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## EDITORIAL

### Mario Baruchello

The WoncaEurope2006 Congress held in Florence at the end of August will remain a cornerstone in the history of Italian General Practice. More than 3.400 participants from 64 different countries, with many representatives from all continents (29 Australians and 19 New Zealanders, over 400 Norwegian); 1.200 papers, 20 rooms occupied for three days, 250 parallel sessions, 550 posters. And what about the Italians? There were 230, plus the organizers, among which Giorgio Visentin and the members of the scientific committee, together with Franco Del Zotti and your leader writer.

We classified in fourth position by number, after the Spanish, Portuguese and Norwegian, and were first with 250 presentations and posters. Massimo Tombesi, President of the meeting proudly wrote: "A World Congress, which most likely is the largest that General Practice ever realized, probably the best by quality and contents as our European and American colleagues said".

We are genuinely aware of this and will do whatever possible at least to share the most original contributions online. Among the many memorable interventions and in-depth studies, Sergio Bernabè's considerations reminded us of the profound relationship between culture, language, humanity and biology, anticipating knowledges that certainly neurobiology will make clear in the near future.

General Practice isn't only entrenched in a formal knowledge. Patient's unstructured stories, emotions, body language are able to stimulate intuition, the GP's *ability to cope* and decisional ability.

Arno Timmermans, President of the Dutch College of General Practitioners, marvellously illustrated, as many other speakers, his presentation with the reproduction of Italian masterpieces that the entire world loves and envies us. He quoted values such as equity and accessibility as the basis of the GP-patient relationship and warned against the *paradox of an overload of information*. Nowadays, the more information we have less we believe and more information we seek, less time we have to dedicate to doing things.

But there was a baseline that crossed hundreds of discussions between GPs coming from so many different realities: General Practice ethics are inspired by immanent and universal values. This is the bond that united a handful of enthusiasts in the past 4 years, which beyond selfishness and party logic, brought to like-minded and efficient work all the scientific societies in the Italian General Practice field.

The moment has come and we undertake to do it as the continuation of the Wonca 2006 Scientific Committee's work, so the entire Italian medical scene will subscribe again to the WMA [www.wma.org](http://www.wma.org), the international association that includes 85 nations (from Cuba to New Zealand), in which we already had the presidency in the 80's and whose statements are reliable reference in all ethical dilemmas that the GP faces everyday. We have evidence of this also in this number with De Mola's case report, which highlights how patients not only bring in the office physical aches, but primarily inner pain.

In the first part you will find a survey on cholesterol and a database (over 100.000 denominator patients per 76 GPs from all over Italy), which confirms the great amount of work that still has to be done for correct and complete data collection. A quite original survey is the comparison among the softwares utilized during a professional training experience in Thiene. In the last 5 years, the most productive Netaudit GPs were the ones that possessed softwares endowed with clear encoding systems, for single diagnostic codes, tests and therapies with extraction functions from the database and for Audits.

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However not all softwares are the same and training is inadequate in this field. Nevertheless, among the expected results there was a growth of knowledge in General Practice, the creation of a factual population epidemiological profile and a relapse in terms of continuous improvement of single GP performances, not only at organizational but also at clinical level.

Last but not least, we are publishing the study on the Verona Case-Mix that confirms the statements made in Florence by W.W. Rosser of the Queen's University of Kingston-Ontario, who invited us all to apply for greater quality in research and not only for a formal adherence to the projects that we sadly see everyday in the agreements made between trade unions and health structures.

The co-existence of multi-pathologies in the same patient, can confuse the results of the statistical elaborations and limit the generalization of their conclusions to elder people or patients in worse conditions.

The **Charlson Comorbidity Index** (CCI) is a simple and reliable method to measure comorbidity and can bring to very different conclusions respect to the simplified ones proposed today. General Practice reveals to be once again ready for real excellence projects: they cannot be offered to all GPs but they shouldn't be denied to those whom claim the possibility of emerging in Italy and that proved in Florence to have a unique international importance. In the photo, the corner of the QQ Magazine at the Wonca Congress in Florence with the Poster and annals of the magazine that were handed out to the most creditable speakers.



### THE SUBSTITUTE

**Cosimo De Mola**

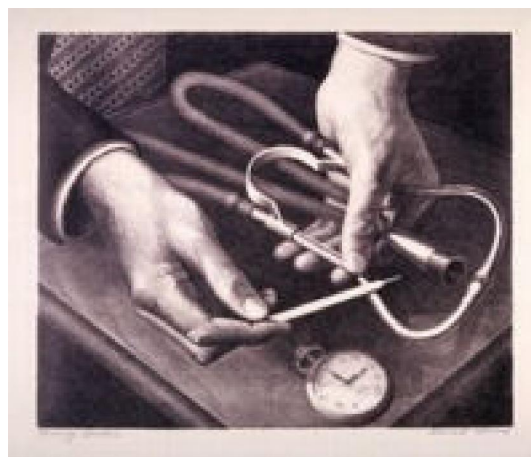
GPS - Bari

Mother and daughter come into my office walking with a heavy and slow pace. They sit down and heave a sigh that promises no good. The mother, with gestures that reveal resignation, hands me the emergency room medical report without comments. The report is in shorthand and describes the umpteenth hypertensive crisis; incomprehensible for the cardiologists that visited her. As a matter of fact, the lady is undergoing treatment for a psychotic disorder and has been on medication also for hypertension for years, strictly under her mother's control. "I assure you doctor – she anticipates, guessing my thoughts – she takes her medications everyday in front of me".

