Treatment decision making for ESKD patients – dialysis versus supportive care

Dr Céline Foote
Staff specialist, Concord Repatriation General Hospital
Research Fellow, The George Institute for Global Health

Affiliated with

THE UNIVERSITY OF
SYDNEY

Australia | China | India | UK

Background

- The "elderly" are the fastest growing dialysis age group[1,2]
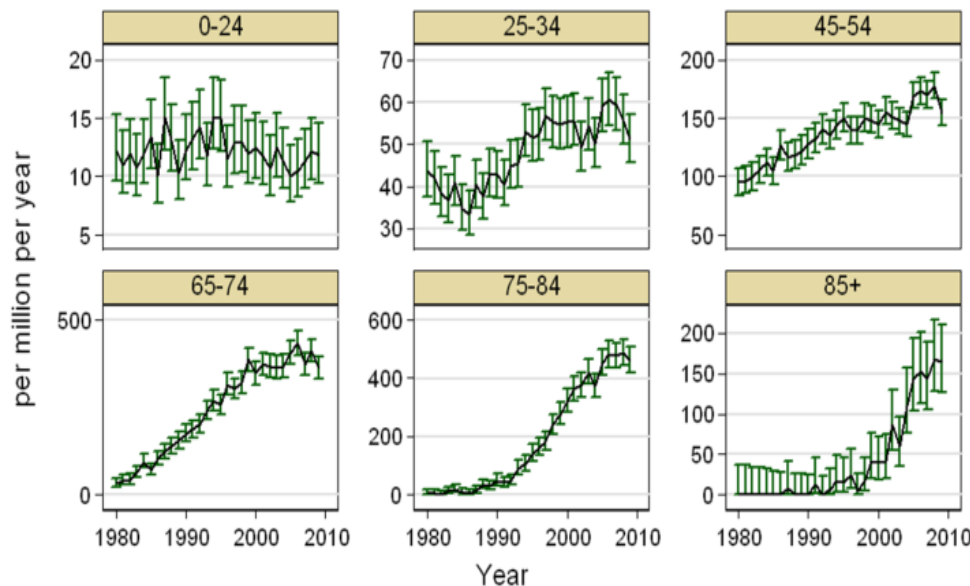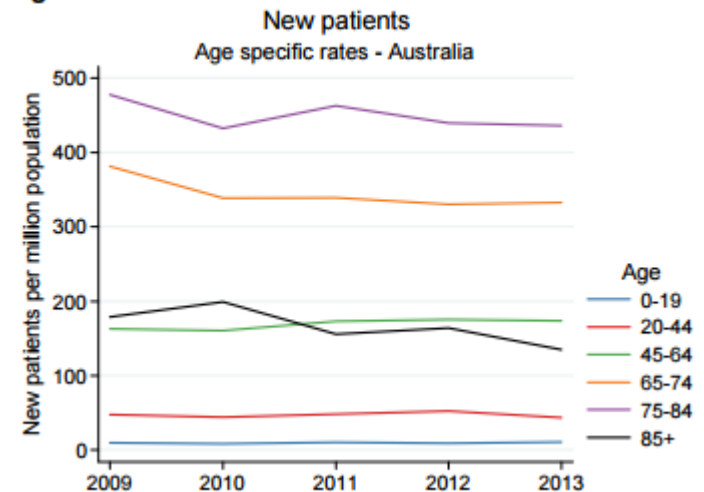- Highest acceptance rates but have leveled off in last 5 years[3]

Figure 1.3.1
New patients
Age specific rates - Australia

1. USRDS Report 2009
2. ANZDATA report 2011
3. ANZDATA report 2014

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Australia | China | India | UK

Reasons for increase in elderly people being referred for RRT

- Technological advances

- Liberalisation of selection criteria

- Rising public expectation

- People living longer

Number

Figure 6.16: Number of new cases of ESKD, by treatment status and age group at ESKD onset, 2003–2007
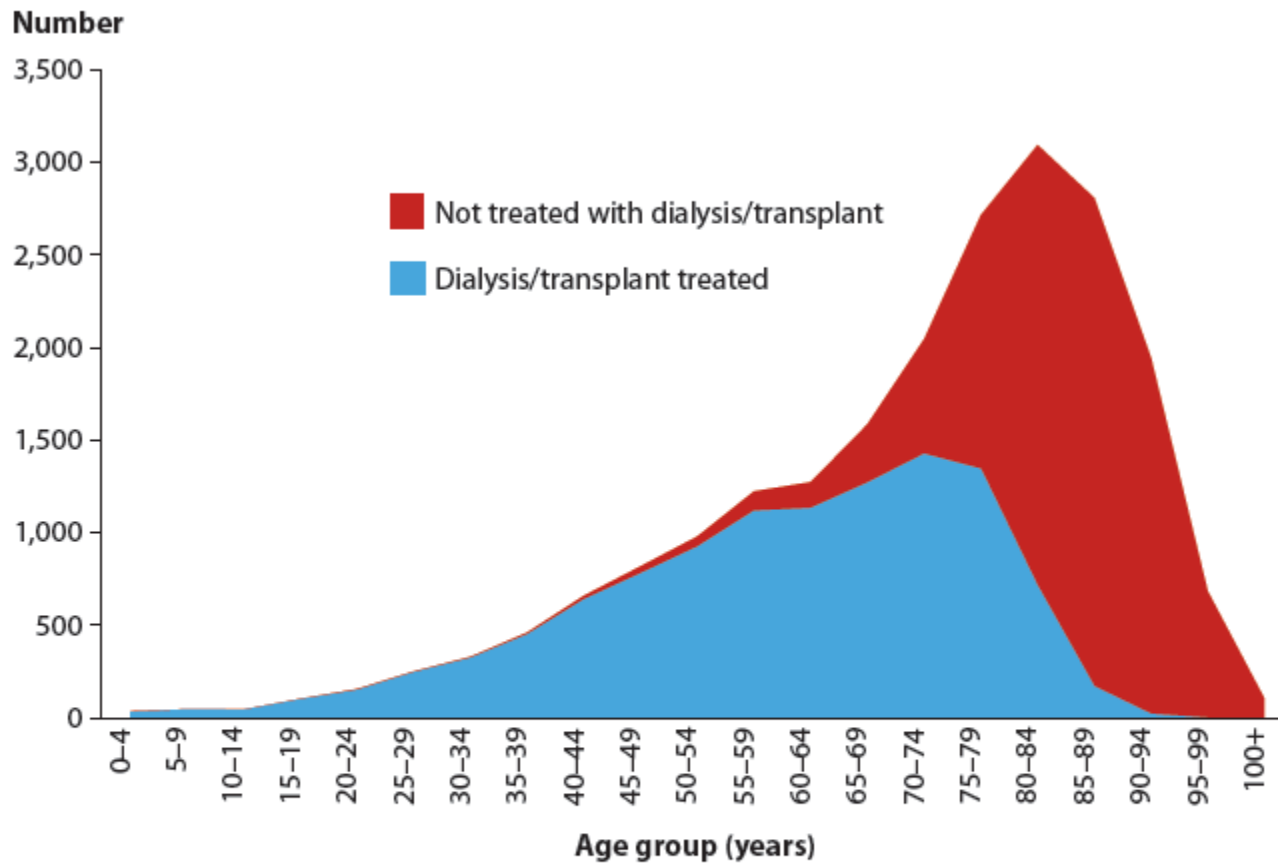
Sources: ANZDATA Registry, AIHW National Mortality Database and National Death Index.

AIHW website: http://www.aihw.gov.au/ckd/end-stage-kidney-disease/ accessed 16th Dec 2013.

Elderly ESKD patients are different to younger counterparts

- They have greater comorbidity[1], increasing frailty[2] and reduced functional status[3]

- May have different issues when contemplating treatment decisions

  - Treatment burden

  - Becoming a strain upon their families[4,5]

1. Foote et al. NDT 2012
2. Johansen et al. JASN 2007
3. Cook et al. KI 2008
4. Ashby et al. Pall Med 2005
5. Visser et al. J Neph 2009

Dialysis or Supportive care ?

Patient-centred outcomes

- Survival
- Quality of life
- Hospitalisations
- Symptom burden
- Impact on family/carers

Survival

Table 3.1

Survival (95% CI) among People who Commenced Renal Replacement Therapy 2004-2013

Age at RRT start	Years	Australia	New Zealand
0-24	1	97 (96, 98)	97 (93, 99)
	2	95 (93, 97)	94 (90, 97)
	5	92 (89, 94)	91 (85, 94)
25-44	1	96 (96, 97)	97 (95, 98)
	2	92 (91, 93)	92 (89, 94)
	5	85 (84, 86)	75 (71, 79)
45-64	1	92 (92, 93)	92 (91, 93)
	2	85 (85, 86)	84 (82, 85)
	5	68 (67, 69)	58 (55, 60)
65-74	1	86 (85, 87)	87 (85, 89)
	2	75 (74, 76)	74 (71, 77)
	5	45 (43, 46)	36 (33, 40)
75-84	1	81 (80, 82)	78 (74, 82)
	2	66 (64, 67)	58 (53, 63)
	5	30 (28, 32)	22 (17, 27)
85+	1	70 (66, 74)	76 (58, 87)
	2	52 (48, 57)	48 (30, 63)
	5	20 (16, 25)	11 (3, 27)

ANZDATA report 2014

Table 3.5

Survival on Dialysis by Age and Comorbidity amongst Older People
Years (median, 25th and 75th centiles)

Age at start	Any vascular disease	Diabetes	Australia	New Zealand
65-69	No	No	5.9 (3.1, 9.6)	5.9 (3.1, 9.6)
65-69	No	Yes	5.1 (3.1, 8.2)	5.1 (3.1, 8.2)
65-69	Yes	No	4.2 (1.8, 7.3)	4.2 (1.8, 7.3)
65-69	Yes	Yes	3.7 (1.9, 6.6)	3.7 (1.9, 6.6)
70-74	No	No	5.1 (2.4, 9.1)	5.1 (2.4, 9.1)
70-74	No	Yes	5.1 (2.6, *)	5.1 (2.6, *)
70-74	Yes	No	3.6 (1.6, 6.3)	3.6 (1.6, 6.3)
70-74	Yes	Yes	3.1 (1.5, 5.4)	3.1 (1.5, 5.4)
75-79	No	No	4.6 (2.1, 7.3)	4.6 (2.1, 7.3)
75-79	No	Yes	4.2 (2.1, 6.4)	4.2 (2.1, 6.4)
75-79	Yes	No	3.0 (1.3, 5.6)	3.0 (1.3, 5.6)
75-79	Yes	Yes	2.9 (1.2, 5.3)	2.9 (1.2, 5.3)
80-84	No	No	3.3 (1.8, 5.6)	3.3 (1.8, 5.6)
80-84	No	Yes	3.2 (1.8, 4.6)	3.2 (1.8, 4.6)
80-84	Yes	No	2.5 (1.2, 4.7)	2.5 (1.2, 4.7)
80-84	Yes	Yes	2.6 (1.0, 4.4)	2.6 (1.0, 4.4)
85+	No	No	3.1 (1.2, 5.5)	3.1 (1.2, 5.5)
85+	No	Yes	2.4 (1.4, 7.9)	2.4 (1.4, 7.9)
85+	Yes	No	2.0 (0.8, 3.8)	2.0 (0.8, 3.8)
85+	Yes	Yes	1.6 (0.4, 3.4)	1.6 (0.4, 3.4)

ANZDATA report 2014

Database searches n=5944
Medline n=3282
Embase n=2528
Cochrane n=134

Duplicates n=598

Number of records after duplicates removed
n=5346

Number of abstracts screened
n=5346

4873 excluded
Not a cohort study or RCT* n=1429
Not elderly population n=1714
Not ESKD n=1008
Not human n=4
Paediatric n=267
No outcomes of interest n=451

Full text articles assess for eligibility
n=473

384 excluded
Not a cohort study or RCT* n=24
Not elderly population n=60
Not ESKD n=8
No outcomes of interest n=178
Not examining dialysis or supportive care=114

89 studies in qualitative synthesis of dialysis
and supportive care

89 studies in quantitative synthesis of dialysis
and supportive care

* reviews, letters, qualitative studies, case
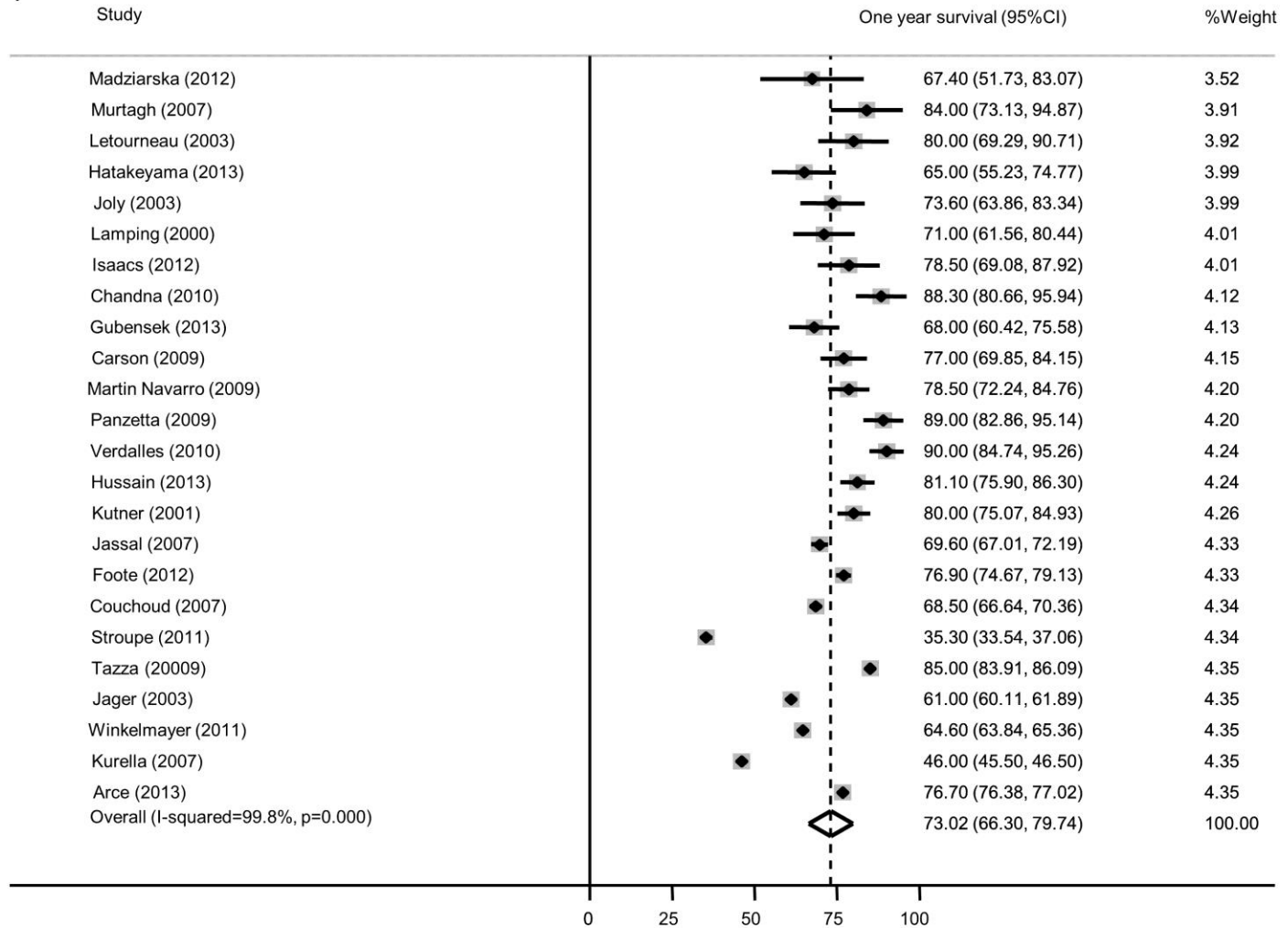reports/series, case-control studies

Foote et al. in press, Nephrology 2015

Footnote: Individual study characteristics are listed in Table 1.

