THIRTY YEARS EXPERIENCE OF JOINT REPLACEMENTS IN PATIENTS WITH BLEEDING DISORDER IN SOUTH AUSTRALIA

SA Adult Haemophilia Treatment Centre
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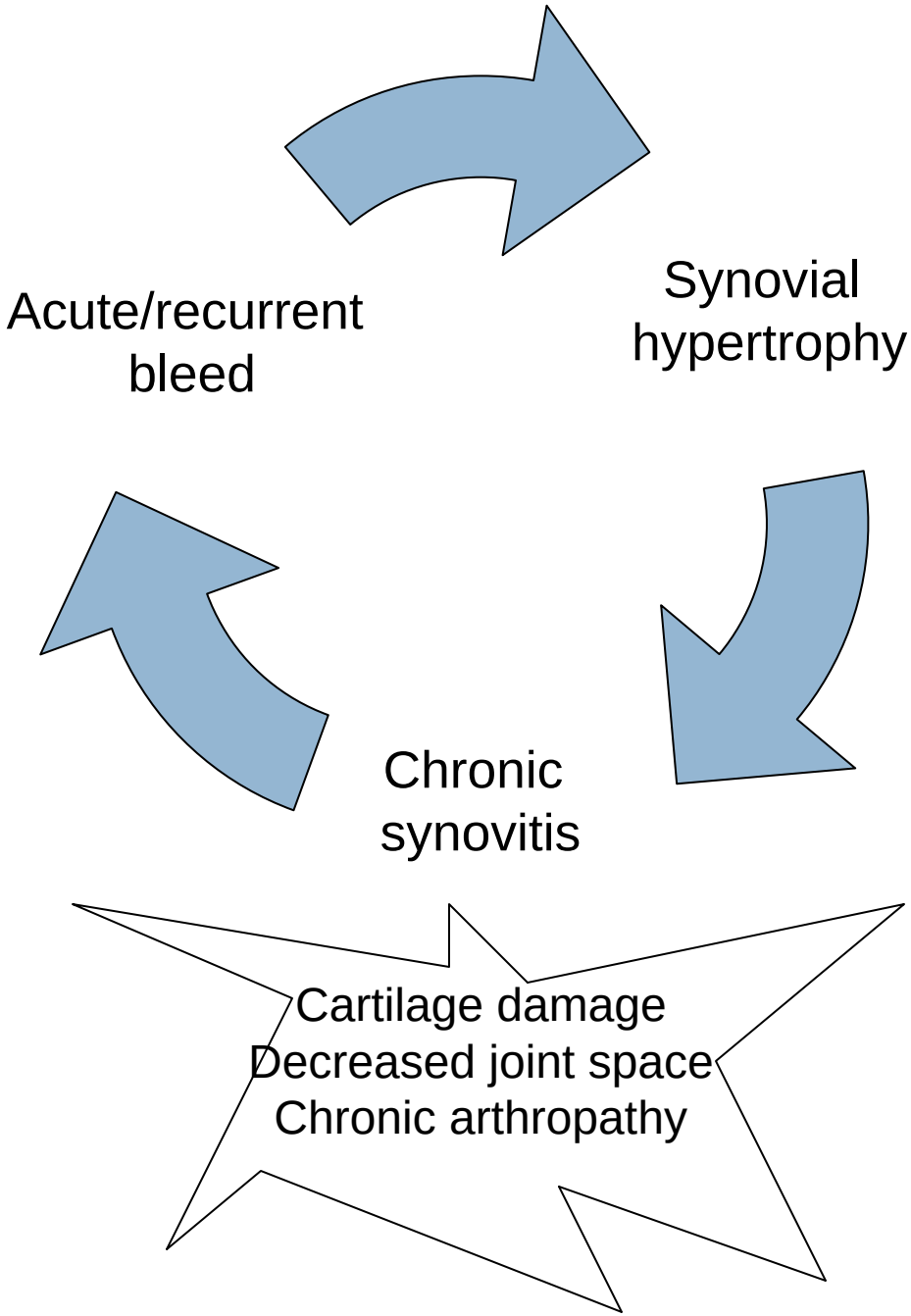
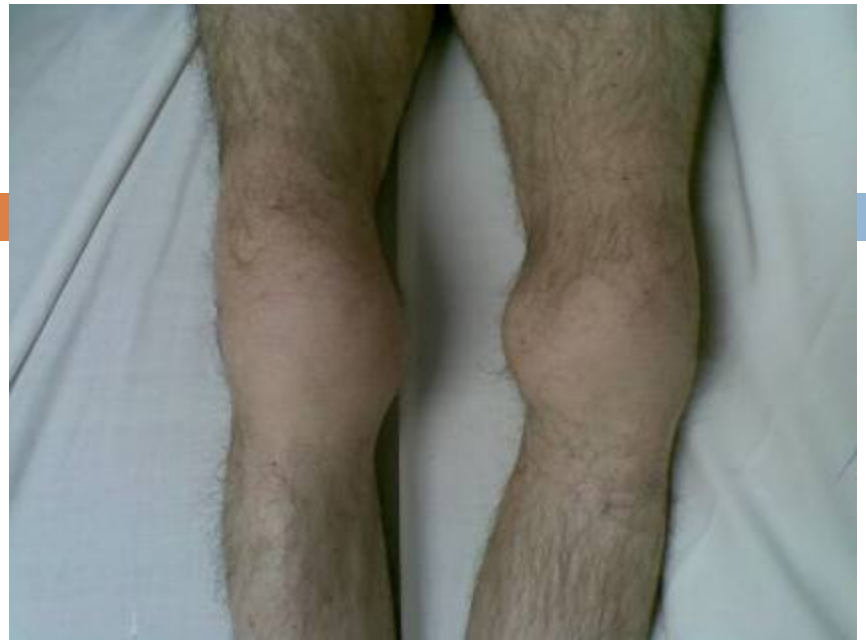
	18-29	30-39	40-49	50-59	60-69	70+	Total
Severe	10	2	5	4	4	2	27
Moderate	4	7	4	12	7	3	37
Mild	7	21	14	12	8	13	75

