

The BC Innovative Approaches to the Management of Hemodialysis:

2004 - 2007

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The World



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Home Hemodialysis – International Trends and Variations

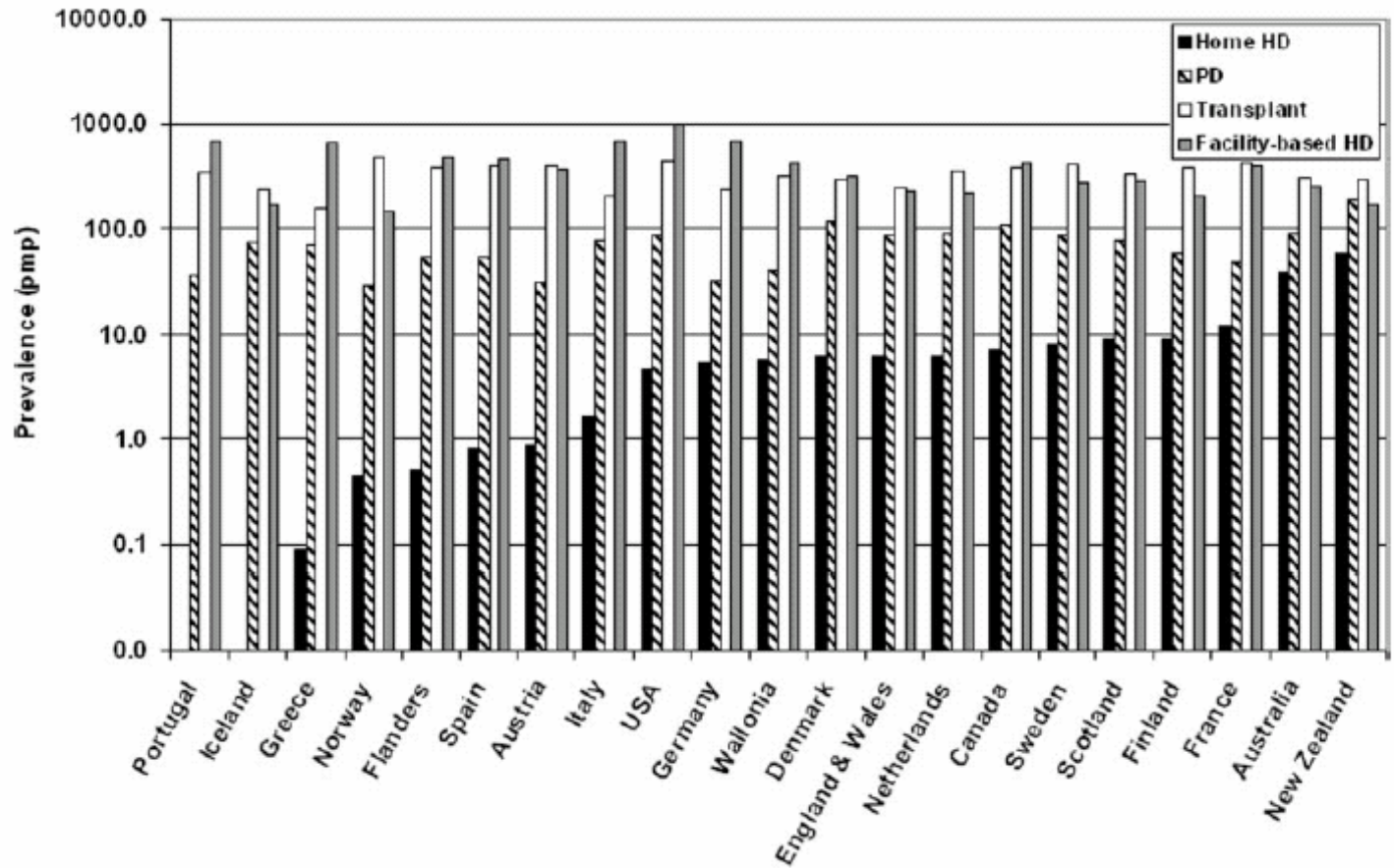
(McGregor et al, *Nephrol Dial Transplant* (2006) 21: 1934-1945)

Prevalence of Renal Replacement Therapies (per million population)

Country	RRT	Tx	PD	Fac HD	Home HD (%)
Australia	685	299	92	255	39.0 (13.2)
Finland	658	390	58	202	8.8 (4.2)
Netherlands	678	359	90	222	6.2 (2.7)
New Zealand	715	291	192	174	58.4 (25.2)
Scotland	726	336	79	283	8.7 (3.0)
USA	1554	441	89	1021	4.6 (0.4)
Canada	927	384	109	427	7.2 (1.7)

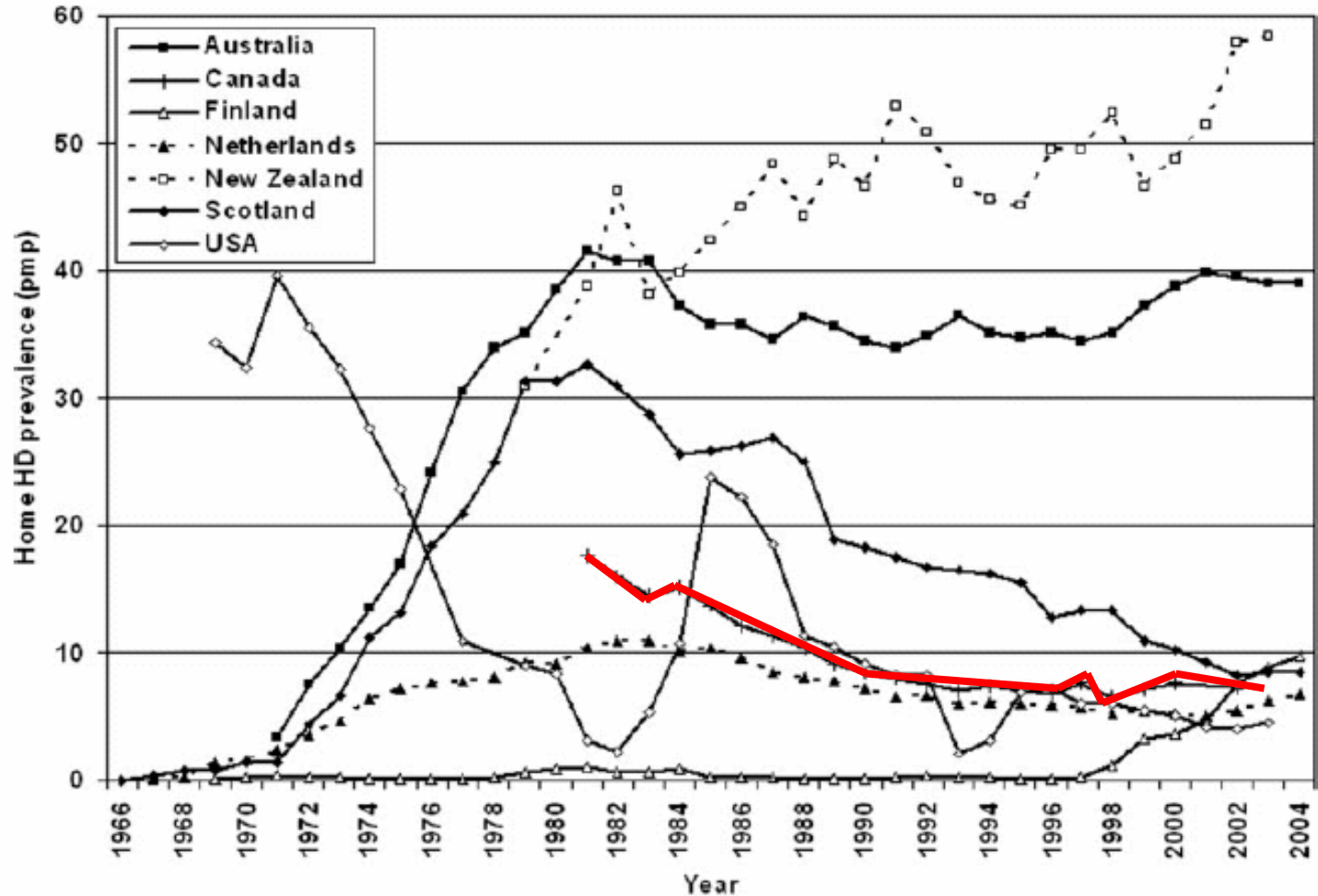
Home Hemodialysis – International Trends and Variations

