

ORIGINAL ARTICLES

Building the integrated system of urological services: The impact on utilization and cost of care

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ABSTRACT

Integrated pathways are commonly seen as the way to strengthen service delivery in many countries. Russia has traditionally had a multilevel system of care that consists of facilities varying in terms of the complexity of cases treated. The attempts are currently made to strengthen this system with an emphasis on closer interaction between individual providers. The recent innovation is to establish a new intermediate level of inter-district specialty centers that serve the population of a few local areas and provide additional services. The early detection of new cases and their follow-up management have been activated as a part of a new model. It is piloted in a Russian region with the focus on the cases of benign prostate hyperplasia. The objective of the paper is to present the new model and to evaluate its first impact on urological service performance. The major findings include: 1) the growth of the new urological cases detected at the level of primary care and a gradual decline in the frequency of the most complicated and neglected cases; 2) the optimization of patients flows across the levels of service delivery – the rise in the utilization at the first levels of service delivery and the decline in the share of tertiary care; 3) the need for additional funding to treat the increased number of cases, with the first signs of slowing down this process; 4) a decrease in unit costs as the result of the changes in the structure of new cases, shifts in the utilization of care by the levels of service delivery. These trends are discussed with the focus on the identification of strengths and weaknesses of the new model, as well as the ways to ensure its sustainability.

The major lesson learnt is that building a multilevel system of service delivery can be seen as the instrument of integration of care and efficiency savings for a country with limited financial resources for health. This process should go parallel with more profound changes in the health system, of which the most important is strengthening primary care, particularly coordination function of general practitioners.

Key Words: Integration, Integrated pathways, Urological care, BPH, Health care utilization, Health care unit cost

1. INTRODUCTION

Many health systems face the problem of fragmentation of service delivery and look for the ways to integrate providers into networks with new mechanisms to enhance efficiency of care. In the USA, there is a general trend of transition from

the traditional open-ended uncoordinated providers to the integrated delivery systems characterized by multi-specialty medical groups and consolidation of physicians and hospitals.^[1–5] The essential features of these systems include a pro-active preventive and curative activities, building a

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culture of teamwork and shared responsibility, exchange of patient information among providers, agreement on workflow design, process standardization, a management structure to guide these processes.^[6,7] The impact of consolidation is highly dependent on the content and scope of the specific integration activities, therefore is not always positive.^[8-11] In European countries, the process of integration is mostly focused on chronic disease management programs to ensure teamwork, continuity and coordination of care.^[12-14] There is a substantial body of literature with the evidence of positive clinical results of integration, but still unclear evidence of its financial impact.^[15]

There is not enough evidence of integration activities in post-communist countries, although these countries have inherited a highly integrated health system and are looking for the ways to strengthen it. The health system in Russia has traditionally been built with the view to ensure close interaction of providers. The key integrative elements of the Semashko model design include a patient list of district physicians (DPs), their gatekeeping function and the responsibility for the enrolled population, a team work of DPs and specialists in big multispecialty outpatient settings – polyclinics (they provide most of primary care), management structures responsible for the interaction of providers, as well as a multi-level system of service delivery based on the referrals from one level to the next one. The usual “route” of patients is from DPs to small rural and urban polyclinics and hospitals with a limited number of specialists in their staff, then to bigger district multi-specialty hospitals and finally to tertiary care facilities – regional and federal hospitals. The major criteria for admitting a patient to a certain level of provision is the complexity of the case. The bulk of complicated cases is concentrated in big regional hospitals. Their clinical capacity is the highest in the region.

The multi-level of provision is designed as the instrument to cope with a substantial underfunding of health system (the ratio of public health expenditure to GDP is only 3.5%), as it allows to concentrate the most expensive resources at the top level of provision and distribute the clinical areas and responsibilities of each facility according to the complexity of cases. This model is presumed to be less costly compared to the model of homogeneous clinical areas of each facility, although a strong evidence is not available. Also, it reflects the specifics of the Russian type of the population location – a low density of the population, a high share of the rural residents, big distances between local areas and big cities. Cross-border movements of patients from the lower to the higher level of service delivery is an inevitable feature of this type of the population location.

