

## TRAFFORD COUNCIL

**Report to:** Health Scrutiny Committee  
**Date:** 10<sup>TH</sup> March 2021  
**Report for:** Information  
**Report of:** Eleanor Roaf, Director of Public Health

### Report Title

Tackling Health Inequalities in Trafford – focus on diabetes

### Summary

The Covid-19 pandemic has ruthlessly exposed the impact of health inequalities on local populations. The need to tackle the factors which lead to health inequalities is more pressing than ever.

The Council and CCG have recently demonstrated their intention to secure equality for employees, residents and service users with the publication of the joint Corporate Equality Strategy 2021-2025. There is a commitment within the strategy to tackle health inequalities.

This report shows how the Council and CCG, working together with partner organisations, are planning to reduce health inequalities across the borough, focusing on two specific areas of investigation: a chronic physical condition known to be strongly associated with and exacerbated by health inequalities (diabetes mellitus) and a major social determinant of health inequality (housing).

Diabetes mellitus:

- prevention of risk factors – with a focus on how this is being targeted towards the most vulnerable groups
- early diagnosis – including screening opportunities for high risk groups
- management of the condition – with a focus on strategies being used to ensure equality of access to services and the monitoring of complications

### Recommendation(s)

To note the content of this report and the planned actions moving forward.

Contact person for access to background papers and further information:

Name: Jane Hynes (Public Health Programme Manager)

## 1. Background

Trafford has significant and preventable internal health inequalities, and the refreshed 2019 Health and Wellbeing Strategy<sup>i</sup> has reducing these inequalities as its core goal. In addition, the Trafford Council and NHS Trafford CCG Corporate Equality Strategy (2021-2025)<sup>ii</sup> has reducing health inequalities as one of its four objectives.

Over the past year, the Covid-19 pandemic has both exposed and exacerbated existing inequalities within society. As we chart our recovery it is important we seek to understand the impacts on Trafford residents, build on some of the positive transformational change that has occurred rapidly by necessity across our health and care system, and identify effective ways to build back better and fairer. A population health approach is one of the tools that allows us to do this.

The population health approach aims to improve physical and mental health outcomes, promote wellbeing, and reduce health inequalities across a population, and to achieve this we need to consider the wider determinants of health, health behaviours and lifestyles, the places and communities in which we live, and the work of an integrated health and care system. The wider determinants of health are a diverse range of social, economic and environmental factors which impact on people's health.

Diabetes is a significant cause of morbidity and mortality in the UK. In recent decades the prevalence of diabetes has increased in the UK, driven largely by increases in obesity, and there are currently estimated to be 4.7 million people in the UK with diabetes.

In this report we will look at the prevention, early identification and management of diabetes, a condition whose risk factors have a strong association with deprivation gradients<sup>iii</sup>. It is estimated that 90% of people with diabetes have type 2<sup>iv</sup>, and for the purpose of this report, when discussing prevention of diabetes we are referring to type 2 diabetes as type 1 is not preventable. Indeed, more than half of cases of type 2 diabetes could be delayed or prevented with early detection and living healthily.

There are a number of key risk factors<sup>v</sup> for developing type 2 diabetes:

- Age
- Family history
- Ethnicity
- BMI
- High blood pressure

In addition, the following also increase the risk:

- Smoking
- Gestational diabetes

- Polycystic Ovary Syndrome (PCOS)
- Mental health conditions
- Sedentary lifestyle
- Alcohol
- Poor sleep

## 2. Local picture

In Trafford, the prevalence of diagnosed diabetes for the period 2019/20 is 6.5% of the population aged 17 or older (it should be noted that this includes all types of diabetes). The estimated local prevalence of diabetes, including both undiagnosed and diagnosed, was 8.2% according to the most recent data (2017), therefore there is a cohort of Trafford residents who we can reasonably expect to have undiagnosed diabetes. In addition, it is estimated that the prevalence of non-diabetic hyperglycaemia (NDH – sometimes referred to as pre-diabetes) is 10.9%. Therefore, it is likely that nearly 1 in 5 adults (19.1%) in Trafford are either diabetic, or pre-diabetic, as can be seen from the data below<sup>vi</sup>.

