



Association of British Clinical Diabetologists

THE RENAL
ASSOCIATION
founded 1950



The 3rd Joint Meeting of the Association of British Clinical Diabetologists & the Renal Association

Diabetes and Kidney Disease: Advances and Controversies



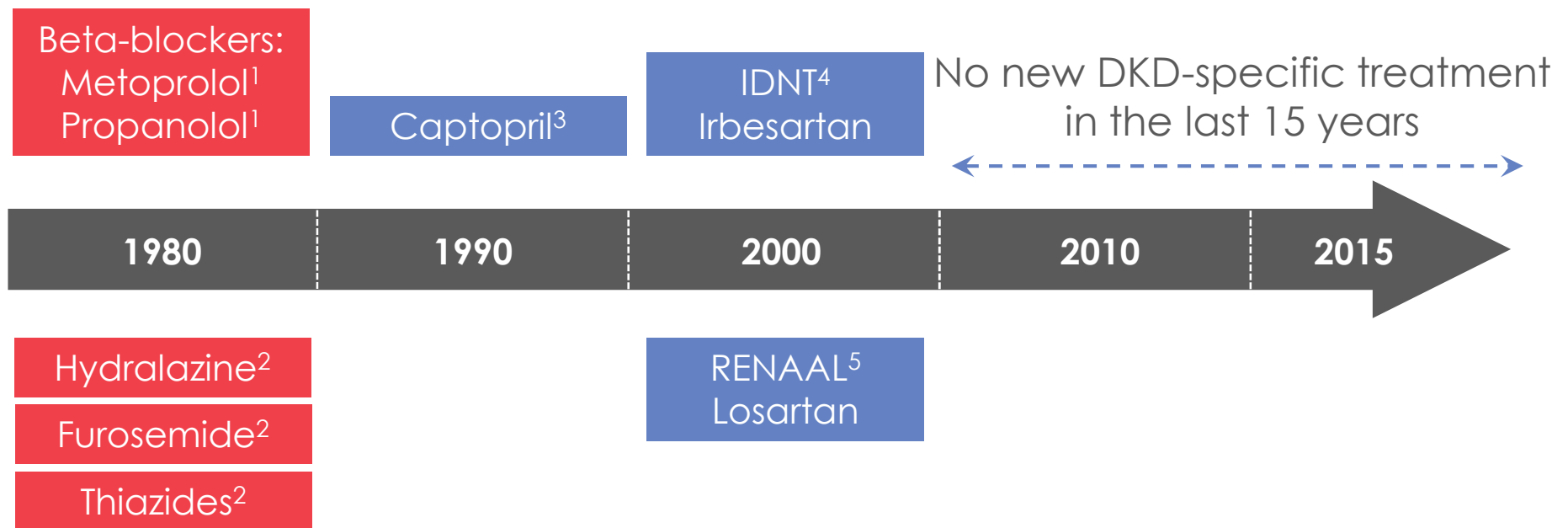


Renal outcomes from the EMPA-REG Outcome and LEADER CVD safety trials in DM

Christoph Wanner, Würzburg, Germany

The 3rd Joint Meeting of the Association of British Clinical Diabetologists and the Renal Association Diabetes and Kidney Disease: Advances and Controversies. Tuesday 28th February 2017, Birmingham

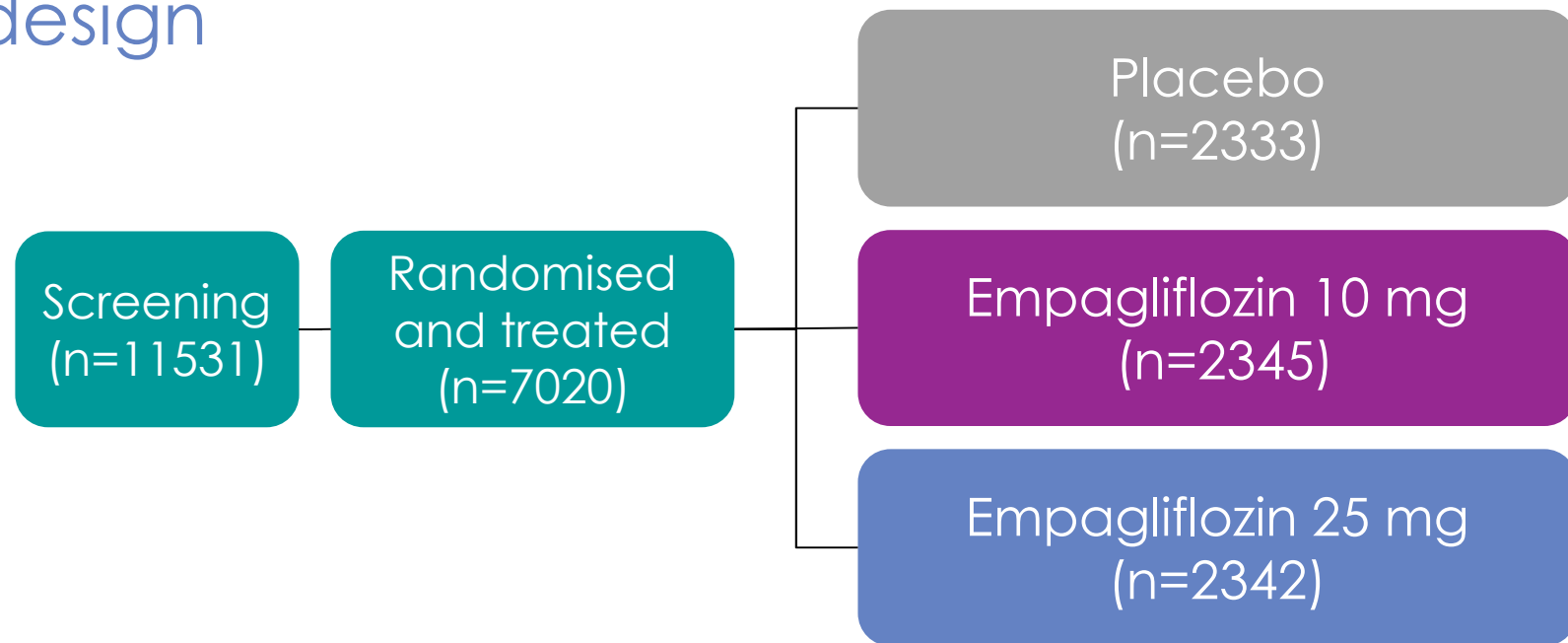
The History of Treating Diabetic Kidney Disease



1. Mogensen CE *et al.* *Br Med J* 1982;285:685
2. Parving HH *et al.* *Lancet* 1983;1:11753
3. Lewis EJ *et al.* *NEJM* 1993;329:1456
4. Lewis EJ *et al.* *NEJM* 2001;345:8515
5. Brenner BM *et al.* *NEJM* 2001;345:861

- Not ,successful'- positive trials
- Double RAS blockade
 - Bardoxolone
 - Soludexide

Trial design



Inclusion criteria

- Adults with T2DM, BMI ≤ 45 kg/m², HbA1c 7–10%,
- CVD (prior MI, CAD, stroke, AP, PAD)
- eGFR >30 mL/min/1.73m²

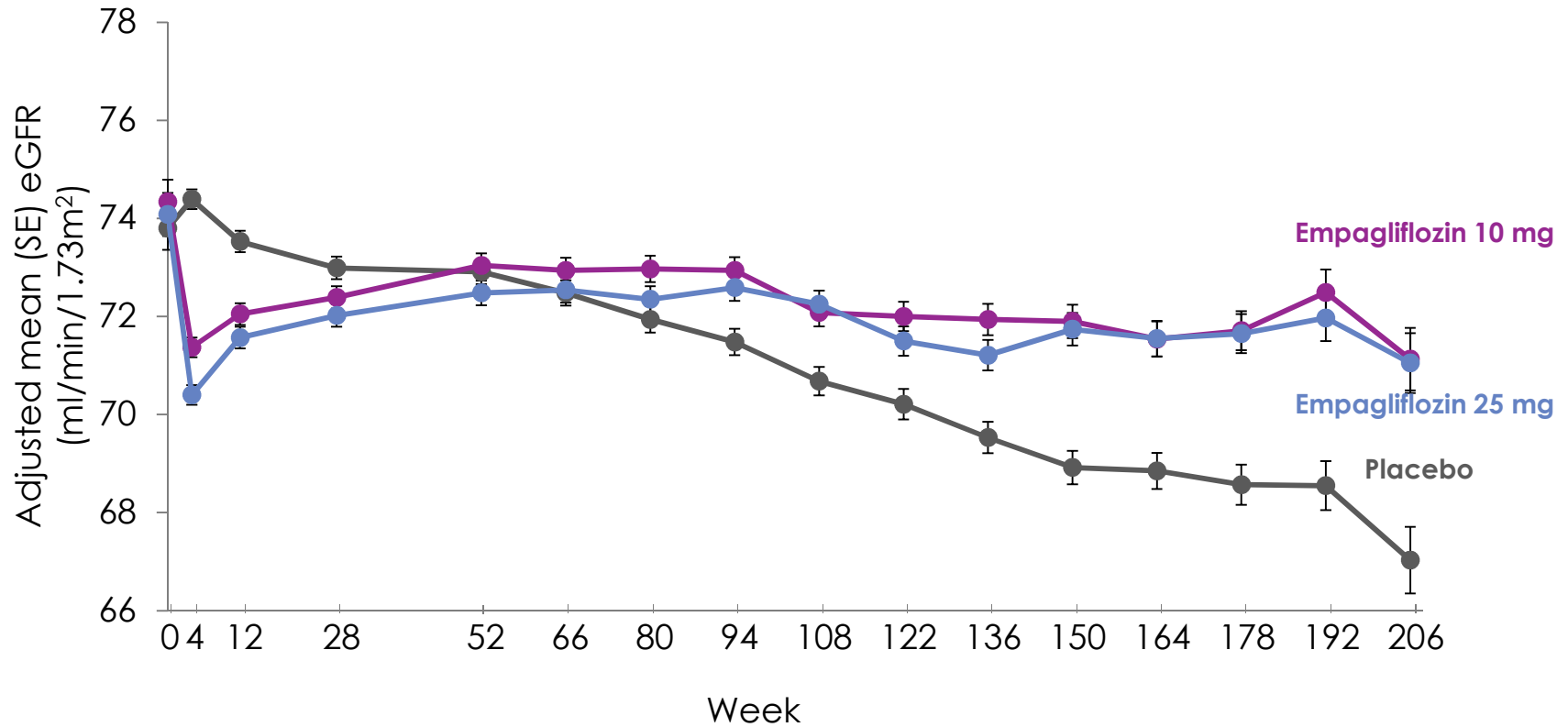
A typical patients (63 years - n=7020)



- 12y history of T2DM
- CVD, post-MI, HF
- BMI 30,2, waist circumference 105 cm
- eGFR 74 ml/min/1,73m²

- RR 135/76 mmHg ARB, CCB, Diuretic, β -B
- LDL-C 84 mg/dl Statin
- HbA1C 8,07% Insulin & Metformin
- Aspirin

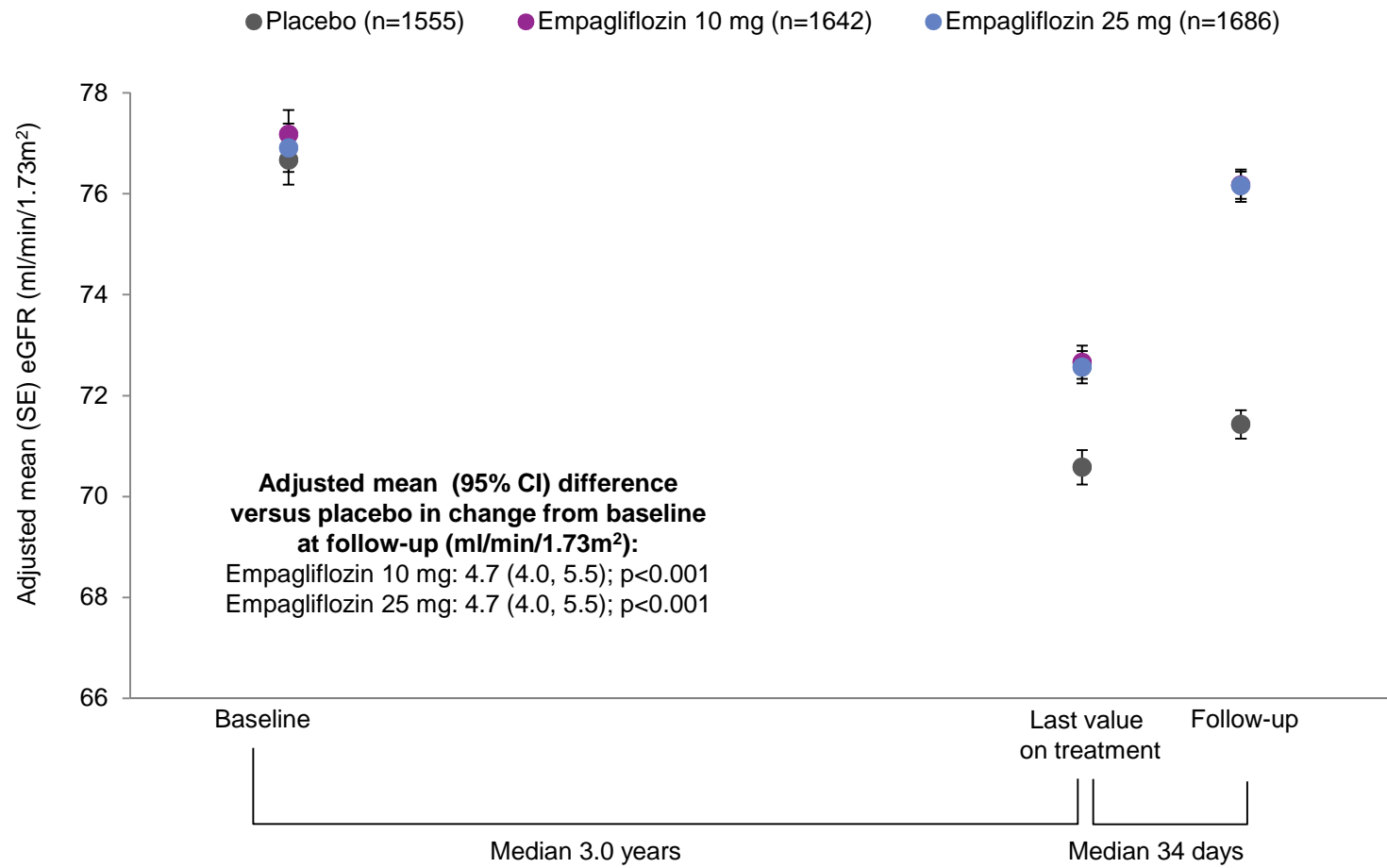
Empagliflozin and eGFR



Placebo	2323	2295	2267	2205	2121	2064	1927	1981	1763	1479	1262	1123	977	731	448	171
Empa10 mg	2322	2290	2264	2235	2162	2114	2012	2064	1839	1540	1314	1180	1024	785	513	193
Empa 25 mg	2322	2288	2269	2216	2156	2111	2006	2067	1871	1563	1340	1207	1063	838	524	216

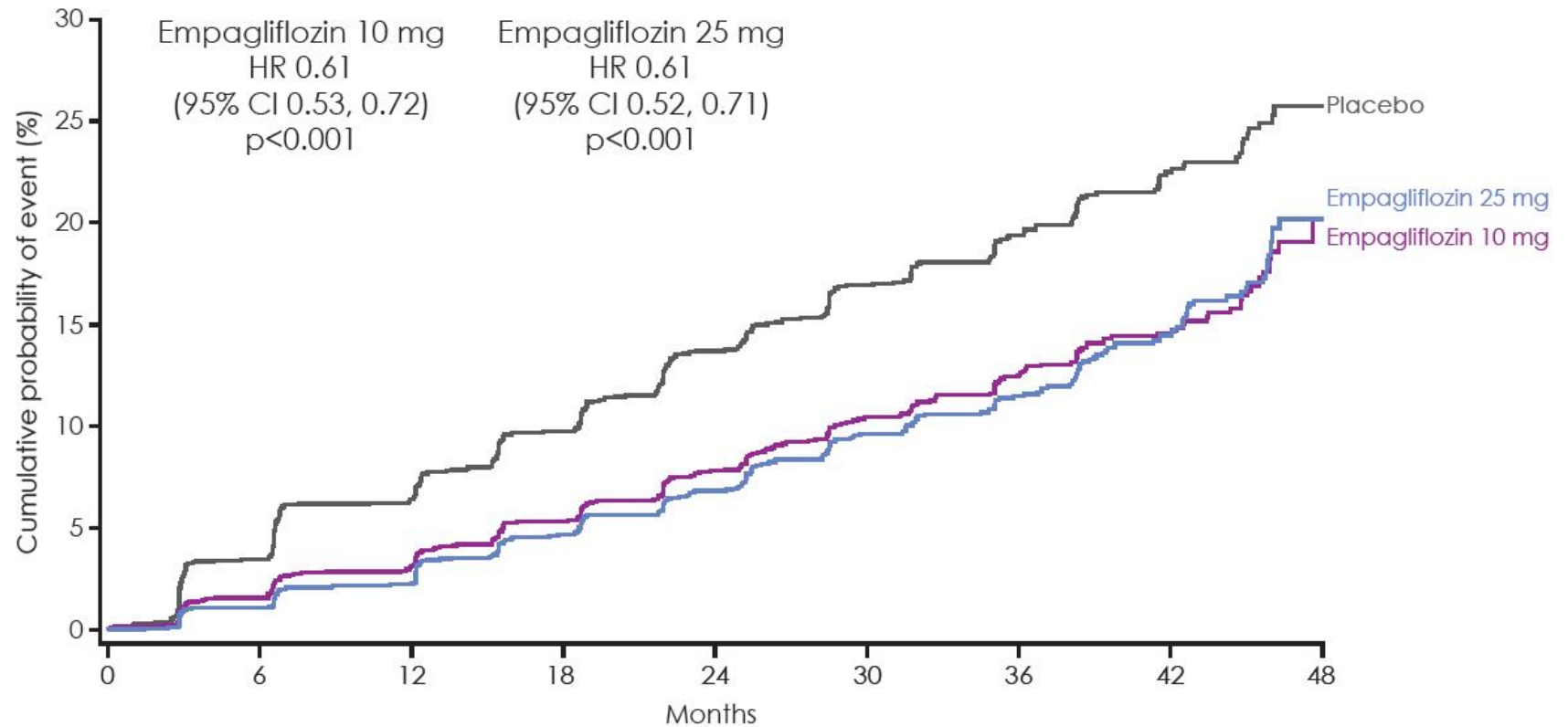
Mixed model repeated measures analysis in the treated set (OC-AD)