Another instrument of integration in the Russian health system is a so called “method of dynamic dispensary surveillance”, that is constant management of diseases by designated providers. This method presumes that every detected case of a serious disease is subject to a certain set of activities, including registration and segmentation of the cases, developing an individual plan for a patient, the documentation of curative episodes, monitoring the process and outcome indicators for individual cases and the entire patient list. The design of dispensary surveillance implies a strong interaction of DPs and specialists, polyclinics and hospitals. It is regulated by the Federal Ministry of Health (MoH).^[16]

In the original Semashko model, integration was supported by a tough administration of the entire health system by the governmental authorities, including the regulation of referrals of patients from one level to another. It was relatively easy implemented in the situation of a limited patient choice of providers: patients had to follow the established “routes” of their movement in the system. After the collapse of the USSR, the regulation of integration has weakened under the pressure of new political and social realities, of which the most important was the de-centralization of the governance, its low capacity and the willingness of consumers to choose providers. The actual implementation of the integration activities has become much more complicated. The current level of integration is substantially lower than in the former health system. The multi-level system of service provision is skewed to secondary and tertiary care provided at the upper-middle and top levels of the system, with primary care substantially lagging behind in the curative capacity and losing its coordination function. The proclaimed method of dynamic dispensary surveillance does not work well in practice because of the shortage of primary care physicians and their limited clinical area.^[17] Only less than half or the detected new cases are subject to the actual dispensary surveillance.^[18] There is a strong evidence of the low level of teamwork, coordination and continuity of care, including poor interaction of polyclinics and hospitals’ physicians in managing patients.^[19]

The attempts to re-vitalize and strengthen the integrated health system in Russia have been developing during the last decade in two major directions. The first is the consolidation of services delivery through merging hospitals and polyclinics into big local complexes serving the population of 300 to a million of population. The reason for the consolidation is to concentrate expensive diagnostic equipment and specialists (that are in short supply) in big facilities and thereby ensure higher accessibility of the “rare” resources. The actual impact of this consolidation on providers performance is dependent on the “content” of the integration

activities, that is measures to ensure coordination of care, its continuity and joint work of individual providers.^[19]

The second direction of the integration activities is strengthening multi-level system of service delivery. The methods used differ from the Soviet command and control system. Administration gave way to the regulation of this system. Patients are allowed to choose providers of the same level of provision. The patterns of their movement to the next level are determined by clinical recommendations and integrated pathways that define what should be done at the specific level and which resources are needed. Contrary to the former system, a physician has a discretion to refer a patient to any level of provision when it is clinically appropriate. The element of this strategy is establishing a new intermediate level of specialty care provision – inter district specialty centers that concentrate the resources of local facilities and serve the population of a few local areas.

The new model has been initiated by the Federal MoH and tested in many regions of the country. It is differentiated for the specific groups of diseases. Urology is one of the clinical areas where the new model is being tested. Voronezh region is a pilot cite for this innovation in the area of urological care with the focus on the cases of benign prostate hyperplasia (BPH). The innovations in the region are designed to build the integrated system of service delivery for urological cases.

The objective of the paper is two fold – to present the new model and to evaluate its first impact on urological service performance in the pilot region. First, the major innovations are presented. Second, their impact on the detection of new BPH cases, their structure by complexity and utilization of care is evaluated with the focus on determining the ratio between secondary and tertiary care provided in the facilities of the various level. Third, an attempt is made to access the impact of the emerging model on the cost of services and unit cost (expenditure per one PBH case). We finish with a discussion of strengths and weaknesses of the new model, as well as the next steps to improve it.

2. METHOD AND DATA

An integrated health system is being built in a few Russian regions. For the research we have chosen Voronezh region – a big region of Central Russia with the population of 3.3 million and 32 municipalities (districts). The reform here started in 2010 and a serious progress has been achieved in its implementation. The design of the research is focused on determining the major trends in the structure of PPH cases, utilization of care by the level of service delivery and its cost, as well as health outcomes. The time period of 2009-2013 is chosen to look at the status before the reorganization of the

urological service in 2009-2010 and after its implementation in 2011-2013. Some activities of the project are evaluated for the longer period.

