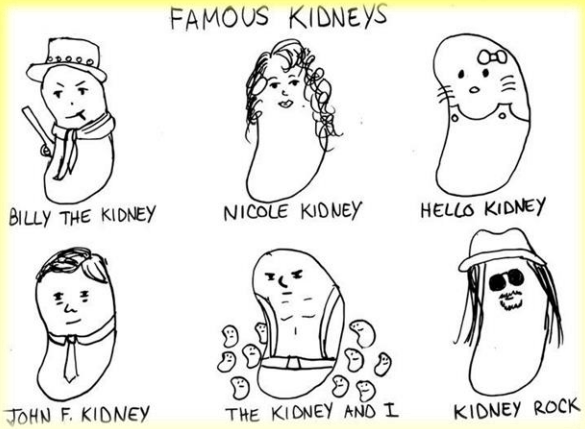
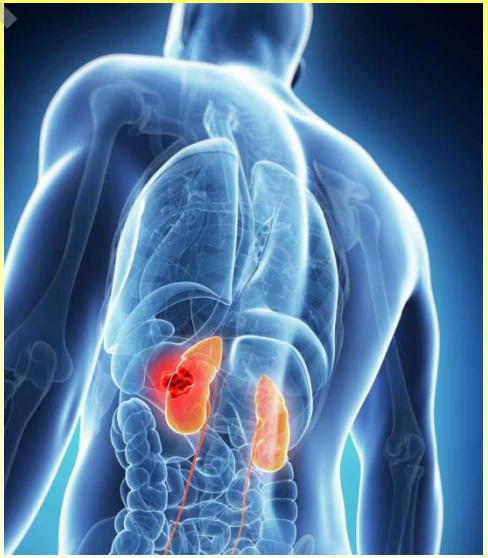
Renal disease in older people





Dr Matt Hall

Consultant Nephrologist

Nottingham University Hospitals

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Demography of kidney disease in the UK

AKI in older people – does dialysis help?

CKD in older people – does dialysis help?

Bones and CKD in older people

Blood pressure control

Renal disease in older people

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Dialysis and transplant

UK Renal Registry 20th Annual Report: Chapter 2 UK Renal Replacement Therapy Adult Prevalence in 2016: National and Centre-specific Analyses

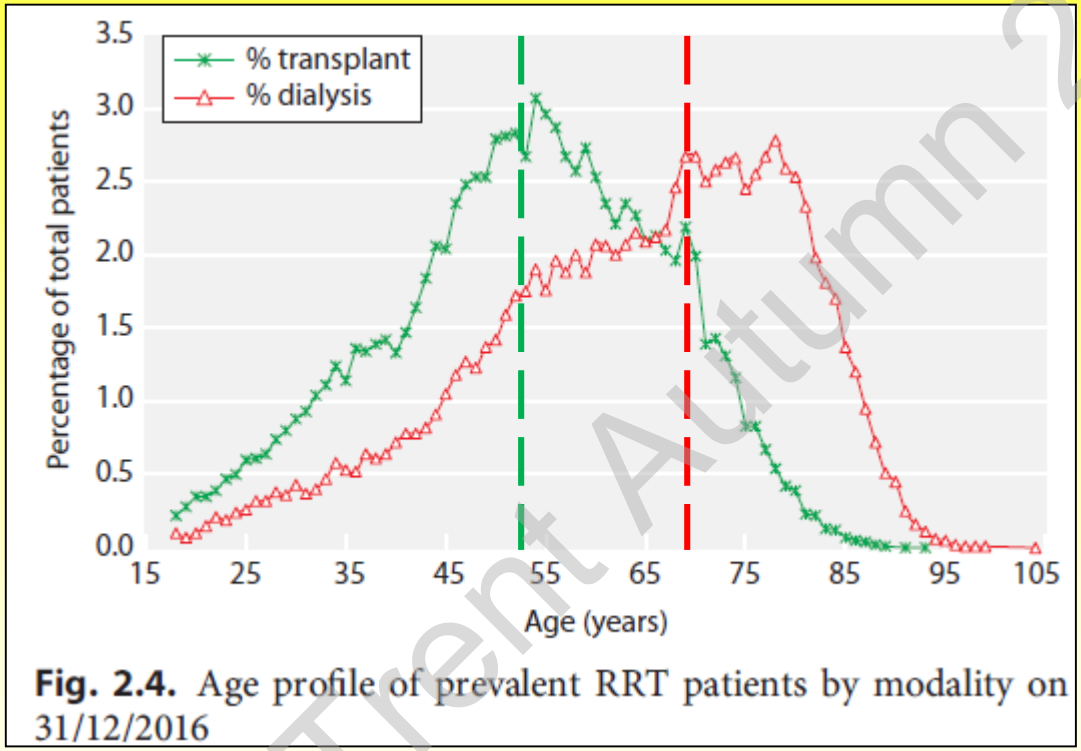

Fig. 2.4. Age profile of prevalent RRT patients by modality on 31/12/2016

Median age in Nottingham:

- Haemodialysis 69.4 years
- Peritoneal dialysis 61.9 years
- Transplant 55.3 years

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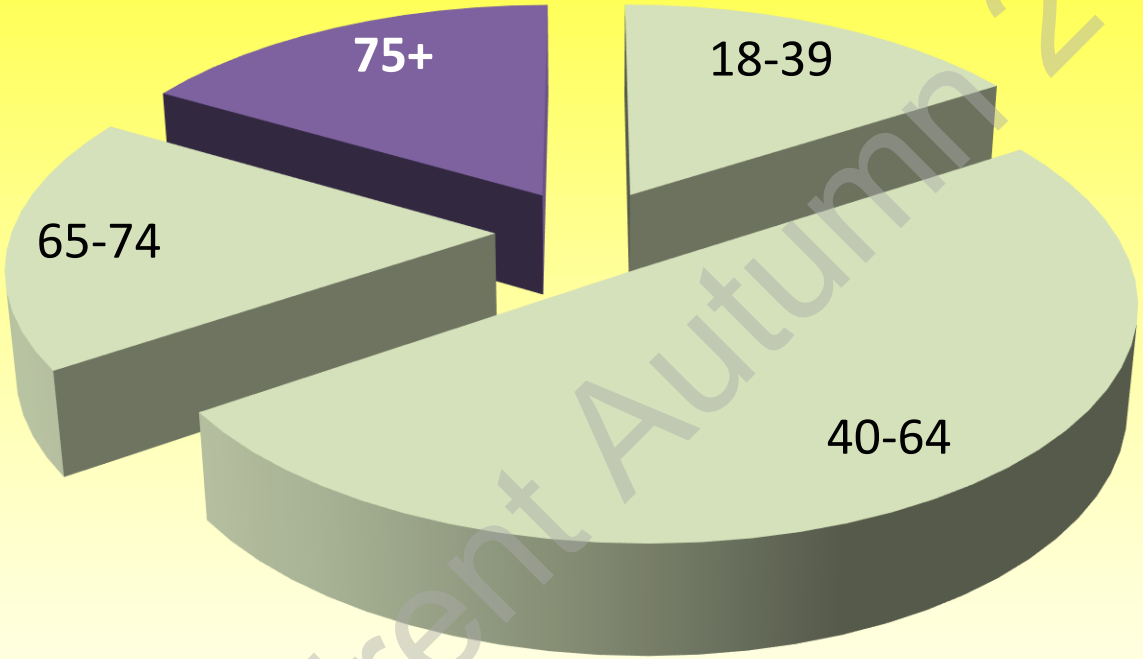
Dialysis and transplant

UK Renal Registry 20th Annual Report: Chapter 2 UK Renal Replacement Therapy Adult Prevalence in 2016: National and Centre-specific Analyses



Dialysis **and transplant** patients in Nottingham

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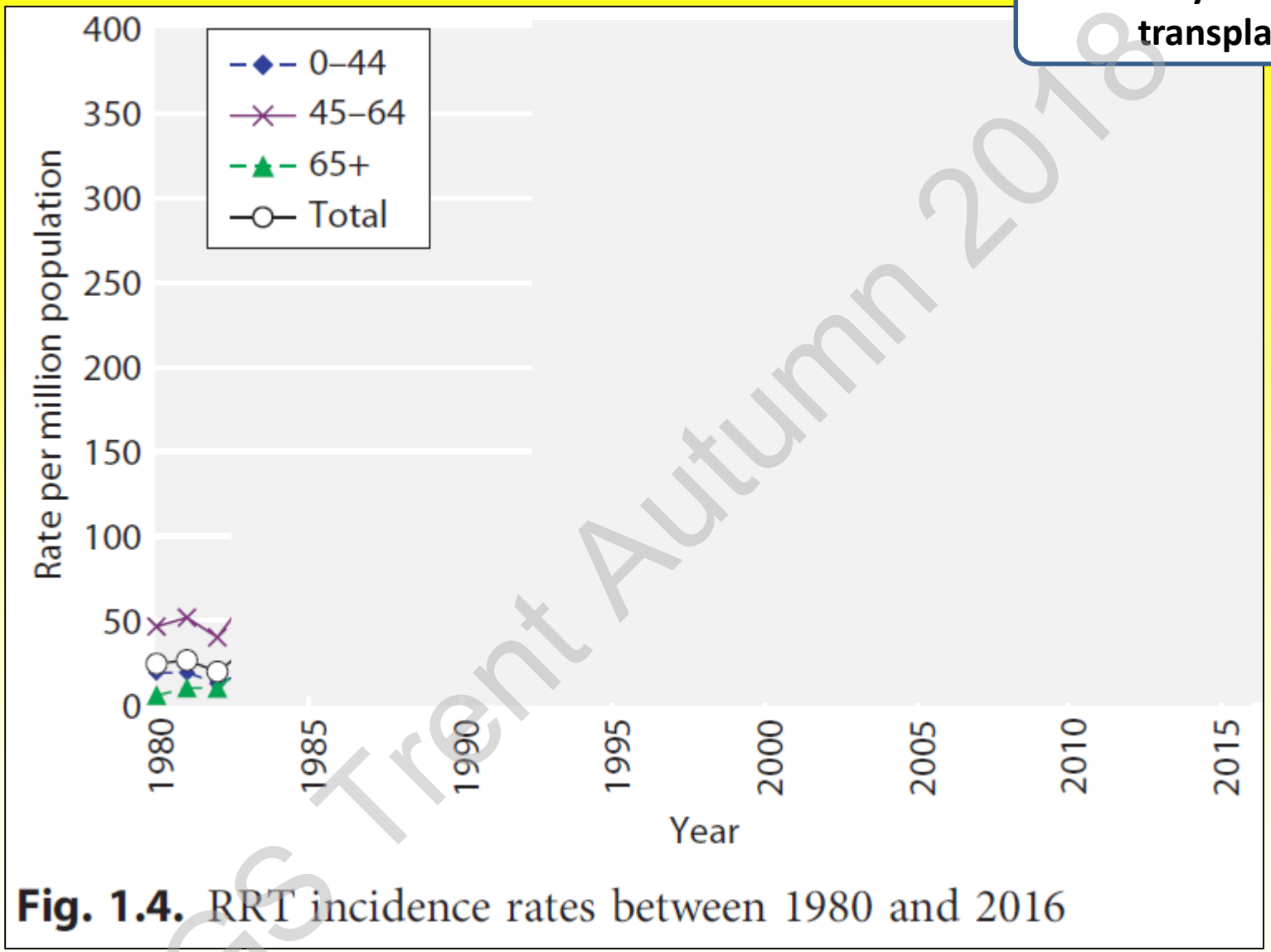

Fig. 1.4. RRT incidence rates between 1980 and 2016

Dialysis and transplant

UK Renal Registry 20th Annual Report: Chapter 1 UK Renal Replacement Therapy Adult Incidence in 2016: National and Centre-specific Analyses

