

Το δίλημμα της έναρξης ή διακοπής της εξωσωματικής
κάθαρσης σε εύθραυστους ηλικιωμένους νεφροπαθείς

Ιωάννης Γ.Γριβέας, ΜD, PhD





Dialysis can be a life-extending treatment for patients of all ages, but one year mortality for >75 years old dialysis starts in the US was 41%, as compared to 28% for the those aged 65-74 and 17% for patients aged 45-64

In addition to limited life expectancy, many older adults experience functional decline and increased episodes of hospitalization after starting dialysis

Vandecasteele SJ, Kurella-Tamura MA. Patient-centered vision of care for ESRD: dialysis as a bridging treatment or as a final destination? J Am Soc Nephrol. 2014;25:1647–51.

Berger JR, Hedayati S. Renal replacement therapy in the elderly population. Clin J Am Soc Nephrol. 2012;7:1039–46.

Dialysis Options for End-Stage Renal Disease in Older People

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≥ 65 years in the US in 2008 [1]. Twenty-five years ago, 45.1% of UK nephrologists responding to a survey would not offer renal replacement therapy to a 50-year-old man with ischaemic heart disease [2]. In contrast, 15 years later, dialysis was available in the UK for high-risk patients (higher age, severe comorbidities and dependent in relation to functional status) despite a low 1-year survival of 19.2% [3]. Patient's advancing age and comorbid status no longer influences nephrologists' decision to initiate dialysis [4].





- Over time the dialysis population shifted from
A younger, healthier cohort to an older, more medically complex group of patients.
- Between 1980 and 2012
patients aged 65-74 initiating dialysis increased by 47%
while those aged ≥ 75 (older adults) increased by 300%

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✓ Quality of Life



✓ Diabetic kidney disease is the single most common cause of renal failure and accounts for 24% of patients with chronic kidney disease (CKD) in the UK

✓ CKD is often associated with other medical conditions, such as heart disease and diabetes.

There is an increased risk of mortality in patients who have advanced CKD.

✓ The lack of specific symptoms can result in people with CKD not being diagnosed or diagnosed when they have advanced stages of CKD.

Approximately one third of patients who have the advanced stages of kidney disease have a late referral to kidney services which is associated with an increase in mortality and morbidity

Wiggins J. Why Do We Need a Geriatric Nephrology Curriculum? Geriatric Nephrology Curriculum [periódico na Internet]. 2009 [acesso em 13 mai 2012]; Disponível em: <http://www.asn-online.org/education/distancelearning/curricula/geriatrics>

TABLE 1 GERIATRIC CONDITIONS THAT AFFECT NEPHROLOGY CARE (ADAPTED FROM WIGGINS, 2009)¹⁴

Visual impairment	Polypharmacy	Functional limitations
Auditory impairment	Emotional problems	Lack of social support
Malnutrition / weight loss	Urinary incontinence	Financial difficulties
Cognitive involvement	Balance and gait impairment/falls	Home environment/safety

TABLE 2 CHARACTERISTICS OF ELDERLY SUBJECTS BEFORE CERTAIN DISEASES (ADAPTED FROM ROSNER, ABDEL-RAHMAN, WILLIAMS, 2010)²²

Disease	Elderly subject characteristics	Recommendations
Diabetes		
a) Glucose level management	Little benefit from intensive glucose level management; more prone to hypoglycemia; increased risk of drug-associated hypoglycemia. ²³	Control glucose levels and assess risk/benefit of reaching Hgb A1C < 7.0.
b) Antihypertensives	Increased risk of significant BP decrease; ²⁴ look at few advantages and side effects of ACEi/ARBs. ²⁵	Avoid significantly low BP; be careful when prescribing ACEi/ARBs.
Hypertension		
a) Goal	CV events, cognitive impairment, incapacity, and death may be greater risk factor for elderly patients than progression to kidney disease. ²⁶	Consider other outcomes as goal to manage BP in addition to delaying renal function progression.
b) Specific drug	ACEi/ARBs may cause AKI and hypercalcemia, with higher incidence in elderly subjects. ²⁷	Need to perform more lab tests after start of ACEi/ARBs; diet changes; chronic administration of ion exchange resins may be needed; limit use of drugs that increase potassium levels.
Glomerulonephritis	Albuminuria increases with age; ²⁸ elderly with proteinuria are at significant risk of function loss in 5 years; ²⁹ albuminuria is associated with increased risk of dementia, HTN, and CVD; ²⁹ clinical manifestations of glomerular diseases are scarce in elderly patients.	Is the meaning of albuminuria different in elderly patients than in young subjects? Consider more biopsies in this group and risks/benefits of using immunosuppressants aggressively.
Heart disease	Diagnose acute coronary syndrome in elderly CKD patients may be challenging, as non-invasive tests have varying sensitivities and specificities, ³⁰ clinical presentation is uncommon ³¹ and interpretation of standard lab markers is difficult. ³²	Be careful when doing the workup for acute coronary syndrome in elderly individuals.
Vascular disease	Increased incidence of renal artery stenosis. ³³ Response to carotid baroreflex is usually attenuated and vasodilating antihypertensives may introduce dizziness and postural hypotension.	Markers required to predict benefit from interventions for renal vascular disease; caution when using ACEi and ARBs
Anemia	High prevalence of anemia. ³⁴	Consider target for Hgb levels, specially if the patient has history of vascular disease, pro-thrombotic conditions such as tumors, or poorly controlled BP
Nutritional status	The body mass index is not adequate to assess nutritional status because of changes in body composition. ³⁵	Address malnutrition early on, as it is a marker for death. ³⁶ The impact of obesity is controversial. ³⁶
Mineral and bone disorder	Osteoporosis and osteoporotic fractures are prevalent. ³⁷ Age is a risk factor for adynamic bone disease. ³⁸	Observe calcium in dialysate and assess bone mineral density. ³⁸

