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Anemia Management Protocol: Tricities Implementation

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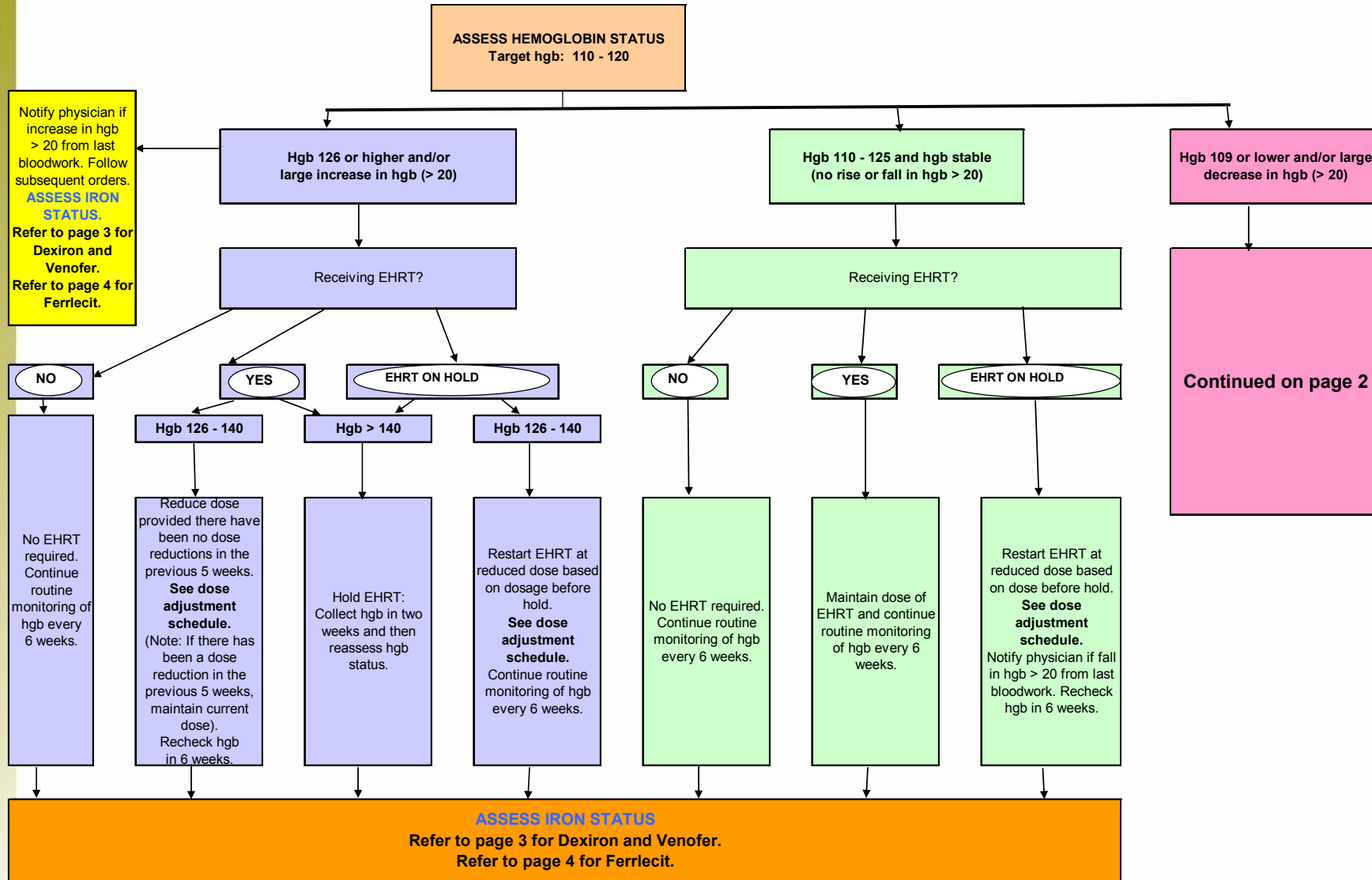
BC Nephrology Days
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**BC Renal
Agency**

