

Medicaid prospective payment: Case-mix increase

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South Carolina Medicaid implemented prospective payment by diagnosis-related group (DRG) for inpatient care. The rate of complications among newborns and deliveries doubled immediately. The case-mix index for newborns increased 66.6 percent, which increased the total Medicaid hospital expenditure 5.5 percent. Outlier

payments increased total expenditure further. DRG distribution change among newborns has a large impact on spending because newborn complication DRGs have high weights. States adopting a DRG-based payment system for Medicaid should anticipate a greater increase in case mix than Medicare experienced.

Introduction

In early 1986, the South Carolina State Health and Human Services Finance Commission (SHHSFC) implemented prospective payment by diagnosis-related group (DRG) for inpatient hospital charges of Medicaid patients. South Carolina joined ten other States whose Medicaid programs had, through 1986, replaced retrospective cost-based reimbursement with systems modeled after the Medicare prospective payment system (PPS) for hospitals (Hellinger, 1986; Intergovernmental Health Policy Project, 1986a, 1986b). By August 1987, three more States had adopted a DRG-based payment system for Medicaid, and several others had such systems under development (Intergovernmental Health Policy Project, 1987).

In a DRG-based payment system, the payment for the care of the patient depends on diagnosis and procedure codes entered onto the billing form. Simborg (1981) showed that coding errors and omissions were common enough so that more meticulous recordkeeping could substantially increase the frequency of patients with diagnoses representing complications. He predicted that a DRG-based system would engender "DRG creep," a shifting of the distribution of DRGs among the patients towards greater complexity, as hospitals responded to the incentive in a system that, in effect, pays for recorded case complexity and comorbidities.

Simborg's prediction proved correct for Medicare. Ginsburg and Carter (1986) estimated that prospective-payment-induced coding practice changes increased the Medicare case-mix index (CMI) 2.8 percent through fiscal year 1984, the first fiscal year of the DRG-based system. In a study of hospital records under PPS, Hsia, et al., (1988) found DRG coding errors in 21 percent of the records reviewed. Sixty-two percent of the errors favored hospitals. The errors increased the case mix 1.9 percent, which is less than Ginsburg and Carter had estimated for coding change.

State agencies implementing a DRG-based payment system for Medicaid have had to decide how much case-mix increase to anticipate. One possibility would be that when prospective payment was implemented there would be no case-mix increase among Medicaid patients. This would happen if the medical practice and diagnosis

coding changes that were instituted earlier in response to the Medicare DRG-based payment were applied uniformly to all patients, and if all other factors that might affect case mix were unchanged.

Some hospitals, however, might not institute these changes for all patients. There are costs to changing medical practice styles and the recording and coding of diagnoses. Medical staff and records personnel must be educated or persuaded. Administrative effort is required to enforce policy directives. A substantial proportion of the Medicaid population is pregnant women and newborns who are treated in hospital units that rarely see a Medicare patient. For these units, some hospital administrations might avoid incurring the costs of change until a substantial number of the patients' bills were paid by DRG. This would cause Medicaid to experience its own case-mix increase once the DRG-based payment system was extended to Medicaid patients.

Most States adopting a DRG-based payment system for Medicaid have assumed that there would be additional case-mix increase. They have made allowances for it in setting payment rates and budgets. South Carolina anticipated a case-mix change equivalent to 3.05 percent of expenditures, and accordingly reduced the amount by which the DRG weight is multiplied to calculate the payment. Other States expected even more DRG change. Ohio allowed for a 3.38-percent change and Washington State allowed for a 5.3-percent change (Hellinger, 1986).

This article presents a partial assessment of how much case-mix change actually occurred for South Carolina Medicaid when the DRG-based payment system was introduced. We use Medicaid claims data for pregnancies, deliveries, and newborns, that the SHHSFC made available to us for an evaluation of a special care program for pregnant women and children. We show how the distribution of DRGs for these patients changed when the DRG-based system was introduced. Then, following the example of Ginsburg and Carter (1986), we consider to what extent the observed changes in the DRG distribution are attributable to medical practice changes or other factors besides reforms in diagnosis recording and coding. The possible other factors considered include changes in Medicaid eligibility, frequency of out-of-hospital births, and changes in medical practice or the actual frequency of morbidity in the population. We estimate the expenditure impact of prospective-payment-induced DRG change for all Medicaid hospitalizations in South Carolina, for comparison with what the State had anticipated.