Since the project is focused on the group of men older than 50, the data was collected specifically for this population group. We focus on the new BPH cases that are detected by primary care providers and the change in their structure by the level of complexity. Three groups of these cases are picked out that vary in terms of lower urinary track symptoms and the need for surgical treatment. The International Prostatic Symptom Score (IPSS)^[20] is used to identify these groups. The first group covers patients with insignificant symptoms ($IPSS \leq 7$) and the absence post-void residual urine, the second – the cases with moderate and significant symptoms ($IPSS > 8$) and post-void residual urine ($V \leq 100$ ml), the third – the cases with moderate and significant symptoms ($IPSS > 8$), as well as with marked infravesical obstruction and high volume of post-void residual urine ($V > 100$ ml).

To evaluate the structure of utilization of care by the levels of service delivery, utilization data is disaggregated into three groups: inter-district urology centers (the first level), urological units in regional hospitals (the second level) and the Federal Institute of Urology and Interventional Radiology (the third level). The first level is a secondary care provided for the relatively easy cases with the use of routine medical technologies, the second and third levels – mostly tertiary care for the most complicated cases with the use of high medical technology.

The cost data is collected for the target group of patients from the databases of the regional social health insurance fund that pays for care. We evaluate all current annual expenditures in the chain of patients flow, including check-ups, diagnostic tests and consultations, emergency visits, elective (planned) and emergency surgery, non-surgery interventions, after-admission consultations and tests. The capital expenditures are not included in the analysis, because the procurement of new equipment is multi-purpose – not only for BPH cases and even for urology cases. The scale of the procurement under the project is insignificant, therefore our presumption is that it does not affect substantially the estimates of cost and unit cost of BHP cases treatment.

3. REORGANIZATION OF THE REGIONAL UROLOGICAL SERVICE

The Program “Urology” (further – Program) was launched in 2011 in Voronezh oblast. It is implemented by the regional government together with the Federal Research Institute of Urology and Interventional Radiology that took on the re-

sponsibility of the design and coordination of the implementation. The Program objective is to improve accessibility and quality of urological care through a set of organizational activities with the focus on the early detection of urological cases and introduction of integrated pathways of patients' movement in the multilevel system of service delivery.

The initial status of urological care in the region was low. 22 of 32 districts did not have urologists in the staff of their polyclinics. District physicians did not have adequate competence to detect urological cases and to manage even the simplest ones. Most of these cases were detected with a high status of complexity. Around 80% of the new urological cases in 2009 were admitted to hospitals in the status of emergency and required urgent surgical intervention. Most of surgical care was provided in the regional and federal hospitals with the resulting growth of the cost of care and poor outcomes.^[21] Patients from rural areas and small cities had to travel to the regional hospitals located far away from the places of their residence. The spatial gap between levels of provision limited accessibility of care and hindered management of the new cases. The interaction of providers of different levels was very limited: district physicians did not communicate with urologists and did not even know about complicated cases admitted to regional hospitals. After hospital discharge, follow-up clinical activities were conducted by only urologists. In case of their absence DPs could not help much.

The new model of service delivery in the region includes the following integration activities:

- closer cooperation of DPs with urologists in the early detection of new cases;
- rationalization of patients movement in the system through establishing a new layer of service delivery;
- development and implementation of integrated clinical recommendations and pathways;
- strengthening the dynamic dispensary surveillance of the detected cases;
- monitoring utilization, quality and cost of care across the integrated network of providers.

Closer cooperation of DPs with urologists in the early detection of new cases. All district physicians have passed a short-term training by the experienced urologists with the focus on the early detection of the new cases. The standard questionnaires regarding symptoms of urological diseases have been developed. They are completed by every man older than 50 who visit polyclinic. The Program implies a close interaction of DPs and urologists not only in the process of the new cases detection but also in their stratification according to the established criteria of the complexity, as

well as the involvement in the follow-up management of the cases after hospital discharge.