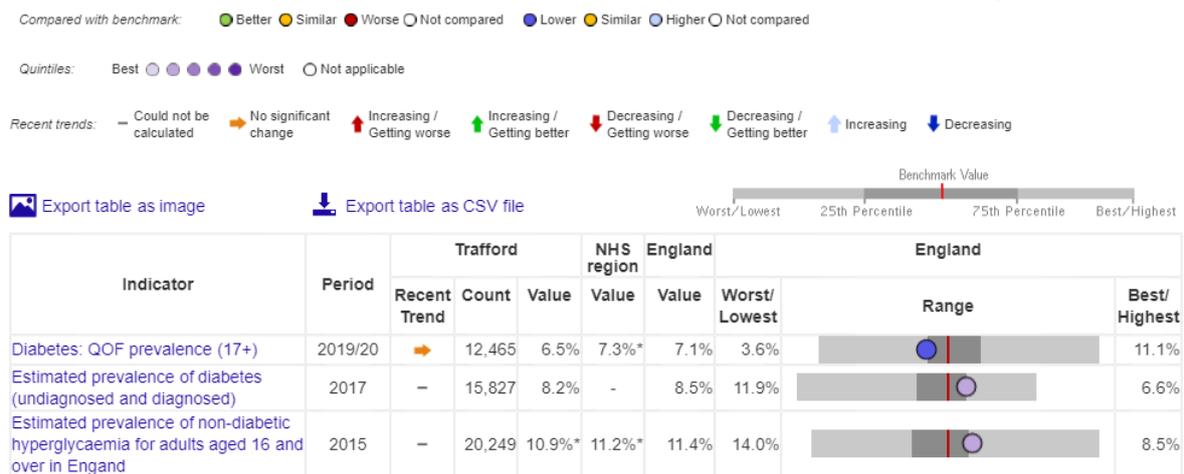


Figure 1. Prevalence of diabetes in Trafford.

The estimated prevalence of diabetes is expected to increase steadily over the next fifteen years (see figure 2 below). In addition, modelling has been carried out by Public Health England to look at how increases (or decreases) in obesity prevalence may impact on the prevalence of diabetes. If obesity levels were to rise by 3% every 5 years, then it estimates that by 2035 prevalence of diabetes would increase to 9.7%.<sup>vii</sup>

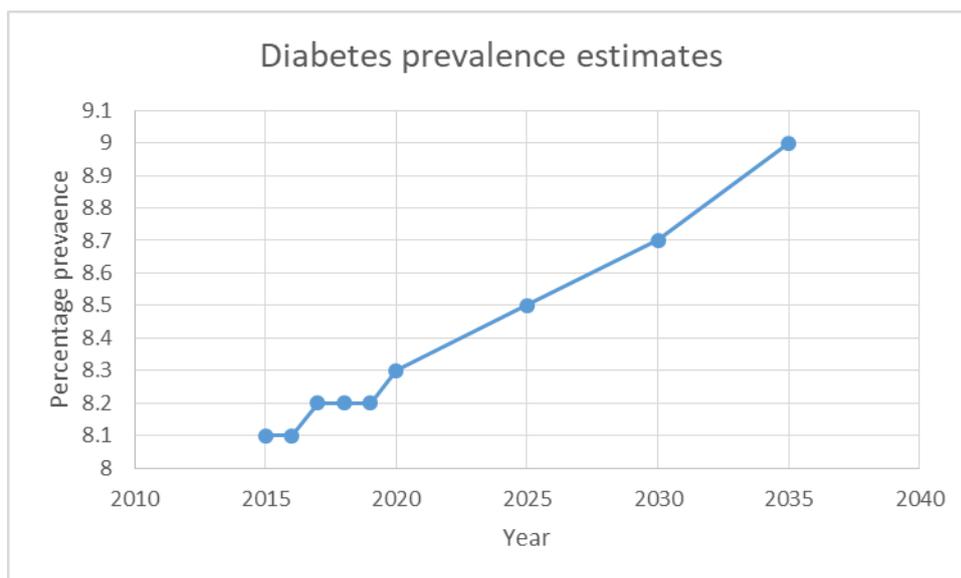


Figure 2. Diabetes prevalence estimates for Trafford CCG by registered populations.<sup>viii</sup>

In comparison to our statistical neighbours, Trafford performs similarly in terms of QOF prevalence, estimated prevalence of diabetes and estimated prevalence of NDH, but we know that this likely masks inequalities between and within Trafford neighbourhoods<sup>ix</sup>.

When looking at inequalities across Trafford, the data below shows the number and percentage of adults on the diabetes register by neighbourhood. People in our more deprived communities tend to have poorer health outcomes than those in our less deprived communities, and this can be seen below, with the prevalence of diabetes higher in North and West neighbourhoods, and lowest in the South neighbourhood.

Neighbourhood	Number on diabetes register	Number on practice list	Neighbourhood%	Trafford%	England%
Central	3,081	50,385	6.11%	6.50%	7.08%
North	2,978	34,366	8.67%	6.50%	7.08%
South	3,275	62,783	5.22%	6.50%	7.08%
West	3,131	44,241	7.08%	6.50%	7.08%
	<b>12,465</b>	<b>191,775</b>			

Figure 3. Adults on diabetes register by neighbourhood.

In addition, we would expect undiagnosed diabetes to follow the same social gradient, therefore it is likely that the table above may under-estimate local inequalities in terms of true prevalence.

While we are unable to map estimated prevalence of NDH at a neighbourhood or ward level, we do know that a significant number of the risk factors above are available at this level and follow the expected pattern of higher prevalence in our most deprived communities compared to the least deprived. In addition, work carried out by the CCG in 2017 identified that people in north Trafford had an increased risk of developing diabetes. Therefore we expect prevalence of diabetes and NDH to

follow similar patterns, being highest in wards in the most deprived decile, and lowest in wards in the least deprived decile, with a clear social gradient.

