

# How to start a home HD program?

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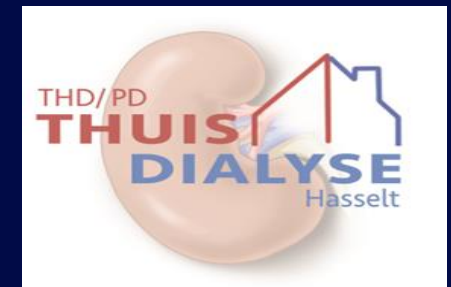
self-care dialysis  
symposium

En collaboration avec le RDPLF

6 & 7th June 2018

Square-Brussels Meeting Centre

[www.selfcaredialysis-symposium.be](http://www.selfcaredialysis-symposium.be)



# Outline

- **Benefits of home and high dose HD**
- **Integrated dialysis care**
- **Ten steps to start**
- **Jessa home hemodialysis program**
- **Conclusions**

# Clinical benefits of high dose HD

	NHD	SDHD
Blood pressure	+++ (PVR reduction)	++ (ECV reduction)
LVH	+++ (afterload reduction)	++ (preload reduction)
LV systolic function	+++	?
Arterial compliance	+++	?
Sleep apnoea	+++	?
Autonomic nervous system	++	?
Phosphate	+++	<i>f</i> (dialysis duration)
Anaemia	++	+
Malnutrition	++	++
Inflammation	++ (CRP, IL-6)	+ (CRP)
Cognition	+	?
Fertility	++	?
Quality of life	++	++

# Benefits of high dose HD

Modality	eGFR stage
Conventional HD	5
CAPD / APD	5
SDHD (6 x 2–3h/w)	4–5
NHD (3 x 8h/week)	4
Frequent NHD (6 x 4h/week)	3
Kidney transplant	3



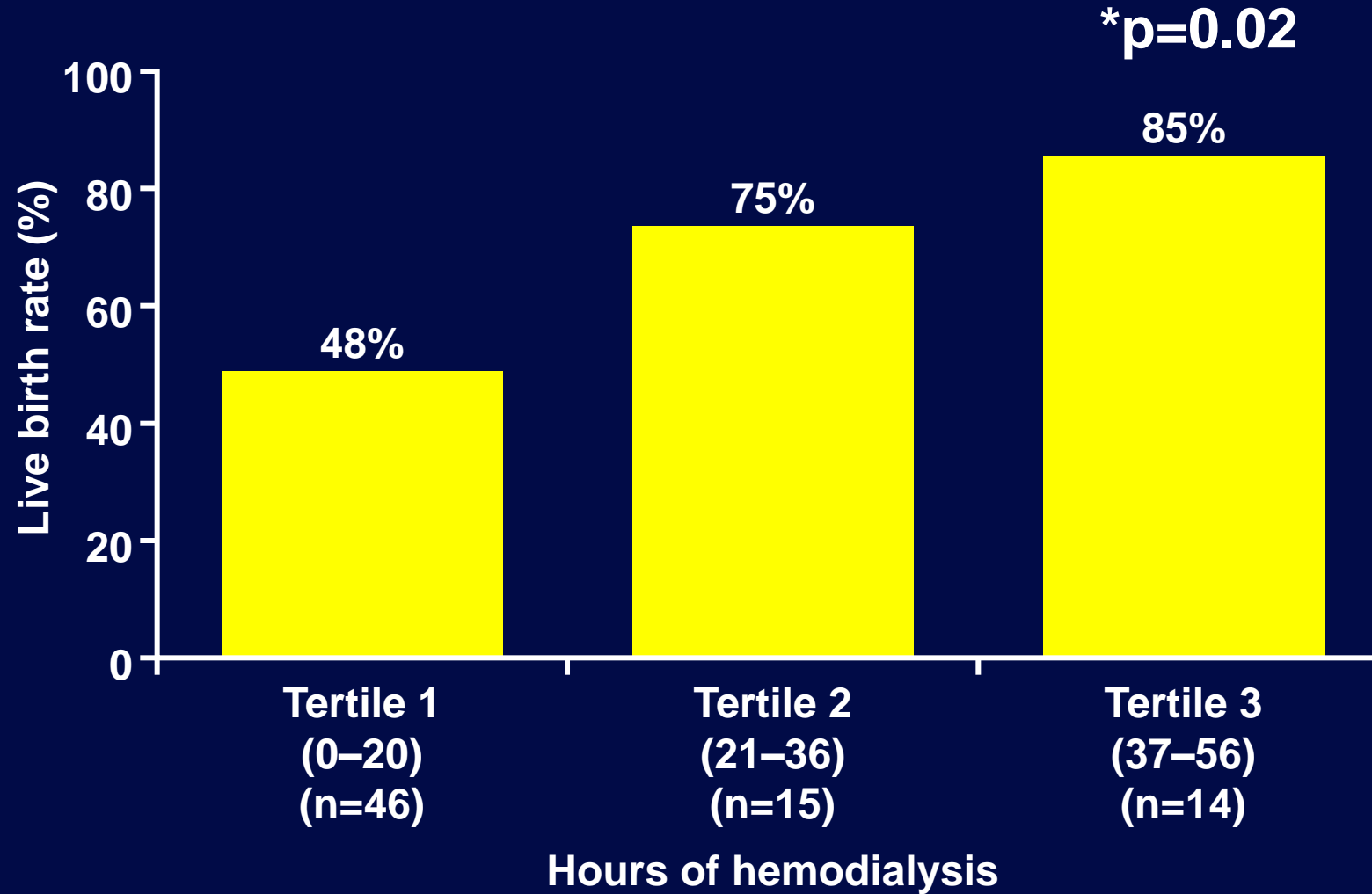
# Quality of life in home and high dose HD: background

