
BDP(Best Demonstrated Practice)

(Medical Advisory Board, MAB)

Chen Tun-Ling

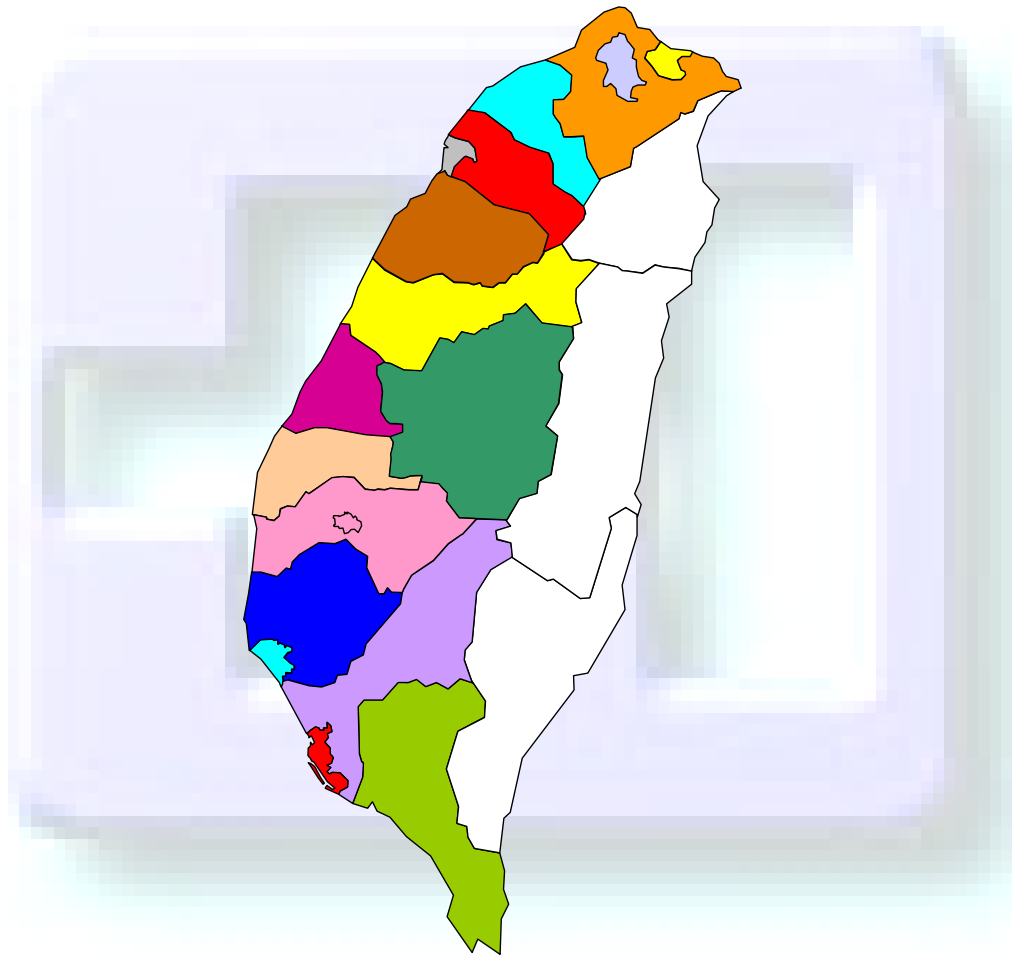


Outline

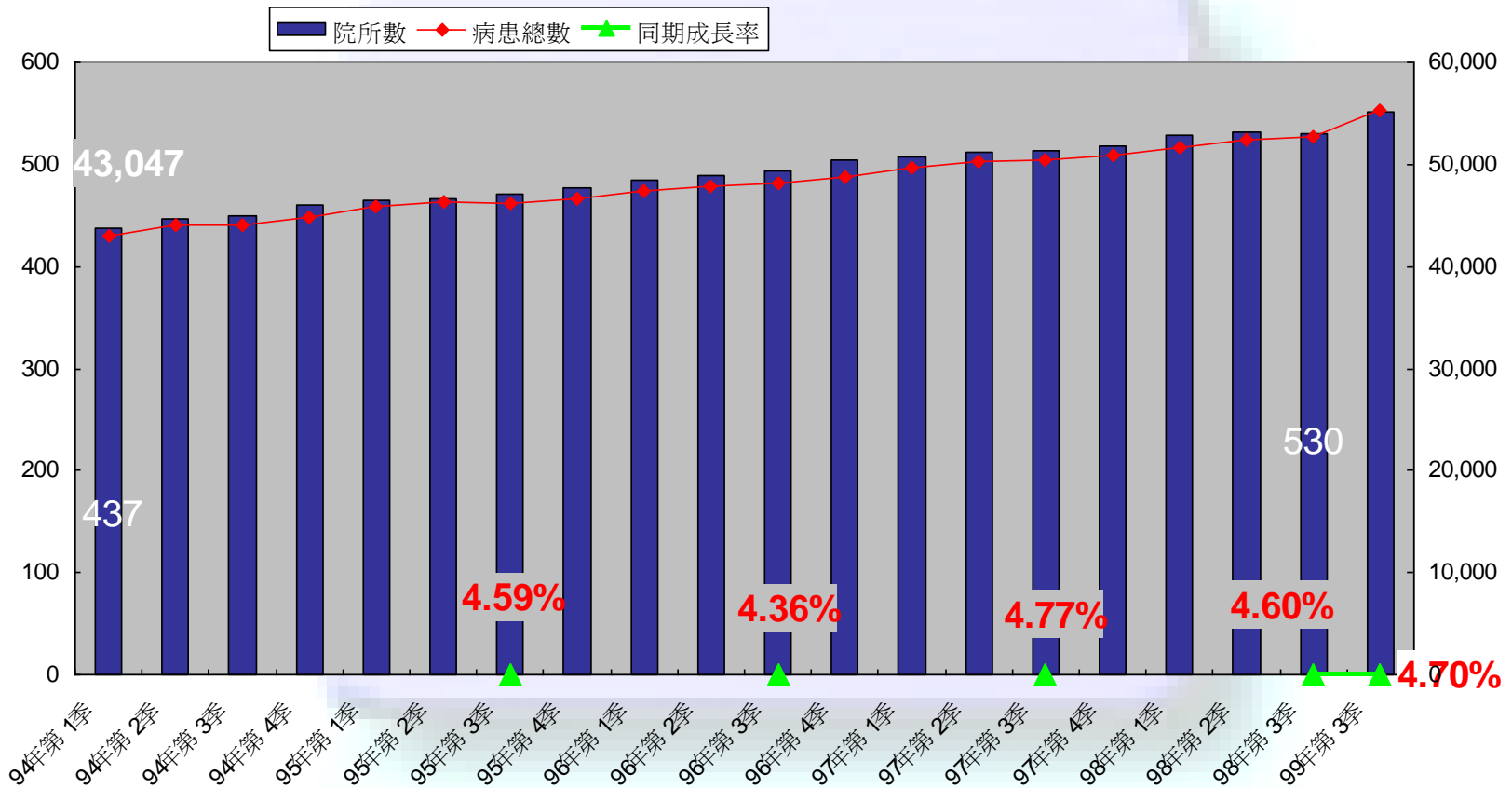
- **mortality rate**
- Anemia management
- Adequacy
- Quality incentive payment (QIP)



