



The Impact of Drug Benefit Design on Medication Adherence and Outcomes

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Agenda

- **Factors affecting medication adherence**
- **Review of the literature: benefit design, medication adherence, outcomes**
- **Employer examples**

World Health Organization

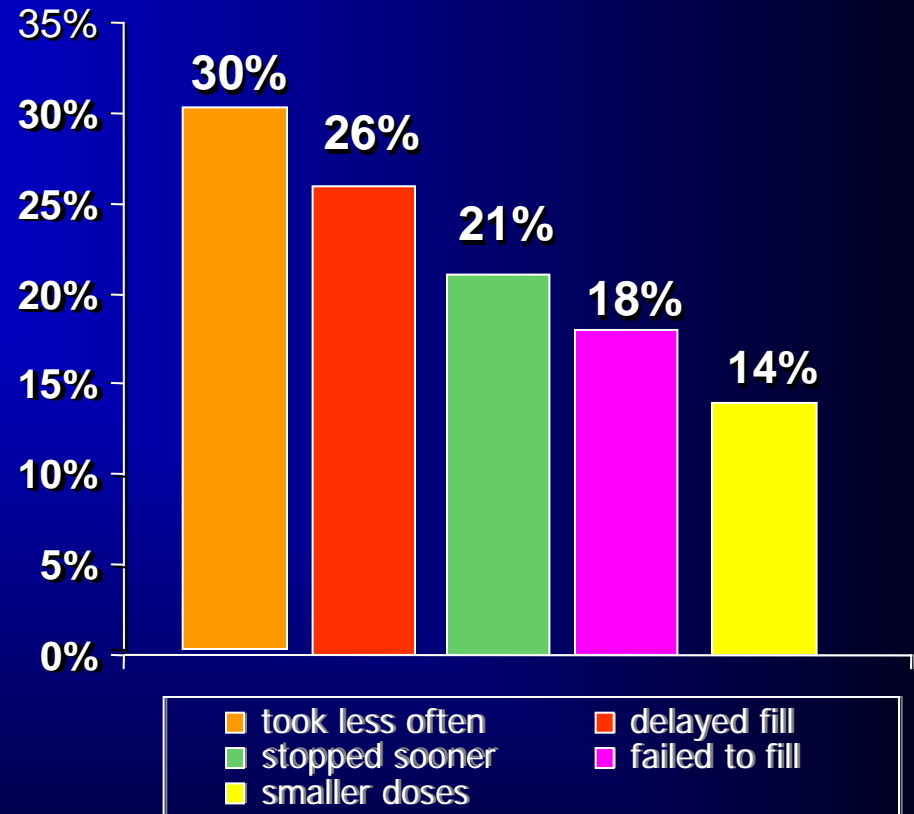
- Adherence to long-term therapy for chronic diseases in developed countries averages **50%**
- The consequences of poor adherence to long-term therapies are **poor health outcomes and increased healthcare costs**

What happens to prescriptions?

65.7% of physician office visits generate a prescription medicine, with multiple drugs prescribed 39.5% of the time¹

But what happens to those prescriptions?

Non-Compliant Behaviors²



¹ Hing E. Cherry DK Woodwell DA,. National Ambulatory Medical Care Survey: 2003 Summary October 4th, 2005 #365 National Center for Health Statistics- CDC- <http://www.cdc.gov/nchs/data/ad/ad365.pdf>. Advance data from vital and health statistics; no 365. Hyattsville, Maryland; National Center for Health Statistics. 2005. ² The Hidden Epidemic: Finding a Cure for Unfilled Prescriptions and Missed Doses. December, 2003. The Boston Consulting Group and Harris Interactive. Available at http://www.bcg.com/publications/files/TheHiddenEpidemic_Rpt_HCDec03.pdf. Accessed August 16, 2004.

Why didn't they take their medication(s)?

- **10%** difficulties in getting the prescription filled
- **14%** decided they didn't need the drug
- **17%** medication was too costly
- **20%** undesirable or debilitating side effects
- **24%** forgetfulness

