

Croatian Pharmaceutical Sector Reform Project: Rational Drug Use

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The Croatian Pharmaceutical Sector Reform Project was one component of a larger Health Reform Project financed by the World Bank. The Croatian government was concerned that Croatia appeared to spend more money on medicinal drugs than most other countries in the region; that the price of drugs purchased in Croatia was higher than in some other countries, and that the prescribing habits of some Croatian physicians were perceived to be unnecessarily expensive. In addition, the Croatian Institute for Health Insurance (CIHI), which pays for most health care, had come under considerable financial pressure due to increasing health expenditure and a decreasing proportion of the population contributing to insurance.

The Australian Health Insurance Commission won the contract for the pharmaceutical reform project. Australian experts were matched with Croatian experts in order to share knowledge, learn from each other, and provide the best advice. The project had two main components. The first addressed supply side issues and provided advice about savings that could be made by incorporating pharmacoeconomic principles into the selection and purchase of drugs on the Croatian positive list. The second component addressed demand side issues and provided advice aimed at evaluating and improving the quality and effectiveness of drug prescribing by Croatian physicians.

This paper describes the second project component. We quantitatively and qualitatively evaluated the prescribing practice of Croatian physicians and ascertain how these might be improved. Croatian general practitioners are required to enter an International Classification of Diseases, 10th Revision (ICD10) diagnostic code on their prescription in order to indicate the clinical problem being treated. Quantitative research involved sorting CIHI prescription data for 2002 into ICD10 diagnostic categories and comparing the drugs prescribed for particular conditions with the recommendations in local and international best-practice guidelines. The results showed a number of areas where the prescribing of Croatian general practitioners and specialists could be improved, such as the use of antibiotics in upper respiratory tract infections and the treatment of hypertension. Qualitative research involved a series of workshops with local pharmacological experts and general practitioners during which the collected prescribing data was discussed, local factors which influenced prescribing were explored, and suggestions for improvement were collated. Many general practitioners felt pressured by increasingly assertive consumers, relentless pharmaceutical promotion, and strident government (CIHI) demands to restrain escalating health care costs. In addition, there was a lack of information about what constituted cost-effective treatment appropriate to the Croatian economic situation. There was support for the production of concise Croatian therapeutic guidelines that provided a limited number of best-practice treatment options for common conditions. A pilot set of such guidelines was devised and incorporated into a clinical software trialed in a Primary Health Care Information Technology Project in Koprivnica. This initiative received support from the general practitioners involved. It was recommended that a unit for the quality use of medicines should be set up to sustain the production of therapeutic guidelines and coordinate this activity with related initiatives. In addition, a quality assurance system (including performance indicators linked to financial incentives) was recommended that would encourage general practitioners to practice in accord with guidelines. We understand that the Croatian government has accepted a number of these recommendations and, in particular, performance indicators (and financial incentives) are written into new contracts for Croatian general practitioners in 2004.

Key words: *drug utilization review; insurance, health; practice guidelines; quality assurance, health care*

All countries face similar problems in health care – how to achieve evidence-based best-practice, appropriate to the financial resources of a country, in the face of rapidly expanding possibilities, rising consumer expectations and the increasing responsibility of governments to purchase health care wisely. This

general problem is often compounded by special interest groups, such as the pharmaceutical industry, who use their considerable resources to persuade health workers and consumers that the latest innovation should immediately be used for all, regardless of cost-effectiveness (1,2).

Croatia has the additional problem of being a country in transition from a command to a market economy. While some members of the public still expect that health care should be both free and a state responsibility (3), this is no longer considered economically sustainable. In common with other countries in the region, Croatia has embarked on a series of health reforms to address these problems. The aim is to create a financially sustainable health system that continues to provide equitable access to all, but one in which the public is more directly involved in financing through health insurance contributions and copayments. In addition, the reforms are designed to encourage the private sector to play an increasing role in the delivery of health care although the public sector will still remain dominant (4).

The Pharmaceutical Sector Reform Project was one component of a Croatian Health Reform Project financed by the World Bank. The government was concerned that Croatia appeared to spend more money on medicinal drugs than most other countries in the region, that the price of drugs purchased was higher in Croatia than in some other countries, and that the prescribing habits of doctors were often perceived to be unnecessarily expensive.

In late 2002, the Australian Health Insurance Commission (HIC) won a World Bank contract to advise the Croatian Ministry of Health and the Croatian Institute for Health Insurance (CIHI) on pharmaceutical reform. Australian medicinal drug policy is held in high regard internationally. In particular, their 55-year old Pharmaceutical Benefits Scheme (5) is world renowned for subsidizing the majority of the cost of around 600 necessary drugs for Australian consumers and using stringent pharmacoeconomic analysis to negotiate low drug prices. For example, drug prices in the USA are 2-3 times higher than Australian prices negotiated by the Pharmaceutical Benefits Scheme, while drug prices in Canada and Sweden are around 50% higher than Australian Pharmaceutical Benefits Scheme prices. In addition, the Australian Quality Use of Medicines (6) policy encourages rational prescribing (and use) by the provision of independent therapeutic guidelines, feedback of drug utilization data, and educational programs run by their National Prescribing Service (7).

