

SUPPLY OF HEALTH SERVICES, FINANCING RULES AND COMPETITIVE SYSTEM IN LOMBARDIA REGION

Maurizio Amigoni¹, Antonello Zangrandi², Carlo Ramponi³

1. Direzione Generale Sanità della Regione Lombardia, Milan; 2. University of Parma; 3. SDA-Bocconi University, Milan

Communications to: Carlo Ramponi, SDA-Bocconi, Via Bocconi 8, 20136 Milano, Tel. +39.02.58366855, Fax +30.02.58366832, E-mail carloram@tin.it

ABSTRACT

The fluctuation in the supply of Health Care Services (surveyed trough the indicators of expenditure and number of discharges) into the Regione Lombardia, may be caused by the new funding rules and the equalisation between public and private hospitals. The data, collected through the Regional Information System, show deep variations into the supply of the Health Care services; particularly these variations have been registred on the lenght of stay and case mix between hospitals. Variations into the market share have been registered in the last three years, when the private hospital entered into the regional Health Care market.

KEYWORDS: DRG, PPS, Private Hospitals, Public Hospitals, Health Care Market.

INTRODUCTION

The reform aim, promoted by Lombardia Region with the law n° 31/1997, is directed to recognize a distinction between organizations which provide health services (public or private hospitals) and organizations responsible for purchasing health services (all public ASL). The reform started from January 1st 1998; obviously it has not yet produced specific effects which might be precisely evaluated; some years are needed to understand if and how much this reform did change the supply system of Lombardia Region .

Really since 1996 a process of change is working in Lombardia Region; this process is characterized by particular aspects in comparison with other italian Regions, In particular since 1996 (D.G.R n° 16086 July 17th 1996) new regional rules have allowed free admittance to specialistics services (i.e. without licence from USL) and a significant number of private hospital beds (up to 2700 at the end of 1997) has been added to the total number of accredited available beds, in this way rising the dimension of private supply in the Region. Further, a prospectic payment system (DGR tariffs for hospitalization and procedures tariffs for ambulatory services) has developped, thus changing in a peculiar way the reimbursement system. Finally both in 1996 and 1997 the new rules have started, based on a so called "ceiling system": an "all inclusive financial budget" which represents the total monetary amount payable for the hospitalization need (whatever the specialty and setting) of Lombardia inhabitants. This "systemic budget" works as follows: if the supplied admissions volume is higher than expected, then the tariffs are cutted down in a proportional way for all providing hospitals; finally a "provider ceil" (a top payable level for each hospital) is set above which the tariffs are cutted down for every specific structure.

All these "manoeuvres" have considerably modified the equilibrium between public and private providers within the Region. The authors aim is to underline some effects of these changes through the analysis of the activity data from 1995 to 1997. In particular the 1995 year is datum- basis against which the Lombardia Region pursued health policy is measured.

The year 1996 is marked by a supply enlargement and by the beginning of competition on the supply side. The year 1997 is characterized by a further supply increase and by the introduction of financing – system with diminishing rates for every single hospital (provider ceil).

AIMS OF THE ANALYSIS

The aims of the analysis are:

- to evaluate the evolution of total admittances;
- to identify the peculiarities of public and private competitive system and to realize how these have been modified according to the regional policy;
- to evaluate how public hospitals react and their ability to improve efficiency.

As far as the first aim (supply and demand relation) the increase of supply services has chiefly developed by private competitors; this has allowed a considerable increase in the regional offer, thus giving the opportunity to satisfy the increasing demand. It seems obvious, from such a health policy, to expect an admittances increase; due to the financing system characteristics, an increase of the financial resources for the hospitals is the logical consequence.

The DRG-based financing system provokes an increase of volumes. In fact it is right to expect that every hospitals develop maximizing activities behaviours. Therefore the quantities augment is determined both by the entry of new structures in the market and by the new financial system for the preexisting hospitals.

About the second aim we want to realize how the private system did organize itself in the new competitive system realized by Lombardia policy. In particular it seems important to understand which market segments have been attained by private hospitals; the choice of market segments being determined by numerous variables like the tariffs system, the expectation on development opportunities, the resource policy, the organizational culture and behaviour of private structures, and so on.

Finally as far as the third aim we want to realize how the public system has reacted and which levels of effectiveness it has brought out. Particularly it is interesting to consider if the tariff-based financing system and the new competitive system have permitted the public hospitals to develop an active strategy of change and of efficiency recovery, or if the public supply system has undergone the competitive dynamics.

