



GDN Collaborative Vulnerability & Carbon Monoxide Allowance (VCMA)

Project Eligibility Assessment (PEA)

Preventing Harm from Environmental Exposure to Carbon Monoxide (PHECO) - E-Learning for Health

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Gas Network Vulnerability & Carbon Monoxide Allowance (VCMA) Governance Document - Project Eligibility Criteria

Section 1 - Eligibility criteria for company specific projects (other than condemned essential gas appliance repair and replacement) In order to qualify as a VCMA project, a project must:	
VCMA Eligibility Criteria	Criteria Satisfied (Yes/No)
a) Have a positive, or forecasted positive Social Return on Investment (SROI), including for the gas consumers funding the VCMA project;	Yes
b) Either: i. Provide support to consumers in vulnerable situations, and relate to energy safeguarding, or ii. Provide awareness on the dangers of CO, or iii. Reduce the risk of harm caused by CO;	i, ii and iii - YES
c) Have defined outcomes and the associated actions to achieve these;	Yes
d) Go beyond activities that are funded through other price control mechanism(s) or required through licence obligations; and	Yes
e) Not be delivered through other external funding sources directly accessed by a GDN, including through other government (national, devolved, or local) funding.	Yes
Section 2 - Eligibility criteria for company specific essential gas appliance servicing, repair, and replacement projects In order to qualify as a VCMA project, unsafe pipework and essential gas appliance servicing, repair or replacement must meet the following criteria:	
a) A GDN has to isolate and condemn unsafe pipework or an essential gas appliance following a supply interruption or as part of its emergency service role;	N/A
b) The household cannot afford to service, repair, or replace the unsafe pipework or essential gas appliance; and;	N/A
c) Sufficient funding is not available from other sources (including national, devolved, or local government funding) to fund the unsafe pipework or essential gas appliance servicing, repair, or replacement.	N/A
Section 3 - Eligibility criteria for collaborative VCMA projects In order to qualify as a collaborative VCMA project, a project must:	
a) Meet the above company specific and boiler repair and replace (if applicable) project eligibility criteria;	N/A
b) Have the potential to benefit consumers on the participating networks; and	Yes
c) Involve two, or more, gas distribution companies.	Yes

Gas Network Vulnerability and Carbon Monoxide Allowance (VCMA) Governance Document - Project Registration Table 2

Information Required	Description
Project Title	Preventing Harm from Environmental Exposure to Carbon Monoxide (PHECO)
Funding GDN(s)	Cadent, NGN, SGN and WWU Updated January 2026 Cadent and SGN Southern Updated February 2026 Cadent, NGN and SGN Southern
New/Updated (indicate as appropriate)	Update February 2026
Role of GDN(s) *For Collaborative VCMA Projects only	The GDNs will provide specific industry guidance and support to the task and finish groups for each of the four project modules. Lead GDN: Cadent Other GDNs involved: SGN, NGN, WWU Update January 2026: Additional modules: Cadent and SGN Southern Update February 2026: Implementation of tools and pathways developed: Cadent, NGN and SGN Southern
Date of PEA Submission	Update January 2026: January 2026 Update February 2026: February 2026
VCMA Project Contact Name, email, and Number	Suzanne Callington, Suzanne.callington@cadentgas.com
Total Cost (£k)	£190,850.00 excluding vat Update January 2026 Additional £91,180.00 +vat Updated total £282,030.00 +vat Update February 2026: Additional £108,812.00 +vat CO Research Trust (CORT) contributing £27,203.00 of total costs. Updated total £390,842.00 +vat
Total VCMA Funding Required (£k)	£190,850 excluding vat funding per GDN: Cadent: 49.80% = £95,043.30 +vat NGN: 11.56% = £22,062.26 +vat SGN: 27.07% = £51,663.10 +vat WWU: 11.57% = £22,081.34 +vat TOTAL: £190,850.00 +vat Update January 2026: Additional - £91,180.00 +vat Cadent – £ 66,257.11 (72.66% of costs) SGN (Southern) - £ 24,922.89 (27.34% of costs) Updated total £282,030.00 +vat

	Update February 2026: Additional - £81,609.00 +vat Cadent - £27,203.00 NGN - £27,203.00 SGN Southern - £27,203.00 Updated total £363,639 +vat
Problem(s)	Awareness of the dangers of carbon monoxide (CO) poisoning, and how to ensure that those who are exposed are protected, is low amongst health and social care staff. This is particularly an issue when staff are working with the most vulnerable groups, including pregnant women and older people. CO symptoms can be non-specific and mimic other conditions. Health/social care staff need not only the knowledge and skills, but also the resources to support identification of CO poisoning. In 2020 the GDNs surveyed 8,000 people and only 42% had a working audible alarm. Within the CO in pregnancy study data to date is suggesting only about 65% have an alarm. There is a lack of robust pathways and protocols to ensure that those identified as potentially being exposed, receive any treatment required and are promptly protected from future harm, without leaving them vulnerable in other ways e.g. from cold and lack of cooking facilities. There is also a need to ensure that records accurately show when CO has been a contributing factor this ensures accurate reporting of deaths relating to CO. Following a death CO may not always be considered as a possible cause or contributing factor due to a lack of knowledge, or consideration of CO symptoms/poisoning. Update January 2026: Awareness of the dangers of carbon monoxide (CO), how to identify potential poisoning and protect those exposed remains low among many healthcare workers. This needs to be corrected particularly amongst those working in General Practices and Fire and Rescue Service (FRS) staff. This lack of awareness may be contributing to under-recognition, delayed diagnosis and failure to protect those being harmed, particularly in our most vulnerable communities. Underdiagnosis and underreporting CO poisoning is significantly underdiagnosed. The National Institute for Health and Care Excellence reports that there are around 40 deaths and over 440 hospital admissions each year related to CO poisoning.¹ However, the Office of National Statistics figures indicate a much higher ten-year average of 178 deaths per year, including non-accidental poisonings.² Data from Fire and Rescue Services (FRS) show over 17,000 CO-related incidents between 2012 and 2022, with more than 2,000 victims (excluding suicides), an average of over 200 per year³. These figures only represent known and reported cases, suggesting the true burden of CO exposure is likely much higher. Given the substantial role in delivery of the Home Fire Safety Visits, FRS officers undertaking these visits are ideally placed to support the identification and prevention of CO poisoning by education and providing CO alarms. They can also use this knowledge when attending incidents that may not be CO related, but where there may be opportunity to provide prevention education and guidance.