### **3. Trafford approach**

#### **3.1 Prevention**

##### **National Diabetes Prevention Programme**

There are a number of approaches taken in relation to prevention, including promotion of and referral to the National Diabetes Prevention Programme (NDPP). This service is commissioned nationally by NHS England, and the local service across Greater Manchester is provided by Xyla Health and Wellbeing (known until very recently as ICS Health and Wellbeing). There are two routes of entry into this service, via GP referral following a blood test to determine HbA1C or Fasting Plasma Glucose level, or via self-referral using the Know Your Risk calculator<sup>x</sup>.

The NDPP is a nine-month programme providing support to help people make positive lifestyle changes, reduce their blood sugar levels and reduce the risk of developing type 2 diabetes. There are two ways to take part – group sessions (currently virtual – either by group telephone call or group video call) or a digital one-to-one service. Both programmes provide education on nutrition, physical activity and holistic wellbeing strategies.

In the current contract period (August 2019 to July 2022), Trafford has a total of 3,359 places available on the NDPP. The eligibility criteria (August 2019 – March 2020) were:

- Aged 18+
- Not pregnant
- HbA1c of 42-47 mmol/mol (6.0 – 6.4%) or Fasting Plasma Glucose (FPG) of 5.5-6.9mmol/l within the last 12 months.

In April 2020, the eligibility criteria were expanded in light of the decrease in people having routine appointments in primary care at the peak of the pandemic. This increased the timescale within which the blood results could be accepted to 24 months. The criteria were expanded in early 2021 to include women with previous history of gestational diabetes and HbA1c less than 42 mmol/mol or FPG less than 5.5mmol/l.

##### **NDPP performance**

To date, 521 referrals have been made to the NDPP and 265 Trafford residents have achieved milestone 1, which is participation in an initial assessment and the first session of the service (up to 31<sup>st</sup> January 2021). This represents a good conversion rate of 51%, and is equal fourth highest in GM. Trafford residents who participate in the programme achieve good outcomes, with a mean weight

change of -5.6kg at milestone 4 compared to programme start weight (milestone 4 records those with a valid weight between day 241 and day 270 after starting the programme). This weight loss is the highest across GM, suggesting that Trafford participants are compliant with the programme and motivated and able to make changes to their diet and activity levels.

HbA1c is not reported by the NDPP provider at CCG level, however, a published report on early outcomes from the NDPP identified an average reduction in HbA1c of 2.1mmol/mol<sup>xi</sup>. With Trafford performing well in terms of weight loss, it may be expected that reductions in blood glucose are also positive.

The programme initially utilised a 'cluster approach' to referrals, with letters or text messages being sent to everyone on the practice list who met eligibility criteria. This resulted in invitations initially being issued across three neighbourhoods – Central, South and West in that order – based on both need and capacity. Whilst there was an acknowledged need for the population in the north of the borough, due to a practice closure and subsequent reorganisation required, there was not the capacity within the North PCN practices to undertake the mobilisation process at that time. Although this meant that some of our more deprived areas started the process later, if the mobilisation had waited for practices in the north to be ready then none of the invitations from any neighbourhood would have been sent prior to lockdown in March 2020. The mobilisation process was nearly complete when the country went into lockdown, and the final cluster letters for North PCN did not go out. This has resulted in greater numbers of referrals from our least deprived communities (see figure 2 below):

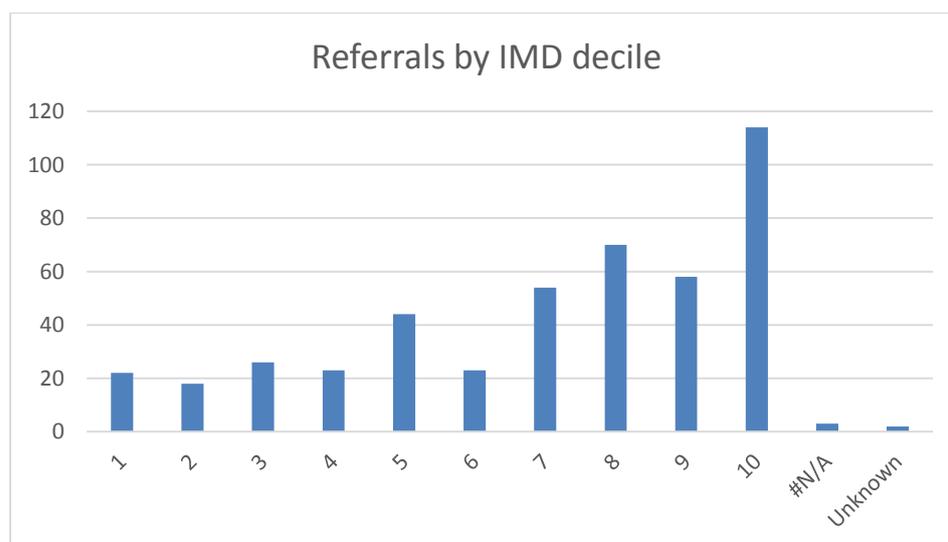


Figure 4. Referrals to NDPP by Indices of Multiple Deprivation (IMD) decile, where 1 is the most deprived, and 10 is least deprived.

