.

**Intervention:** The three Centres in this study demonstrated the considerable range in types of care farms; with one social enterprise specialising in aquaponics, horticulture and skills building (Centre 1); a religious charity with emphasis on horticulture and maintenance (Centre 2) and one family-run cattle farm with a focus on rehabilitation (Centre 3). Users at Centre 2 served their CO at different locations and unlike the other Centres, were allocated to multiple sites during their CO. In Centre 3, probation services used the care farm as a 'specified activity requirement' rather than an 'unpaid hours' CO.

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**Comparator:** Identifying suitable comparators sites was challenging. Comparator users in Centre 1 were allocated to a charity warehouse sorting second-hand clothes; in Centre 2 we were unable to recruit comparator users and in Centre 3 comparator users attended a range of different specified activity requirements including to address alcohol misuse, domestic violence, anger management and drink driving.

**The primary outcome** was quality of life derived from the Clinical Outcome in Routine Evaluation–Outcome Measure (CORE-OM) from which a utility score can be valued and QALYs derived. The 34 items cover four dimensions: subjective well-being; problems/symptoms; life functioning; and risk/harm. The full version of the questionnaire can be found here: <http://www.coreims.co.uk/>.

**The secondary outcomes** were:

- Individual level data on reconviction rates obtained from the Police National Computer (PNC).
- Mental well-being derived from Warwick-Edinburgh Mental Well-being Scale (WEMWBS).
- Measures of smoking, alcohol, drug use, diet and physical activity adapted from General Lifestyle Survey and Health Survey of England.
- Measures of the Connectedness to Nature.
- Exploration of social and health resource use costs and health utility as derived from CORE-OM.

All questionnaire outcomes were collected at the beginning of users' CO and at six months. PNC data on reconvictions (i.e. offences which have received a court sentence) was collected at least 6 months, and up to 18 months, following CO completion.

We conducted a qualitative study to understand allocation decisions and differences in the use of CFs by probation services. We interviewed 8 service-users (all male due to the limited number of women allocated to CFs), care farmers (6: 5 male and 1 female) and probation staff (5: 3 male and 2 female). All interviews were recorded and transcribed verbatim. We used a theoretically driven approach to analysis, testing our logic models derived from the systematic review.

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**Results:** We recruited 134 respondents. This was below our target of 300. Only 14% (21) of the probation service-users approached declined to participate. Recruitment proved challenging due to changes in probation (Probation Trusts were disbanded in May 2014) and the closure of one farm site. Of those recruited, 37% attended the 3 care farms, while the remainder were at different comparator sites.

Differences in operations in each probation service required bespoke recruitment strategies. Factors which aided recruitment and data collection included: having a research assistant seconded from probation services; having a Co-I working at a senior level within a probation service; incentivising users by allowing time-spent with the researchers to count towards their unpaid hours; including probation service-users with multiple requirement orders; recruiting at weekends as well as during the week.

At baseline, we found significant differences between users allocated to CF and comparator in terms of gender (4% CF were female compared to 44% at comparator sites); risk of reoffending scores (OGRS) were 26 points higher (95% CI: 6.86, 45.14) among CF users; CF users had 139% (95% CI: 21, 370) more missing CORE-OM questions; substance use and smoking were 47% and 78% respectively among CF users, 24% and 57% among comparators; comparators found healthy foods preferable. This reflects the fact that in at least one Centre (Centre 3), users with a higher risk of reoffending were actively allocated to the care farm. Our qualitative findings highlighted that those responsible for allocation decisions within probation felt that CFs, unlike some of the comparator sites, were able to appropriately manage and support those with more complex needs and higher OGRS. The OGRS is thus a key confounder to be considered in any future study.

We were able to follow up 52% of participants; these were older, more likely to be NPS rather than CRC, non-smokers, used less substances and less health services than those not followed up.

Participants' consented to, and we were able to access and link, probation service and reconviction data for 90% of respondents. Given the challenges and potential bias in

