Inverse Care Law Programme

Update Report

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Executive Summary

This report has been prepared on behalf of the Prevention and Well-being Workstream of the Primary Care Strategic Programme. It provides a review of the Inverse Care Law (ICL) Programme in Wales which was previously overseen by the Inverse Care Law Programme Development Board and the National Inverse Care Law Programme Board. It is an update to a 2019 companion report which is available here: https://primarycareone.nhs.wales/files/sharing-practice/icl-prog-final-report-v12-sept-2019-pdf/.

- The ICL Programme aims to improve the prevention and management of chronic conditions and reduce premature mortality by offering a cardiovascular disease risk assessments (CVRA) also referred to as a "heath check" to eligible people, targeting more deprived communities with highest risk of cardiovascular disease (CVD).

- The Inverse Care Law (ICL) Programme of cardiovascular disease risk assessments (CVRA) commenced in Aneurin Bevan (AB) and Cwm Taf (CT) University Health Boards (UHBs) in 2015. Whilst having a shared objective of reducing health inequalities, the models in AB and CT differed with regard their eligibility criteria, method of selection, CVRA software and venue of CVRA delivery - local community venues in AB and patients' general practice in the CT model. Please see table 1 pages 29-32 of the 2019 companion report (linked above) for full information on the different models used in AB and CT.

- As part of a national programme roll-out, pilot CVRA projects were also established in Hywel Dda (HD) and Abertawe Bro Morgannwg (ABM) UHBs from 2016-2018, based on the AB community venue model. The ABM pilot in Bridgend North cluster was paused and restarted as a general practice delivery model when UHB boundaries changed and the cluster transferred to the newly created Cwm Taf Morgannwg (CTM) UHB in April 2019.

- Eligible General Practitioner (GP) registered patients (aged 40-74 in CT and 40-64 in AB), not otherwise known to have CVD were invited to attend a CVRA with a trained Health Care Support Worker (HCSW). During the face to face consultation, a 10-year risk of a cardiovascular event (QRisk2 score) was calculated from measurements taken (BMI, BP, HbA1c, pulse, Lipids and Cholesterol) and information provided by the individual (family history, smoking status, physical activity, alcohol consumption); the results were discussed with the patient together with advice given on how to reduce the risk and any support available to achieve this.

- Whilst the main focus of the CVRA was lifestyle risk reduction, the Health Care Support Worker also undertook measurements for clinical risk factors, which triggered clinical referral to Primary Care if indicated.