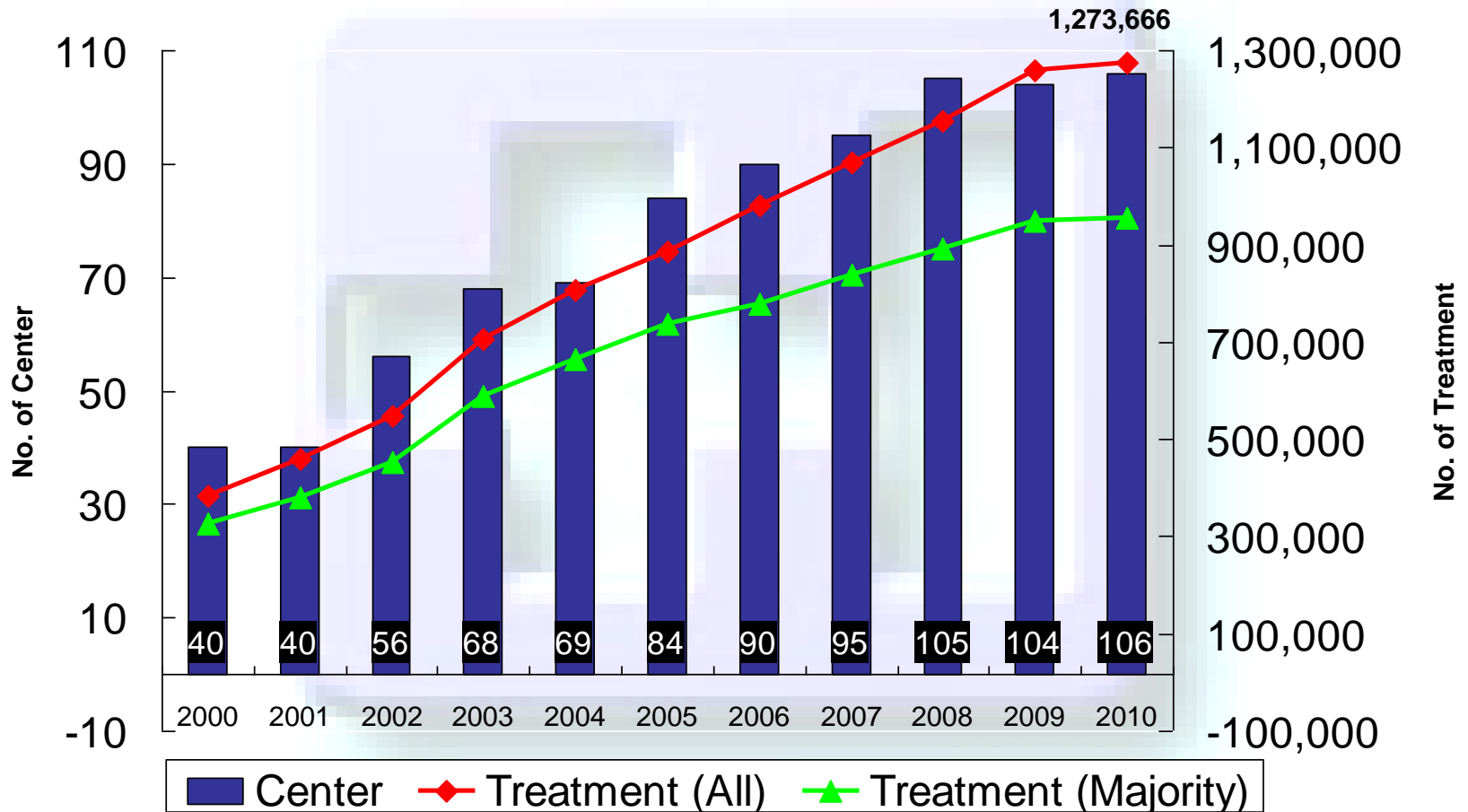
marketplace



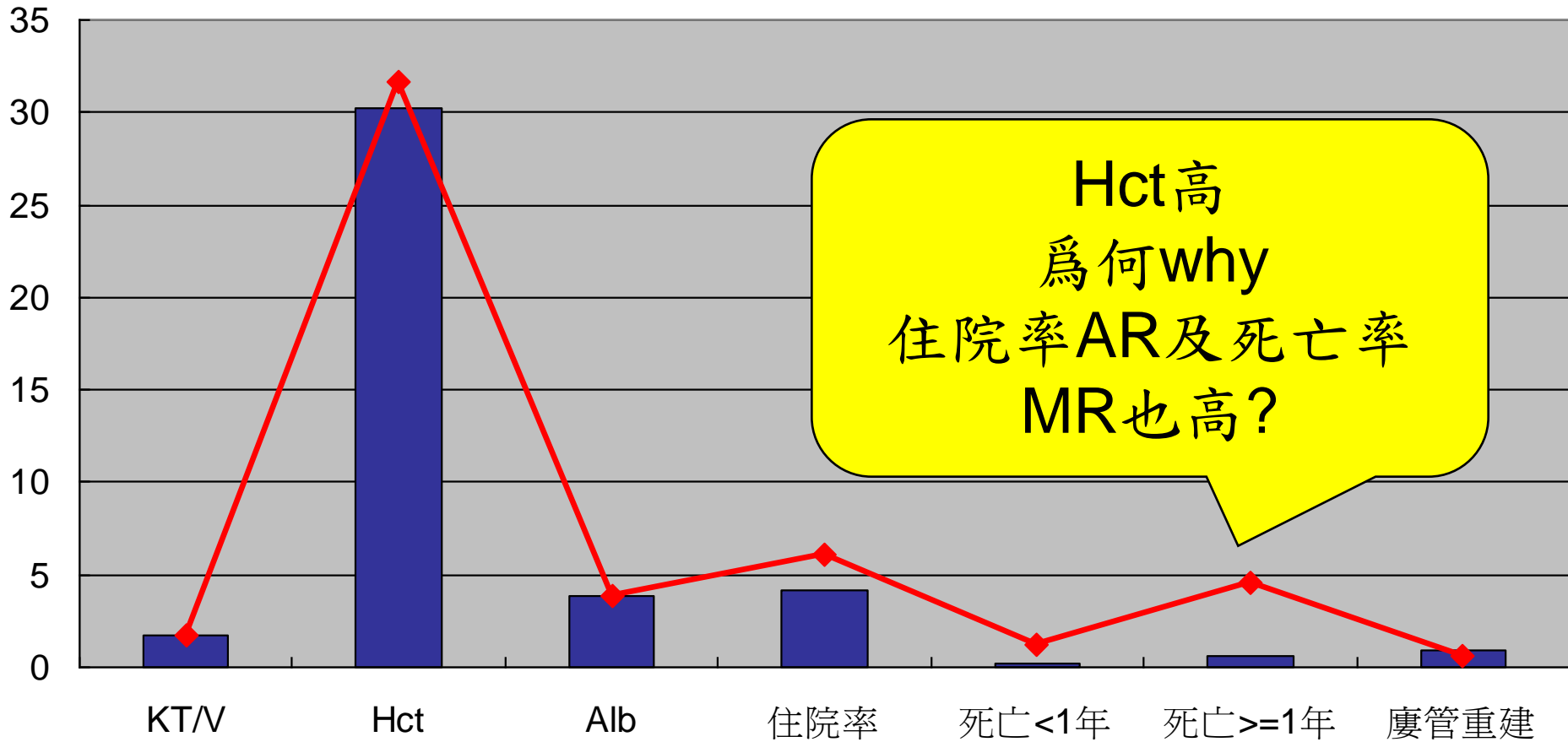
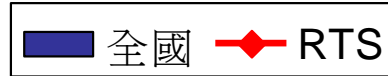
Taiwan RTS



RTS



RTS & Taiwan



Demography (1)

Topic	survival		death		χ^2
	no	%	no	%	
gender	3401		576		6.23 *
Male	1580	46.46	300	52.08	
female	1821	53.54	276	47.92	
Age					97.14 **
<40	480	14.14	24	4.17	
40~55	600	17.68	56	9.74	
56~60	760	22.39	128	22.26	
61~70	838	24.69	173	30.09	
>70	716	21.10	194	33.74	
Marital	2967		470		13.64 *
yes	2567	86.52	405	86.17	
divorce	18	0.61	3	0.64	
no	258	8.70	27	5.74	
spouse dead	124	4.18	35	7.45	
education	2352		440		35.96 *
pre-junior	1466	62.33	333	75.68	
junior	335	14.24	55	12.50	
senior	382	16.24	42	9.55	
college	169	7.19	10	2.27	

Demography(2)

Topic	survival		death		X ²
	no	%	no	%	
complicate	997		427		44.66 **
0	118	57.47	174	40.75	
1	740	35.80	201	47.07	
2	100	4.84	35	8.20	
3	21	1.02	8	1.87	
>4	18	0.87	9	2.11	
DM	3184		559		75.21 **
yes	920	28.89	265	47.41	
no	2264	71.11	294	52.59	
hyperBP	3184		559		0.24
yes	806	25.31	147	26.30	
no	2378	74.69	412	73.70	

Demography(3)

Topic	survival		death		X ²	
	no	%	no	%		
BMI	584		113		15.53	**
<19	95	16.27	35	30.97		
20~24	328	56.16	59	52.21		
25~29	147	25.17	17	15.04		
>30	14	2.40	2	1.77		
EPO	3401		576		240.62	*
yes	2741	80.59	293	50.87		
no	660	19.41	283	49.13		
Anti-HCV	3028		490		20.41	**
yes	648	21.40	150	30.61		
no	2380	78.60	340	69.39		
AV shunt	2338		443		63.25	**
AVF	1844	78.87	293	66.14		
gortex	393	16.81	91	20.54		
perm cath	101	4.32	59	13.32		
Multiple	3401		576		20.22	**
yes	494	14.53	126	21.88		
no	2907	85.47	450	78.13		

Lab data (1)

Topic	survival (N=3401)		death (N=576)		t-test	
	average	SD	average	SD		
Total Protein	6.94	0.58	6.87	0.61	2.41	*
Albumin	3.91	0.40	3.68	0.49	10.42	**
Total Ca	9.51	0.82	9.47	0.85	0.87	
P	4.81	1.36	4.58	1.51	3.39	**
CaXP	45.84	13.74	43.34	14.43	3.97	**
PTH	212.67	264.86	182.62	310.48	1.99	*
A.L.T	22.55	22.44	26.24	37.05	-2.31	*
Alkaline-P	125.02	105.00	148.61	123.04	-4.29	**
Cholesterol	182.93	40.04	178.02	47.24	2.29	*
Triglyceride	173.31	115.58	167.91	105.44	1.09	
Glucose	135.49	65.70	162.29	86.71	-6.64	**
W.B.C	6.76	1.92	7.46	2.47	-6.44	**
Hgb	9.96	1.28	9.53	1.36	7.27	**
Hct	30.21	3.73	29.33	4.01	4.89	**
Fe	71.56	23.73	68.24	25.05	2.87	**
Ferritin	584.66	499.51	603.00	602.06	-2.51	*

Lab data(2)