Considering the number of public hospitals and their prominence in Lombardia Region, it is important to understand if these regional policies have allowed an improvement in the public hospitals performance too.

RESULTS

The first compared data between 1995 and 1997 show a system evolution in which:

- the patients flow from Lombardia to other regions has been stable; on the contrary the patients flow from other regions to Lombardia has increased;
- the admittances number (i.e. elective, urgent and emergent) remains steady, even if, within this apparent immobility, medical cases lower, while, on the contrary, surgical cases augment; the one – day admittances reduce, while the admittances with length of stay from two to six days increase;
- the average length of stay reduces;
- the average weight* increases;
- the hospitalization as day hospital setting rises.

These important variations of hospitals behaviour, show that the whole system is very dynamic and it is, probably, receptive of the regional policies, particularly as far as the innovating financial system and free access to the structures are concerned.

*. according to the HCFA DRG 10^h version

**Table 1. Admittances in hospitals located in Lombardia
(from Lombardiay and from all other italian regions)**

	<i>1995</i>	<i>1996</i>	<i>1997</i>
Electives, urgent and emergent adittances	1.631.164	1.629.570	1.620.884
Medical	1.108.350	1.093.619	1.059.075
Surgical	522.814	535.951	561.809
Day Hospital Setting	266.184	371.250	476.089
Medical	238.140	318.281	388.269
Surgical	28.044	52.969	87.820
Admittances with LOS>1 day	1.353.574	1.389.170	1.434.432
Medical	889.167	899.452	904.830
Surgical	464.407	489.718	529.512
Average weight, admittances with LOS>1 day	0,900	0,921	0,939
Medical	0,751	0,766	0,770
Surgical	1,185	1,206	1,228
Average LOS., admittances with LOS>1 day	10,10	9,52	9,01
Medical	10,23	9,75	9,46
Surgical	9,85	9,09	8,26

Table 2. The satisfied demand for hospitalization only for Lombardi a inhabitants

	<i>1995</i>	<i>1996</i>	<i>1997</i>
Elective, urgent and emergent admission (Lombardiay hospitals)	1.506.441	1.510.221	1.496.465
Medical	1.032.269	1.020.504	985.134
Surgical	474.172	489.717	511.331
Elective, urgent and emergent admission (all other italian hospitals)	(unknown)	69.411	69.242
Medical	(unknown)	50.701	49.748
Surgical	(unknown)	18.710	19.494
Admission rate/1000 inhab. (Estimate for 1995 and 1996)	177,2	177,6	176,0
Medical	121,8	120,4	116,3
Surgical	55,4	57,2	59,7
Day Hospital	252.033	350.736	444.132
Medical	225.646	300.889	361.915
Surgical	26.387	49.847	82.215
Electives, urgen and emergen adittances, LOS>1 day	1.248.600	1.285.211	1.321.871
Medical	828.155	838.800	841.087
Surgical	420.445	446.411	480.784
Average Weight, LOS>1 day	0,897	0,919	0,936
Medical	0,751	0,766	0,770
Surgical	1,185	1,206	1,228
Average LOS, admittances> 1day	10,02	9,45	8,95
Medical	10,20	9,73	9,44
Surgical	9,66	8,92	8,10

The first tables synthetize:

- table 1: admittances in hospitals located in Lombardia (for Lombardia inhabitants and from all other italian regions);
- table 2: the satisfied demand for hospitalization only for Lombardia citizens (admittances in hospitals either in Lombardia or in all other regions).

Over a three years period, the hospital services use is diminished (a reduction of about 10.000 cases), even if the only one-day cases diminish (from 1995 270.000 cases to 1997 180.000 cases) and the cases with a lenght of more than a day augment (80.000 more).

Particularly from table 3 :

- the one-day medical cases diminish by -65.000;
- the one-day surgical cases diminish by -25.000;
- the medical cases with a lenght of stay more than a day increase by +15.000;
- the surgical cases with a lenght of stay more than a day, increase by +65.000.