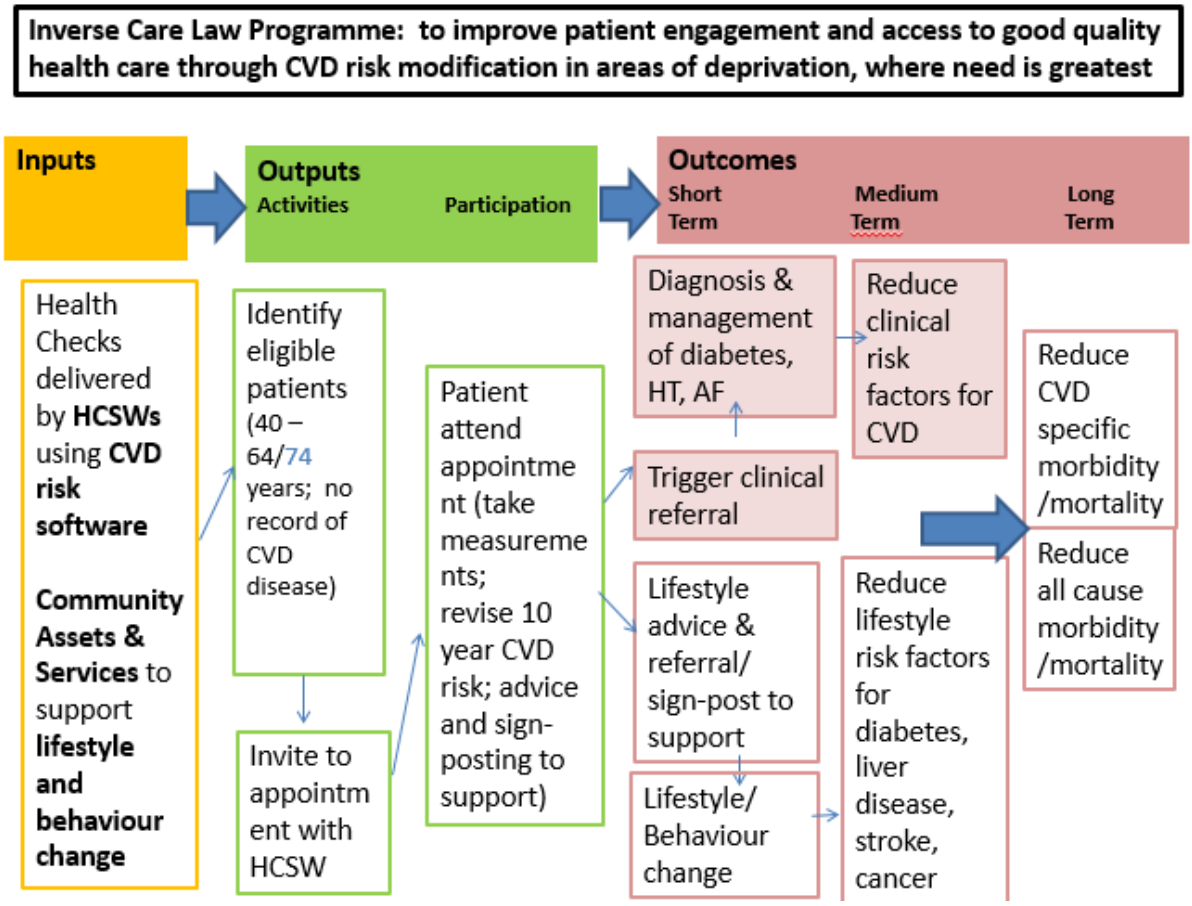

Figure 1: Logic Model of ICL CVRA Programme

- The COVID-19 pandemic paused both the ICL CVRA programme patient-facing activity, and also the work on the ICL programme update report including the review of the published evidence and SAIL data analysis in March 2020. Work on the ICL Programme update report was restarted in Autumn 2020 following this delay, and CVRA health checks restarted in CTM in August 2021.

- A previous report on the ICL Programme for the period 2013-2018 was produced for Welsh Government in 2019 and contained three recommendations, which form the basis of this update report. The recommendations were:

    - Recommendation1:
      Establish a detailed next phase of the national Inverse Care Law Programme in Wales that consolidates the model based on the valuable learning to date; the re-focused programme will inform the Primary Care Strategic Programme and contribute to the realisation of the prevention vision set out in a Healthier Wales.

    - Recommendation 2:
      Explore the challenges posed by the evaluation of the programme with particular focus on addressing the weaknesses in the data architecture underpinning the programme.

- Recommendation 3:
  Explore opportunities for health economic evaluation of the programme and longitudinal research drawing on the strength of the SAIL Databank.

This update report includes:

- A review of the published international evidence for CVD health check programmes.
- Analysis of programme data from 2013-2019 held in the SAIL Databank where available for AB, CT and Bridgend.
- Reflections on the ICL Programme from both AB and CTM UHBs.
- Key learning points and Conclusions.

Evidence Review

- The evidence review **was mainly based on studies which examined the NHS Health Check (NHSHC) Programme in England,** as they made up the majority of the published evidence. The NHS England model differs in that it is a universal health check programme and is not targeted to reduce health inequalities in deprived communities.

- The review found that the evidence is not clear on the impacts or optimum model for CVD health check programmes:
  - It is not clear if CVD health check programmes have health benefits to people that attend them, with mixed results on their clinical benefits including diagnosis of CVD risk factors, treatment of CVD risk factors, diagnosis of CVD and mortality.
  - However, it is worth noting that whist there is no evidence for the health benefits of CVD health check programmes themselves, the clinical and lifestyle interventions which occur following a CVD health check are evidence-based and informed by NICE guidance.
  - Modelling studies found that it is unclear if CVD health check programmes have a positive health economic impact, although it is likely that programmes that target higher risk or more deprived groups are more cost-effective. However, these modelling studies found that CVD health check programmes still may not be cost-effective when considering the opportunity cost of running a CVD health check programme at the expense of other medical or social care activities.
  - There was no evidence which specifically examined whether CVD health check programmes could address health inequalities.
  - Most studies show that women and older people have a higher uptake of CVD health check programmes, with some evidence that people who attend NHS England health checks are healthier than people who are invited but do not to attend.

- There is debate around the eligibility criteria, with some studies stating that CVD screening programmes should not solely target older people as age is not a modifiable risk factor, with others demonstrating that programmes with a higher age threshold, or which have eligibility criteria to include people with pre-existing conditions such as hypertension, have the greatest population health gains due to increased identification and treatment of risk factors and clinical conditions.

- There is no conclusive evidence on the venue for health checks or the preferred CVD risk calculation tool.

- There needs to be consistent clinical and lifestyle follow-up after a CVD health check in order to improve the health impacts of CVD health check programme. This includes medical follow up of clinical risk factors to start medication as appropriate, and consistent and adequately funded lifestyle management programmes. However, even with appropriate clinical and lifestyle follow-up, there is no conclusive evidence on the population health benefits and economic impact of CVD health check programmes.

- Further research is needed into different CVD health check models to assess their health and economic impacts.

SAIL Data Analysis

- The Secure Anonymised Information Linkage (SAIL) Databank project and data analysis presented in this update report was designed in consultation between Public Health, Primary Care, and Swansea University SAIL teams, building on previous analyses undertaken on this programme's data and an enhanced understanding of data flows. New cascades outlining the stages for moving through the CVRA to lifestyle/ clinical follow-up were created, and used in a revised protocol for the SAIL analysis which was completed in January 2020.

- There were some issues with the data flows and completeness of the primary care data within the SAIL Databank, particularly for AB and Bridgend (BRID) which necessitated additional steps and/ or impacted on the analyses that could be undertaken:

    - Data extracted from primary care records into SAIL for CVRA and subsequent clinical activity data in CT was used in the analyses as it was deemed sufficiently complete when compared to programme data collected locally. This was not the case in AB where invitation and attendance data had to be separately imported from the commercial software system employed in the community CVRAs. It was not possible due to staff redeployment to COVID-19 response to undertake the additional work required to also obtain the necessary clinical activity data from primary care records to complete the clinical and lifestyle cascade analyses extraction for AB.

