

BMJ Open Quality Implementation of a medical education programme for addictions MDT members to improve knowledge and confidence in managing substance users with complex comorbidities

Marie Alexandra Edison ¹, Bridget Browne,² Jeffrey Fehler¹

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¹Addiction Recovery Community Hillingdon (ARCH), CNWL, London, UK

²Quality Improvement, CNWL, London, UK

Correspondence to

Dr Marie Alexandra Edison; m.edison@nhs.net

ABSTRACT

Background Public Health England (PHE) has highlighted a rising number of deaths due to addiction, and notable changes in patient profiles. Management is now frequently intertwined with medical comorbidities and polypharmacy, as the patient group presents with more complex needs. Early detection is vital to minimise harm. Mental health frequently needs treating in tandem, but ‘cross-referral’ services can fail to recognise or meet these needs. A cohesive, confident multidisciplinary team (MDT) is vital for holistic care and accelerating recovery in cost-effective ways. Furthermore, MDTs are uniquely placed to effectively broker communications between multiple care inputs.

Methods MDT members of an addictions centre participated in a three-and-a-half-months education programme, encompassing eight PHE-recommended topics. These related to physical and mental health substance misuse sequelae, and specific population treatment needs.

Results There was a statistically significant improvement in all areas including: recognising early physical and/or mental health deterioration signs, providing basic health advice and appropriate escalation. Regarding PHE topics, biggest mean improvements were in managing substance misuse with physical comorbidities and pregnancy (38.2% and 35.9% respectively, $p < 0.0001$). Additionally, biological mechanisms increased 26.0%, physical health consequences 24.2%, hepatic disorders 31.7%, older people 31.3%, homeless populations 31.8% and coexisting mental health 24.6% (all $p \leq 0.002$). Confidence communicating concerns to internal and external clinicians also increased (14% and 21%, respectively, $p \leq 0.001$).

Conclusion A teaching programme improved MDT knowledge and confidence in early detection, escalation and communication of physical and mental comorbidities associated with substance misuse. This intervention should support harm reduction strategies on individual and wider-community levels. Introducing an education programme ensures a sustainable approach to workforce development and helps facilitate holistic care cost-effectively. Clear communication between multiple ‘cross-referral’ services involved with complex needs is essential for comprehensive integrated care.

INTRODUCTION AND LOCAL CONTEXT

Substance and alcohol misuse have the potential to be permanently harmful to both individuals and communities. It is estimated over 310 000 people in England are opiate and/or crack cocaine dependent, a statistically significant increase of 4.4% (from 300 783 to 313 971) when compared with the last report in 2014/2015.¹ Public Health England (PHE) has raised concerns in recent years that the number of deaths due to drug poisoning is rising; in 2019, England and Wales reported 4 393 drug poisoning-related deaths, the highest number since the time series began in 1993.^{2–5} In addition to an increased disease burden, there are notable changes in patient profiles; across 2 years there has been a 12% increase in substance misuse in older people,¹ meaning that addictions are now intertwined with many medical comorbidities, as well as the well-established ‘dual diagnosis’ associations with anxiety and depression.^{6,7}

Increasingly complex service users require a fully integrated multidisciplinary team (MDT) approach that will likely bridge both primary and secondary care pathways. Early detection and/or onward referral and liaison with specialist medical teams is vital for best practice holistic care and to minimise harm to individuals. Understanding the biological mechanisms of addiction and pathologies behind its physical health consequences can help MDT members recognise and facilitate treatment of these in an effective and timely fashion, as well as create care plans personalised to individuals’ particular needs. Besides this, greater knowledge will facilitate MDT members to take on new and challenging leadership roles and to effectively broker lines of communication between both clinical and non-clinical staff.

A quality improvement project was designed with the intervention of a regular teaching programme delivered to MDT members at an addictions treatment centre in a west London borough. It aimed to improve MDT understanding of physical and mental health substance misuse sequelae, as well as their treatment in tandem, including specific population treatment needs. Furthermore, it aimed to evaluate its impact on staff confidence in early detection of health deterioration, when to escalate concerns, and in communication with both internal and external team clinicians.