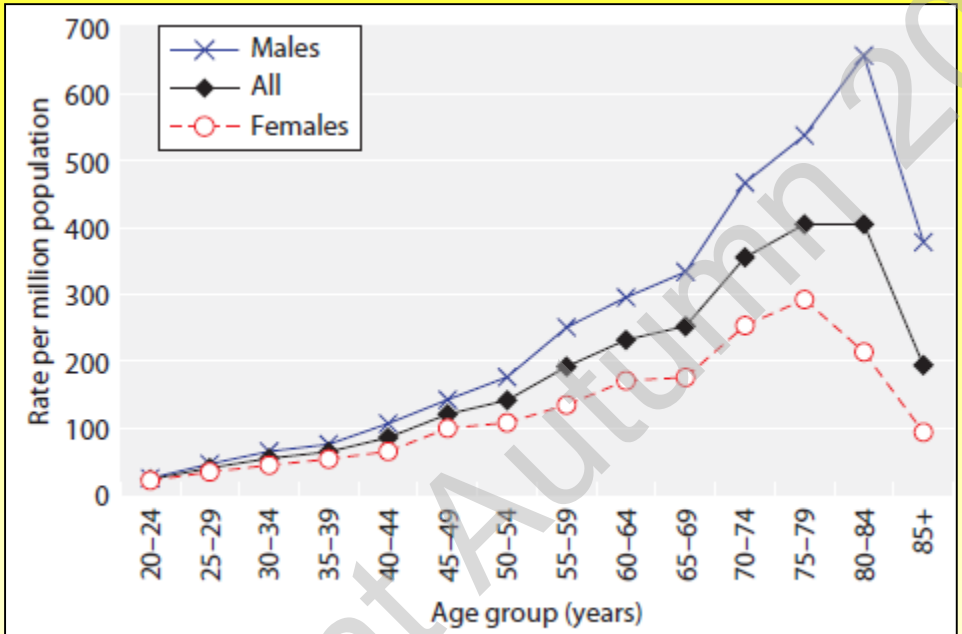

Fig. 1.5. RRT incidence rates in 2016 by age and sex

Median RRT start in UK:

- Haemodialysis 66.8 years
- Peritoneal dialysis 60.5 years
- Pre-emptive Transplant 50.5 years

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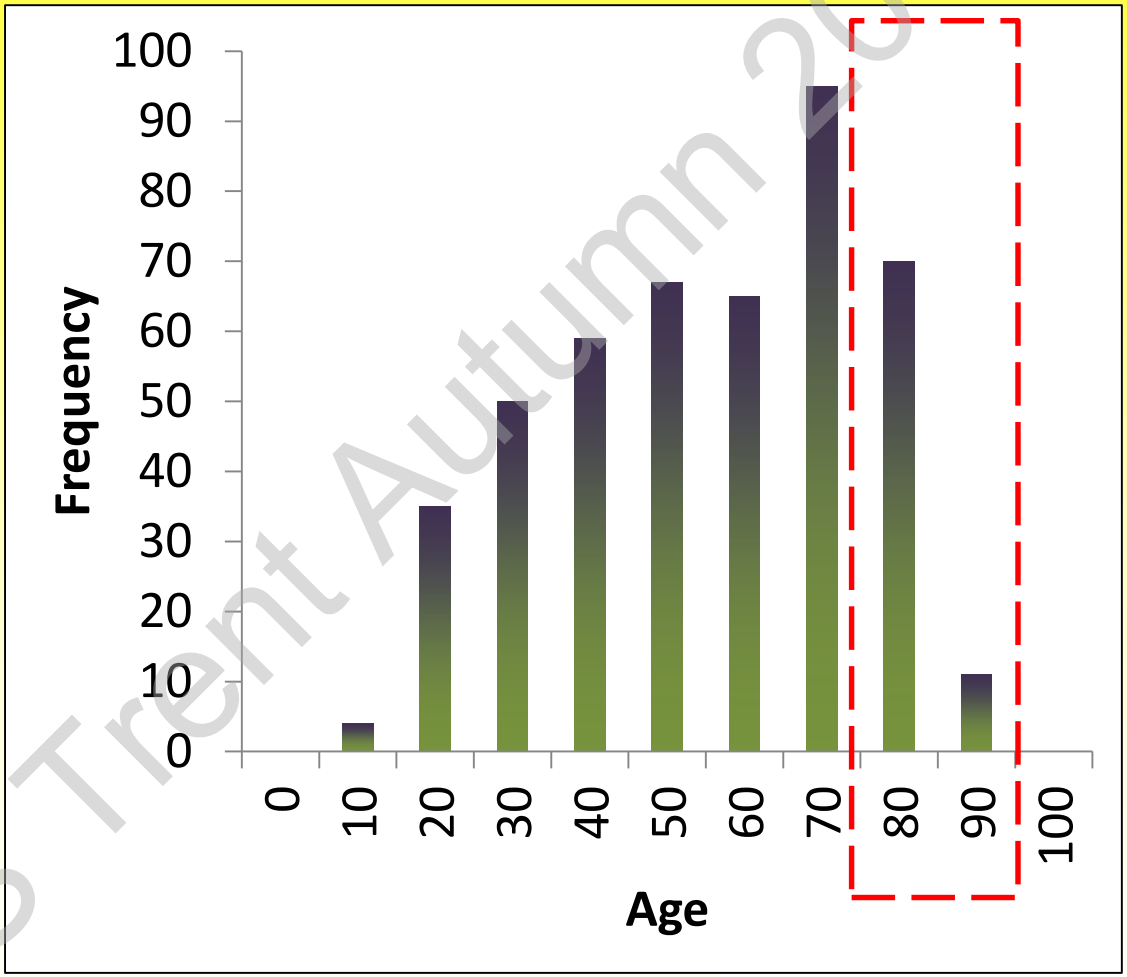
My general nephrology clinic



Median age: 63.7 years
80+ years: 17.8%

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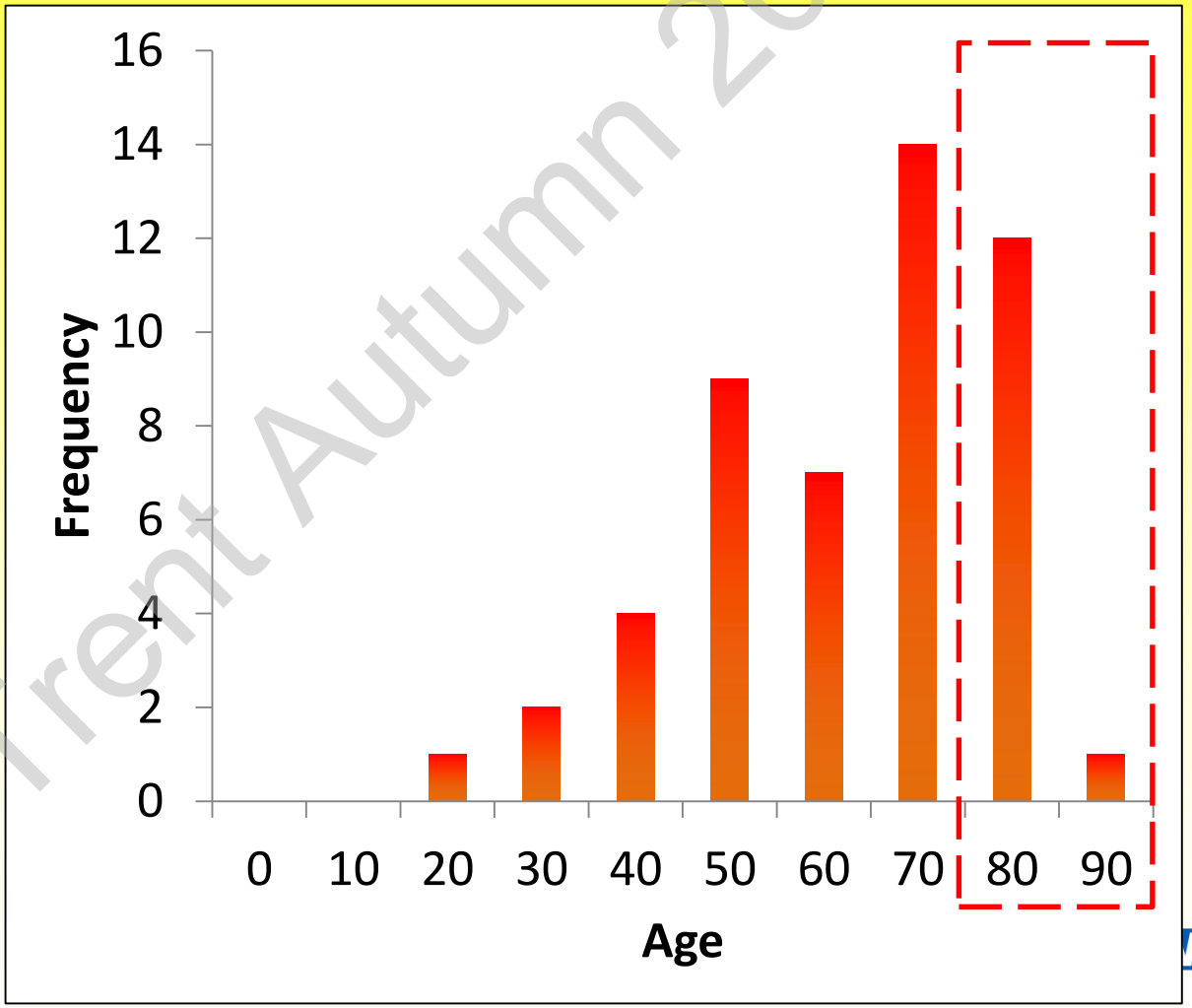
Haemodialysis

Ilkeston dialysis unit



Median age: 68.6 years
80+ years: 30%

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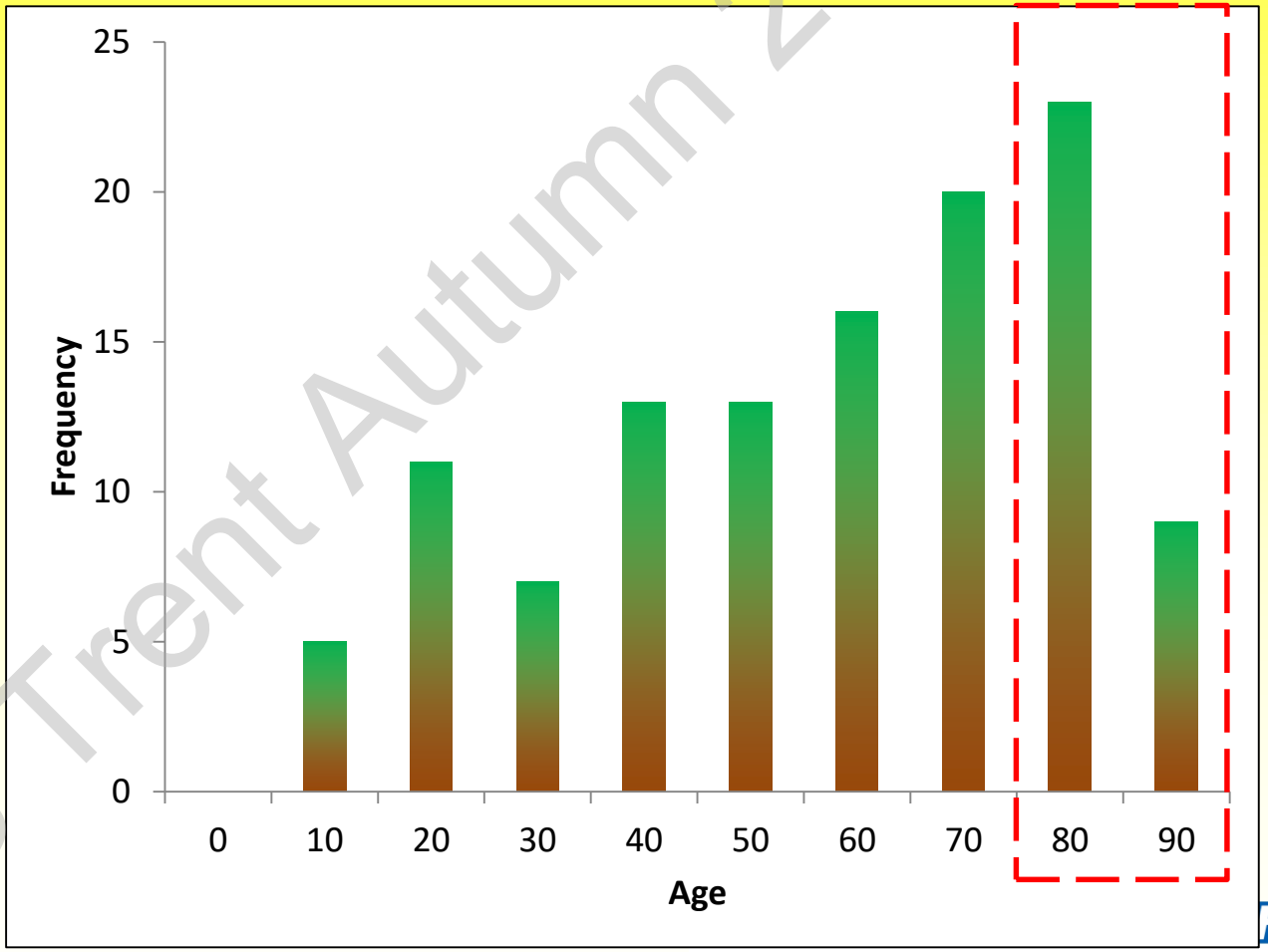
AKI

A snapshot of QMC
23-28/9/2018
AKI stages 2 and 3 eAlerts



Median age: 65.0 years
80+ years: 30%

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CKD in older people – does dialysis help?