The drug budget of all countries is the sum of two components: the price of drugs and the volume used. Accordingly, the pharmaceutical reform project had two main components. The first addressed supply side issues by conducting research and providing advice about incorporating pharmacoeconomic principles into the selection and purchase of drugs on the Croatian national subsidized list. The second component addressed demand side issues by conducting research and providing advice aimed at improving the quality and effectiveness of drug prescribing by physicians.

This paper focuses on the second component of the project: rational drug use. After briefly outlining the health system and prescribing environment in Croatia a number of research questions were addressed by both quantitative and qualitative method-

ologies. Were there discrepancies between Croatian prescribing habits and best-practice recommendations? What local factors influenced prescribing? How could the Croatian situation be improved (this included devising a pilot set of therapeutic guidelines and assessing their acceptability). Finally, recommendations were made concerning the sustainability of rational drug use initiatives in Croatia.

Croatian Health System and Prescribing Environment

The health sector in Croatia is predominantly funded by a universal government insurance scheme administered by CIHI. This scheme provides free access to primary health care providers and free hospital in-patient treatment. Outpatient treatment is based on a fee-for-service and prescriptions attract various levels of co-payments. More recently, voluntary supplementary health insurance was introduced by CIHI, allowing patients to cover increased co-payments and selected additional services.

In the year 2000, for a population of 4.38 million people, primary health care was provided primarily by 2,419 general practitioners, one third of who had specialist training in general practice/family medicine. Patients in urban areas also had additional access to specialized primary care providers (277 pediatricians for children under the age of seven and 225 gynecologists for women during pregnancy and for general gynecological problems). Emergency care, dental care, medical care for school children, and occupational medicine, were also included within the primary care network.

Primary health care providers have individual contracts with the CIHI and are paid on the basis of risk-adjusted capitation (e.g. children under the age of 7 and adults over the age of 65 attract more than twice the payment of youths aged 7-17). The average size of a general practitioner's list in 2000 was 1,584 patients, who each had on average 5.9 consultations per year. A prescription was issued in almost 70% of all general practitioners consultations.

Only primary care physicians working in the public sector under a contract with the CIHI are able to prescribe drugs reimbursed by the CIHI. Specialists are not permitted to prescribe and can only make recommendations to the primary care physicians with respect to the required medication needs.

Secondary care is provided through general and specialized hospitals as well as University hospitals. Secondary care is reimbursed by charges for outpatients and capped budgets provided by the CIHI for inpatient care.

In recent times, CIHI has come under considerable financial pressure due to growing health expenditure and a decreasing proportion of the population contributing to insurance. Expenditure by CIHI increased from 5.6 billion HRK (€750.7 million, US\$ 921.1 million) in 1994 to 14.0 billion HRK (€1.9 billion, US\$2.3 billion) in 2000, an increase of 2.5 times in five years. At the same time, the number of insured employees (those who paid contributions) decreased

and the number of those who did not contribute to insurance (dependants, retired, unemployed, and socially vulnerable) increased. In 1990, there were 38 retired per 100 employed but by 1999 there were 74 retired per 100 employed persons. In addition, the unemployment rate increased to 22% in 2000. The end result was that in 2000, only 33% of the population paid insurance contributions (8).

This situation was exacerbated in 2000, when the government lowered the payroll tax from 18% to 16% and the public insurance fund found itself in debt. The arrears stood at approximately 2.5% of gross domestic product (GDP) at the end of 2000 and by September 2001 were increasing by an estimated 1.5 billion HRK (€201.1 million, US\$246.7 million) annually (about 10% of the overall CIHI revenues) (8).

CIHI took two actions to arrest this growth; budget caps for hospital care and higher co-payments for pharmaceuticals, diagnostic tests, and a range of other services. CIHI then offered a supplemental health insurance package to cover the new copayments, partially offset by a tax refund for individuals or employers who purchased the package. In addition, for the unemployed, the new supplemental health insurance premium could be partly or entirely picked up by the local (county) governments. The supplemental health insurance package also covered the purchase of brand-name drugs over generics and high-end services in private facilities (9).

The hospital budget cuts were criticized on the grounds that they simply increased queues for high-cost procedures rather than encouraging increased efficiency. The supplemental insurance package was also criticized as a public finance "sleight-of-hand" trick that generated new revenues for CIHI at the expense of Treasury and local government while doing nothing to control the overuse of services and pharmaceuticals and the inefficient allocation of resources.

