



Maternal and Newborn Health Indicators: Colorado CHP+ Enrollees, 2005-07

*An analysis of select indicators from the
Colorado Pregnancy Risk Assessment
Monitoring System (PRAMS)*

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Introduction

Child Health Plan *Plus* (CHP+) is publicly financed health insurance (60% federal/40% state funds) that provides coverage to low-income children and pregnant women who do not qualify for Medicaid. Currently, children and pregnant women are eligible for CHP+ if they have family incomes at or below 205 percent of the federal poverty level (FPL); in 2007 this was \$28,065 for a family of two and \$42,333 for a family of four.ⁱ In FY08, the average monthly enrollment of children in CHP+ was 57,795 and the average number of pregnant women enrolled per month was 1,570.ⁱⁱ Recently passed legislation in Colorado (HB 09-1293) raised the eligibility threshold to 250 percent of FPL beginning in 2010.

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a population-based risk factor surveillance system designed to identify and monitor maternal attitudes and experiences before, during and after pregnancy. Colorado is one of 38 states participating in PRAMS which is funded by the federal Centers for Disease Control and Prevention (CDC).

PRAMS is an ongoing, population-based surveillance system designed to supplement vital records and to generate state-specific perinatal health data. Each month, a stratified random sample comprised of approximately 5 percent of Colorado women who recently had a baby are selected from eligible birth certificates. This sample is stratified by region of residence (Denver Metro, Other Metro, Rural) and birth weight (low, adequate) to ensure an adequate sample in the rural and low birth weight categories. Selected women are asked to complete the PRAMS questionnaire, which addresses a variety of health and psychosocial issues such as prenatal care, maternal use of alcohol and cigarettes, breastfeeding, stress, and infant health.

The Colorado Health Institute (CHI) conducted the following analysis at the request of the Colorado Department of Health Care Policy and Financing (HCPF) using three years of PRAMS data (2005-07). The analysis compares women enrolled in CHP+ with all other women who had recently given birth. *All other pregnant women* include those enrolled in Medicaid and uninsured women in addition to those who have private insurance. Because of the heterogeneity of this group of women, particularly the mix of known high risk pregnant women (Medicaid and uninsured women) with lower risk women, the comparisons between CHP+ enrollees and *all other pregnant women* should be interpreted judiciously.

Specific indicators included in the CHI analysis are:

- Maternal demographic characteristics;
- Select maternal risk factors and experiences during pregnancy;
- Maternal utilization of prenatal during pregnancy; and
- Select newborn birth outcomes and postpartum experiences.

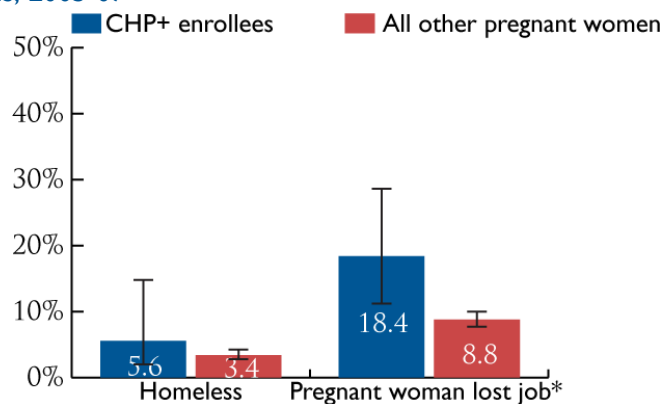
Analysis and data limitations

The PRAMS data used for the analysis contained in this issue brief came from statewide samples of women who had recently given birth in Colorado for the period covering 2005 through 2007. These samples were then weighted to represent the population of all women who had delivered a live infant in Colorado during this period. The estimates included in the tables and graphs are “point estimates” and

include a 95 percent confidence interval (CI) around each point estimate. The 95 percent CI will include the *true* population mean (or proportion) 95 percent of the time if random samples of the same population are drawn multiple times. A confidence interval is often referred to as the margin of error associated with a point estimate; e.g., political polls often refer to a margin of error of plus or minus three percentage points.