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Data

The data available to us were all of the South Carolina Medicaid hospital claims paid from October 1984 through May 1988 that included a newborn-, pregnancy-, or delivery-related diagnosis. Such hospitalizations represented 27 percent of Medicaid expenditures for inpatient hospital care in South Carolina in the 1986-87 fiscal year.

From these data we select hospitalizations of delivering women and newborns whose first day of stay was from January 1, 1985, through February 28, 1987. This is the period from one year before to one year after the implementation of prospective payment.

The transition period from retrospective payment to prospective payment for South Carolina Medicaid was from January 1 to March 1, 1986. Before January 1, 1986, Medicaid paid hospitals on a fee-for-service basis, subject to limits on paid days per patient per year. On January 1, a temporary payment system was introduced that paid a uniform amount per hospitalization regardless of the patient's diagnosis or procedures. Full DRG-based payment began March 1, with no phasing in as with Medicare. Starting with patients admitted on March 1, hospital payments depended on the DRG, not on length of stay or services rendered, except for outlier cases with unusually long lengths of stay. Payments that had been made under the temporary system in January and February were retroactively adjusted according to the full DRG-based system.

Limiting our data to one full year before and one full year after prospective payment eliminates seasonal effects. Though our data include bills paid through May 1988, we do not have a second full year of usable data after prospective payment because of time lags between hospital admissions and payments of claims.

Table 1

DRGs for delivery and newborn hospitalizations with Medicaid weights: South Carolina Medicaid, fiscal year 1986-87

DRG code	Description	Weight
370	Caesarian section with complicating condition	1.8025
371	Caesarian section without complicating condition	1.4131
372	Vaginal delivery with complicating diagnoses	0.9710
373	Vaginal delivery without complicating diagnoses	0.7528
374	Vaginal delivery with sterilization and/or D and C	1.0759
375	Vaginal delivery with other operating room procedure	1.0690
385	Neonate, died or transferred	1.2078
386	Extreme immaturity or respiratory distress syndrome	6.9317
387	Prematurity with major problems	3.6960
388	Prematurity without major problems	2.8107
389	Full term neonate with major problems	1.1672
390	Neonate with other significant problems	0.8347
391	Normal newborn	0.2883

NOTES: DRG is diagnosis-related group. D and C is dilation and curettage.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Department of Hospital Reimbursement.

Limiting our data to one year before and one year after the implementation also avoids two major changes in Medicaid eligibility; the start of the medically needy program in mid-1984 and the termination of that program in March 1987.

We classify hospital claims by the first day of stay. This is done because under South Carolina Medicaid regulations it is the date of admission that determines the payment system under which a claim is paid, even though diagnosis and procedure coding is done at discharge. Payment and eligibility changes affect only patients admitted after the effective date of the change.

All claims were regrouped and repriced according to the system that was in use in South Carolina on May 25, 1987. This makes DRG distributions and costs comparable over time. The DRGs that represent hospitalizations of delivering mothers and newborns, with the weight for each DRG in effect when prospective payment began are listed in Table 1. The payment to a particular hospital for a particular hospitalization was the weight multiplied by a hospital-specific dollar amount. This varied according to the level of the hospital and the presence or absence of a medical education program. According to the SHHSFC Department of Hospital Reimbursement, the weights in Table 1 were derived as a simple average of the weights being used by the Medicaid DRG-based systems in Maryland, Michigan, Ohio, and Pennsylvania in 1985. The SHHSFC switched to weights based on South Carolina Medicaid claims for fiscal year 1987-88.

Case-mix jump for newborns

The percentage of hospitalizations of newborns in each of the DRGs representing complications, from January 1985 through February 1987 is shown by month in Figure 1. The rest of the newborn claims were in DRG 391, for normal newborns.

"Jump" is a more apt description than Simborg's "creep" for the sharp change in the DRG distribution that coincided with the implementation of prospective payment. The rate of complications among newborns averaged 8.6 percent during the period January-June 1985. The rate rose to 12.7 percent in December 1985. The complications rate more than doubled 3 months later to an average of 27.9 percent from March 1986 through February 1987. No further upward trend in complications after March 1986 is apparent. The hospitals' response to the DRG-based system appears to have been in full operation by the end of the transition period.