The daughter, in the meanwhile, apart the initial moan that I interpreted as a greeting, hadn't said a word. I tell my secretary not to disturb and decide to investigate further. With the quickest glance allowed by the psychotic drug treatment, the lady makes me understand she wants to talk to me without her mother's presence. I asked her mother to kindly wait outside. We were now alone so she started telling me her story.

"Doctor, you remember that last year I underwent abortion. I didn't want to, but my mother insisted.... I was taking too many medications... I already had two

children.... my husband didn't have a steady job and as you know, we live with her. After the abortion I was very depressed... I'm Catholic... I shouldn't have done it. Night after night, I had trouble sleeping, woke up all perspired, petrified by my nightmares. I went to confess in Church hoping I would feel better, but the priest did not absolve me for my sin. He was hard-hearted. He said the Church cannot forgive these sins. From that day I began feeling worse. Often when I think about it, I feel my blood pressure rising, my head becoming very hot, my eyesight becoming foggy ... my mother gets scared ...and I end up in the emergency room." I jumped on my chair and struggled not to curse; I said it was impossible that Father xxxx had treated her so peevishly; I know him well, he is a man of culture with great compassion, he couldn't have done this with such thoughtlessness. I then discovered that Father xxx was absent that day and that the woman was confessed by a "very young substitute". I'm not an expert in religious matters, I know the moral and sexual doctrine in the Catholic Church considers abortions a mortal sin. On the other hand, this is a case that should have been treated with more good sense and intelligence. Perhaps, but I could be wrong, if Father xxx had not been absent, he would have offered the woman a different (ab)solution.



### SHORT OPEN NET-AUDIT: RECORDING CHOLESTEROL

**Francesco Del Zotti** (VR); **Enzo Brizio** (CN); **Paolo Schianchi** (PR); **Cristina Bianchi** (BL); **Giovanni Ciolina** (BS); **Augusto Negrini** (VI); **lista Netaudit** ([www.netaudit.org](http://www.netaudit.org))

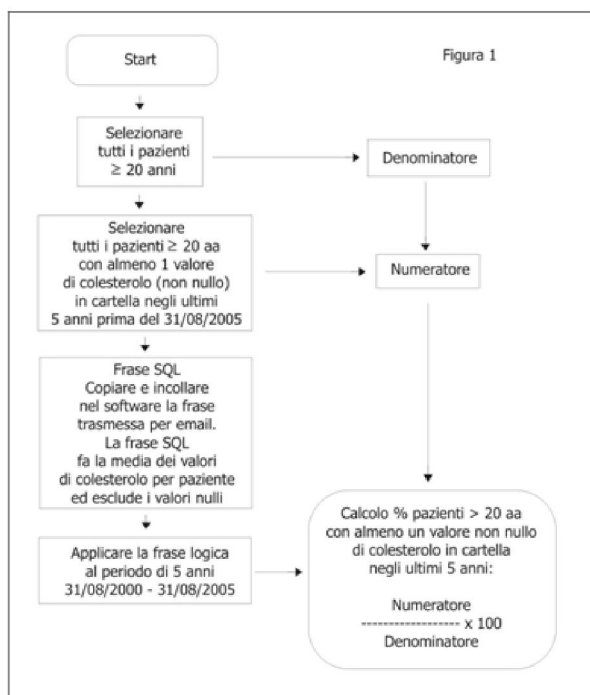
#### *Background*

Periodical evaluation of cholesterol in adults is considered common by the most influential guidelines, among which "US Preventive Service Task force" and "Canadian task force on Preventive Health care". A report of the prestigious MMWR of the Atlanta CDC, September 2005, on one side refers to the "Healthy People 2010" project that has the aim of bringing at least to 80% the portion of patients over-twenty, which underwent a

total Cholesterol test in the last 5 years; on the other side, it reports the results of a broad telephone survey financed by the USA government in 2003, in which 73.1% (CI = 72.7-73.4) patients over-twenty had undergone cholesterol testing in the previous 5 years. Seen this, we wanted to evaluate patients over-twenty with at least one numerical value for cholesterol in their clinical record, in a group of Italian GPs supplied with clinical record software.