    - There were inconsistencies in BRID data, particularly around invites and uptake data. There was no means of retrospectively correcting this for the analyses.

- This means that the SAIL analyses presented in this report uses:
    - Data from AB, CT and BRID for attendance at CVRA.
    - Data from AB and CT for uptake, but not BRID.
    - Data on the clinical and lifestyle cascades for CT only.

Eligible, invited, attended and uptake

- 10.5% of people in AB, CT and BRID who would have been eligible for a CVRA based on their age and GP registered location were ineligible due to pre-existing cardiovascular related conditions.

- Ineligibility due to pre-existing cardiovascular related conditions was statistically significantly higher in BRID and CT at 13% (95% CI 12.5-13.5%) and 11% (95% CI 10.8-11.2%) respectively, compared to AB which had 9.4% (95% CI 9.2-9.6%) of people ineligible due to pre-existing conditions[1]. This is likely to be partly due to the different eligibility criteria, with people up until 74 being eligible in CT compared to 64 in AB.

- The reach of the ICL programme was defined as:
  The number of people who attended an ICL Health Check /
  The number of people who were eligible for an ICL Health Check

- The reach of the CVRA in AB and CT programmes combined was 13.6%.

- The uptake of the ICL programme was defined as:
  The number of people who attended an ICL Health Check /
  The number of people who were invited to an ICL Health Check

- The uptake of the CVRA in the AB and CT programmes combined was 49.2%.

- The uptake was statistically significantly higher in AB at 50.7% (95% CI 50.1-51.3) compared to 47.7% (95% CI 47.0-48.3) uptake in CT. There could be many reasons for this, but this could be potentially due to their different delivery models.

- 74.9% who attended CVRA across AB, CT and BRID lived in quintiles 1 (most deprived) and 2 (next most deprived). This is in line with the aim of the ICL programme, to target deprived areas as a means of reducing health inequalities.

- Uptake for eligible people living in the three most deprived quintiles (Q1, 2 and 3) was over 45% in AB and CT. Uptake in AB, which specifically targets people living in Q1 and Q2, was highest in Q1 and Q2. Uptake in CT, which did not specifically target people living in the most deprived quintiles, but reflected deprivation in its pre-CVRA QRISK2 estimate approach was highest in Q3 and 4.

- Uptake for CT and AB combined increased with age, from a 43.9% uptake in 40-44 year olds to a 71.2% uptake in 70-74 year olds, which is consistent with findings from other studies.

[1] 95% confidence intervals (95% CI) were calculated for a range of ICL Programme data from SAIL. 95% confidence intervals can be interpreted as we are 95% confident that the true result lies between the upper and lower confidence intervals. Results are statistically significantly different when the 95% confidence intervals do not overlap.

- However, the number of people who attended a CVRA was highest in the 45-49-year-old age groups. 4,332 people aged 45-49 in AB and CT attended a CVRA out of 9,273 people who were invited, and uptake of 46.7%. This is because many more people were invited and attended in this age group, even though the uptake was lower.

- Uptake was statistically significantly higher in women at 52% than men at 46.7% for AB and CT combined.