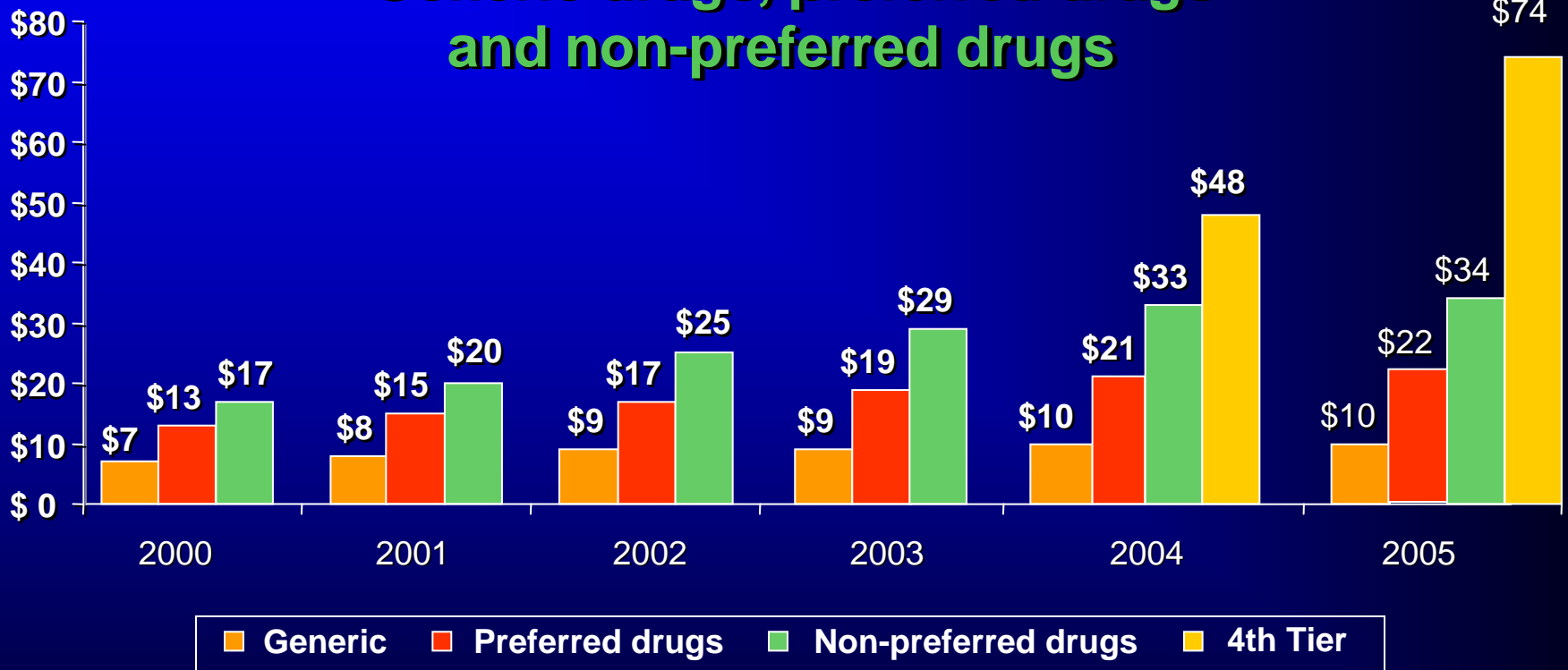
Unintended consequences

- **47%** that postponed care stated that it caused a significant loss of time at work or other important life activities
- **53%** said the problem caused a significant temporary disability that resulted in significant pain or suffering
- 1 in 6 (**17%**) said the unmet need resulted in a long-term disability

Cost sharing is increasing

Average co-pays 2000-2005

Generic drugs, preferred drugs and non-preferred drugs



Cost sharing saves Rx drug spend for payors

- **Lowers drug expenses**
 - Co-payment doubling reduced drug spending by **19-33%** across different therapeutic classes¹
- **Decreases prescription utilization**
 - Utilization declines **10-12%** as co-payment increases to **\$5**²
- **Effects are more pronounced as rate of cost sharing increases**
 - Prescription caps > coinsurance > copayment

1 Joyce GF, Escarce JJ, Solomon MD et al. Employer drug benefit plans and spending on prescription drugs. *JAMA*. 2002;288(14):1733-1739. 2. Fairman KA, Motheral BR, Henderson RR. Retrospective, long-term follow-up study of the effect of a three-tier prescription drug copayment system on pharmaceutical and other medical utilization and costs. *Clinical Therapeutics*. 2003;25(12):3147-3161.

But does cost sharing reduce overall healthcare costs?

Are patients making the “right” choices on prescription drug spending for essential medications (diabetes, heart disease, asthma)?

What do the statistics and literature show?

Chronic medications (Goldman)

Impact of benefit design in a broad population of 30 large employers

Retrospective analysis of utilization for entire population vs. those with chronic conditions

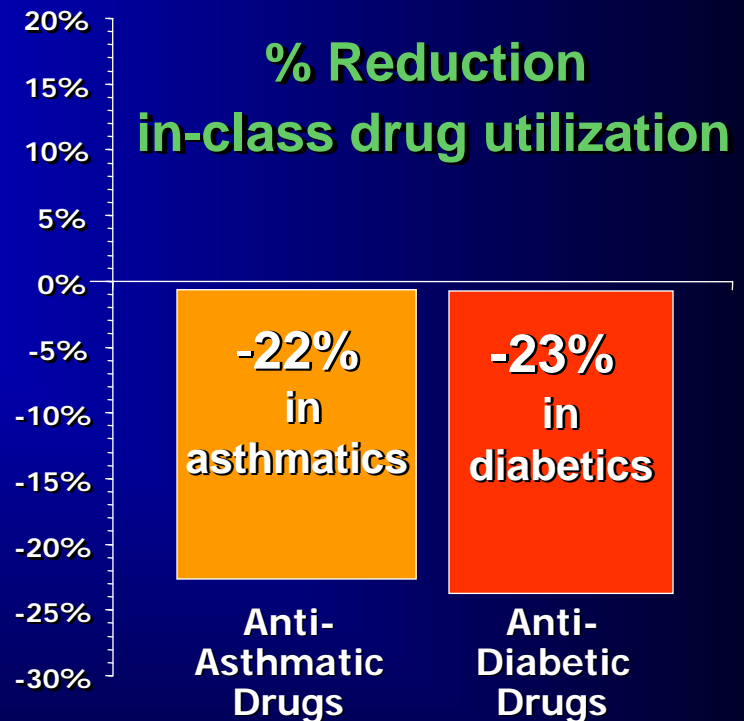
- 8 chronic conditions (10 treatment classes) accounting for 51% of prescription drug spend
- Chronic condition = 2 or more Medical Claims plus at least one prescription in the defined treatment class

Chronic medications (Goldman) cont.

When out-of-pocket payments doubled, drug utilization was significantly reduced

Change in Co-pays:

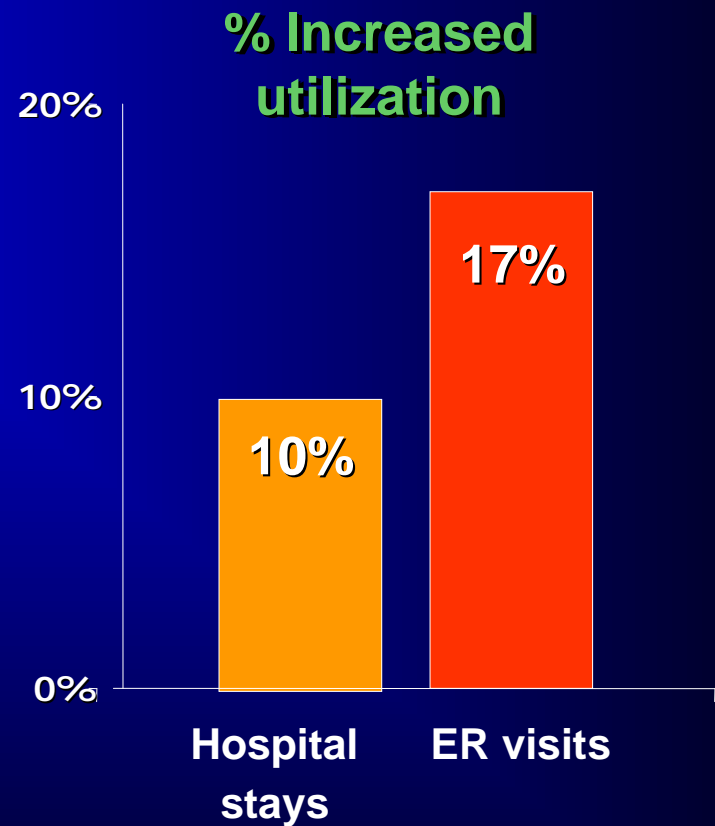
- 1st tier: \$6.31 to \$12.62
- 2nd tier: \$12.85 to \$25.70



Chronic medications (Goldman) cont.