Table 3. Admissions for Lombardia inhabitants to Lombardia Hospitals

Year	1 day Admissions	Electives, urgent and emergent adittances, LOS>1 day	Day hospital Setting
1995	257.841	1.248.600	252.033
1996	225.010	1.285.211	350.736
1997	174.594	1.321.871	444.132
<i>Abs. variation 95-97</i>	- 83.247	+ 73.271	+ 192.099
<i>% var 95-97</i>	- 32,3%	+ 5,9%	+ 76,2%

However alternative settings of hospital assistance increase. In particular the day-hospital setting has reached very high peaks with nearly 480.000 cases in 1997 in comparison to 270.000 cases in 1995. The very strong reduction of one-day cases is surely bound to the new financing rules such as:

- the reduced one day admittance tarif probably induces to extend lenght of stay to get the full rate;
- the incentive for different setting of hospitalization (for example the day-surgery tarif in 75% of full value).

All what said before, shows that the hospitals behaviour is affected by policies .

Table 4 shows how the lenght of stay was modified.

Table 4. Distribution of admittances for LOS class

	1994	1995	1996	1997
1 day	18%	16%	14%	12%
1 week	41%	46%	50%	53%
2 weeks	28%	27%	27%	27%
over 2 weeks	13%	10%	9%	9%

The total value of the services, is increased (table 5). Hospitals, which for year 1995 invoiced 6.143 thousands millions liras (3.173 millions Euro[†]) only for Lombardia residents admittances, in year 1997

[†]. 1 Euro= 1936,27 Liras

invoiced no less than 7.260 billions (3.749 millions Euro) with a “formal” increase of 1116 thousands millions liras. The increase of the proceeds value is defined “formal” because of the ceiling policy implemented by Lombardiy Regional Authority since 1996. The analysis of the increase of the proceeds is simply a measure of how the values of production have been modified. So the “formal” increase of proceeds due to the increase in admittances for Lombardia inhabitants during the three years period, accounts + 18%. Using variance analysis we can say:

- only the 27% of the increase of proceeds is due to the increased complexity of case-mix with a LOS longer than a day (the reasons of this alteration are different: improved coding, overcoding and so on);
- the remaining 73% is produced by the increased hospitalization also distributed into three different classes of tariffs : one day stay (- 83000 cases), day- hospital setting (+ 192.000 cases) and hospitalization with a LOS longer than a day (+ 73.000 cases).

Table 5. Consumption of hospital services; Lombardia inhabs. to Lombardia hospitals, values of “formal” proceeds in Italian Lire x 1000

Year	Value one-day cases	Value >1 day cases	Value day hospital setting	Total value
1995	167.878.816	5.774.611.209	201.112.760	6.143.602.785
1996	166.545.796	6.321.139.851	300.016.833	6.787.702.480
1997	102.673.017	.640.569.792	516.652.085	7.259.894.894
<i>Abs. Variance 2 years 95-97</i>	<i>- 65.205.799</i>	<i>+ 865.958.583</i>	<i>+ 315.539.325</i>	<i>+ 1.116.292.109</i>
<i>% var 2 years 95-97</i>	<i>- 38,8%</i>	<i>+ 15,0%</i>	<i>+ 156,9%</i>	<i>+ 18,2%</i>

The final result is a light reduction of the traditional (elective, urgent and emergent) hospitalization (10.000 usual cases less) and a relevant increase of the day-hospital setting (192.000 cases more).

Table 6. Main reasons for proceeds increase; Lombardia inhabs., Lombardia Hospitals, from 1995 to 1997

Increase cases > 1die (+5,5%)	33%	+	368.085.229
Decrease cases 1 day LOS (-48%)	- 6%	-	65.205.799
Increase weight due to shift from 1 day LOS cases to more days LOS cases	27%	+	302.879.430
Average Weight increase for admittances with LOS>1 day 7,9%)	45%	+	497.873.354
increase Day hospital setting (43%)	28%	+	315.539.325
Total proceeds increase (15%)	100%	+	1.116.292.109
Admission rate/1000 abs variation (-0,9%)			

Table 7 Proceed increase between 1995 and 1997: a variance analysis

	surgical	medical	Total
Weight variation	403 mld. (36%)	359 mld. (32%)	762 mld. (68%)
Number cases variation	195 mld. (17%)	-157 mld. (-14%)	38 mld. (3%)
Day-hospital setting use	151 mld. (14%)	165 mld. (15%).	317 mld. (28%)
	759 mld. (67%)	367 mld. (33%)	1.116 mld. (100%)

The analysis in the table 6 shows that the increase of the 1.116 billions liras is explained as follows:

- 315 billions liras due to the increase of the day hospital setting (28%);
- 498 billions due to the increase of the average weight per case (45%);
- 303 billions liras (27%) due to the increased number of cases with a LOS >1 day.