Pharmaceuticals have averaged around 15% of CIHI expenditure over the years 1997-2000 (Table 1). In Croatia, after a medicinal drug is registered (a process overseen by the Ministry of Health), the pharmaceutical company involved can make an application for listing on the CIHI list of subsidized drugs. The CIHI Positive List Committee reviews these submissions and uses its expert judgment as to what is reasonable evidence that the drug is effective and has the required cost-benefit. If listed, CIHI determines a co-payment that differs according to both the class of insured and the class of drug. Another component of the pharmaceutical project studied the listing and pricing process and, while important, this aspect will not be further commented upon in this paper which focuses on Croatian prescribing practice.

Table 1. Distribution of health care expenditure (% of total) by the Croatian Institute for Health Insurance, 1997-2000

Expenditure	1997	1998	1999	2000
Primary health care	18.6	16.9	16.6	16.2
Drugs	15.5	17.1	12.9	15.9
Outpatient care	11.5	13.2	14.3	14.2
Inpatient care	29.8	30.5	36.3	30.3
Other	24.6	22.3	19.9	23.4

In 1990, in order to contain prescribing, CIHI capped the number of prescriptions that primary care physicians were able to issue to five prescriptions per patient per year. Nevertheless, according to CIHI figures in 1997, the average number of prescriptions per insured was about 5.5. It appeared that if a doctor was going to exceed the quota, he or she only needed to apply to the CIHI for approval and this was nearly always granted.

In 1998, CIHI went further and imposed a limit on the annual expenditure on prescribed drugs according to an age-based patient profile for each physician. The budget formula was 281 HRK (€37.7, US\$46.2) per patient under 65 and 843 HRK (€113.0, US\$138.7) per patients over the age of 65 years. General practitioners complained that such limits were inappropriate if their list contained a number of younger patients with chronic disease. In practice, however general practitioners appeared to be able to go over such budget limits.

In the primary care contract for the year 2002, the CIHI introduced a new incentive where, if the primary care physician spent less than his CIHI budget limit, the physician would obtain a bonus which amounted to 25% of the total budget saving. Conversely, a penalty also applies and is calculated as 25% of the amount by which the budget limit is exceeded. Critics noted that while this incentive might achieve cost reductions in pharmaceuticals it could also compromise patient care by denying them access to necessary drugs and lead to higher costs elsewhere (for example, due to higher utilization of hospital services).

In short, at the time the pharmaceutical reform project was commenced there was continued concern by CIHI about health expenditure in general and drug expenditure in particular but considerable dissatisfaction among physicians and consumers about the measures taken to-date to restrain this expenditure. The task of the rational drug use component of the project was to determine if there were discrepancies between the prescribing habits of Croatian physicians and best-practice recommendations, what local factors influenced prescribing, and how prescribing practice might be improved (including the acceptability by general practitioners of succinct therapeutic guidelines).

Research Question: Were there Discrepancies between Prescribing Habits of Croatian Physicians and Best-Practice Recommendations?

Methodology

Prescribing data for 2002, collected by CIHI, was supplied to the project team for analysis. Croatian general practitioners are obliged by CIHI to add an International Classification of Diseases, 10th Revision (ICD10) code to their prescription to identify the clinical problem for which the drug was prescribed (otherwise the prescription cannot be dispensed). If a patient has several problems requiring the prescription of different drugs then these are required to be written

on different prescription forms, each with the appropriate ICD10 code.

All pharmacies are computerized and, in order to obtain reimbursement from CIHI, pharmacists regularly submit a floppy disk containing prescription information including ICD10 clinical diagnostic codes. This allowed CIHI to provide the pharmaceutical project with prescription data sorted by the diagnosis recorded by prescribers.

The quantitative research conducted involved sorting CIHI data of the drugs prescribed for a particular diagnostic code into descending order of frequency. A judgment as to whether prescribing was appropriate or inappropriate was made by comparing the most frequently prescribed drugs for each condition with evidence-based, best-practice recommendations; both Croatian (10,11) and international (12). Preliminary judgments were ratified by Croatian experts employed as consultants to the project (a team of 19 clinical pharmacologists, specialist physicians, and general practitioners).

Several caveats need to be applied to this data. First, ICD10 coding was not always done accurately by general practitioners. For example, some prescriptions coded as J02/J03 "Acute pharyngitis/tonsillitis" were found to contain antacids, insulin, or diuretics, presumably because the patient had several clinical problems. However, such findings were uncommon. Second, specialists could not write prescriptions for drugs on the CIHI positive list, they could only advise general practitioners on their recommendation; it was the general practitioner who wrote the script. Thus, a proportion of the prescriptions analyzed, especially for more complex problems such as hypertension,

would have originated from specialists, not general practitioners.