Among patients with asthma and diabetes and other disease states . . .

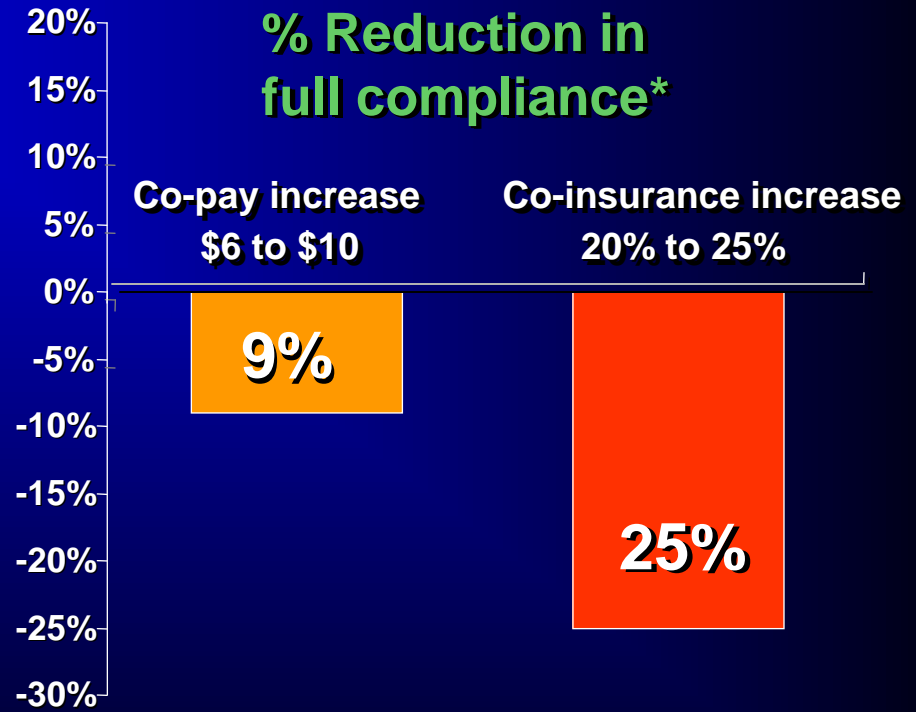
. . . as the use of prescription drugs dropped, utilization of other services increased



Diabetes medications (Dor)

Impact of benefit design on a population of 27,000 diabetic patients from a large multi-employer database

He found that increasing cost-sharing levels decreased full compliance.



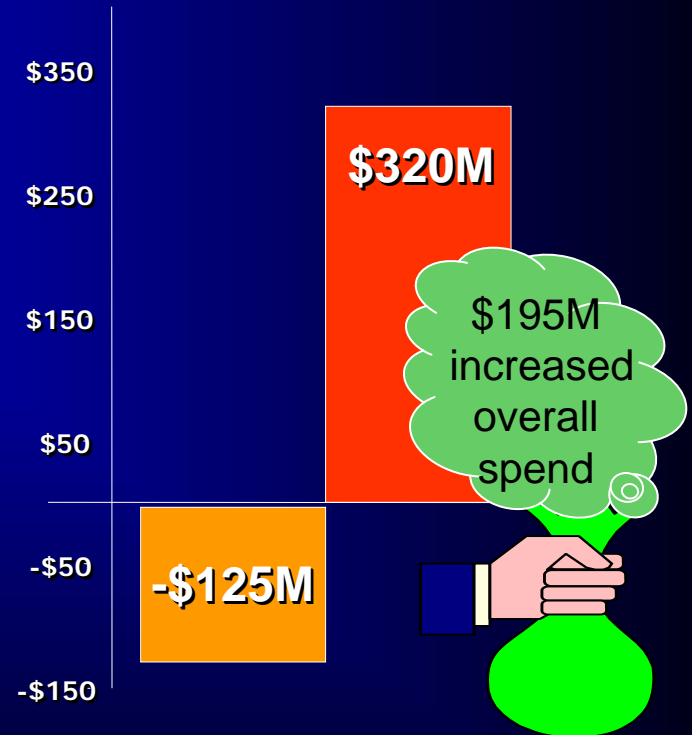
*Patients taking oral anti-diabetic drugs

Diabetes medications (Dor) cont.

Based on the database, his model shows that if co-pays for 10 million diabetics (in the US) were increased from \$6 to \$10:

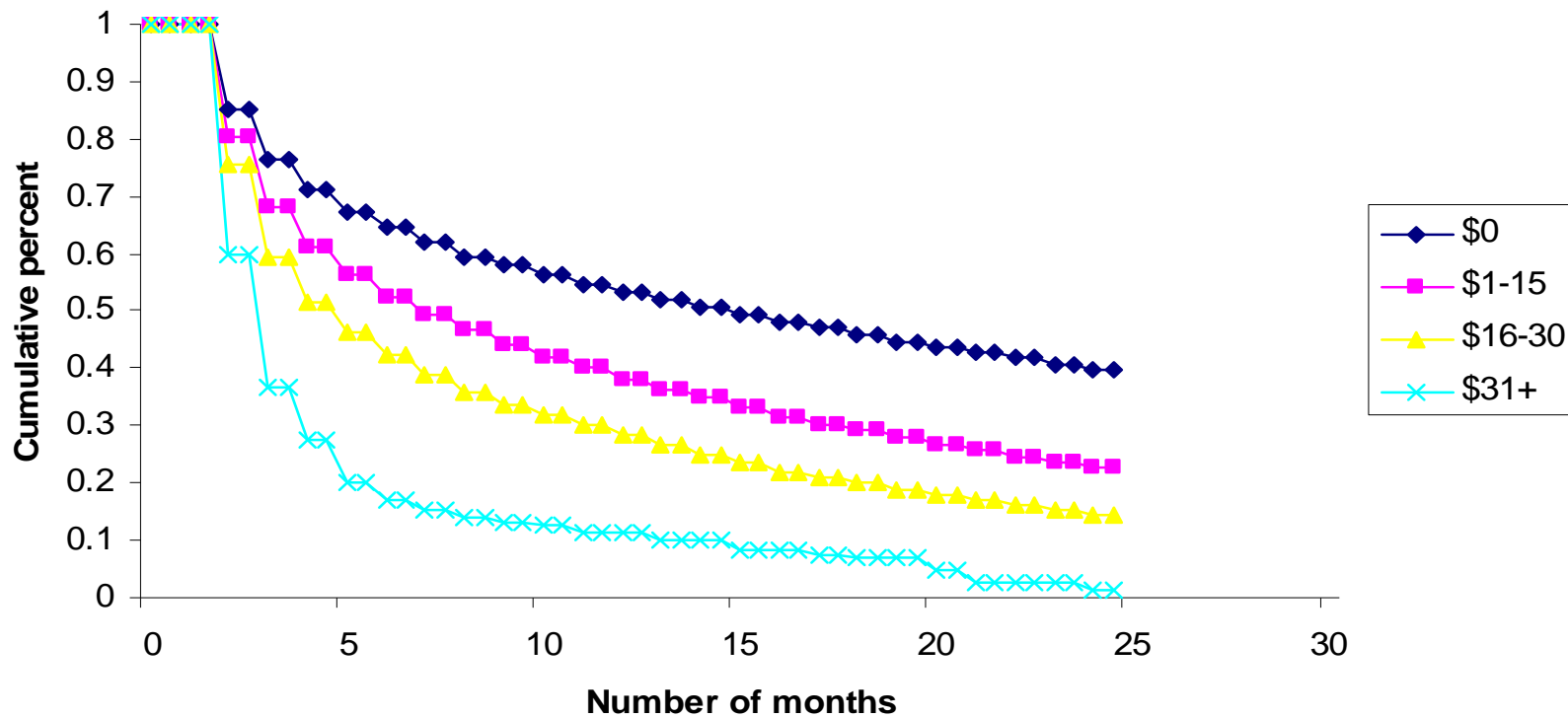
- RX spend would **decrease** by \$125M per year
- **DIRECT** medical costs would **increase** by \$320M per year

This yields an annual net direct cost of \$195M -- not including absenteeism or disability



Diabetes Medications (Kessler)

Figure 4. Projected cumulative probability of medication termination over the study period among patients with diabetes who differed in size of baseline copayment but did not experience any change in copayment

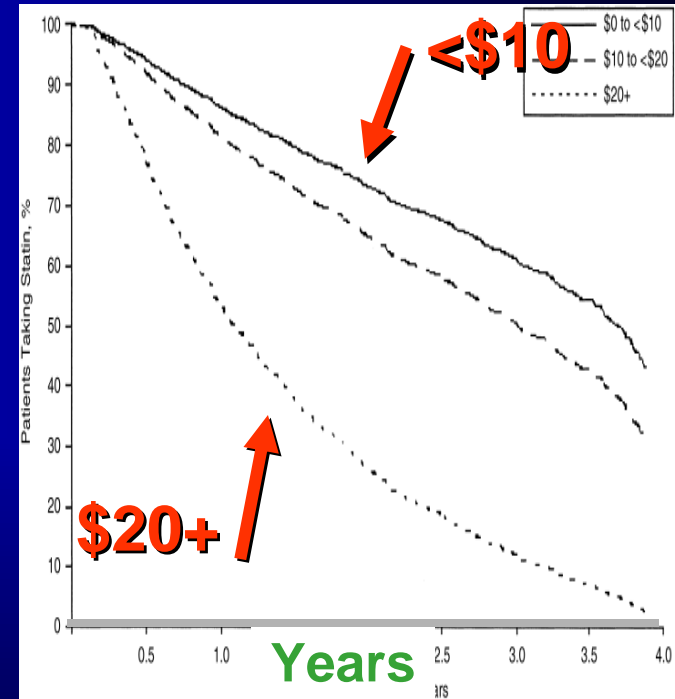


Cholesterol medications (Ellis)

After analyzing adherence in a non-Medicaid MCO population of adults taking 2 or more statin prescriptions, Ellis found that . . .

. . . patients with co-pays of \$20 or more were over 4 times more likely to stop taking their medication as patients with co-pays of less than \$10

100% Compliant



Survival curves for discontinuation by co-pay range

Pitney Bowes

- **80-plus year legacy**
- **Fortune 500 company**
- **\$5.6 billion global provider of integrated mail and document management solutions**
- **Global team of more than 35,000 employees**
- **Presence in more than 130 countries worldwide**
- **More than 2 million customers**

The “Business Case” or a “Leap of Faith”

● Drivers

- Predictive modeling results
 - Illness burden and costs driven by lack of preventive services and pharmaceutical compliance
- Analysis indicating 50% population had a chronic illness

● Challenges

- Assume increased cost sharing
- Forgo some rebates
- Senior management imperative to manage healthcare budget

Pharmacy plan

- **Moved diabetes, asthma and hypertension medications from 2nd tier (30% co-insurance) and 3rd tier (50% co-insurance) to 1st tier (10% co-insurance)**
- **Design**
 - **No mandatory generic**
 - **No step therapy**
 - **No therapeutic substitution**
 - **Limited prior authorization**