Recording of ethnicity is poor across the NDPP in Greater Manchester, with nearly all referrals recorded with unknown ethnicity. In Trafford, the ethnicity is

unknown for 89% of referrals, compared to 84% unknown across GM. Ethnicity coding in primary care is something which we know requires improvement, and it appears to be similar across GM. Of those referrals where ethnicity is recorded, nearly 88% were recorded as white British, which is slightly higher than the estimated resident population from the 2011 census of 85.5% white<sup>xii</sup>.

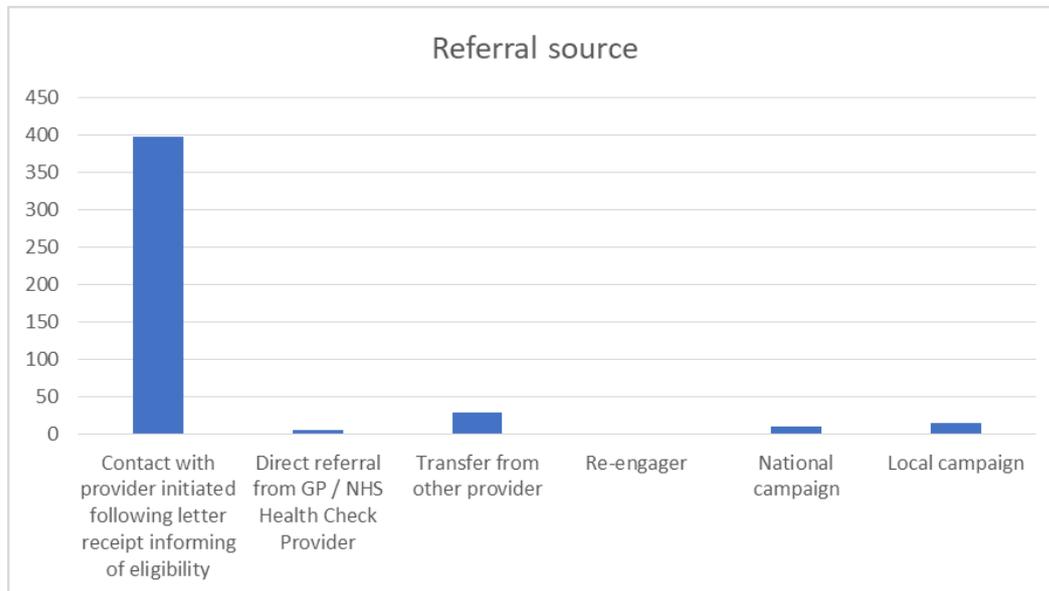


Figure 5. Referral source for Trafford residents accessing NDPP.

We can also see from figure 5 above that referrals into the programme have (to date) primarily resulted from direct invitations to eligible invitations, and that direct referrals from primary care have been minimal.

In the first six months of the pandemic there were a number of challenges in generating referrals into the programme including:

- Lack of capacity within phlebotomy to carry out routine blood tests due to re-deployment of staff to the Covid response.
- Lack of routine patient contact within primary care to provide opportunistic referrals into the programme. This was not purely due to capacity; the Wider Impacts of Covid on Health tool tells us that people were not seeking advice for worsening health conditions in order to avoid putting pressure on the NHS, due to concern about catching Covid and concern about leaving the house, amongst other reasons.
- Suspension of NHS Health Checks programme.
- Lack of capacity within the local system to re-visit the cluster invitation approach.

These factors have led to reduced uptake of the programme, and a pattern of uptake where we have more engagement from our least deprived communities.

From November 2020 there has been significant progress made in terms of engagement with primary care, capacity within the CCG and targeted engagement with communities in order to increase uptake via both entry routes. Engagement sessions have been delivered with Voice of BME Trafford, Trafford BME Mental Health Service (provided by the Pakistani Resource Centre), and via Dr. Zak Goga's wellbeing seminars with the BAME community, as well as promotion of upcoming non-English language groups.

Alongside this, both Trafford CCG and the Public Health team have been working closely with GM colleagues to develop an action plan to increase referrals and uptake of the programme.

### **Non-diabetes specific preventative work**

Alongside the NDPP, there are a number of preventative programmes which focus specifically on health behaviours and populations who we know are at greater risk.

### **Weight management services**

Trafford has a clinical Specialist Weight Management service provided by MFT which patients can access via a GP referral. This long-standing service has now been supplemented by a suite of pilot community-based weight management provision (since January 2021). The new services are available for all residents who have a BMI  $\geq 25$  (anyone who is overweight or obese) and include a group programme delivered by Slimming World (currently virtual groups), a digital offer provided by GetSlim and a programme targeted specifically at men called FitFans, delivered by Foundation 92.

