Pilot Deployment and Development of a Mobile Assessment Tool for People with Multiple and Complex Needs at Risk of Homelessness in the Liverpool Waves of Hope Programme

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Key Strategic Messages

There is a need to:

1) Make integration of evaluation into service delivery standard practice;
2) Qualify and quantify the health and social inequalities surrounding individuals with multiple and complex needs at risk of homelessness;
3) Capture evaluation and profile data in digital and interoperable formats so they can be readily shared for the best vital interests of service users;
4) Take actions on evaluation outputs, in a structured and consistent manner;
5) Measure the impact of services and interventions so they can be refined to better serve people with multiple and complex needs at risk of homelessness.

Abstract – This report outlines the pilot configuration, deployment and development of the Lincus mobile evaluation software platform for the Liverpool Waves of Hope Programme. It describes work completed, barriers faced, lessons learned, new developments and an example case study. Training, engagement, configuration, multidisciplinary co-development workshops, user surgeries and shared learning meetings, and technical development exercises were completed. There were considerable lessons learned and the technology and use of the technology were adapted as a result. There was a trend for increased and diversified usage of the Lincus tool. Lincus became more integrated into service delivery workflows as a result of closely working with services and directly developing the tool for the needs voiced by service users and other stakeholders.

Keywords: Homelessness, Multiple and Complex Needs, Assessment, Technology Implementation Barriers, Mobile Assessment Tool

I. Introduction

There is an incontrovertible body of evidence that indicates very strong associations between homelessness and poor health[i]. Ill health can contribute to a person losing their home, or can be a consequence of homelessness[ii]. It is essential that those providing support to people who are homeless seek to minimise the impact of homelessness on health; and to promote improved outcomes so that poor health is not a barrier to people gaining a home[iii].

People who are homeless die on average, 30 years younger than the general population[iv]. They are also much more likely to be admitted to hospital in any given year than the general population[v]. A&E department attendances can be high, often due to either being the victim of violent assaults, intoxication or acute mental health crises. Whilst for some, there can be difficulties accessing primary care services, many of those who are homeless or at risk of homelessness are registered with GP services. This however may be on a temporary basis

which can cause problems in terms of smooth transition of care, ongoing coordination and support; and long term conditions management.
Research shows that a higher percentage of people who are homeless report a mental health issue compared with the general population, with just over half of these being diagnosed with serious mental illnesses including anxiety disorders, schizophrenia, depression and bipolar disorder[vi]. Rates of alcohol and substance misuse are high and for many this seems to represent an attempt to cope with the impact of untreated mental health issues and a range of highly distressing symptoms[vii].
Almost all long and short term physical health conditions are significantly more common than amongst the general population. These include respiratory problems, gastrointestinal conditions, musculoskeletal issues, skin conditions and continence issues[viii].
Lifestyles can be particularly detrimental to wellbeing: smoking is substantially higher than amongst the general population; diet and nutritional intake is commonly particularly poor; and alcohol and illicit substance use is high[ix].

II. Methods

Though there are health inequalities that separate populations at risk of homelessness from the general population, their health can be measured utilising the same metrics. Therefore, in the first instance generally applicable peer reviewed surveys were utilised. They integrated self-report for physical, mental and social health factors, along with events, all of which had been systematically selected through peer reviewed research for their impact on health economic outcomes[x].
The surveys were conducted utilising Rescon's Lincus software as a service tool. Lincus was accessed via web browsers and a Waves Lincus Android application which was developed specifically for the pilot, to enable offline use, to address issues with poor internet access.