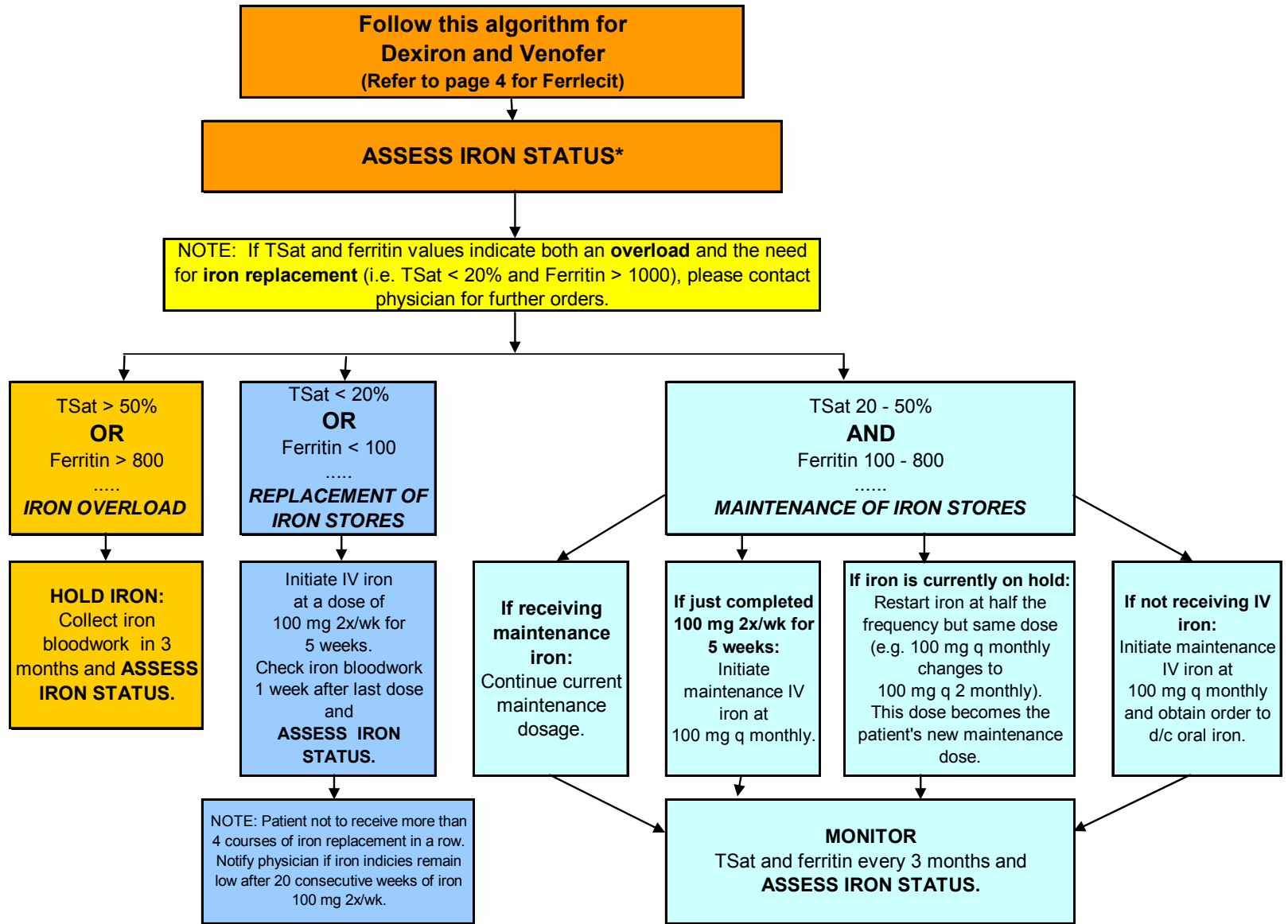
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Health Services Authority

RENAL ANEMIA MANAGEMENT PROTOCOL



Note: Erythropoietic hormone replacement therapy (EHRT) refers to both Aranesp and Eprex.





****If iron bloodwork ever appears very unusual compared to previous results, (e.g. with replacement of iron stores, TSat goes from < 20% to > 50%) repeat bloodwork and reassess iron status.***

Note: Iron maintenance dose refers to 100 mg q monthly unless otherwise indicated.



Case-control Study

- Cases: Tricity patients enrolled in AMP
- Controls: BC CDU patients on dialysis and EHRT during the same period
- Patients matched on
 - Age
 - Gender
 - Duration of Dialysis
 - Duration of EHRT
 - Race (if available)



Cases

- Cases: enrolled in AMP from Jul 04 – Apr 06
- Median follow-up: 18 months
- Blood-work review every 6 weeks
- Dose adjustments per protocol (attached)
 - ARANESP/EPREX
 - Iron



Demographics: Cases (AMP Patients) vs. Controls (Matching BC CDU Patients)

Variable	Controls	Cases	P
N	176	133	
Age	64	62	0.12
Gender (% Male)	65%	65%	0.91
Race (% Caucasian)	78%	75%	0.46
Diabetes	42%	37%	0.36
CVD	56%	47%	0.33
Dialysis Duration (mo)	9	14	0.14
Registered as CKD	62%	57%	0.40