¹ Carbon monoxide poisoning | Health topics A to Z | CKS | NICE

² Carbon monoxide deaths and poisonings for the past 10 years - Office for National Statistics

³ Carbon monoxide incidents, 2012 to 2023 - GOV.UK

	Limited studies are available on how often CO poisoning is accurately diagnosed in the emergency department (ED) and how often a diagnosis is missed. One study suggested the probability of missing a diagnosis of CO poisoning to currently be up to 98%⁴. Anecdotal evidence exists in the form of cases reported in the press where patients who have been unknowingly exposed to CO from domestic sources have been sent home after seeking medical attention for their symptoms and have died from the continued exposure⁵. Low-level exposure and hidden risks Emerging studies highlight the dangers of chronic low-level CO poisoning, which may not trigger alarms or obvious symptoms but still causes harm over time. These new modules will provide education and advice regarding low level exposure and support GPs to help identify, provide intervention and treatment pathways. In one study, 18% of 270 homes tested had CO levels exceeding World Health Organisation (WHO) guidance⁶. Another found 22% of homes had a faulty gas appliance⁷. Such findings indicate that low-level exposure is widespread yet often goes unnoticed even by healthcare professionals. Inequality, deprivation, and fuel poverty CO exposure risk is closely linked with fuel poverty and social deprivation, both known to worsen health inequalities⁸. Those living in lower socioeconomic groups are more likely to experience CO exposure due to poorly maintained or inefficient heating systems, lack of regular appliance servicing, and limited financial means to make repairs or challenge unsafe housing conditions. Approximately 10.7 million people in England live in the lowest two deciles of social deprivation⁹. These individuals are also up to 1.7 times more likely to require GP or emergency care than those in less deprived areas¹⁰. This intersection of deprivation, health inequality, and environmental risk means that CO poisoning is most likely to affect people who already have limited healthcare access, yet frontline staff may not associate their symptoms with CO exposure. Lack of awareness on CO from frontline/ emergency healthcare staff There are several reasons why CO poisoning remains under-recognised in healthcare settings: 1. Non-specific symptoms: CO poisoning can mimic common illnesses such as flu, viral infections, fatigue, or migraines. Without a high index of suspicion, clinicians may not consider CO exposure as a cause. 2. Limited training and awareness: CO poisoning is rarely covered in depth during professional education or ongoing training for GPs, ambulance, and emergency staff.¹¹ 3. Absence of clear pathways: there are few established clinical or referral pathways for suspected CO exposure. Even when exposure is suspected, systems for coordinated follow-up, housing safety checks, and protection from repeat exposure are inconsistent or absent. Low public awareness: In a 2020 survey of 8,000 people by the Gas Distribution Networks (GDNs), only 42% reported having a working audible CO alarm. Early data from the CO in Pregnancy study shows only around 65% of participants had an alarm.
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⁴ European Journal of Emergency Medicine

⁵ Gas leak fear after family of four are found dead | UK news | The Guardian 'Poison leak' from faulty gas fire behind couple's death | Metro News

⁶ Real time carbon monoxide measurements from 270 UK homes

⁷ Self-reported neurological symptoms in relation to CO emissions due to problem gas appliance installations in London: a cross-sectional survey | Environmental Health | Full Text

⁸ Fuel poverty is intimately linked to poor health | The BMJ

⁹ People living in deprived neighbourhoods - GOV.UK Ethnicity facts and figures.

¹⁰ The Health Of People From Ethnic Minority Groups In England | The King's Fund

	Update February 2026: To date, all the projects within this area of focus have been independent of each other. We now need a coordinated and cohesive rollout plan to ensure the outcomes of the projects can be fully embedded into healthcare practice, combining project outputs into a single, coherent change that can be adopted into practice. With a focus on integration, consistency, and sustained behaviour change across healthcare settings.
Scope and Objectives	This project will develop a generic learning module to help a broad range of health and social care staff better understand the harm caused by exposure to carbon monoxide, how to identify those at risk and how to protect them from harm. Building on this generic learning module we will add further depth by developing short topic/ professional specific learning modules, those areas could include pregnancy, emergency department, care of older people, dementia care and medical examiners. These learning packages will be made available through the e-Learning for healthcare (elfh) platform. Formed in 2007 it [elfh] delivers a range of programmes of learning. It works in partnership with other organisations to develop e-Learning programmes to support the health and care sector workforce. It has over two million registered users and is now delivering or developing more than 450 e-Learning programmes in collaboration with organisations including Royal Colleges, Department of Health and Social Care, NHS England (NHSE), and the Office of Health Inequalities and Disparities (OHID). It also works with a broader group of organisations that support evidence based and high-quality practice in health and social care. iPiP (Improving Performance in Practice) have led or been involved in developing four elfh training modules. Considering those groups which might be most at risk and/or where the consequences may be greater it is suggested that the first two priority areas should be pregnancy and older people. Also, because of the concern that records should accurately show when CO has been a contributing factor or cause of a death, it will help medical examiners to have access to a module designed specifically to meet their needs. This will include coding/reporting exposure, how CO poisoning might present and the importance of recording its involvement in any death. The overall aims are to: 1. Ensure that NHS and social care staff have access to high quality, evidence based training, ensuring they are better able to identify those exposed or potentially exposed to carbon monoxide, and understand the appropriate actions to help protect those individuals and record incidence of poisoning to aid an understanding of the scale of the problem. 2. Ensure medical examiners have access to the knowledge required to consider if CO is a cause or contributing factor in a death. This includes how to code/report exposure, how CO poisoning might present and the importance of recording its involvement in any death. 3. Improve the relationships between gas distribution, health, and social care organisations to benefit the most vulnerable communities. 4. Support the development of pathways, protocols, and interventions to help ensure that when those from vulnerable groups are identified as potentially being exposed, they are supported to identify the source, safely remove the harm, and receive any required treatment. Development process and key milestones: A codesign process will be used, working closely with the experts within the required fields and the elfh design team. Both the pregnancy and vulnerable older people workstreams will have individuals/groups involved that represents the group we are wanting to better protect.