GFR-Proteinuria

eGFR <30ml/min/1.73 m²,


AKI

alb /cr r>300 mg/gm.or
sustained decline in
renal function of >5
ml/min/1.73 m²/year



Between 1996 and 2009 the percent of "early", at eGFR >10 ml/min/1.73 m², US dialysis starts in older adults increased from 25% to 62%

- Rosansky SJ, Clark WF. Has the yearly increase in the renal replacement therapy population ended? *J Am Soc Nephrol.* 2013;24:1367-70
- Rosansky SJ, Cancarini G, Clark WF, Eggers P, Germaine M, Glasscock R, et al. Dialysis initiation: what's the rush? *Semin Dial.* 2013;26:650-7.
- Nesrallah GE, Mustafa RA, William FC Bass A, Barnieh L, Hemmelgarn BR, Klarenbach S, et al. Canadian Society of Nephrology 2014 clinical practice guideline for timing the initiation of chronic dialysis. *CMAJ.* 2014;186:112-7



Failed to demonstrate a survival benefit for "early start" dialysis

Recent guidelines, which recommend deferring dialysis until patients have low levels of eGFR (<6 ml/min/1.73 m²) unless a patient is symptomatic at a higher e GFR level

REVIEW

Open Access



Treatment decisions for older adults with advanced chronic kidney disease

Steven J. Rosansky^{1*}, Jane Schell², Joseph Shega³, Jennifer Scherer⁴, Laurie Jacobs⁵, Cecile Couchoud⁶, Deidra Crews⁷ and Matthew McNabney⁸

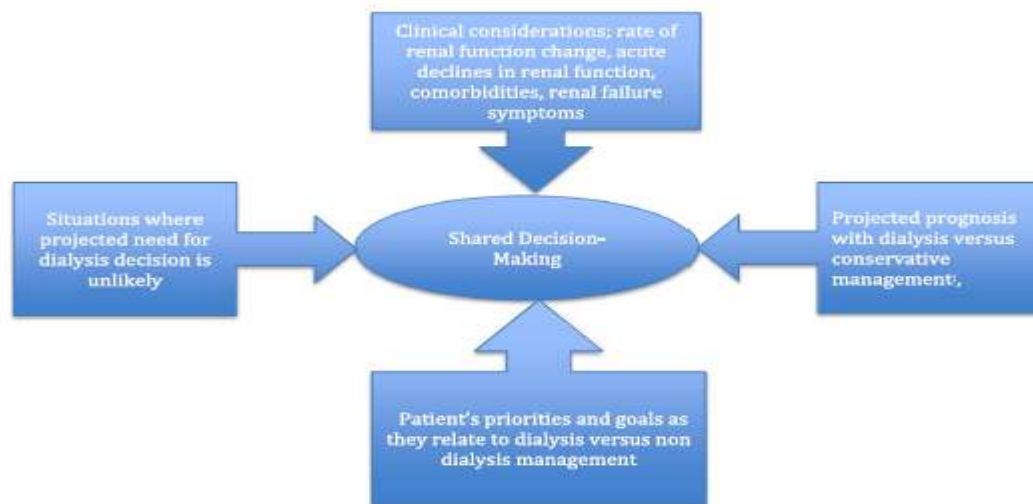


Fig. 1 Framework for management of advanced CKD in older adults. The competing risk of death from non renal causes due to comorbidities and slow loss of renal function, $< 3 \text{ ml/min/1.73 m}^2/\text{year}$ of eGFR [25, 28–30], makes the likelihood of the need for a dialysis decision low. Patient's comorbidities and other parameters are used in tools for survival projections ([34, 35, 38–46] <https://www.qxmd.com/calculate/calculator/3-month-mortality-in-incident-elderly-esrd-patients>). High comorbidity and poor functional status may eliminate any dialysis survival advantage [2, 6, 14, 18, 44, 45]. A patient's priorities and goals should be considered in conjunction with advantages and disadvantages of dialysis (listed in Table 2), in the shared decision process



1

Rate of loss of renal function and the potential need for dialysis

methodologies) [23–25]. As slope based methodologies to determine rates of renal decline are not readily available to clinicians, a simpler calculation uses a patient's initial and final or the average of first and last year's eGFRs to calculate their change in eGFR per year [Table 1] [25–27]. This estimate makes several assumptions: a) that eGFR declines (increases and stable eGFRs are not uncommon; b) that eGFR approximates true GFR (this assumes stable muscle mass and the lack of an unusual dietary pattern or body habitus), c) that the eGFR declines linearly (non linear patterns may occur in 40% of patients [24]); and c) that patients do not have episodes of AKI, during the measurement interval. Using

2

Use of a patient's rate of renal function decline and intensity of comorbidity, to help predict need for dialysis and post dialysis initiation survival

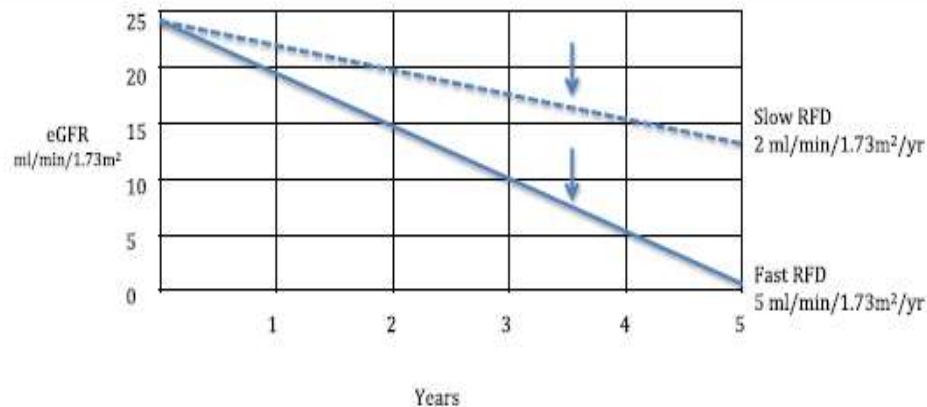


Fig. 2 Use of estimated rate of renal function decline (RFD) and survival to help plan for future dialysis needs. Suggested method of calculation of RFD, see Table 1. Hypothetical 75 year olds with baseline eGFR of 25 ml/min/1.73 m², one with slow RFD, dotted line, and one with fast RFD, solid line. In contrast to fast RFD patient, slow RFD patient unlikely to face dialysis decision [25, 28–30]. Vertical arrow indicates a projected survival of 3.5 years [37]

