

Making Chronic Conditions Count:

Hypertension

Stroke

Coronary Heart Disease

Diabetes



A systematic approach to estimating and forecasting
population prevalence on the island of Ireland

Executive Summary

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Authors: Kevin P Balanda, Steve Barron, Lorraine Fahy

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Prepared by:

Kevin P Balanda, Steve Barron, Lorraine Fahy (Institute of Public Health in Ireland)

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Ireland and Northern Ireland's Population Health Observatory (INISPHO),
The Institute of Public Health in Ireland (IPH).

5th Floor	Forestview
Bishop's Square	Purdy's Lane
Redmond's Hill	Belfast
Dublin 2	BT8 7ZX
Ireland	Northern Ireland
Tel: +353 1 478 6300	Tel: +44 2890 648494
Fax: +353 1 478 6319	Fax: +44 2890 646604

Email: info@inispho.org

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Foreword

Chronic diseases cause significant morbidity and mortality, and result in poorer quality of life for many people in the Republic of Ireland and Northern Ireland. In both jurisdictions there are also considerable financial costs to health and social care, and to the economy.

Accurate estimates and forecasts of the population prevalence of chronic diseases help us identify need, plan and develop disease prevention and management programmes, and monitor performance.

This important study shows that we can expect a substantial rise in the number of people living with a chronic disease. This is because our population is growing, ageing and lifestyle risk factors such as obesity are becoming more common. The study's importance is all the greater as most chronic diseases and their complications are preventable.

Previously the Institute of Public Health in Ireland systematically developed estimates and forecasts for diabetes at national and local levels. Those figures have been widely used and made a significant contribution to policy, service planning and public health practice.

This new study extends that systematic approach to hypertension, coronary heart disease (angina and heart attack) and stroke as well as updating earlier diabetes figures. It documents the chronic disease epidemic we are facing over the next 15 years and the challenges posed to our population, our health and social care systems, and our economies.

It describes the unequal way in which the burden of chronic disease is distributed in Northern Ireland and the Republic of Ireland and highlights the pressing need for a greater emphasis on prevention, tackling health inequalities and addressing the social determinants of health. This requires action across government and by many sectors. Considerably greater benefits can be achieved by influencing policies of the non health sector than by health policies alone.

This work is a timely response to a key public health issue. In Northern Ireland it will help inform the current review of the public health strategy, Investing for Health, and in the Republic of Ireland it will make a vital contribution to the intersectoral work that is such an important part of improving the prevention and management of chronic diseases. We commend the Institute and its academic partners and look forward to the next phase of this work which will include other chronic diseases and further improvements in methodology.

Dr Tony Holohan
Chief Medical Officer
Department of Health and Children
Republic of Ireland

Dr Michael McBride
Chief Medical Officer
Department of Health, Social
Services and Public Safety
Northern Ireland

Introduction

This executive summary contains estimates and forecasts of the population prevalence¹ of four chronic conditions: hypertension, coronary heart disease (angina and heart attack), stroke and diabetes (Type 1 and Type 2 combined). It shows how their prevalence varies across the island and what change is expected between 2007, 2015 and 2020.

Chronic conditions are responsible for a significant proportion of early deaths. They reduce quality of life in many of the adults living with them, represent substantial financial costs to patients and the health and social care system, and cause a significant loss of productivity to the economy.

Although the population is living longer, chronic conditions have reduced the quality of the extra years that have been gained. There is evidence in the Republic of Ireland, the United Kingdom and Europe, that over recent decades, while life expectancy has increased, healthy life expectancy has not kept up (www.ehemu.eu).

The burden of conditions is expected to rise because our population will grow, it will age and some risk factors such as obesity will become more common. Unless we address this growing burden we may continue to add more years to our lives without adding more life to those years.

Chronic conditions occur more frequently among the poor and vulnerable. A range of interrelated factors including the social determinants of health such as poverty, unemployment and the environment, smoking, alcohol consumption, diet and physical activity are established risk factors for chronic conditions. These risk factors are distributed unevenly across society.

The key findings are:

1. Very large numbers of adults across the island live with hypertension, angina and heart attack (CHD), stroke and diabetes.

The prevalence of each of these conditions:

- Increases dramatically with age.
- Tends to be higher in the northern and western parts of the island, and lower around Dublin.
- Is generally higher amongst males.

These differences reflect variation in demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle factors (obesity and smoking) across the island.

