



**OPERATIONS RESEARCH SUMMARY**

**Quality Assurance Project II**

**Cost Savings from Improving Care for Pregnancy-Induced Hypertension: Tver, the Russian Federation**

**Care improvement:** Three hospitals in Tver Oblast, the Russian Federation, implemented a program in 1999 to improve the management of pregnancy-induced hypertension (PIH), then Tver’s leading cause of maternal death. Prior to program implementation, women evincing toxemia were considered at risk for PIH. The new program introduced evidence-based guidelines that included stricter criteria for identifying PIH and admission to a hospital, rationalized use of drugs, and more aggressive treatment of the PIH cases admitted. The results were very positive in terms of patient care: During the 19 months following program implementation:

- No PIH cases resulted in a maternal death;
- None progressed to eclampsia; and
- Newborn complications of admitted PIH cases dropped by 60% compared to the previous six months.

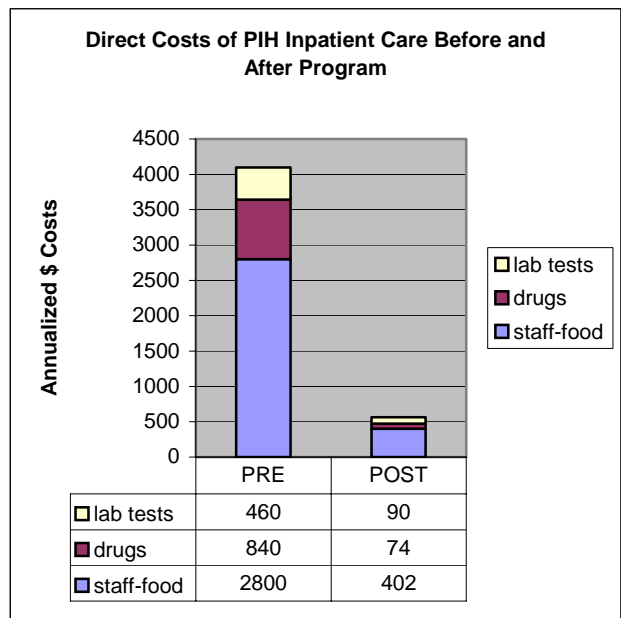
**Cost reduction**

A study that examined costs and that involved two of the hospitals concluded that the new program reduced costs substantially.<sup>1</sup> (Only two program hospitals participated in the cost study due to implementation delays in the third.) Total direct inpatient costs fell 86% and outpatient costs almost as much. This dramatic decline resulted from reductions in: 1) the number of women admitted for PIH; 2) the per-patient cost; and 3) all the main components of direct inpatient costs: hospital days, drugs, and lab tests (figure).

**Inpatient costs:** In the six months before the program was introduced to the six months immediately after...

- PIH admissions dropped 77% (from 47 cases to 11).
- The average length of stay dropped 13% (from 13.5 days to 11.8 days).
- The direct cost per patient stay dropped 41%.
- The direct cost per patient day dropped 30%.
- The per-patient costs for hospitalization, drugs, and lab tests dropped 39%, 63%, and 16%, respectively.

Fewer types of drugs were prescribed in the new program than before (32 versus 72). Although a larger proportion of patients paid for some drugs in the new program (55% versus 21%), the average amount they (rather than the hospital) paid fell by 68%, due primarily to the decrease in the number of drugs prescribed per patient (from five to two).



**Outpatient costs:** The new definition of PIH resulted in fewer patients receiving PIH outpatient care and lower PIH-related outpatient costs (table). In the six months before the program was introduced to the six months immediately following its introduction, total PIH-related outpatient costs dropped by about the same percentage as direct inpatient costs, from \$1,690 to \$224.

**Differences between hospitals:** There were large differences between the two hospitals in most of the results, for example, in average cost per PIH inpatient both before and after program implementation, in the decrease in number of PIH admissions, in the decrease in the average PIH inpatient cost, in the average length of stay, and even in the type and cost of drugs prescribed.

**Differences by severity:** Per patient direct cost after program implementation did not vary significantly by PIH severity, although it had before implementation. However, per patient costs for drugs and lab tests were significantly higher for severe cases after implementation in comparison to mild and moderately severe cases. These results are based on very small samples.

**Discussion:** The full report discusses several possible threats to the validity of the findings, including declines in the fertility rate and incidence of PIH, unaccounted-for outpatient care, indirect hospital costs, patient-borne costs, and other interventions. It concludes that the changes observed followed closely the logic established by the new program and are very likely its direct result.

PIH Costs: Two Hospitals		
	Before	After
Number of PIH outpatients	47	9
Cost for all PIH outpatients	\$ 1,690	\$ 224
Direct cost, all PIH in-patients	4,100	566
Total cost, all PIH patients	5,790	790
Outpatient costs as % total	27%	28%
<b>Note:</b> All costs are direct costs in annualized US dollars (25 Rubles = \$1)		

<sup>1</sup> This is a summary of a Quality Assurance Project (QAP) operations research study carried out by QAP's office in Moscow, Russia. The citation for the full report is: Abdallah H, Chernobrovkina O, Korotkova A, Massoud R, and Burkhalter B. 2002. Improving the quality of care for women with pregnancy-induced hypertension reduces costs in Tver, Russia. *Operations Research Results* 2(4). Published for USAID by the Quality Assurance Project, University Research Co., LLC, Bethesda, MD. QAP publications are available at [www.qaproject.org](http://www.qaproject.org).

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