Table 2 compares the newborn DRG distributions during 12-month periods before and after the implementation of prospective payment. The DRG distribution changed in a way consistent with attributing the change primarily to more thorough diagnosis recording and coding. DRGs requiring the coding of major problems or complicating conditions (386, 387, 389, and 390) more than tripled in frequency. Especially notice the six-fold increase in the rate of DRG 390. Minimal effort is required to upcode normal newborns (DRG 391) to DRG 390, since almost any complication or comorbidity is acceptable to justify the upcode. DRGs 386, 387, and 389 require the finding of more specific

Figure 1

Percent of newborn hospitalizations in abnormal diagnosis-related groups, by month of admission

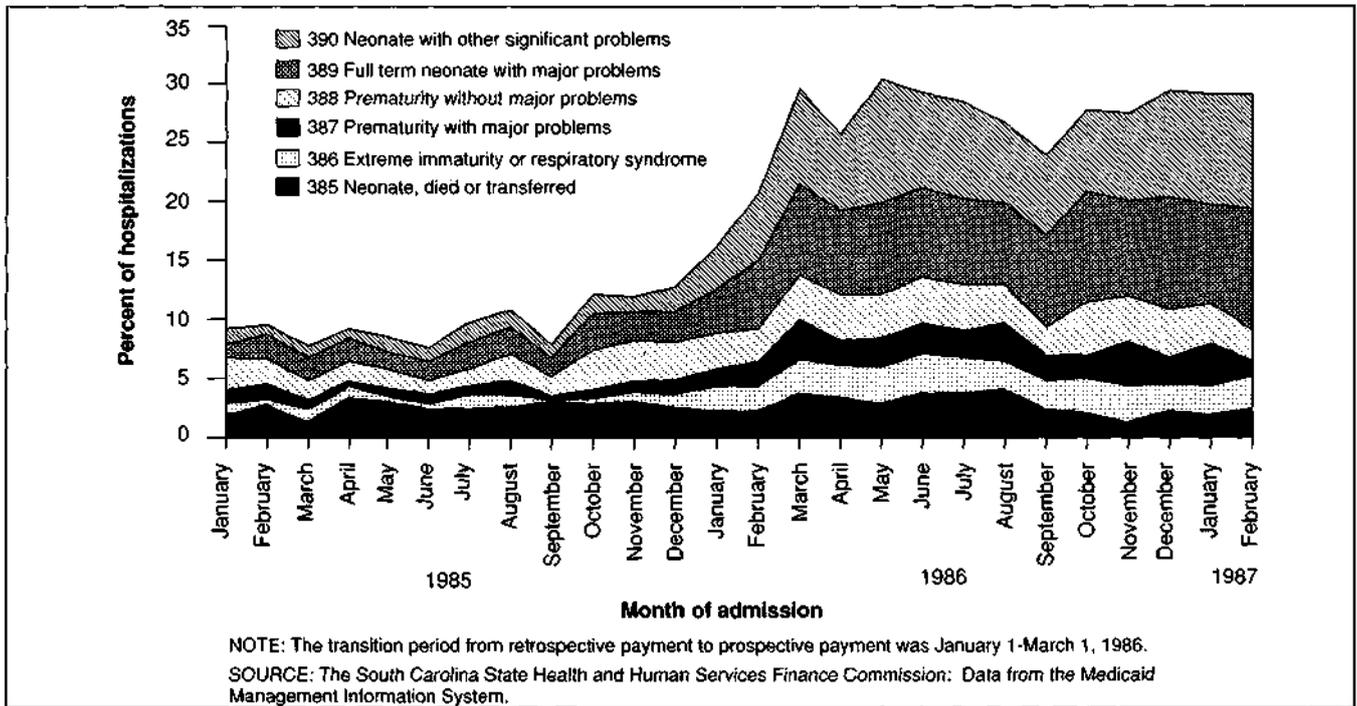


Table 2

Distribution of DRGs of newborn hospitalizations before and after implementation of DRG-based system: South Carolina Medicaid

DRG code	Description	January-December 1985	March 1986-February 1987
Percent			
385	Neonate, died or transferred	2.6	2.7
386	Extreme immaturity or respiratory distress syndrome	0.8	2.8
387	Prematurity with major problems	0.8	2.5
388	Prematurity without major problems	2.3	3.5
389	Full term neonate with major problems	2.1	8.2
390	Neonate with other significant problems	1.3	8.1
391	Normal newborn	90.1	72.1
Number			
All codes		10,020	13,215

NOTE: DRG is diagnosis-related group.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Medicaid Management Information System.

complications. Uncomplicated prematurity (DRG 388) increased, but by less. Deaths and transfers (DRG 385) had only a negligible increase.