METHODS

Study design and participants

Over the course of 3.5 months, a regular teaching programme was established and delivered from August to November 2019. MDT members of an addiction treatment centre in a west London borough with a large and varied population profile (Addictions Recovery Community Hillingdon Service, Uxbridge, London, UK) were invited to participate in six interactive sessions between 60 and 75 minutes each. The programme encompassed the following eight PHE recommended topics³:

- ▶ Biological mechanisms of addiction.
- ▶ Early identification and intervention of the physical health consequences of addictions.
- ▶ Hepatic disorder population.
- ▶ Older people and substance misuse.
- ▶ Implications of concurrent comorbidities, including polypharmacy management.
- ▶ Pregnancy and postpartum care.
- ▶ Homeless population.
- ▶ ‘Dual diagnosis’; mental healthcare and substance misuse.

Attendance at sessions was open to all and non-compulsory. All sessions were delivered voluntarily by the same facilitator, a junior doctor with previous experience of working within an addictions psychiatry team. Materials used for sessions included visual aids such as PowerPoints, diagrams and pictures. Additionally, interactive flipchart work and breakout small group work methods were employed. Teaching materials were made available on the staff shared drive so that participants could review the information after the sessions.

Public and patient involvement

This project was done without patient involvement as the education programme was tailored to the needs of the substance misuse and alcohol MDT partnership. MDT members provided feedback that the development of leaflets for the patients, and/or reinforcement with a patient health education programme (tailored to a layman level), could be created as a legacy to this programme. If this recommendation is taken forward patient involvement will be sought in developing this information.

Verbal informed consent was taken from all participants at the first session.

Impact analysis

Overall impact was assessed through anonymous questionnaires preprogramme and postprogramme delivery (see online supplemental appendix 1). A 1–10 point Likert type scale asked participants to rate their confidence (1=not confident at all, 10=extremely confident) in domains regarding knowledge of the PHE recommended topics, when to escalate, and communication with other in-house and external teams. There were also several free text boxes for participants to advise what worked well, what could be improved, and any other general comments.

Anonymous feedback was also sought after each individual session with similar Likert scales to rate session domains of usefulness, appropriateness, interest, new content, teacher engagement and feedback to students (online supplemental appendix 2).

Data collection and statistical analysis

All data were collected and analysed using Excel statistical software (V.16.3). Descriptive statistics were used to summarise data. Kurtosis tests were carried out to assess normality of the data. A value of ≥ 2 and < 2 was taken as acceptable. F tests were employed to assess homogeneity of variance.

For normal distributions, an unpaired, two-tailed Student's t-test with equal/unequal variance as appropriate was performed. For non-normal distributions, a Mann-Whitney U-Test was performed. A $p < 0.05$ was considered significant for all tests.

RESULTS

Twenty-one MDT members participated in the teaching programme. Roles were varied, including managers (n=2), outreach workers (n=1), psychologists (n=3), recovery practitioners (n=4), nurses (n=4) and student nurses (n=2), specialty doctors (n=2), social workers (n=1) and criminal justice workers (n=2). Owing to leave days, different clinic times, booked patient appointments and group facilitated sessions, it was not possible for all staff members to attend every session. Median class size number was 12 (range 7–14). Median number of sessions attended by participants was 4 out of a possible 6. Twelve staff members completed the postintervention questionnaire.

Preprogramme and postprogramme questionnaires assessed knowledge and confidence across multiple domains, including detecting early signs of physical or mental health deterioration, when to escalate to a senior, providing basic health advice and communication with both internal and external team clinicians. All domains saw a significant mean increase in MDT member confidence. Results are summarised in [table 1](#) and are further detailed below:

Physical health

Overall, physical health was the area MDT members felt least confident in initially but saw the biggest

