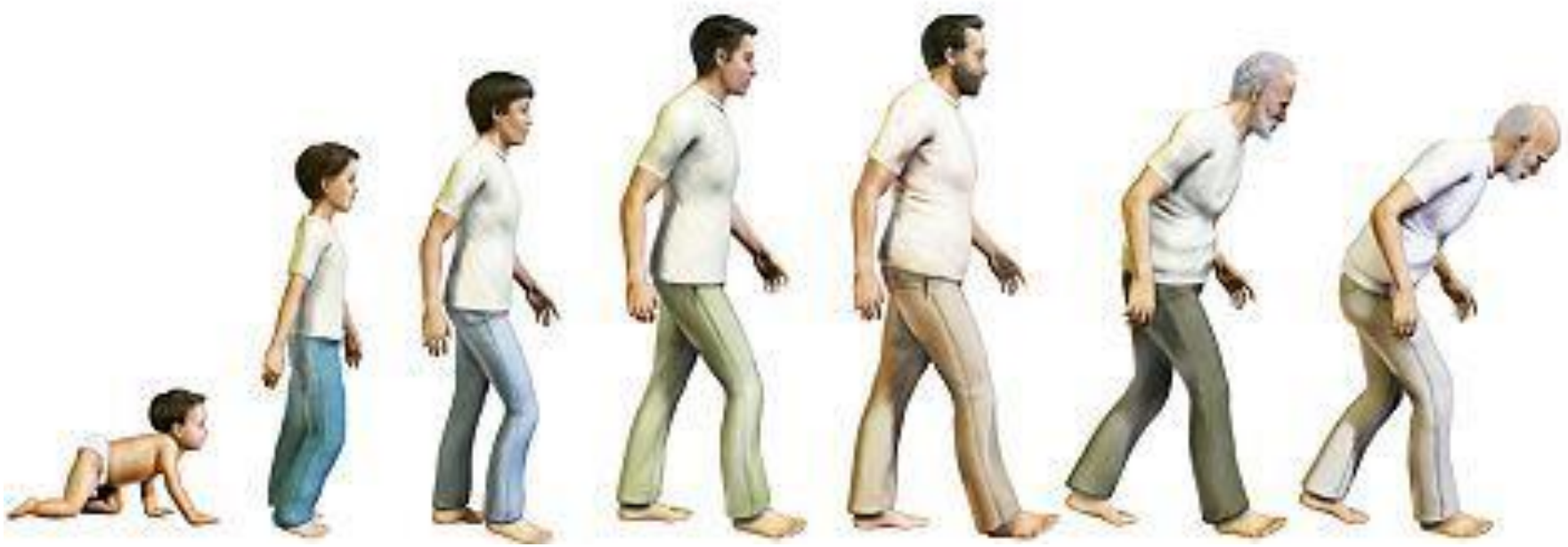
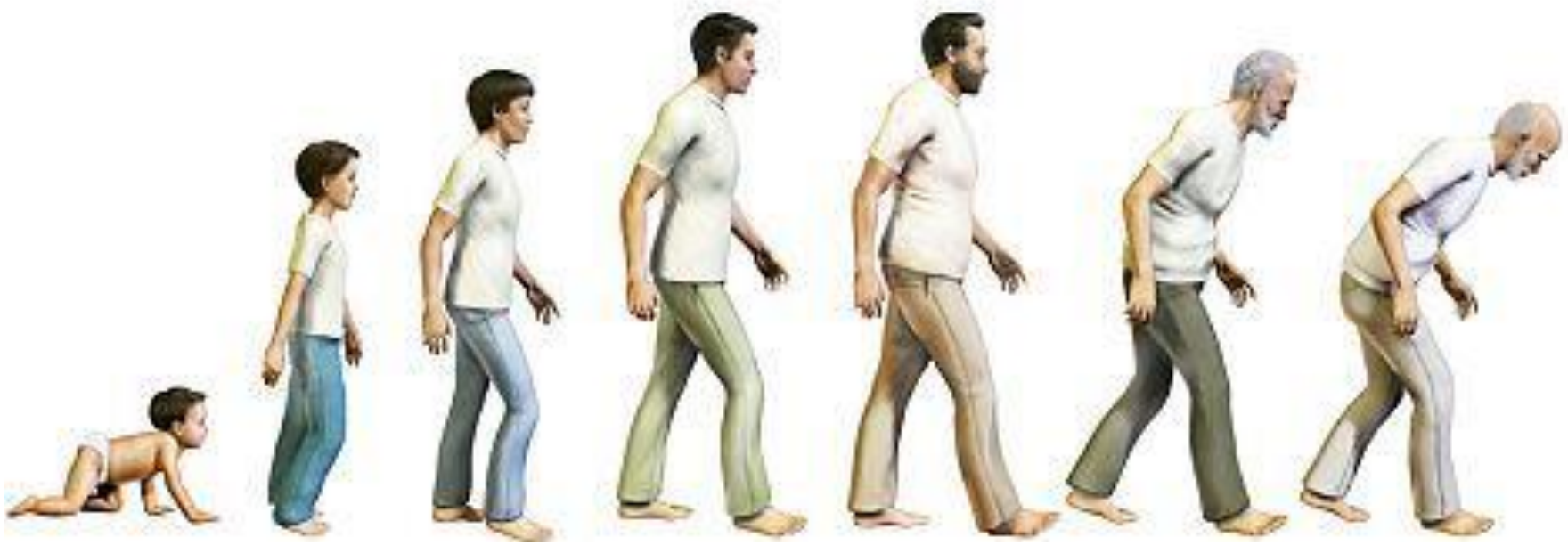

WHEN THEY SAID THE NHS IS FOR PEOPLE 'FROM THE CRADLE TO THE GRAVE' THEY MEANT THE PATIENTS NOT THE STAFF!