(McGregor et al, *Nephrol Dial Transplant* (2006) 21: 1934-1945)



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British Columbia's Independent Program

IAMHD Program



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Independent Dialysis: Is it an option for you?



- Improved quality of life
- Fewer symptoms during and between dialysis
- Fewer medications
- More free time
- Less days in hospital



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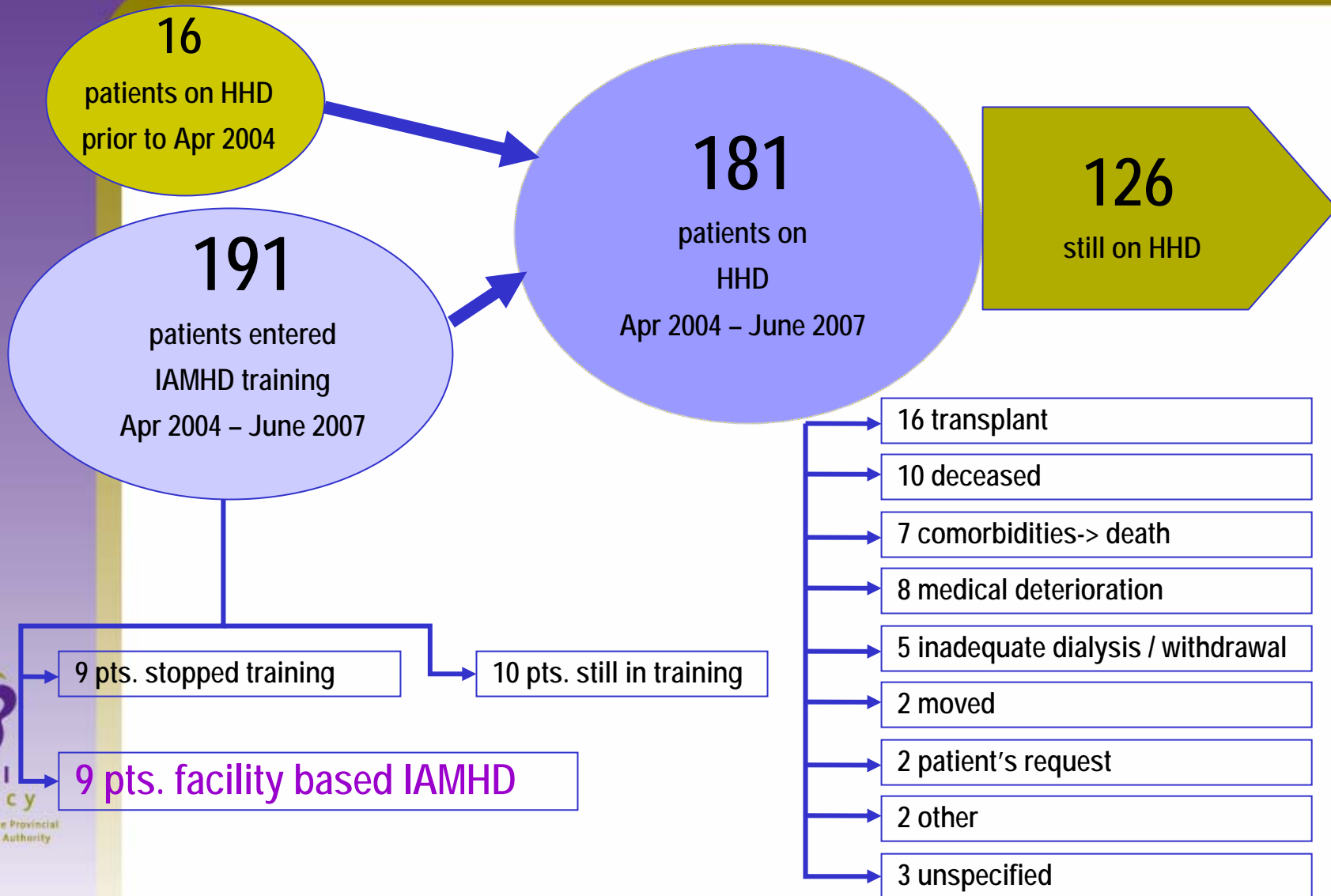
How have we done?



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IAMHHD Patients



Characteristics of Patients who Initiated Home HD

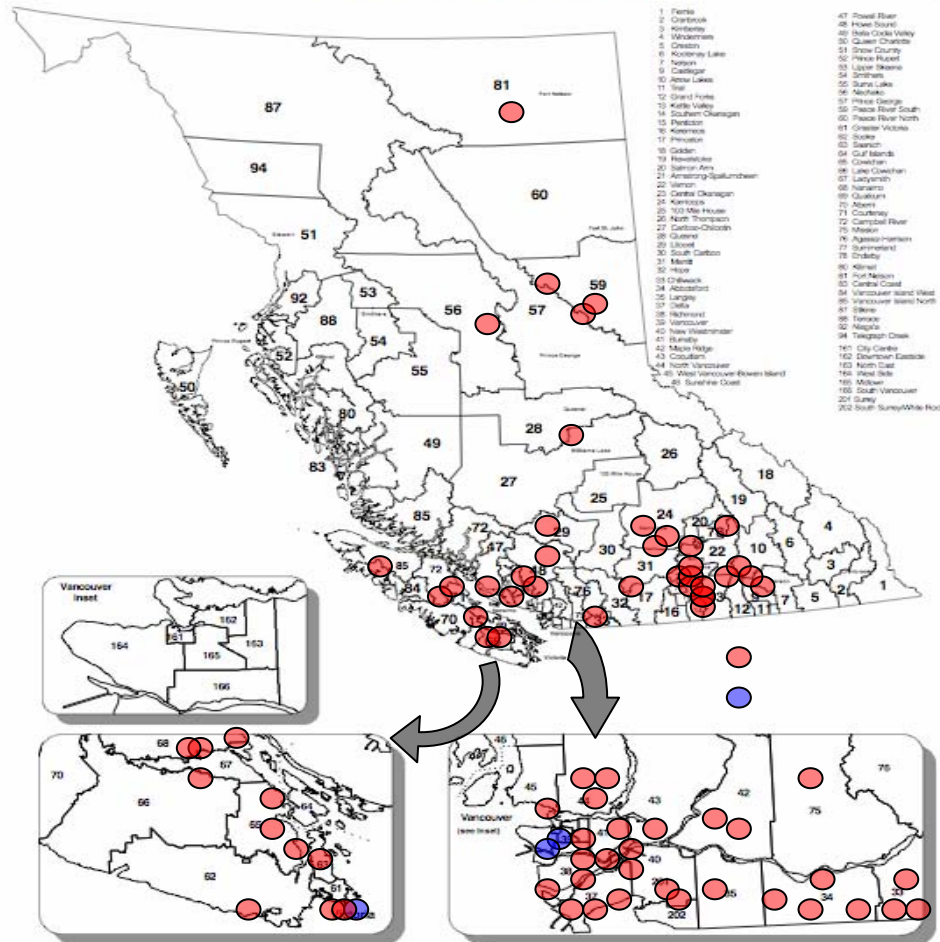
Variable	HA01	HA02	HA03	HA04	HA05
Age (Mean)	55	53	50	54	60
% Age > 65yr	18	32	16	26	33
Gender (% Male)	76	68	68	81	78
Race (% Caucasian)	52	68	37	70	89
Diabetes (%)	24	21	25	22	44
CVD (%)*	41	42	34	33	56
Prior Dial. Dur. (mo)	18	52	31	20	16