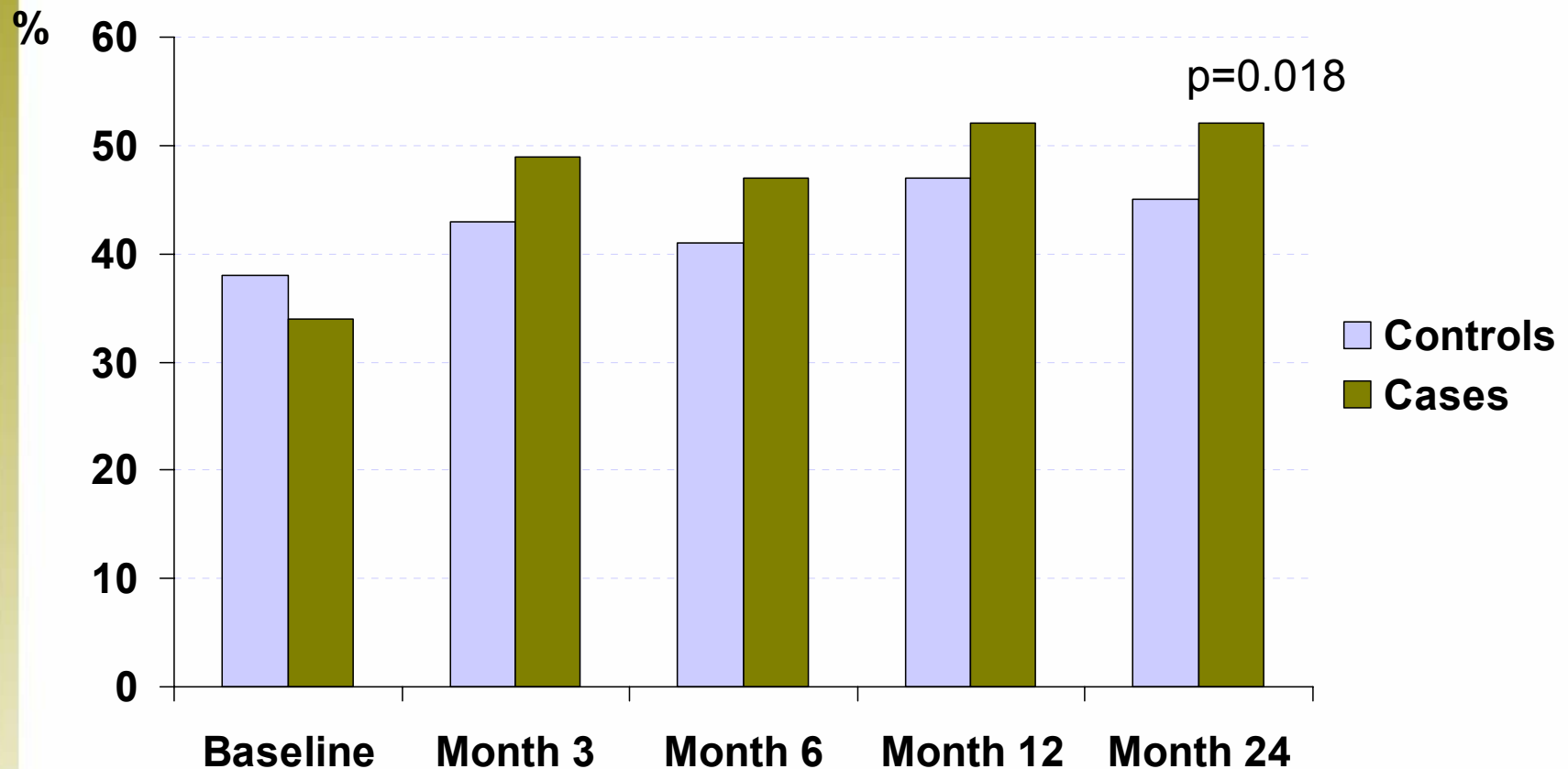


Demographics: Cases (AMP Patients) vs. Controls (Matching BC CDU Patients)

