

ORIGINAL PAPER
ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

**The relative value of medical innovations
on population health status
Physicians' views in Greece**

OBJECTIVE To identify the medical innovations that have contributed to the greatest degree to the improvement of the health status of the Greek population health during the last three decades, according to physicians. **METHOD** Semi-qualitative individual interviews with a representative sample of 500 Greek internists and general practitioners, based on a strictly structured questionnaire that included 42 medical innovations (22 pharmaceutical and 20 technological). **RESULTS** Of the sample, 429 physicians responded (response rate 78%). According to the respondents, the seven most important pharmaceutical innovations, in selection order, were: angiotensin converting enzyme inhibitors and angiotensin II antagonists (69%), inhaled steroids and β_2 -agonists (67.4%), statins (64.6%), proton pump inhibitors and H₂-antagonists (54.3%), newer antibiotics (48.3%), antiviral drugs for hepatitis B and C (45.0%) and calcium channel blockers (33.6%). The seven most important technological innovations were: magnetic resonance imaging and computed tomography scanning (77.4%), balloon angioplasty with stents (75.3%), coronary artery bypass graft (72.5%), gastrointestinal endoscopy (58.3%), human immunodeficiency virus testing (55.7%), mammography (55.0%) and prostate-specific antigen testing (43.4%). **CONCLUSIONS** The epidemiological profile of the population is a strong determinant of the value of technology. Physicians' perspectives of the relative value of medical innovations constitute an important input into the decision-making process for the allocation of healthcare resources.

During the past thirty years, many important innovations have had great clinical and economical impact on medicine. New medications, new diagnostic techniques and new surgical procedures have helped patients to live longer, better-quality lives. On the other hand, medical innovations are considered a major cause of rising health expenditures in the developed world^{1,2} and several studies have been conducted with the aim to assess if the benefits of innovations worth their cost.^{3,4}

The efficacy and safety of most innovations have been thoroughly studied through randomised clinical trials. In addition, there have been numerous attempts to calculate the cost-effectiveness of specific interventions for well-defined clinical conditions.⁵ Economic analysis alongside to clinical trials has been the "golden standard" for the evaluation of newer medical innovations compared to older ones, as well as for the comparison between different medical innovations, for example, a new class of drugs compared

to an established surgical procedure, etc.

The contribution of medical innovations to the improvement of population health status and the relative importance of each medical innovation to patients are very difficult to determine.⁶ Patients themselves cannot make comparisons, because it is not possible for one patient to have direct experience with all medical innovations that have been launched in therapeutics the last thirty years. Similarly, specialised physicians are not able to compare different technologies that are applied to a wide variety of health problems and across the whole range of different medical specialties. Primary care physicians, i.e. internists and general practitioners in the Greek health system, are probably in the best position to make such comparisons, given that they see the effects of many different innovations on their patients. This approach was first used a few years ago in a study by Fuchs and Sox.⁷ In that study the authors analysed the responses of 225 leading general internists

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2010, 27(6):963-969

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Η σχετική συμβολή της βιοϊατρικής
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Περίληψη στο τέλος του άρθρου

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in the USA about the relative importance of thirty medical innovations to patients.

The aim of our study was to identify the medical innovations –pharmaceutical and technological– that contributed mostly to the improvement of Greek population health status during the last three decades, according to physicians' views.

MATERIAL AND METHOD

In order to record the views of the physicians regarding the relative value of various innovations, a questionnaire based survey was conducted on a representative sample of 500 Greek internists and general practitioners.

The study questionnaire was formulated by a panel of experts, with the use of the Delphi method of energetic convergence.⁸ The panel consisted of 10 experts, 7 professors of internal medicine and 3 professors of general medicine/primary care, all members of the seven schools of Medicine in Greece. Their purpose was to formulate the list of the most important pharmaceutical and technological innovations of the last three decades, according to the frequency of citations in the literature and their expert opinion, in order to adjust for newer innovations. The questionnaire had two parts: Part 1 with two questions and the list of 22 pharmaceutical innovations and part 2 with two questions and the list with 20 technological innovations. The two questions were the same for part 1 and 2. Question 1: "Please choose 5 to 7 innovations from the given list, that their absence (non existence) would have the greatest impact on your patients' health status. Please take into consideration factors like the consequences that the absence of the specific innovation would have on life expectancy, quality of life, as well as the proportion of the affected patients in your practice." In question 2, the physician had to choose 5 to 7 innovations that their absence would have the smallest impact on patients' health status.