### Method

The members of the Netaudit List have been carrying out periodical clinical Audits. We thought it would be useful, with this first example on cholesterol, to render Netaudit methods acknowledged also outside the usual circuit, by launching a “*short open netaudit*” that does not need more than 30-40 minutes to collect data. It has the main function of presenting these 1<sup>st</sup> level Netaudits to different telematic groups of Italian GPs. To extract the data from one’s database, the participating GPs were invited to use an algorithm and one only SQL phrase *ad hoc* (see flow-chart fig. 1).



Each GP had the responsibility of finding a number of patients with at least one numerical value (excluded fields with “null” or “nominal” values) of cholesterol in their clinical records in the 5 years from 31 August 2000 and 31 August 2005 and then, calculate the proportion respect to the assisted population of patients over-twenty.

### Participating GPs

76 GPs working in 40 different provinces in all geographical areas of the country, belonging to the following telematic circuits participated in the Audit:

- Circuit n. %
- Netaudit 43 56.6
- Forum Millewin 17 22.4

- MIR 7 9.2
- Ippocrate 5 6.6
- SIMG Veneto 3 3.9
- Pillole 1 1.3

Most participants use Millewin software: 66 GPs (86.8%); 10 GPs use Iatros, Pico, Pierrel and other software.

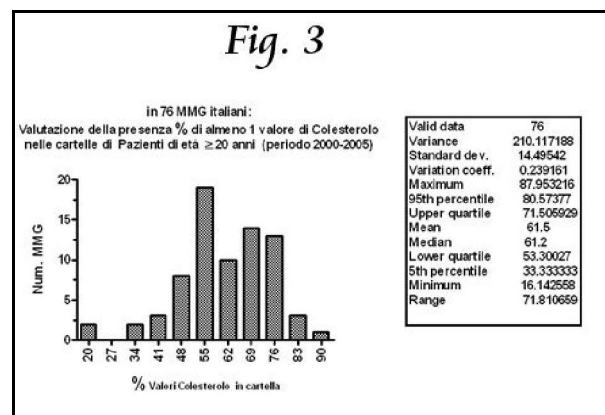
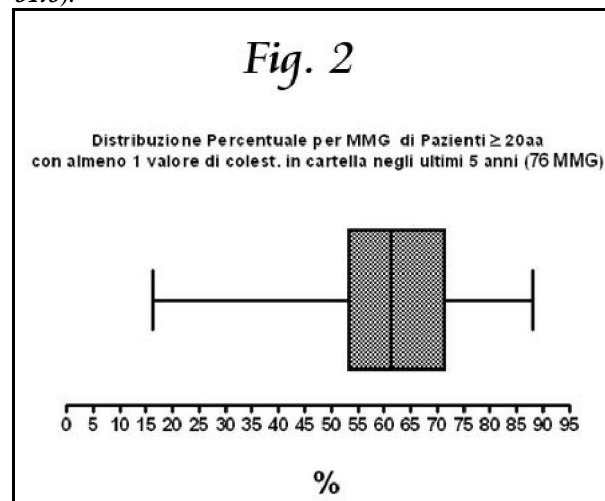
### Patients

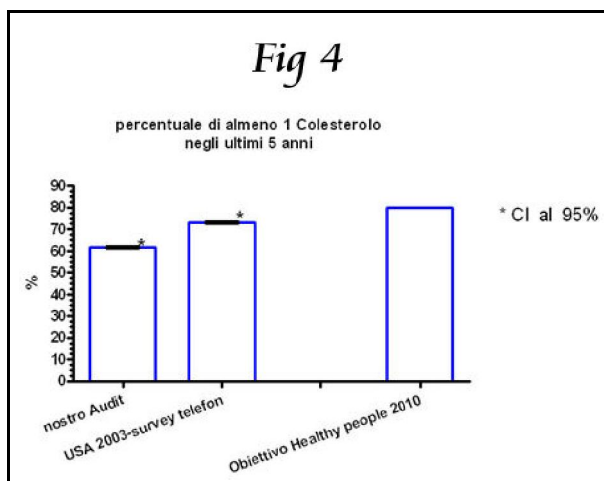
These 76 GPs assist 103001 patients, with an average of 1355.3 patients per GP (DS 247.8; Minimum 540; Maximum 1729).

The patients over-twenty, object of the cholesterol evaluation, were 92601, with an average of 1218.4 per GP ( Median 1286; Minimum 422; Maximum 1533)

### Results and comments

57001/92601 patients over-twenty had at least one cholesterol value in their clinical record, which means **61.5%** (*Exact -Clopper-Pearson. 95% CI = 61.2-61.9*).