Preliminary findings

- Annual cost of care decreased for both conditions (asthma and diabetes)
- Pharmacy costs **decreased**
- Hospital admissions **declined** for people with asthma
 - Hospital admissions **increased** for people with diabetes (still below benchmark)
- ER visits **declined** for people with diabetes
 - ER visits unchanged for people with asthma

Preliminary findings (Cont'd)

- **50%** reduction in short term disability
- **Changes in medication/possession rates for both groups**
 - Improved adherence
 - Types of medications (more controllers, less rescue)
- **Savings of \$1 million in first year; savings of \$2.5 million in third year**

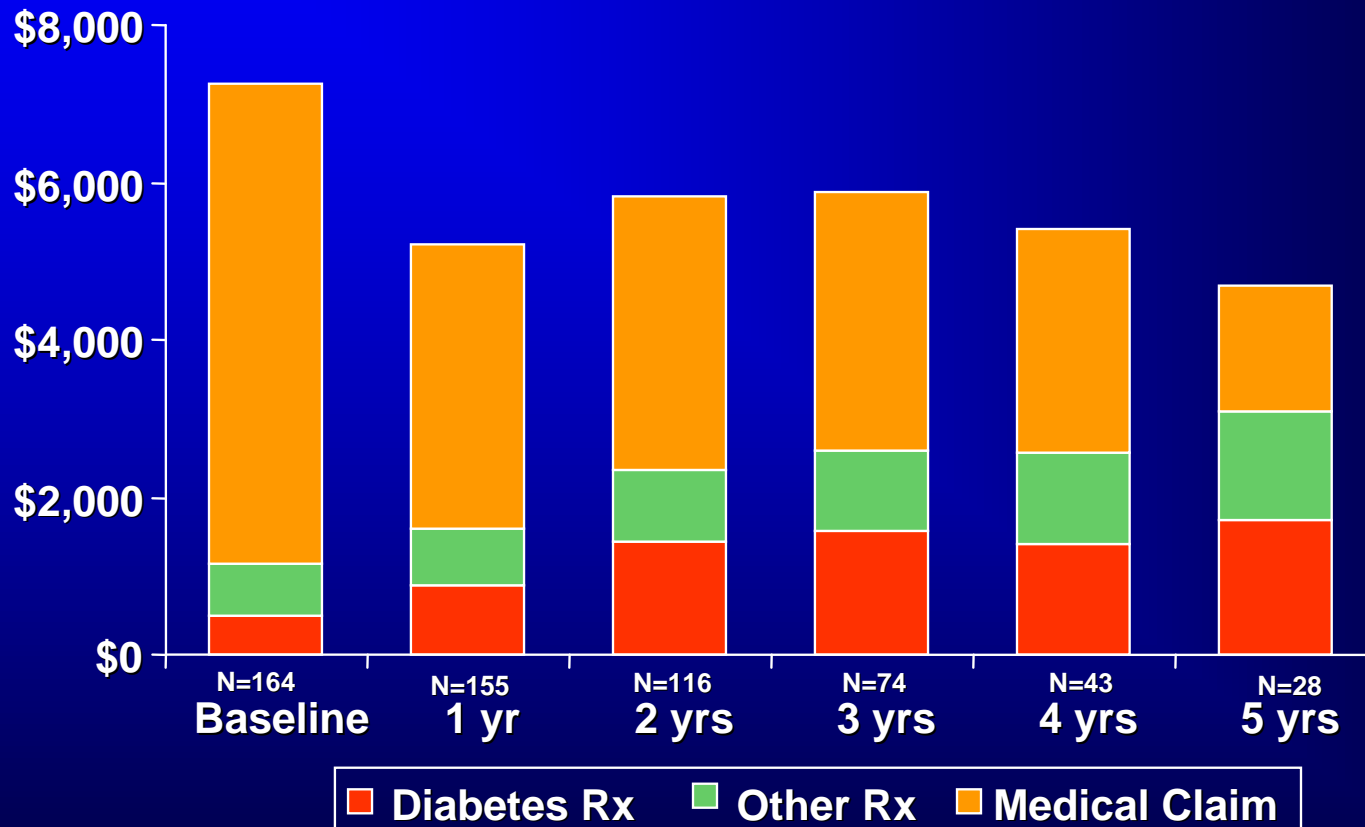
Asheville Project

Diabetes Patient Incentives and Care Model

- **Community-based program**
- **Funded by employer (City of Asheville, NC)**
- **Coordinated by Mission St. Joseph Hospital and APhA**
- **Focus on patient education and support**
- **Waived co-pays, waived formulary**
- **Utilized RPh to provide ongoing support and monitoring**