Program Setting



B.C. Local Health Areas Revised Boundaries - June 2002



- 1 Fernie
- 2 Creston
- 3 Kimberley
- 4 Mackenzie
- 5 Creston
- 6 Kootenay Lake
- 7 Nelson
- 8 Castlegar
- 9 Arrow Lakes
- 11 Trail
- 12 Grand Forks
- 14 Southern Okanagan
- 15 Penticton
- 16 Kelowna
- 17 Princeton
- 18 Okanogan
- 19 Revelstoke
- 20 Salmon Arm
- 21 Armstrong-Spallumcheen
- 22 Vernon
- 23 Central Okanagan
- 24 Kamloops
- 25 West Fraser
- 26 North Thompson
- 27 Cariboo-Chilcotin
- 28 Kamloops
- 29 Lillooet
- 30 South Cariboo
- 31 Merritt
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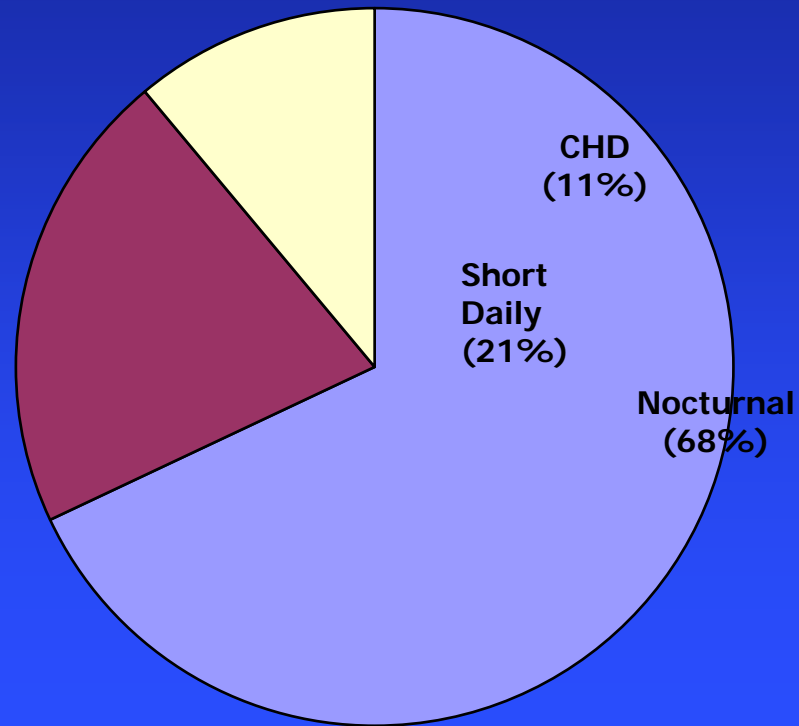
Patient Number Projections

	07/08	08/09	09/10	10/11
IHA	13	13	14	14
FHA	15	16	17	18
VCH/PHC	19	20	21	21
VIHA	13	13	14	14
NHA	3	3	3	3
Total New	63	65	69	70
Running Total	184	221	257	289