Topic	survival (N=3401)		death (N=576)		t-test	
	average	SD	Average	SD		
TS	33.49	13.50	32.07	13.94	2.17	*
MCV	93.40	7.56	93.15	7.99	0.74	
Platelet	198.72	62.01	196.21	67.03	-1.06	
Creatinine	10.08	2.56	8.79	2.45	11.20	**
CL	101.30	3.76	100.68	4.24	2.47	*
K	4.73	0.73	4.59	0.81	3.87	**
Uric acid	7.38	1.41	7.17	1.52	3.07	**
URR	74	0.06	72	0.07	3.14	**
K/V (Gotch)	1.37	0.24	1.34	0.24	2.88	**
K/V (Daugirdes)	1.65	0.30	1.61	0.31	2.79	**
TACurea	42.31	9.80	40.56	10.72	3.54	**
nPCR	1.13	0.26	1.06	0.25	5.74	**
UFR	2.53	1.04	2.48	1.12	0.92	
CTR	50	0.06	52	0.05	-5.13	**
BFR	263.63	40.64	255.69	36.52	4.40	**
Therapy time	239.92	8.41	238.62	9.07	3.16	**

gender & BFR & adequacy

Topic	male		female		t-test P-value
	Average	SD	average	SD	
URR (%)	71.14	0.06	75.76	0.06	<0.01
K/V (Gotch)	1.27	0.21	1.45	0.23	<0.01
Kt/V (Daugirdes)	1.53	0.26	1.74	0.30	<0.01
BFR	272.5	42.35	253.6	35.87	<0.01



Blood Access & Adequacy

topic	(1) AVF		(2) gortex		(3) Perm cath		P-value / Duncan	
	no	averag e	no	averag e	no	average		
URR (%)	2129	0.74	482	0.74	159	0.73	0.01	1,2> 3
K/V (Gotch)	2129	1.37	482	1.39	159	1.34	0.04	2>3
Kt/V (Daugirdes)	2040	1.65	466	1.66	145	1.58	<0.01	1,2> 3



DM & Blood access

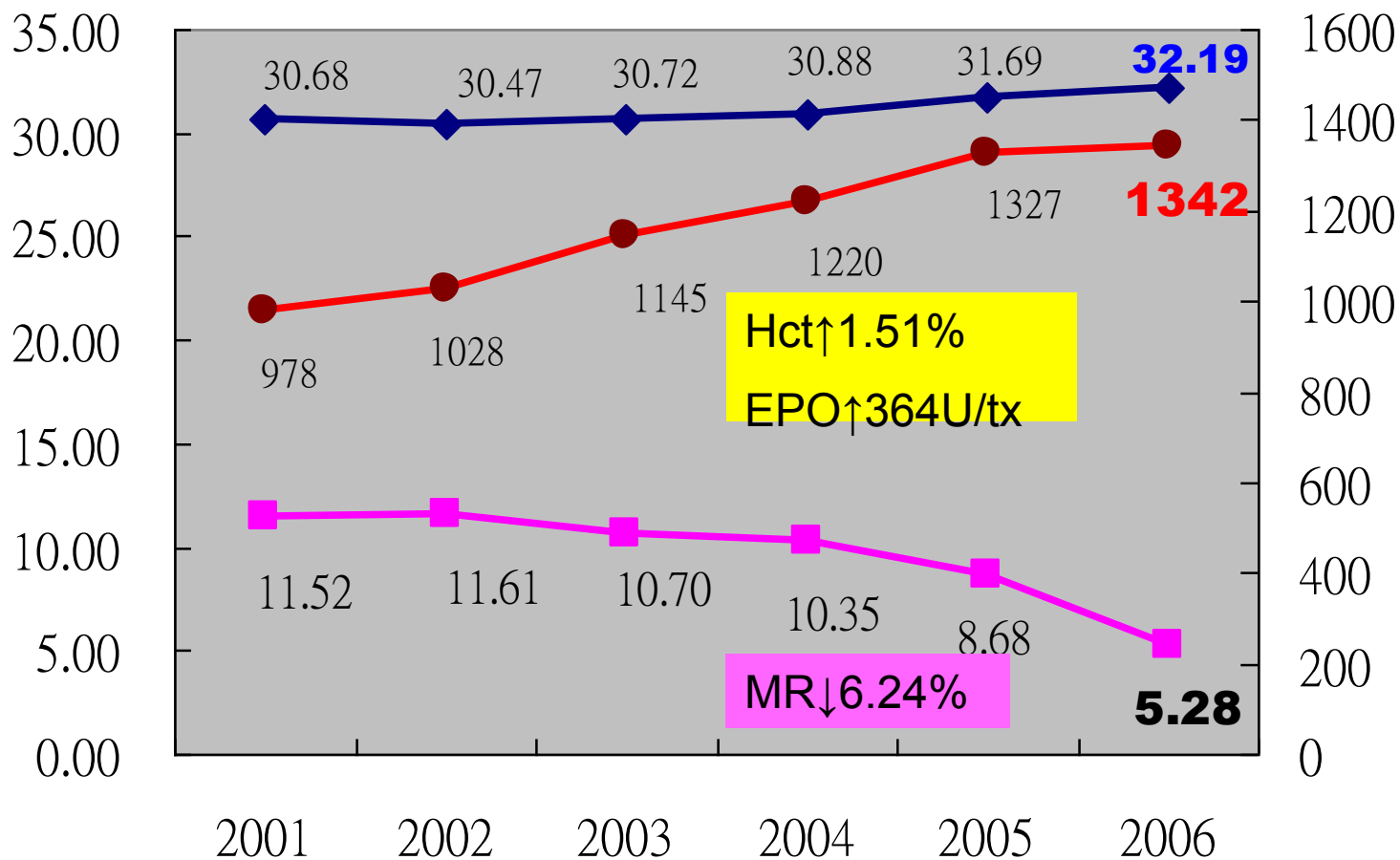
Topic	(1) AVF		(2) gortex		(3) Perm cath		χ^2 P-value
	no	%	no	%	no	%	
DM							0.03
yes	1,403	77.94	311	17.28	86	4.78	
no	662	74.55	162	18.24	64	7.21	

Survival analysis

Topic	迴歸係數	標準誤	Hazard Ratio	95%CI
Age	0.05	<0.01	1.05 **	1.03 1.07
AV shunt (ref : AVF) blood access				
gortex	0.43	0.21	1.54 *	1.03 2.30
perm cath	0.84	0.35	2.31 *	1.17 4.57
DM (ref : no)DM				
yes	0.57	0.20	1.77 **	1.21 2.61
EPO (ref : no)				
yes	-0.87	0.18	0.42 **	0.30 0.59
Albumin	0.43	0.29	1.04	0.88 2.69
W.B.C	0.13	0.04	1.14 **	1.05 1.23
Hct	-0.09	0.03	0.91 **	0.87 0.96
Creatinine	-0.17	0.05	0.84 **	0.76 0.94
P	0.23	0.24	1.26	0.79 1.99
Kt/V (Daugirdes)	-0.88	0.44	0.92 *	0.18 0.97
CTR	0.41	1.90	1.00	0.04 61.96
....				

Hct & Mortality rate

■ 死亡率 ◆ Hct ● EPO



Mortality analysis

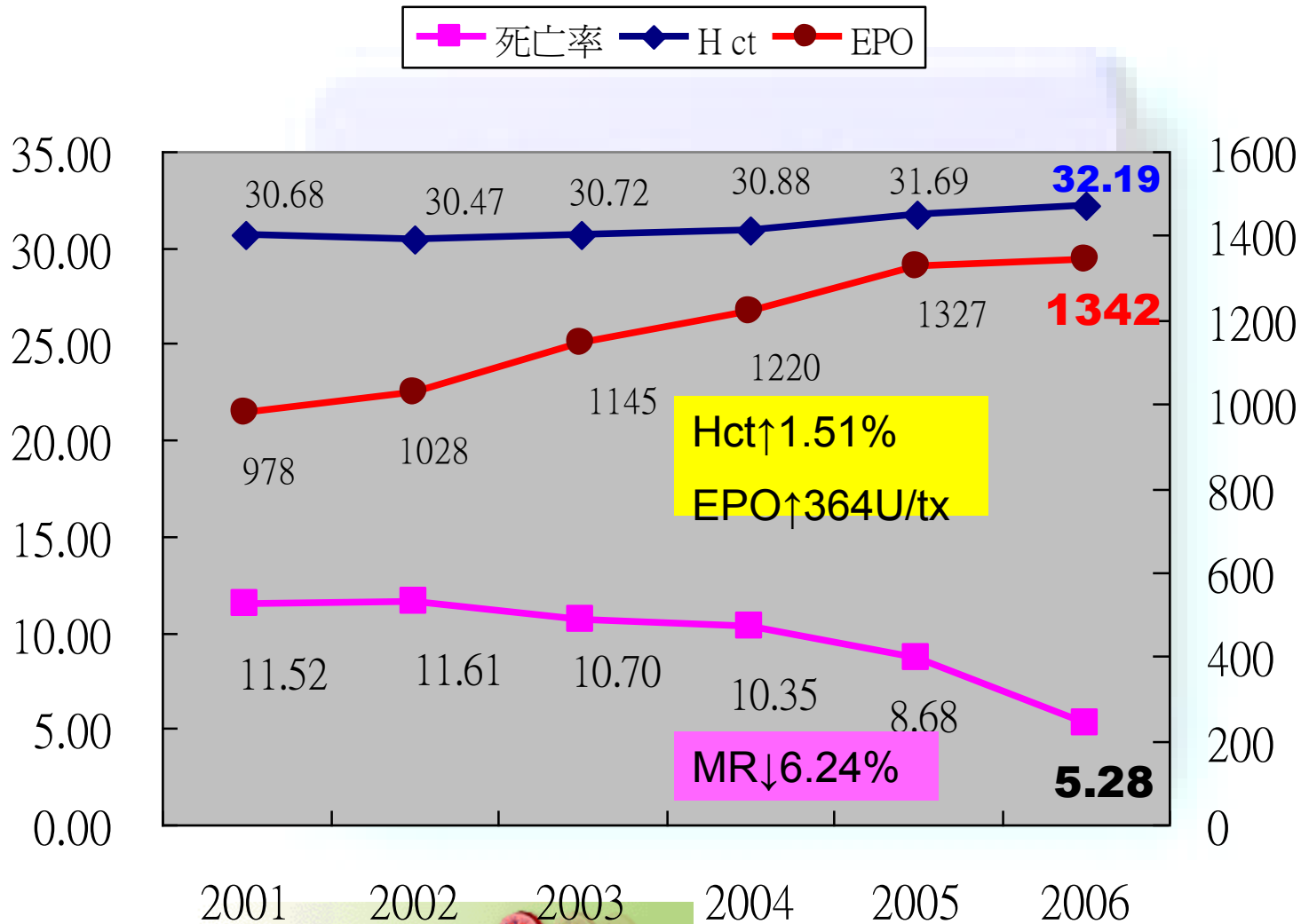
	Cause of death	Etiology	2006
1	CVS	AMI , CHF , Arrhythmia pericarditis	50%
2	Infection	Sepsis pneumonia	19%
3	Tumor	Hepatoma	10%
4	Other	Accident suicide	9%
5	GI tract	Cirrhosis of liver 、GI Bleeding	7%
6	CNS	CVA	5%