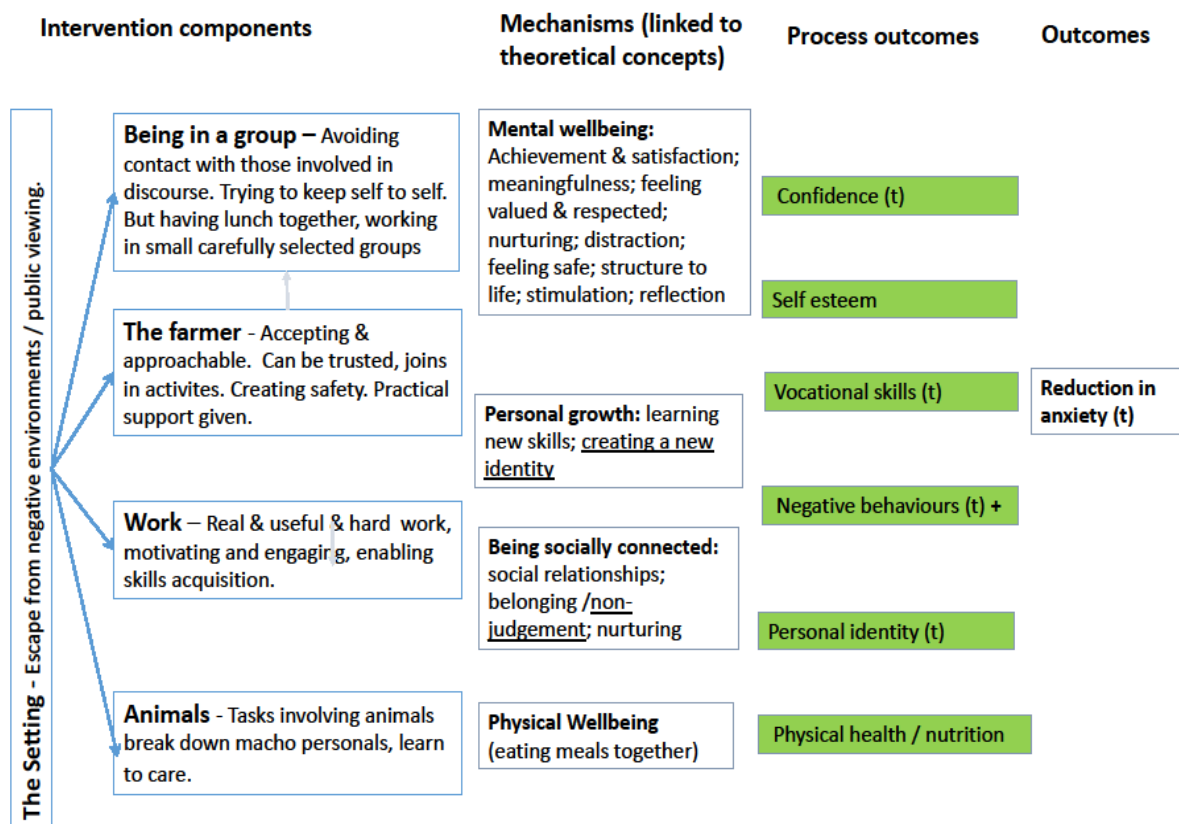
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following-up probation service-users to fill-in questionnaires, the feasibility of using existing PNC data to assess reconvictions among our participants 6 months (or more) after completing their CO, is a valuable finding to inform future studies. We were able to collect cost data on health and social care use and transform the CORE-OM scores into CORE-6D, allowing derivation of QALYs.

Our qualitative study identified different uses of CFs as part of COs by probation services, with some formally recognising them as rehabilitative and others misinterpreting them as punitive. By combining the findings from the qualitative study with existing theories on care farming and desistance and the logic model developed from the review, we were able to construct a logic model specific to probation service-users (Figure A). Only the process and final outcomes measured in the published studies included in the systematic review are shown in figure A below. It is likely that outcomes identified for other user groups are relevant to probationers, but as they have not been assessed in the literature, they are not included in figure A.

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Figure A. Logic model on care farming for probation service-users



t= theory based; coloured process outcomes equates to evidence from qualitative literature; black + symbols = quantitative evidence where - is no significant difference and + is significant difference.

To gain service-user involvement, we used an existing probation services user group. This limited involvement; establishing and supporting our own service-user group might have increased user engagement.

**Conclusions:** Our study was conducted at a time of transformation within probation services; these system changes – rather than service-user resistance - undermined recruitment to the study. We therefore conclude that recruitment would be feasible in a more © Queen's Printer and Controller of HMSO 2017. This work was produced by Elsey *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health. This 'first look' scientific summary may be freely reproduced for the purposes of private research and study and extracts may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.

stable probation environment. However, retention among probationers is challenging. Using reconvictions as a main outcome measure, utilising existing police data rather than follow-up questionnaires is one solution to retention challenges. We found significantly worse health and risk of reoffending among those at CFs, reflecting use of CFs by probation to manage challenging offenders. Propensity analysis provides a viable method for comparison despite differences in probationers at CFs and comparator sites. While randomisation is not possible within probation, a sufficiently powered natural experiment is feasible and would be of value to commissioners.

Our review identifies the aspects of care farming that may potentially improve health and well-being and our logic models present the mechanisms that may lead to the changes for different client groups. The limited quantitative evidence to test the impact of the mechanisms of health and well-being outcomes underlines the need for well-designed and powered studies.

The study provides lessons for the newly formed CRCs, particularly how to maximise the rehabilitative nature of CO site allocations and to ensure that women have equal opportunities with men to benefit from the potential advantages of CFs. For care farmers, adapting activities and organisational culture to meet the needs of different service-user groups may well be a way to improve outcomes for service-users. Consideration of how male-dominated environments may impact on women's participation in care farming is an area that could be usefully addressed by CFs.

Note: registration of systematic review with **Prospero** (PROSPERO 2014:CRD42014013892  
[http://www.crd.york.ac.uk/PROSPERO/display\\_record.asp?ID=CRD42014013892](http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42014013892))

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