Figures 2, 3 and 4 show the variability between participating GPs, both with the data of the 2003 telephone survey and the one with the 80% aim of *Healthy People 2010*. The proportion of cholesterol values in the clinical records display results that are still distant from the 80% established by the project. Our 61.5% is also lower than the one found in the American survey quoted in MMWR. On the other side, we must notice that our proportion regards numerical values actually recorded in our PC, while the American data displays answers to a telephone survey, which often contains broad margins of unreliability for the known “mnesic bias” and for the absence of those families without a phone in the survey. Moreover, the 61.5% datum includes only cholesterol values having a numerical value and excludes cholesterol values not reported in the clinical record or reported with a “nominal label” (i.e.: “normal”, “high”, “very high”). We must also indicate the great variability of the proportion, with 39/76 GPs between 25° and 75° percentile, which means between 53% and 71% cholesterol values in the clinical record. 18 GPs had a value lower to 25° percentile, up to a minimum of 16%; but there were also 19 GPs with a percentage over 71%, up to maximum 88%, value that was higher than the aim of *Healthy People 2010*.

Evidently among the different GPs there are different styles of collecting data, a matter that should be investigated with further researches. It is necessary to repeat that to record significant numerical values of cholesterol, it is a small effort compared to the great potential of clinical evaluations per individual patient and for the epidemiological analysis per group of patients.

A voluntary and in general enthusiastic participation of numerous GPs in this study, made us understand that the simplicity and power in the extraction of retrospective data on cholesterol, due to PCs and modern softwares for clinical records, supplies on one side, the possibility of accumulating and studying precious data on cardiovascular risks and on the other side, the requirement and task of standardizing the recording style of this important clinical variable.

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(September 9, 2005/54 (35); 865-870)

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**ABOVE AND BEYOND CEILING LIMITS  
BASED ONLY ON AGE AND GENDER:  
GENERAL PRACTICE AND CASE-MIX  
ACCORDING TO THE CHARLSON INDEX AS A  
PREDICTOR OF PHARMACEUTICAL COSTS.  
A PILOT EXPERIENCE IN THE LOCAL  
HEALTH UNIT 20 OF THE VENETO REGION**

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### *Introduction*

The need of finding easy yet simple methods to measure the degree of welfare complexity in different user areas (Case-Mix) is important, not only for the health economy but also for clinical research. The coexistence of multi-pathologies in a same patient are able to confuse trial results and limit the

generalizability of the conclusions in elder or more complex cases.

The **Charlson Comorbidity Index** (CCI) is a simple and reliable method to measure comorbidity; the method was validated in a great number of experiences and the values produced are well correlated with mortality, morbidity and the consumption of health resources [1]. The index is built on the basis of the presence or less in the single patient of 19 tracing diseases, where each contributes to a score that goes from 1 to 6; the sum of the scores of the coexisting diseases in a subject is therefore pondered by the patient's age.

The entire Charlson "age adjusted Index" range goes between 0 a 43 points and its values proved an excellent predicting validity for a great number of clinical outcomes in oncology, geriatrics and internal medicine [1, 11]. Even though a range, a Charlson score equal to or greater than 5 generally is the expression of a complex clinical task. We don't know if the method was used in a systematic manner within the setting of primary welfare. We therefore thought of using the Charlson Comorbidity Index to measure the comorbidity within the areas of the single GPs. It is our opinion that a correct definition of the individual Case-Mix will allow a "congruent definition" of resource consumption, which is certainly more adequate respect to the one offered by the crude definition of "consumption ceiling limits" [2] in company contracts.

The aim of our research is therefore to:

- evaluate the Case-Mix in a group of GPs;
- quantify the consumption of health resources induced by the single GPs;
- correlate the consumption of resources with the individual Case-Mixes;
- propose a resource allocation system based on the definition of individual Case-Mixes.

### Materials and methods

We compared the different areas of four GPs belonging to group medicine in the Local Health Unit 20 of the Veneto Region supplied with a common professional software (Millewin). We analysed the professional activity relative to the period

01 January 2005 - 31 December 2005. For each case record we extracted: patients affected by at least one of the 19 tracing diseases necessary to calculate the Charlson score; patients that went at least once to the offices during the reference period; the value of the age-adjusted Charlson Index; patients that received drug prescriptions during the reference period; costs of the drug prescriptions, evaluated in the GP's database. The data was extracted from the professional databases using SQL queries that were appositely created to attribute a Charlson score to each patient.

### Results

#### Demographical composition of the assisted patients of the single GPs and number of accesses

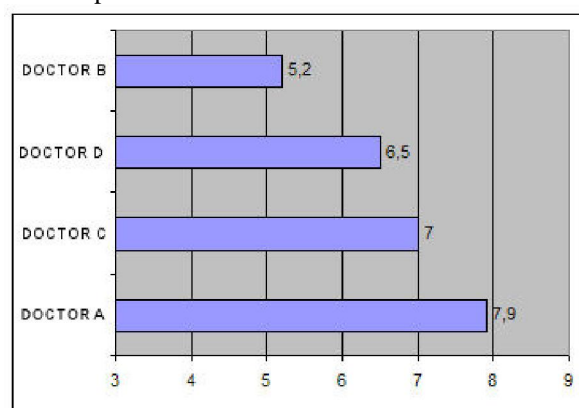
The Group Medicine core includes 4944 subjects (average: 1236 per GP).