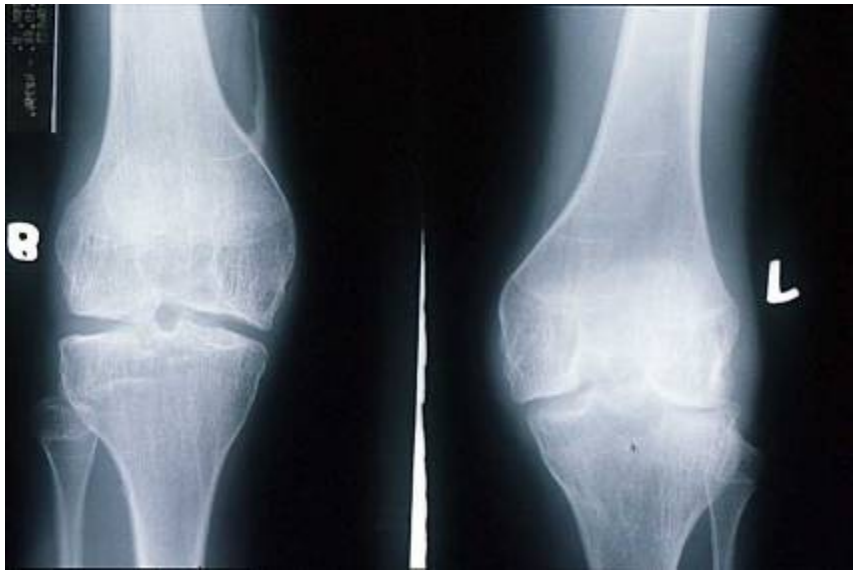
- Total adult Haemophilia A : 139
  - 27/139 (19%) severe, 27% moderate
  - 27% of total > 60yo (11% - severe/moderate phenotype)
- Haemophilia B – 29 (3 severe, 4 moderate, 22 mild)
- VWD – 134

Joint replacements in patients with bleeding disorder

- SA Adult HTC experience in joint replacement
  - Only joint replacements or revisions
  - How we prepare and support
- Snapshot of last 30 years 1980-2009
  - No and type of joint replacements
  - Factor VIII usage
- Complications