To illustrate, Graph 1 shows that 5.6% of CHP+ enrolled pregnant women reported being homeless at some time during the 12 months before giving birth. The 95 percent CI around the point estimate is between 2.0 and 14.8, which means that the true point estimate (percent reporting homelessness) for the population would fall somewhere between 2% and 14.8% for 95 out of 100 samples of this population. Likewise, the point estimate for the percent of women reporting that they had lost a job during the 12 months prior to giving birth was 18.4% with a 95 percent CI that ranged from 11.2% to 28.6%.

Graph 1. Percent of women reporting select stressful situations in the 12 months prior to giving birth by CHP+ status, 2005-07



* Statistically significant difference ($p < 0.05$)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

When comparing two groups' point estimates, they may or may not be statistically different from each other, even if the confidence intervals overlap. CHI employed the student's t-test to determine significance for all comparisons between the two groups of interest—CHP+ enrolled pregnant women and *all other pregnant women*.

In its analysis, CHI uses an asterisk to denote if the difference between two groups is statistically significant according to the results of the t-test. For example, in Graph 1 comparing the rates at which CHP+ enrollees and all other pregnant women reported losing their job within the 12 months prior to giving birth, the difference between the two groups is statistically significant, that is, pregnant women on CHP+ were significantly more likely to report losing job within the 12 months prior to giving birth than all other pregnant women.

Analysis

MATERNAL DEMOGRAPHIC PROFILE

Table I compares the demographic characteristics of pregnant women enrolled in CHP+ with *all other pregnant women* that gave birth between 2005 and 2007 in Colorado. Pregnant women not enrolled in CHP+ were significantly more likely to be 35 years or older than those enrolled in CHP+ (17% versus 5% respectively). Likewise, *all other pregnant women* were significantly more likely to have completed more than 12 years of education when compared to CHP+ enrolled women (55% versus 33%), while CHP+ enrollees were more likely to have a twelfth grade education (36% versus 25%). This statistic is interesting when considering that *all other pregnant women* includes those enrolled in Medicaid and uninsured women.

Table I. Characteristics of Colorado women who recently gave birth by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant woman		
	%	95% CI		%	95% CI	
Maternal Age						
15-19 years	11.2	6.3	19.2	8.5	7.4	9.6
20-24 years*	41.9	31.4	53.2	22.7	21.0	24.4
25-34 years	41.9	31.4	53.3	51.7	49.8	53.6
35+ years*	5.0	2.1	11.3	17.2	15.9	18.6
Race/Ethnicity						
White/non-Hispanic	57.8	46.0	68.8	62.8	60.9	64.7
Hispanic	39.4	28.5	51.4	29.4	27.5	31.3
Black	2.4	0.6	8.9	4.2	3.3	5.2
Asian American/Pacific Islander	0.0	NA		3.1	2.4	3.8
American Indian/Native Alaskan	0.3	0.1	2.1	0.7	0.6	1.0
Education						
<12 yrs	31.3	21.4	43.3	20.6	19.0	22.4
12 yrs*	35.6	26.0	46.5	24.8	23.1	26.5
>12 yrs*	33.1	23.8	44.0	54.6	52.7	56.5

* Statistically significant difference (p<0.05)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

MATERNAL RISK FACTORS DURING PREGNANCY

According to published literature, women who report an unintended pregnancy are more likely to also exhibit risky behaviors than pregnant women who report that their pregnancy was planned.^{iii, iv} As illustrated in Table 2, significantly more pregnant women enrolled in CHP+ reported their pregnancy was unintended when compared to *all other pregnant women* (54% versus 38%). CHP+ enrolled women

were significantly more likely to be younger as a group (age 20-24 years) than *all other pregnant women* (42% versus 23%) and research conducted by CDC has found that younger age is associated with higher rates of unintended pregnancy.