Results

Table 2 shows the commonest drugs prescribed for the diagnosis of common cold (ICD10 code J00) by Croatian general practitioners in 2002. Antibiotics accounted for 28% of all packs prescribed and 40% of the costs. Antibiotics are not indicated for the treatment of common colds as this condition is caused by respiratory viruses which antibiotics are not active against.

Calculations showed that if less than 5% of all prescriptions for the common cold were antibiotics (currently 28%) and symptomatic treatment was substituted the annual cost savings were estimated at 400,000 HRK (€53,619.3, US\$65789.5) (a 12% saving of the total treatment costs for this condition). These calculations assume that the cheaper phenoxymethylpenicillin (not currently available in Croatia) is substituted for benzathine-phenoxymethylpenicillin at the Australian price.

Table 3 shows the antibiotics prescribed for a diagnosis of acute tonsillitis and pharyngitis (ICD10 code J02 and J03) by Croatian general practitioners in 2002. Broad-spectrum antibiotics accounted for 85% of all antibiotics prescribed. Broad-spectrum antibiotics are not required to treat *Streptococcus pyogenes* (the usual causative organism of bacterial tonsillitis); they are more expensive, more likely to produce side-effects, and more likely to select resistant organisms. Similar results have been published from Croatia previously (13). If 80% of all antibiotics prescribed for sore throat were narrow-spectrum antibiotics (currently only 15%) the annual cost savings were es-

Table 2. Prescribing data for general practitioners for prescriptions with the diagnosis of common cold (ICD10 code J00) in 2002*

Most popular drugs for common cold	Packs	% of packs	Total cost (HRK)	% of cost	Average unit cost
Ephedrine	40,046	26.42	272,394.29	7.57	6.80
Butamirate citrate	35,096	23.15	1,130,914.63	31.43	32.22
Pholcodine	22,992	15.17	591,918.94	16.45	25.74
Amoxicillin	12,356	8.15	226,313.54	6.29	18.32
Sulfamethoxazole + trimethoprim	8,077	5.33	89,666.90	2.49	11.10
Cefalexin	7,781	5.13	254,732.73	7.08	32.74
Paracetamol	7,230	4.77	52,423.44	1.46	7.25
Amoxicillin + clavulanic acid	6,705	4.42	496,175.14	13.79	74.00
Loratadine	4,155	2.74	113,140.77	3.14	27.23
Azithromycin	3,647	2.41	309,369.60	8.60	84.83
Neomycin + bacitracin	3,502	2.31	61,356.79	1.71	17.52
Total	151,587	100.00	3,598,406.77	100.00	30.71

*Source: Croatian Institute for Health Insurance. 100 HRK=€13.4, US\$16.5.

Table 3. Antibiotic prescribing data for prescriptions with the diagnosis of acute tonsillitis, or/and pharyngitis (ICD10 codes J02 and J03) in 2002*

Most popular antibiotics used for acute tonsillitis and pharyngitis	Packs prescribed	% of packs	Total cost (HRK)	% of costs	Average unit cost (HRK)
Amoxicillin	441,087	30.6	8,138,525.16	11.9	18.46
Amoxicillin + clavulanic acid	291,598	20.2	22,524,160.26	33.0	77.93
Benzathine phenoxymethylpenicillin	212,040	14.7	10,764,772.95	15.8	50.81
Cefalexin	202,719	14.0	6,968,773.34	10.2	34.40
Azithromycin	142,989	9.9	12,869,983.45	18.9	90.69
Sulfamethoxazole + trimethoprim	60,073	4.2	656,007.43	1.0	10.91
Cefuroxime	49,177	3.4	3,113,840.62	4.6	64.03
Ceftibuten	22,343	1.5	2,476,712.29	3.6	110.56
Cefadroxil	11,826	0.8	384,710.59	0.6	32.72
Erythromycin	9,888	0.7	306,772.18	0.4	30.83
Total	1,443,740	100.0	68,204,258.27	100.0	52.134

*Source: Croatian Institute for Health Insurance. 100 HRK=€13.4, US\$16.5.