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How do we define CKD in older people?

Guide to Frequency of Monitoring (number of times per year) by GFR and Albuminuria Category

GFR categories (ml/min/1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30mg/mmol
	G1	Normal or high	≥90	1 if CKD	1	2
	G2	Mildly decreased	60–89	1 if CKD	1	2
	G3a	Mildly to moderately decreased	45–59	1	2	3
	G3b	Moderately to severely decreased	30–44	2	3	3
	G4	Severely decreased	15–29	3	3	4+
	G5	Kidney failure	<15	4+	4+	4+

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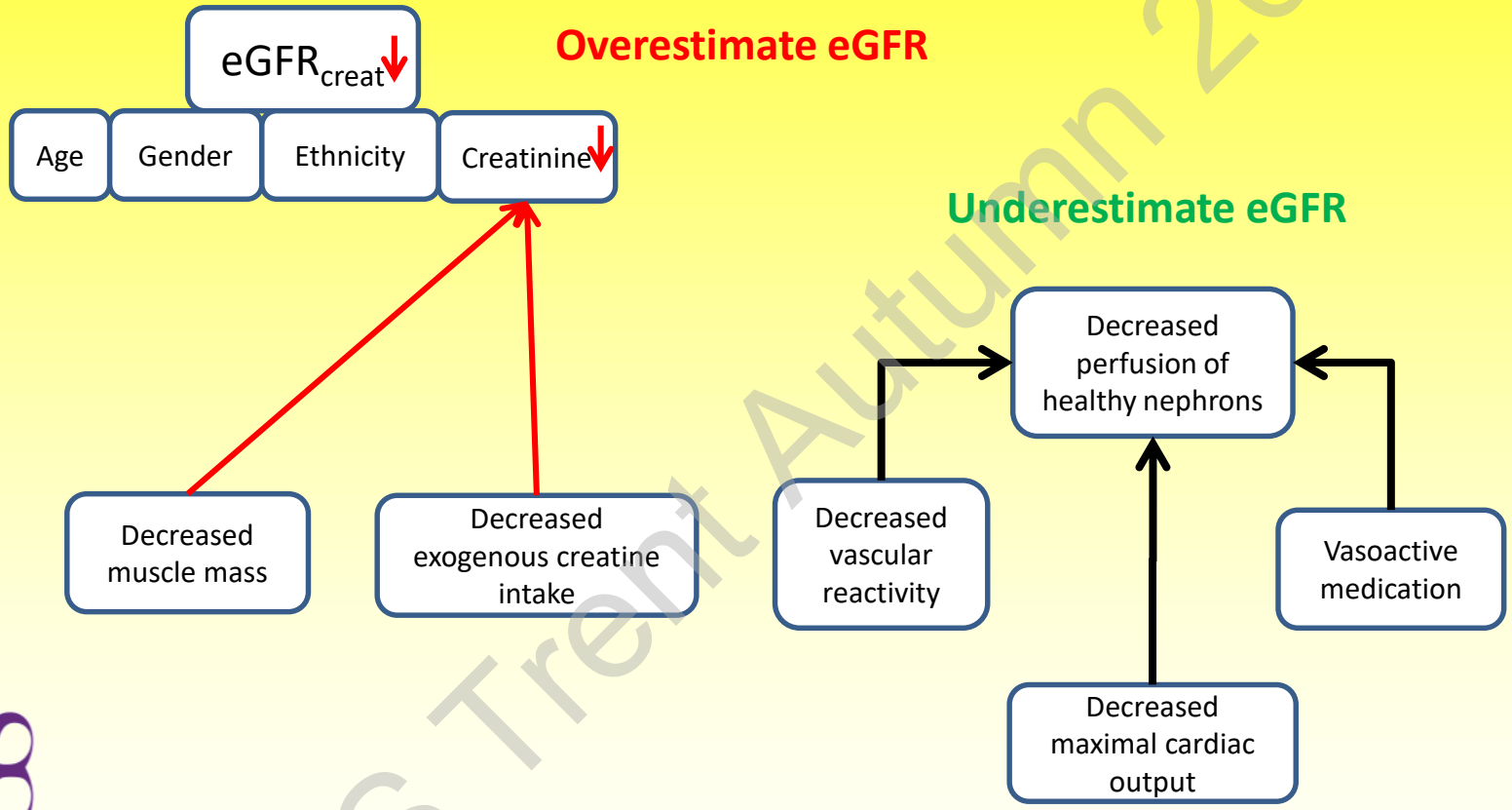
How do we define CKD in older people?

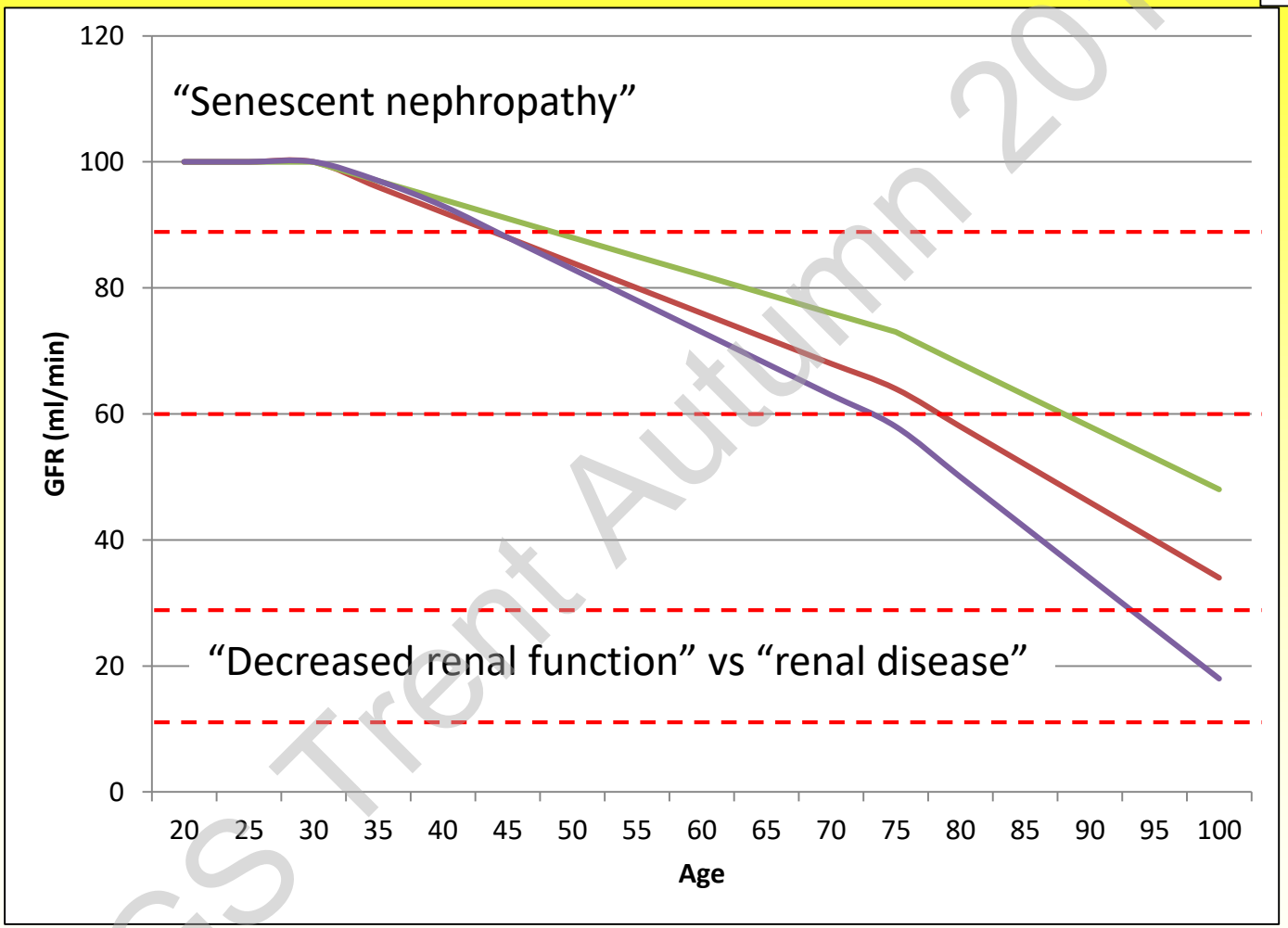


How do we define CKD in older people?

Aging and the Kidneys: Anatomy, Physiology and Consequences for Defining Chronic Kidney Disease

Richard J. Glassock[a] Andrew D. Rule[b]

Nephron 2016;134:25–29
DOI: 10.1159/000445450



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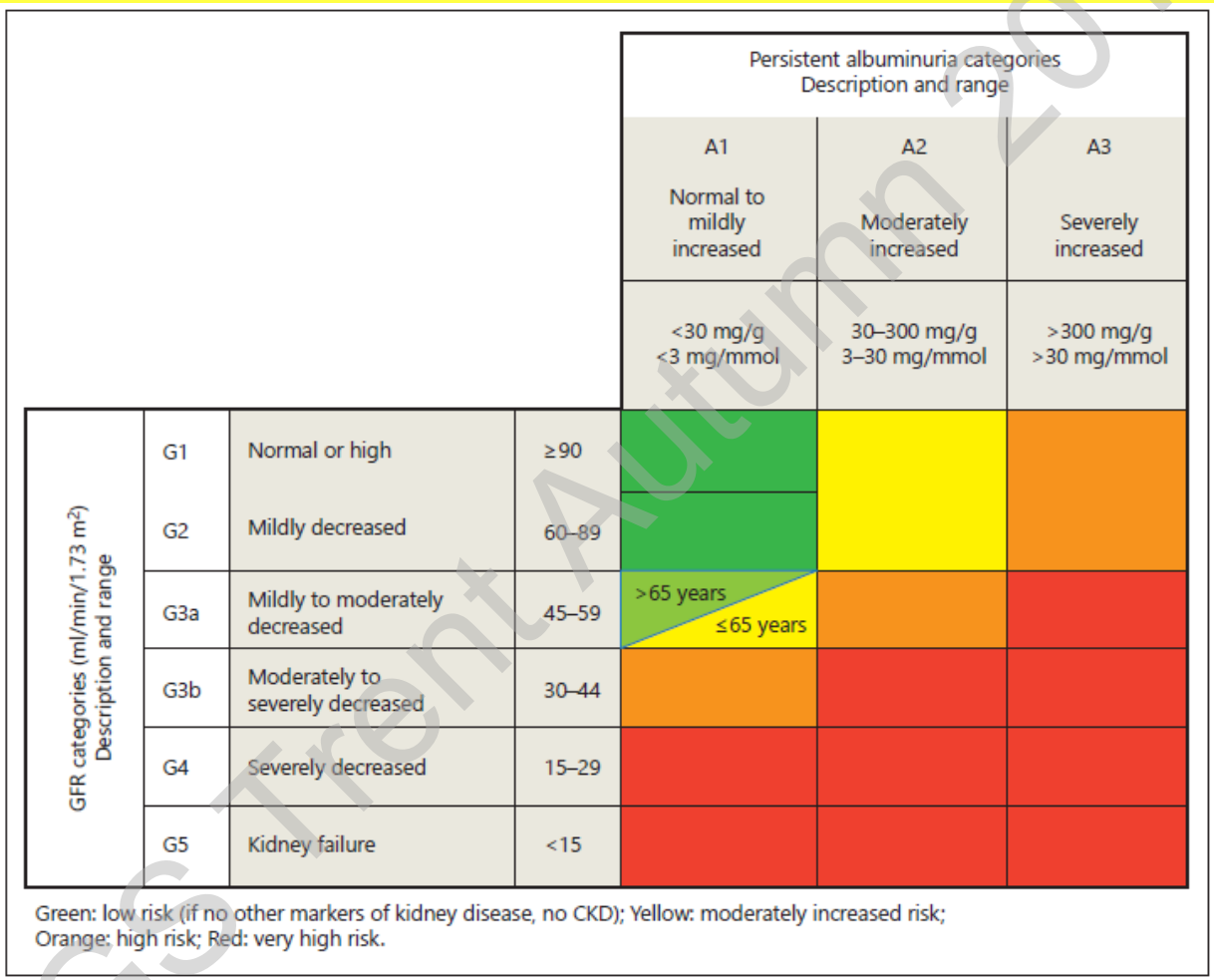

GFR categories (ml/min/1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1 Normal to mildly increased	A2 Moderately increased	A3 Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	≥90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59	>65 years / ≤65 years		
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	<15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk.