- Increased autonomy and functionality<sup>1</sup>
- Reduced pill burden<sup>2,3</sup>
- Liberalisation of diet and fluid intake<sup>4</sup>
- Elimination of transport time
- Continuation of employment<sup>5</sup>
- Improved sleep quality<sup>6</sup>
- Reduction of uremic symptoms<sup>7</sup>
- Reduction of inflammation<sup>8</sup>
- ...



1. Hall et al. Clin J Am Soc Nephrol 2012;7:782–94; 2. Chertow et al. N Engl J Med 2010;363:2287–300;  
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# Improved pregnancy outcomes with high dose HD



## Adverse events in home HD

- **2 Canadian Home HD centers, 500 patient years**
- **1 death and 6 potentially fatal adverse events = 0.06 events/1000 dialysis treatments**
- **5/7 events human errors with lapses in protocol adherence**

# Adverse events in home HD

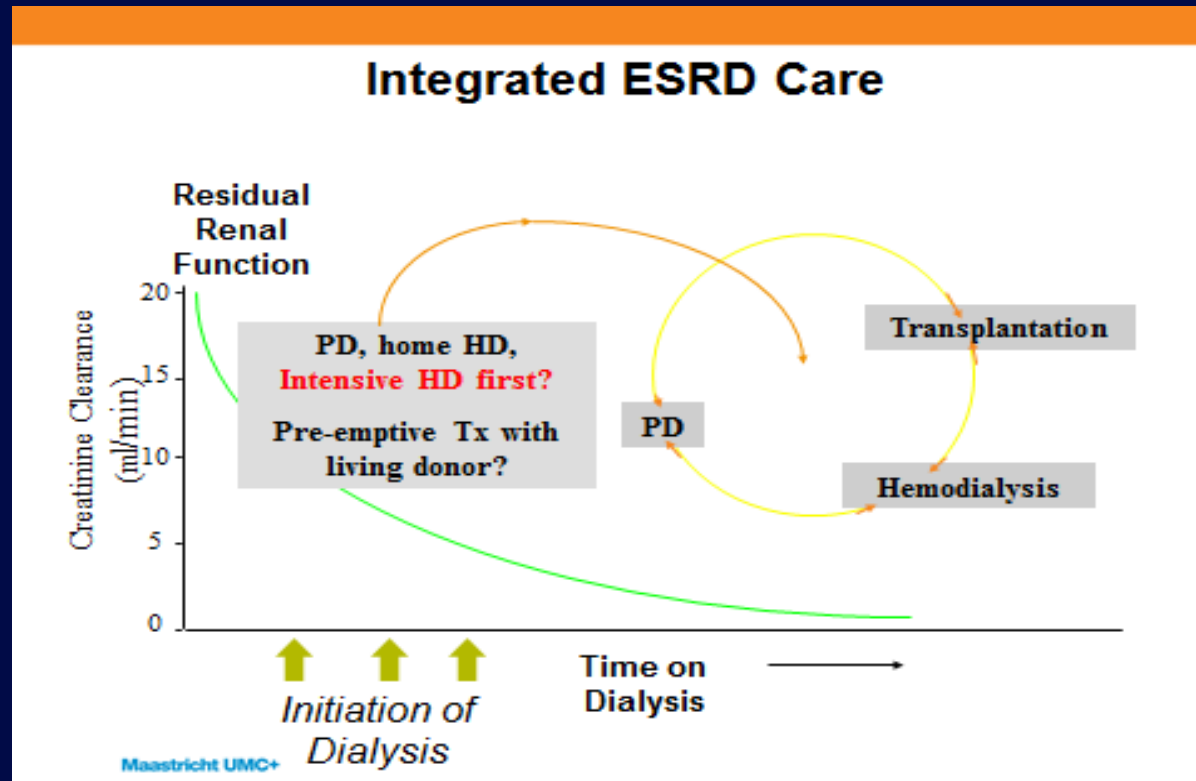
**Need for quality assurance framework:**

