

Medication Adherence Impacts Lost Time, Productivity Costs and Emergency Room Visits in Employees with Diabetes, Depression, and Coronary Artery Disease

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Purpose

- To explore the impact of medication adherence on absences, productivity costs, and emergency room (ER) visits in employees with:
 - Type 2 Diabetes (Diabetes).
 - Major Depressive Disorder (MDD).
 - Coronary Artery Disease (CAD).

Background

- Type 2 Diabetes (Diabetes), Major Depressive Disorder (MDD), and Coronary Artery Disease (CAD) are frequently reported as highly prevalent and costly conditions in the United States (US).
- US employee benefits include:
 - Sick Leave (SL) for paid time off, generally without a specific reason.
 - Short- and Long-term Disability (STD and LTD, respectively) for non-work-related injuries/illnesses.
 - Workers' Compensation (WC) for work-related injuries/illnesses.
 - Family medical leaves.
- Absences due to SL, STD, LTD, and WC can have significant impact on business performance.
- Employers are intensifying efforts to manage these benefits and make connections with employee health.

Study Population

- US employees within the Workpartners (formerly HCMS) Research Reference Database (RRDb) between January 2017 and December 2019.
- Workpartners RRDb contains:
 - Medical and pharmaceutical claims for over 3 million employees and dependents from multiple US private sector employers in the medical, retail, service, manufacturing, transportation, energy, technology, financial, and utility industries.
 - Enhanced employee demographics (including self-reported race).
 - Job-related employee information (salary, job type, full/part-time status, exempt/non-exempt status).
 - Information on family medical leaves [FMLA] and self-reported survey data.
 - Employees in all states.
 - Claims with absence durations and payments for employee populations eligible for STD=1.2 million, LTD=1.1 million, WC=1.4 million, SL=710,000.

Study Population (continued)

- The Workpartners RRDb has been used for research in:
 - Diabetes,¹⁻³ diabetic macular edema, and diabetic retinopathy.²
 - Mental disorders including bipolar disorders^{4,5} and major depressive disorders with and without suicidal ideation.⁶
 - Cardiovascular conditions such as cardiac arrhythmias,^{7,8} atrial fibrillation,⁹ and hypertension.⁹
 - The impact of persistence and adherence on absenteeism and costs.^{3,9,10}
 - The impact of COVID-19 on claims utilization and absence.
 - Optimal Benefit Design.
 - Risk-adjusted benchmarks (Workpartners' HUI - Health Utilization Index).
 - Various other conditions.

Methods

- Retrospective analysis of US employees in each year with medical claims in the Workpartners RRDb for:
 - Type 2 Diabetes (Diabetes).
 - Major Depressive Disorder (MDD).
 - Coronary Artery Disease (CAD).
- Employees were required to have more than one year of continuous data following their initial disease claim.
- For each condition, the proportion of days covered (PDC) was calculated and employees classified as:

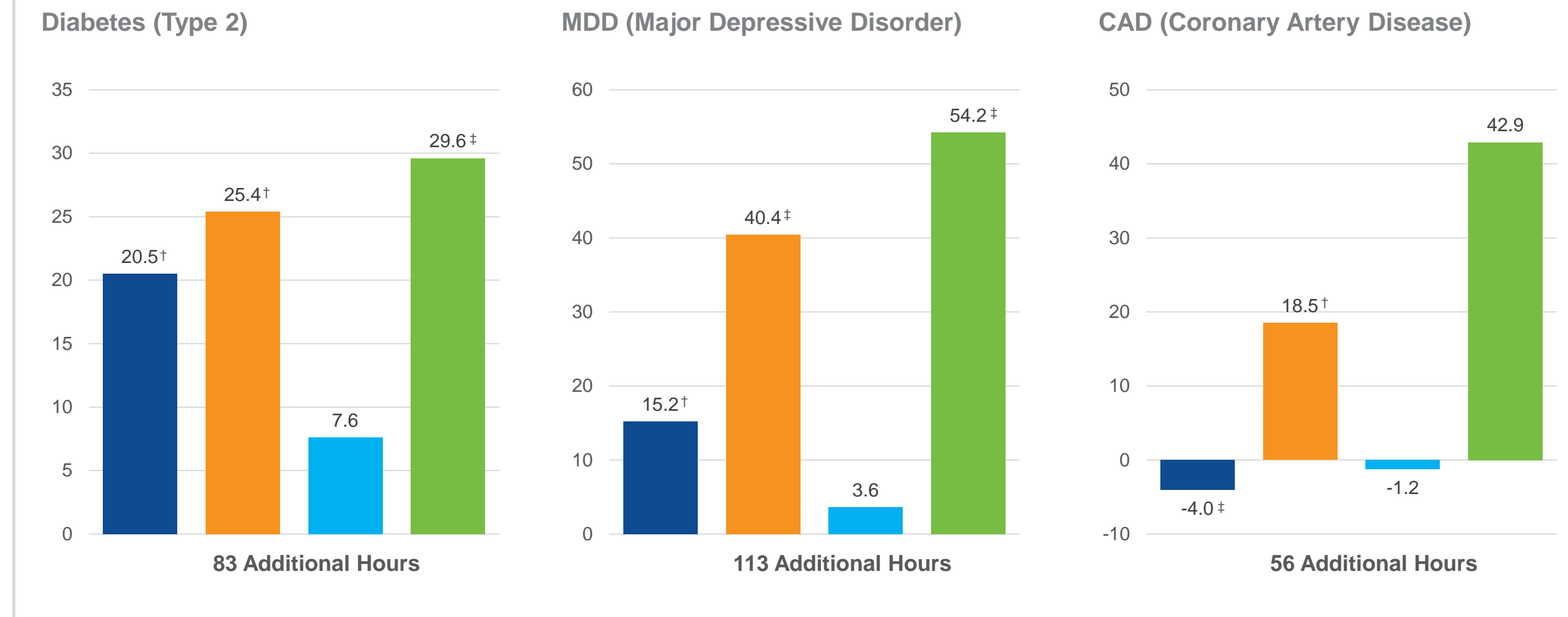


- Low-adherence employees were matched to high-adherence employees on age and gender. Study outcomes were evaluated over the study year and compared hours missed for:
 - Disability, FMLA, workers' compensation, absences (sick-leave/time-off), and in total.
- Models predicted the avoidable total absence costs and the number of avoidable annual ER visits for each study condition.
- Findings significant $P \leq 0.05$, $P \leq 0.01$, $P \leq 0.0001$ or non-significant NS ($P > 0.05$).
- Savings in avoidable absence costs were estimated based on annual employee salaries that were: low (\$50,000) and high (\$100,000).

Results

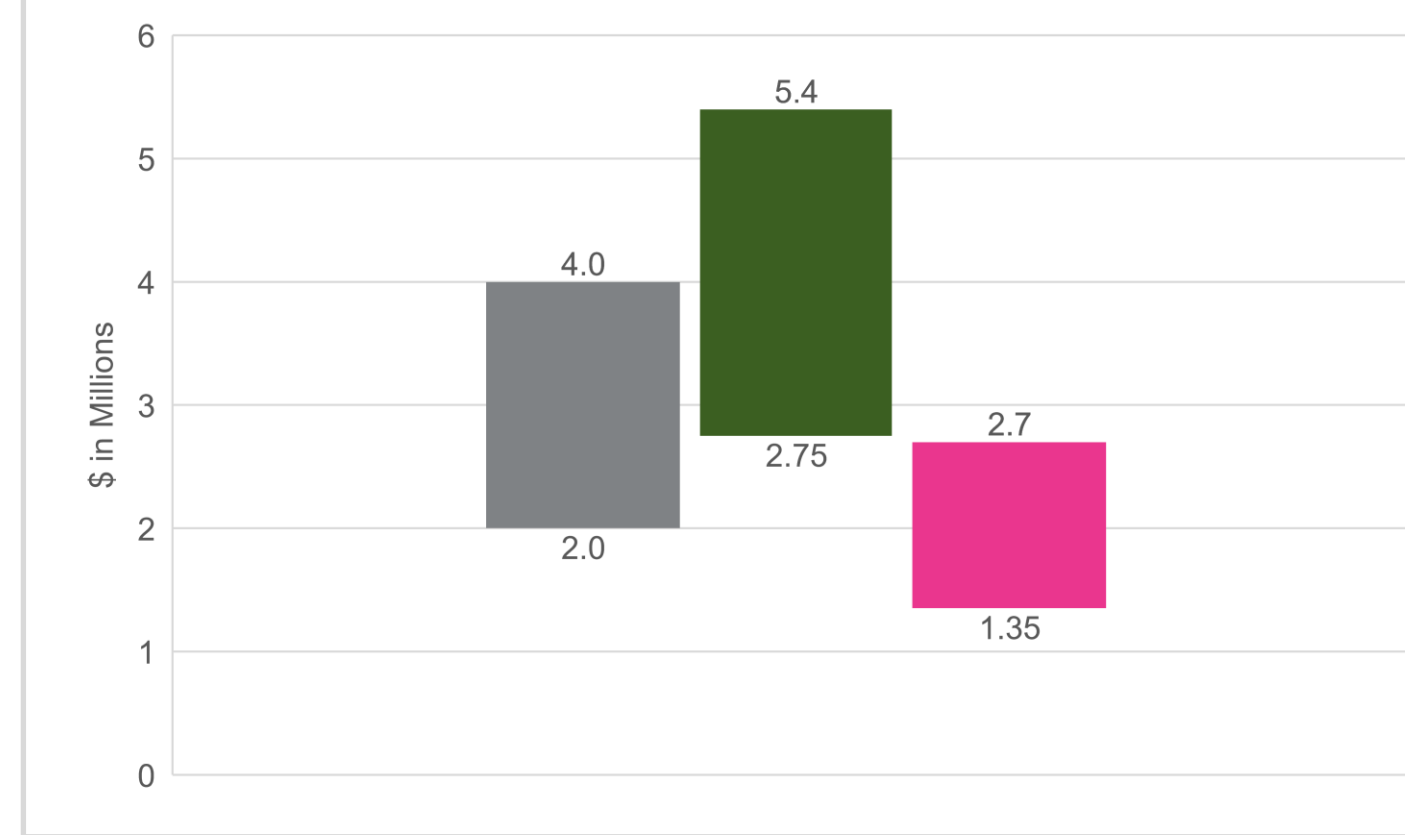
Legend: ■ Disability† ■ Medical Leaves‡ ■ Workers' Compensation ■ Sick Leave / Paid Time off‡
 * $P \leq 0.05$, † $P \leq 0.01$, ‡ $P \leq 0.0001$ or non-significant NS ($P > 0.05$).