A stakeholder group will be formed comprising of academic and clinical experts in CO and the target populations, along with representatives from other key agencies and charities such as CORGI, CO Research Trust (CORT), SANDS, Age UK

The module for medical examiners will need to be developed with a separate team and group of partners because of the highly specialist nature of the work.

Step one Feb '24 – April '24

- Identify the key individuals and invite them to join a task and finish groups
- Undertake literature and messaging reviews
- Research the sessions audiences
- Agree key learning outcomes
- Create the e-Learning templates/structures

Step two – April '24 – May '24

- Review the evidence and messaging
- Identify and agree overall structure
- Identify use of animation and film
- Agree content, written, animation and film
- Identify pilot sites

Step three – May '24 - June '24

- Prepare the written content, including the session assessment
- Prepare the guidelines for animation
- Prepare scripts
- Undertake filming
- Review materials with task and finish groups
- Review materials with key professional groups
- Agree the required analytics

Step four – April '24 – Jan '25

- Work with elfh development team to build the sessions
- Prepare the pilot sites for implementation
- Prepare communication strategies

Step five – August '24 – Oct '24

- Sign off the module designs and content with the task and finish groups.
- Implement within pilot sites

Step six – Nov '24 – Feb '25

- Review pilot implementations
- Agree and undertake any changes/additional requirements
- Launch sessions using agreed communication plans

Development and piloting phase by December 2024, then with ongoing data to be provided up until April 2026.

Update January 2026

Building on the recently developed suite of eLearning modules covering pregnancy, medical examiners and vulnerable adults (Preventing Harm from Environmental Carbon Monoxide Exposure), this project will create two new role-specific modules. These will support workers from the **FRS** and **General Practice's (GPs) including Practice Nurses**, to better understand the harms caused by CO poisoning, identify those at potential risk, have impactful conversations and take effective action to protect them from harm.

As with the existing suite of eLearning modules already developed, these learning packages will be made available through NHS England's (NHSE) eLearning for healthcare (elfh) platform.

The overall aims are to:

	1. Ensure that those key groups mentioned above have access to high quality, evidence based training, ensuring they are better able to identify those exposed or potentially exposed to carbon monoxide, have impactful conversations and understand the appropriate actions to help protect those individuals and record incidence of poisoning to aid an understanding of the scale of the problem. 2. Grow the relationships between gas distribution and health organisations to benefit the most vulnerable communities. 3. Support the development of pathways, protocols, and interventions to help ensure that when those from vulnerable groups are identified as potentially being exposed, they are supported to identify the source, safely remove the harm, and receive any required treatment. Development process and key milestones A co-design process will be used, collaborating closely with the experts within the required fields and the elfh design team at NHSE. All of the groups will have their own subject matter and clinical experts to ensure the material produced sits alongside existing clinical and professional guidelines and resonates with the targeted professionals. Key stakeholders will include academic and clinical experts in CO and the target populations, along with representatives from other key agencies and charities such as CORGI, CO Research Trust (CORT), National Fire Chiefs Council (NFCC), and the Royal College of General Practitioners (RCGP). Project steps: Step one • Identify the key individuals and clinical leads • Undertake literature and messaging reviews • Research the sessions audiences. • Agree key learning outcomes. • Create the e-Learning templates/structures. Step two • Review the evidence and messaging. • Identify and agree overall structure. • Identify use of animation and film. • Agree content, written, animation and film. • Identify pilot sites. Step three • Prepare the written content, including the session assessment. • Prepare the guidelines for animation. • Prepare scripts. • Undertake filming. • Review materials with clinical leads and key professional groups. • Agree the required analytics. Step four • Work with elfh development team to build the sessions. • Prepare the pilot sites for implementation. • Prepare communication strategies. Step five • Sign off the module designs with key groups and individuals. • Pilot modules Step six • Undertake any changes/additional requirements.
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	• Launch sessions Updated February 2026 The continuing work within the healthcare sector to support CO research, developing tools, raising awareness, and creating pathways for CO identification and treatment, represents significant progress. However, this alone is not sufficient. Real impact is achieved when such developments translate into everyday practice in a way that is both sustainable and impactful. This important stage of implementation is often neglected. As a result, research does not always achieve the positive impact on professional practice. It is essential that the work completed to date is embedded effectively and has a major impact in practice, helping protect some of the most vulnerable populations The work programme will include: • A systemwide approach: Using lessons from the Smoking Challenge Group approach, to adopt a systems-based approach to increase knowledge, integrate the tools and pathways into everyday practice. • National policy: Working with stakeholders and utilising knowledge, findings and solution-based approach to influence national policy. • A national stakeholder working group: Forming and working with the members to support the work within the various systems to facilitate wide understanding and uptake of the work focusing on pregnancy. • Consulting and working with local, regional and national organisations: Using existing networks to build understanding of this work and secure involvement in implementing the tools and pathways. • Identifying all the potential audiences for the elfh module: Developing and implementing strategies to achieve wide engagement. • Conferences and workshops: Continuing to speak at and attend local, national and international events that provide a platform to spread information about the harm and the available approaches and tools. • Regional launches: Working with regional leads of the key organisations, organise half day introductory workshops, showcasing and supporting the implementation of the toolkit, e learning and guidance Key activities: • Convene and coordinate a cross-sector stakeholder group (including representatives from maternity services, public health, professional bodies, and FRS) to provide shared oversight, alignment, and peer support. • Seek sector endorsement and support from relevant professional and partner organisations for the maternity CO prevention and FRS referral toolkits, where appropriate. • Develop and disseminate a concise implementation pack, including toolkits, pathway diagrams, FAQs, template referral pathways, and briefing materials adaptable for local use. • Deliver virtual launch events and targeted briefings for LMNSs, Integrated Care Boards (ICBs), maternity providers, and FRS. • Support local adoption through LMNS-level coordination, identification of named maternity and FRS leads, and provision of practical implementation checklists. • Promote and encourage uptake of existing NHSE eLFH CO modules within maternity services. • Share learning and emerging practice through professional articles, case studies, conferences, and workshops. • Undertake monitoring, evaluation, and a gap analysis to inform continuous improvement and longer-term sustainability planning.
Why the Project is Being Funded Through the VCMA	This project will benefit some of the most vulnerable groups across the UK by empowering front-line health and social care professionals by: • Increasing their understanding of the dangers of CO poisoning • Enabling them to recognise potential sources of harm • Ensuring an understanding of the actions required to prevent or remove harm Those professionals will also be able to ensure that vulnerable clients/patients access the Priority Services Register (PSR) and that their carers and family understand potential CO harm and actions required to prevent harm. The work with medical