- 1. Case review**
- 2. Technique audit of patient**
- 3. Specific questions to programme, e.g. device defect? Human error? Change protocol? Change HD recruitment/retention?**



# Integrated CKD-ESRD care:

- state of the art “CKD-ESRD chain” care
- peritoneal dialysis and home HD
- medical responsiveness



**Also: home dialysis education e.g. fellowships!**

# Practical aspects of home HD

- Recognition of benefits but lack of direct experience
- Availability of practical resource to facilitate adoption
- Global Forum of Home Hemodialysis



ISHD

- Open-source, web-enabled, practical manual:
  - [www.ishd.org/home-hd-toolkit](http://www.ishd.org/home-hd-toolkit)
- Published in Hemodialysis International

# Practical aspects of home HD

- Funding and planning
- Workforce development
- Infrastructure, water, machines
- Cultivate suitable patients
- Patient safety: quality assurance and SAE's
- Patient selection and training
- Vascular access
- Prescriptions of home hemodialysis
- Psychosocial aspects

# Practical aspects of home HD

- How to start a home HD program?
- How to expand a home HD program?
- Home HD in Pregnancy
- Home HD in Children

# Ten steps to start home HD

- 1. Identify a clinical champion**
- 2. Identify key team members (physician, nurse coordinator, training nurses, dialysis equipment technician, social worker)**
- 3. Identify potential partners/mentors**
- 4. Develop a budget and identify sources of funds**
- 5. Obtain legal and administrative permissions and clearances**

# Ten steps to start home HD

**6. Decide on the range of treatment modalities to be offered to patients (short-daily, conventional, nocturnal, etc)**

**7. Strategize patient recruitment (clinical complexity, housing, social support requirements, etc)**

**8. Identify a location for patient training**

**9. Source HD machines (existing pool vs new portable machines)**

**10. Review program performance (eg, clinical metrics, patient-reported outcomes, cost-effectiveness, staff interest and support)**

# Jessa home HD program

- **Home HD team:**
  - **Nurse coordinator: Yvan Bollen**
  - **Home HD nurses: Martine Gyselaers, Kelly Schepers, Marij Smets**
  - **Home HD technicians: Danny Voets, Sebastiaan Goossens**
  - **Social worker: Sophie Niewold**
  - **Nephrologist: Tom Cornelis**