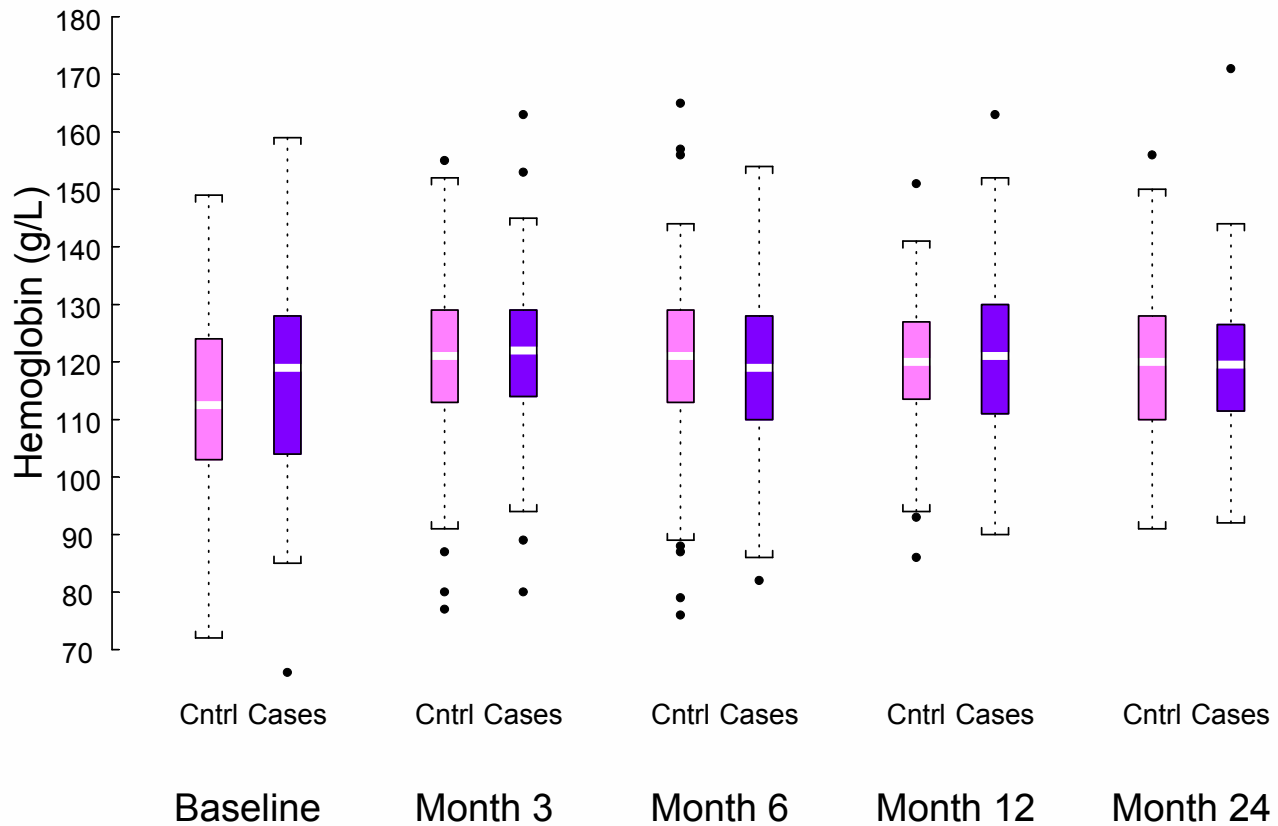
Variable	Controls	Cases	P
N	176	133	
EHRT Duration (mo)	12	17	0.11
% on ARANESP	39%	56%	<0.01
In follow-up @ 6 months	91%	91%	ns
In follow-up @ 12 months	83%	80%	ns
In follow-up @ 24 months	77%	70%	ns



% Hemoglobins within 110-125 g/L Range



Hemoglobin Levels



EHRT Weekly Dose

Variable	Controls	Cases	P
Baseline ARANESP $\mu\text{g}/\text{wk}$	42 \pm 30	38 \pm 29	ns
Month 3 ARANESP $\mu\text{g}/\text{wk}$	39 \pm 25	35 \pm 31	ns
Month 6 ARANESP $\mu\text{g}/\text{wk}$	36 \pm 23	30 \pm 29	ns
Month 12 ARANESP $\mu\text{g}/\text{wk}$	42 \pm 33	35 \pm 34	ns
Month 24 ARANESP $\mu\text{g}/\text{wk}$	48 \pm 46	35 \pm 35	ns