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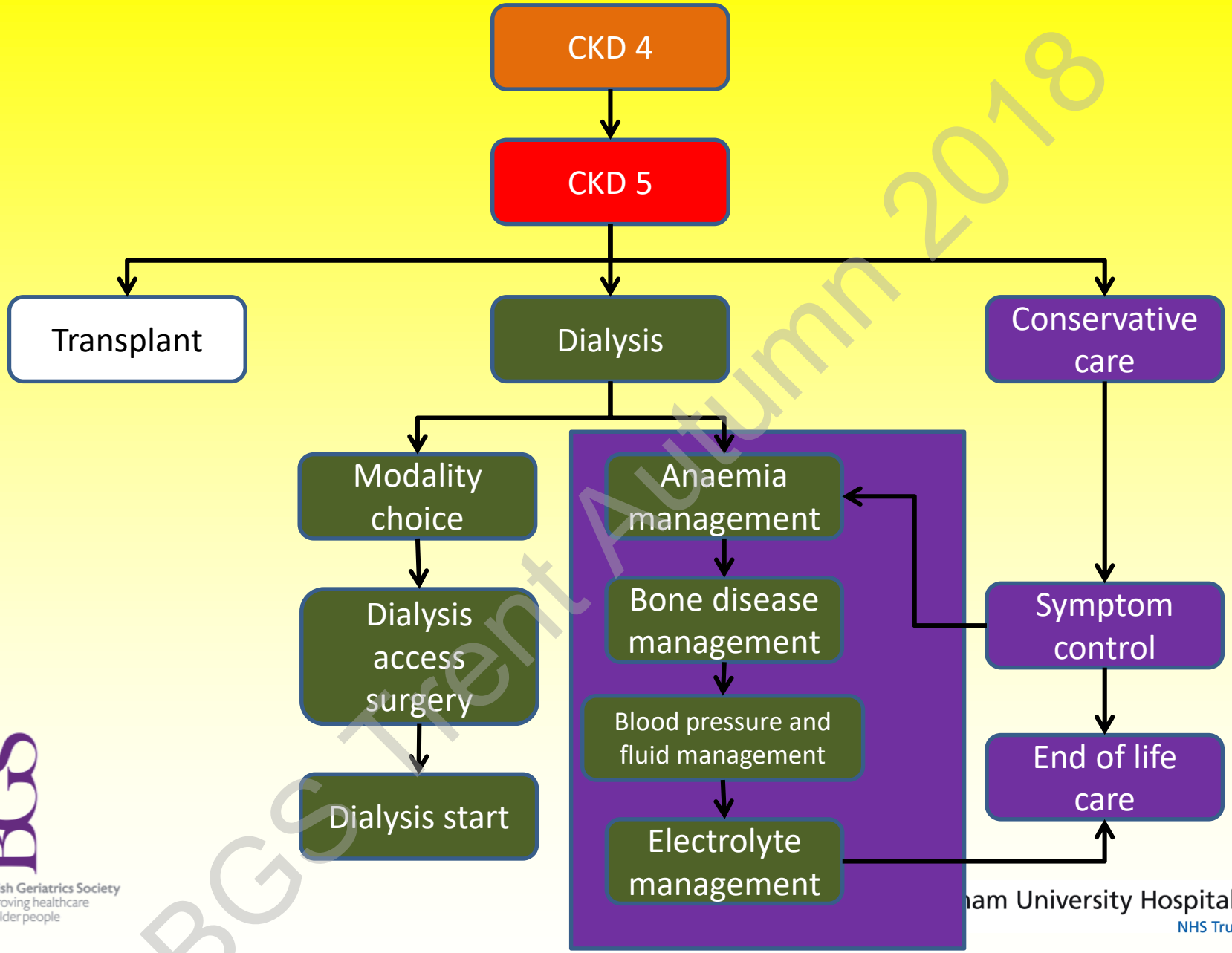

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CKD in older people – does dialysis help?

- Systematic review
- 11515 patients
- CKD 5; dialysis vs cons care

- Age >65
- Adjusted for age and comorbidity:
  - HR for mortality with dialysis 0.53 (0.3-0.91)

Wongrakpanich S et al. Nephron 2017;137(3):178

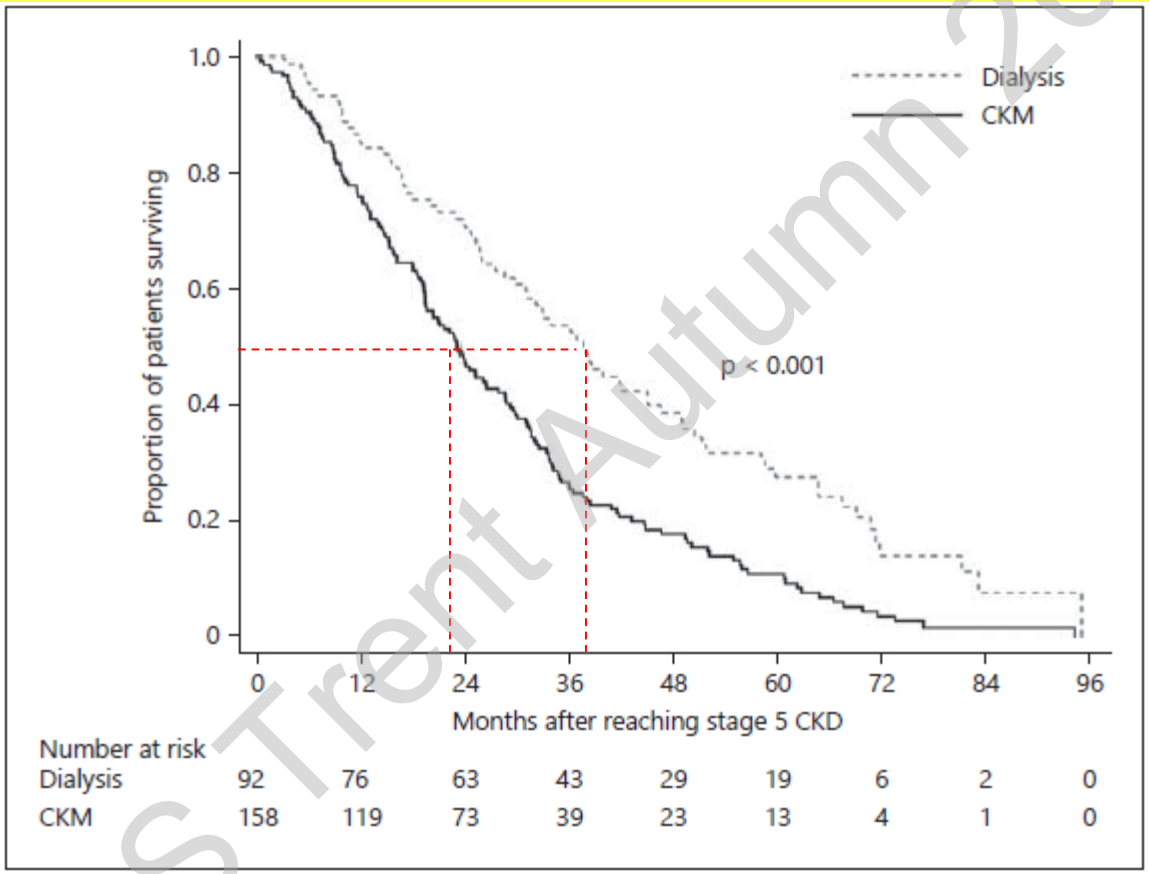
CKD in older people – does dialysis help?

Age>75
CKD 5
Observational

Rate of Decline of Kidney Function, Modality Choice, and Survival in Elderly Patients with Advanced Kidney Disease

Shahid M. Chandna[a] Lewis Carpenter[b] Maria Da Silva-Gane[a] Paul Warwicker[a] Roger N. Greenwood[a] Ken Farrington[a, b]

Nephron 2016;134:64–72
DOI: 10.1159/000447784



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Age>75
CKD 5
Observational

CKD in older people – does dialysis help?

Rate of Decline of Kidney Function, Modality Choice, and Survival in Elderly Patients with Advanced Kidney Disease

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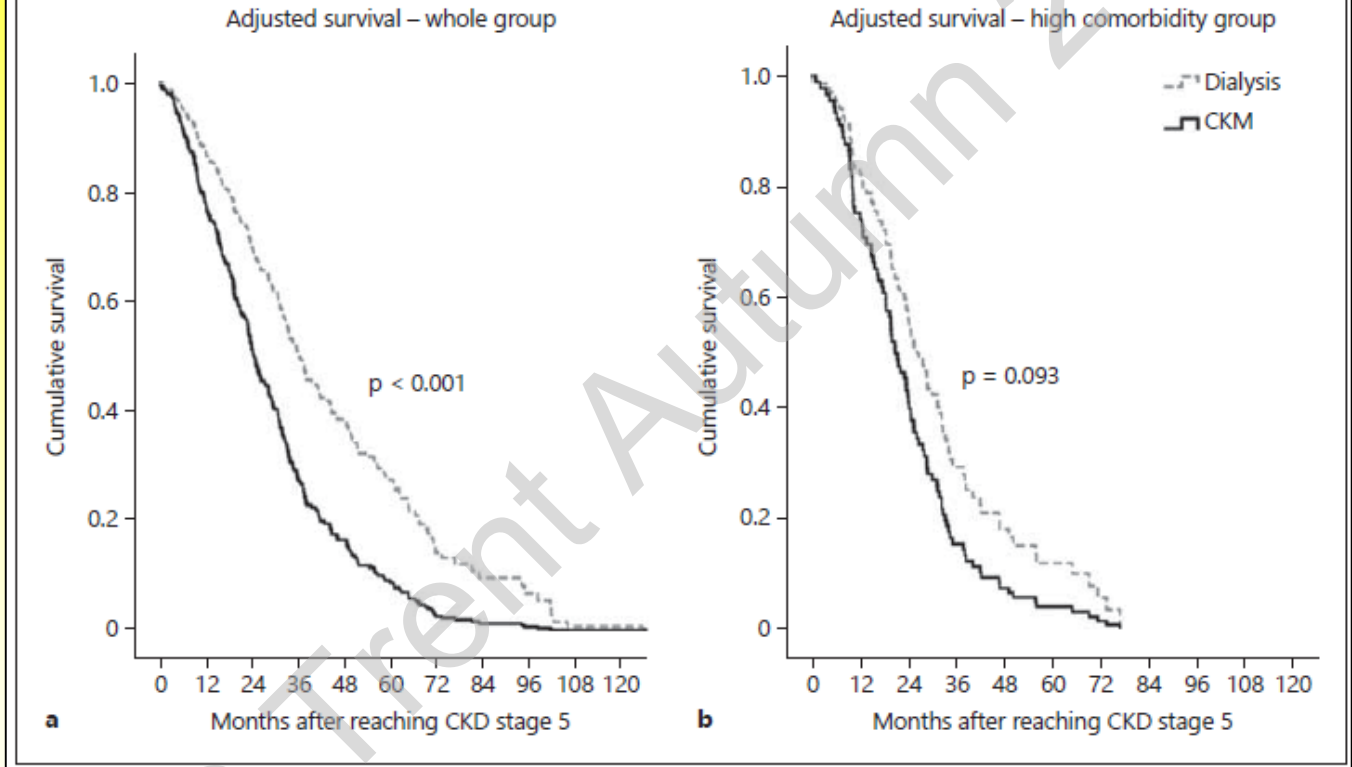

Fig. 2. Adjusted survival time in patients over the age of 75 years with stage 5 CKD. **a** Adjusted for age, gender, ethnicity, diabetes, high comorbidity and modality choice (dialysis or CKM). **b** Adjusted for age, gender, ethnicity, diabetes and modality choice (dialysis of CKM) in patients with high comorbidity.