recommendation

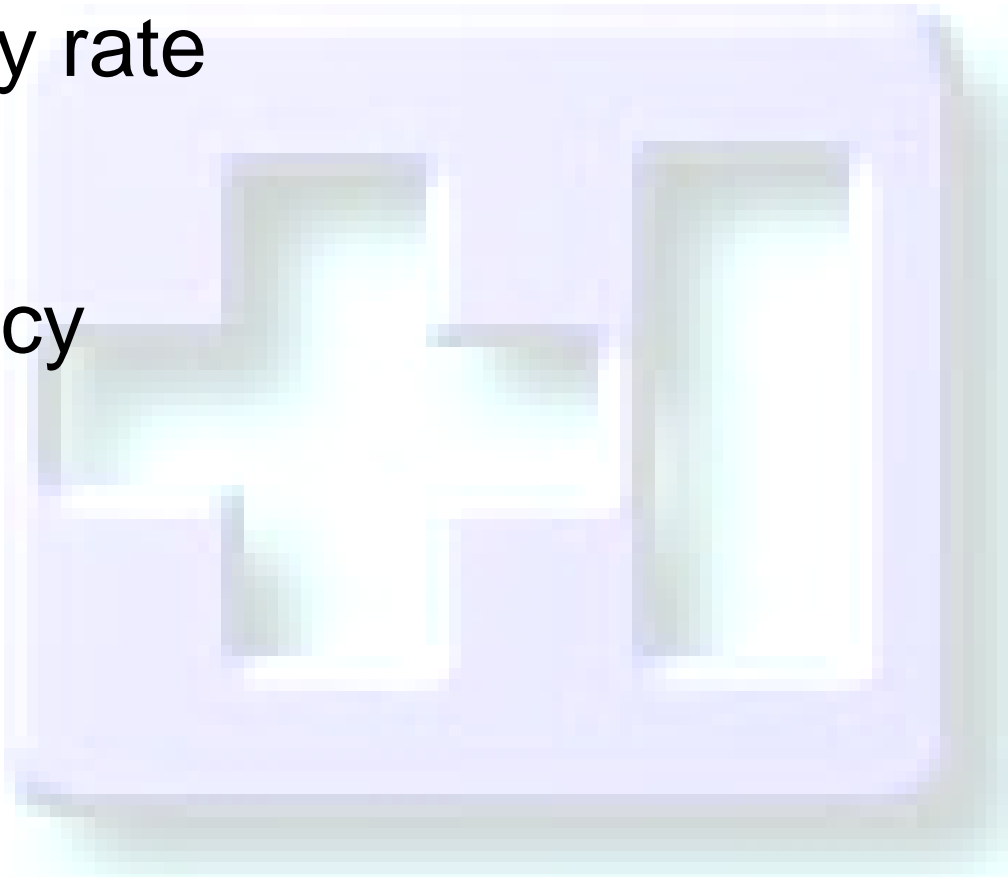
- Dry weight and CVS
 - Training for variant control, case studDM foot and infection
- Anemia management
 - Cost-effective
- DM foot care and Infection control ---Training education
- Adequacy --- BDP