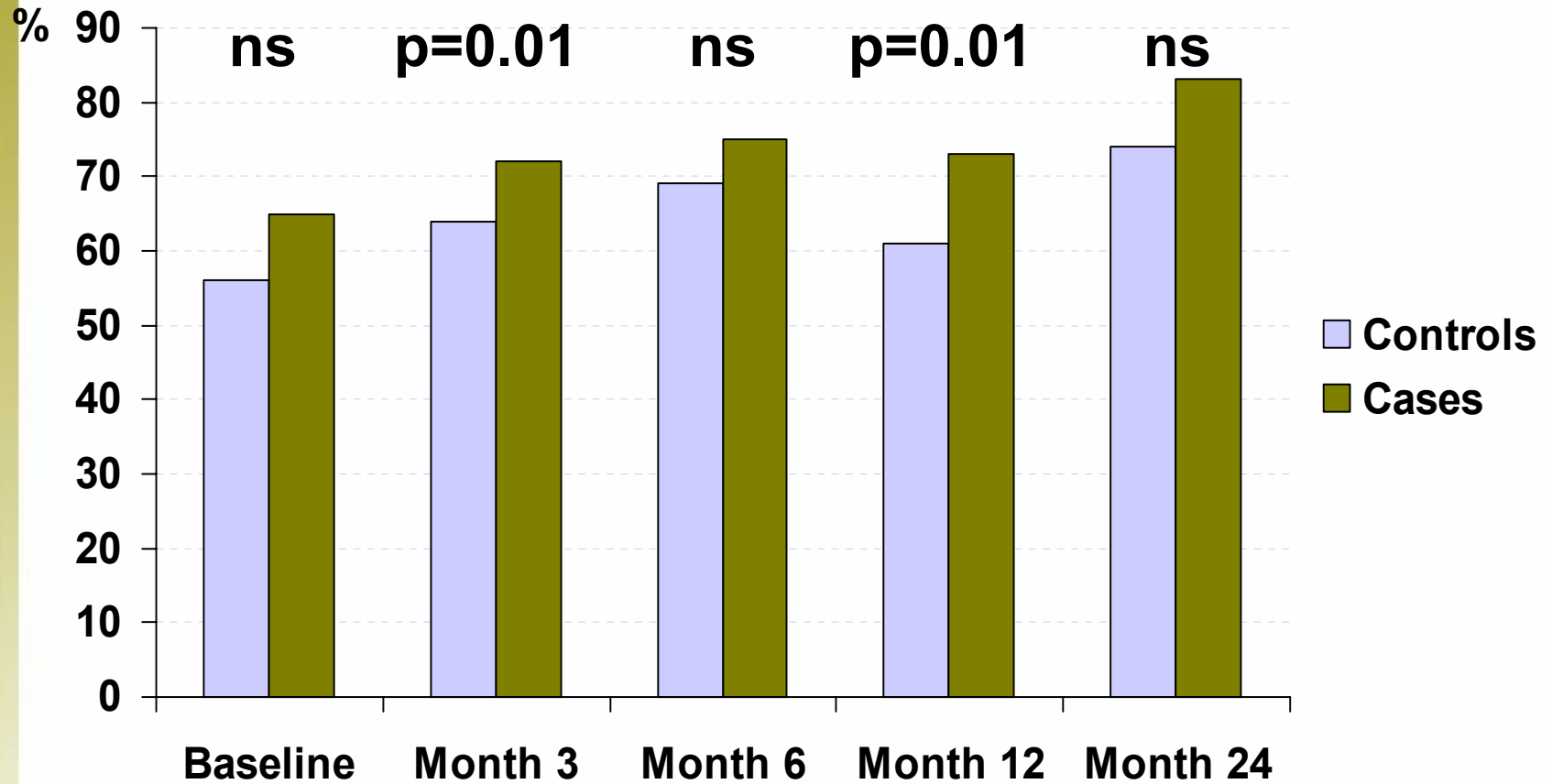


EHRT Weekly Dose

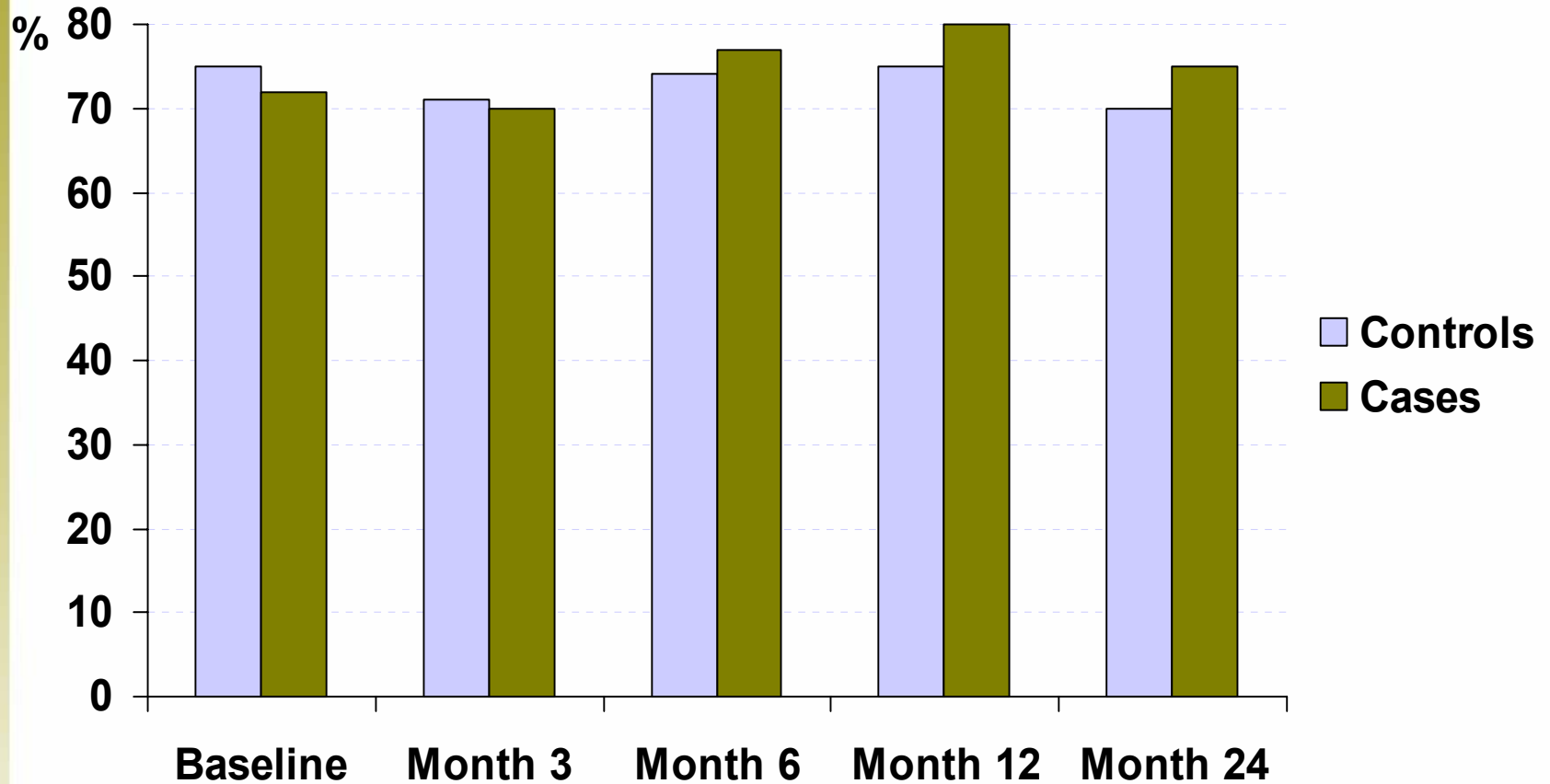
Variable	Controls	Cases	P
Baseline EPREX unit/wk	12900 \pm 7600	10100 \pm 6500	ns
Month 3 EPREX unit/wk	12300 \pm 7700	10300 \pm 6100	ns
Month 6 EPREX unit/wk	11700 \pm 7400	10500 \pm 6300	ns
Month 12 EPREX unit/wk	10600 \pm 7100	10400 \pm 7200	ns
Month 24 EPREX unit/wk	10500 \pm 7000	9100 \pm 6800	ns



% TSat within 0.20-0.45 Range



% Ferritins within 100-800 $\mu\text{g/L}$ Range



IV Iron Weekly Dose

Variable	Controls	Cases	P
Baseline 'Dextran' unit/wk	50 (50-50)	50 (50-50)	0.797
Month 3 'Dextran' unit/wk	50 (50-100)	25 (25-37)	0.157
Month 6 'Dextran' unit/wk	50 (25-100)	25 (25-37)	0.012
Month 12 'Dextran' unit/wk	50 (25-50)	na	na
Month 24 'Dextran' unit/wk	50 (25-50)	na	na
Month 12 'Ferrlecit' mg/wk	63 (31-125)	31 (31-125)	0.129
Month 24 'Ferrlecit' mg/wk	63 (47-63)	31 (31-63)	0.068

*Median (Inter-Quartile Range: 25th-75th Percentile)