**Table 1** illustrates the number of office accesses recorded for each GP per medical/year in 2005 (any type of contact)

	n. pazienti in carico	n. accessi 2005
Medico A	1598	12735
Medico B	812	4244
Medico C	1182	8316
Medico D	1352	8830
media	1236	8531,25

Graphic 1 illustrates the difference in the load of the four GPs. The parameter considered is the number of office accesses per year per **assisted patient** (access = any type of contact)

Graphic 1 - Relationship (n. accesses per year)/n. assisted patients



#### Consumption of Pharmaceutical Resources 2005

**Table 2** illustrates the consumption of pharmaceutical resources in 2005 per assisted patient of the single GPs. We used as a consumption proxy the volume of prescriptions in 2005 recorded in the professional databases. The costs were calculated multiplying per each product the number of pieces prescribed by the cost of each piece. We considered: the values of the overall pharmaceutical costs, the average values of costs for each patient treated, the deviation respect to the average of the group values of the average cost per patient.

Medici	n. pazienti trattati	spesa farmaceutica 2005 (euro)	spesa farmaceutica/trattato	scostamento dalla media
Medico A	1195	497316	416,1	1,18
Medico B	498	152633	306,4	0,87
Medico C	840	297002	353,5	1,00
Medico D	837	278100	332,2	0,94
media	-	-	352,1	1

*In Table 2 you notice that if the consumption "appropriateness" is evaluated using as a standard the average of the group, the first GP reveals an "anomalous" consumption of resources (+18% respect to the average)*

## Dissociation between distribution and the sum of the Charlson scores in the different GPs and the cost degree

**Table 3** illustrates the sum of the individual Charlson Comorbidity Index scores (= sum of the scores of the single patients) recorded in the single user areas, the average score per assisted patient and the variance of the values of the average score respect to the average of the group.

*Therefore, expressing the individual Case-Mix in the format of an “average Charlson Index score per assisted patient” GP A reveals a case record complexity 53% superior to the average of the group.*

	n. pazienti in carico	Somma Scores CCI registrati nei singoli pazienti	Score CCI medio per assistibile	Scostamento dalla media del gruppo
Medico A	1598	2806	1,75	1,53
Medico B	812	924	1,13	0,99
Medico C	1182	990	0,83	0,73
Medico D	1352	919	0,67	0,59
media	-	-	1,14	1

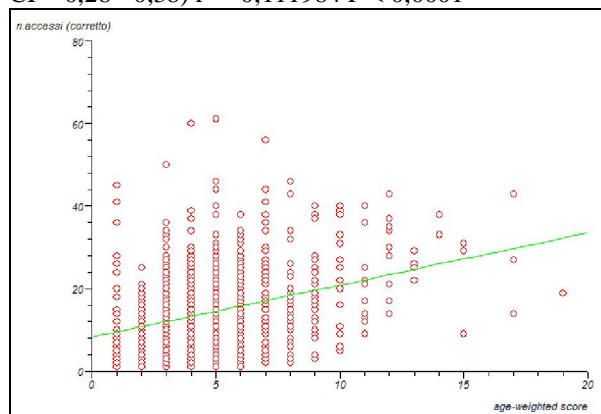
The distribution of the number of patients individuated through the calculation of the Charlson Index and the number of diagnoses that contributed to the calculation, resulted very different within the pool. GP A presented a triple number of patients and respectively a quadruple number of diagnoses respect to the other three.

## RELATIONSHIP between the Charlson Index in the single patients with the number of accesses and with the Pharmaceutical cost.

Graphic 3 illustrates for the entire case report a regression between the values of the **Charlson Comorbidity Index (see the box at the end of the article)** and the number of annual accesses per capita in 2005 in a model of univariated analysis.

*The patients with higher CCI score values are those who access the office more frequently.*

Graphic 2 – Correlation between Charlson score (of each single pt.) and number of accesses per year Univariated analysis - 1259 patients with Charlson Score calculated Correlation coefficient  $r = 0,33$  (95% CI = 0,28 - 0,38)  $r^2 = 0,111984$   $P < 0,0001$

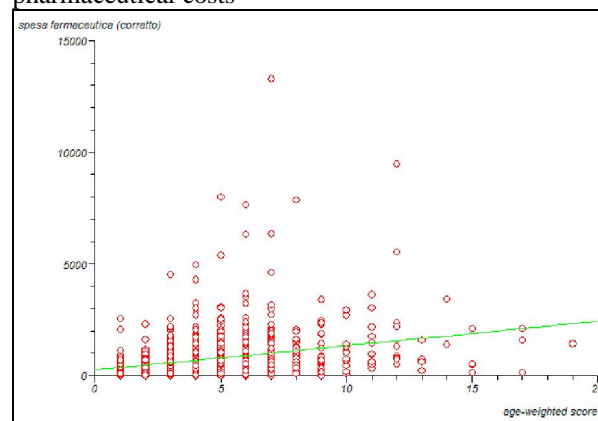


Graphic 3 illustrates, for the entire case report, the regression between the regression Charlson