Hct & MR



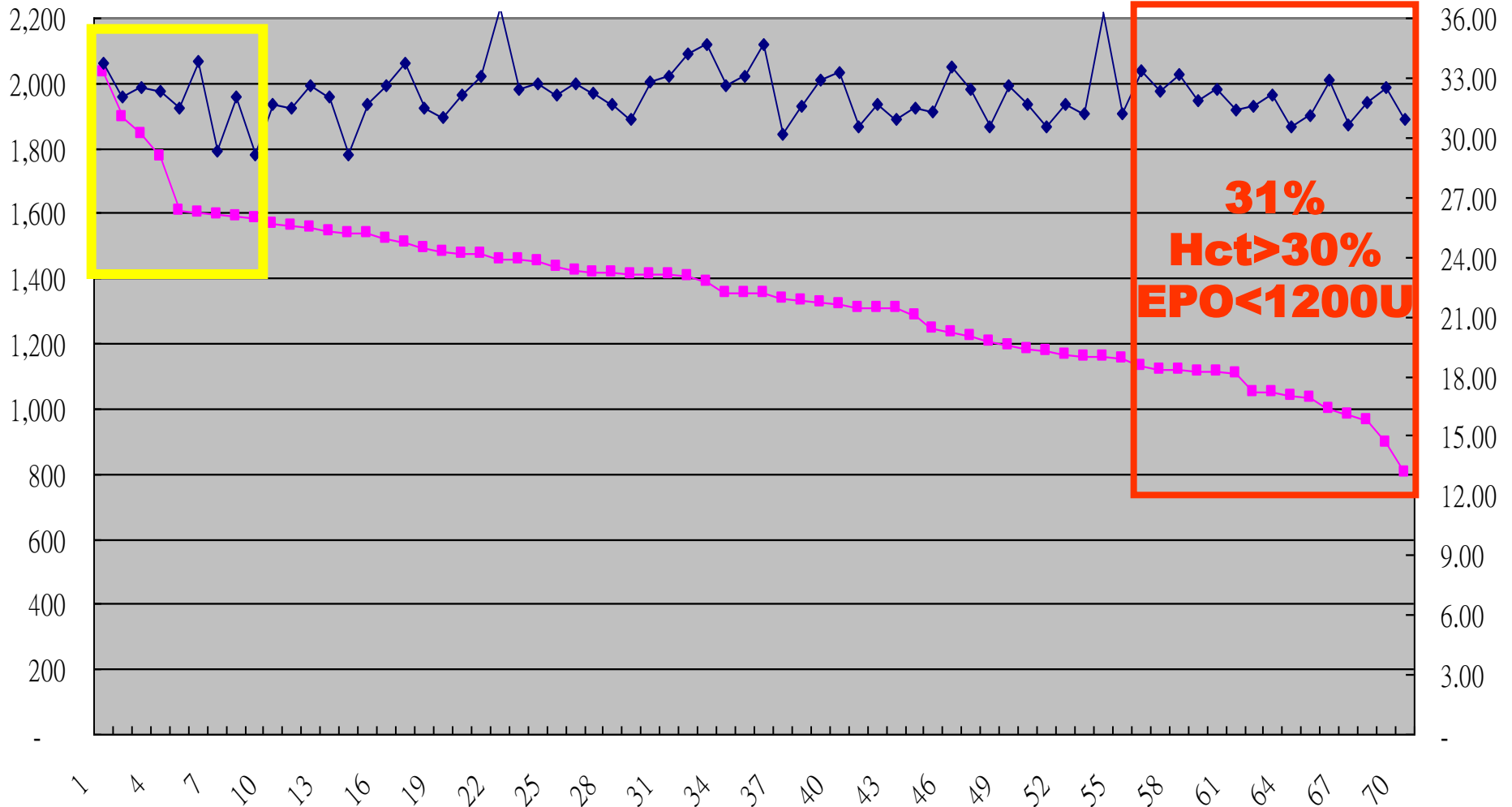
Outline

- Mortality rate
- **EPO**
- adequacy
- QIP



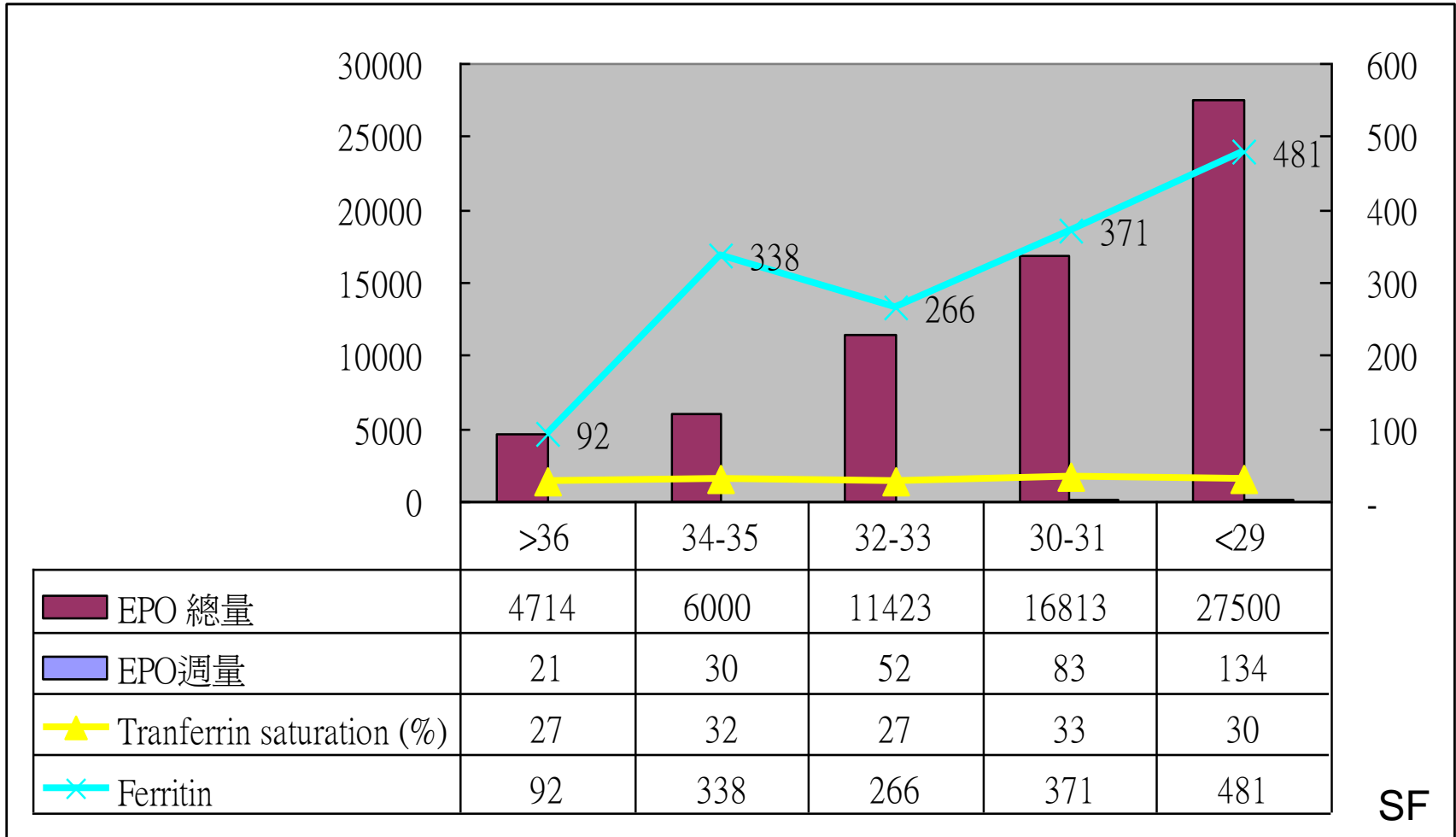
EPO vs Hct

■ EPO ◆ Hct



BDP of EPO

999U/32.9%

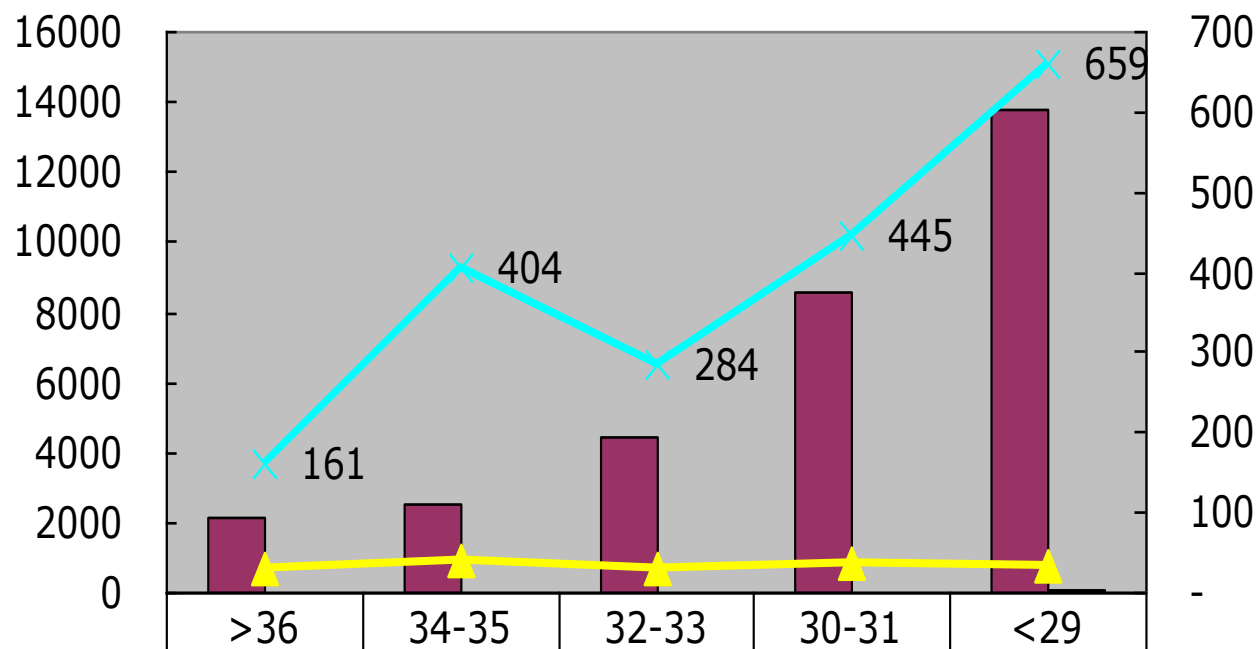


SF

average:60.11y/o , >65y/o:40.5% , EPO usage 93.9%

BDP of EPO

896U/32.57%

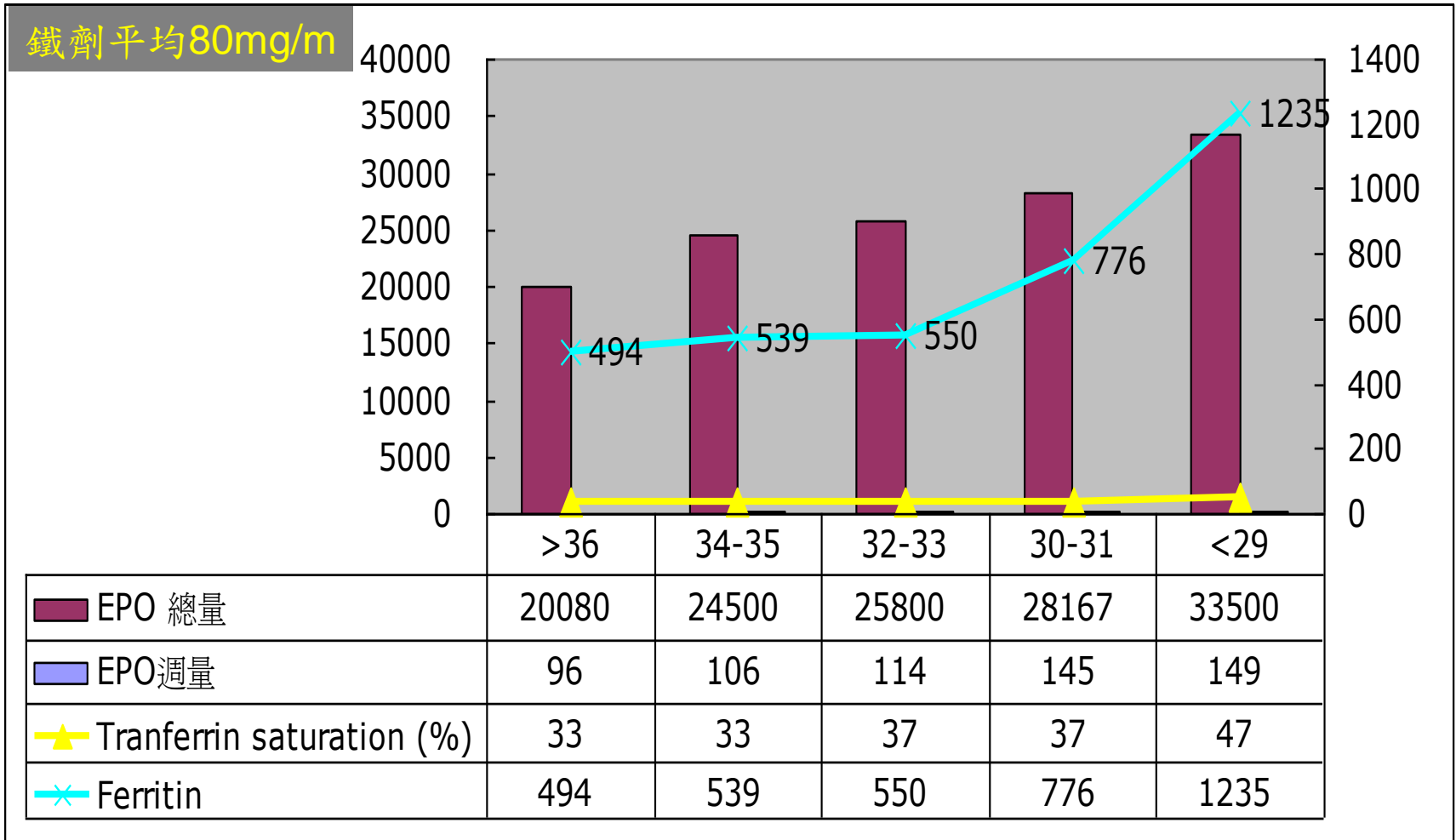


EPO 總量	2167	2500	4429	8594	13771
EPO 週量	11	14	20	35	68
Tranferrin saturation (%)	30	41	31	37	32
Ferritin	161	404	284	445	659