Implementation

The technology providers regularly engaged with the programme managers and services involved in Waves ahead of the pilot.
A full day of training was provided to staff in month 3, involving an introduction to Lincus and the different features that were available. The training day also provided staff with opportunity to ask questions about the pilot or Lincus tool. An additional half day of training was provided in month 5 in addition to periodic drop-in surgeries to discuss use of Lincus and any barriers to implementation. Users were provided with access to a demo platform for training purposes and online user guides. Ongoing phone and email support was available during working hours throughout the pilot.
Lincus was initially used with support workers acting as advocates, alongside the people they were supporting, with consent obtained by the primary support worker. As for a previous implementation of Lincus in 2013 with Liverpool YMCA for people with complex needs at risk of homelessness[xi], this implementation was designed to facilitate improved communication between support workers and service users, and self-reflection on wider health issues.
Lincus was introduced in a stepwise fashion, with a limited number of service users introduced to the tool in month 5, prior to expanding use of the tool to be accessible to all service users after 9 months.

Barriers

Unlike the previous trial conducted with the same user group in 2013, where there was 100% pick up by both staff and service users, there were several barriers to usage in services during this pilot including: existing workload and reporting burden including double data entry on existing systems and Lincus; reported lack of access to technology; disparity in attendance to training, workshops and meetings; lack of

engagement with software support services; perception of low utility of tool by some service providers; inconsistent consent; resistance to usage by some service users; and lack of survey focus for the needs of the homeless population. To address the above issues, further training and feedback working groups to communicate both the wider capabilities and utility of the Lincus tool, and the specific issues facing services, were conducted. An outcome of these meetings was the agreement that the development of a new population specific survey would be initiated. Furthermore, the providers opted to utilise Lincus observations functionality. This allowed recording of the service providers perception of service users' physical, mental and social wellbeing. This refinement of Lincus use increased the inclusivity and consistency of the evaluation through providing an additional, yet complementary, assessment to self-report.

Co-development

To develop a specific survey tool for the needs of the homeless population a co-development exercise was undertaken with stakeholders, including service users. At month five of the programme, three multidisciplinary development workshops were conducted as part of the North West Regional Fulfilling Lives conference which involved delegates from the Liverpool, Manchester and Blackpool Fulfilling Lives programmes. As an output of these workshops, nine key sliding scale questions that directly related to the specific issues facing people at risk of homelessness were identified which were:

- How do you feel about yourself?
- How do others feel about you?
- Are you feeling connected?
- How are you feeling about the future?
- Are you ready for change?
- Do you understand this programme?
- Do you live in a healthy community (healthy culture)?
- How are your finances?
- Are you engaging with services?

An additional question was added as a result of interactions with the local working group at the month 7 working group which was:

- Do you use substances or alcohol?

Together, these questions formed the Waves support survey (Figure 1), specifically targeted for this population. Picture representations of the survey were developed and the surveys were integrated into both the web and Android applications.

Figure 1: Waves support survey screenshot

At the month 9 workshop, after consultation with the management group, the new survey along with observations and action reporting (Figure 2) features were launched and the limited numbers pilot requirement was lifted so Lincus could be offered to all service users. There was increased usage of the tool after this along with in workplace engagement and support from Rescon in month 11. This engagement also led to the trusted content module to be implemented which had already been developed for another project. This would enable users to access trusted online video and text information, with the most relevant content recommended to them based on their user profile. This would also support the different services sharing best practice and knowledge across the programme, where useful content could be added for users and their supporters.

Figure 2: Action report feature

In addition, and in response to workshop outputs, Rescon developed, at its own expense, a Health Equalities Framework (HEF) tool for people with multiple and complex needs at risk of homelessness (Figure 3). Rescon worked with HEF Associates, the authors of the original HEF for people with learning disabilities, to create, through research, the HEF for people with multiple and complex needs at risk of homelessness. The HEF for people with multiple and complex needs at risk of homelessness was developed, digitised and integrated into the Lincus platform and was deployed for use in the Waves programme at month 15.