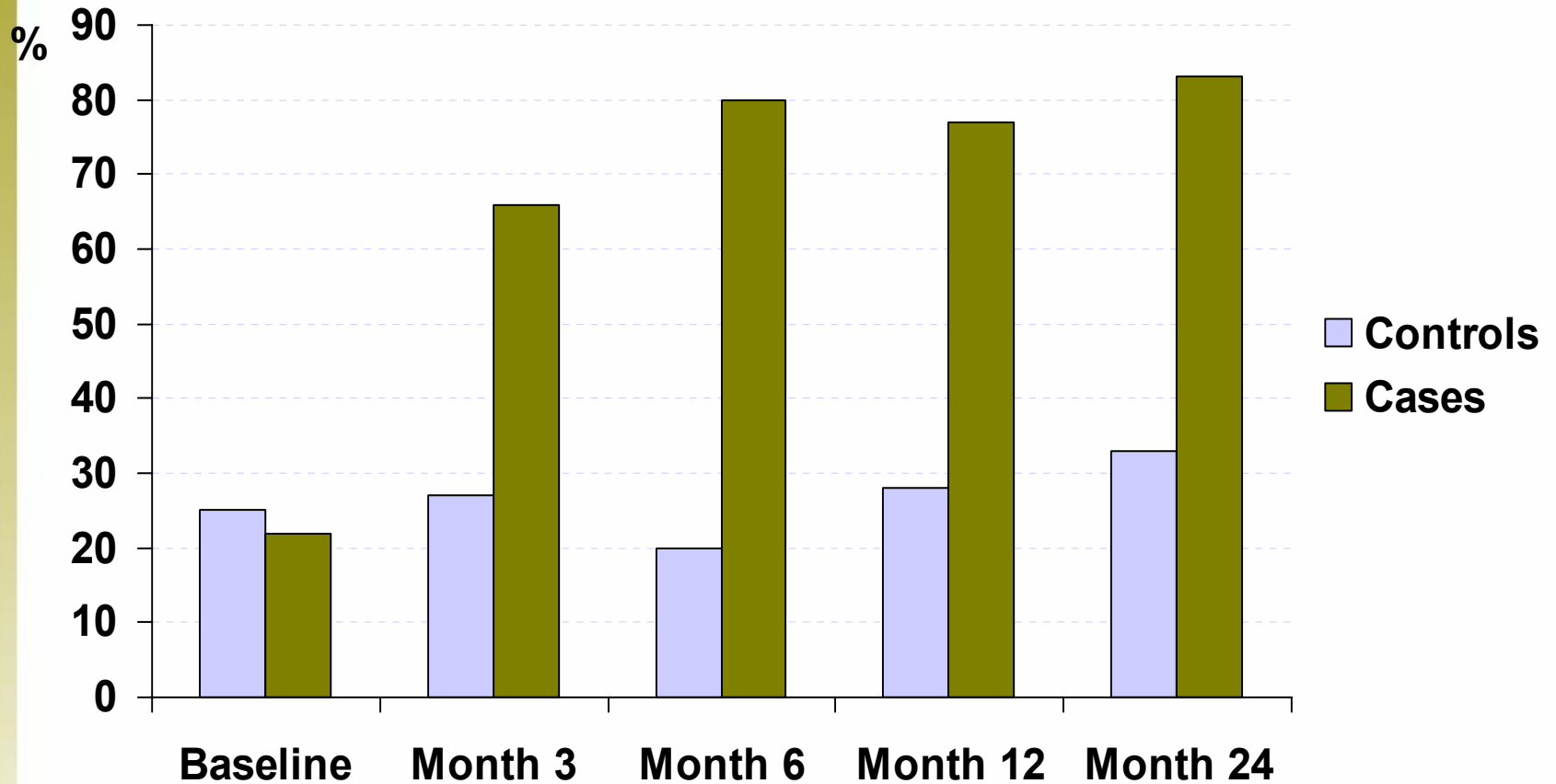
IV Iron Weekly Dose

Variable	Controls	Cases	P
Baseline 'Venofer' mg/wk	50 (50-100)	50 (25-100)	0.733
Month 3 'Venofer' mg/wk	50 (50-100)	25 (25-50)	<0.001
Month 6 'Venofer' mg/wk	50 (25-100)	25 (25-37)	<0.001
Month 12 'Venofer' mg/wk	50 (25-100)	25 (25-25)	<0.001
Month 24 'Venofer' mg/wk	50 (25-50)	25 (25-25)	0.022

*Median (Inter-Quartile Range: 25th-75th Percentile)