eGFR at baseline, last value on treatment and follow-up



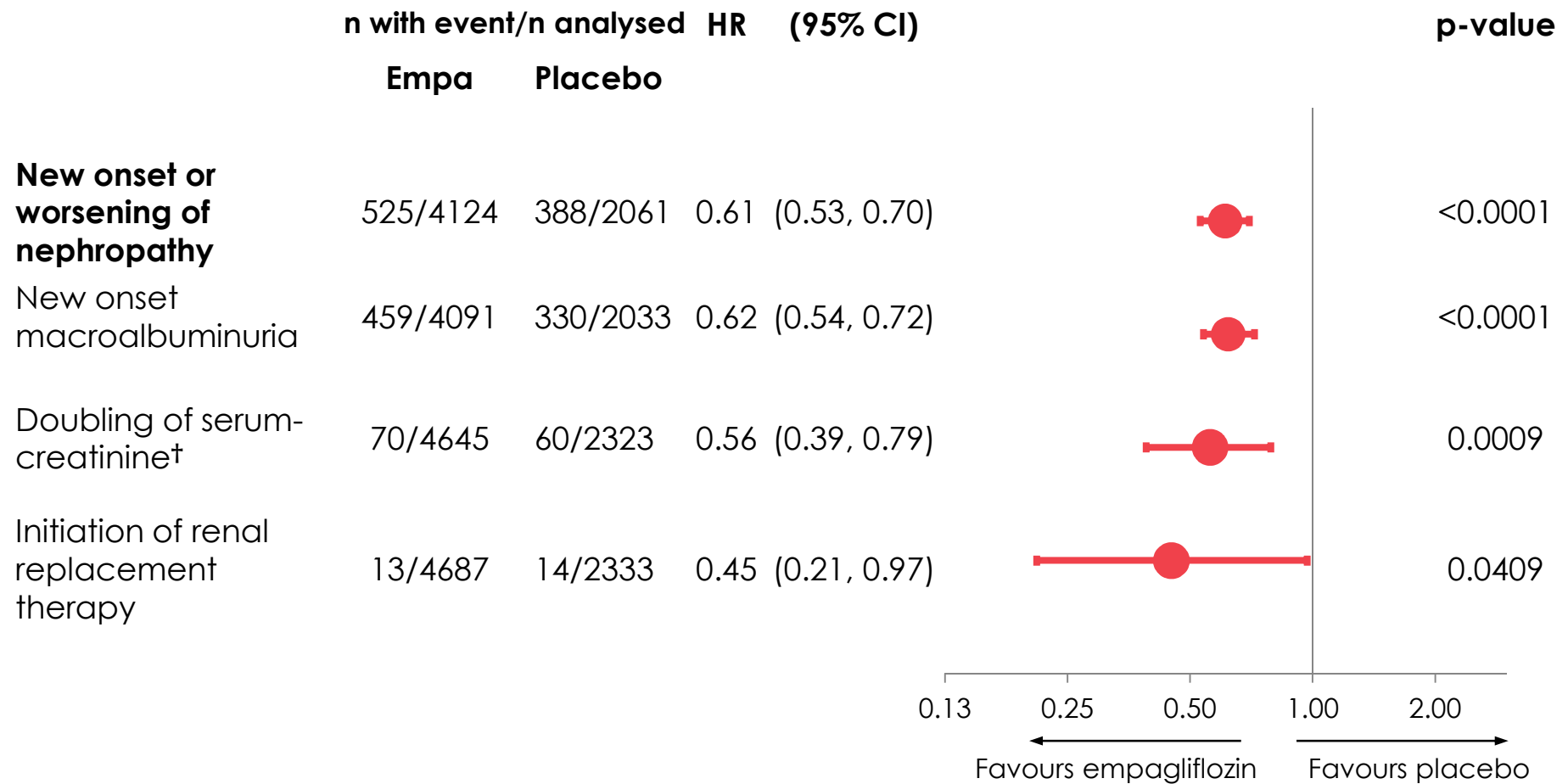
New onset or worsening nephropathy

(new onset macroalbuminuria, 2xSCr, ESRD or renal death)



No. of patients	0	6	12	18	24	30	36	42	48
Empagliflozin 10 mg	2055	1991	1912	1825	1571	1122	922	593	136
Empagliflozin 25 mg	2069	2003	1936	1844	1600	1157	965	626	154
Placebo	2061	1946	1836	1703	1433	1016	833	521	106

New onset or worsening of nephropathy



Liraglutide and renal outcomes in type 2 diabetes: Results of the LEADER randomized trial

Liraglutide and Cardiovascular Outcomes in Type 2 Diabetes

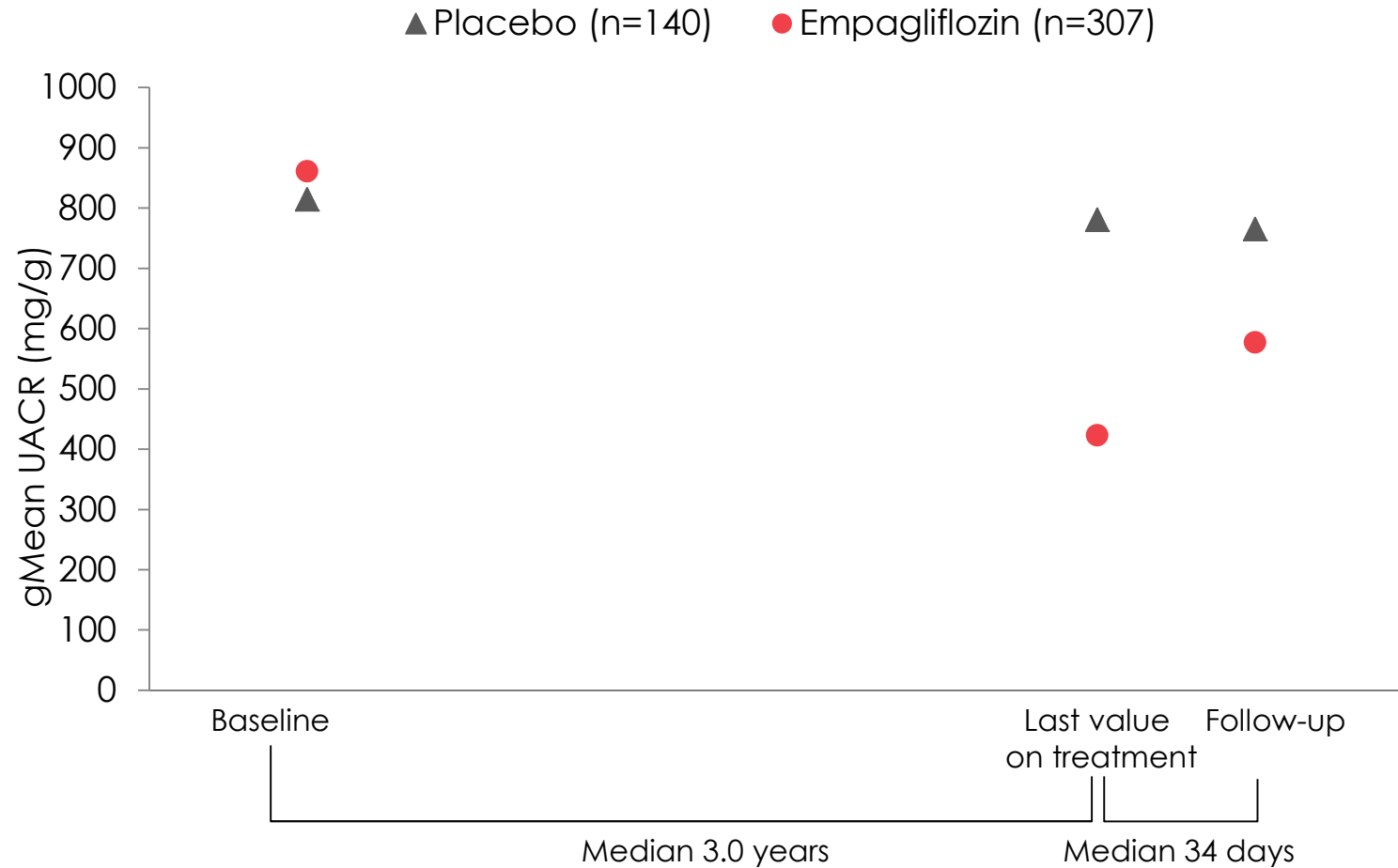
Steven P. Marso, M.D., Gilbert H. Daniels, M.D., Kirstine Brown-Frandsen, M.D., Peter Kristensen, M.D., E.M.B.A., Johannes F.E. Mann, M.D., Michael A. Nauck, M.D., Steven E. Nissen, M.D., Stuart Pocock, Ph.D., Neil R. Poulter, F.Med.Sci., Lasse S. Ravn, M.D., Ph.D., William M. Steinberg, M.D., Mette Stockner, M.D., Bernard Zinman, M.D., Richard M. Bergenstal, M.D., and John B. Buse, M.D., Ph.D., for the LEADER Steering Committee on behalf of the LEADER Trial Investigators*

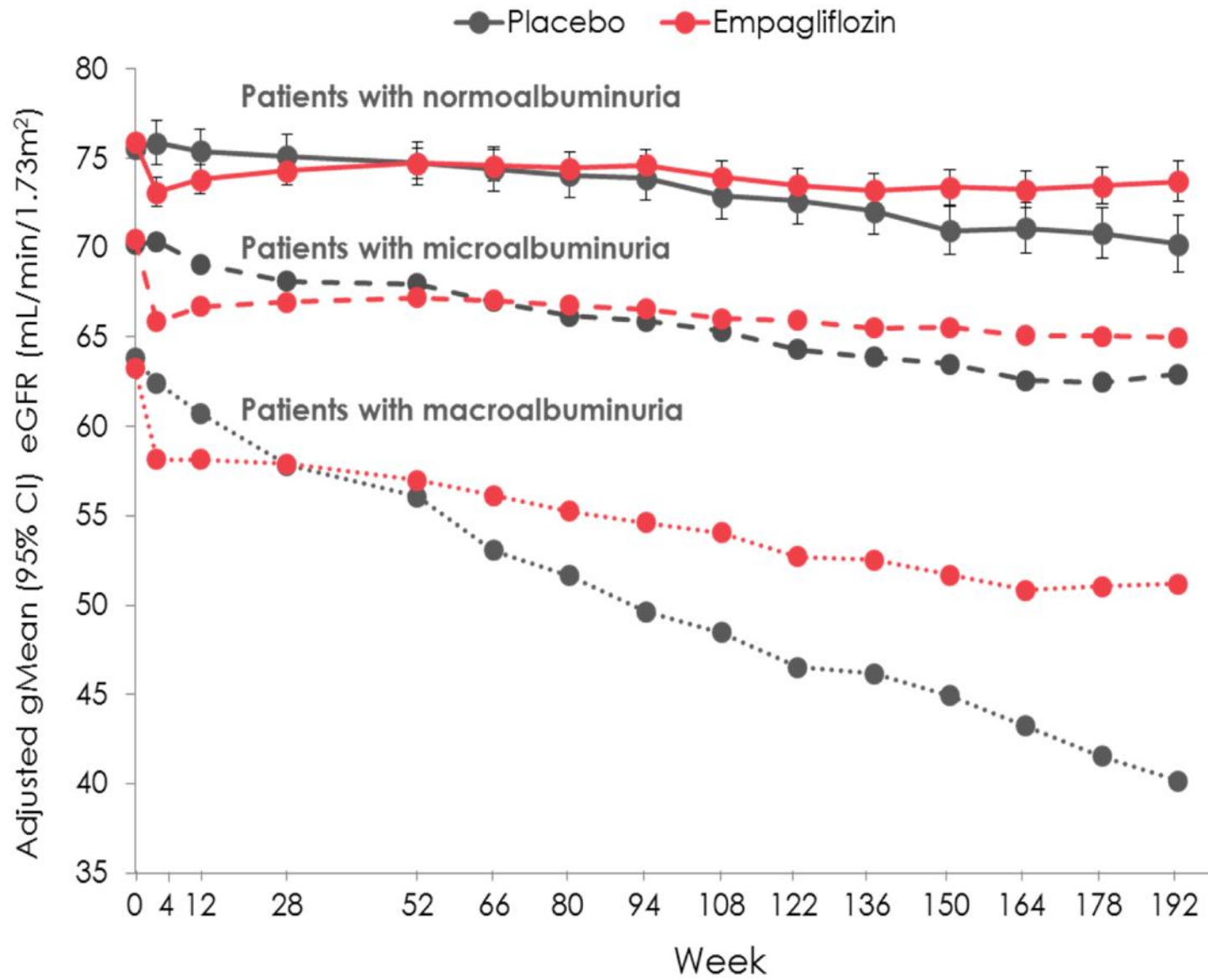
Johannes F.E. Mann, Florian M.M. Baeres, Richard M. Bergenstal, Kirstine Brown-Frandsen, Gilbert H. Daniels, Peter Kristensen, Steven P. Marso, Michael A. Nauck, Steven E. Nissen, David D. Ørsted, Stuart Pocock, Neil R. Poulter, Søren Rasmussen, William M. Steinberg, Mette Stockner, Bernard Zinman, John B. Buse for the LEADER investigators

NEJM 2016;375:311-322

EMPA-REG Outcome: new data

UACR at baseline, LVOT and FU Patients with macroalbuminuria at baseline





Doubling of serum creatinine ($2 \times \text{Scr}$ = 57% decline in eGFR)

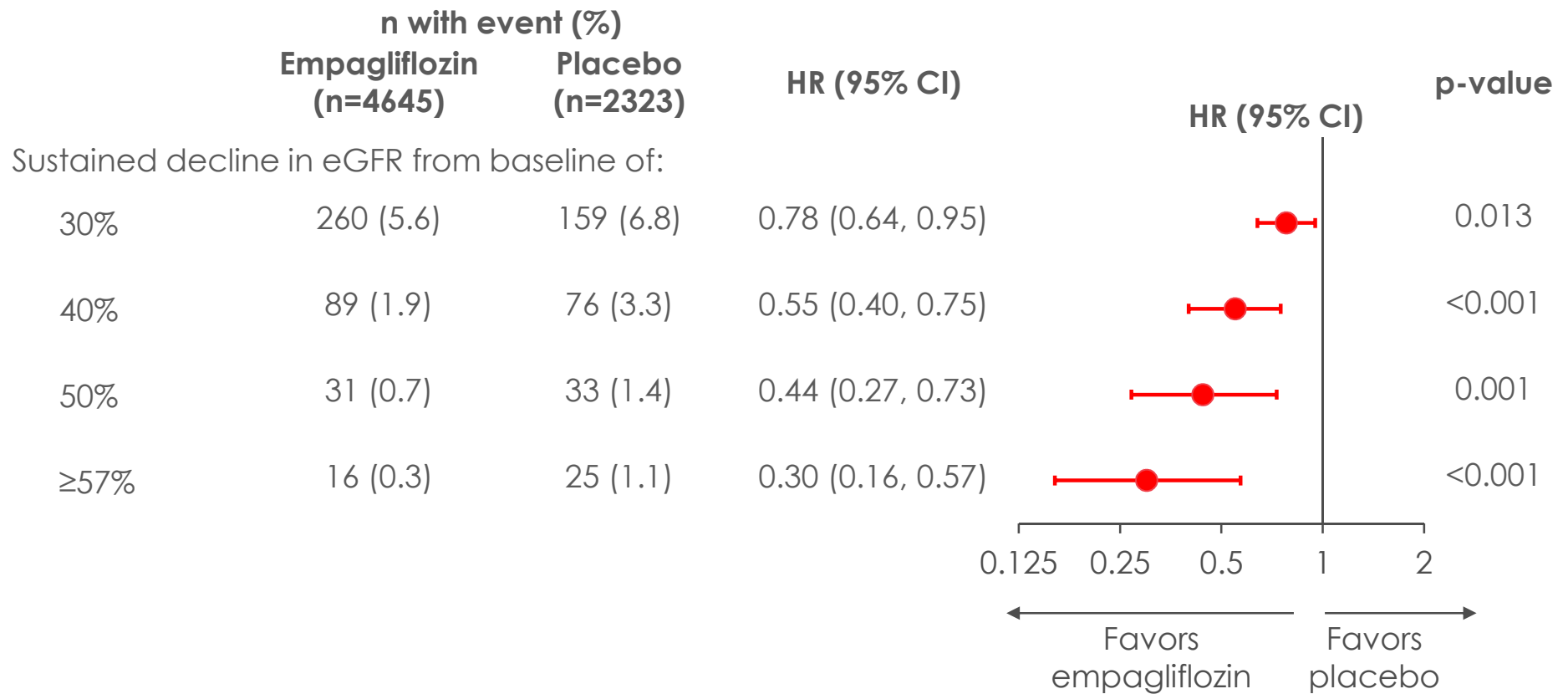
End-stage Renal Disease = RRT

Alternative Renal Outcomes

eGFR decline of 40% ?

eGFR slopes ?

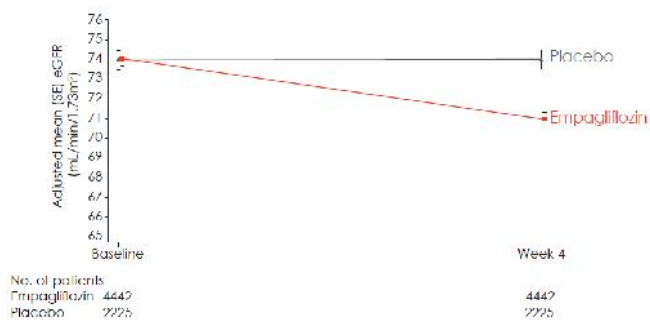
Risk comparison for sustained decline in eGFR of 30%, 40%, 50% or $\geq 57\%$ from baseline



Adjusted mean eGFR values over prespecified time periods

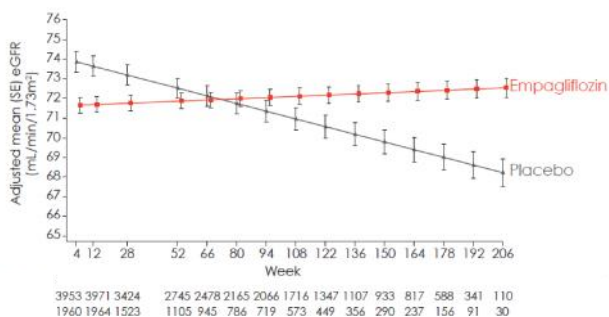
INITIATION (acute)

Baseline to week 4



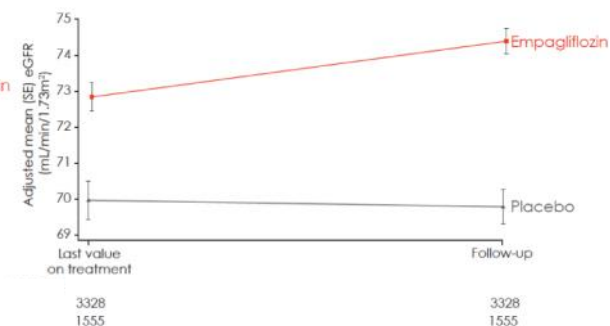
LONG-TERM (chronic)

Week 4 to last value on treatment



CESSATION (follow-up)

Last value on treatment to follow-up

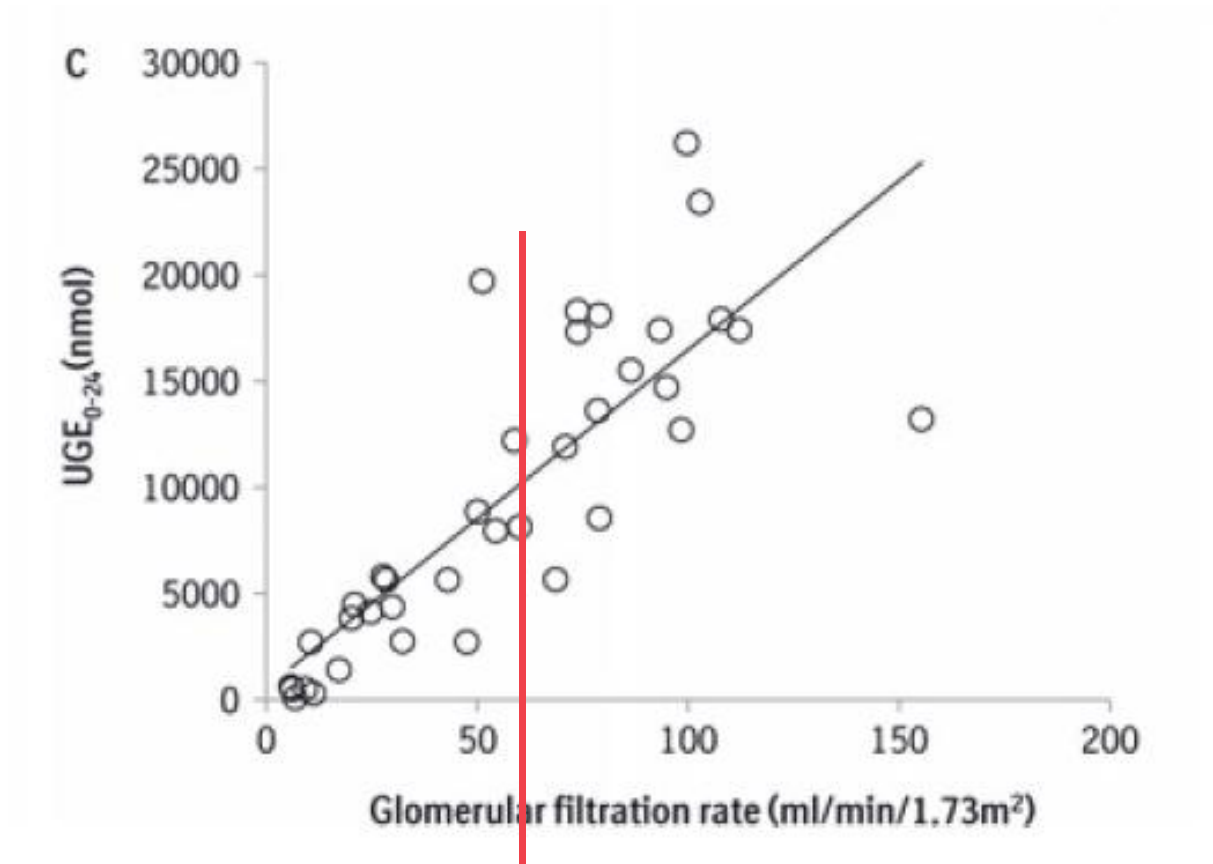


Median time from last value on treatment to follow-up: 34 days.