Rationalization of patients' movement in the system through establishing a new level of service delivery. Inter district urology centers were established. They serve the population of a few districts with the catchment area of around 300 hundred residents each. This is an intermediate level of specialty care provision between local and regional facilities, that is between primary and mostly tertiary care. Currently, there are seven inter district centers in the region. Each of them was set up through the concentration of the insignificant urological capacity in small local polyclinics and hospitals, including outpatient urologists and equipment that were not used at full scale in local areas. They operate in the premises of the existing district hospitals without additional construction investment. Thus, the focus of the new model is on the re-distribution of the available resources.^[22]

The logic of this innovation is to concentrate the "rare" resources at the immediate level of service provision and thereby to mitigate the spatial gap between local and regional facilities and enhance access to urological care. Most of the new cases are to be treated at the intermediate rather than top level of the regional system.

The newly established centers take on the function of managing most of the cases and coordinating care provided at other levels of the regional health system, including primary care (detection of new cases), outpatient specialists (dynamic dispensary surveillance), emergency service, inpatient care and rehabilitation. They promote a shared responsibility of providers at all levels, as well as an exchange of patient information among them. These centers introduce rational "routes" of patients with the focus on the use of cost effective technologies at the secondary rather than tertiary level of service provision.

Development and implementation of integrated clinical recommendations and pathways. To consolidate service delivery, the standardized approaches to the BPH cases treatment are used. Clinical recommendations have been developed for each level of service delivery. They are supplemented by the integrated pathways that determine the movement of patients in the system, as well as labor and equipment requirements for each level of service provision. Both recommendations and pathways are universal for the entire integrated system. These instruments are designed to ensure continuity of care. Interventions are not limited to one episode of care but cover patients' needs longitudinally and can be assessed by a patient – depending on the progress from one stage of service delivery to another.

Strengthening the dynamic dispensary surveillance of the detected cases. Practically all new cases have been placed under the constant management with the major role of urologists staffed by inter district centers. The individual plans of treatment are developed for each patient. The process and outcome indicators are used for monitoring patient status. The referral system is strengthened according to the integrated pathways.^[21]

Monitoring utilization, quality and cost of care across the integrated network of providers. A set of process and outcome indicators is introduced to evaluate care at each level of service provision. The indicators for BPH cases include the frequency of the acute urinary retentions, the share of the initial stages of these cases, the frequency of after surgery aggravations. The target indicators are set, for example, the acute urinary retentions must not exceed 10% of all BPH cases. Monitoring these indicators is followed by the adjustment of clinical activity so that to minimize negative outcomes. Also, utilization and cost data is collected to evaluate the financial impact of the integration activities.^[23]

The Program “Urology” provided an additional funding for the procurement of drugs, medical supplies and equipment.

But the amount of this funding is insignificant. The focus of the project is placed on preventive activities, reorganization of care and strengthening the interaction of providers.

4. RESULTS

4.1 The impact on the number of BPH cases and the structure of care utilization

The active detection of new BPH cases at the level of primary care resulted in a substantial increase of their number – by more than 3 times during 2009-2013 (see Table 1). This work has compensated the weakness of the early detection by primary care providers in the previous period. The morbidity was hardly lower but it was mostly in the hidden form and manifested itself in the neglected cases that required more resources for treatment. This hypothesis was supported by the analysis of the structure of the new cases by the level of complexity. It has changed substantially after the reorganization of service delivery. The share of the first group of complexity increased from 51.2% to 68.05%, while the share of the second and third groups decreased respectively by 9.1 and 7.8 percent points. A relative decrease in the share of patients with moderate and substantial symptoms of BPH is an obvious result of the active early detection of new cases.

Table 1. The number of BPH cases and their structure by the groups of complexity for the group of men older than 50 in Voronezh region in 2009-2013

Year	Number of cases	Groups by complexity of cases					
		Group I		Group II		Group III	
		Number	%	Number	%	Number	%
2009	9,659	4,944	51.18	3,703	38.34	1,012	10.48
2010	14,076	7,910	56.19	5,168	36.72	998	7.09
2011	19,383	11,109	57.31	7,165	36.97	1,109	5.72
2012	26,905	17,127	63.66	8,576	31.87	1,202	4.47
2013	30,054	20,452	68.05	8,783	29.22	819	2.73

The change in the structure of new cases is also demonstrated by the indicator of the frequency of the most complicated cases, particularly the share of emergency hospital admissions of patients with the acute urinary retention. It decreased from 11.3% to 1.5% over 2009-2013 (see Figure 1). The initial very high level of neglected cases has been compensated by the activities of the early detection of new cases and the following dynamic dispensary surveillance.