The Seven Ages of Man



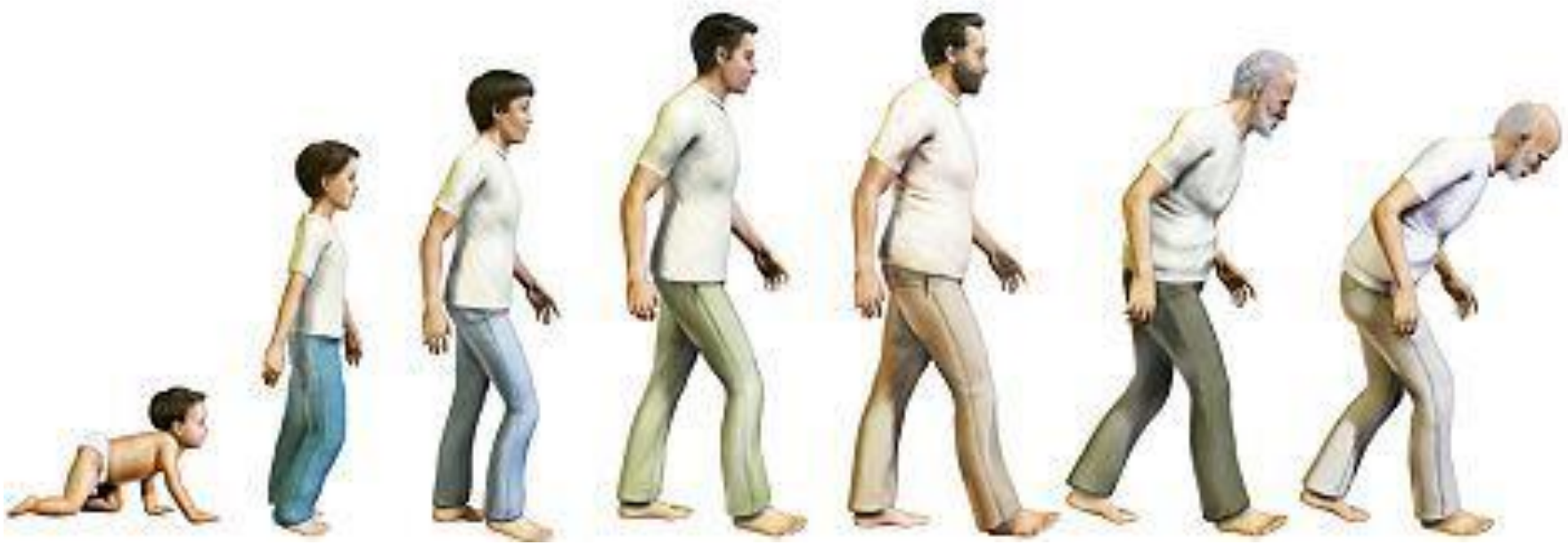
1. Infancy

The Seven Ages of Man



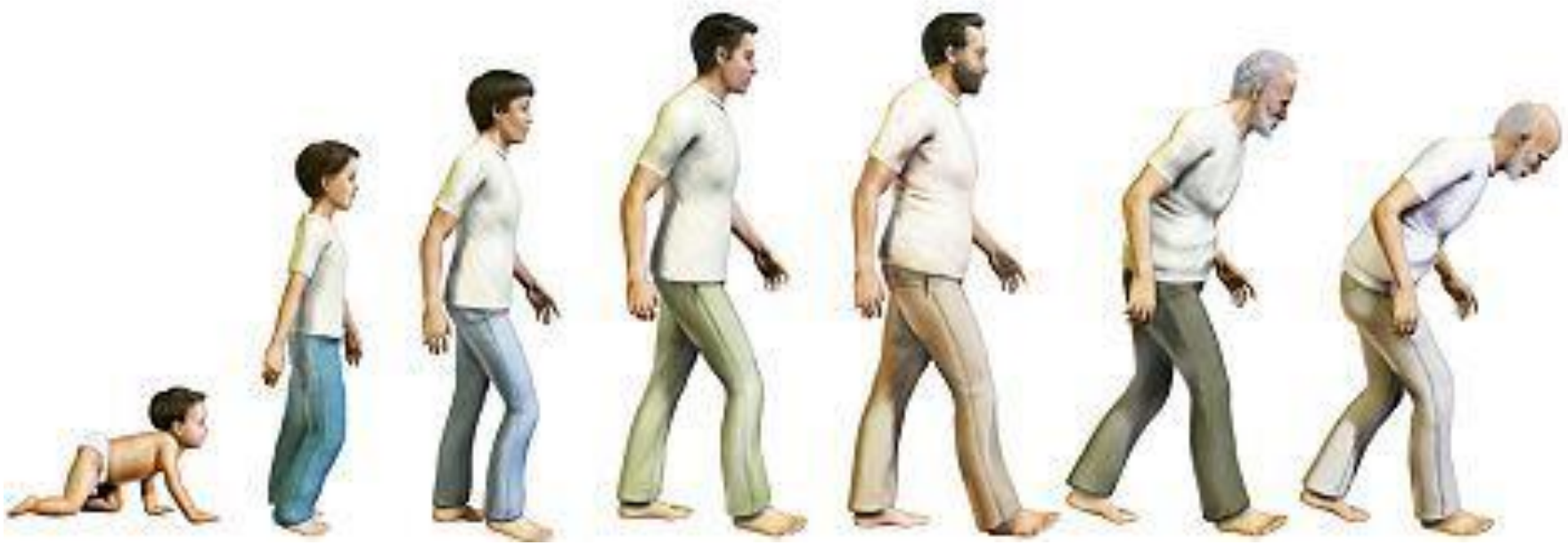
2. Childhood

The Seven Ages of Man



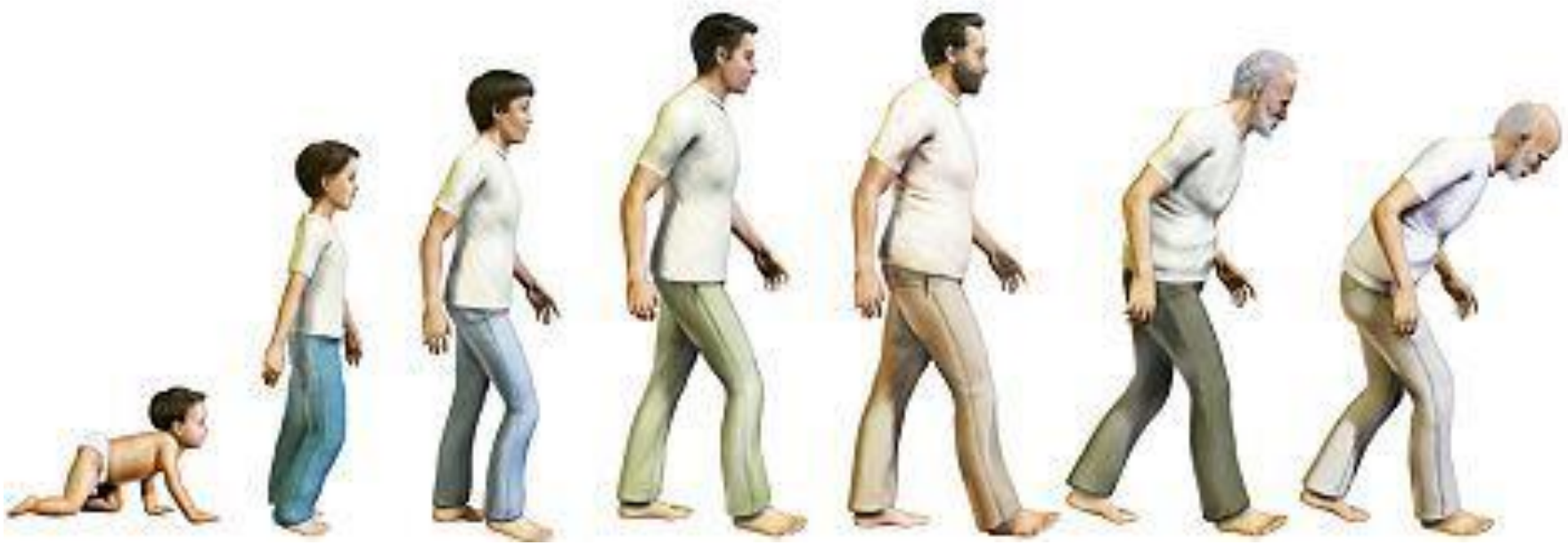
3. Adolescence

The Seven Ages of Man



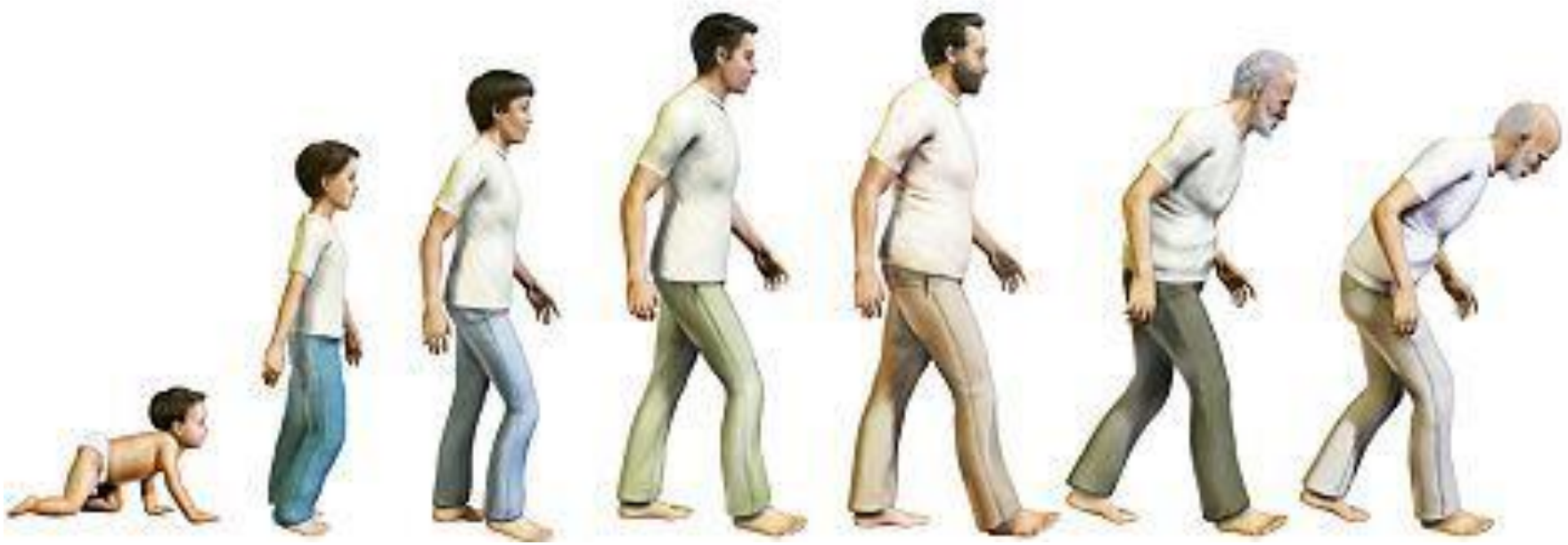
4. Young adult

The Seven Ages of Man



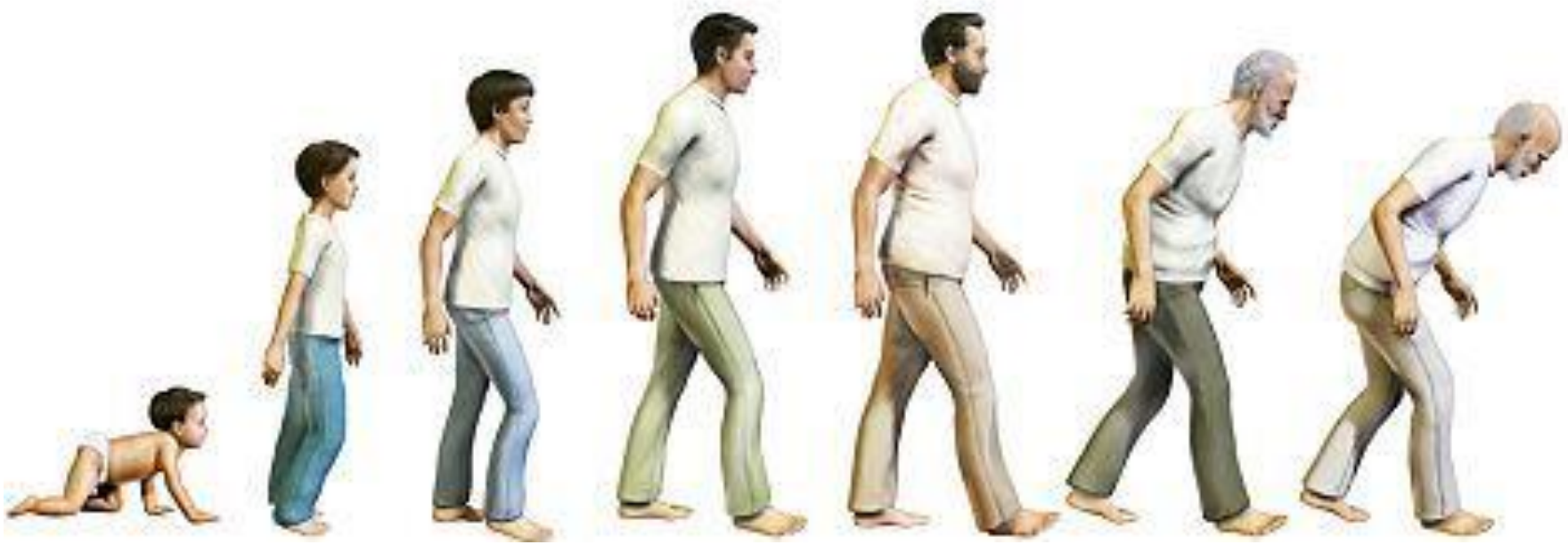
5. Adulthood

The Seven Ages of Man



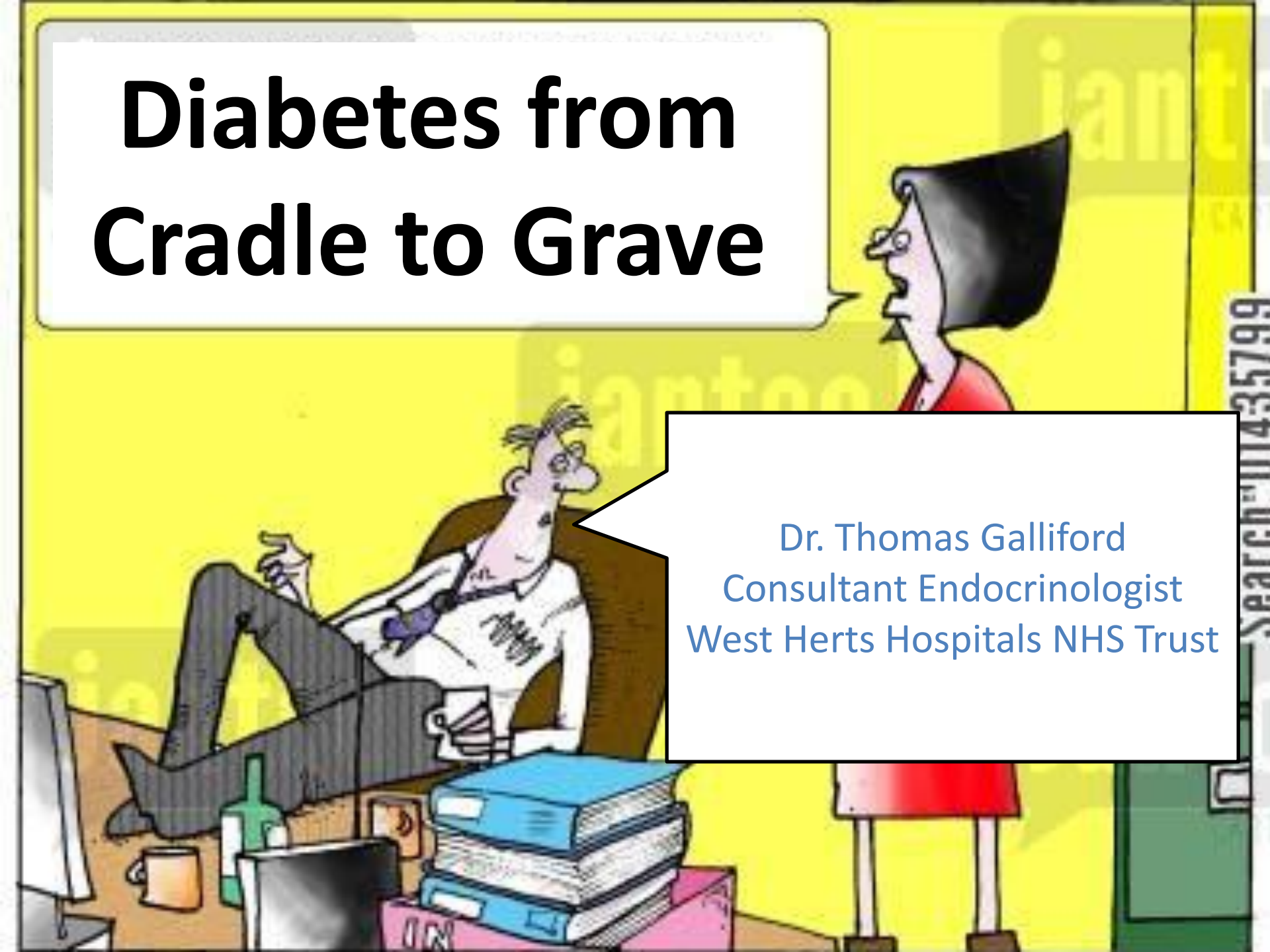
6. Early old age

The Seven Ages of Man



7. Later old age

Diabetes from Cradle to Grave



Dr. Thomas Galliford
Consultant Endocrinologist
West Herts Hospitals NHS Trust

Hertfordshire Diabetes Conference

Hertfordshire Annual Diabetes Conference
1st October 2015, Fielder Centre, Hatfield
'Quality and Safety in Diabetes Care'
Programme:

08.30 - 08.55	Registration and Coffee
08.55 - 09.00	Welcome and Introduction
09.00 - 09.20	Keynote Speaker: Dr Partha Kar Quality Indicators and standards for diabetes care CQC Inspection of Diabetes Service
09.20 - 09.30	Patient 1: Experience of Diabetes Care
09.30 - 09.40	Patient 2: Experience of Diabetes Care
09.40 - 10.00	Panel Q&A
10.00 - 10.30	Coffee
10.30 - 11.30	Workshop 1 (Group A), Presentations 1&2 (Group B)
11.30 - 12.30	Workshop 2 (Group A), Presentations 3&4 (Group B)
12.30 - 13.30	Lunch
13. 30 - 14.30	Workshop 2 (Group B), Presentations 1&2 (Group A)
14.30 - 15.30	Workshop 1(Group B), Presentations 3&4 (Group A)
15.30 - 16.00	Tea
16.00 - 16.45	Debate: Tight Glycaemic Control - Does It Do More Harm Than Good?
16.45 - 17.00	Close
Workshop 1:	Prevention of Admission & Discharge Planning
Workshop 2:	Diagnosing Diabetes - Could It Be Type 1?
Presentation 1:	Overcoming Health Barriers to Deliver Quality Care
Presentation 2:	Hypoglycaemia Pathway & Prenatal Diabetes Care
Presentation 3:	Self Management Strategy & Personal Health Plans
Presentation 4:	Diabetes in Care Homes

All delegates will receive an email link to an online feedback form and certificate of attendance following the conference. All presentations will be available on the websites of East & North Herts CCG, Herts Valleys CCG, East and North Herts NHS Trust, West Herts Hospital Trust & Hertfordshire Community Trust.