Table 1 Clinical considerations for discussions about dialysis versus conservative management^a

Clinical Issues	Suggested Track ^b		Comments
	Dialysis ^c	Conservative ^d	
Renal Function Trajectory (RFD)			RFD defined as rate of decline of a patient's estimated GFR (eGFR) per year ^e
Slow <3 ml/min/1.73 m²/year^f			
Low Comorbidity ^g		□ ^h	Patients are unlikely to be faced with a dialysis decision, but if their RFD increases, or they have an AKI episode, they may be good candidates for chronic dialysis.
High Comorbidity ⁱ		□□□	These patients are the most likely to remain in a conservative care track due to slow loss of renal function and high probability of death from comorbidity related issues.
Medium 3–5 ml/min/1.73 m²/year^f			
Low Comorbidity	○		Compared with patients who have a slow RFD, these patients are more likely to require dialysis, especially if starting from an eGFR close to 15 ml/min/1.73 m ² (see Fig. 2).
High Comorbidity ⁱ		□□	Due to the relationship between faster RFD and worse survival [23, 36], these patients are likely to die before dialysis is required and therefore remain on a conservative track.
Fast >5 ml/min/1.73 m²/year^f			
Low Comorbidity	○○		These patients are the most likely to require dialysis and should be offered all treatment modalities, including renal transplant [2].
High Comorbidity			Likelihood of remaining in conservative track may be low for most patients. Patient and family input with emphasis on a patient's treatment goals is critical (Fig. 1, Table 2). Short survival on dialysis likely.
Acute Kidney Injury (AKI)			Defined as patients who have a sudden sustained serum creatinine increase e [3] and most often uses a serum creatinine of ≥2x baseline creatinine [51]. Dialysis may in many cases be initiated "early" (eGFR > 10 ml/min/1.73 m ²) [50, 52–54] and eGFR may overestimate true GFR [7, 52].
Low Comorbidity	○○		If patients have renal failure symptoms dialysis may be necessary. Preemptive dialysis, without a conventional dialysis indication, has not been shown to be beneficial [53, 54]. Recovery of renal function should be tracked [81, 82].
High Comorbidity		□□	Non-dialysis management should be considered during joint decision discussions due to a predicted short survival after dialysis initiation. Surrogate decision makers may choose dialysis if patients have not expressed a desire for non-dialysis management [19].

3-Month Mortality in Incident **Elderly** ESRD Patients

Estimate the risk of early death (at 3 months) in elderly patients starting **dialysis**

Gender

Age

Model has not been validated for patients < 75 years of age

75-84

85-89

≥90

Mobility?

Walks without help

Needs assistance with walking

Totally dependent

Congestive Heart Failure?

Dysrhythmia

Active Cancer?

Severe Behavioral

Disorder?,

Serum Albumin?

<25 g/L

25-29.9 g/L

30-34.9 g/L

≥35 g/L

Peripheral Vascular Disease?

Use the Leriche classification

Grade I - Asymptomatic

Grade II - Intermittent Claudication

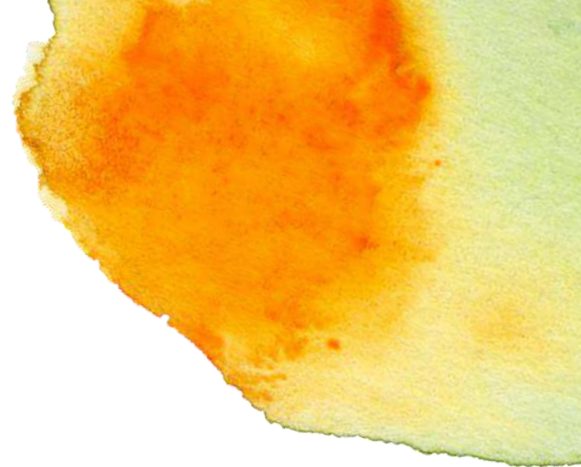
Grade III - Pain/Paresthesia at rest

Grade IV - Trophic disorder or necrosis with ulcer or gangrene

https://qxmd.com/calculate/calculator_286/3-month-mortality-in-incident-elderly-esrd-patients



Calculate by
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Medical Calculator
[QxMD Medical Software](#)



Renal Replacement Therapy in the Elderly Population

Joseph R. Berger* and S. Susan Hedayati^{†‡} *Clin J Am Soc Nephrol* 7: 1039–1046, 2012. doi: 10.2215/CJN.10411011

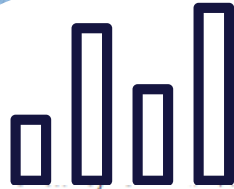
Risk Factors	Points		Total Score	6-Month Mortality Rate
Total dependence for transfers	3	}	0	8%
BMI <18.5 kg/m ²	2		1	8-10%
Peripheral vascular disease stage 3 or 4	2		2	14-17%
Congestive heart failure stage 3 or 4	2		3-4	21-26%
Severe behavioral disorder	2		5-6	33-35%
Unplanned dialysis initiation	2		7-8	50-51%
Active malignancy	1		≥9	62-70%
Diabetes mellitus	1			
Dysrhythmia	1			

Figure 1. | Six-month prognostic risk score in patients ≥75 years who initiate dialysis. Adapted from a prognostic model developed and validated by Couchoud *et al.* (30) using the French Renal Epidemiology and Information Network registry to predict 6-month mortality in ESRD patients ≥75 years who initiated dialysis. BMI, body mass index.