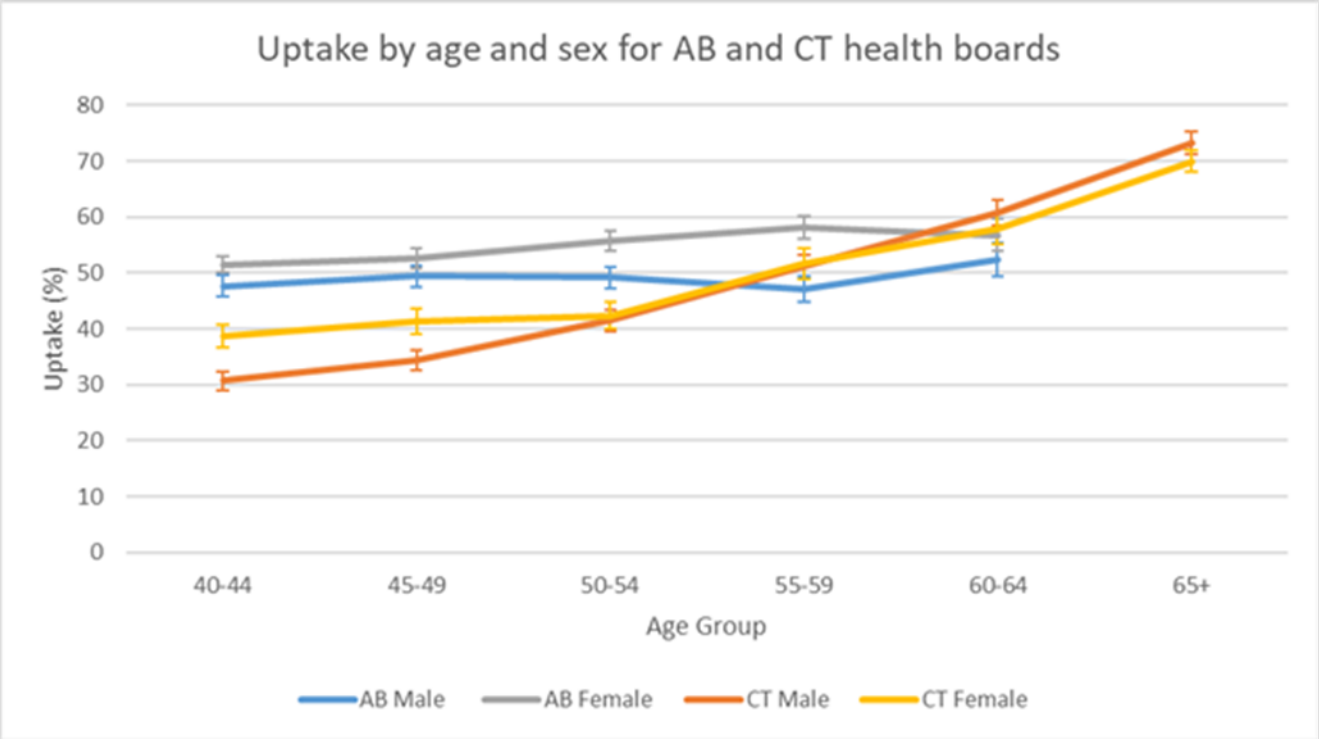

Figure 2: Uptake by age and sex for AB and CT

- Both AB and CT health boards show a general pattern of increasing uptake with age for both men and women. This is less marked in AB than CT. The uptake was higher in younger people in AB.

Clinical cascades

The SAIL data analysis included examinations of cascades for the identification and management of both clinical and lifestyle risk factors. Data available for CT only.

There were five clinical cascades:

1. Management of high QRISK2 score.
2. Management of raised HbA1c / raised blood sugar and pre-diabetes.
3. Management of raised blood pressure / hypertension.
4. Management of elevated cholesterol / hypercholesterolaemia.
5. Management of irregular pulse / atrial fibrillation.

		Attended Health Check	QRISK2 10-20%	QRISK2 >20%	HbA1c 42-47	HbA1c >=48	Raised blood pressure	Total cholesterol >7.5	Cholesterol HDL ratio >6	Irregular pulse
CT	n	11,414	4,488	1,702	1,087	246	3,759	93	987	249
	%	N/A	39.3 (38.4-40.2)	14.9 (14.3-15.6)	9.5 (9.0-10.1)	2.2 (1.9-2.4)	32.9 (32.1-33.8)	0.8 (0.7-1.0)	8.6 (8.2-9.2)	2.2 (1.9-2.5)

Table 1: Summary of number and percentage of clinical risk factors identified at ICL Health Check in CT

- 39.3% of people who attended a CVRA in CT had a QRISK2 score (risk of cardiovascular event in next 10 years) of 10-20% and 14.9% had a QRISK2 >20%. This means that over half (54.2%) had an elevated QRISK2 of either 10-20% or >20% which demonstrates that the majority of people attending for CVRA have an elevated risk of CVD and substantial potential to benefit from intervention.

- The most common individual clinical risk factors identified at health check in CT was raised blood pressure (32.9%).

- The least common clinical risk factors identified at health check in CT were total cholesterol >7.5 (0.8%), HbA1c >=48 (2.2%) and irregular pulse (2.2%).

		Attended Health Check	QRISK2 10-20% and started statin 12 months	QRISK2 >20% and started statin 12 months	HbA1c >=48 and diagnosed diabetes 12 months	Raised blood pressure and started anti-HTN 12 months	Total cholesterol >7.5 and diagnosed FH 12 months	Cholesterol HDL ratio >6 or total cholesterol >7.5 and started statin 12 months	Irregular pulse and diagnosed AF 3 months
CT	n	11,414	611	383	130	416	<5	240	14
	%	N/A	5.4 (5.0-5.8)	3.4 (3.0-3.7)	1.1 (1.0-1.4)	3.6 (3.3-4.0)	N/A	2.1 (1.9-2.4)	0.1 (0.1-0.2)

Table 2: Summary of number and percentage of clinical outcomes identified following an ICL health check in CT

- The most common clinical outcomes identified following a health check were elevated QRISK2 10-20% and started on statin (5.4%) and raised blood pressure and started on anti-hypertensive medication (anti-HTN) (3.6%).

- The least common clinical outcomes identified following a health check were raised total cholesterol >7.5 and diagnosed with familial hypercholesterolemia (FH) (N/A due to <5 people having clinical outcome) irregular pulse and diagnosed with AF within 3 months (0.1%).

- This indicates that some clinical risk factors that are identified at the CVRA are more likely to lead to a clinical diagnosis or medication than other risk factors. This could be because these risk factors are more accurate clinical markers for their relevant condition, these risk factors or conditions are more likely to require medication, or because of informed patient choice to accept medication for these conditions.

Lifestyle cascades

There were four lifestyle cascades:

1. Smoking and smoking cessation.
2. Overweight or obese and weight management.
3. Physical inactivity and exercise referral.
4. Excess alcohol consumption and alcohol services.

		Attended Health Check	Current Smoker	BMI 25-30	BMI >30	Low physical activity	High alcohol Audit >=8	Very high alcohol Audit >=16
CT	n	11,414	2,323	5,085	3,782	7,855	1,987	96
	%	N/A	20.4 (19.6-21.1)	44.6 (43.6-45.5)	33.1 (32.3-34.0)	68.8 (68.0-69.7)	17.4 (16.7-18.1)	0.8 (0.7-1.0)

Table 3: Summary of lifestyle risk factors identified by Health Checks in CT

- The most common lifestyle risk factors identified were low physical activity (68.8%), BMI 25-30 (44.6%), and BMI >30 (33.1%). 77.7% of people were either overweight or obese.