	examiners will help develop a better understanding of when CO has contributed to or caused a death. The E Learning for Health Platform is the key platform for e-Learning across health professionals. This allows a reach which is not possible via other platforms or methods. This partnership service goes above and beyond our core responsibilities as a Gas Distribution Network and is eligible under the VCMA funding criteria as it will provide energy crisis support, access to energy efficiency and CO advice, empowering vulnerable households to use energy safely, efficiently, and affordably. This partnership aligns to the GDNs commitment to deliver support services customers aligned to our four strategic pillars: 1. Services Beyond the Meter 2. Supporting Priority Customer Groups 3. Fuel Poverty & Energy Affordability 4. Carbon Monoxide Awareness This project aligns to strategic pillars 2 and 4. Update January 2026: There is recognition that CO poisoning can affect anyone, and it is essential to provide appropriate advice to help protect all population groups. While some individuals will be able to take the necessary preventive actions independently, others may require additional support to do so. These new modules will be designed to promote a broad understanding of CO risks and the measures needed to prevent exposure across diverse communities with highly different needs and abilities to protect themselves. These resources will benefit some of the most vulnerable groups across the UK by enabling frontline professionals to: • Understand of the dangers of CO poisoning. • Recognise potential symptoms and sources of harm. • Understand the actions required to prevent or remove harm. Those professionals will also be able to ensure that vulnerable clients/patients know about and are able to access the Priority Services Register (PSR). This will support those who need extra help with everyday energy matters like bills, and also in the unlikely event of a power cut, gas or water supply interruption. The e Learning for Health platform is the key platform for e learning for health professionals. This allows a reach which is not possible via other platforms or methods. This partnership service goes above and beyond the core responsibilities of a Gas Distribution Network and is eligible under the VCMA funding criteria as it will provide energy crisis support and access to CO advice, empowering vulnerable households to use energy safely. This partnership continues to align to two pillars (2 and 4) of the GDNs commitment to deliver support services to customers aligned to our four strategic pillars: 1. Services Beyond the Meter 2. Supporting Priority Customer Groups 3. Fuel Poverty & Energy Affordability 4. Carbon Monoxide Awareness Update February 2026: Funding will support and enable the national implementation of guidance, learning packages, pathways and strategies to support health and social care staff to better protect vulnerable groups, The focus is on facilitating wider awareness, consistent adoption, and sustainable use of established tools within routine practice, rather than generating new evidence or developing new guidance.
Evidence of Stakeholder/Customer Support	The need for this work has been identified through the knowledge gained from work previously undertaken including;

	IPPCO study. This study aims to bring together information on expired CO levels in pregnant women recruited into the study, with information collected on exposure in their home and insights into pregnant women's knowledge and understanding of the harm and how to protect themselves and their babies. This study has just closed to recruitment and the analysis of data has just begun. There are early indications that pregnant women and maternity staff have a poor level of knowledge about the dangers of environmental CO, or the actions required to protect pregnant women and their babies. Representation from Maternity Voices Partnership as part of iPiPs wider work on environmental CO. The team receive regular requests for information and advice about how to identify and treat environmental CO poisoning. An evidence review and roundtable event, including a wide range of health professionals, GDNs and user voices. The aim being to bring together the literature regarding the level and types of harm and to begin the discussion about the roles of organisations in reducing that harm. The paper, Understanding and minimising the consequences of CO exposure during pregnancy (September 2022)¹¹, shows the types and levels of harm of low-level chronic exposure to the unborn baby. The roundtable attendees agreed a set of actions required to reduce harm, these included better training for health staff. The efficient operation of regulation and legislation: An holistic approach to understanding the effect of Carbon Monoxide on mortality A Report for the CO Research Trust, February 2022¹². This highlighted the need for better identification of CO as a cause or contributory factor in cause of death. Cognitive decline, dementia, and air pollution A report by the Committee on the Medical Effects of Air Pollutants¹³ Chairman: Professor Frank Kelly Chairman of Subgroup on Cognitive Decline and Dementia: Professor Robert L Maynar. This paper highlights the links with cognitive decline and the need for health and social care practitioners to have the knowledge and skills to identify and mitigate risks. Understanding and minimising the consequences of environmental CO exposure during pregnancy¹⁴. A report for the CO Research Trust, September 2022 resulted in a consultation with health and social care organisations including NHSE, OHID, UK Health Security Agency (UKHSA), Royal College of General Practice (RCGP) Recognition of need by E Learning for Health following submission to develop modules for the platform. UKHSA, in consultation with other key agencies, agreed the need for a CO algorithm to support healthcare professionals to better identify, treat and help remove sources of harm. This is in final draft and funding is being sort to test the algorithm in practice. The APPCOG 'Prepare, Practice, Protect – Improving carbon monoxide safety in heath and care services'¹⁵ report (July 2023) states that in relation to health and social care professionals "awareness of the risks of carbon monoxide is very low, and most people associated carbon monoxide with death only, and anticipated that exposure would lead to an 'all or nothing' outcome for those poisoned". The first recommendation from the report says "Authorities may find it beneficial to examine the potential economic and public health benefits of subsidising or providing grants to support training, events, and the development of national resources for health and social care professionals (ideally specific to their role) and
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¹¹ Understanding and minimising the consequences of environmental exposure during pregnancy. A report for the CO Research Trust, Beth Cheshire, June 2022