Acute/recurrent bleed
Synovial hypertrophy
Chronic synovitis
Cartilage damage
Decreased joint space
Chronic arthropathy



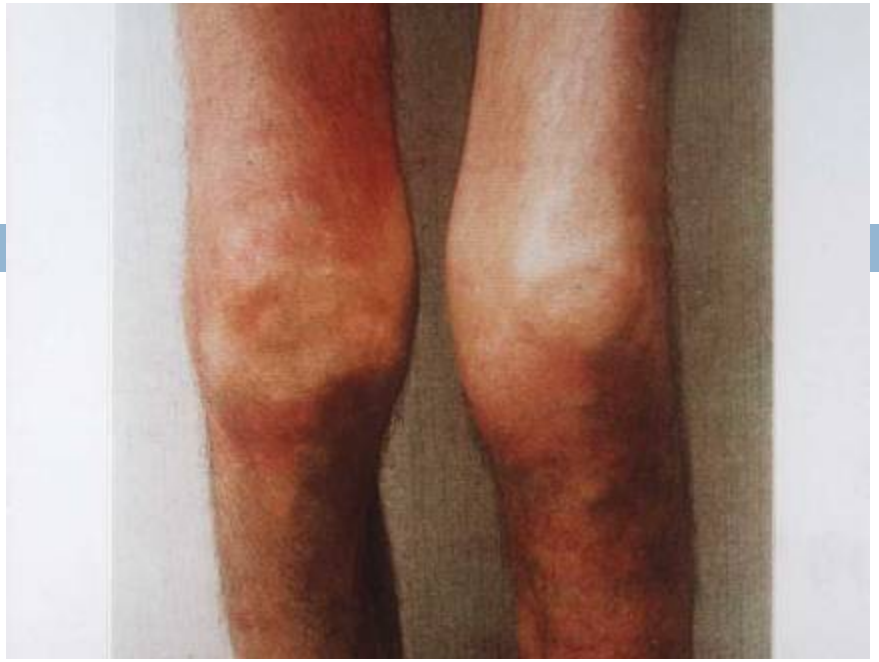


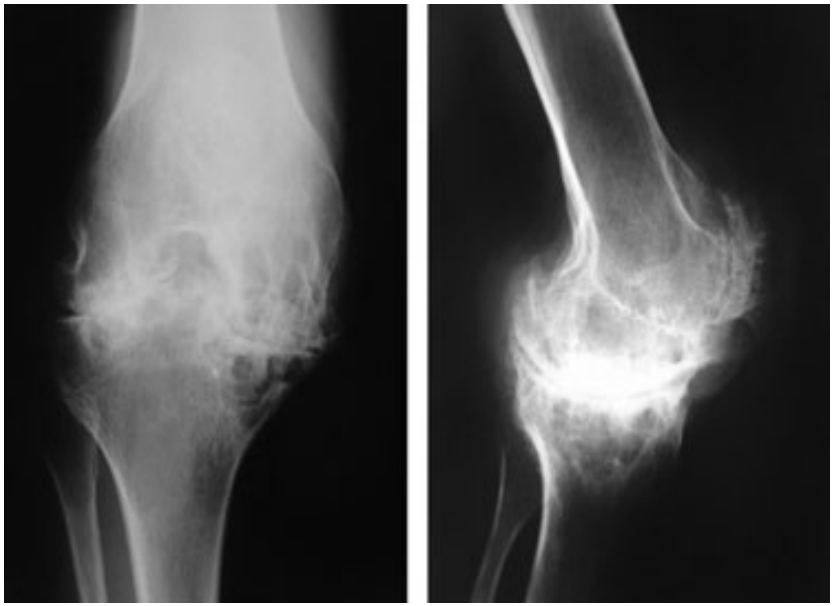
- Medical – treat bleeds, consider prolonged secondary prophylaxis
- Analgesia – paracetamol, oxycodone
- Multidiciplinary review
- Yttrium synovectomy
- Surgical synovectomy