The jump in the DRG distribution caused the case mix for newborns to increase 66.6 percent, from an average of 0.476 in 1985 to an average of 0.789 from March 1986 through February 1987. Such an increase

was because the payment gradient for newborn DRGs is very steep, as shown in Table 1.

The totals for hospitalizations in Table 2 show the expansion of Medicaid that was taking place at this time. The possible impact of this expansion on the DRG distribution is discussed in the following section.

Other factors

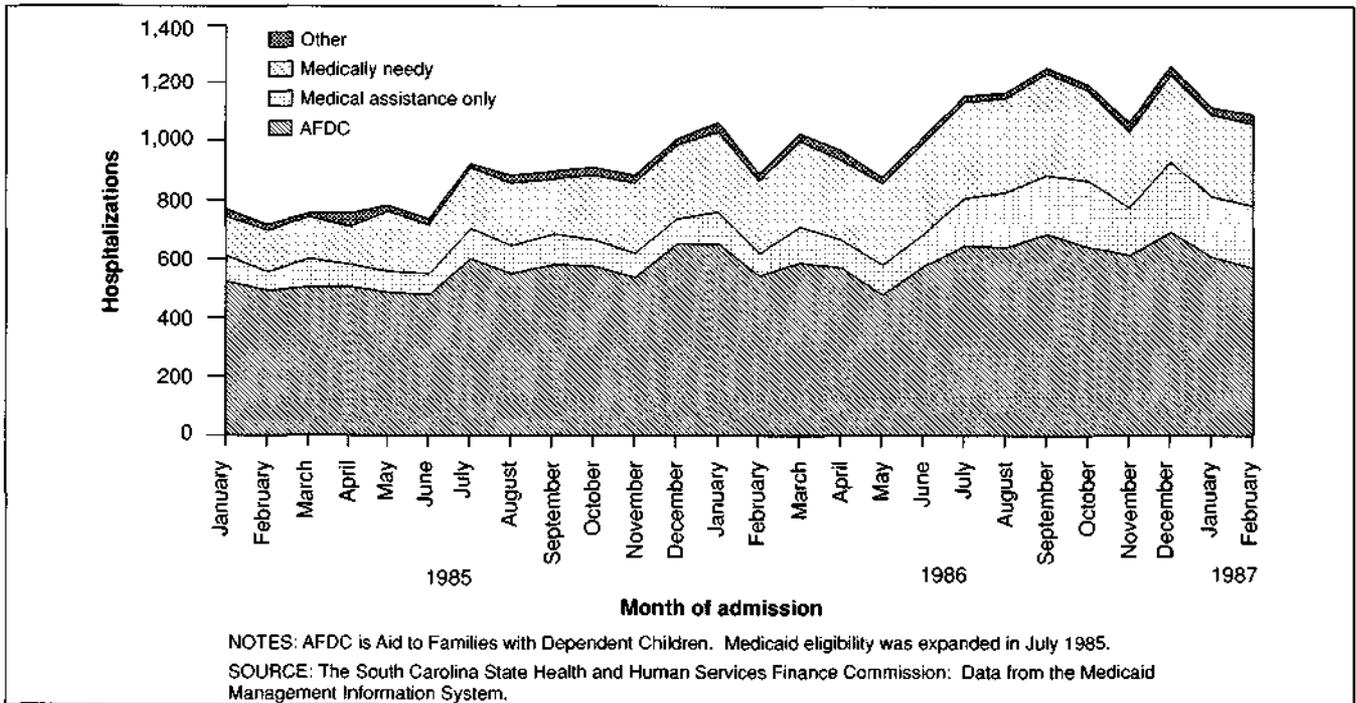
Though the timing and pattern of the DRG jump suggest that more intensive diagnosis recording and coding is a major contributing factor in the observed DRG distribution change, there are other factors that might affect the DRG distribution, and the comparison of before and after transition to prospective payment. Ginsburg and Carter (1986) considered factors including a shift to outpatient treatment for Medicare and other changes in medical practice for Medicare patients.