Hertfordshire DIABETES Conference 2016

A JOURNEY THROUGH DIABETES PREVENTION

08.30 - 08.55	Registration and Coffee
08.55 - 09.00	Welcome and Introduction
09.00 - 09.20	Keynote Speaker: Mr Piers Simey – Prevention: Potential and Practicalities
09.20 - 09.30	Ms Pam Bowman (Type 1 diabetes) : 'If I could turn back time'
09.30 - 09.45	Mr. Colin Bertie (Type 2 diabetes): 'If I could turn back time'
09.45 - 10.00	A New Diabetes Service in Herts Valleys: Dr Nicola Cowap
10.00 - 10.30	Coffee
10.30 - 11.30	Workshop 1 (Group A), Presentations 1&2 (Group B)
11.30 - 12.30	Workshop 2 (Group A), Presentations 3&4 (Group B)
12.30 - 13.30	Lunch
13. 30 - 14.30	Workshop 2 (Group B), Presentations 1&2 (Group A)
14.30 - 15.30	Workshop 1 (Group B), Presentations 3&4 (Group A)
15.30 - 16.00	Tea
16.00 - 16.45	Debate: 'My 2020 vision for diabetes prevention in Hertfordshire '– Public Health, Primary Care & Secondary Care . Prof. Jim Mc Manus, Dr. Alka Patel & Dr. Ana Pokarajac.
16.45 - 17.00	Close
Workshop 1:	Lifestyle Modification – Ms. Claire Mearing, Ms Michelle Constable etc
Workshop 2:	Prevention of Foot Amputation – Dr. Chantal Kong etc.
Presentation 1:	Prevention of Diabetic Eye Disease – Dr. Sadhana Kulkarni
Presentation 2:	Prevention of Hypoglycaemia – Dr. Andrew Solomon
Presentation 3:	Prevention of Cardiovascular disease – Dr. Peter Winoccour
Presentation 4:	Prevention of Type 2 DM after GDM – Dr. Tom Galliford

All presentations will be available on the websites of East & North Herts CCG, Herts Valleys CCG, East and North Herts NHS Trust, West Herts Hospital Trust & Hertfordshire Community Trust.

Supported by:
Herts Valleys CCG, East and North Herts CCG, West Herts Hospital Trust, East and North Hertfordshire Trust and Hertfordshire Community Trust

Childhood

Incidence of diabetes in children

Table 1| **Top 10 countries by incidence of type 1 diabetes in children aged up to 14 years**

Country	Incidence (per 100<thin>000)
Finland	57.6
Sweden	43.1
Saudi Arabia	31.4
Norway	27.9
United Kingdom	24.5
United States	23.7
Australia	22.5
Kuwait	22.3
Denmark	22.2
Canada	21.7

1.