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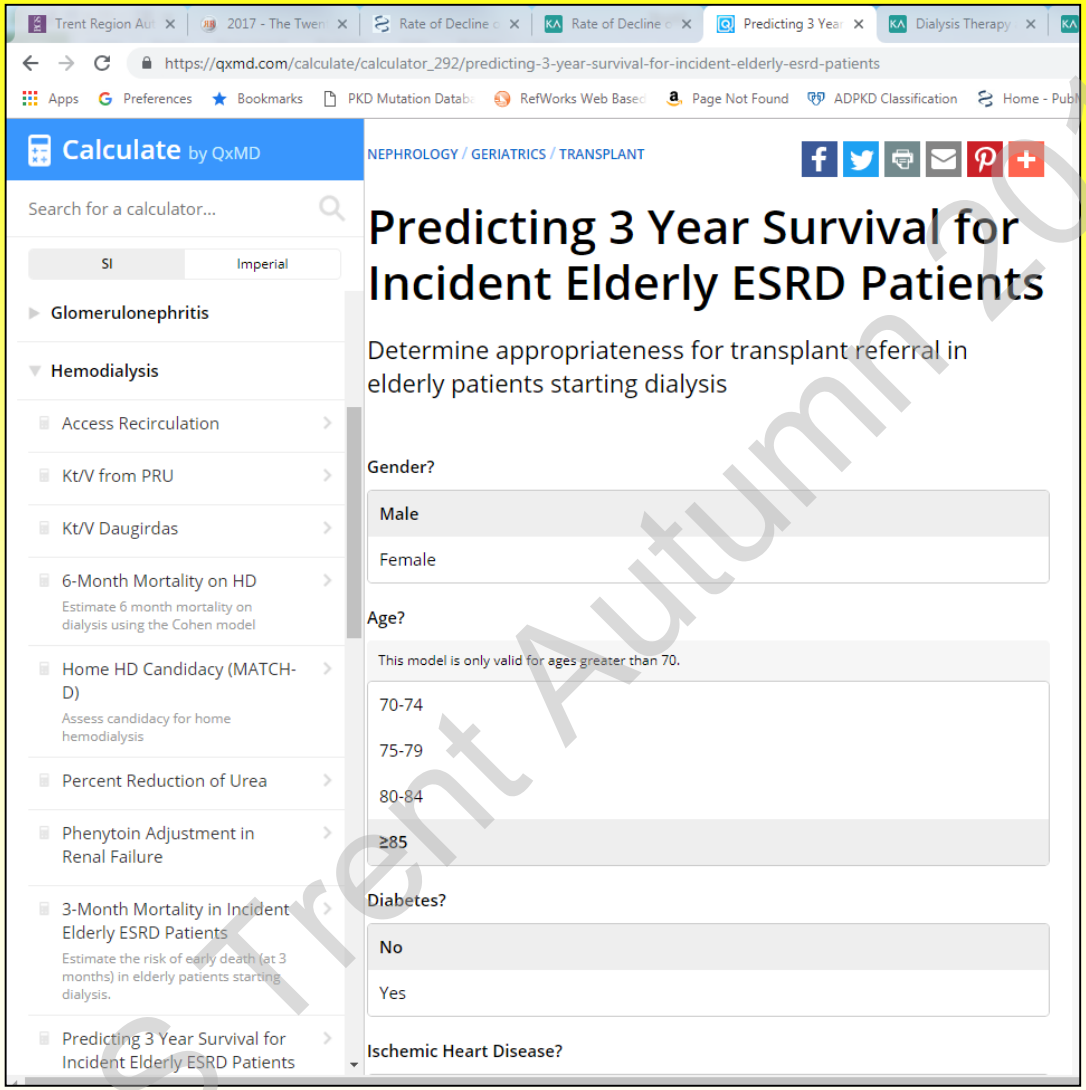

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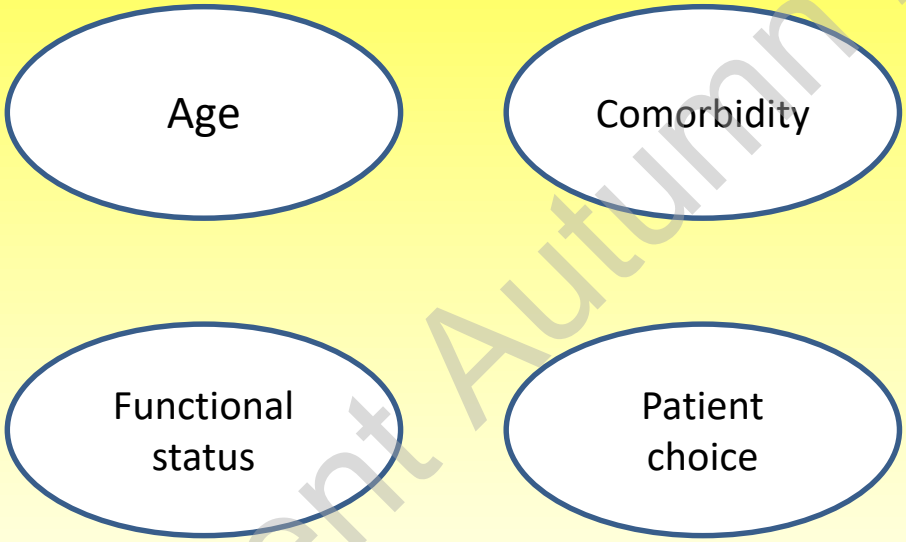
- Male, >85 y.o
- No diabetes, IHD, CVD, CCF, PVD, dysrhythmia, cancer or dementia
- Walks independently
- BMI 25
- Starting dialysis with a fistula

- Estimated 3yr survival = 70%

- Male, 70-74 y.o
- With diabetes, IHD, mild CCF and COPD
- Walks with a frame
- BMI 32
- Starting dialysis on a line

- Estimated 3yr survival = 32%

CKD in older people – does dialysis help?



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AKI in older people – does dialysis help?