2. Between 2007 and 2020, the burden of chronic conditions is expected to increase dramatically in both Northern Ireland and the Republic of Ireland. By 2020:

- The number of adults with these chronic conditions will increase by around 40% in the Republic of Ireland and by around 30% in Northern Ireland.
- Relatively more (compared to 2007) of the burden of these conditions will be borne by adults in the older age groups.

¹ Population prevalence refers to both diagnosed and undiagnosed cases.



Larger increases are expected in the Republic of Ireland because its population is projected to grow more than Northern Ireland's.

Except for diabetes, these forecasts do not incorporate changes in lifestyle factors such as obesity and smoking.

3. Local socio-economic circumstances affect the prevalence of chronic conditions in an area. Adults living in more deprived areas are more likely to be living with a chronic condition.

Generally speaking, this is true across all chronic conditions, amongst males and females, in each age group, and in both the Republic of Ireland and Northern Ireland.

The Study

Estimates and forecasts of the population prevalence of chronic conditions quantify how many people have these conditions; in this report they are described by sex, age, place of residence and characteristics of the area.

To date reliable sub-national estimates and forecasts of the population prevalence of chronic conditions have not been available on the island. This study deals with recent (2007) and future (2015 and 2020) population prevalence of four conditions: hypertension, angina and heart attack (CHD), stroke and diabetes (Type 1 and Type 2 combined)². The full report contains figures for Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland, broken down by sex, age and local socio-economic circumstances.

Key Findings

KEY FINDING 1:

Very large numbers of adults across the island live with hypertension, angina and heart attack (CHD), stroke and diabetes.

The prevalence of each of these conditions:

- Increases dramatically with age.
- Tends to be higher in the northern and western parts of the island, and lower around Dublin.
- Is generally higher amongst males.

These differences reflect variation in demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle factors (obesity and smoking) across the island.

² Findings are based on models that incorporate the effects of demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle factors (obesity and smoking). The diabetes model is based on physical measurements, the hypertension model is based on a combination of self-reported and physical measurements, and the stroke and CHD models are based on self-reported measurements. See Chapter 2 of the full report and its technical supplement for further details.

Table 1 presents population prevalence rates in 2007. In that year:

- Nearly 1.25 million adults aged 16 years and over (396,000 in Northern Ireland and 852,000 in the Republic of Ireland) have high blood pressure.
- Almost 206,000 adults aged 16 years and over (75,000 in Northern Ireland and 131,000 in the Republic of Ireland) have ever had angina or a heart attack.
- Nearly 92,000 adults aged 16 years and over (33,000 in Northern Ireland and 59,000 in the Republic of Ireland) have ever suffered a stroke.
- Over 210,000 adults aged 20 years and over (67,000 in Northern Ireland and 144,000 in the Republic of Ireland) have diabetes (Type 1 and Type 2 combined).

Table 1: Demographic variation in population prevalence rates in 2007

	Males	Females	Persons	16-44 yrs	45-64 yrs	65-74 yrs	75+ yrs
Hypertension							
Northern Ireland	29.8%	27.6%	28.7%	9.2%	39.6%	65.1%	71.9%
Republic of Ireland	26.7%	23.4%	25.1%	8.7%	38.4%	64.0%	70.9%
Angina and heart attack (CHD)							
Northern Ireland	6.5%	4.5%	5.4%	0.4%	6.1%	16.5%	22.4%
Republic of Ireland	4.7%	3.0%	3.8%	0.3%	5.0%	14.1%	19.1%
Stroke							
Northern Ireland	2.4%	2.4%	2.4%	0.3%	2.0%	6.8%	11.8%
Republic of Ireland	1.8%	1.7%	1.7%	0.3%	1.7%	5.9%	10.3%
Diabetes (Type 1 and Type 2 combined)							
	Males	Females	Persons	20-29 yrs	30-59 yrs	60+ yrs	
Northern Ireland	4.5%	6.0%	5.3%	0.5%	3.1%	13.4%	
Republic of Ireland	3.9%	5.1%	4.5%	0.6%	3.0%	13.2%	

Except for diabetes, the prevalence estimates for these chronic conditions are more common amongst males³.

The prevalence of each of these conditions increases dramatically with age. For example, in 2007 the percentage of adults in Northern Ireland who have high blood pressure rose from 9.2% amongst 16-44 year olds, to 39.6% amongst 45-64 year olds, to 65.1% amongst 65-74 year olds, and to 71.9% amongst adults aged 75 years and over. The same pattern is observed in the Republic of Ireland and amongst males and females. This is not surprising given that each of the conditions generally reflects influences whose effects accumulate over time and tend to express themselves later in life.

³ This reflects the findings of the underlying population-based reference studies. Other studies have reported different findings about diabetes prevalence amongst males and females. See full report and its technical supplement for further details.