EN1

Note: Animated slide.
Ng, Elizabeth, 28/10/2016

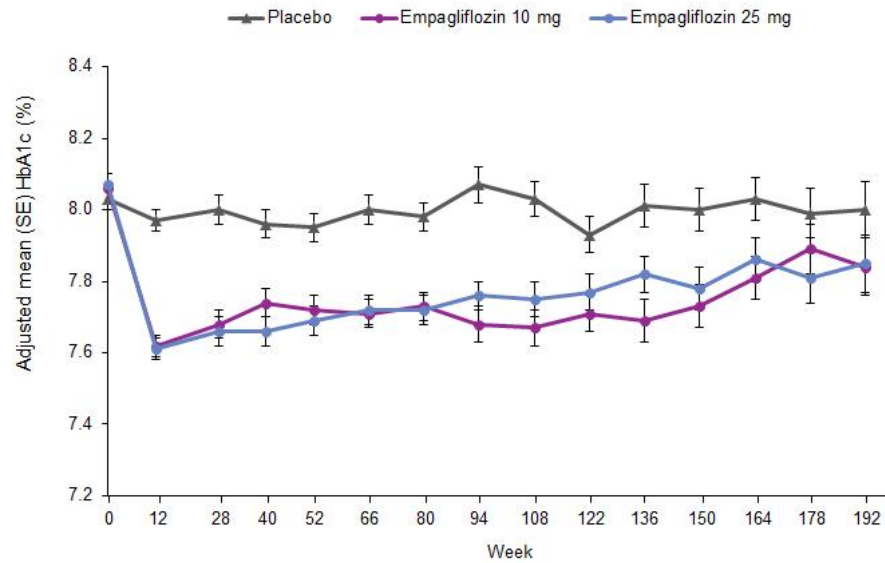
24 hour UGE declines with declining GFR



A linear relationship between UGE and GFR is observed

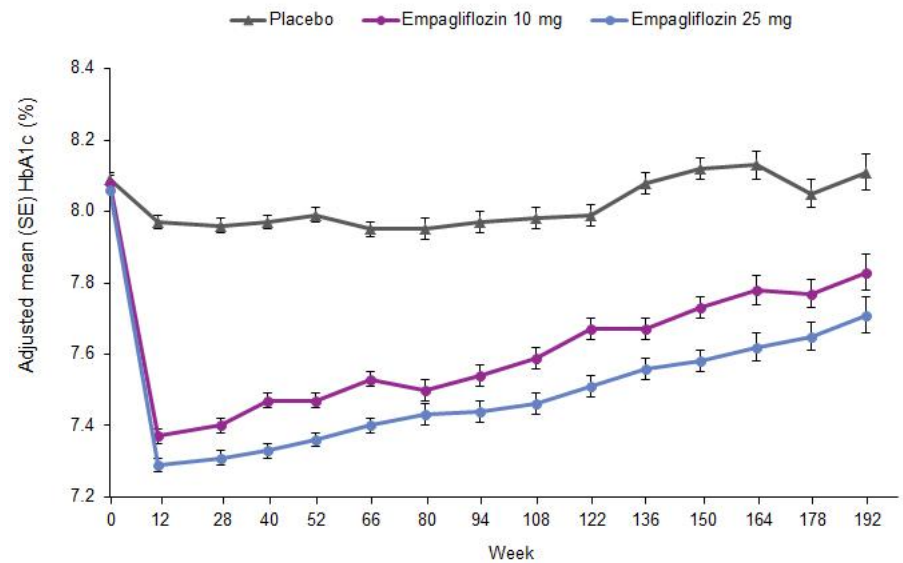
HbA1c

Patients with eGFR <60 mL/min/1.73m² at baseline



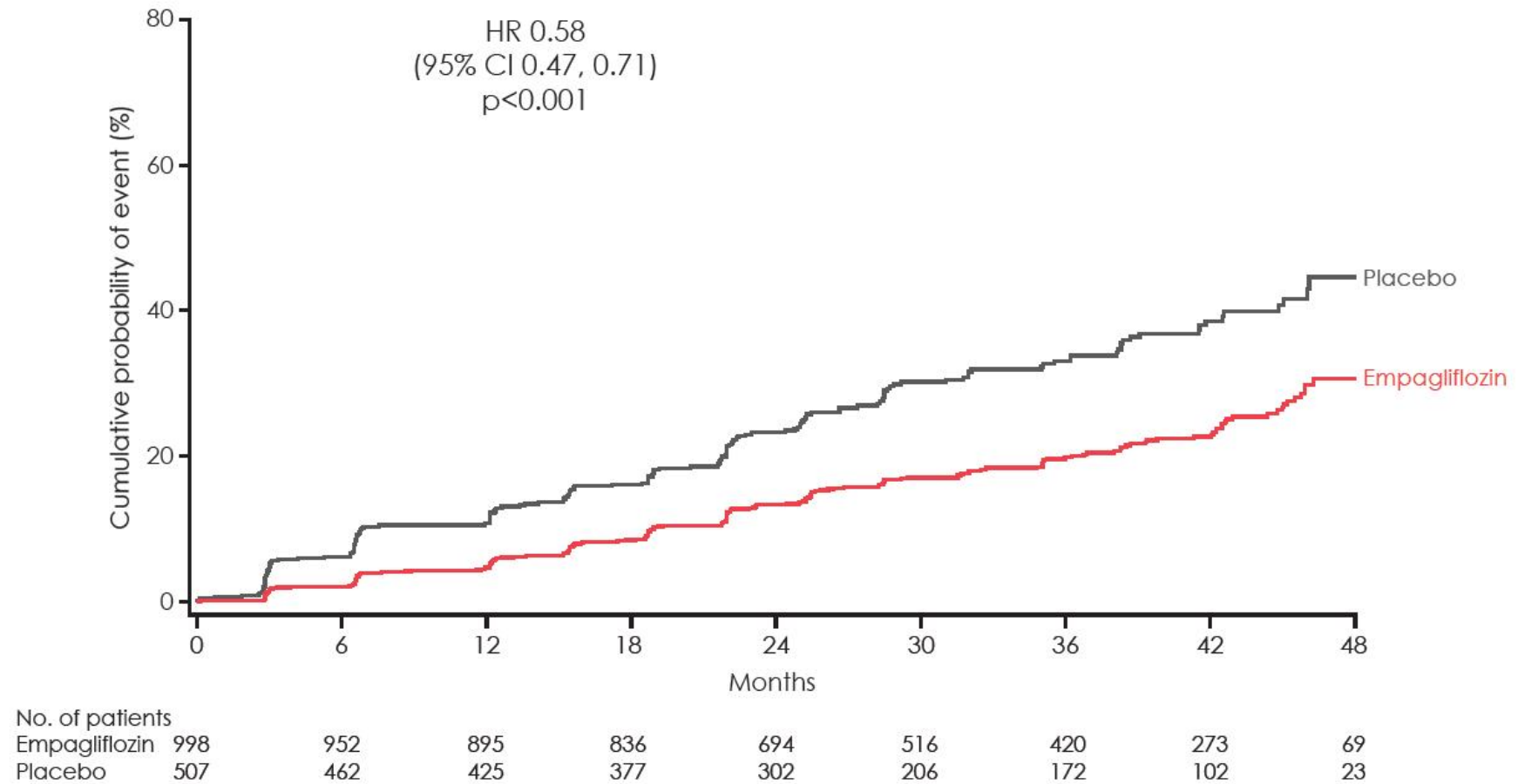
Placebo	596	554	527	489	427	308	245	109
Empagliflozin 10 mg	589	560	541	506	437	320	246	118
Empagliflozin 25 mg	594	565	545	523	451	332	261	129

Patients with eGFR ≥60 mL/min/1.73m² at baseline

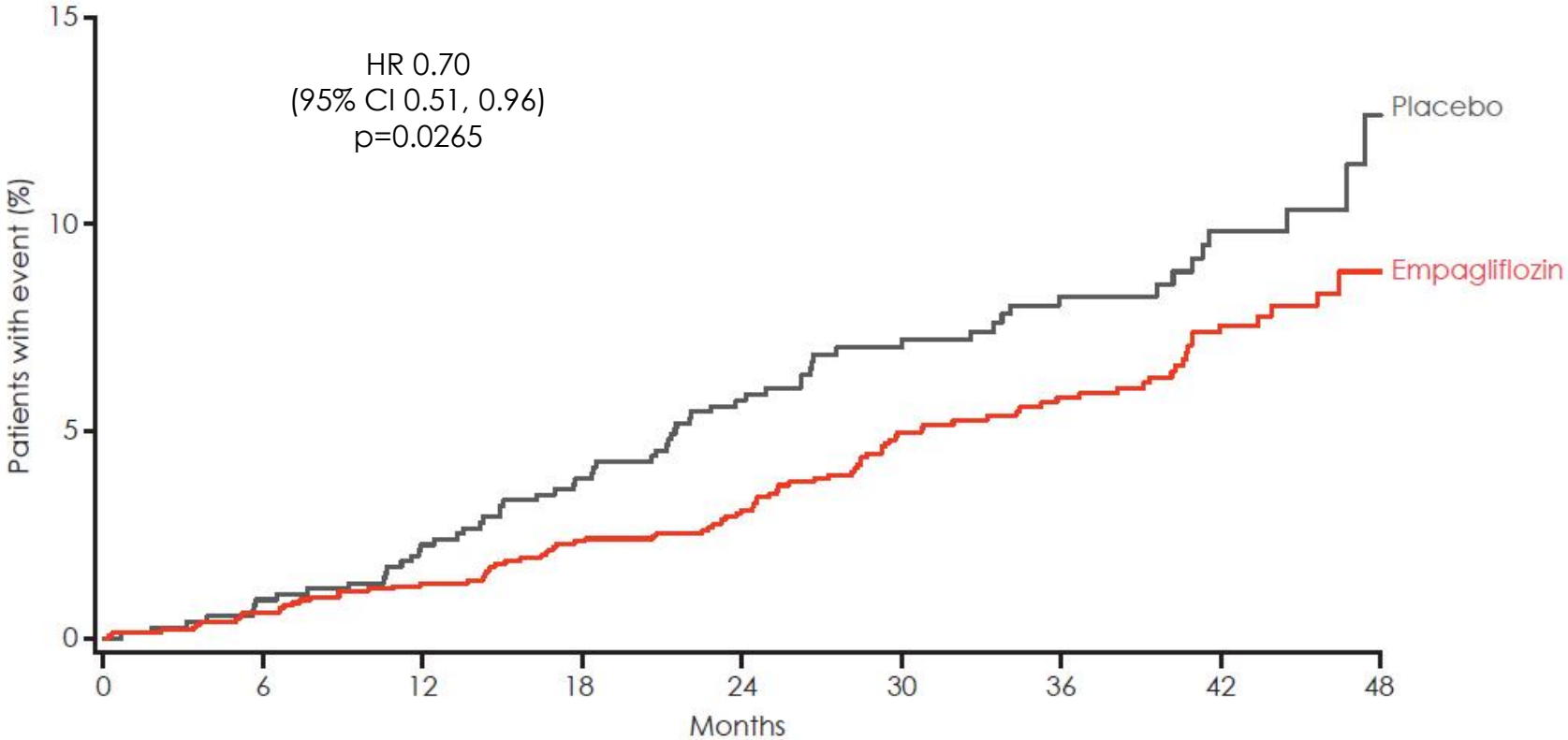


1698	1634	1586	1519	1314	933	717	311
1707	1658	1614	1566	1368	977	760	370
1701	1646	1604	1556	1390	994	782	369

Incident or worsening of nephropathy in prevalent kidney disease

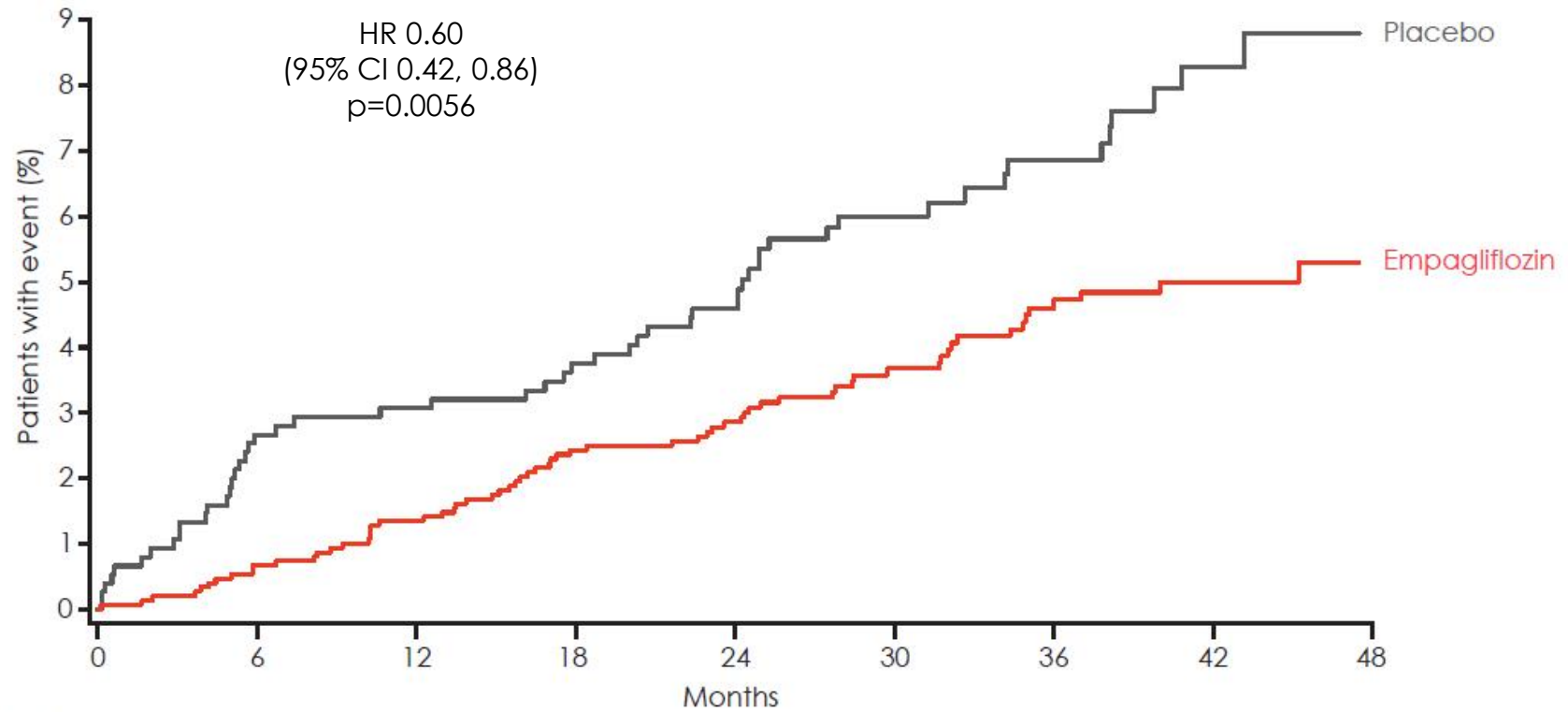


Cardiovascular death in patients with prevalent kidney disease at baseline



No. of patients	0	6	12	18	24	30	36	42	48
Empagliflozin	1498	1480	1465	1441	1296	981	827	544	136
Placebo	752	741	728	710	632	472	404	257	63

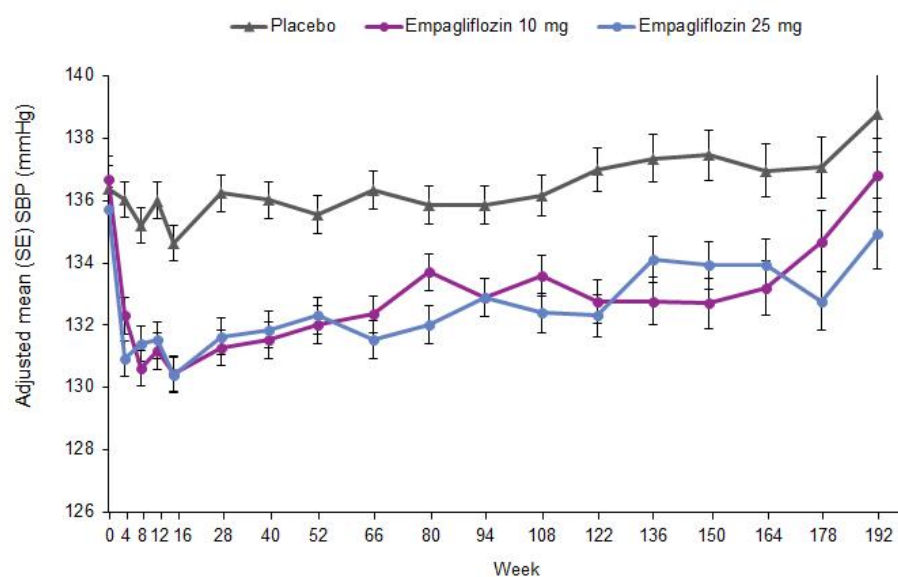
Hospitalisation for heart failure in patients with prevalent kidney disease at baseline