** New patients on Home Hemodialysis as of fiscal year end*

Home Hemodialysis

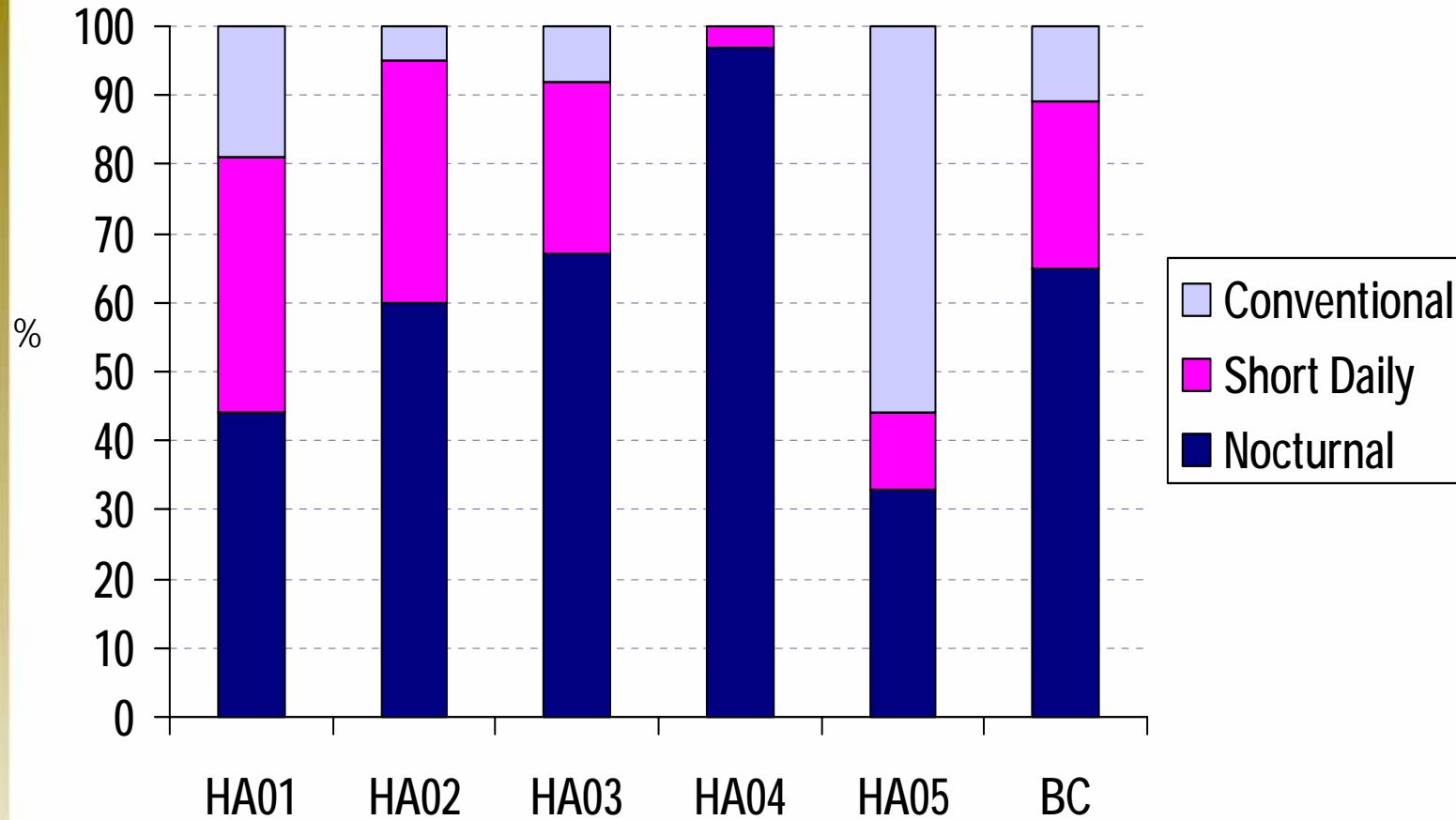
**Breakdown by HHD type
(BCPRA, 2007)**



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Home HD by Type

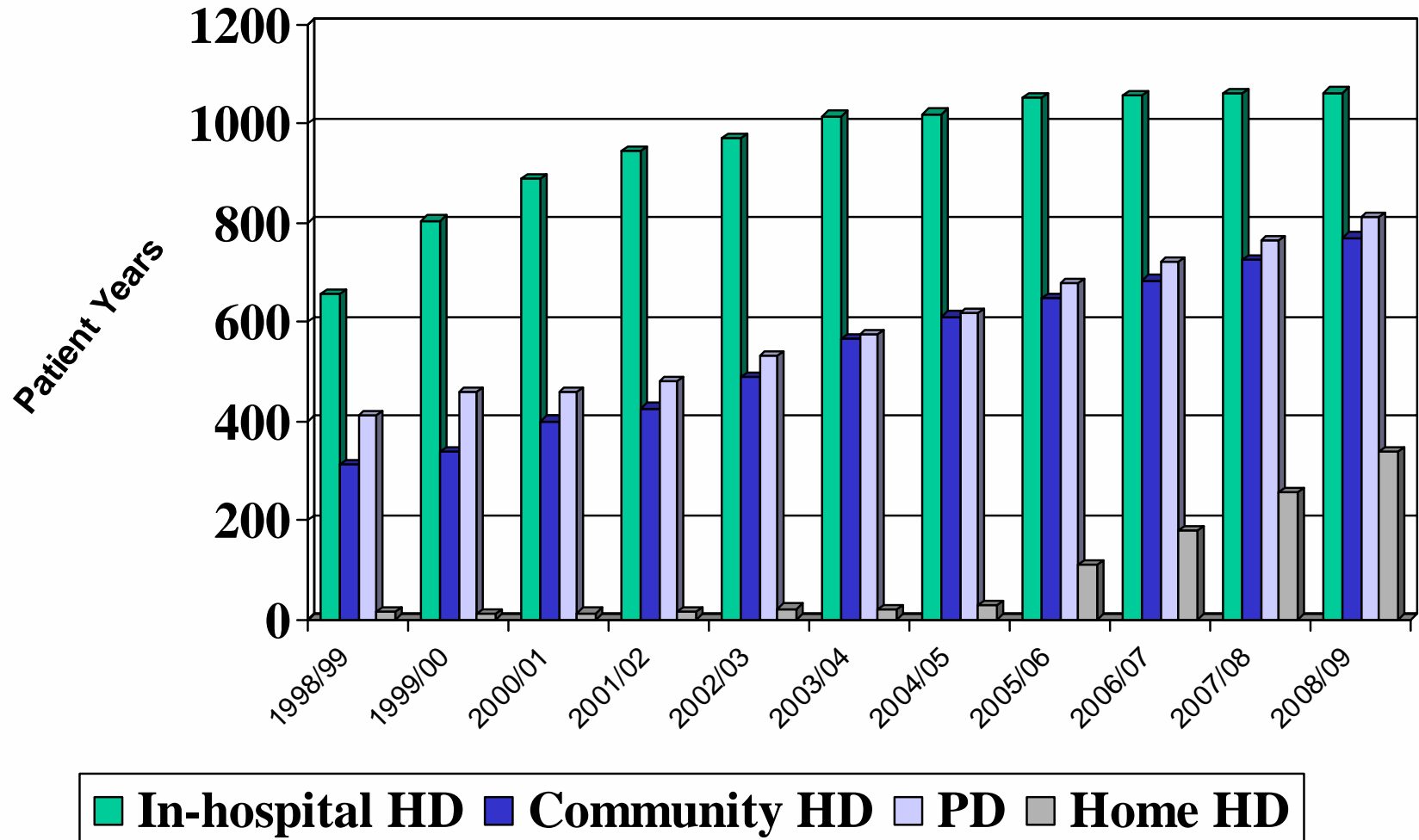


But is our growth
just an illusion?

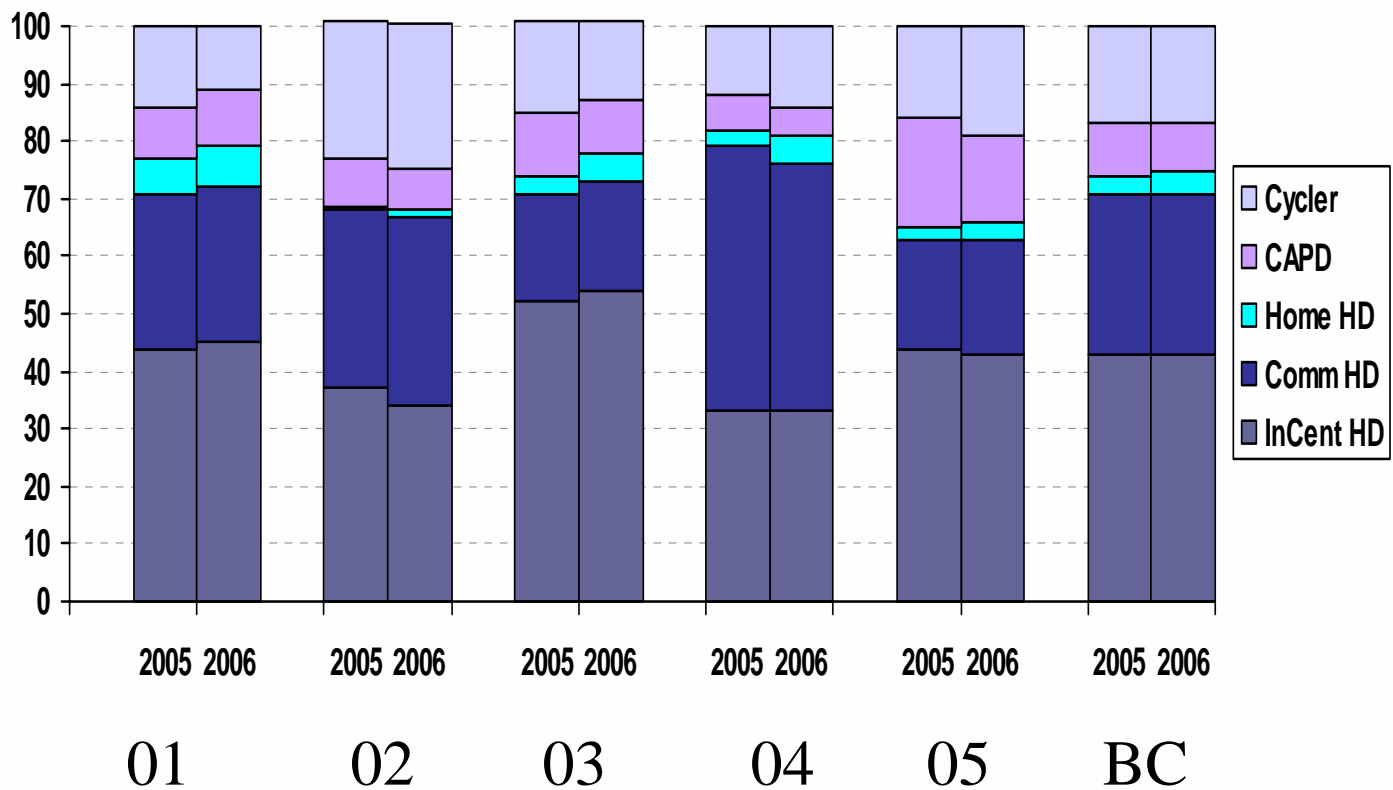
Are we robbing Peter
to pay Paul?