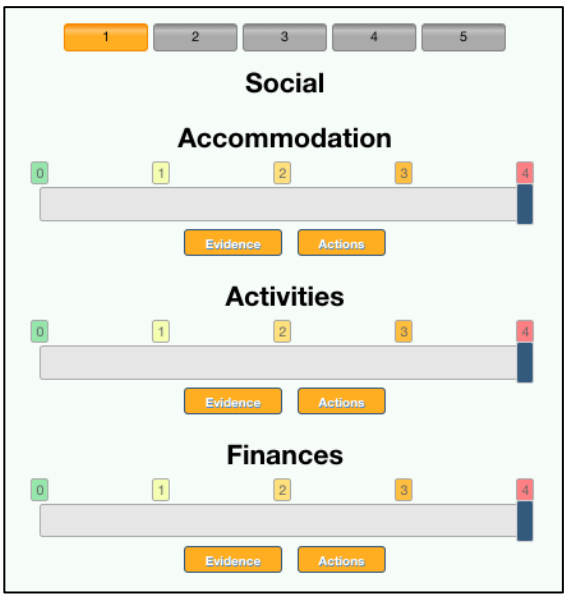


Figure 3: Digitised HEF for people with multiple and complex needs at risk of homelessness

In addition to the above activities, Rescon also developed a regional support user so there could input from support workers across different centres. This need was identified during working group engagement, due to a number of service users being supported across services. This development was extensively tested prior to release in month 15.

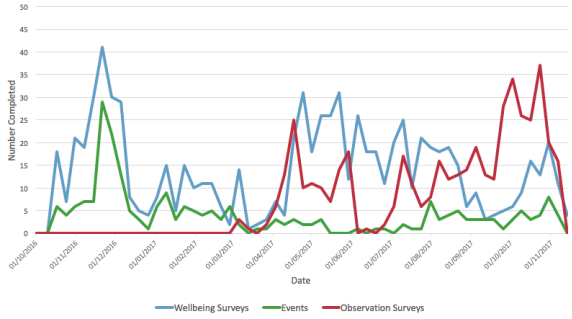
III. Results

The overall timeline of the configuration, deployment, and development of the Mobile Assessment Tool for the Waves of Hope programme can be found in Appendix 1.
Initial uptake of the tool was slow, with the first users registered on Lincus at month 5. At the end of the pilot, there were a total of 161 users registered on Lincus (120 service users and 14 support/administrative users). During the pilot, a total of 817 surveys had been completed on Lincus, including 63 Waves support surveys. There were 235 events recorded and 456 observation surveys submitted (Table 1 and Figure 8).

Table 1: Total monthly Lincus usage throughout Waves pilot (*month 18 includes partial data)

Project Month	Wellbeing Surveys	Events	Observation Surveys
5	46	16	0
6	120	65	0
7	46	22	0
8	53	29	0
9	30	18	0
10	20	4	6
11	63	10	54
12	113	5	60
13	73	3	3
14	95	11	48
15	58	15	55
16	21	10	72
17	64	23	142
18*	15	4	16
Total	**817**	**235**	**456**

Figure 4: Total weekly Lincus usage throughout Waves pilot



The first surveys were completed by service users in month 5 of the pilot programme. Survey use across the four services from 1st October 2016 to 15th November 2017 can be seen in Figures 4-7, where green relates to frequency of event reporting, blue self-reported outcomes and red being observation reports (which were not launched until month 9).