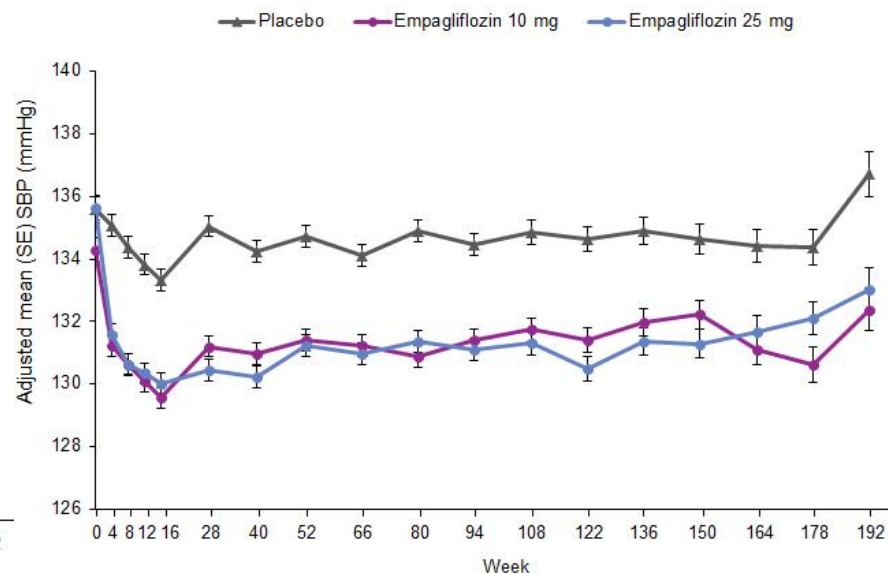
No. of patients	0	6	12	18	24	30	36	42	48
Empagliflozin	1498	1463	1432	1389	1235	932	781	517	132
Placebo	752	722	697	674	591	431	367	233	57

Systolic blood pressure

Patients with eGFR <60 mL/min/1.73m² at baseline



Patients with eGFR ≥60 mL/min/1.73m² at baseline



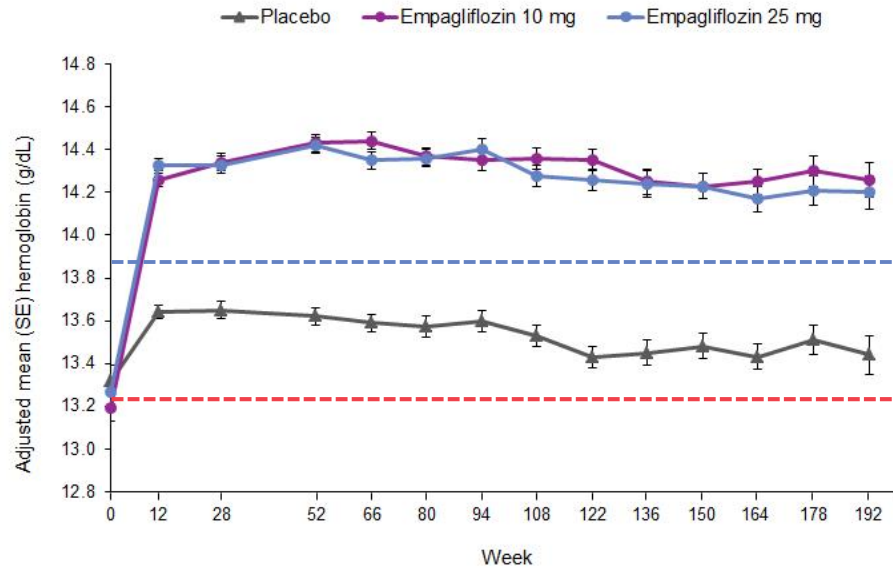
Placebo	605	579	551	519	481	372	287	184	113
Empagliflozin 10 mg	596	577	551	528	508	393	296	195	126
Empagliflozin 25 mg	599	576	560	537	516	399	306	212	136

1717	1656	1610	1554	1493	1120	839	551	337
1726	1673	1642	1597	1564	1163	893	595	392
1723	1670	1636	1591	1549	1171	905	630	392

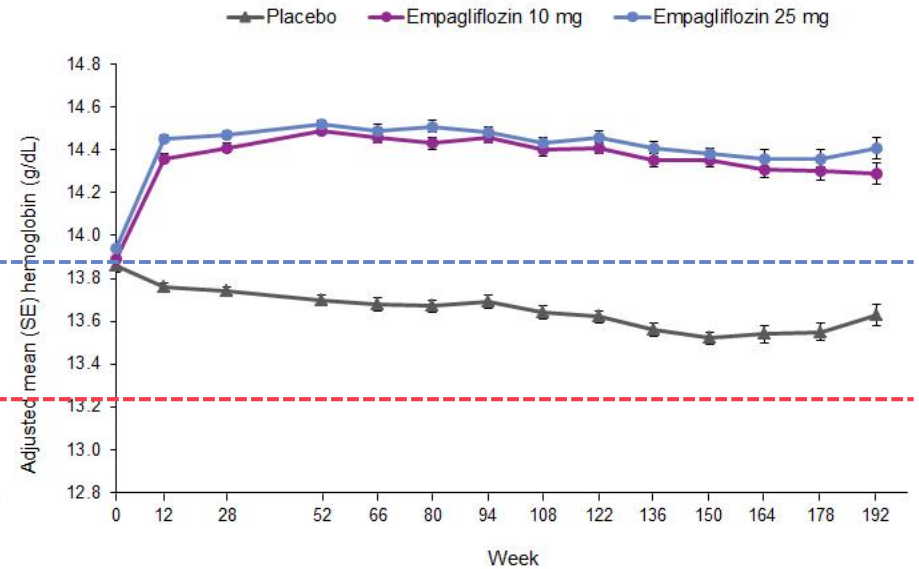
Mixed model repeated measures analysis in the treated set (OC-AD).

Hemoglobin

Patients with eGFR <60 mL/min/1.73m² at baseline



Patients with eGFR ≥60 mL/min/1.73m² at baseline



Placebo	596	559	526	483	434	312	252	114
Empagliflozin 10 mg	589	562	537	502	437	326	248	123
Empagliflozin 25 mg	594	564	544	519	453	330	264	134

1697	1637	1579	1509	1324	941	717	332
1707	1655	1605	1560	1388	987	766	388
1701	1648	1606	1546	1406	1000	784	386

Adverse events

Acute renal failure (SMQ search)

Adverse events with frequency $\geq 0.2\%$

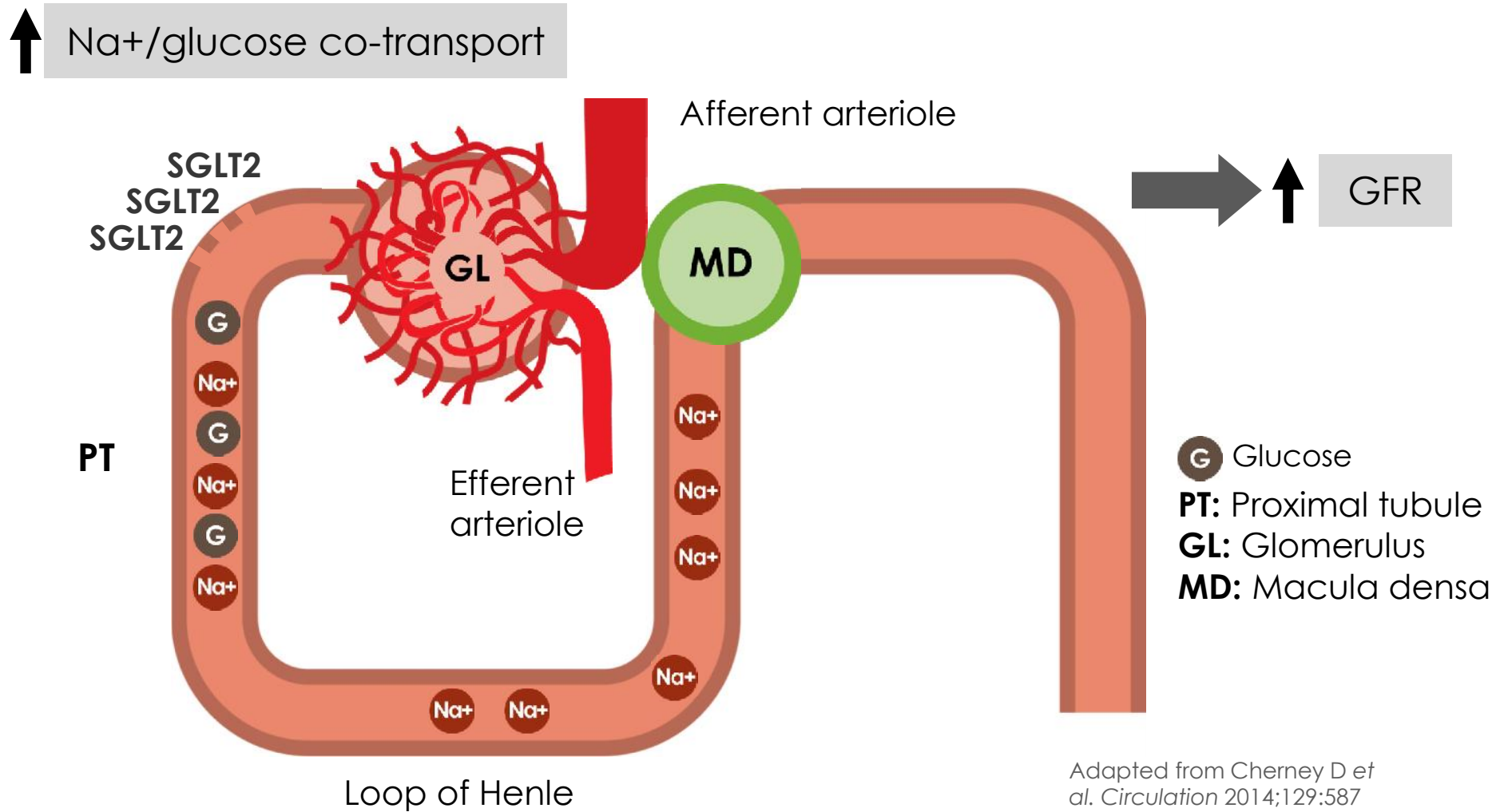
Preferred term	Liraglutide		Placebo	
	Events (%)	Rate /100 PYO	Events (%)	Rate /100 PYO
All events	234 (5.0)		262 (5.6)	
Acute kidney injury	111 (2.4)	0.7	99 (2.1)	0.6
Proteinuria	64 (1.4)	0.4	95 (2.0)	0.6
Renal failure	25 (0.5)	0.1	38 (0.8)	0.2
Renal impairment	20 (0.4)	0.1	15 (0.3)	<0.1
Blood creatinine increased	16 (0.3)	<0.1	13 (0.3)	<0.1

PYO: patient years of observation; SMQ, standardized MedDRA query.

Possible mechanisms: **TGF** Tubulo Glomerular Feedback

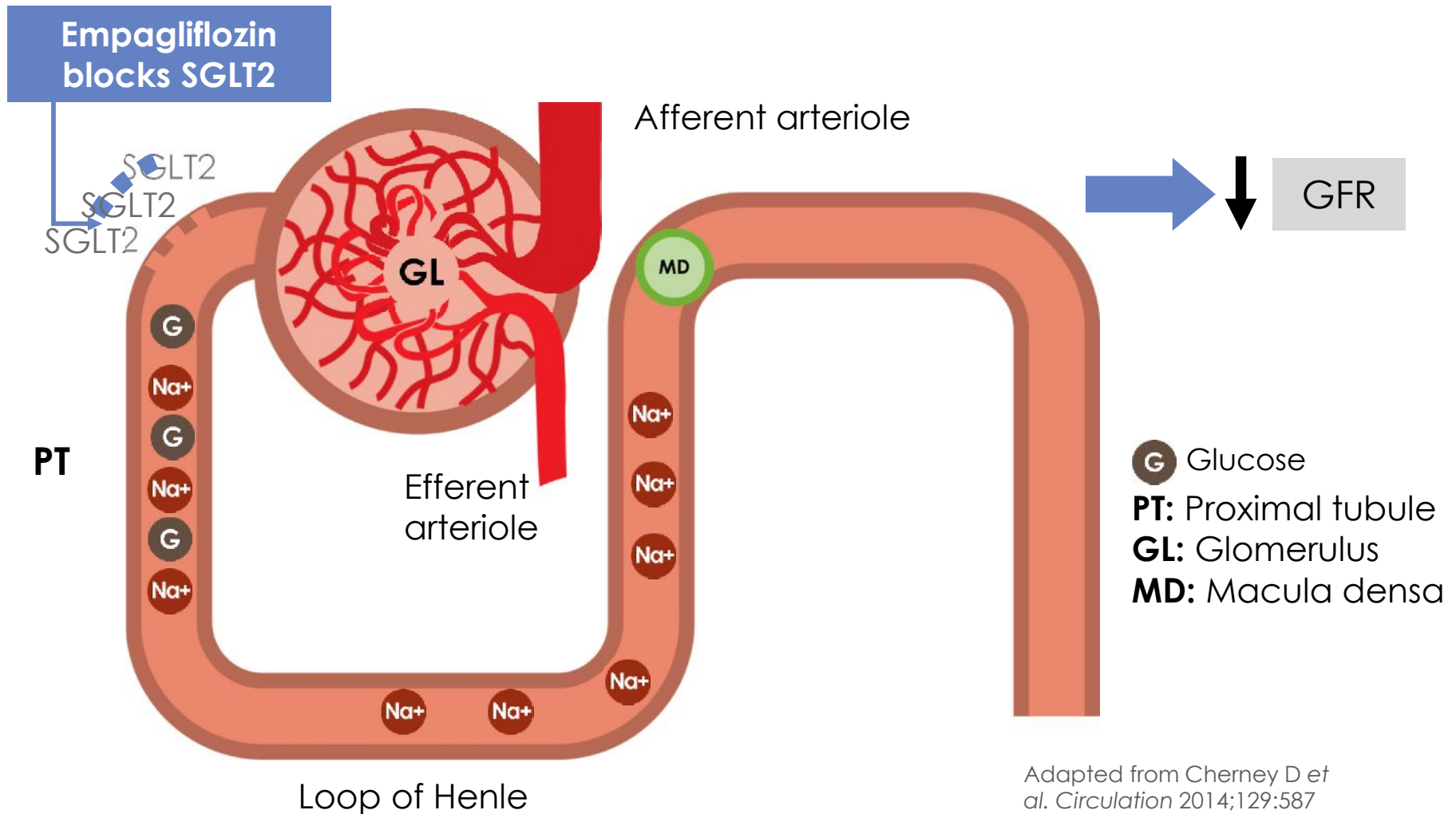
Adapted from Cherney D *et al. Circulation* 2014;129:587

Diabetes causes glomerular hypertension

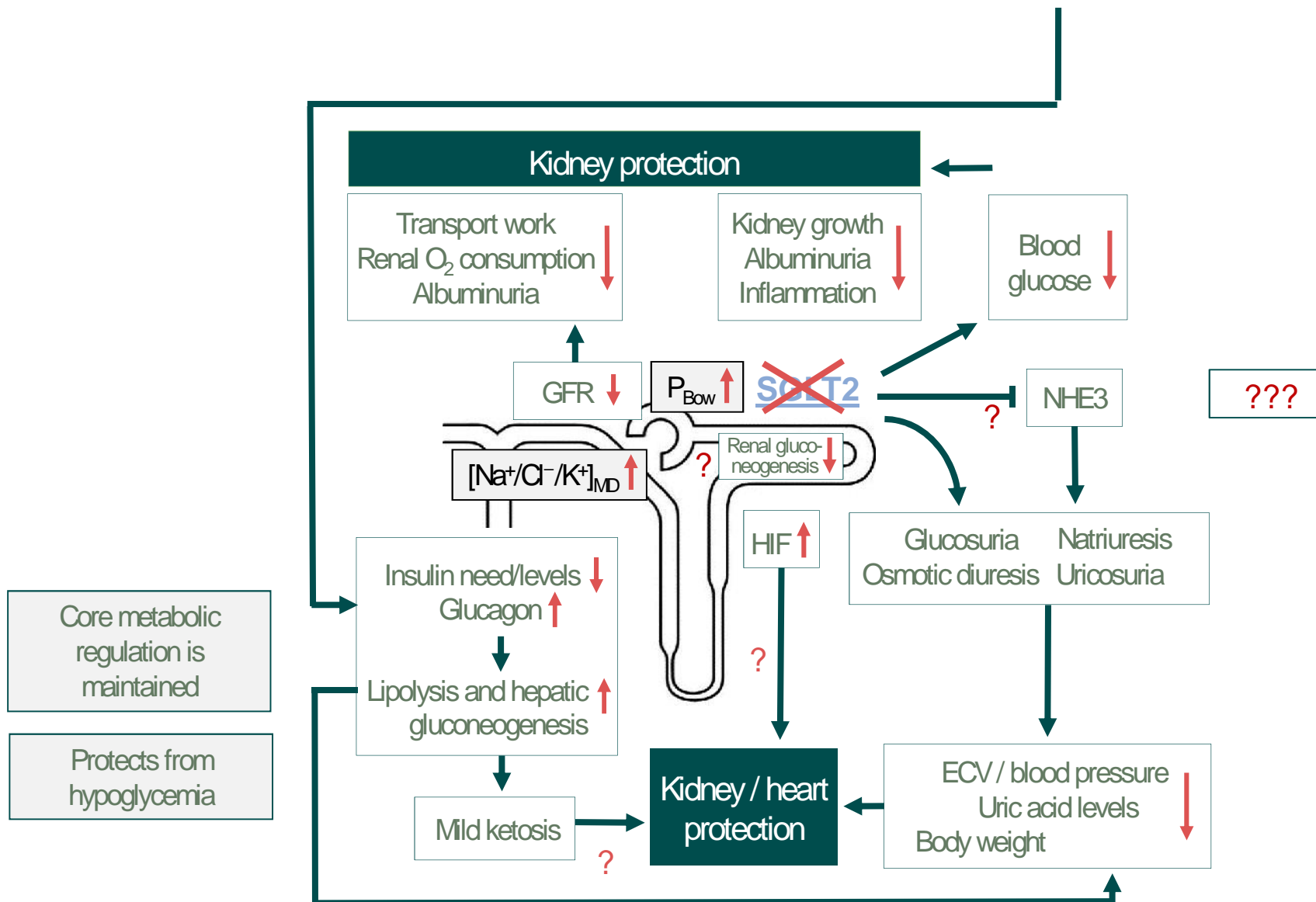


Renal hemodynamics under hyperglycemia

Empagliflozin lowers intra-glomerular pressure



Renal hemodynamics with empagliflozin



Thank you



Glucose



Salt



Water



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Diabetes and Kidney Disease: Advances and Controversies



Cognition in DM CKD

George Tadros

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Urgent Care, Birmingham, UK

Professor of Liaison Psychiatry and Dementia, Aston
Medical School, Aston University

Visiting Professor of Dementia Care in Acute Hospitals,
Chester University

Expectations !!

1. Ageing Hospital population
2. Dementia impact
3. Cognition in CKD
4. Cognition and DM
5. Can Liaison Psychiatry do any good in acute hospitals?

