

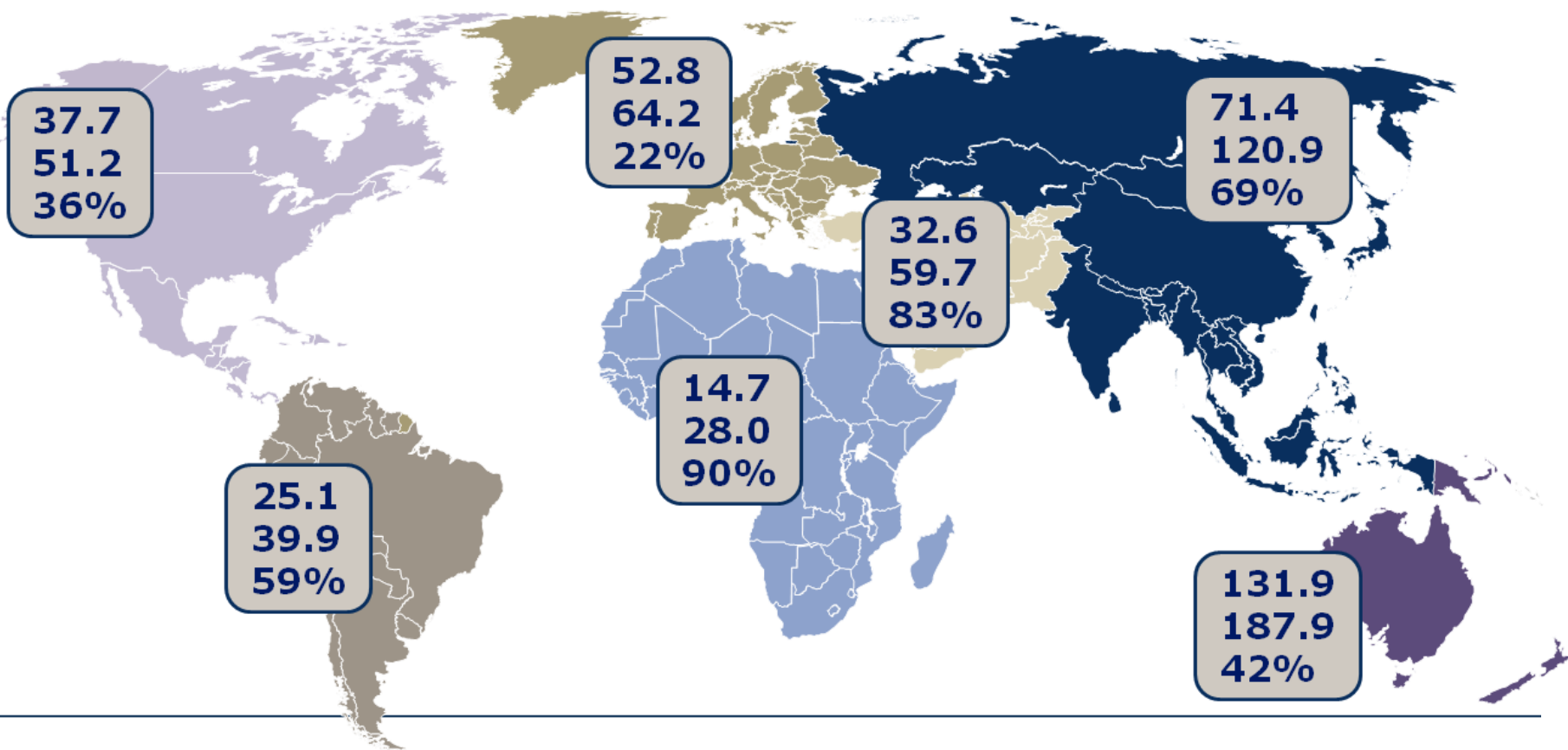
Diabetes Care and Research in Ireland – What We Do Not Have

**Timothy O'Brien MD PhD FRCPI FRCP FACP
FACE**

**Consultant Endocrinologist University
College Hospital and Professor of Medicine
NUIG Galway, Dean of the College of
Medicine, Nursing and Health Sciences**

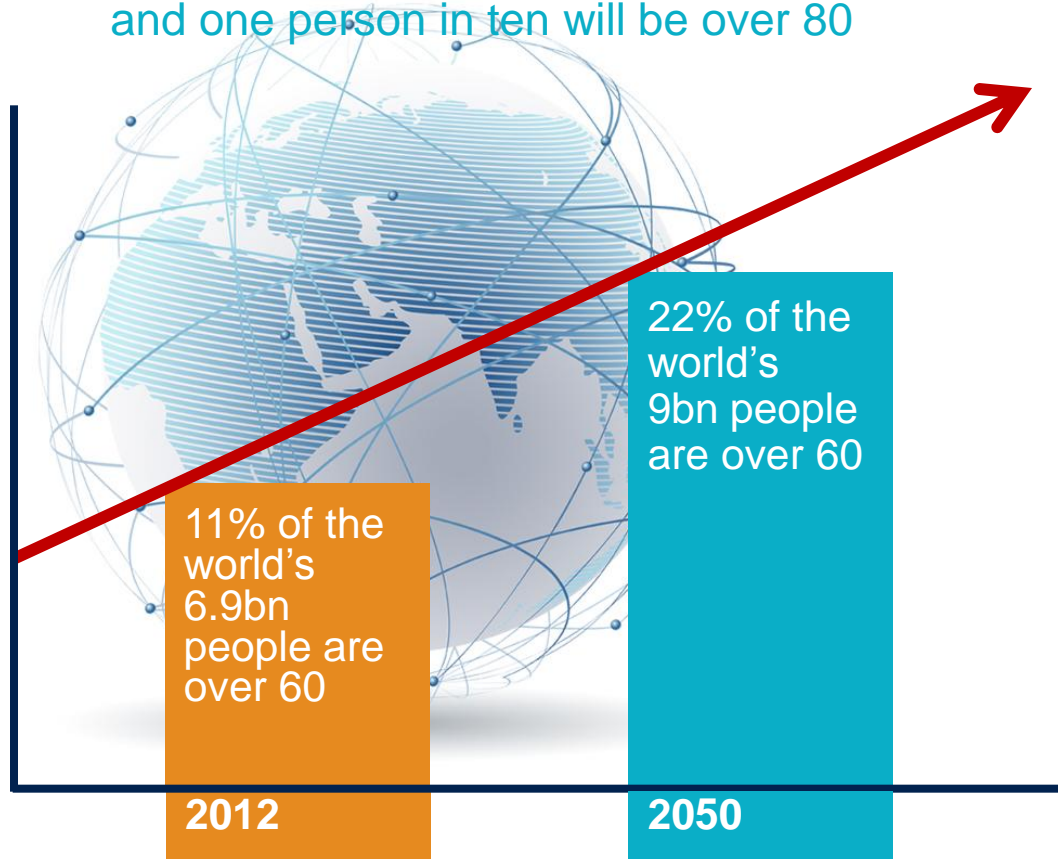
The Diabetes Epidemic: Global Projections, 2010–2030