Thamer M, Kaufman JS, Zhang Y, Zhang Q, Cotter DJ, Bang H. Predicting early death among elderly dialysis patients: development and validation of a risk score to assist shared decision making for dialysis initiation. Am J Kidney Dis. 2015;66(6):1024-32.



dialysis conservative management. A study of US older adult incident dialysis patients, 2009-2010, demonstrated a mean starting eGFR of 12.6 ml/min/1.73 m², and a three and six month's mortality of 12.4% and 20.4%, respectively



[44]. Data from this study and a recent report from France show that one third of older adults initiating dialysis with poor functional status, as defined by strong dependency in activities of daily living, inability to ambulate or presence of an amputation, died within three months of dialysis initiation [44, 45]. Other factors associated with poor short-term survival include a high comorbidity index score [41–46], nursing home residence [44], low serum albumin [40, 41, 44, 45], low body mass index [42], significant heart failure [39, 44], and a negative response to the “surprise” question asked of the nephrologist (would I be surprised if this patient died in the next twelve months?) [43, 57]. Identifi-



3

AKI and the dialysis decision

Clinical Considerations

Although the majority of older adults with advanced CKD lose renal function slowly, 51% of an older adult (mean age 77) US dialysis population had an episode of AKI in the six months prior to starting dialysis and 65% of patients in this age group started dialysis while hospitalized

Patients who initiate dialysis during emergent situations are likely to have a higher initial eGFR, a higher level of comorbidity (including episodes of congestive heart failure) and thus may experience higher ninety-day mortality rates

❑ In an acute care setting, delaying dialysis may not be an option for a category of patients

❑ somatic protein stores in acutely ill patients

❑ "early" (absent a conventional or life threatening indication) dialysis initiation in the acute setting is not supported by available studies

❑ repeated joint decision discussions




Geriatric Giants in Dialysis

a syndrome precipitated by and often attributed to changes in cellular or molecular pathways that lead to multiple alterations in homeostatic responsiveness

The most widely accepted clinical definition is that used by Fried *et al.*, is defined as the presence of three of five criteria:

- Unintentional weight loss,
- self-reported exhaustion,
- slow gait speed,
- weakness (measured using a hand-grip), and
- low physical activity.



Since acute dialysis in hospital is a common scenario for older adults, early advanced care planning discussions should include conversations about emergent dialysis as one of the life support options. If given the

opt for a trial of dialysis, monitoring of a patient's residual renal function (by measures of interdialytic creatinine and or urea clearance) should be part of their care [7].Patients

or urea clearance) should be part of their care [7].Patients may lose 10% per month on dialysis, of their remaining endogenous renal function [7]. With this loss of endogen-

endogenous renal function [7]. With this loss of endogenous renal function, discontinuation of dialysis could potentially result in death sooner than if a dialysis trial were not chosen. On the other hand, monitoring of post

dialysis initiation renal function (especially after AKI starts) may show that a patient's renal function has improved to the point where they can discontinue dialysis [7,



4

The dialysis decision as it relates to patient symptoms

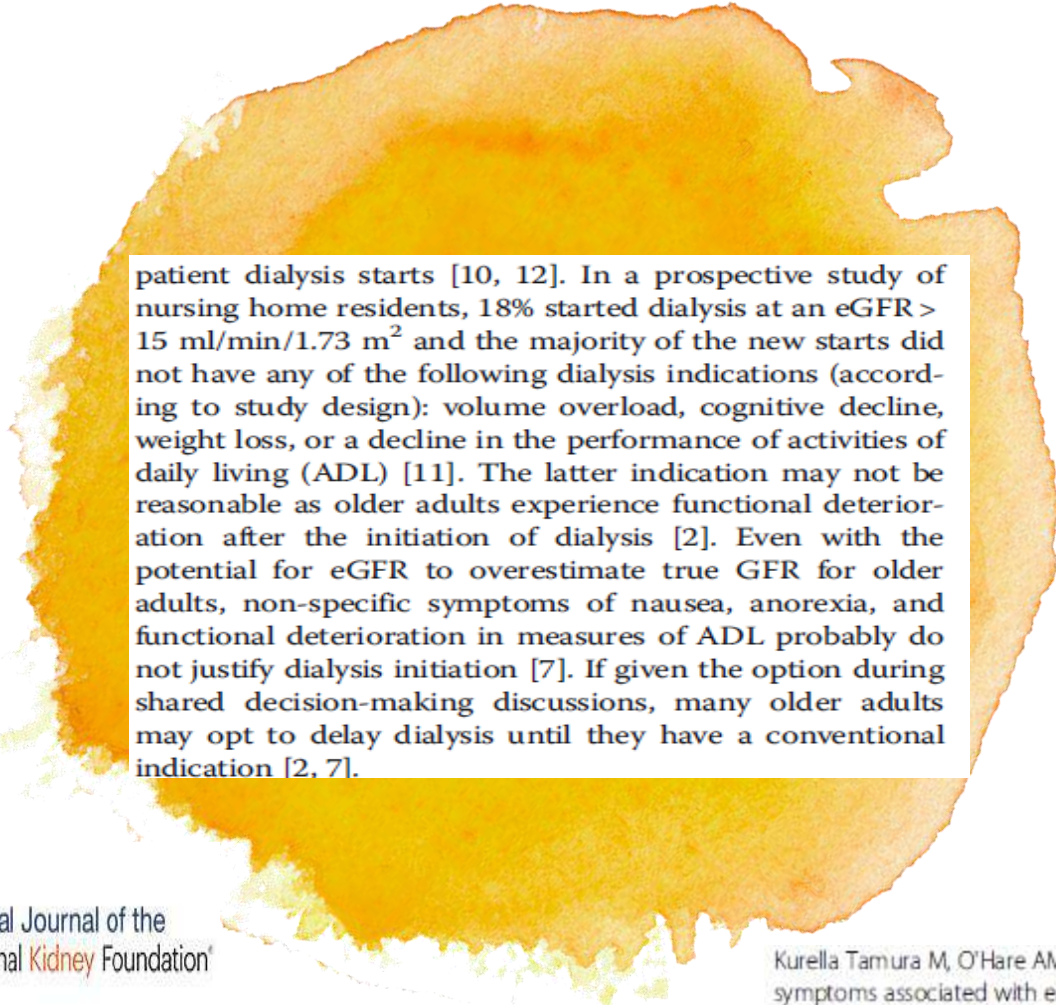
Recent guidelines for dialysis initiation have suggested a greater emphasis on a patient's symptoms, rather than a specific eGFR level, as the primary factor to consider when deciding whether to initiate dialysis [7]. In many