Dialysis Patient Activity (in Patient Years) by Dialysis Modality



Modality Distribution: British Columbia



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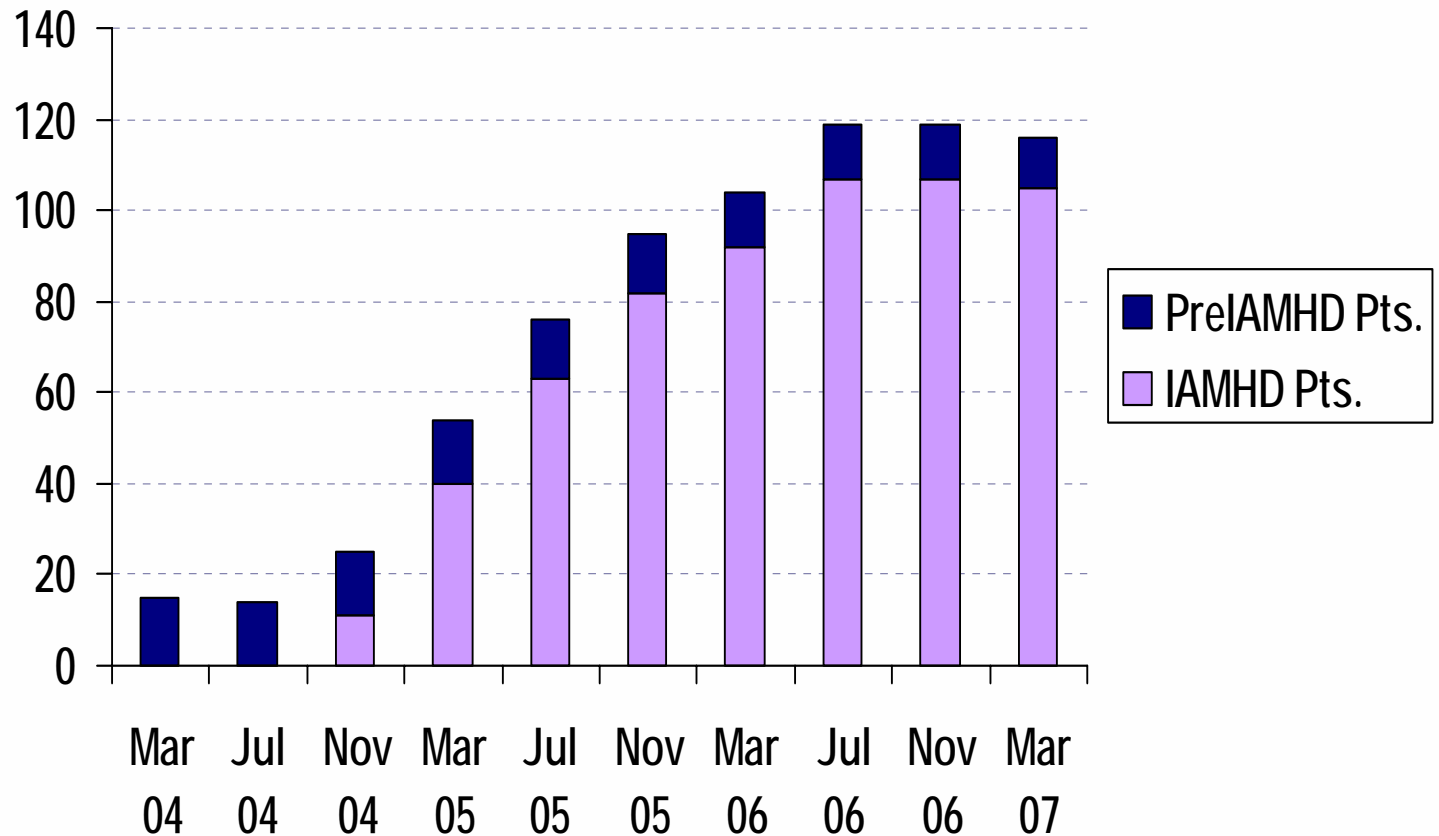
Outcomes



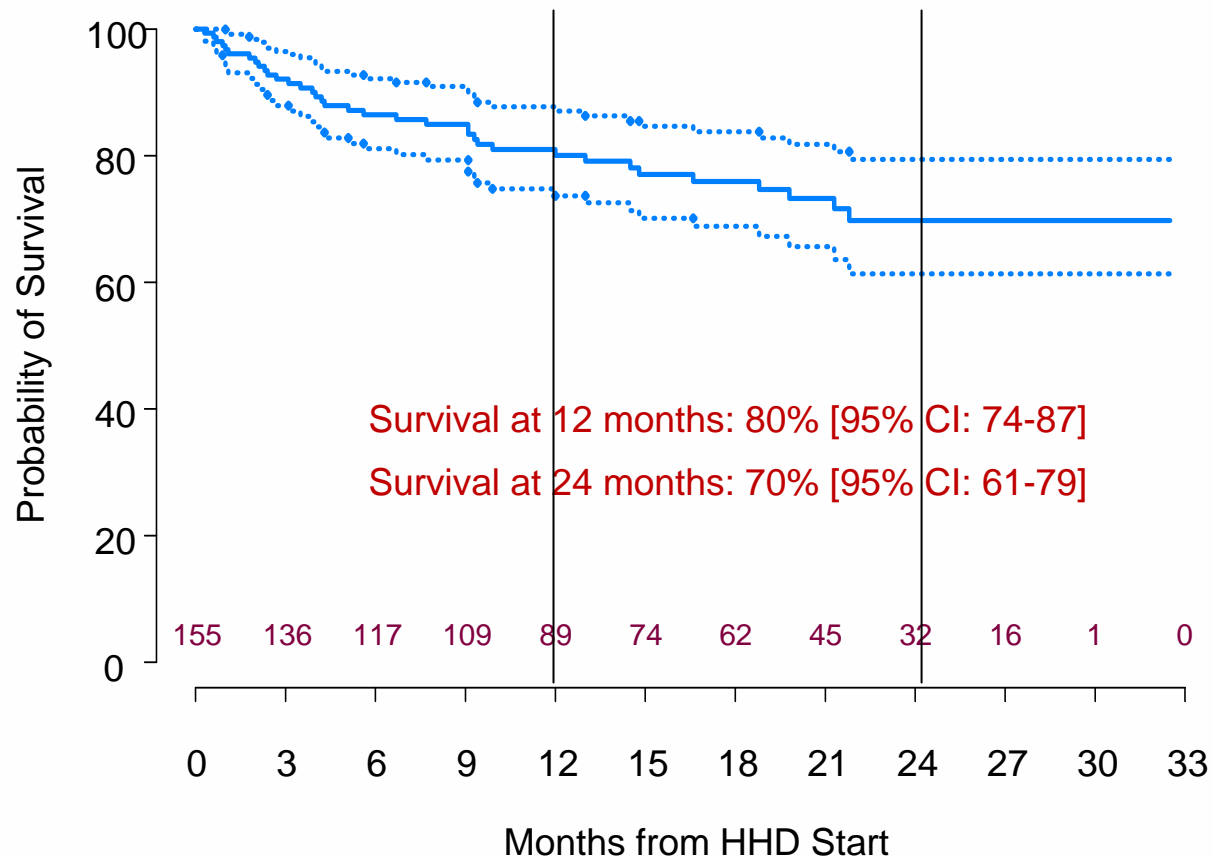
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Home HD Growth