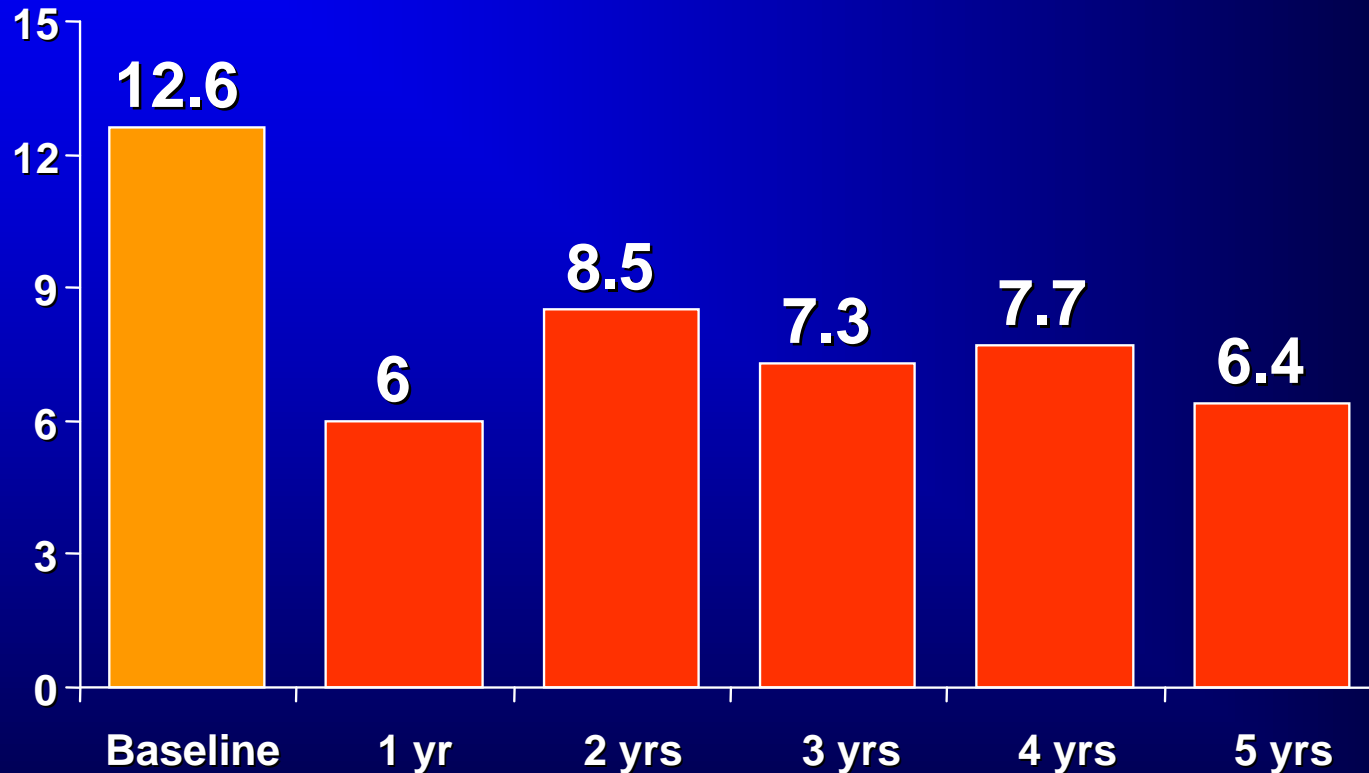
Asheville Project

Healthcare costs



Asheville Project

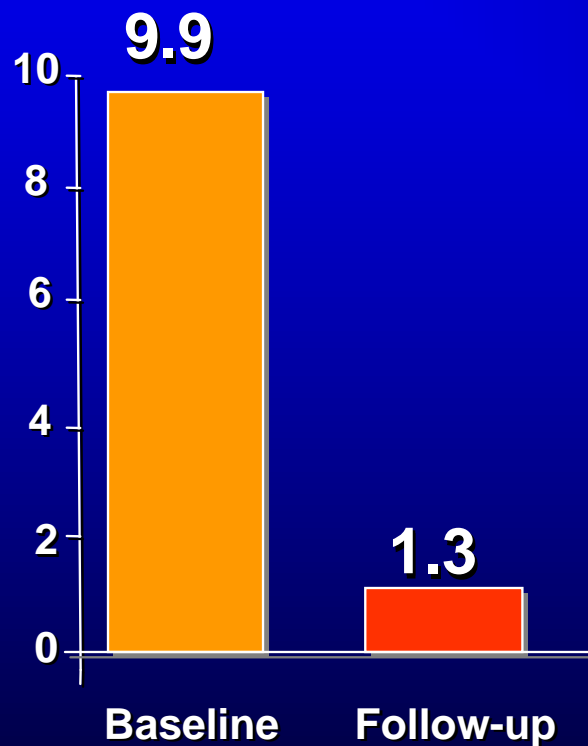
Reduction in Annual Sick Days



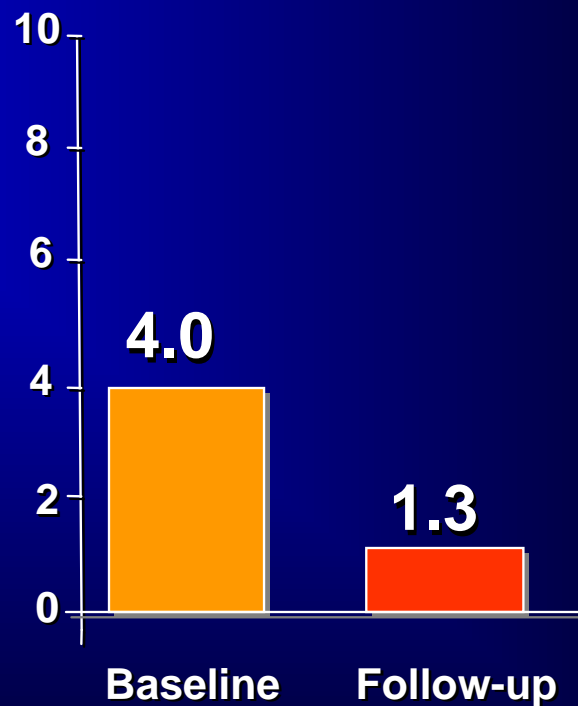
Asheville Project

Asthma results

% ER visits



% Hospitalizations



Asheville Project

Asthma results (Cont'd)

- Spending on asthma medications increased

But

- Medical claims decreased, and total asthma-related costs decreased
 - Direct cost savings averaged **\$725/pt/yr**
 - Indirect costs savings estimated at **\$1,230/pt/yr**
 - Indirect costs due to missed/non-productive workdays decreased from **10.8 to 2.6 days/yr**