Population projections

- Current UK estimates for female life expectancy at birth are 83.0 years and 79.3 years for men.
 - But, estimates at the age of 65 are 86.1 for women and 83.6 for men.
- People currently aged 75 can expect to live an average of 13.0 years (for women) and 11.2 years for men
- By 2040, nearly one in four people in the UK will be aged 65 or over.
 - A baby born in 2011 is almost eight times more likely to reach 100 than one born in 1931.
 - Nearly one in five people currently in the UK will live to see their 100th birthday.
- In 2011, 32% of people aged 65 and over who were admitted to hospital were found to be malnourished at the time of admission.
- In 2010, 21% of adult inpatients in England said that they were not always treated with respect for their dignity. This result has not improved since the first survey in 2002 (!!!).

Hospital care

- 16 million adults admitted to hospital last year, almost 8 million (47%) were aged 65+.
 - Up to 60% of older people in hospital have mental health problems or develop them during their stay
- Older people occupy two third of NHS beds!!
 - 48% for reasons other than the need for acute medical intervention
 - 30-50% have dementia, delirium or other cognitive impairment.
- National Audit Office; More people with dementia in acute hospital beds than in mental health beds,
 - Only 41% had received an assessment of mental state of any sort.
 - 70% of older people referrals to liaison services are not under the care of mental health services.
- Length of Stay in Acute Hospitals 2000-2010,
 - hospital stay for 60-74 increased by 50%, over 75 by 66%.
- In a typical acute hospital (500 beds), failure to organize dementia liaison services leads to excess cost of £6m/year
- Of people aged over 70 admitted to an acute hospital
 - 27% have previously diagnosed dementia
 - 50% have cognitive impairment
 - 27% have delirium
 - 24% have possible major depression
 - 8% have definite major depression

Dementia and Outcome measures

- The majority of mental co-morbidity in acute hospital affecting older people is due to three disorders:
 - **Dementia,**
 - **Depression**
 - **Delirium.**
- **Mental disorder in older adults is a predictor of:**
 - **Increased LOS**
 - **Increased readmissions**
 - **Increased Institutionalism (impacting on performance and efficiency)**
 - **Increased mortality**
 - **Increased falls**
 - **Other poorer outcomes**
- But, only 2-3% of older people admissions to acute hospitals are referred for a psychiatric opinion;
 - elderly are less likely to be referred to liaison psychiatry than younger people in relation to the proportion of beds they occupy.

Undiagnosed Dementia in Acute Hospitals

- Dr. A Michael, 2014
- Russell Hall Hospital, Dudley, West Midlands
- 1107 patients admitted to acute hospital
- No known history of dementia on admission.
- 42% screen positive for dementia
- Q Whether there is Delirium?
- Q Where is the link between community care and hospital care?

Age Group	AMT < 8	%
75- < 80	49/192	26
80- <85	106/288	37
85- <90	178/369	48
90- <95	102/207	49
95- <100	32/48	67
100+	2/3	67
Total	469/1107	42%

Hospitals on the
edge.

Can our hospitals
or even NHS
survive without
better and more
effective dementia
care?



Treat as One

Bridging the gap between mental and physical healthcare in general hospitals



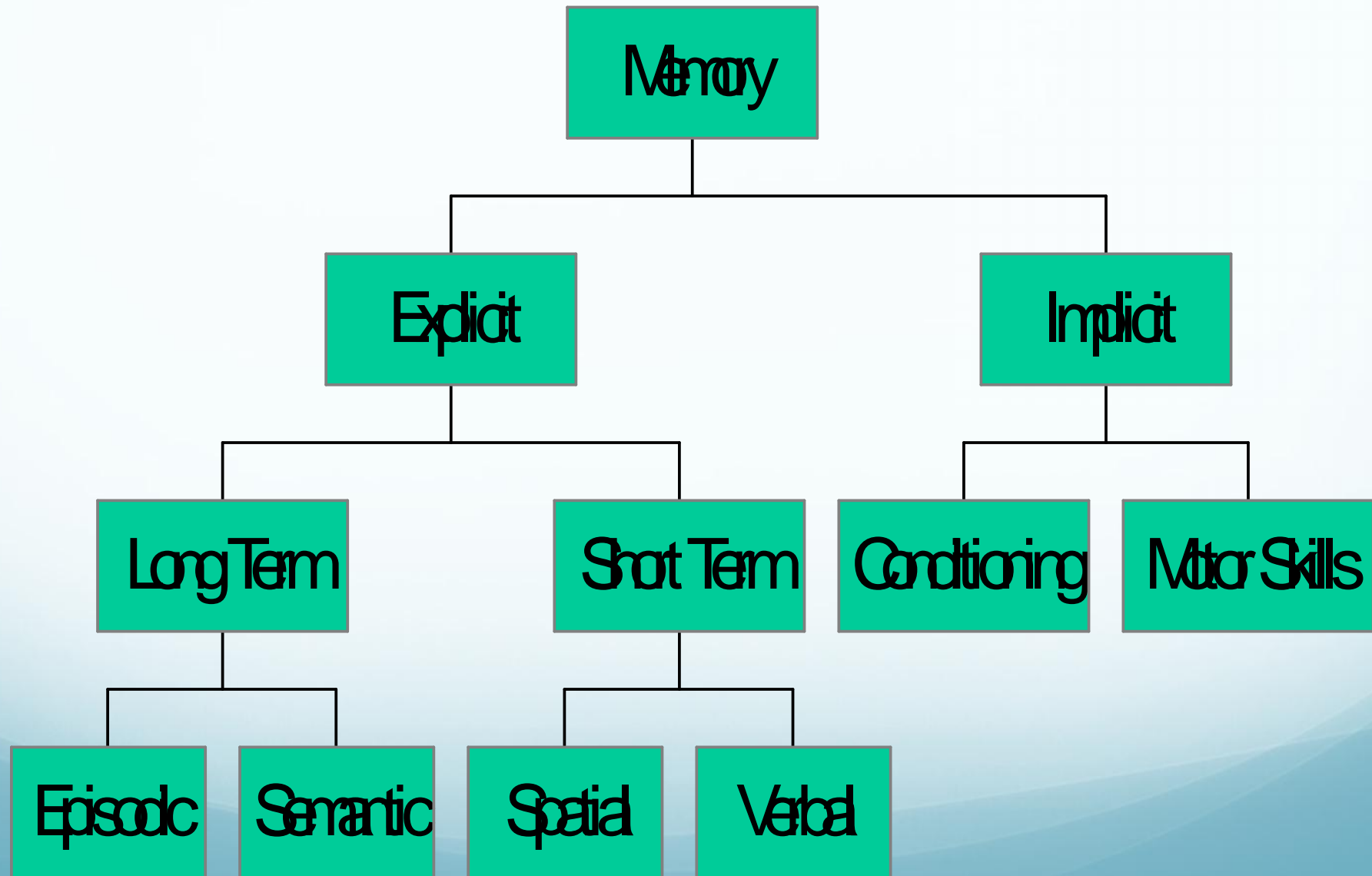
Features of normal ageing

- ◆ Decreased sensory processing and under-arousal
- ◆ Slowed neuronal processing
- ◆ Decreased complex and sustained attention
- ◆ Accentuation of personality traits
 - Decreased flexibility and tolerance to change
 - Decreased excitability & impulsivity; more cautious
- ◆ Ageing and intelligence:
 - Preserved crystalized intelligence
 - Decreased fluid intelligence
 - Stable verbal IQ but decline in performance IQ
- ◆ Decrease in naming ability
- ◆ Decrease in primary and working memory
- ◆ Decreased retrieval of stored memory
- ◆ Language relatively well spared
- ◆ Sleep; fragmented, increased daytime somnolence

Definition of dementia

- Cognition is the ability to use and integrate basic capacities such as perception, language, behaviour, actions, memory and thoughts in order to interact appropriately with the world.
- Dementia is an acquired, persistent impairment in multiple areas of intellectual function, not due to delirium.
- Operationally, there is a compromise in three or more of the following nine spheres of mental activities:
 - Memory, language,
 - perception, praxis,
 - calculation, conceptual or semantic knowledge,
 - executive functions, personality, emotional expression.

What is Memory

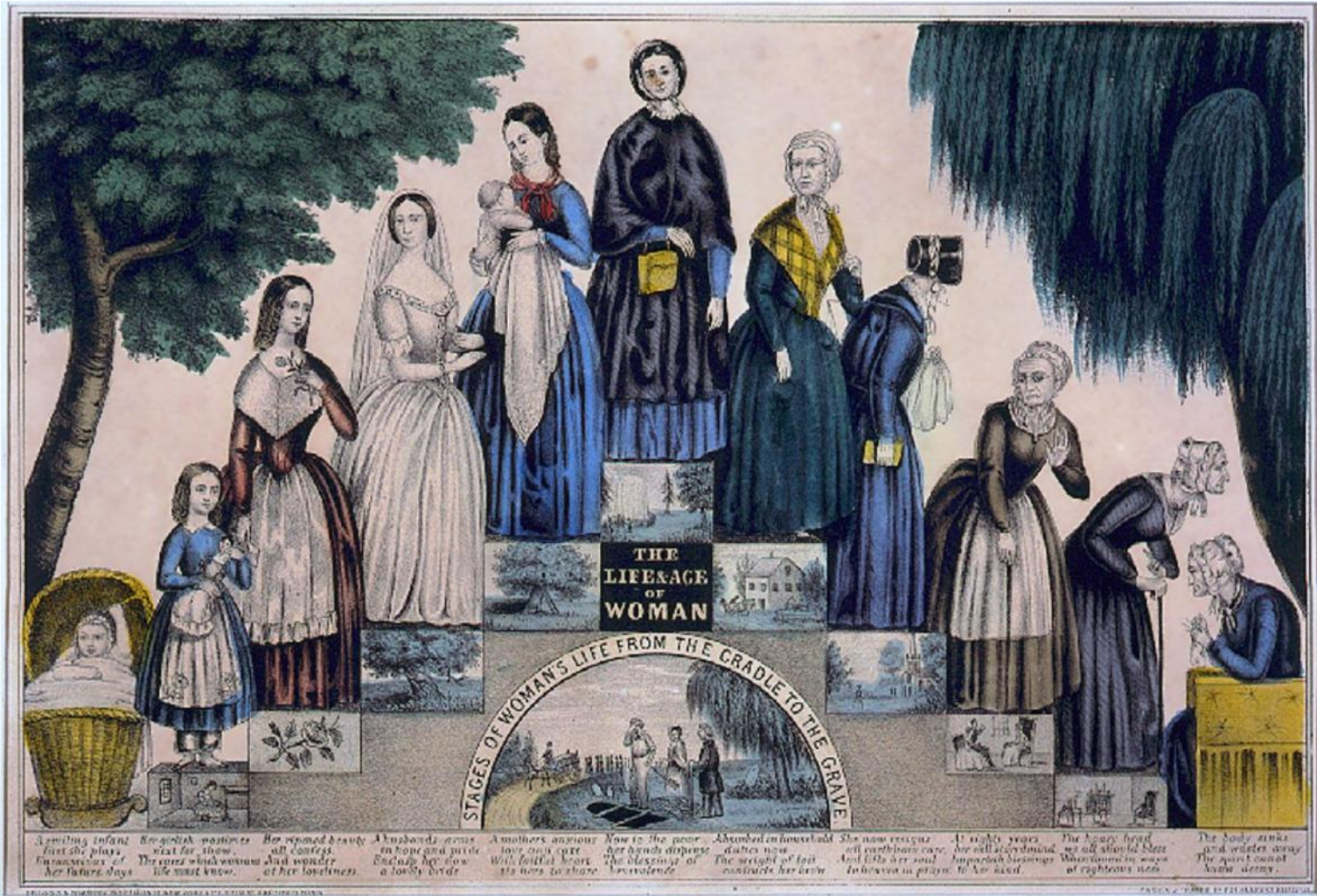




Prevalence of Dementias

- 0.01% before the age of 40.
- 5-8% of all individuals over 65.
- 15-20% of all individuals over 75.
- 25-50% of all individuals over 85.
- 60-80% of all individuals over 95.
- 90% of all individuals over 100
- 100% of all individuals over ??
- 50% of all individuals in nursing homes.
- 820,000 persons in the UK.





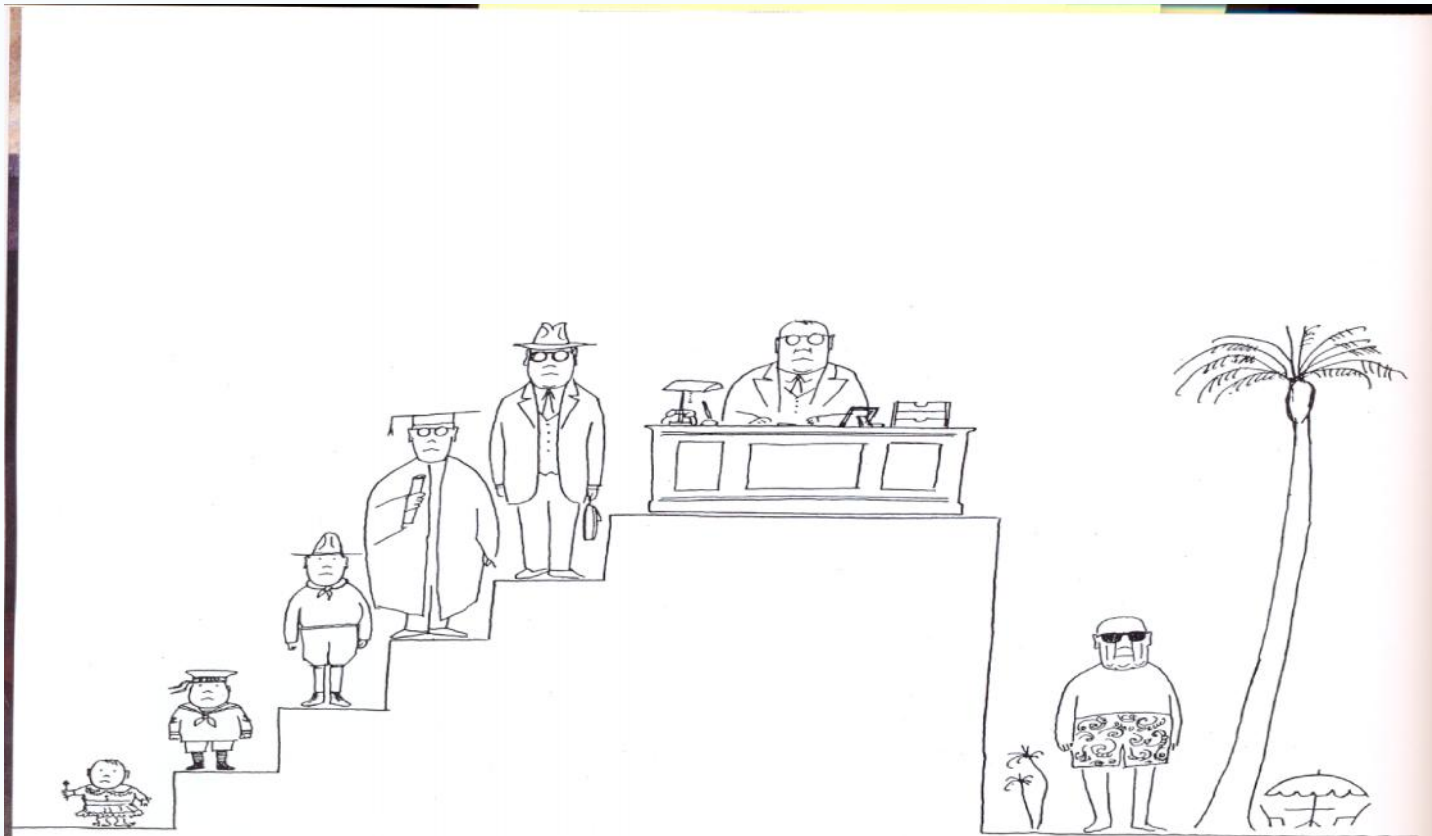
THE LIFE & AGE OF WOMAN

STAGES OF WOMAN'S LIFE FROM THE CRADLE TO THE GRAVE

A smiling infant first she plays
 Unconscious of her future days
 Her golden tresses next she shows
 The curls which woman's life must know
 Her ripened beauty all confess
 And wonder at her loveliness
 A husband's arms in hope and pride
 Enclave her slow a lovely bride
 A mother's anxious love and care
 Will faithful bear its cross to share
 Now to the poor her hands dispense
 The blessings of benevolence
 Attended in household duties now
 The weight of toil constrains her brow
 She now receives all earthly care
 And tells her soul to heaven to pray
 At eighty years she will be found
 Impartial blessings from heaven to send
 The hoary head no all should bless
 Whose crown is won of righteous men
 The body sinks and wastes away
 The spirit cannot tarry long

FRANCIS & THOMAS, PRINTERS, NEW-CORNER, AUSTIN ST. AND BRIDGE-ST. LONDON.





Irony ends in pathos in Saul Steinberg's 'Untitled, 1954', a version of the traditional diagram of the Ages of Man. The successful man rises from infant, through boy scout, academic, business man, tycoon to... playboy on a beach in Florida, retired, relaxed, happy but – useless.