# Jessa home HD program

- **Mentor:**

- Tony Goovaerts, Eric Goffin

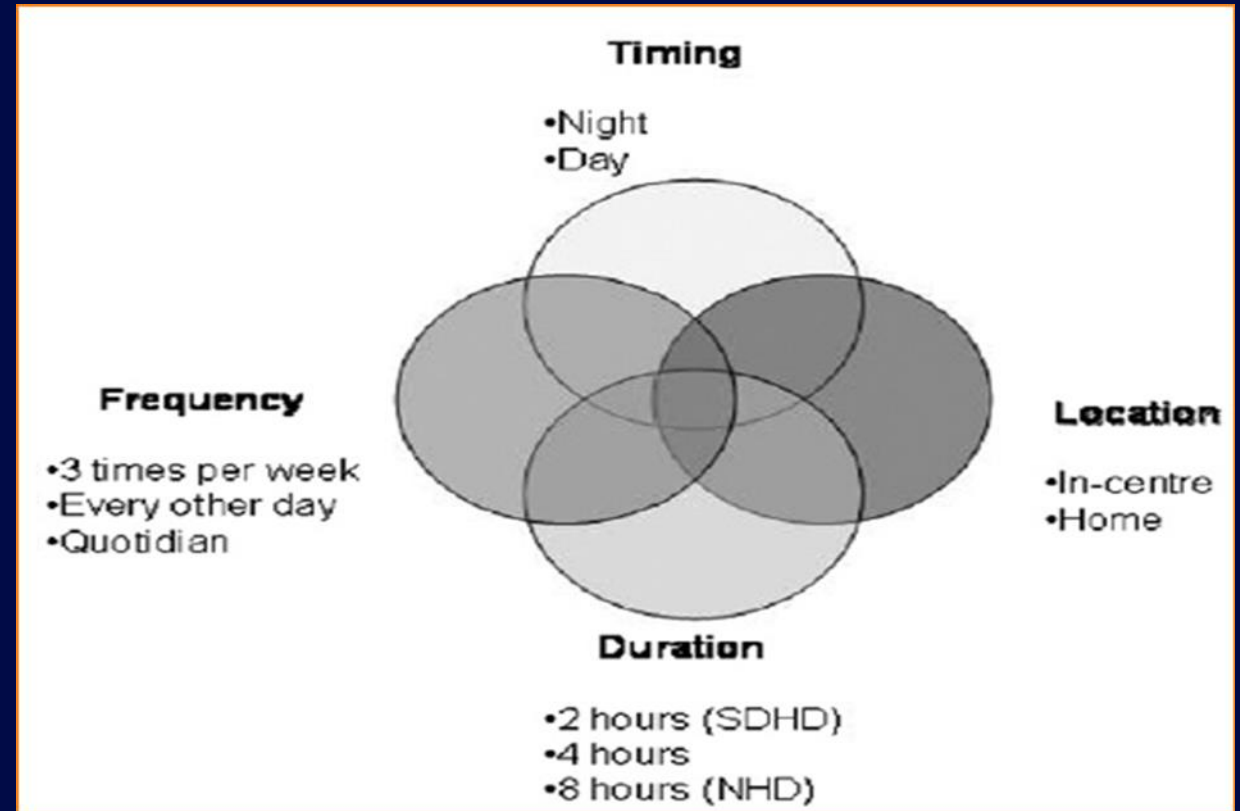
- **Partner:**

- Domien Peeters, Sven Smets (Sint-Trudo Hospital, Sint-Truiden)



# Jessa home HD program

- Range of treatments:
  - Alternate day HD (minimum!)
  - Short daily HD
  - Nocturnal HD : alternate night
  - Incremental HD



CASE REPORT

Open Access

# Incremental short daily home hemodialysis: a case series



Stephanie M. Toth-Manikowski<sup>1</sup>, Surekha Mullangi<sup>1</sup>, Seungyoung Hwang<sup>1</sup> and Tariq Shafi<sup>1,2,3\*</sup> 

## Abstract

**Background:** Patients starting dialysis often have substantial residual kidney function. Incremental hemodialysis provides a hemodialysis prescription that supplements patients' residual kidney function while maintaining total (residual + dialysis) urea clearance (standard Kt/Vurea) targets. We describe our experience with incremental hemodialysis in patients using NxStage System One for home hemodialysis.

**Case presentation:** From 2011 to 2015, we initiated 5 incident hemodialysis patients on an incremental home hemodialysis regimen. The biochemical parameters of all patients remained stable on the incremental hemodialysis regimen and they consistently achieved standard Kt/Vurea targets. Of the two patients with follow-up >6 months, residual kidney function was preserved for  $\geq 2$  years. Importantly, the patients were able to transition to home hemodialysis without automatically requiring 5 sessions per week at the outset and gradually increased the number of treatments and/or dialysate volume as the residual kidney function declined.

**Conclusions:** An incremental home hemodialysis regimen can be safely prescribed and may improve acceptability of home hemodialysis. Reducing hemodialysis frequency by even one treatment per week can reduce the number of fistula or graft cannulations or catheter connections by >100 per year, an important consideration for patient well-being, access longevity, and access-related infections. The incremental hemodialysis approach, supported by national guidelines, can be considered for all home hemodialysis patients with residual kidney function.

