HEALTH CARE UTILIZATION AS A PROXY TO INTRODUCE A NOVEL DISEASE SCREEN IN PEDIATRIC POPULATIONS

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BACKGROUND

The global economic burden of treating genetically distinct conditions is growing rapidly. An interest in prophylactic treatment and pharmacogenetic decision-making has emerged in concert with an increasing usage of genetic tools used to pre-symptomatically identify these conditions, such as prenatal genetic testing, biomarker assays and personal genomic tests. However, little is known about the optimal timing of these approaches to best impact patient care and, where applicable, to consider the cost of care in providing prophylactic treatment. We hypothesized that health care utilization is predictive for the optimal timing of a genetic screen, and that the majority of people would favor a pre-symptomatic genetic screen.

OBJECTIVE

To determine the optimal developmental time point in early childhood to screen for certain health conditions pre-symptomatically and conduct initial price sensitivity analysis.

METHODS

A retrospective review of vaccination compliance, as a proxy for healthcare utilization, of the 3,969,953 eligible individuals from 2012 through 2018 using de-identified data from the Wisconsin Immunization Registry. Further analysis across racial groups was assessed, and the financial impact of changes in cost of care. Concurrently, we conducted a national survey (n=122) to determine preference for the timing and disease inclusions of genetic tests. Data collection included sex, income, race, community type, family planning status, rare disease status, insurance type. IRB #19-02MR

RESULTS

1. 73% of respondents prefer a pre-symptomatic genetic test

   ![Graph showing preference for genetic test timing]

2. Health care system utilization suggests 2- and 4-month old infants are best time points if the genetic test is deployed in the first year

   ![Graph showing vaccination rates by age]

3. 90% of respondents willing to pay out-of-pocket for genetic screen in both healthy and symptomatic babies.

   ![Graph showing willingness to pay for genetic test]

4. Genetic tests are strongly supported where treatments may not be commercially available and for genetic diseases with onset in late-adolescence or adulthood.

   ![Graph showing importance of genetic test for different situations]

CONCLUSIONS

I. Health care utilization is predictive of the optimal timing for genetic test
   - A 2- or 4-month well-child visit may be optimal time point for genetic screen
   - Highest vaccination compliance rate was at month 2 (69.2%) or 4 (71.2%)

II. Pre-symptomatic tests are favored across all demographics
   - Earliest time point available for testing is preferred
   - 57.2% preferred a test at birth, 19.1% during the first year and 23.8% preferring to utilize the test only if their child was symptomatic
   - 100% of respondents indicated the inclusion of conditions with a late-adolescent or adult onset was either ‘important’ or ‘somewhat important’

III. Pricing analysis revealed consistent expectations and willingness to pay across all demographics

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