All the new services have been specifically targeted to populations who we know experience greater health inequalities. This has been primarily on a neighbourhood basis, focusing initially on Partington, Old Trafford, Stretford and Firswood, followed by Sale West, Sale Moor and then picking up any other areas where there are pockets of health inequalities. This targeted work has been carried out with the support of the Trafford Community Collective neighbourhood leads and key VCFSE organisations in each area.

### **Healthy Lifestyles Service**

This provides targeted healthy lifestyles support and advice from a number of commissioned providers each working with a key demographic group.

- Older people – Age UK
- People with learning disabilities, physical disabilities and sensory needs – Empower You
- People from BAME communities – Voice of BME Trafford and Pakistani Resource Centre

- People with hearing impairments – Manchester Deaf Centre
- Liva Healthcare – digital health support for the target populations working with other Healthy Lifestyle providers.

### **Other prevention work**

There are a number of other work programmes that contribute to this such as:

- Sport and physical activity (including the Sport England Local Pilot, Active Travel, Couch to 5k etc.)
- Stop smoking work – e-cigarette pilot and ongoing programme
- Social prescribing – supporting residents within a variety of settings, such as adult social care, primary care, secondary care, within communities, to access services and activities to benefit health and wellbeing.

### **3.2 Early diagnosis including screening for high risk groups**

The NHS Health Check programme aims to help prevent heart disease, stroke, diabetes and kidney disease. Everyone between the ages of 40 and 74, who has not already been diagnosed with one of these conditions, will be invited (once every five years) to have a check to assess their risk of heart disease, stroke, kidney disease and diabetes and will be given support and advice to help them reduce or manage that risk. A high take up of NHS Health Check is important to identify early signs of poor health leading to opportunities for early interventions.

When compared to other GM authorities, and our statistical neighbours, Trafford performs worse than the benchmark in terms of the number of people invited for an NHS Health Check per year. However, the number of people receiving a health check and taking up an invite per year are better than the benchmark when compared amongst both GM authorities and statistical neighbours. So although we only invite 68.4% of our eligible population for a health check, more than half (53.3%) of those invited take up the offer. This means that 36.4% of the eligible population each year receive their health check.

Figures 6 and 7 below show Trafford's performance compared to other GM authorities in terms of invitations and uptake of NHS Health Checks.<sup>xiii</sup>

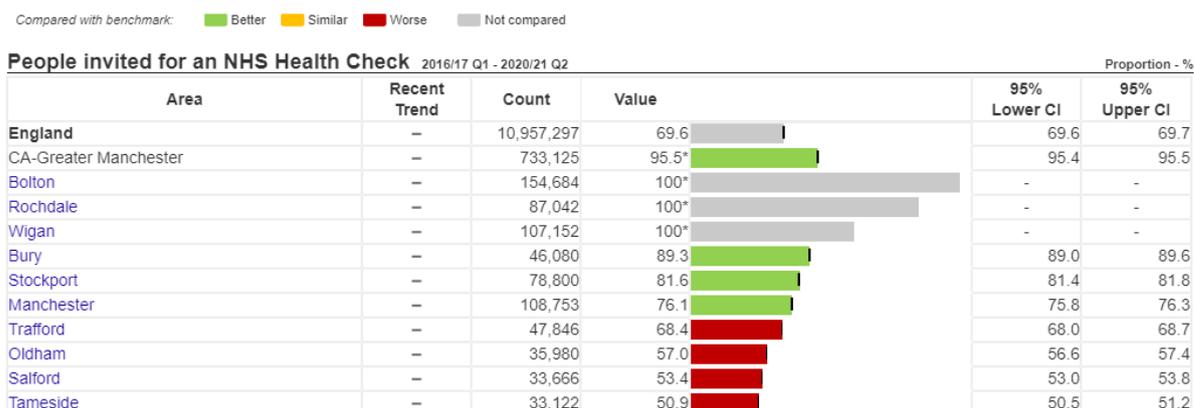


Figure 6. People invited for an NHS Health Check

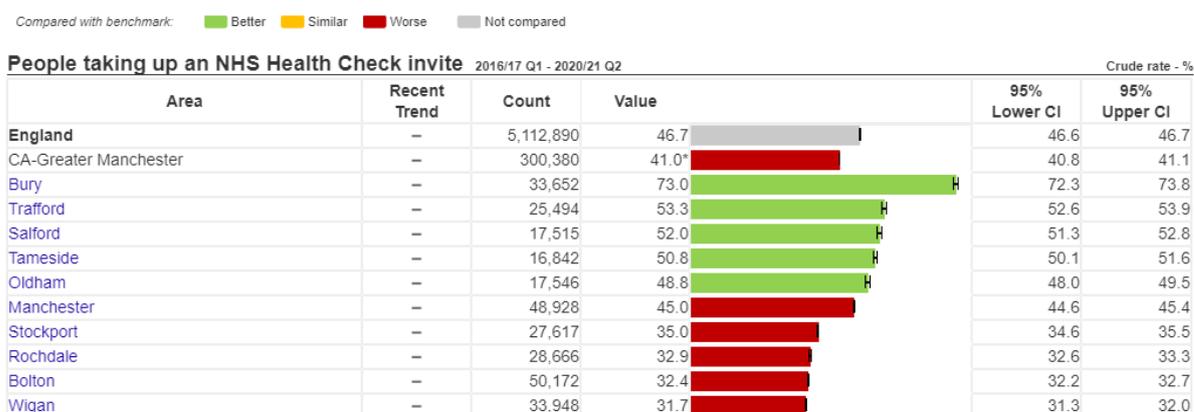


Figure 7. Percentage of people receiving an NHS Health Check from those sent an invitation.