The Program implementation has also resulted in the changes in the structure of urological care. The ratio of surgical and non-surgical cases has not changed, most of the cases are

non-surgical. But these cases increased much more than emergency surgery cases in 2009-2013 – by 3.1 and 2.3 times respectively (see Table 2). Also, the share of elective surgery of BPH cases increased, while the share of emergency surgery decreased. There are indications of the improvement of the structure of new cases due to the early detection.

Establishing inter-community urological centers together with the introduction of the integrated pathways has radically changed the structure of care utilization by levels of service delivery. The share of surgery cases in inter-district centers

increased from 64% in 2010 (when they were established) to 76% in 2013, while the share of regional and federal hospitals decreased from nearly 100% in 2009 to 23.7% in 2013 (see Table 3).

The change in the structure of service delivery has allowed regional and federal hospitals to concentrate on the most complicated cases. In 2009, only 1% of BPH surgical patients received the most expensive surgery, which makes the special group in Russian payment system.

Another result of the new cases structure is a decrease in the average length of hospital stay of urological cases by 15% with the resulting increase in the turnover of urological hospital beds.

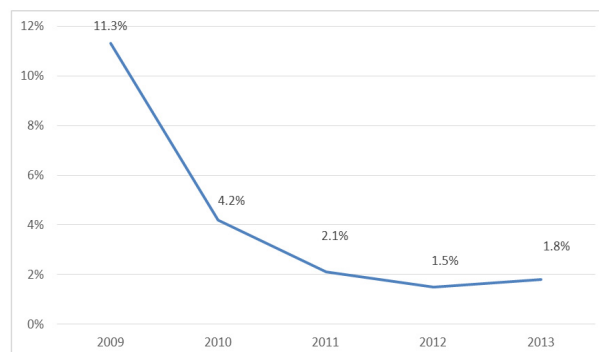


Figure 1. The share of emergency hospital admissions with acute urinary retention in the total number of BPH cases in Voronezh region in 2009-2013

Table 2. The structure of urological care utilization for BPH cases by the level of medical intervention in Voronezh oblast in 2009-2013

Year	Non-surgery cases (pharmaceutical care)		Elective surgery cases		Emergency surgery cases	
	Number	% of total	Number	% of total	Number	% of total
2009	9,235	95.61	235	2.43	189	1.96
2010	13,289	94.42	540	3.84	245	1.74
2011	18,379	94.82	767	3.96	237	1.22
2012	25,639	95.30	951	3.53	315	1.17
2013	28,606	95.18	999	3.32	449	1.50

Table 3. The number and structure of surgical BPH cases by levels of service delivery in Voronezh oblast in 2009-2013

Year	Inter-district urological centers		Urological units in regional hospitals		Federal Institute of urology in Moscow	
	Number	% of total	Number	% of total	Number	% of total
2009	–	–	420	99.06	4	0.94
2010	505	64.17	197	25.03	85	10.80
2011	585	58.27	339	33.77	73	7.27
2012	905	71.49	343	27.09	18	1.42
2013	1,102	76.11	343	23.69	3	0.20

4.2 The impact on cost of treatment

The estimate of total cost of detection and treatment of BPH cases indicates its growth by 2.4 times in 2009-2013 (see Figure 2), while the number of these cases increased by more than 3 times (see Table 1). The major part of the growth happened in the first years of the Program implementation, while in 2013 total cost decreased by 6.5%, which can be interpreted as the result of the slowdown in the detection of new cases. Marginal value of this process was the highest in 2010-2012.

Strengthening the multi-level system of service delivery has changed the structure of expenditure on surgical BPH cases

(see Figure 3). In 2009 practically all surgery was concentrated in the regional hospital, with most of expenditure spent at this level (96.6%). After establishing inter district centers in 2010-2011, patients from rural areas and small cities have received an access to surgical care closer to the places of their residence, and 41%-42% of expenditure was spent at this level with the following growth of this share to 70.2% in 2013. Correspondingly, the share of tertiary care expenditure in the regional and federal medical facilities has dropped dramatically (28.7% and 1.1% respectively). Also, the total current expenditure per BPH case in 2013 was 22% lower than in 2009 (see Figure 4), that is unit cost has had a downward tendency.