Rosansky SJ, Cancarini G, Clark WF, Eggers P, Germaine M, Glassock R, et al. Dialysis initiation: what's the rush? *Semin Dial.* 2013;26:650-7. PMID: 24066675.

more of a consequence of older adult comorbidities

than their level of renal function [7, 45, 60]. The conventional indications to initiate acute or chronic dialysis

nutritional



patient dialysis starts [10, 12]. In a prospective study of nursing home residents, 18% started dialysis at an eGFR > 15 ml/min/1.73 m² and the majority of the new starts did not have any of the following dialysis indications (according to study design): volume overload, cognitive decline, weight loss, or a decline in the performance of activities of daily living (ADL) [11]. The latter indication may not be reasonable as older adults experience functional deterioration after the initiation of dialysis [2]. Even with the potential for eGFR to overestimate true GFR for older adults, non-specific symptoms of nausea, anorexia, and functional deterioration in measures of ADL probably do not justify dialysis initiation [7]. If given the option during shared decision-making discussions, many older adults may opt to delay dialysis until they have a conventional indication [2, 7].



5

Shared decision-making regarding dialysis versus conservative management

Table 2 Potential advantages and disadvantages of choosing dialysis versus conservative management

Potential advantages of dialysis	Potential disadvantages of dialysis
<ul style="list-style-type: none">• Possibly longer survival [67, 69–71]• May improve appetite• May be life saving in some AKI situations• Social contact/interactions with dialysis staff and patients	<ul style="list-style-type: none">• Multiple painful access procedures [74–76]• Loss of residual renal function [7, 60]• Dialysis related fatigue hypotension, cardiac ischemia, and functional decline [7, 18, 60, 77]• Increased risk of sudden death and stroke [7, 72]• Time lost to dialysis and hospitalizations [18]• High mortality rate, first 3 months [7, 44, 45]• More likely to die in hospital versus conservative management [2, 18]• High discontinuation rates [73]

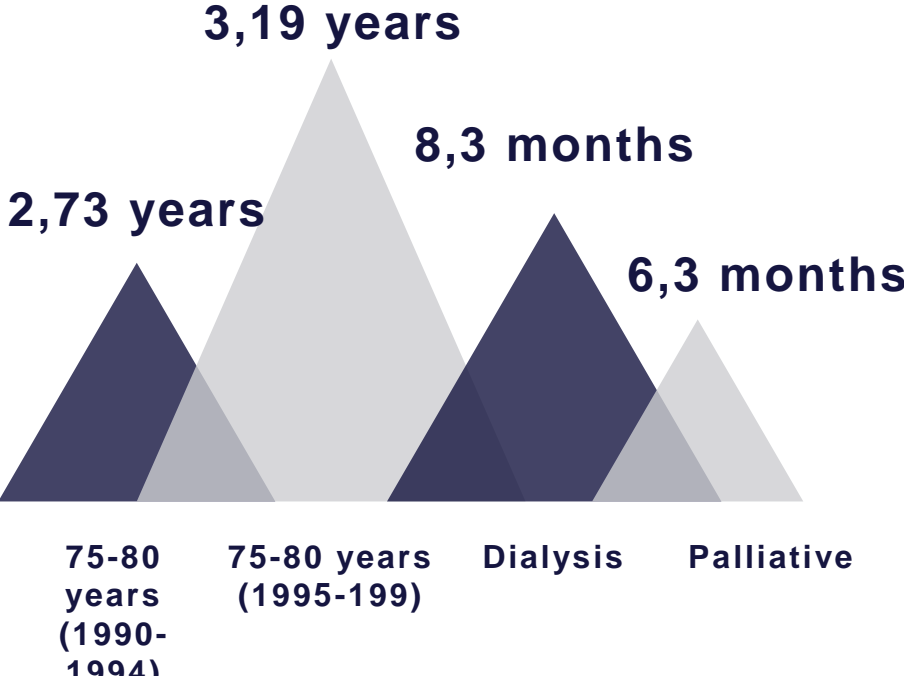
Balancing Benefit and Burden

who would be a good dialysis candidate and who would do poorly

attempts to define a subpopulation of elderly patients who would not do well on dialysis have been largely unsuccessful.

Age, functional status, mobility, and comorbidity burden are predictive of survival but do not explain sufficient variability to allow the development of a criterion score that can be used to select patients for dialysis.