SW

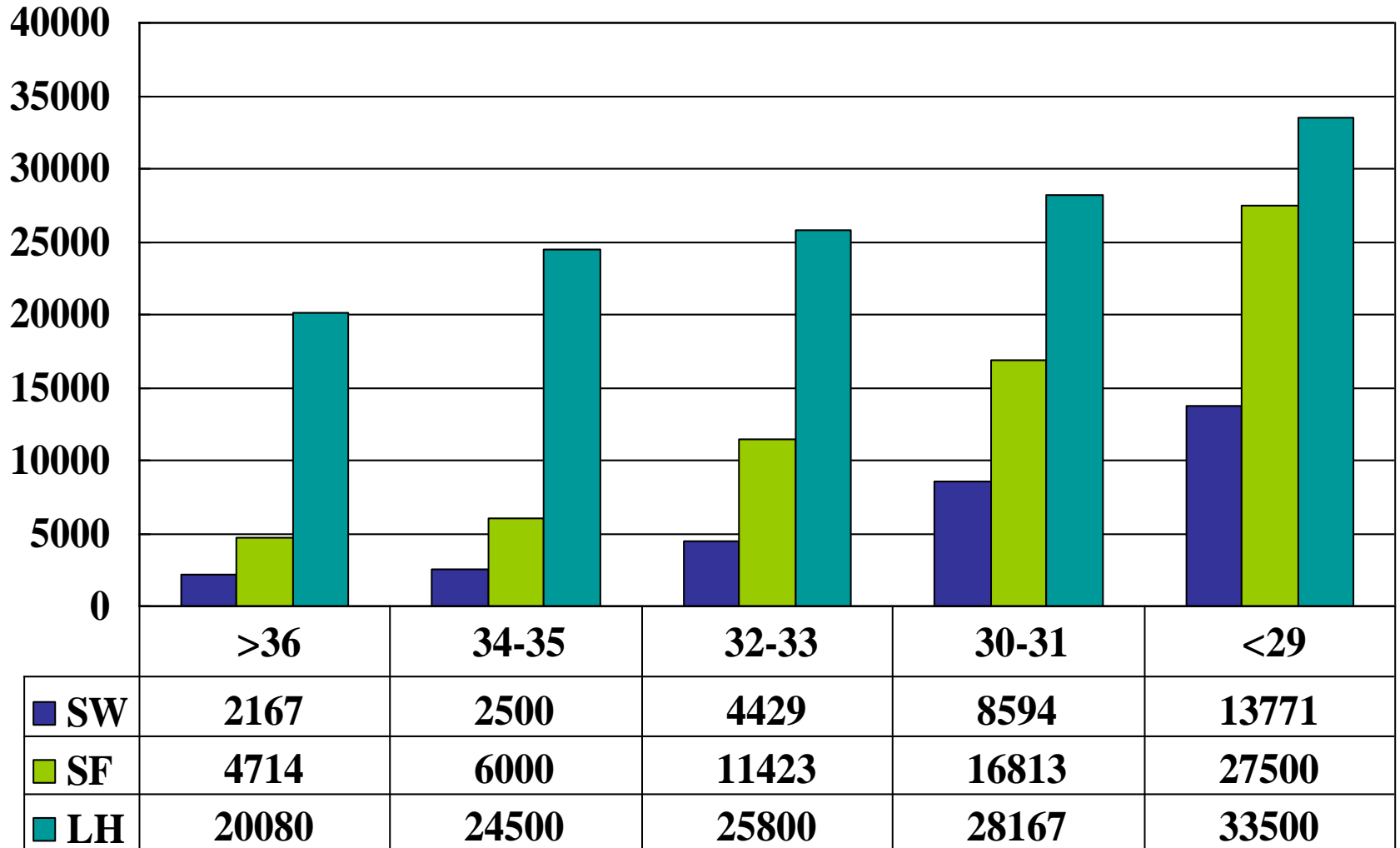
Average :63.61y/o , >65y/o:55.1% , EPO usage 90.9%

1892U/32.56%



Average :59.01y/o , >65y/o:39.5% , EPO usage 98.6%

EPO

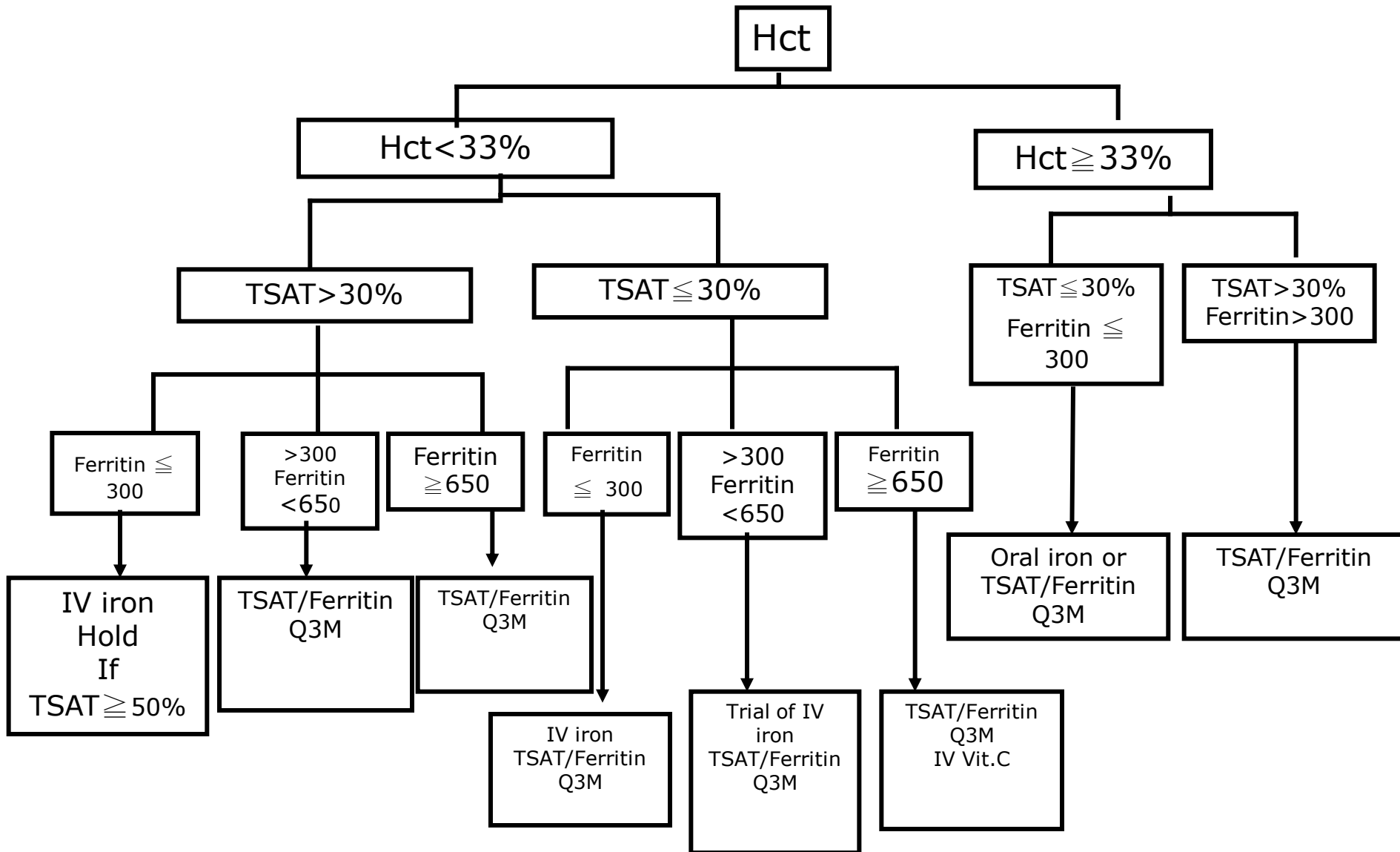


ESA (CPG)

HCT	EPO	EPO weekly		短效 EPOU	長效EPO(Aranesp)mcg 25mcg/Vial或 40mcg/Vial
<29	43400	120u/Kg	8000U-10000U	4000u-2000u-4000u	20mcg-25mcg (每週二次)
30-31	26040	80u/Kg	5000U-6000U	2000u-2000u-2000u	40mcg (每週一次)
32-33	13020	50u/Kg	2000U-3000U	1000u-1000u-1000u	20mcg 與12.5mcg交替 (每週一次半支)
34-35	4340	20u/Kg	500U-1000U	0-1000u-0	10mcg 或12.5mcg (每兩週一次)
>36	2170	10u/Kg	1000u/隔週 維持兩週不降 時暫停	1000u/隔週 維持兩週不降時暫 停	10mcg/每月一次 維持兩週不降時暫停



IV--Fe (CPG)