Table 1 Overall domains scores

	Median		Mean		% increase in means	P value
	Pre (IQR)	Post (IQR)	Pre (SD)	Post (SD)		
Ability to recognise the early signs of physical health deterioration	6 (4.5–7)	9.5 (8.5–10)	5.74 (2.13)	8.92 (1.44)	31.8	0.00009
Understanding of initial interventions for physical health	6 (5–8.5)	9.5 (8.5–10)	6.58 (2.09)	8.83 (1.59)	22.5	0.00338
Ability to offer basic advice on nutrition (diet, malnutrition and obesity)	6 (5–8)	10 (8.5–10)	6.37 (2.22)	9.00 (1.48)	26.3	0.00110
Ability to offer basic advice on smoking cessation	5 (3–6.5)	10 (8.5–10)	4.95 (2.39)	9.00 (1.48)	40.5	0.00001
Ability to offer basic advice on BBV and vaccinations	5 (4–7)	9 (8–10)	5.21 (2.49)	8.75 (1.54)	35.4	0.00013
Ability to offer basic advice on sexual Health	7 (5–7.5)	9 (7.75–10)	6.37 (1.80)	8.75 (1.42)	23.8	0.00056
Ability to offer basic advice on NHS health checks for older clients	5 (3–6.5)	9.5 (7–10)	5.00 (2.71)	8.42 (2.39)	34.2	0.00288*
Ability to offer basic advice on falls	4 (3–5.5)	9.5 (7.75–10)	4.58 (2.57)	8.42 (2.11)	38.4	0.00016
Ability to offer basic advice on wound care and infection prevention	5 (3–7)	9 (6.75–10)	5.16 (2.89)	8.00 (2.30)	28.4	0.00750
Ability to offer basic advice on harm of substance misuse in pregnancy	5 (3–6)	9 (8–10)	4.95 (2.07)	8.58 (1.73)	36.4	0.0003*
Understanding of when to escalate physical health concerns	7 (6–9.5)	9.5 (9–10)	7.32 (2.11)	9.33 (0.78)	20.2	0.00088
Ability to screen for the early signs of mental health deterioration	8 (6–8)	10 (8.75–10)	6.79 (1.93)	9.17 (1.27)	23.8	0.00052*
Ability to undertake risk assessments and formulate a risk management plan	8 (7–8.5)	10 (9–10)	7.53 (1.54)	9.33 (1.15)	18.1	0.00159
Ability to offer basic advice to promote mental health and well-being	8 (7.5–9)	10 (9.75–10)	7.95 (1.35)	9.75 (0.45)	18.0	0.00002
Understanding of initial psychosocial interventions for common mental health problems	7 (7–8.5)	10 (8–10)	7.47 (1.71)	9.08 (1.31)	16.1	0.00951
Comfortability with managing coexisting mental health and substance misuse issues	7 (5–8)	9.5 (7.75–10)	6.63 (1.80)	8.75 (1.48)	21.2	0.00197
Comfortability with managing coexisting physical and mental health, and substance misuse issues	7 (5–7)	10 (7.75–10)	6.05 (1.58)	8.75 (1.82)	27.0	0.00014
Understanding of when to know when to escalate mental health concerns	8 (7–9.5)	10 (9–10)	8.37 (1.21)	9.67 (0.49)	13.0	0.00031
Confidence in ability to communicate to doctors within my team	8 (7.5–9.5)	10 (10–10)	8.47 (1.17)	9.92 (0.29)	14.4	0.00138*
Confidence in ability to communicate to local primary care and specialist secondary care teams	8 (6.5–9)	10 (9.75–10)	7.47 (2.12)	9.58 (0.79)	21.1	0.00060

*Mann-Whitney U test performed.

BBV, bloodborne virus; IQR, Interquartile Range; NHS, National Health Service; SD, Standard Deviation.

improvement post-intervention. In recognising the early symptoms/signs of physical health deterioration, the pre-programme mean Likert score was 5.74 (SD 2.13), increasing by 32% to 8.92 (SD 1.44) after all sessions had been completed ($p < 0.0001$). Similarly, initially few felt comfortable managing coexisting physical health and substance misuse issues, but this saw a 27% increase in confidence after the training (mean 6.05 (SD 1.58) to 8.75 (1.82), $p < 0.001$). MDT members were initially fairly confident in escalating physical health concerns, but this

still saw a mean increase of just over 20% (7.32 (SD 2.11) to 9.33 (SD 0.78), $p < 0.001$).

Pre-programme few felt confident advising on basic physical health advice, however all topics saw a significant mean increase by end of programme. Confidence in advising on nutrition increased 26.3%, smoking 40.5%, bloodborne viruses and vaccination programmes 35.4%, sexual health 23.8%, National Health Service (NHS) health checks for older people 34.2%, falls 38.4%, wound or track mark care 28.4% and pregnancy 36.4%. All $p \leq 0.001$.

Mental health

MDT members confidence in domains pertaining to mental health also improved. In recognising the early symptoms/signs of mental health deterioration, preprogramme mean Likert score was 6.79 (SD 1.93) increasing by 24% to 9.17 (SD 1.27) after all sessions had been completed ($p < 0.001$). Similarly, initially few felt more comfortable managing coexisting mental health and substance misuse than physical health (mean 6.63 (SD 1.80)) but this saw a 21% increase in confidence after training (mean 8.75 (SD 1.48), $p < 0.002$).