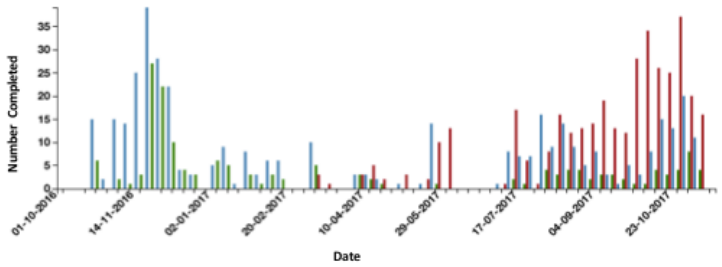


Figure 5: YMCA

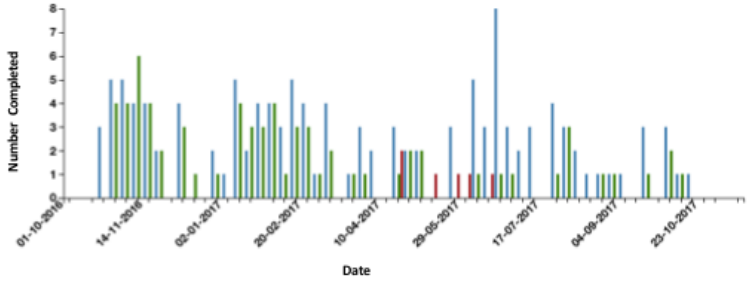


Figure 6: New Beginnings

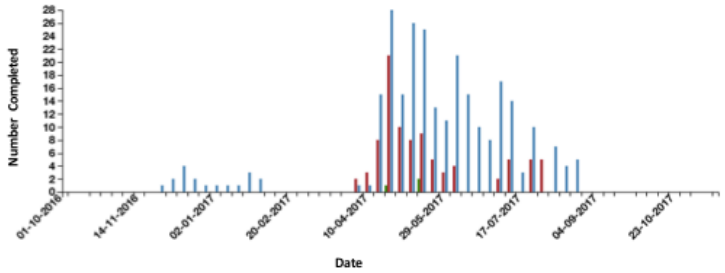


Figure 7: Intensive Support Service

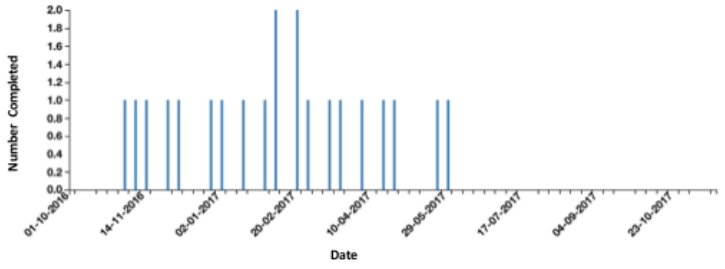


Figure 8: Peer Mentoring Service

There was considerable variation in the use of Lincus with a general trend of more use in the later months, especially after introduction of the observation tools. There was initial high use of the tool from YMCA. This was likely due to YMCA staff knowing the utility of Lincus, and

being familiar with the technology and its implementation, secondary to being involved in the previous Lincus pilot in 2013. Despite the initial high use, this dropped off somewhat halfway through the pilot. It then increased after the introduction of the observation tool at month 9 increasing use for the remainder of the pilot. Conversely the use by the Intensive Support Service peaked towards the middle of the pilot before declining, with limited use in the latter months. The lack of engagement from this service was notable and impacted the amount of data that was collected, due to it supporting the most service users.

Engagement remained relatively consistent from New Beginnings, though gradually reduced throughout the pilot. This service supported service users who were assigned to different services, therefore the tool could not be used with these service users until the regional support user was deployed in month 15.

There was limited use throughout the pilot by the Peer Mentoring Service. This was potentially due to the service being supported by volunteers who did not have time to engage with training and co-design work.

There was considerable interest in the development and deployment of the HEF for people with multiple and complex needs at risk of homelessness services. However, due to an inability to train and onboard services due to limited resource, the HEF survey tool was not utilised by services during the pilot.

The wellbeing results over the trial (1st October 2016 to 15th November 2017) can be seen plotted out for Waves Lincus Users (Figure 9), All Lincus Users (Figure 10) and Public Lincus Users (Figure 11). Though these are only trend graphs and have not been fully statistically analysed some general statements can be made. The reported wellbeing of service users was in general higher than that of the public Lincus user population and organisational Lincus user population which includes people with learning disabilities and those with long term conditions. The reported wellbeing of service users also increased throughout the trial period, in contrast to public and organisational Lincus users' wellbeing decreasing during this time.