- 20.4% of people were identified as current smokers. 17.4% were identified as having high alcohol intake (Audit C score >=8) and 0.8% were identified as having a very high alcohol risk Audit C score >=16.

		Attended Health Check	Smoker and given smoking cessation advice	Overweight or obese and given weight management advice	Low physical activity and given physical activity advice	Alcohol audit >=8 and given alcohol advice
CT	n	11,414	2,278	7,658	7,217	1,786
	%	N/A	20.0 (19.2-20.7)	67.1 (66.2-68.0)	63.2 (62.3-64.1)	15.6 (15.0-16.3)

Table 4: Summary of lifestyle advice given following Health Checks by Health Board

- The most common lifestyle advice identified were overweight or obese and given weight management advice (67.1%) and low physical activity and given physical activity advice (63.2%).

- The least common lifestyle advice identified were smoker and given smoking cessation advice (20.0%) and high alcohol (audit >=8) and given alcohol advice (15.6%).

		Attended Health Check	Smoker and smoking cessation referral	Overweight or obese and referred to weight management service	Low physical activity and referred to NERS	Low physical activity and completed NERS*	Alcohol Audit >=16 and referred to alcohol service
CT	n	11,414	1,101	947	1,678	245	33
	%	N/A	9.6 (9.1-10.2)	8.3 (7.8-8.8)	14.7 (14.1-15.4)	2.1 (1.9-2.4)	0.3 (0.2-0.4)

Table 5: Summary of lifestyle programme referral and completion following Health Checks in CT Data for completing NERS is from NERS dataset which was linked with the ICL dataset in SAIL*

- The most common lifestyle programmes referred to were low physical activity and referred to exercise referral programme (14.7%), smoker and referred to smoking cessation (9.6%), and overweight or obese and referred to weight management (8.3%).

- Data from the National Exercise Referral Scheme (NERS) was linked to ICL data in SAIL. This showed that 7.4% of people were referred to NERS, whilst 2.1% completed NERS within 12 months.[2]

- There are multiple reasons why many people who were identified as having a lifestyle risk factor at the CVRA were not recorded as being referred to lifestyle programmes. Only some of the people with the lifestyle risk factor were eligible for lifestyle programme referral, for example there are different referral criteria for specific NERS programmes, based on low levels of physical activity and whether this is combined with other risk factors for chronic disease. There were also limited availability of lifestyle programmes for some risk factors, such as weight management services. People were also able to decline referral to a lifestyle service.

[2] The data on referral to NERS is different to the data on referral to exercise referral schemes, as the exercise referral scheme data is taken from primary care record of activity following the health check, whilst the NERS data is taken directly from the NERS dataset