Regarding the study sample population, proportional stratified sampling was the method used. The stratification was based on the geographical distribution of physicians (internists and general practitioners). The initial total sample consisted of 500 physicians, internists or general practitioners, aged ≥ 50 years old, in order to ensure adequate experience with the surveyed technologies. The role of the primary care physician is played in Greece mainly by specialised internists, because the specialty of the general practitioner is relatively new and has been established rather recently in Greek medical practice.

As mentioned above, data were collected using the method of semi-qualitative individual interviews that were based on a strictly structured questionnaire. The individual interviews were conducted after a prefixed telephone appointment and after confirming that the doctor had already received the mailed questionnaire. The survey was initiated in September of 2008 and lasted until October of the same year. Data were analysed with

Statistical Package for Social Sciences (SPSS) 15.0.

RESULTS

From the initial sample of 500 physicians, 429 questionnaires were completed, a number that corresponds to a 78% response rate. The remaining 71 physicians either denied their participation, or a telephone appointment could not be arranged within the timeframe of the data collection stage. The characteristics of the respondents are presented in table 1.

The responses that were collected for the list of the 22 pharmaceutical innovations are presented in tables 2 and 3. Tables 4 and 5 present the responses for questions 1 and 2 of the second part regarding the list of the 20 technological innovations.

According to the respondents, as shown in table 1, the most important pharmaceutical innovation of the last three decades are angiotensin converting enzyme (ACE) inhibitors and angiotensin II antagonists, included in 69.0% of the answers in question 1. Inhaled steroids and β_2 -agonists (67.4%), statins (64.6%), proton pump inhibitors and H₂-antagonists (54.3%), newer antibiotics (48.3%), antiviral drugs for hepatitis B and C (45.0%) and calcium

Table 1. Characteristics of the respondents.

Parameter	Number	%
<i>Sex</i>		
Male	392	91.4
Female	37	8.6
<i>Age</i>		
50–54	148	34.5
55–59	124	28.9
60–64	86	20.0
65–69	45	10.5
69+	26	6.1
<i>Specialty</i>		
Internist	389	90.7
General practitioner	40	9.3
<i>Place of work</i>		
Hospital	106	24.7
Private practice	151	35.2
Social security practice	164	38.2
Did not specify	8	1.9
<i>Geographical area</i>		
Attica	200	46.6
Rest of Greece	229	53.4

Table 2. The most important pharmaceutical innovations according to the opinion of the respondents.

Pharmaceutical innovation	% of the answers in Q1 that included the innovation
Angiotensin converting enzyme inhibitors (ACE) and angiotensin II receptors antagonists	69.0
Inhaled steroids and β_2 -agonists	67.4
Statins	64.6
Proton pump inhibitors (PPIs) and H ₂ -blockers	54.3
Newer antibiotics	48.3
Antiviral drugs for hepatitis B and C	45.0
Calcium channel blockers	33.6
Antiretroviral drugs	31.7
Selective serotonin reuptake inhibitors (SSRIs) and recent non-SSRIs antidepressants	30.3
Newer immunosuppressive drugs	29.4
Tamoxifen	23.3
Biological therapies for autoimmune diseases	22.8
Newer antithrombotic-antiplatelet drugs	22.6
Bisphosphonates for osteoporosis	21.2
Acetylcholinesterase inhibitors for the treatment of Alzheimer's disease	18.9
Newer antidiabetic agents	18.9
Non steroid antiinflammatory drugs and COX-2 inhibitors	12.4
Combination therapy for the eradication of <i>Helicobacter pylori</i>	11.9
Non-sedating antihistamines	8.2
Opioid analgesics (long-acting and parenteral)	6.5
Drugs for the treatment of erectile dysfunction	5.6
Drugs for the treatment of urinary incontinence	3.0

channel blockers (33.6%) concluded the list of the seven most important pharmaceutical innovations.