Osteoarthritis

- Loss of function
- Chronic pain

- Arthroplasty





REFACTO HALF LIFE STUDY

Patient:
DOB:
UR Number:
Weight: 60
Blood group: O

Date: 11/8/2007
Product Infused: REFACTO
Time of infusion: 0900
Dose: 1500 units

Plasma Volume est. 3000 ml
Distribution Volume: 3400 ML

Half life: 13 HR
Recovery: 94%

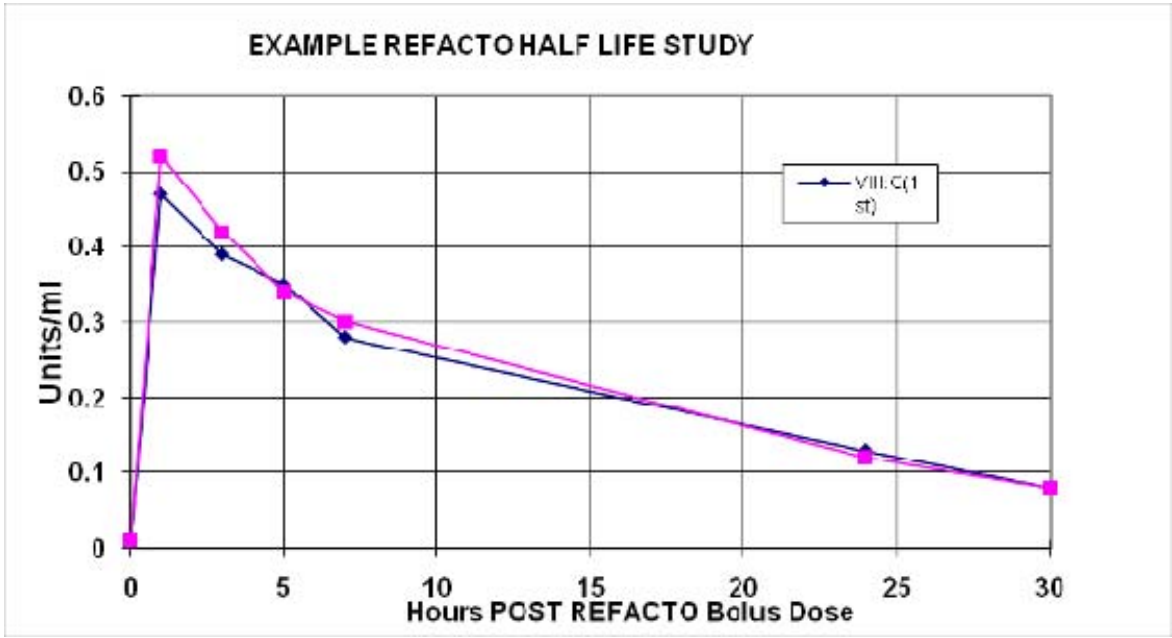
Hours POST-REFACTO	VIII:C(1-st)	FVIII-chr
0	0.01	0.01
1	0.47	0.52
3	0.39	0.42
5	0.35	0.34
7	0.28	0.3
24	0.13	0.12
30	0.08	0.08

1-stage and FVIII-chr assays calculated against **Refacto** standard.

Calcuations based on 1-stage data.

For 100% recovery, expected increment 0.50 iu/ml.
Actual increment = 0.47 iu/ml. at 1 hr

Therefore, recovery = [0.47/0.50] X 100 = 94%.



Treatment Protocol

- Individualised dose, FVIII continuos infusion/boluses
  - eg. Severe – continuous infusion for 5-7d; up to 3 weeks to 1 month
  - Dose calculator
- Define target FVIII, FVIII monitoring
- Co-ordination on day of surgery is crucial
- Close co-operation between haemophilia and orthopaedic teams for best patient outcomes

onday		0900		Start continuous infusion	4000 u/27 hr
		0930		Surgery	(TPF)
		1030		Assay in theatre	
		1230		Assay post-theatre	
		1400		Post-op bolus	1500 u
		1430		Assay	
		1600		Assay	
/04/2009	1	0900	1.0	Assay	
iesday		0900		Continue infusion	3500 u/24hr
		1400		Assay	(TPF)
/04/2009	2	0900		Assay	
ednesday		0900	1.0	Continue infusion	3000 u/24hr
		1400		Assay	(TPF)
/04/2009	3	0900	0.80	Assay	
iursday		1000		Continue infusion	3000 u/24hr
		1400		Assay	(TPF)
/04/2009	4	0830	0.80	Assay	
iday		1000		Bolus	1500 u
		2100		Bolus	1500 u
/04/2009	5	0830	0.75	Assay	
turday		0900		Bolus	1500 u
		2100		Bolus	1500 u
/04/2009	6	0900		Bolus	1000 u
nday		2100		Bolus	1000 u
/04/2009	7	0830	0.60	Assay	
onday		0900		Bolus	1000 u
		2100		Bolus	1000 u

