

## Impact of Chest Radiography Screening on Healthcare Spending

### TO THE EDITORS:

Medical evidence suggests that the current technologies used for chest radiography for screening purposes are not cost-effective and may be clinically harmful.<sup>1</sup> More surprisingly, a recent meta-regression analysis published in the November issue of the *Journal* by Mauri et al<sup>1</sup> found that despite formal recommendations, chest radiography screening is still prescribed by primary care physicians, and prescription trends seem to decrease only slowly over time. This is a very important issue considering the worrisome proportions that healthcare costs—and, specifically, imaging costs—are amassing.<sup>2</sup> For this reason, it would be important to be able to evaluate the impact of chest radiography screening on healthcare spending. Unfortunately, from the reported analysis by Mauri et al the impact of this practice on health expenditure cannot be estimated. More specifically, it would be useful if Mauri et al had reported the actual practice of chest radiography screening in the general population and not only the physicians' prescription habits. This is likely to represent a bias, because the rate of prescription of a certain test may be consistently different from its real practice among the general population.<sup>3</sup> Given that the same authors, in 2 previous studies, supported that in Greece the rate of prescription of the test by primary care physicians was 3 times higher than its real practice (77% vs 20%),<sup>4,5</sup> it is surprising that they did not report this information or comment on this issue, which constitutes a possibly unnecessary limitation in the work they present.

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### REFERENCES

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### IN REPLY:

Prescribed chest radiography for screening purposes (S-CRx) is not a cost-effective test—in any setting considered. Its practice may still be harmful because its positive predictive value is low, and further evaluation of false-positive findings might be associated with increased cost and risk from additional diagnostic/therapeutic interventions. To assess whether S-CRx recommendation by primary care physicians changes over time, a systematic review of literature was recently published. As healthcare costs continue to climb to a worrisome proportion, and more specifically the costs that imaging are amassing,<sup>1</sup> critics observed that test prescription may be consistently different from its real practice among the general population,<sup>2,4</sup> and consequently, our study<sup>5</sup> did not provide relevant data for the calculation of expenditure related to S-CRx implementation among the population. It was thus suggested that the lack of analyses of S-CRx practice patterns was a limitation of the study. We agree with this criticism. In December 2005, a systematic review of literature was conducted to retrieve relevant peer-reviewed studies evaluating the rate of S-CRx practice among the population. Studies investigating both patients' desire and actual practice were regarded as eligible.

An electronic search resulted in 23 528 hits (PubMed/MEDLINE 23 184 hits, Thompson Scientific library 304 hits, and Cochrane library 40 hits). Potentially eligible studies were selected by abstract/title, and 203 full-paper manuscripts were thereafter retrieved. The Panhellenic



Association for Continual Medical Research archive for the related literature was further perused.

We found 5 suitable studies<sup>2,6-9</sup> but only 3 of them were reporting the actual practice of S-CRx<sup>2,7,8</sup>; consequently, we did not proceed to statistical analysis.

In the Montano and Phillips study,<sup>2</sup> the actual S-CRx practice was 37% for smokers and 32% for nonsmokers, while patients' perception was that they underwent S-CRx at higher rates (45% and 39%, respectively). It is worth mentioning that physicians underestimated their performance of S-CRx; 10% for nonsmokers and 33% for smokers.

In the Woo et al study,<sup>6</sup> the actual rate of S-CRx performed was double the expected rate based on physicians' recommendations. Patients' educational status seemed to be an independent correlation factor, because only 30% of patients with post-high school education desired a yearly S-CRx compared with 94% of patients without post-high school education ( $P < .001$ ). In the Lynch and Prout study,<sup>7</sup> 40% of smokers or patients with occupational risk underwent S-CRx in the past 2 years, while in the Mandel et al study,<sup>8</sup> the patient-years per test rate was only 9%.

It is obvious that data from literature are not enough to help us estimate the actual practice of S-CRx. Indeed, to our knowledge, only 4 studies<sup>2,3,7,8</sup> had addressed this issue, still including our report published in 2006 (Table).<sup>3</sup> Further

survey studies are therefore needed to reveal the actual impact of this avoidable screening tool in health economy.

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■ **Table.** Studies Evaluating the Proportion of the Population Undergoing Chest Radiography (S-CRx) for Screening Purposes

Author (year) [Nation]	No. Analyzed/Characteristics of Investigated Population	Proportion Undergoing S-CRx (%)	Interval Considered (Years)	Setting	Methods
Kamposioras K (2006) [Greece]	5499/adults bringing or visiting their relatives while getting healthcare in hospitals and health centers of 26 Hellenic provinces	20	3	General population	Patients' interview with questionnaire
Montano DE (1995) [USA]	3281/patients (aged 19-75) of 450 family physicians randomly selected from the WAFP	39	3	Nonsmokers	Patients' chart audit
	45	45	3	Smokers	
	11 005/patients (aged 19-75) of 450 family physicians randomly selected from the WAFP	32	3	Nonsmokers	Mailed questionnaire
		37	3	Smokers	
Lynch GR (1986) [USA]	151/patients (aged >40) attending an outpatient primary care clinic in Boston during 1975-1980	40	2	Smokers or patients with occupational risk	Patients' chart audit
Mandel IG (1982) [USA]	112/patients (aged >17) at the University of Rochester Family Medicine Program	9	1*	General population	Patients' chart audit

\*In the Mandel study, medical charts were surveyed for 5 years (1975-1979) and thereafter screening test frequencies were expressed for intervals of 1 year (as patient-years per test).  
 WAFP indicates membership of the Washington Academy of Family Physicians.