Regarding the technological innovations, the seven most important, as shown in table 4, are: magnetic resonance imaging (MRI) and computed tomography scanning (CT) (included in 77.4% of the answers), balloon angioplasty with stents (75.3%), coronary artery bypass graft (CABG) (72.5%), gastrointestinal endoscopy (58.3%), human immunodeficiency virus (HIV) testing (55.7%), mammography (55.0%) and prostate-specific antigen (PSA) testing (43.4%).

The answers to the second question, namely the least important pharmaceutical and technological innovations are presented in tables 3 and 5, respectively. With regard to least important pharmaceutical innovations, the analysis provided the following ranking: Non-sedating antihista-

Table 3. The least important pharmaceutical innovations according to the opinion of the respondents.

Pharmaceutical innovation	% of the answers in Q2 that included the innovation
Non-sedating antihistamines	62.9
Acetylcholinesterase inhibitors for the treatment of Alzheimer's disease	46.4
Drugs for the treatment of urinary incontinence	46.2
Drugs for the treatment of erectile dysfunction	45.9
Non steroid antiinflammatory drugs and COX-2 inhibitors	43.8
Bisphosphonates for osteoporosis	35.0
Newer antidiabetic agents	33.6
Combination therapy for the eradication of <i>Helicobacter pylori</i>	29.4
Newer antithrombotic-antiplatelet drugs	26.6
Biological therapies for autoimmune diseases	24.7
Opioid analgesics (long-acting and parenteral)	24.7
Selective serotonin reuptake inhibitors (SSRIs) and recent non-SSRIs antidepressants	23.8
Calcium channel blockers	18.9
Antiretroviral drugs	18.6
Antiviral drugs for hepatitis B and C	15.2
Newer antibiotics	13.5
Proton pump inhibitors (PPIs) and H ₂ -blockers	13.3
Newer immunosuppressive drugs	11.0
Tamoxifen	8.6
Statins	8.4
Angiotensin converting enzyme inhibitors (ACE) and angiotensin II receptors antagonists	7.0
Inhaled steroids and β_2 -agonists	6.5

mines (characterized as such by 62.9% of the respondents), acetylcholinesterase inhibitors for the treatment of Alzheimer's disease (46.4%), drugs for the treatment of urinary incontinence (46.2%), drugs for the treatment of erectile dysfunction (45.9%), nonsteroidal anti-inflammatory drugs (NSAIDs) and COX-2 inhibitors (43.8%), bisphosphonates for osteoporosis (35%), newer antidiabetic agents (33.6%). In accordance, the seven least important technological innovations as reported by the participating physicians were the following: Opioid infusion pump (63.4% of the respondents), insulin pump (58.7%), detection of *Helicobacter pylori* infection (57.3%), bone densitometry (48.3%), laparoscopic surgery (39.2%), molecular techniques for the detection and quantitative measurement of viral load in viral infections (38%), laser techniques in ophthalmology (35.2%).

Table 4. The most important medical technological innovations according to the respondents.

Technological innovation	% of the answers in Q1 that included the innovation
Magnetic resonance imaging and computed tomography scanning	77.4
Balloon angioplasty with stents	75.3
Coronary artery bypass graft (CABG)	72.5
Gastrointestinal endoscopy	58.3
Human immunodeficiency virus (HIV) testing	55.7
Mammography	55.0
Prostate-specific antigen (PSA) testing	43.4
Ultrasonography	43.1
Hip and knee replacement	32.6
Bone marrow transplantation	30.3
Cardiac enzymes	21.0
Laparoscopic surgery	17.7
Biopsies, punctures, drainages guided by imaging techniques	15.9
Insulin pump	14.9
Cataract extraction and lens implantation	11.4
Molecular techniques for the detection and quantitative measurement of viral load in viral infections	8.4
Opioid infusion pump	7.7
Detection of <i>Helicobacter pylori</i> infection	7.0
Laser techniques in ophthalmology	6.1
Bone densitometry	5.1

Table 5. The least important medical technological innovations according to the respondents.

