



Italian Arthroplasty Registry Project

**TOWARDS
THE OPERATIVENESS**

Edited by
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Second Report
Addendum

English version of Tables and Figures

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Executive Summary

Introduction

The Second Report of the Italian Arthroplasty Registry ("Registro Italiano Artroprotesi", RIAP) is intended to continue the activities already started after the publication of the First Report. The aim is to make aware health professionals and decision makers about the central role of a national arthroplasty registry in managing the safety of the implanted devices, as well as patients about the importance of a system able to monitor outcomes in joint replacement surgery.

The First Report was a picture of the work done in the ten years elapsed since the RIAP started. The Second Report presents relevant data on procedures performed in 2014 and initiates a new cycle that consists in the publication of annual reports. To provide the lecturer with the most updated information about the development of the project, all the activities carried out in 2014, and also in 2015 until the publication, have been reported.

The complete report is published in Italian. In this addendum all the Tables and Figures of Chapters 4 and 5, describing statistical analyses on joint arthroplasty from national Hospital Discharge Records (HDR) database 2001-2013

and RIAP data 2014, have been translated in English for a comprehensive reading worldwide.

Organization of the Report

In order to facilitate the reading, the Second Report has the same structure of the First Report. It is organized in 5 Chapters followed by 14 appendices including technical documents and useful information.

Chapter 1 gives a short description of the project (a detailed description of the Registry is provided in the First Report), its structure as well as the data collection flow and presents the last release of the record layouts for hip, knee and shoulder.

Chapter 2 describes the procedures for Medical Devices (MD) identification and characterization, the updates regarding the development of the RIAP-MD Library and the procedures for checking the quality of data received from the Manufacturers. This activity is a key element of the Registry architecture.

Chapter 3 updates the activities performed by the RIAP participating institutions, focusing on relevant news happened in 2014. The regions and the autonomous provinces that have already started collecting data have highlighted

the new developments occurred in the observed timeframe. At the same time, those that didn't collect any data in 2014 have presented their programs, initiatives and achieved goals.

Chapters 4 and 5 are devoted to present data. In particular, Chapter 4 shows the analyses performed on the national HDR database for hip, knee and shoulder arthroplasties (shoulder has been included for the first time in this report), while Chapter 5 summarizes the data collected by the hospitals participating in the RIAP project.

Methods

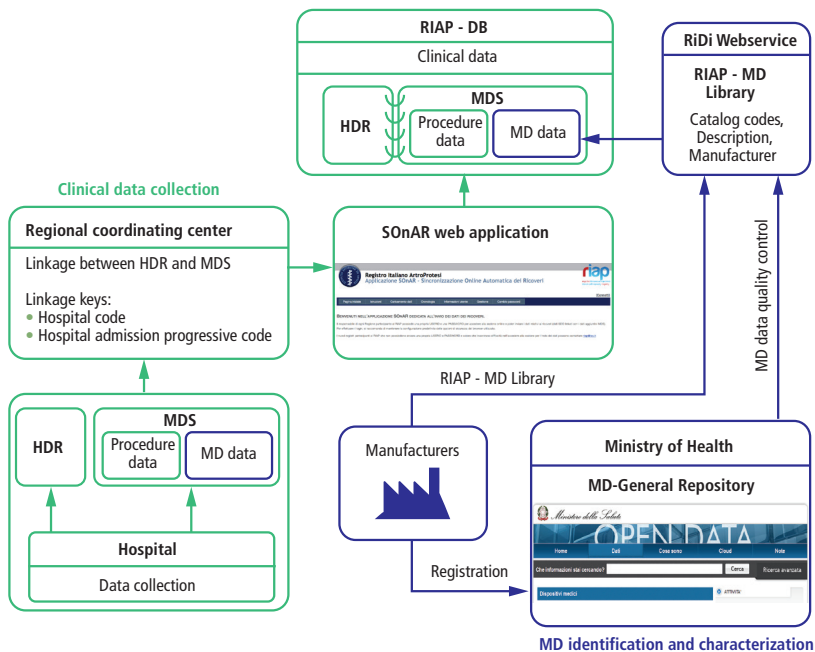
Based on a close cooperation among public health institutions, clinicians and all the involved stakeholders, the architecture of the registry is founded on three pillars: i) a federation of regional registries coordinated by a public health institution, the Italian National Institute of Health; ii) data collected using HDR integrated by an additional data set (MDS); iii) implants identified and characterized in a dedicated medical device library (RIAP-MD Library) available also as webservice (RiDi Webservice).

Flow diagram supporting the clinical data collection and medical device identification and characterization is shown in the figure below. A web application dedicated to the data transmission was developed (SOnAR).

The statistical analyses performed on data collected from HDR national database include the temporal profile of hip, knee and shoulder arthroplasties carried out from 2001 to 2013 (Table 4.1 and Figures 4.1-4.4), as well as the primary joint replacements and revisions performed in 2013 by patient characteristics, primary diagnosis, type of discharge, hospital length of stay and hospitalization burden (Tables from 4.2 to 4.23) and the distribution, by regions, of the hospitals with low volume of interventions for primary total hip, knee and shoulder replacements (Figures 4.5, 4.8 and 4.11), hip and knee revisions (Figures 4.6 and 4.9) and partial shoulder replacements (Figure 4.12). Finally, the inter-regional mobility index for elective total primary replacements is shown in Figures 4.7 (hip), 4.10 (knee) and 4.13 (shoulder).

The Italian regions, autonomous provinces and institutions currently enrolled in RIAP and the procedure adopted by each one for data collection are presented in Figure 5.1. In addition, the participation rate and the coverage of the regions and hospitals involved in the project are shown in Tables 5.1-5.3. The statistical analyses performed on the RIAP database include hip and knee arthroplasties performed in 2014 by type of provider (Tables 5.4-5.5 and 5.10-5.11), patients' characteristics and surgical practice, as well as diagnosis for primary and revision proce-

Flow diagram of data collection



dures presented in Tables 5.4-5.9 (hip) and Tables 5.10-5.15 (knee). Finally, characteristics of the implanted medical devices for hip and knee primary total replacements are presented in Tables 5.16-5.20 and Figures 5.2-5.3.

Results

The activities carried out during 2014 and 2015 have signed an important step for the implementation of the Italian Arthroplasty Registry. Procedures for collecting data on hip

and knee were consolidated and the record layout of the shoulder was defined, a fundamental and necessary achievement to start the data collection.

The procedures for MD identification and characterization were defined. The RIAP-MD Library, a key tool supporting the MD data collection of the Registry, was further expanded and updated. The cooperation with the International Consortium of Orthopaedic Registries (ICOR)

started to share the Global Library and include in the RIAP-MD Library the technical information useful for the device characterization.

Many regions worked to make the registry systematic, i.e. to include it in the local information flows. At the central level attention was paid to provide health professionals with tools making easier the data collection, improving it both in quality and in quantity.

According to the HDR database, the number of joint replacements continued to increase over time, in particular +2.8% was measured in 2013 as compared to 2012. Slightly lower, but still important, the proportion of hospitals performing less than 25 primary procedures per year (26.7% for total hip replacements and 32.8% for total knee replacements). Inter-regional mobility for elective primary interventions (in the absence of fracture) is still high with some regions having a remarkably higher attraction than escape index.

In the present Report, 31,159 procedures collected in 2014 are presented, 25,873 for hip and 5,548 for knee (the data of Lombardia, the region with the highest volume of activity, were provided on time for the publication for hip only and are referred to 2013). Participation rate in the regions and autonomous provinces was be-

tween 19% and 100%, while the overall coverage rate was 80% for hip and 56% for knee replacements. Ninety-four percent of the transmitted data were used for the analyses. Data collected from the Registry represent about 20% of the national volume on an annual basis.

Future perspectives

The feature characterizing RIAP is its approach in sharing methods and experiences with all the involved actors. This attitude feeds a constructive discussion and stimulates the development and the improvement of the project. A key element is the close collaboration between surgeons and public health institutions, both at the local and national level. Thus, it is crucial to constantly motivate surgeons to an even wider participation. Voluntary participation is a crucial element we hope will be overcome when the law establishing the Registry (Law 221/2012) is implemented.

Collecting data of high quality is essential for an arthroplasty registry. All the RIAP activities are addressed to improve the quality of care provided to patients undergoing joint replacement. A key requirement to achieve this important goal is setting up a data collection flow that punctually identifies and characterizes MD, supporting, in a coordinated way, the monitoring and post-marketing surveillance activities carried out by the Ministry of Health.

Index of Tables

CHAPTER 4 - Joint arthroplasties: Hospital Discharge Records analysis

Table 4.1	Joint arthroplasties in Italy (main and secondary procedures)
Table 4.2	Hip. Arthroplasties performed in the Italian Regions (main and secondary procedures)
Table 4.3	Hip. Number of hospitals by Region and class of volume of primary total replacements (main and secondary procedures)
Table 4.4	Hip. Number of hospitals by Region and class of volume of revisions (main and secondary procedures)
Table 4.5	Hip. Arthroplasties by main diagnosis (ICD9-CM)
Table 4.6a	Hip. Primary total replacement without fracture diagnosis, resurfacing and revision by gender and class of age
Table 4.6b	Hip. Primary total (with fracture diagnosis) and partial replacement by gender and class of age
Table 4.7a	Hip. Primary total replacement without fracture diagnosis, resurfacing and revision by type of discharge
Table 4.7b	Hip. Primary total (with fracture diagnosis) and partial replacements with fracture by type of discharge
Table 4.8	Hip. Median values of hospital length of stay (days), total and postoperative, by procedure and Region
Table 4.9	Hip. Arthroplasties by hospitalization burden (% values)
Table 4.10	Knee. Arthroplasties performed in the Italian Regions (main and secondary procedures)
Table 4.11a	Knee. Number of hospitals by Region and class of volume of primary total replacements (main and secondary procedures)
Table 4.11b	Knee. Number of hospitals by Region and class of volume of revisions (main and secondary procedures)
Table 4.12	Knee. Arthroplasties by main diagnosis
Table 4.13	Knee. Primary total replacements and revisions by gender and class of age
Table 4.14	Knee. Primary total replacements and revisions by type of discharge
Table 4.15	Knee. Median values of hospital length of stay (days), total and postoperative, by procedure and Region
Table 4.16	Knee. Arthroplasties by hospitalization burden (% values)
Table 4.17	Shoulder. Arthroplasties performed in the Italian Regions (main and secondary procedures)

Table 4.18a	Shoulder. Number of hospitals by Region and class of volume of total replacements (main and secondary procedures)
Table 4.18b	Shoulder. Number of hospitals by Region and class of volume of partial replacements (main and secondary procedures)
Table 4.19	Shoulder. Arthroplasties by main diagnosis
Table 4.20	Shoulder. Primary total replacements and revisions by gender and class of age
Table 4.21	Shoulder. Primary total and partial replacements by type of discharge
Table 4.22	Shoulder. Median values of hospital length of stay (days), total and postoperative, by procedure and Region
Table 4.23	Shoulder. Arthroplasties by hospitalization burden (% values)

CHAPTER 5 - Joint arthroplasties: RIAP data analysis

Table 5.1	Participation rate and coverage of the Regions involved in the RIAP project
Table 5.2	Hip. Coverage rate of the hospitals participating in the RIAP project
Table 5.3	Knee. Coverage rate of the hospitals participating in the RIAP project
Table 5.4	Hip. Type of procedure
Table 5.5	Hip. Arthroplasties by type of provider
Table 5.6	Hip. Characteristics of patients and surgical practice for primary procedures
Table 5.7	Hip. Primary procedures by diagnosis
Table 5.8	Hip. Characteristics of patients and surgical practice for revision procedures
Table 5.9	Hip. Revision procedures by diagnosis
Table 5.10	Knee. Type of procedure
Table 5.11	Knee. Arthroplasties by type of provider
Table 5.12	Knee. Characteristics of patients and surgical practice for primary procedures
Table 5.13	Knee. Primary procedures by diagnosis
Table 5.14	Knee. Characteristics of patients and surgical practice for revision procedures
Table 5.15	Knee. Revision procedures by diagnosis
Table 5.16	Hip. Femoral stems for primary implant by fixation
Table 5.17	Knee. Femoral component for primary implant by fixation
Table 5.18	Knee. Tibial baseplate for primary implant by fixation
Table 5.19	Knee. Tibial plateau for primary implant by type
Table 5.20	Knee. Primary total replacements by patella implant

Index of Figures

CHAPTER 4 - Joint arthroplasties: Hospital Discharge Records analysis

- Figure 4.1 Temporal profile of primary elective total joint replacements in Italy
- Figure 4.2 Hip. Incidence rates per 100,000 population by type of procedure (2001-2013)
- Figure 4.3 Knee. Incidence rates per 100,000 population by type of procedure (2001-2013)
- Figure 4.4 Shoulder. Incidence rates per 100,000 population by type of procedure (2001-2013)
- Figure 4.5 Hip. Hospitals with low volume of primary total replacements (≤ 25) by Region
- Figure 4.6 Hip. Hospitals with low volume of revisions (≤ 5) by Region
- Figure 4.7 Hip. Primary total replacements without fracture. Inter-regional mobility index
- Figure 4.8 Knee. Hospitals with low volume of primary total replacements (≤ 25) by Region
- Figure 4.9 Knee. Hospitals with low volume of revisions (≤ 5) by Region
- Figure 4.10 Knee. Primary total replacements. Inter-regional mobility index
- Figure 4.11 Shoulder. Hospitals with low volume of primary total replacements (≤ 25) by Region
- Figure 4.12 Shoulder. Hospitals with low volume of partial replacements (< 5) by Region
- Figure 4.13 Shoulder. Primary total replacements without fracture. Inter-regional mobility index

CHAPTER 5 - Joint arthroplasties: RIAP data analysis

- Figure 5.1 Italian regions, autonomous provinces and institutions currently enrolled in the Italian arthroplasty registry and procedure adopted for data collection
- Figure 5.2 Hip. Femoral stems for cementless primary implants
- Figure 5.3 Hip. Articular bearing surface

Table 4.1. Joint arthroplasties in Italy (main and secondary procedures)

ICD-9 CM Codes	Procedures	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% (*)
Anca															
81.51	Total hip replacement	45,792	48,793	51,311	54,442	55,599	57,612	58,650	58,786	59,528	59,764	60,712	62,361	64,056	2.8
81.51	Total hip replacement (no fracture)	39,144	41,396	43,419	45,764	46,561	48,157	49,104	49,289	49,923	50,394	51,422	52,940	54,624	2.8
81.52	Partial hip replacement	20,768	21,358	21,020	21,657	22,402	22,418	22,326	23,069	22,542	23,953	24,177	24,324	24,998	1.6
00.85	Total hip resurfacing(*)	-	-	-	-	-	-	-	-	273	404	122	52	44	-36.6
00.86	Partial hip resurfacing, femoral head(**)	-	-	-	-	-	-	-	-	22	61	26	26	38	14.6
00.87	Partial hip resurfacing, acetabulum(**)	-	-	-	-	-	-	-	-	8	11	9	16	14	15.0
	Revision of hip replacement(***)	6,015	6,502	6,528	6,745	6,960	7,230	7,273	7,219	7,606	7,919	7,897	8,302	8,249	2.7
	Hip	72,575	76,653	78,859	82,844	84,961	87,260	88,249	89,074	89,979	92,112	92,943	95,081	97,399	2.5
Knee															
81.54	Total knee replacement	26,787	31,039	35,799	40,904	43,785	47,986	52,116	54,395	54,778	56,808	56,977	58,979	60,261	7.0
	Revision of knee replacement(***)	1,269	1,665	1,904	2,189	2,472	2,665	3,007	3,311	3,850	3,953	3,996	4,235	4,502	11.1
	Knee	28,056	32,704	37,703	43,093	46,257	50,651	55,123	57,706	58,628	60,761	60,973	63,214	64,763	7.2
Shoulder															
81.80	Total shoulder replacement	695	798	934	1,239	1,455	1,688	2,036	2,175	2,515	2,965	3,444	3,793	4,421	16.7
81.80	Total shoulder replacement (no fracture)	405	503	634	868	1,080	1,331	1,620	1,773	2,073	2,355	2,784	3,011	3,464	19.6
81.81	Partial shoulder replacement	844	875	917	1,020	1,051	1,191	1,203	1,234	1,242	1,333	1,211	1,352	1,432	4.5
	Shoulder	1,539	1,673	1,851	2,259	2,506	2,879	3,239	3,409	3,757	4,298	4,655	5,145	5,853	11.8
Other joints															
81.56	Total ankle replacement	96	116	150	175	178	256	267	282	254	251	296	313	330	10.8
81.57	Replacement of joint of foot and toe	336	409	435	489	649	673	736	720	571	614	608	483	507	3.5
81.59	Revision of joint replacement of lower extremity, not elsewhere classified	219	189	183	363	707	599	383	153	201	133	111	90	103	-6.1
81.73	Total wrist replacement	45	45	46	50	63	86	74	75	61	54	76	84	69	3.6
81.84	Total elbow replacement	92	147	163	214	250	321	320	316	411	404	438	451	478	14.7
81.97	Revision of joint replacement of upper extremity	83	82	85	103	93	106	135	150	167	167	210	253	233	9.0
	Other joints	871	988	1,062	1,394	1,940	2,041	1,915	1,696	1,665	1,623	1,739	1,674	1,720	5.8
	Total	103,041	112,018	119,475	129,590	135,664	142,831	148,526	151,885	154,029	158,794	160,310	165,114	169,735	4.2

Source data: Hospital Discharge Records database (2001-2013); Acute or day-hospital admissions

(*) Annual growth rate; (**) Codes introduced on 1 January 2009; (***) Codes introduced on 1 January 2009; (****) 81.55. New codes introduced on 1 January 2009; (00.80, 00.81, 00.82, 00.83, 00.84

Resurfacing needs to be further investigated due to possible misclassification

Table 4.2. Hip. Arthroplasties performed in the Italian Regions (main and secondary procedures)

Regions	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement		Resurfacing		Revision	
	N	%	N	%	N	%	N	%	N	%
Piemonte	4,930	9.0	878	9.3	2,037	8.1	13	13.5	823	10.0
Valle d'Aosta	166	0.3	14	0.1	84	0.3	0	0.0	19	0.2
Lombardia	12,675	23.2	1,063	11.3	5,145	20.6	10	10.4	1,850	22.4
PA Bolzano	982	1.8	77	0.8	184	0.7	0	0.0	124	1.5
PA Trento	581	1.1	48	0.5	311	1.2	0	0.0	58	0.7
Veneto	5,798	10.6	775	8.2	2,090	8.4	8	8.3	751	9.1
Friuli Venezia Giulia	1,739	3.2	169	1.8	800	3.2	0	0.0	248	3.0
Liguria	1,678	3.1	711	7.5	664	2.7	1	1.0	354	4.3
Emilia-Romagna	4,505	8.2	468	5.0	1,568	6.3	19	19.8	771	9.3
Toscana	4,605	8.4	755	8.0	2,042	8.2	1	1.0	847	10.3
Umbria	734	1.3	194	2.1	460	1.8	0	0.0	101	1.2
Marche	1,174	2.1	311	3.3	632	2.5	0	0.0	177	2.1
Lazio	4,379	8.0	1,125	11.9	2,047	8.2	18	18.8	608	7.4
Abruzzo	1,255	2.3	250	2.7	640	2.6	0	0.0	145	1.8
Molise	181	0.3	14	0.1	136	0.5	0	0.0	21	0.3
Campania	2,644	4.8	829	8.8	1,580	6.3	3	3.1	360	4.4
Puglia	2,207	4.0	442	4.7	1,580	6.3	2	2.1	336	4.1
Basilicata	293	0.5	73	0.8	231	0.9	0	0.0	42	0.5
Calabria	744	1.4	227	2.4	687	2.7	2	2.1	134	1.6
Sicilia	2,602	4.8	850	9.0	1,605	6.4	1	1.0	392	4.8
Sardegna	752	1.4	159	1.7	475	1.9	18	18.8	88	1.1
TOTAL	54,624	100.0	9,432	100.0	24,998	100.0	96	100.0	8,249	100.0

Source data: Hospital Discharge Records database 2013

Resurfacing needs to be further investigated due to possible misclassification

Table 4.3. Hip. Number of hospitals by Region and class of volume of primary total replacements (main and secondary procedures)

	Class of volume of total replacements							Total
	1-25	26-50	51-100	101-200	201-400	401-800	>800	
Regions								
Piemonte	4	9	20	13	7	0	0	53
Valle d'Aosta	0	0	2	0	0	0	0	2
Lombardia	13	28	31	23	11	3	2	111
PA Bolzano	2	0	3	4	1	0	0	10
PA Trento	1	3	1	3	0	0	0	8
Veneto	4	9	12	19	6	1	0	51
Friuli Venezia Giulia	0	1	6	7	1	0	0	15
Liguria	1	2	5	4	1	2	0	15
Emilia-Romagna	17	12	14	12	2	0	1	58
Toscana	10	6	14	13	6	1	0	50
Umbria	4	2	7	1	1	0	0	15
Marche	5	6	5	4	1	0	0	21
Lazio	33	20	17	13	3	1	0	87
Abruzzo	5	4	8	3	1	0	0	21
Molise	2	1	2	0	0	0	0	5
Campania	33	17	15	7	2	0	0	74
Puglia	23	8	10	6	2	0	0	49
Basilicata	5	0	1	2	0	0	0	8
Calabria	10	7	1	2	1	0	0	21
Sicilia	25	24	19	3	2	0	0	73
Sardegna	8	9	4	1	0	0	0	22
TOTAL	205	168	197	140	48	8	3	769

Source data: Hospital Discharge Records database 2013

Table 4.4. Hip. Number of hospitals by Region and class of volume of revisions (main and secondary procedures)

	Class of volume of revisions				Total
	1-5	6-10	11-50	>50	
Regions					
Piemonte	10	13	24	3	50
Valle d'Aosta	1	0	1	0	2
Lombardia	34	24	40	6	104
PA Bolzano	1	3	4	0	8
PA Trento	3	1	3	0	7
Veneto	8	13	24	1	46
Friuli Venezia Giulia	4	0	10	0	14
Liguria	4	4	5	2	15
Emilia-Romagna	23	10	17	2	52
Toscana	15	12	15	5	47
Umbria	5	4	4	0	13
Marche	5	7	6	0	18
Lazio	38	15	17	1	71
Abruzzo	7	3	7	0	17
Molise	1	2	0	0	3
Campania	39	8	11	0	58
Puglia	18	8	9	1	36
Basilicata	3	1	2	0	6
Calabria	11	4	4	0	19
Sicilia	34	16	11	0	61
Sardegna	12	6	1	0	19
TOTAL	276	154	215	21	666

Source data: Hospital Discharge Records database 2013

Table 4.5. Hip. Arthroplasties by main diagnosis (ICD9-CM)

Primary total replacement	N	%
Osteoarthritis	50,316	80.4
Fracture of neck of femur	9,086	14.5
Other disorders of bone and cartilage	1,771	2.8
Other diagnoses (N. 81)	1,409	2.3
TOTAL	62,582	100.0
Primary partial replacement	N	%
Fracture of neck of femur	22,838	94.1
Fracture of other and unspecified parts of femur	410	1.7
Other disorders of bone and cartilage	313	1.3
Osteoarthritis	299	1.2
Other diagnoses (N. 77)	406	1.7
TOTAL	24,266	100.0
Resurfacing	N	%
Osteoarthritis	24	34.4
Fracture of neck of femur	21	30.0
Complications peculiar to certain specified procedures	11	15.7
Fracture of other and unspecified parts of femur	8	11.4
Other disorders of bone and cartilage	2	2.9
Acute myocardial infarction	1	1.4
Angina pectoris	1	1.4
Arthropathy associated with infections	1	1.4
Other orthopedic aftercare	1	1.4
TOTAL	70	100.0
Revision	N	%
Mechanical loosening of prosthetic joint	1,371	19.9
Infection and inflammatory reaction due to internal joint prosthesis	918	13.3
Unspecified mechanical complication of internal orthopedic device, implant, and graft	812	11.8
Dislocation of prosthetic joint	632	9.2
Other complications due to internal joint prosthesis	575	8.4
Peri-prosthetic fracture around prosthetic joint	381	5.5

Table 4.5. Follow

Revision	N	%
Other mechanical complication of prosthetic joint implant	376	5.5
Broken prosthetic joint implant	278	4.0
Articular bearing surface wear of prosthetic joint	199	2.9
Other complications due to other internal orthopedic device, implant, and graft	160	2.3
Hip joint replacement	153	2.2
Mechanical complication of other device, implant, and graft	132	1.9
Femoral shaft fracture	86	1.3
Peri-prosthetic osteolysis	85	1.2
Osteoarthritis, localized, primary, pelvic region and thigh	80	1.2
Infection and inflammatory reaction due to other internal orthopedic device, implant, and graft	80	1.2
Other diagnoses (N. 126)	567	8.2
TOTAL	6,885	100.0

Source data: Hospital Discharge Records database 2013

Table 4.6a. Hip. Primary total replacement without fracture diagnosis, resurfacing and revision by gender and class of age

	Total replacement (no fracture)				Resurfacing				Revision			
	Males	Females	TOTAL		Males	Females	TOTAL		Males	Females	TOTAL	
<i>Mean age</i>	65.3	69.4	67.5		66.2	80.7	72.8		68.9	72.7	71.3	
Class of age	Males	Females	TOTAL	%	Males	Females	TOTAL	%	Males	Females	TOTAL	%
<45	1,639	978	2,617	4.9	5	0	5	7.1	133	119	252	3.7
45 - 54	2,832	2,016	4,848	9.1	2	1	3	4.3	242	207	449	6.5
55 - 64	5,641	5,075	10,716	20.1	11	2	13	18.6	408	484	892	13.0
65 - 74	8,208	10,500	18,708	35.0	7	2	9	12.9	840	1,302	2,142	31.1
75 - 84	5,379	9,567	14,946	28.0	9	15	24	34.2	841	1,710	2,551	37.0
≥ 85	436	1,116	1,552	2.9	4	12	16	22.9	145	454	599	8.7
TOTAL	24,135	29,252	53,387	100.0	38	32	70	100.0	2,609	4,276	6,885	100.0

Source data: Hospital Discharge Records database 2013

Table 4.6b. Hip. Primary total (with fracture diagnosis) and partial replacement by gender and class of age

	Total replacement (with fracture)				Partial replacement			
	Males	Females	TOTAL		Males	Females	TOTAL	
<i>Mean age</i>	72.7	74.4	74.0		82.5	83.6	83.3	
Class of age	Males	Females	TOTAL	%	Males	Females	TOTAL	%
<45	65	28	93	1.0	58	43	101	0.4
45 - 54	142	179	321	4.2	63	69	132	0.5
55 - 64	309	829	1,138	14.0	139	237	376	1.5
65 - 74	682	2,285	2,967	34.5	547	1,322	1,869	7.7
75 - 84	780	2,481	3,261	33.6	2,446	7,498	9,944	41.0
≥ 85	366	1,049	1,415	12.7	2,932	8,912	11,844	48.9
TOTAL	2,344	6,851	9,195	100.0	6,185	18,081	24,266	100.0

Source data: Hospital Discharge Records database 2013

Table 4.7a. Primary total replacement without fracture diagnosis, resurfacing and revision by type of discharge

Type of discharge	Total replacement (no fracture)		Resurfacing		Revision	
	N	%	N	%	N	%
Ordinary discharge	28,521	53.5	46	65.7	3,816	55.4
Transfer in the same hospital	11,955	22.4	3	4.3	1,236	18.0
Transfer to an inpatient rehabilitation hospital	10,326	19.3	12	17.1	1,198	17.4
Transfer to an acute admission unit of a different hospital	1,458	2.7	3	4.3	254	3.7
Discharge to a residential health care	739	1.4	1	1.4	217	3.2
Discharge to a nursing home	197	0.4	0	0.0	71	1.0
Dead	67	0.1	3	4.3	69	1.0
Discharge against medical advice	62	0.1	2	2.8	18	0.3
Discharge to hospital at home	62	0.1	0	0.0	6	0.0
TOTAL	53,387	100.0	70	100.0	6,885	100.0

Source data: Hospital Discharge Records database 2013

Table 4.7b. Hip. Primary total (with fracture diagnosis) and partial replacements with fracture by type of discharge

Type of discharge	Total replacement (with fracture)		Partial replacement	
	N	%	N	%
Ordinary discharge	5,204	56.6	13,024	53.7
Transfer in the same hospital	940	10.2	1,741	7.2
Transfer to an inpatient rehabilitation hospital	1,900	20.7	5,262	21.7
Transfer to an acute admission unit of a different hospital	308	3.3	882	3.6
Discharge to a residential health care	476	5.2	1,971	8.1
Discharge to a nursing home	175	1.9	501	2.1
Dead	123	1.3	713	2.9
Discharge against medical advice	46	0.5	110	0.5
Discharge to hospital at home	23	0.3	62	0.2
TOTAL	9,195	100.0	24,266	100.0

Source data: Hospital Discharge Records database 2013

Table 4.8. Hip. Median values of hospital length of stay (days), total and postoperative, by procedure and Region

Regions	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement		Resurfacing		Revision	
	Total	Post-operative	Total	Post-operative	Total	Post-operative	Total	Post-operative	Total	Post-operative
Piemonte	8	7	12	9	13	9	8	7	11	8
Valle d'Aosta	4	3	12	9	13	11	-	-	15	10
Lombardia	7	6	10	7	11	8	12	8	8	7
PA Bolzano	8	7	10	8	10	8	-	-	11	9
PA Trento	6	5	11	8	11	7	-	-	9	7
Veneto	8	7	12	10	14	11	8	7	14	11
Friuli Venezia Giulia	9	8	14	11	15	12	-	-	12	10
Liguria	7	5	12	8	14	10	28	19	9	7
Emilia-Romagna	8	7	11	8	11	9	9	71	10	8
Toscana	8	7	9	7	10	7	14	13	9	7
Umbria	8	7	10	6	10	7	-	-	12	8
Marche	9	8	13	9	13	10	-	-	12	9
Lazio	8	6	9	6	11	7	15	5	11	7
Abruzzo	7	6	11	7	11	7	-	-	9	7
Molise	9	5	17	11	15	9	-	-	17	12
Campania	8	6	12	6	12	6	7	3	11	7
Puglia	8	7	11	7	11	7	15	3	11	8
Basilicata	8	7	10	6	9	6	-	-	10	9
Calabria	8	7	11	7	10	6	11	7	13	9
Sicilia	7	6	11	7	10	7	8	7	10	7
Sardegna	8	7	14	10	13	9	15	10	16	11
Italy	8	7	11	7	12	8	10	7	10	8

Source data: Hospital Discharge Records database 2013

Table 4.9. Hip. Arthroplasties by hospitalization burden (% values)

	Total replacement (no fracture)	Total replacement (with fracture)	Partial replacement	Resurfacing	Revision
National Health System	95.0	97.4	99.0	94.3	94.9
Other	5.0	2.6	1.0	5.7	5.1
TOTAL	100.0	100.0	100.0	100.0	100.0

Source data: Hospital Discharge Records database 2013

Table 4.10. Knee. Arthroplasties performed in the Italian Regions (main and secondary procedures)

Regions	Total replacement		Revision	
	N	%	N	%
Piemonte	4,378	7.2	306	6.8
Valle d'Aosta	124	0.2	0	0.0
Lombardia	12,673	21.0	1,201	26.7
PA Bolzano	707	1.2	38	0.8
PA Trento	470	0.8	30	0.7
Veneto	6,613	11.0	428	9.5
Friuli Venezia Giulia	1,658	2.8	112	2.5
Liguria	1,595	2.6	158	3.5
Emilia-Romagna	4,020	6.7	424	9.4
Toscana	5,768	9.6	559	12.4
Umbria	1,096	1.8	73	1.6
Marche	1,339	2.2	68	1.5
Lazio	4,475	7.4	280	6.2
Abruzzo	1,737	2.9	73	1.6
Molise	237	0.4	3	0.1
Campania	2,849	4.7	144	3.2
Puglia	2,838	4.7	163	3.6
Basilicata	478	0.8	35	0.8
Calabria	1,188	2.0	52	1.2
Sicilia	4,642	7.7	302	6.7
Sardegna	1,376	2.3	53	1.2
TOTAL	60,261	100.0	4,502	100.0

Source data: Hospital Discharge Records database 2013

Table 4.11a. Knee. Number of hospitals by Region and class of volume of primary total replacements (main and secondary procedures)

Regions	Class of volume of total replacements							TOTAL
	1-25	26-50	51-100	101-200	201-400	401-800	>800	
Piemonte	12	12	9	11	6	0	0	50
Valle d'Aosta	0	1	1	0	0	0	0	2
Lombardia	24	35	23	17	8	7	0	114
PA Bolzano	2	1	5	2	0	0	0	10
PA Trento	1	2	5	0	0	0	0	8
Veneto	5	11	14	10	3	3	1	47
Friuli Venezia Giulia	2	2	5	5	2	0	0	16
Liguria	4	1	4	3	1	1	0	14
Emilia-Romagna	24	14	14	5	3	1	0	61
Toscana	14	8	10	8	10	1	0	51
Umbria	3	3	7	3	0	0	0	16
Marche	6	6	4	4	1	0	0	21
Lazio	36	19	12	11	2	1	0	81
Abruzzo	5	7	5	1	3	0	0	21
Molise	3	0	1	1	0	0	0	5
Campania	37	14	15	4	1	0	0	71
Puglia	17	15	4	7	3	0	0	46
Basilicata	3	2	1	2	0	0	0	8
Calabria	12	3	2	0	3	0	0	20
Sicilia	27	15	15	11	4	0	0	72
Sardegna	11	2	5	4	1	0	0	23
TOTAL	248	173	161	109	51	14	1	757

Source data: Hospital Discharge Records database 2013

Table 4.11b. Knee. Number of hospitals by Region and class of volume of revisions
(main and secondary procedures)

Regions	Class of volume of revisions				TOTAL
	1-5	6-10	11-50	>50	
Piemonte	23	6	12	0	41
Valle d'Aosta	0	0	0	0	0
Lombardia	52	16	18	5	91
PA Bolzano	4	4	0	0	8
PA Trento	5	1	1	0	7
Veneto	23	10	8	2	43
Friuli Venezia Giulia	8	4	3	0	15
Liguria	6	1	2	1	10
Emilia-Romagna	29	9	6	2	46
Toscana	17	12	11	2	42
Umbria	6	4	1	0	11
Marche	9	1	3	0	13
Lazio	40	9	7	0	56
Abruzzo	11	3	2	0	16
Molise	3	0	0	0	3
Campania	38	4	3	0	45
Puglia	19	3	7	0	29
Basilicata	4	2	1	0	7
Calabria	11	2	1	0	14
Sicilia	41	7	7	0	55
Sardegna	9	4	0	0	13
TOTAL	358	102	93	12	565

Source data: Hospital Discharge Records database 2013

Table 4.12. Knee. Arthroplasties by main diagnosis

Total replacement	N	%
Osteoarthritis	57,325	96.7
Other acquired deformities of limbs	723	1.2
Other diagnoses (N. 48)	1,252	2.1
TOTAL	59,300	100.0
Revision	N	%
Mechanical loosening of prosthetic joint	736	19.0
Unspecified mechanical complication of internal orthopedic device, implant, and graft	607	15.7
Infection and inflammatory reaction due to internal joint prosthesis	503	13.0
Other mechanical complication of prosthetic joint implant	298	7.7
Other complications due to internal joint prosthesis	261	6.7
Dislocation of prosthetic joint	175	4.5
Broken prosthetic joint implant	169	4.4
Osteoarthritis, localized, primary, lower leg	147	3.8
Other complications due to other internal orthopedic device, implant, and graft	119	3.1
Joint replaced knee	114	2.9
Infection and inflammatory reaction due to other internal orthopedic device, implant, and graft	107	2.8
Mechanical complication of other device, implant, and graft	68	1.8
Osteoarthritis, localized, secondary, lower leg	54	1.4
Other diagnoses (N. 116)	510	13.2
TOTAL	3,868	100.0

Source data: Hospital Discharge Records database 2013

Table 4.13. Knee. Primary total replacements and revisions by gender and class of age

	Total replacement				Revision			
	Males	Females	TOTAL		Males	Females	TOTAL	
<i>Mean age</i>	69.1	70.7	70.2		68.1	70.7	70.0	
Class of age	Males	Females	TOTAL	%	Males	Females	TOTAL	%
<45	498	265	763	1.3	52	40	92	2.4
45 - 54	828	1,171	1,999	3.4	78	88	166	4.3
55 - 64	3,174	6,696	9,870	16.6	198	436	634	16.4
65 - 74	8,398	18,561	26,959	45.5	446	1,176	1,622	41.9
75 - 84	5,365	13,427	18,792	31.7	356	919	1,275	33.0
≥ 85	248	669	917	1.5	8	71	79	2.0
TOTAL	18,511	40,789	59,300	100.0	1,138	2,730	3,868	100.0

Source data: Hospital Discharge Records database 2013

Table 4.14. Knee. Primary total replacements and revisions by type of discharge

Type of discharge	Total replacement		Revision	
	N	%	N	%
Ordinary discharge	31,867	53.6	2,164	56.0
Transfer in the same hospital	14,366	24.2	966	25.0
Transfer to an inpatient rehabilitation hospital	11,022	18.6	566	14.6
Transfer to an acute admission unit of a different hospital	1,218	2.1	99	2.6
Discharge to a residential health care	521	0.9	47	1.2
Discharge to a nursing home	167	0.3	13	0.3
Dead	36	0.1	3	0.1
Discharge against medical advice	52	0.1	5	0.1
Discharge to hospital at home	51	0.1	5	0.1
TOTAL	59,300	100.0	3,868	100.0

Source data: Hospital Discharge Records database 2013

Table 4.15. Knee. Median values of hospital length of stay (days), total and postoperative, by procedure and Region

Regions	Total replacement		Revision	
	Total	Postoperative	Total	Postoperative
Piemonte	7	6	8	7
Valle d'Aosta	4	3	-	-
Lombardia	6	5	6	5
PA Bolzano	9	8	12	10
PA Trento	7	6	8	6
Veneto	8	7	9	7
Friuli Venezia Giulia	9	8	10	9
Liguria	6	5	7	6
Emilia-Romagna	8	7	10	8
Toscana	8	7	8	7
Umbria	7	6	9	7
Marche	9	8	9	8
Lazio	7	6	8	7
Abruzzo	7	5	7	5
Molise	5	4	9	5
Campania	8	6	10	7
Puglia	8	6	9	7
Basilicata	8	6	9	7
Calabria	8	7	8	7
Sicilia	7	5	8	6
Sardegna	7	6	7	6
Italy	7	6	8	7

Source data: Hospital Discharge Records database 2013

Table 4.16. Knee. Arthroplasties by hospitalization burden (% values)

	Total replacement	Revision
National Health System	97.1	97.6
Other	2.9	2.4
TOTAL	100.0	100.0

Source data: Hospital Discharge Records database 2013

Table 4.17. Shoulder. Arthroplasties performed in the Italian Regions
(main and secondary procedures)

Regions	Total replacement		Partial replacement	
	N	%	N	%
Piemonte	434	9.8	64	4.5
Valle d'Aosta	4	0.1	0	0.0
Lombardia	842	19.0	290	20.3
PA Bolzano	30	0.7	15	1.0
PA Trento	27	0.6	21	1.5
Veneto	449	10.2	242	16.9
Friuli Venezia Giulia	120	2.7	54	3.8
Liguria	95	2.1	10	0.7
Emilia-Romagna	542	12.3	117	8.2
Toscana	436	9.9	121	8.4
Umbria	93	2.1	13	0.9
Marche	161	3.6	26	1.8
Lazio	319	7.2	175	12.2
Abruzzo	115	2.6	23	1.6
Molise	11	0.2	5	0.3
Campania	167	3.8	48	3.4
Puglia	216	4.9	106	7.4
Basilicata	16	0.4	2	0.1
Calabria	62	1.4	13	0.9
Sicilia	233	5.3	64	4.5
Sardegna	49	1.1	23	1.6
TOTAL	4,421	100.0	1,432	100.0

Source data: Hospital Discharge Records database 2013

Table 4.18a. Shoulder. Number of hospitals by Region and class of volume of total replacements (main and secondary procedures)

Regions	Class of volume of total replacements							TOTAL
	1	2	3-4	5-9	10-14	15-24	≥25	
Piemonte	7	4	8	9	7	5	4	44
Valle d'Aosta	0	0	1	0	0	0	0	1
Lombardia	11	12	14	21	10	9	7	84
PA Bolzano	0	2	3	1	1	0	0	7
PA Trento	3	2	1	2	0	0	0	8
Veneto	1	4	6	11	4	11	3	40
Friuli Venezia Giulia	0	0	5	4	1	1	1	12
Liguria	1	2	3	3	0	0	1	10
Emilia-Romagna	9	9	9	9	5	2	7	50
Toscana	6	3	3	7	3	2	6	30
Umbria	1	1	2	6	0	2	0	12
Marche	1	1	5	6	1	1	2	17
Lazio	13	8	5	12	4	1	3	46
Abruzzo	3	2	5	2	2	1	1	16
Molise	0	1	1	1	0	0	0	3
Campania	9	5	3	5	2	0	2	26
Puglia	6	3	7	5	1	4	1	27
Basilicata	2	0	0	0	1	0	0	3
Calabria	4	1	5	1	1	1	0	13
Sicilia	9	9	5	8	2	0	3	36
Sardegna	3	5	1	2	0	1	0	12
TOTAL	89	74	92	115	45	41	41	497

Source data: Hospital Discharge Records database 2013

Table 4.18b. Shoulder. Number of hospitals by Region and class of volume of partial replacements (main and secondary procedures)

Regions	Class of volume of partial replacements							TOTAL
	1	2	3-4	5-9	10-14	15-24	≥25	
Piemonte	8	6	8	3	0	0	0	25
Valle d'Aosta	0	0	0	0	0	0	0	0
Lombardia	19	16	13	11	4	1	2	66
PA Bolzano	3	0	2	1	0	0	0	6
PA Trento	1	0	1	1	1	0	0	4
Veneto	8	7	5	9	3	2	2	36
Friuli Venezia Giulia	5	0	1	5	1	0	0	12
Liguria	3	0	0	1	0	0	0	4
Emilia-Romagna	12	7	4	3	0	0	2	28
Toscana	10	5	3	2	1	1	1	23
Umbria	0	0	1	2	0	0	0	3
Marche	5	3	1	2	0	0	0	11
Lazio	13	8	10	9	3	1	0	44
Abruzzo	3	2	0	3	0	0	0	8
Molise	1	0	1	0	0	0	0	2
Campania	12	3	2	2	1	0	0	20
Puglia	5	4	4	3	3	1	0	20
Basilicata	2	0	0	0	0	0	0	2
Calabria	5	1	0	1	0	0	0	7
Sicilia	10	4	4	1	2	0	0	21
Sardegna	0	4	0	2	0	0	0	6
TOTAL	125	70	60	61	19	6	7	348

Source data: Hospital Discharge Records database 2013

Table 4.19. Shoulder. Arthroplasties by main diagnosis

Total replacement	N	%
Osteoarthritis	2,392	55.6
Fracture of humerus	910	21.1
Other disorders of synovium, tendon, and bursa	196	4.6
Other and unspecified arthropathies	115	2.7
Complications peculiar to certain specified procedures	109	2.5
Other and unspecified disorders of joint	104	2.4
Other disorders of bone and cartilage	102	2.4
Peripheral enthesopathies and allied syndromes	90	2.1
Late effects of musculoskeletal and connective tissue injuries	68	1.6
Other joint derangement, not elsewhere classified	66	1.5
Other diagnoses (N. 33)	152	3.5
TOTAL	4,304	100.0
Partial replacement	N	%
Fracture of humerus	596	45.3
Osteoarthritis	348	26.4
Other disorders of synovium, tendon, and bursa	126	9.6
Other disorders of bone and cartilage	43	3.3
Complications peculiar to certain specified procedures	39	3.0
Peripheral enthesopathies and allied syndromes	35	2.7
Dislocation of shoulder	27	2.1
Late effects of musculoskeletal and connective tissue injuries	19	1.4
Malignant neoplasm of bone and articular cartilage	14	1.1
Other diagnoses (N. 20)	67	5.1
TOTAL	1,314	100.0

Source data: Hospital Discharge Records database 2013

Table 4.20. Shoulder. Primary total replacements and revisions by gender and class of age

	Total replacement (no fracture)				Total replacement (with fracture)				Revision			
	Males	Females	TOTAL		Males	Females	TOTAL		Males	Females	TOTAL	
<i>Mean age</i>	69.1	70.7	70.2		68.1	70.7	70.0		68.1	70.7	70.0	
Class of age	Males	Females	TOTAL	%	Males	Females	TOTAL	%	Males	Females	TOTAL	%
<45	29	26	55	1.6	5	1	6	0.6	53	21	74	5.6
45 - 54	44	41	85	2.5	3	4	7	0.8	59	31	90	6.8
55 - 64	156	196	352	10.4	22	49	71	7.6	122	140	262	19.9
65 - 74	420	1,190	1,610	47.8	44	282	326	35.1	105	370	475	36.2
75 - 84	230	983	1,213	36.0	61	387	448	48.2	65	284	349	26.6
≥ 85	10	49	59	1.7	12	60	72	7.7	6	58	64	4.9
TOTAL	889	2,485	3,374	100.0	147	783	930	100.0	410	904	1,314	100.0

Source data: Hospital Discharge Records database 2013

Table 4.21. Shoulder. Primary total and partial replacements by type of discharge

Type of discharge	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement	
	N	%	N	%	N	%
Ordinary discharge	3,089	91.6	820	88.2	1,230	93.6
Transfer in the same hospital	193	5.7	37	4.0	16	1.2
Transfer to an inpatient rehabilitation hospital	58	1.7	44	4.7	35	2.7
Transfer to an acute admission unit of a different hospital	15	0.4	9	1.0	14	1.1
Discharge to a residential health care	2	0.1	12	1.3	9	0.7
Discharge to a nursing home	2	0.1	3	0.3	3	0.2
Dead	1	0.0	1	0.1	2	0.1
Discharge against medical advice	10	0.3	4	0.4	4	0.3
Discharge to hospital at home	4	0.1	0	0.0	1	0.1
TOTAL	3,374	100.0	930	100.0	1,314	100.0

Source data: Hospital Discharge Records database 2013

Table 4.22. Shoulder. Median values of hospital length of stay (days), total and postoperative, by procedure and Region

Regions	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement	
	Total	Postoperative	Total	Postoperative	Total	Postoperative
Piemonte	5	4	7	4	5	4
Valle d'Aosta	4	3	-	-	-	-
Lombardia	5	4	10	5	7	4
PA Bolzano	7	6	8	5	9	7
PA Trento	4	4	12	4	5	4
Veneto	6	5	10	5	3	2
Friuli Venezia Giulia	6	4	9	6	5	4
Liguria	3	3	11	6	10	6
Emilia-Romagna	5	4	9	5	6	4
Toscana	5	4	8	5	5	3
Umbria	5	3	7	4	2	2
Marche	3	3	6	4	5	5
Lazio	6	4	9	5	7	4
Abruzzo	6	5	9	4	8	5
Molise	8	7	10	6	8	7
Campania	8	4	12	6	4	2
Puglia	5	4	8	4	6	3
Basilicata	5	4	-	-	4	2
Calabria	7	4	5	4	13	5
Sicilia	5	4	9	4	6	4
Sardegna	6	4	12	5	9	5
Italy	5	4	9	5	6	4

Source data: Hospital Discharge Records database 2013

Table 4.23. Shoulder. Arthroplasties by hospitalization burden (% values)

	Total replacement (no fracture)	Total replacement (with fracture)	Partial replacement
National Health System	95.8	97.1	96.0
Other	4.2	2.9	4.0
TOTAL	100.0	100.0	100.0

Source data: Hospital Discharge Records database 2013

Table 5.1. Participation rate and coverage of the Regions involved in the RIAP project

Regions	Joint	Start date	Stop date	Coverage (%)	Participation (%)	Received records (N.)	QI*
Lombardia	Anca	01/01/13	31/12/13	≈100.0	100.0	16,303	95.1
PA Bolzano	Anca	01/01/14	31/12/14	91.7	100.0	1,344	100.0
	Ginocchio	01/01/14	31/12/14	87.4	100.0	752	100.0
PA Trento	Anca	01/01/14	31/12/14	81.2	87.5	1,034	96.8
Marche	Anca	01/01/14	31/12/14	36.0	75.0	851	87.3
	Ginocchio	01/01/14	31/12/14	40.0	71.0	665	93.8
Puglia	Anca	01/01/14	31/12/14	100.0	100.0	4,300	95.8
	Ginocchio	01/01/14	31/12/14	100.0	100.0	2,817	92.7
Basilicata	Anca	01/01/14	31/12/14	30.4	57.1	0**	n.a.
	Ginocchio	01/01/14	31/12/14	45.5	57.1	0**	n.a.
Calabria	Anca	01/01/14	31/12/14	35.0	57.0	610	92.5
	Ginocchio	01/01/14	23/12/14	49.0	38.0	464	96.7
Sicilia	Anca	01/01/14	31/12/14	15.2	18.7	530	92.6
	Ginocchio	01/01/14	31/12/14	18.2	20.0	489	90.0
Fondazione Livio Sciuotto ONLUS	Anca	01/01/14	31/12/14	66.9	100.0	901	99.2
	Ginocchio	01/01/14	31/12/14	42.6	100.0	361	98.9
Hip						25,873	95.3
Knee						5,548	89.0
Total						31,421	94.2

* Quality Index: percentage of records used for the analyses out of records received

** Additional data linked to Hospital Discharge Records were not transmitted

n.a.: not applicable

Table 5.2. Hip. Coverage rate of the hospitals participating in the RIAP project

Regions	Hospitals	Start date	Stop date	Coverage (%)
Lombardia	UUOO Ortopedia/Traumatologia	01/01/13	31/12/13	~100.0
PA Bolzano	Ospedale di Bolzano	01/01/14	31/12/14	100.0
	Casa di Cura privata S.Maria	01/01/14	31/12/14	96.0
	Ospedale di Silandro	01/01/14	31/12/14	95.1
	Ospedale di Brunico	01/01/14	31/12/14	94.4
	Ospedale di San Candido	01/01/14	31/12/14	93.6
	Ospedale di Bressanone	01/01/14	31/12/14	90.9
	Ospedale di Merano	01/01/14	31/12/14	85.8
	Ospedale di Vipiteno	01/01/14	31/12/14	81.4
PA Trento	Ospedale San Camillo Trento	01/01/14	31/12/14	99.4
	Ospedale di Cavalese	01/01/14	31/12/14	96.9
	Ospedale di Trento	01/01/14	31/12/14	95.7
	Ospedale di Cles	01/01/14	31/12/14	94.1
	Ospedale di Tione	01/01/14	31/12/14	93.7
	Ospedale di Rovereto	01/01/14	31/12/14	77.2
	Ospedale di Borgo Valsugana	01/01/14	31/12/14	57.5
	Marche	Presidio Ospedaliero ZT4, Senigallia (AN)	01/01/14	31/12/14
Casa di Cura Villa Serena, Jesi (AN)		01/01/14	31/12/14	88.0
Ospedale Santa Croce, Fano (PU)		01/01/14	31/12/14	81.0
Ospedale di Fermo, Fermo		01/01/14	31/12/14	72.0
Ospedale Civile "E. Profili", Fabriano (AN)		01/01/14	31/12/14	62.0
Casa di Cura Villa Pini Sanatrix Gestion, Civitanova Marche (MC)		01/01/14	31/12/14	57.0
Presidio Ospedaliero Umberto I, Ancona		01/01/14	31/12/14	49.0
Ospedale S. Maria della Misericordia, Urbino		01/01/14	31/12/14	40.0
Ospedali Riuniti di Jesi, Jesi (AN)		01/01/14	31/12/14	37.0
Casa di Cura Villa Igea, Ancona		01/01/14	31/12/14	34.0
Casa di cura Villa San Marco, Ascoli Piceno		01/01/14	31/12/14	32.0
Ospedale San Salvatore, Pesaro		01/01/14	31/12/14	21.0
Ospedale Generale di Zona, Civitanova Marche (MC)		01/01/14	31/12/14	15.0
Ospedale S. Maria della Pietà, Camerino (MC)		01/01/14	31/12/14	5.0
Ospedale Gen.le Provl.e C.G.Mazzoni, Ascoli Piceno		01/01/14	31/12/14	1.0
Basilicata	AOR San Carlo, Potenza	01/01/14	31/12/14	57.5
	Ospedale Madonna delle Grazie (MT)	01/01/14	31/12/14	45.5

Follow

Table 5.2. Follow

Regions	Hospitals	Start date	Stop date	Coverage (%)
Puglia	PO Umberto I, Altamura (BA)	01/01/14	31/12/14	100.0
	PO San Giacomo, Monopoli (BA)	01/01/14	31/12/14	100.0
	PO S. Maria degli Angeli, Putignano (BA)	01/01/14	31/12/14	100.0
	Casa Bianca Hospital, Cassano (BA)	01/01/14	31/12/14	100.0
	Casa di Cura Villa Lucia, Conversano (BA)	01/01/14	31/12/14	100.0
	Casa di Cura Anthea, Bari	01/01/14	31/12/14	100.0
	PO di Venere, Bari	01/01/14	31/12/14	100.0
	Casa di Cura S.Maria, Bari	01/01/14	31/12/14	100.0
	CBH Casa di Cura Mater Dei, S. Rita (BA)	01/01/14	31/12/14	100.0
	AOU Policlinico, Bari	01/01/14	31/12/14	100.0
	PO San Paolo, Bari - Molfetta - Corato (BA)	01/01/14	31/12/14	100.0
	EE Miulli, Acquaviva (BA)	01/01/14	31/12/14	100.0
	PO Camberlingo, Francavilla - Ceglie (BR)	01/01/14	31/12/14	100.0
	PO Ostuni, Brindisi	01/01/14	31/12/14	100.0
	PO A. Perrino, Brindisi	01/01/14	31/12/14	100.0
	PO Bisceglie-Trani, Bisceglie (BT)	01/01/14	31/12/14	100.0
	PO L. Bonomo, Andria (BT)	01/01/14	31/12/14	100.0
	PO Monsignor R. Dimiccoli, Barletta - Canosa (BT)	01/01/14	31/12/14	100.0
	PO G. Tatarella, Cerignola (FG)	01/01/14	31/12/14	100.0
	PO S. Camillo De Lellis, Manfredonia (FG)	01/01/14	31/12/14	100.0
	Cliniche Riunite Villa Serena e San Francesco, Foggia	01/01/14	31/12/14	100.0
	PO T. Masselli Mascia, San Severo (FG)	01/01/14	31/12/14	100.0
	AOU Ospedali Riuniti, Foggia	01/01/14	31/12/14	100.0
	IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG)	01/01/14	31/12/14	100.0
	PO S. Caterina Novella, Galatina (LE)	01/01/14	31/12/14	100.0
	PO F. Ferrari, Casarano (LE)	01/01/14	31/12/14	100.0
	PO S. Giuseppe da Copertino, Copertino-Nardò (LE)	01/01/14	31/12/14	100.0
	PO Veris delli Ponti, Scorrano (LE)	01/01/14	31/12/14	100.0
	PO Sacro Cuore di Gesù, Gallipoli (LE)	01/01/14	31/12/14	100.0
	EE Cardinale G. Panico, Triggiano (LE)	01/01/14	31/12/14	100.0
	Casa di Cura Villa Bianca, Lecce	01/01/14	31/12/14	100.0
	PO Vito Fazzi, Lecce	01/01/14	31/12/14	100.0
	Casa di Cura Città di Lecce, Lecce	01/01/14	31/12/14	100.0
	Casa di Cura San Camillo, Taranto	01/01/14	31/12/14	100.0
PO San Marco, Grottaglie (TA)	01/01/14	31/12/14	100.0	

Follow

Table 5.2. Follow

Regions	Hospitals	Start date	Stop date	Coverage (%)
Puglia (follow)	PO Orientale, Manduria (TA)	01/01/14	31/12/14	100.0
	Casa di Cura F. D'Amore, Taranto	01/01/14	31/12/14	100.0
	PO Occidentale, Castellaneta (TA)	01/01/14	31/12/14	100.0
	PO Valle d'Itria, Martina Franca (TA)	01/01/14	31/12/14	100.0
	PO SS. Annunziata, Taranto	01/01/14	31/12/14	100.0
	Casa di Cura Bernardini, Taranto	01/01/14	31/12/14	100.0
Calabria	Casa di Cura Villa Serena, Catanzaro	07/01/14	15/12/14	100.0
	Casa di Cura Villa Caminiti, Reggio Calabria	07/01/14	18/12/14	100.0
	Casa di Cura Scarnati, Cosenza	01/01/14	22/12/14	97.0
	Azienda Ospedaliera Mater Domini Policlinico Universitario, Catanzaro	15/01/14	17/12/14	85.0
	Istituto Ortopedico del Mezzogiorno d'Italia, Reggio Calabria	01/01/14	30/12/14	60.0
	Casa di Cura Cascini, Cosenza	04/01/14	20/12/14	52.0
	Azienda Ospedaliera di Cosenza	17/01/14	29/12/14	32.0
	PO S. Maria degli Ungheresi, Polistena (RC)	06/01/14	31/12/14	15.0
	Presidio Ospedaliero, Lamezia Terme (CZ)	07/01/14	15/12/14	14.0
	Azienda Ospedaliera Pugliese Ciaccio, Catanzaro	07/01/14	30/12/14	7.0
	Ospedale Basso Ionio, Soverato (CZ)	05/01/14	31/12/14	2.0
	Presidio Ospedaliero San Francesco di Paola/Cetraro, Cosenza	07/01/14	17/12/14	1.0
	Sicilia	IOMI F. Scalabrino Ganzirri, Messina	08/01/14	29/12/14
Fond. Ist. San Raffaele-G. Giglio, Cefalù (PA)		08/01/14	29/12/14	86.8
COT SpA (Cure Ortoped. Traum.), Messina		08/01/14	23/12/14	86.1
PO Gravina e S. Pietro, Caltagirone (CT)		14/02/14	22/12/14	85.3
PO Castiglione Prestianni, Bronte (CT)		27/03/14	19/12/14	82.1
Ospedale Maria Paternò Arezzo, Ragusa		07/01/14	29/12/14	79.6
Policlinico Giaccone, Palermo		26/02/14	31/12/14	71.6
PO M. Chiello, Piazza Armerina (EN)		24/01/14	22/12/14	55.6
Casa di Cura Musumeci Gecas, Catania		28/01/14	18/04/14	28.2
Casa di Cura S. Barbara Sogesa, Gela (CL)		29/04/14	22/07/14	12.7
Casa di Cura Mater Dei, Catania		28/01/14	05/03/14	10.9
Ospedale Generale di Zona, Lentini (SR)		17/02/14	04/11/14	8.9
PO Umberto I, Enna		16/01/14	20/01/14	8.0
Ospedale Buccheri La Ferla, Palermo		13/01/14	13/01/14	2.5
Fondazione Livio Sciuotto		Ospedale S. Corona, Pietra Ligure (SV)	01/01/14	31/12/14
	Ospedale di S. Maria di Misericordia (GSL), Albenga (SV)	01/01/14	31/12/14	38.0

Table 5.3. Knee. Coverage rate of the hospitals participating in the RIAP project

Regions	Hospitals	Start date	Stop date	Coverage (%)
Lombardia	UUOO Ortopedia/Traumatologia	01/01/13	31/12/13	~100.0
PA Bolzano	Casa di Cura privata S.Maria	01/01/14	31/12/14	100.0
	Ospedale di Bressanone	01/01/14	31/12/14	97.5
	Ospedale di San Candido	01/01/14	31/12/14	97.5
	Ospedale di Brunico	01/01/14	31/12/14	97.4
	Ospedale di Bolzano	01/01/14	31/12/14	80.8
	Ospedale di Vipiteno	01/01/14	31/12/14	79.9
	Ospedale di Merano	01/01/14	31/12/14	77.8
	Ospedale di Silandro	01/01/14	31/12/14	65.9
Marche	Ospedale Santa Croce, Fano (PU)	01/01/14	31/12/14	100.0
	Presidio Ospedaliero ZT4, Senigallia (AN)	01/01/14	31/12/14	97.0
	Ospedale Civile E. Profili, Fabriano (AN)	01/01/14	31/12/14	96.0
	Ospedale di Fermo, Fermo	01/01/14	31/12/14	85.0
	Casa di Cura Villa Serena, Jesi (AN)	01/01/14	31/12/14	72.0
	Ospedale Generale di Zona, Civitanova Marche (MC)	01/01/14	31/12/14	71.0
	Presidio Ospedaliero Umberto I, Ancona	01/01/14	31/12/14	69.0
	Ospedale S. Maria della Misericordia, Urbino	01/01/14	31/12/14	66.0
	Casa di Cura Villa Pini Sanatrix Gestion, Civitanova Marche (MC)	01/01/14	31/12/14	51.0
	Casa di Cura Villa Igea, Ancona	01/01/14	31/12/14	49.0
	Casa di Cura Villa San Marco, Ascoli Piceno	01/01/14	31/12/14	39.0
	Ospedale San Salvatore, Pesaro	01/01/14	31/12/14	39.0
	Ospedali Riuniti di Jesi, Jesi (AN)	01/01/14	31/12/14	35.0
	Ospedale Gen.le Prov.le C.G.Mazzoni, Ascoli Piceno	01/01/14	31/12/14	4.0
Ospedale S. Maria della Pietà, Camerino (MC)	01/01/14	31/12/14	3.0	
Basilicata	Ospedale Madonna delle Grazie (MT)	01/01/14	31/12/14	69.2
	AOR San Carlo, Potenza	01/01/14	31/12/14	61.3
Puglia	EE Miulli, Acquaviva (BA)	01/01/14	31/12/14	100.0
	Casa di Cura S.Maria, Bari	01/01/14	31/12/14	100.0
	Casa di Cura Villa Lucia, Conversano (BA)	01/01/14	31/12/14	100.0
	Casa di Cura Anthea, Bari	01/01/14	31/12/14	100.0
	Casa Bianca Hospital, Cassano (BA)	01/01/14	31/12/14	100.0
	CBH Casa di Cura Mater Dei, Bari	01/01/14	31/12/14	100.0
	PO Umberto I, Altamura (BA)	01/01/14	31/12/14	100.0
	PO San Paolo, Bari	01/01/14	31/12/14	100.0
	PO San Giacomo, Monopoli (BA)	01/01/14	31/12/14	100.0
	PO S. Maria degli Angeli, Putignano (BA)	01/01/14	31/12/14	100.0

Follow

Table 5.3. Follow

Regions	Hospitals	Start date	Stop date	Coverage (%)
Puglia (follow)	PO di Venere, Bari	01/01/14	31/12/14	100.0
	AOU Policlinico, Bari	01/01/14	31/12/14	100.0
	PO Ostuni, Brindisi	01/01/14	31/12/14	100.0
	PO Camberlingo, Francavilla - Ceglie (BR)	01/01/14	31/12/14	100.0
	PO A. Perrino, Brindisi	01/01/14	31/12/14	100.0
	PO L. Bonomo, Andria (BR)	01/01/14	31/12/14	100.0
	PO Monsignor R. Dimiccoli, Barletta (BR)	01/01/14	31/12/14	100.0
	PO Bisceglie-Trani, Bisceglie (BT)	01/01/14	31/12/14	100.0
	PO G. Tatarella, Cerignola (FG)	01/01/14	31/12/14	100.0
	PO T. Masselli Mascia, San Severo (FG)	01/01/14	31/12/14	100.0
	PO S. Camillo De Lellis, Manfredonia (FG)	01/01/14	31/12/14	100.0
	Cliniche Riunite Villa Serena e San Francesco, Foggia	01/01/14	31/12/14	100.0
	IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo (FG)	01/01/14	31/12/14	100.0
	AOU Ospedali Riuniti, Foggia	01/01/14	31/12/14	100.0
	PO S. Caterina Novella, Galatina (LE)	01/01/14	31/12/14	100.0
	PO Sacro Cuore di Gesù, Gallipoli (LE)	01/01/14	31/12/14	100.0
	EE Cardinale G. Panico, Triggiano (LE)	01/01/14	31/12/14	100.0
	Casa di Cura Villa Bianca, Lecce	01/01/14	31/12/14	100.0
	Casa di Cura Città di Lecce, Lecce	01/01/14	31/12/14	100.0
	PO S. Giuseppe da Copertino, Copertino - Nardò (LE)	01/01/14	31/12/14	100.0
	PO Veris delli Ponti, Scorrano (LE)	01/01/14	31/12/14	100.0
	PO F. Ferrari, Casarano (LE)	01/01/14	31/12/14	100.0
	PO Vito Fazzi, Lecce	01/01/14	31/12/14	100.0
	PO Orientale, Manduria (TA)	01/01/14	31/12/14	100.0
	PO Valle d'Itria, Martina Franca (TA)	01/01/14	31/12/14	100.0
	Casa di Cura Bernardini, Taranto	01/01/14	31/12/14	100.0
	Casa di Cura F. D'Amore, Taranto	01/01/14	31/12/14	100.0
	Casa di Cura San Camillo, Taranto	01/01/14	31/12/14	100.0
	PO Occidentale, Castellaneta (TA)	01/01/14	31/12/14	100.0
	PO SS. Annunziata, Taranto	01/01/14	31/12/14	100.0
PO San Marco, Grottaglie (TA)	01/01/14	31/12/14	100.0	
Calabria	Istituto Ortopedico del Mezzogiorno d'Italia, Reggio Calabria	07/01/14	23/12/14	100.0
	Casa di Cura Scarnati, Cosenza	01/01/14	13/11/14	96.0
	Casa di Cura Villa Caminiti, Reggio Calabria	30/01/14	02/12/14	95.0
	Azienda Ospedaliera Mater Domini Policlinico Universitario, Catanzaro	11/01/14	13/12/14	66.0

Follow

table 5.3. Follow

Regions	Hospitals	Start date	Stop date	Coverage (%)
Calabria (follow)	Casa di Cura Villa Serena, Catanzaro	07/01/14	22/12/14	31.0
	Presidio Ospedaliero, Lamezia Terme (CZ)	29/01/14	15/10/14	17.0
	PO S. Maria degli Ungheresi, Polistena (RC)	24/03/14	29/11/14	11.0
	Casa di Cura Cascini, Cosenza	13/01/14	13/12/14	9.0
Sicilia	IOMI F. Scalabrino Ganzirri, Messina	08/01/14	29/12/14	100.0
	PO Gravina e S. Pietro, Caltagirone (CT)	14/02/14	22/12/14	96.8
	Fond. Ist. San Raffaele-G. Giglio, Cefalù (PA)	08/01/14	29/12/14	93.4
	Ospedale Maria Paternò Arezzo, Ragusa	07/01/14	29/12/14	82.9
	PO Castiglione Prestianni, Bronte (CT)	27/03/14	19/12/14	74.2
	PO M. Chiello, Piazza Armerina (EN)	24/01/14	22/12/14	67.9
	COT SpA (Cure Ortoped. Traum.), Messina	08/01/14	23/12/14	62.9
	Policlinico Giaccone, Palermo	26/02/14	31/12/14	57.9
	Casa di Cura Musumeci Gecas, Catania	28/01/14	18/04/14	18.0
	PO Umberto I, Enna	16/01/14	20/01/14	6.1
	Casa di Cura Mater Dei, Catania	28/01/14	05/03/14	5.3
	Casa di Cura S. Barbara Sogesa, Gela (CL)	29/04/14	22/07/14	4.5
	Ospedale Generale di Zona, Lentini (SR)	17/02/14	04/11/14	3.3
	Ospedale Buccheri La Ferla, Palermo	13/01/14	13/01/14	2.4
Fondazione Livio Sciuotto	Ospedale S. Corona, Pietra Ligure (SV)	01/01/14	31/12/14	98.7
	Ospedale di S. Maria di Misericordia (GSL), Albenga (SV)	01/01/14	31/12/14	15.0

Table 5.4. Hip. Type of procedure

	N	%
Total replacement without fracture	14,724	59.7
Partial replacement	6,773	27.5
Total replacement with fracture	1,749	7.1
Total revision	767	3.1
Partial revision	567	2.3
Removal of prosthesis	71	0.3
Spacer revision	8	0.0
Conversion of partial to total replacement	2	0.0
TOTAL	24,661	100.0

Table 5.5. Hip. Arthroplasties by type of provider

Provider	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement		Revision (*)		TOTAL	
	N	%	N	%	N	%	N	%	N	%
Public	6,105	49.7	976	80.3	4,213	80.0	662	54.4	11,956	59.8
Private, accredited	6,095	49.6	236	19.4	1,048	20.0	545	44.8	7,924	39.7
Private, not accredited	82	0.7	3	0.3	2	0.0	9	0.8	96	0.5

(*) Total or partial revision, removal of prosthesis, spacer revision, conversion of partial to total replacement

Table 5.6. Hip. Characteristics of patients and surgical practice for primary procedures

	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement		TOTAL	
Age								
Mean age (s.d.)	68.2 (11.2)		73.2 (10.8)		83.3 (7.6)			
Minimum - Maximum	18-93		23-101		23-103			
Interquartile range	62-76		67-80		79-88			
Gender	N	%	N	%	N	%	N	%
Females	8,112	55.1	1,314	75.1	5,092	75.2	14,518	62.4
Males	6,612	44.9	435	24.9	1,681	24.8	8,728	37.6
Operated side								
Right	7,966	55.0	890	50.9	3,306	49.4	12,162	53.1
Left	6,438	44.5	858	49.0	3,383	50.6	10,679	46.6
Bilateral	67	0.5	1	0.1	2	0.0	70	0.3
Approach								
Posterolateral	6,911	51.0	786	47.3	2,476	39.8	10,173	47.4
Lateral	4,215	31.1	711	42.8	3,107	49.9	8,033	37.5
Anterolateral	788	5.8	98	5.9	512	8.2	1,398	6.5
Anterior	1,617	11.9	67	4.0	127	2.0	1,811	8.5
Other	21	0.2	0	0.0	9	0.1	30	0.1
Fixation								
Cementless	10,994	92.5	956	77.5	1,651	34.0	13,601	75.8
Cemented	379	3.2	93	7.7	182	3.7	654	3.6
Hybrid (*)	392	3.3	92	7.7	1,947	40.1	2,431	13.5
Reverse hybrid (**)	70	0.6	39	3.2	72	1.5	181	1.1
Only cemented stem	7	0.1	18	1.5	684	14.1	709	4.0
Only cementless stem	38	0.3	5	0.4	324	6.6	367	2.0
Previous surgery								
None	9,873	96.3	991	96.6	4,275	98.8	15,139	97.0
Osteosynthesis	196	1.9	32	3.1	36	0.9	264	1.7
Osteotomy	82	0.8	1	0.1	1	0.0	84	0.6
Arthrodesis	1	0.0	0	0.0	1	0.0	2	0.0
Other	103	1.0	2	0.2	12	0.3	117	0.7

(*) Cemented stem and cementless cup

(**) Cementless stem and cemented cup

Table 5.7. Hip. Primary procedures by diagnosis

Diagnosis	Total replacement (no fracture)		Total replacement (with fracture)		Partial replacement		TOTAL	
	N	%	N	%	N	%	N	%
Primary osteoarthritis	12,477	87.6	-	-	107	1.7	12,584	56.2
Fractured neck/head of femur	-	-	1,749	100.0	6,166	96.2	7,915	35.3
Aseptic necrosis of femoral head	663	4.6	-	-	7	0.1	670	3.0
Congenital dislocation / dysplasia of hip	589	4.1	-	-	4	0.1	593	2.6
Post-traumatic osteoarthritis	252	1.8	-	-	31	0.5	283	1.3
Rheumatoid arthritis	54	0.4	-	-	1	0.0	55	0.2
Neoplasia	26	0.2	-	-	42	0.7	68	0.3
Perthes disease or epiphysiolysis	25	0.2	-	-	9	0.1	34	0.2
Pseudoarthrosis neck fracture related	12	0.1	-	-	6	0.1	18	0.1
Septic coxitis	5	0.0	-	-	0	0.0	5	0.0
Other	136	1.0	-	-	39	0.5	175	0.8

Table 5.8. Hip. Characteristics of patients and surgical practice for revision procedures

	Revision (*)	
Age		
Mean age (s.d.)	71.9 (11.1)	
Minimum - Maximum	28-99	
Interquartile range	66-79	
Gender	N	%
Females	827	58.8
Males	580	41.2
Operated side		
Right	703	50.3
Left	686	49.1
Bilateral	9	0.6
Approach		
Posterolateral	711	54.7
Lateral	483	37.1
Anterior	57	4.4
Anterolateral	46	3.5
Other	4	0.3
Previous surgery		
Total hip replacement	984	79.3
Revision of hip replacement	116	9.3
Partial hip replacement	89	7.2
Spacer or prosthesis removal	32	2.6
Other	20	1.6

(*) Total or partial revision. removal of prosthesis. spacer revision. conversion of partial to total replacement

Table 5.9. Hip. Revision procedures by diagnosis

Diagnosis	Revision (*)	
	N	%
Acetabular cup aseptic loosening	260	20.3
Dislocation	208	16.2
Femoral stem aseptic loosening	152	11.8
Periprosthetic fracture	139	10.8
Total aseptic loosening	121	9.4
Wear	98	7.6
Infection	65	5.0
Pain	65	5.0
Osteolysis	56	4.3
Prosthesis removal	26	2.0
Fractured insert	11	0.9
Fractured modular neck	7	0.5
Fractured stem	5	0.4
Fractured femoral head	2	0.2
Fractured acetabulum	2	0.2
Other	68	5.4

(*) Total or partial revision. removal of prosthesis. spacer revision. conversion of partial to total replacement

Table 5.10. Knee. Type of procedure

	N	%
Total replacement	4,726	95.7
Total revision	123	2.5
Partial revision	42	0.9
Patello-femoral implant on primary prosthesis	26	0.5
Removal of prosthesis	21	0.4
TOTAL	4,938	100.0

Table 5.11. Knee. Arthroplasties by type of provider

Provider	Total replacement		Revision (*)		TOTAL	
	N	%	N	%	N	%
Public	1,620	78.0	74	77.1	1,694	78.0
Private, accredited	419	20.2	21	21.9	440	20.2
Private, not accredited	38	1.8	1	1.0	39	1.8

(*) Total or partial revision, removal of prosthesis, spacer revision

Table 5.12. Knee. Characteristics of patients and surgical practice for primary procedures

	Total replacement	
Age		
Mean age (s.d.)	71.2 (7.6)	
Minimum - Maximum	23-91	
Interquartile range	67-77	
Gender	N	%
Females	3,333	70.5
Males	1,393	29.5
Operated side		
Right	3,479	73.6
Left	1,232	26.1
Bilateral	15	0.3
Approach		
Parapatellar, medial	3,618	91.4
Parapatellar, lateral	126	3.2
Mid-vastus	65	1.6
Mid-vastus, mini-invasive	38	1.0
Quad-sparing	31	0.8
Tibial tuberosity osteotomy	22	0.5
Sub-vastus	4	0.1
Other	56	1.4
Fixation		
Cementless	1,496	93.9
Cemented	60	3.8
Hybrid	31	1.9
Reverse hybrid	6	0.4
Previous surgery		
None	1,676	94.0
Osteotomy	26	1.5
Arthroscopy	19	1.1
Arthrodesis	7	0.4
Other	54	3.0

Table 5.13. Knee. Primary procedures by diagnosis

Diagnosis	Total replacement	
	N	%
Primary osteoarthritis	4,251	90.1
Rheumatoid arthritis	245	5.2
Osteonecrosis	54	1.1
Post-traumatic osteoarthritis	50	1.1
Neoplasia	1	0.0
Other	116	2.5

Table 5.14. Knee. Characteristics of patients and surgical practice for revision procedures

	Revision (*)	
Age		
Mean age (s.d.)	70,6 (9,0)	
Minimum - Maximum	47-90	
Interquartile range (25% - 75%)	56-77	
Gender	N	%
Females	127	65,1
Males	68	34,9
Operated side		
Right	139	71,3
Left	56	28,7
Approach		
Parapatellar, medial	158	93,4
Parapatellar, lateral	4	2,4
Mid-vastus	1	0,6
Mid-vastus, mini-invasive	1	0,6
Tibial tuberosity osteotomy	1	0,6
Other	4	2,4
Previous surgery		
Spacer	51	40,5
Primary total without patella	29	23,0
Primary total with patella	26	20,6
Revision	6	4,8
Primary unicondylar medial	4	4,0
Other	9	7,1

(*) Total or partial revision, removal of prosthesis, spacer revision

Table 5.15. Knee. Revision procedures by diagnosis

Diagnosis	Revision (*)	
	N	%
Aseptic loosening (more components)	51	26.3
Instability	30	15.5
Pain	25	12.9
Tibial component aseptic loosening	21	10.8
Infection	20	10.3
Progressive arthritis remaining	12	6.2
Femoral component aseptic loosening	7	3.6
Rigidity	7	3.6
Dislocation	5	2.6
Periprosthetic fracture	5	2.6
Wear	4	2.0
Other	7	3.6

(*) Total or partial revision, removal of prosthesis, spacer revision

Table 5.16. Hip. Femoral stems for primary implant by fixation

Cemented		Cementless		TOTAL
N	%	N	%	N
5,440	24.6	16,713	75.4	22,153

Table 5.17. Knee. Femoral component for primary implant by fixation

Cemented		Cementless		Cementable		TOTAL
N	%	N	%	N	%	N
3,438	77.1	635	14.2	387	8.7	4,460

Table 5.18. Knee. Tibial baseplate for primary implant by fixation

Cemented		Cementless		Cementable		TOTAL
N	%	N	%	N	%	N
3,432	79.5	636	14.7	248	5.7	4,316

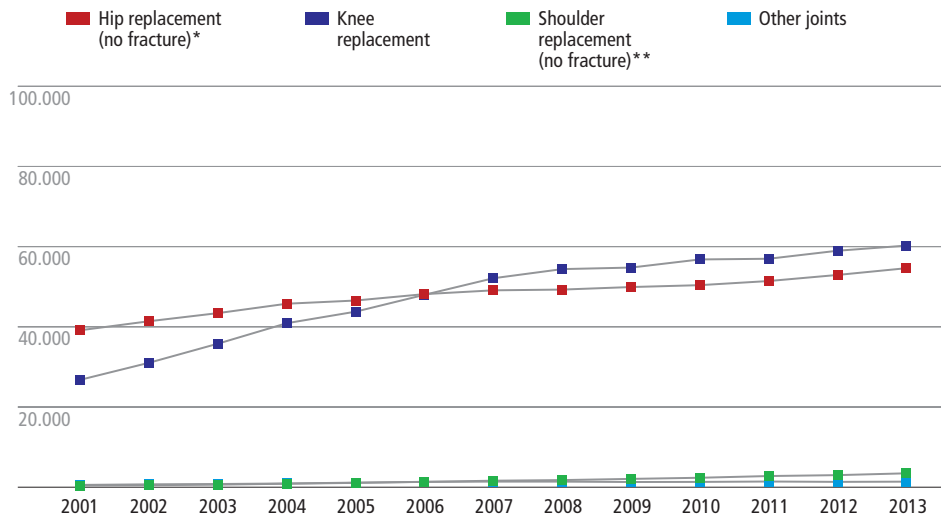
Table 5.19. Knee. Tibial plateau for primary implant by type

Mobile		Fixed		TOTAL
N	%	N	%	N
1,594	36.9	2,722	63.1	4,316

Table 5.20. Knee. Primary total replacements by patella implant

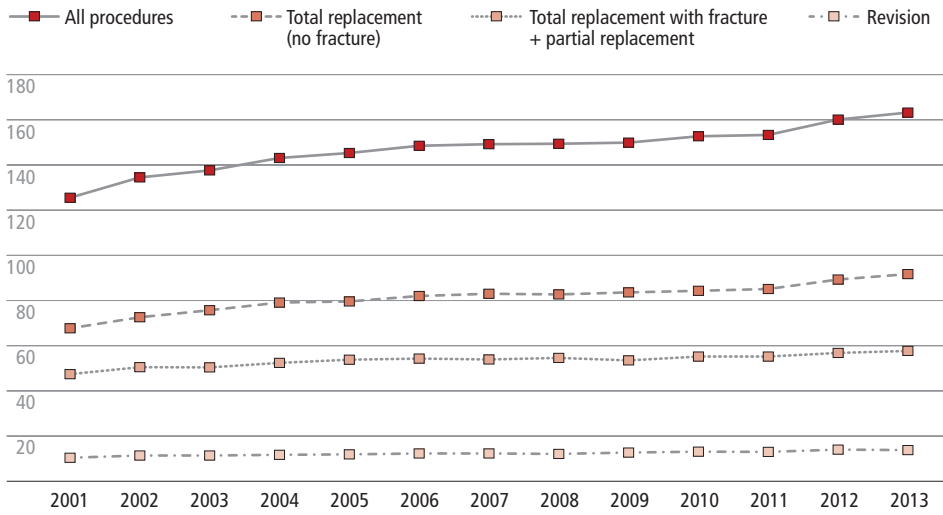
	N	%
Patella not implanted	4,503	97.3
Patella implanted	126	2.7
Total	4,629	100.0

Figure 4.1. Temporal profile of primary elective total joint replacements in Italy



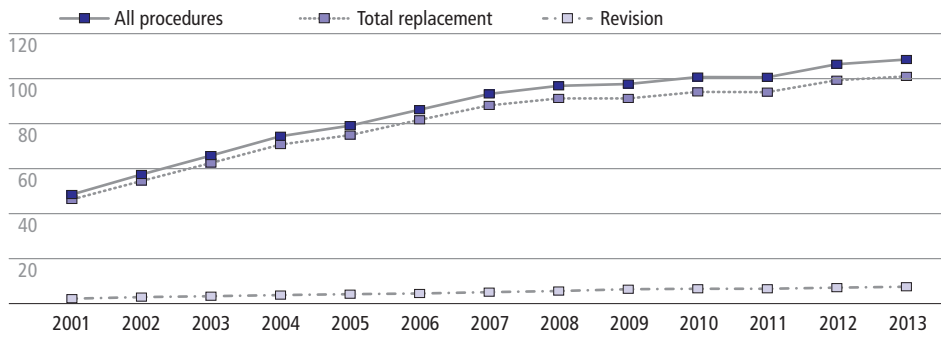
Source data: Hospital Discharge Records database (2001-2013). Acute or day-hospital admissions
 * Excluding hospitalizations with main diagnosis of fracture of neck of femur (ICD-9-CM code: 820)
 ** Excluding hospitalizations with main diagnosis of fracture of humerus (ICD-9-CM code: 812)

Figure 4.2. Hip. Incidence rates per 100,000 population by type of procedure (2001-2013)



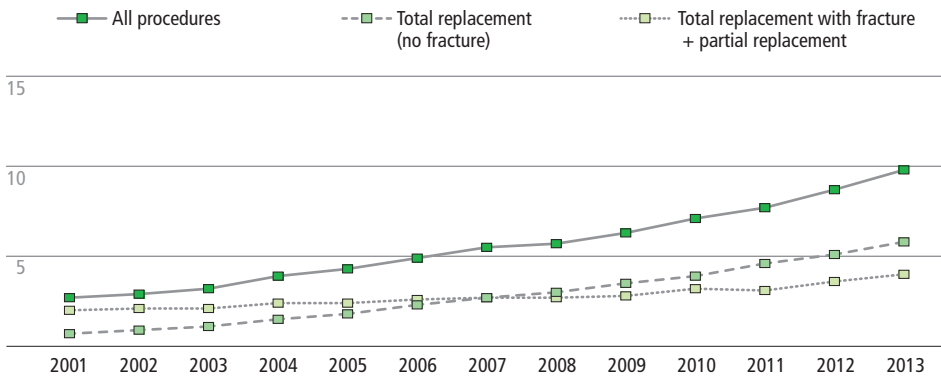
Source data: Hospital Discharge Records database 2001-2013

Figure 4.3. Knee. Incidence rates per 100,000 population by type of procedure (2001-2013)



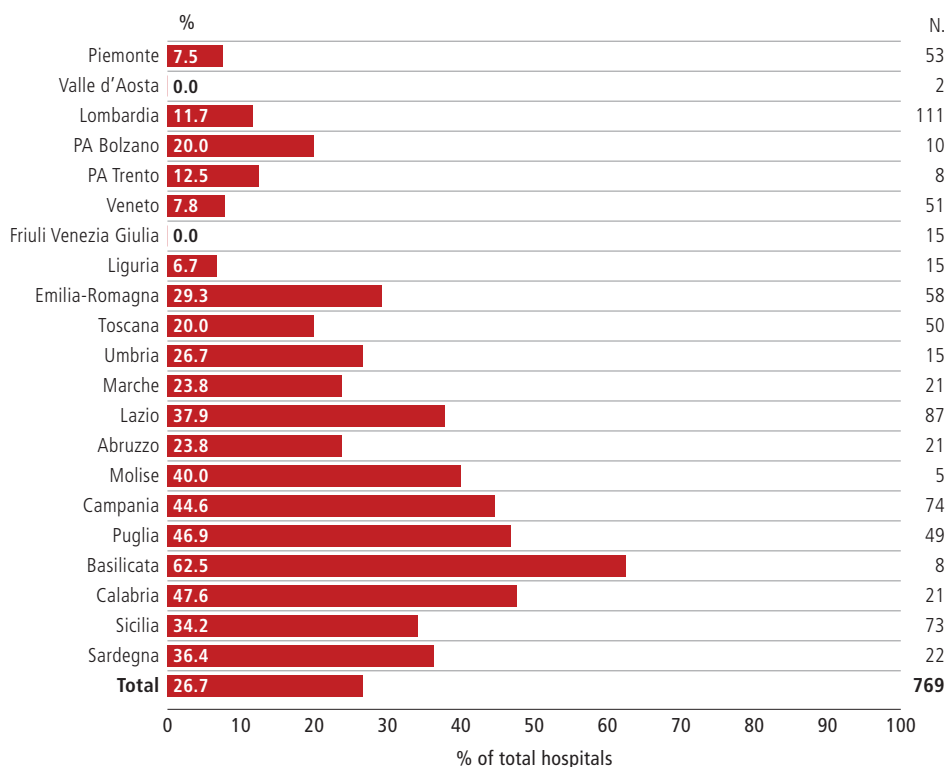
Source data: Hospital Discharge Records database 2001-2013

Figure 4.4. Shoulder. Incidence rates per 100,000 population by type of procedure (2001-2013)

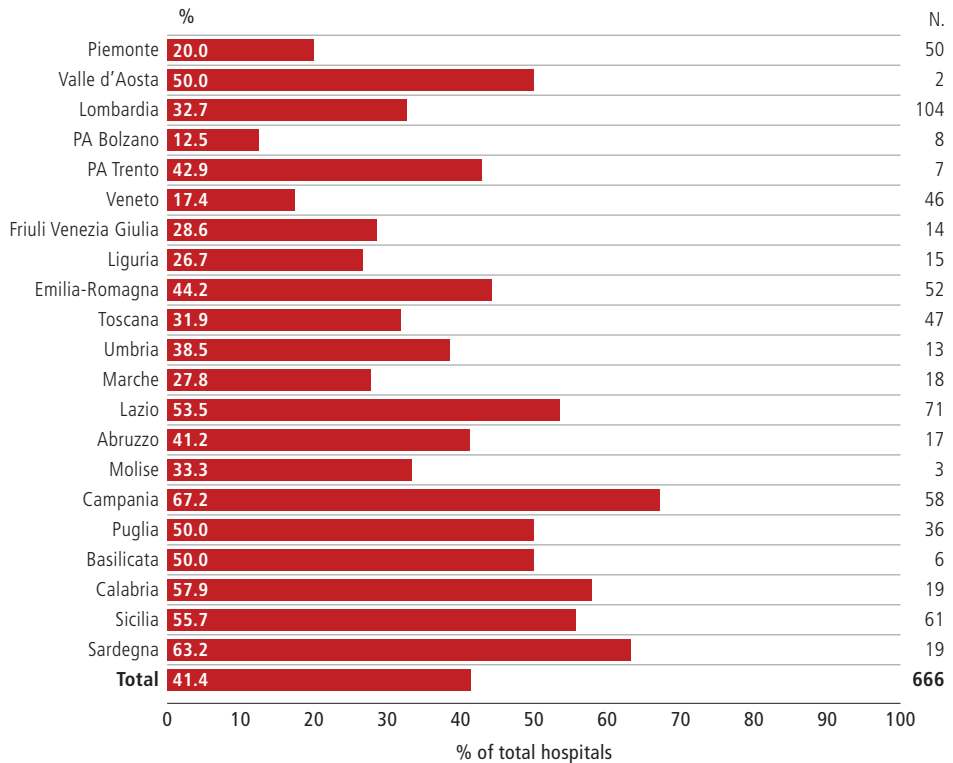


Source data: Hospital Discharge Records database 2001-2013

Figure 4.5. Hip. Hospitals with low volume of primary total replacements (≤ 25) by Region

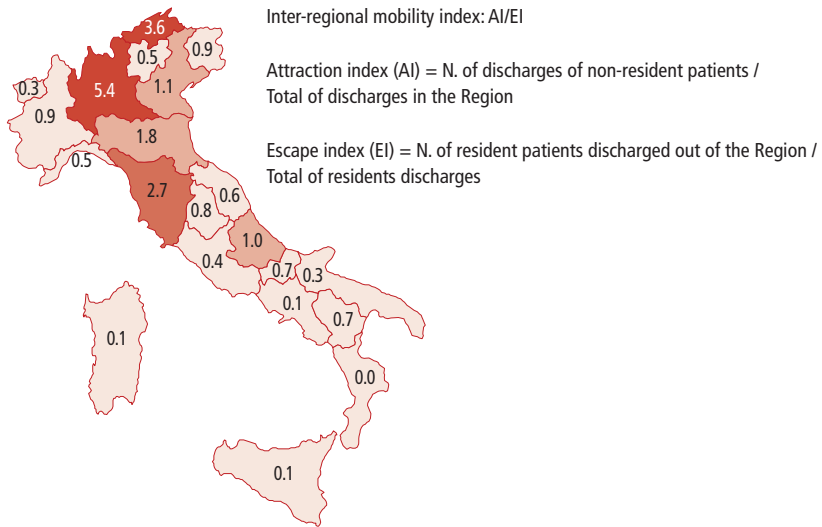


Source data: Hospital Discharge Records database 2013

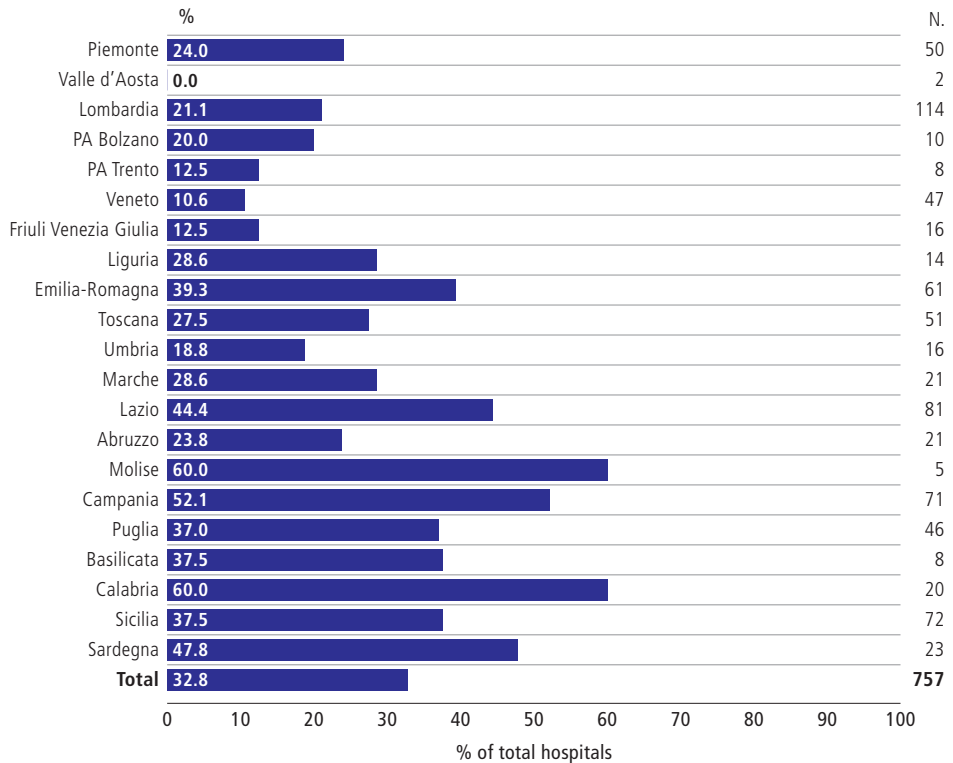
Figure 4.6. Hip. Hospitals with low volume of revisions (≤ 5) by Region


Source data: Hospital Discharge Records database 2013

Figure 4.7. Hip. Primary total replacements without fracture. Inter-regional mobility index

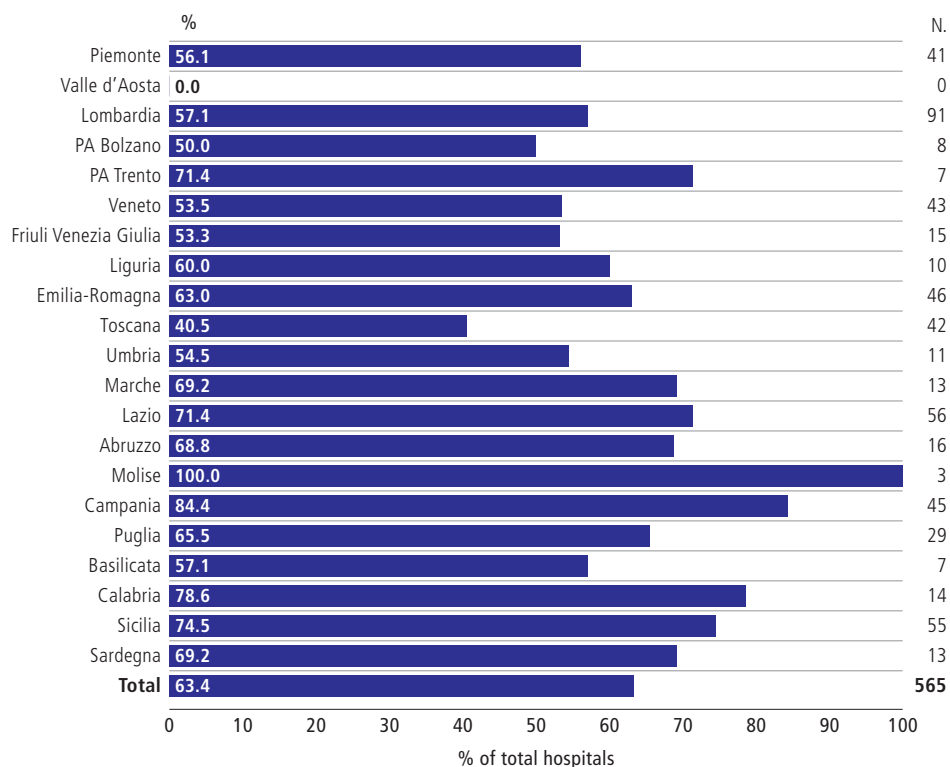


Source data: Hospital Discharge Records database 2013

Figure 4.8. Knee. Hospitals with low volume of primary total replacements (≤ 25) by Region


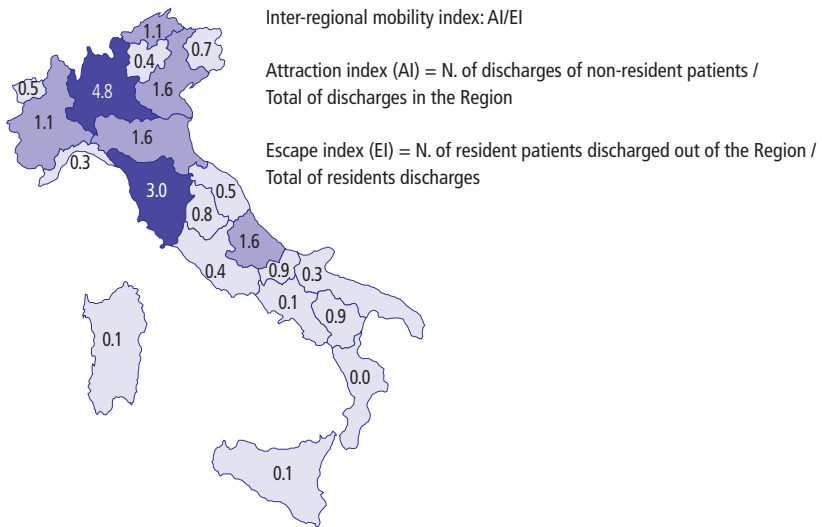
Source data: Hospital Discharge Records database 2013

Figure 4.9. Knee. Hospitals with low volume of revisions (≤ 5) by Region



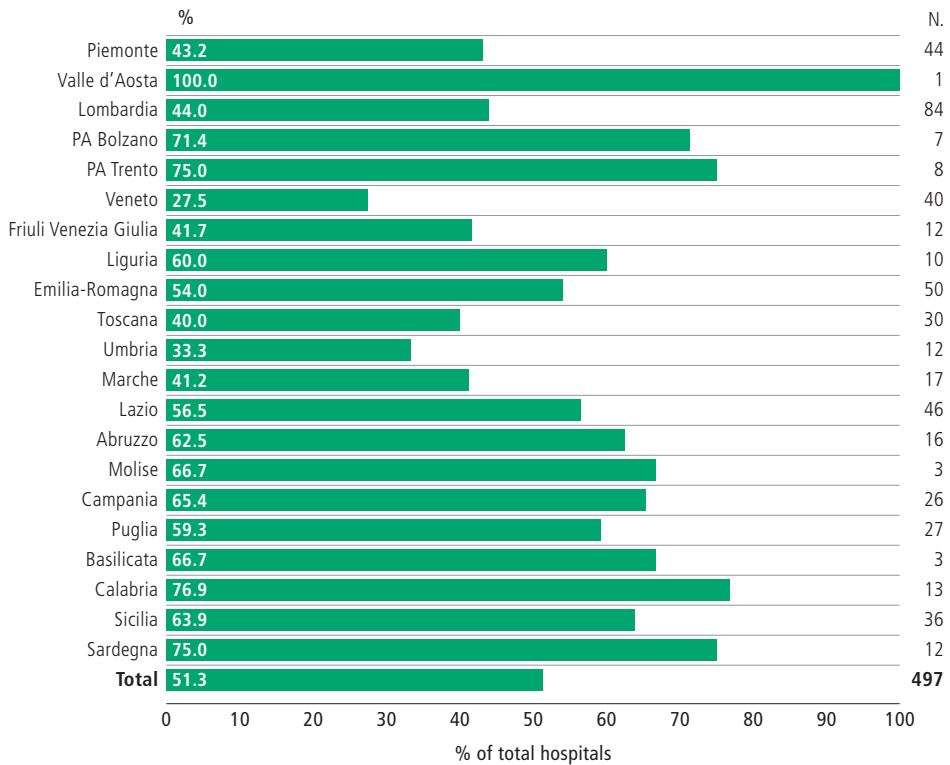
Source data: Hospital Discharge Records database 2013

Figure 4.10. Knee. Primary total replacements. Inter-regional mobility index



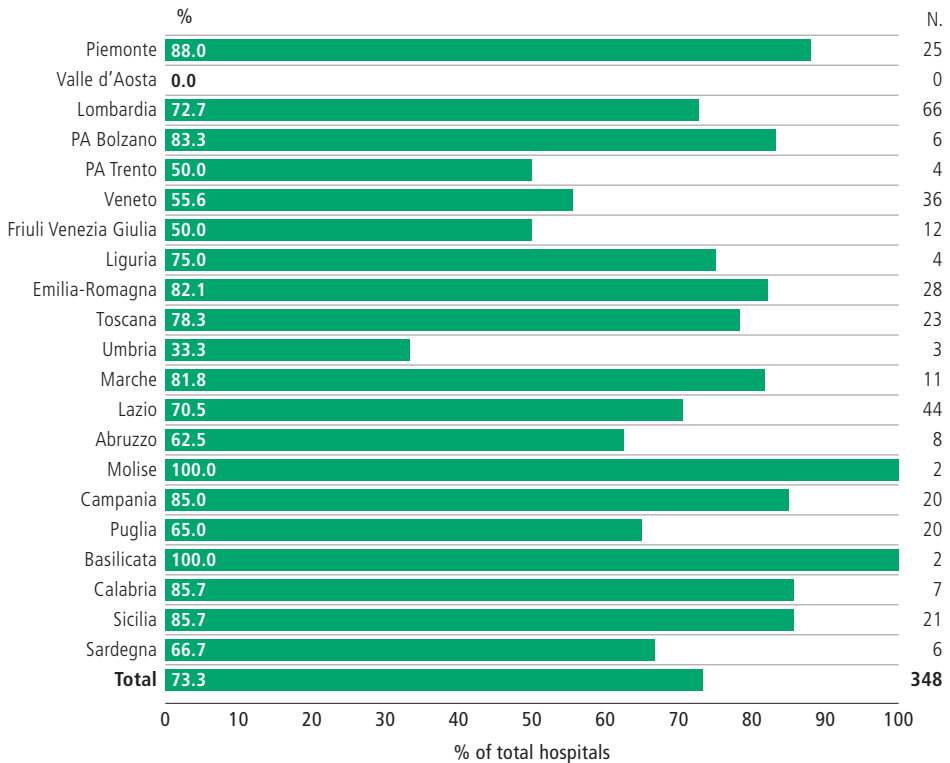
Source data: Hospital Discharge Records database 2013

Figure 4.11. Shoulder. Hospitals with low volume of primary total replacements (≤ 25) by Region



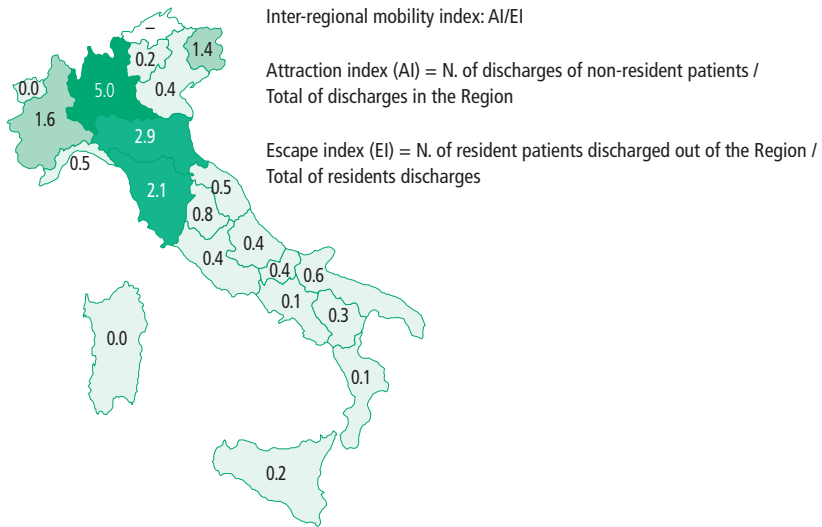
Source data: Hospital Discharge Records database 2013

Figure 4.12. Shoulder. Hospitals with low volume of partial replacements (<5) by Region



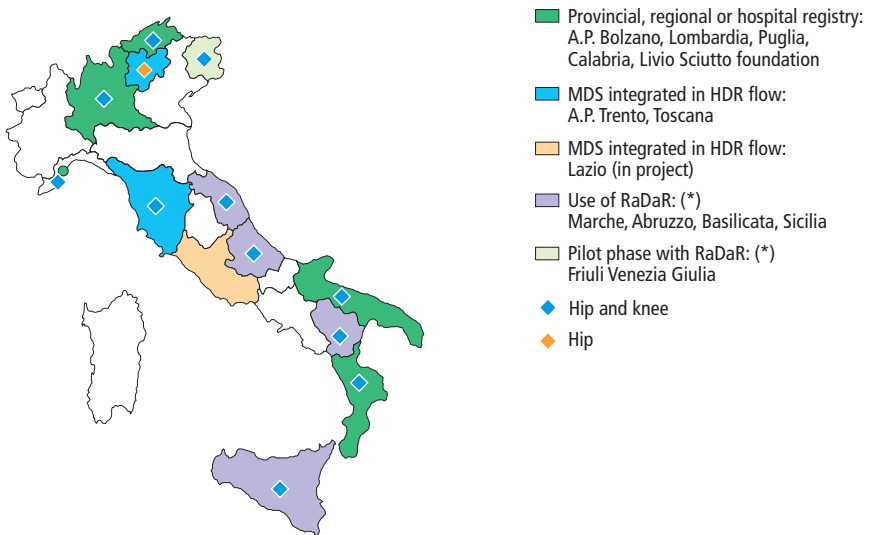
Source data: Hospital Discharge Records database 2013

Figure 4.13. Shoulder. Primary total replacements without fracture. Inter-regional mobility index



Source data: Hospital Discharge Records database 2013

Figure 5.1. Italian regions, autonomous provinces and institutions currently enrolled in the Italian arthroplasty registry and procedure adopted for data collection



(*) RaDaR is a web application developed by RIAP to collect MDS data

Figure 5.2 Hip. Femoral stems for cementless primary implants

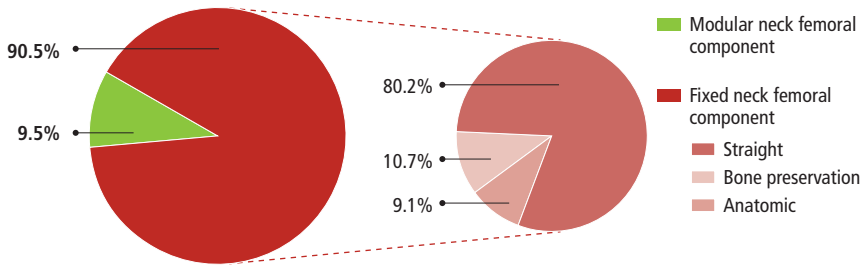
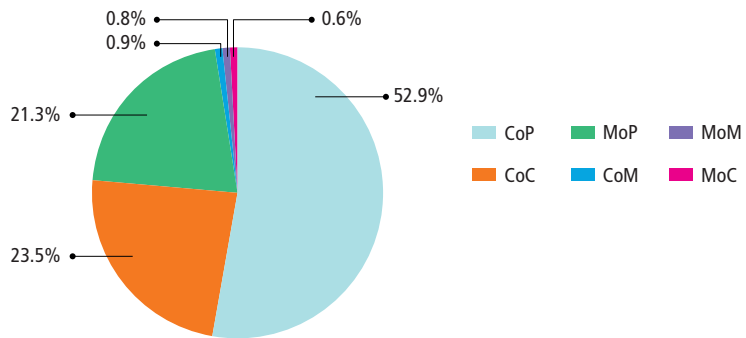


Figure 5.3 Hip. Articular bearing surface



Legend: CoP = Ceramic-Polyethylene; CoC = Ceramic-Ceramic; MoP = Metal-Polyethylene; CoM = Ceramic-Metal; MoM = Metal-Metal; MoC = Metal-Ceramic