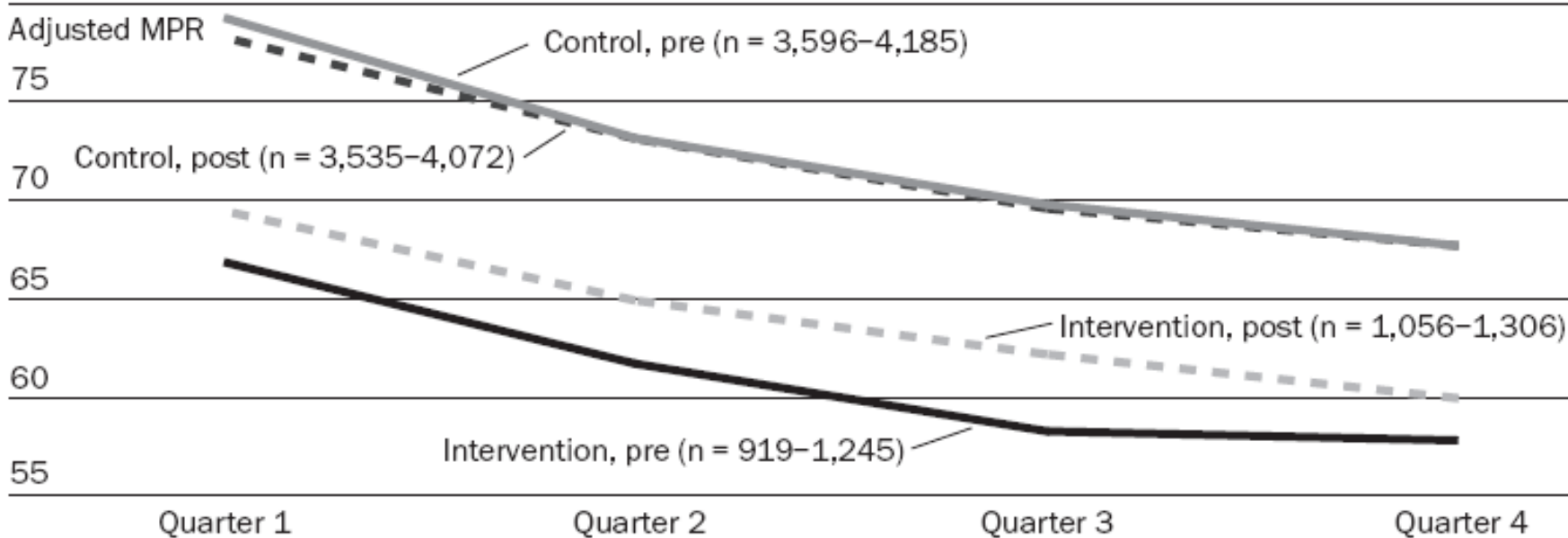
Employer Example- Service Industry

- Purpose of study: Examine the impact of lowering Rx co-pays on medication adherence
- 5 drug classes studied: ACE/ARBs, beta blockers, diabetes medications, statins, inhaled steroids
- Prospective, pre/post study with control group
- Time period: 2004 (pre) and 2005 (post)
- Both intervention and control groups used same disease management programs

Diabetes Results

EXHIBIT 2

Adjusted Medication Possession Ratio (MPR) For Diabetic Therapy, In The Pre And Post Periods, For Intervention And Control Groups, Calendar Years 2004 And 2005



SOURCE: Authors' multivariate analysis of administrative data.

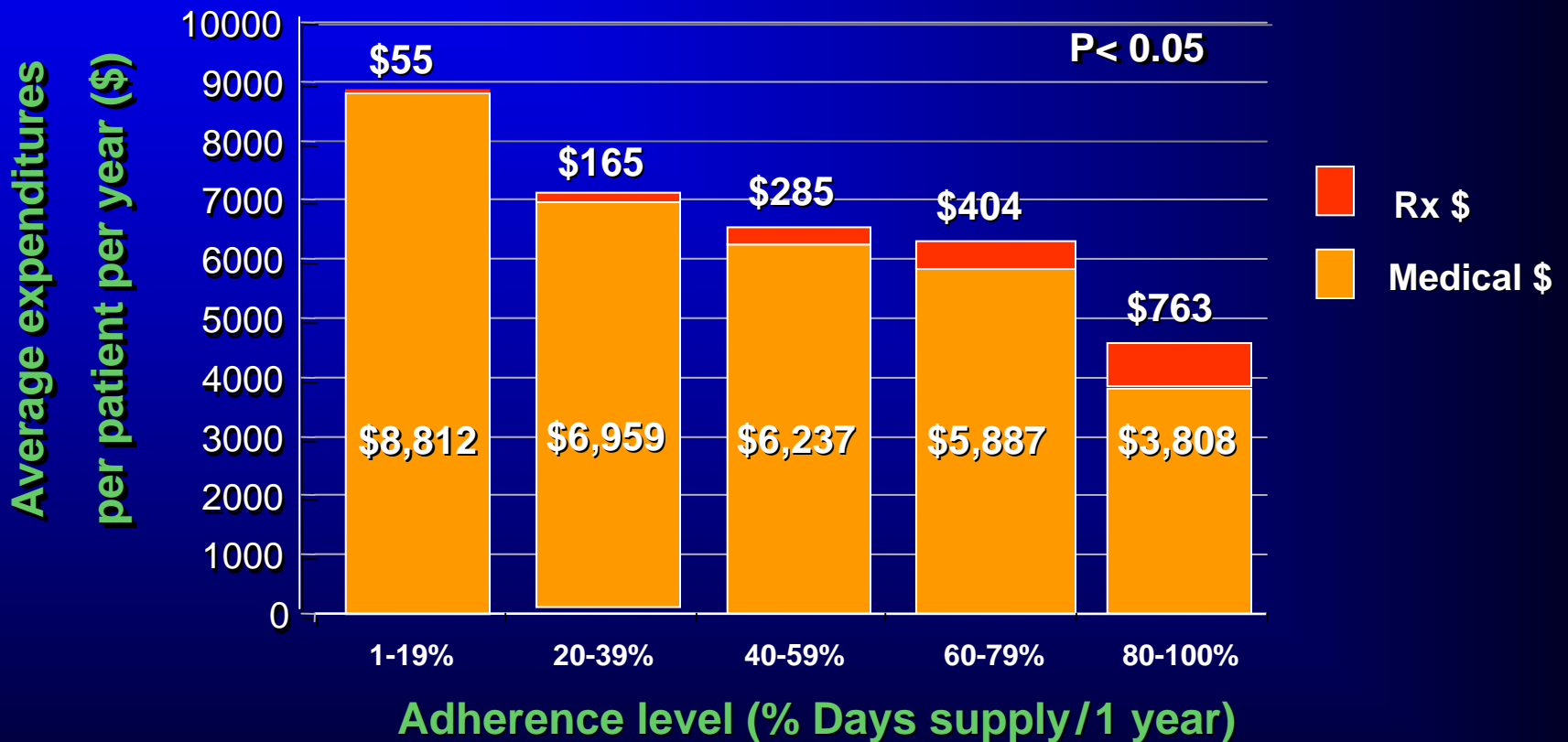
NOTE: Pre period is calendar year 2004; post period is calendar year 2005.