Table 2. Percentage of pregnancies reported as unintended by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
Unintended pregnancy*	53.9	42.8	64.6	38.2	36.3	40.1

* Statistically significant difference (p<0.05)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Multivitamin use prior to becoming pregnant

The Institute of Medicine recommends that all women of childbearing age take a daily folic acid supplement both prior to and during pregnancy as folic acid supports normal fetal neural tube development.^v As displayed in Table 3, there were no significant differences in the daily intake of a multivitamin during the month prior to becoming pregnant for CHP+ enrolled women and *all other pregnant women*.

Table 3. Multivitamin use every day of the week in the month prior to becoming pregnant by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
Multivitamin use every day	25.4	17.1	36.0	34.1	32.3	35.9

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Timely prenatal care

One of the functions of prenatal care is to identify and monitor risks associated with pregnancy. There were no significant differences in the proportion of women enrolled in CHP+ and *all other pregnant women* in reported rates of receiving prenatal care as early as they wanted (81% versus 83%).

Regardless of payment source, all pregnant women were more likely to receive their prenatal care at a private physician's office or HMO clinic compared to all other settings, although CHP+ enrollees were significantly more likely than *all other pregnant women* to receive their prenatal care from a community health center (24% versus 10% respectively) and less likely to receive care from a private physician's office or HMO clinic (40% versus 61% respectively).

Table 4. Source of prenatal care of mothers who recently gave birth by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
Hospital clinic	18.9	11.2	30.1	15.5	14.0	17.0
Health dept. clinic	14.0	7.5	24.6	6.6	5.6	7.8
Private physician/HMO clinic*	40.5	30.4	51.4	60.8	58.9	62.7
Community health center*	23.8	15.3	35.1	9.9	8.8	11.2
Other*	2.8	1.4	5.7	7.2	6.3	8.2

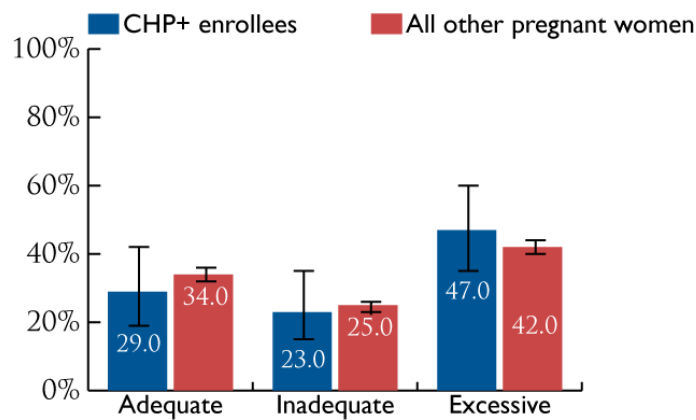
* Statistically significant difference (p<0.05)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Maternal weight gain during pregnancy

Appropriate weight gain during pregnancy is associated with healthy fetal development. Excessive weight gain can cause adverse health outcomes such as gestational diabetes and complications during labor and delivery. Alternatively, insufficient weight gain can result in low birth weight.^{vi, vii} As noted in Graph 2, there were no significant differences between women enrolled in CHP+ and *all other pregnant women* who achieved adequate weight gain during their pregnancy.¹

Graph 2. Weight gain during pregnancy in mothers who recently gave birth by CHP+ status, 2005-07



SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Similarly, there were no significant differences in rates of low birth weight between CHP+ women and *all other pregnant women* as observed in Table 5. However, among all women giving birth between 2005 and 2007 in Colorado, including both CHP+ enrollees and *all other pregnant women*, the Healthy People 2010 target of no more than five percent of all births being of low birth weight was missed as a statewide goal.

¹ Weight gain classifications recommended by the Institute of Medicine.