**Keywords:** Residual kidney function, Incremental hemodialysis, Home hemodialysis, Uremic toxins, Kt/V, NxStage

# Patient recruitment

- **Prevalent hemodialysis patients**
- **Pre-dialysis education**
  - Renal care nurse
  - Dialysis education team

# The RRTOE Nurse

## Experience of the nurse

- Hands-on experience of all modalities

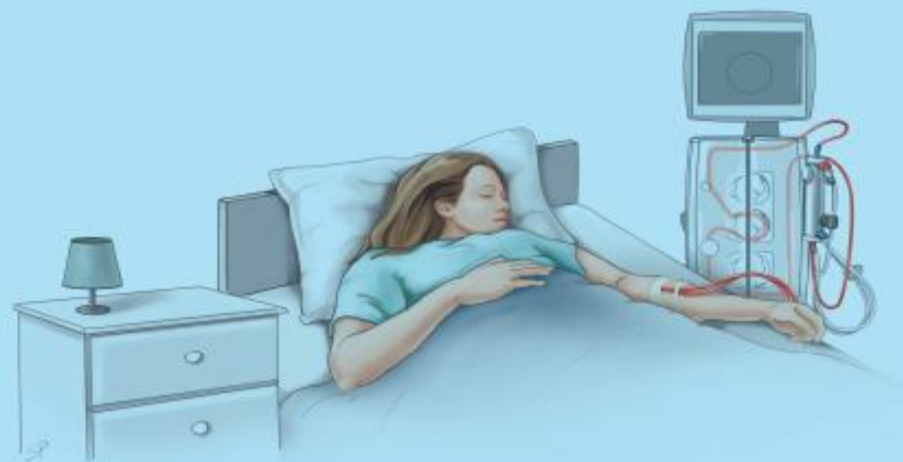
## Training of the nurse

- Principles of adult education
- Motivational interviewing
- Effective communication
- Avoiding bias
- Mentoring

## Role of the nurse

- Provide and organise education
- Manage cases
- Individualise education
- Evaluate education
- Offer support





# THUIS- HEMODIALYSE

JESSA  
ZIEKENHUIS

# Home HD criteria

- **Cardiovascular stability**
- **Emotional stability**
- **Appropriate vascular access**
- **Adequate vision**
- **Adequate practical motor function**
- **Patient owns house or receives approval by house owner**



# Home HD criteria

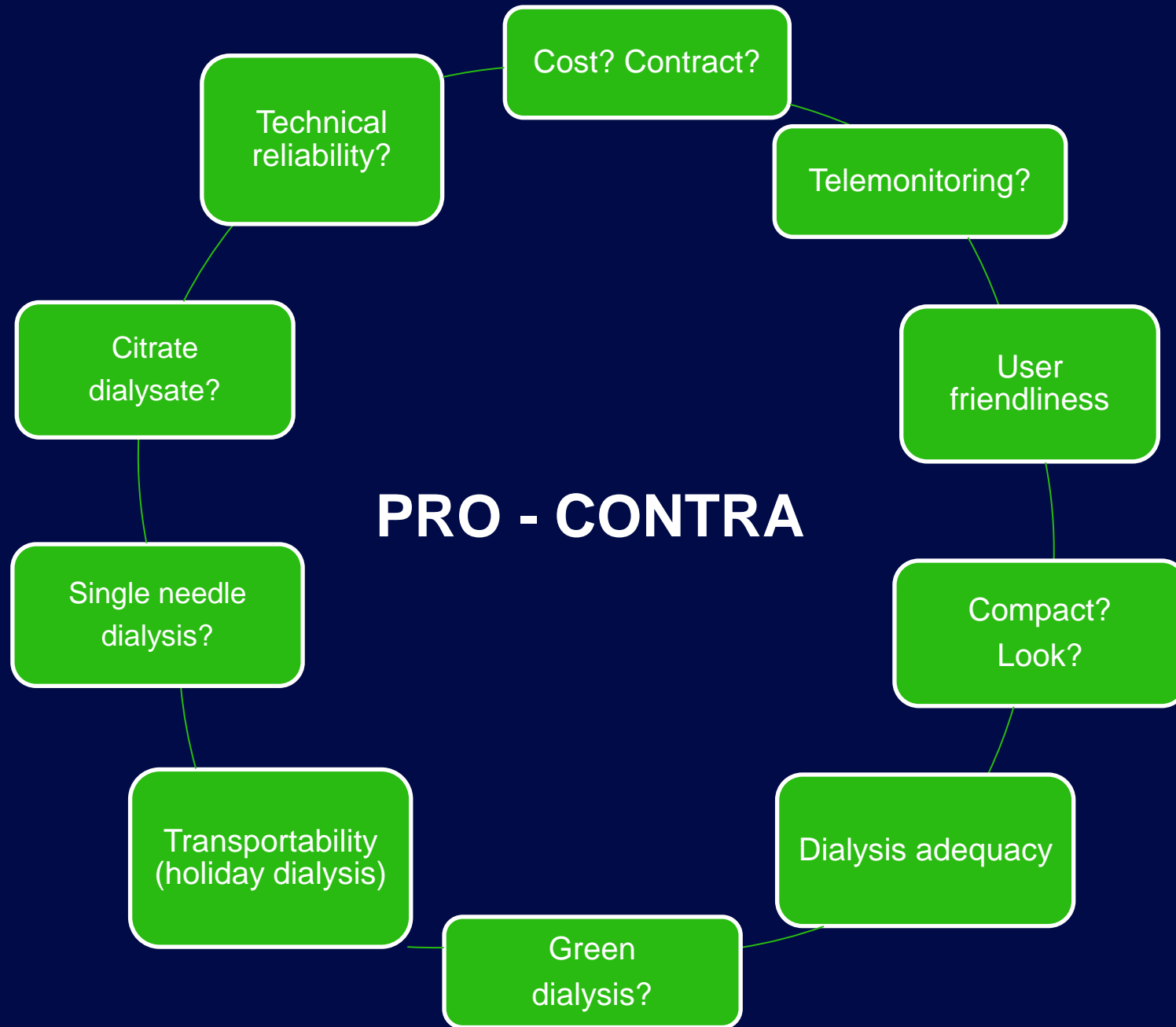
- **Approval by home HD nurse and dialysis technician**
  - Electricity
  - Sanitation
  - Sewage system
  - Space for water treatment and machinery
  - Hygiene
- **Partner agrees**
- **Patient is prepared to take responsibility for treatment**
- **No expected kidney transplantation within coming year**