MDT members were also initially more confident in escalating mental health concerns, but this still saw a mean increase of 13%, (mean score increase from 8.37 (SD 1.21) to 9.67 (SD 0.49), $p < 0.001$). Similarly, there was also an 18% increase in confidence in providing basic mental health advice (7.95 (1.35) to 9.75 (0.45), $p < 0.0001$).

Communication with other services

MDT member confidence in communicating their concerns to local doctors was good preintervention. However, the preprogramme mean still saw an increase of 14% from 8.47 (SD 1.17) to 9.92 (SD 0.29), $p = 0.001$. Confidence in liaising with other services was lower initially, at 7.47 (SD 2.12) preprogramme, and this increased by 21% to 9.58 (SD 0.79) after completion ($p < 0.001$).

Individual PHE topic analysis

Participants rated their confidence in the eight topics described by PHE (Likert score 1–10) before starting the teaching programme, and again 3.5 months after it was completed. All topics saw a statistically significant mean increase in MDT knowledge confidence as displayed in figure 1 (raw scores are detailed in online supplemental appendix 3).

Biological mechanisms of addiction saw a mean increase of 26.0%, physical health consequences 24.2%, hepatic disorder population 31.7%, older people and substance misuse 31.3%, homeless population and substance misuse 31.8%, 'dual diagnosis': mental healthcare and substance

misuse 24.6%. All $p \leq 0.002$. The biggest areas of concern were managing substance misuse with other physical comorbidities and/or polypharmacy and in pregnancy (mean scores 4.26 (SD 2.13), and 4.16 (SD 2.06), respectively). These were also the areas that saw the biggest increase in confidence by the end of the programme (38.2% and 35.9%, both $p < 0.0001$).

Summary individual session feedback

Feedback from individual sessions was excellent, every session delivered scored $\geq 8.75/10$ in all five assessed domains (table 2); usefulness of session, content appropriateness, how interesting the session was, whether the participant felt like they learnt something new and how engaging the facilitator was.

Free-text feedback

Free-text feedback boxes was available for commenting on things done well, suggestions for improvement or any other comments. Across all sessions recurring themes in regard to what was done well were: session informative and/or interesting (mentioned 30 times), engaging teacher and/or clear explanations (28 times), usefulness/transferability into daily work (13 times). Other positive feedback was around the resources available after the sessions (five times).

The most common improvements suggested was for more of this training and/or more time in sessions (seven times) and use of videos or alternate media (three times). Other ideas were for leaflets for patients (one time) and slower pace (one time).

DISCUSSION

Since its inception in 1948, the landscape of the NHS has diversified almost unrecognisably. It is now commonplace to see complex patients with comorbid physical and mental health conditions that may span a lifetime of increasing longevity.⁴ Additionally, addiction treatment services typically use an integrated partnership model, including multiple providers, with staff having differing

Table 2 Individual sessions feedback scores

	Biological mechanisms of addiction	Physical health consequences and liver disorder population	Older people and substance misuse	Concurrent comorbidities and polypharmacy	Pregnancy and postpartum care	Homeless population and concurrent mental health with substance misuse
Usefulness	9.36 (1.15)	9.29 (1.38)	9.00 (1.04)	9.00 (1.60)	9.43 (1.51)	9.50 (1.17)
Appropriateness	9.50 (1.09)	9.36 (1.34)	8.92 (1.31)	8.75 (1.58)	9.29 (1.89)	9.50 (1.24)
Interesting	9.57 (1.09)	9.43 (1.16)	9.08 (1.24)	9.38 (1.41)	9.43 (1.51)	9.50 (1.00)
Learnt something new	9.57 (0.94)	9.57 (0.65)	8.75 (1.60)	8.88 (1.73)	9.57 (1.13)	9.42 (1.38)
Engaging	9.79 (0.43)	9.21 (2.12)	9.00 (1.54)	9.13 (1.46)	9.29 (1.89)	9.25 (1.60)

levels of expertise (as many may not professionally qualified).^{3 8 9} An efficient, confident and competent MDT staff base is vital to meeting the needs of service users, in order to reduce harm and accelerate recovery. This teaching programme improved MDT staff knowledge of early physical and mental health deterioration, initial interventions, when to escalate concerns, and their ability to give basic health advice.

