

Increasing Appropriate Vaccinations: Health Systems-based Interventions Implemented in Combination

Summary Evidence Table - Economic Review

Study	Study and Population Characteristics	Intervention & Comparison	Effect Size	Program Costs	Healthcare Costs Averted Productivity Losses Averted	Economic Summary Measure
Author (Year): Ahmed, et al. (2002) Vaccine: Pneumococcal Polysaccharide Study Design: Modeled Economic Method: Cost-Benefit Monetary conversions: Index year is 2000	Location: Multistate, USA Study Population: Data from 225 MCOs. Baseline rate was 55% Medicare enrollees 65 and older. Sample Size: Modeled for US Intervention length: Modeled 5 years	Intervention: Quality Improvement (QI) for HEDIS over 5 years including client reminders, provider assessment and feedback, provider incentives, reduced OOP. Comparison: Usual care	Study cites Community Preventive Services Task Force review (2000) that found 16% median increase in vaccination rate and similar increases noted for elderly and pneumococcal These effects waned over time. Baseline rate drawn from national surveys.	5 Year Cost Per MCO Enrollee Total costs \$5.65 HEDIS reporting \$0.66; QI intervention \$1.43; Vaccine & administration \$3.13; Patient time off \$0.24; Patient travel \$0.16; Side effects, office visit \$0.02; Side effects patient time \$0.02.	Benefits per MCO Enrollee Total benefits \$10.72 Hospitalizations 3.09; Outpatient visits 0.03; drugs 0.01; Nursing facility 0.16; Home Health Agency 0.09; Productivity pneumococcal illness 0.27; premature death 7.06	Net Benefit=\$5.07 Markov decision with Monte Carlo simulation of 5 year annual intervention with 25,000 closed cohort age 65. Follow from first vaccination to death or 100 years age. Notes: The primary driver of benefits is productivity gains from deaths averted. Modeled study Sensitivity analysis indicated costs greater than benefit when QI cost>\$4.40 per unvaccinated and increase in vaccination < 8% due to QI. Simultaneous variation in model parameters found QI was cost-saving 95% of the time. Productivity, time off work, travel costs not germane to MCOs.

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Author (Year): Hambidge et al. (2009) Vaccine: Childhood Series Study Design: RCT Economic Method: Cost-Effectiveness Monetary conversions: Index year is 2009	Study Location: Denver, CO Study Population: Infants from 3 clinics Sample size: Intervention 408 Control 399 Intervention length: 15 months	Intervention: reminder postcards; high risk received telephone reminder and postcard, Outreach/tracking, home visit, case management if behind after reminders, case manager assess and assist with barriers, use of IIS. Comparison: Usual care	Intervention infants vaccinated was 44% compared to 33% in control. Difference +11pct pts	Total cost of intervention \$142,596 Cost per child \$349.50 Cost components: personnel, mailings, telephone calls, home visits, and creation of reminder/recall database	Healthcare cost: Not estimated Productivity effects: Not estimated	No summary measures. Cost per child vaccinated \$3316 Cost per additional well-child visit \$530
Author (Year): Healy, et al. (2011) Vaccine: Tdap Study Design: Post Only Economic Method: Program cost Monetary conversions: Index year is 2007	Study Location: Harris County (Houston), TX Study Population: Ben Taub General Hospital post-partum women, immediate family and caregivers. >5K births annually 90% Hispanic under-insured and medically underserved Study period:	Intervention: Hospital implemented post-partum cocooning and standing orders on-site Tdap vaccine. Targeted staff education on pertussis and cocooning. Patient and Family education through posters and education packet on	<u>Postpartum women receiving Tdap</u> 8334 (75%) during Jan 08 to Jan '10 2969 (86%) during June 09 to Jan '10 <u>Family Contacts</u> 2303 (67%) postpartum women reported 4 median contacts of whom 3	Annual cost of program was approximately \$800K. Without vaccine it would be \$275K. At annual birth rate of 5000 babies and 4 persons vaccinated. And cost per dose of Tdap vaccine administered \$40, where Vaccine \$26.25 and rest is overhead, faculty, and nursing personnel.	Healthcare cost: Not estimated Productivity effects: Not estimated	No summary measure. Notes: H1N1 epidemic hospital policy on visits lowered the rate of vaccination of family contacts. Cocooning should ideally be done prior to birth (14 days for protective antibody effect). Legal and logistic problems in vaccinating non-patients in hospitals. Many adolescents vaccinated should have been covered under school mandates and free VFC vaccines. Tdap not covered

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	Cocooning started June 09 in dedicated room on post-partum floor Standing Orders started Jan 08 for all post-partum women. Intervention length: 24 months	pertussis and ACIP recs. At antenatal, baby-feeding, breastfeeding classes. Led by nurses.	eligible and median or 2 vaccinated. 579 (26%) of infants cocooned. Median cocooning was 50%.	Program utilized services of 2 physicians, 2 program nurses, and support not reimbursed by the hospital.		under Medicaid maternity charges.

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Author (Year): Poirier, et al. (2009) Vaccine: Pneumococcal conjugate Study Design: Pre-post Economic Method: Cost-effectiveness and Net cost Monetary conversions: Index year is 2007. Canadian dollars.	Study Location: Quebec, Canada Sample Size: Reference population in 2006 was 7.7 million with 80K births. Study period: Data from 2006-2007 and 1999-2001 Intervention length: 3 years data following intervention	Intervention: In December 2004, pneumococcal conjugate offered for children less than 5 years-3 doses provided by the provincial government. Comparison: None	<u>Cases averted annually</u> 324 invasive pneumococcal disease (IPD) cases (1.7% of total) 2717 pneumonia cases (14.1% of total cases) 16,242 Otitis Media cases (84.2% of total cases). 880 MVTI procedures 38 deaths (6 in children aged <5 years, 15 in 5-64 years, 17 in elderly)	Health System Cost \$20.28 million Family Cost \$2.67 million Societal \$22.95 million Cost of management, vaccines and administration. Vaccine purchases 84.5% of total costs	Healthcare Cost: Averted Disease Cost \$6.3 million Pre-post pneumococcal outcomes and associated costs. Treatment of pneumococcal meningitis, pneumococcal bacteremia and all-cause community-acquired pneumonia, all-cause otitis media and myringotomy with ventilation tube. Mostly from Quebec experience. Productivity effects: Averted Productivity Loss \$26.6 million (\$16.2 m at 3% discounting).	Net Cost with 3% discounting \$392,000 Healthcare cost saving without discounting \$9.95 million and costs to families from previous studies. Cost-Effectiveness With discounting \$466 to \$580 per life-year gained. Based on QALY gained of 1337 (843 with 3% discount) from UK studies.