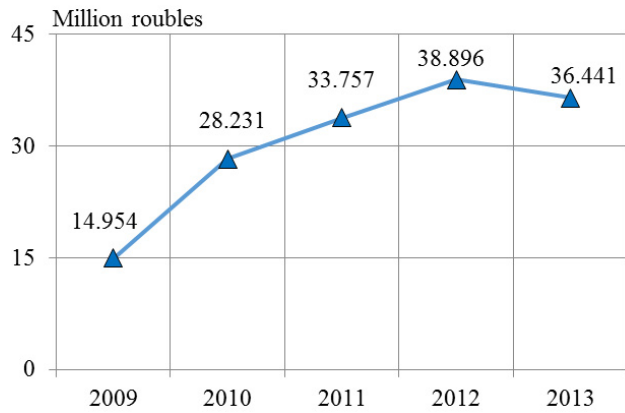


Figure 2. Total cost of BPH cases identification and treatment to provide in Voronezh oblast in 2009-2013, million roubles of current expenditure

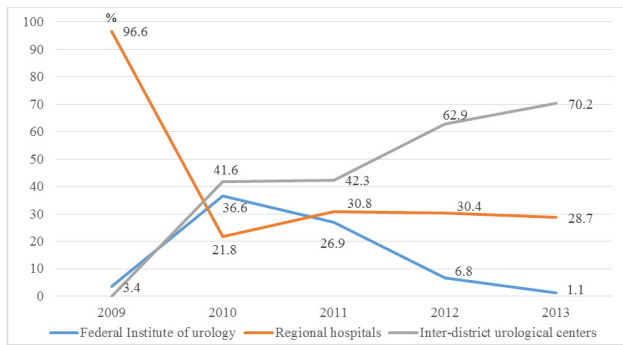


Figure 3. Distribution of expenditure on surgical BPH cases in medical facilities of different levels in Voronezh region in 2009-2013, % of total surgical expenditure

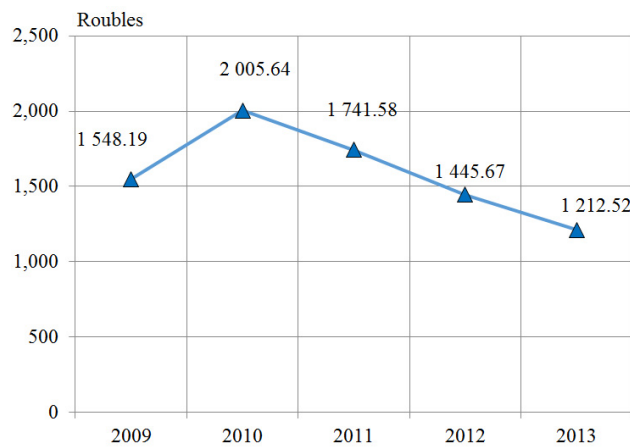


Figure 4. Total current expenditure per one BPH case in Voronezh region in 2009-2013, roubles per case

4.3 Health outcomes of the Program implementation

The Program has contributed to the progress of health indicators for urological cases. As stated above, the frequency of emergency hospital admissions with acute urinary retention

in the total number of BPH cases has dropped substantially. Other outcomes indicators have also improved.^[21-23]

The number of new prostate cancer cases increased by 47% during 2009-2015, while the share of the first and second stages increased from 57.2% to 71.3% – due to the early detection of cancer.

Prostate cancer mortality during the year after the detection of new cases decreased from 14.6 in 2009 to 7.5% in 2013, while the average for Russia – from 14.0% to 10.3% (see Figure 5).