Table 4. Prescribing data for prescriptions with the diagnosis of hypertension (ICD10 code I10) in 2002*

Most popular drugs prescribed for hypertension	Packs prescribed	% of packs	Total cost (HRK)	% of costs	Average unit cost (HRK)
Lisinopril	1,308,134	19.3	87,883,505.70	27.2	67.18
Amlodipine	948,580	14.0	45,480,771.89	14.1	47.95
Atenolol	891,912	13.1	19,265,273.83	6.0	21.60
Lisinopril + hydrochlorothiazide	621,605	9.2	58,670,324.21	18.1	94.39
Doxazosin	507,428	7.5	34,303,266.63	10.6	67.60
Short-acting nifedipine	500,826	7.4	11,995,116.60	3.7	23.95
Chlortalidone	441,984	6.5	4,792,823.71	1.5	10.84
Cilazapril	433,403	6.4	30,446,699.48	9.4	70.25
Verapamil	431,596	6.4	10,833,955.92	3.4	25.10
Furosemide	353,493	5.2	3,865,048.37	1.2	10.93
Lacidipine	347,938	5.1	15,831,984.67	4.9	45.50
Total	6,786,899	100.0	323,368,771.01	100.0	47.65

*Source: Croatian Institute for Health Insurance. 100 HRK=€13.4, US\$16.5.

timated at 8 million HRK (€1.1 million, US\$1.3 million) (a 13% saving of the total costs for treating tonsillitis and pharyngitis).

Table 4 shows the drugs prescribed for the diagnosis of hypertension (ICD10 code I10) by Croatian general practitioners in 2002. When we reviewed the 11 most frequently prescribed drugs for this diagnosis we found that diuretics only accounted for 12% of prescriptions and about 1.5% of the cost, yet both local and international guidelines recommend that diuretics should be the drugs of first choice for treating hypertension. Our calculations showed that if 40% of prescriptions for hypertension were for diuretics the annual cost savings would be 75 million HRK (€10.1 million, US\$12.3 million) (a 23% saving of the total treatment costs for this condition).

In addition, Table 4 shows that in 2002 doxazosin accounted for 7.5% of all packs prescribed for hypertension in Croatia and 10.6% of the cost. Yet in January 2000, the doxazosin treatment arm of the large "ALLHAT" trial (13) was stopped due to a statistically significant higher incidence of major cardiovascular disease events with doxazosin compared to chlortalidone alone. This information does not appear to have been well communicated to Croatian physicians.

Research Question: What Local Factors Influenced Prescribing and How Might the Situation Be Improved?

Methodology

Qualitative research to address these issues involved a series of workshops with local consultants (n = 19) and general practitioners (n = 200) in Zagreb, Dubrovnik, and Rovinj. During these workshops, the CIHI prescribing data was discussed, local factors which influenced prescribing were explored, and suggestions for improvement were collated. Participants were also encouraged to record their thoughts on these topics on a semi-structured data collection form. This information was used to supplement the key themes summarized during the discussion.

Results

Local factors influencing prescribing. Workshop participants agreed that the current Croatian pharmaceutical system provided few incentives to either providers or patients to utilize pharmaceuticals wisely.

Although CIHI has introduced a number of blunt mechanisms to reduce physician's prescribing (and thus contain the drug budget) these have not encouraged physicians to prescribe in a more cost-effective manner. The recently introduced supplementary insurance package has also encouraged the prescription of more expensive brand-name drugs compared to generics and allowed many patients to escape the restraining influence of co-payments.

In addition, many general practitioners felt pressured by increasingly assertive consumers who "demanded" particular treatments and some believed that the capitation system (by rewarding large patient lists) encouraged doctors to comply with these treatment expectations. The end result was that inappropriate medicine could be prescribed (14).

Furthermore, in Croatia as in other countries, it was noted that it was hard for busy physicians to keep up-to-date. The problem was not that there was too little information but there was too much and it was often conflicting. The pharmaceutical industry was the main source of this information overload and it was understood that these companies are mainly interested in promoting their latest (and usually expensive) drugs. There was a lack of independent information about what constituted cost-effective prescribing appropriate to the Croatian economic situation.

How Might Croatian Situation Be Improved?

There was support by workshop participants for the measures listed below:

- Regular distillation and dissemination of best-practice therapeutic information (guidelines, formulary, drug bulletin, consumer information, etc) by independent experts.
- Programs in evidence-based medicine, critical appraisal, and rational prescribing for undergraduate, postgraduate, and continuing medical education.
- Feedback of drug utilization data to health professionals with relevant educative campaigns.
- More ethical and less extensive pharmaceutical promotion.
- General practitioner computer systems incorporating electronic medical records, best-practice drug and therapeutic information including drug-drug interaction checking and patient information.
- Best practice prescribing performance indicators linked to financial incentives.

- Greater involvement of pharmacists in the medication process.
- Greater involvement of consumers through public education campaigns.

Production of a Pilot Set of Succinct Therapeutic Guidelines

Several groups such as the Ministry of Health (15), the Croatian Medical Chamber (16), and others (17) had done some work in the guideline area. However, there had been little coordination between the various groups involved, great variation in the guideline formats produced and no overall plan for dissemination and sustainability of the process. As part of this project the combined team of Croatian and Australian experts was asked to develop a prototype set of 30 succinct therapeutic guidelines in both print and electronic formats.