Comorbidity Index (CCI) values and the yearly pharmaceutical costs (expressed as cost of the pharmaceutical prescriptions per-capita in 2005) in a model of univariated analysis

*The patients with higher CCI score values are those responsible for the higher cost values*

Graphic 3 - Correlation between Charlson score and pharmaceutical costs



Univariated analysis - 1259 patients with Charlson Score calculated Correlation coefficient ( $r = 0,277015$ ) (95% CI = 0,222388 - 0,329909)  $r^2 = 0,076738$   $P < 0,0001$

## Proposal of a theoretical model of resource allocation in correlation to the Charlson Index and the presented data

We will now illustrate a theoretical model for resource allocation based on the definition of the individual Case-Mix. The model foresees that the costs disbursed/allocated for the entire pool is “appropriate”.

**Table 4** illustrates the pharmaceutical cost values observed per single GP, the “expected” values on the basis of the respective Case-Mix and the deviation value observed/expected values.

	Case Mix Individuale = Contributo % al Case Mix del gruppo	Spesa Farmaceutica osservata nel 2005 (in euro)	Spesa Farmaceutica attesa in base al case-Mix = (spesa complessiva del pool) x (Case Mix individuale)	Scostamento (Spesa osservata) / (Spesa attesa)
Medico A	0,497605959	497316	609592,6	0,81
Medico B	0,16385884	152633	200735,4	0,76
Medico C	0,175563043	297002	215073,6	1,38
Medico D	0,162972158	278100	199649,2	1,39
SOMMA	1	1225051	1225051	1

*On the basis of the analysis model used by GPs C and D they present a pharmaceutical resource consumption superior to the one “expected”*

## Conclusions

The analysis model proposed proves that a “prescription appropriateness” based on the definition of individual Case-Mix can even distort the results of an analysis based on the simple deviation from the “average” cost or consumption values.

In our experience, the Charlson score can be correlated to the use of health resources. The correlation was good both experimenting the use of resources through

different indirect methods (= [number of accesses]), and expressing the use of resources using a format [pharmaceutical cost].

The collection of the necessary data from the professional databases to calculate the age-adjusted Charlson Index with SQL, was an easy procedure that can be used on a large scale. The small number of GPs was compensated by the systematicity of the evaluation of the Charlson index and respective cost, per each patient. A potential distortion of the results of our pilot study could be provoked by a difformity in the recording quality.

Although this results isn't probable in our case, because the 4 GPs belonging to the Group Medicine core, had already shown an optimal codification uniformity in the past. I.e. an analysis of historical data from the 4 GP's database showed that 98% of the 1180 patients with hypertension had been correctly codified on the basis of the ICD9 classification [10]. Eventually, we proposed a Case-Mix indicator based on the definition of the Case- Mix contribution percentage per single GP respect to the Case- Mix of the entire pool. The indicator also takes into account the only usual consideration of health authorities (age). In absence of a reference standard we used as denominator, to create the "*individual specific welfare load*" (see our definition of Case-Mix), the sum of the scores recorded of all patients in the entire pool. We hope that the extension of this experience to broader case histories

will allow a more reliable use of this Case-Mix measurement method. It's evident that an allocation system based on the illustrated models foresees that overall resource allocation to the entire pool is "appropriate". Even with the limits of this supposition, an allocation method based on the definition of the complexity of individual case histories, is clearly more reasonable that the one usually used in company contracts or General Practice regional contracts, where case history evaluation is carried out exclusively per age, gender and, only in some realities, per prescription charge exemption type. If the method were experimented on GPs with a good professional performance, Case-Mix considerations could be used to define the "prescriptive appropriateness standard" accurately adjusted on the complexity of the case histories. In this perspective, an extensive experimentation of the method could involve, at least in the beginning, GPs that are *certainly* characterized by good professional performance, where this is validated in audit experiences concerning critical points of primary welfare. An extensive experimentation of the method implies a great uniformity in the codification processes of the pathologies in the professional databases. This <structure criteria> could represent an object of negotiation in company agreements: it is in fact in our opinion, an element to include in medium term strategies to reach welfare quality.