Size and cost of Dementia

- It is estimated that 35.6 million people living with dementia worldwide in 2010,
 - increasing to 65.7 million by 2030 and 115.4 million by 2050.
 - The total estimated worldwide costs of dementia are US\$604 billion in 2010.
 - The United Dementia Republic
 - What if dementia was a republic in terms of population economy?
 - It would have ranked 18th Largest economy in the world
- About 70% of the costs occur in Western Europe and North America.
- 820,000 people with dementia in the UK
 - The cost of dementia care exceeds that of cancer, heart disease and stroke combined.
 - £17 billions/ year
 - Triple to £50 billions/ year over the next 30 years

Risk Factors for AD and VaD

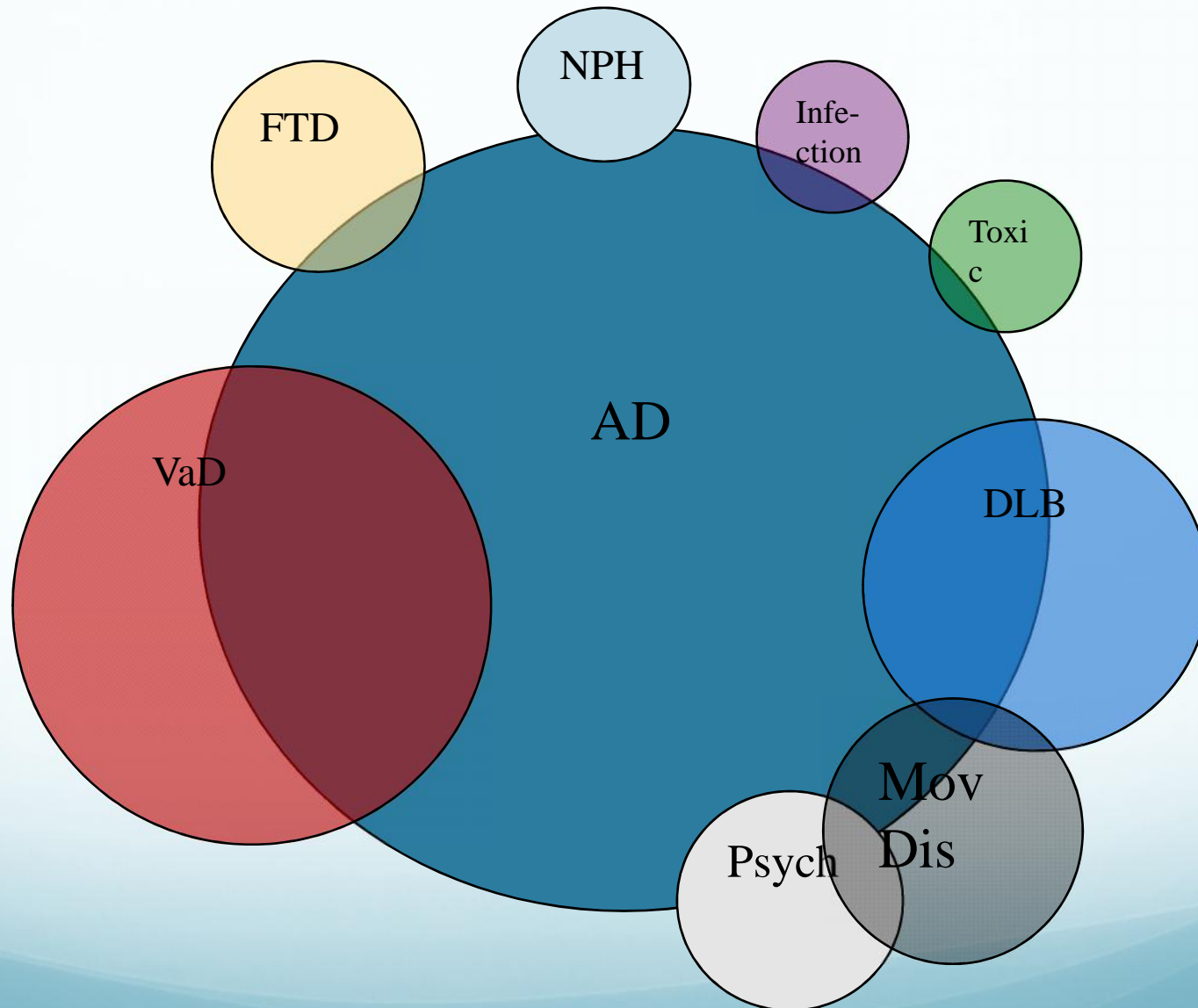
Modifiable Risk factors:

- ◆ Stroke.
- ◆ Midlife Hypertension.
- ◆ Midlife obesity
- ◆ Diabetes.
- ◆ Smoking.
- ◆ Elevated level of low-density lipids.
- ◆ Alcohol consumption (U-curve)
- ◆ Psychological stress.
- ◆ Cognitive inactivity
- ◆ low educational attainment
- ◆ Physical inactivity
- ◆ Sodium intake
- ◆ Exposure to environmental toxins
- ◆ Depression

Un-modifiable risk factors:

- ◆ Age
- ◆ Gender; female
- ◆ Family History
- ◆ Dawn Syndrome
- ◆ ApoE.
- ◆ CADASIL (cerebral autosomal dominant arteriopathy with subcortical infarcts & leukoencephalopathy, linked to Notch3 gene.).

Types of Dementia



Diabetes and Dementia

- The AlzRisk AD Epidemiology Database; suggest an association between DM and increased risk for both AD and Vascular dementias.
- Biessels et al (2006) identified 14 eligible longitudinal studies
 - Increased risk of dementia
 - Type 1 Vs Type 2
 - Dementia, sub-types or CMI.
- Vascular disease and alterations in glucose, insulin, and amyloid metabolism may underlie the pathophysiology
- DM type 2 independent predictor of post-stroke dementia
- Barnes and Yaffe (2011); A 10–25% reduction in risk factors could potentially prevent as many as 3.0 million AD cases worldwide.

Diabetes and Dementia

- Fluoro-2-deoxy-D-glucose positron emission tomography (FDG-PET) imaging has revealed glucose metabolic reductions in the parieto-temporal, frontal and posterior cingulate cortices to be the hallmark of AD.
- Impaired brain glucose metabolism leads to abnormal hyperphosphorylation of tau and neurofibrillary degeneration via down regulation of tau O-GlcNAcylation in Alzheimer's disease.
- It is concluded that the cholinergic deficit, nerve cell atrophy and the amyloid accumulation in the brain are secondary phenomena caused by the 50–70% decline of glucose metabolism in Alz Disease.
- Abnormal brain glucose metabolism in the delusional misidentification syndromes: A positron emission tomography study in Alzheimer disease
- ELAD study
- Imperial; HoEFT a research centre
- Liraglutide

Dementia and CKD

- Increasing severity of Chronic Kidney Disease (CKD) is associated with a graded increase in prevalence of cognitive impairment
 - decrease in brain perfusion independent of vascular risk factors.
 - Diagnostic methods vary but recent reviews summarise at least moderate cognitive impairment in 30-70% of dialysis patients.
 - Cognitive impairment in HD patients is independently associated with higher rates of depression.
- There are multiple factors CKD and HD specific factors including oxidative stress, malnutrition and inflammation.
 - Co-segregation of atherosclerotic risk factors, cannot entirely account for excess risk.
 - To date, no interventions are proven to slow cognitive decline

Dementia and CKD

- Cognitive function drops significantly after the start of haemodialysis.
- Haemodialysis might cause worsening of cognitive impairment by inducing haemodynamic instability, fluid shifts, cerebral ischaemia or cerebral oedema
- Evidence suggests that the retention of uraemic toxins which are incompletely cleared by haemodialysis may also be responsible for chronic cognitive impairment.
- HoEFT
 - 100 patients (82 completed both tests), HD
 - T1, T2 and T3
 - Median age was 72 years (53 - 91), 60% male.
 - Median dialysis vintage was 40 months (range: 3 - 388)
 - 28% were diabetic.
 - MoCA, CAM, GDS; before and after
 - At baseline: 62 patients (76%) had CI at baseline (MOCA score ≥ 24) with 12 (15%) having severe CI (MOCA <17).
 - Cognitive function declined significantly over a dialysis session (MOCA score 20.9 ± 4.9 to 19.1 ± 4.1 , $p < 0.001$).
 - 91.5% had cognitive impairment post- haemodialysis (MOCA score ≥ 24). All domains of cognitive function were affected except visuo-spatial and naming.
 - On univariate analysis, none of the factors studied correlated with change in MOCA score over HD (MOCA 1 – MOCA 2).
 - Age and dialysis vintage were independently associated with decline in cognitive function.

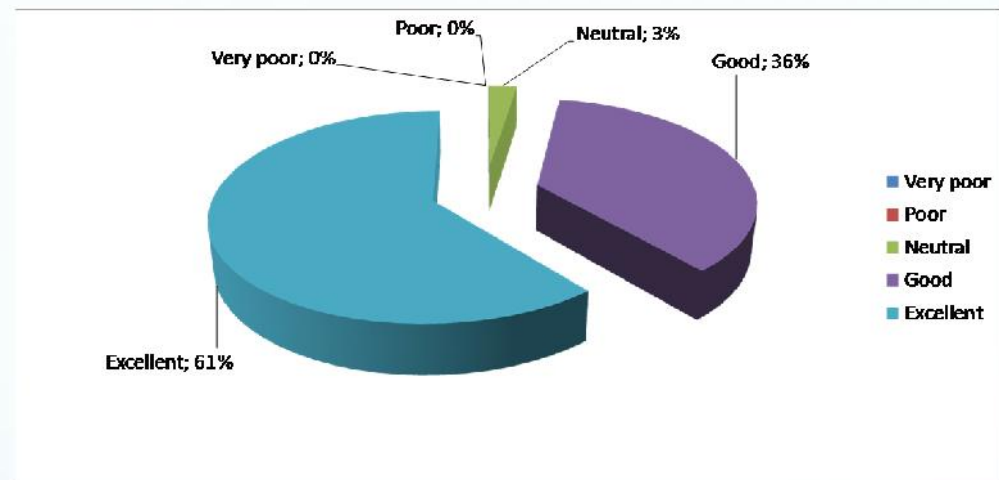
Rapid Assessment Interface Discharge (RAID)



Teaching and evaluation

- 4Ds (Dementia, Depression, Delirium and Dignity).
- 2 days training with a month gap for theory application.
- Day 1; theory and scales for measuring.
- Day 2: Management including BPSD

- Feedback and evaluation.



Savings and wider financial Benefits

Potential Benefits of RAID

- Outcomes Considered in this Study**
1. Inpatient LoS
 2. Readmission rates
 3. Admission avoidance

Social care £

Complaints

Staff satisfaction

Patient satisfaction

Staff sickness

Acute staff confidence in dealing with MH conditions

A&E savings

Demand for community MH services

Discharge destination

MH outcomes

Quality

SUIs

Acute staff training

Referring / Signposting to community MH services

Security

RAID combined total savings: beds/day

- **On reduced LOS**
 - saved bed days/12 months= **13,935** bed days
 - $\div 365 = 38$ days/day (35 beds/day for the elderly)
 - **Saved bed days through avoiding admissions at MAU**
 - **Saved bed days = 6 beds / day**
 - **Elderly .. = 6 beds**
 - **Increasing survival before another readmission**
 - Admissions saved over 12 months =1800 admissions
 - Average LOS 4.5 days
 - = 8100 saved bed days
 - $\div 365 = 22$ beds/day
 - 20 for the elderly
 - **Total Saved beds every day**
 - = **38 + 22+ 6= 66 bed/ day (Maximum) {Elderly: 59 beds/day}**
 - = **21 +22+ 6= 49 bed days (minimum) {Elderly: 42 beds/ day}**
- ✓ *2010: City Hospital has already closed 60 beds.*

Independent evaluation by London school of Economics, August 2011

- Very thorough, detailed and vigorous review but conservative estimation
- Total savings:
 - £3.55 million to NHS
 - At least 44 beds/day
 - £60,000/week to social care cost
- Money value
 - Cost : return = £1: £4
- RAID expanded in Birmingham to 5 acute hospitals across three acute Trust, 3600 beds
- Now RAID is being implemented in over 27 trusts across the country.
- RAID National Network, 600 members.



Independent RAID Financial Evaluation by Central Midlands CSU

Steven Wyatt, 2013

Potential Benefits of RAID

Outcomes Considered in this Study

Inpatient LoS

Readmission rates

Time in A&E

A&E re-attendance rates

Admission rates fro A&E

Time to readmission

Acute £ Prov / Comm

Complaints

Staff satisfaction

Patient satisfaction

Acute staff confidence in dealing with MH conditions

Staff sickness

Demand for community MH services

Discharge destination

MH outcomes

Quality

SUIs

Acute staff training

Referring / Signposting to community MH services

Security

Social care £

A&E Financial Outcomes – Concurrent Controls

	Commissioner Cost		Provider Cost	
	Cases	Controls	Cases	Controls
All	2626	2626	2626	2626
	↓ 14%	↓ 22%	↓ 14%	↓ 22%
Admitted	359	588	359	588
	↓ 90%	↓ 91%	↓ 90%	↓ 90%
Located & Costed	322	537	324	530
	↓ @£890	↓ @£1,391	↓ @£1,049	↓ @£1,615
Cost	286,573	746,998	339,912	855,847
	↓ ÷0.90	↓ ÷0.91	↓ ÷0.90	↓ ÷0.90
Grossed -Up Cost	319,502	817,942	376,631	949,505
	↘	↘	↘	↘
Difference	-498,440		-572,875	

A&E Activity Outcomes – Concurrent Controls

Outcome	Cases	Controls	Difference (95% CI)	Notes
Admission from A&E	13.7%	22.4%	8.7% (6.8% - 10.6%)	Sig. at 99%
Average Duration in A&E	4h 20m	2h 43m	97m (83m – 111m)	Sig. at 99%
Average Number of Re-attendances within 28 days*	1.14	0.64	0.50 (0.40 to 0.61)	Sig. at 99%
Average Number of Re-attendances within 90 days*	2.20	1.53	0.67 (0.57 to 0.78)	Sig. at 99%

* Applies to subset of cases seen between July 2012 and November 2012

Inpatient Activity Outcomes – Concurrent Controls

Outcome	Cases	Controls	Difference (95% CI)	Notes
Average Length of Stay Days	5.7	6.3	0.6 (0.5 to 0.7)	Sig. at 99%
Average Number of Re-admissions within 28 days*	0.28	0.31	-0.03 (-0.01 to -0.05)	Sig. at 99%
Average Number of Re-admissions within 90 days*	0.80	0.72	0.08 (0.04 to 0.13)	Sig. at 99%

* Applies to subset of cases seen between July 2012 and November 2012.

Inpatient Financial Outcomes – Concurrent Controls

	Commissioner Cost		Provider Cost	
	Cases	Controls	Cases	Controls
All*	33,750	33,750	33,750	33,750
	↓ 93.1%	↓ 93.1%	↓ 93.1%	↓ 93.1%
Matched	31,414	31,414	31,414	31,414
	↓ 99.0%	↓ 99.0%	↓ 99.6%	↓ 99.6%
Located & Costed	31,093	31,093	31,296	31,296
	↓ @£1,629	↓ @£1,678	↓ @£2,080	↓ @£2,238
Cost	50,656,320	52,162,644	65,110,245	70,042,352
	↘	↙	↘	↙
Difference	1,506,323		4,923,107	
		↓ ÷0.990 ÷0.931		↓ ÷0.996 ÷0.931
Grossed-Up Difference	1,635,107		5,318,846	

* To avoid double counting, this number excludes cases seen by RAID in AE and then admitted

Financial Outcomes Summary – Concurrent Controls

		Full Tariff / Average Cost (£'000s)			Savings Share	Marginal (£'000s)
		A&E	Inpatient	Grossed-Up Total*		
Commissioner	Saving	498	1,635	2,133	36%	640
Provider	Spend	-573	-5,319	-5,892		
	Income	-498	-1,635	-2,133		
	Saving	74	3,684	3,758	64%	1,127
Total Saving				5,892		1,768
Full Costs				3,295		
Incremental Cost				1,976		
Saving / Incremental Cost				2.98		0.89

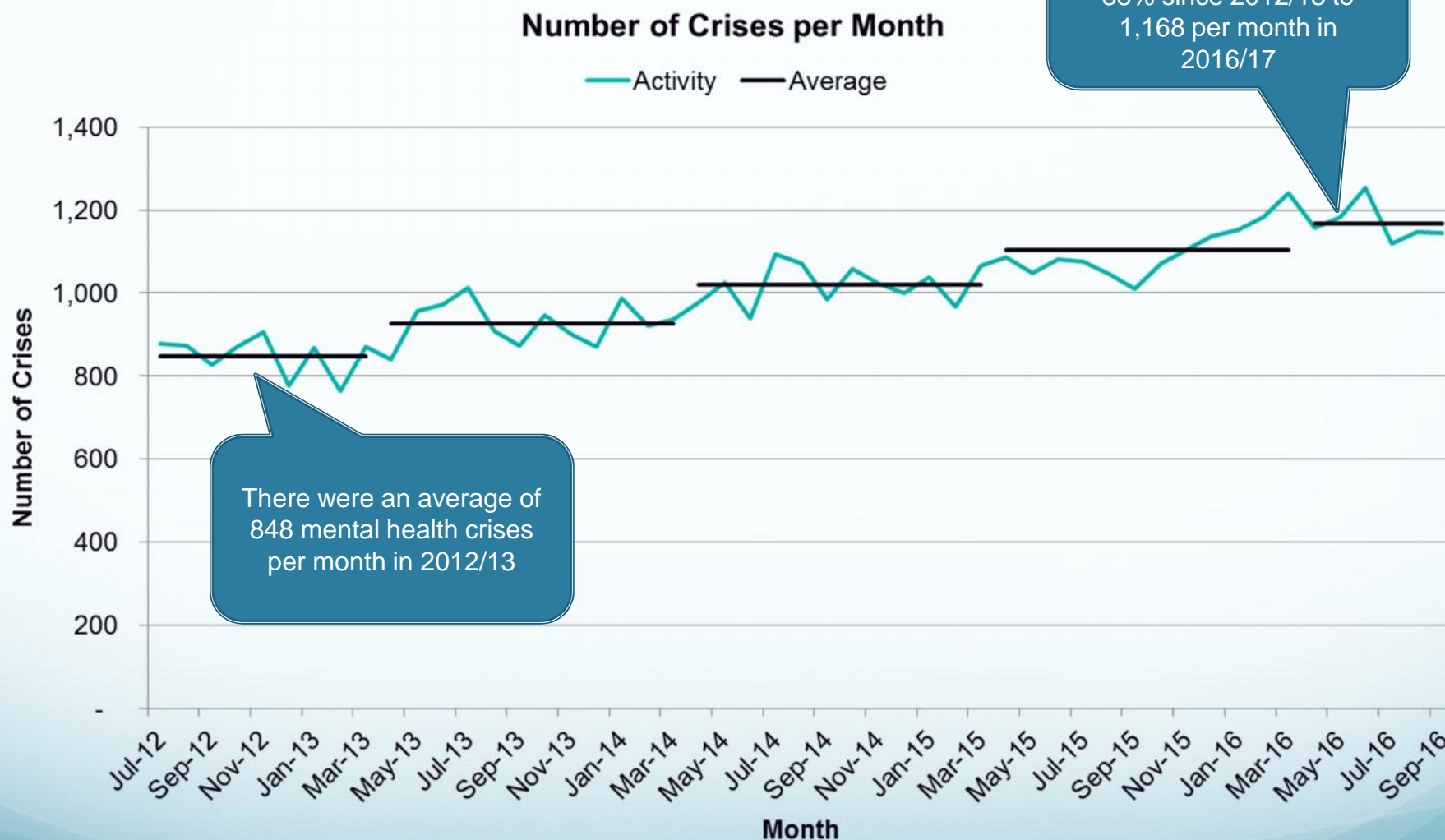
Activity Outcomes by Site

Site	Admission via A&E			Length of Stay		
	<i>cases</i>	<i>controls</i>	<i>diff</i>	<i>cases</i>	<i>controls</i>	<i>diff</i>
Heartlands	14.3%	28.7%	-14.4%	6.1	7.4	-1.3
Good Hope	19.4%	29.2%	-9.8%	7.2	7.7	-0.5
Solihull	20.2%	11.2%	+9.0%	5.2	5.8	-0.6
City	11.4%	17.3%	-5.9%	3.9	4.6	-0.7
UHB	10.9%	19.1%	-8.2%	6.3	6.3	0.0
All	13.7%	22.4%	-8.7%	5.7	6.3	-0.6