¹² The efficient operations of regulation and legislation. A report for the CO Research Trust, Isabella Myers, February 2022

¹³ Cognitive decline, dementia and air pollution. A report by the Committee on the Medical Effects of Air Pollutants, Prof Frank Kelly, Independent review by UKHSA, published 25 July 2022

¹⁴ Understanding and minimising the consequences of environmental exposure during pregnancy. A report for the CO Research Trust, Beth Cheshire, June 2022

¹⁵ Prepare Practice Protect, improving carbon monoxide safety in health and care services, Laura Fatah, Policy Connect & APPCOG, published 17 July 2023

	their employers to embed learning and support good practice in carbon monoxide safety.” Update January 2026: A number of recent studies underline the stakeholder interest in improving awareness, identification and management of CO exposure: • A UKHSA cross-sectional multi-centre UK study of patients in emergency departments (EDs) presenting with symptoms potentially consistent with CO exposure found a prevalence of suspected CO exposure of 0.62% (95% CI 0.41-0.91%) among 4,175 participants. Home investigations confirmed one definite case and 21 probable cases, many of which had normal carboxyhaemoglobin levels¹⁶. This underlines the need for enhanced screening and professional awareness of CO risk among healthcare staff. • A survey in two emergency departments (January 2022–March 2023; 6,043 respondents) found that 63.1% of patients reported owning a CO alarm; alarm ownership was significantly lower among renters (58.0%) than homeowners (67.4%), and among ethnic minority respondents (58.0%) compared to white respondents (68.9%). A large proportion had never tested their alarms (20.8%) or had them incorrectly placed (43.0%)¹⁷. These public awareness gaps reinforce the value of supporting healthcare staff and partner agencies to identify exposure risk in patients. • A 2012 study examining presentations at four large emergency departments with 1758 patients found raised COHb levels in 4.3% of patients presenting with non-specific symptoms¹⁸. Additional academic work highlights the specifically low awareness within emergency care settings: in “<i>Carbon monoxide: raising awareness of the silent killer in the emergency department</i>”¹⁹ the authors observed that a high degree of clinical suspicion is needed since CO often presents with common symptoms such as headache, nausea or fatigue, and found that educational interventions (such as sticker-based prompts) may help raise awareness.
Outcomes, Associated Actions and Success Criteria	Outcomes Within the project, four e-Learning modules will be developed in order to; • Provide education to health professionals • Empower education from healthcare professional to patient/clients • Identify potential CO poisoning, chronic and acute • Remove risk from home environments • Reduce harm to individuals and unborn babies • Access schemes supporting those in fuel poverty • Improve identification of CO as a cause/contributing factor to a death The core (generic) module will enable those participating to; • Describe the harms caused by carbon monoxide • Discuss the potential sources of carbon monoxide with clients/patients • Identify those being exposed or at risk of exposure • List the signs and symptoms of exposure to CO • Evaluate the potential risk of individuals within their care Modules two and three will focus on pregnancy and vulnerable older people. They will provide more detail about the harm for that specific group, how to identify

¹⁶ Screening patients for unintentional carbon monoxide exposure in the Emergency Department: a cross-sectional multi-centre study - UK Health Security Agency

¹⁷ Carbon monoxide alarm ownership and maintenance in patients attending the Emergency Departments: a cross-sectional study - PubMed

¹⁸ Screening for carbon monoxide exposure in selected patient groups attending rural and urban emergency departments in England: a prospective observational study | BMJ Open

¹⁹ Carbon monoxide: raising awareness of the silent killer in the emergency department | BMJ Open Quality

	those at risk and the actions necessary to protect individuals, recording and coding of incidence and an understanding of referral pathways and treatment and support. Module four will focus on the needs of medical examiners. For these medical examiners the module will assist them in: • Scrutinising the chain of causation of death and recognising when CO exposure might be implicated, particularly low-level • Identifying cases for further review under local mortality arrangements and contribute to other clinical governance processes Knowledge checks and assessments Each section will end with the identification of key learning points. At the end of the module participants will be asked to complete a short multiple-choice assessment with a pass rate of 80/90% required. Analytics The system will be developed to allow the collection of data which will identify region, type of organisation, clinical area, and professional group and engagement with the modules. Integrated care systems are being introduced into the healthcare system. This will allow information to be collected on a sub-regional basis which will enable better matching to GDN footprints. The assessment will measure their pre and post session knowledge of what CO is, understanding of sources of harm, how to identify and prevent potential harm and the professional group of each profession. Overviews of access and outcomes will be available to the funders during the pilot and the national roll out. Communications During the development phase we will work with the key stakeholders and e-Learning for healthcare team to develop and implement a communication strategy. This will include: • Speaking at key health/social care events • Articles in professional journals • Using social media and podcasts • Messaging key agencies, royal colleges, and professional organisations • Messaging users on the elfh platform The resources developed during this process will also be able to be utilised in other ways, for example we use extracts from some modules within virtual and face to face training sessions. There will be a specific communication strategy for the other nations to ensure the key people are aware and have access to all resources on the platform. Reach Within the pilot phase the training will be utilised within a variety of relevant organisations, with each GDN area having at least one organisation taking part. For the generic/pregnancy modules we will engage with one maternity service and one health visiting service For the generic/vulnerable older people modules we will engage with one home care and one district nursing service The module for medical examiners will be focused on the approximately 870 clinical specialists. The pilot will be undertaken with specialists in one Integrated Care System.
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Pilot Reach

Group	Numbers
Midwives/midwifery/support workers	95
Health Visitors	50
Obstetricians	10
Home Carers	60
District Nurses	50
Medical Examiners	20
TOTAL	285

Following the pilot, there will be a national roll out with all modules made widely available to health care staff. The generic module will be suitable for all health staff, for the topic specific modules the initial focus will be on those that can have the greatest impact.

The elfh platform is accessible to all those with an NHS email account or an Open Athens account (from all four nations). Others can apply for access to the system directly or via Open Athens, these include those that offer services under contract with the NHS and social care providers.