Twenty-nine out of thirty-one practices provided monitoring data for health checks in 2018/19 and 2019/20, and from this we can see that:

- The North neighbourhood carried out the fewest health checks and issued the fewest invitations
- Central offered the most invitations
- South has the highest compliance (with 58% of invitations leading to a health check)
- Practice level data shows large disparities between practices. While noting that all practices have different patient population sizes and age profiles, one practice in Central sent out more invitations than all North practices combined.

Data from the NHS data dashboard<sup>xiv</sup> provides information on Health Check activity from April 2012 to March 2018. Key findings from the Trafford level data include:

- Sex – 53% of all attendees were women.

- Age – the highest level of compliance was in the over 60 categories, with over 90% of invitations resulting in an attendance. The 45-49 category had the most attendances, but also the most non-attendances.
- Ethnicity – 3,493 attendances had ethnicity not recorded, which further evidences a well-known issue with the recording of ethnicity in primary care. There is a potential that Asian and Asian British people are under-represented in the invited category but not in the attendees category, with Trafford having an estimated 7.9% Asian population but they make up only 6.1% of people invited for a Health Checks. The data suggests that the BAME population are very compliant with accepting the invitation, however there are question marks over the validity of the data, with there being more attendees than invitations for some ethnic minority groups.
- Deprivation – The data shows that around 24% of people living in the most deprived quintile have attended a health check in the time period. Using the mid 2019 estimates of deprivation, we can see that people living in more deprived areas are overly represented in the number of invites, which is promising to see.

The data also highlights that there is very poor recording of some key health indicators. 71% of people didn't have alcohol use recorded, 57% for physical activity, 42% for diabetes risk, 96% have no record of CVD risk in the family.

NHS Health Checks are therefore a key route for screening for diabetes, but only when they are delivered effectively and include screening for all relevant risk factors. In addition, health checks have been suspended for most of the last year so a review of delivery and effectiveness is a priority for the Public Health team. The team are therefore working to guidance from PHE<sup>xv</sup> to establish how to re-start NHS Health Checks in line with current Covid restrictions, with various options being considered, such as:

- Better screening of patients to be invited e.g. linked to BMI, ethnicity etc.
- Consideration of two-part health check with initial screening carried out via online consultation to identify patients with higher-risk scores and invite these patients to complete the face-to-face full health check

### **3.3 Clinical management**

The National Institute for Health and Care Excellence (NICE) recommends nine care processes for diabetes. There are five risk factors (BMI, blood pressure, smoking, glucose levels (HbA1c) and cholesterol) and four tests to identify early complications (urine albumin creatinine ratio, serum creatinine, foot nerve and circulation examination and eye screening).

NICE guidance also identifies that adults with diabetes need to acquire a large range of new skills and knowledge, such as how to manage insulin therapy. Patient education enables self-management, which is important in diabetes

management as it allows people with diabetes to maintain a good quality of life. Therefore, structured education programmes are offered to all adults within 12 months of diagnosis.

NICE also recommends treatment targets for glucose control, blood pressure and cholesterol in order to reduce the risk of vascular complications, and progression of eye disease and kidney failure<sup>xvi</sup>.

Trafford performs well (either better or similar for all indicators) compared to statistical neighbours on the following key outcomes:

- Care processes
- Structured education
- Treatment targets
- Foot care activity<sup>xvii</sup>

Diabetes care is managed within primary care with this being brought back in from secondary care who had for a number of years provided most of the diabetic care, in order to support more equitable access for Trafford residents. There continues to be variation across primary care in relation to treatment of patients with type 2 diabetes; and while many practices currently offer diabetes clinics in-house for their registered patients, others are not presently able to offer this. In addition, Trafford has historically had no specialist diabetes provision available in the community.

Variation in primary care and lack of speciality community care has meant that many patients continue to be referred to secondary care who could appropriately be treated in an out of hospital setting if the appropriate expertise and capacity was available.