Effect of age, sex and deprivation on clinical and lifestyle cascades

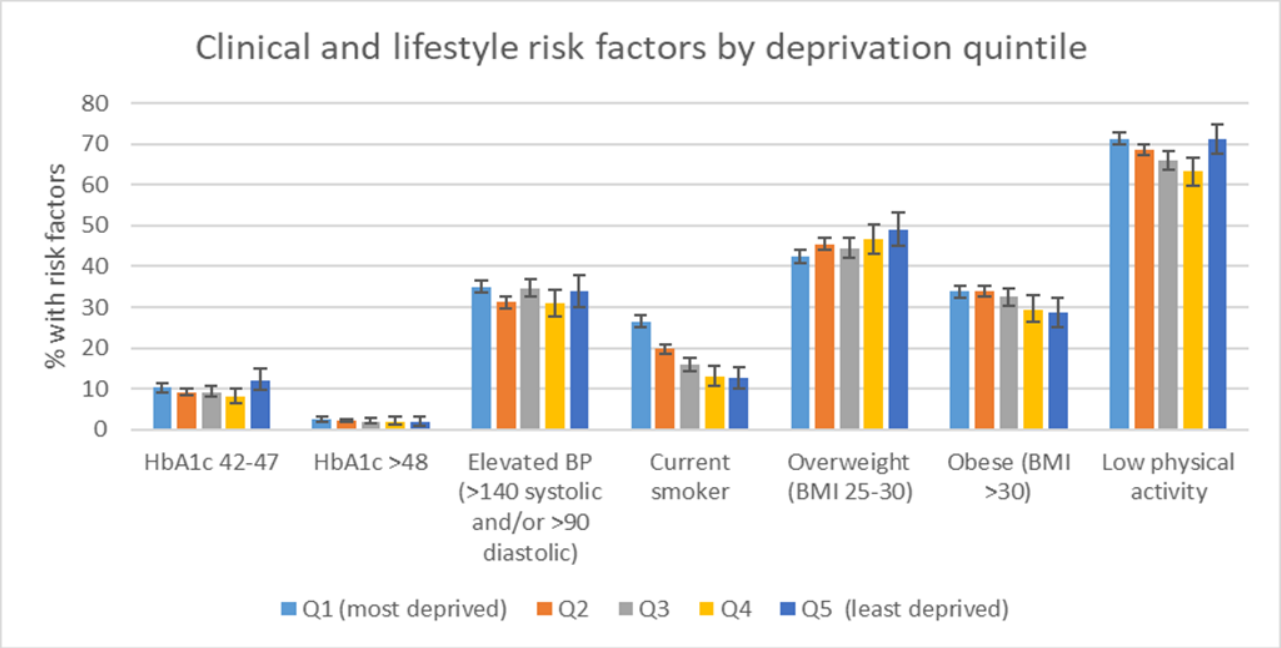

Figure 3: Clinical and lifestyle risk factors by deprivation quintile for CT

- There is a clear relationship between smoking and deprivation quintile, with smoking being statistically significantly higher in people in the most deprived quintiles (Q1 and Q2) compared to the least deprived quintiles (Q4 and Q5). 26.5% of people in Q1 were current smokers compared to 12.5% of people in Q5.

- The proportion of people who were overweight was lowest in Q1 (most deprived) and highest in Q5 (least deprived), whilst the proportion of people who were obese was lowest in Q5 (least deprived) and highest in Q1 (most deprived). However, the difference is only statistically significant between Q1 and Q5 for overweight people, and not statistically significantly different between the different quintiles for obese people.

- There is no clear pattern for the clinical risk factors of elevated HbA1c 42-47 or >48 or elevated BP (>140 systolic and/or >90 diastolic).

- Low physical activity showed a similar relationship of higher levels of physical inactivity in Q1 (most deprived) which slowly decreased to Q4 (second least deprived). However, the highest levels of physical inactivity were in Q5 (least deprived).

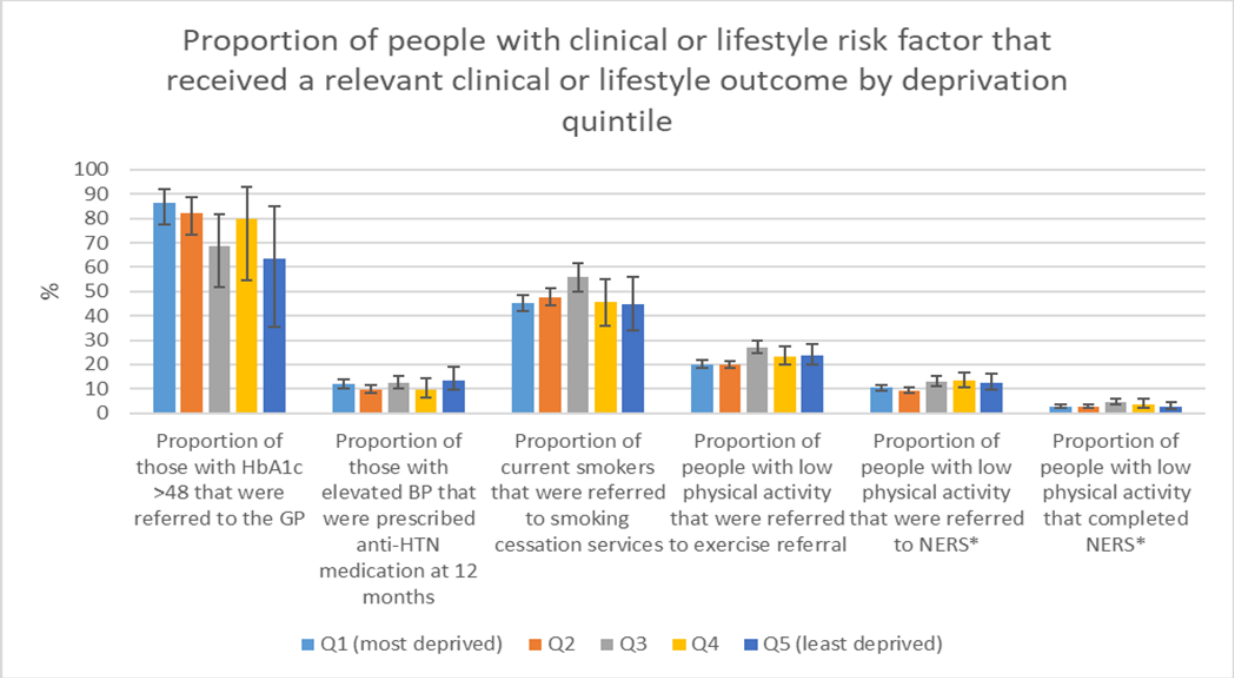

Figure 4: Proportion of people with clinical or lifestyle risk factor that received a relevant clinical or lifestyle outcome by deprivation quintile in CTM

- There is no clear relationship between deprivation quintiles and the proportion of people with any of the clinical or lifestyle risk factors investigated and the relevant clinical or lifestyle outcomes. This highlights, that whilst there are differences in clinical and lifestyle risk factors by deprivation quintile, there is no evidence of an Inverse Care Law for outcomes following the identification of these risk factors.

Key Learning Points

There are a number of Key Learning Points from the "*Inverse Care Law Programme Update Report 2021*". Many of these (1-10) were first documented in the 2019 programme update report.
The programme has demonstrated:

1. The feasibility and value of utilising an affordable, and readily available and appropriately-trained primary care-based workforce resource to enhance the identification of previously unrecognised CVD risk and signpost into existing lifestyle and/or clinical interventions aiming to modify such risk.