A shift to outpatient treatment could affect the Medicaid newborn DRG distribution in two ways. One would be if planned out-of-hospital births increased. Women selected for planned out-of-hospital births would be less likely to have newborns that were premature or had complications. This would tend to increase the proportion of hospital-born newborns in DRGs other than 391. In South Carolina, there has been no tendency and no policy encouragement for planned out-of-hospital deliveries for Medicaid. In 1986, 99.4 percent of births in South Carolina were in hospitals or on-premises clinics (South Carolina Department of Health and Environmental Control, 1988). Births at hospital-based clinics are billed as hospital births in South Carolina, and would be included in our data.

A second possible affect of outpatient treatment on the newborn DRG distribution could have resulted from a

Figure 2

Newborn hospitalizations in Medicaid qualification category, by month of admission



shift in newborn care from hospital to home. Home care options for premature neonates are increasing for the general population. In South Carolina, health professionals and policymakers generally believe that Medicaid recipients have such low incomes and often low educational levels that their home environment is not suitable for outpatient treatment of newborns. Reinforcing this direction in policy, the SHHSFC switched to per-diem payment for DRGs 385-387 in fiscal year 1987-88, reducing any incentive to discharge Medicaid newborns early.

An increase in outpatient treatment of newborns would have affected our comparison of newborn DRG distributions if an increasing frequency of newborns were being readmitted and their readmissions were grouped into the specific newborn DRGs 385-391. (Infant readmissions grouped into other DRGs would not affect this article's analysis.) During 1985, 1.17 percent of claims in DRGs 385-391 were for newborns who had been previously hospitalized, then discharged at least overnight. From March 1986 through February 1987, 1.22 percent of claims were for such newborns, which was a small increase. There was little upcoding for readmitted newborns, however, because most readmitted newborns had complications coded even before the DRG-based payment system began. For example, in 1985, 77.8 percent of the readmitted newborns were in complication DRGs 385-390. From March 1986 through February 1987, this increased slightly to 81.4 percent. Apparently, the special circumstances of readmitted newborns encouraged full documentation of diagnoses. Readmitted newborns in the complication DRGs 385-390, were 0.91 percent of newborn claims in 1985. They were 0.99 percent of newborn claims from March 1986

through February 1987. Thus, the small increase in readmissions in the newborn DRGs increased the overall proportion of newborns in complication DRGs by a negligible 0.08 percent.

Another factor that might have affected the DRG distribution was an expansion of Medicaid participation during 1985 and 1986. Effective July 1985, the income ceiling for Aid to Families with Dependent Children (AFDC) was raised from 25 percent to 50 percent of the Federal poverty level. As shown in Figure 2 and Table 3, there were about 50 percent more Medicaid-paid births in early 1987 than there were in early 1985. The proportions of newborns in the Medicaid qualification categories also changed. Most of the increase in newborns were in medical assistance only (MAO) and medically needy

Table 3
 Newborn hospitalizations by Medicaid qualification categories before and after prospective payment implementation: South Carolina Medicaid

Category	1985		March 1986-February 1987	
	Amount	Percent	Amount	Percent
All categories	10,020	100.0	13,215	100.0
AFDC	6,468	64.6	7,294	55.2
Medical assistance only	1,038	10.4	2,037	15.4
Medically needy	2,248	22.4	3,580	27.1
Other	266	2.7	304	2.3

NOTE: AFDC is Aid to Families with Dependent Children.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Medicaid Management Information System.

categories, rather than traditional AFDC, the categorical program for families already with children.

Medical assistance only in South Carolina primarily consists of pregnant women without children who meet AFDC income and asset qualifications. In South Carolina, the medically needy category covers families whose income net of medical expenditures was low enough to qualify for AFDC. (This was a more restrictive standard than in most other States. In South Carolina the net income eligibility ceiling for medically needy was the same as the AFDC income eligibility ceiling.) Recipients in those categories do not receive cash payments.

The eligibility changes would increase the newborn case mix if the newly eligible newborns were less well on average than newborns who would have been eligible under the Medicaid rules of early 1985. We cannot tell from our data which of the newborns in 1986 would have been eligible under the new income ceiling and which would not have been. We can, however, control for the changing proportion of major qualification categories by reconstructing what the DRG distribution would have been if the proportions of the categories had not changed. To do this, we define an adjusted number of claims for each DRG in each period. The formula is as follows, with DRG 385 used as an example:

$$\begin{aligned} \text{Adjusted number of DRG 385's for current period} = & \\ & \frac{\text{385's in AFDC in current period}}{\text{All AFDC in current period}} \\ & \times \text{All AFDC in base period} \\ & + \frac{\text{385's in MAO in current period}}{\text{All MAO in current period}} \quad (1) \\ & \times \text{All MAO in base period} \\ & + \text{analogous terms for medically needy and other.} \end{aligned}$$