Foote et al. in press, Nephrology 2015

Undifferentiated dialysis

a)

Study	One year survival (95%CI)	%Weight
Madziarska (2012)	67.40 (51.73, 83.07)	3.52
Murtagh (2007)	84.00 (73.13, 94.87)	3.91
Letourneau (2003)	80.00 (69.29, 90.71)	3.92
Hatakeyama (2013)	65.00 (55.23, 74.77)	3.99
Joly (2003)	73.60 (63.86, 83.34)	3.99
Lamping (2000)	71.00 (61.56, 80.44)	4.01
Isaacs (2012)	78.50 (69.08, 87.92)	4.01
Chandna (2010)	88.30 (80.66, 95.94)	4.12
Gubensek (2013)	68.00 (60.42, 75.58)	4.13
Carson (2009)	77.00 (69.85, 84.15)	4.15
Martin Navarro (2009)	78.50 (72.24, 84.76)	4.20
Panzetta (2009)	89.00 (82.86, 95.14)	4.20
Verdalles (2010)	90.00 (84.74, 95.26)	4.24
Hussain (2013)	81.10 (75.90, 86.30)	4.24
Kutner (2001)	80.00 (75.07, 84.93)	4.26
Jassal (2007)	69.60 (67.01, 72.19)	4.33
Foote (2012)	76.90 (74.67, 79.13)	4.33
Couchoud (2007)	68.50 (66.64, 70.36)	4.34
Stroupe (2011)	35.30 (33.54, 37.06)	4.34
Tazza (20009)	85.00 (83.91, 86.09)	4.35
Jager (2003)	61.00 (60.11, 61.89)	4.35
Winkelmayer (2011)	64.60 (63.84, 65.36)	4.35
Kurella (2007)	46.00 (45.50, 46.50)	4.35
Arce (2013)	76.70 (76.38, 77.02)	4.35
Overall (I-squared=99.8%, p=0.000)	73.02 (66.30, 79.74)	100.00

0   25   50   75   100

Haemodialysis

b)

Study	One year survival (95% CI)	% Weight
Basic-Jukic (2008)	71.40 (41.14, 101.66)	0.96
Chester (1979)	62.00 (43.99, 80.01)	2.14
Kolendorf (1977)	82.00 (65.69, 98.31)	2.43
Williams (1991)	95.00 (80.39, 109.61)	2.78
Rotellar (1979)	88.00 (74.68, 101.32)	3.08
Sitter (1997)	82.00 (69.46, 94.54)	3.27
Kawecka (2008)	63.00 (52.66, 73.34)	3.89
Harris (2002)	76.90 (67.24, 86.56)	4.10
Churchill (1992)	71.80 (62.94, 80.66)	4.35
Walls (1990)	77.20 (68.40, 86.00)	4.37
Peri (2001)	82.60 (74.21, 90.99)	4.51
Steele (2009)	71.40 (63.31, 79.49)	4.61
Gentil (1992)	79.00 (72.11, 85.89)	5.01
Chauveau (2001)	80.00 (74.85, 85.15)	5.57
O'Brien (1976)	92.00 (87.53, 96.47)	5.78
Piccoli (1990)	70.80 (66.58, 75.02)	5.85
Hung (2009)	75.30 (71.14, 79.46)	5.86
Posen (1990)	62.00 (58.83, 65.17)	6.12
Oliva (2013)	83.10 (80.06, 86.14)	6.15
Salomone (1995)	82.30 (80.02, 84.58)	6.30
Praga (2013)	87.80 (86.20, 89.40)	6.40
Brunner (1988)	81.00 (80.26, 81.74)	6.48
Overall (I-squared = 92.9%, p = 0.000)	78.39 (75.17, 81.61)	100.00

0   25   50   75   100

Peritoneal dialysis

Study	One year survival (95%CI)	%Weight
Sunder (2004)	88.00 (65.37, 110.63)	1.87
Harris (2002)	38.50 (20.87, 56.13)	2.43
Christidou (1998)	82.00 (64.66, 99.34)	2.46
Dimkovic (2001)	72.00 (55.18, 88.82)	2.53
Williams (1990)	65.00 (48.44, 81.56)	2.56
Suzuki (2010)	70.00 (54.17, 85.83)	2.66
Ounissi (2009)	92.80 (78.21, 107.39)	2.83
Benevent (1990)	73.90 (62.56, 85.24)	3.30
Genestier (2010)	64.90 (53.93, 75.87)	3.36
Cheng (2013)	59.20 (48.54, 69.86)	3.41
Yang (2007)	85.00 (74.95, 95.05)	3.50
De Vecchi (1998)	85.00 (75.44, 94.56)	3.57
Povlsen (2008)	77.00 (67.60, 86.40)	3.59
Hung (2009)	71.10 (62.32, 79.88)	3.68
Piccoli (1990)	73.40 (64.67, 82.13)	3.69
Gentil (1991)	83.00 (75.19, 90.81)	3.82
Issad (1996)	73.60 (66.70, 80.50)	3.94
Kadambi (2002)	78.00 (71.37, 84.63)	3.97
Salomone (1995)	81.70 (75.63, 87.77)	4.04
Vrtovsnik (2002)	80.00 (74.87, 85.13)	4.15
Segolini (1990)	77.10 (72.96, 81.24)	4.24
Lupo (1994)	80.00 (75.90, 84.10)	4.25
Hiramatsu (2007)	85.00 (81.30, 88.70)	4.28
Nissenson (1990)	85.00 (81.58, 88.42)	4.30
Posen (1990)	70.00 (66.92, 73.08)	4.33
Brunner (1988)	77.00 (75.08, 78.92)	4.40
Shum (2014)	99.30 (97.99, 100.61)	4.42
Lim (2011)	90.00 (89.14, 90.86)	4.43
Overall (I-squared=96.5%, p=0.000)	77.85 (73.77, 81.93)	100.00

0 25 50 75 100

Supportive Care

Study	One year survival (95%CI)	%Weight
Smith (2003)	19.00 (-15.59, 53.59)	3.57
Joly (2003)	29.00 (1.85, 56.15)	5.13
Carson (2009)	72.00 (52.74, 91.26)	7.87
Da Silva-Gane (2012)	75.00 (57.11, 92.89)	8.50
Wong (2007)	65.00 (51.43, 78.57)	10.83
Shum (2014)	80.70 (67.41, 93.99)	11.00
Ellam (2009)	78.30 (67.31, 89.29)	12.41
Murtagh (2007)	76.00 (65.06, 86.94)	12.44
Chandna (2010)	80.20 (71.73, 88.67)	13.99
Hussain (2013)	71.00 (62.95, 79.05)	14.25
Overall (I-squared=65.7%, p=0.002)	70.64 (63.31, 77.98)	100.00

0   25   50   75   100

Author	N patients	Median age	Study design	Country	Starting point for survival analysis	Survival
Carson	29	83	Prospective	England	Putative dialysis initiation date	Median 13.9mths (range 2-44)
Chandna	106	81.4	Retrospective	England	eGFR<10-15 mL/min/1.73m^2	One year survival 80.2%
Da Silva-Gane	30	77.5#	Prospective	England	Study enrolment, late stage 4/5 CKD attending low clearance clinic	One year survival 75%, median survival 913 days
Ellam	69	80	Retrospective	England	eGFR <15 mL/min/1.73m^2	Median 21 mths (range 1-100)
Hussain	172	NR, >70years	Prospective	England	eGFR <20, eGFR<15 and eGFR<12mL/min/1.73m^2	One year survival 71% from eGFR<15
Isaacs	54	83	Retrospective	England	Survival from decision not to dialyse	Median 6 mths (2.5-11)
Joly	37	84.1#	Retrospective	France	Survival from decision not to dialyse	Median 8.9 mths (95%CI 4-10)
Murtagh	77	83	Retrospective	England	eGFR <15 mL/min/1.73m^2	Median 18mths (range 0.1-73.1)
Seow	63	78	Prospective	Singapore	eGFR 8-12 mL/min/1.73m^2	Two year survival 61.9%
Shum	42	75.3#	Retrospective	Hong Kong	eGFR <15 mL/min/1.73m^2	One year survival 80.7%
Smith	26	71#	Retrospective	England	Putative dialysis initiation date	Median survival 6.3 mths
Wong	73	79	Prospective	England	Survival from decision not to dialyse	Median survival 23.4mths

- study in patients of all ages

Studies which compared dialysis and supportive care
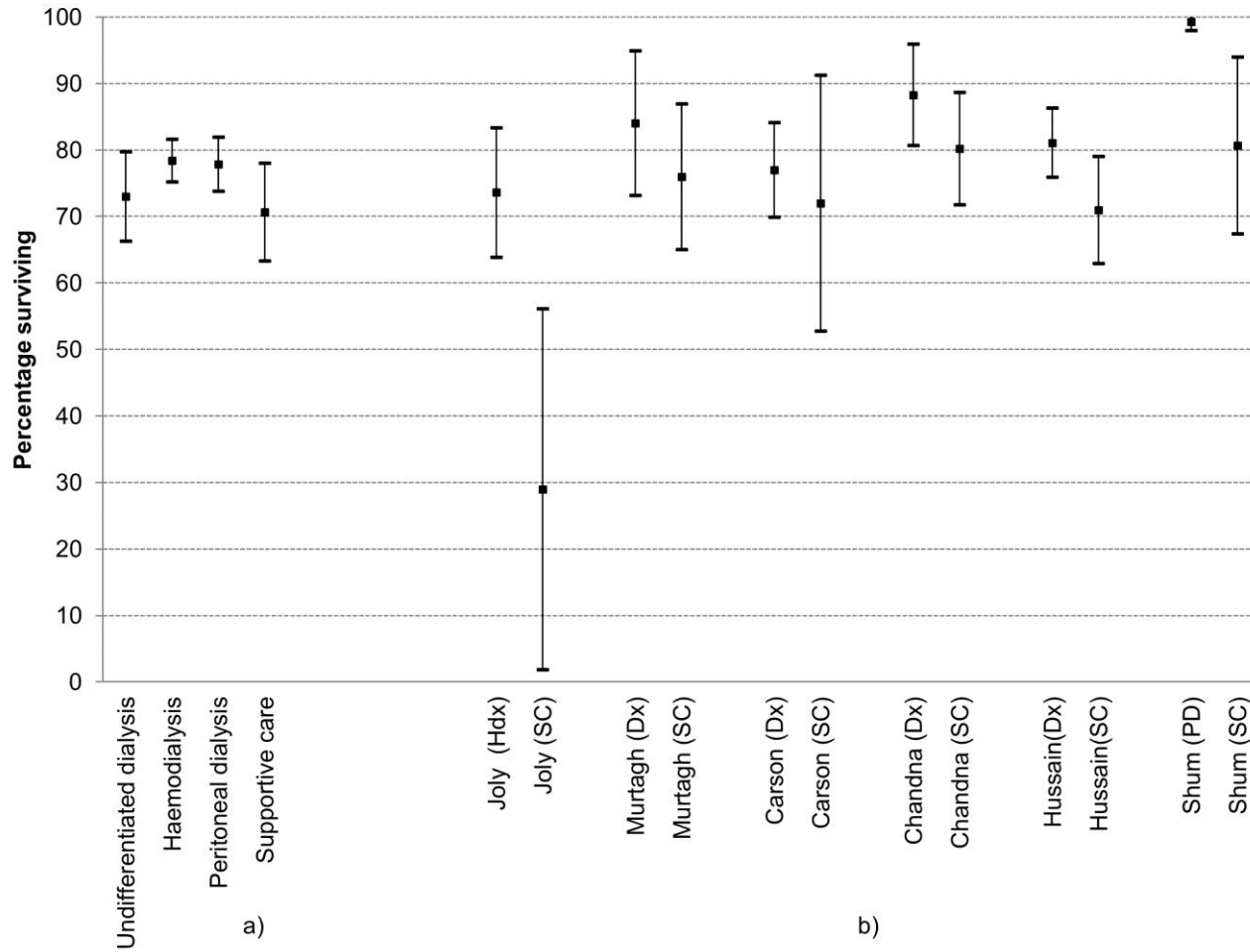
Footnote: Individual study characteristics are listed in Table 1.