[1]Iacobucci. *BMJ 2013*; **346**

Incidence trends for type 1 diabetes in Europe[1]

- EURODIAB registers (17 countries)
  - Oxford, Bristol, Leeds, N. Ireland

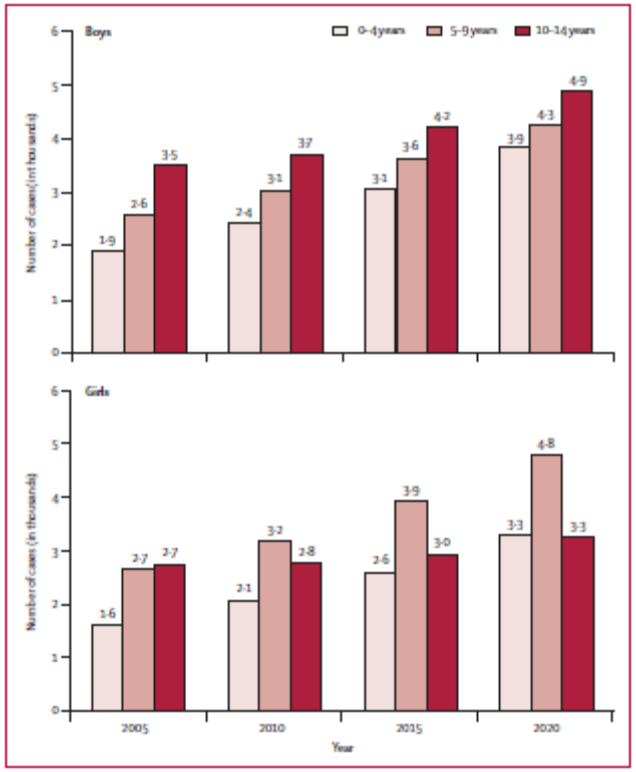


Figure 4: Estimated (2005) and predicted cases of newly diagnosed type 1 diabetes

[1]Patterson et al. *Lancet 2009*; **373:**2027-33

Challenges with young children with type 1 diabetes

1. Physiological
   - Increased insulin sensitivity
   - Susceptibility to hypoglycaemia/failure to reliably detect
   - Hyperglycaemia (glycaemic variability) leading to decreased grey matter volume
2. Nutritional
   - Glycaemic index of foods
   - Food preferences and food refusal

   } difficult to predict insulin volume and dosage
   - Greater negative child mealtime behaviours /mealtime misbehaviour and worse diet
3. Physical Activity
   - Unpredictable
   - Avoidance (hypoglycaemia)

   } Less activity overall
4. Psychosocial
   - Considerations of management pervade nearly all ADLs (e.g. play, meals, sleep, sibling/peer relationships, school/daytime interactions)
   - Adherance to treatment regime feels like punishment
   - Neuropsychological effects from difficulties in achieving treatment targets
   - Reduced QoL
5. Parental (more known about psychological stresses in parents)
   - Fear/worry about acute and chronic complications including hypoglycaemia (e.g. seizure)
   - Social isolation/negative effects on job performance or advancement
   - Self-doubt
   - Increased prevalence and risk of PTSD/depression/anxiety symptoms
   - Sleep disturbance
   - The younger the child the greater the impact
   - 70-80% of burden of care on mothers (very young children)

Young children with type 1 diabetes

- Interventions
  - Limited trial data, small studies
  - e.g. parent mentors, phone-calls, coping skills training
  - Streisand et al[1]:
    - 134 parents of children 1-6yrs (parent support vs. diabetes education support)
    - Parent support = phone sessions, online message board, group teleconferences
    - Interventional strategies = parental emotional functioning, support of parenting behaviours
    - Preliminary results:
      - Improvements in mealtime distress
      - Higher satisfaction
      - 0.5% reduction in HbA1c from baseline at 1 year
  - More studies needed!

[1]Streisand and Monaghan. *Curr Diab Rep. 2014,* **14(9)**

ISPAD
International Society for Pediatric and Adolescent Diabetes

American Diabetes Association®

- Target HbA1c < 58mmol/mol (7.5%)

NICE
National Institute for Health and Care Excellence

Diabetes (type 1 and type 2) in children and young people: diagnosis and management

- Published Aug 2015, updated Nov 2016
- Target HbA1c < 48mmol/mol (6.5%)

NPDA
National Paediatric Diabetes Audit

National Paediatric Diabetes Audit Report 2015-2016
Part 1: Care Processes and Outcomes

HQIP
Healthcare Quality Improvement Partnership

RCPCH
Royal College of Paediatrics and Child Health
Leading the way in Children's Health

- All 173 PDUs
  - 24,439 children <24yrs
- 27,115 (96%) Type 1 diabetes
  - Prevalence 195.4/100,000
  - Incidence 25.9/100,000
  - ♂ > ♀
  - Mean HbA1c 67.8mmol/mol (8.35%)
    - 3.2mmol/mol improvement from 2014-2015
    - 23.5% HbA1c < 58mmol/mol
  - Complications:
    - 9.7% microalbuminuria
    - 13.8% retinopathy
    - 26.3% hypertension
    - 30% referred to psychology or CAMHS

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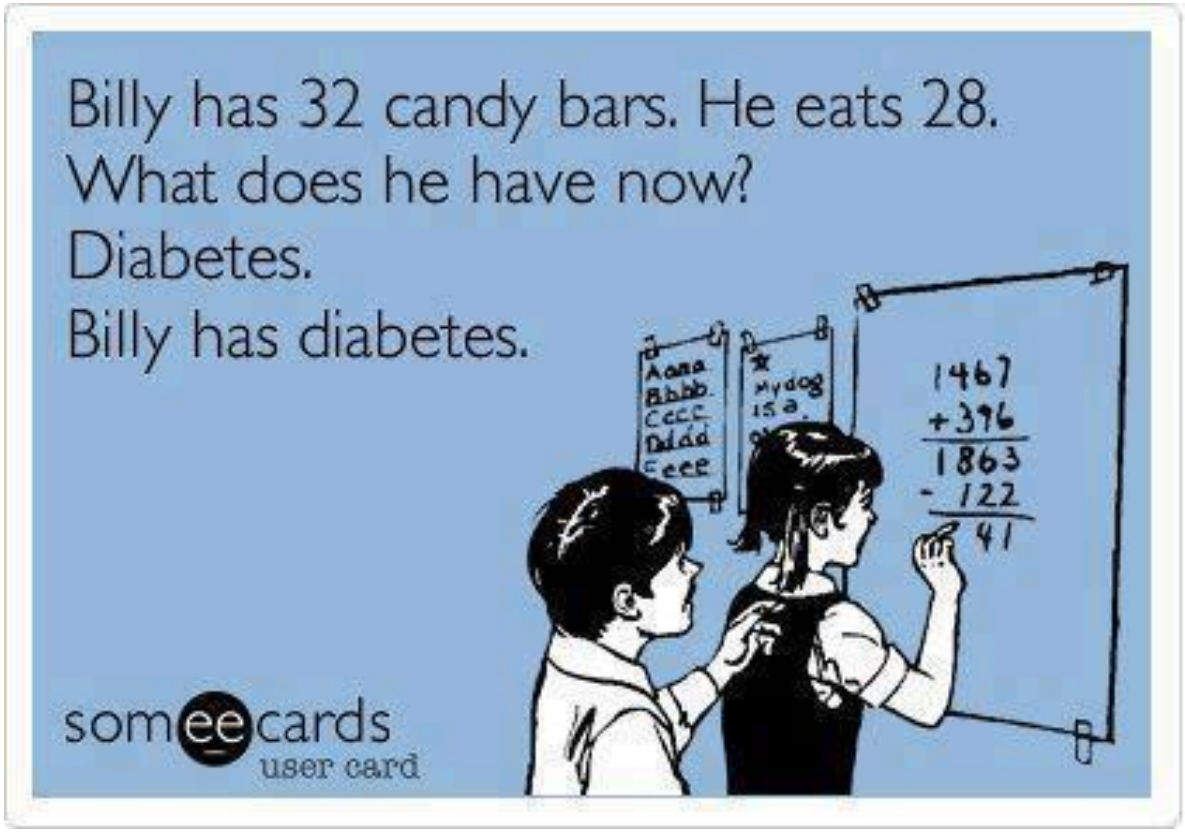
- 621 (2.2%) Type 2 diabetes



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- 621 (2.2%) Type 2 diabetes
  - ♀:♂ = 2:1
  - 78.5% obese, 7.3% overweight
  - Black and asian backgrounds greater representation (52.3%)
  - Most children lived in deprived areas
  - Mean HbA1c 59.7mmol/mol (7.6%)
  - Complications:
    - 14.5% microalbuminuria
    - 5.4% retinopathy
    - 40% hypertension
    - 33.8% referred to psychology or CAMHS

Adolescence

Type 1 diabetes in adolescence

- Decline in metabolic control
- Rates of DKA increase
- Less likely to attend OP
- Increased drop out of medical system

The New England
Journal of Medicine

Volume 329 SEPTEMBER 30, 1993 Number 14

THE EFFECT OF INTENSIVE TREATMENT OF DIABETES ON THE DEVELOPMENT AND PROGRESSION OF LONG-TERM COMPLICATIONS IN INSULIN-DEPENDENT DIABETES MELLITUS

THE DIABETES CONTROL AND COMPLICATIONS TRIAL RESEARCH GROUP*

- 1441 patients with type 1 diabetes
  - Intensive therapy vs. conventional treatment
  - Mean follow-up 6.5 years
- Results:
  - HbA1c 7.4% vs. 9.1%
  - 76% reduction in risk for development of retinopathy
  - 54% reduction in progression of retinopathy
  - 47% reduction in proliferative or severe non-proliferative retinopathy
  - 39% reduction in occurrence of microalbuminuria
  - 54% reduction in occurrence of albuminuria
  - 60% reduction in development of clinical neuropathy
  - 41% reduction in major CV and PVD events
  - 2-3x increase in severe hypoglycaemia

NEJM 1993; **329(14):** 977-85

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 DECEMBER 22, 2005 VOL. 353 NO. 25

Intensive Diabetes Treatment and Cardiovascular Disease in Patients with Type 1 Diabetes

The Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications (DCCT/EDIC) Study Research Group*

- 93% followed for 17 years
  - Assessment of long-term incidence of CV disease (non-fatal MI, stroke, death from CV disease, angina, need for PTCA)
- Results: (intensive vs. conventional treatment)
  - HbA1c 7.9% vs. 7.8%
  - 42% reduction in risk of CV event
  - 57% reduction in non-fatal MI, stroke, death from CV disease
  - Differences between groups remained significant after adjusting for microalbuminuria and albuminuria

NEJM 2005; **353(25):** 2643-53

DCCT in adolescents

- DCCT cohort differences adolescant vs. adult[1]
  - 195 young subjects (13 – 17yrs)
  - At enrollment HbA1c INT 9.6% vs. 9.0%, CON 9.5% vs. 8.9%
  - At completion HbA1c INT 8.1% vs. 7.2%, CON 9.7% vs. 8.9%
    - Risk reduction of having DR 53% (p = 0.048)
    - Risk reduction of progression of DR 70% (p = 0.042)
- DCCT/EDIC
  - 156 adolescents[2]
    - No difference in retinopathy progression 10yrs after the end of DCCT
    - Significantly higher risk of retinopathy progression INT adolescants vs. INT adults – adjusted hazard ratio 1.7

[1]DCCT Research Group. *J Pediatr. 1994*, **125(2):** 177-88
[2]White et al. *Diabetes 2010*, **59:** 1244-1253

Adulthood

NDA 2015-16: cardiovascular complications - hospital admissions

- People with diabetes comprise about 5% of the adult population yet account for 25-30% of admissions for cardiovascular complications.