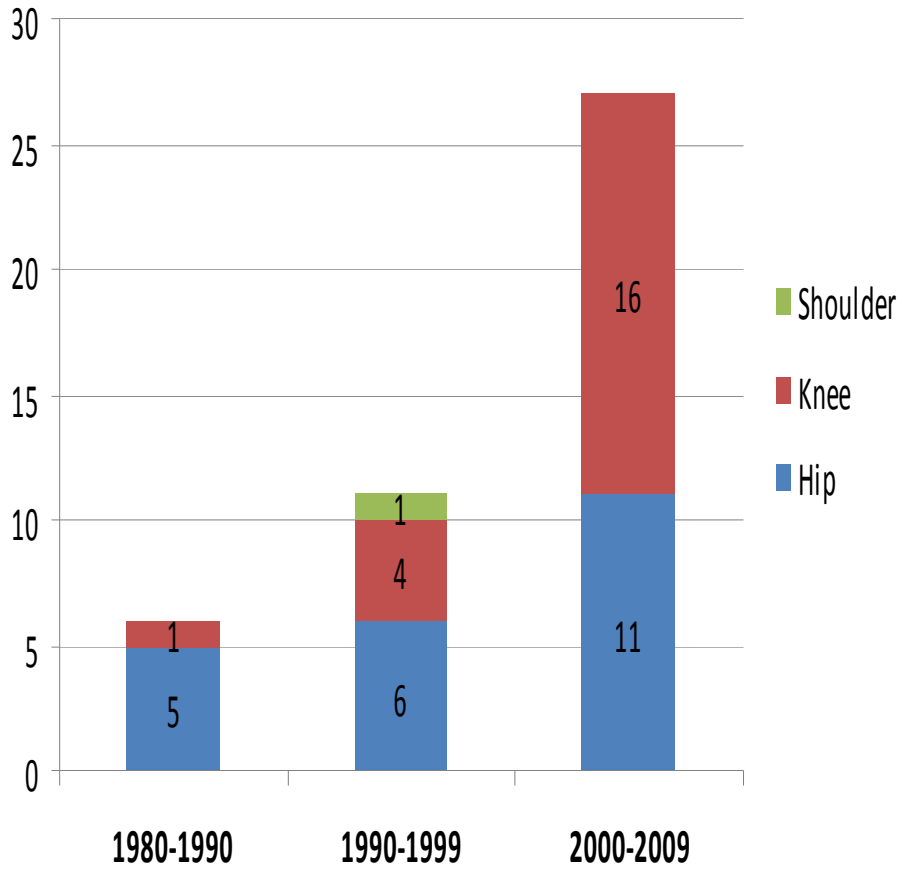
- Usually discharged on day 10
- d11-21, target FVIII 20%; 22-31:10% (severe)
- In mild haemophilia, treat only till d21

Venous thromboprophylaxis

- Usually not used in severe/moderate haemophilia patients
- Should be considered in mild phenotype and carriers
- VWD – standard VTE prophylaxis starts 24 hours after surgery once FVIII/VWF at target level; stop when off factor replacement

From 1980…to April 2009

Year	Hip	Knee	Shoulder
1980-1990	5	1	
1990-1999	6	4	1
2000	2	3	
2001	1	1	
2002	2	1	
2003	1	1	
2004	0	3	
2005	0	1	
2006	0	1	
2007	1	3	
2008	2	0	
2009	2	2	
TOTAL	22	21	1