A further explanatory supposition concerns the changes of case-mix. Synthetically occurred variations between 1995 and 1997 years may be explained as from table 7. The increase of 1.116 billions could be explained as follows:

- 67% due to surgical cases and in particular :
 - 151 billions (14%) for day surgery cases;
 - 195 billions (18%) for an increased number of surgical cases;
 - 403 billions (36%) on account of the increase of average value of surgical cases.
- 33% due to medical cases and in particular:
 - 164 billions (15%) for the increased number of cases in a day hospital setting;
 - 359 billions (32%) due to the increase of the average weight of the medical cases;
 - minus 157 billions (-14%) due to the decrease of medical admittances:

It is worth to emphasize that the slackening of hospitalization and the increasing financial budget do not proceed at the same rate. The hospitalizations with LOS <1 day are reduced (-83.242 and almost all in public hospitals); while hospitalizations with LOS>1 day increase (+ 73.271) as the day-hospital setting does (+ 192.099 mainly in public hospitals, i.e. + 182.654) .

The more relevant lowering of hospitalization deals with medical cases (-4,6% in a period of three years); the average tariff value of medical admissions is lower and it increases little in three years (only 6%) , while the surgical hospitalizations enlarge more (+ 7,8 %), and in the same time the average tariffs are more heavy and augment much more (+ 26% in three years). The average weight of surgical cases (longer than a day) rises for public hospitals from 1.186 to 1.204 while for the private hospitals it rises from 1.184 to 1.

Table 8. % Dtribution of proceeds increase throug 1995 to 1997; kind of hospitals and case mix

		Private hospitals	Private teaching & research hospitals	Public Hospitals	Public teaching & research hospitals	total
Surgical cases	Weight variance	16%	2%	16%	2%	36%
	N° cases variance	6%	4%	6%	1%	17%
	N° d-h setting variance	1%	0%	11%	2%	14%
Medical cases	Weight variance	10%	-2%	23%	1%	32%
	N° cases variance	0%	3%	-16%	0%	-13%
	N° d-h setting variance	1%	1%	12%	1%	15%
		33%	8%	52%	7%	100%

It is interesting to propose a scheme comparing the change that occurs subdividing the hospitals into 4 different kind in such a way that the 1.116 billions liras of greater proceeds (theoretic as said before - see the table 8) are divided among the various types of hospitals and applying the same methodology of analysis mentioned above. Even if the annual proceed has risen for each group of hospitals (see table 9), a meaningful change in the market shares is observed: the most evident is the augment of the private presence as well with an increase for all kinds of hospitals. Nevertheless the public hospitals proceed did not reduce such as to compensate the private proceed increase, but less than proportionally (table 10). The main peculiarities of change in the public-private relation need to be linked to the modified structure of the supply.

Table 9. Proceeds growth, in billion liras, trough 1995 to 1997, for kind of hospitals

	Private hospitals	Private teaching & research hospitals	Public Hospitals	Public teaching & research hospitals	total
1995 value	873	390	4.560	322	6.145
1997 value	1.248	478	5.138	397	7.261
% variance 95-97	+ 43 %	+ 22%	+ 12%	+ 23%	+ 18%

In more general terms the following phenomena appear:

- the annual proceed of private hospitals has risen by 43%. Such a result seems to be achieved, with an almost unchanged number of hospitalization (20.000 cases more in 1997 compared with the 1995 [+8%]) but mainly surgical cases, with an increase in the average value per case. The resort to day-hospital setting increases, though it maintains small dimension.
- the annual proceed of private teaching and research hospitals (private IRCCS) has risen by 22%; this effect is more due to the increased number of admittances than for the augment of the average value of each single hospitalization. The day-hospital increases even if in a small size.
- the annual proceed of the public teaching and research hospitals (public IRCCS) has risen by 23%; this result seems to be due to the increase of mean tarif per case, with the same number of admissions.
- the annual proceed of public hospitals[‡] has grown by 12% and therefore more slowly than all the others; because this kind of hospitals is the more important as far as their number and the number of available beds, an increase of the 12% means however the 50% of the whole augmentation obtained during a period of two years. The public hospitals market share has modestly diminished (from 74% to 71%). The peculiarities of case-mix treated by these public hospitals are of high interest, indeed such a considerable development equal to almost 578 billions of proceeds and a reduction of the medical cases by 16 % has to be probed at least from two points of views :
 - the properties of the developed services;
 - the levels of the efficiency of the public hospitals.