Table 5. Percent of infants with a birth weight of less than 2500 grams (5 pounds 8 ounces)

	CHP+ enrollees		All other pregnant women	
	%	95% CI	%	95% CI
Birth weight < 2500 grams	8.5	6.0 11.9	8.2	8.0 8.3

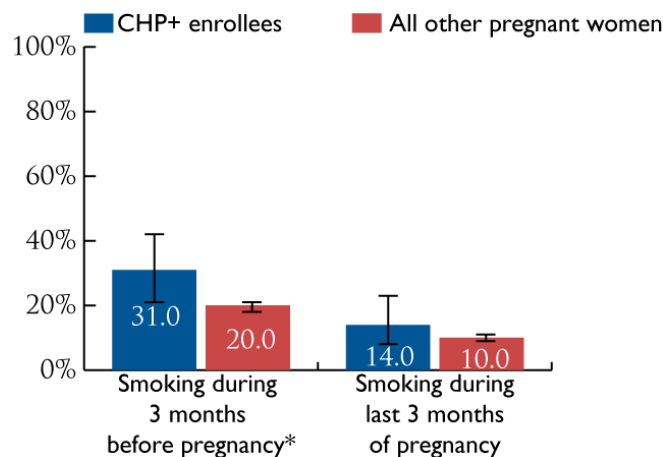
SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Smoking prior to and during pregnancy

Smoking while pregnant has been demonstrated to increase the risk of low birth weight and newborn distress and death.^{viii, ix} The way in which the data on smoking were requested for the purposes of this report does not permit an analysis of the interrelationship between smoking prior to and during the last three months of pregnancy. What can be observed are these two rates (prior to and during pregnancy) independent of one another.

Pre-pregnancy smoking rates were significantly higher for CHP+ pregnant women *than all other pregnant women* although during pregnancy rates were not different. More importantly from a policy intervention perspective, all pregnant women in Colorado exceeded the Healthy People 2010 goal of less than one percent of women smoking during pregnancy.

Graph 3. Proportion of women who smoked the three months prior to becoming pregnant and during the last three months of pregnancy by CHP+ status, 2005-07



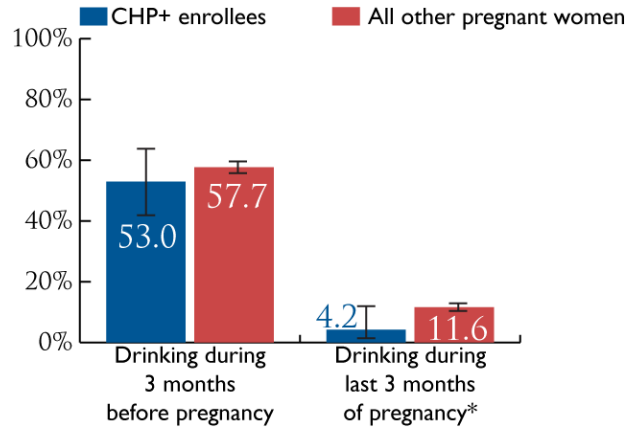
SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07
 what does the asterisk denote?

Alcohol consumption prior to and during pregnancy

For those women who reported having at least one alcoholic beverage within the past two years, CHP+ enrollees had similar rates of alcohol consumption during the three months prior to becoming pregnant as *all other pregnant women* (53% vs. 57.7% respectively). Alternatively, CHP+ enrollees were significantly less likely to drink during the last 3 months of their pregnancy when compared to *all other pregnant women* (4.2% versus 11.6% respectively). Furthermore, women on Medicaid are less likely to drink both

before and during pregnancy—indicating that the difference in alcohol consumption between CHP+ enrollees and all other pregnant woman would likely be even larger if women on Medicaid were not counted amongst *all other pregnant women*.

Graph 4. Drank alcohol 3 months prior to pregnancy and during the last 3 months of pregnancy by CHP+ status, 2005-07



SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

* Statistically significant difference ($p < 0.05$)

Stressors experienced 12 months prior to giving birth

High levels or chronic stress can have negative effects on fetal development and are associated with preterm births and low birth weight.^x The PRAMS questionnaire asked women to identify stressful situations that may have occurred in the 12 months prior to giving birth. Table 6 summarizes these individual stressors.