World 2011 = 366 million
 2030 = 552 million
 Increase = 51%



The World's Ageing Population

In 2050 one person in three will be over 65
and one person in ten will be over 80



Global Burden of Chronic Illness



**HEART
DISEASE**

**MUSCULOSKELETAL
DISEASES**

DIABETES

2013

220 million diabetes sufferers worldwide

2030

552 million sufferers worldwide



Global Burden of Chronic Illness



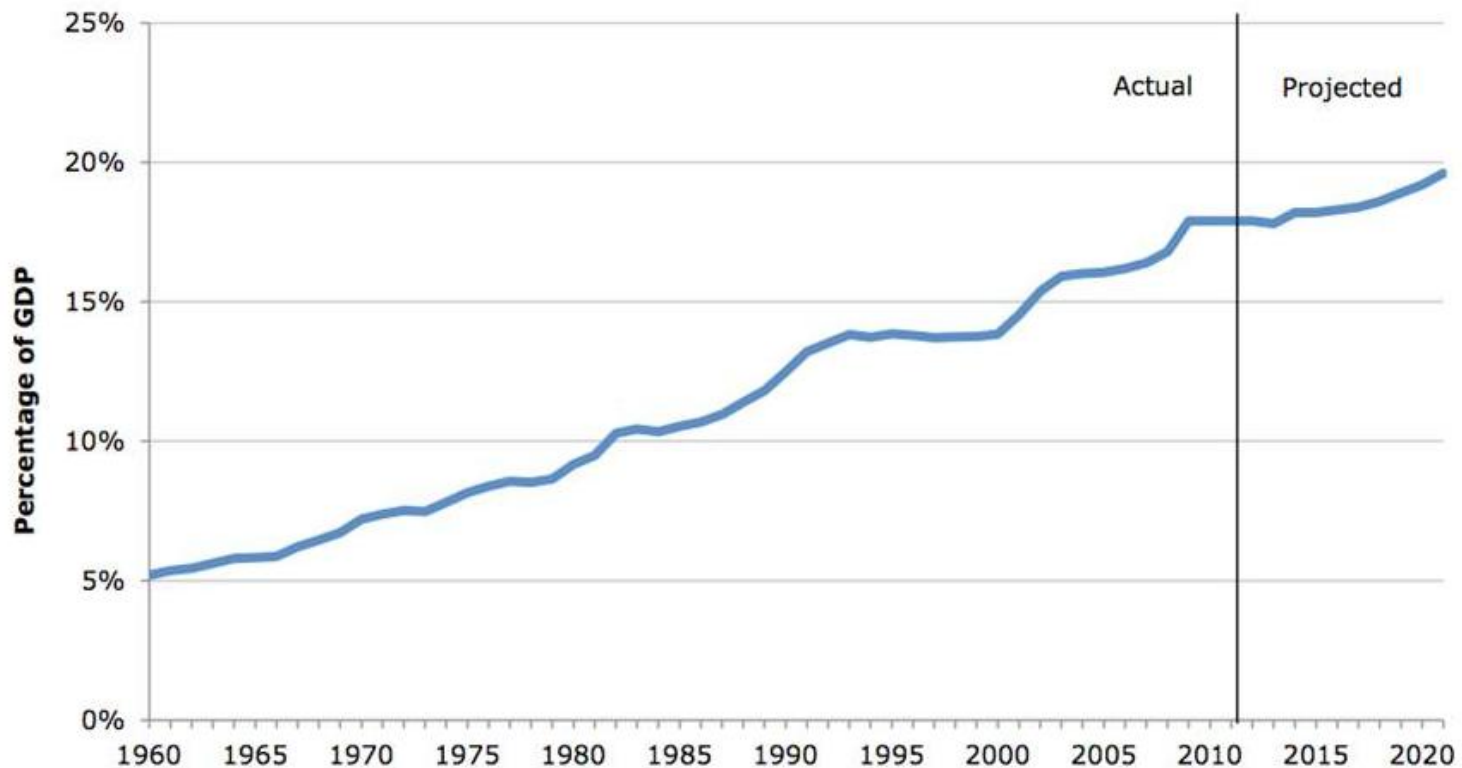
Rocketing Health Costs



Total US spend on Chronic Disease
\$1.875 trillion
\$3 out of every \$4 of US healthcare
spending is on Chronic Disease

Rocketing Health Costs

U.S. National Health Expenditure as a Share of GDP, 1960-2021



Source: Centers for Medicare and Medicaid Services.

Cost of Diabetes in Ireland



- The Cost of Treating Type 2 Diabetes (CODEIRE) Ir Med J. 2006 Nov-Dec;99(10):307-10
- Total direct cost 580 million

Type 2 diabetes is a very costly disease, largely due to the cost of and the management of complications. Many diabetes related complications are preventable, therefore it would appear a cost-effective approach for government to invest in the prevention of Type 2 diabetes and diabetes related complications...

How will we rise to these challenges?

The Vision

Prevention

Affordable Solutions

Transformative Regenerative Technologies

Bio - Printed Constructs
for Cardiac Disease



Glyco - Modified
Implants for
Parkinson's Disease



Regenerative Treatment
for Disc Degeneration



Patient Empowered
Bone Density Monitors
for Osteoporosis



Site Responsive
Devices for
Critical Limb Ischemia





What we do have

- Clinical programmes – Diabetes
 - Health and Wellbeing Directorate
 - Well trained clinicians
 - Subspecialty training scheme
 - National Retinal Screening programme
 - Evolving Podiatry Care
 - State support for Cost of Medicines
 - CSII for under 5's
 - Integrated care diabetes nurse specialists
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A Model of Diabetes