Technological innovation	% of the answers in Q2 that included the innovation
Opioid infusion pump	63.4
Insulin pump	58.7
Detection of <i>Helicobacter pylori</i> infection	57.3
Bone densitometry	48.3
Laparoscopic surgery	39.2
Molecular techniques for the detection and quantitative measurement of viral load in viral infections	38.0
Laser techniques in ophthalmology	35.2
Cardiac enzymes	28.9
Biopsies, punctures, drainages guided by imaging techniques	26.6
Cataract extraction and lens implantation	26.1
Prostate-specific antigen (PSA) testing	20.5
Hip and knee replacement	19.3
Bone marrow transplantation	13.5
Ultrasonography	11.2
Gastrointestinal endoscopy	9.3
Mammography	9.3
Human immunodeficiency virus (HIV) testing	8.9
Balloon angioplasty with stents	6.8
Coronary artery bypass graft (CABG)	5.6
Magnetic resonance imaging and computed tomography scanning	4.9

DISCUSSION

The present study aimed at recording and presenting the opinions of the “first contact” physicians, namely internists and general practitioners in the Greek healthcare setting, regarding the relative value and contribution of the most important medical innovations of the last three decades.

As mentioned above, this approach was first used by Fuchs and Sox in their 2001 survey of 225 leading general internists in the USA.⁷ However, an important difference in the design of our study compared to the study by Fuchs and Sox and to another smaller study –with 49 participants (25 hospital internists and 24 general practitioners)– with similar design as theirs,⁹ is the fact that we included more technological and pharmaceutical innovations in our questionnaires –20 and 22, respectively– and in two different lists. In the above mentioned studies the list was uniform for both types of innovations and the total number of the included innovations was 30. This type of categorization

(pharmaceutical versus technological innovations) facilitated a more in-depth analysis and highlighted a number of conclusions, regarding the perspectives of the physicians on biomedical technology.

A major finding of the study is the fact that among the seven most important pharmaceutical innovations that were chosen, three are primarily intended to treat cardiovascular diseases: ACE inhibitors and angiotensin II antagonists (1st place), statins (3rd place) and calcium channel blockers (7th place). Similarly, among the seven most important technological innovations that were chosen, two are surgical procedures used to treat cardiovascular diseases: balloon angioplasty with stents and CABG (2nd and 3rd place, respectively). This selection order and the subsequent importance attributed to the aforementioned innovations probably reflects the higher incidence of cardiovascular diseases in Greece,^{10,11} as well as their significant contribution to the burden of disease. According to WHO calculations, cardiovascular diseases are the most important cause of morbidity and mortality, accounting for 23.3%

of the total disability adjusted life years (DALYs) lost each year in Greece.¹² Following a similar pattern, pharmaceutical innovations that conclude the list of the seven most important are also used to treat high-prevalence diseases in Greece, such as inhaled steroids and β_2 -agonists for chronic obstructive pulmonary disease (COPD),¹³ proton pump inhibitors for gastroesophageal reflux disease¹⁴ and antiviral drugs for hepatitis B.¹⁵

Highly ranked were also technological innovations that have changed dramatically the diagnostic procedures, namely MRI, CT and gastrointestinal endoscopy, as well as those that represent relatively simple, non-costly and highly effective screening tests, i.e. mammography and PSA testing. All these technological innovations have “saved many lives” through greatly contributing to an early diagnosis and consequently to the improvement of prognosis in severe diseases, such as neoplasms. Therefore, it is no surprise that these clinically valuable innovations are highly appreciated by the participating physicians.

In the classification of the 22 pharmaceutical innovations, great importance is also given to drug treatments that have undoubtedly improved patients’ quality of life and changed dramatically the therapeutic procedure in specific diseases. Characteristic examples are inhaled steroids and β_2 -agonists for the treatment of asthma¹⁶ and COPD¹⁷ and the proton pump inhibitors and H_2 -antagonists for the treatment of peptic ulcer.¹⁸ These pharmaceutical innovations have also contributed to the shortening of hospital stay, as well as to the prevention of adverse effects of other drug treatments.

An observation worth mentioning is that the diagnostic HIV testing was ranked 5th most important technological innovation by 55.7% of the participants, while antiretroviral drugs were ranked lower, in the 8th place by only 31.7% of the participating physicians. This difference is probably explained by the fact that HIV testing is considered a very important diagnostic procedure for the population as a whole, taking into consideration for example blood transfusions and the societal need for a sustainable and “minimum risk” blood supply. On the other hand, antiretroviral drugs are an innovation that is rather focused on a subgroup of the population, thus limiting the impact of the technology on the general health status.