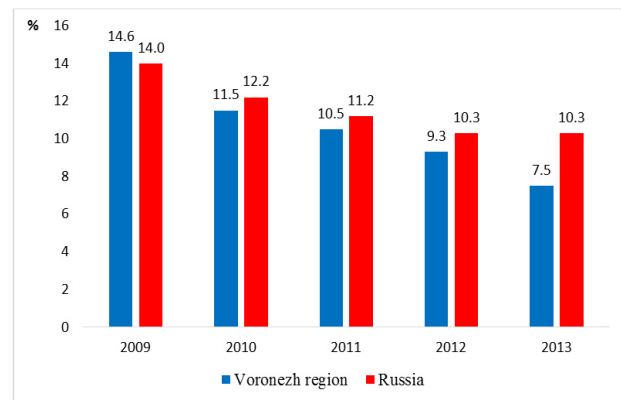


Figure 5. Prostate cancer mortality during the first year after the detection of new cases in Voronezh region and average for Russia

Prostate cancer mortality of all registered cases decreased from 10.4% to 6.2%, while the average for Russia – from 8.9% to 6.43% (see Figure 6). Thus the progress of outcomes in the region is more substantial.

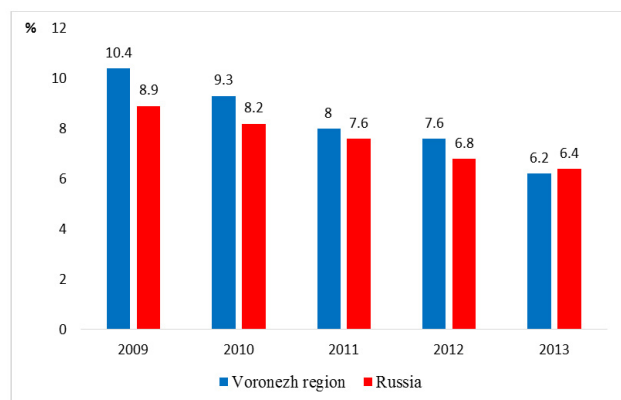


Figure 6. Prostate cancer mortality of all registered cases in Voronezh region and average for Russia

5. DISCUSSION

The Program in the region has strengthened integration of service provision in the area of urological care. It actually im-

plements the design of the previous system and adds the new elements, of which the most important is closer cooperation of DPs with urologists in the early detection of new cases, rationalization of patients movement in the system through establishing a new layer of service delivery, development and implementation of integrated clinical recommendations and pathways, strengthening the dynamic dispensary surveillance of the detected cases, monitoring utilization, quality and cost of care across the integrated network of providers.

The major findings of the impact of the new model:

- the growth of the new urological cases detected at the level the of primary care with a gradual decline of the share of the most complicated cases and a decrease in the frequency of the neglected cases that require emergency care;
- the optimization of patients flows across the levels of service delivery – the rise in the utilization at the first levels of service delivery and the decline in the share of tertiary care;
- the need for additional funding to treat the increased number of cases, with the first signs of slowing down this process;
- the decrease in unit costs;
- the progress in health outcomes.

It is important to note that the positive evidence of the Program relates to the period of 3-4 years after the start of its implementation. The Program has had a quick effect. This can be attributed to three major factors. First, the health system had a hidden morbidity – mostly due the weak primary care and underprovision of diagnostic services to detect new urological cases. Strengthening the diagnostic capacity of primary care providers has allowed to detect new cases and decrease the burden of the neglected cases. Second, the inter-district centers have enhanced access to care for the citizens of rural areas and small cities, because these centers are closer to them than regional hospitals. Third, the concentration of resources has allowed to use them more efficiently, since the number of urological cases in local facilities sometimes was not enough to justify the position of full-time urologist. The new investment in the capacity of these centers under the Program has strengthened their capacity. Finally and most important is that integrative activities have contributed to more coordinated work of individual providers.

A decrease in unit cost is the most unexpected finding. The major reasons behind this trend are the following. First, the most neglected conditions were identified during the first years of the Program implementation, then the structure of new cases has improved substantially, because of the grow-

ing awareness of the population of preventive activities at primary care level and earlier contacts with physicians. Second, a growing portion of the new cases is treated as elective patients rather than emergency cases. This pattern of care utilization usually requires relatively less resources. Third and most important is that utilization of care has shifted from regional and federal hospitals (providers of mostly tertiary care) to inter-district centers, where the cost of care is much lower. Taken together, these factors resulted in efficiency savings.