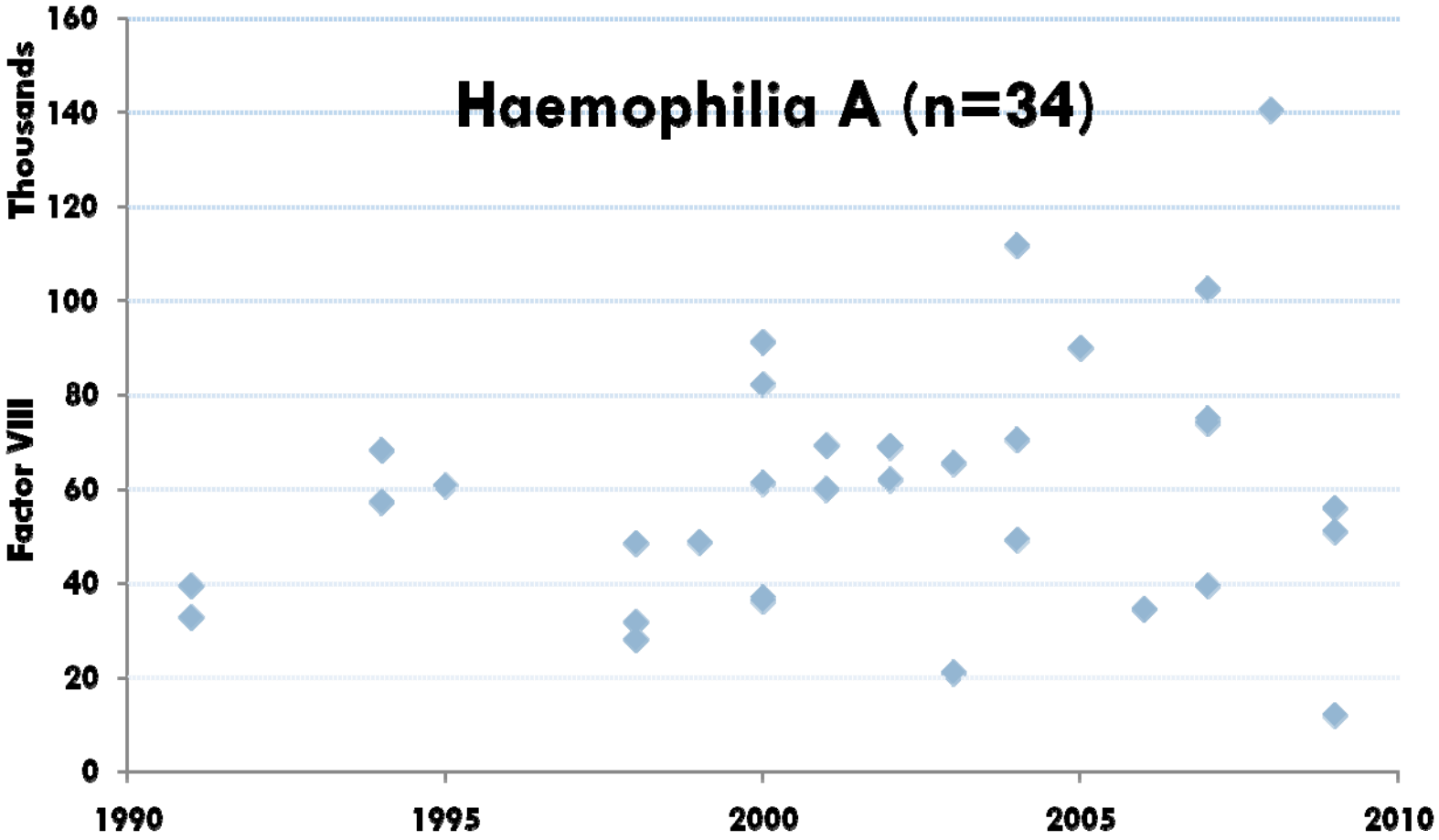
1980-April 2009

- 44 total joint replacements – 41 (93%) in HA; 1 mild HB and 2 VWD
- 32/44 (72%) in 12 severe HA
- 8 joint revisions (4 to 11 years)
- Median age 55yo, Range 35-83
- 41 surgeries in RAH, 3 in private sector – mild haemophilia A, carrier &mild type 1 VWD