Dividing the sum of these terms by the number of claims in the base period gives an adjusted proportion for

Table 4

Distribution of DRGs of newborn hospitalizations, adjusted for changing proportion of Medicaid qualification categories: March 1986-February 1987

DRG code	Description	Observed	Adjusted
		Percent	
385	Neonate, died or transferred	2.7	2.7
386	Extreme immaturity or respiratory distress syndrome	2.8	2.8
387	Prematurity with major problems	2.5	2.6
388	Prematurity without major problems	3.5	3.6
389	Full term neonate with major problems	8.2	8.2
390	Neonate with other significant problems	8.1	8.6
391	Normal newborn	72.1	71.9

NOTE: DRG is diagnosis-related group.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Medicaid Management Information System.

DRG 385 in the current period. A similar calculation is made for the other newborn DRGs, 386 through 391.

Shown in Table 4 is how the newborn DRG distribution from March 1986 through February 1987 changes when adjusted in this manner. The base period is January-December 1985.

The two distributions hardly differ. To the extent that they differ at all, the adjusted distribution has a higher case mix. This indicates that the changing proportion of qualification categories among newborns tended to slightly mitigate the DRG jump.

One more possible factor affecting the DRG distribution should be discussed. This is the possibility that the actual health of the newborns changed during the period. The difficulty in assessing this is that there is no data available on Medicaid newborns' morbidity independent of these hospital claims. Vital records data do not indicate who pays for the medical care. For the entire State population, the rate of low-birth-weight births was virtually unchanged, at 86.0 per thousand in 1985 and 85.9 per thousand in 1986 (South Carolina Department of Health and Environmental Control, 1988).

One program in operation that was specifically intended to improve birth outcomes for Medicaid newborns has been the High Risk Channeling Project (HRCP). This program began in April 1985, 1 month after prospective payment began. The HRCP screens all Medicaid pregnancies and channels those judged to be high risk to specialist providers for prenatal, delivery, post-partum, and infant care. The HRCP does appear to be somewhat successful, according to ongoing evaluations (Kronenfeld and Baker, 1989). To the extent that the HRCP reduced morbidity among newborns in late 1986, the observed change in the DRG distribution understates the impact of prospective payment.

In sum, for newborns it is appropriate to measure the DRG jump by the observed change in the DRG distribution. The changing qualification categories of Medicaid recipients and the HRCP would, if they have any effect, tend to reduce the newborn case mix. There was only a very small increase in readmissions of newborns in the complication DRGs in the year following prospective payment's implementation. The actual case-mix increase associated with prospective payment for newborns should differ little from what we observe.

Delivery case mix jump

A DRG jump also occurred for deliveries. An immediate response to the implementation of prospective payment, particularly for complications among caesarian sections is shown in Figure 3.

As shown in Table 5, the proportion of caesarian sections (DRGs 370 and 371) that had complicating conditions (DRG 370) increased six-fold. The proportion of vaginal deliveries in DRG 372, which is for complicating diagnoses, nearly doubled. The rate of caesarian sections among deliveries also increased, from 18.9 percent to 21.5 percent of deliveries, but we cannot determine to what extent this represents coding change versus change in actual practice.

The cost impact of the DRG increase for deliveries was much less than the increase for newborns, because the