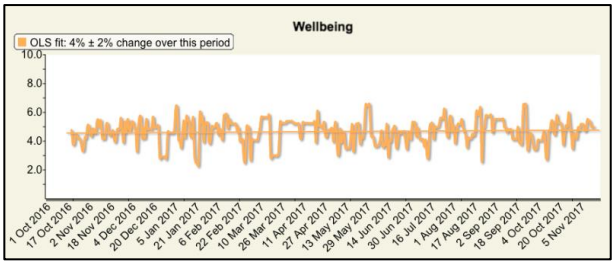


Figure 9: Waves Lincus Wellbeing Scores

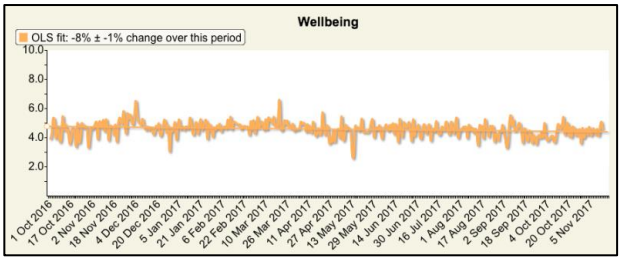


Figure 10: All Lincus Organisation Users Wellbeing Scores

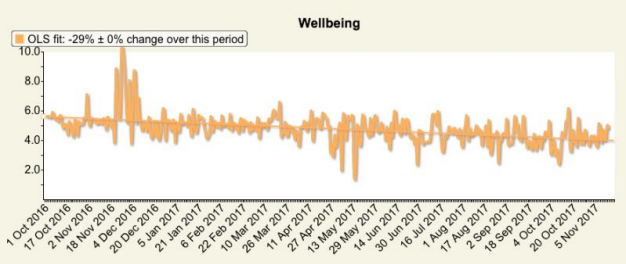


Figure 11: Public Lincus Users Wellbeing Scores

In addition to the above results informal subjective analyses were performed. In summary, it was reported that both service users and service providers could see the benefit of using the tool. It was suggested that using a combination of self-report and observed report which was service user led would lead to more efficient and useful Lincus uptake.

IV. Case Study

There were a few cases that were presented to the Lincus team by the various providers that outlined both the utility of the tool and some of the barriers faced in practice. The following case study was chosen due to its complexity and that the individual was with the service for several months before using Lincus. Personal details have been changed to preserve anonymity.

Julie was a 46 year old female who was in the same supported accommodation for several months before using Lincus, and in other supported accommodation services in the years prior to that. She had a history of cardiorespiratory disease, epilepsy and was a long-term heroin/crack cocaine user. She had depression and anxiety disorders. She was on multiple medications. She had no formal offending history. Julie started using Lincus in October 2016 and benefited from the visual feedback of how her physical and mental health deteriorated after payday when she had been using heroin and crack cocaine. Over three months of reflection she made changes to address this. She no longer injected heroin as the feedback from Lincus demonstrated the impact this had on her physical health, though she continued to smoke crack cocaine. She had also been to seek medical advice and had subsequently been prescribed methadone which she used to control her addiction. Her support worker found Lincus very useful and felt it was used most effectively through occasional self-report directed by Julie, with the observed report on other days as part of standard care recording. Like other support workers, they found double entry of some information into the Waves Mainstay system and Lincus inefficient, and somewhat frustrating. However, they were willing to use Lincus due to the positive outcomes on service users they had witnessed.

V. Discussion

The Lincus test and learn pilot reinforced the difficulties of introducing new technologies into established care systems.

Though there were multiple induction, training and shared learning meetings and workshops, the uptake and use of Lincus in day to day services was slow and remained extremely limited in some services.