No Diabetes → Primary Prevention → Diabetes

Unrecognised Diabetes → Screening & Diagnosis → Recognised

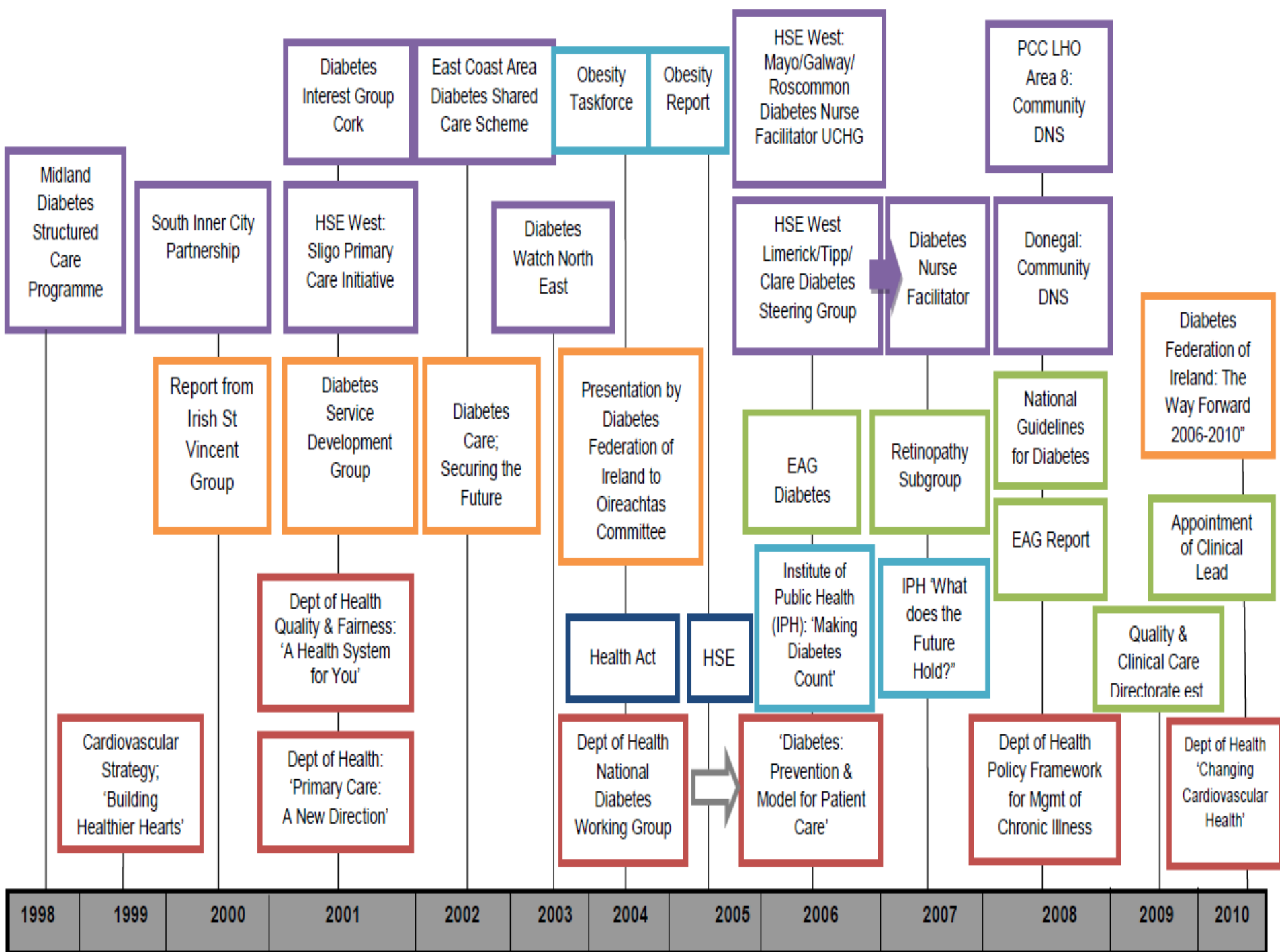
Uncared for Diabetes → Access & Utilization → Cared for Diabetes
Diabetes

Improper Care → Quality of Care → Proper Care



National Policy on Prevention of Diabetes

- Directorate Health and Wellbeing
 - Compulsory exercise in schools
 - Food tax
 - Bicycle usage
-
- Implementation of policy



System Inertia

- Defined as failure to initiate or sustain behaviour change despite evidence that change is needed
- Not necessarily a negative reaction to change
 - May be a natural response in a system that is overstretched with competing demands
- In favour of the idea but concerned about implementation and impact

Prediabetes: IFG, IGT, Increased A1C

Categories of increased risk for diabetes (prediabetes)*

FPG (5.6–6.9 mmol/L): IFG

OR

2-h plasma glucose in the 75-g OGTT
(7.8–11.0 mmol/L): IGT

OR

A1C 5.7–6.4%

*For all three tests, risk is continuous, extending below the lower limit of a range and becoming disproportionately greater at higher ends of the range.

Short Report: Epidemiology

Pre-diabetes in adults 45 years and over in Ireland: the Survey of Lifestyle, Attitudes and Nutrition in Ireland 2007

C. M. Buckley^{1,2}, J. Madden², K. Balanda³, S. Barron³, L. Fahy³, J. Harrington², I. J. Perry² and P. M. Kearney²

¹Department of General Practice, University College Cork (UCC), Cork, ²Department of Epidemiology and Public Health, University College Cork (UCC), Cork and ³Institute of Public Health, Dublin, Ireland

Accepted 7 May 2013

Abstract

Objectives Pre-diabetes is an important indicator of future diabetes burden and many countries are reporting prevalence estimates of pre-diabetes. To date in Ireland, estimates of the prevalence of pre-diabetes were unavailable. Our objectives were to estimate the prevalence of pre-diabetes in a nationally representative sample of Irish adults and to explore determinants of pre-diabetes.

Methods The Survey of Lifestyle Attitudes and Nutrition 2007 was a cross-sectional survey on health and lifestyle in a nationally representative sample of Irish adults. Analysis was performed on a subsample of 1132 participants ≥ 45 years who provided blood samples. Determination of pre-diabetes was based on American Diabetes Association HbA_{1c} cut points of 39–46 mmol/mol (5.7–6.4%). To explore determinants, we modelled pre-diabetes prevalence as a function of a set of health system and socio-demographic variables using logistic regression.

Results The overall weighted prevalence estimate of pre-diabetes in participants ≥ 45 years was 19.8% (95% CI 16.4–23.9). There was no significant difference between age or gender-specific prevalence rates. Obesity was significantly associated with pre-diabetes on univariate and multivariate analysis. Population attributable fraction estimates for excess BMI, physical inactivity and poor diet as causes of pre-diabetes were 31.3% (95% CI –3.9 to 54.5), 10.0% (95% CI –2.7 to 21.3) and 6.1% (95% CI –4.9 to 15.9), respectively.

Conclusions The high levels of pre-diabetes detected in this study are worrying. Population level interventions to address diet and lifestyle factors are needed urgently to prevent progression to diabetes in high-risk individuals.

Diabet. Med. 30, 1198–1203 (2013)



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Diabetes

Improper Care → Quality of Care → Proper Care

The Prevalence and Determinants of Undiagnosed and Diagnosed Type 2 Diabetes in Middle-Aged Irish Adults

Jennifer M. O Connor, Seán R. Millar*, Claire M. Buckley, Patricia M. Kearney, Ivan J. Perry

Department of Epidemiology & Public Health, University College Cork, Cork, Ireland

Abstract

Background: The prevalence of type 2 diabetes within the Republic of Ireland is poorly defined, although a recent report suggested 135,000 cases in adults aged 45+, with approximately one-third of these undiagnosed. This study aims to assess the prevalence of undiagnosed and diagnosed diabetes in middle-aged adults, and compare features related to either condition, in order to investigate why certain individuals remain undetected.

Methods: This was a cross-sectional study involving a sample of 2,047 men and women, aged between 50–69 years, randomly selected from a large primary care centre. Univariate logistic regression was used to explore socio-economic, metabolic and other health related variable associations with undiagnosed or diagnosed diabetes. A final multivariate analysis was used to determine odds ratios and 95% confidence intervals for having undiagnosed compared to diagnosed diabetes, adjusted for gender, age and significant covariates determined from univariate models.