Home HD Technique Survival



Patients entered Home HD April 2004 – March 2007, censored for transplant

Infections



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Background

Concerns raised by several parties about the apparent frequency of systemic infections in the home HD program in Vancouver

- Physicians
- Nurses
- Vascular Access Nurses

As a CQI initiative, the providers (RNs, Vascular Access Clinics, and Nephrologists) commenced a formal review

- Initial focus on technique teaching, and variabilities in teaching between 3 training sites



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Background

During initial meetings, it became apparent that we didn't understand the magnitude of the problem:

- Did we have a large problem?
- How did we compare with other dialysis programs?
- Were our patients simply 'more visible' when they developed infections

Undertook review of current statistics of our program

- Reviewed raw data August 30, 2007

Vancouver Patients

(2004 – August 31, 2007)

Trained: 82 patients

At Home: 50 (+1)

– Transplanted 8

– Died 10

(2 secondary to infection)

– Other 12

Total number of patient months: **1498**



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Infections

Definition of infection based on **Culture Positive** events

- Blood vs Access site infection

This is consistent with reporting practice in general hemodialysis population

- Will miss clinically suspicious but culture negative situations
- 2nd tier data will look at access complications requiring surgical intervention



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Infections

1498 Patient-months of experience

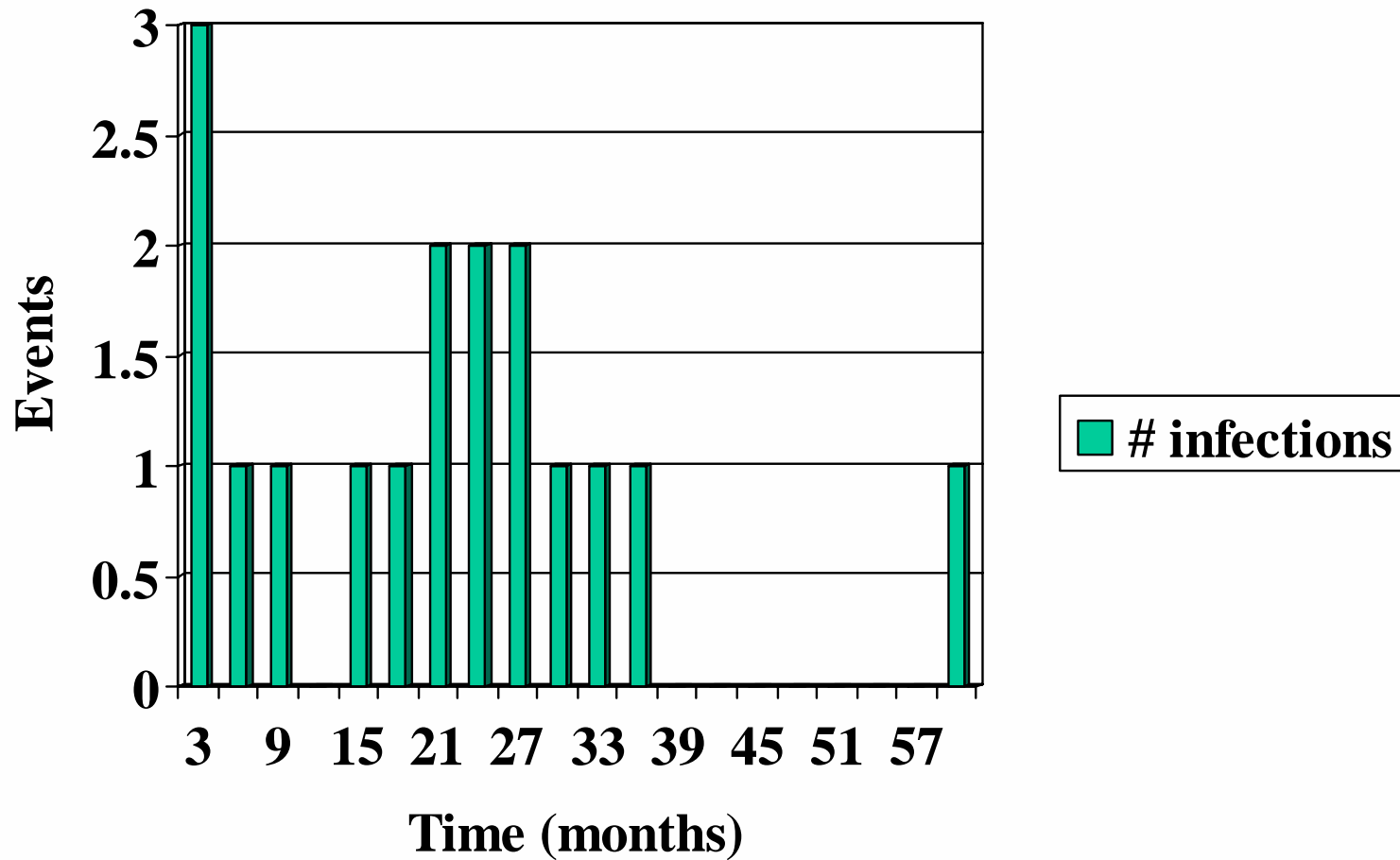
- Total number of infections documented: 23
- Total number of individuals affected: 17
- Infection related mortality: 2

Infection rate: 1 infection in 65.1 patient-months treated

Cultured organism:

- MSSA 18 (1 died)
- MRSA 2 (1 died)
- Coag –ve Staph: 1

Time to first infection



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Time to first infection

Patient number	Vascular Access Type (at time of infection)	Time at home before 1 st infection (month)
1 (MJ)	AVF	21
2 (NL)	PermCath	26
3 (JW)	AVG	25
4 (JE)	AVF	18
5 (SY)	AVF	3
6 (RS) *	AVF	2
7 (RG)	PermCath	22
8 (DB)	AVF	29
9 (NW)	AVF	21
10 (GL)	AVF	6
11 (PB)	AVF	1
12 (SC)	AVF	31
13 (WL)	AVF	60
14 (CH)	AVF	15
15 (DM)	PermCath	36
16 (RW)	AVF	23
17 (RV)	AVF	8



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Breakdown of Vascular Access Types

Type	<i>n</i>	Number infections	Number not infected	Infection per pt-mo
PermCath	18	4	14	1:74 (296 pt-mo)
AVF	58	18	40	1:62.4 (1123 pt-mo)
AVG	3	1	2	1:64 (64 pt-mo)
Unknown	2	0	2	0 (15 pt-mo)

Conclusions

Preliminary review suggests some interesting observations:

- 2 peaks of infections:
 - Early (<6 months)
 - Late (~24 months)
- Lower than expected rate of Catheter associated Bacteremia



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Costs

Cost of Implementation of a multi-regional provincial program

The Costs of Starting a Provincial Home Hemodialysis Program: When do we break even?

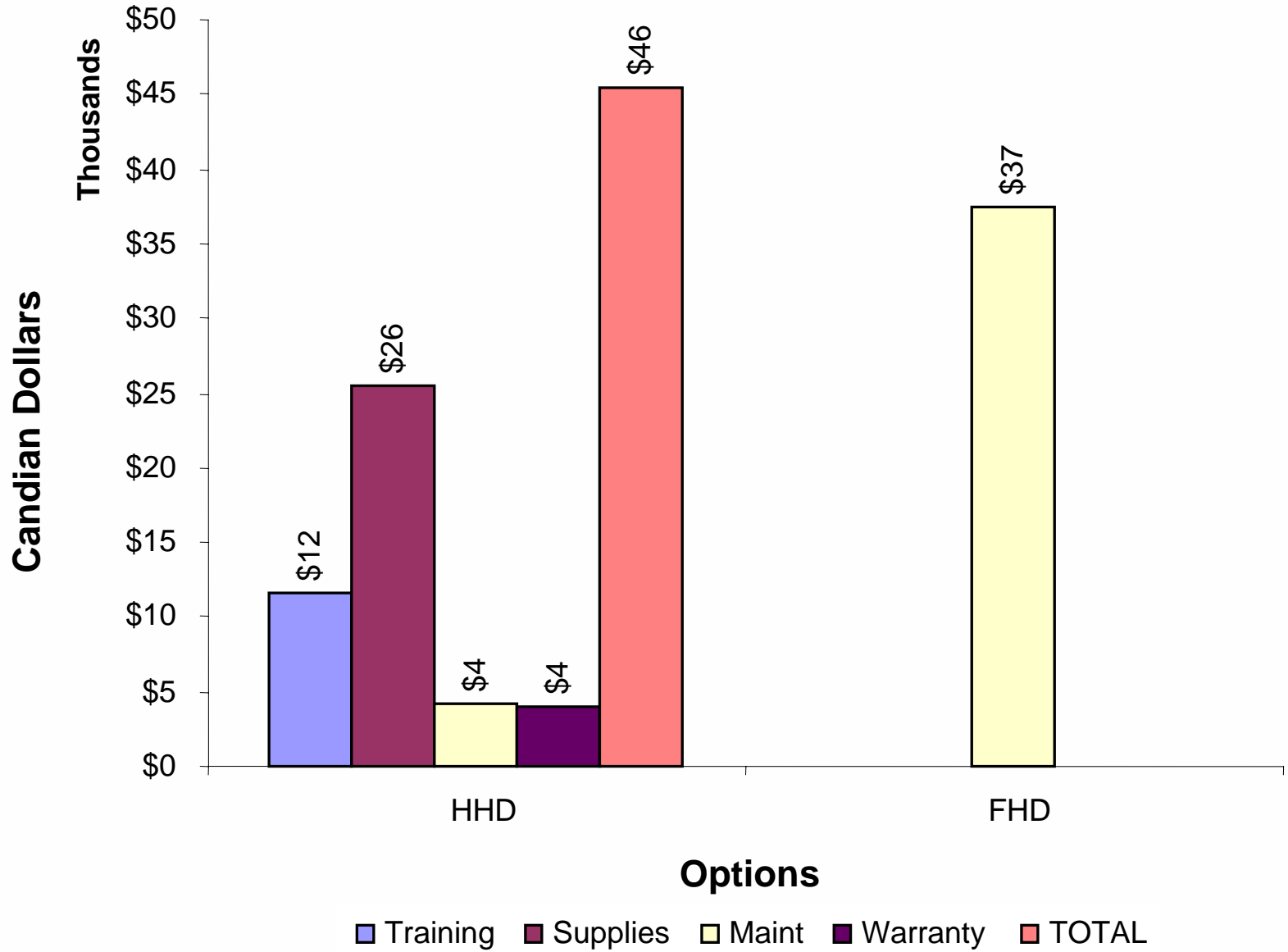
Komenda P*, Levin A*†, Djurdev O†, Makwana J†, Copland M*†.

*University of British Columbia Division of Nephrology,

†BC Provincial Renal Agency, Vancouver, British Columbia, Canada.

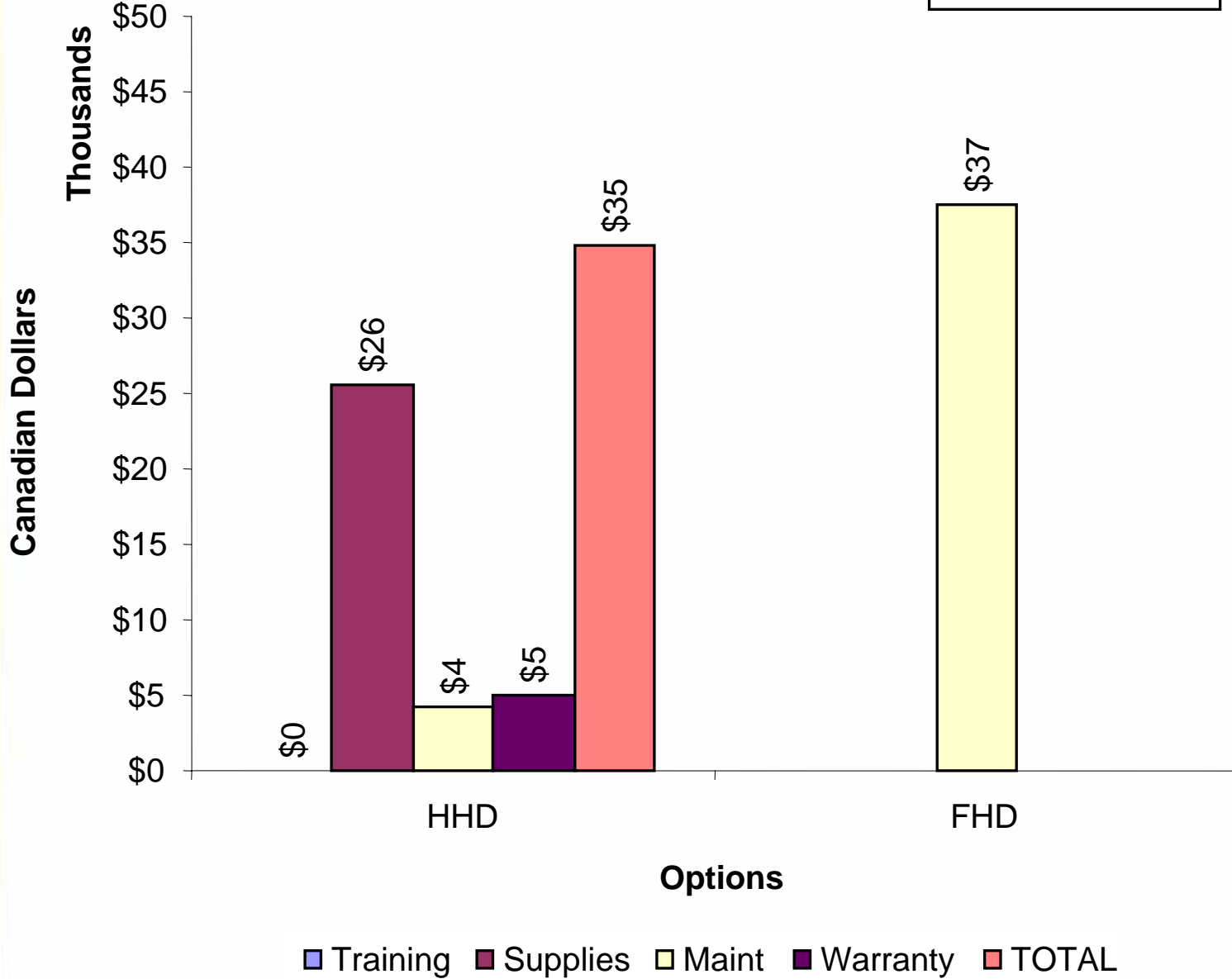
Comparison of Costs per patient per year for Home HD and Facility based HD Care