With regard to this last factor there are not adequate cost informations to estimate the level of effectiveness attained by the public hospital, i.e. if the costs have raised more or less than the activity level. But it is reasonable to think a less than proportional increase of costs. Some indirect indicators let us think so.

This indirect measure of efficiency level however may indicate a tendency.

[‡]. These hospitals are named: 1. Aziende ospedaliere, and 2. presidi ospedalieri di ASL

Table 10. Market shares

	Private hospitals	Private teaching & research hospitals	Public Hospitals	Public teaching & research hospitals	total	
year 1995	N° of available beds	7.515	2.321	35.524	2.634	47.994
	% beds	16%	5%	74%	5%	100%
	Proceeds (billion liras)	971	476	4887	444	6.778
	5 proceeds	14%	7%	72%	7%	100%
	Productivity/bed, (milions liras/year)	129,2	205,1	137,6	168,6	141,2
year 1997	N° of available beds	10.265	2.396	34.896	2.572	50.129
	% beds	20%	5%	70%	5%	100%
	Proceeds (billion liras)	1429	640	5478	537	8.084
	5 proceeds	18%	8%	68%	7%	100%
	Productivity/bed, (milions liras/year)	139,2	267,1	157,0	208,8	161,3
Variazioni	N° of beds variance	2750	75	-628	-62	2135
	Proceeds variance	458	164	591	93	1.306
	Bed productivity variance	10,0	62,0	19,4	40,2	20,0
	% bed productivity variance	8%	30%	14%	24%	14%

NB: table deals with all admissions on a elective, urgent and emergent basis (Lombardia inhabitants and all other)

Another datum, which indirectly confirms this situation, is that sanitary staff has not increased in the period, sustaining the hypothesis of a higher productivity.

If these data-trends will be confirmed, we shall confirm the tariff system has been positive for the public organizations, such as the competition between private and public hospitals. It is necessary to be prudent, and it might be interesting developing comparative analysis with other Italian regions, that have developed different politics, more centred on the protection of the public system "tout-court".

CONCLUSIONS

The three questions, that have guided the analysis, show very important changes in the Lombardia Health Care System, and not only for a greater private presence. In a three years period the augment of hospitalizations has been quite moderate; the ways of provision of hospital services have differentiated with an increase of the day-hospital setting and a reduction of medical cases. It seems a regional health system more appropriate in the selection of response to needs, if compared to that of 1995.

The great increase of private share-market, points out the solidity of a more competing system compared with the past; the increased competition seems push the competitors to develop more focused actions to organizational goals. The proceeds increase caused increased system costs, partially counter balanced by the "ceiling system" policy. The efficiency of public system seems to grow, as well as the selectivity of the organizational behaviours.

Given the unsatisfied demand for health services, the “patient free choice and equality between public and private” policy was an answer, but it had a relevant cost. At the moment the health system appears :

- more efficient (average LOS reduced);
- likewise expensive (the infused resources in the system are not changed);
- more selective (not all the supply today has a proper competing place and a proper segment market also in consequence of the higher competition).

With this prospect it will be interesting to observe if, in a coherent manner, the public sector will be able to rebuild its framework : it will be necessary to form more qualified and efficient structures to achieve a selective strategy, since the investing resources are however scarce .

BIBLIOGRAPHY

All data come from the Ministry of Health HSP22 model and Rekord data sets (SDO) years 1995, 1996, 1997

APPENDIX

The main aspects of this regional law are here briefly summarized:

1. The regional healthcare system is funded almost completely by public financial resources (about 8.8 billions, more than 50% of which are for hospital admittances); other sources (as insurances companies or private funds) are difficult to account, but they are not relevant. The private market (the patient pays for services) provides services mainly in the ambulatory setting; on the contrary the private hospitalizations are marginal.; for private hospitalization there will be a further restriction due to new laws dealing with new contractual relations between doctors and public healthcare organizations
2. Every patient may choose his/her reliable doctor or hospital; bureaucracy has been strongly reduced. Every citizen may decide where to go and choose between the accredited hospitals and clinics
3. Public and private providers are paid on a DRG based tariffs, and compete each other; each provider must meet some quality requirements (mainly number and kind of staff, technology, facilities). These requirements become compulsory to be paid by public funding.
4. Otherwise Public providers enjoy an additional funding to balance the difference between full costs of public hospitals which are higher than revenues calculated on the DRGbased tariff.. this unbalance may be due to inefficiency, too much rigid public rules, a different mission for public hospitals, etc. etc.