2. That many preventive activities that were traditionally performed by registered primary care staff can be successfully taken on by HCSWs (or other similar roles) working within a prudent, robust framework of governance, training and management. The success of this approach has possible application to many other areas of primary care transformation through the primary care strategic programme.

3. Successful development and delivery of a social model of CVRA delivered by appropriately trained HCSWs was achieved, providing capability and capacity to GP practices to implement national guidance (NICE CG181) with pace and at scale.

4. The ability to link into Clinical Pathways with appropriate clinical governance arrangements.

5. Feedback from individuals who attended a CVRA, as reported in previous 2019 report, found that they like the experience, although 50.8% of those invited do not take up the offer, which remains a key area for further exploration.

6. The feasibility of undertaking CVRA with full use of software in GP practice premises, other health care settings and community venues with minimal difference in uptake, but sufficient to warrant further exploration.

7. That models developed in one health board can be adapted and implemented successfully in other health boards. However, the imperative to roll out the programme before a full evaluation had been conducted meant that opportunities were missed to strengthen the programme at its foundation and in its linkages with services/initiatives aimed at changing disease risk.

8. Development of a range of products:
    - Training programmes and operational manuals for Health Care Support Workers undertaking CVRA in conjunction with the British Heart Foundation (BHF).
    - CVRA Software tailored for Wales – for use in both Practice and Community settings
    - Publicity and patient materials

9. Primary care and public health working together with wider partners with shared objective of improving population health; providing opportunity for practices to make contact with

patients who otherwise wouldn't attend the surgery or take interest in their health and wellbeing; providing additional capacity to practices enabled them to take an active interest in CVD prevention and social referral.

10. The availability of services to support lifestyle change is key – lack of low level weight management support service is a serious concern. This will hopefully improve moving forward due to the significant national investment in the All Wales Weight Management Pathway and the All Wales Diabetes Prevention Pathway.

Evaluation

The literature review, which was predominantly based on studies of the NHSHC in England, showed that:

11. Overall the published evidence is not clear on the impacts or optimum model for CVD health check programmes.

12. It is not clear if CVD health check programmes have health benefits to people that attend them, with mixed results on their clinical benefits including diagnosis of CVD risk factors, treatment of CVD risk factors, diagnosis of CVD and mortality.

13. It is also unclear if they have a positive health economic impact, although it is likely that programmes that target higher risk or more deprived groups are more cost-effective. However, they still may not be cost-effective when considering the opportunity cost of running a CVD screening programme at the expense of other medical or social care activities.

14. The literature review did not find any evidence on the effect of CVD health check programmes on health inequalities.

15. There is also mixed evidence around an optimum model for CVD screening programme, including the eligible population, location, clinical and lifestyle follow-up.

16. There is debate around the eligibility criteria, with some studies stating that screening programmes should not solely target older people as age is not a modifiable risk factor, with others demonstrating that programmes with a higher age threshold, or which have eligibility criteria to include people with pre-existing conditions such as hypertension, have the greatest population health gains due to increased identification and treatment of risk factors and clinical conditions.

17. Studies into clinical and lifestyle follow up highlight the need for consistent follow-up after a CVD health check in order to improve the health impacts of CVD health check programme. This includes medical follow up of clinical risk factors to start medication as appropriate, and consistent and adequately funded lifestyle management programmes. However, even with

appropriate clinical and lifestyle follow-up there is no conclusive evidence on the population health benefits and economic impact of CVD health check programmes.

18. Further research is needed into different CVD screening models to assess their health and economic impacts.

The ICL programme SAIL Analyses:

19. Provided a unique experience of using SAIL to evaluate a complex intervention where:
    a. Parallel local monitoring of data provided comparison between SAIL and local data.
    b. Data governance agreement with practices and data transmission posed challenges, which were exacerbated by staff being redeployed during the COVID pandemic.
    c. The operation of the ICL health check programme varied between health boards and developed over time, adding to the complexity of evaluating the programme.
    d. The evaluation was led by the Public Health and Swansea University SAIL team, with input from GPs and the ICL health check teams. This has allowed for greater insight into what happens during and following a health check, and has made for a better informed data extraction and analyses. However, it is acknowledged that the SAIL analyses could have further benefited from Clinical Informatics input throughout its duration.

20. The ICL programme delivered in excess of 23,000 cardiovascular risk assessments between February 2015 and December 2019.

21. The ICL programme successfully targeted inverse care by reaching more deprived populations, 74.9% patients attending CVRA across AB, CT and BRID lived in quintiles 1 (most deprived) and 2 (next most deprived).

22. Uptake was statistically significantly higher for people aged 45-54 in AB, which uses community venues with extended opening hours for CVRA, compared to CT which uses GP venues. This may suggest that community venues with more flexible appointments may be preferable to people in younger age groups.

23. Over half the people that attended a CVRA had increased risk of CVD as measured by their QRISK2 score. This indicates that the ICL Programme is targeting a higher risk population for CVD risk, and the importance of ensuring that appropriate and up-to-date data is held to accurately assess CVD risk in the population.