Factor Concentrates

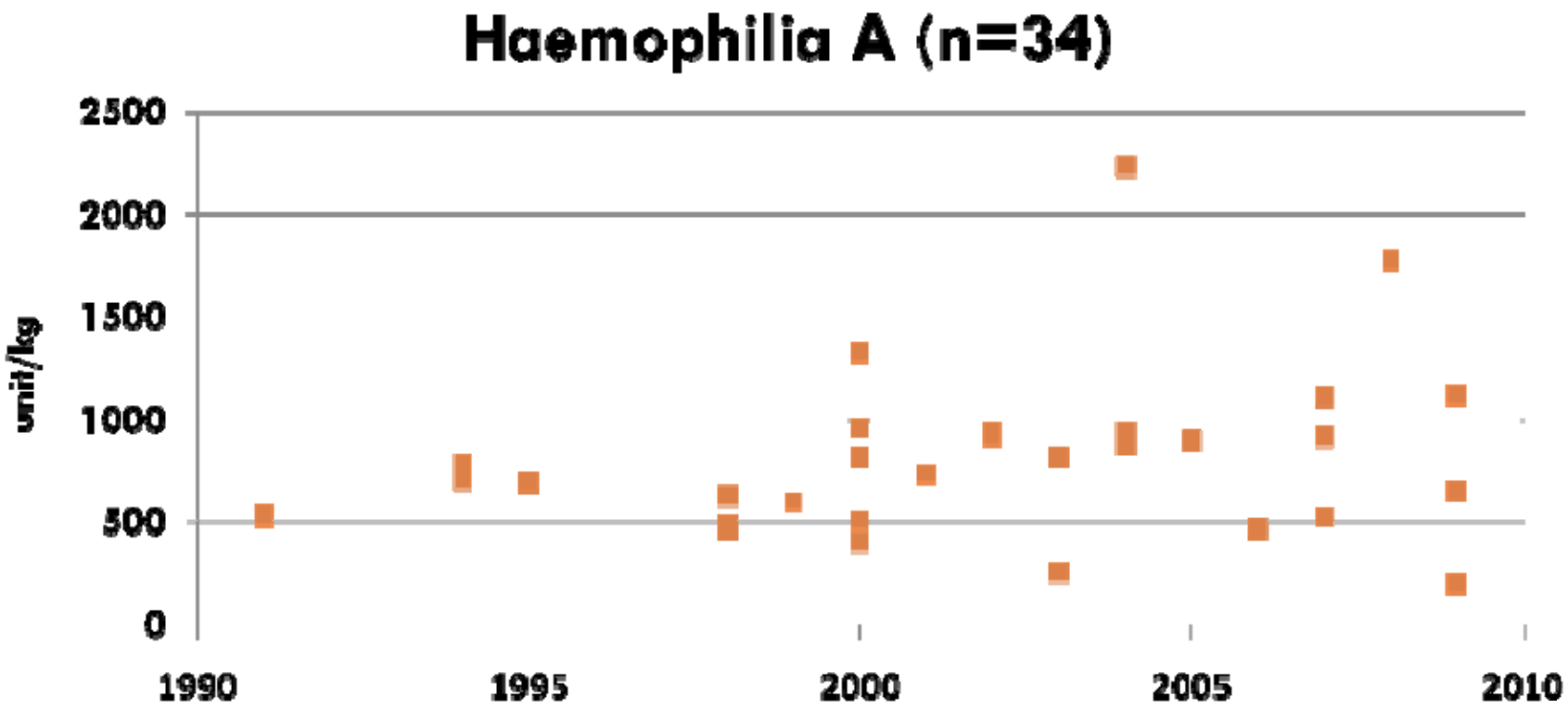
Year	Product	No (total 41 HA)
Before 1989	cryoprecipitate	>2
1987-2006	AHF(pd)	25
Since 2003	BIOSTATE (pd)	4
2000-2007	RECOMBINATE	3
Since 2007	ADVATE	6
2009	REFACTO	1

- Haemophilia B - Monofix
- VWD – Biostate and DDAVP



- Median FVIII 54,500 +/- 21,680 (12,000 to 91,250)
- include carrier, exclude 3 patients >100,000unit
  - Possible inhibitor, extensive revision & HCV coagulopathy