Systematic review conclusions

- Broadly comparable 1 year survival

- Lack of data about supportive care

- Supportive care data mostly retrospective and susceptible to lead-time bias

→ Makes it difficult to counsel patients about survival with supportive care

St George study
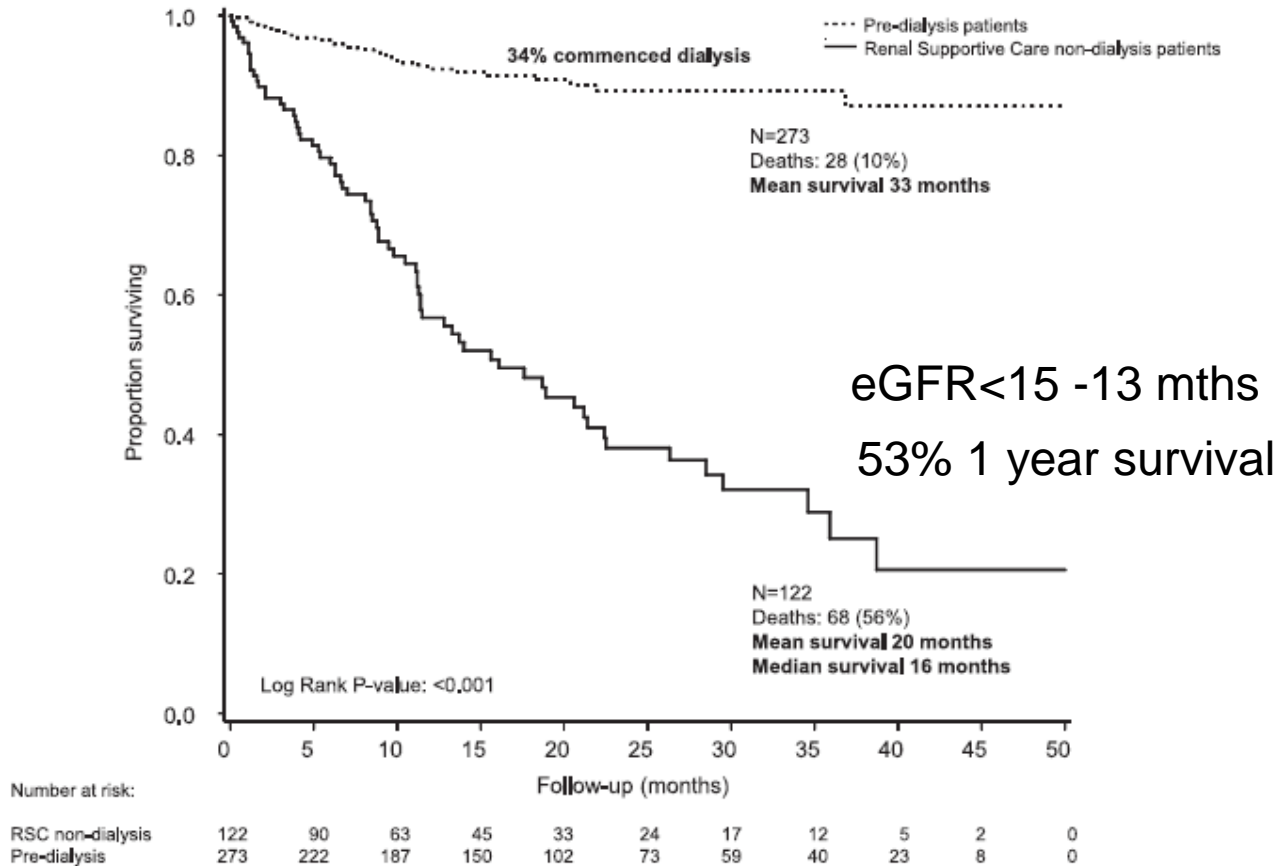
Figure 2. | Survival in patients in the predialysis (n=273) or RSC-NFD (n=122) groups. Time zero is from first attendance at the predialysis or renal supportive care clinic after a decision had been made to pursue dialysis or not.

Brown et al. CJASN, Feb 2015

Predictors of elderly patient survival on dialysis

- Factors identified with poorer survival on dialysis include:
  - Older age
  - Comorbid conditions
  - Malnutrition
  - Frailty
  - Functional status
  - Late referral to a nephrologist
  - Unplanned start
- Several studies have identified comorbidity score as a strong predictor of mortality[1,2]

1. Lamping et al. The Lancet 2000
2. Foote et al. NDT 2012

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

There may be no survival advantage with dialysis with increasing comorbidity
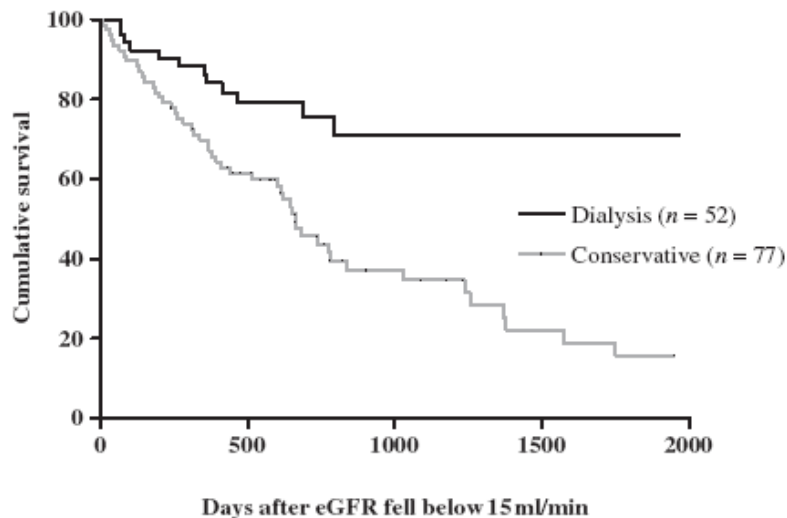
Fig. 2. Kaplan–Meier survival curves comparing the dialysis and conservative groups (log rank statistic = 13.63, $P < 0.001$).
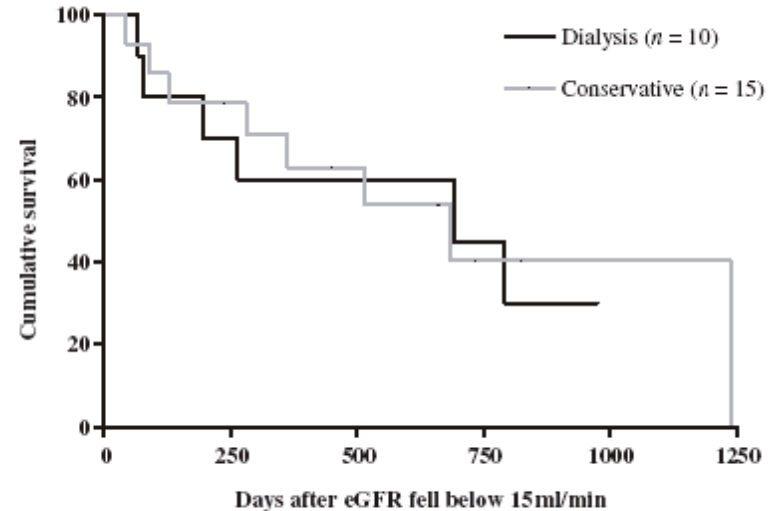
Fig. 3. Kaplan–Meier survival curves for those with high comorbidity (score = 2), comparing dialysis and conservative groups (log rank statistic <0.001, df 1, $P = 0.98$).

Murtagh et al. NDT 2007

There may be no survival advantage with dialysis with ischaemic heart disease

Murtagh et al. NDT 2007

23
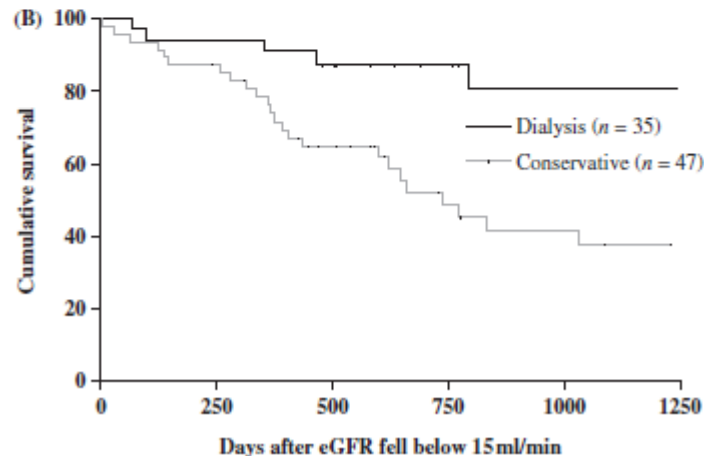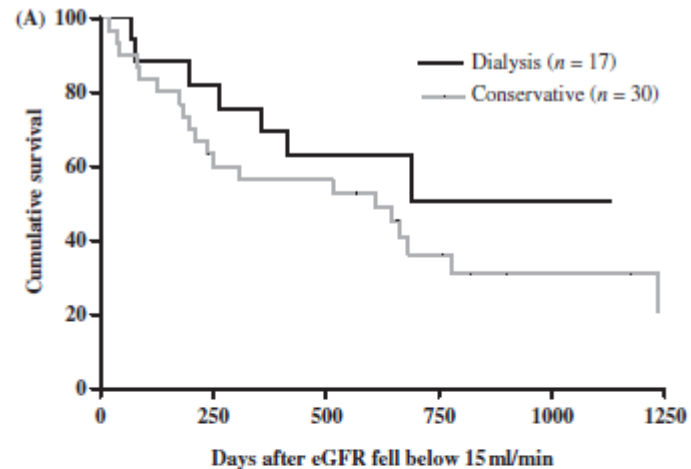
There may be no survival advantage with dialysis with increasing comorbidity
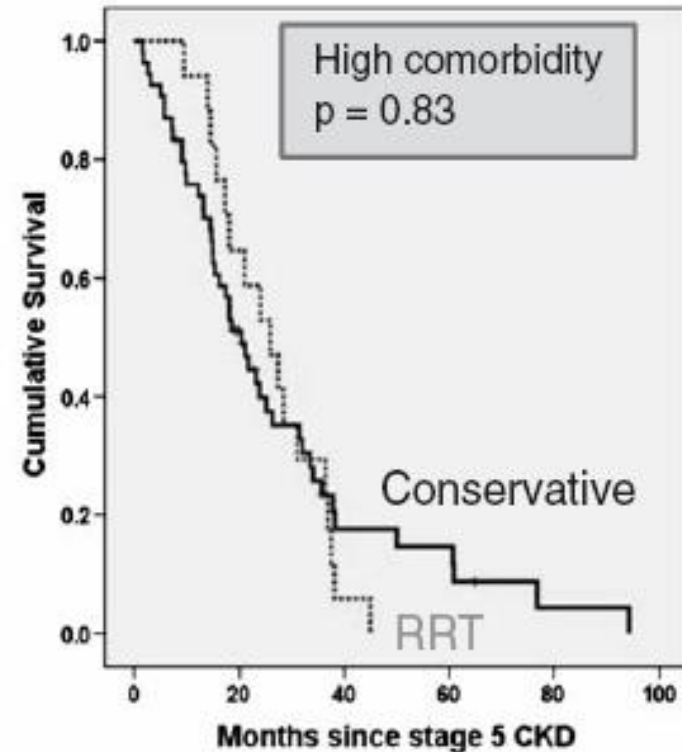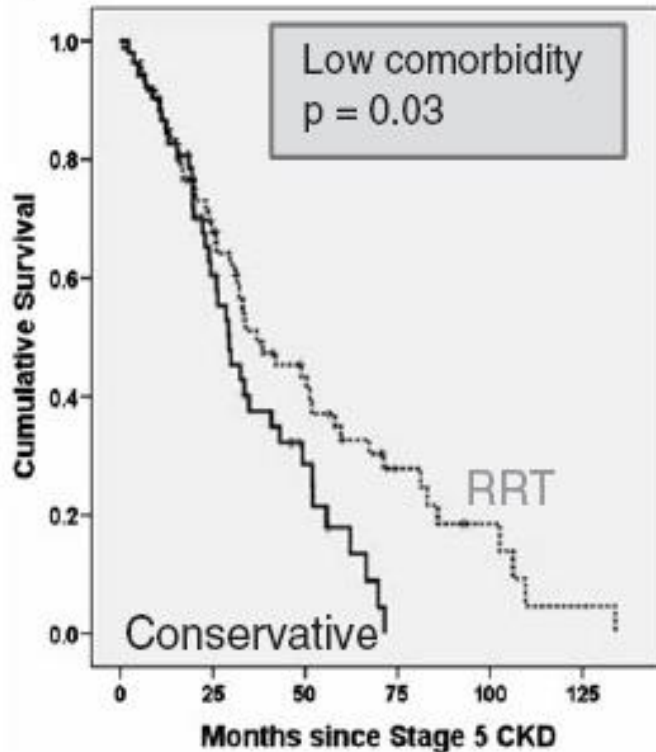
Chandna et al. NDT 2010

There may be no survival advantage with dialysis with increasing comorbidity

- Similar findings in St George study where pts >75 yrs with 2 or more comorbidities (one of which was CHF or IHD) had no difference in survival.