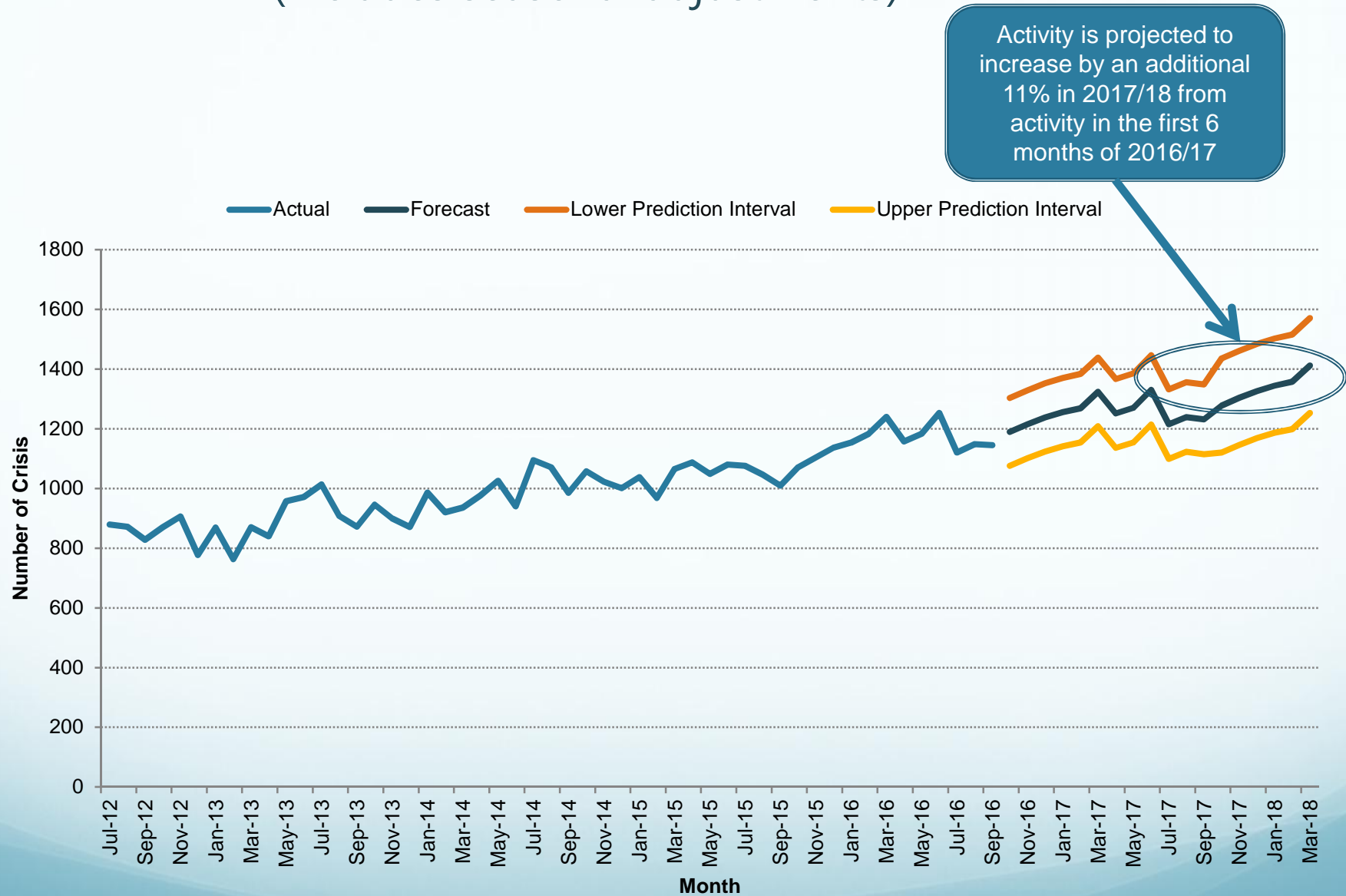
Financial Outcomes by Site (£'000s)

	All	HoEFT	City	UHB
Full Cost	3,295	1,748	748	798
Incremental Cost	1,976	997	465	513
Commissioner Savings AE	-498	-322	-109	-69
Provider Savings AE	-74	-31	26	-80
Commissioner Savings IP	-1,635	-1,494	-293	162
Provider Savings IP	-3,684	-3,161	-1,028	535
Total Savings	-5,892	-5,008	-1,404	549
Net Savings (@ full cost)	-2,597	-3,261	-656	1,347
Net Savings (@ incremental cost)	-3,916	-4,011	-939	1,062
Savings / Full Cost	1.79	2.87	1.88	-0.69
Savings / Incremental Cost	2.98	5.02	3.02	-1.07

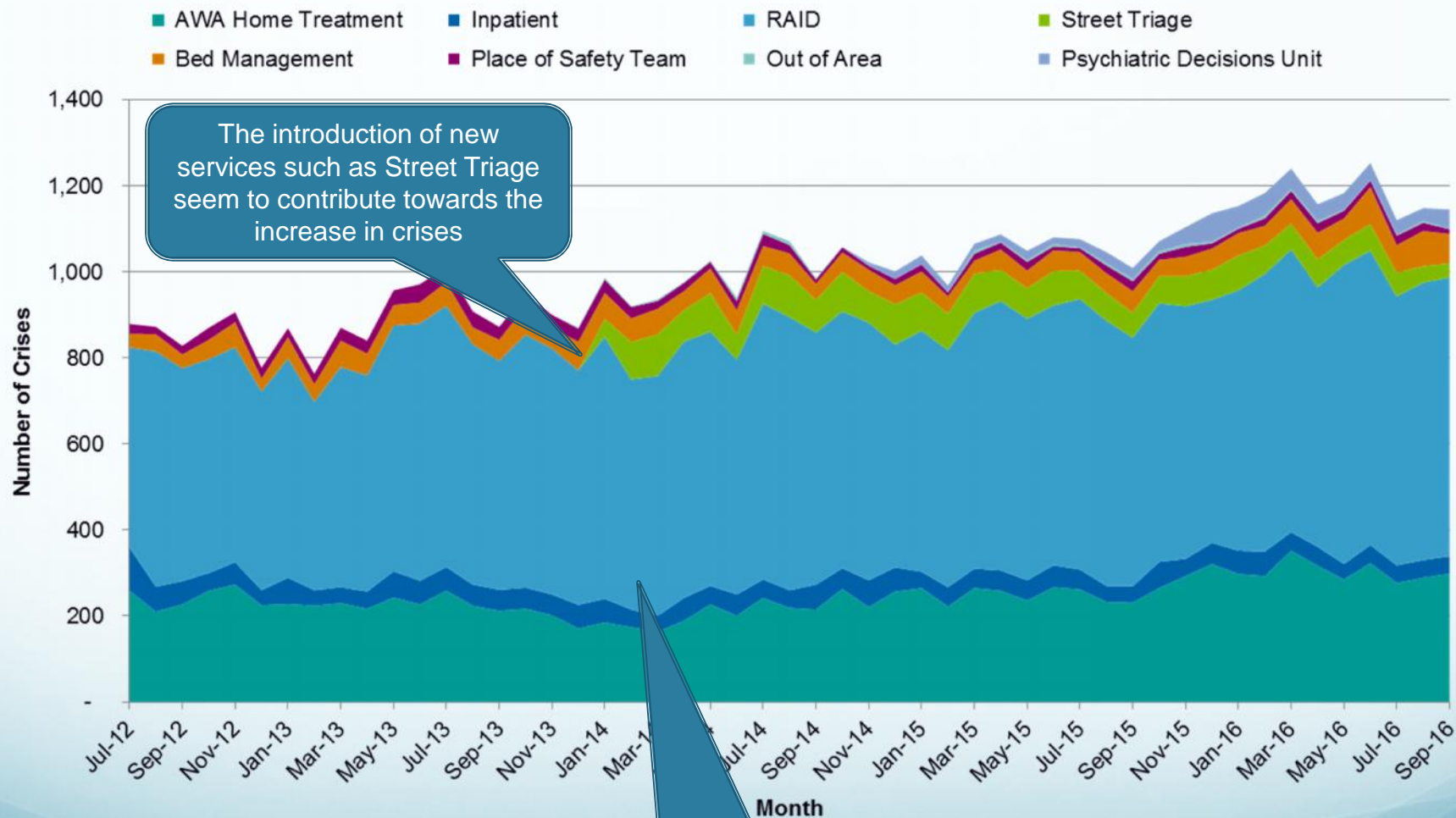
There is an increasing number of crises



Crises are likely to increase in the future if nothing changes (includes seasonal adjustments)



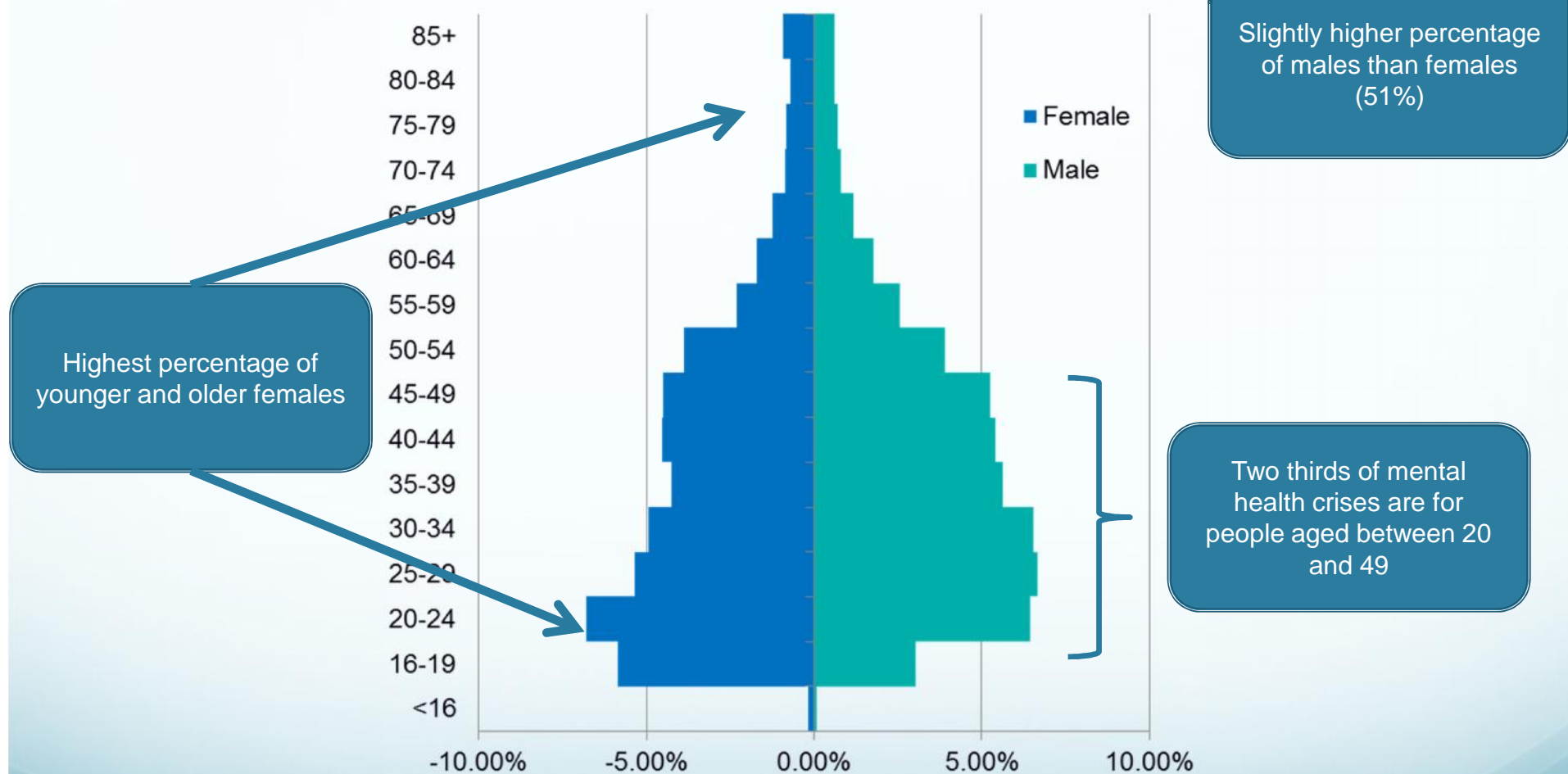
Where do patients present when they are in crisis?



The introduction of new services such as Street Triage seem to contribute towards the increase in crises

More than half of mental crises presented via A&E and were seen by the RAID Team

What is the age / gender profile of patients in crisis?



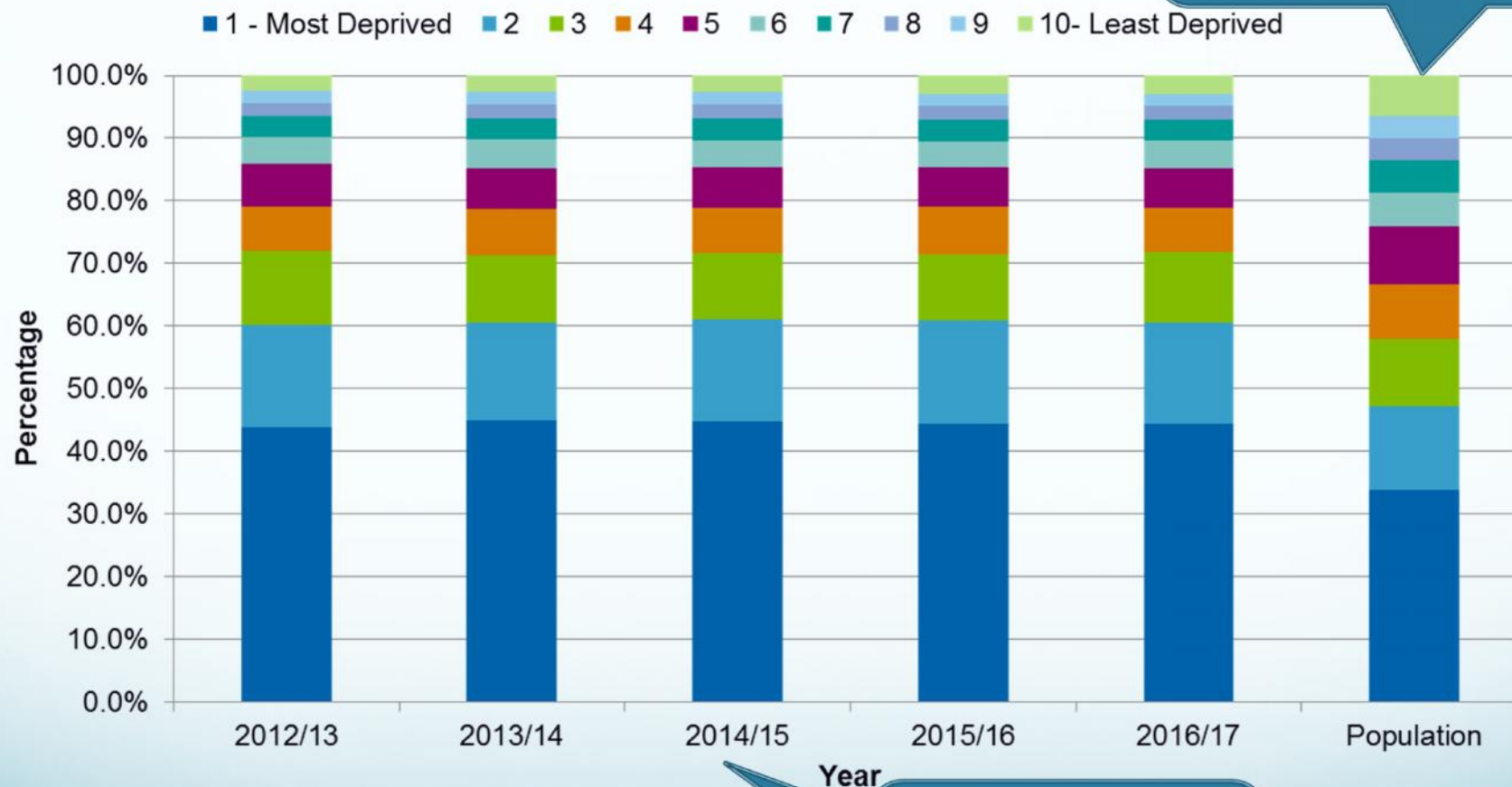
Slightly higher percentage of males than females (51%)

Highest percentage of younger and older females

Two thirds of mental health crises are for people aged between 20 and 49

Are patients in crisis more deprived than the background population?

People with a mental health crisis live in more deprived areas than the general population of Birmingham and Solihull

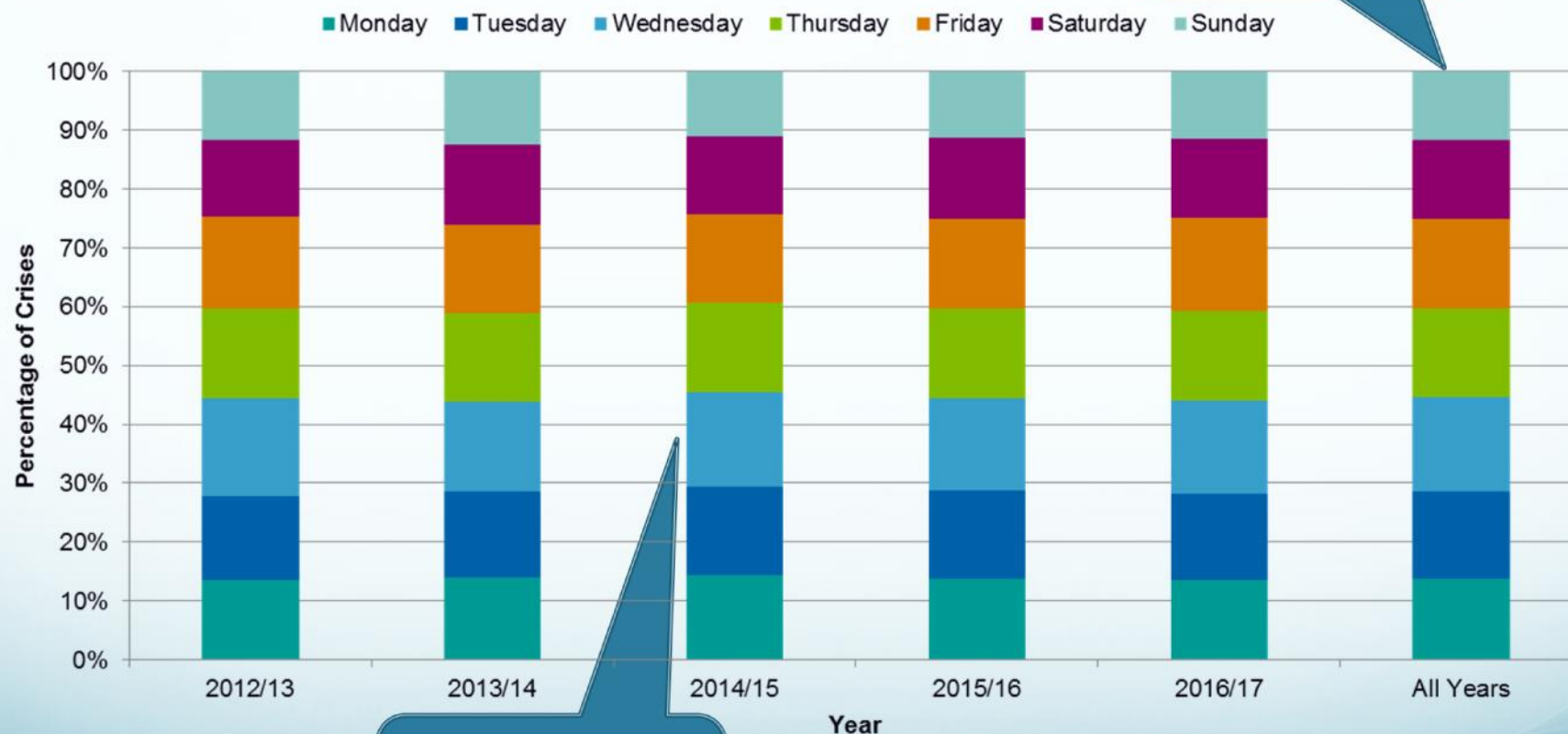


The deprivation profile each year for people who have a mental health crisis has not changed significantly over the years

On which day of the week do patients in crisis present?