This is particularly pertinent in the substance and alcohol misusing population, who will likely have a wide range of health social care needs, as well as high morbidity and mortality risks.¹⁰ In the UK, liver disease (LD) is the third most common cause of premature death.¹¹ Commissioners for these services have increasing pressure to fund patient-centred cost-effective care that enables individual recovery, as well as decreasing the wider harms caused by substance misuse.⁴ The project itself incurred very few costs, but, moreover, early detection and intervention for physical health consequences of addiction can attenuate disease sequelae severity, reducing future costs.^{4 11 12} Indeed, the Drug Treatment Outcomes Study has suggested that every £1 invested in drug treatment results in a £2.50 society benefit.¹²

A common problem in the substance misusing population is that many are not registered with a primary care practitioner.^{13 14} Thus, addictions healthcare workers may be one of the more regular points of contact for the patient and are uniquely placed to offer basic health advice and/or escalate concerns, as is required. This a role no longer confined to clinical staff, but now defined in other MDT roles such as social care and recovery practitioners.^{11 15} The Lancet Commissions report on LD in the UK has specifically recommended MDT members receive training in its early identification, and be able to counsel on dietary advice and other initial interventions.^{4 11}

With regard to comorbid mental health, Weaver *et al*⁶ reported that 75% (95% CI 68.2% to 80.2%) of substance misuse and 85% of alcohol misuse service users (95% CI 74.2% to 93.1%) had a psychiatric disorder in the past year. Moreover, they found that MDT members were unlikely to identify substance misuse service users with psychiatric disorders and community mental health team patients with harmful alcohol use (reported sensitivity of 20%–38%). They call for implementation of collaborative working models between substance misuse services and psychiatric teams, and suggest mainstream staff need to be able to recognise and manage at least basic comorbidity. Workforce development, by developing training programmes such as the one described here, is one way to begin to address these deficits.

In this study, teaching sessions improved MDT workers' confidence in communicating with both internal and external team clinicians. This is crucial as substance misusers use resources that increasingly span third sector and statutory organisations, in tandem with NHS trusts.^{3 8 9} They require engagement of both primary and secondary care settings, and may well have additional inputs from mental health teams, homelessness services,

social care and even palliative teams.^{3 8 9 13 14} As such, clear communication between cross-referral services is essential to reduce risk and provide comprehensive and integrated care.

Limitations of this study include small participant numbers and confinement to a single centre, limiting its generalisability. Additionally, the programme attendees encompassed a wide range of job roles, with different required levels of clinical knowledge. While this is in some ways advantageous, as clinical and non-clinical members can learn a different skill set from one another, it also creates difficulty in tailoring sessions to individual needs.

Moreover, acquired knowledge was self-assessed and thus subjective. Further, ideally measurements would have included more than two time points. In future, added objective assessment of acquired knowledge would be beneficial. This could be carried out utilising pre-session and post-session multiple choice questions (MCQs) based around topic objectives. Staff retention of the programme could be evaluated in several month time by repeating the same objective assessments.

LESSONS AND NEXT STEPS

A solid therapeutic alliance with substance and alcohol misusers lays foundations for the biopsychosocial model of care. Thus, if given the correct training, addictions service MDT members are well placed to facilitate the interface across the many services their patients use. This aids a holistic approach to care, while reducing costs for local commissioners. Introducing an education programme which may be repeated periodically ensures a sustainable approach to workforce development and aids staff members to fulfil their roles as educators,³ both to the service users and junior staff members.

In order to facilitate a tailored approach to individual needs, a repeated programme could be revised in the following way: a new programme whereby learners are grouped by job roles, with each group assigned a mentor with expertise in their job role area. This mentor could meet with their group prior to the programme commencement to assess specific group needs and create a shared learning agreement. Subsequent meetings mid-programme and postprogramme could be employed to ensure the programme is on track with these agreed learning points.

Further, the revised programme could be diversified by division into 'core' sessions, in which all learners are taught together, followed by 'breakout' sessions which cater to specific job group needs. In this way, the value in a mixed learner audience, where different skill sets can be shared, is kept but individual learner are also accommodated.

