Introduction:

- The Home haemodialysis (HHD) programme was reintroduced in Beaumont Hospital in 2009.
- To date we have trained 29 people in Beaumont.
- Cork and Waterford have established HHD units.
- Recently this year Tallaght and Galway have opened.
- Currently in the ROI there are 41 on home haemodialysis with 6 doing nocturnal haemodialysis.
- Beaumont home therapies department currently manage 23 Home haemodialysis patients- 1 currently training.
- ROI home haemodialysis service has resulted in:
  - reduction in 6250 day case HD
  - saved 350,000kms
  - €1 million saving since programme commenced (National Renal Office)
Why home haemodialysis?

- The more dialysis, the better...
- Numerous studies showing benefits of short daily HD and nocturnal HD over conventional HD (CHD);
  - Reduction in left ventricular mass.
  - Greater weekly clearance of small and middle molecules (urea, creatinine, phosphorus, β2-microglobulin).
  - Less medications - Bp meds, PO4 binders both reduced or stopped.
  - Better recovery time between sessions, less hypotensive episodes.
- Improved quality of life: more energy, motivation, empowered to do your own treatment, lessen the impact of kidney disease, independence.
- Better survival rates (up to 60% in some studies) compared to conventional haemodialysis.

- We do frequent referrals but not everybody is suitable.
# Home HD Patient Assessment Form

<table>
<thead>
<tr>
<th>Physical</th>
<th>Social</th>
<th>Medical</th>
<th>Psychological</th>
<th>Cognitive</th>
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<tbody>
<tr>
<td>Dexterity</td>
<td>Who Lives At Home?</td>
<td>Diagnosis</td>
<td>Choice</td>
<td>Previous Modality</td>
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<td>Eyesight</td>
<td>Type of House</td>
<td>Access</td>
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<td>Council □</td>
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<td>Location ........</td>
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<td>Flat (Floor Level) □</td>
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<td>Accessibility □</td>
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<td>Leased / rented □</td>
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<td>Hearing</td>
<td>Support</td>
<td>Fertility</td>
<td>Occupation Status</td>
<td>Literacy Issues</td>
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<td>Helper □</td>
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<td>Non-helper □</td>
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<td>Speech</td>
<td>Any Pets?</td>
<td>Weight / BMI</td>
<td>Motivation</td>
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<td>Non-compliance □</td>
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<td>Compliant □</td>
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<td>Storage Space</td>
<td>Urine Output</td>
<td>Psychiatric Hx</td>
<td>Patient care Co-</td>
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<td>Yes □</td>
<td>Ordinator Referral</td>
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<td></td>
<td>No □</td>
<td></td>
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Additional Comments: __________________________________________________________________________________
___________________________________________________________________________________________________

DATE: _______________  HHN ____________________________
Nocturnal HHD (NHD)

- ...is an intensive renal replacement therapy providing prolonged treatment duration in the home environment for 6-8 hours on at least 4-6 nights per week...

- Most patients do 8 hours per night 5 times per week, totalling 40 hours of treatment per week.

- There is a growing interest in this method of dialysis due to the growing body of evidence demonstrating the numerous benefits associated with it.
Pauly (2010) lists the following benefits with nocturnal haemodialysis:

- **Better blood pressure management** with less need for blood pressure medications.
- Avoidance of **intradialytic hypotension** (i.e. low blood pressure during dialysis).
- **More energy** and less 'wash-out' after treatment.
- **Decreased prevalence of sleep apnoea** or improvement in severe cases of sleep apnoea.
- **Less expensive** overall for the health system due to lower rates of hospitalisation and savings on nursing.
- **Less dietary restrictions**—e.g., phosphate binders, renal failure food restrictions.
- **More control** over the dialysis treatment schedule and greater life satisfaction.
Who Is Suitable for NHHD?

Taken from the Beaumont Hospital Nocturnal Haemo Policy:

Inclusion Criteria

- The candidate should be successfully on the home haemodialysis programme for at least one year before being considered, in consultation with the nephrologist, for NHD.