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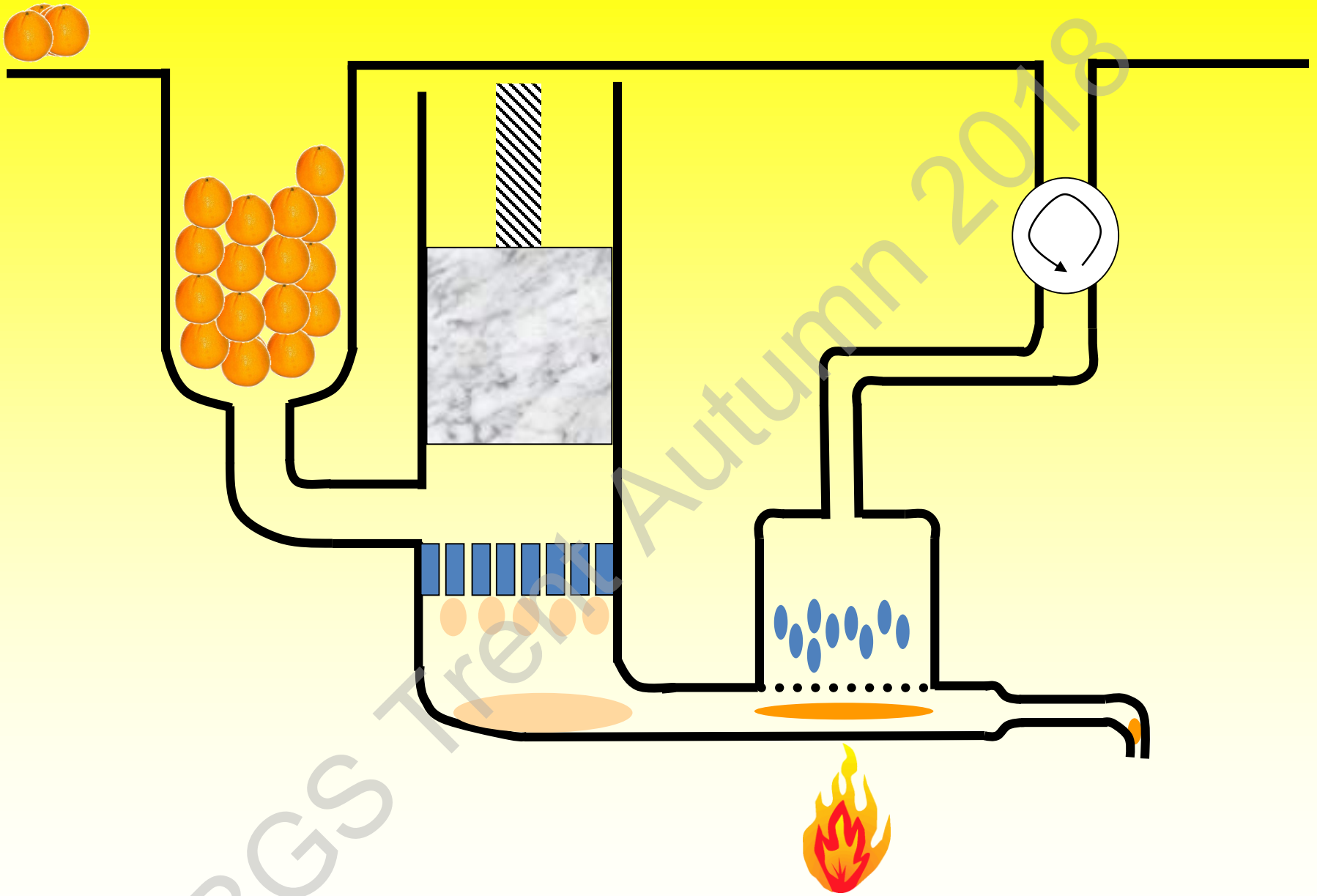
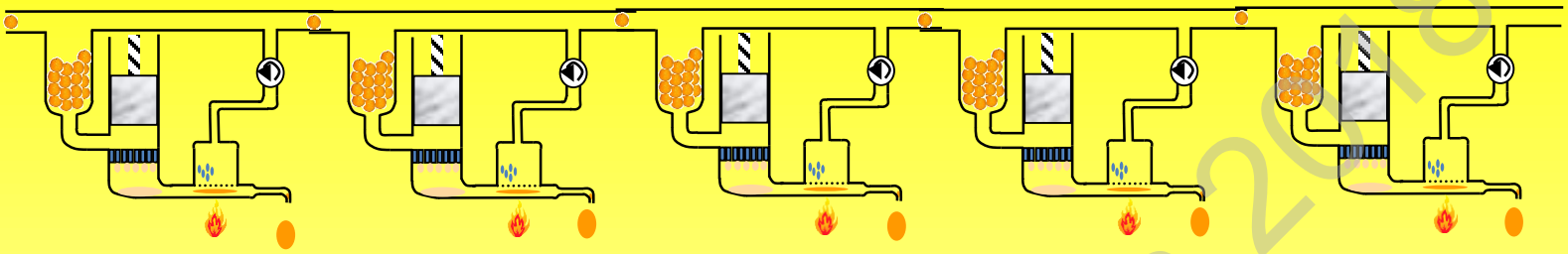
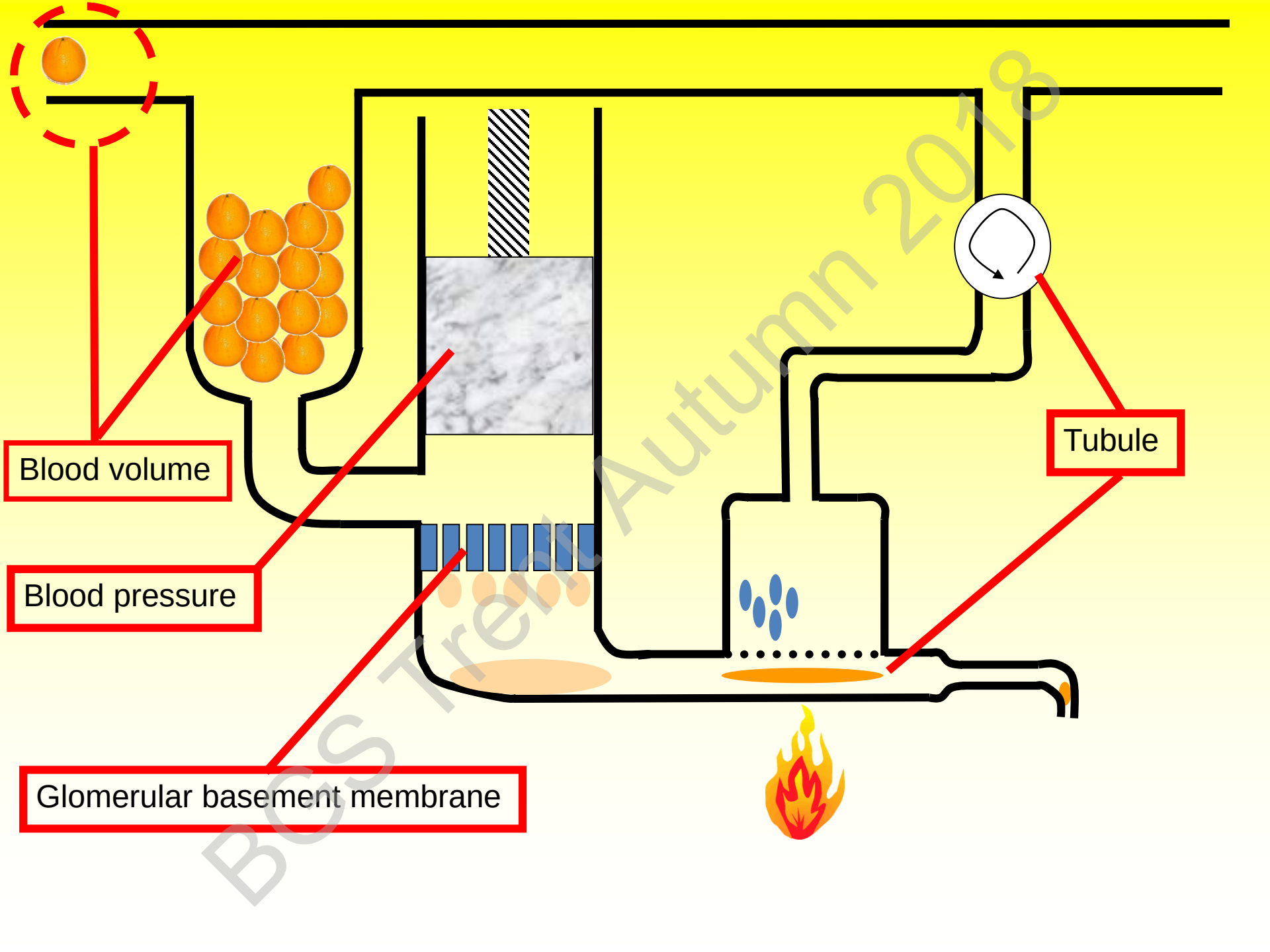
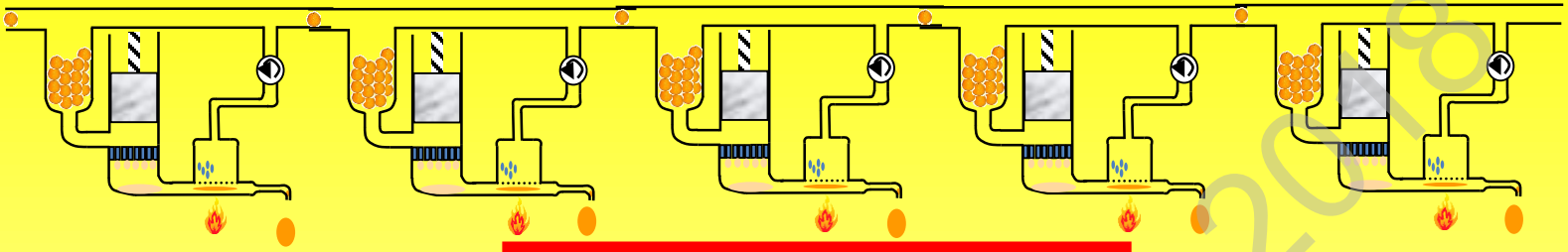
AKI and oranges