All participants wished for this teaching programme to continue and repeating this programme (with the aforementioned refinements) ensures sustainability. Staff suggestions for the future included a greater emphasis on mental health risk assessments, use of video media, and

the development of leaflets for the service users. These could be added with relative ease in the future, and the suggested midpoint review between the staff learner groups and their assigned mentors would allow staff feedback to be implemented before programme completion. Given current pandemic times, it is worth noting that this programme would be suitable for adaptation to a virtual platform.

CONCLUSION

A medical education programme improved addictions service MDT knowledge and confidence in the detection, escalation and communication of physical and mental comorbidities of drug and alcohol abuse. This intervention, therefore, should support harm reduction strategies both on an individual and wider community levels. Workforce development helps facilitate whole person care in a cost-effective manner for the future, as well as ensuring sustainability of expertise. Clear, compassionate communication is essential in providing care to this population group, often presenting with complex needs, whose inputs often span third sector, statutory, and other health and social care organisations.

Twitter Marie Alexandra Edison @edison_marie and Bridget Browne @qiCNWL

Contributors MAE was principal lead and designed, organised and delivered the training programme. JF was the supervising local consultant and BB provided support as an improvement advisor.

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Competing interests None declared.

Patient and public involvement statement Patients were not involved in the design, or conduct, or reporting, or dissemination plans of our research. This project was done without patient involvement as the education programme was tailored to the needs of the substance misuse and alcohol MDT partnership. MDT members provided feedback that the development of leaflets for the patients, and/or reinforcement with a patient health education programme (tailored to a layman level), could be created as a legacy to this programme.

Patient consent for publication Not required.

Ethics approval Ethical approval was not required by CNWL.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

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ORCID iD

Marie Alexandra Edison <http://orcid.org/0000-0003-4636-5251>

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Appendix 1**Pre-ARCH addictions education programme questionnaire:**

Date	
MDT role	
Please rate your agreement with the following statements: Put a number between 1 and 10 in the box: 1=Strongly disagree, 10=Strongly agree	
I feel I could recognise the early signs of physical health deterioration secondary to substance misuse	
I feel I understand initial interventions, including lifestyle advice, for physical health consequences secondary to substance misuse	
I feel I could offer basic advice to my clients on:	
I. Nutrition (regarding diet, malnutrition and obesity)	
II. Smoking cessation	
III. Blood borne virus testing and vaccination schemes	
IV. Sexual health	
V. NHS health checks for aging service users	
VI. Falls prevention in the older population	
VII. Wound care and infection prevention (e.g. of injection sites)	
VIII. Developmental defects due to alcohol or drugs in pregnant service users	
I feel I know when to escalate physical health concerns in my clients to a doctor or senior member of the MDT	
I feel I am able to screen for the early signs of mental health deterioration in my clients	
I feel comfortable undertaking risk assessments and formulating risk management plans for my clients	
I feel I could offer basic advice to my clients promoting mental health and well-being	
I feel I understand initial psychosocial interventions for of common mental health problems	
I feel comfortable managing co-existing mental health together with substance misuse issues	
I feel comfortable managing co-existing mental health and physical health issues in the substance misusing population	
I feel I know when to escalate mental health concerns of substance misuse to a doctor or senior member of the MDT	
I feel confident in my ability to communicate any client concerns to:	
I. Doctors within my team	
II. To local primary care and specialist secondary care teams	

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Please rate your confidence in knowledge regarding: Put a number between 1 and 10 in the box: 1=Not at all confident, 10=Very confident	
Biological mechanisms of addiction	
Early identification and intervention of the physical health consequences of addictions	
Liver disorder population	
Older people and substance misuse	
Implications of concurrent co-morbidities, including polypharmacy management	
Pregnancy and post-partum care	
Homeless population	
“Dual diagnosis”; mental health care and substance misuse	
Were you aware of Public Health England published resources for staff involved in care of drug and alcohol addictions?	
If yes, which and did you find them helpful (and if not why)?	
Have you had formal teaching on addictions medicine prior to this education programme? (if yes please give details)	
What are you particularly worried about before starting the teaching programme?	

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What are you most hoping to get out of the teaching programme?

Any further comments?