Brown et al. CJASN, Feb 2015

Survival with supportive care may also be associated with co-morbidity

Survival in CKD Patients Who Do Not Receive Dialysis

83%

Grade 0, n = 16

70%

56%

Grade 1, n = 21

Grade 2, n = 36

p = 0.005

Survival %

Time (years)
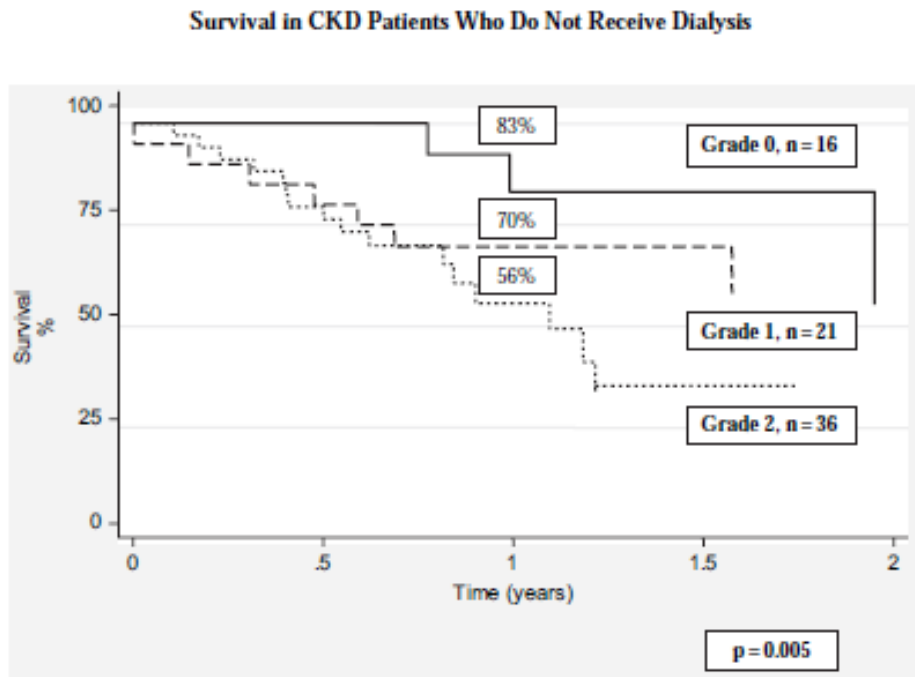
Figure 4. Kaplan-Meier survival curve by Stoke's comorbidity grade.

Wong et al. Renal Failure 2007

QUALITY OF LIFE

Quality of life of elderly dialysis patients

- QoL of all dialysis patients is decreased compared to general population

  - No difference in mental component of elderly patients[1]

- QoL of elderly dialysis may be better than younger pts[2] and better preserved over time[3]

1 Lamping et al. Lancet 2000
2 Rebollo et al. NDT 2001
3 Unruh et al JAGS 2008

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Quality of life of supportive care patients might be better than dialysis patients

SF 36 scores compared to age/sex matched general population		
SF36 domain	Dialysis group (n=134)	Supportive care group (n=45)
Physical functioning	↓	↓
Physical role functioning	↓	↓
Bodily pain	↓	↔
General health perceptions	↓	↔
Vitality	↓	↔
Social role functioning	↓	↓
Emotional role functioning	↓	↓
Mental health	↓	↔

Yong et al.
Pall Med 2009
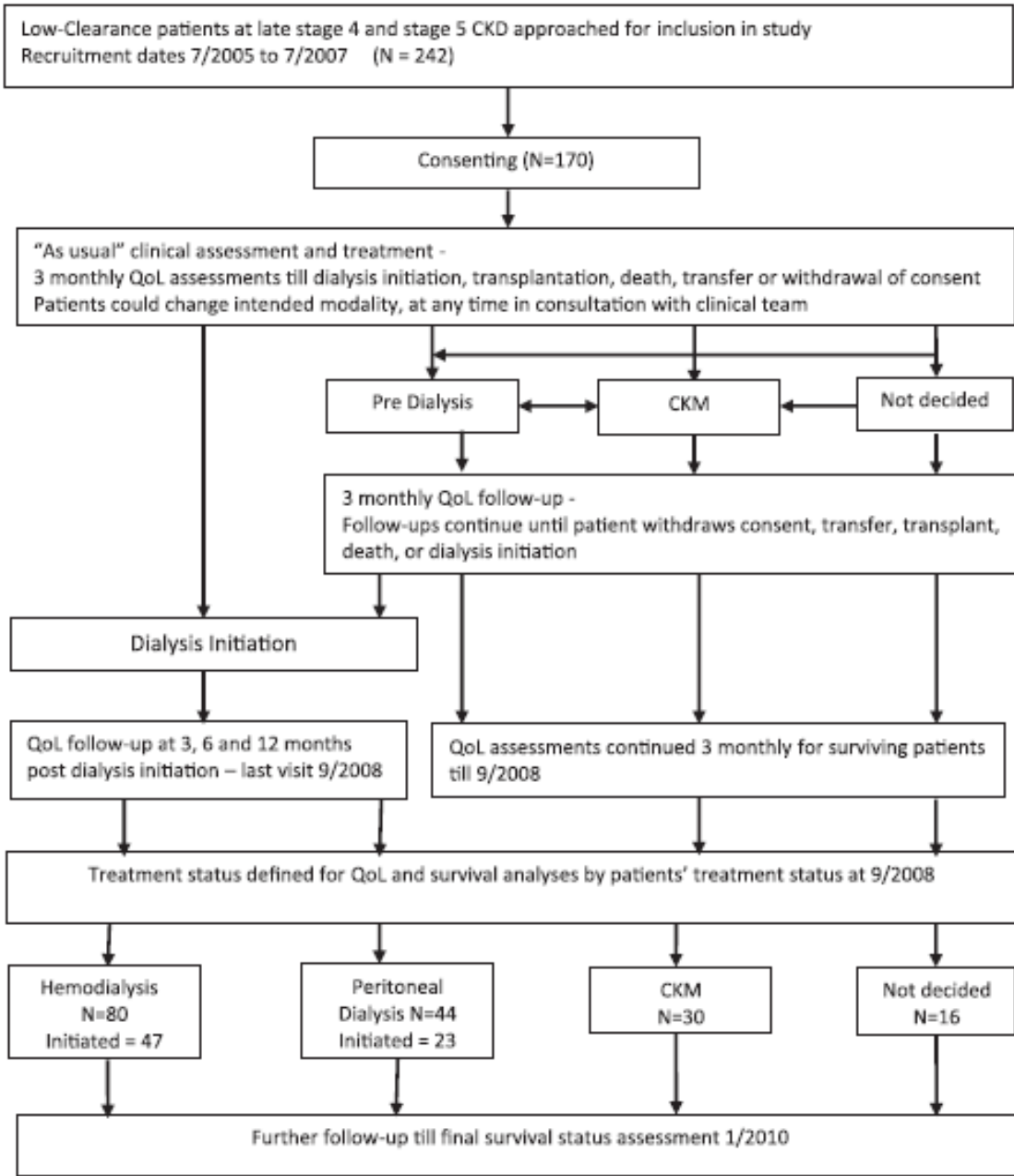
Baseline characteristics of modality groups

Variable	Hemodialysis	Peritoneal Dialysis	Conservative Management	Not Decided	P Value
Patients (n)	80	44	30	16	
Men (%)	76	50	70	56	0.02
Age (yr)	60.6±14.9	48.0±15.6	77.5±6.5	68.3±16.4	<0.001
Weight (kg)	83.1±19.7	77.8±14.6	76.2±18.6	78.4±15.2	No group differences
eGFR (ml/min per 1.73 m^2)					
Per MDRD4	13.3±3.7	14.2±4.4	14.3±3.4	16.3±4.6	0.04 for HD versus not-decided
Per CKD-EPI	12.2±3.7	13.7±4.5	12.5±3.1	14.9±4.8	No group differences
Comorbidity, n (%)					
Low	52 (65)	38 (86)	8 (26)	9 (56)	<0.001
High	28 (35)	6 (14)	22 (74)	7 (44)	
KPS score, n (%)					
>70	66 (82.5)	43 (98)	10 (33)	8 (50)	<0.001
<70	14 (17.5)	1 (2)	20 (66)	8 (50)	
SF-36 score					
Mental health	47.6±10.7	45.9±10.6	49.9±9.9	52.0±40.0	No group differences
Physical health	25.2±8.8	30.1±6.5	18.0±8.8	21.1±24.0	<0.001 for HD and PD versus CKM; 0.01 for HD versus PD
HADS score					
Anxiety	5.5±3.6	4.7±4.0	6.9±3.3	5.3±1.6	0.04 for HD versus CKM; 0.02 for PD versus CKM
Depression	6.1±4.0	6.4±4.2	5.2±3.3	4.9±17.6	No group differences
SWLS score	21.7±8.0	22.5±7.3	23.2±7.1	22.4±35.2	No group differences

Unless otherwise noted, values are expressed as mean ± SD. eGFR, estimated GFR; MDRD4, Modification of Diet in Renal Disease 4 equation; CKD-EPI, Chronic Kidney Disease-Epidemiology Collaboration; KPS, Karnofsky performance scale; SF-36, quality-of-life assessment using Short-Form 36 questionnaire; HADS, Hospital Anxiety and Depression Scale; SWLS, Satisfaction with Life Scale (see text for explanation).

Table 2. Growth model parameter estimates

Measure	Fixed-Effects Parameter Estimates								P Value for Model Fit (Wald)
	Change over Time	Dialysis Initiation	Age	Comorbidity	KPS Score	Sex	Propensity Score	Constant	
SF-36									
Mental health	0.12 ± 0.32^a	-0.69 ± 5.8	0.21^b	-3.09^a	-0.43	0.68	2.68	$50.7^b \pm 6.2$	<0.001
Physical health	0.04 ± 0.17	0.49 ± 1.7	-0.16^b	1.61	-1.21^b	-0.35	-4.04	$21.1^b \pm 4.4$	<0.001
SWLS	0.02 ± 0.11	$-1.84^a \pm 4.5$	0.12^b	-2.70^a	-0.35	0.71	-0.14	$23.5^b \pm 5.5$	<0.001
HADS									
Depression	-0.03 ± 0.10	-0.57 ± 1.7	-0.10^b	1.17	0.29^b	-0.81	0.02	$5.56^b \pm 3.1$	<0.001
Anxiety	-0.004 ± 0.14	-0.02 ± 2.6	-0.02	0.73	0.53^b	0.10	-0.78	$5.36^b \pm 2.5$	<0.001

Unless otherwise noted, values are expressed as mean ± SD. Change over time (growth) for the fixed effect is the estimated change per month in the quality-of-life measure. Similar interpretations can be applied to dialysis initiation and the constant. Age, comorbidity, KPS score, sex, and propensity score were entered into the model as fixed effects only to adjust for variation between groups at baseline. SDs for age, comorbidity, KPS score, sex, and propensity score were not estimated because of constraints on model fitting. KPS, Karnofsky performance scale; SF-36, quality-of-life assessment using Short-Form 36 questionnaire; HADS, Hospital Anxiety and Depression Scale; SWLS, Satisfaction with Life Scale.

[a] $P<0.05$.

[b] $P<0.01$.

Da Silva-Gane CJASN 2012

St George study

Table 3. Symptoms and QOL at the initial clinic visit and change in symptoms and QOL over time in the RSC-NFD and predialysis groups

	Predialysis	RSC-NFD	P Value
Symptoms	133	65	
No. of symptoms at first visit (MSAS), mean (SD)	9.1 (5.3)	12.2 (5.6)	<0.001
Score >20 at first visit (MSAS)	44 (33%)	37 (57%)	0.001
QOL			
Physical composite (SF-36)	137	63	
Score at first visit; mean (SD)	38 (11)	29 (8)	<0.001
Mental composite (SF-36)			
Score at first visit; mean (SD)	50 (10)	46 (12)	0.06
QOL status	49	19	
Change of physical composite score over 12 mo			0.12
Stable	2 (4%)	3 (16%)	
Improved	20 (41%)	4 (21%)	
Worse	27 (55%)	12 (63%)	
Change of mental composite score over 12 mo			0.78
Stable	1 (2%)	1 (5%)	
Improved	26 (53.1%)	10 (53%)	
Worse	22 (44.9%)	8 (42%)	

Brown et al. CJASN, Feb 2015

33

Dialysis is associated with functional decline in elderly patients
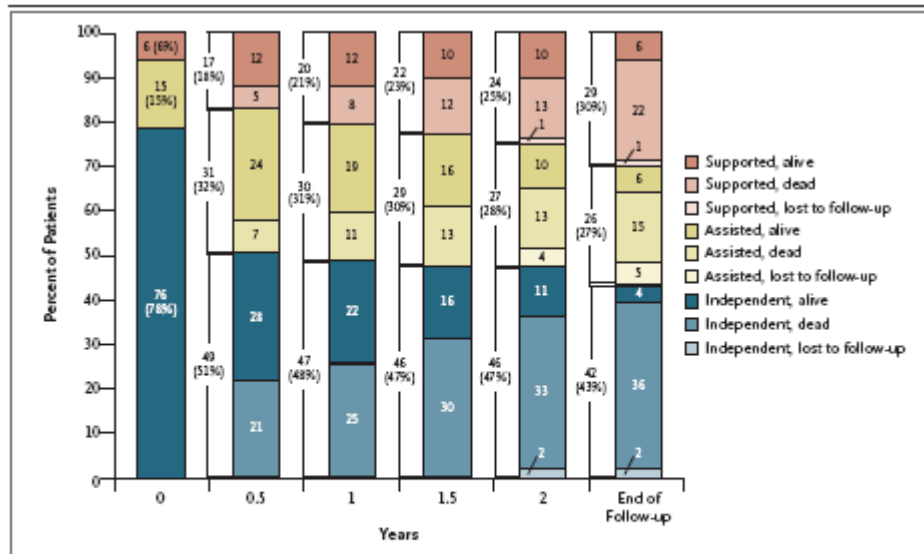
Figure 1. Living Status and Residence during the Study Period, Assessed at 6-Month Intervals.
"Supported" was defined as being a resident in a full-time care setting or nursing home, "assisted" as being a resident in an assisted-care setting or receiving support from a community or private caregiver, and "independent" as residing in the home without support or assistance.

• More than 30% of patients aged ≥ 80 had functional loss 6 months after dialysis initiation[1]
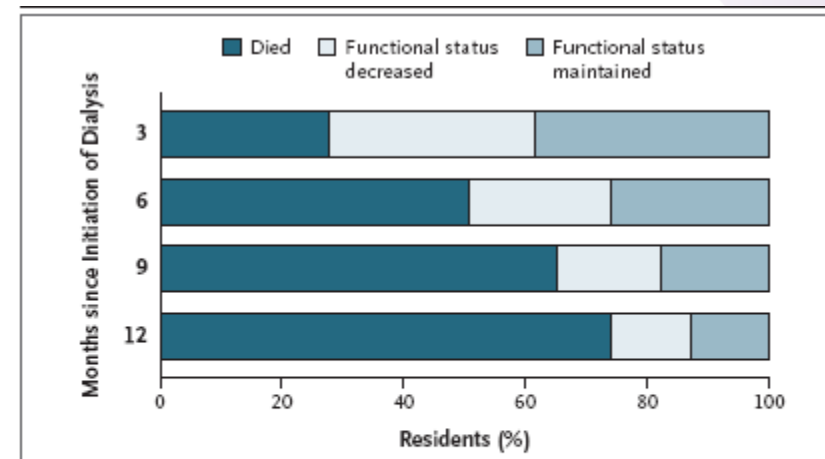
Figure 2. Change in Functional Status after Initiation of Dialysis.
Data were missing for 549 nursing home residents at 3 months, 696 residents at 6 months, 823 residents at 9 months, and 787 residents at 12 months from the full analytic cohort of 3702 residents.