Individualized assessment seems to be optimal

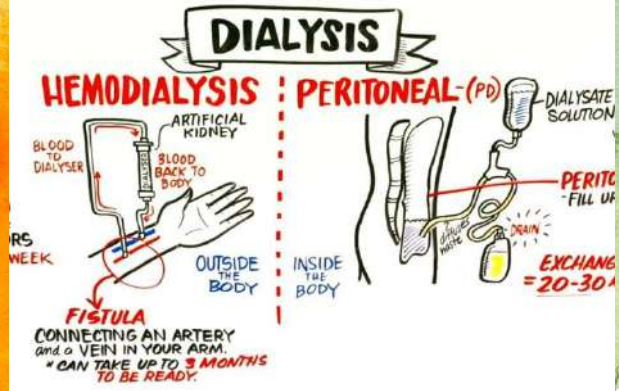


➤ The use of PD in elderly patients may be controversial.

➤ Advocates for PD still champion personal independence as the sole largest benefit of the treatment.

➤ Extrapolation of the data showing an increased mortality risk would likely shorten life only by a few weeks to months in contrast to a potentially improved quality of life

□ Differences between the two dialysis modalities, in terms of functional and cognitive burden, independence, and satisfaction with life, are lacking but may influence physician practice.



Mini-Review

Dialysis in Late Life: Benefit or Burden

Sarbjit V. Jassal*† and Diane Watson*

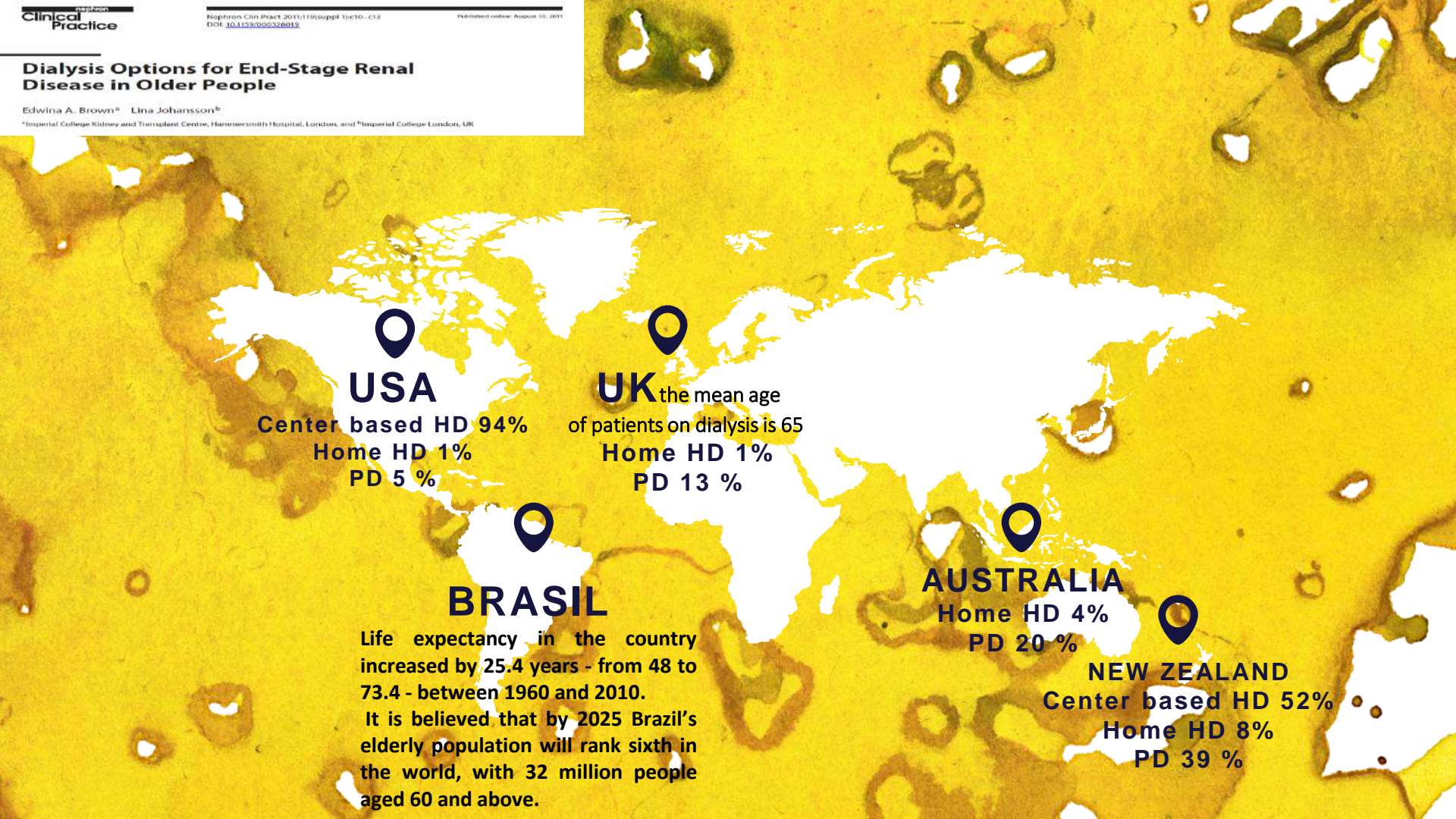
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Clin J Am Soc Nephrol 4: 2008–2012, 2009. doi: 10.2215/CJN.04610709

Dialysis Options for End-Stage Renal Disease in Older People

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USA
Center based HD 94%
Home HD 1%
PD 5 %

UK the mean age
of patients on dialysis is 65
Home HD 1%
PD 13 %

BRASIL
Life expectancy in the country increased by 25.4 years - from 48 to 73.4 - between 1960 and 2010.
It is believed that by 2025 Brazil's elderly population will rank sixth in the world, with 32 million people aged 60 and above.