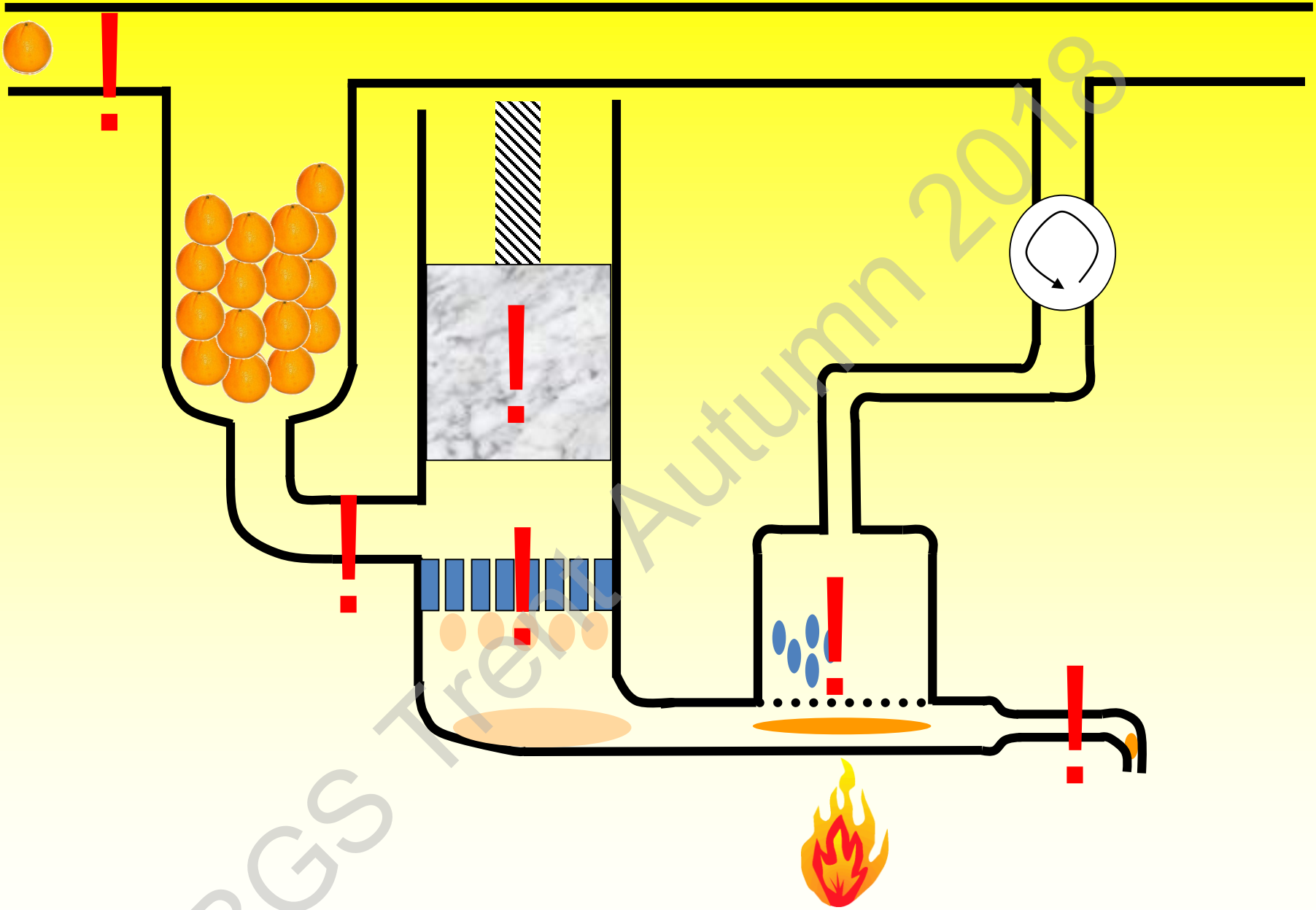


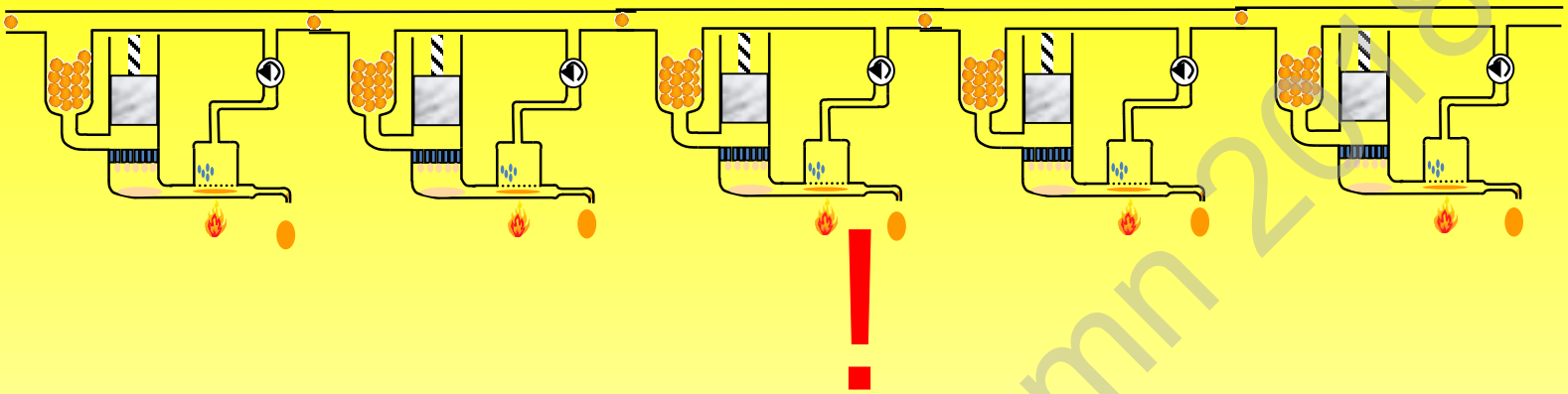


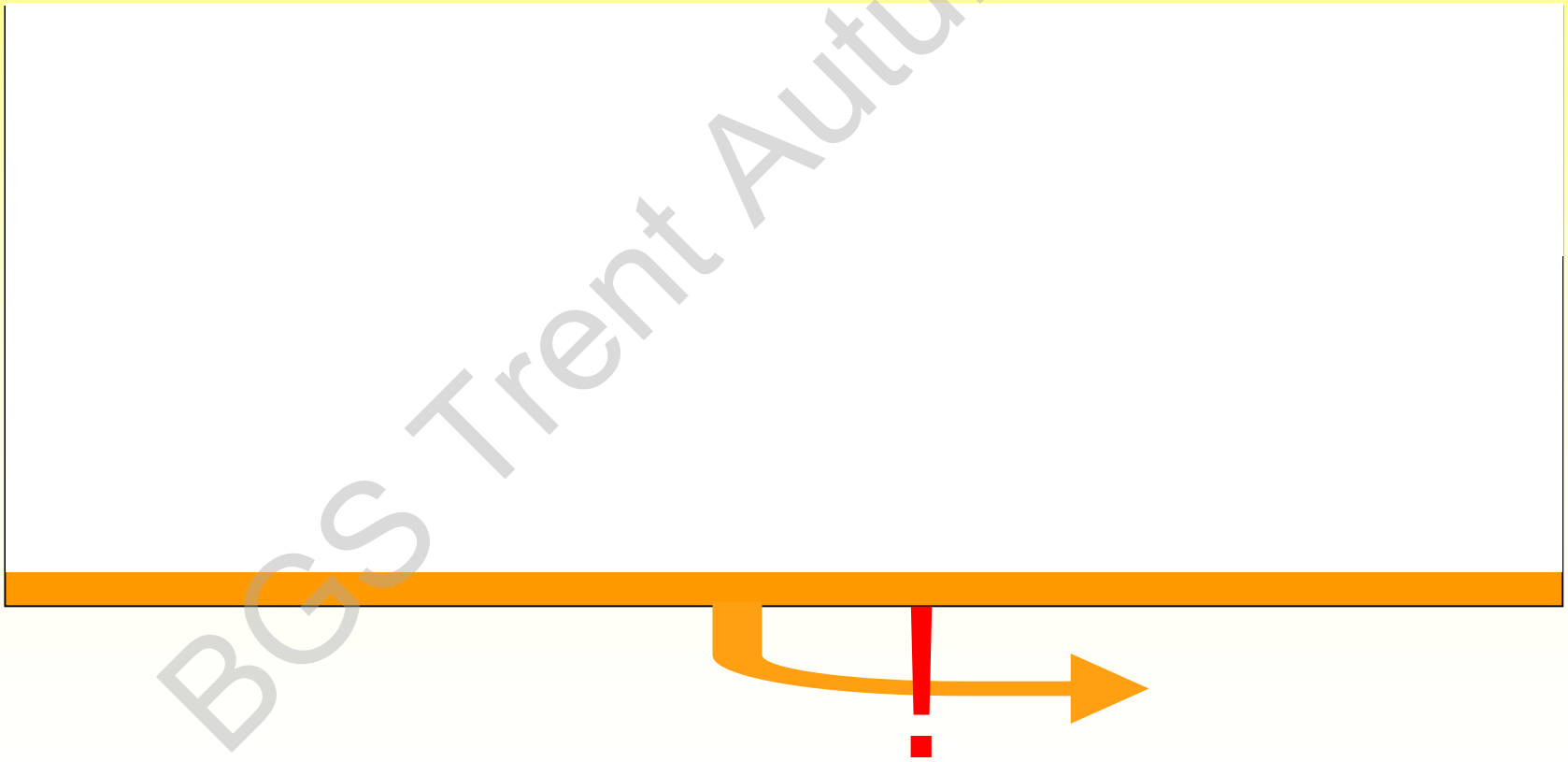
Collecting ducts and ureter

Bladder

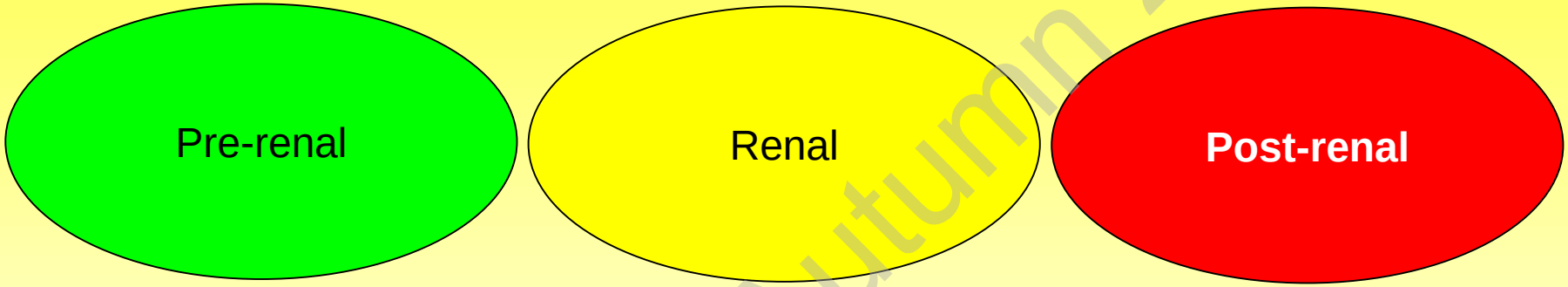
Urethra





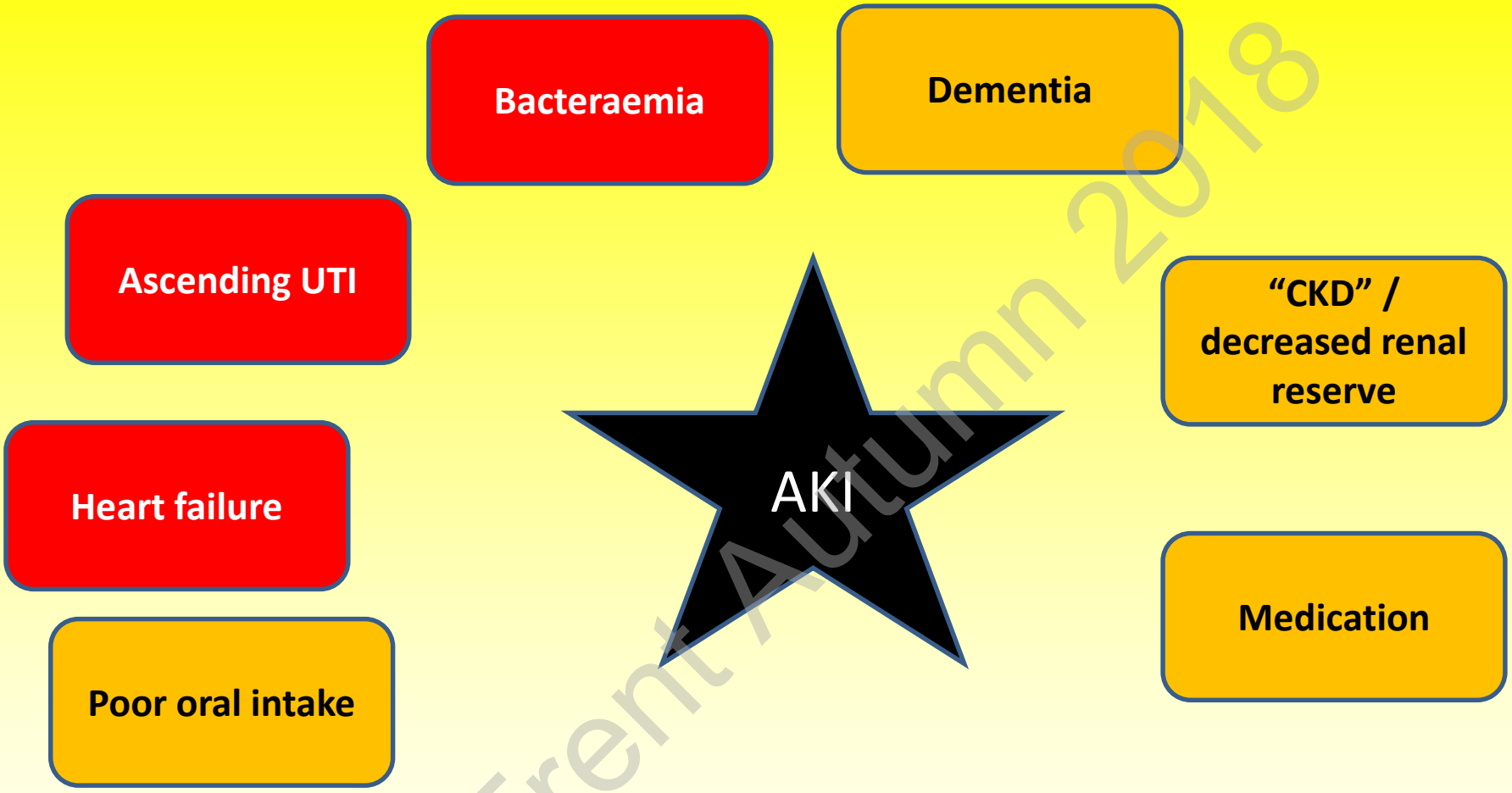


AKI - causes



In ~~hospital~~ *older people*		
~~70%~~ *80%*	~~20%~~ *5%*	~~10%~~ *15%*

In community		
35%	25%	40%



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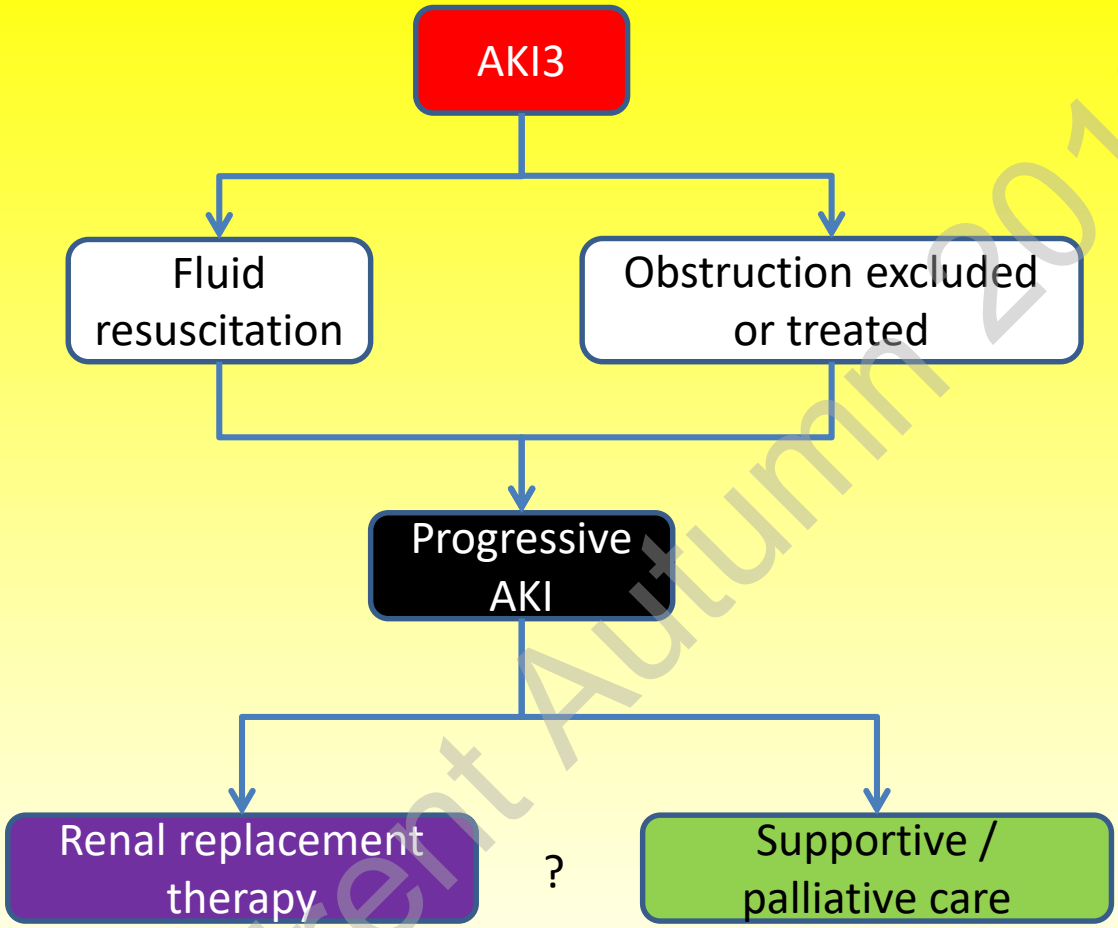

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Dialysis versus Nondialysis in Patients with AKI: A Propensity-Matched Cohort Study

F. Perry Wilson,*† Wei Yang,†‡ Carlos A. Machado,‡ Laura H. Mariani,§ Yuliya Borovskiy,‖ Jeffrey S. Berns,* and Harold I. Feldman*†‡