#### Ponderazione del consumo di risorse in base al case- Mix

	n. assistibili	Score Globale CCI = Somma CCI scores registrati per ogni MMG	Case Mix Individuale = Contributo % al Case Mix del gruppo = (Somma scores CCI medico) /(Somma scores CCI gruppo)
Medico A	1598	2806	0,497605959
Medico B	812	924	0,16385884
Medico C	1182	990	0,175563043
Medico D	1352	919	0,162972158
somma	4944	5639	1

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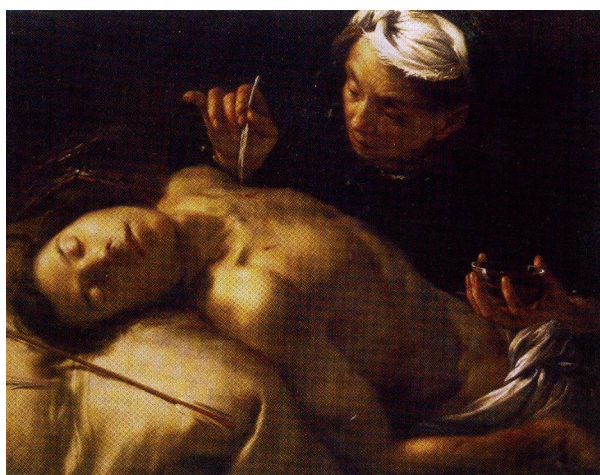
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**“DATA MINING” QUALITY FUNCTIONS AND STATISTICS IN 12 COMPUTERIZED CLINICAL RECORDS OF ITALIAN GPs**

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The experience with the Netaudit Italian group ([www.netaudit.org](http://www.netaudit.org)) was possible in the last 5 years thanks to the establishment of a software for quality clinical records in Italy: in particular the GPs that adhered with greater frequency to netaudits were those with softwares having clear codification systems for single diagnostic codes, examinations and therapies, having an extraction function from the database and Audit. Throughout these 5 years we noticed that, with reference to these technical abilities, not all softwares are the same. On the other side, in a great number of courses and conferences on General Practice audits, authors realized that, even when present, the statistical parts and Audits are often the less used by GPs. From these observations we decided to organize a practical test to “evaluate” codification functions, database extractions (Data Mining), statistics and audit.

**Aims**

1. record the presence of Data Mining functions and Quality degrees for Audits in different softwares for computerized clinical records, in order to create a minimum quality standard for the greatest number of softwares possible
2. increase the number of GPs that use the statistical sections and Audit of their computerized clinical records.

**Phases and articulation of the first field test**

In autumn 2004, after having obtained the consensus of the Local Health Unit 6 of Thiene (Vicenza) managers, we organized meetings both with the General Practice trade union managers and with GPs that had expertise in informatics and of computerized clinical records belonging to that Local Health Unit. Consequently, we planned an original practical test, created around 14 practical tests in two 4 hour sessions, in which we analysed the most used softwares. Each program was presented and tested thanks to the expert GPs involved, focusing specifically on data extraction, statistical and Audit functions. In the test carried out in Thiene the following softwares were evaluated: *Docteur; Iatros; Pico; Profim; Medico 2000; Phronesis; Accu.*

In a following phase, between the end of 2004 and the first months of 2005, the same test was used to evaluate other softwares with expert GPs from the province of Verona. In particular, in this 2<sup>nd</sup> phase the following softwares *Cartella Clinica* (Bracco), *FPPF* (Fournier), *Informedica* (Janssen), *Millewin; Perseo* (Menarini) were evaluated. Points were assigned to the first two authors, chosen as experts by the managers of the Local Health Unit 4 for their management roles in General Practice quality verification experiences. The 12 softwares involved in this test were the most used by GPs, both in the Veneto Region and in Italy; 5 of these softwares analysed are sponsored by a pharmaceutical industry.

**Results**

As for the single tests (Table) the test punctually evaluated some Quality Indicators relating to Audits and Epidemiological Research.

In particular:

- a) the presence of an online Help function;
- b) the presence of a disease and problem (ICD) classification system (ICD) and/or problems (ICPC);
- c) the possibility of extracting a list of patients affected by codified pathologies with a single code;
- d) the possibility of extracting a list of patients affected by codified pathologies with a sequence of codes (“ranges”; i.e. all patients suffering from hypertension with ranges from 401.0 to 401.9);
- e) the possibility of extracting a list of patients affected by pathologies codified with more than one combination of codes with Boolean phrases, i.e. with AND, OR and parenthesis;
- f) the possibility of combining diseases with the presence of diagnostic tests and an eventual numerical threshold;