• Majority of elderly nursing home residents have died or lost function 12 months after dialysis initiation[2]

1. Jassal et al. NEJM 2009, 2. Tamura et al. NEJM 2009

HOSPITALISATIONS

ESKD patients have high hospitalisation rates

- Rates of hospitalisation in elderly RRT patients 20-35 days per year[1-2]

- Rates of hospitalisation in elderly supportive care patients 10-16 days per year[1,3]

1 Carson et al. CJASN 2009
2 Rohrich et al. NDT 1998
3 Wong et al. Renal Failure 2007

Distribution of Days Survived:
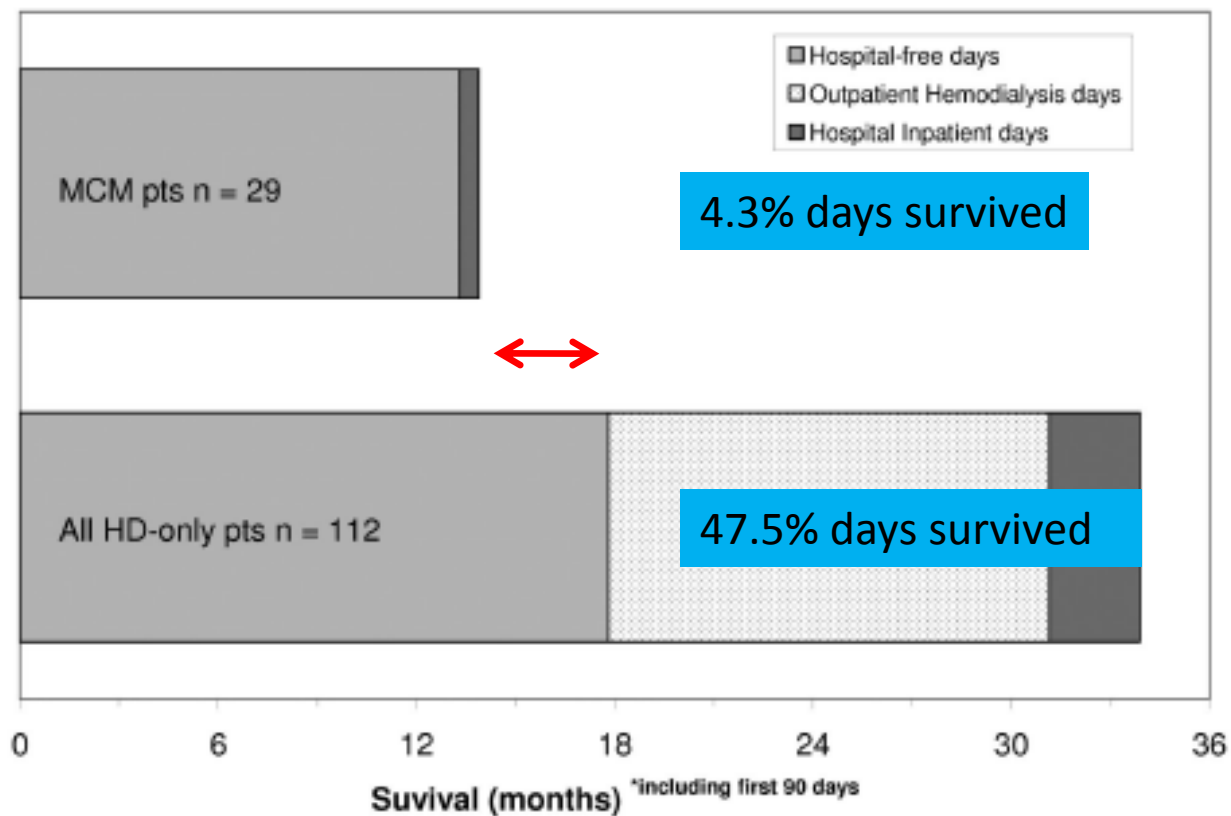**Hospital-free Days, Outpatient Hemodialysis Days**
and Hospital Inpatient Days

Legend:
- Hospital-free days
- Outpatient Hemodialysis days
- Hospital Inpatient days

MCM pts n = 29 — 4.3% days survived

All HD-only pts n = 112 — 47.5% days survived

Survival (months) *including first 90 days

Figure 3. Median survival for MCM cohort and the hemodialysis-only subgroup in the RRT cohort. Data shown are how many days were spent hospital-free, compared with in-patient stays in hospital and outpatient hospital attendances for dialysis.

Carson et al. CJASN 2009

SYMPTOM BURDEN

ESKD patients have a high symptom burden
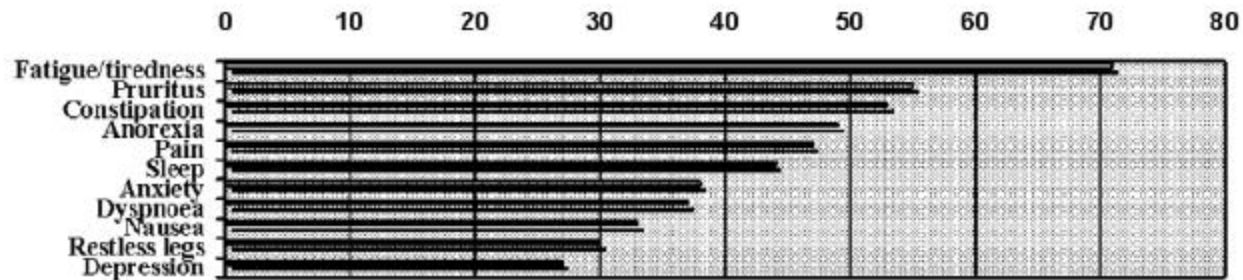
Figure 1. Weighted mean prevalence of symptoms (%) in ESRD (weighted by size of study).

Murtagh et al. Advances in Chronic Kidney Disease 2007

Symptoms with supportive care are similar

TABLE 3. SYMPTOMS AND QUALITY OF LIFE WITH CONSERVATIVE, NONDIALYTIC MANAGEMENT OF END-STAGE RENAL DISEASE

Reference	CM group	Comparison group	Symptoms in CM group	Other outcomes
DeBiase et al., 2008[29]	mean age 81.5 mean GFR 11.2 mean number of comorbidities 5.7 n = 11	mean age 79.4 mean GFR 9.0 mean number of comorbidities 2.6 n = 5 (dialysis patients)	not reported	similar quality of life between groups[a]
Murphy et al., 2009[25]	mean age 82 mean GFR 12.75 n = 55	none	weakness 75% poor mobility 75% poor appetite 58% pain 56% pruritus 56% dyspnea 49%	mean number of symptoms 6.8 (range 1–14)
Murtagh et al., 2007[22]	mean age 82 mean GFR 11.2 n = 66	none	lack of energy 76% pruritus 74% drowsiness 65% dyspnea 61% edema 58% pain 53% dry mouth 50% muscle cramps 50% restless legs 48% lack of appetite 47% poor concentration 44% dry skin 42% sleep disturbances 41%	mean number of symptoms 11.58 (range 0–22)
Murtagh et al., 2010[23]	mean age 80.9 mean GFR 11.0 n = 49	none	lack of energy 86% pruritus 84% drowsiness 82% dyspnea 80% poor concentration 76% pain 73% poor appetite 71% swelling 71% dry mouth 69% constipation 65% nausea 59%	median number of symptoms 16.6 (range 6–27)
Saini et al., 2006[24]	median age 67 median GFR 11.4 median KPS 90 n = 11	median age 63 median GFR 81.3 median KPS 80 n = 11 (patients with terminal malignancy[b])	lack of energy 100% dyspnea 82% difficulty sleeping 82% swelling 73% pain 64% numbness/tingling 64% food taste changes 55% pruritus 55% lack of appetite 55% changes in skin 55%	median number of symptoms: 17 (range 11–24) in CM group; 15 (range 5–23) in malignancy group similar quality of life between groups[c]
Yong et al., 2009[28]	mean age 73.1 mean CCI score 8.5 n = 45	mean age 58.2 mean CCI score 6.1 n = 134 (dialysis patients)	cold aversion 78% fatigue 69% pruritus 58% lower torso weakness 58% difficulty sleeping 49% pain 49% dyspnea 47%	mean number of symptoms ± SD: 8.2 ± 3.9 with CM 9.3 ± 4.7 with dialysis similar quality of life between groups[a]

O'Connor et al.
J of Pall Med 2012

Symptom burden with supportive care is similar to dialysis

Table 4 Symptom intensity in ESRD patients

Symptoms	All ESRD patients with symptoms	Dialysis patients with symptoms	Palliative-care patients with symptoms	P-value
	Mean intensity score (SD)			
Sexual problem	6.5 (2.4)	6.8 (2.3)	3.3 (1.0)	0.043[a]
Fatigue	5.6 (2.2)	5.5 (2.3)	5.9 (2.2)	0.903
Difficulty sleeping	5.5 (2.5)	5.4 (2.4)	5.8 (2.8)	0.105
Cold aversion	5.4 (2.1)	5.5 (2.0)	5.1 (2.4)	0.123
Lower torso weakness	5.4 (2.4)	5.3 (2.3)	5.7 (2.7)	0.102
Pruritus	5.3 (2.5)	5.6 (2.6)	4.3 (2.1)	0.021[a]
Loss of appetite	5.1 (2.2)	5.0 (2.2)	5.4 (2.1)	0.385
Skin changes	5.0 (2.4)	5.1 (2.5)	4.4 (2.1)	0.844
Dizziness	4.8 (2.5)	5.0 (2.6)	4.3 (2.1)	0.189
Constipation	4.8 (2.5)	4.9 (2.5)	4.6 (2.6)	0.423
Change in taste	4.7 (2.3)	5.1 (2.4)	3.3 (1.0)	0.029[a]
Nausea and vomiting	4.7 (2.5)	4.8 (2.6)	3.6 (1.3)	0.138
Bloated abdomen	4.6 (2.4)	4.9 (2.5)	3.5 (1.7)	0.040[a]
Dyspnoea	4.6 (2.3)	4.4 (2.4)	5.1 (2.2)	0.598
Halitosis	4.4 (1.9)	4.4 (1.8)	4.5 (2.4)	0.269
Limb swelling	4.3 (2.1)	4.4 (2.0)	4.1 (2.4)	0.358
Limb numbness	4.2 (2.1)	4.4 (2.2)	3.8 (1.5)	0.043[a]
Hearing impairment	4.2 (2.2)	4.4 (2.2)	3.5 (2.4)	0.869
Muscle cramp	4.1 (1.8)	4.1 (1.7)	4.1 (2.1)	0.346
Dry mouth	4.1 (2.2)	4.0 (2.1)	4.5 (2.5)	0.153
Restless leg	4.0 (2.0)	4.1 (2.0)	3.7 (2.2)	0.744
Cough	3.6 (1.9)	3.7 (1.9)	3.1 (2.0)	0.683
BPI-C Pain intensity scores (0–10) mean (SD)				
Worst pain	5.1 (2.4)	5.2 (2.3)	4.8 (2.6)	0.184
Least pain	3.1 (2.3)	3.1 (2.3)	3.0 (2.4)	0.986
Average pain	4.1 (2.2)	4.1 (2.2)	4.2 (2.4)	0.432
Pain now	2.8 (2.5)	2.7 (2.4)	3.0 (2.9)	0.204
BPI-C Pain interference score (0–10) mean (SD)				
General activity	2.8 (3.0)	2.8 (2.8)	2.6 (3.3)	0.168
Mood	3.0 (3.2)	3.3 (3.0)	2.2 (3.5)	0.340
Walking	3.2 (3.2)	3.4 (3.1)	2.7 (3.5)	0.305
Work	2.3 (3.0)	2.7 (2.9)	1.4 (3.0)	0.471
Relations with others	1.6 (2.7)	1.8 (2.7)	1.1 (2.6)	0.455
Sleep	2.5 (3.1)	2.6 (3.1)	2.2 (3.2)	0.886
Enjoyment of life	2.5 (3.1)	2.7 (3.0)	2.1 (3.3)	0.969

[a]Significantly more intense in the dialysis group than the palliative-care group, $P < 0.05$.