Additional barriers included existing workload, double data entry, lack of specific tools for the needs of the homeless population, and perceived low utility of the tool by some providers. The consent process was also inconsistent and there was resistance to using the tool by some service users. Barriers to usage in services during the pilot were identified and addressed. This was through ongoing engagement with services including working groups to highlight the specific issues being faced by services. This led to co-development work to ensure the tool was optimised for integration into service workflows and was aligned with the needs of people with multiple and complex needs at risk of homelessness. For example, one issue was a lack of evaluation that was specific to the multiple and complex needs of this population. This led to the development of a tool that addressed this issue in the programme, and an additional tool that was privately funded outside the programme.

Taking the above into account, there were many positive outcomes and opportunities from this pilot work.

The tool was developed and adapted in close collaboration with services and with feedback from service users through regular engagement. The use within the services was also adapted to better suit service users and those supporting them. This was particularly notable with the deployment of observation surveys, which increased use of the tool in some services as a result. This enabled support users to complete regular observations, overcoming barriers

including consent and resistance to use the tool, whilst facilitating service user directed use. During engagements, services also highlighted existing Lincus features that would be useful for the pilot, which led to implementation of the trusted content module that had been developed during a different project.
Additional technical developments included the creation of a regional support user who could conduct surveys with individuals who were assigned to different services, and a HEF for people with multiple and complex needs at risk of homelessness.

Key Learning
Key learning outcomes from this project include:
The importance of identifying barriers to usage in services early on and implementing methods to overcome them. This strategy supported the co-development and adaptation of the tool both technically and through trialling different methods of use.

The use of Mobile Assessment Tools could be increased by making it a requirement of service delivery. Practically use requirement could be integrated into service contracts, with effective evaluation practices being a prerequisite for outcome based payments.

Implementation, and the barriers faced, is unique to each service. It is therefore important to work with each service to address specific issues to support most effective implementation of evaluation. For Waves, ongoing engagement further supported the configuration, development and deployment of the tool. This included workshops, shared learning meetings and user surgeries which provided services with the opportunity to raise any issues so that they could be addressed.

Ongoing close support with services through dynamic test, learn and refine practices can lead to adaptation of evaluation to better suit workflows and service delivery, which in turn addresses barriers to effective and inclusive evaluation.

Engagement with the services can also identify use cases where evaluation has been most beneficial and provide valuable insight into effective methods of use. An example of this type of refinement was one service suggesting self-report to be directed by service users, with observed report completed on all other days.

Co-development is vital to increase the uptake and utility of evaluation services, especially in populations with complex needs and challenging service requirements. For Waves, this included development of new features to overcome issues that services faced, whilst addressing the specific needs of the homeless population.

These key learning outcomes helped to facilitate and refine integration of Lincus into service delivery and increase usage and utility throughout the pilot.

Next Steps
To ensure continued and ongoing use of the Mobile Assessment Tool, proper service integration and whole system improvement is required.
Use of the tools specifically developed for the multiple and complex needs of this population needs to be implemented along with clear action plans that are responsive to the evaluation outputs. Integration into standard service delivery is therefore vital and would be beneficial for use of the tool to become a requirement of service delivery. This would promote consistent and standardised evaluation, and provide actionable information for services.

Additional barriers that are still being faced must also be addressed. Particularly the issue of double data entry with the existing systems. A focus on interoperability between systems is needed to improve workflow efficiencies and services delivery. In addition, ongoing training for new developments such as the HEF would result in increased usage of stakeholder led development.

VI. Conclusions

The test and learn Mobile Assessment Tool pilot for the Waves of Hope Programme utilising Lincus has been challenging and successful. It is clear from case studies and other work with Lincus that once properly integrated into service delivery with co-development and regular engagement, there is high potential for a measurable positive impact on the physical, mental and emotional health and outcomes of people with multiple and complex needs at risk of homelessness.