KEY FINDING 2:

Between 2007 and 2020, the burden of chronic conditions is expected to increase dramatically in both Northern Ireland and the Republic of Ireland. By 2020:

- The number of adults with these chronic conditions will increase by around 40% in the Republic of Ireland and by around 30% in Northern Ireland.
- Relatively more (compared to 2007) of the burden of these conditions will be borne by adults in the older age groups.

Larger increases are expected in the Republic of Ireland because its population is projected to grow more than Northern Ireland's population.

Except for diabetes, these forecasts do not incorporate changes in lifestyle factors such as obesity and smoking.

Table 2 illustrates how the number of people living with each of these chronic conditions is expected to increase dramatically between 2007 and 2020 in both Northern Ireland and the Republic of Ireland.

Table 2: Number of cases and prevalence rates in 2007, 2015 and 2020 in Northern Ireland and the Republic of Ireland

	2007		2015		2020	
	n	%	n	%	n	%
Hypertension						
Northern Ireland	395,529	28.7%	448,011	30.3%	481,867	31.7%
Republic of Ireland	851,658	25.1%	1,050,591	26.8%	1,192,415	28.3%
Angina and heart attack (CHD)						
Northern Ireland	75,158	5.4%	87,848	5.9%	97,255	6.4%
Republic of Ireland	130,703	3.8%	166,985	4.3%	195,243	4.6%
Stroke						
Northern Ireland	32,941	2.4%	38,405	2.6%	42,457	2.8%
Republic of Ireland	58,778	1.7%	74,493	1.9%	86,845	2.1%
Diabetes (Type 1 and Type 2 combined)						
Northern Ireland	67,262	5.3%	82,970	6.0%	94,219	6.6%
Republic of Ireland	143,618	4.5%	193,240	5.2%	232,644	5.9%

- In 2007 nearly 852,000 adults in the Republic of Ireland (25.1%) have high blood pressure. By 2020 this is expected to rise to over 1,192,000 (28.3%). This represents a 40% increase in the numbers of people affected - an additional 341,000 adults - in less than 15 years.
- In 2007 nearly 396,000 adults in Northern Ireland (28.7%) have high blood pressure. By 2020 this is expected to rise to nearly 482,000 (31.7%). This represents a 22% increase – an additional 86,000 adults – in less than 15 years.
- In 2007 nearly 131,000 adults in the Republic of Ireland (3.8%) have ever had a CHD. By 2020 this is expected to rise to over 195,000 (4.6%). This represents a 50% increase – an additional 65,000 adults – in less than 15 years.
- In 2007 over 75,000 adults in Northern Ireland (5.4%) have ever had a CHD. By 2020 this is expected to rise to over 97,000 (6.4%). This represents a 30% increase – an additional 22,000 adults – in less than 15 years.
- In 2007 almost 59,000 adults in the Republic of Ireland (1.7%) have ever had a stroke. By 2020 this is expected to rise to almost 87,000 (2.1%). This represents a 48% increase – an additional 28,000 adults – in less than 15 years.
- In 2007 almost 33,000 adults in Northern Ireland (2.4%) have ever had a stroke. By 2020 this is expected to rise to over 42,000 (2.8%). This represents a 29% increase – an additional 10,000 adults – in less than 15 years.
- In 2007 nearly 144,000 adults in the Republic of Ireland (4.5%) have diabetes (Type 1 and Type 2 combined). By 2020 this is expected to rise to over 233,000 (5.9%). This represents a 62% increase – an additional 89,000 adults – in less than 15 years.
- In 2007 over 67,000 adults in Northern Ireland (5.3%) have diabetes (Type 1 and Type 2 combined). By 2020 this is expected to rise to over 94,000 (6.6%). This represents a 40% increase – an additional 27,000 adults – in less than 15 years.

For each chronic condition, higher prevalence rates amongst older adults along with an ageing population mean that the percentage of all adults with these conditions who belong to the older age groups will increase. For example, in the republic of Ireland the percentage of all adults who have ever had a stroke who are aged 65 years and over will rise from 62.8% in 2007 to 67.1% in 2020. In Northern Ireland the percentage will rise from 67.2% to 71.2%.

KEY FINDING 3:

Local socio-economic circumstances affect the prevalence of chronic conditions in an area. Adults living in more deprived areas are more likely to be living with a chronic condition.

Generally speaking, this is true across all chronic conditions, amongst males and females, in each age group, and in both the Republic of Ireland and Northern Ireland.