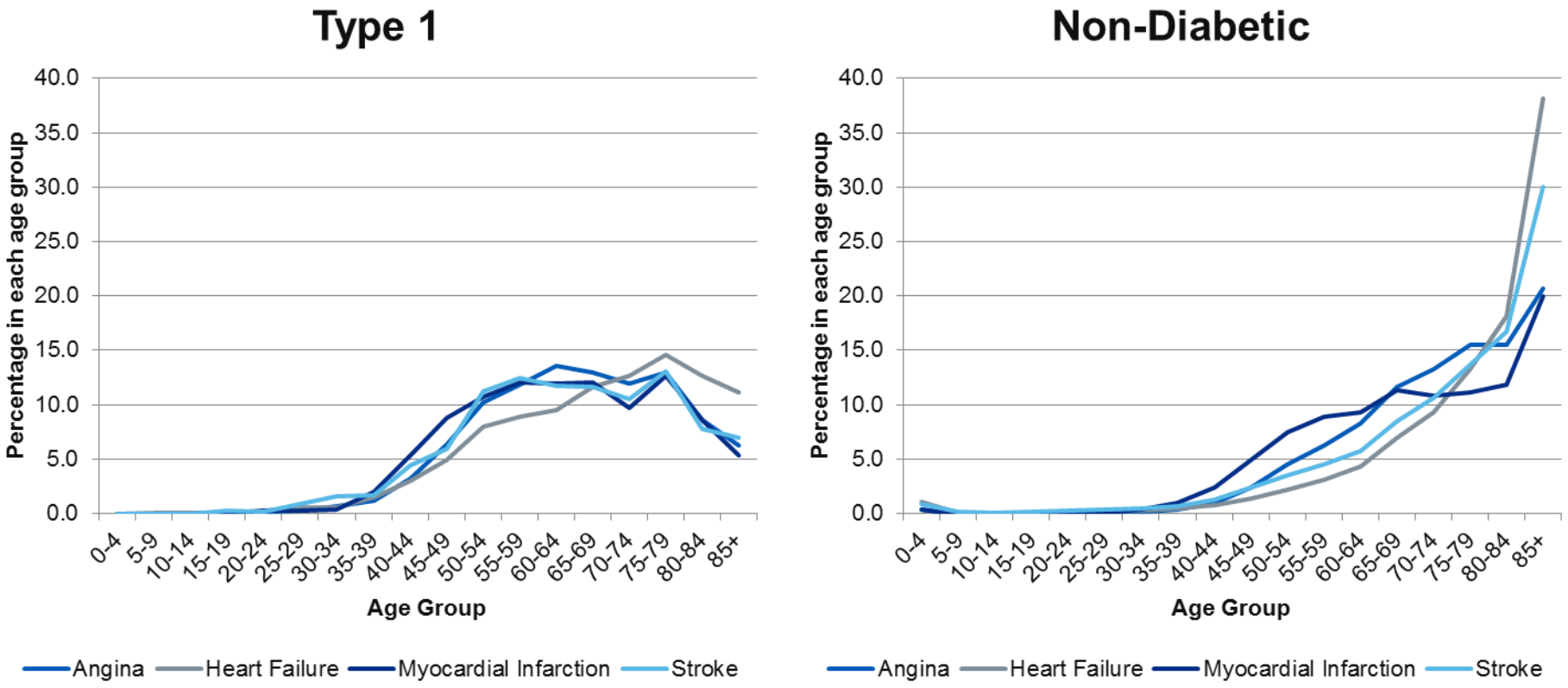
Complication[a]	Non-Emergency Admissions			Emergency Admissions		
	Number of all non emergency admissions	Number of non emergency admissions for NDA population	Percentage of non emergency admissions for NDA population	Number of all emergency admissions	Number of emergency admissions for NDA population	Percentage of emergency admissions for NDA population
Angina	224,091	63,501	28.3	256,250	78,151	30.5
Myocardial Infarction	16,732	4,079	24.4	87,849	21,399	24.4
Heart Failure	107,820	32,802	30.4	356,081	115,695	32.5
Stroke	31,670	7,286	23.0	126,590	29,392	23.2

Number of hospital admissions and NDA related hospital admissions for cardiovascular complications, 2015-2016 HES/PEDW

NDA 2014-15: cardiovascular complications - age at hospital admission, type 1 DM

- People with type 1 diabetes admitted to hospital with cardiovascular complications are younger than those without diabetes.

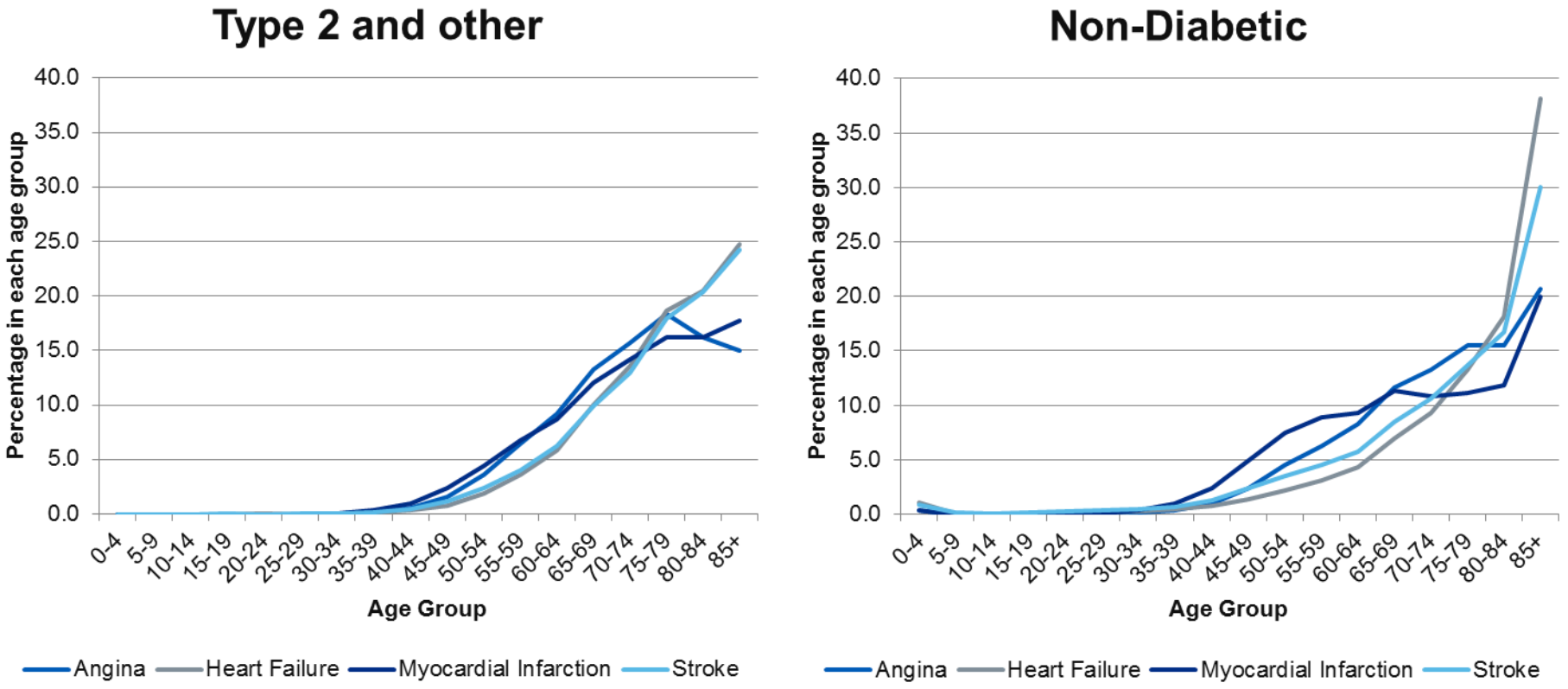
Age distribution of people admitted to hospital with cardiovascular complications, by those with type 1 diabetes and those without diabetes, 2014-15 audit



NDA 2014-15: cardiovascular complications - age at hospital admission, type 2 DM

- People with type 2 diabetes admitted to hospital with cardiovascular complications are of similar age to those without diabetes.