While few Croatian general practitioners used computers to write prescriptions, the Ministry of Health had plans for the computerization of the primary care. This would ultimately link all general practitioner teams into a national health information network. Pilot general practitioner computer projects were being implemented in Koprivnica at the time of this project. This provided an opportunity to integrate pilot electronic guidelines on upper respiratory tract infections into the clinical software being evaluated and thus receive feedback from Croatian general practitioners about the utility of electronic therapeutic resources devised.

Methodology

A Guideline and Feedback Advisory Group of Croatian experts met on a number of occasions with their Australian counterparts to discuss the selection of diseases for primary focus, the approach to ensure local acceptance of the guidelines, and to give final approval for the 30 prototype guidelines developed. In determining which diseases to focus on, the Group was provided with Institute of Public Health data and also CIHI prescribing data for all prescribers for 2002. In addition, the following criteria were used to select the 30 conditions targeted:

- The condition is frequently seen in general practice.
- Prescribing is a significant component of management of the condition.
- There tend to be prescribing problems in managing the condition.
- The general practitioner has some control over prescribing choices.
- The ICD coding for the condition is unambiguous.
- Improvement in the management of the disease is measurable.

The final list of conditions addressed is shown in Table 5.

Croatian, Australian, and other international material were used as a starting point for the prototype guidelines, included patient information material. Project core personnel incorporated and edited the

Table 5. Common conditions for which prototype guidelines were written*

Alcohol abuse	COPD	Osteoporosis
Anxiety	Cystitis	Otitis media
Antidiabetic drugs	Depression	Overweight
Asthma	Dyslipidaemia	Peptic ulcer
Back pain	Heart Failure	Pharyngitis/ tonsillitis
Benzodiazepine abuse	Hormone replacement therapy	Prevention of cardiovascular disease
Boils and carbuncles	Hypertension	Prostatic hypertrophy
Bronchitis	Influenza	Rheumatoid arthritis
Cellulitis and erysipelas	NSAID-induced ulcers	Sinusitis
Common cold	Osteoarthritis	thyroid disease

*Abbreviations: COPD – chronic obstructive pulmonary disease, NSAID – nonsteroidal antiinflammatory drugs.

source materials and reviewed the draft text for consistency, content, and succinctness. The resulting draft was then reviewed by a Croatian specialist in each field. Suggested changes were discussed, and the decision to incorporate the suggestions was made by the guideline group. Questions for clarification which had arisen in the meantime were checked to determine if any of the queries need to be further addressed with the specialist, following their review. The original draft text was modified in light of the above feedback. Finally, the text was approved by the Guideline and Feedback Advisory Group.

Guidelines on upper respiratory tract infections were converted to electronic formats and incorporated into clinical software trialed in the Koprivnica Primary Health Care Information Technology Project (Figs. 1,2). Only qualitative feedback was assessed at this stage; a more formal evaluation aimed at establishing whether the incorporation of guidelines in prescribing software changes general practitioner prescribing habits is currently in progress.

Results

The qualitative feedback from general practitioners in Koprivnica was very positive. General practitioners appreciated the ease with which they could find recommendations to treat particular problems and they were pleased with the additional information provided about potential drug interactions and side effects. In particular, they liked the patient information pages which could be printed as an alternative to providing a prescription for conditions such as the common cold (Fig. 3).

Discussion

Many countries have discovered that in order to achieve evidence-based, best-practice, government in association with professional organizations must provide health workers with an independent quality assurance system. This system needs to regularly distil the scientific literature in order to define locally acceptable, succinct, and cost-effective best-practice guidelines; it must assist health workers to compare their own prescribing patterns with what is recommended and, where discrepancies exist, provide opportunities for reflection, targeted education, and in-



Figure 1. Pilot electronic therapeutic guidelines (prior to translation), showing the partners involved.

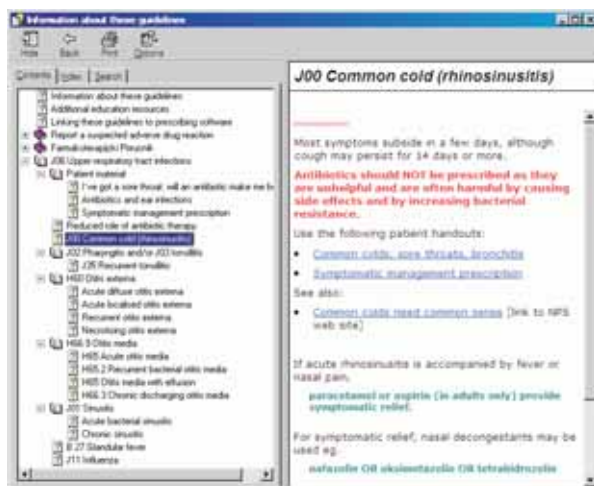


Figure 2. Pilot therapeutic guideline recommendations concerning the treatment of the common cold (ICD10 code J00), prior to translation.

centives to reduce the gap (18). These principles also need to be incorporated into undergraduate, post-graduate, and continuing education of health professionals as well as the clinical computer systems currently being developed in order to make, “the right choices the easy choices”. Finally, public educational campaigns are also needed because patients often request inappropriate drugs from their doctors, stimulated by the media reporting which is often uncritically sourced from the pharmaceutical industry (19).