Materials developed for this platform can be shared with organisations, such as Royal Colleges, if they consider the materials being on an internal platform would increase the reach within their profession.

Target Population figures

Although the pilot phase will be completed across each GDN footprint within England. Once roll out commences, engagement across the other nations will be undertaken to broaden the take up of the e-Learning packages, therefore increasing the reach. Healthcare professionals relevant to each module category from Scotland and Wales will be invited to review and feedback on all modules developed prior to any roll out across the UK.

Estimates of target populations (within England)

Based on the number of customers within the UK in our target groups, we've calculated the number of customers within each target group in England alone as follows;

Pregnancies (2021/22) = 595,948 (midwifery)

With the implementation of the new algorithm, developed by UKHSA, considering environmental CO as a potential source of harm for the unborn baby will become part of all pregnancy booking visits. The level of conversation will vary depending on the results of an exhaled breath test (completed for all pregnant women) but with the support of the algorithm and new e learning, CO should be raised as a potential source of harm with all women.

Given the above the 50% of midwives who will complete the training, will have a conversation with all of the women they engage with, that is **297,974** conversations.

Children births (2021/22) = 580,000

Potential population for health visitors to have a conversation at a new birth visit will be population of 174,000 (this number is a third of the new birth population each year) Post training health visitors should consider environmental CO in all the conversations undertaken in the homes. We estimate that meaningful conversations regarding CO are likely to occur in approximately 10% of those contacts. We have used 10% because some of these patients will have been spoken to by their midwife earlier on in the pregnancy. That is **17,400** conversations.

People aged 75+ = 4,504,000 (community nursing)

We estimate reaching 15% of the professionals who have contact with this group within GP surgeries and the community, therefore they have the potential to reach 675,600 individuals. We estimate that they will actually have a meaningful conversation with 10% of this group, that is **67,560** conversations.

Total customer conversations: 382,934

Estimate of completion within England;

Estimates below of e-Learning completion are conservative, as this is an emerging area and there are no previous modules around CO/air quality that would provide an indication. We expect higher completion rates within midwifery and medical examiners;

1. Midwifery because there is an algorithm process being developed to support the identification and treatment of pregnant women exposed to environmental CO, which will be shared widely with all midwifery services across England.
2. Medical Examiners because the module for this profession will be developed in collaboration with this relatively small group of health professionals.

Some other groups not named may also be interested in elements of the training including social care staff working within homes and staff working in emergency departments. This broader engagement will be monitored and may identify other specific groups which require targeted modules.

Healthcare Professional	Estimated Number in England	Assumed Completion %	Estimated Number of healthcare professionals educated
Midwives	40,000	50%	20,000
Health Visitors	5,979	30%	1,794
Community Nursing Staff	82,000	20%	16,400
General Practitioners	36,432	10%	3,643
Nursing Staff within General Practice	23,421	20%	4,684
Medical Examiners	870	70%	609
TOTAL	188,702	24.7%	46,609
TOTAL minus Medical Examiners (870)	187,832	24.7%	46,395

Total healthcare professional reach

As a medical examiners role is to ensure correct categorisation on cause of death rather than educate patients, we have excluded this profession when considering the number of customers educated on CO. This exclusion means that **46,395** healthcare professionals will be available to educate patients (24.7%).

If we are reaching 24.7% of the potential professional audience, we can reasonably expect that they will be able to reach a similar % of the customer base.

Summary of reach (customer and healthcare professional)

Customer reach: 382,934 (consistent with conversation reach detailed above)

Professional reach: 46,395 (i.e. 24.7% of 187,832)

TOTAL reach: 429,329

Estimates of target populations (within Scotland and Wales)

The table below shows the estimated numbers of professionals and population within the target groups. iPiP do not have the experience of services in Scotland and Wales to the extent they do in England so at this stage are unsure about the level of reach. It is anticipated that further information will become available from partner organisations during the process of development and testing so reach in Scotland and Wales can be estimated more accurately.

	Scotland	Wales
Number of pregnancies	44,557	26,565
Number of live births	45,061	27,420
Number of 0 - 4 year olds	187,379	117,258
Number of 75+	526,600	320,487
Midwives	3,612	2,236
Health visitors	2,300	817

Community nursing staff	56,000	34,000
General Practitioners	5,209	2,324
Nursing Staff within General Practice	1,540	1,000
Medical Examiners	54	N/A

Update January 2026:

Within the update to this project, two additional e-Learning modules will be developed that;

- Provide education to workers in fire and rescue and general practice
- Enable those professionals to have impactful conversations and provide information to patient/clients
- Identify potential CO poisoning, chronic and acute
- Facilitate the removal of risk
- Reduce harm to individuals
- Support patients/clients to access schemes providing support such as the Priority Services Register (PSR)

These modules will build on the previously built generic module by providing more detail about how to identify those at risk within these specific settings, job roles and scenarios along with the actions and conversations relevant to their specific job role.

Knowledge checks and assessments

Each section will end with the identification of key learning points. At the end of the module participants will be asked to complete a short multiple-choice assessment with a pass rate of 80%.

This assessment will measure their post session knowledge of what CO is, understanding of sources of harm, how to identify and prevent potential harm and the key learning points for each professional group.

Analytics

Currently basic information is available about the engagement with each module this includes numbers accessing/completing the learning, time spent, number undertaking and passing the knowledge check.

Communications

During the development phase we will work with the key stakeholders and e-Learning for healthcare team to develop and implement a communication strategy. This will include:

- Speaking at key health/social care events
- Articles in professional journals
- Using social media and podcasts
- Messaging key agencies, Royal Colleges, and professional organisations
- Messaging users on the elfh platform

The elfh platform is accessible to all those with an NHS email account or an Open Athens account (from all four nations). Others can apply for access to the system directly or via Open Athens, these include those that offer services under contract with the NHS and social care providers. There is already permission from NHSE for the FRS to have access to the system. The project will also investigate the possibility of FRS's to have their own direct link from their own system accessible via their own e-learning platform.

There will be a specific communication strategy for the other nations to ensure the key people are aware and have access to all resources on the platform.

The resources developed during this process will be able to be utilised in other ways, for example we use extracts from some modules within virtual and face to face training sessions.