Yong et al.
Palliative Medicine 2009

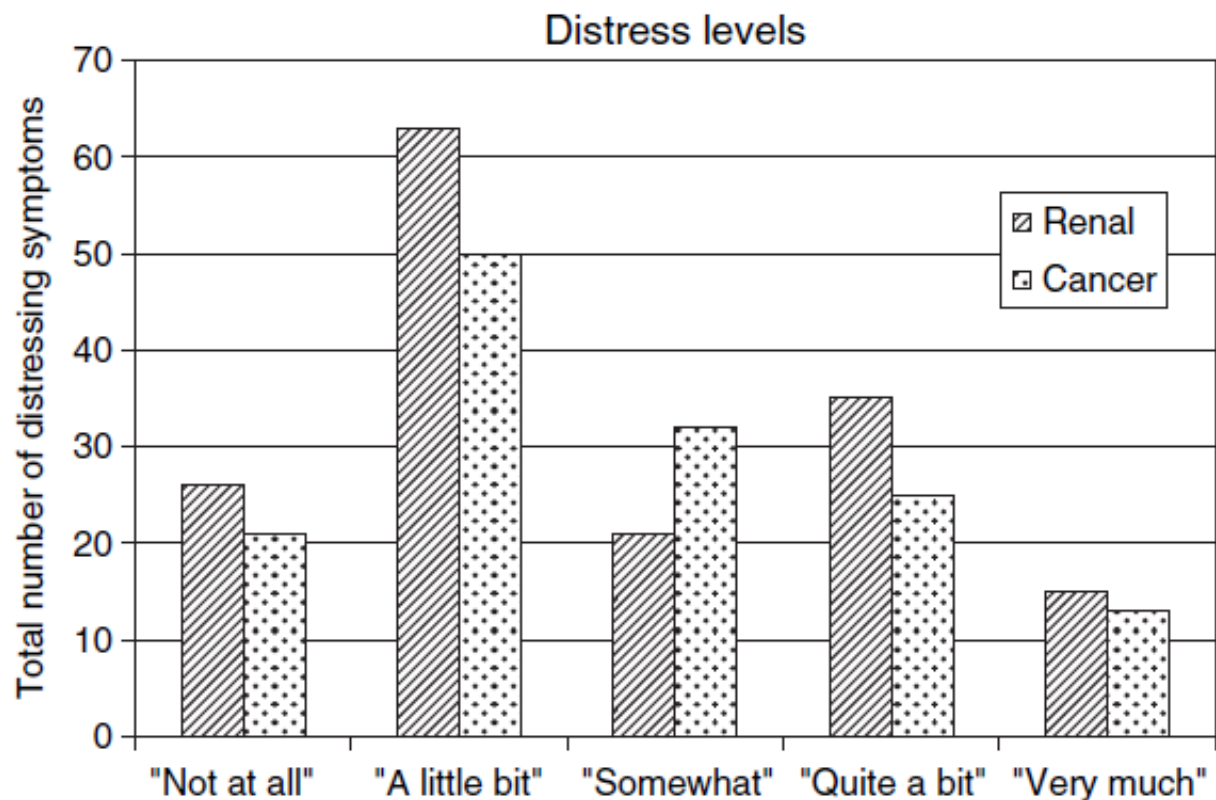# Symptom burden in ESKD is similar to terminal cancer

Figure 1 Bar graph showing physical symptoms and levels of distress reported by each group.

Saini et al.
Palliative Medicine 2006

Table 3. Symptoms and QOL at the initial clinic visit and change in symptoms and QOL over time in the RSC-NFD and predialysis groups

	Predialysis	RSC-NFD	P Value
Symptoms	133	65	
No. of symptoms at first visit (MSAS), mean (SD)	9.1 (5.3)	12.2 (5.6)	<0.001
Score > 20 at first visit (MSAS)	44 (33%)	37 (57%)	0.001
QOL			
Physical composite (SF-36)	137	63	
Score at first visit; mean (SD)	38 (11)	29 (8)	<0.001
Mental composite (SF-36)			
Score at first visit; mean (SD)	50 (10)	46 (12)	0.06
QOL status	49	19	
Change of physical composite score over 12 mo			0.12
Stable	2 (4%)	3 (16%)	
Improved	20 (41%)	4 (21%)	
Worse	27 (55%)	12 (63%)	
Change of mental composite score over 12 mo			0.78
Stable	1 (2%)	1 (5%)	
Improved	26 (53.1%)	10 (53%)	
Worse	22 (44.9%)	8 (42%)	
MSAS symptom status			
Change of MSAS symptoms score from initial visit to 6 mo	84	45	
Stable	6 (7%)	3 (8%)	0.88
Improved	32 (38%)	16 (42%)	
Worse	46 (55%)	19 (50%)	
Change of MSAS symptoms score from initial visit to 12 mo	48	21	0.12
Stable	5 (10%)	1 (5%)	
Improved	15 (31%)	12 (57%)	
Worse	28 (58%)	8 (38%)	
POS-S symptom status		78	
Change of POS-S (renal) score over 6 mo			
Stable		3 (4%)	
Improved		48 (62%)	
Worse		27 (35%)	
Change of POS-S (renal) score over 12 mo		69	
Stable		3 (4%)	
Improved		49 (71%)	
Worse		17 (25%)	

Data are n unless otherwise stated. The overall initial survey response rate was 51% for both the MSAS and SF-36 forms. Missing data from follow-up visits were mostly due to deaths or else failure to return the voluntary MSAS or SF-36 forms. Data for symptom assessment using the POS-S form in the RSC-NFD group were more complete as this was conducted at the time of their clinic visit. QOL, quality of life; MSAS, Memorial Symptom Assessment Scale; SF-36, Short Form-36.

Brown et al. CJASN, Feb 2015

IMPACT ON CARERS/FAMILY

Carers of elderly dialysis patients have impaired quality of life

- Median 56 to 70 hours of care per week[1]

- All SF36 components affected

  – 32% of carers had signs of depression[1]

- Increasing carer burden with:

  - Increasing age and comorbidity[2]

  - Poor functional status and decreased QOL of elderly pts[1]

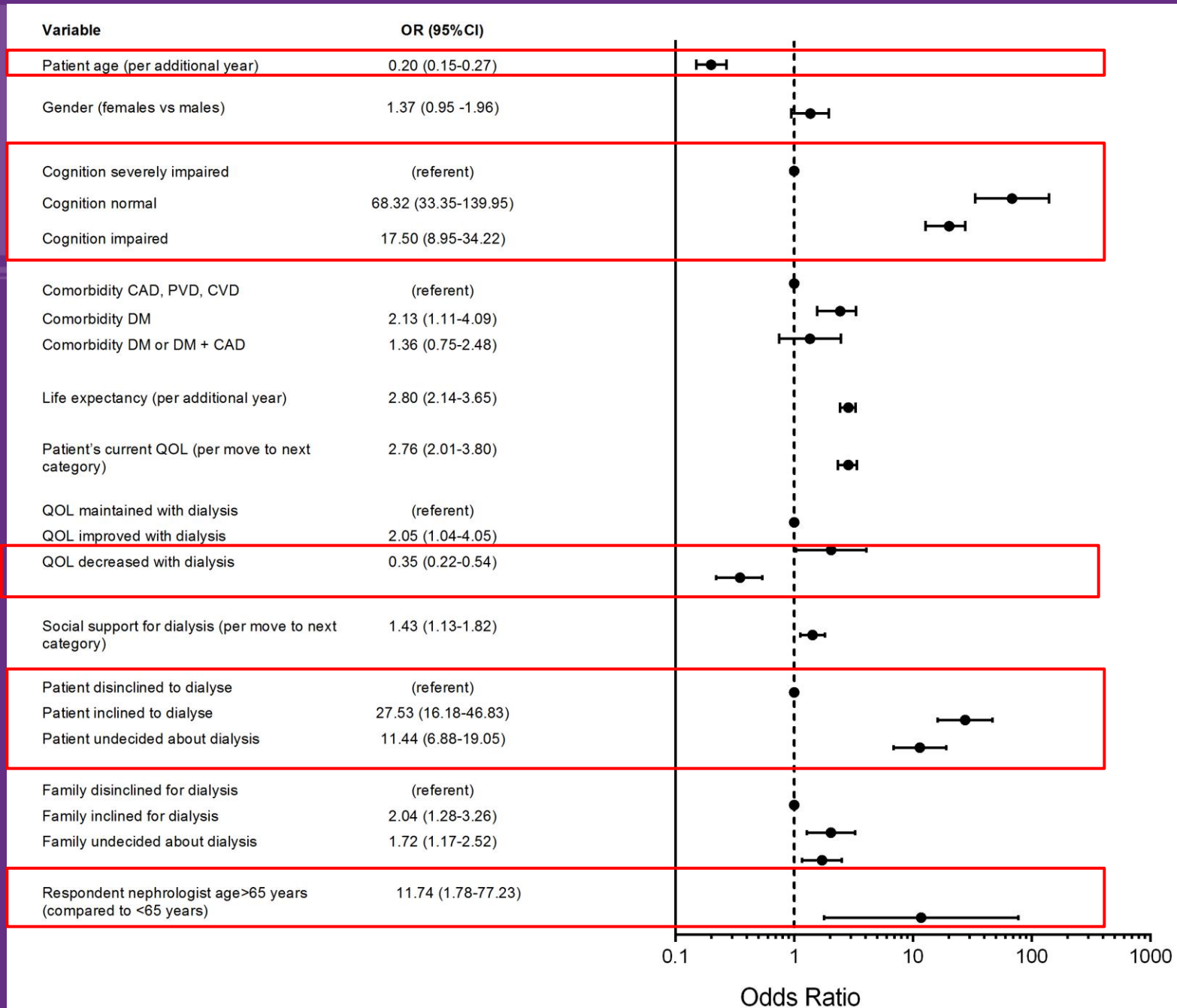- No information on carers of supportive care patients

1. Belasco et al. AJKD 2006
2. Alvarez et al. J Nephrol 2004

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Dialysis or Supportive care ?
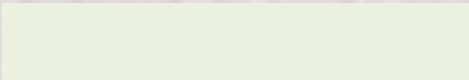
CONSIDER: (COnsiderations of Nephrologists when SuggestIng Dialysis in Elderly patients with Renal failure) study

Foote et al. NDT 2014

Variable	OR (95%CI)
Patient age (per additional year)	0.20 (0.15-0.27)
Gender (females vs males)	1.37 (0.95 -1.96)
Cognition severely impaired	(referent)
Cognition normal	68.32 (33.35-139.95)
Cognition impaired	17.50 (8.95-34.22)
Comorbidity CAD, PVD, CVD	(referent)
Comorbidity DM	2.13 (1.11-4.09)
Comorbidity DM or DM + CAD	1.36 (0.75-2.48)
Life expectancy (per additional year)	2.80 (2.14-3.65)
Patient's current QOL (per move to next category)	2.76 (2.01-3.80)
QOL maintained with dialysis	(referent)
QOL improved with dialysis	2.05 (1.04-4.05)
QOL decreased with dialysis	0.35 (0.22-0.54)
Social support for dialysis (per move to next category)	1.43 (1.13-1.82)
Patient disinclined to dialyse	(referent)
Patient inclined to dialyse	27.53 (16.18-46.83)
Patient undecided about dialysis	11.44 (6.88-19.05)
Family disinclined for dialysis	(referent)
Family inclined for dialysis	2.04 (1.28-3.26)
Family undecided about dialysis	1.72 (1.17-2.52)
Respondent nephrologist age>65 years (compared to <65 years)	11.74 (1.78-77.23)

Odds Ratio

Less likely to recommend dialysis   More likely to recommend dialysis

48

CONSIDER - results

- **Trade-offs between QOL and survival**

- Nephrologists were willing to forgo 12 months of patient survival (95% CI 10-14 months) in order to avoid a substantial QOL decrease with dialysis initiation (decrease in QOL by one level, e.g. from medium to low QOL)

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

CONSIDER - Summary

- Nephrologists were much more likely to recommend dialysis to those with normal cognition and those inclined towards dialysis

- Patient QOL was prominent in decision-making

- Patient preference was also important

SEEK – **S**tudy of **E**xperiences of **E**lderly persons with advanced **K**idney disease – a qualitative study

SEEK – **S**tudy of **E**xperiences of **E**lderly persons with advanced **K**idney disease

- Patients aged ≥75 years attending St George Hospital clinics (pre- dialysis and supportive care) from Dec 2010 to Aug 2011.
- Semi-structured interviews using open-ended questions
- Interviews:
  - In participants' homes
  - Audio recorded and transcribed verbatim
  - Conducted until thematic saturation was obtained

Patient characteristics	Number (proportion) or Median (range)
Total number	21
Median age	82(75-94)
Male	15(68)
Caucasian ethnicity	22(100)
NESB	2(9)
Married	16(73)
High school education and above	20(91)
Living alone	4(18)
Median Karnofsky Performance Scale	80(50-100)
Median Charlson Comorbidity Index	8(5-15)
History of diabetes	9(41)
Median Creatinine	266(175-532)
Median estimated GFR	18(10-33)

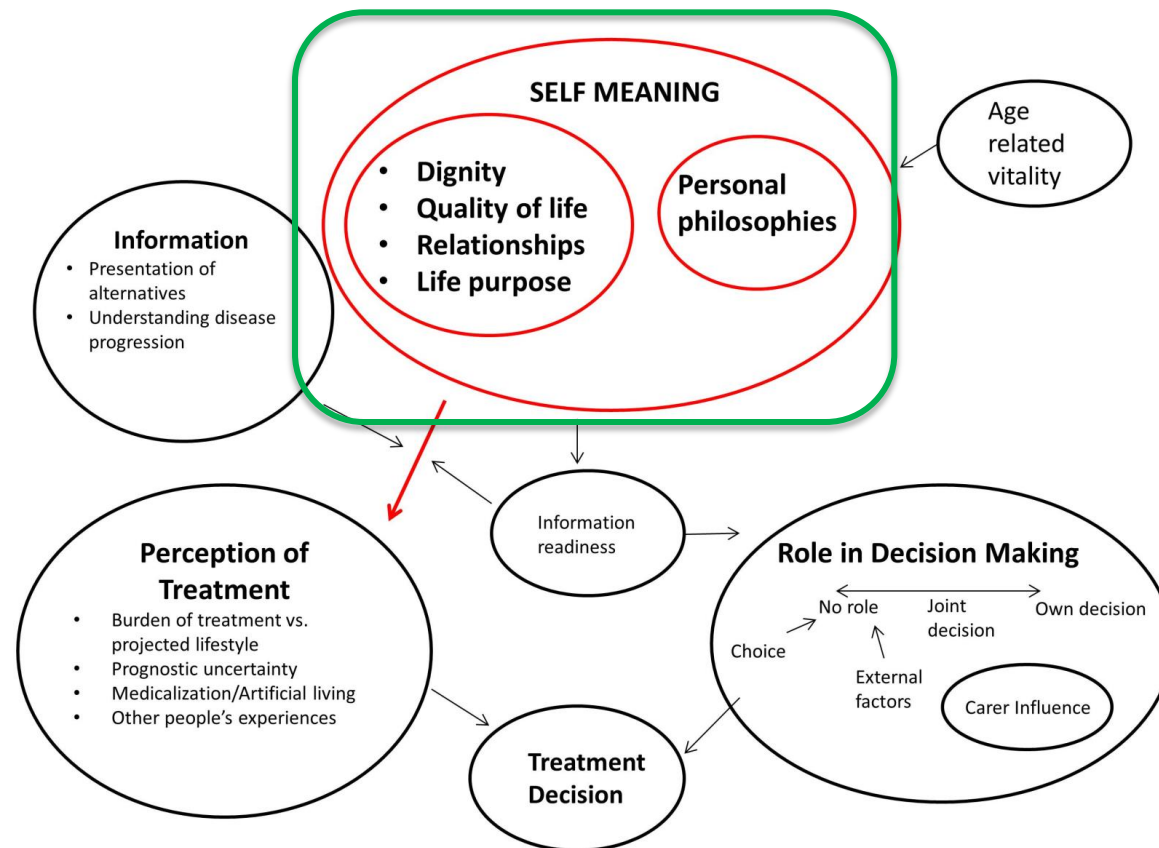| Carer characteristics	Number (proportion) or Median (range)
Total number	9
Median age	82(38-90)
Male	5 (56)
Caucasian ethnicity	9(100)
Partner of patient	7(78)
Living with patient	8(89)
High school education and above	6(67)
Unemployed/Home maker	7(78)
Immediate caregiving responsibilities	4(44)
Median Charlson Comorbidity Index	0