- The candidate should have a stable medical condition, be stable on home haemodialysis, and have displayed excellent compliance with the home dialysis programme.

- Vascular access should preferably be by AVF but CVC access will be considered.
• Patients must be settled in their home with no plans of moving house.

• They must have a stable home environment with adequate water, power and space in their house.

• The candidate should be confident in the therapy and need to accept responsibility for their own treatment.
In Republic Of Ireland:

- ROI total: 6
- Beaumont Home Therapies first in ROI to commence NHD
- Beaumont currently has 5 NHD, (CUH has 1)
  - 4 male 1 female
  - 4 AVF (sharps), 1 CVC
- 2 awaiting training (1 AVG, 1 AVF)
Differences to HHD:

-Treatment lasts 6-8 hours 5 nights per week.
-We use heparin 1000iu/hr. Bolus 1000iu.
-2 patients use Innohep x 2 doses
-Blood flow rate is 200-250ml/min
-Dialysate flow rate is 300ml/min
-A blood leak detector is used at EACH session
-Specific dressings are required to prevent needle dislodgement.
-No nocturnal phone cover..patients told to come off if difficulties and ring unit in the morning (Ring ambulance if emergency).
Training:

- In HHD Unit for 3 days on one week- 2 consecutive days 1 single.
- Patient comes in from 8pm-5pm.
- Independent at machine set-up for HHD. Equipment for NHD is essentially the same as for home haemodialysis.
- Patient taught to draw up heparin-attach to machine (Heparin can be adjusted if visible clotting or clotted chambers)
- Shown how to attach and activate blood leak detector and to secure needles/lines.
• Blood work pre and post each dialysis whilst training in terms of phosphate, calcium, and potassium, and coagulation depending on clotting- to give a baseline.
• Shown how to administer PO4 enema into dialysate bag- incase it is required.
• Must be competent and signed off by Home therapies team and medics pre going home.
• Health provider informed of change to NHD- machine settings changed and extra stock delivered.
• Home visit. At least every 4-6 months.
• Weekly bloods for first while then monthly.
Blood Detector:
Blood detector attached and secured:
Night v’s Day!

Problems:

- Some teething issues - machine settings, syringes.
- 1 had pain in AVF - reduced the blood flow and resolved.
- 2 sleep in separate rooms due to RO noise on HD nights.
- 1 collapse- due to fluid shift after 8 hrs. Advised to lie flat post disconnecting - resolved.
- Electricity and ? water costs.

Benefits:

- No phosphate binders.
- No BP meds for 4/5
- Look better and more energy.
- Nearly normal diet - cholesterol can be high!
- 4/5 fulltime work; 1 part time.
- Much better quality of life ‘wouldn’t go back to day HD’.
- Less frequent OPD visits.
- Hope for the first NHD baby in the next year.
NHD and Pregnancy:

Baby Boom at University Health Network’s Home Hemodialysis Unit

Elizabeth Wong, RN, BScH, Rosato RDN, BHS(N), Stella Fung RN, BHS(N), Calline d’Gama RN, BHS(N),
University Health Network, Toronto, Canada

Introduction
Pregnancy for women on dialysis, either hemodialysis or peritoneal dialysis, is known to be difficult and potentially hazardous. However, women have managed to have children successfully. Intensive dialysis, careful counseling, and support from the nephrology team, the hemodialysis team and the family are key factors to ensure a successful pregnancy.

Literature Review
Studies examining pregnancy with peritoneal dialysis (PD) and standard intensive hemodialysis (3 times per week) indicate a higher incidence of pre-eclampsia and fetal losses in women on PD, in contrast to women on hemodialysis (see Table 1). (Blackshaw et al., 2011). With the advent of standard and intensive hemodialysis, data are emerging to suggest that pregnancy while on intensive dialysis may result in better outcomes in terms of fetal health and survival than pregnancy while on standard hemodialysis. This may present a viable option for women who are not able to continue on standard hemodialysis. This may prove valuable for a large number of young women whose reproductive years would otherwise have been lost to chronic kidney disease.