Principle Findings: The total prevalence of diabetes was 8.5% (95% CI: 7.4%–8.8%); 72 subjects (3.5%) had undiagnosed diabetes (95% CI: 2.8%–4.4%) and 102 subjects (5.0%) had diagnosed diabetes (95% CI: 4.1%–6.0%). Obesity, dyslipidaemia, and family history of diabetes were positively associated with both undiagnosed and diagnosed type 2 diabetes. Compared with diagnosed subjects, study participants with undiagnosed diabetes were significantly more likely to have low levels of physical activity and were less likely to be on treatment for diabetes-related conditions or to have private medical insurance.

Conclusions: The prevalence of diabetes within the Cork and Kerry Diabetes and Heart Disease Study is comparable to recent estimates from the Slán National Health and Lifestyle Survey, a study which was nationally representative of the general population. A considerable proportion of diabetes cases were undiagnosed (41%), emphasising the need for more effective detection strategies and equitable access to primary healthcare.

Recommendations: Testing for Diabetes in Asymptomatic Patients

- Consider testing overweight/obese adults (BMI ≥ 25 kg/m² or ≥ 23 kg/m² in Asian Americans) with one or more additional risk factors for type 2 diabetes; for all patients, particularly those who are overweight, testing should begin at age 45 years **B**
- If tests are normal, repeat testing at least at 3-year intervals is reasonable **C**
- To test for diabetes/prediabetes, the A1C, FPG, or 2-h 75-g OGTT are appropriate **B**
- In those with prediabetes, identify and, if appropriate, treat other CVD risk factors **B**



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Access to Care

- Primary care
 - Secondary care
-



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ORIGINAL RESEARCH

'It sounds like a great idea but...': a qualitative study of GPs' attitudes towards the development of a national diabetes register

Sheena M Mc Hugh,¹ Monica O'Mullane,² Ivan J Perry,¹ Colin Bradley,³
On behalf of the National Diabetes Register Project (NDRP)

► Additional material is published online only. To view please visit the journal online (<http://dx.doi.org/10.1136/bmjqs-2013-002626>).

¹Department of Epidemiology & Public Health, University College Cork, Cork, Ireland

²Faculty of Health Care and Social Work, Department of Public Health, Trnava University, Trnava, Slovakia

³Department of General Practice, University College Cork, Cork, Ireland

ABSTRACT

Objective The aim of this study was to investigate the attitudes of general practitioners (GPs) to the development of a national diabetes register as a way of improving the quality of care.

Design Qualitative study using semistructured interviews.

Setting General practice, Ireland.

Participants Purposive sample of 29 GPs and two practice nurses. Participants' practices varied by (a) location (rural/urban), (b) size (single-handed/group practice) and (c) extent of computerisation.

with in the health system. This inertia stems from previous experience and the competing demands of maintaining versus improving care in a system with dwindling resources.

INTRODUCTION

Professional attitudes are a potential source of resistance to change in the health system and initiatives can fail without adequate 'buy in' from frontline staff.¹ A longitudinal evaluation of the integrated care pilots in the National Health Service

Table 2 Attitudes to the development of a national diabetes register and the factors driving concerns

Attitudes	Factors influencing attitudes	Quote
Scepticism	Previous experience of change in the health system	"It's an idealistic approach, and I'm afraid..., in my lifetime anything idealistic has never come to fruition, I mean not even once...Sometimes people get into the idea of the ideal...and I mean everybody would like these things...In practical terms, they never work and haven't worked in the past...but that doesn't mean you should stop hoping for it." (GP 109: rural, single-handed, computerised practice)
Risk of distracting from patient management	Previous experience of change in the health system	"I've no problem with it but on the other hand if it's something like 6 sheets have to be filled in every time somebody new was diagnosed as diabetic...it's all about balance. It can't be a burden and in particular it can't be an administrative burden." (GP 111: urban, group, computerised practice)
Need for remuneration for widespread engagement	Frustration with current payment structure	"GP practices are often so overworked and overloaded that when something comes down and it's said like this is what you have to do, there's a big kind of 'hang on a minute, we're not paid for this, we're already doing this and this and there's a big kind of stand-off." (Practice nurse 104: rural, group, computerised practice)
Risk of diverting resources in the health system	Economic pressure and competition for resources	"I think it sounds like a great ideal... [but] money might be better placed in some other way." (GP 114: urban, single-handed computerised practice)
'Clinically sensible' aims should underpin register	Wariness towards bureaucracy and health service administration	"It depends on the layer of bureaucracy that goes with it [a national register]...As long as the its aims are not too high falutin', as long as they're very practical and clinically sensible." (GP 112: rural, group, computerised practice)
Resistance to top-down change	Wariness towards bureaucracy and health service administration	"There is a force from primary care and from tertiary care and from the powers that control the purse strings to have a computer E-health (system) travel down the way and impose itself eventually on primary care." (GP 108: rural, group, computerised practice)
Need for universal patient registration and computerisation	Lack of unique patient identifier and widespread computerisation in general practice	"...the only way to deliver the standard of care the patient deserves <i>would</i> be to have a diabetic register but in Ireland we've the whole issue of the fluidity of the practice population, nobody knows what their practice population is so you're trying to shoot a moving target." (GP 106: urban, group, computerised practice)

GP, general practitioner.

Midlands HSE Diabetes Structured Care Programme

European Journal of General Practice. 2008; 14: 117–122

informa
healthcare

ORIGINAL ARTICLE

Management of diabetes in primary care: A structured-care approach

CARMEL BRENNAN¹, VELMA HARKINS¹ & IVAN J. PERRY²

¹Health Service Executive – Dublin/Mid-Leinster Area, Ireland, and ²Department of Epidemiology and Public Health, University College Cork, Cork, Ireland

Abstract

Background: In the Irish Midland Health Service Executive (HSE) Diabetes Structured Care Project, additional resources were targeted at general practice in the absence of a local hospital-based specialized diabetes unit. **Objective:** We assessed the performance of the Midland HSE Diabetes Structured Care programme in 2003, bench-marked against Primary Care Trust (PCT) data from the 2003/2004 National Diabetes Audit for England. **Methods:** Data on 947 patients (72% of eligible patients) from all 20 general practices participating in the structured-care programme were collected retrospectively over a 12-month period. The data included demographic and clinical variables as well as key process-of-care and intermediate outcome indicators used in the National Diabetes Audit for England. **Results:** The level of recording of process-of-care measures was near or above the upper quartile for PCTs in England. The proportion of patients with HbA_{1c} concentrations at target levels (<6.5%) in the Midlands HSE project (26.8%) was virtually identical to the upper quartile level for PCTs in England (27.4%). The proportion of patients reaching target total cholesterol levels (<5.0 mmol/l) (54.6%) was close to the mean for PCTs in England (56.6%), and performance with regard to target blood pressure levels was equally poor in both the Midlands HSE (18.0%) and in PCTs in England (20.8%).

Conclusion: Primary-care-led structured care, with relatively limited but well-focused investment, can achieve quality of care for patients with diabetes, comparable to international best practice.