Materials can be shared with organisations, such as Royal Colleges, if they consider the materials being on an internal platform would increase the reach within their profession.

Reach

There are an estimated 30,769 staff within the FRS, we are expecting around 200 of these to complete the e-learning for health training modules within the first year of it becoming available. For purposes of calculations associated with this project this

would be a total of 200 FRS professionals completing the role specific CO training, with an estimated customer reach of 5,000 conversations within the first year.

Within GP surgeries we estimate there are around 56,911 GPs and Practice Nurses, and around 378 of these will complete the e-learning for health training modules within the first year of the modules becoming available. For purposes of calculations associated with this project this would be a total of 378 professionals completing the role specific CO training, with an estimated customer reach of 17,000 conversations within the first year.

We estimate around 10% of all 22,000 (2,200) customer conversations will signpost customers to the PSR.

Update February 2026

Outcomes:

- Increased awareness of CO risks in pregnancy across maternity and partner services.
- Growing systemwide usage and awareness of the e-learning module across maternity and adult health and social care.
- More consistent national use of UKHSA algorithm and escalation guidance within participating services.
- Improved identification of potential environmental CO exposure in pregnant households.
- Strengthened multi-agency collaboration between maternity services, public health, and FRS.
- Contribute to reducing variation and addressing inequalities related to CO exposure in pregnancy.

Reach:

Workforce training

England has an estimated 23,000–24,000 WTE midwives (NHSE, 2024), equating to an average of approximately 186.5 midwives per maternity unit. Within each early-adopter unit, approximately 30 midwives, primarily community and antenatal staff responsible for booking appointments, will need to complete the training hosted on the NHSE e-learning for healthcare Hub.

This equates to 300 midwives trained across 10 early-adopter units.

This assumption reflects the targeting of staff that are most likely to deliver CO screening and prevention conversations, rather than whole workforce.

CO screening and prevention conversations:

There are approximately 600,000 women booked for maternity care in England each year, an average of 4,762 bookings per maternity unit. Current compliance with Saving Babies' Lives Care Bundle version 3 (SBLv3) indicates that approximately 95% of women receive CO screening at booking.

With the addition of the new UKHSA algorithm utilised in the units, this results in:

- Approximately 4,523 women per unit per year receiving CO testing and a prevention conversation
- **Approximately 45,239 women** across 10 units per year

Referrals to Home Fire Safety Visits (HFSV):

Information gathered during the pilot indicates that approximately 7–8% of women screened at booking record a CO level of 4ppm or above, triggering further assessment, prevention discussions and referral.

Using a conservative midpoint assumption this equates to 339 women per unit per year that have a CO level ≥ 4 ppm, all of whom should be offered a referral for a Home Fire Safety Visit (HFSV).

Data from previous phases of the project indicate an uptake rate of approximately 57%. This equates to:

- 193 women per unit per year accepting an HFSV
- **1,930 HFSVs delivered annually** across 10 early-adopter units

Professional dissemination via healthcare sector magazine journals:

The Royal College of Midwives (RCM) publication has a reported circulation of approximately 42,000.

	It is reasonable to apply standard professional journal engagement assumptions. This evidence suggests: • 30–60% of circulated copies are actively read • A 40–50% engagement rate is commonly used as a planning assumption This gives an estimated engaged readership of 18,000–21,000 midwives. This activity supports awareness, reinforcement of practice change, and indirect uptake of the algorithm but is treated as dissemination reach rather than direct training. Together, these strands early-adopter implementation, national workforce education, and professional dissemination provide a credible, conservative and evidence-based estimate of the reach and potential prevention impact of the implementation programme.								
Project Partners and Third Parties Involved	Improving Performance in Practice (iPiP) E Learning for Healthcare (a division of Health Education England). CO Research Trust (CORT) NHS England (NHSE) Office of Health Inequalities and Disparities (OHID) UK Health Security Agency (UKHSA) Royal College of Midwives (RCM) Royal College of Nursing (RCN) Royal College of General Practice (RCGP) Coroner's Office Royal College of Pathology (RCPath) Update January 2026: Improving Performance in Practice (iPiP) E Learning for Healthcare (a division of Health Education England). CO Research Trust (CORT) NHS England (NHSE) Office of Health Inequalities and Disparities (OHID) UK Health Security Agency (UKHSA) National Fire Chiefs Council (NFCC) Association of Ambulance Chief Executives (AACE) Royal College of Emergency Medicine (RCEM) Royal College of General Practitioners (RCGP). Update February 2026: In addition to those provided in January 2026 update; Department of Health Royal College of Midwives Variety of LMNS, ICB's, Maternity Services and FRS (locations TBC) Royal College of Obstetricians and Gynaecologists								
Potential for New Learning	This project will increase the understanding of how those working in the NHS and Social Care can: 1) Support the identification of those who are/have been exposed or potentially exposed to carbon monoxide. 2) Protect the most impacted and most vulnerable from the effects of CO poisoning. 3) Help identify and support those living in fuel poverty. 4) Support the understanding of the scale of the problem. Update January 2026: Points 1-4 above remain applicable, and for the new phase of the project will also be applied to FRS's.								
Scale of VCMA Project and SROI Calculations, including NPV	<table border="1"> <tr> <td>Project cost:</td><td>£190,850</td></tr> <tr> <td>5 year forecast gross social value</td><td>£3,747,068.80</td></tr> <tr> <td>5 year forecast social net present value (minus project cost)</td><td>£3,556,218.80</td></tr> <tr> <td>5-year net SROI figure per £1 spent</td><td>£18.63</td></tr> </table> Until such time that the industry wide SROI framework tool is completed, Cadent's SROI calculator developed in support with Sia Partners was used to calculate this projects SROI figures. The calculation is based on the number of avoided (as a result of CO education being provided) CO deaths, A&E visits, long term hospital stays and cost of time off work due to injury. Once the new industry standard SROI framework is	Project cost:	£190,850	5 year forecast gross social value	£3,747,068.80	5 year forecast social net present value (minus project cost)	£3,556,218.80	5-year net SROI figure per £1 spent	£18.63
Project cost:	£190,850								
5 year forecast gross social value	£3,747,068.80								
5 year forecast social net present value (minus project cost)	£3,556,218.80								
5-year net SROI figure per £1 spent	£18.63								

rolled out and in use this forecast will be recalculated, and the PEA updated accordingly.