Clin J Am Soc Nephrol 9: 673–681, 2014. doi: 10.2215/CJN.07630713

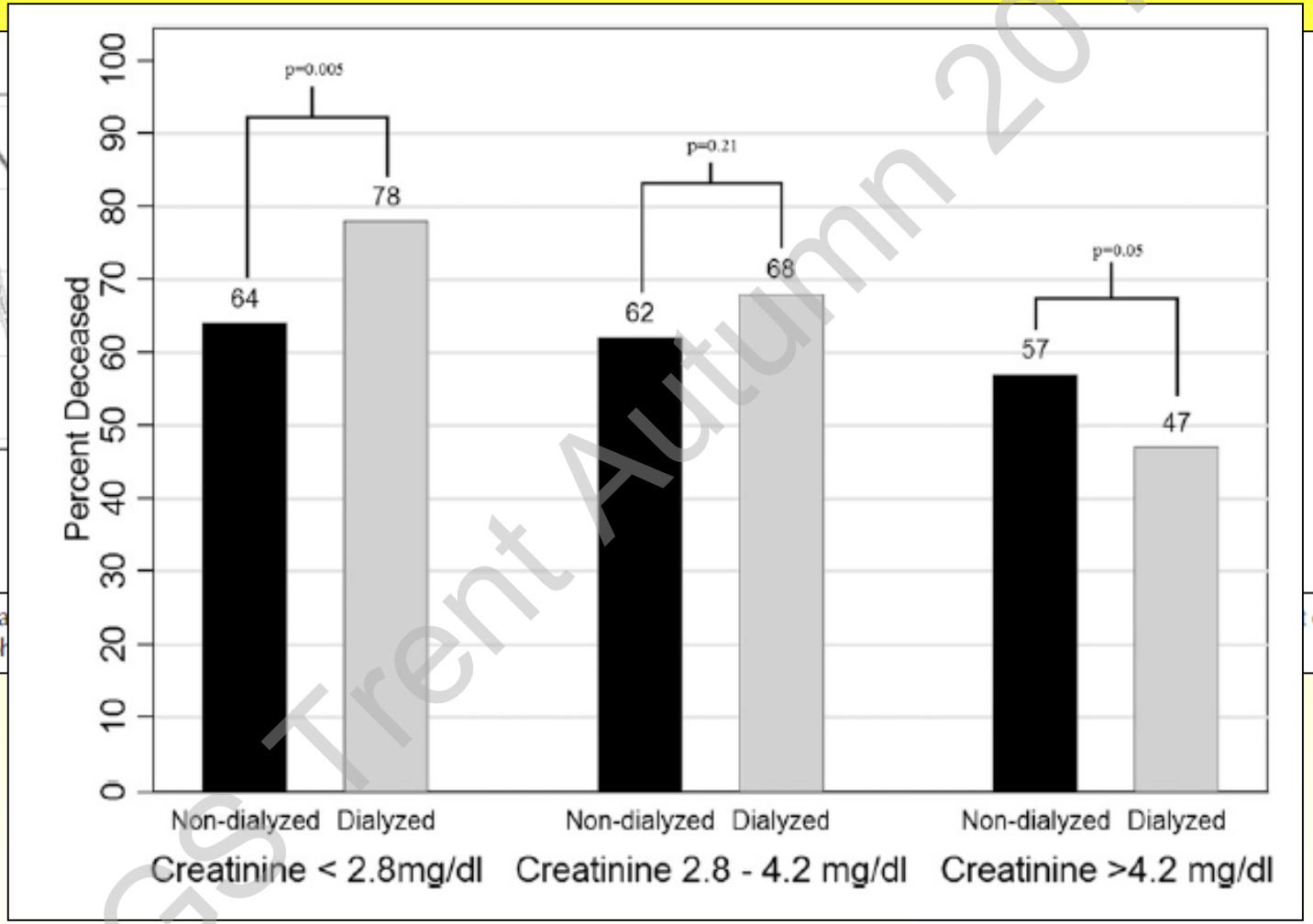

Figure 1. | Ka … of AKI in the full coh…

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The impact of dialysis on critically ill elderly patients with acute kidney injury: an analysis by propensity score matching

Braz. J. Nephrol. (J. Bras. Nefrol.) 2018 DOI: 10.1590/2175-8239-JBN-2018-0058

Table 5 Distribution of variables for patients aged 70+ years based on prescription of dialysis during ICU stay, before and after PSM

Variables	Before Matching			After Matching
	Non-dialysis (n = 167)	Dialysis (n = 57)	*p*	
Age (years)	80.8 ± 6.9	78.7 ± 6.2	0.035	
Sex			0.760	
Male	84 (36.8)	30 (13.2)		
Female	87 (38.2)	27 (11.8)		
KDIGO			0.085	
KDIGO1	49 (21.5)	11 (4.8)		
KDIGO2	46 (20.2)	11 (4.8)		
KDIGO3	76 (33.3)	35 (15.4)		
Charlson	7.4 ± 2.0	7.8 ± 1.9	0.184	
Delta Nephro	3.6 ± 6.6	4.4 ± 8.1	0.458	
Higher BUN	156 ± 65.4	228 ± 81.8	< 0.001	
Higher K	5.2 ± 1.2	6.3 ± 3.8	0.001	
Lower Hb	8.7 ± 2.1	7.5 ± 1.6	< 0.001	
Higher Leukocyte count	215974 ± 21474.7	292219 ± 11433.8	0.011	
Lower Platelet count	128874.8 ± 79029.3	974912 ± 63476.1	0.003	
Oliguria	86 (37.7)	49 (21.5)	< 0.001	
Septic shock	32 (14.0)	20 (8.8)	0.018	
Diuretics	89 (39.0)	40 (17.5)	0.025	
VAD	64 (28.1)	37 (16.2)	0.001	
MV	118 (51.8)	55 (24.1)	< 0.001	
Mortality	98 (43.0)	47 (20.6)	0.001	

PSM: propensity score matching; VAD: vasoactive drugs; MV: mechanical ventilation.

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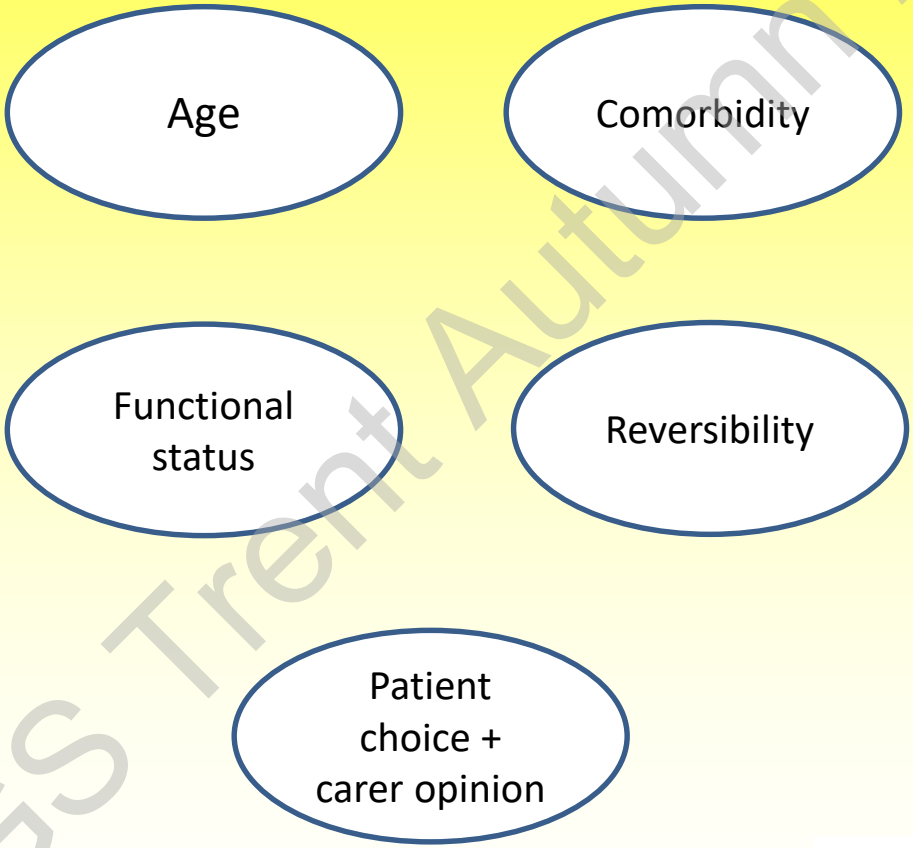
AKI in older people – does dialysis help?



Bones and CKD in older people

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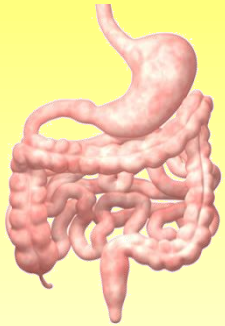
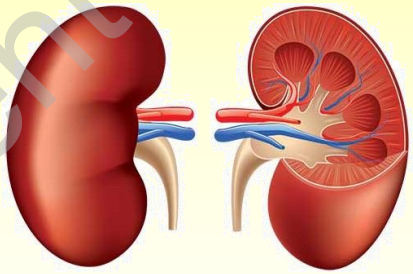
Osteoporosis

Adynamic bone disease



Hyperparathyroid bone disease



Osteomalacia

- 83 year old lady
- Slipped on ice - # L Colles

- CKD 5D – haemodialysis x 3 years

- cCa 2.38mmol/l
- PO4 1.4mmol/l
- PTH 196 nmol/l
- Vitamin D 43 nmol/l

Adcal-D3?

Colecalciferol?

Alfacalcidol?

Bisphosphonate?

Denusomab?

DEXA scan?

Bone biopsy?

Adcal-D3? | Colecalciferol?

4.3 Contraindications

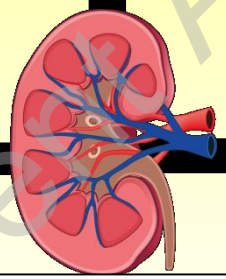
Colecalciferol 800 IU Capsules must not be used in patients with:

- Hypersensitivity to the active substance (Colecalciferol) or to any of the excipients listed in section 6.1
- Hypercalcaemia and/or hypercalciuria
- Nephrolithiasis (Renal calculi)
- Hypervitaminosis
- **Severe renal impairment**

Colecalciferol SpMC

Vitamin D3

25(OH)D3



$24,25(OH)_2D3$

$1,25(OH)_2D3$

- 1α hydroxlase is found throughout the body
- $25(OH)D3$ and $24,25(OH)_2D3$ (probably) have physiological roles
- "Standard" vitamin D supplements can have a biochemical effect in dialysis recipients

SimplifieD

Clinical Trial Protocol

Trial Title: Survival Improvement with Colecalciferol in Patients on Dialysis – The SIMPLIFIED Registry Trial

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Bisphosphonate?

4.2 Posology and method of administration

Use in renal impairment: No dosage adjustment is necessary for patients with GFR greater than 35 ml/min. Alendronate is not recommended for patients with renal impairment where GFR is less than 35 ml/min, due to lack of experience.

Alendronate SmPC

Bisphosphonate?

Accumulation due to decreased renal clearance

Exacerbation of adynamic bone disease (and vascular calcification)

Hypocalcaemia

Bisphosphonate?

CKD 1/2	CKD 3	CKD 4/5	Dialysis
Use bisphosphonate as indicated as normal	Measure and replace standard vitamin D	Is it osteoporosis? Consider DEXA and/or bone biopsy	Is it osteoporosis? Consider DEXA and/or bone biopsy
	If persistent secondary hyperPTH, start alfacalcidol	Correct vitamin D and PTH	Denosumab is licensed at this level of kidney function
	Use bisphosphonate as indicated as normal	Denosumab is licensed at this level of kidney function	Bisphosphonates should generally be avoided
		Use bisphosphonate with caution	

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Other things I often get asked about…

- Diuretics in CKD
- ACEi and ARB in CKD
- Contrast in AKI
  Contrast in CKD
- Blood pressure targets
- Anaemia and EpO in CKD
- Is it renal tubular acidosis?
- Sodium up?
  Sodium down?
- Why won't you take them to the renal unit?

Thanks for listening.