Figures 1 and 2 below illustrate how the prevalence of angina and heart attack (CHD), and diabetes, in an area increases as the local socio-economic circumstances (as measured by an area's local deprivation score) worsen.

Figure 1: Population prevalence rates of angina and heart attack (CHD) amongst adults; across the deprivation bands⁴ in the Republic of Ireland within each sex and age group (2007).

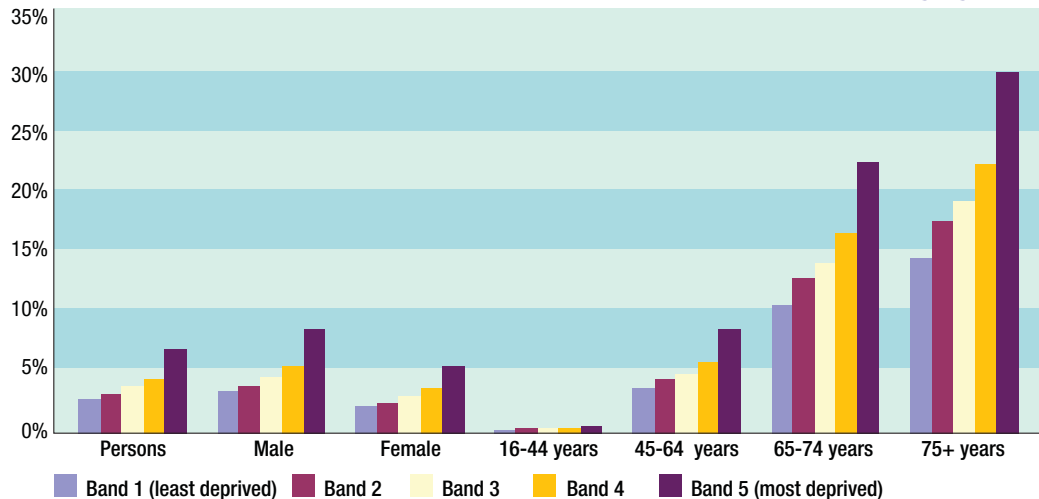
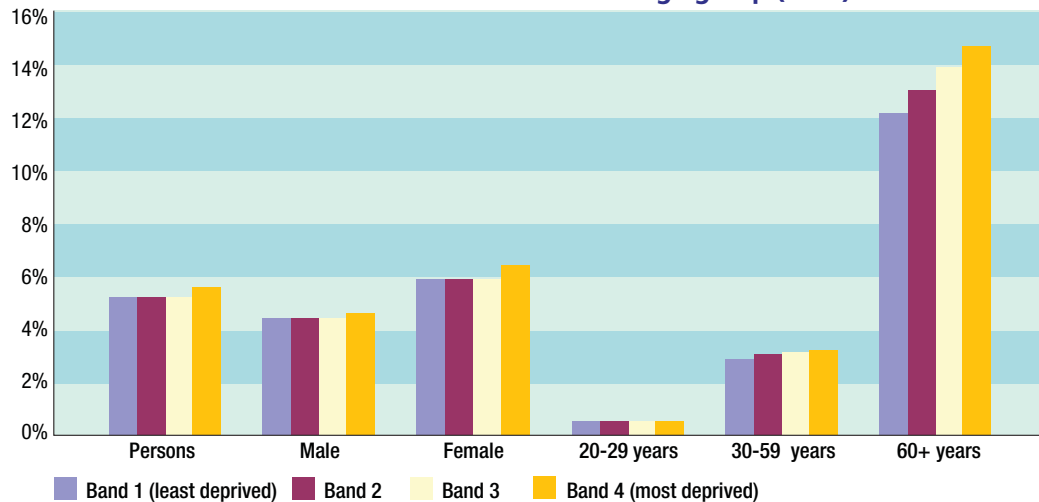


Figure 2: Population prevalence rates of diabetes amongst adults; across the deprivation bands⁴ in Northern Ireland within each sex and age group (2007).



The effect of local socio-economic circumstances is similar amongst males and females, and across all age groups. This is true for each chronic condition.

The contrast between the most deprived areas and the least deprived areas is sometimes quite large. For example, CHD prevalence in the most deprived areas in the Republic of Ireland is almost 2.5 times that in the least deprived areas. Although direct North-South comparisons are not possible because of methodological differences (see the main report's technical supplement), in Northern Ireland CHD prevalence in the most deprived areas is about 1.5 times that in the least deprived areas.

⁴ LGDs in Northern Ireland and LHOs in the Republic of Ireland were grouped into bands according to their deprivation scores. See the main report's technical supplement for definition of deprivation bands.