Commenting on the pharmaceutical innovations that were ranked as least important, it could be pointed out that the drugs that are included in the first places, are those that are used either for minor ailments, e.g. non-sedating antihistamines, drugs for the treatment of urinary incontinence or for erectile dysfunction, or those that cause severe side effects that limit their clinical utility,

e.g. NSAIDs. This finding is in accordance with the factors upon which the respondents were requested to base their answers, especially the consequences on life expectancy and quality of life, and in this way it enhances the consistency of the results. Consistency and reliability of the results are also supported by the fact that the 7 pharmaceutical innovations listed as “least important” were the same that were ranked in the last 10 positions of the list of the most important. The same observation can be made for the list of technological innovations: The majority of those ranked as less important are also found in the last positions in the list of the most important technological innovations.

With regard to the variability of answers across different subgroups of the study sample, statistically significant differences, as calculated by Pearson Chi-Square tests, were observed according to age and affiliation (place of work) ($p=0.029$ and $p=0.004$, respectively, for the list of pharmaceutical innovations).

A characteristic example of the variability of answers according to age is the difference in the ranking of two pharmaceutical innovations between the youngest and the oldest age subgroup: Only 42.6% of the physicians aged 50–54 years old compared to 84.6% in the ≥ 69 year old group ranked newer antibiotics as one of the most important pharmaceutical innovations. The reverse pattern was noted for the group of newer antidepressants: 33.8% of the physicians aged 50–54 years old compared to only 3.8% of those over 69 years old have chosen selective serotonin reuptake inhibitors (SSRIs) and newer antidepressants as one of the most important pharmaceutical innovations. At this point it should be noted that also in the study of Fuchs and Sox the mean score of newer antidepressants declined very sharply with age.⁷ The oldest age group ranked differently some technological innovations also: They gave the highest ranking of all groups for laparoscopic surgery and detection of *H. pylori* infection with 42.3% and 23.1%, respectively, while they gave the lowest ranking of all groups (15.4%) for bone marrow transplantation. This finding could probably be a reflection of the differences in medical training as it evolves, incorporating new knowledge, new techniques and new differential diagnostic procedures.

Variability according to place of work was observed in greater extent in the ranking of technological innovations compared to pharmaceutical innovations (statistically significant at the 0.05 level in both cases). An illustrative example is the difference in the ranking of CABG between physicians working in hospitals (82.1% of the answers) and in social security practices (67.2%) as well as in the ranking of gastrointestinal endoscopy (71.4% for hospital physicians as opposed to 53.2% for social security doctors). Noteworthy differences for pharmaceuticals include inhaled steroids

and β_2 -agonists between physicians working in hospitals (51.8%), in private practices (72.8%) and in social security practices (75.9%) and the ranking of newer antibiotics between physicians working in hospitals (58.6%) and in social security practices (40.7%).

This result can be attributed almost entirely to the strong differences in the case-mix across the existing settings of health care provision in Greece. Generally, patients that visit the Greek NHS hospitals are likely to suffer from a severe disease or be in need of urgent care, whereas the social security practices are used mainly by chronically ill patients, in order to perform follow-up examinations, routine checks, repeated prescription, etc. Internists working as private practitioners, especially in rural areas of Greece, are "in the middle" as they provide treatment for minor cases and refer those that are severely ill to the nearest public hospital. In this light, discrepancies according to affiliation were, more or less, expected.

No statistically significant or other worth mentioning differences could be observed between physicians working in Attica and in the rest of Greece. Due to the small percentage of women physicians that were included in the study sample (a situation, however, representative of the distribution of women in the actual population of internists aged >50 in Greece), no sound conclusion could be drawn about possible differences in rankings.

Overall, the findings of the present study show that at the macro-level the most important determinants of the physicians' opinions on the relative significance of biomedical technology innovations are the epidemiological profile of the population, the effectiveness of each innovation, both in terms of clinical effectiveness as well as health-related quality of life, and the utility of each of the

innovations in everyday clinical practice. Although there is significant consistency and uniformity among physicians, as to whether an innovation should be classified as "most important" or "least important", variability exists in the actual ranking of the specified technologies. The analysis showed that this could be mainly attributed to the differences in medical education, as denoted by the age of the respondent, and in the patient case-mix at each healthcare provision setting.