Key words: Diabetes management, primary care, structured care

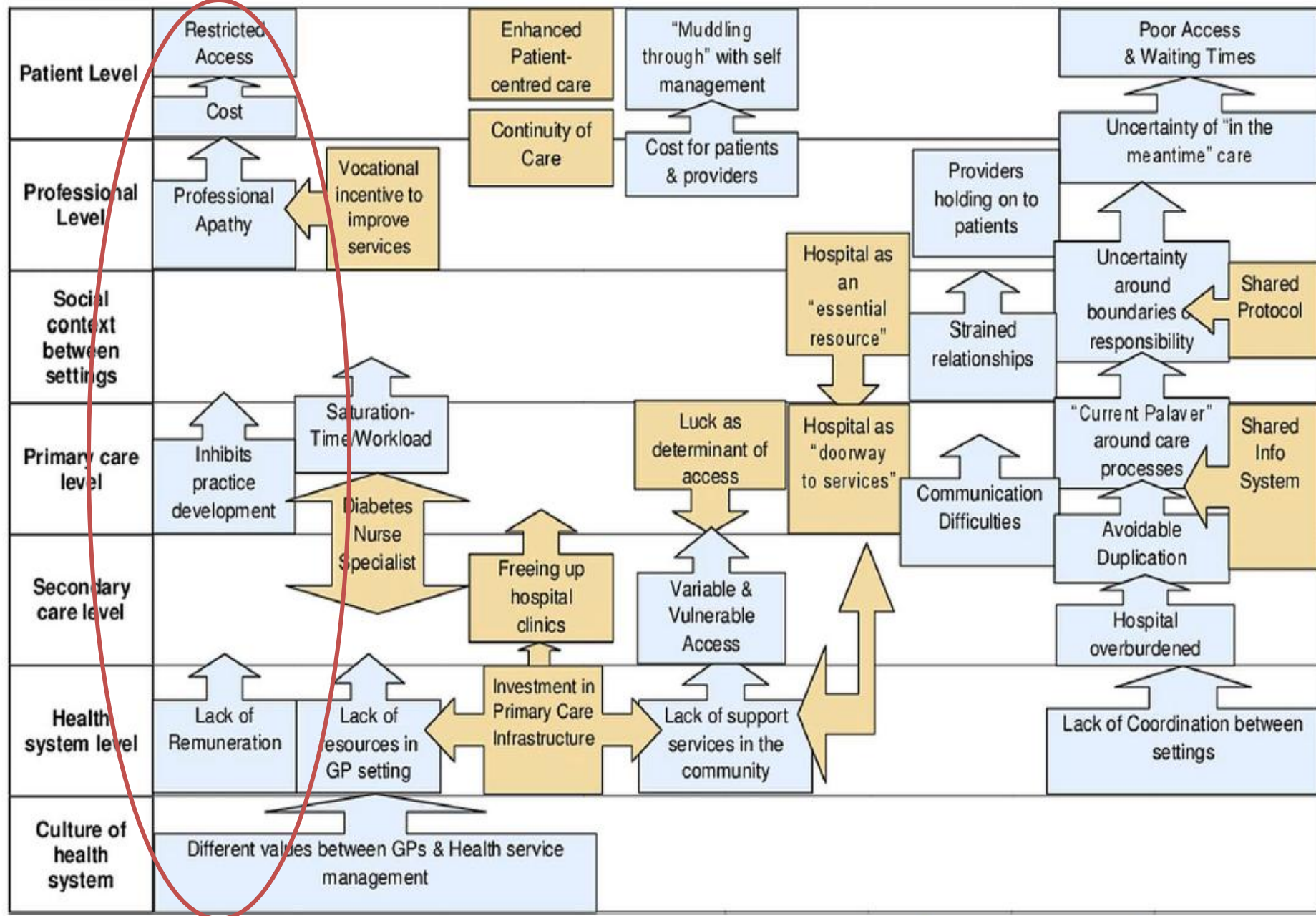
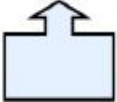



Figure 1 Barriers to, and facilitators in, delivering integrated diabetes care. barrier , facilitator .



Primary Care Interface

- Truly integrated service
 - Project ECHO
 - Electronic medical record
 - Incentivize primary care
-



Key Performance Indicators

Process Metrics

- All practices will have a diabetes register
- Practice Nurse
- % recording A1c/BP/Lipids/BMI/ACR etc

- Target Metrics

- % of patients achieving A1c/BP/Lipid targets etc.

- High Performance Metrics

- % reduction in sight loss
 - % reduction in lower limb amputations
 - % reduction in renal failure
 - % reduction in MI/CVA
-