Prevention, inequalities and the social determinants of health

Like many developed countries, life expectancy in the Republic of Ireland and Northern Ireland is increasing.

Between 1985 and 2000 the Republic of Ireland experienced a 47% reduction in deaths from heart disease (CHD) amongst those aged 25–84 years. A recent application of the IMPACT model to the Republic of Ireland found that 44% of this reduction could be attributed to more effective treatment. Improvements in population-level risk factors such as smoking prevalence, mean cholesterol concentrations and blood pressure levels had a greater effect (Bennett et al, 2006). While modern cardiology treatments had gained many thousands of life-years, twice as many life-years were generated by relatively modest reductions in major population-level risk factors (Kabir et al, 2007).

WHO (World Health Organization) estimates that 80% of heart disease, stroke and Type 2 diabetes, and 40% of cancer could be avoided if major risk factors were eliminated.

The WHO Strategy for Chronic Disease recommends that countries adopt an integrated strategy that incorporates population-level disease prevention programmes as well as targeted disease management programmes that focus on individuals at high risk (WHO, 2008).

Despite this, the Organisation for Economic Cooperation and Development (OECD) estimates that only 3% of total healthcare expenditure goes towards population-based disease prevention programmes. More focus on prevention is clearly needed.

A range of interrelated factors including the social determinants of health such as poverty, education, housing and the physical environment as well as smoking, alcohol consumption, diet and physical activity are established risk factors for chronic conditions.

These risk factors are distributed unevenly across society and efforts to reduce the burden of chronic conditions must address the causes of these uneven distributions.

The variation across a range of factors - age, sex, geography and local socio-economic conditions - observed in this study in the prevalence of chronic conditions means it is essential that chronic disease prevention programmes take these factors into account⁵. The recent publication *Tackling Health Inequalities: an All-Ireland Approach to Social Determinants* reviewed the key social determinants in the Republic of Ireland and Northern Ireland and highlighted possible policy responses to reduce health inequalities (Farrell et al, 2008).

⁵ Similar variations in quality of care, care outcomes and mortality suggest that the same is true for chronic disease management programmes.



Recommendations

A review of key government policies across the island would identify opportunities to incorporate the three Principles of Action identified by the WHO Commission on the Social Determinants of Health. These are:

- Improving daily living conditions.
- Tackling the inequitable distribution of power, money and resources.
- Measuring and understanding the problem and assessing the impact of action.

The following recommendations emphasise the importance of a stronger focus on prevention, tackling inequalities using a social determinants of health and life course perspective, and the crucial importance of building appropriate information systems to support these efforts.

CHRONIC DISEASE PREVENTION

A stronger focus on prevention is urgently needed. Key government policies and supporting policies and strategies need to promote healthier lifestyles and strengthen the early assessment and diagnosis of chronic conditions.

Chronic disease prevention programmes need to take a life course perspective with a strong focus on early childhood, and develop interventions based on the needs of vulnerable and disadvantaged groups.

CHRONIC DISEASE MANAGEMENT

Equity should be incorporated more strongly into the implementation of key government policies and should be extended beyond access and quality of care to reflect the definition used in the WHO Commission on the Social Determinants of Health.

Chronic disease management programmes must be based on need and not ability to pay. An understanding of current and future prevalence and how it varies with factors such as age, sex, geography and local socio-economic circumstances is an essential prerequisite for good planning and monitoring of chronic disease management.

Appropriate models of integrated care that involve a greater role for primary care and community care sectors should be developed.

RESEARCH AND DATA GAPS

Further research into the impact of chronic diseases on the population, the health and social care system, and the economy is required. This research should consider the magnitude of the burden of these conditions (including financial costs); how it is distributed across the population; how that burden might change in the future; and the implications for the health and social care workforce and its training requirements.

Alongside patient registers, a system of standardised population prevalence estimates and forecasts (available at national and sub-national level) should be developed and maintained.

Prevalence estimates and forecasts should be incorporated into routine local data collections such as the core data set for the Republic of Ireland's Primary Care Teams and the community profiles that will support local government in Northern Ireland.

A comprehensive and standardised system for monitoring risk factors (overweight/obesity, nutrition, physical activity and smoking) at the national and sub-national level should be established and maintained.

Relevant data on social determinants of health should be incorporated into clinical, service and public health information systems - including chronic disease patient registers and local data collections - and used to help plan, deliver and evaluate chronic disease prevention and management programmes.

Performance indicators which can be used to measure differences in disease prevention and management between population subgroups should be developed and used to plan and monitor efforts to reduce health inequalities.



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