Post-ARCH addictions education programme questionnaire:

Date	
MDT role	
Following completion of the teaching programme please now again rate your agreement with the following statements: Put a number between 1 and 10 in the box: 1=Strongly disagree, 10=Strongly agree	
I feel I could recognise the early signs of physical health deterioration secondary to substance misuse	
I feel I understand initial interventions, including lifestyle advice, for physical health consequences secondary to substance misuse	
I feel I could offer basic advice to my clients on:	
IX. Nutrition (regarding diet, malnutrition and obesity)	
X. Smoking cessation	
XI. Blood borne virus testing and vaccination schemes	
XII. Sexual health	
XIII. NHS health checks for aging service users	
XIV. Falls prevention in the older population	
XV. Wound care and infection prevention (e.g. of injection sites)	
XVI. Developmental defects due to alcohol or drugs in pregnant service users	
I feel I know when to escalate physical health concerns in my clients to a doctor or senior member of the MDT	
I feel I am able to screen for the early signs of mental health deterioration in my clients	

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I feel comfortable undertaking risk assessments and formulating risk management plans for my clients	
I feel I could offer basic advice to my clients promoting mental health and well-being	
I feel I understand initial psychosocial interventions for of common mental health problems	
I feel comfortable managing co-existing mental health together with substance misuse issues	
I feel comfortable managing co-existing mental health and physical health issues in the substance misusing population	
I feel I know when to escalate mental health concerns of substance misuse to a doctor or senior member of the MDT	
I feel confident in my ability to communicate any client concerns to:	
III. Doctors within my team	
IV. To local primary care and specialist secondary care teams	
Please rate your confidence after teaching programme completion in knowledge regarding: Put a number between 1 and 10 in the box: 1=Not at all confident, 10=Very confident	
Biological mechanisms of addiction	
Early identification and intervention of the physical health consequences of addictions	
Liver disorder population	
Older people and substance misuse	
Implications of concurrent co-morbidities, including polypharmacy management	
Pregnancy and post-partum care	
Homeless population	
Dual diagnosis"; mental health care and substance misuse	
How many sessions were you able to attend in total?	

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What 3 things did you find particularly helpful/ enjoy about the programme?

-
-
-

What are 3 improvements that could be made to the teaching programme?

-
-
-

Do you have any particular concerns or worries after completion of the programme?

If possible, would you like further teaching to continue?

Any further comments?

Appendix 2**Teaching session feedback form**

Date	
Title of teaching	
MDT role	
Please rate your agreement with the following statements: Put a number between 1 and 10 in the box: 1=Strongly disagree, 10=Strongly agree	
The session was useful	
The content of the session was appropriate	
The session was interesting	
I feel that I learnt something new during the session	
My teacher was engaged, and I received appropriate feedback	
Please rate your confidence in knowledge regarding the topic Put a number between 1 and 10 in the box: 1=Not at all confident, 10=Very confident	
Before the session	
After the session	
Did you have any specific concerns prior to this session?	
If yes, what, and were they addressed?	

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What did you like particularly about the session?
What improvements could be made next time?
Any further comments?

Appendix 3**Table 3:** Raw individual PHE topic knowledge confidence scores (Figure 1)

Topic	Median		Mean Likert Score		% increase in means	p value
	Pre (IQR)	Post (IQR)	Pre (SD)	Post (SD)		
Biological mechanisms of addiction	6 (5-7)	8 (7.75-9)	5.32 (2.33)	7.92 (1.56)	26.0%	0.00200
Early identification and intervention of addiction physical health consequences	6 (5-7)	8.5 (7.75-9.25)	6.00 (1.91)	8.42 (1.31)	24.2%	0.00063
Liver disorder population	5 (3.5-6.5)	8.5 (7-9.25)	5.00 (2.26)	8.17 (1.64)	31.7%	0.00024
Older people and substance misuse	5 (4-7)	9 (7.75-10)	5.37 (2.01)	8.50 (1.57)	31.3%	0.00008
Implications of concurrent co-morbidities, including polypharmacy management	4 (3-5.5)	8.5 (7.5-9.25)	4.26 (2.13)	8.08 (1.88)	38.2%	0.00002
Pregnancy and post-partum care	4 (3-6)	8.5 (6-9.25)	4.16 (2.06)	7.75 (2.18)	35.9%	0.00007
Homeless population	6 (4.5-7)	9 (8-10)	5.74 (2.35)	8.92 (1.16)	31.8%	0.00003
“Dual diagnosis”; mental health care and substance misuse	7 (5-7.5)	9.5 (7.75-10)	6.37 (1.74)	8.83 (1.47)	24.6%	0.00033