Figure 3
Percent of complications among caesarian and vaginal deliveries

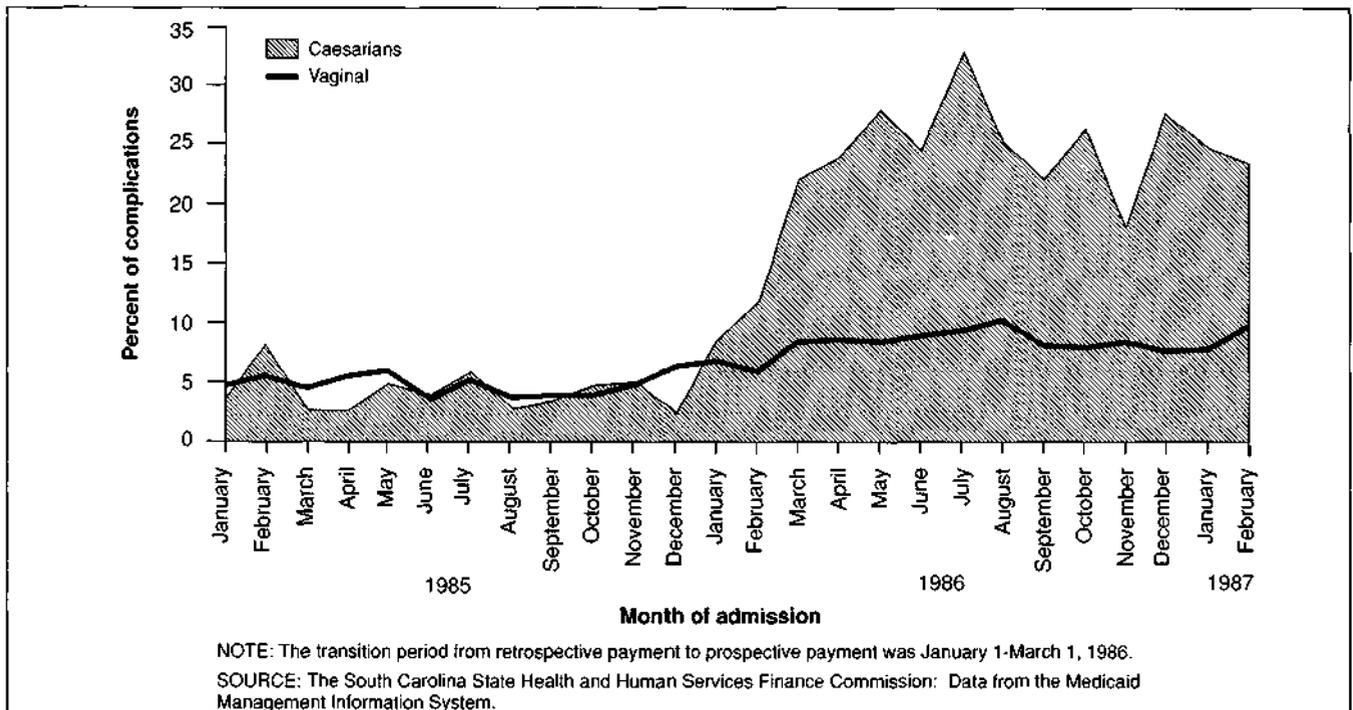


Table 5
Indicators of DRG jump for deliveries

Indicator	January-December 1985	March 1986-February 1987
	Percent	
Complications rate among caesarian sections	4.0	24.7
Complications rate among vaginal deliveries	5.1	9.3
Rate of caesarian sections	18.9	21.5
	Number	
Delivery hospitalizations	10,439	13,060

NOTE: DRG is diagnosis-related group.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Medicaid Management Information System.

difference in weight for DRGs was much less for deliveries, as shown in Table 1. The CMI for deliveries rose from an 0.908 average during 1985 to an 0.951 average from March 1986 through February 1987, an increase of 4.7 percent. Excluding the effect of the increase in the caesarian section rate makes the increase 2.2 percent.

Impact on Medicaid costs

The DRG jump for newborns had a major affect on program finances. Payments for newborns accounted for 13 percent of Medicaid hospital expenditures in South Carolina during the year after prospective payment began. The 66.6 percent case-mix increase for newborns implies a 5.5-percent increase in total Medicaid hospital

payments, even if there were no DRG jump among other Medicaid patients. Suppose all Medicaid hospitalizations other than newborns had a case-mix increase of 2.2 percent, which was our finding for deliveries, conservatively excluding all of the shift to caesarian sections. Under that assumption, the Medicaid case-mix increase would be 7.6 percent. This increase is much greater than Medicare experienced, and also greater than the 3.05 percent that South Carolina had anticipated or what other States had anticipated.

Outliers

Payments for outliers exacerbated the cost impact of the DRG distribution change for newborns. South Carolina's DRG-based payment system initially defined outliers as those hospitalizations for which the length of stay was more than twice what the SHHSFC expected it to be for the average length of stay of a particular DRG. For each day in the hospital beyond the outlier trim, the hospital received a payment calculated by dividing the DRG-based payment by the DRG's expected average length of stay, and then dividing that quotient by two. In other words, the payment for outlier days was one-half of the average per diem rate for the DRG. Later in 1987, the outlier payment system was modified to also include incurred-cost outliers.