Age distribution of people admitted to hospital with cardiovascular complications, by those with type 2 diabetes and those without diabetes, 2014-15 audit



NDA 2014-15: amputation prevalence in people with all types of diabetes by age

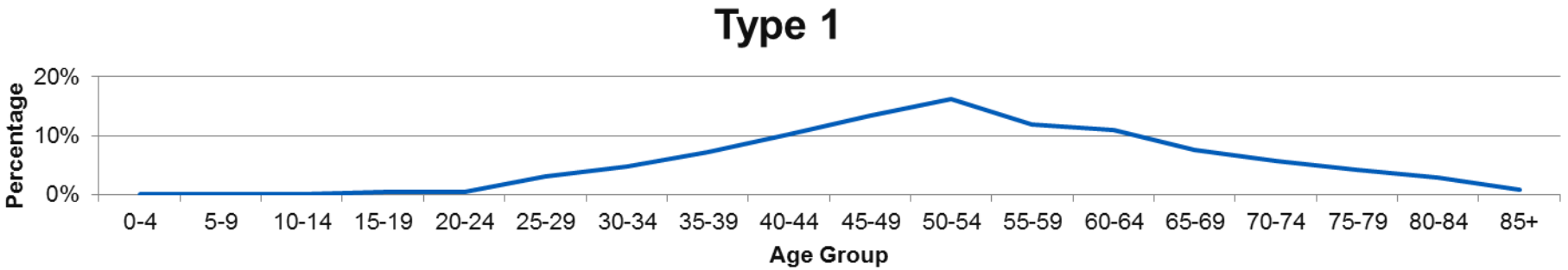
- The absolute numbers of amputations in people with diabetes are relatively small but they represent around half of all admissions to hospital for amputation
- Duration of diabetes since diagnosis supersedes age as the dominant risk factor for major and minor amputations

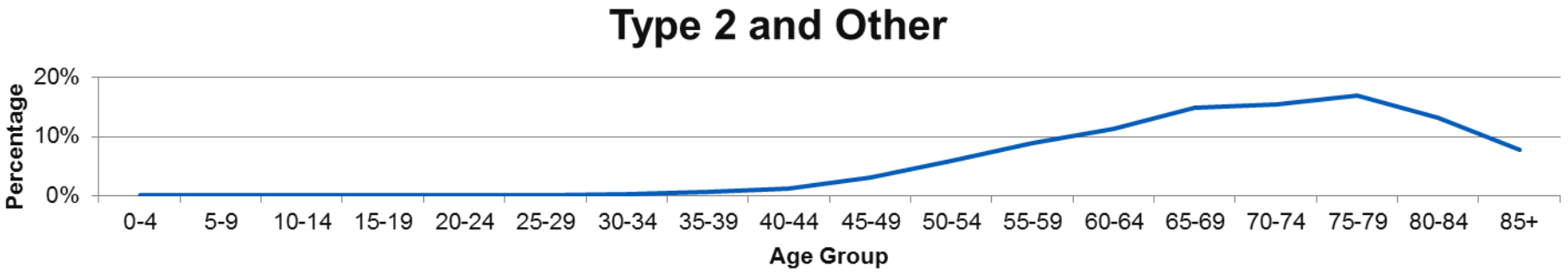
Complication[a]	Age Range (years)	Number of People with Diabetes	Number of People with Diabetes Experiencing Amputation	Prevalence Percentage
Major Amputation	0-64	935,957	623	0.07
	65-79	739,868	681	0.09
	80+	292,981	211	0.07
Minor Amputation	0-64	935,957	1,593	0.17
	65-79	739,868	1,345	0.18
	80+	292,981	503	0.17

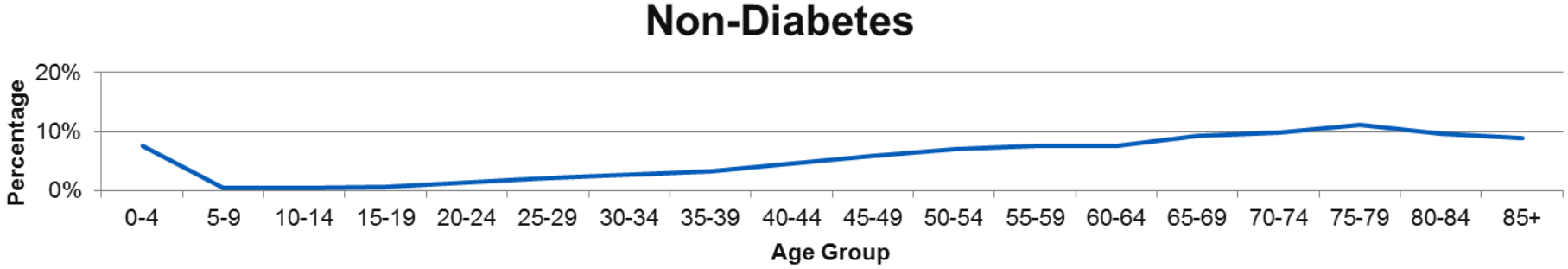
One year diabetes related amputation prevalence, by age, 2014-15 audit

NDA 2014-15: diabetes specific hospital admission characteristics (RRT)

- People with diabetes requiring RRT are younger than those without diabetes (especially type 1)



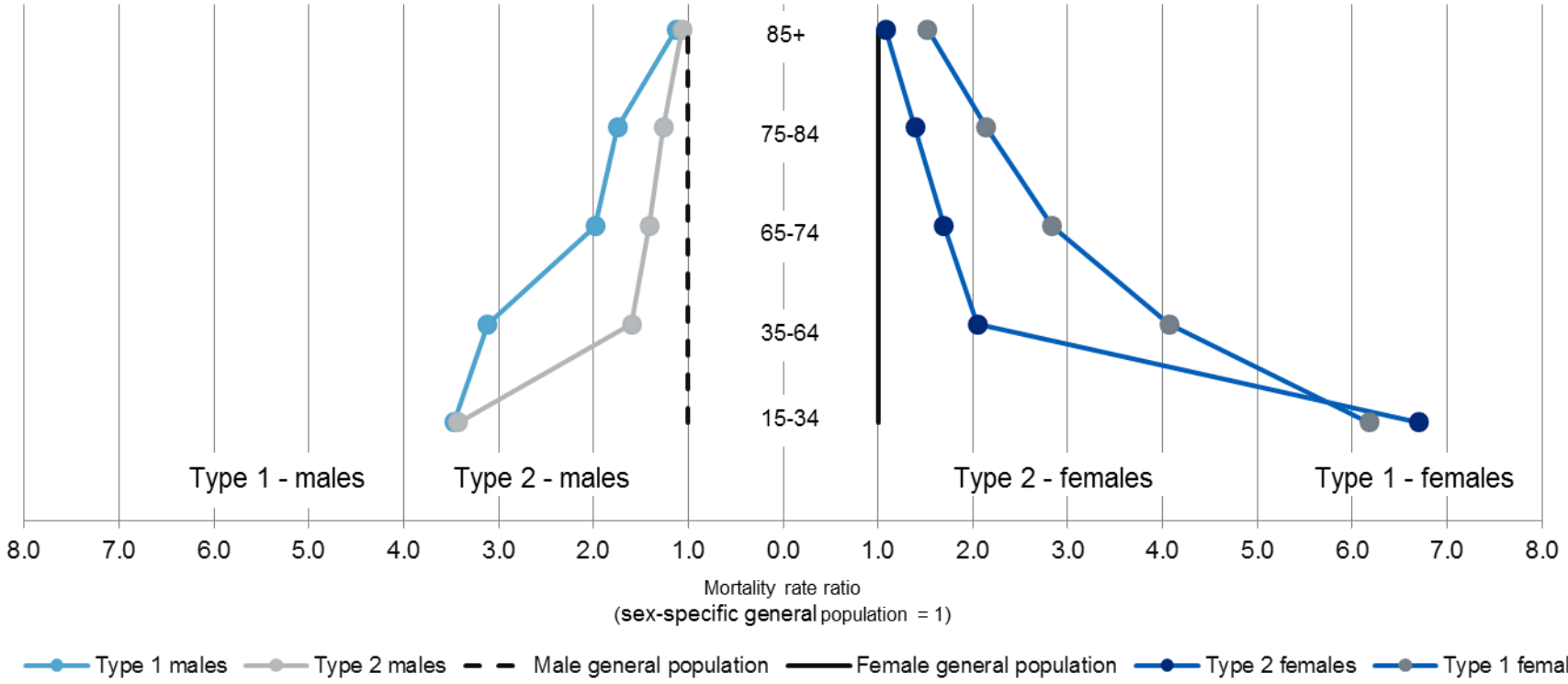




Age distribution of people with and without diabetes admitted for RRT, 2014-15 audit

NDA: age specific mortality rate ratios

- The relative risk of death is increased at all ages, in both men and women, in younger people more than older people.



Age specific mortality rate ratios by type of diabetes and sex, 2013-14 audit, deaths in 2015

NDA: mortality and care processes – subgroup analysis

Analysis of two cohorts of people with diabetes

- aged 20 years and over and alive as at 31st March 2013
- Tracked over 7 years between 2006-7
- Looked at x3 NICE specified diabetes care processes (HbA1c, BP and cholesterol)
- follow up period was used to identify if the patient died during 2013-14 or 2014-15

1. All 21 checks, **'Complete'**
2. 12 checks or less (significantly reduced care process completion) **'Incomplete'**

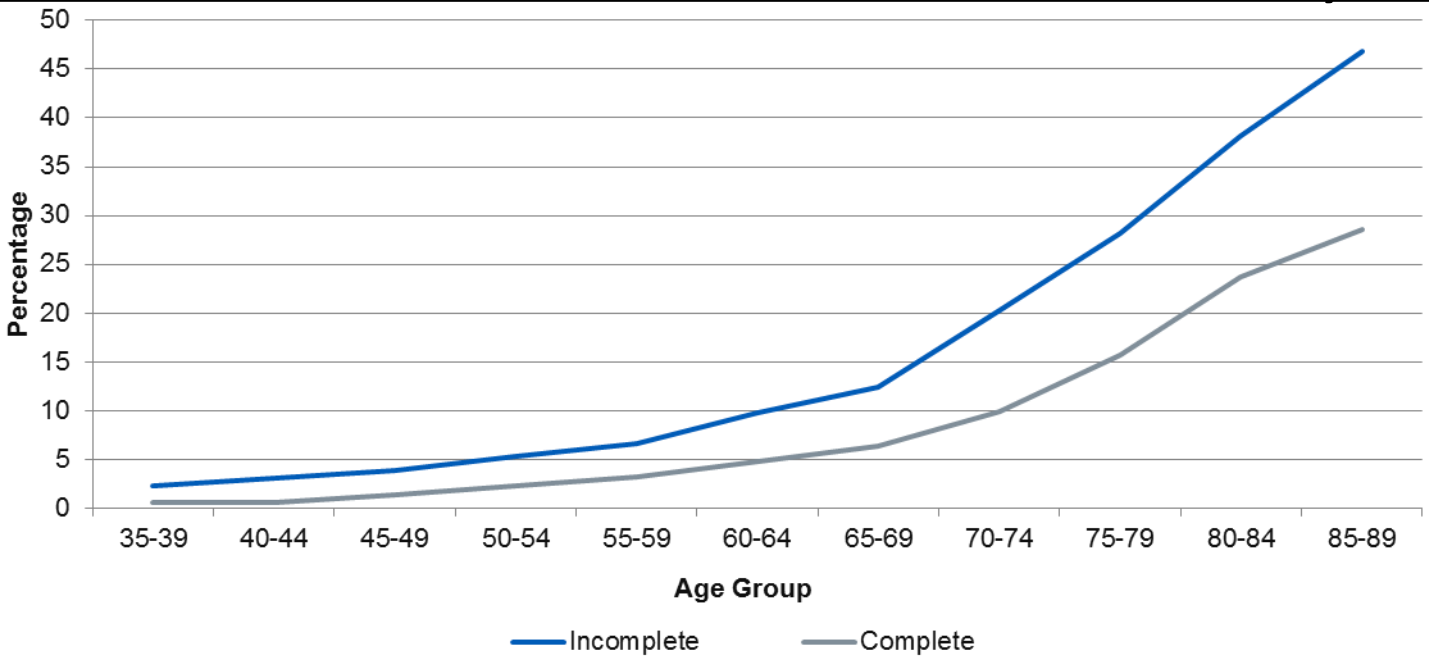
	Type 1	Type 2 and Other
Complete Care Processes	23,928	242,829
Incomplete Care Processes	16,823	79,924

