Executive summary

Among the objectives of health regulation established in the Decree-Law n. º 127/2009, of May 27th, the Portuguese Health Regulation Authority (Entidade Reguladora da Saúde - ERS) must ensure the accomplishment of health care access criteria, as well as guarantee health care users' rights and interests, to safeguard transparency in economic relations between agents in the health system, and to secure competition between health care providers. On that context, ERS evaluated the horizontal integration of hospitals carried out by the creation of Centros Hospitalares (CH).

The study analyzed the role of the CH within the National Health Service (NHS) and its potential impacts on efficiency. The intended assessment of actual compliance of CH with the objectives for their creation was hampered by the absence of measures and parameters established for the purpose of evaluating the efficiency of CH.

The use of the data collected from several entities, including Administrações Regionais de Saúde (ARS), Agrupamentos de Centros de Saúde (ACES) and CH present some limitations due to the lack of especial facts and documents. The opinion from Municipalities relating CH is also considered in order to assess the impact of their creation among populations.

Based on the data and information collected, the analysis of CH's model starts with the definition and nature of the CH, the presentation of the reasons for their creation, the description of its historical and legal context, the assessment of compliance with the objectives established in their legal framework, and also the analysis of replies to inquiries made to the CH, the ARS, the ACES and the Municipalities.

The study also evaluates patients access to health care when using CH, taking into account the socio-economic characteristics of the population covered, the spatial dimensions of access (proximity and capacity) and the temporal dimension of access (using the Maximum Response Time Guaranteed for initial hospital consultations and SIGIC scheduled surgery criteria).

An analysis on the variation of Unit Direct Costs (CUD) and Unit Total Costs (CUT) of the output using an evaluation *ex-ante* and *ex-post* to the creation of CH and a financial analysis by the method of ratios are also presented, with the aim of assessing economic and financial performance of the CH.

It is observed that Decree-Law n.º 284/99, of July 26th, establishes as legal requirement a proposal of the ARS to the Health Ministry regarding the creation of a CH. Those proposals were not elaborated and/or submitted at the time of creation of each CH, therefore lacking the initial determination of the objectives for each CH that should now constitute the grounds for the evaluation of the accomplishment, or not, of those objectives. It was nevertheless possible to find out that the reasons motivating the creation of each CH were the improvement on patients accessibility and on quality of health services; the rationalization of human resources; improvement on coordination between the healthcare units; concentration of diagnostic systems; economies of scale; reorganization of administrative and support services; and innovation and concentration of information systems.

As hospitals before incorporation into CH are considered as an observational unit and after integration it is the CH that must be taken into account as an observational unit, it was decided to create groups of hospitals by type of integration (CH, ULS[1] and hospitals not included in any kind of integration), in order to compare the CH model with other different models of integration.

For the access analysis it is considered:

(i) the differences in production (comparing contracted and real production), in a group of sixteen CH (created before 2008) based on data for 2008 and 2009 relating five lines of production;
(ii) the proximity and capacity indicators;
(iii) initial hospital consultations; and
(iv) scheduled surgery in SIGIC (similarly to the initial hospital consultation analysis, the evaluation is based on observation of the waiting times (comparing three groups of hospitals with different organizational models - CH, ULS and hospitals that are not included in any kind of integration).

The cost analysis of CH considers the variation of the output using an evaluation *ex-ante* and *ex-post* to its creation. It is intended to assess whether hospitals after integration in CH presented, in different areas of production, economies or diseconomies of scale.

The financial analysis looks on the economic and financial ratios of the CH for the years 2008 and 2009 and is based on a group of sixteen CH (that aggregates the CH

[1] ULS is a kind of vertical integration of the different level of Hospitals.

that were created before 2008 and for the period under review have closed their financial accounts and maintained the legal nature).

In conclusion:

1. Relating to access to health care, and given that it can be assessed taking into consideration the socio-economic characteristics of the population covered by CH, the capacity indicators, proximity indicators and temporal analysis (with an econometric analysis of TMRG), it was found that:

(i) Program Contracts agreed between CH and ARS are not entirely reflecting the socio-economic characteristics of the population, neither the actual production performed;

(ii) As for capacity, there is a very heterogeneous distribution of human resources: all CH present a number of doctors per 1000 inhabitants indicator below national and European Union (EU) average. A similar observation is found for the number of nurses per 1000 inhabitants indicator (and the national level is already lower than that of the EU). These results reveal an inadequate distribution of health professionals;

(iii) As for proximity, populations of reference areas of a CH have an average travel time to access the establishments integrated in CH lower than 90 minutes. The need for effective implementation of Hospital Referral Networks, with explicit definition of catchment areas, is however stressed;

(iv) the CH group in analysis have a growing tendency for initial hospital consultations in disrespect of the established TMRG, even though that group presents a better performance than the ULS group and Control group. It is then possible that patients may incur in access difficulties relating initial hospital consultations;

(v) the econometric analysis showed that the CH group reveals a decrease in the number of consultations performed beyond the TMRG when compared to Control group;

(vi) when comparing two CH groups with other groups (including ULS group and Control group), we observe that there is a more accentuated decrease in consultations performed beyond the TMRG in CH I group (aggregating the oldest CH) than CH II (aggregating the newest CH). It is therefore estimated that time integration of hospitals into CH may have a positive influence in this aspect; and

(vii) regarding access to the surgery for the years 2009 and 2010, the CH group presented the lowest percentages for patients waiting time (TE) in disrespect for TMRG compared with ULS group and the group of hospitals which are not subject to any kind of integration.

2. Relating to variation in costs, and in respect of the Unit Direct Costs (CUD) and Unit Total Costs (CUT) in output, the evaluation *ex-ante* and *ex-post* to the creation of CH showed that:

(i) taking into account the number of patients treated in hospital and the number of consultations, after integration in CH, there is an increase of production in almost all medical specialties. The CH group presented a decrease in CUD and CUT, with evidence of economies of scale in almost medical specialties analyzed. It should however be noted that in Ophthalmology specialty an increase in CUD and CUT was found after integration in CH alongside with a decrease in production, revealing possible diseconomies of scale;
(ii) in relation to emergency specialty, the number of patients treated after integration in CH increased by 66%, maintaining unchanged its cost;
(iii) in Cardiology specialty, an increase of the CUD and of the CUT more than proportional to the increase in production after integration in CH can also reveal possible diseconomies of scale.

3. Finally and with respect to financial analysis, between 2008 and 2009 there was a 4% increase in total revenues of the CH group. Labor costs also increased 5%, consumption increased 7%, supplies and services increased 14% and other costs decreased by 3%. It also appears that the CH group, in the same period, presents difficulties dealing with financial commitments in short and long term, evidencing an increase in payment average period and showing a decrease in profitability.