There is a body of literature that discusses a range of stressful events occurring immediately before and during pregnancy and ways in which these stress factors can affect maternal and infant outcomes. In 2002, the CDC issued a special PRAMS report that included the prevalence of physical abuse experienced by women in the 12 months prior to giving birth in which Colorado rates were reported.^{xi}

This paper reports both individual stress factors as well as groupings of stressors to both highlight those individual stress factors that had statistical significance across all those reported by pregnant women and to show the cumulative burden of stress reported by women giving birth in Colorado in the 2005-07 period. Although many individual stress factors cannot be correlated with a specific adverse birth outcome per se, understanding the stressors faced by pregnant women can provide policy guidance about those that may be putting Colorado’s pregnant women at increased risk for adverse maternal and infant health outcomes.

Table 6. Percent of women reporting select stressful events in the 12 months prior to giving birth by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
A close family member was very sick and had to go into the hospital	20.8	13.8	30.3	19.0	17.5	20.5
Separated or divorced from husband or partner	9.7	5.45	16.7	7.2	6.25	8.24
Moved to a new address	47.6	36.8	58.7	36.5	34.7	38.35
Homeless	5.6	2.0	14.8	3.4	2.8	4.25
Husband or partner lost his job	19.9	12.1	31.0	12.3	11.1	13.6
Pregnant woman lost job*	18.4	11.2	28.6	8.8	7.7	10.0
Argued with husband or partner more than usual	24.0	15.9	34.4	23.1	21.5	24.8
Husband or partner said he didn't want the pregnancy	12.9	6.9	22.6	7.3	6.3	8.3
Couldn't pay bills	30.5	21.8	40.9	23.1	21.5	24.8
In a physical fight*	1.3	0.5	3.4	3.1	2.47	3.9
Pregnant woman or husband/partner went to jail	7.8	3.8	15.3	4.1	3.4	5.0
Someone very close had a bad problem with drinking or drugs	19.1	11.6	29.7	10.8	9.7	12.1
Someone very close died	21.7	13.8	32.6	13.8	12.6	15.2

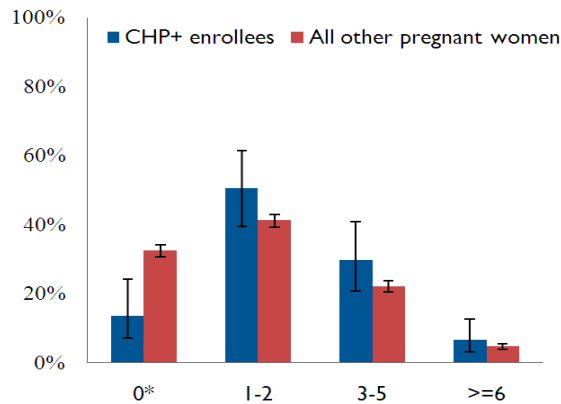
* Statistically significant difference ($p < 0.05$)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

As noted in Table 6, pregnant women enrolled in CHP+ were twice as likely to report losing a job during the 12 months prior to giving birth as *all other pregnant women* (18% versus 9% respectively). This is likely because these are pregnant women who became eligible for CHP+ after a job loss.

The cumulative number of stressors that new mothers reported during the 12 months prior to giving birth is summarized in Graph 5. CHP+ enrollees were significantly less likely to report having zero stressors during their pregnancy when compared with *all other pregnant women*, with the largest proportion of women reporting 1-2 stressful events immediately prior to or during their pregnancy.

Graph 5. Total number of stressors reported by women who recently gave birth by CHP+ status



* Statistically significant difference

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

Anticipatory guidance and counseling during pregnancy

Table 7 lists various recommended topics that should be discussed during routine prenatal care visits. As noted in the table, there were several significant differences in coverage of these topics during prenatal visits between the two groups of pregnant women. In each case, CHP+ enrollees were significantly more likely to discuss these topics with their prenatal care provider than *all other pregnant women*.