Lost Time by Benefit and Disease

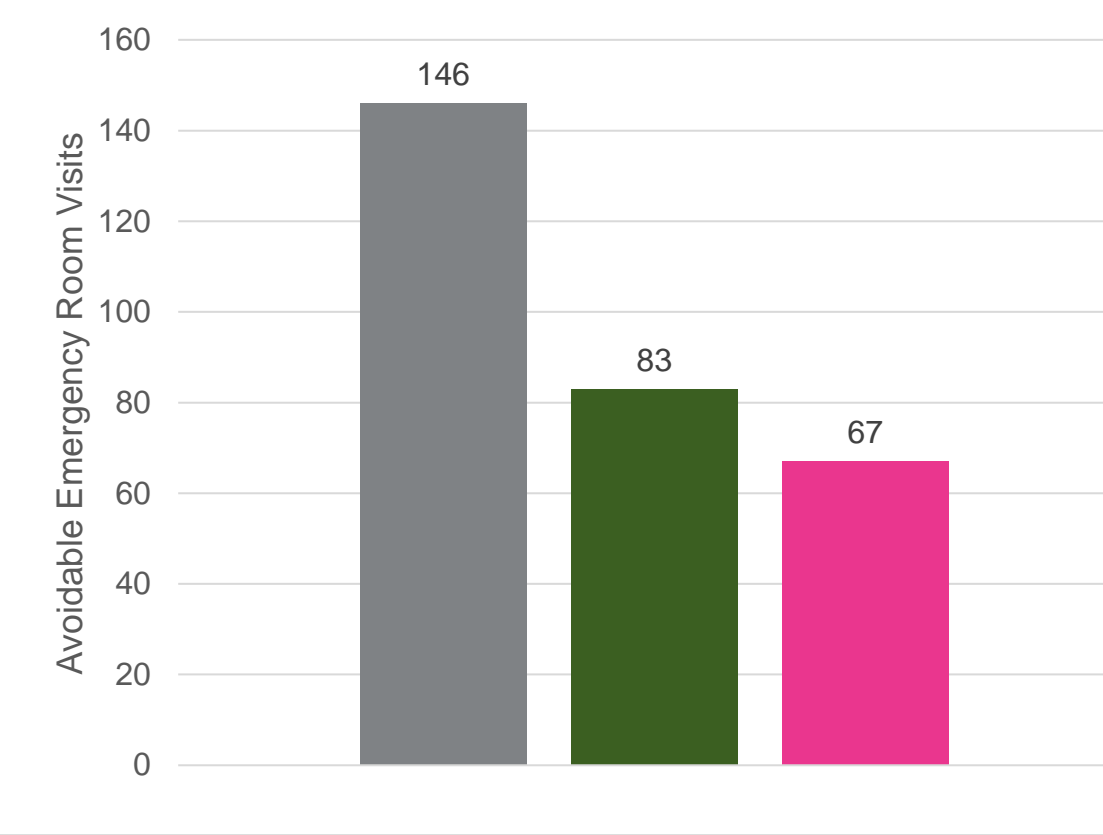


Legend: ■ Diabetes ■ MDD ■ CAD

Avoidable Absence Costs



Avoidable ER Visits



Conclusions

- Poor medication adherence correlates to an increase in lost time, productivity costs, and avoidable ER visits in employees with Diabetes, Major Depressive Disorder, and Coronary Artery Disease.
- Increased adherence results in reduced absence costs, fewer avoidable emergency room (ER) visits, and other medical events.

Implications for Policy or Practice

- Coordination of benefits is important.
- Analysis of the impact of workplace accident and disability leaves and payments, by using a constant salary-replacement factor, is inappropriate.
- Person-level data by year and benefit should be used.

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