

*End of Life Expenditure
Patterns for Medicaid
Eligible Infants and Children*

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Background

- Annually, 50,000 children die from injuries, congenital anomalies, cancer, and other diseases
- An additional 500,000 children are coping with life-limiting illnesses
- The goal of **palliative** care is to provide comprehensive and effective care for children and families (pain and symptom control) while addressing health, spirituality, and emotional well being
- **Limited information available**

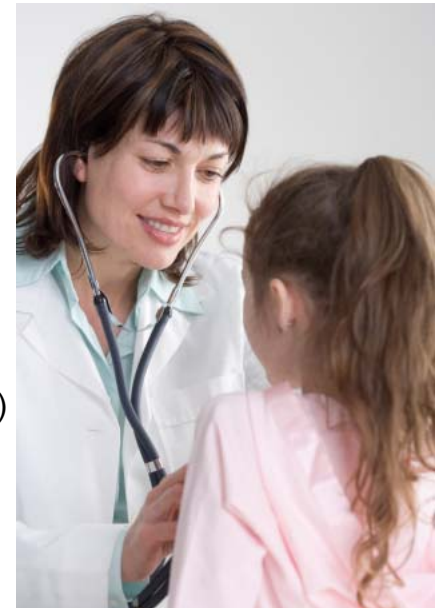
Goals of our Study

1. Describe the end of life expenditure patterns over all service categories (inpatient, outpatient, emergency dept., pharmacy, other, and hospice care)
2. Investigate the association between demographic characteristics and cause of death on end of life spending

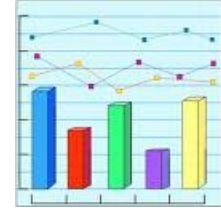


Hospice Availability in Florida

- Florida has more inpatient hospice days than any other State (Kaiser 2007)
- About 26% of Florida hospices have pediatric programs (NAHPCO 2007)
- Other agencies may be providing services to children at the end of life



Census Characteristics



- N=687 infants and N=1,527 children who died from 2003-2006. All in Florida's Medicaid program
- About 1/3 of all child deaths in Florida
- About 60% males (both infants and children)
- More Black infants (37%) and more White children (40%) than all other race categories (Hispanic and Other)
- Less than 10% live in a rural area
- Infants age=3 months, children=12
- Average months enrolled for children=9

Mean Expenditures (standard deviation) During the Last Year of Life for
Spenders, Percentage Incurring Expenditures

| | Infants | Children |
|-------------|--------------------------------------|--------------------------------------|
| Inpatient | \$63,654 (\$95,928) 79% | \$44,753 (\$72,416) 52% |
| Outpatient | \$1,650 (\$6,338) 74% | \$16,106 (\$38,769) 81% |
| Hospice | \$8,652 (\$9,271) 4% | \$11,362 (\$14,060) 11% |
| Pharmacy | \$943 (\$2,142) 36% | \$5,477 (\$9,093) 67% |
| Total Costs | \$58,844 (\$95,103) 91% | \$53,736 (\$84,135) 87% |

Cause of Death

- Cause of Death was partitioned into four categories based on ICD9 codes:
 - Perinatal (e.g. chromosomal abnormalities, related to gestation)
 - Chronic (e.g. Cancer, HIV, CP)
 - External (e.g. trauma, homicide)
 - Other (e.g. SIDS, unexplained death)
- More infants died from a chronic condition (35%) and more children died from external causes (45%)

Analytical Strategy



- Two part models were used:
 - Estimate the odds of having any expenditures,
 - For spenders only, estimate an ordinary least squares (OLS) model,
- Outcome variables: expenditures for each service category
- Expenditures are highly skewed so we used log transformation
- Predictor variables: Cause of Death, Months Enrolled, and Demographics

Infants- Logistic Model

- Perinatal and Chronic cause of death increased the odds of incurring **inpatient** expenditures by **79%** as compared to 'Other' cause of death
- Longer months enrolled increased odds- **18% hospice to 60% pharmacy**
- Black infants had decreased odds versus Whites-- **51% less Outpatient and 40% less 'Other' costs**
- Hispanic infants had **five times** the odds of incurring hospice expenditures than Whites

Children- Logistic Model

- Months enrolled had the greatest effect
- Age decreased the odds-**Outpatient (-3%) to other expenditures (-6%)**
- Black children had increased odds versus Whites-- **68% more ED expenditures**
- Black children 51% less likely than Whites to incur **hospice** expenditures

Combined Results- Infants

- Cause of Death had the greatest effect on inpatient expenditures for infants
- Perinatal and Chronic causes of death increased inpatient expenditures **37 to 30 times**
- Black (**99%**) and Hispanic (**48%**) infants had **higher** inpatient expenditures
- Months enrolled increased expenditures by 11% (ED) to 33% (Outpatient)

Combined Results - Children

- Perinatal cause of death had the greatest effect on expenditures for children
- Months enrolled increased expenditures
- Black (49%) and Hispanic (88%) children had higher inpatient expenditures
- Rural children had **lower** outpatient and pharmacy expenditures

Discussion

- Infants and children have similar total costs (\$59,000 and \$54,000), however, infants spend more inpatient dollars and children spend more hospice, outpatient, and pharmacy dollars.
- About 9% of infants and 14% of children in our census did not incur any expenditures

Discussion



- **Summary:**

- Cause of Death had the greatest effect on spending for both groups
- Months enrolled had positive effect for both groups
- Age had a slightly negative effect for children
- Demographic variables showed some expected and unexpected results:
 - **Expected**
 - Black infants spend more than Whites for inpatient and other
 - Black and Hispanic children spend more on inpatient and emergency department care than Whites
 - **Unexpected**
 - Hispanic infants are about 5 times more than White infants to use hospice services
 - Children in rural areas spend more inpatient but less on outpatient and pharmacy than children in urban areas

Limitations

- Medicaid enrollees only
- Longer time spans may change results
- Palliative care programs may or may not focus on the last year of life

Implications



- In the last year of life, infants and children die from different causes reflecting different service needs
- Infants and children should have more choices at the end of life
- Race/ethnicity is an important factor in the use of services, but it is unclear what the co-founding factors are

Future Research

- How can this information be used to develop palliative care programs?
- What drives the differences in service usage across racial groups?