# Source HD machines (s)







# Review program performance



- Hb, EPO
- K, P, P-binders, PTH
- BP, antihypertensives
- BCM OH
- QoL : KDQOL - 36
- Back-up dialysis
- Vascular access complications



- Infections
- CV events
- Hospitalisation
- Calls
- Kidney transplantation
- Employment
- Mortality

<b>Home Hemodialysis Unit</b> 416-340-3736	<b>Call the Home Hemodialysis Unit:</b> <ul style="list-style-type: none"><li>✓ To report health problems and all bad events.</li><li>✓ To get advice when you are concerned.</li></ul>
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# Jessa home HD performance since April 2017

- **Inflow patients: previous dialysis (6), pre-dialysis (5)**
- **Age: youngest (35y), oldest (83), average (55)**
- **Gender: female (5), male (6)**
- **Demographics: DM (2), CVD (2), PVD (1), malignancy (3)**
- **Vascular acces :**
  - ✓ **Arteriovenous fistula: 5 patients**
  - ✓ **AV graft: 2**
  - ✓ **Tunneled dialysis catheter: 4 (2 permanent)**

# Jessa home HD performance

- **Number of training days: total of 369 sessions**
  - ✓ Fastest training: 25 sessions
  - ✓ Longest training: 62
  - ✓ Average: 37
- **Home HD regime:**
  - ✓ Alternate day: 6 patients
  - ✓ Conventional: 1
  - ✓ Nocturnal hemodialysis: 2
  - ✓ 4 times a week: 1
- **Current status:**
  - ✓ Home: 9 patients
  - ✓ Training: 1
  - ✓ Stop: 1

# Jessa home HD performance

- **Calls: Total: 104**
  - ✓ **Reasons: Technical error dialysis device (32%)**
    - Problem delivery material (8%)
    - Vascular access problems (19%)
    - Wrong actions of the patient (25%)
    - Questions about medication, lab and dialysis prescription (22%)
- **Back up dialysis: Total : 56 sessions**

Primary causes :

  - ✓ **Catheter trombosis**
  - ✓ **Buttonhole creation**
  - ✓ **Catheter infection**
  - ✓ **Retraining**
- **Registration and monitoring**
  - ✓ **Complications: infections (2), CV events (1), hospitalisations (4), mortality (0)**
  - ✓ **QOL**
  - ✓ **BCM**
  - ✓ **Hb, EPO, BP, drugs...**
  - ✓ **Kidney transplantation: T (2), NT (5), no candidate (4)**

# Conclusions

- **Home and high dose HD: viable options!**
- **Home dialysis fellowships are necessary to deliver clinical champions**
- **All suitable patients have the right to do home HD**
  - **offer it with proper pre-dialysis education and structured home HD program!**
- **Take your time to go through 10 steps before start**
- **Dedicated and highly motivated home HD team**

# Thank you!

# And our Team!!!