FIRST YEAR



Comparison of Costs per Patient Year for Home HD and Facility based HD Care

**SECOND YEAR
and beyond**



Cost Comparison for Home Hemodialysis and Facility based Hemodialysis (April 1st 2004 to March 31st 2010)

	2004 - 2005		2005 - 2006		2006 - 2007 Projected		2007- 2008 Projected		2008- 2009		2009- 2010	
	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$
Home HD Program												
Entry Training	N=53		N=69	804,865	N=50	583,236	N=60	699,883	Assume NO New Patients (N = 232)		Assume NO New Patients (N = 232)	
Exits			9.00	2,942	10.00	3,269	12.00	3,923	-	0	-	0
Maintenance HHD	12.36	513,769	65.58	1,948,816	130.67	3,882,859	203.19	6,037,791	203.19	6,037,791	203.19	6,037,791
Pys Facility HD	9.51	368,656	17.52	655,661	27.44	1,026,737	42.67	1,596,561	42.67	1,596,561	42.67	1,596,561
Start up costs		788,000		20,000		0		0		0		0
Home Renovation		110,000		107,500		50,000		100,000		100,000		100,000
Equip. Warranty		36,000		443,000		700,000		750,000		750,000		750,000
TOTAL HHD	21.86	\$1,816,425	83.11	\$3,982,784	158.11	\$6,246,101	245.86	\$9,188,158	245.86	\$8,484,352	245.86	\$8,484,352
Without Home HD Program - Facility Based HD												
Home HD at unit	12.36	479,234	65.58	2,536,397	130.67	4,949,682	203.19	7,675,224	203.19	7,602,673	203.19	7,602,673
Facility HD	9.51	368,656	17.52	655,661	27.44	1,026,737	42.67	1,596,561	42.67	1,596,561	42.67	1,596,561
IN Facility Costs	21.86	\$847,890	83.11	\$3,192,058	158.11	\$5,976,419	245.86	\$9,271,785	245.86	\$9,199,234	245.86	\$9,199,234
SAVINGS		(968,535)		(790,726)		(269,682)		83,627		714,882		714,882

Summary of Costs and Savings over 6 years (Assume NO New patients after Year 4)

	2004 - 2005		2005 - 2006		2006 - 2007 Projected		2007- 2008 Projected		2008- 2009		2009- 2010	
	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$	PY	\$\$
HOME HD Pgm		\$1,816,425		\$3,982,784		\$6,246,101		\$9,188,158		\$8,484,352		\$8,484,352
Facility HD Pgm		\$847,890		\$3,192,058		\$5,976,419		\$9,271,785		\$9,199,234		\$9,199,234
Surplus/(Deficit)	21.86	(\$968,535)	83.11	(\$790,726)	158.11	(\$269,682)	245.86	\$83,627	245.86	\$714,882	245.86	\$714,882
Cummulative		(\$968,535)		(\$1,759,262)		(\$2,028,943)		(\$1,945,316)		(\$1,230,434)		(\$515,552)

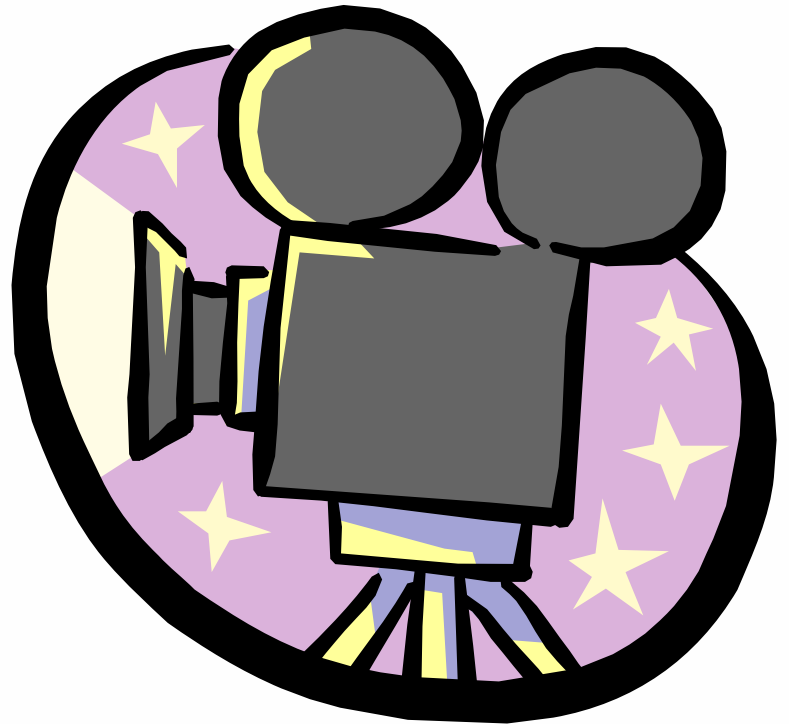


Conclusions

- Within the healthcare model of British Columbia, the centralized and coordinated implementation of an independent hemodialysis program results in:
 - Standardized care irrespective of location
 - ‘Turn-key’ operations for smaller programs
 - Magnitude of purchases to be of benefit in contractual negotiations
 - Cost-effective (but not cost-saving) treatment relative to incentre hemodialysis, and similar to community hemodialysis

Video Perspective

- Older patient
- Cramped living situation



The Older Patient...

Len



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The Cramped Apartment...

Daniel



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Panel Discussion