24. The ICL CVRA identified lifestyle and clinical risk factors and the Health Care Support Worker provided lifestyle advice, directing patients to further clinical or lifestyle follow-up accordingly. However, the SAIL analyses highlighted inconsistency in the follow-up of lifestyle and clinical risk factors, and the implementation decay of the ICL Programme. The majority of people who were identified as having a lifestyle risk factor as determined by the

risk assessment tools used in the CVRA were not documented as being referred to a lifestyle service at the time of the CVRA. There could be many reasons for this:

a. the risk factor or referral not being appropriately recorded during the CVRA
b. the person declining referral to the lifestyle service.
c. the person not being eligible for lifestyle services (i.e. not meeting referral criteria). Also there could be inadequate lifestyle support provision available, which was found to be the case for weight management support during the study period.

25. At this current time, we are not able to capture the results /risk modification outcomes from lifestyle referrals and activity in SAIL including;
    a. Weight loss following referral to and participation in a weight management programme
    b. Number of people who have quit smoking following referral to *Help Me Quit* or other programmes including Community Pharmacy and self-help
    c. Whilst data from the NERS database was able to report engagement with and completion of NERS programme we were not able to capture increased physical activity/weight loss following referral and participation in the NERS programme or other local programme.

    The data linkage to these data sources held by PHW were hampered by governance issues which could not be resolved in the necessary timeframe for data analysis.

26. Ultimately the evaluation did not have sufficient longitudinal data to demonstrate whether the ICL programme successfully modified risk or impacted health inequalities that arise from CVD mortality at a population level. There is a case for the continuation of the ICL programme with extended evaluation. Longitudinal outcome data at individual patient level (using SAIL) and population level (using routinely published data) would be required to be examined to establish whether the programme has successfully modified risk of CVD and led to reduced CVD (and all cause) morbidity and mortality.

Conclusions

Health Inequalities and Programme design

- All Lifestyle and clinical intervention programmes should consider their impact on health inequalities.
- In designing and developing an equitable intervention delivery model this would include consideration of:
    - Targeting the intervention to those with greater need rather than universal offer;
    - Making the intervention more accessible to the target groups by addressing barriers to uptake e.g. by offering flexible appointments in suitable venues that enable extended hours of operation, identifying and meeting specific needs of local populations

- The CVRA in its current form provides a tested case-finding model for a range of cardiovascular conditions and their risk factors. There should be a full exploration of how the CVRA model developed in the ICL programme could provide an integrated and co-ordinated approach to case-finding for programmes targeting diabetes prevention (AWDPP) and stroke prevention (through identification and management of atrial fibrillation and hypertension).
- The application of the model could be extended to a wider basket of chronic conditions and their risk factors. This warrants further exploration.
- Where programmes continue to use the CVRA model or similar case-finding approach, the learning should be captured and shared.
- When designing lifestyle and clinical interventions, attention should be given to the availability of services to support the identified needs of individuals

Cardiovascular Risk Assessment

- To deliver the CVRA model as a method of case finding, at scale across Wales, due regard should be given to the learning from this programme and ongoing best evidence from other models. This must include the following system considerations:
    - Availability of lifestyle and clinical support for individuals identified with cardiovascular risk at CVRA. Essential to undertake early mapping of the available lifestyle risk modification services post CVRA and address any critical gaps in provision, particularly weight management
    - Clear pathways for accessing non-medical support and connecting to communities through social prescribing
    - A comprehensive financial framework to support the delivery of the programme in various settings including primary care
    - Design, functionality and availability of CVRA Software that can interact fully/ be integrated with the patient record held in Primary Care Clinical Systems
    - Training of HCSW staff
    - Robust monitoring of outcomes and evaluation

- Scope to reflect in the model additional population health challenges post-COVID-19 including capacity in primary care

Programme Evaluation

- Evaluations of complex interventions should have a clear programme level oversight structure to ensure fidelity to the original plan and allow for consistent communication and feedback loops between teams leading on programme delivery and evaluation
- Plans for programme evaluation should be clearly defined at the outset giving due consideration to the outcomes to be measured, data required and complexity of model. Particular attention must be given to complex interventions, where multiple models are being evaluated or where the model is likely to change over time.
- There should be robust and consistent engagement with stakeholders to secure their input into the design, delivery, monitoring and evaluation of such programme.

Acronyms

AB: Aneurin Bevan University Health Board

ABM: Abertawe Bro Morgannwg University Health Board

AF: Atrial Fibrillation

BMI: Body Mass Index

BP: Blood Pressure

BRID: Bridgend

CCG: Clinical Commissioning Group

CT: Cwm Taf University Health Board

CTM: Cwm Taf Morgannwg University Health Board

CVD: Cardiovascular Disease

CVRA: Cardiovascular Risk Assessment

FH: Familial Hypercholesterolaemia

GP: General Practitioner

HCSW: Healthcare Support Worker

HD: Hywel Dda University Health Board

HDL: High-Density Lipoprotein

HTN: Hypertension

ICER: Incremental Cost-Effectiveness Ratio

ICL: Inverse Care Law

IMD: Indices of Multiple Deprivation

MI: Myocardial Infarction

NERS: National Exercise Referral Service

NHSHC: NHS Health Check

NRT: Nicotine Replacement Therapy

PREMS: Patient Reported Experience Measure

QALY: Quality Adjusted Life Year

SAIL: Secure Anonymised Information Linkage

TIA: Transient Ischaemic Attack

UHB: University Health Board

WIMD: Welsh Index Multiple Deprivation

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