AUSTRALIA
Home HD 4%
PD 20 %

NEW ZEALAND
Center based HD 52%
Home HD 8%
PD 39 %

CONCLUSION

The older patient with renal disease is different from younger counterparts on several counts—comorbidity burden, disease progression, survival, outcomes with therapy and considerations that influence quality of life. A ‘one-size-fits-all’ approach to counselling and prescribing renal replacement therapy cannot be recommended.

BMJ Open Older patient considering treatment for advanced renal disease: protocol for a scoping review of the information available for shared decision-making

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Abstract Older adults with advanced renal disease face unique challenges in their path to treatment. The purpose of this scoping review is to identify and synthesize the available information on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Introduction Older adults with advanced renal disease face unique challenges in their path to treatment. The purpose of this scoping review is to identify and synthesize the available information on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Methods The scoping review protocol was developed using the Arksey and O’Malley framework. The search strategy was designed to identify relevant literature on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Results The scoping review protocol was developed using the Arksey and O’Malley framework. The search strategy was designed to identify relevant literature on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Conclusion The scoping review protocol was developed using the Arksey and O’Malley framework. The search strategy was designed to identify relevant literature on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Strengths and Limitations of this Study This scoping review provides a comprehensive overview of the available information on the lived experience of older adults with advanced renal disease, and to identify the information available for shared decision-making.

Keywords Older adults, advanced renal disease, shared decision-making, scoping review, lived experience, quality of life, comorbidity burden, disease progression, survival, outcomes with therapy, considerations that influence quality of life.

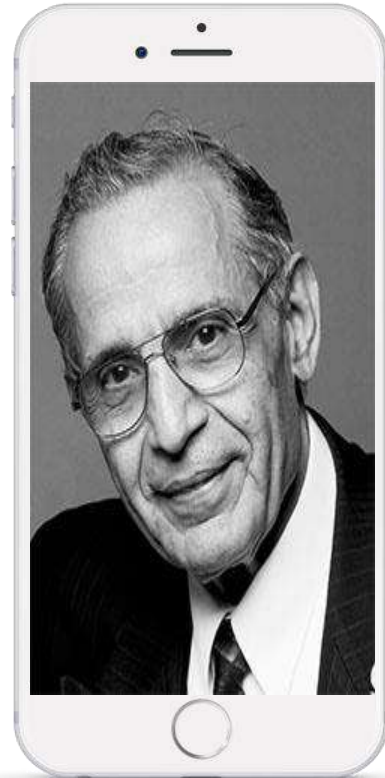
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As predicted by Oreopoulos & Dimkovic, nephrologists in the 21st century will have to practice geriatrics as amateur geriatricians.¹² To nephrologists, seeing elderly patients is always a dilemma, as these subjects require geriatric care measures that are not included in the formal training of nephrology.



Oreopoulos DG, Dimkovic N. Geriatric nephrology is coming of age. *J Am Soc Nephrol* 2003;14:1099-101. <http://dx.doi.org/10.1097/01.ASN.0000067656.48829.0E> PMID:12660346

EVERY OLDER PERSON IS DIFFERENT



The Guardian **Opinions**

Thanks!

Any questions?

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1

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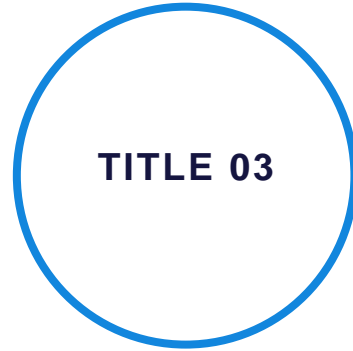
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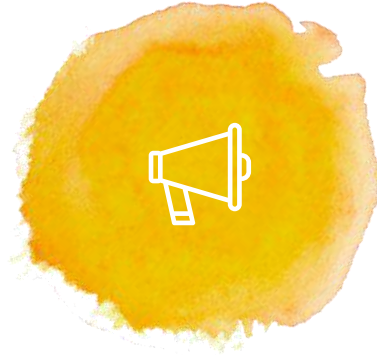
Shapes to explain ideas



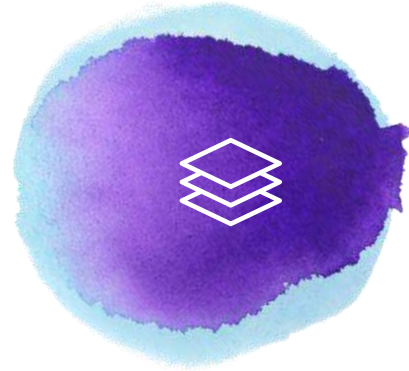
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Content A	100	200	400
Content B	\$67,000	\$56,000	\$78,000
Content C	4500	60000	\$8,000

World Map



USA

19,450000



EUROPE

19,450000



BRASIL

19,450000



56,790,500


Write here your big numbers

Geriatric Giants in Dialysis

a syndrome precipitated by and often attributed to changes in cellular or molecular pathways that lead to multiple alterations in homeostatic responsiveness

The most widely accepted clinical definition is that used by Fried *et al.*, is defined as the presence of three of five criteria:

- Unintentional weight loss,
- self-reported exhaustion,
- slow gait speed,
- weakness (measured using a hand-grip), and
- low physical activity.