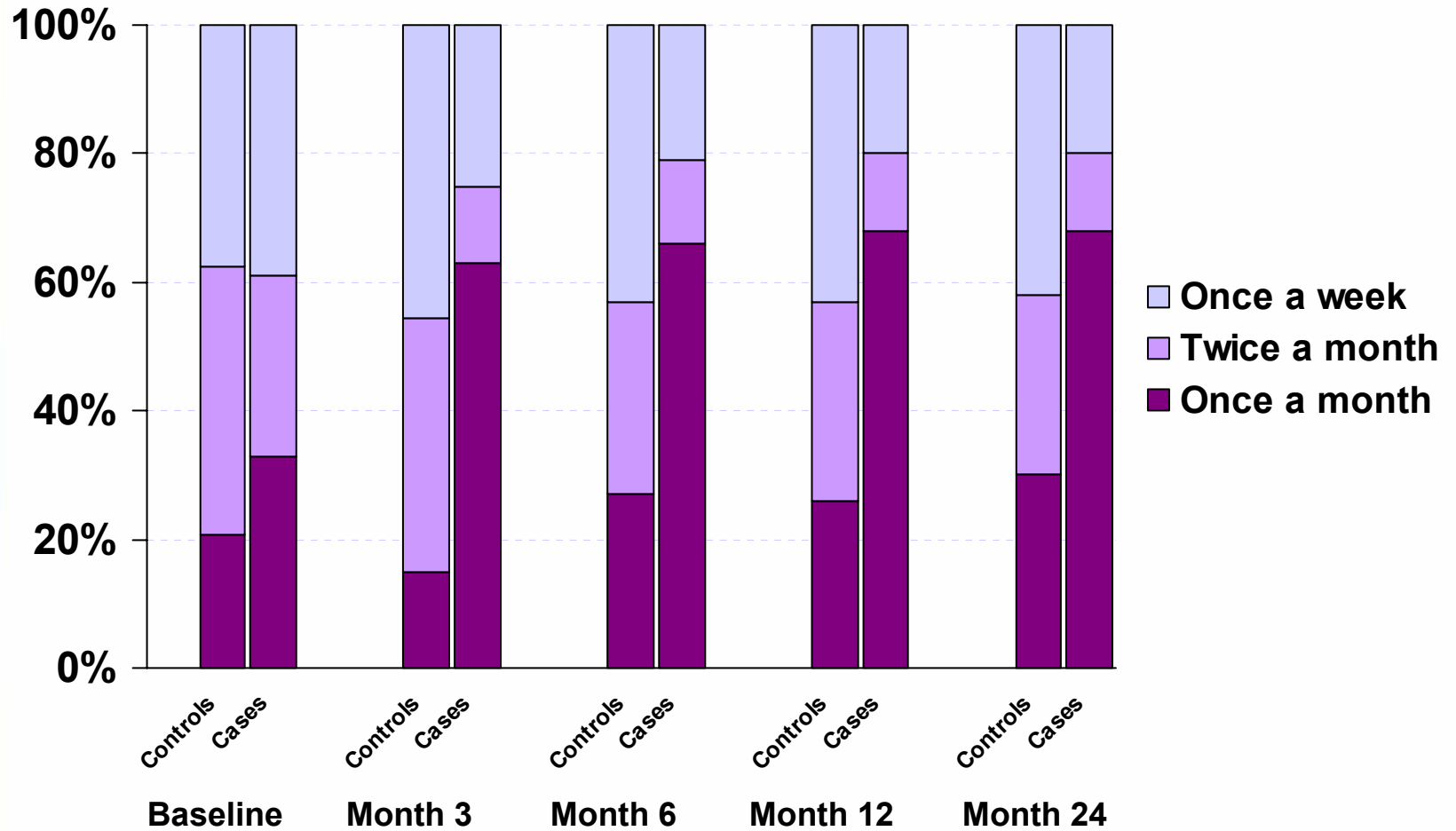
Patients on "Low"* IV Iron Dose



* 100 mg, once monthly, or less



Iron Saccharate (Venofer) Dose



EHRT Efficiencies

EPREX

per patient wk: 2(000) u/pt *\$14.17=\$28.34

100 pts. 4 wks: \$28.34*100*4=\$11,336

ARANESP

per patient wk: 7 mcg/pt *\$2.76=\$19.32

100 pts. 4 wks: \$19.32*100*4=\$7,728



Human Resources Costs

- Training costs:
10 nurses * 2 day In Service* = \$4620
Nurse Trainer and Pharmacist *2 days = \$1260
- “AMP Nurse” (dedicated support nurse) costs:
9 blood-works per year*30 hours=\$8910



CDU with 50 patients cost-effective after 4 months

*nurse hourly rate \$33



Summary

Anemia Management Protocol Demonstrated:

- Less fluctuations of Hg and Iron parameters levels over time compared with matched control patients not on protocol
- More patients within target range of Hg, TSat and Ferritin
- Stable TSat and Ferritin levels with substantially lower doses of IV Iron



Summary

- The protocol allowed us to delegate this aspect of therapy in a safe manner...and based on our data to date we have not done any harm to the pts.
- It has allowed nephrologists to focus on other tasks and a way to deal with the increasing complexity of our renal pts.



Acknowledgements

I would like to thank the following:

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