RNA-based screening for preterm preeclampsia reduces costs in pregnancies of advanced maternal age

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OBJECTIVE

- Estimate the economic impact of introducing a ribonucleic acid (RNA)-based risk assessment for preterm preeclampsia (PE) (Encompass™, Mirvie) in pregnant individuals of advanced maternal age (AMA; ≥35 years) with no high risk factors for PE
- Compare to the current United States Preventive Services Task Force (USPSTF) guideline-based screening

STUDY DESIGN

- Using the Merative® MarketScan Commercial Claims and Encounters Database (01/01/2019 to 12/31/2023), the mean net maternal-infant payments were quantified in AMA pregnancies with ≥1 moderate PE risk factor, stratified by PE status and gestational age (< 28, 28-33, 34-36, and ≥37 weeks). Payments included costs incurred from 6 months pre-delivery to 12 months post-delivery
- A US payer-focused budget impact analysis incorporated screening and treatment costs (low-dose aspirin and remote blood pressure monitoring) to compare projected expenditures under RNA-based risk assessment-guided care versus USPSTF-based care (All costs were reported in 2025 US Dollars)
- Ongoing collection of real-world data on adherence to low-dose aspirin prophylaxis, a key input for the HEOR model, was collected via SMS-based surveys

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RNA-based preeclampsia prediction risk test Encompass™ enables more effective preventive intervention than current guidelines, saving $56 million per 10,000 tested.

Table 1 - Short-term (1 year) Results: AMA with no preexisting high-risk conditions (2024 USD)

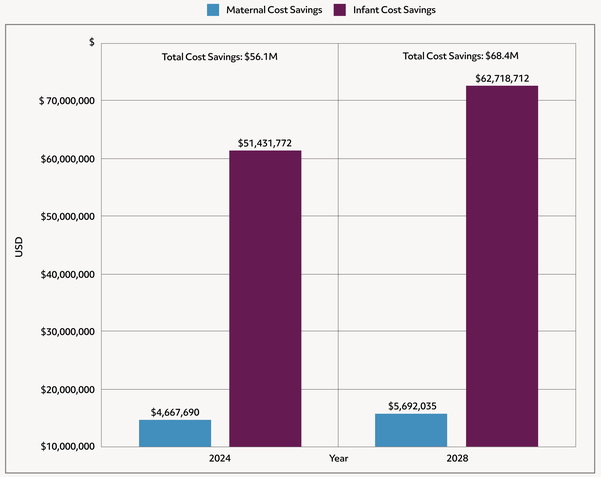
Outcome	Standard Care (USPSTF)	Encompass	Difference/ Savings
PE Incidence (%)	790 (8%)	708 (7%)	-82
<28 weeks	20 (3%)	10 (1%)	-10
28-33 weeks	122 (15%)	58 (8%)	-64
34-36 weeks	184 (23%)	113 (16%)	-71
≤37 weeks	464 (59%)	527 (75%)	63
Total Net Costs[†]/Budget Impact	$989,659,614	$952,234,847	-$37,424,767
Total Net Costs/Budget Impact (per 10,000 tested)	$989,646,470	$933,547,008	-$56,099,462
Maternal Costs	$402,387,768	$397,720,078	-$4,667,690
Infant Costs	$587,258,702	$535,826,929	-$51,431,773
Screening (Test) Costs	$0	$18,650,000	$18,650,000
Screening (Test) Costs PMPM	$0	$0.35	$0.35
Screening (Test) Costs PMPY	$0	$4.14	$4.14
Intervention Costs	$13,144	$37,839	$24,695
Gross Costs PMTPY	$98,966	$93,355	-$5,611
Gross Costs PMTPM	$8,247	$7,780	-$467
Gross Costs PMPY[††]	$219.92	$207.45	-$12.47
Gross Costs PMPM[††]	$18.33	$17.29	-$1.04
Gross ROI	—	3:1	—

Abbreviations: PE – Preeclampsia; USPSTF – U.S. Preventive Services Task Force; PMTPY – Per member tested per year; PMTPM – Per member tested per month, PMPY – Per member per year; PMPM – Per member per month; ROI – Return on Investment
[†]Net costs include both clinical event costs and the costs of screening and intervention, whereas gross costs reflect only clinical event costs
[††] Assumes a 4.5M commercial payer population that gave rise to 10,000 AMA births at an estimated birth rate of ~0.2%

Figure 2 - Cost Savings Per 10,000 AMA Pregnancies Tested

Budget impact results

Year 1 (2024) vs. Year 5 (2028), Maternal vs infant costs avoided per 10,000 tested.



RESULTS

- Encompass reduced first-year maternal costs by $4.7 M and neonatal costs by $51.4 M, yielding total gross savings of $56.1 M per 10,000 tested
- Gross payer savings increased annually, reaching $68.4M per 10,000 tested in year five
- ROI was 3:1, driven primarily by avoided neonatal intensive care unit costs
- Pregnancies in individuals with AMA complicated by preeclampsia incurred substantially higher total costs compared with those without preeclampsia ($2.4M versus $704K at < 28 weeks).
- Ongoing collection of real-world data (n=159) shows that those identified to be at high risk for preterm preeclampsia are highly adherent (96%) to preventive treatment which is significantly higher than the adherence rate (65.5%) used in the economic model ($p < 0.05$). These adherence rates are also considerably higher than published rates (~10% adherence) for current guidelines in moderate-risk groups.

CONCLUSION

- The test enables proactive, targeted intervention with improved clinical outcomes.
- The use of Encompass is projected to yield substantial short-term and long-term payer savings for the US healthcare system.
- Integrating Encompass into standard practice is an affordable, high-value innovation for US healthcare.

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