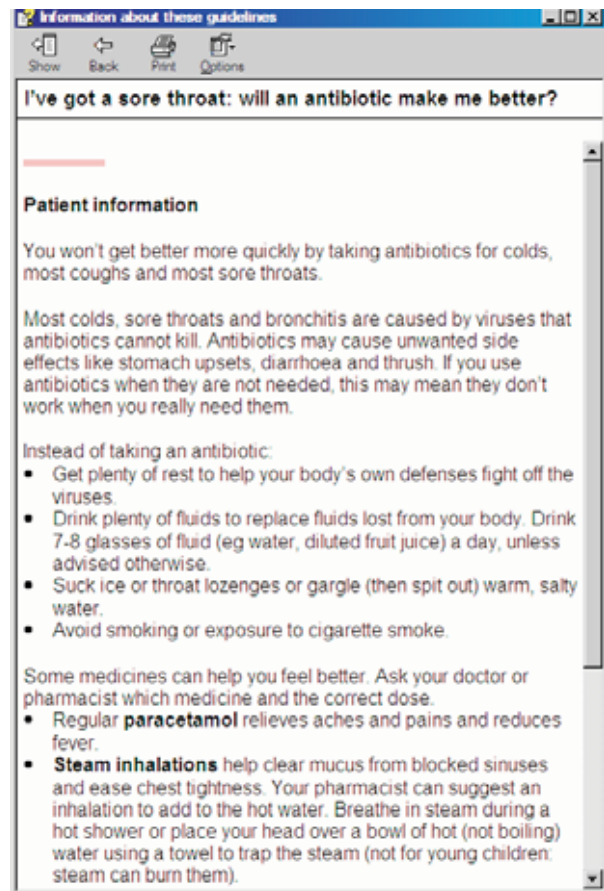


Figure 3. Patient information concerning the use of antibiotics in upper respiratory tract infections, prior to translation.

In Australia, this system has been implemented by the National Prescribing Service (NPS) and its partners such as Therapeutic Guidelines Limited. A number of National Prescribing Service’s evaluations have shown that spending money on coordinated rational drug use initiatives saves considerably more money by decreasing inappropriate prescribing (20).

We found that a number of the components for such a system existed in Croatia. With respect to therapeutic information there was the CIHI positive list of subsidized drugs, an excellent national formulary (21) and a world renowned national drug bulletin (22). The main missing resource was a national set of therapeutic guidelines containing a short list of cost-effective drug and non-drug treatments for the common diseases encountered in the country.

The project was tasked with developing treatment guidelines for only 30 of the most common and important disease areas. There is a need for additional topics to be covered and also for the guidelines to be updated at regular intervals given the introduction of new drugs, new information about old drugs, changing patterns of drug usage, bacterial resistance, etc.

The project recommended that a Quality Use of Medicines Unit should be set up to sustain the production of therapeutic guidelines and coordinate this

activity with other Croatian drug information and educational resources.

Mechanisms that allow health workers to compare their own prescribing with best-practice recommendations are also largely undeveloped in Croatia. However, the basis of such a system is present in the prescribing data currently collected by CIHI. In this area, Croatia is ahead of many countries in that general practitioners are required to add a diagnostic code to each prescription. The potential for using this data for peer review, targeted education and best-practice performance indicators linked to financial incentives is clear. This work could be done by the Croatian Institute for Public Health. For example, given a diagnosis of common cold, if less than 5% of particular general practitioners prescriptions were for antibiotics (currently averaging 28%) then the general practitioners could be awarded good prescribing points which could ultimately be translated into a financial

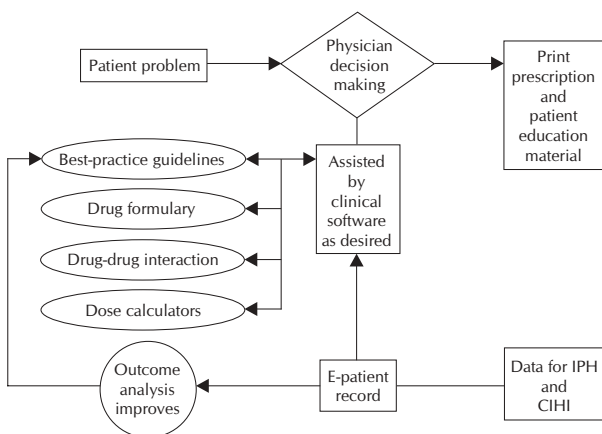


Figure 4. Knowledge management added to computerized prescribing. IPH – Institute of Public Health; CIHI – Croatian Institute for Health Insurance.