Care process completion cohort sizes for mortality

NDA: mortality and care processes - rates by age (type 1 DM)

- For all age groups, the death rate during the follow up period was higher for the group whose care process completion during the preceding seven years was incomplete – twice as high for most age groups.

This suggests that regular healthcare contacts in people with type 1 diabetes are associated with reduced additional mortality

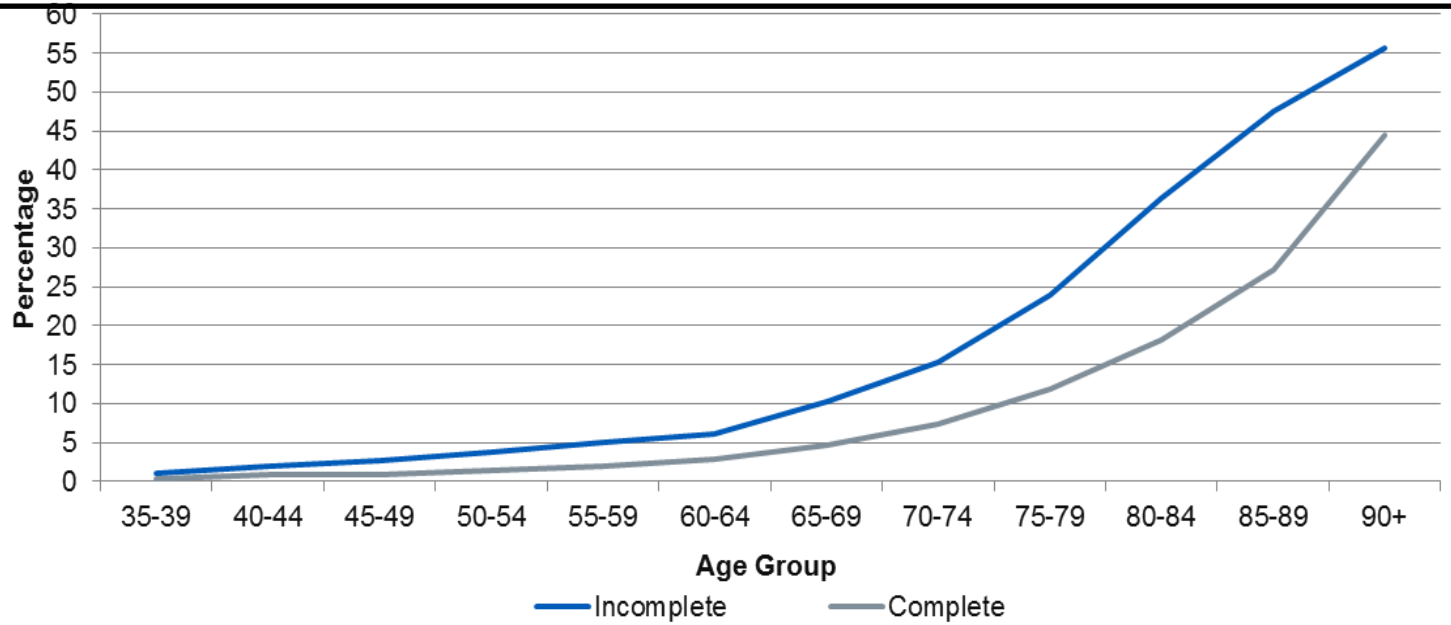


Percentage of people with Type 1 diabetes who died during the follow up period, by age

NDA: mortality and care processes - rates by age (type 2 DM)

- For all age groups, the death rate during the follow up period was higher for the group whose care process completion during the preceding seven years was incomplete – twice as high for most age groups.

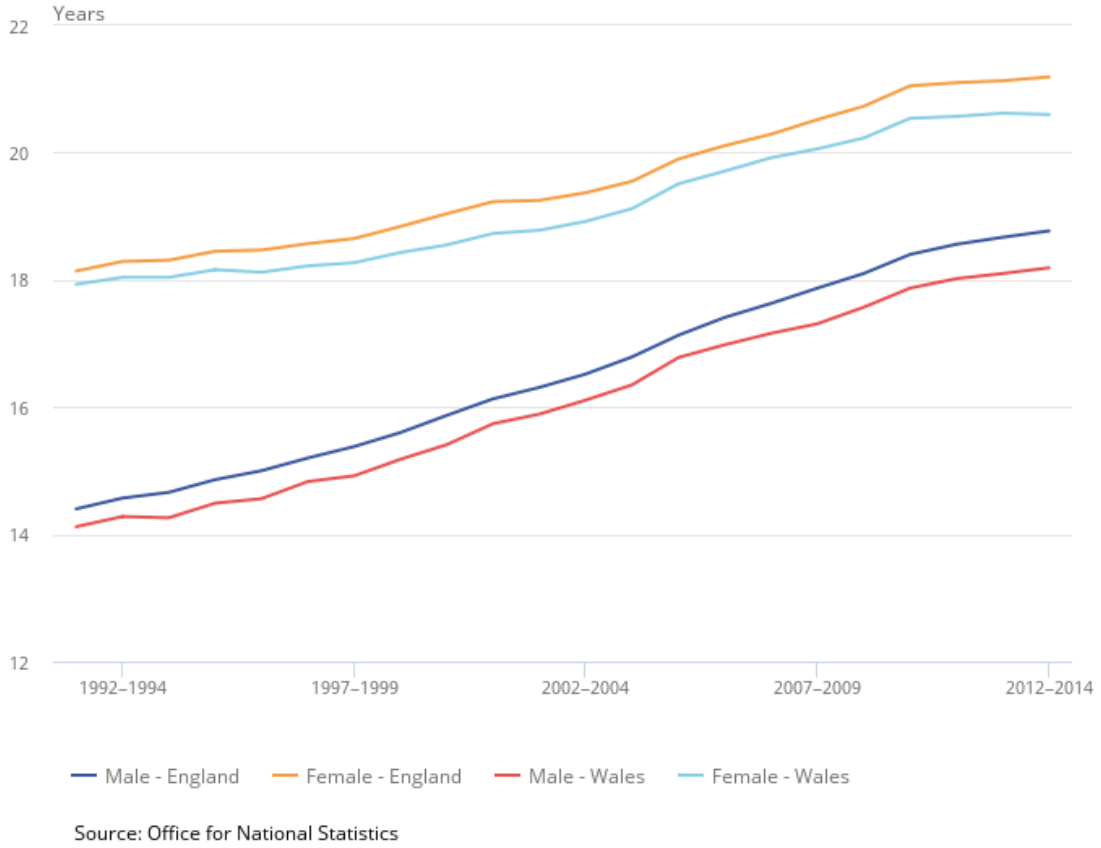
This suggests that regular healthcare contacts in people with type 2 diabetes are associated with reduced additional mortality



Percentage of people with Type 2 and other diabetes who died during the follow up period, by age

Old Age

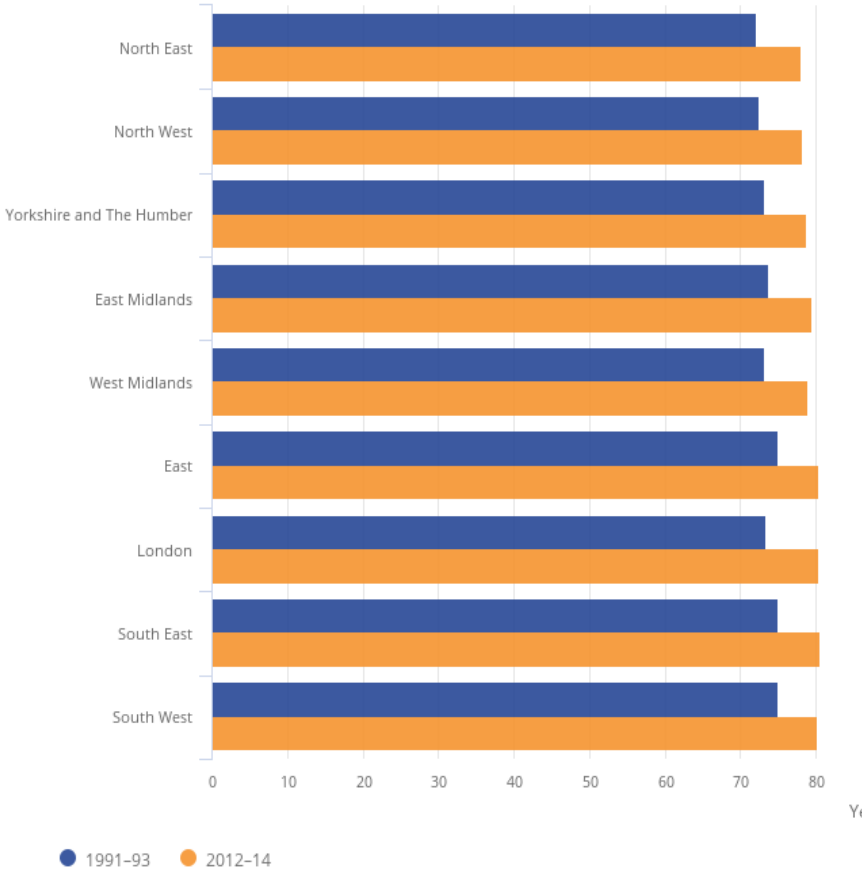
Life expectancy for 65-yr olds by sex and country (England and Wales 2012-14)



