

To the orthopedic surgeon, locally responsible for the Swedish Knee Arthroplasty Register Study

Here is the 1999 annual report from the Knee Register, accounting for data reported during 1998.

The report is based on the content of the register as of November 5<sup>th</sup> 1999.

The Register continues to be improved in various ways. The validity study in 1997 (where every living patient registered was asked if they had been revised) caused an extensive checking of revisions and subsequent update of the register. A further control has now been performed against the Patient Administrative System (PAS) for the years 1996 and 1997.

Thus, regarding revisions, the register has been updated until the end of 1997, and until the end of 1998 regarding primary arthroplasties.

This time have been added to the report the opinion of patients regarding satisfaction with the operated knee, which shows that ca 80% of the patients are satisfied, and that patients not subject to revision remain satisfied for a long period of time.

It should be noted that the cumulative revision rate (CRR) does not take into account differences in age and gender. The differences in CRR between regions are mostly caused by their choice of implants. However, these regional differences seem to be reduced over time.

After the general summary of results, every unit will find a list containing the reported operative procedures performed during 1998. We hope that you will compare this list with the locally available data and help us correct any errors. To make this easier, we provide the list sorted both by ID and date of operation.

Further we enclose a diskette containing all the registered knee arthroplasties reported by your unit. In cases where a revision has been performed at a different unit, this revision is also included on the diskette.

We find it appropriate to remind you that as the Swedish Knee Arthroplasty Register is a prospective study, revisions reported to the register are only entered if the primary operation has been reported to the register in a ordinary manner. A primary operation that previously should have been reported, but only became revealed during a later revision, is thus not entered into the register.

A late reporting of primary procedures to the register is only allowed in cases when all primaries, performed during a time period, are reported collectively

We at the project center in Lund want to thank you for your cooperation during the last year.

Lund den November 5<sup>th</sup> 1999.

On behalf of the Swedish Knee Arthroplasty Register.

Lars Lidgren  
Professor

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## 5723 primary knee arthroplasties reported in 1998, by type and region

(please observe that there are occasional units that have not completed reporting)

	Stockholm Gotland	Uppsala Örebro	Sydöstra	Södra	Västsvenska	Norra
<b>Hinges</b>	3			1	1	
<b>Linked</b>		4		2	3	
<b>TKA</b>	718	1,186	605	791	888	563
<b>Med.UKA</b>	80	236	125	253	163	28
<b>Lat.UKA</b>	7	18	1	10	3	3
<b>Bilat.UKA</b>	1	20		4		1
<b>Patella</b>		3	2			
<b>Total</b>	809	1467	733	1,061	1,058	595

## The most common primary knee arthroplasty implants used in 1998

### TKA

	No	Percent
<b>AGC</b>	1,456	30.6
<b>PFC</b>	682	14.4
<b>PFC Sigma</b>	246	5.2
<b>Duracon</b>	546	11.5
<b>F/S MIII</b>	497	10.5
<b>F/S unspecified</b>	26	0.5
<b>Kinemax</b>	343	7.2
<b>NexGen</b>	308	6.5
<b>Scan</b>	275	5.8
<b>AMK</b>	156	3.3
<b>MillerGalante2</b>	86	1.8
<b>Other</b>	130	2.7
<b>Total :</b>	4,751	100

### UKA

	No	Percent
<b>Link-Uni</b>	481	50.5
<b>MillerGalante</b>	201	21.1
<b>PFC</b>	70	7.3
<b>PFC-Sigma</b>	27	2.8
<b>Oxford- Uni</b>	44	4.6
<b>Duracon-Uni</b>	42	4.4
<b>Alligretto</b>	35	3.7
<b>Marmor</b>	20	2.1
<b>Repicci (AARS)</b>	20	2.1
<b>Other</b>	13	1.4
<b>Total :</b>	953	100

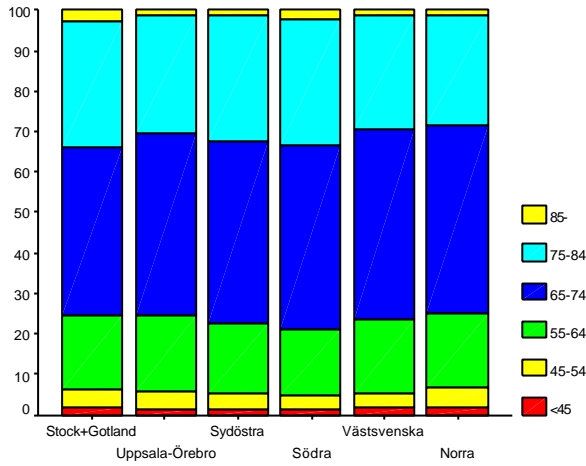
**De 3 most common TKA implants in each region 1998**  
(primary operations)

<b>Stockholm</b>	<b>PFC + <math>\Sigma</math></b>	<b>Duracon</b>	<b>Kinemax</b>	<b>Others</b>
<b>Gotland</b>	290+105	131	93	99
<b>Uppsala</b>	<b>AGC</b>	<b>F/S Mod</b>	<b>Kinemax</b>	<b>Others</b>
<b>Örebro</b>	334	282	249	321
<b>Sydöstra</b>	<b>NexGen</b>	<b>AGC</b>	<b>PFC</b>	<b>Others</b>
	228	213	106	58
<b>Södra</b>	<b>AGC</b>	<b>PFC + <math>\Sigma</math></b>	<b>Duracon</b>	<b>Others</b>
	186	124+125	164	192
<b>Västsvenska</b>	<b>AGC</b>	<b>F/S MIII+ospec</b>	<b>Duracon</b>	<b>Others</b>
	374	197+26	134	157
<b>Norra</b>	<b>AGC</b>	<b>PFC + <math>\Sigma</math></b>	<b>Duracon</b>	<b>Others</b>
	279	114+10	64	96

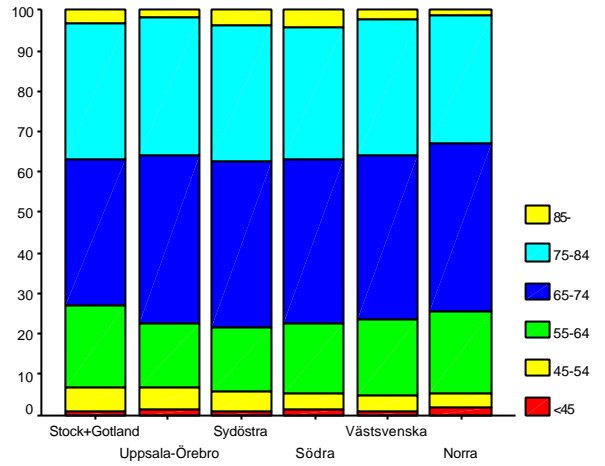
**De 2 most common UKA implants in each region 1998**  
(primary operations)

<b>Stockholm</b>	<b>MillerGalante</b>	<b>Brigham</b>	<b>Others</b>
<b>Gotland</b>	69	9	10
<b>Uppsala</b>	<b>Link</b>	<b>PFC+ S</b>	<b>Others</b>
<b>Örebro</b>	168	41	65
<b>Sydöstra</b>	<b>Link</b>	<b>Genesis</b>	<b>Others</b>
	57	28	41
<b>Södra</b>	<b>Link</b>	<b>PFC + <math>\Sigma</math></b>	<b>Others</b>
	136	51	80
<b>Västsvenska</b>	<b>MillerGalante</b>	<b>Oxford</b>	<b>Others</b>
	88	41	37
<b>Norra</b>	<b>Link</b>	<b>MillerGalante</b>	<b>Others</b>
	24	6	2

### Age distribution at the primary operation in the regions (%)

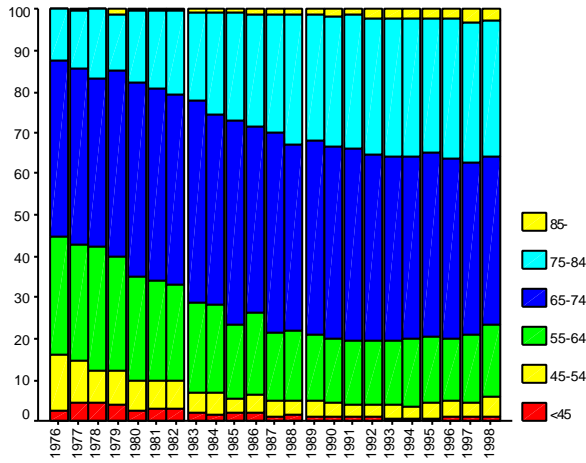


1976-1997

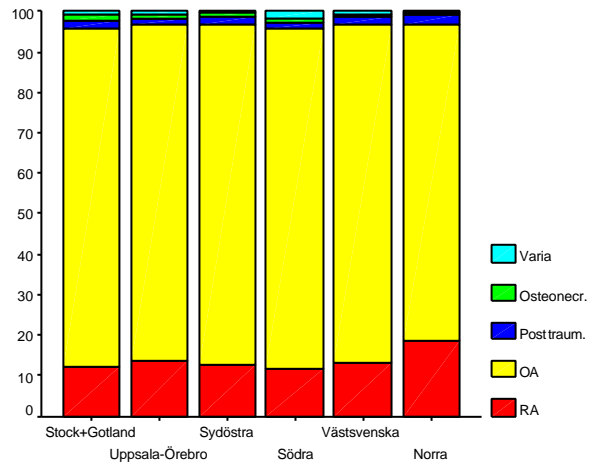


reported 1998

### Age distribution and diagnoses for primary operations 1976-1998



Distribution in age groups each year (%)



Distribution of diagnoses by regions (%)

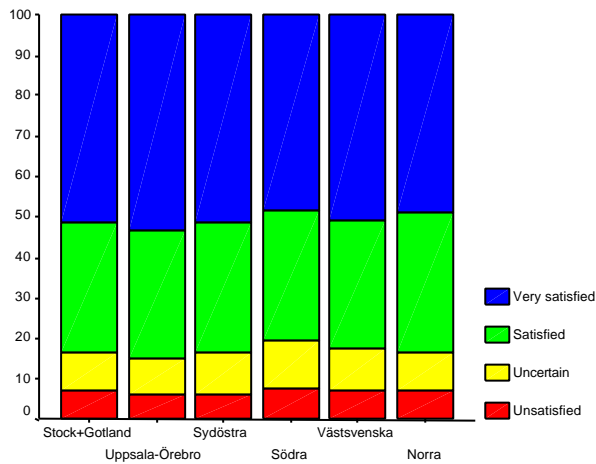
## Patient satisfaction in 1997

In connection with the validation of the register that was performed in 1997, all living patients registered, operated before 1997, were sent a questionnaire (27,632)

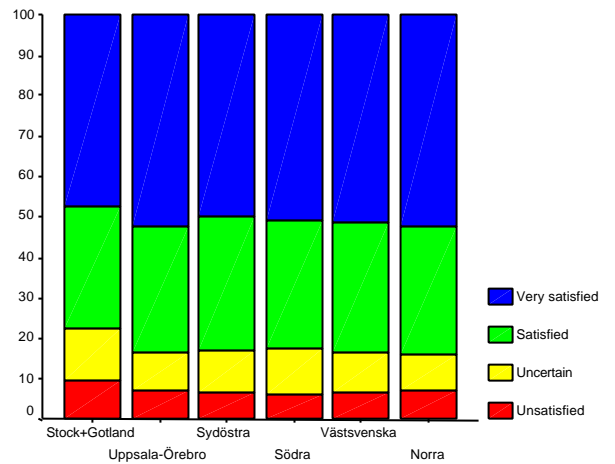
The patients were asked how satisfied they were with the operated knee.

93 % of the patients answered the question.

### Primaries 1976-96, not subject to revision. Patient satisfaction (%) by regions

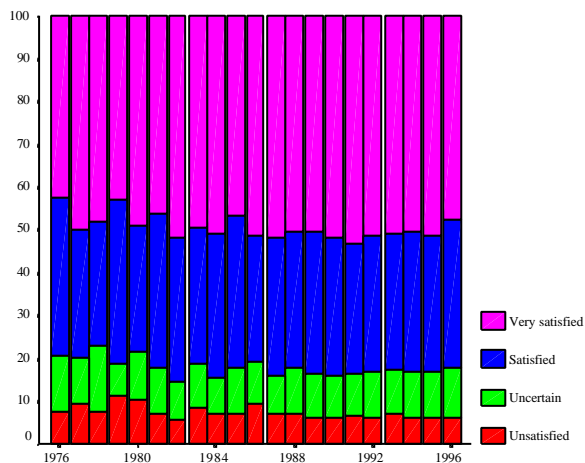


TKA

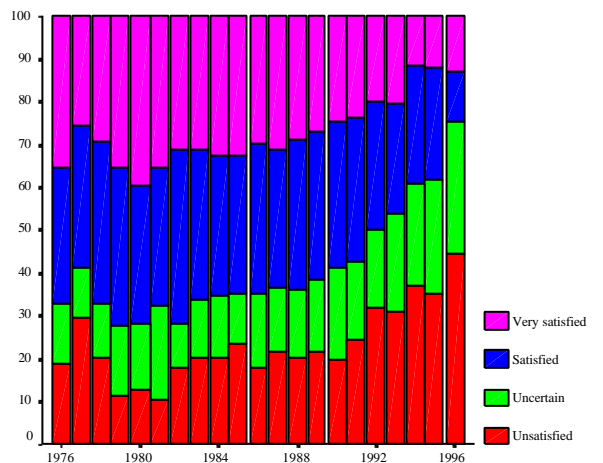


medial UKA

### Patient satisfaction (%) by the year of the primary operation



Unrevised patients



Revised patients

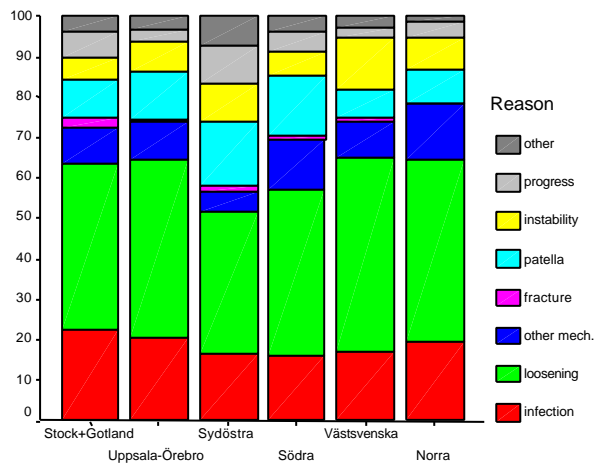
## Reason for revisions performed 1976-1995 and 1996-1998

The register continuously changes.

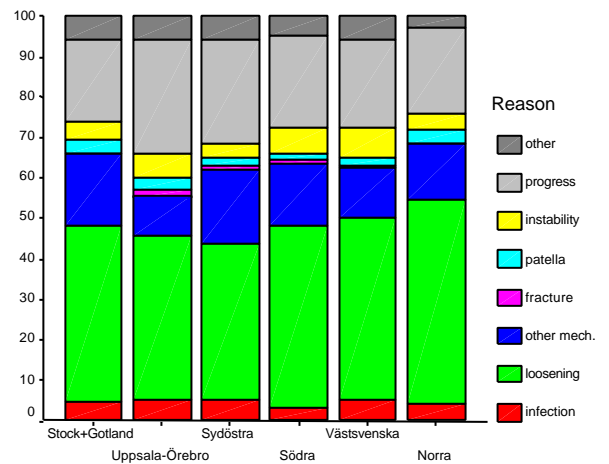
A revision of the period 1996-1997 shows that units during these years failed to report the same proportion of revisions as during 1976-1995, revealed by the validation in 1997. After the revision of the numbers for 1996 and 1997 we now again, (as in last report) account for this time period separately.

	1976-1995		UKA		TKA and UKA		1996-1997	
	Antal	%	Antal	%	Total	%	Total	%
<b>Infection</b>	321	19.0	91	4.6	412	11.2	77	10.3
<b>Loosening</b>	752	44.4	845	42.8	1597	43.6	313	41.7
<b>Other mech.</b>	173	10.2	275	13.9	448	12.2	87	11.6
<b>Fracture</b>	14	0.8	14	0.7	28	0.8	12	1.6
<b>Patella probl.</b>	160	9.5	49	2.5	209	5.7	75	10.0
<b>Instability</b>	141	8.3	126	6.4	267	7.3	35	4.7
<b>Progress</b>	72	4.3	476	24.1	548	15.0	106	14.1
<b>Other</b>	59	3.5	96	4.9	155	4.2	46	6.1
<b>Total</b>	<b>1,692</b>		<b>1972</b>		<b>3,664</b>		<b>751</b>	

### Reason for revision (%) 1976-1997, by regions



Revisions of TKA



Revisions of UKA

## The 10 year period 1988-1997

The curve showing cumulative revision rate is highly influenced by operations performed early during the period analyzed, and therefore by older prosthetic models

To account for the results of relatively modern models, but with reasonable follow-up time, we use the 10 year period 1988-97 for analysis.

### The most commonly used implants

(all diagnoses)

#### TKA

	No	percent
AGC	9,871	35.5
F/S MIII	3,105	11.2
F/S unspec	1,132	4.1
Scan	2,416	8.7
PFC	2,250	8.1
Kinemax	2,200	7.9
Duracon	1,785	6.4
MillerGalante2	927	3.3
Mill/G unspec	435	1.6
PCA-Mod	782	2.8
PCA unspec	769	2.8
Synatomic	332	1.2
LCS	310	1.1
Tricon	290	1.0
AMK	272	1.0
Kinematic	149	0.5
Axiom	116	0.4
NexGen	111	0.4
Townley	99	0.4
RMC	76	0.3
Osteonics	64	0.2
Rotaglide	63	0.2
Profix	62	0.2
Nuffield	37	0.1
Genesis	28	0.1
Other	329	1.1
<b>Total :</b>	<b>27,823</b>	<b>100</b>

#### UKA

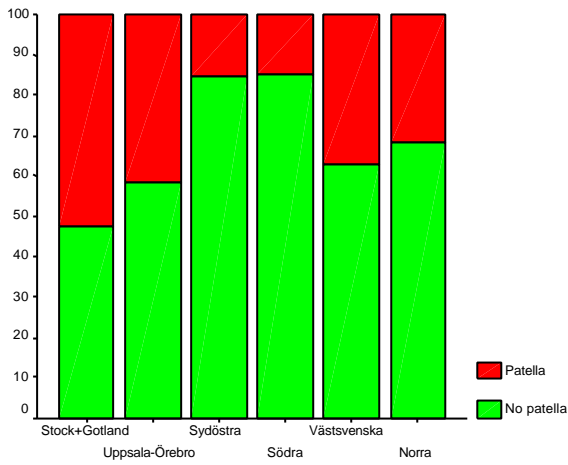
	No	percent
Link	4,514	34.5
St.Georg	904	6.9
Marmor	2,864	21.9
Brigham	1,035	7.9
Oxford	950	7.3
PCA	867	6.6
Duracon	582	4.4
PFC	403	3.1
MillerGalante	393	3.0
Alligretto	234	1.8
Repicci (AARS)	220	1.7
Genesis	96	0.7
Other	33	0.2
<b>Total :</b>	<b>13,095</b>	<b>100</b>

#### Kopplade proteser

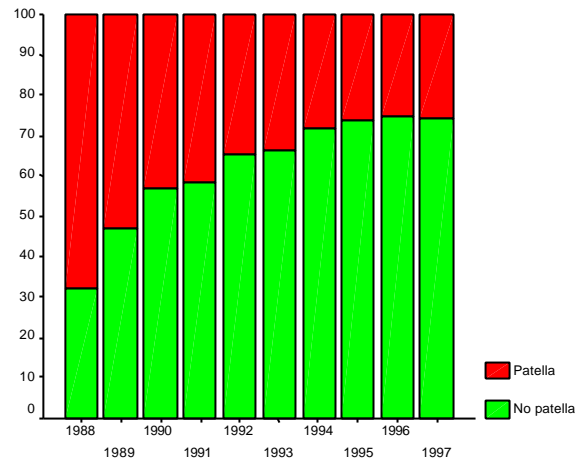
	Antal	Procent
Link rotation	59	38.3
Endo rotation	53	34.4
Spherocentric	17	11.0
Kotz	13	8.4
Other	12	7.8
<b>Total :</b>	<b>154</b>	<b>100.0</b>



## Use of patellar component in TKA (1988-97)

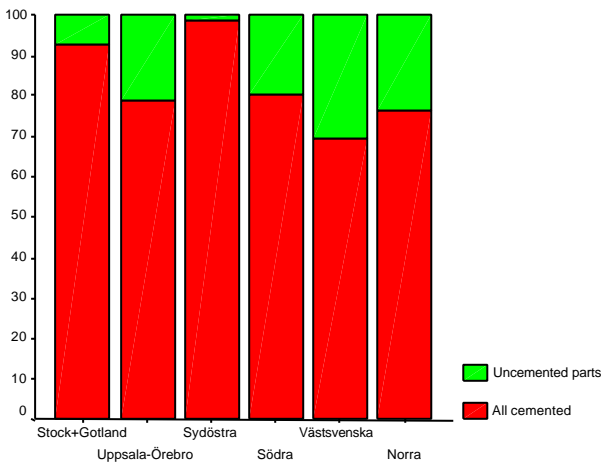


Use of patellar components (%) by regions

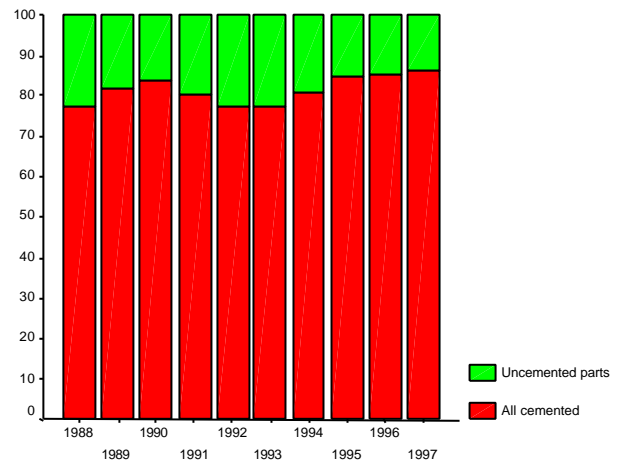


Use of patellar components (%) by year

## Not cemented components (incl. hybrids) in TKA (1988-97)



Uncemented components (%) by regions



Uncemented components (%) by year

## Distribution of implants in the regions 1988-1997

(Primary TKA, osteoarthritis)

### Stockholm + Gotland %

AGC	2,613	68.2
Kinemax	572	14.9
Duracon	223	5.8
PFC	128	3.3
F/S MIII	84	2.2
F/S unspec	37	1.0
PCA-Mod	82	2.1
PCA unspec	48	1.3
Genesis	14	0.4
Rotaglide	10	0.3
LCS	10	0.3
Other	10	0.2
Total	3,831	100.0

### Uppsala-Örebro %

F/S MIII	1,439	27.9
F/S unspec	349	6.8
Kinemax	1,166	22.6
AGC	1,129	21.9
Scan	342	6.6
MillerGalante2	226	4.4
Mill/G unspec	64	1.2
PCA	103	2.0
PCA-Mod	65	1.3
AMK	103	2.0
PFC	51	1.0
Tricon	35	0.7
NexGen	31	0.6
Synatomic	18	0.3
Other	29	0.6
Total	5,150	100.0

### Sydöstra %

AGC	1,514	46.9
PFC	417	12.9
MillerGalante2	395	12.2
Mill/G unspec	129	4.0
Duracon	232	7.2
PCA-Mod	166	5.1
PCA unspec	27	0.8
Scan	148	4.6
NexGen	67	2.1
Kinemax	45	1.4
RMC	36	1.1
F/S MIII	10	0.3
F/S unspec	9	0.3
Interax	10	0.3
Other	23	0.7
Total	3,228	100.0

### Södra %

PFC	841	23.6
Scan	777	21.8
Duracon	646	18.1
PCA unspec	211	5.9
PCA-Mod	182	5.1
AGC	367	10.3
Synatomic	209	5.9
Osteonics	63	1.8
Axiom	55	1.5
Kinematic	51	1.4
Rotaglide	47	1.3
F/S MIII	39	1.1
Nuffield	37	1.0
Other	40	1.1
Total	3,565	100.0

### Västsvenska %

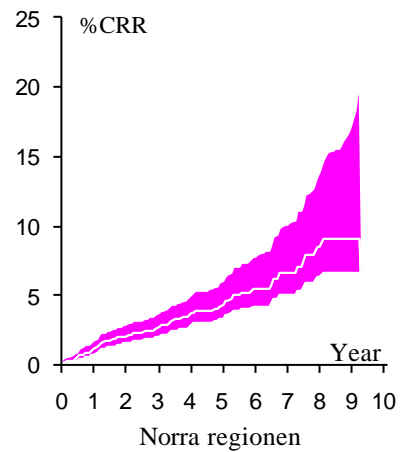
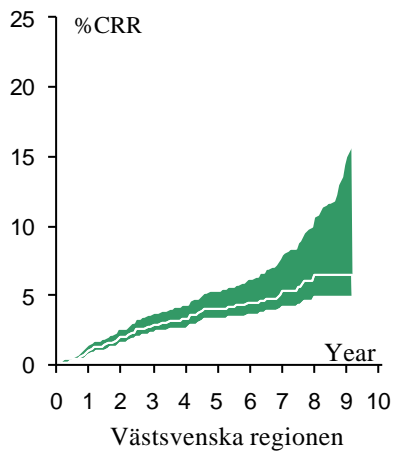
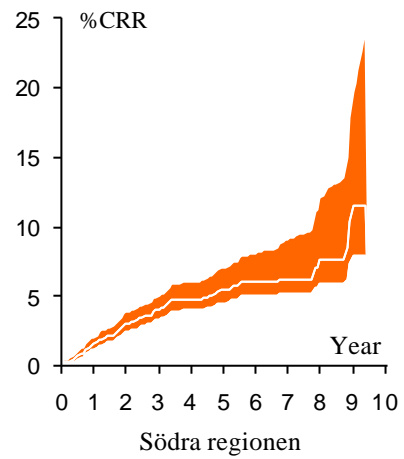
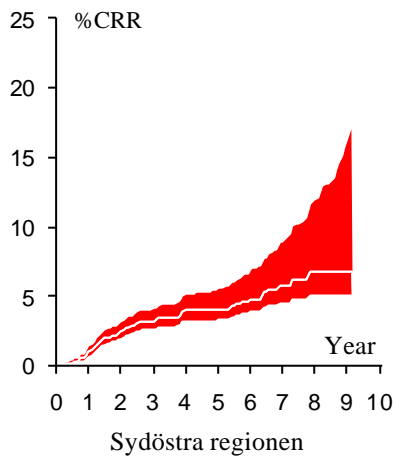
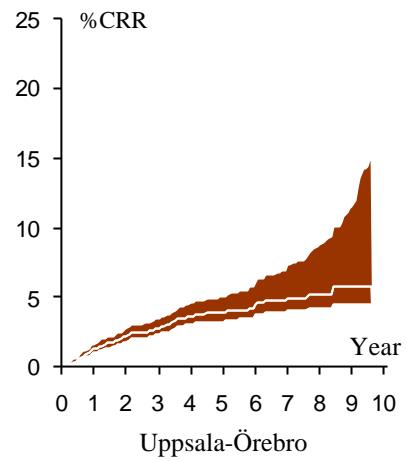
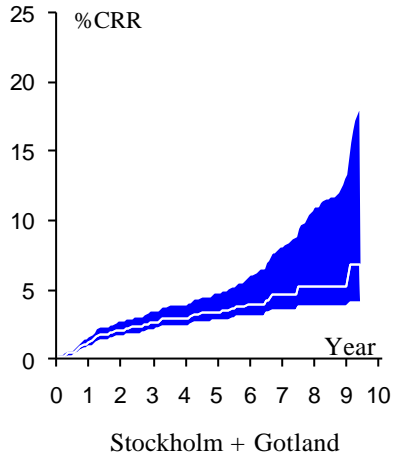
AGC	2,262	54.8
F/S MIII	787	19.1
F/S unspec	314	7.6
Scan	259	6.3
Duracon	157	3.8
AMK	108	2.6
MillerGalante2	44	1.1
Mill/G unspec	25	0.6
Axiom	57	1.4
Townley	55	1.3
PCA-Mod	48	1.2
Other	8	0.2
Total	4,124	100.0

### Norra %

AGC	452	17.7
PFC	391	15.3
Duracon	293	11.5
LCS	235	9.2
PCA unspec	166	6.5
Tricon	158	6.2
F/S MIII	143	5.6
F/S unspec	71	2.8
Mill/G unspec	125	4.9
MillerGalante2	89	3.5
Scan	140	5.5
PCA-Mod	78	3.1
Kinemax	59	2.3
Profix	56	2.2
Synatomic	39	1.5
Orthomet	20	0.8
SAL	14	0.5
AMK	11	0.4
Other	11	0.4
Total	2,551	100.0

# 10 year CRR for the regions 1988-1997

(Primary TKA, osteoarthritis)



## Distribution of implants in the regions 1988-1997

(Primary TKA, rheumatoid arthritis)

### Stockholm + Gotland      %

AGC	337	57.4
Kinemax	78	13.3
Duracon	43	7.3
PCA-Mod	39	6.6
PCA unspec	21	3.6
F/S MIII	28	4.8
F/S unspec	18	3.1
PFC	20	3.4
Other	3	0.3
Total	587	100

### Uppsala-Örebro      %

F/S MIII	245	21.2
F/S unspec	170	14.7
AGC	216	18.7
Kinemax	199	17.2
Scan	161	13.9
MillerGalante2	44	3.8
Mill/G ospec	25	2.2
PCA unspec	32	2.8
PCA-Mod	24	2.1
PFC	10	0.9
Other	30	2.6
Total	1,156	100

### Sydöstra      %

AGC	269	48.1
PFC	72	12.9
MillerGalante2	34	8.9
Miller/G unsp.	23	6.1
Scan	50	4.1
RMC	28	5.0
PCA-Mod	22	3.9
PCA unspec	12	2.1
Duracon	22	3.9
F/S unspec	13	2.3
Other	14	2.5
Total	559	100

### Södra      %

Scan	328	43.2
PFC	126	16.6
Kinematic	78	10.3
AGC	64	8.4
PCA unspec	44	5.8
PCA-Mod	21	2.8
Synatomic	57	7.5
Duracon	32	4.2
Other	10	1.3
Total	760	100

### Västsvenska      %

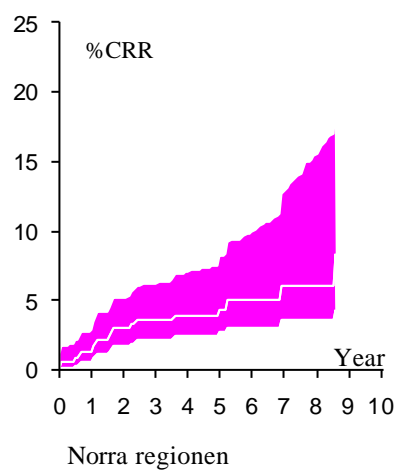
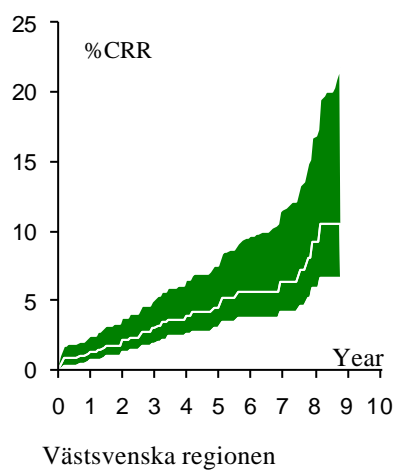
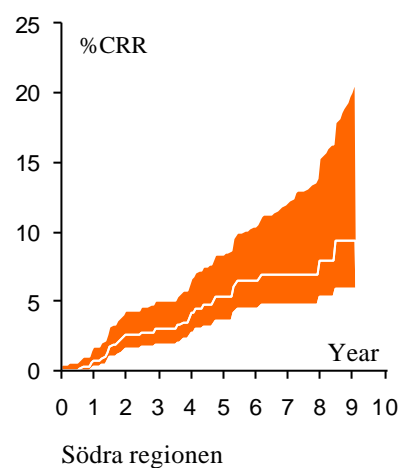
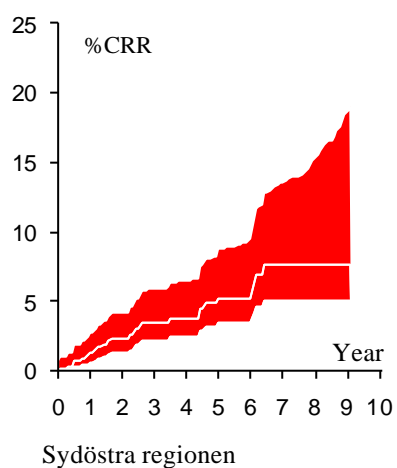
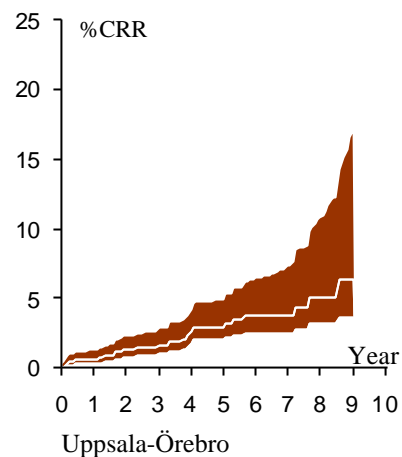
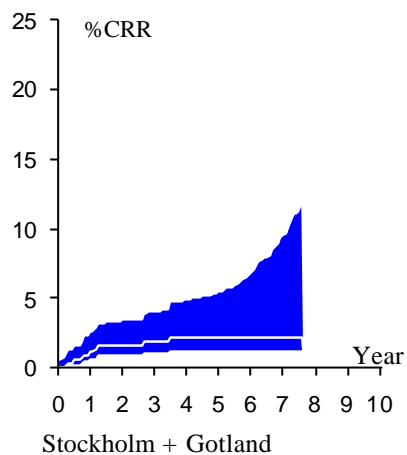
AGC	288	38.4
F/S MIII	196	26.1
F/S unspec	124	16.5
Scan	77	10.3
Townley	29	3.9
AMK	15	2.0
Other	21	2.8
Total	750	100

### Norra      %

PFC	83	16.7
Tricon	82	16.5
Duracon	80	16.1
PCA unspec	78	15.7
PCA-Mod	30	6.0
AGC	39	7.9
MillerGalante2	29	5.8
Miller/G unsp.	15	3.0
LCS	25	5.0
Scan	13	2.6
Other	22	4.4
Total	496	100

# 10 year CRR for the regions 1988-1997

(Primary TKA, rheumatoid arthritis)



## Distribution of implants in the regions 1988-1997

(Primary UKA, osteoarthritis)

### Stockholm + Gotland %

Brigham	616	57.6
Oxford	166	15.5
Miller/Galante	91	8.5
Link	62	5.8
Genesis	44	4.1
PCA	28	2.6
Repicci /AARS	21	2.0
Duracon	13	1.2
PFC	13	1.2
Marmor/Richards	12	1.1
Other	3	0.3
Total	1,069	100.0

### Uppsala-Örebro %

Link	1,782	47.2
St.Georg	314	8.3
Marmor/Richards	1,106	29.3
PFC	173	4.6
Oxford	121	3.2
PCA	104	2.8
Duracon	97	2.6
Brigham	32	0.8
Genesis	27	0.7
Alligretto	12	0.3
Other	11	0.3
Total	3,779	100.0

### Sydöstra %

Marmor/Richards	339	24.6
Link	330	23.9
St.Georg	22	1.6
Brigham	221	16.0
PCA	210	15.2
Duracon	106	7.7
Oxford	62	4.5
Alligretto	46	3.3
PFC	36	2.6
Other	8	0.6
Total	1,380	100.0

### Södra %

Link-Uni	972	28.3
Sct. Georg	348	10.1
Marmor	904	26.3
PCA-Uni	347	10.1
Duracon-Uni	228	6.6
PFC-Uni+S	137	4.0
Oxford-Uni	133	3.9
Brigham	129	3.8
Repicci (AARS)	109	3.2
Alligretto	100	2.9
Genesis	23	0.7
Other	8	0.2
Total	3,438	100

### Västsvenska %

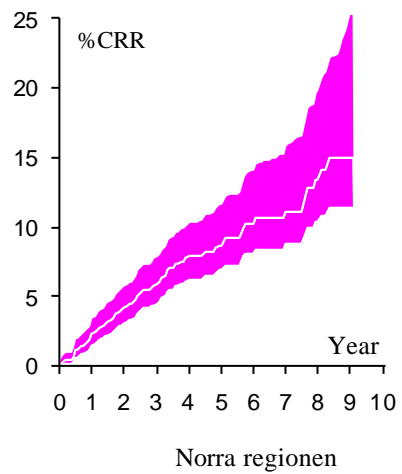
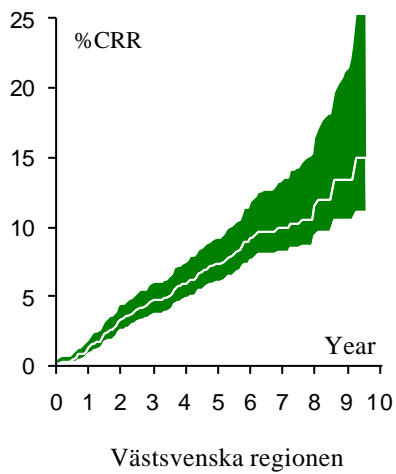
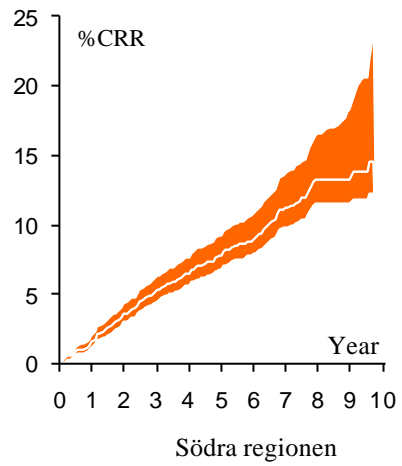
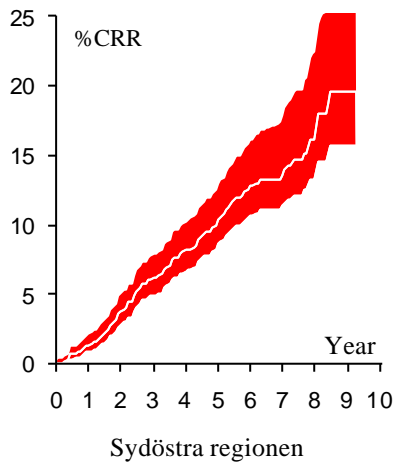
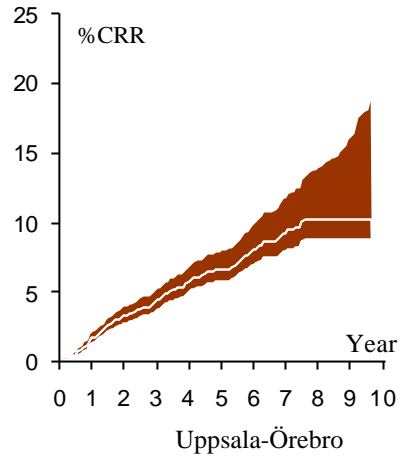
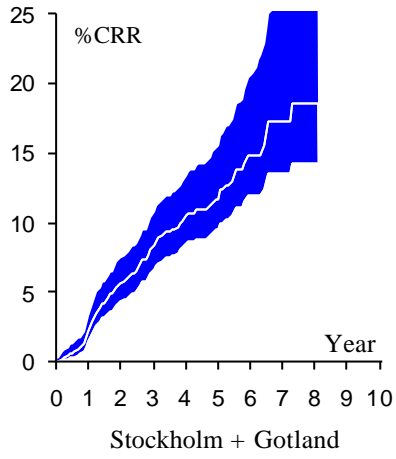
Link	681	36.4
St.Georg	62	3.3
Oxford	325	17.4
Marmor/Richards	288	15.4
Miller/Galante	257	13.8
Duracon	86	4.6
Repicci /AARS	75	4.0
Alligretto	68	3.6
PCA	23	1.2
Other	4	0.2
Total	1,869	100.0

### Norra %

Link	497	51.9
St.Georg	105	11.0
Oxford	102	10.7
Marmor/Richards	89	9.3
PCA	86	9.0
Duracon	26	2.7
PFC	22	2.3
Miller/Galante	22	2.3
Gunston Hult	8	0.8
Total	957	100.0

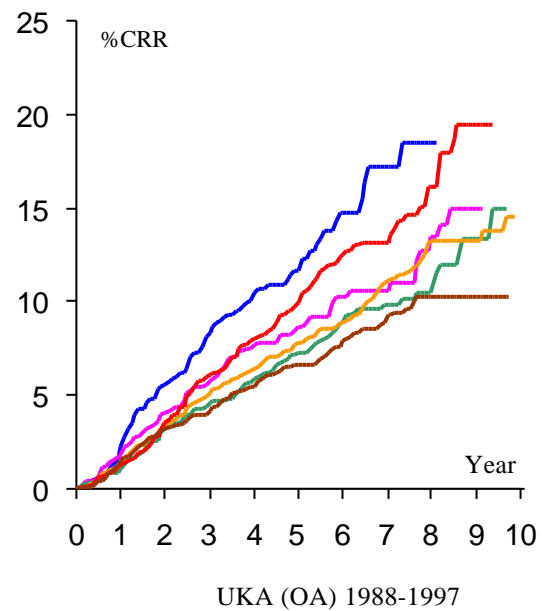
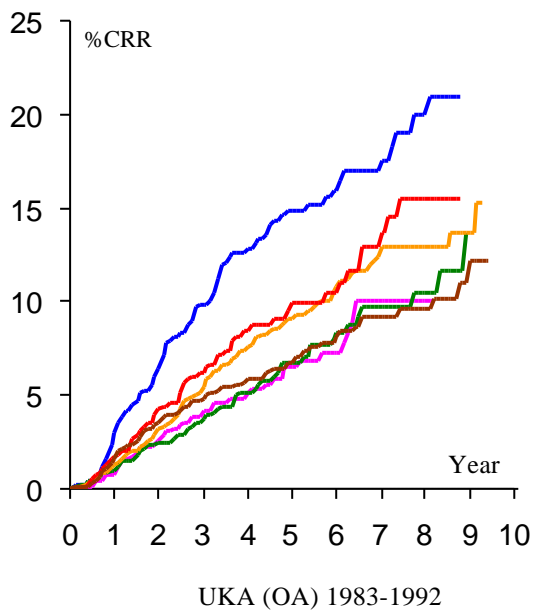
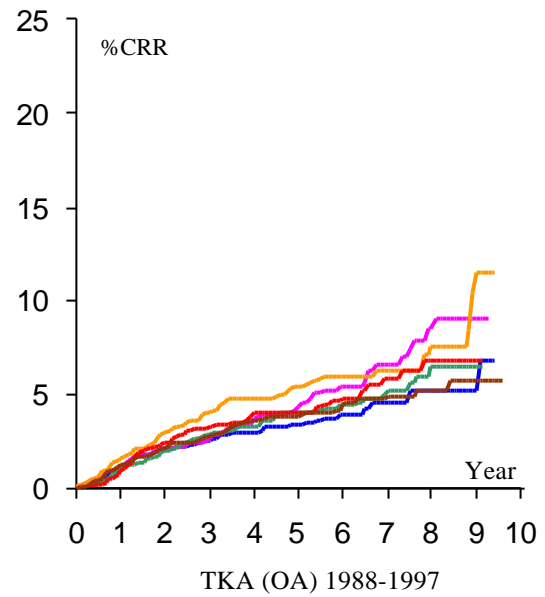
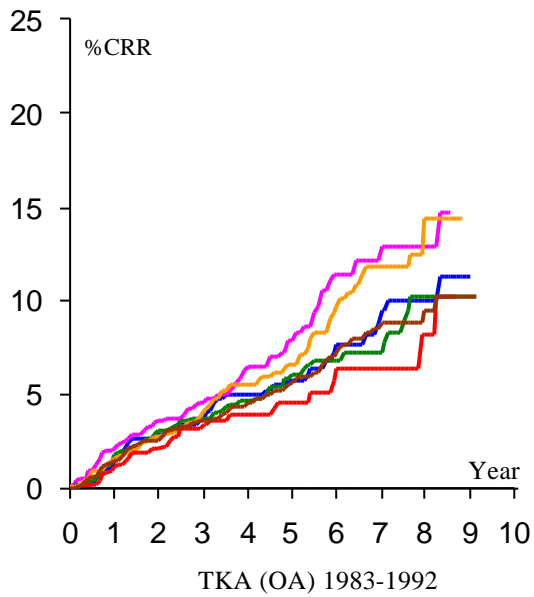
# 10 year CRR for the regions 1988-1997

(Primary UKA, osteoarthritis)



## Improvement with time – reduction of regional differences

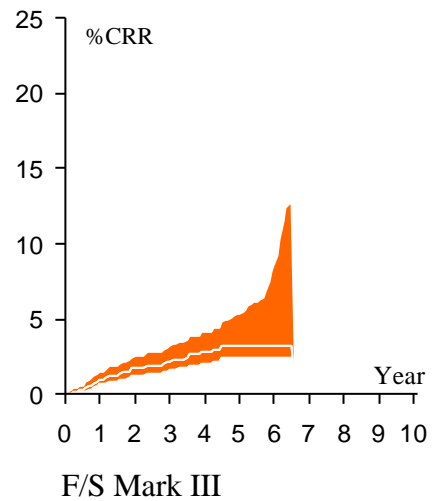
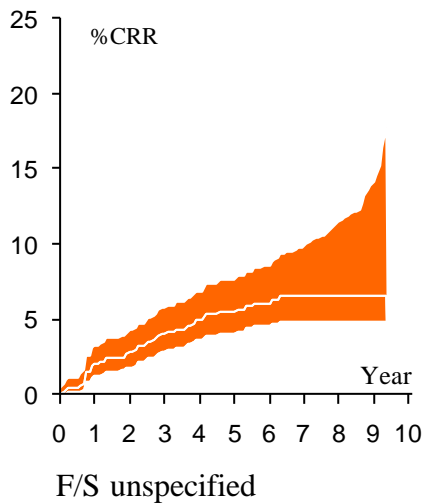
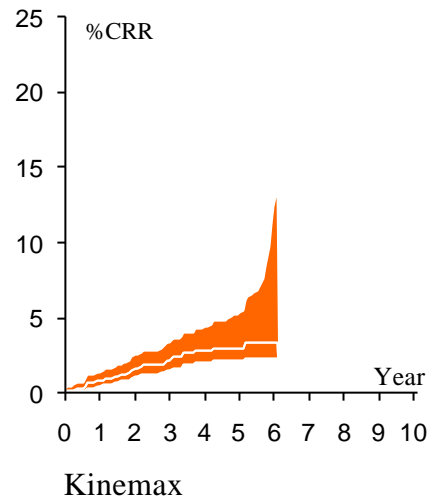
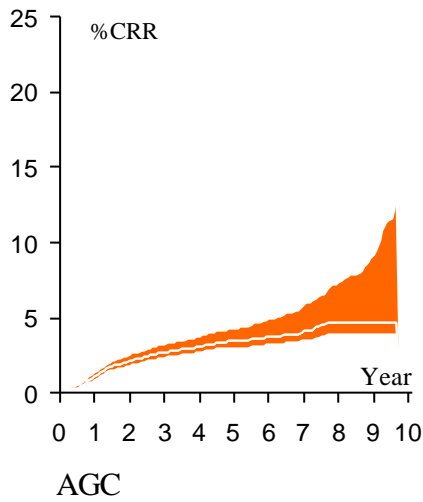
When CRR for the regions during 1983-1992 is compared with the period 1988-1997 (without confidence interval), it is apparent that the spread in outcome for the regions has become less.

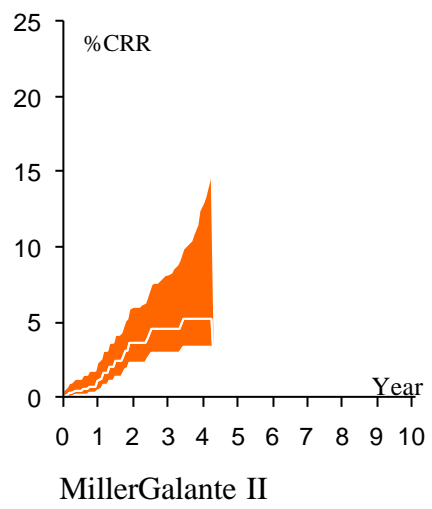
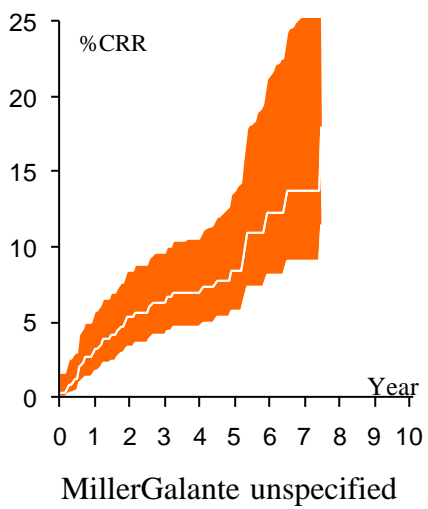
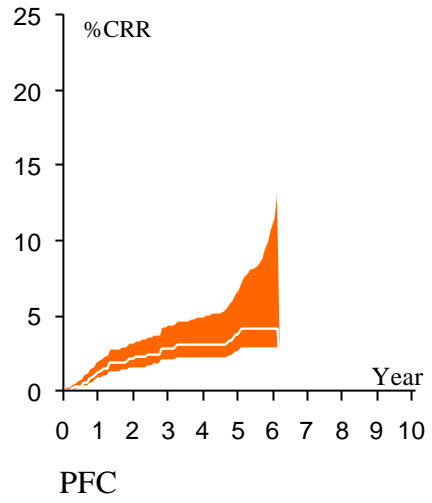
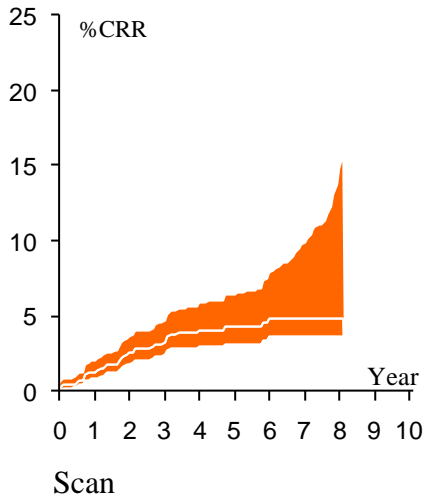


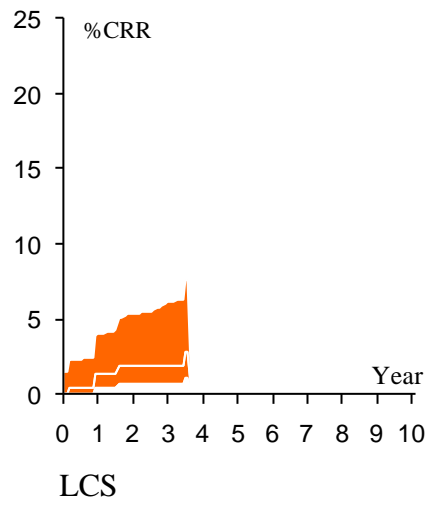
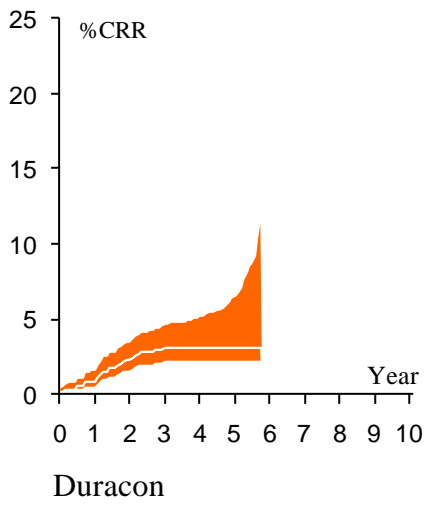
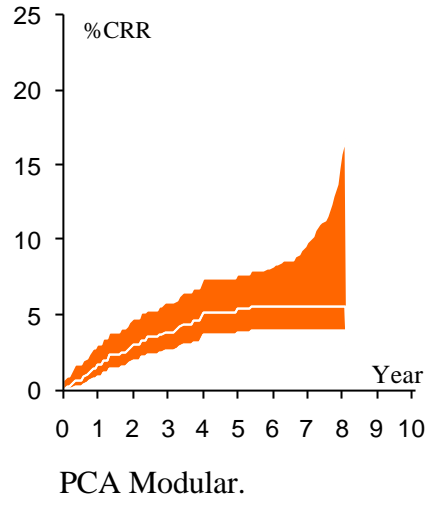
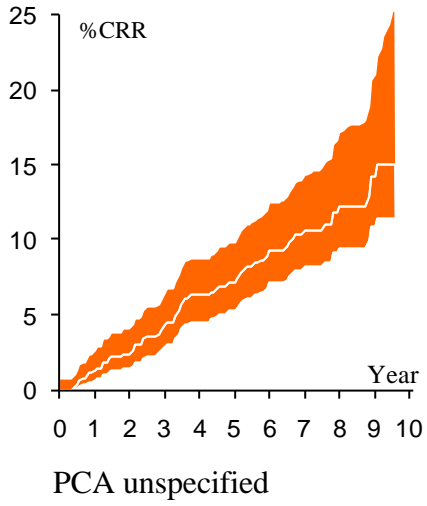


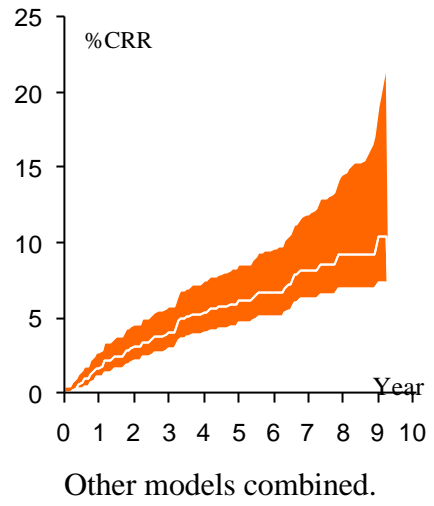
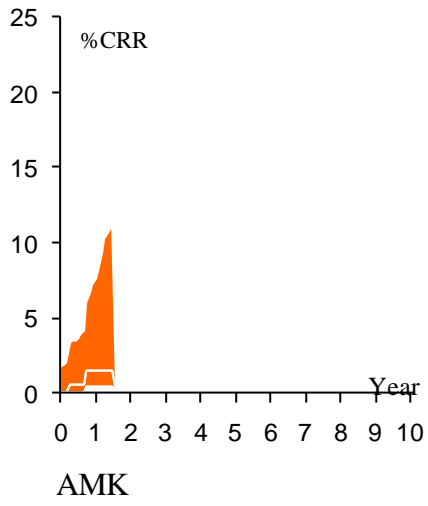
## 10 year CRR for the most common TKA implants. The period 1988-1997

Observe ! : Only operations for osteoarthritis are analyzed.  
Some implants have not been available the whole period.  
The curves are cut when 30 patients are left "at risk".









## 10 year CRR for the most common UKA implants. The period 1988-1997

Observe ! : Only operations for osteoarthritis are analyzed (implanted medially or laterally).  
Some implants have not been available the whole period.  
The curves are cut when 30 patients are left "at risk".