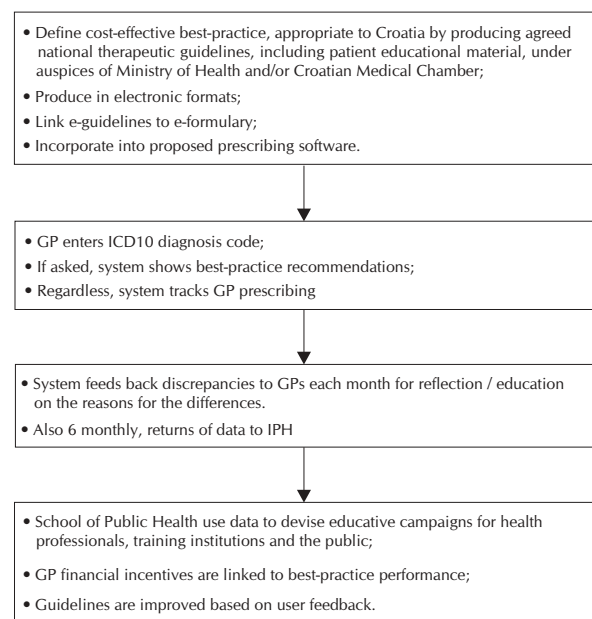


Figure 5. The pharmaceutical utilization strategy proposed is based on the following quality assurance cycle. PH – public health; GP – general practitioner.

bonus by CIHI. A general practitioner computer system incorporating up-to-date information resources and performance monitoring would encourage best-practice and provide an objective means for rewarding general practitioners with bonus payments (Fig. 4). The project made a number of recommendations along these lines.

Finally, there is considerable expertise in public education available in Croatia, for example in the Andrija Štampar School of Public Health, although this has yet to be tapped to improve pharmaceutical utilization. Other countries have devised relevant campaigns that could readily be modified to suit local conditions (23).

The recommended quality assurance system that would bring all these elements together is shown in Figure 5 (below) with the possible role of various partners shown in Figure 6. We have suggested that role played by HIC in this project now needs to be taken over by a Quality Use of Medicines Unit funded by CIHI and/or the Ministry of Health.

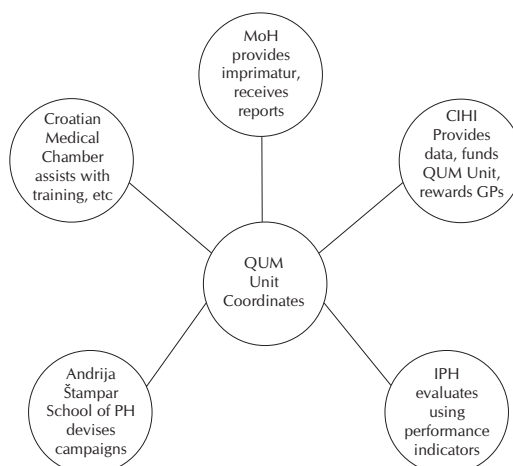


Figure 6. The suggested role of the partners to sustain the project. MoH – Ministry of Health; CIHI – Croatian Institute for Health Insurance; QUM – Quality Use of Medicines; GPs – general practitioners; PH – public health; IPH – Institute of Public Health.

Conclusion

Physicians have conflicting responsibilities: to do the best they can for their patients, but also to use society’s resources responsibly. In the face of this conflict, doctors often favor providing all the treatment they can to the patient before them. It is understandably difficult for doctors to deny treatment to any of their patients, whose identity and circumstances are known to them, in favor of citizens nationally, most of whom the doctor will never meet. In addition, the pharmaceutical industry is extremely active in informing physicians of the latest (but not necessarily the most cost-effective) therapeutic possibilities available.

Given these pressures, it is crucial that governments (and health insurance agencies) invest money in setting up appropriate quality assurance systems to assist physicians to practice in a cost-effective and ef-

ficient manner. Information technology has a crucial role to play in this regard. By providing health workers with easy access to up-to-date best-practice information it can make the "right choices the easy choices", by monitoring performance indicators it can encourage general practitioners to practice wisely, and by linking general practitioners and therapeutic experts together dilemmas can be shared, problems solved, and guidelines updated and improved.

We believe that the quality assurance measures outlined in this paper will not only assist Croatia to achieve more cost-effective prescribing but will also provide a valuable model for the region. We understand that the Croatian government has already accepted a number of the project recommendations and, in particular, performance indicators (and financial incentives) will be written into new contracts for Croatian general practitioners in 2004.

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