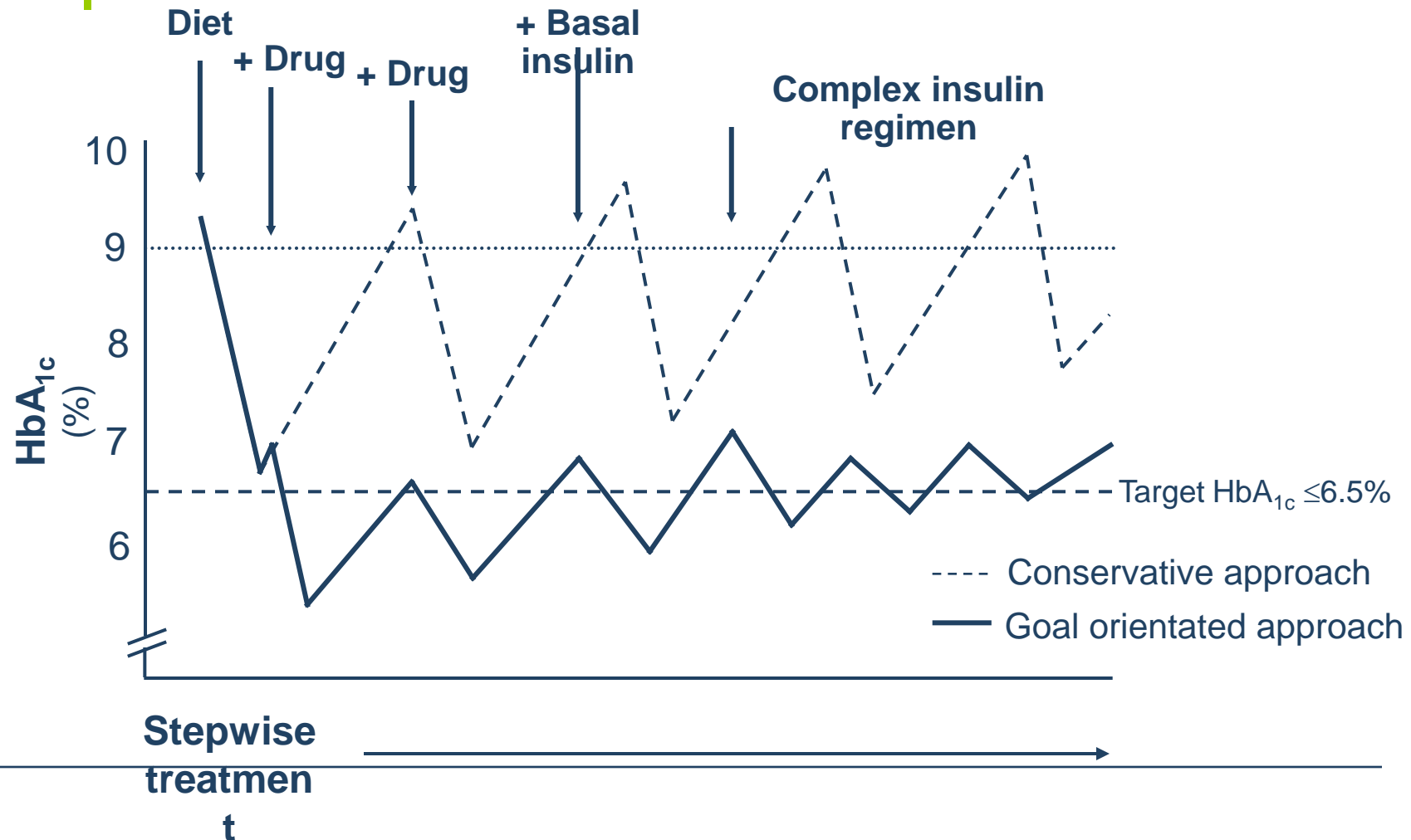


Galway University Hospitals ECHO



University Hospital Galway
Ospidéal na h-Ollscoile, Gaillimh
GALWAY UNIVERSITY HOSPITALS

Future management of type 2 diabetes – intensive management: National Guidelines

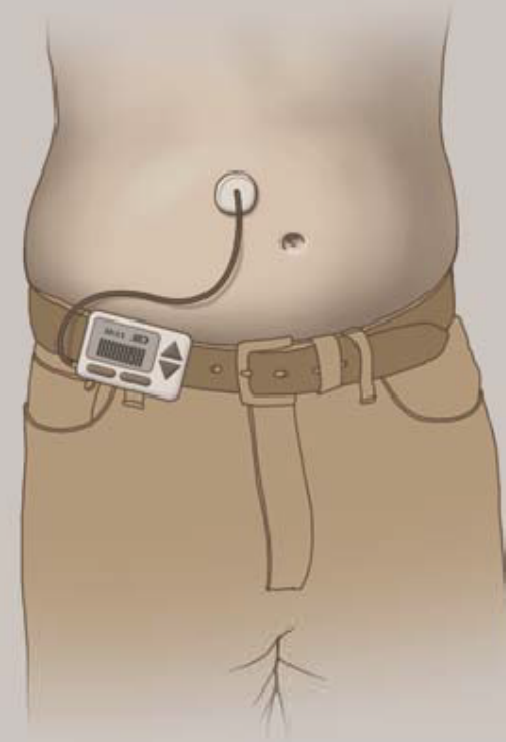
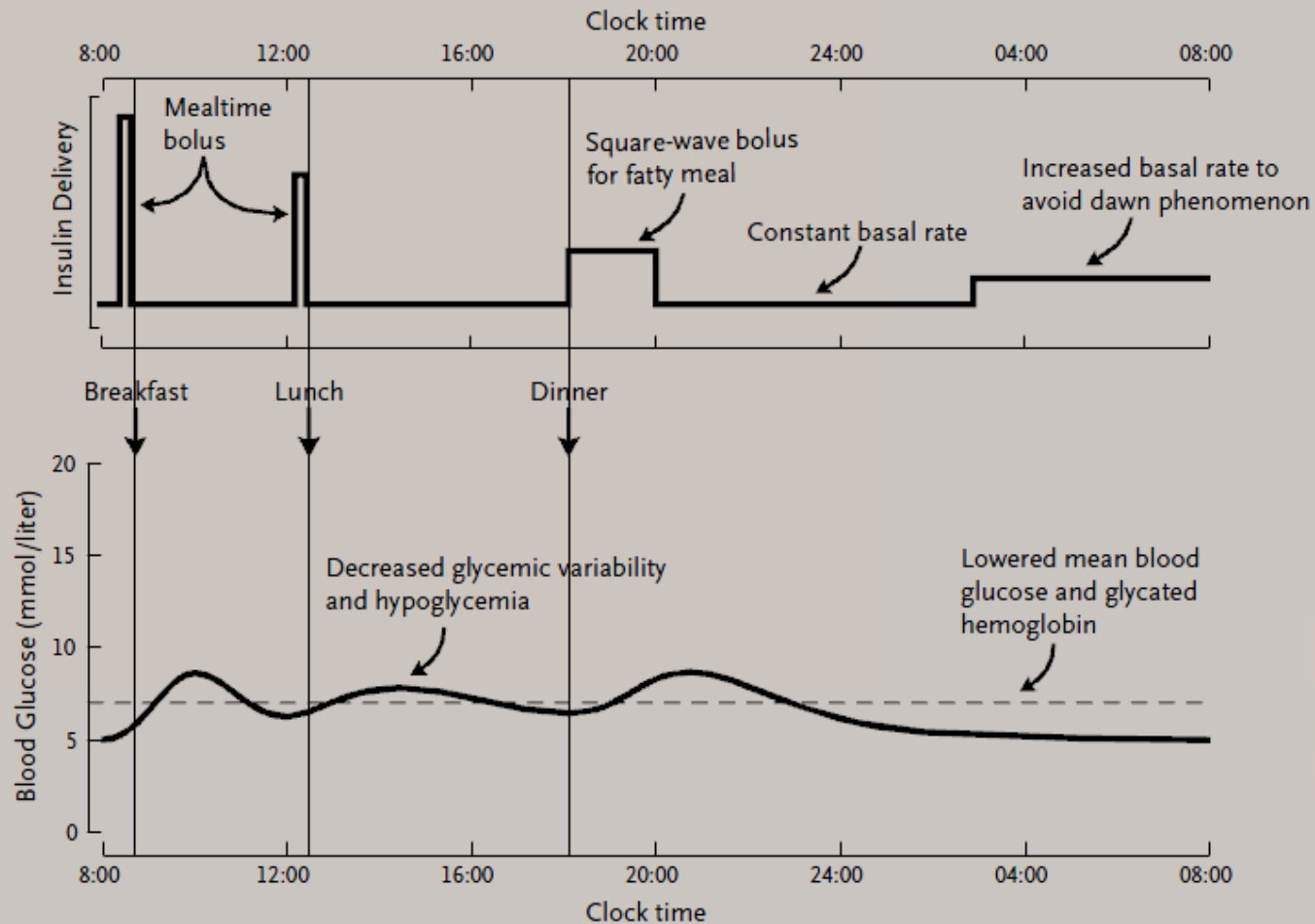