Finally, it should be noted that the analysis presented is not without limitations. Several points should be clarified, the main of which is the actual way that each of the aforementioned variables correlate to whether an innovation is regarded as "most important" or not at the micro-level. This could be an object of further and more detailed investigation at a larger scale survey.

In conclusion, the present study provided a first view on how general practitioners in Greece value the most important biomedical innovations of the last 30 years and identified the main variables that influence that decision. The high response rate and the willingness to participate in the study reflect the physicians' disposition to express their opinion with a systematic pattern. The analysis showed that factors that affect the importance attributed to each innovation by the "first contact" physicians should be sought at the epidemiological characteristics of the population and the effectiveness and utility of each intervention in clinical practice. The above described study with its different design goes beyond the estimation of cost-effectiveness, providing policy makers with a qualitative tool to assess and evaluate the relative contribution of medical innovations to population health status.

ΠΕΡΙΛΗΨΗ

Η σχετική συμβολή της βιοϊατρικής καινοτομίας στο επίπεδο υγείας του πληθυσμού: Οι απόψεις των Ελλήνων ιατρών

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ΣΚΟΠΟΣ Η παρούσα μελέτη αποσκοπούσε στον προσδιορισμό των καινοτομιών της βιοϊατρικής τεχνολογίας, οι οποίες συνέβαλαν κατά το μεγαλύτερο βαθμό στη βελτίωση του επιπέδου υγείας στην Ελλάδα, κατά τα τελευταία 30 έτη, σύμφωνα με τη γνώμη των θεραπόντων ιατρών. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Τα δεδομένα συλλέχθηκαν μέσω συνεντεύξεων σε ένα πανελλαδικό στρωματοποιημένο δείγμα 500 ιατρών, παθολόγων και γενικών ιατρών, στη βάση κλειστού ερωτηματολογίου, το οποίο περιείχε έναν κατάλογο με 42 καινοτομίες (22 φαρμακευτικές και 20 τεχνολογικές), προς αξιολόγηση. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Ελήφθησαν απαντήσεις από 429 συμμετέχοντες (ποσοστό ανταποκρισιμότητας

78%). Σύμφωνα με τους ερωτώμενους, οι επτά σημαντικότερες φαρμακευτικές καινοτομίες των τελευταίων 30 ετών, με βάση την επίδρασή τους στο επίπεδο υγείας του ελληνικού πληθυσμού, κατά σειρά επιλογής, ήταν οι ανασταλτές του μετατρεπτικού ενζύμου της αγγειοτασίνης (συμπεριελήφθησαν στο 69% των απαντήσεων), τα εισπνεόμενα στεροειδή και οι β₂-αγωνιστές (67,4%), οι στατίνες (64%), οι αναστολείς της αντλίας πρωτονίων και οι H₂-ανταγωνιστές (54,3%), τα νεότερα αντιβιοτικά (48,3%), οι αντι-ιικοί παράγοντες για τις ηπατίτιδες Β και C (45,0%) και οι ανταγωνιστές διαύλων ασβεστίου (33,6%). Αντίστοιχα, οι επτά σημαντικότερες τεχνολογικές καινοτομίες ήταν η μαγνητική και η αξονική τομογραφία (77,4%), η αγγειοπλαστική με τη χρήση stents (75,3%), η στεφανιαία παράκαμψη (72,5%), η ενδοσκοπική εξέταση (58,3%), ο έλεγχος για τον ιό HIV (55,7%), η μαστογραφία (55%) και ο έλεγχος του ειδικού προστατικού αντιγόνου (PSA) (43,4%). **ΣΥΜΠΕΡΑΣΜΑΤΑ** Το επιδημιολογικό προφίλ του πληθυσμού αποτελεί ισχυρό προσδιοριστή της αξίας της τεχνολογίας υγείας. Οι απόψεις των θεραπόντων ιατρών στο ζήτημα της σημασίας και της αξιολόγησης της τεχνολογίας υγείας αποτελούν σημαντική εισροή στη διαδικασία λήψης των αποφάσεων για την κατανομή των πόρων υγείας.

Λέξεις ευρητηρίου: Βιοϊατρική τεχνολογία, Πολιτική υγείας, Οικονομικά της υγείας, Τεχνολογία υγείας

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