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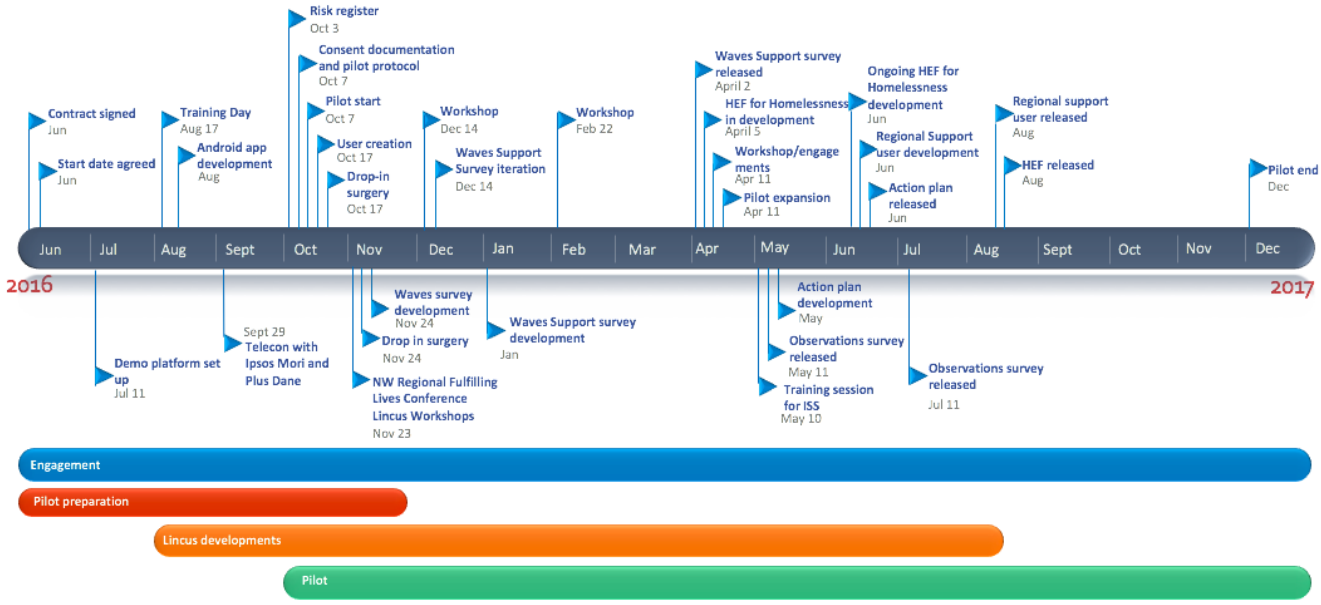
Appendix A: Waves of Hope Lincus Mobile Assessment Tool Timeline


Contract signed
Jun
Start date agreed
Jun
Training Day
Aug 17
Android app development
Aug
Risk register
Oct 3
Consent documentation and pilot protocol
Oct 7
Pilot start
Oct 7
User creation
Oct 17
Drop-in surgery
Oct 17
Workshop
Dec 14
Waves Support Survey iteration
Dec 14
Workshop
Feb 22
Waves Support survey released
April 2
HEF for Homelessness in development
April 5
Workshop/engagements
Apr 11
Pilot expansion
Apr 11
Ongoing HEF for Homelessness development
Jun
Regional Support user development
Jun
Action plan released
Jun
Regional support user released
Aug
HEF released
Aug
Pilot end
Dec
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Jul
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Dec
2016
2017
Demo platform set up
Jul 11
Sept 29
Telecon with Ipsos Mori and Plus Dane
Waves survey development
Nov 24
Drop in surgery
Nov 24
NW Regional Fulfilling Lives Conference
Lincus Workshops
Nov 23
Waves Support survey development
Jan
Action plan development
May
Observations survey released
May 11
Training session for ISS
May 10
Observations survey released
Jul 11
Engagement
Pilot preparation
Lincus developments
Pilot