Bariatric Surgery

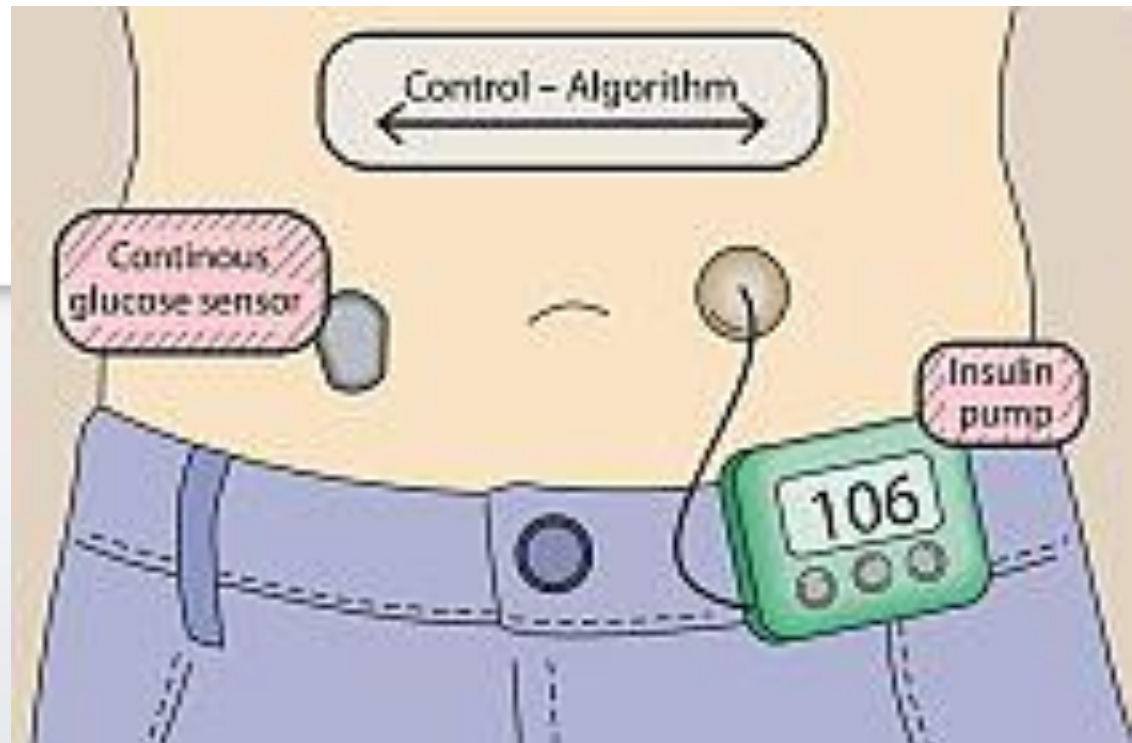


B Insulin-Pump Therapy



John Pickup Insulin- Pump Therapy for T1DM NEJM July 2012

- A closed-loop system has the potential to improve:
 - Glycaemic control
 - Hypoglycaemia
 - Glycaemic variability
 - Compliance
 - Quality of life



Pancreas Transplantation

- SPK or PAK most common
- 86% insulin independence at 1 year and 69% at 3 years
- Significant morbidity and mortality associated with the transplantation

Islet Transplantation

- Who should be considered in light of switching insulin for immunosuppression
 - C peptide negative
 - Severe glycaemic lability
 - Recurrent life threatening hypoglycaemia
 - Hypoglycaemic unawareness

Islet Transplantation

- 20 fold less morbidity
- Major drawbacks
 - Inadequate supply of pancreata
 - Innate and alloimmune rejection
 - Recurrent autoimmunity
 - Toxicity of immunosuppression
 - Cost

Cell Manufacturing (CCMI)

Expertise

- Good manufacturing practice
 - Cell processing including isolation, expansion, characterisation
 - Clinical trials
 - Media formulation
 - Cleanrooms
-



The CCMI is a versatile cleanroom with standout features including two parallel production suites. Each of the two suites is capable of clinical grade manufacturing of cellular therapy products and small molecules for therapeutic applications.



CCMI are very interested in discussing opportunities with clients interested in procuring human GMP-grade mesenchymal stem cells or a custom manufacturing service

Other deficiencies in care of patients with type 1 DM

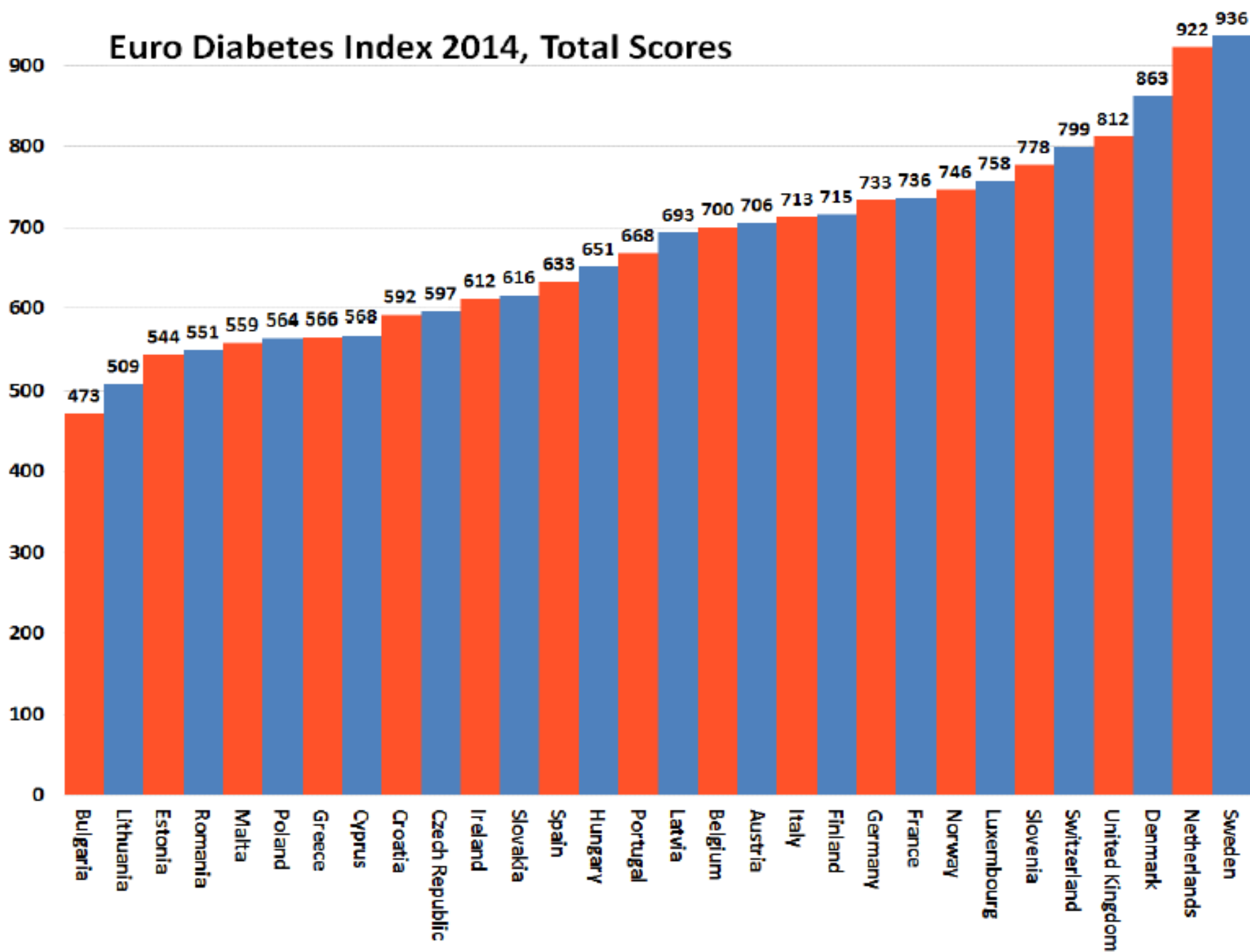
- Psychology
- Dietetics
- Structured education programmes such as DAFNE
- Specialized type 1 clinics with technology focus