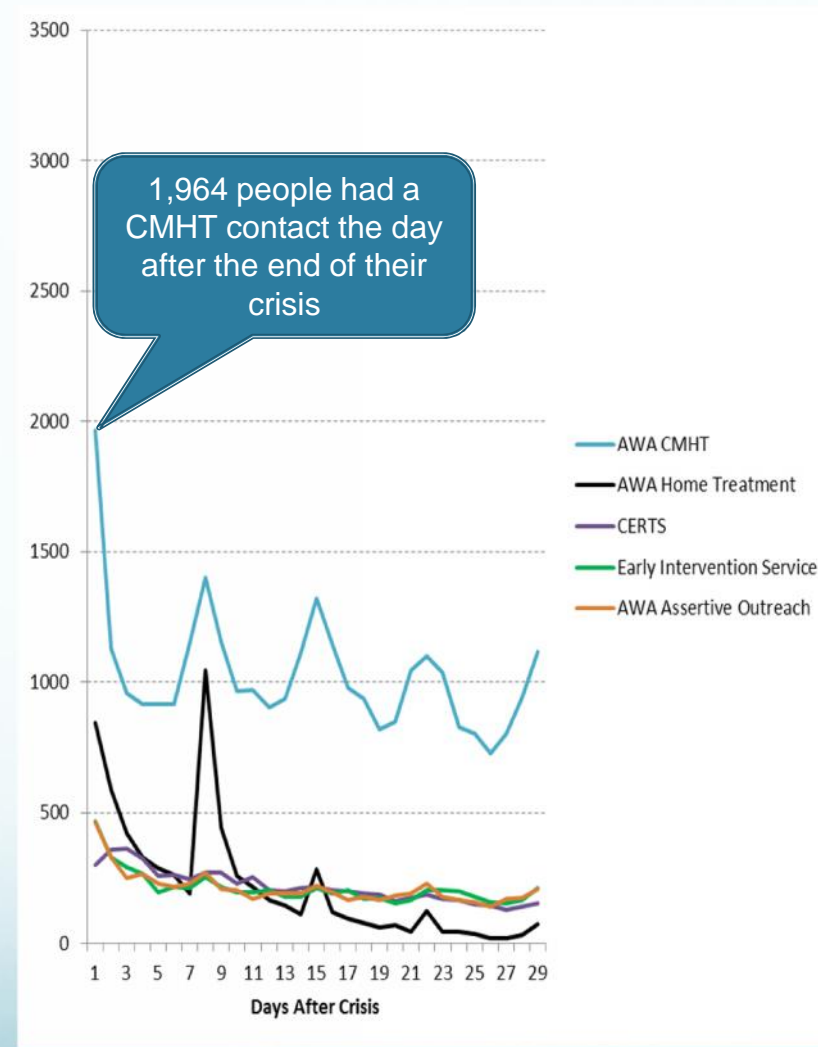
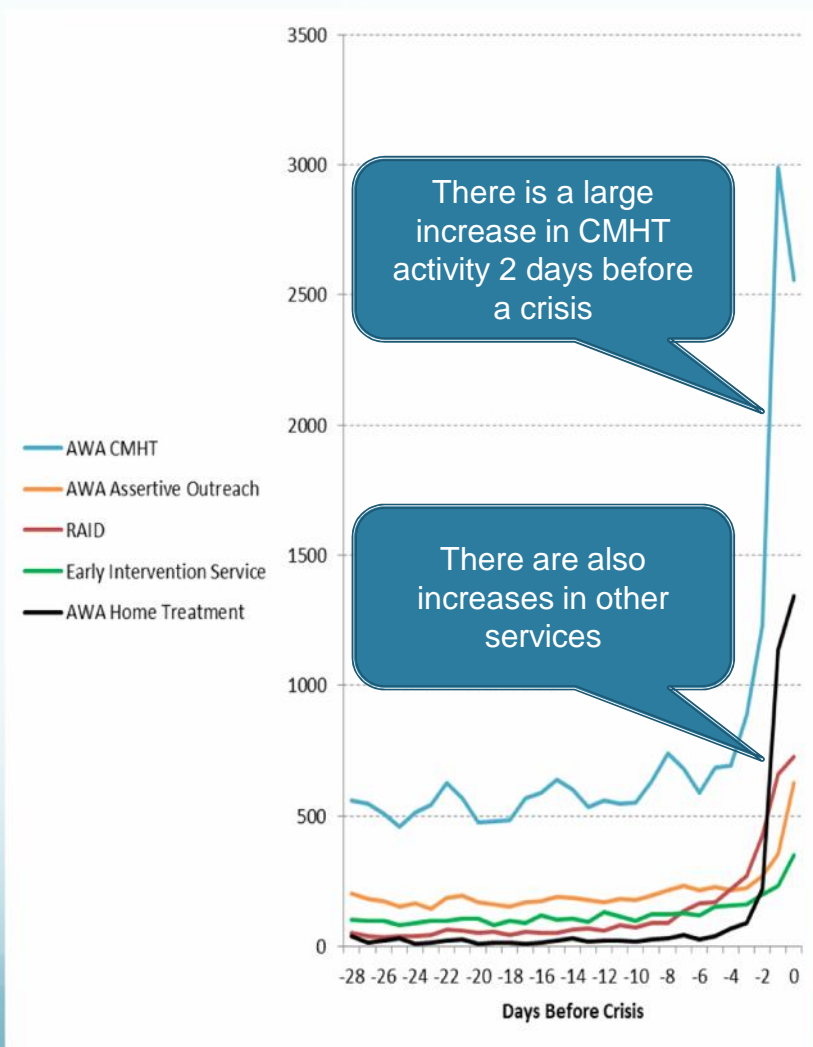
The number of crises that present on each day of the week are broadly similar but there are some marginal differences

Sundays have the lowest level of mental health crises

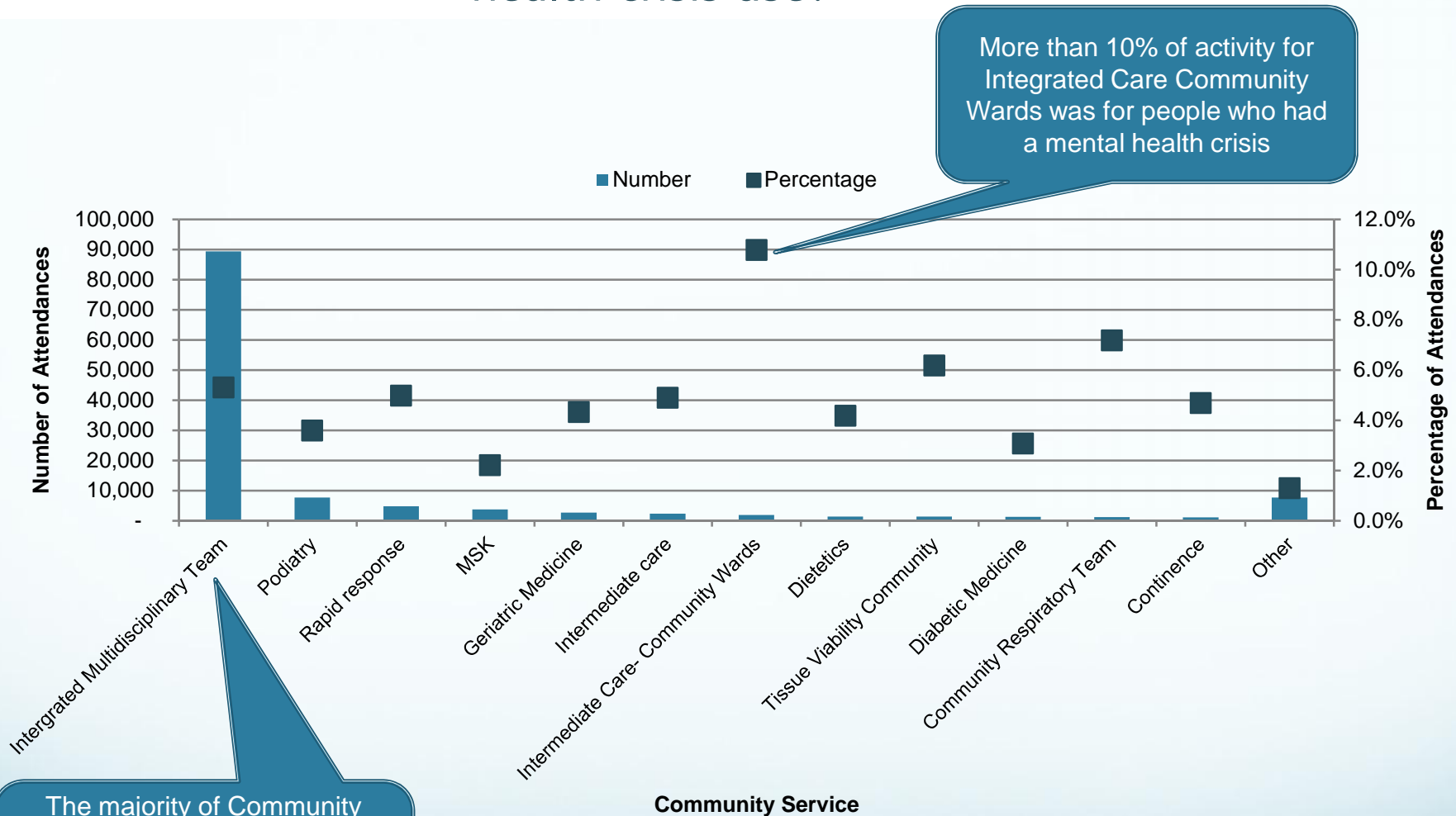


Wednesdays have the highest level of mental health crises

Pathways in and out of crisis (28 days)



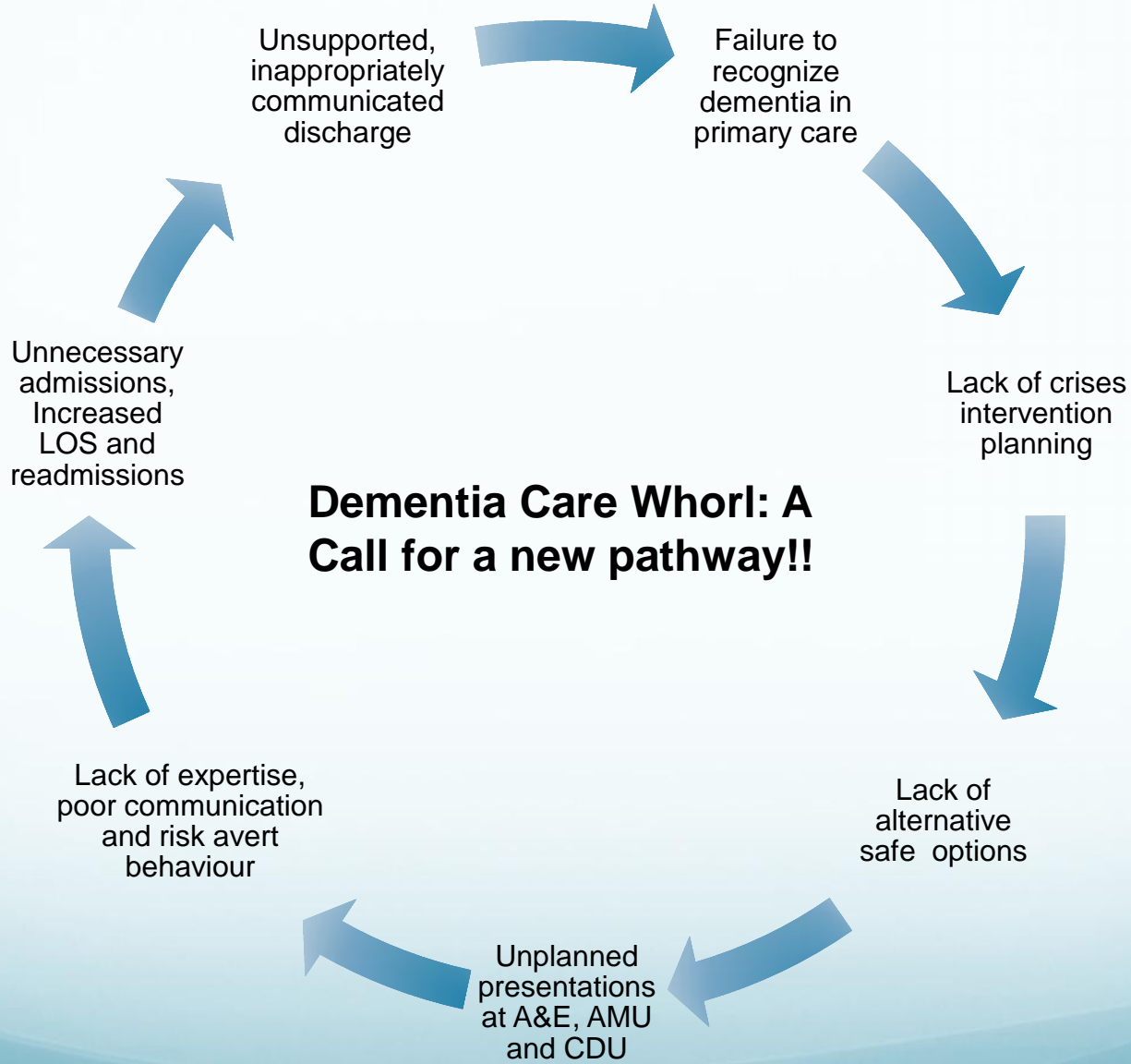
Which community services do people who have a mental health crisis use?



More than 10% of activity for Integrated Care Community Wards was for people who had a mental health crisis

The majority of Community activity for people who had a mental health crisis was with the Integrated Multidisciplinary Team

Dementia Care Whorl: A Call for a new pathway!!



1. System and patient intelligence

2. System redesign and disruptive innovation

3. RAIDPlus products

4. Added value

Combinatorial Innovation →



PROCESS



OUTCOMES

Third sector partnership

- ◆ Alzheimer's Society
 - ◆ Free support to a weekly memory clinic.
 - ◆ Free access information and carers support weekly.
 - ◆ Alz café
 - ◆ Carers and patients voice.
 - ◆ Volunteers' service
 - ◆ A good numbers of volunteers
 - ◆ Properly governed
 - ◆ Very useful
- ◆ Charities
 - ◆ Research
 - ◆ Training
 - ◆ Support

Leading the fight
against dementia

Alzheimer's
Society

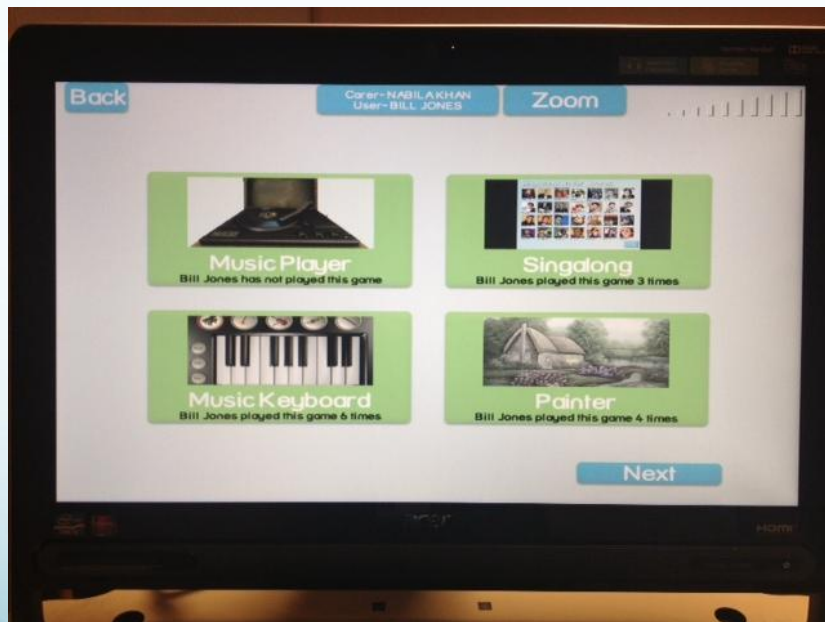
Reminiscence Pod

Pop Up Vintage Store



1950's Pop Up Living Room

My Life Software



- Touch screen computer on wheels
- Activities
 - Games
 - Music Player
 - Sing-a-long
 - Painter
 - Bingo
 - Quiz
- Reminiscence media
 - Different media types
 - Video Clips
 - Music Clips
 - Photos
 - For different categories
 - Sport
 - People and Occasions
 - Entertainment and Humour
 - Youth
 - Pastimes
 - Individual favourites

Dementia Care in Acute Hospitals: An E-learning training package

E-learning Development

- Funding provided by the Academic Health Science Network (AHSN).
- E-learning module aimed at acute hospital staff who are caring for people with dementia.
- The module content was provided by experts in the field and produced by the company GuyKat, a Birmingham based e-learning developer.
- On going pilot
- The finished module will be accredited by the University of Chester.

Brought to you by

Birmingham and Solihull 
Mental Health NHS Foundation Trust



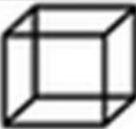
MoCA

- Many languages
- No specific training
- <http://www.mocatest.org/paper-tests/mocatest-full/h>


MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.3 Original Version

NAME: _____ Education: _____ Date of birth: _____
Sex: _____ DATE: _____

VISUOSPATIAL / EXECUTIVE




Copy cube  _____

Draw CLOCK (See past clock) (1 point)

 _____

Contour _____ Numbers _____ Hands _____ **5**

NAMING

 _____  _____  _____ **3**

MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DASY	RED	No points
1st trial						
2nd trial						

ATTENTION Read list of digits (1 digit/sec). Subject has to repeat them in the forward order [] 2 1 8 5 4
Subject has to repeat them in the backward order [] 7 4 2 **2**

Read list of letters. The subject must tap with his hand at each letter &. No points if 2 errors.
[] F B A C M N A R J E L B A F A K D E R A A J A M O F A R B **3**

Serial 7 subtraction starting at 100 [] 93 [] 86 [] 79 [] 72 [] 65 **3**
No correct subtractions: 0 pts, 2 or 3 correct: 2 pts, 4 correct: 1 pt, 5 correct: 0 pt

LANGUAGE Repeat: I only know that John is the one to help today []
The cat always hid under the couch when dogs were in the room. [] **2**

Fluency (Name maximum number of words in one minute that begin with the letter F [] _____ (N=11 words) **3**

ABSTRACTION Similarity between e.g. banana - orange = fruit [] train - bicycle [] watch - ruler **2**

DELAYED RECALL

Has to recall words WITH NO-DUE	FACE	VELVET	CHURCH	DASY	RED	Points for UNCORRECT recall only
[]	[]	[]	[]	[]	[]	

Optional

Category car	Multiple choice car

ORIENTATION [] Date [] Month [] Year [] Day [] Place [] City **6**

© J. Alexander MD www.mocatest.org Normal 26 / 30 TOTAL **30**
Administered by _____ Add'l points if 8/0 or 9/0

DVLA guidance on driving with health conditions

- <https://www.gov.uk/health-conditions-and-driving>



Royal College
of Nursing

Alzheimer's
Society

Leading the
fight against
dementia

This is me

This leaflet will help you support me
in an unfamiliar place.

Please place a photograph of yourself in the space provided.

My full name

Thank You



Association of British Clinical Diabetologists

THE RENAL
ASSOCIATION
founded 1950



The 3rd Joint Meeting of the Association of British Clinical Diabetologists & the Renal Association

Diabetes and Kidney Disease: Advances and Controversies