Shown in Table 6 is how spending on outliers increased beyond what might have been expected. The top half of Table 6 shows what the outlier payments would have been if the DRG-based payment system had been in effect in 1985. Eighty-nine percent of the outliers are in DRG 391, for normal newborns, and outlier

Table 6
Outlier payments before and after prospective payment implementation

DRG code	Claims	Total payments	Outliers	Outlier payments	Percent of total for outlier payments
Before DRG-based payment (January-December 1985)¹					
All codes	10,020	\$6,096,603	104	\$64,278	1.1
385	259	947,884	0	0	0.0
386	82	1,341,219	0	0	0.0
387	77	712,980	0	0	0.0
388	231	296,840	5	4,450	1.5
389	208	218,112	4	11,329	5.2
390	132	62,083	2	1,147	1.8
391	9,031	2,517,484	93	47,352	1.9
After DRG-based payment (March 1986-February 1987)					
All codes	13,215	16,586,659	75	1,517,640	9.1
385	360	2,078,686	13	513,968	24.7
386	374	6,033,233	13	482,309	8.0
387	336	3,203,867	5	370,875	11.6
388	466	704,591	2	4,450	0.6
389	1,086	1,280,906	29	138,554	10.8
390	107	561,486	5	6,360	1.1
391	9,522	2,723,889	8	1,125	0.0

¹Claims are grouped and repriced as if paid by a DRG-based payment system.

NOTE: DRG is diagnosis-related group.

SOURCE: The South Carolina State Health and Human Services Finance Commission: Data from the Medicaid Management Information System.

payments are only 1.1 percent of total payments. Planners might expect outliers to make only a small contribution to program costs.

When prospective payment was implemented, the diagnosis coding changes shifted newborns into DRGs with longer length-of-stay cutoffs but higher per day outlier payments. The frequency of outliers fell from 1.04 percent to 0.57 percent, but the higher daily payments more than offset this. Outlier payments for newborns were 9.1 percent of total payments in the first year of prospective payment. Because of the shift of outliers to higher paying DRGs, average payment per newborn hospital claim after prospective payment was twice the anticipated payment based on the previous year's hospital claims.

Conclusion

The introduction of a DRG-based payment system for Medicaid in South Carolina was associated with a DRG jump of striking magnitude and speed. The CMI for newborns rose 66.6 percent. Virtually all of the change in the DRG distribution came in a 3-month period corresponding precisely to the period that prospective payment was implemented. The speed of the case-mix increase suggests to us that a major cause of the increase was changes in hospital administrative policy regarding the recording and coding of diagnoses. Hospital administrations in South Carolina had the managerial and technical expertise to change diagnosis recording and coding practices, because of having 2 years of experience with DRG-based payment under Medicare, as well as transmitted knowledge from other States where a Medicaid DRG-based system had already been implemented. A specific incentive was evidently

important in sparking the application of this apparatus to units caring for Medicaid maternal and newborn patients.

For budget planners in States considering adopting the DRG-based payment for Medicaid, the South Carolina experience shows that a DRG jump could be larger than would be anticipated based on the Medicare experience. This is not because the amount of coding change is necessarily any greater for Medicaid than for Medicare. Rather, it is because the payment per case typically increases very sharply for newborn DRGs representing prematurity and complications. Other States will generally have different DRG weights than South Carolina, so their case-mix increase will differ accordingly. However, as long as DRG payments reflect the large difference in resources used by premature versus normal newborns, the cost implications of coding change will be high. Outlier payments for newborns will exacerbate the cost impact of the DRG jump if, as with South Carolina's payment system, the per day payments for outliers are proportional to the basic payment for the DRG.

The South Carolina experience also has an implication for the research use of hospital discharge data, such as that collected by State or private cooperative services. The diagnosis distribution can change dramatically in response to changes in the payment system. The coding practice changes instituted for Medicare patients after the DRG-based payment began in 1983 have not necessarily been applied to non-Medicare patients. Even though one cannot assume that current coding practices under DRGs represent the best possible recording and coding practices, differences in these practices over time and over type of patient do raise questions about the reliability of diagnosis-based hospital data for time-based research uses. The abruptness of the Medicaid DRG jump in South Carolina leads us to believe that hospital

administrations knew how to improve and enhance diagnosis recording and coding efforts, and did so rapidly once the incentive appeared. Further research could track changes in non-DRG-paid patients' codings as DRG-based payment system is introduced for other groups of patients, to see how much spillover there is, if any.

Acknowledgment

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