Source: Office for National Statistics

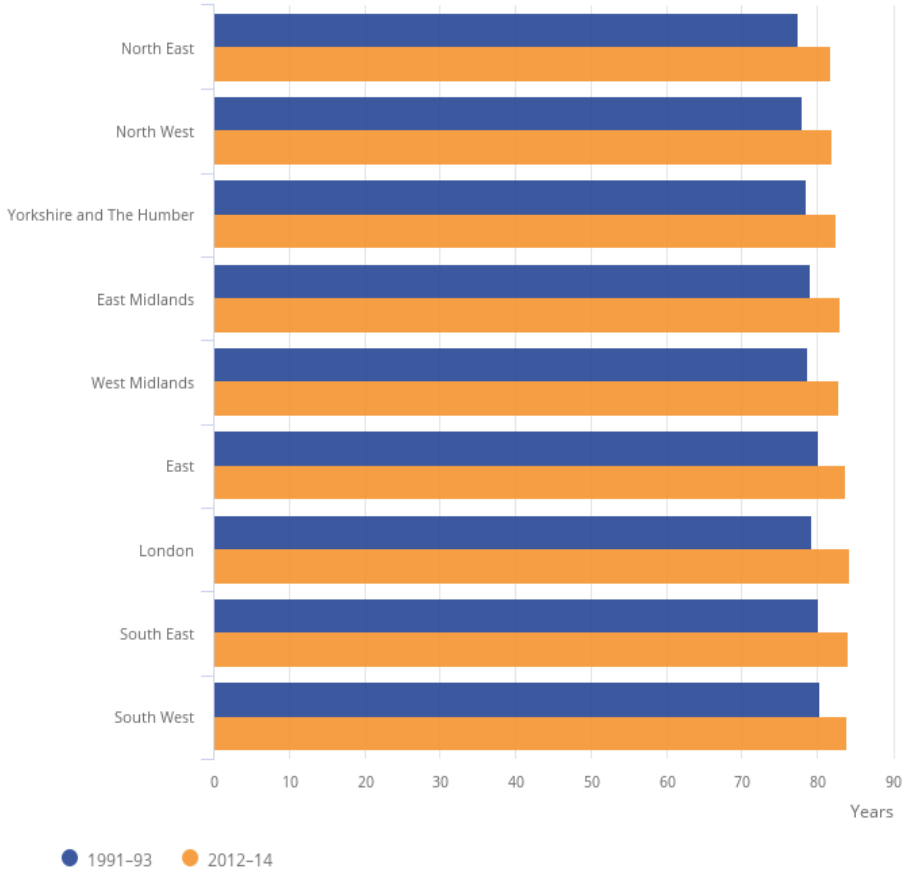
Life expectancy

Newborn baby boys by region 1991-93 and 2012-14



Source: Office for National Statistics

Newborn baby girls by region 1991-93 and 2012-14



Source: Office for National Statistics

Clinical guidelines for diabetes in older age

NICE
National Institute for
Health and Care Excellence

- Individualized care, considering the factors of age, life expectancy and co-morbidity when considering glycaemic targets
  - Little qualifying detail

diabetesFRAIL
The emergence of a concept

- European Diabetes Working Group

→ HbA1c target 53-58mmol/mol (7-7.5%) in fit older people;
59-69mmol/mol (7.5-8.5%) for the frail

- ?69mmol/mol may be risky?

Glycaemic control in older age

- Thorpe et al *Diabetes Care 2015*; **38:** 588-95
  - 15,880 people aged > 65 yrs
  - 16% (2,541) had dementia
  - 24% (3,811) had dementia if age > 75 yrs
  - 52% (8,258) had HbA1c < 53mmol/mol / 7%

    → 75% (6,193) treated with insulin, SUs or both
- Hambling et al *Diabet. Med. 2017*; **34:** 1219-27
  - ECLIPSE data extraction in Norfolk and Suffolk for patients from Nov 2013 – May 2015
  - 24,661 patients > 70 yrs; 15.7% (3862) coded for T2 DM

  → 35.7% (1379) prescribed SUs and/or insulin therapies

  → Median HbA1c = 58mmol/mol / 7.5%

  719 people HbA1c < 58mmol/mol c.f. QoF

  400 people HbA1c < 53mmol/mol

  162 people HbA1c < 48mmol/mol } **⅓ overtreated**

  644 people had eGFR <60 ml/min/1.73m^2

  60 people coded for dementia

Vulnerabilities for hypoglycaemia

- Advanced age
- Diabetes duration
- Polypharmacy
- Co-morbidities e.g. renal, cognitive impairment
- Frailty (unintended weight loss)

→ Zaccardi et al *Lancet Diabetes Endocrinol 2016*; **4:** 677-85

  - Year on year increase in hospital admissions for hypoglycaemia in England 2005-2014
  - over 10yrs absolute nos. = 39% (HES data)

Sequelae of hypoglycaemia

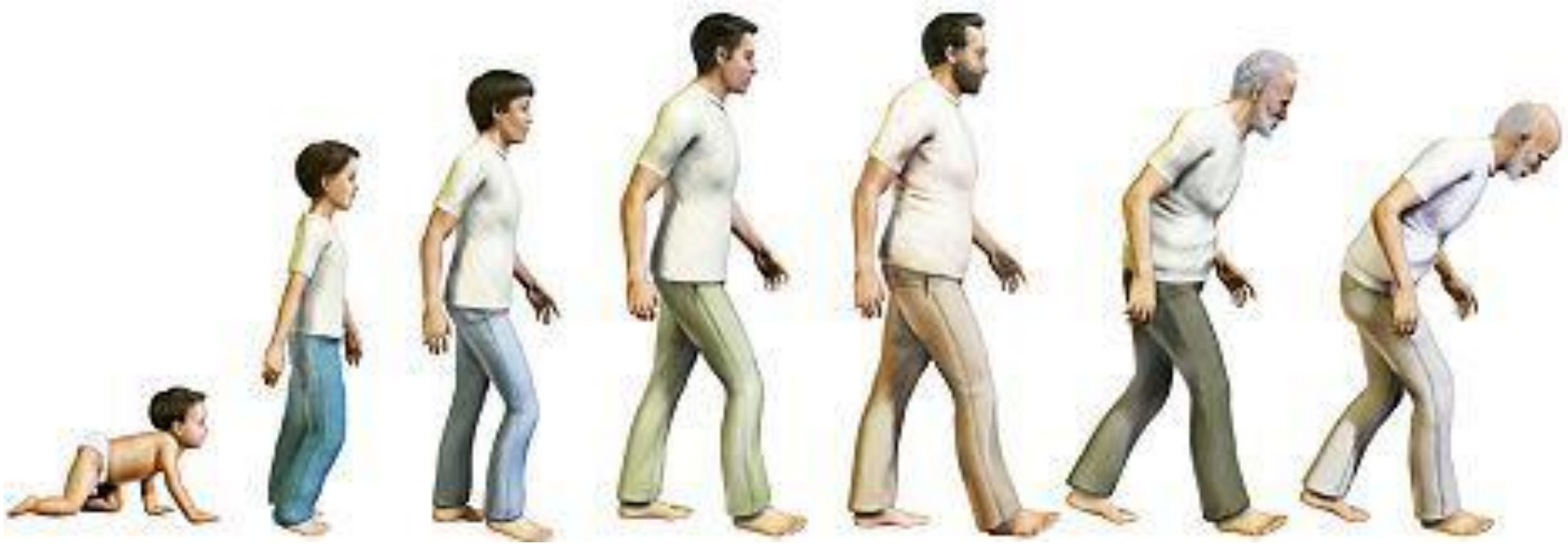
- Emergency call outs (GP, Ambulance)
- Admission (prolonged)
- Fractures
- Head injury
- CV event
- Psychological harm
- Increased cognitive decline

Focus on old age - summary

- Prevalence of diabetes peaks at 75-79 yrs (19.7% of men, 14.2% of women having diabetes)[1]
- Insulin and oral hypoglycaemic agents are second only to warfarin and anti-platelet agents as iatrogenic causes of hospital admission
- Evidence for tight glycaemic control lacking
- Individualized care paramount
- Aim to avoid hypoglycaemia and symptomatic hyperglycaemia
- Diabetes UK. Good clinical practice guidelines for care home residents with diabetes. 2010

[1]Holt. *Diabet. Med 2017*, **34:** 1183-84

The Seven Ages of Man



2. Childhood 4. Young adult 6. Early old age

1. Infancy 3. Adolescence 5. Adulthood 7. Later old age

Sir David Brailsford

"The whole principle came from the idea that if you broke down everything you could think of that goes into riding a bike, and then improved it by 1%, you will get a significant increase when you put them all together."

TEAM | sky

Marginal gains

- Newer Insulins
  - Ultrafast acting insulins
  - Better basal insulins
  - Glucose-responsive insulins
  - Buccal insulin
  - Inhaled insulin
- Newer oral agents
  - Reduced hypoglycaemia risk
- New combinations
- Technology
  - Greater use of CSII in particular groups
  - Flash glucose monitoring
  - RT-CGMS
  - Closed-loop systems
- Education and knowledge


FOR THE MANY
NOT THE FEW
FOR THE MANY NOT THE FEW
Labour


DING
NTRY
ORKS
ERYON