Prior to the Covid pandemic, Trafford commissioners and clinicians were working closely with their Manchester equivalents and the diabetes consultants at Manchester Foundation Trust (MFT) to develop a roadmap towards reform of the end to end diabetes pathway, focussing on:

- Agreement of a tiered approach which clearly defines which cohorts of patients are appropriate to be treated in primary and secondary care
- New models of delivery, including hospital outreach and joint-clinics whereby consultants work alongside primary care colleagues
- Neighbourhood-based care, whereby lead practices could support the management of type 2 patients within localities; a successful example of this approach has already been embedded in Partington leading to repatriation of significant numbers of patients from secondary care
- An advice and guidance programme is already in place to allow primary care clinicians to remotely seek consultant opinion on patient management

Covid-19 has meant that this work has been on hold for the past 12 months, with management of the pandemic taking precedence; however as we move forward, diabetes pathway reform has been reinstated as a priority. The response to the pandemic has also driven wide-ranging improvements in the approach to digital delivery of healthcare which opens up opportunities for diabetes management.

One area for improvement is the number of people taking up structured education post-diagnosis, with only 7% of people who were newly diagnosed with diabetes attending the structured education programme. Although statistically similar to statistical neighbours and other areas in the North-West, there is a lot of potential to increase this and improve outcomes for patients, with uptake by practice varying from 0% to 50% across and within neighbourhoods.

When reviewing the achievement of the nine care practices by neighbourhood, this is broadly similar to the England average, with slight variations by neighbourhood across all domains and neighbourhoods, however there are no obvious trends by locality.

During the Covid response, most Long Term Condition (LTC) management and screening (with the exception of NHS Health Checks) has continued, but has not necessarily been recorded or reported accurately. However, there is evidence from the Wider Impacts of Covid on Health tool<sup>xviii</sup> that people have not been seeking health care support during pandemic for a number of reasons, so uptake is likely to have been lower than usual.

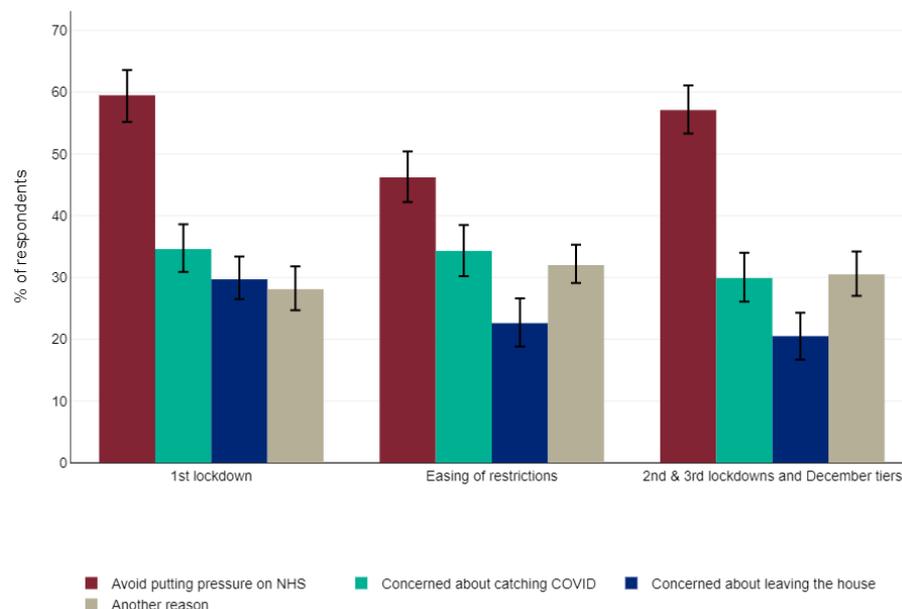


Figure 8. Reason why respondents have not sought advice for a worsening health condition.

There has been significant enthusiasm from a number of practices for participating in the NHS Low Calorie Diet (LCD) Programme pilot<sup>xix</sup>. This programme aims to achieve diabetes remission in people who have a recent (within the last six years) diagnosis of type 2 diabetes. As part of the Greater Manchester pilot, Trafford has 32 places on the programme, and a number of practices have expressed an interest in becoming referrers. However, more targeted work needs to be done to ensure that access to this programme is available in a way that does not widen inequalities between communities.

Finally, many of the commissioned weight management services described in section 3.1 above have a number of case studies where diabetes remission has been achieved, or diabetes treatment such as medication has been reduced.

#### 4. Key aims and objectives to consider and recommendations

4.1 Continue to take a whole system approach to addressing health inequalities, recognising that alongside individual behaviour change, there need to be changes to the system of factors that influence health, wellbeing and inequalities.