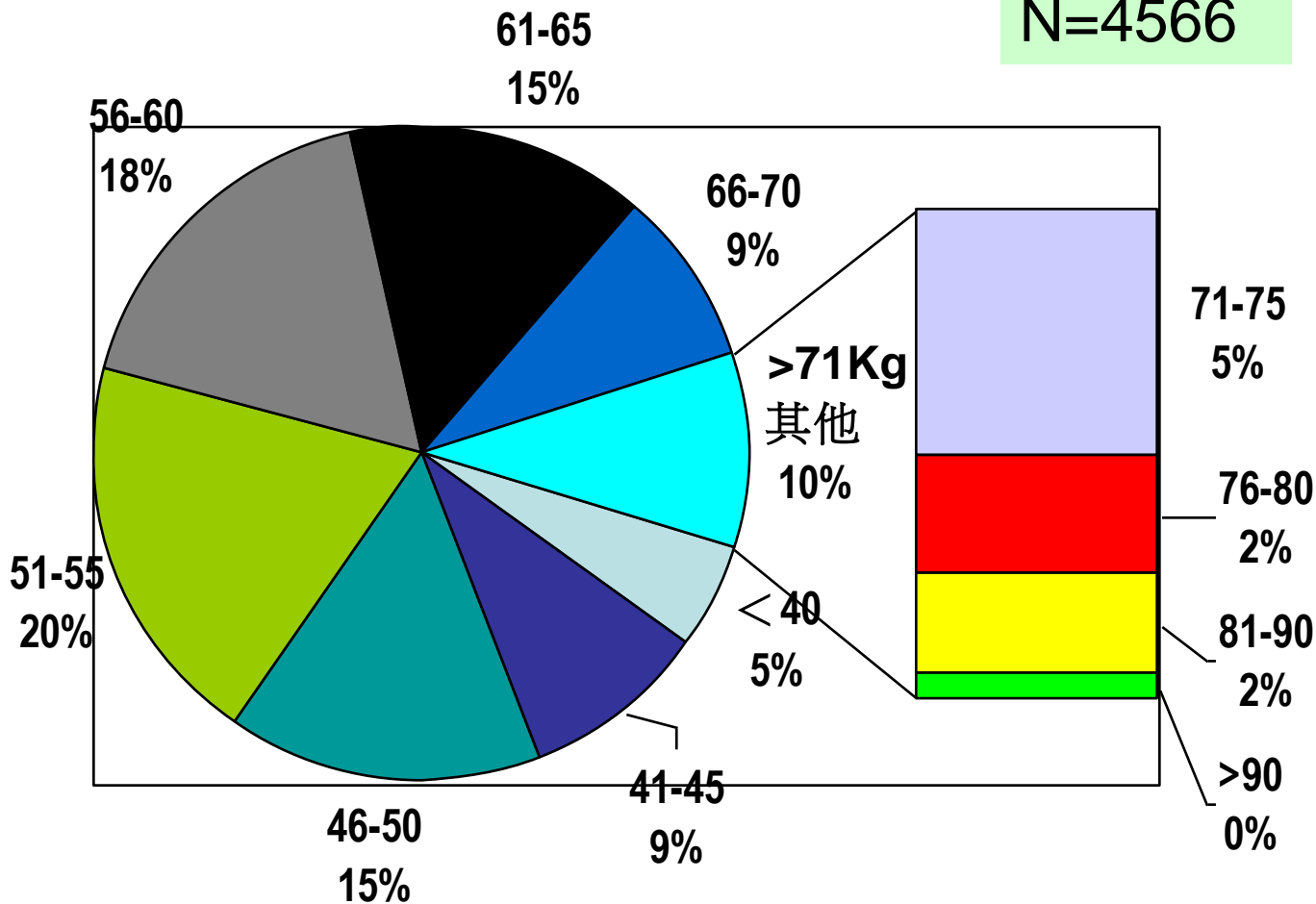
Outline

- Mortality
- Anemia management
- **Adequacy**
- QIP



BW

N=4566



Adequacy

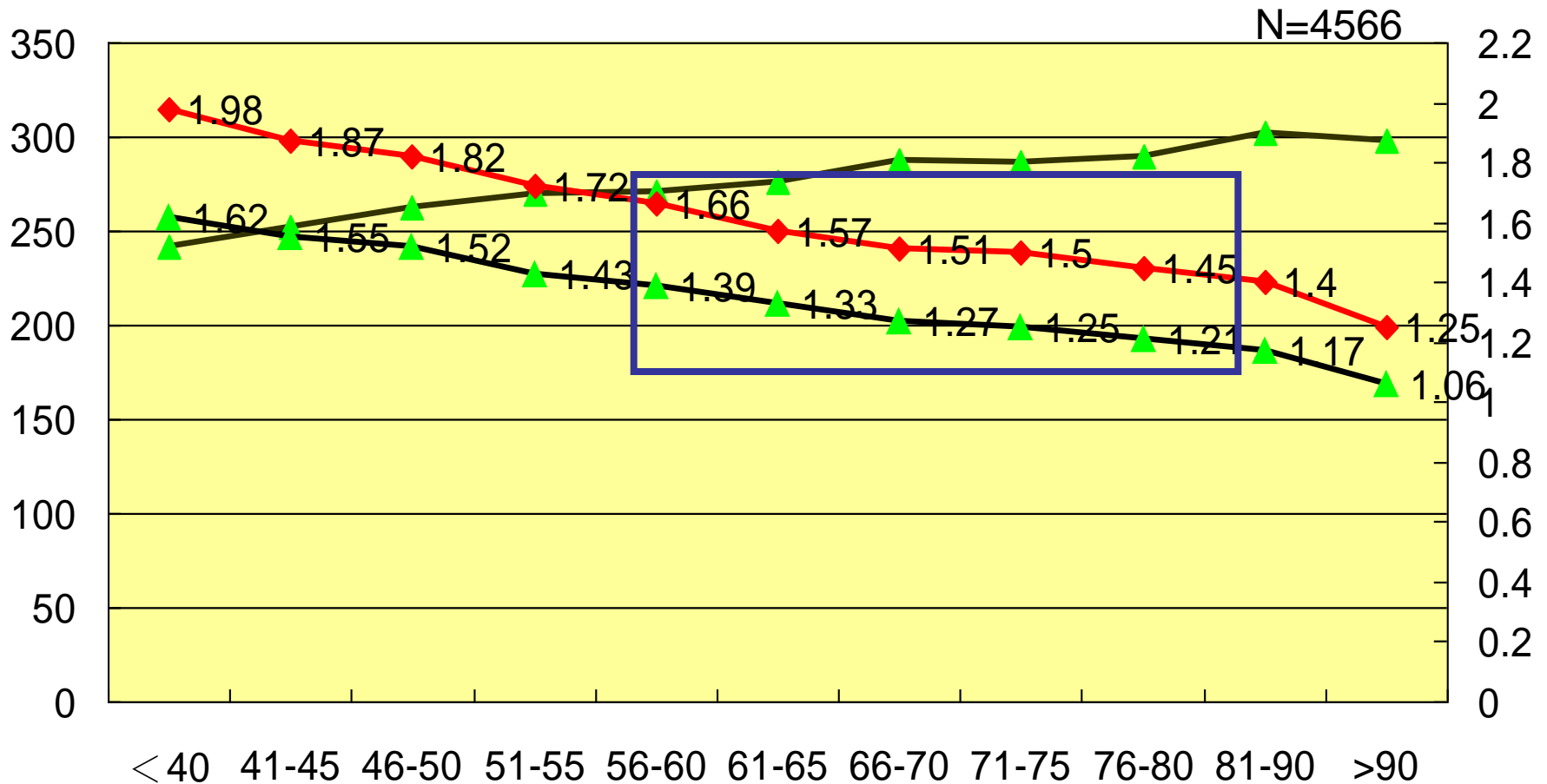
n=4566

BW	BFR(ml/min)	URR	K/V (Gotch)	K/V (Daugirdes)	Treat hour	Surface (M ²)
< 40Kg	242	0.79	1.62	1.98	3.81	1.56
41-45Kg	252	0.78	1.55	1.87	3.93	1.69
46-50Kg	262	0.77	1.52	1.82	3.93	1.71
51-55Kg	270	0.75	1.43	1.72	3.97	1.79
56-60Kg	271	0.74	1.39	1.66	3.97	1.82
61-65Kg	276	0.73	1.33	1.57	4.00	1.88
66-70Kg	287	0.71	1.27	1.51	4.01	1.94
71-75Kg	286	0.71	1.25	1.50	4.06	1.96
76-80Kg	290	0.70	1.21	1.45	4.10	2.10
81-90Kg	302	0.68	1.17	1.40	4.14	2.00
>90Kg	298	0.65	1.06	1.25	4.20	2.09



BW & BFR & KT/V

▲ 血液流速(ml/min) ◆ K/V (Daugirdes) ▲ K/V (Gotch)



Adequacy (CPG)

BW (kg)	BFR(ml/min)	treatment(Hr)	surface(M ²)	AK usage %
< 40	250	4	1.3	14.34%
41-45	250	4	1.3	
46-50	300	4	1.5	52.71%
51-55	300	4	1.5	
56-60	300	4	1.5	
61-65	350	4	1.8	
66-70	350	4	1.8	23.27%
71-75	350	4	2.1	9.68%
76-80	350	4.5	2.1	
81-90	400	4.5	2.1	
>90	400	5	2.1	