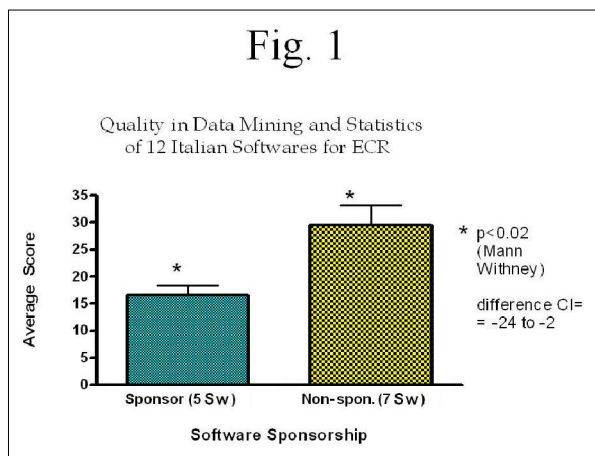


- g) the extraction of patients in therapy with a determined drug;
  - h) the extraction of patients in therapy with a class of drugs (i.e. diabetic patients treated with one medication in the “ACE-i” class);
  - i) the possibility of extracting data using fields in which SQL phrases can be inserted, allowing a fast diffusion of a netaudit practice among hundreds of GPs
- Each one of these items were evaluated on a Quality ordinal number scale with values from 1 to 4 (scarce; insufficient; sufficient; good). The first two expert authors were given a score respectively as Netaudit Director and SIQUAS National Vice President (Italian Society for Welfare Quality).*

NOTA: Il punteggio per ogni Item va da un minimo di 1 ad un massimo di 4 (1=scarso; 2=insufficiente; 3=sufficiente; 4=buono)

Software	A	B	C	D	E	F	G	H	I	L	M	N
Sponsorizzato	NO	NO	NO	NO	NO	NO	NO	SI	SI	SI	SI	SI
Help in linea	1	1	4	3	1	1	4	1	2	2	1	2
Codifica problemi	4	3	3	3	3	3	3	3	3	3	1	2
Estraz. 1 Cod. Diagn.	4	4	4	4	4	1	4	1	4	3	2	3
Ranghi Cod. Diagn.	2	4	3	4	1	1	4	1	1	1	1	1
AND OR Cod. Diagn.	2	4	4	4	2	1	4	1	1	1	1	2
ICD AND test eseguiti	2	3	4	4	3	1	4	1	2	1	1	1
Icd e valore numer. super. o inf. a..	2	3	4	2	1	1	4	1	2	1	1	1
2 diagn e 1 risult di un test	1	1	4	1	1	1	4	1	1	1	1	1
Estrarre paz. con nome scient farmac.	4	4	4	2	4	1	4	1	3	4	2	1
Estrarre paz con classe terapeutica	4	2	4	1	1	1	4	1	2	1	1	1
Maschera Estraz SQL	1	3	1	1	1	3	4	1	1	1	1	1
Totale	27	32	39	29	22	15	43	13	22	19	13	16

As you can see in the table there was a great variability among the 12 softwares. In the figure you can see, regarding Data Mining functions that there is a trend that goes significantly higher in non-sponsored programs (median 29; average 29.6) respect to the ones sponsored by pharmaceutical industries (median 16; average 16.6), with a significant difference ( $p < 0.02$ ) in the Mann-Withney Test and Confidence Interval of the score difference from -24 to -2. But also in the same class of non-sponsored softwares the variability was vast (Coefficient of Variation 32%).



### Conclusions

This is the first comparative study that we know of regarding Data Mining ability in Italian computerized clinical records; however, at international literature level, there are a few works that take into consideration quality at the basis of the data and the different types of Hardware in General Practice (1), but it is very hard to find equivalent studies oriented specifically towards Data Mining and Audit functions in computerized

clinical records for GPs. Therefore, this study could have a trailblazer function in Italian and European General Practice used to plan 2<sup>nd</sup> level studies that have, together with evaluating GPs, a contemporary presence of informatics with good references and maybe also the presence of the same software companies. Another study would be useful to evaluate the latest versions of these softwares taken into consideration, which after 1-2 years maybe have undergone significant changes. Besides the evaluation of the study's design, we want to consider a few other matters. General Practice computerization is seen as a value that cannot be renounced. Although the strong lure could stimulate myths (i.e. *“the Pc and its software have an intrinsic and “indisputable” quality value”*). A computerized clinical record is often seen by its owner, who has been using it for years, as a sort of “pet”, with which he has created strong mutual emotional relationship. In point of fact, this study shows that there is a great variability in the functions of the different softwares, in particular regarding the ability of Data Mining and statistics. This should encourage GPs to maintain a vigilant rational objectivity towards “their” software, the companies that produce them, and sponsors. Moreover, from the data comes another possibility: it seems that private sponsoring industries tend to define and improve “current” functions (prescriptions; clinical data filing) more than strategic ones of GP audit. Non-sponsored software is linked to bigger General Practice groups (Cultural Societies, Cooperatives), which per statutory mandate have the responsibility of sustaining Audit and research in General Practice; all this should explain at least in part the scores in Data Mining functions. But beyond the antinomy Sponsor/Non sponsor, a rational objectivity is useful to share the slogan: *“in the growing discipline of contemporary GP, all softwares can/must improve, including the best”*. The circuit activated by this Test – carried out by GPs referent of the softwares, Audit experts, institutional referents – could give an impulse on one side, to a quality control on softwares used in General Practice, on the other side, to develop Audit and Netaudit experiences in General Practice, since they have a significant importance in qualifying contemporary General Practice and binds incentives to GPs for valid projects/aims having a social utility.

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