Euro Diabetes Index

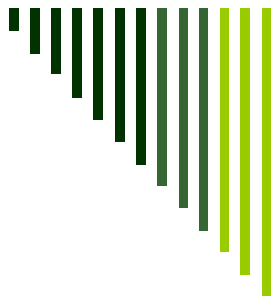
2014

Euro Diabetes Index 2014, Total Scores

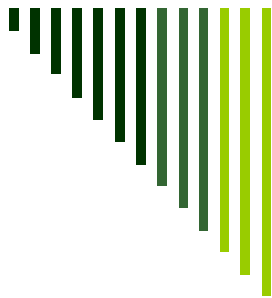


Mention of Ireland

Coordination of care; A good illustration is provided by comparing care delivery of Ireland (20th in the EDI) and the UK (4th). In Ireland, care is delivered in a variety of ways to patients with diabetes including traditional mixed care, hospital-led care, shared care arrangements and primary care-led management. At GP level, care is often ad-hoc reflected by the absence of patient registries, irregular review and the lack of guideline use among GP's²³. Access to essential support is variable and inconsistent with multiple providers of services, often influenced by whether a patient is attending the public or private health system. In England and Wales, diabetes care delivery is supported by an infrastructure including a dedicated policy framework, screening programmes, robust IT systems in general practice and a financial incentive structure to promote quality assurance as well as an annual audit that measures the effectiveness of diabetes healthcare against NICE Clinical Guidelines and NICE Quality Standards.



□ Adequate consultant numbers



Research

- Clinical Trial Network through CRFs
- Diabetologists with protected research time to develop global profile
- Linkage of diabetes research programmes
- Protected or ring-fenced research budget
- Health services and registry-based research
- Type 1 and the cure: Technology, immunotherapy, stem cell therapy and islet transplantation



Clinical Research Facility

- Access to clinical specialists and networks
- Clinical trial management
- Research nursing support
- Biostatistical and methodological support on study design and analysis
- Data management and IT support





OÉ Gaillimh
NUI Galway



University College Cork, Ireland
Coláiste na hOllscoile Corcaigh



Queen's University
Belfast



RCSI

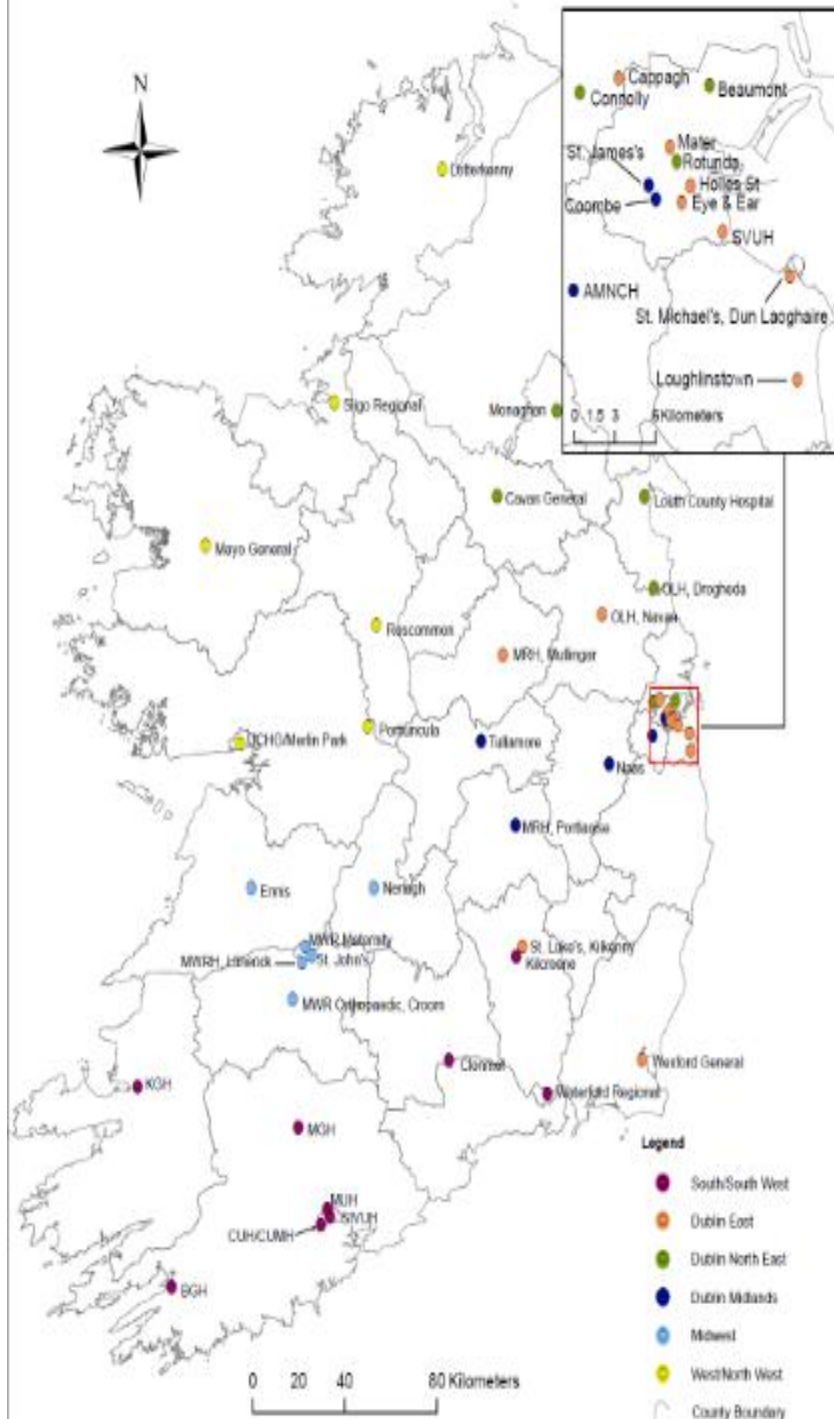
ROYAL COLLEGE OF SURGEONS IN IRELAND
COLÁISTE BÓGA NA MAINLEA IN ÉIRENN



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH



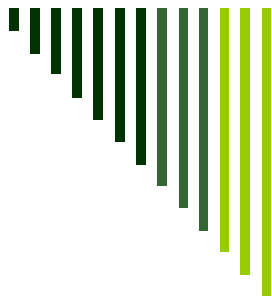
OÉ Gaillimh
NUI Galway





Education

- National medical school curriculum
 - Post graduate taught programmes
 - Post graduate research programmes
 - Educational upskilling/CME opportunities
-



Priorities

- Implementation of policy framework
 - Screening and prevention programme
 - National register
 - Electronic medical record
 - Financial incentive structure
 - Annual audit of care against KPIs
 - Bariatric programme/Diabetes technology/staffing
 - Clinical trial network
 - National curriculum
-