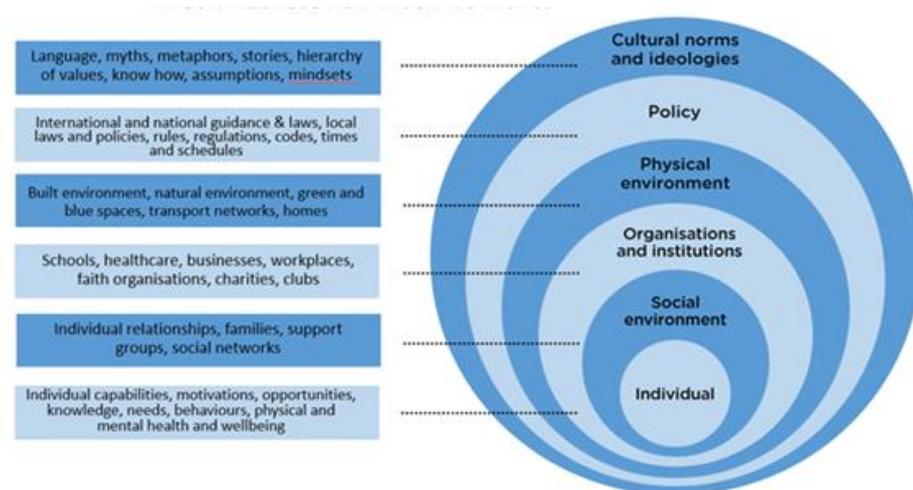


Figure 9. Visual depiction of a whole system approach to changing outcomes<sup>xx</sup>.

- 4.2 Roll-out the 'opt-out' pilot for NDPP – this is being piloted in a number of practices across GM to assess whether the 'cluster mobilisation' approach is more effective where patients have to opt-out of being referred to the NDPP, rather than having to opt-in.
- 4.3 Embed NDPP Facilitators within Primary Care to support targeted engagement. These facilitators are being recruited at a GM level and will be available to work directly with primary care to support access into the NDPP.
- 4.4 Deliver Trafford Locality NDPP Action Plan to increase uptake into NDPP. Collaborative work between Public Health and the CCG to identify, plan and carry out key actions to engage with primary care, VCFSE partners and targeted communities.

- 4.5 Ensure that diabetes prevention and management is the highest priority for both the CCG and Public Health post-Covid, recognising that significant impact can be made on outcomes for residents.
- 4.6 Pick up work on end-to-end diabetes pathway as described in 3.3 above.
- 4.7 Ensure all practices are making opportunistic referrals into NDPP.
- 4.8 Improve ethnicity coding in primary care.
- 4.9 Improve links with Health Checks once these resume, ensuring diabetes risk is calculated within health checks programme and people are then referred into the NDPP or other relevant programme.
- 4.10 Ensure health checks are delivered effectively across Trafford, with additional risk stratification to ensure those most at risk receive an NHS Health Check.
- 4.11 Ensure health checks are reaching most at-risk communities, through working with key VCFSE partners and community groups.
- 4.12 Develop and implement communications and engagement plan as part of a wider healthy lifestyle and prevention programme of engagement.
- 4.13 Ensure the local offer that supports diabetes prevention and other behaviour change programmes is clear to professionals and residents and easy to access.
- 4.14 Continue to develop LTCs group via Trafford LCO and establish roadmap back to outpatients/community focus.
- 4.15 Get back to business as usual within primary and secondary care and address waiting times.
- 4.16 Encourage and support participation in NHS LCD programme for practices in target areas.
- 4.17 Ensure participation in weight management services is a recommendation for people with type 2 diabetes.
- 4.18 Improve consistency in referral to and uptake of structured education programme for people newly diagnosed with diabetes.

## 5. Links to corporate priorities

The key aims and objectives described in section 4 contribute primarily to the following two corporate priorities:

**Priority 2:** Trafford has improved health and wellbeing and reduced health inequalities.

**Priority 7:** Supporting our residents when they need it most.

## 6. References

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<sup>i</sup> <http://www.traffordjsna.org.uk/Health-wellbeing-priorities/Health-wellbeing-priorities.aspx>

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- ii <https://democratic.trafford.gov.uk/documents/s38344/Equality%20Strategy%20Doc.pdf>
- iii <https://www.nice.org.uk/guidance/ph35/evidence/ep-3-socioeconomic-status-and-risk-factors-for-type-2-diabetes-pdf-433771165>
- iv [https://www.diabetes.org.uk/resources-s3/2017-11/diabetes in the uk 2010.pdf](https://www.diabetes.org.uk/resources-s3/2017-11/diabetes%20in%20the%20uk%202010.pdf)
- v <https://www.diabetes.org.uk/preventing-type-2-diabetes/diabetes-risk-factors>
- vi <https://fingertips.phe.org.uk/profile-group/cardiovascular-disease-diabetes-kidney-disease/profile/diabetes-ft/data>
- vii <https://www.gov.uk/government/publications/diabetes-prevalence-estimates-for-local-populations>
- viii <https://www.gov.uk/government/publications/diabetes-prevalence-estimates-for-local-populations>
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- xvi <https://www.nice.org.uk/guidance/conditions-and-diseases/diabetes-and-other-endocrinal--nutritional-and-metabolic-conditions/diabetes>
- xvii <https://fingertips.phe.org.uk/profile-group/cardiovascular-disease-diabetes-kidney-disease/profile/diabetes-ft/data>
- xviii <https://analytics.phe.gov.uk/apps/covid-19-indirect-effects/>
- xix <https://www.england.nhs.uk/diabetes/treatment-care/low-calorie-diets/>
- xx <https://hayleyleverblog.wordpress.com/2020/02/15/the-power-of-how-culture-change/>