Intensive Dialysis for Pregnant Women on Hemodialysis
The Toronto Hemodialysis and of University Health Network developed a program of intensive hemodialysis to better support pregant women on hemodialysis (HHD). The included women required at least 5 hemodialysis sessions per week to maintain chronic kidney disease. Each patient was followed weekly in a newly-developed Pregnancy and Fetal Medicine (PMMF) clinic. Hemodialysis nurses were an active part of the care, monitoring blood work, weight loss, and close follow-up of patients.

TABLE 1. Detailed description of women who were pregnant

<table>
<thead>
<tr>
<th>Year</th>
<th>Geographic region</th>
<th>Terminations (%)</th>
<th>Livebirths (%)</th>
</tr>
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<tbody>
<tr>
<td>2008</td>
<td>Europe</td>
<td>38</td>
<td>23</td>
</tr>
<tr>
<td>2009</td>
<td>Saudi Arabia</td>
<td>63</td>
<td>37</td>
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<tr>
<td>2010</td>
<td>United States</td>
<td>55</td>
<td>37</td>
</tr>
<tr>
<td>2011</td>
<td>United States</td>
<td>46</td>
<td>42</td>
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<tr>
<td>2012</td>
<td>Japan</td>
<td>24</td>
<td>49</td>
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<tr>
<td>2013</td>
<td>Japan</td>
<td>36</td>
<td>64</td>
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<tr>
<td>2014</td>
<td>Brazil</td>
<td>13</td>
<td>87</td>
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</tbody>
</table>

Conclusion
Our experience indicates that intensive hemodialysis during pregnancy can improve maternal and fetal outcomes. The woman’s role in treatment planning, of dialysis, blood pressure and fluid management, as well as emotional support for the patient is crucial. In addition, communication between the nephrology and obstetrics team is essential.

References

Acknowledgments
To the mothers who make the journey possible
For further information
Elleslie Wong at ellesie@uhn.ca

Results

<table>
<thead>
<tr>
<th>Date</th>
<th>Births/Year</th>
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<tbody>
<tr>
<td>2008</td>
<td>5 live births</td>
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<td>2009</td>
<td>5 live births</td>
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<tr>
<td>2011</td>
<td>5 live births</td>
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<tr>
<td>2012</td>
<td>5 live births</td>
</tr>
</tbody>
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Additional Information

- Osteoarthritis and pregnancy
- Hypertension and pregnancy
- Hypertension
- Hypertonic
- Hypovolemic
- Hypothyroid
- Hypothyroidism
- Hypokalemia
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Toronto Pregnancy Experience

Plan for a Beaumont Baby Boom!!
Quick Start NHD for women with ESRD planning to get pregnant

Particular attention is paid to co-morbidities common with CKD such as hypertension, bone and mineral metabolism, and anemia, as well as close fetal assessment and follow-up (See Table 2).

**Dialysis Prescription**
The intensified dialysis prescription for the pregnant patient consisted of 6 - 7 nights/week, 8 hour session with Qb 300 ml/min and Qd 300 ml/min. Heparin utilization remained unchanged. Na Phosphate was

**Results**
To date, eight women on nocturnal home hemodialysis have had successful pregnancies, resulting in ten live births (See Table 3).
The Future of NHD?

- Make available and accessible to all interested
- New technology? New machine in the near future
- Expand the Nocturnal Programme to all HHD Units around Ireland
- Aim to alleviate the fear of ‘needles falling out’!
- Awareness of home dialysis programme for HD units.
Some of the Beaumont Home Therapies Team..
Resources:

• Beaumont Hospital Kidney Centre
  http://www.beaumont.ie/kidneycentre-home
THANK YOU!!
References:


