

Comparison of Data Availability and Quality for
Pharmacoeconomic Analyses in Brazil
Versus The United States and European Union:
The Cases of Diabetes & Hypertension

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**ISPOR Latin America
Rio De Janeiro, Brazil
September 11, 2009**

Acknowledgements

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❖ Funding:

This research was supported by Novartis AG, Basel, Switzerland & Novartis Biociências S/A, Sao Paulo, Brazil

Background & Rationale

- ❖ In Latin America, as in North America and Europe, economic considerations are an important component of health care decision making
- ❖ Brazilian payers and reimbursement authorities are interested in pharmacoeconomic analyses of new health care technologies, tailored to the Brazilian context
- ❖ There is a need to identify accessible, high quality sources of epidemiologic, economic, outcomes and life expectancy data in Brazil

Project Objectives

- ❖ To compare the availability and quality of data needed for pharmacoeconomic analysis in Brazil versus the US & EU, using diabetes & hypertension as case studies
- ❖ Specific objectives:
 - Identify Brazilian sources of economic data for diabetes & hypertension to support multiple-perspective analyses
 - Evaluate the identified data sources according to pre-defined criteria
 - Compile a database of high-quality Brazilian data resources
 - Assess gaps in data resources

Methodology: Overview

1. Identify estimates required to perform pharmacoeconomic analyses in diabetes & hypertension
 - ❖ Examine commonly-referenced global disease models:
 - ❖ Generate candidate lists of estimates
2. Use *ISPOR Guidelines on Transferability of Economic Evaluations Across Jurisdictions* to identify local estimates required for pharmacoeconomic analyses specific to the Brazilian setting

Methodology:

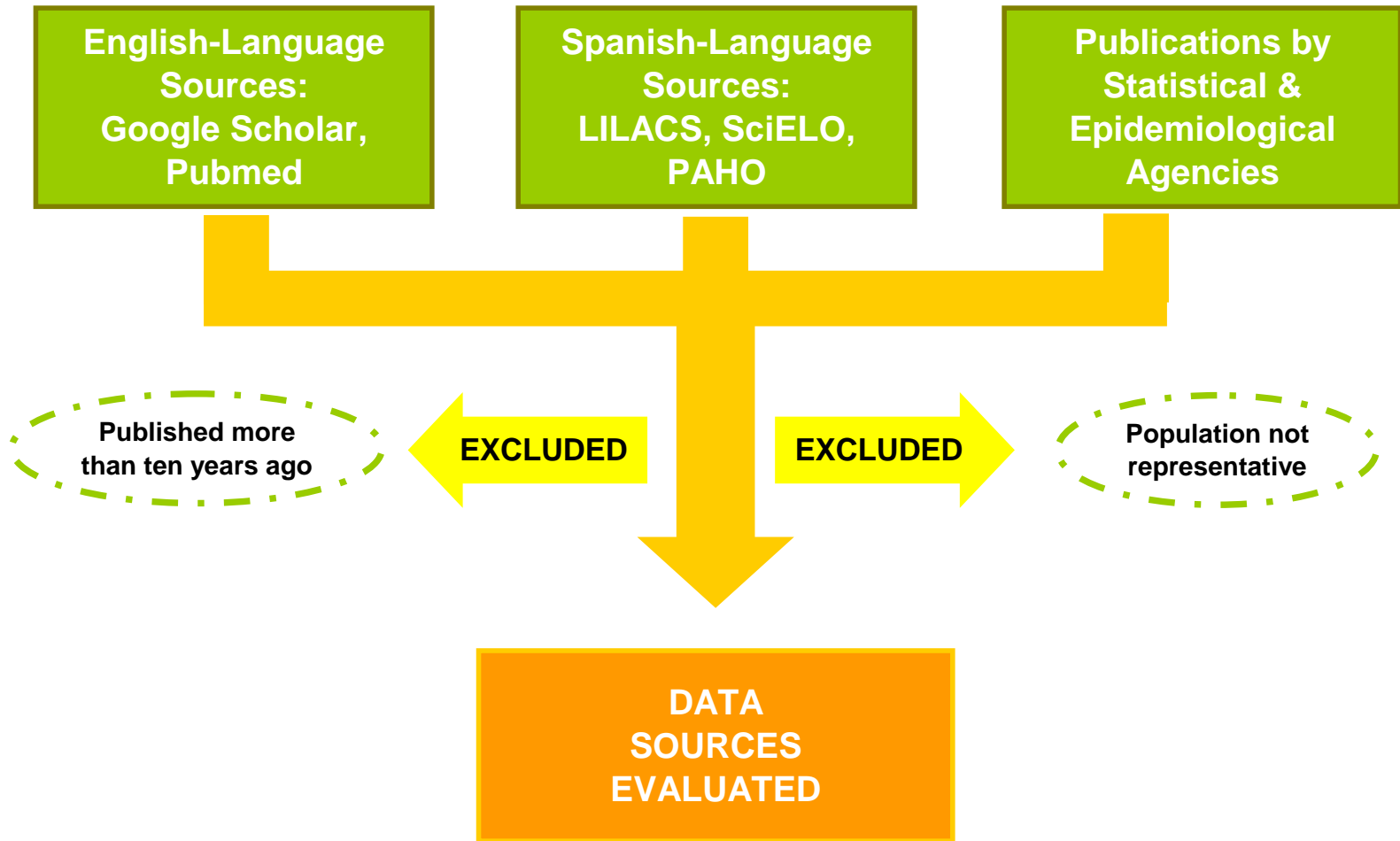
Types of Data Sources

Data sources for the following types of data were sought for Brazil:

- ❖ Epidemiologic (Cross-sectional & Longitudinal):
 - Disease prevalence
 - Disease incidence
- ❖ Health Outcomes:
 - Mortality/life expectancy
 - Morbidity
 - Quality of life
- ❖ Economic:
 - Treatment patterns
 - Medication Compliance
 - Direct medical costs
 - Indirect costs

Methodology: Identification of Data Sources

1. Review of published literature



Methodology: Identification of Data Sources

2. Personal Interviews & Website Searches



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Methodology: Evaluation of Data Sources

Criteria for Assessing Quality

❖ **Content:**

- Relevance of data collected

❖ **Coverage:**

- Relevance of population covered
- Representativeness of sample
- Rates of non-response

❖ **Quality Assurance:**

- Systems in place to ensure data validity and accuracy

❖ **Reliability:**

- Data collected in a consistent and standardized manner

❖ **Timeliness:**

- Number of years elapsed since data collection

Results: Public Data Sources

DATASUS

(Departamento de Informática do Sistema Único de Saúde)

- ❖ Database containing population and health information for Brazilian population covered by the Unified Health System (SUS), maintained by the Ministry of Health
- ❖ Available data:
 - Epidemiology
 - Disease prevalence
 - Health outcomes
 - Mortality
 - Direct medical cost
 - Healthcare utilization & cost for inpatient, ambulatory & laboratory procedures
- ❖ Access to the data is free

Results: Public Data Sources

DATASUS: Data Evaluation

DATASUS: Data Elements	Years of Data	Quality of DATASUS data (1=low, 5=high)				
		Content	Coverage	Quality Assurance	Reliability	Timeliness
Disease Prevalence	28 yrs	5	5	5	5	5
Healthcare Utilization & Cost	10 yrs	5	5	4	4	5
Mortality Rates by ICD-10	15 yrs	5	5	4	4	4
Reimbursement Rates (SUS)	annual	5	5	5	5	5

Results: Public Data Sources

ANS (Agência Nacional de Saúde Suplementar)

- ❖ Database maintained by ANS which regulates commercial health plans in Brazil and monitors private health care providers (35 million patients lives)
- ❖ Data available
 - Mortality rates by ICD-10 and age for patients in the Private Health System
- ❖ Access to the data is free

	Quality of ANS data (1=low, 5=high)				
Years of Data	Content	Coverage	Quality Assurance	Reliability	Timeliness
1 yr: 2004	5	4	3	4	1

Results: Public Data Sources

HIPERDIA

(Sistema de Cadastramento e Acompanhamento de Hipertensos e Diabéticos)

- ❖ Public health database of 7.2 million patients with diabetes and hypertension covered by the Unified Health System (SUS), maintained by the Ministry of Health
- ❖ Available data:
 - Demographic data & risk factors
 - Age, Gender, Sedentarism, BMI etc.
 - Prevalence of diabetes- & hypertension-related complications
 - Renal Disease, Stroke etc.
- ❖ Access to the data is free

	Quality of HIPERDIA data (1=low, 5=high)				
Years of Data	Content	Coverage	Quality Assurance	Reliability	Timeliness
5 yrs	4	4	4	4	5

Results: Public Data Sources

Corações do Brasil

- ❖ Survey commissioned by the Brazilian Society of Cardiology to gather data on prevalence of CVD risk factors, morbidity and mortality (n=2550)
- ❖ Data available
 - Demographic & socio-economic data
 - Anthropometric measures, biochemical measures & behavioral habits
 - Healthcare utilization & medication use
 - Prevalence of hypertension
- ❖ Access to the data is free

	Quality of Hearts of Brazil Data data (1=low, 5=high)				
Years of Data	Content	Coverage	Quality Assurance	Reliability	Timeliness
1 yr: 2005	4	5	4	4	3

Results: Public Data Sources

AMB (Associação Médica Brasileira)

- ❖ The AMB publishes a compilation of AMB-endorsed treatment guidelines for diabetes & hypertension and tables of private reimbursement rates for ambulatory procedures and laboratory tests
- ❖ Access to the data is free

AMB Publications	Years of Data	Quality of data (1=low, 5=high)				
		Content	Coverage	Quality Assurance	Reliability	Timeliness
Treatment Guidelines	annual	4	4	4	5	5
Reimbursement rates (private settings)	annual	5	5	5	5	5

Results: Selected Private Data Sources

Commercial Claims Data

- ❖ Commercial claims databases with de-identified data on patients covered by private health plans
- ❖ Data available:
 - Demographic data
 - Disease prevalence
 - Health-care utilization (including medication use) & cost
- ❖ Access to the data typically requires a formal research proposal, fee is dependent on extent of analysis and timelines

Years of Data	Quality of data (1=low, 5=high)				
	Content	Coverage	Quality Assurance	Reliability	Timeliness
Max: 5 yrs	4	4	4	4	4

Results: Selected Private Data Sources Disease Management Companies

- ❖ Commercial firms implement programs to identify chronically ill patients and disease management programs for private health plans
- ❖ Data available
 - Healthcare utilization & cost
 - Treatment compliance
- ❖ Access to the data typically requires a formal research proposal, fee is dependent on extent of analysis and timelines

Years of Data	Quality of data (1=low, 5=high)				
	Content	Coverage	Quality Assurance	Reliability	Timeliness
Max: 5-8 yrs Avg: 1.5 yrs	4	4	4	4	4

Results: Selected Private Data Sources

Drug Costs

- ❖ Kairos & Revista Simpro publish annual compilations of costs for drugs and other medical products (Revista Simpro)
- ❖ Data available:
 - Outpatient prescription medications: wholesale list price and retail prices (Kairos)
 - Outpatient prescription medications & medical products: wholesale list price (Revista Simpro)
- ❖ Online access to Kairos data is free, Revista Simpro costs R\$77/issue

Publications	Years of Data	Quality of data (1=low, 5=high)				
		Content	Coverage	Quality Assurance	Reliability	Timeliness
Kairos	annual	5	4	5	5	5
Revista Simpro	annual	5	4	5	5	5

Results:

Published Estimates of Quality of Life (QoL)

- ❖ A Brazilian-Portuguese version of the SF-36 has been translated and validated for use in estimating QoL in Brazilian patients with diabetes* and hypertension.
 - Selected citations:
 - Lima MG, Barros MBdA, César CLG et al. Impact of chronic disease on quality of life among the elderly in the state of São Paulo, Brazil: a population-based study. *Rev Panam Salud Publica*. 2009; 25(4):314-321
 - De Castro M, Caiuby AVS, Draibe S and MF Canziani. Qualidade de vida de pacientes com insuficiência renal crônica em hemodiálise avaliada através do instrumento genérico SF-36. *Rev. Assoc. Med. Bras*. 2003; 49(3):245-249
 - dos Reis M, Glashan RdQ. Adultos hipertensos hospitalizados: percepção de gravidade da doença e de qualidade de vida. *Rev. Latinoam. Enferm*. 2001; 9(3):51-57

*The Brazilian-Portuguese version of the SF-36 has also been incorporated into a broader instrument “*Questionário de Qualidade de Vida na Diabetes*”

Results:

Published Estimates of Indirect Costs

- ❖ Published estimates are also available of the indirect costs (productivity losses) associated with diabetes & hypertension in Brazil
 - Selected citations:
 - Barcelo A, Aedo C, Rajpathak S and S Robles. The cost of diabetes in Latin America and the Caribbean. Bulletin of the World Health Organization. 2003; 81(1)
 - da Costa J, Fuchs S, Olinto MTA et al. Cost-effectiveness of hypertension treatment: a population-based study. Sao Paul Med. J. 2002; 120(4): 100-104

Summary:

Data Sources Identified

- ❖ Sources for many of the data elements needed for pharmacoeconomic analysis were identifiable in Brazil and comparable to US and EU sources on the five evaluation criteria
- ❖ Ranking of data availability/quality by component:
 - Healthcare costs
 - Health Outcomes
 - mortality and morbidity
 - Epidemiology
 - Compliance
 - Quality of life
 - Indirect cost

Summary:

Gaps in Identified Data Resources

- ❖ Notable gaps in requisite data in Brazil included large-scale longitudinal epidemiologic studies analogous to the United Kingdom Prospective Diabetes Study (UKPDS) and the US Framingham Heart Study

Conclusion

- ❖ Brazilian data sources are available and of sufficiently high quality to be used in pharmacoeconomic analyses in diabetes or hypertension
- ❖ However, in the absence of Brazilian longitudinal epidemiologic data and disease-specific utilities, scientifically rigorous analyses for the Brazilian setting likely would require local adaptation of models and data from other countries in North America or Europe

Commonly Cited US Data Sources for Economic Analyses of Diabetes & Hypertension

❖ Epidemiology

- National Health Interview Survey/ National Health and Nutrition Evaluation Survey (*CS)
- Framingham Heart Study (*LON)
- Nurses' Health Study (*LON)

❖ Health Outcomes

- National Health Interview Survey
- National Vital Statistics System
- Cardiovascular Health Study
- Framingham Heart Study (*LON)
- Epidemiology of Diabetes Interventions and Complications Study

❖ Economics

- National Ambulatory Medical Care Survey/National Hospital Ambulatory Medical Care Survey
- National Health Interview Survey
- Medicare Claims Data
- Commercial Medical and Pharmacy Claims Databases (e.g. Ingenix, IMS)
- Healthcare Utilization Project Database
- Numerous published quality of life studies using EQ-5D or SF-36

*CS: cross-sectional; LON: longitudinal

Commonly Cited UK Data Sources for Economic Analyses of Diabetes & Hypertension

❖ Epidemiology

- Health Survey for England (*CS)
- The NHS Quality and Outcomes Framework Database (*CS)
- United Kingdom Prospective Diabetes Study (*LON)

❖ Health Outcomes

- United Kingdom Prospective Diabetes Study
- The British Regional Heart Study (BRHS)
- Health Survey for England
- Office for National Statistics

❖ Economics

- Key Health Statistics for General Practice Database
- National Health Service Schedule of Reference Costs
- PSSRU Schedule of Unit Costs of Health and Social Care
- Office for National Statistics Prescription Analysis Reports
- Department of Health Hospital Episode Statistics
- British National Formulary
- the Department of Works and Pension Information Centre
- Numerous published quality of life studies using EQ-5D or SF-36

*CS: cross-sectional; LON: longitudinal