Employer Example- Large Manufacturer

- Purpose of study: Examine the impact of medication adherence on hospitalization risk and health care cost
- 4 disease states studied- diabetes, high blood pressure, high cholesterol, heart failure
- Retrospective, observational study
- Time period: 1997-1999
- Diabetes
 - 3,260 patients in cohort
 - Average age was 54 years old
 - 45% female

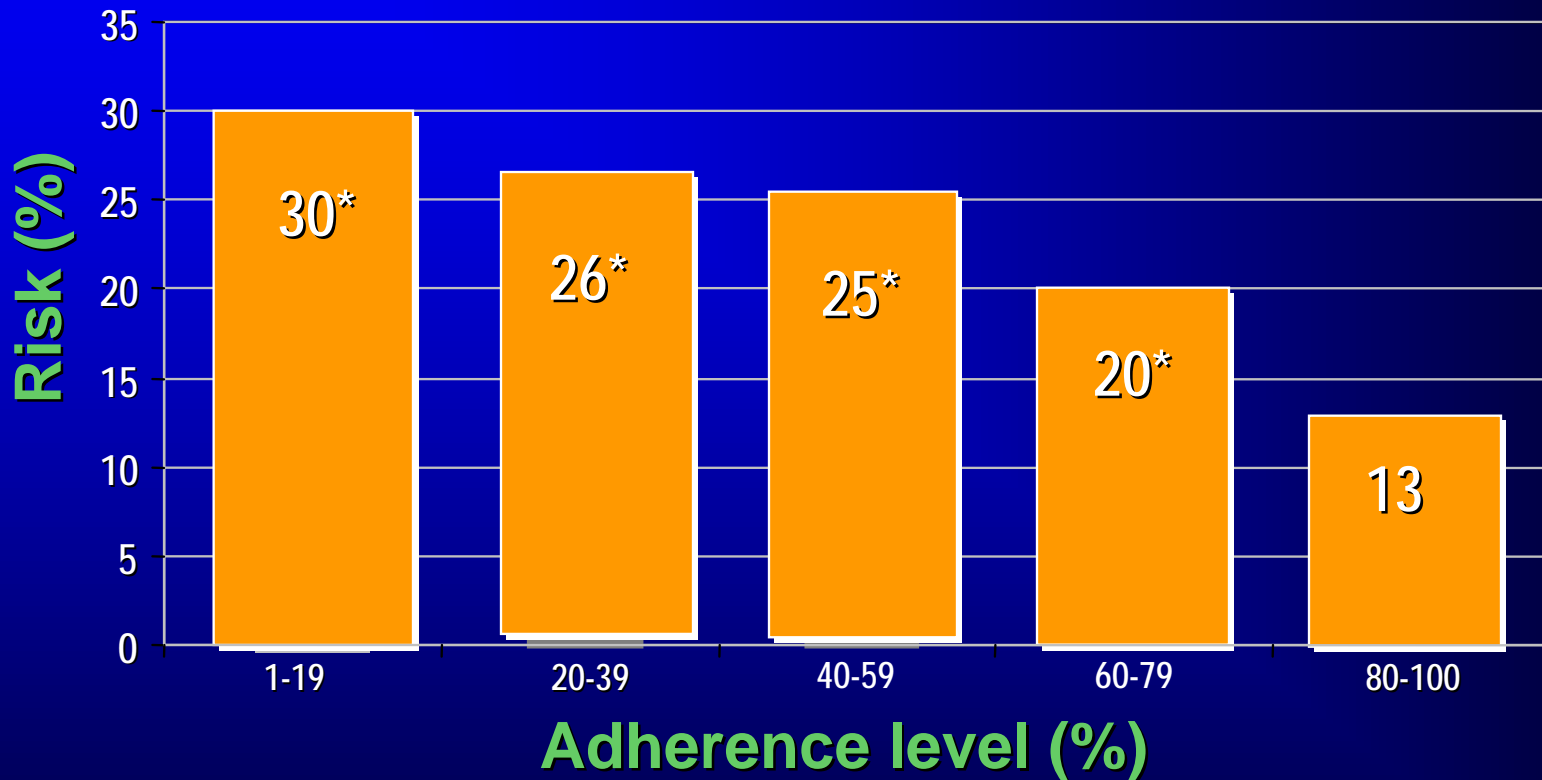
Diabetes Results

Costs



Diabetes Results

Hospitalization Risk



*Indicates that outcome is significantly higher than outcome for 80-100% adherence group ($P < 0.05$). Differences were tested for medical cost and hospitalization risk.

Sokol MC, McGuigan KA, Verbrugge RR, Epstein RS. Impact of medication adherence on hospitalization risk and healthcare cost. *Medical Care*. 2005;43:521-530.



Employer Example- Bank

- Large financial services corporation
- HQ in Midwest with employees in 25 states
- At time of study, about 100,000 employees (72,000 continuously employed from 2000-2004)
- 70% female
- Average age 38 years old
- 87% reported Caucasian ethnicity

Employer Example- Bank

- Purpose of study to determine association of antidepressant medication adherence with employee disability absences
- Retrospective, observational study
- Time period: 2000-2004
- 2,112 employees in study cohort

Employer Example- Bank (RESULTS)

- **62%** adhered to acute phase treatment (3 months of antidepressant treatment)
- **46%** adhered to continuation phase treatment (6 months of antidepressant treatment)
- Employees nonadherent with acute treatment were **39% more likely** to have STD claims
- Employees nonadherent with continuation treatment were **46% more likely** to have STD claims
- About **\$400,000** in lost STD workdays could have been **saved** had the employees maintained adherence

**“Drugs don’t work in patients
that don’t take them.”**

- C. Everett Koop, M.D.

“Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments.”^{1,2}

- World Health Organization



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