SEEK – Analysis

- Grounded theory approach
  - Transcripts were read and coded using NVivo10
  - Mind-mapping approach was used to develop an analytic thematic schema.
  - Researcher triangulation was used to ensure that coding captured relevant concepts and reflected the primary data

SEEK – main themes

- Identified 5 main themes:
  - Self-meaning
  - Age related vitality
  - Information/information needs
  - Perception of treatment
  - Role in Decision Making

SELF MEANING

- **Dignity**
- **Quality of life**
- **Relationships**
- **Life purpose**

Personal philosophies

Age related vitality

Information
- Presentation of alternatives
- Understanding disease progression

Perception of Treatment
- Burden of treatment vs. projected lifestyle
- Prognostic uncertainty
- Medicalization/Artificial living
- Other people's experiences

Information readiness

Role in Decision Making

No role   Joint decision   Own decision

Choice

External factors

Carer Influence

Treatment Decision

Self meaning

Self meaning

- Participants with an overall realised self meaning favoured supportive care

P83M: If you have had a fortunate life which I have...you see your family grow up around you. I've done my bit, so when the time comes, I'll bow out as gracefully as I can...

P83M: The decision (not to have dialysis) was not difficult....because you're content with your life. You've done what you wanted to do.

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Self meaning

- Others felt that they had an unrealised self meaning, thus minimising the burden of dialysis

    P77M: I don't think the dialysis will affect my life much... I'll probably go to bed a bit earlier that's all.

    P75M: Basically like today, I'd sit around, read the paper, then watch TV... so if I'm at the hospital instead of watching TV...that's the 3-4 hours I'd have dialysis.
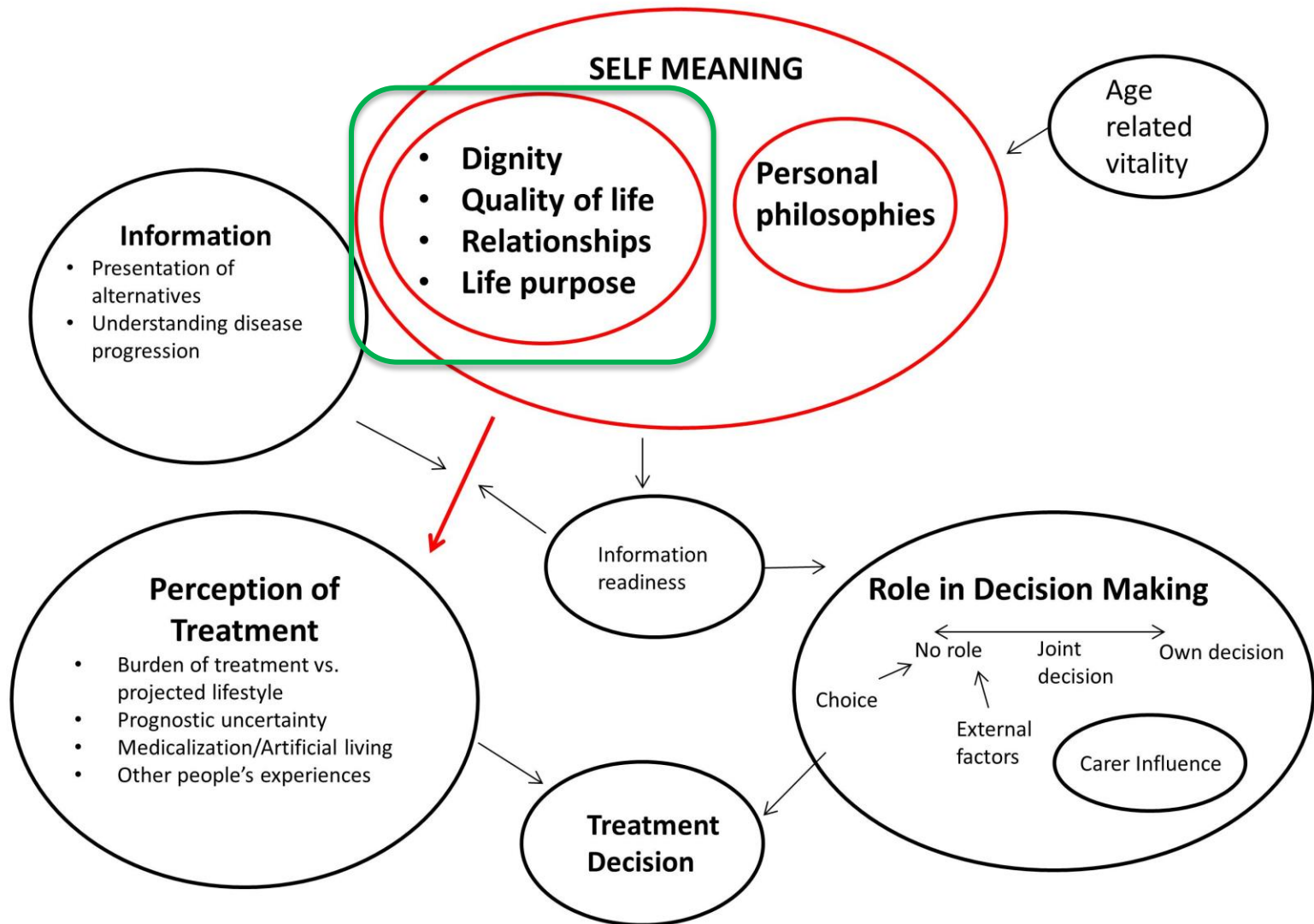
Self meaning - Dignity

- Self-respect and the ability to control their own lives

- Tied to independence

P77M : It depends on what I was up to...if I was unable to do things for myself...no I don't think I would take it (dialysis).

P83M: If you've got to have dialysis...You're not in charge, you're not steering the boat...the boat is steering you and once you've lost control...I couldn't handle it. I've always run my own race.

Self meaning – Quality of life (QOL)

- Lifestyle and freedom

- Influenced by functional status and symptoms

- Those content with their QOL sought to maintain this through their choice

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Self meaning – Quality of life

C90F: We love our home, we're happy in it. We don't need to go on holidays or anything like that...the night-time dialysis would allow you to do that if you wanted to but we're happy just staying here.

P81M: I've never really entertained the idea of dialysis. I think I would just give up if I had it. My daily routine - I exercise in the mornings, go out about midday and don't come home 'til evening. I go to the club, have a punt, watch sport...I'm quite happy with that.

Self meaning – Relationships

- Some patients felt that they were a burden and made choices to minimise this

P75F: It's time-consuming. It would be hard to get someone to take me to hospital and bring me home. The girls wouldn't have time for that, M works shift work so I couldn't ask him. J doesn't drive...

- Others felt that they contributed to relationships, feeling that the potential burden of dialysis on relationships was acceptable

Self meaning – Life purpose

- Fulfilment of life purpose seemed to help patients accept their mortality
- Patients with ongoing aspirations deemed that potential longer survival with dialysis allowed them more time to achieve goals

P85F: I have babies coming in May and I've got a number ten great grandchild coming so I've got to be here for that...

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA

Self meaning – Personal Philosophies

- Underpinned how patients viewed themselves and coped with illness

- An attitude of acceptance was commonly applied to illness, treatment and mortality

- *P83M: at 83..If your time is up, you've had your time. You've done everything you want to do... game's over...accept it.*

THE GEORGE INSTITUTE
for Global Health   AUSTRALIA
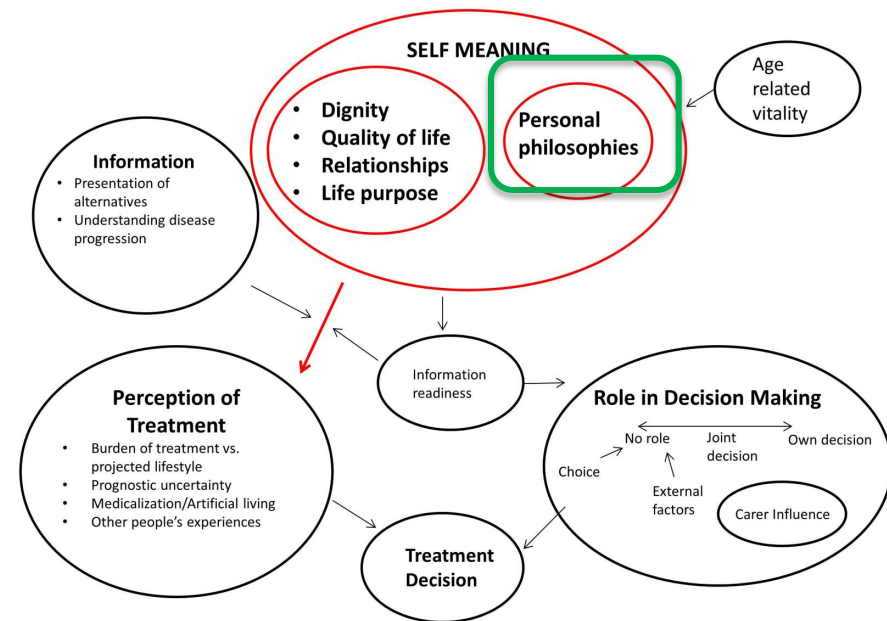
Self meaning – Personal Philosophies

- A "fatalistic" philosophy was also described by many

P83M: If it comes to the stage where I need dialysis, I would let nature take its course....fatalistic... Dialysis interferes with the natural progression of things. Once you get to a certain stage… It's the natural course...

- Strong spiritual beliefs held by some helped them to accept their illness and cope with hardship

P83M: My faith helps me deal with life. My disease is a part of life…. When the time comes…say your prayers, make peace with the boss upstairs and see how you go in the next life.
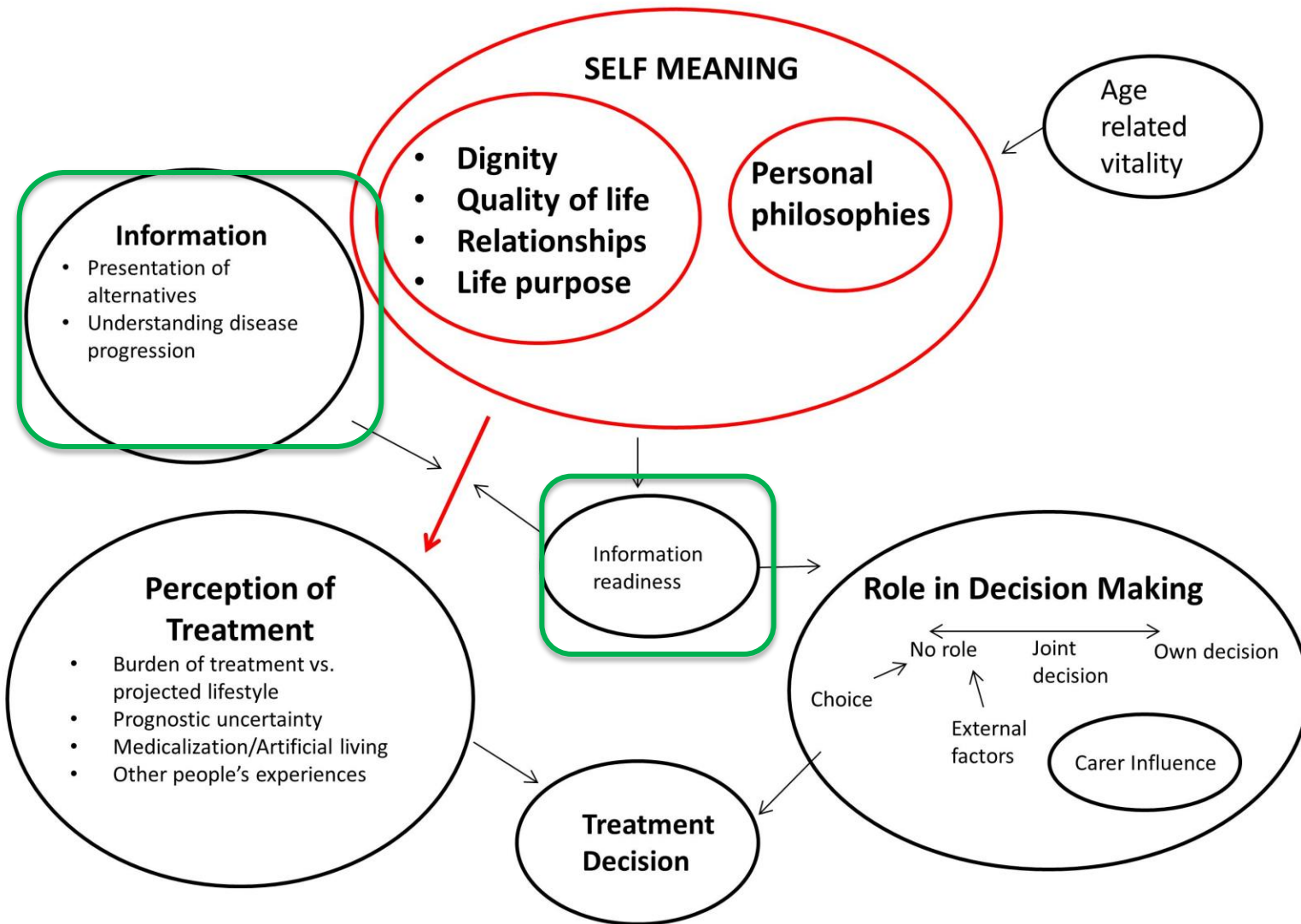
Age related vitality