AK---BDP

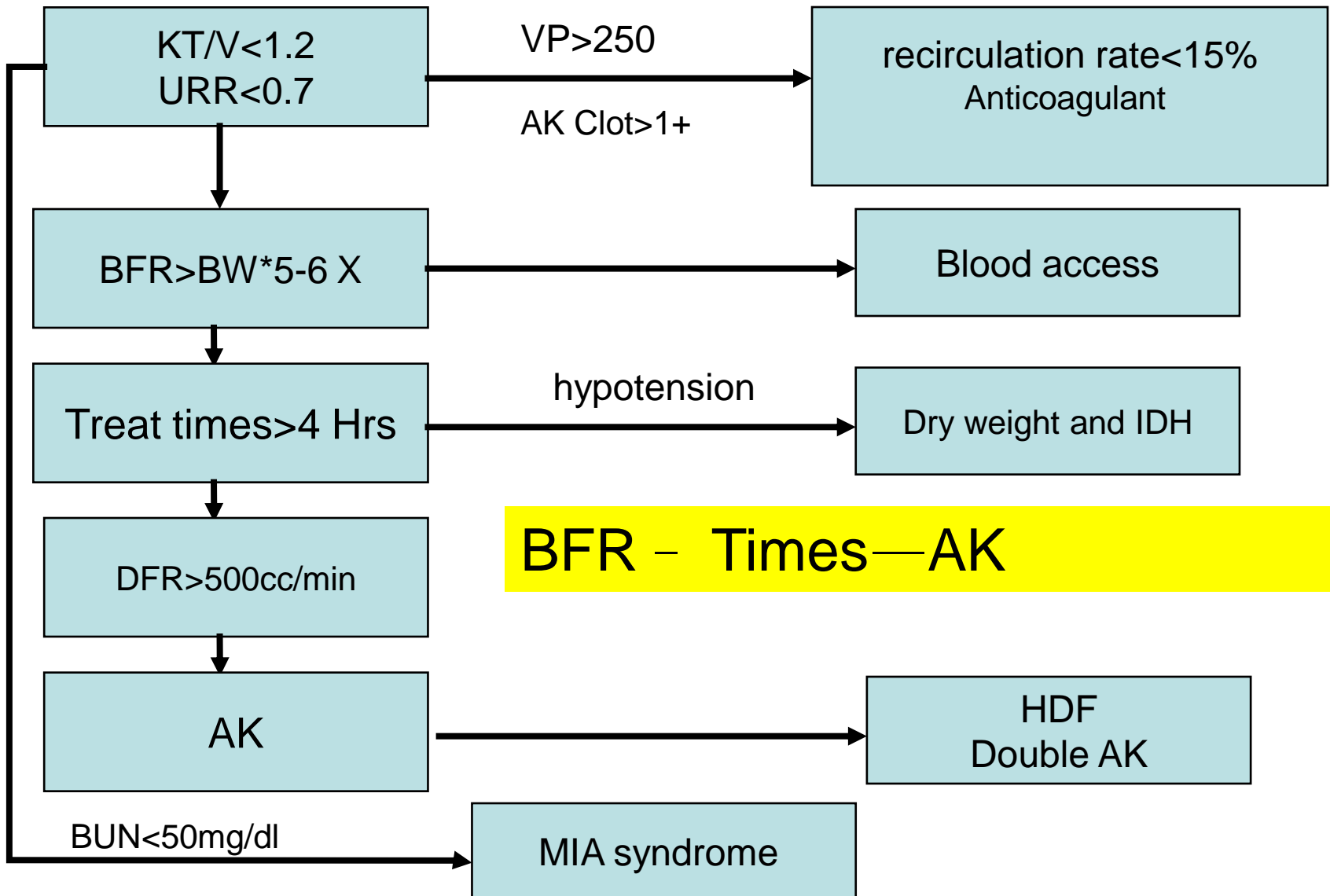
AK	Group1	surface	Group2	surface	Group3	Surface	Reuse	Surface
	Dicea130	1.3m	Dicea210	2.1m	FLX18GW	1.8m	FDX15GW (可開蓋)	1.5m
	Dicea150	1.5m	FLX15GW	1.5m	FLX21GW	2.1m	FDX18GW (可開蓋)	1.8m
	Dicea170	1.7m	APS-15U	1.5m	APS-21U	2.1m	FDX21GW (可開蓋)	2.1m
	Bio Hx75	1.5m	APS-18U	1.8m	APS-18MD	1.8m	Rexeed-15A (不可開蓋)	1.5m
	Bio Hx90	1.8m	APS-15MD	1.5m	APS-21MD	2.1m	Rexeed-18A (不可開蓋)	1.8m
	Bio Hx100	2.0m	HIPS15	1.5m	HIPS18	1.8m	Rexeed-21A (不可開蓋)	2.1m
	LOPS15	1.5m	LOPS20	2.0m	HIPS20	2.0m	Rexeed-25A (不可開蓋)	2.5m
	LOPS18	1.8m						
usa ge %	45%		30%		15%			

summary

- Blood flow rate ◦
- Treatment time ◦
- Appropriated A_k ◦
- Reuse ratio ◦
- Heparination ◦



Flow chart



BFR - Times - AK

Reimbursement

- (一) 達成「品質監測指標」：
25% 全國平均>10%。
- (二) 達成降低末期腎臟疾病發生率：25%。
- (三) 推廣「腹膜透析推廣獎勵計畫」：20%。全國95年新增腹膜透析病患較94年增加≥10% 支用本項預算50%。
- (四) 推動「PRE-ESRD 及病人衛教方案」：20%
- (五) 合理「調整血液透析支付標準」：10%。

	Dialysis Global Budget	Growth %	Budget for Quality Assurance Fund
2004	24.2b	8.0	0
2005	25.9b	7.2	1.0
2006	27.7b	6.68	0.94
2007	28,5b	2.886	0.6
2008	29,4b	3.13	176m

品質保留款



Cost analysis

item	2009	north	south	middle
medication	83.42	55	90.4	84
EPO	117	127	127	122
AK	340	340	347	332
T/B	64.31	65.0	61.3	66.0
N/D	15.85	16	16.4	16
solute A	86.98	73	70.5	70
solute B	39.57	38	41.0	39
P/T	1.91	1.0	3.3	1.0
wire	0.85	1	0.2	1
infectant	7.38	9	7.0	6



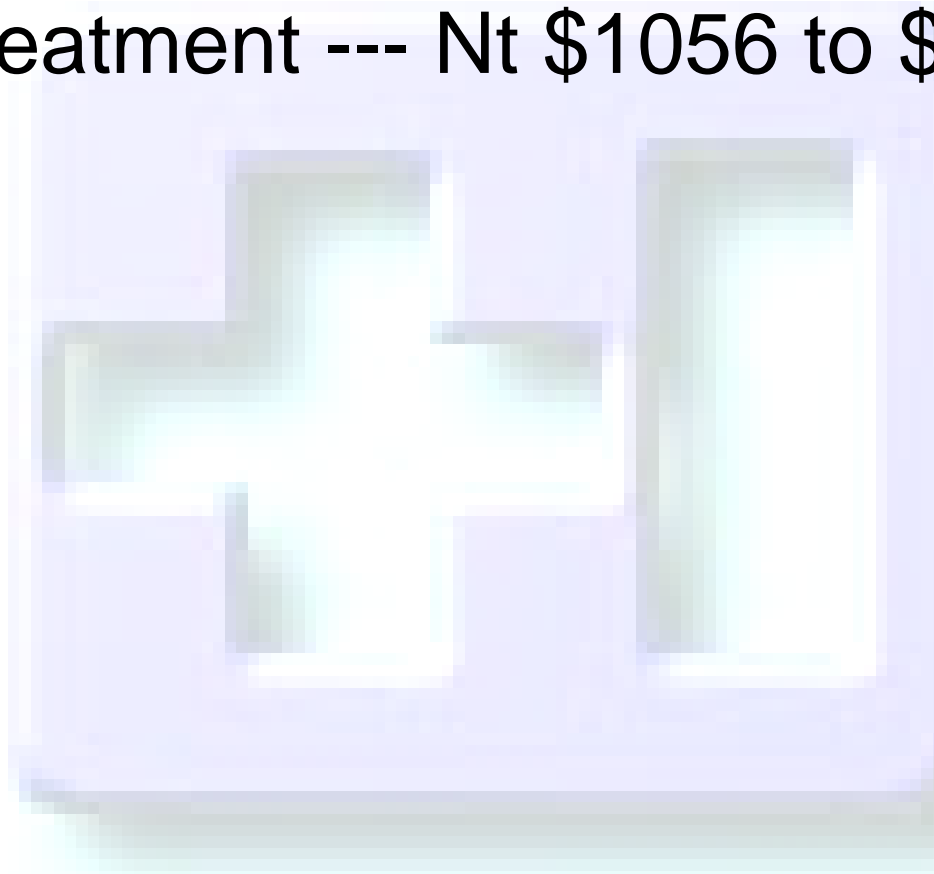
Cost analysis

items	2009	north	south	middle
N/S	27.7	26.0	28.5	28.0
other	31.3	26	32.9	34
lab	36.6	37	36.4	37
waste	30.3	29	27.9	30
laundry	12.1	14	10.9	11
nutriment	9.17	4	1.6	16
transportation	125	336	143.4	140
Total	1030	1197	1046	1033



Target

- Cost /treatment --- Nt \$1056 to \$1000



Thank you for your attention