With all strengths of the emerging model, we see a few obstacles to its sustainability in the context of the current health system in the country. The first obstacle is the weakness of primary care. There is a substantial shortage of DPs – around 30% of district therapists and 10% of district pediatricians. DPs available are overburdened having the average catchment of around 2,700 residents and in some regions – 3,000-3,500 residents.^[17] Most of them have a narrow clinical area that is not enough to detect new urological cases. The Program is based on the active role of urologists in district physicians training, but this can hardly be sustainable, since urologists are busy with their own tasks. The alternative to this model is to rely on general practitioners who have much broader clinical area. However, the institute of GP has not developed in Russia – contrary to many other post-Soviet countries with the similar starting situation in the early 90-s. The number of GPs in 2014 was only 0.7 per 10,000 residents compared to an average of 8.7 in the pre-2004 EU and 5.7 in the post-2004 EU.^[24,25] General practitioners make up only 13% of the total number of district physicians, as opposed to 90%-100% in Central and Eastern European countries.^[26]

Second, the growing dynamic dispensary surveillance under the Program has improved the management of urological cases. However, the scope of these activities is still much lower compared to the modern programs of chronic disease management in Western countries. The major limitations of these activities include a poor interaction of primary care settings and hospitals, the lack of pro-active activities and on-line communication with patients, the absence of individual agreements with patients, the low involvement of nurses in managing cases, as well as weak economic incentives for constant management of cases. These and some other elements, common in many European countries, can substantially contribute to clinical outcomes.^[15] Thus, the current surveillance of cases should give way to full-scale chronic disease management programs.

Third, a multi-level system of service provision needs a strong coordinator responsible for the movement of patients across various stages of service delivery, ensures the informa-

tion exchange among providers, as well as between providers and patients, monitors process and outcome of patients management, etc. A strong referral system is a pre-requisite of this model implementation with the major role of general practitioners. In the current Program, the Federal Institute of urology plays a substantial role in the design of the model. The newly established inter-district centers coordinate care at the stage of specialty care, but there is no coordinator of the entire chain of service provision. It is realistic to expect that this should be the responsibility of permanent multi-specialty groups with the leading role of general practitioners. The absence of such a coordinator limits the sustainability of the new model.

Also, the effectiveness of the new model is limited by the inadequate coverage of outpatient drugs in the system of medical benefits. Only around 14 million of the Russian population (10%) have full or partial outpatient drug coverage, with the rest paying totally out-of-pocket. The public sector's share of total drug expenditure is 11 percent in Russia, compared to 48 percent in the EU. It is lower than that in most of post-Soviet countries (except for Moldova) – 31 percent in Belarus, 34 percent in Lithuania and 63 percent in Czech Republic.^[27] Thus, many urological cases can't afford pharmaceuticals prescribed by urologists with the possible aggravation of their status and even emergency hospital admissions.

To strengthen the emerging model and make it sustainable, more comprehensive reforms are needed that include large scale reform of primary care, developing modern disease management programs, introducing new economic incentives, building strong interactions between providers as well as between providers and patients.

The major lesson learnt is that building a multilevel system of service delivery can be seen as the instrument of integration of care and efficiency savings for a country with limited financial resources for health. But this process should go parallel with more profound changes in the health system.

Limitations of the study

The emerging model of urological care in the region is the innovation in the country, therefore the attempt was made to compare the trends with other regions and the entire country. But most of indicators could not be obtained from the regional and national data bases, because of the high level of aggregation of statistical forms. This is the major limitation of the study. Also, there is the need to look at capital cost trends. The hypothesis is that the share of inter-district centers would be even stronger, since most of the new investment was concentrated there.

6. CONCLUSIONS

The integration of urological care in the Russian region includes large-scale activities of the early new cases detection, strengthening their management, establishing inter district specialty centers, development of the standardized clinical approaches. A short-term impact of this innovation on urological care performance is obviously positive. It has contributed to decreasing the share of complicated cases requiring surgical interventions, as well as decreasing the share of tertiary care utilization. The growth of expenditure due to the increasing number of the newly detected cases was accompanied by some decline of unit cost, which can be attributed mostly to the change in the structure of cases by the level of complexity and the structure of care utilization. The sustainability of the new model and its long-term effect are not clear yet. A set of general factors reflecting the problems of the current health system limits its effectiveness.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare no conflicts of interest.

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