Since acute dialysis in hospital is a common scenario for older adults, early advanced care planning discussions should include conversations about emergent dialysis as one of the life support options. If given the

opt for a trial of dialysis, monitoring of a patient's residual renal function (by measures of interdialytic creatinine and or urea clearance) should be part of their care [7]. Patients

or urea clearance) should be part of their care [7]. Patients may lose 10% per month on dialysis, of their remaining endogenous renal function [7]. With this loss of endogen-

endogenous renal function [7]. With this loss of endogenous renal function, discontinuation of dialysis could potentially result in death sooner than if a dialysis trial were not chosen. On the other hand, monitoring of post

dialysis initiation renal function (especially after AKI starts) may show that a patient's renal function has improved to the point where they can discontinue dialysis [7,

Features with icons



Content A

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Content B

Itself is what the end-user derives value from also can refer to the information



Content B

Itself is what the end-user derives value from also can refer to the information



Content C

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Content D

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Content D

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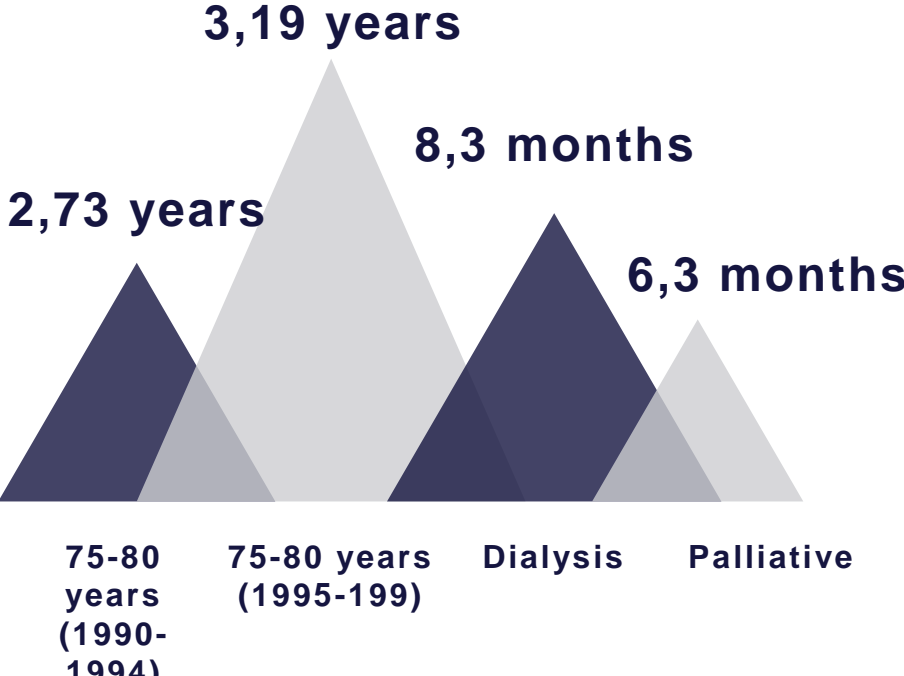
Balancing Benefit and Burden

who would be a good dialysis candidate and who would do poorly

attempts to define a subpopulation of elderly patients who would not do well on dialysis have been largely unsuccessful.

Age, functional status, mobility, and comorbidity burden are predictive of survival but do not explain sufficient variability to allow the development of a criterion score that can be used to select patients for dialysis.

Individualized assessment seems to be optimal

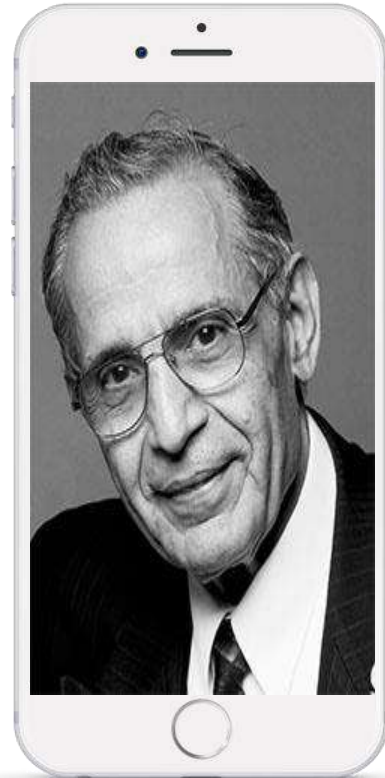


Mobile Project

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derives value from also can
refer is what



As predicted by Oreopoulos & Dimkovic, nephrologists in the 21st century will have to practice geriatrics as amateur geriatricians.¹² To nephrologists, seeing elderly patients is always a dilemma, as these subjects require geriatric care measures that are not included in the formal training of nephrology.



Oreopoulos DG, Dimkovic N. Geriatric nephrology is coming of age. *J Am Soc Nephrol* 2003;14:1099-101. <http://dx.doi.org/10.1097/01.ASN.0000067656.48829.0E> PMID:12660346



Laptop Project

Itself is what the end-user
derives value from also can
refer.

Desktop Project

Itself is what the end-user derives
value from also can refer is what.



Thanks!

Any questions?

You can find me at:

www.athens-nephrology.gr

giannisgriv@hotmail.com



Maximal Non Dialytic Conservative Management

Intensive CKD approach in a multidisciplinary clinic staffed by dietitians, social workers, and other support personnel.

Patients receive the same care as they do in earlier CKD stages, with emphasis on supportive, symptomatic care.

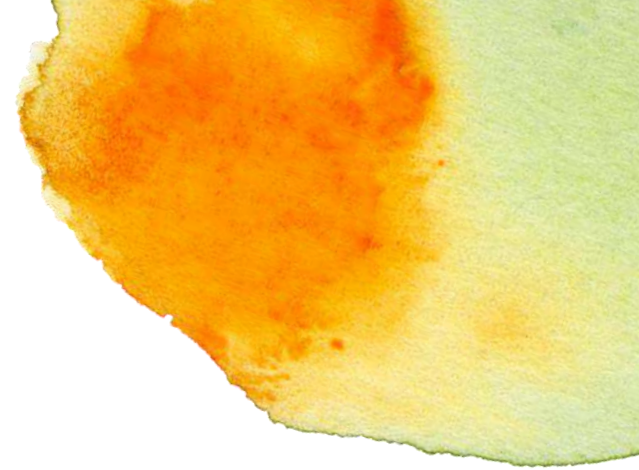
Content A

Content itself is what the end-user derives value from also can refer to the information provided through the medium,

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Content C

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Colors used

