NHSEED - - Economic Study or Review

Cost effectiveness of newborn screening for cystic fibrosis: a simulation study

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Study design (if review, criteria of inclusion for studies)

A Markov model

Participants

A hypothetical CF-NBS program over a 5-year time horizon assuming its integration into an existing universal NBS program.

Interventions

A Markov model was built to simulate the cost effectiveness of various CF-NBS options for a hypothetical CF-NBS program over a 5-year time horizon assuming its integration into an existing universal NBS program. NBS simulated options were based on a combination of tests between the two commonly used immunoreactive trypsinogen (IRT) cutoffs (96th percentile and 99.5th percentile) as first tier tests, and, as a second tier test, either a second IRT, pancreatic-associated protein (PAP) or CFTR mutation panels. CFTR mutation panels were also considered as an eventual third tier test. Data input parameters used were retrieved from a thorough literature search.

Outcome measures

Outcomes considered were the direct costs borne by the Quebec public health care system and the number of cases of CF detected through each strategy, including the absence of screening option

Main results

IRT-PAP with an IRT cutoff at the 96th percentile is the most favorable option with a ratio of CAD$28,432 per CF case detected. The next most favorable alternative is the IRT1-IRT2 option with an IRT1 cutoff at the 96th percentile. The no-screening option is dominated by all NBS screening protocols considered. Results were robust in sensitivity analyses.

Authors' conclusions

This study suggests that NBS for cystic fibrosis is a cost-effective strategy compared to the absence of NBS. The IRT-PAP newborn screening algorithm with an IRT cutoff at the 96th percentile is the most cost effective NBS approach for Quebec.

http://www.cysticfibrosisjournal.com/article/S1569-1993%2813%2900169-0/abstract

See also

J Cyst Fibros. 2013 Nov 12. pii: S1569-1993(13)00169-0. doi: 10.1016/j.jcf.2013.10.012.

Keywords

Neonatal Screening; Newborn; non pharmacological intervention - diagn; screening; diagnostic procedures;