- Familiarity with death
- Having lived a full life
- Different expectations of acceptable lifestyle
- Different life goals
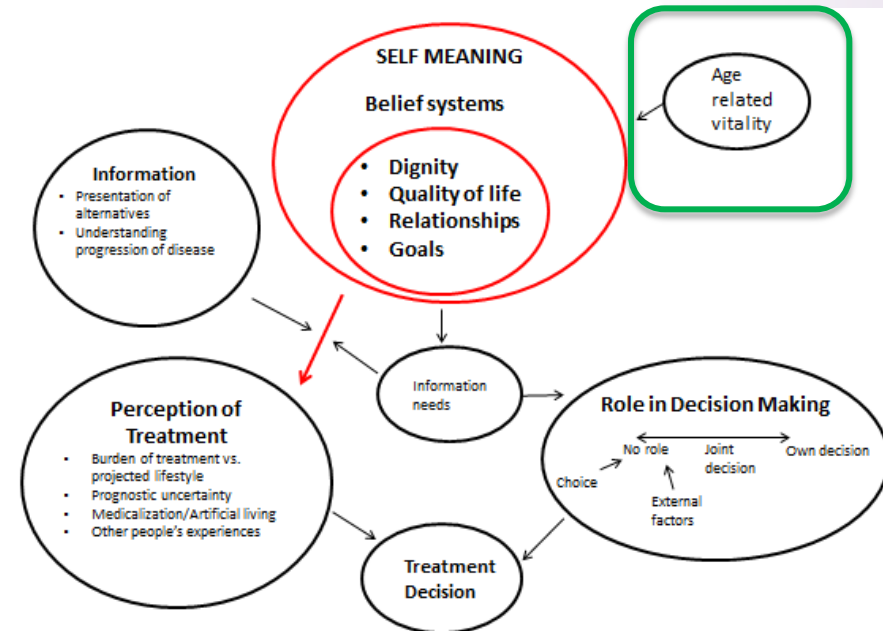
Age related vitality

C82M: at this stage, all our friends have died from natural causes or car accidents before they've reached our age. So, it's no great shock…

P75M: I can't do any more now…can't scale Mt Everest. Doesn't matter to me… As long as things are tidied up for when I'm not here…I've got the basics taken care of.

SELF MEANING

- **Dignity**
- **Quality of life**
- **Relationships**
- **Life purpose**

Personal philosophies

Age related vitality

Information
- Presentation of alternatives
- Understanding disease progression

Information readiness

Perception of Treatment
- Burden of treatment vs. projected lifestyle
- Prognostic uncertainty
- Medicalization/Artificial living
- Other people's experiences

Role in Decision Making

No role   Joint decision   Own decision

Choice

External factors

Carer Influence

Treatment Decision

Information

- Information readiness

  P83M: Doctor gave us a little résumé...what's the worst and best case scenario. It's good to have knowledge so you can make the most of the time you've got.

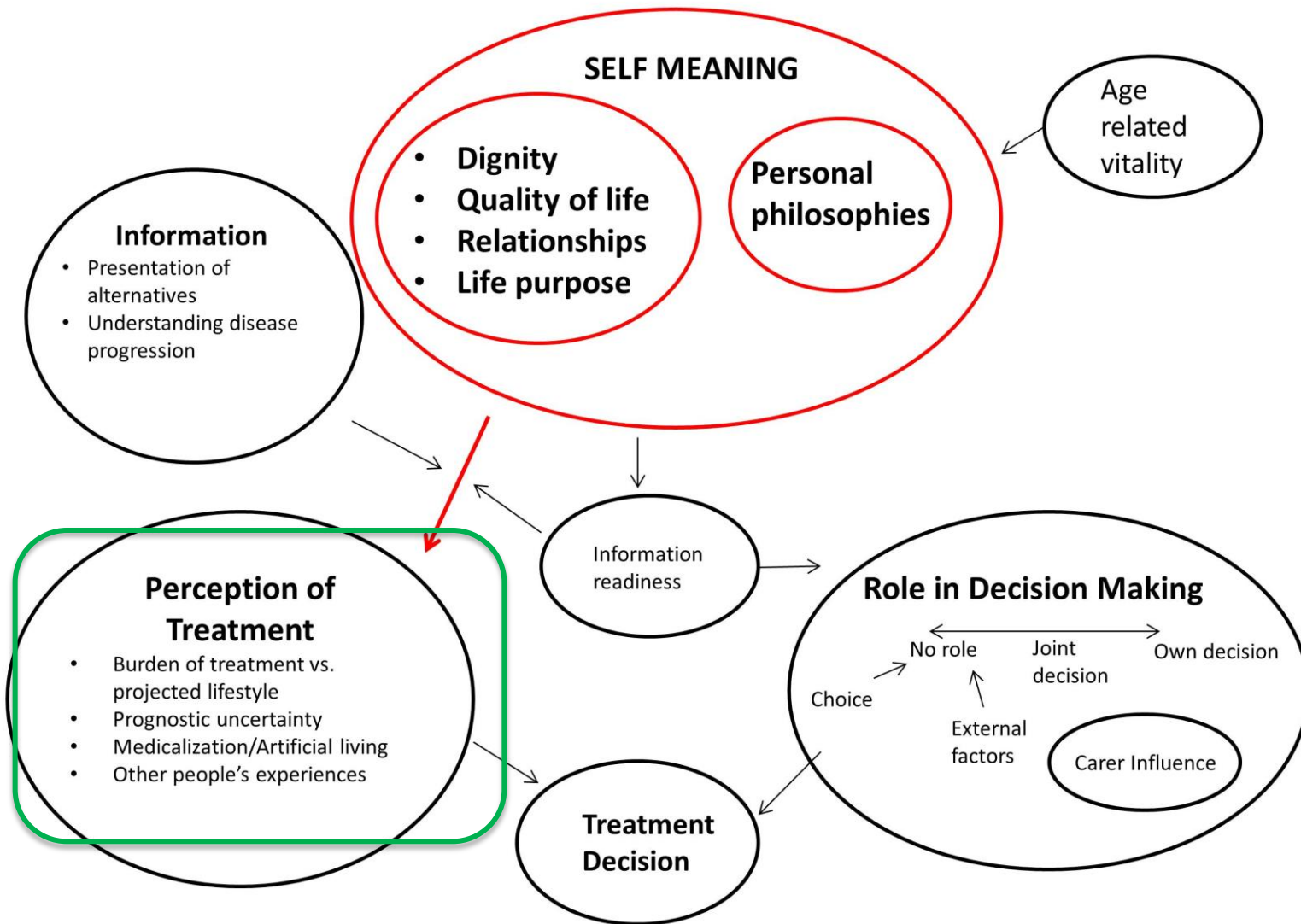- Understanding disease progression assisted with preparation and acceptance

  C82M: It's been a process coming to grips with this and just accepting each stage as it's developed...I think we've done that.

Information

- Presentation of alternatives

P80M: The only option is dialysis. There is no other treatment as far as I'm aware - it's as simple as that- it's dialysis or the box.

P84M: I don't know what it is (supportive care) to tell you the truth. I take tablets, I don't know what the tablets are for…

SELF MEANING

- **Dignity**
- **Quality of life**
- **Relationships**
- **Life purpose**

Personal philosophies

Age related vitality

Information
- Presentation of alternatives
- Understanding disease progression

Perception of Treatment
- Burden of treatment vs. projected lifestyle
- Prognostic uncertainty
- Medicalization/Artificial living
- Other people's experiences

Information readiness

Role in Decision Making

No role   Joint   Own decision
           decision
Choice
           External
           factors   Carer Influence

Treatment Decision

Burden of treatment vs. projected lifestyle

- Treatment alternatives weighed up with respect to burden of treatment vs. projected lifestyle
- Some believed that dialysis would lead to an inability to maintain their current lifestyle

  P80F: Dialysis would have slowed me down further . I've never had to stop so it would have slowed me down terrible. I just think I would slow down too much."

- Others perceived lifestyle benefits for dialysis

  P75M: I don't want to mess around with so many bloody tablets.... I have 13 in the morning...rather put up with making a trip to the hospital for dialysis. At least it's getting out of the house. I don't like sitting at home...

Burden of treatment vs. projected lifestyle

- Acceptable quality of life on dialysis was critical

  C82M: Do you want to be part of a machine for four years or do you want to have family around you and be able to watch television and those sort of things...

Prognostic uncertainty

- Difficult to reconcile this with treatment alternatives

  P83M: You're left in limbo, in a vagueness…let's see how we go. That doesn't help anybody.

- Concrete survival estimates were interpreted according to participants' self meaning

  C83M: When you're eighty and I'm more…what's the difference between 1 and 3 years?

  C80F: What shocked me was when doctor said if you don't go on dialysis, you'll have 12 months and if you do then 3 years. We had no idea…. as soon as we found out…12 months that was it…

Medicalization/Artificial living

- Dialysis was likened to living artificially
- Compromise between this and self meaning differed for participants

P84M: I didn't want to be on a (dialysis) machine like a vegetable…Doesn't appeal to me - laying down and keeping you alive. You become nothing.

P80M: Dialysis is a dirty word, sort of thing that a healthy being doesn't accept, being put on a machine… but it's diminished with time and you learn to accept different things through life.

Other people's experiences

- Other people's dialysis experiences were remarkably influential
- Patients who construed negative peer influences equated this with negative impact on themselves

P83F: I was in hospital and a lady would come back from dialysis and she'd be a real mess. She looked sick…Fancy having to go through that…

P83M: I have a friend, he's had dialysis for years and he's headed for Japan on a ship with all the dialysis people and I felt well…gee, if he can do that…

Role in decision making

- Patients manifested on a continuum regarding preferred role in decision making

    P77M: No, that's my decision. They do what they want. I do what I want. That's the way it should be. You shouldn't dictate from anybody what you want to do. I didn't ask for advice. I've just told them bugger it, it's my decision

    P80M: I've got to think about all the options and consider other people's opinions as well.

    P92M: The decision to have dialysis was an easy one because I have a profound respect for doctors especially nephrologists...

Carer influence

- Majority of carers and patients made concordant choices regarding dialysis/supportive care

- Most carers felt that patients should be primary decision makers

  C82M: I didn't want to sway her in what she was deciding...I deliberately did not go with her to see the clinician...She had to make the right decision for her...I wanted to be one stage removed from it.

SEEK – Main findings

- Decisions were not based on effectiveness of treatment but rather on interpretation of how treatment characteristics aligned with self meaning
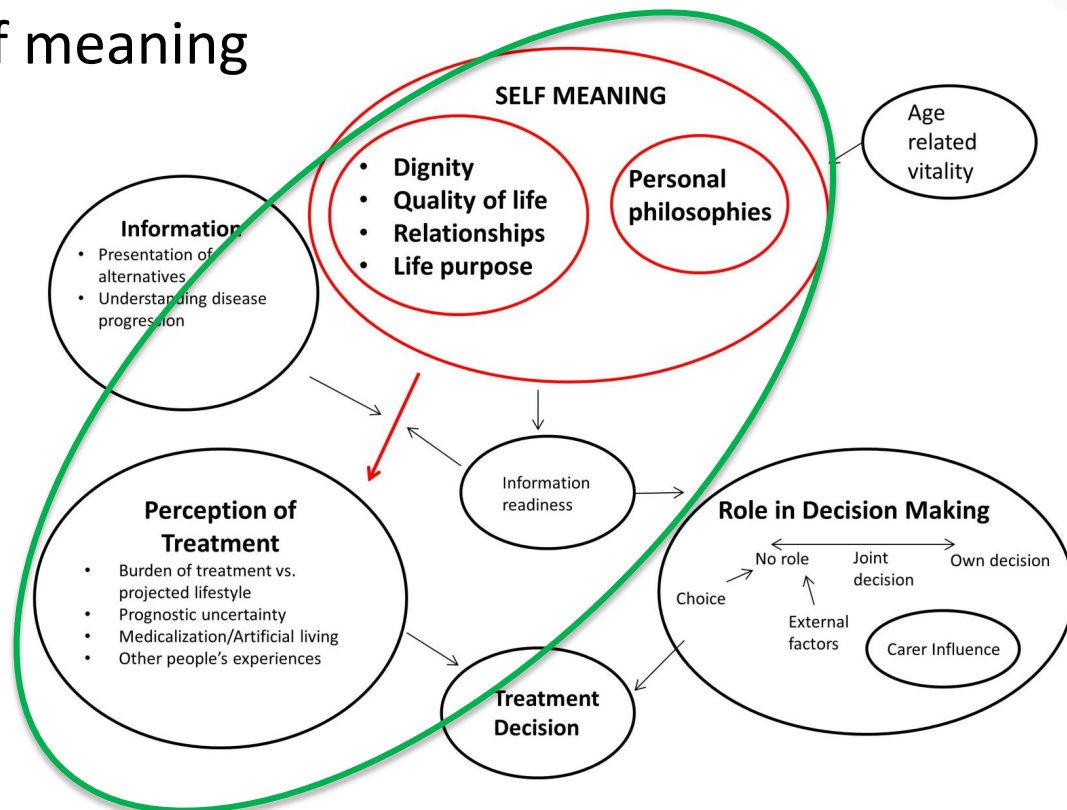
SEEK – Clinical Implications

1) Clinicians need to explore and understand patient's goals and values and tailor education/intervention to address the things important to them

2) Foster better understanding of supportive care as a treatment option

3) Delve into perceptions of other people's experiences and clarify misconceptions

Treatment decision making for ESKD patients – take home messages

- Complex and difficult process

- Understand patient perspective – "self meaning" (values, goals)

- Patient specific information for broad patient centred outcomes

Thank you to:
- Patients, carers and physicians who participated in these studies
- Renal Department at St George Hospital and particularly Prof Brown, Dr Brennan, Liz Josland and Gemma Collett
- Prof Cass, Prof Gallagher, A/Prof Jardine, Dr Morton and Dr Urban

- Questions?