Table 7. Health topics discussed during prenatal visits by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
How smoking during pregnancy could affect baby	78.7	69.0	86.0	70.4	68.7	72.2
How drinking alcohol during pregnancy could affect baby	78.4	68.7	85.8	73.1	71.3	74.7
How using illegal drugs could affect baby	72.4	61.7	81.0	64.3	62.5	66.2
Medicines that are safe to take during pregnancy	92.3	86.3	95.8	91.4	90.3	92.4
Testing for birth defects and/or hereditary diseases	86.1	76.9	92.1	89.9	88.6	91.0
HIV testing	77.3	67.2	85.1	76.4	74.8	78.0
Using a seat belt during pregnancy	64.7	53.9	74.2	55.9	54.0	57.8
Affects of physical abuse by husband/partner*	64.0	53.2	73.6	46.4	44.5	48.4
Talked to someone about signs and symptoms of preterm labor*	91.9	85.9	95.5	86.3	84.9	87.6

	CHP+ enrollees			All other pregnant women		
Early labor	90.0	81.7	94.7	88.8	87.5	89.9
Getting baby's hearing tested	63.6	52.5	73.5	55.2	53.3	57.1
Breastfeeding*	91.1	84.2	95.2	83.9	82.5	85.2
Postpartum birth control*	90.8	83.2	95.2	84.0	82.5	85.3

* Statistically significant difference (p<0.05)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

POSTPARTUM BEHAVIORS AND RISK FACTORS

All Colorado women giving birth between 2005 and 2007 exceeded the Healthy People 2010 goal for “ever breastfeed” and “infant sleeps on back.” In two cases, “no loaded firearms in the home” and “postpartum depression,” CHP+ enrolled women had significantly better experiences than *all other pregnant women*.

Table 8. Postpartum behaviors and risk factors by CHP+ status, 2005-07

	CHP+ enrollees			All other pregnant women		
	%	95% CI		%	95% CI	
Ever breastfed	90.8	82.8	95.3	89.9	88.7	91.0
Newborn's hearing tested when baby was born	95.1	86.6	98.3	93.3	92.3	94.3
Infant brought home in car seat	100.0	NA		99.5	99.2	99.7
Home has working smoke alarm	92.5	83.9	96.7	93.5	92.4	94.4
No loaded firearms in house*	99.3	97.6	99.8	94.9	94.0	95.7
Infant sleeps on back	80.5	69.5	88.2	79.9	78.3	81.4
Infant had well-baby checkup	92.3	83.5	96.6	93.6	92.5	94.5
Postpartum depression* ²	10.3	5.8	17.5	12.8	11.6	14.2

* Statistically significant difference (p<0.05)

SOURCE: Colorado Dept. of Public Health and Environment, Health Statistics Section, PRAMS, 2005-07

SUMMARY AND POLICY IMPLICATIONS

This analysis reveals a number of noteworthy findings with regard to pregnant women who had recently given birth and received prenatal care through CHP+. The women tended to be younger than all other pregnant women, and significantly more likely to have reported an unintended pregnancy. These two factors, taken in combination, point to the importance of having a maternity benefit in place for CHP+.

² Estimates of postpartum depression include women who reported “always” or “often” feeling down, depressed or hopeless; and/or having little interest or pleasure in doing things following the birth of their baby.

Moreover, it is important to note that women enrolled in CHP+ who had recently given birth have comparable health outcomes to all other pregnant women who had recently given birth. Among those outcomes are having adequate prenatal care, receiving anticipatory guidance by a health care provider and comprehensive counseling during the prenatal period, as well as positive birth outcomes as measured by a low incidence of low birth weight. Therefore, the CHP+ pregnancy benefit has demonstrated its success in providing the circumstances for positive maternal, birth and newborn outcomes.

Endnotes

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