Median FVIII – 836 unit/kg



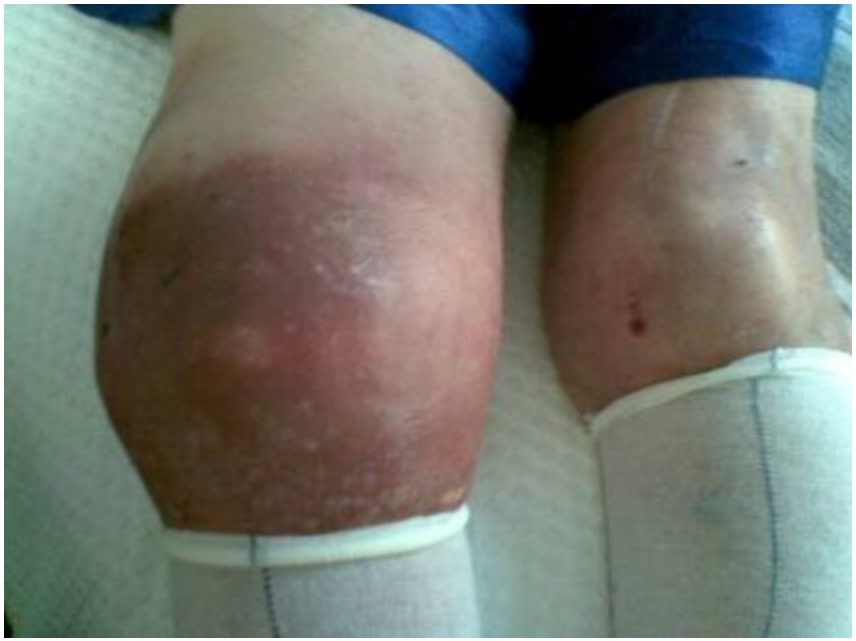
- Prophylaxis dose 30unit/kg three times a week
- Estimated annual FVIII =90X52= 4,680 unit/kg

Complications

- Early complications
  - Fracture hip prosthesis after 4 years, infected revision
  - Hip prosthesis infected with staph epidermidis removed, NWB 1 year
  - Proteus wound infection
- VTE : HA carrier (28% FVIII, day 6 PE, calf vein thrombosis)
  - DDAVP, FVIII, tranexamic acid, >>14d Rx LMWH

Late joint complications

- Hip : capsule damage and infected, 10 years post arthroplasty
- Knee (2004): septic from central line infection, wrist



Orthopaedic team

FACTOR CONC

Haemostasis Lab

Haemophilia team

Physiotherapist

Patient & family

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- Data manager - Kathryn Van Diemen
- Orthopaedic surgeon - Mr Teague

2004-current	Joints	Product	Year	Unit
SEVERE	R TKR	Biostate	2004	111750
SEVERE	R TKR	Biostate	2004	70500
SEVERE	Left TKR	Biostate	2004	49250
SEVERE	R TKR	Recombinate	2005	90000
SEVERE	R TKR	AHF	2006	34500
MILD	L TKR	Advate	2007	74000
SEVERE	Rev R Hip & bone graft	Advate	2007	102500
SEVERE	RevisionRight TKR	Recombinate	2007	75000
MILD	L TKR	Advate	2007	39500
SEVERE	R THR	Advate	2008	140500
VWD-1	Hip replacement	DDAVP	2008	0
MILD	Left THR	Advate	2009	51000
SEVERE	Right THR	Refacto	2009	56000
HA Carrier	Left TKR	Advate	2009	12000
VWD-2M	R TKR	Biostate	2009	10000
SEVERE	R ankle replacement	Refacto	2009	*56000
MILD	R TKR	Advate	2009	*40000
VWD-2M	R THR	Biostate	2009	*4500

- 6 patients had bilateral knee replacements
- Only 1 dual-joint replacement (hip and knee)
- Since April, 3 additional arthroplasty – ankle, hip and knee, total of 7 joint replacements (3H, 3K, 1 ankle)

- 1 patient had 6 surgeries in 30 years, bilateral hip and knee replacements and revision of hip & knee (first surgery aged 39, now 60)
- 72 yo patient had 6 surgeries for 4 joints/revision (first hip arthroplasty at 55 – 2 knees and 1 hip)