Update January 2026:

The GDNs worked with leading social impact research consultancy SIRIO Strategies on the development of the Industry Standard Social Value Framework and supporting GDN Rulebook. We have used that GDN Rulebook to carry out an assessment of the financial and wellbeing outcomes applicable to the additional services and outcomes for vulnerable households incorporated in this partnership update. Following an assessment of the predicted outcomes we forecast a positive net Social Return on Investment of £1.74. This calculation was completed using the following:

- 22,000 customers receiving one to one CO safety information via GP surgeries and FRS.
- 578 professionals receiving role specific CO training
- 2,200 customers being signposted to the PSR via GP's and FRS.

Project cost:	£91,180
Gross present value	£249,921.95
Net present value	£158,741.95
SROI figure per £1 spent	£1.74

The revised SROI for the whole project combined is £13.17. See combined data table below:

Project cost:	£282,030
Gross present value	£3,996,991
Net present value	£3,714,961
SROI figure per £1 spent	£13.17

Update February 2026:

The GDNs worked with leading social impact research consultancy SIRIO Strategies on the development of the Industry Standard Social Value Framework and supporting GDN Rulebook. We have used that GDN Rulebook to carry out an assessment of the financial and wellbeing outcomes applicable to the additional services and outcomes for vulnerable households incorporated in this partnership update.

It is worth noting that the benefits of this implementation phase go beyond what GDNs currently measure, however, based on our current methodology this phase generates an additional positive SROI and following an assessment of the predicted outcomes we forecast a positive net Social Return on Investment of £0.28. This calculation was completed using the following:

- 300 midwives trained
- 45,239 conversations
- 1,930 receiving FRS home safe and well visits
- 4,608 reading CO healthcare publications (18,000 with 25.6% retention)
A 25% attribution rate was applied to the SROI calculation for the CORT contribution

Project cost:	£108,812.00
Gross present value	£139,690.24
Net present value	£30,854.24
SROI figure per £1 spent	£0.28

The revised SROI for the whole project combined is £9.58 See combined data table below:

Project cost:	£390,842.00
Gross present value	£4,136,681.24
Net present value	£3,745,815.24
SROI figure per £1 spent	£9.58

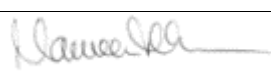
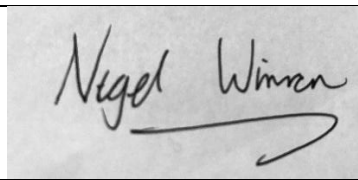
VCMA Project Start and End Date

January 2024 – April 2026.

	Development and piloting phase by December 2024, then with ongoing data to be provided up until April 2026. Update January 2026: Development and piloting phase of the additional modules will be completed by end of March 2026. Update February 2026: Work required to deliver the implementation phase will be completed during March 2026.
Geographical Area	Development, pilot, and early implementation across England, with engagement across all four Nations at the review stage prior to UK wide roll out.
Internal governance and project management evidence	The project will be led by the Director and overseen by a multi-agency steering group including the GDNs. Each element of the work will have a nominated lead who will be supported by a small group of key professionals that will form task and finish groups for each module. The leads will report to the Director and the task and finish groups will report into the steering group. Update January 2026: The additional modules developed as part of this update will comply with the same governance and project management as the original set of modules as detailed above. Update February 2026: The implementation will comply with the same governance and project management as above.

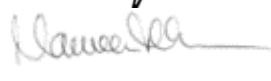
Gas Network Vulnerability and Carbon Monoxide Allowance (VCMA) Governance Document - PEA Control Table

In order to ensure that a VCMA project is registered in accordance with the Ofgem VCMA governance document (incl. project eligibility assessment), the below table should be completed as part of the project registration process.	
Stage 1: GDN Collaboration Group PEA Review Date completed: Review completed by: Job title:	
GDN:	Name(s):
Cadent	Suzanne Callington Updated February 2026 – 5/3/26
NGN	Katie Wynd Updated February 2026 – 10/3/26
SGN	Dan Edwards Updated February 2026 – 4/3/26
WWU	Sophie Stone Updated February 2026 – n/a
Stage 2: GD2CVG Panel Review Date review completed: Review completed by: Job title:	
GDN:	Name(s)
Cadent	Gemma Norton Updated February 2026 - 5/3/26
NGN	Jill Walker Updated February 2026 – 10/3/26
SGN	Kerry Potter Updated February 2026 – 11/3/26
WWU	Nigel Winnan Updated February 2026 – n/a
Step 3: Participating GDN individual signatory sign-off	

GDN	Name(s)	Signature(s)	Date
Cadent:	Phil Burrows		30/01/24
NGN:	Eileen Brown		30/01/24
SGN:	Maureen McIntosh		19/01/24
WWU:	Nigel Winnan		02/02/2024

Update January 2026

Step 3: Participating GDN individual signatory sign-off

GDN	Name(s)	Signature(s)	Date
Cadent:	Phil Burrows		28.01.26
SGN:	Maureen McIntosh		12/02/26

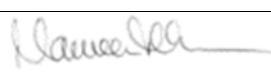
Step 4: Upload PEA Document to the Website & Notification Email Sent to Ofgem (vcma@ofgem.gov.uk)

Date that PEA Document Uploaded to the Website:

Date that Notification Email Sent to Ofgem:

Update February 2026

Step 3: Participating GDN individual signatory sign-off

GDN	Name(s)	Signature(s)	Date
Cadent:	Phil Burrows		10/3/26
NGN	Greg Dodd (on behalf of Eileen Brown)		12/03/26
SGN:	Maureen McIntosh		13/03/26

Step 4: Upload PEA Document to the Website & Notification Email Sent to Ofgem (vcma@ofgem.gov.uk)

Date that PEA Document Uploaded to the Website:
Date that Notification Email Sent to Ofgem: