JUSTIFICATION DU NOMBRE DE LITS DEMANDE DANS LE CADRE DE L'IHU SUR LES DONNEES D'ACTIVITE PMSI 2007-2008

Rapport demandé par le Président de la CME

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Executive summary

Background: The Diagnosis Related Group (DRG)-based prospective payment significantly shortens the length of stay and reduces cost, but its influence on the patient outcome is still debated. Since 12 years we developed managed-based approaches, trying to shorten the diagnostic delay and enhance adherence to guidelines.

Methods: We used the French Hospital DRGs database to evaluate the care provided to infectious disease patients at a university hospital in Marseille, France for two consecutive years. We analyzed the length of stay, cost savings, readmission ratio and mortality differences between the infectious disease department and all other medical departments that care for the same DRG in 2007 and 2008.

Results: For the 13 most-prevalent DRGs relevant to infectious diseases, the mean length of stay was significantly shorter in the infectious disease department compared to other medical departments (8.5 ± 7.5 days vs. 10.3 ± 10.3 days, respectively; p=0.037). The mortality rate was significantly lower in the infectious disease department compared with other departments (1.9% vs. 5.7%, respectively; OR adjusted for age=2.4, 95%CI=1.4 – 4.0, p=0.0016), while no difference was observed on the readmission ratio. If care for these DRG had been provided by the infectious disease department, the French national insurance program would have saved a total of €1.426.298.

Conclusion: When patients with an infectious disease are cared for by infectious disease physicians in the infectious disease department in Marseille, a substantial amount of money can be saved, the quality of care is sustained and a significantly lower mortality rate is achieved.

Key Words: Infectious diseases, quality of care, medico-economic management

In many countries the insurance medical system is on the brink of crisis. In France since 2000 the medical insurance branch of the Social Security is in deficit. This raised € 11.6 billion in 2004 and 2010 [http://www.securite-sociale.fr/IMG/pdf/2011_chiffres_cles.pdf]. In addition it has been reported that patients received only about 55% of guidelines recommended for their conditions [1]. Un adapted management of patients at the hospital results in a formidable over cost. Recently this cost has been evaluated for decubitus ulcers following hospitalization. For 4.8 million patients discharged, decubitus ulcers was responsible for 376,546 hospital days equivalent to $680 million [2]. Death related to health-care associated bacteremia is estimated to range from 7 to 10/100 000 inhabitants in countries where this has been studied [3]. A major goal of health care police makers is to identify ways to control cost while maintaining or improving the quality of care. For this as early as 1983 the DRG-based prospective payment was adopted in the USA [4]. Most studies evaluating the DGR payment results in a significant shortening of the length of stay (LOS) [5], but studies on outcomes of patients tends to be inconclusive [6]. The long term effect of Premier Pay for performance on patients outcomes recently published remain modest [7]. On another side immunocompromised cancer patients have a lower mortality (33% reduction) when care for in a National Cancer Institute-designed hospitals [8], and the mortality or infective endocarditis is greatly reduced when patient are care for by a specialized team with a managed-based approach [9]. Consequently, although DRG-based payment reach the goal for the LOS, it apparently and unexpectedly failed on patient outcome and a management based approach seems more efficient. Specialists are under increasing pressure to demonstrate their value to patients, hospitals and third-party payers. In fact, “several authors have suggested that specialists contribute excessively to the overall cost of care and do not provide sufficiently quality to justify this expense” [10]. As an answer, geriatricians recently demonstrated that for an equivalent patient outcome they were better than other physicians in reducing length of stay of their geriatric patients, providing a lower cost for the institution [11]. Even though most infectious disease specialists believe their care is valuable, this opinion is not universally shared. However, with the increasing incidence of bacterial resistance in hospitals and increasing cost of health care, more

efficient diagnoses combined with more appropriate antibiotic prescriptions would lead to shortened stays at hospitals, decreases in hospital-acquired complications and better patient quality of life. Several authors have reported the cost savings of better antibiotic implementation and controls associated with these potential benefits. It has become apparent that intervention by an ID physician can favorably affect antibiotic use [12] and reduce hospital costs [13]. Shortening the diagnostic delay is one major contributor toward reducing LOS. With blood stream infections, the admitting service and delay following the first blood culture and gram stain results are among the factors independently associated with a shortened LOS [16].The use of novel diagnostic tools, such as molecular methods and mass spectrometry, has considerably shortened LOS at hospitals. For example, the implementation of point-of-care laboratory and PCR techniques in the diagnosis of viral meningitis has reduced the average time of diagnosis from 9 to 2 days and the average LOS from 5.4 to 2.2 days, leading to profound modifications in patient care [14]. The future developments in the use of mass spectrometry for the identification of microorganisms in positive blood cultures will accelerate medical decisions and likely improve patient outcomes [15].

Our infectious disease department regroups two clinical wards for infectious and tropical disease and the microbiology, virology and parasitology laboratories of the university hospital including infection control team. We practice managed and evidence-based care since years. We developed the use of MaldiTOF mass spectrometry for identification of pathogen in clinical biology reducing diagnostic delay [16;17], we set up “Point-of-Care” for rapid microbiology diagnosis at the emergency department and deeply modified the patient management in the hospital [18], we developed diagnostic kits for exhaustive microbiological testing in endocarditis, pericarditis, and bone indwelling devices infection, which have already demonstrated their effectiveness for diagnostic performance [19-21]. The development of ambulatory treatment and diagnosis of infected orthopedic implant and osteitis cases also contributes to a reduction in LOS and a concordant reduction in the costs of these diseases and we received agreement for referral center in southern France [22]. To avoid acquired hospital infection in our wards that lengthen the hospital stay of patient and increase mortality, we

developed wide used of alcohol hand disinfection at bedside as early as 1998 [23] and health care workers vaccination campaign for flue [24]. We have employed this management style in our hospital for more than 12 years but we never evaluate the medical and economic impact of this management policy. The present study aims to compare the management of care provided by infectious diseases doctors in our department to that provided by other colleagues for similar patients in the same university hospital under the same DRG based payment system.

Materials and methods

French care system and DRG payment system*:* French social security insurance is universal and apply to all people on the territory according to regulations. It is financed by taxes on employee pay and employer's. DRG payment system named " tarification à l'activité" has been generalized to all hospital in France in 2007

The French Hospital DRG database was used to describe the care of infectious disease patients at a large university hospital in Marseille, France. This database was created in 1986 and mandatory used since 1991 by the physician in charge of care for all patients hospitalized in any public or private hospital in France. Standardized hospitalization summaries (SHS) are completed upon patient discharge. Depending on a patient's diagnosis, which is named based on the 10th revision of the International Classification of Diseases, the hospital stay is codified into a DRG. A DRG includes associated comorbidity (ACM) such as diabetes mellitus, hypertension, heart or kidney failure… The cost of a DRG is established annually by the French Ministry of Health. This cost is paid by the national insurance program to the hospital and recorded to the benefit of the medical unit (MU) that provided the patient's care.

Study population: The study comprises a cohort of patient discharged between January 1, 2007 and December 2008 from our university hospital that comprises 4 hospitals located in different districts of the town. The Infectious disease department, further named IDD, comprises 2 infectious diseases wards located in two different hospitals. We decided to work on the whole university hospital

further defined as “hospital” compiling data from the 4 hospitals. Using the 2007 and 2008 DRG database, we selected 3 different MU belonging to the IDD, which were identified in the database as N° 2763, 2780 belonging to one of the IDD ward and 3401 belonging to the other IDD ward. Data from each of these three MUs were compiled and further defined as IDD. We selected only cases with a length of stay of up to or equivalent to 48 hours and patients older than 17 years in age. Because the data base do not allow to analyze multiple stays in MU, we selected patients that were admitted in only one ward (only one SHS was associated with the patient) during their stay at the hospital. SHSs relevant to infectious diseases were selected as those needing microbiological, virological or parasitological laboratory investigations and/or antiviral, anti-parasitic or antimicrobial treatment. The SHS for those patients selected as representatives of the “Infectious disease” patients are described in **Table 1**.

Statistical analysis: Data were captured from the DRG database with the above described criteria. To identify who is caring for a patient with an infectious disease in our hospital, we compared the distribution of patients with an infectious disease DRG as defined above between the IDD and other MUs of the hospital. We then selected the most prevalent DRG cared for in IDD (e.g., those which represent up to 80% of the IDD DGR’s) (table 1). We then compared the mean LOS of these most frequent infectious diseases DRG between the IDD and other MUs of the hospital. We first performed a global comparison using an analysis of variance with the type of MU as the principal factor (IDD vs. other MUs), DRG as a cofactor and interaction with the type of MU, and the ages of patients as covariate. A further comparison of LOS between types of MU by DRG class was then performed using test of effect sliced based on least squares means. To assess the cost saved if the patients within the same DRG were cared for by the IDD instead of another MU, the number of saved days of care was calculated as the difference between the total LOS of a DRG provided by the IDD and another MU. The number of saved days of care was converted to a number of saved DRG by dividing by the mean LOS of the DRG in the IDD. The theoretical saved cost was obtained by

multiplying the saved DGR by the DRG cost available in the French national data base 2007 (see formula in table 3).

To evaluate the quality of care, we studied the number of patients readmitted to the hospital in the same DRG within 30 days of discharge, and we examined the number of deaths in the DRG within the time of care. Overall comparisons between the two types of MU were performed using logistic model with type of MU and age as effects. Age-adjusted odd ratio and its 95% confidence interval (95%CI) were done. The two types of MUs were compared by DRG using Chi-Square tests (or Fisher exact test if necessary). Age of patients was compared by DRG between the two types of MU using Student t-tests.

Finally we compared the length of stay of each DRG between ID department and all other MU and to MU relevant to the DRG

Results

From the 2007 and 2008 DRG database, 32 infectious disease DRGs were selected according to definition. Overall, 4188 SHSs were provided by the university hospital of Marseille for these DRGs, with 1059 being provided by the IDD and 3129 by other MUs, indicating that the IDD cared for 25% of the infectious disease DRG (**Table 1**). In the IDD, 80% of SHSs belong from 13 most frequent DRGs (**Table 1**). The most prevalent DRG both in the IDD and in other MU is pneumonia with and without ACM representing 25.6% of the "infectious" DRGs provided by the Hospital. Pneumonia in the IDD represents 20.3% (160/789) of pneumonia with ACM and 25.5% (132/518) of pneumonia without ACM cared for in the hospital. The IDD cared for the great majority of diseases due to HIV, 67.9% of HIV diseases with several complications, 52.1% of HIV diseases with a single complication and 65.8% of other diseases due to HIV. The IDD cared for 66.3 % of parasitic disease cases, 55 % of osteomyelitis cases, 30.9% of cellulitis in patients without ACM and 28.1% of cellulitis in patient with ACM . Urinary tract infection cases with or without ACM represented 19% and 17.7% of the DRG patients cared for by the IDD respectively. Despite the fact that age and DRG factors significantly

influenced the LOS (p<0.0001), the mean LOS was still significantly shorter in IDD than in other MUs (8.5 ± 7.5 days vs. 10.3 ± 10.3 days, respectively; p=0.037). The interaction between the department type and DRG was also significant (p<0.0001) allowing for a detailed analysis of LOS by DRG. Mean LOS for pneumonia cases in the IDD was shortened by 2 days (+/- 8.6) and by 1 day (+/-6.6) for uncomplicated pneumonia with and without ACM respectively. The LOS could be shortened by 3 days (+/- 12.7) in the care of parasitic disease, and as much as 10 days (+/-17.8) in osteomyelitis cases. Although the standard deviations are wide and linked to excessive LOS, they do not influence the mean LOS. The difference in LOS between care in the IDD and other MUs was significant for "Osteomyelitis" (p<0.001). Finally, of these 13 DRG, 10 (77 %) presented a shortened LOS in the IDD compared with other MUs, the cumulated LOS being significantly reduced (-1.8 ± 9.6: p=0.037) (**Table 2**). At the opposite three DRGs have a longer stay in the IDD such as HIV patients with several infectious complications [3.7 days (+/-11.1)], other diseases due to HIV [4.3 days +/- 8.6] and urinary tract infections without ACM [1.5 days +/- 3.6]. Moreover when observed throughout the medical specialty, the LOS of pneumonia without ACM was significantly shorter when cared for in IDD than in the pneumology or the internal medicine department (mean LOS: 6.5+/-4.4d/7.7+/- 5.4d/9.8+/-7.9d respectively; p=0.0052 ANCOVA) while the LOS of urinary tract infections without ACM was longer in IDD than in nephrology (Mean LOS 5.08+/-2.8d/3.42+/-2.5d; respectively p = 0.006 ANCOVA). For urinary tract infections with ACM, the LOS was shorter in nephrology than in IDD and in internal medicine (5.47+/-2.5d/8.5+/-4.5d/13.4+/-9.3d respectively; p<0.0001)

In the situation where the IDD would have care for all the 13 DRG patients admitted to the hospital , this would have save 3170 hospitalization days corresponding to € 1.426.298. The care for pneumonia and osteomyelitis represents 72% of the total money saved (**Table 3**). The supplementary cost due to longer stay of patients with HIV would be of € 59.922 and that of urinary tract infection of € 106.170. In terms of bed capacity these 3170 hospital saved days would have needed to transfer 5 beds (0.5% total hospital beds) from other MU to the IDD.

Within the 13 most frequent patient DRG, the mortality rate was 16/861 (1.9%) in the IDD and 128/2264 (5.7%) in other MUs (OR adjusted for age=2.4, 95%CI=1.4 – 4.0, p=0.0016) whereas complications that lead to readmission for the same DRG were 24/861 (2.8%) and 42/2264 (1.9%) (OR adjusted for age=0.8, 95%CI=0.5 – 1.4, p=0.45) in the IDD and other MUs, respectively (**Table 4**).

Discussion

Only a low proportion of patients with suspected or confirmed infectious disease cases (25%) are hospitalized in IDDs. Most such patients are distributed to other medical wards or even to the surgery ward explaining the development of ambulatory care by itinerant infectious disease physicians [12] . With the emergence of hospital-acquired infections due to resistant bacteria or highly transmissible diseases such as influenza or measles, the dispersal of such patients within hospitals is a questionable practice [25;26]. The dispersal of infected patients throughout hospitals makes infection control difficult [27]. The global mean LOS was significantly shortened in the IDD compared with other MUs, and the shorter LOS was independent of the age group and the DRG. As the DGR includes the associated comorbidity, which are likely to influence the outcomes, the main bias have been taken into account. However, when assessed according to the DRG, the significance was lost for most DRG excepted osteomyelitis ($p< 10^{-3}$) and the most frequent pneumonitis DRG (with ACM) (p=0.0259) . This result was likely due to the decreased number of SHSs analyzed and the consequent loss of study power. Increasing the number of SHSs by adding supplementary study years would likely raised the power and allow significant differences, but due to permanent yearly readjusting of the data base and DRG cost this is not feasible. Moreover, the standard deviation varied greatly within certain DRGs. This result may have been due to excessive LOS associated with patients in certain social situation (e.g., cellulitis in homeless persons) or diseases with protective airborne isolation (e.g., tuberculosis). However these excessive standard variations have no influence on the mean LOS. In this study, LOS has been shown to be shorter for infectious diseases that require highly technical approaches to diagnosis such as pneumonitis or osteomyelitis. Management-based community

acquire pneumonia has been established years ago in the IDD with diagnostic protocols such as those used in endocarditis or pericarditis [9;19] and more recently the use of the point of care that offer legionella and pneumococcus urinary antigens, *Mycoplasma pneumonia*, *Bordetella pertussis* , influenza viruses, and RSV diagnostic in the time of care [18]. Guidelines for treatment of community acquired pneumonia have been established in our department since 12 years. The implementation of guidelines has been suggested previously as a method for improving the cost effectiveness of community acquired pneumonia care [28]. In fact, adherence to treatment guidelines in pneumonia cases has already been shown to save €1121 per patient cured without affecting outcomes and death [29]. Moreover, patients not treated following the guidelines have been more likely to be readmitted to a hospital within 30 days of discharge [29]. The development of ambulatory treatment and diagnosis of infected orthopedic implant and osteitis cases also contributes to a reduction in LOS and a concordant reduction in the costs of these diseases [22]. We have employed this management style in our hospital for more than 12 years with developing molecular diagnostic in bone biopsy [21] and therapeutic ambulatory protocols [30]. Finally, critics may suggest that such economic management might reduce the quality of care. Our study demonstrates a significant reduction in mortality independently from age and comorbidity. In fact, patients with the aforementioned infectious diseases treated in the IDD have a 2.4 times more chance to survive. We demonstrate here that independently from DRG-based payment system, when infectious diseases are cared by infectious disease specialist with a managed-based approach (syndrome based diagnostic, development of POC, treatment guidelines…) , a substantial amount of money can be saved while sustaining the quality of care and achieving a significantly lower mortality rate.

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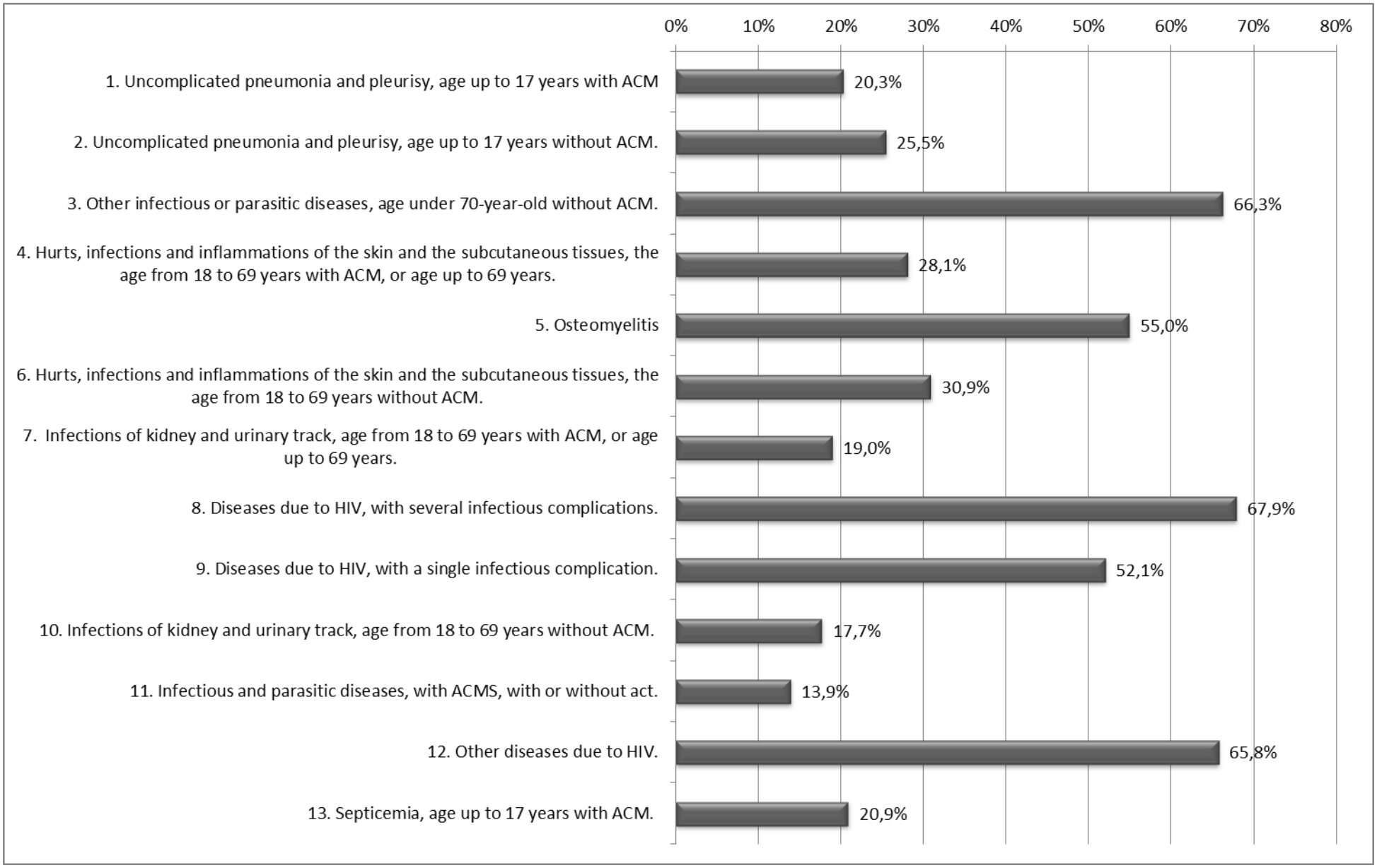
Figure 1: Proportion of the most prevalent DRG related to Infectious diseases cared for in the Infectious Disease Department compared to other medical units of the hospital in percentage. ACM : Associated Co Morbidity



DRG of patients	Number SHS[1]	% DRG in ID dept.	% ID dept. in DRG	Total LOS[2]
1. Uncomplicated pneumonia and pleurisy, age up to 17 years with ACM[3]	789	14,2%	20%	9564
2. Uncomplicated pneumonia and pleurisy, age up to 17 years without ACM.	518	11,4%	25%	3747
3. Other infectious or parasitic diseases, age under 70 years without ACM.	169	9,8%	66%	911
4. Hurts, infections and inflammations of the skin and the subcutaneous tissues, 18 to 69 year-old with ACM.	249	6,3%	28%	2830
5. Osteomyelitis	111	6,3%	55%	1497
6. Hurts, infections and inflammations of the skin and the subcutaneous tissues, 18 to 69 year-old without ACM.	207	6,1%	31%	1472
7. Infections of kidney and urinary track, 18 to 69 year-old with ACM.	321	5,3%	19%	3017
8. Diseases due to HIV, with several infectious complications.	53	5,2%	68%	773
9. Diseases due to HIV, with a single infectious complication.	73	4,4%	52%	737
10. Infections of kidney and urinary track, 18 to 69 year-old without ACM.	260	4,0%	18%	1000
11. Infectious and parasitic diseases, with ACM.	208	3,0%	14%	2988
12. Other diseases due to HIV.	38	2,8%	66%	271
13. Septicemia, age up to 17 years with ACM.	129	2,6%	21%	1729
14. Fever of unknown etiology, age up to 17 years without ACM.	153	2,4%	19%	826
15. Viral diseases, age up to 17 years	86	2,1%	29%	574
16. Infections and inflammations of the male reproductive organ, age up to 69 years and\or ACM.	104	2,0%	22%	925
17. Viral meningitis	38	1,6%	50%	246
18. Infections of the nervous system with the exception of viral meningitis, age under 70-year-old without ACM.	53	1,4%	26%	440
19. Other infectious or parasitic diseases, age up to 69 years and\or ACM.	39	1,3%	33%	376

20. Septicemia, age up to 17 years without ACM.	59	1,2%	17%	423
21. Septic arthritis	37	1,2%	35%	478
22. Infections of the nervous system with the exception of viral meningitis, the age up to 69 years and\or ACM.	43	1,0%	23%	653
23. Diseases due to HIV, with death	8	1,0%	75%	203
24. Infections and inflammations of the male reproductive organ, age under 70-year-old without ACM.	73	0,9%	14%	301
25. Fever of unknown etiology, age up to 17 years with ACM.	66	0,9%	14%	573
26. Interventions for disease due to HIV	15	0,7%	40%	151
27. Acute and sub-acute endocarditis.	80	0,4%	5%	1276
28. Infections of the feminine reproductive organ.	78	0,2%	4%	370
29. Interventions for infectious or parasitic diseases without ACM.	62	0,2%	3%	699
30. Interventions for infectious or parasitic diseases with ACM.	32	0,2%	6%	611
31. Post-operative and traumatic infections without ACM.	20	0%	0%	141
32. Post-operative and traumatic infections with ACM.	17	0%	0%	214
Total	4188	100%	25%	40016

Table 1: Detail of the DGR selected for the analysis during years 2007-2008

[1]Standardized hospitalization summary

[2]Length of Stay in days

[3]Associated Co Morbidity

Table 2: LOS of patient cared for in ID dept. with diagnostic among the 13 more frequent infectious compared with other medical unit of the same university hospital. Among the 13 DRG, 10 (77%) have a shortened mean LOS ranging from -0.4 to -10.2 days when cared in the ID Department.

(Diagnostic Related Group) DRG	**ID Department**			**Other medical ward**				
	Number SHS[1]	Total LOS[2]	Mean LOS[3]	Number SHS	Total LOS	Mean LOS	Gain (days)	P-value[4]
1. Uncomplicated pneumonia and pleurisy, age up to 17 years with ACM	160	1680	10.5 ± 8.9	629	7884	12.5 ± 8.5	-2.0 ± 8.6	0.0259
2. Uncomplicated pneumonia and pleurisy, age up to 17 years without ACM.	132	858	6.5 ± 4.4	386	2889	7.5 ± 6.6	-1.0 ± 6.1	0.6402
3. Other infectious or parasitic diseases, age under 70-year-old without ACM.	112	511	4.6 ± 2.6	57	400	7.0 ± 8.5	-2.5 ± 5.4	0.1524
4. Hurts, infections and inflammations of the skin and the subcutaneous tissues, the age from 18 to 69 years with ACM, or age up to 69 years.	70	714	10.2 ± 8.4	179	2116	11.8 ± 9.1	-1.6 ± 8.9	0.2769
5. Osteomyelitis	61	543	8.9 ± 7.8	50	954	19.1 ± 25.2	-10.2 ± 17.8	<.0001
6. Hurts, infections and inflammations of the skin and the	64	436	6.8 ± 6.4	143	1036	7.2 ± 15.0	-0.4 ± 13.0	0.6679

subcutaneous tissues, the age from 18 to 69 years without ACM.								
7. Infections of kidney and urinary track, age from 18 to 69 years with ACM, or age up to 69 years.	61	519	8.5 ± 4.5	260	2498	9.6 ± 7.9	-1.1 ± 7.4	0.2640
8. Diseases due to HIV, with several infectious complications.	36	568	15.8 ± 12.3	17	205	12.1 ± 7.9	3.7 ± 11.1	0.1495
9. Diseases due to HIV, with a single infectious complication.	38	342	9.0 ± 7.1	35	395	11.3 ± 7.7	-2.3 ± 7.4	0.3148
10. Infections of kidney and urinary track, age from 18 to 69 years without ACM.	46	234	5.1 ± 2.8	214	766	3.6 ± 3.8	1.5 ± 3.6	0.2012
11. Infectious and parasitic diseases, with ACMS, with or without act.	29	341	11.8 ± 9.3	179	2647	14.8 ± 13.1	-3.0 ± 12.7	0.1195
12. Other diseases due to HIV.	25	215	8.6 ± 10.2	13	56	4.3 ± 3.7	4.3 ± 8.6	0.1852
13. Septicemia, age up to 17 years with ACM.	27	351	13.0 ± 6.4	102	1378	13.5 ± 12.2	-0.5 ± 11.3	0.7692
All DRG	861	7312	8.5 ± 7.5	2264	23224	10.3 ± 10.3	-1.8 ± 9.6	0.0370[5]

[1] Standardized hospitalization summary,[2] Length Of Stay (day), [3]Mean ± standard deviation,[4] Type of ward effect by DRG of ANOVA with age as covariate (effect sliced by DRG of LOS least squares means), [5]Type of ward effect of ANOVA with age as covariate.

Table 3: Saved cost for the 13 more frequent DRG if patient cared for in other medical units would be care for in ID department. Care for the 13 more frequent DRG by ID dept. would save 13.6% of hospitalization day equivalent to € 1.426.298. Formula: Saved cost = [(ac-b)/c] x DRG cost €)

DRG of patients	Other medical ward		ID Department			Calculated saved cost		
	a/Number SHS	b/Total LOS	c/ID Mean LOS	ID Total LOS	Saved days[i]	Saved [ii] DRG	DRG Cost[iii]	Saved cost
1. Uncomplicated pneumonia and pleurisy, age up to 17 years with ACM[iv].	629	7884	10.5	6605	-1280	-122	4 447 €	-541 899 €
2. Uncomplicated pneumonia and pleurisy, age up to 17 years without ACM.	386	2889	6.5	2509	-380	-58	2 995 €	-175 092 €
3. Other infectious or parasitic diseases, age under 70-year-old without ACM.	57	400	4.6	262	-138	-30	2 185 €	-65 455 €
4. Hurts, infections and inflammations of the skin and the subcutaneous tissues, age 18 to 69 years with ACM.	179	2116	10.2	1826	-290	-28	4 013 €	-114 174 €
5. Osteomyelitis	50	954	8.9	445	-509	-57	5 586 €	-319 469 €
6. Hurts, infections and inflammations of the skin and the	143	1036	6.8	972	-64	-9	2 136 €	-19 978 €

subcutaneous tissues, age 18 to 69 years without ACM.								
7. Infections of kidney and urinary track, age from 18 to 69 years with ACM.	260	2498	8.5	2210	-288	-34	3 215 €	-108 932 €
8. Diseases due to HIV, with several infectious complications.	17	205	15.8	269	64	4	7 794 €	31 374 €
9. Diseases due to HIV, with a single infectious complication	35	395	9	315	-80	-9	5 346 €	-47 516 €
10.Infections of kidney and urinary track, age from 18 to 69 years without ACM	214	766	5.1	1091	325	64	1 664 €	106 170 €
11. Infectious and parasitic diseases, with ACM.	179	2647	11.8	2112	-535	-45	3 945 €	-178 795 €
12. Other diseases due to HIV.	13	56	8.6	112	56	6	4 406 €	28 588 €
13. Septicemia, age up to 17 years with ACM.	102	1378	13	1326	-52	-4	5 280 €	-21 120 €
Total	2264	23224		20054	-3170			-1 426 298 €

[i] Number of days saved due to LOS shortening, [ii] Number of DRG saved by LOS shortening, [iii] French national data base 2007, [iv] Associated Co Morbidity

Table 4: Age, number of readmission, and death among each DRG between "other medical units" and ID department.

Diagnostic Related Group (DRG)	ID Dept.				Other Medical Units			
	SHS[a]	Mean age	Readmission[c]	Death	SHS	Mean age	Readmission	Death
1. Uncomplicated pneumonia and pleurisy, age up to 17 years with ACM	160	67.9 ± 16.7*	2 (1.3%)	7 (4.4%)	629	72.6 ± 17.7*	12 (1.9%)	45 (7.2%)
2. Uncomplicated pneumonia and pleurisy, age up to 17 years without ACM.	132	57.8 ± 20.4*	1 (0.8%)	4 (3.0%)	386	68.0 ± 19.4*	6 (1.6%)	14 (3.6%)
3. Other infectious or parasitic diseases, age under 70-year-old without ACM.	112	37.9 ± 11.0*	1 (0.9%)	0 (0%)	57	44.4 ± 14.7*	3 (5.3%)	1 (1.8%)
4. Hurts, infections and inflammations of the skin and the subcutaneous tissues, the age from 18 to 69 years with ACM, or age up to 69 years.	70	64.0 ± 19.5	1 (1.4%)	0 (0%)	179	68.4 ± 17.7	4 (2.2%)	3 (1.7%)
5. Osteomyelitis	61	57.3 ± 17.6	7 (11.5%)	1 (1.6%)	50	59.4 ± 16.9	3 (6.0%)	0 (0%)
6. Hurts, infections and inflammations of the skin and the subcutaneous tissues, the age from 18 to 69 years without ACM.	64	48.5 ± 14.4	3 (4.7%)	0 (0%)	143	45.7 ± 14.4	1 (0.7%)	0 (0%)

7. Infections of kidney and urinary track, age from 18 to 69 years with ACM, or age up to 69 years.	61	77.7 ± 15.4*	0 (0%)	0 (0%)	260	71.7 ± 17.9*	5 (1.9%)	4 (1.5%)
8. Diseases due to HIV, with several infectious complications.	36	41.4 ± 7.4	4 (11.1%)	0 (0%)	17	43.2 ± 5.5	0 (0%)	0 (0%)
9. Diseases due to HIV, with a single infectious complication.	38	44.2 ± 8.1	1 (2.6%)	0 (0%)	35	47.3 ± 7.9	1 (2.9%)	1 (2.9%)
10. Infections of kidney and urinary track, age from 18 to 69 years without ACM.	46	40.1 ± 15.1*	1 (2.2%)	0 (0%)	214	46.8 ± 19.4*	3 (1.4%)	0 (0%)
11. Infectious and parasitic diseases, with ACMS, with or without act.	29	61.1 ± 21.1	2 (6.9%)	2 (6.9%)	179	65.2 ± 19.4	2 (1.1%)	43 (24%)
12. Other diseases due to HIV.	25	46.6 ± 11.0	1 (4.0%)	0 (0%)	13	42.6 ± 5.3	0 (0%)	1 (7.7%)
13. Septicemia, age up to 17 years with ACM.	27	69.2 ± 16.7	0 (0%)	2 (7.4%)	102	68.1 ± 14.8	2 (2.0%)	16 (15.7%)
All DRG	861	56.2 ± 20.2	24 (2.8%)	16 (1.9%)	2264	64.7 ± 20.4	42 (1.9%)	128 (5.7%)

[a]SHS: Standardized Hospitalization Summary, [b]Data are : mean ± standard deviation for age and number (%) for readmission and death, [c]number of patient re admitted for the same DRG within 30 days after discharge, * Mean age with significant difference between ID department and other MU ($p<0.05$).