

Clinical Interventions in Australian Community Pharmacies (The PROMISE Project)

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Background



- Clinical Intervention
 - The process of identifying an actual or potential drug related problem and recommending an action to be taken to resolve or prevent the problem
- Frequency, Type and Value of clinical interventions in Australian community pharmacies is not clearly known

PROMIS^e Method



- Developed a Classification System
 - DOCUMENT
 - Type/Subtype, Action, Recommendation, Clinical Significance, Outcome
- Developed an electronic data collection system
 - Central repository model
- Tested the effect of Remuneration, an Intervention Prompt, and Observation
- Undertook an Economic Analysis

DOCUMENT: A Classification System for DRPs and their resolution



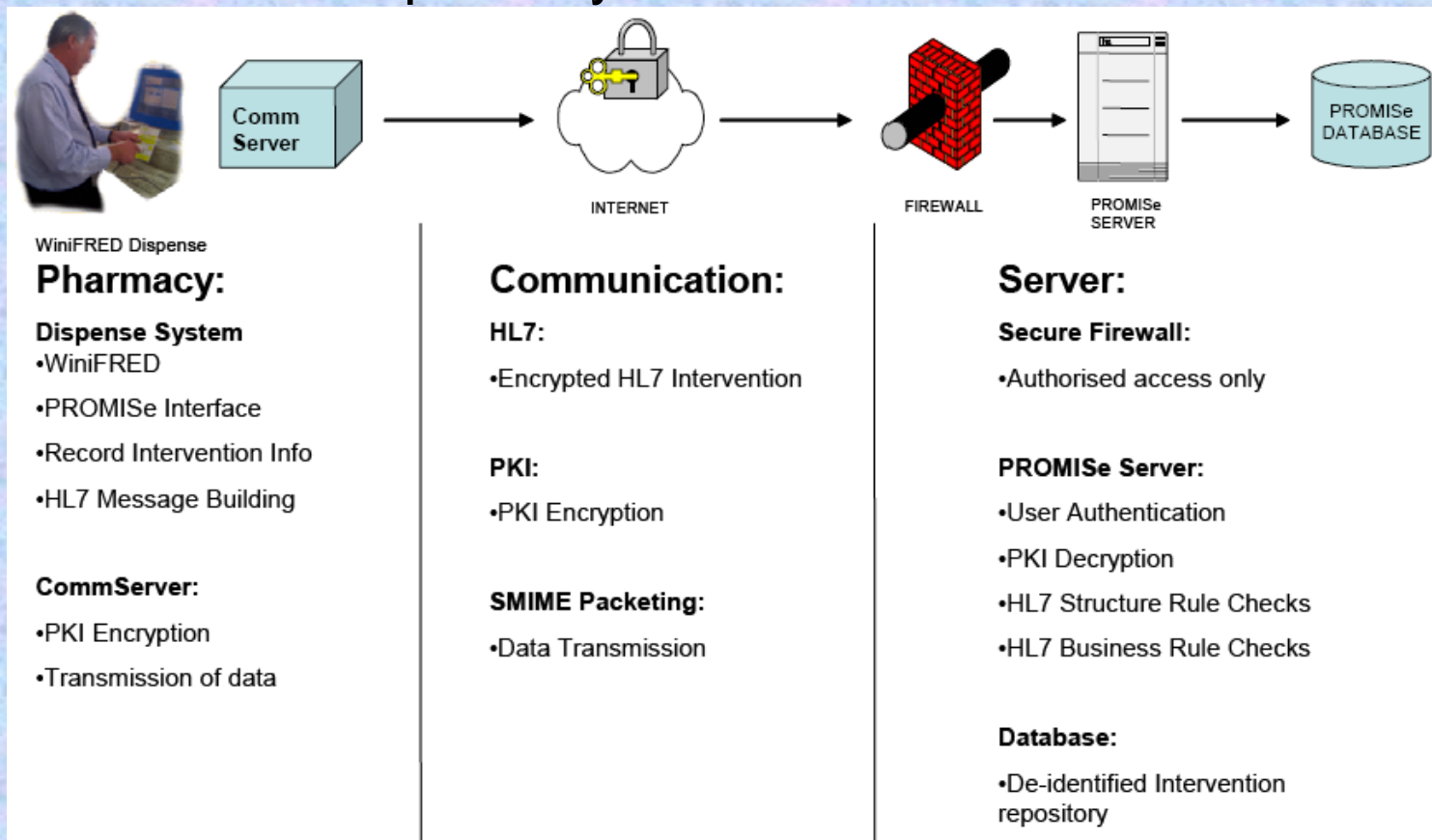
- **Type/Subtype**
 - **Drug Selection**
 - eg. Contraindication, duplication, interactions
 - **Over/Underdose**
 - **Compliance**
 - **Undertreatment**
 - **Monitoring**
 - **Education**
 - **Non-clinical**
 - **Toxicity/ADRs**
- **Action**
 - Discussion, resources
- **Recommendation**
 - Drug/dose change, referral, education
- **Clinical Significance**
- **Outcome**
 - Acceptance of recommendation

Online validation by >200 independent pharmacists and ~150 PROMISE pharmacists

Method: Electronic Data Collection



- Intervention recording system installed into WiniFRED[®] dispensing program with secure, de-identified data transfer to a repository



WiniFRED® PROMIS^e Interface



- Information from prescription entered automatically
- Other information relating to intervention added by pharmacist

The screenshot shows the 'Interventions' window in the WiniFRED PROMIS^e interface. It contains fields for patient information (Patient, Gender: Male, Birthdate: 14/07/1963, Age Group: 21-65 years old (adult)), prescription details (Script No: 259534, Script Type: Original, Drug: AMOXIL CAP 250mg, 1884E -GK), and prescriber information (Prescriber, Prescriber No: 799893, Pharmacist Initials: TL, Med Count: 12). Below these fields are five tabs: 1. Categories, 2. Actions, 3. Recommendations & Outcomes, 4. Significance, and 5. Notes. The 'Categories' and 'Significance' tabs are circled in yellow. Under 'Intervention category', 'D Drug selection' is selected. Under 'Intervention sub-category', 'B Drug interaction' is selected. A 'Category Notes' text area is at the bottom. At the very bottom, there is an 'Edit Intervention' button and a row of buttons: Help, Summary, Delete, Edit Draft, Save Draft, Save, and Cancel.

Methods: PROMIS^e Data Collection



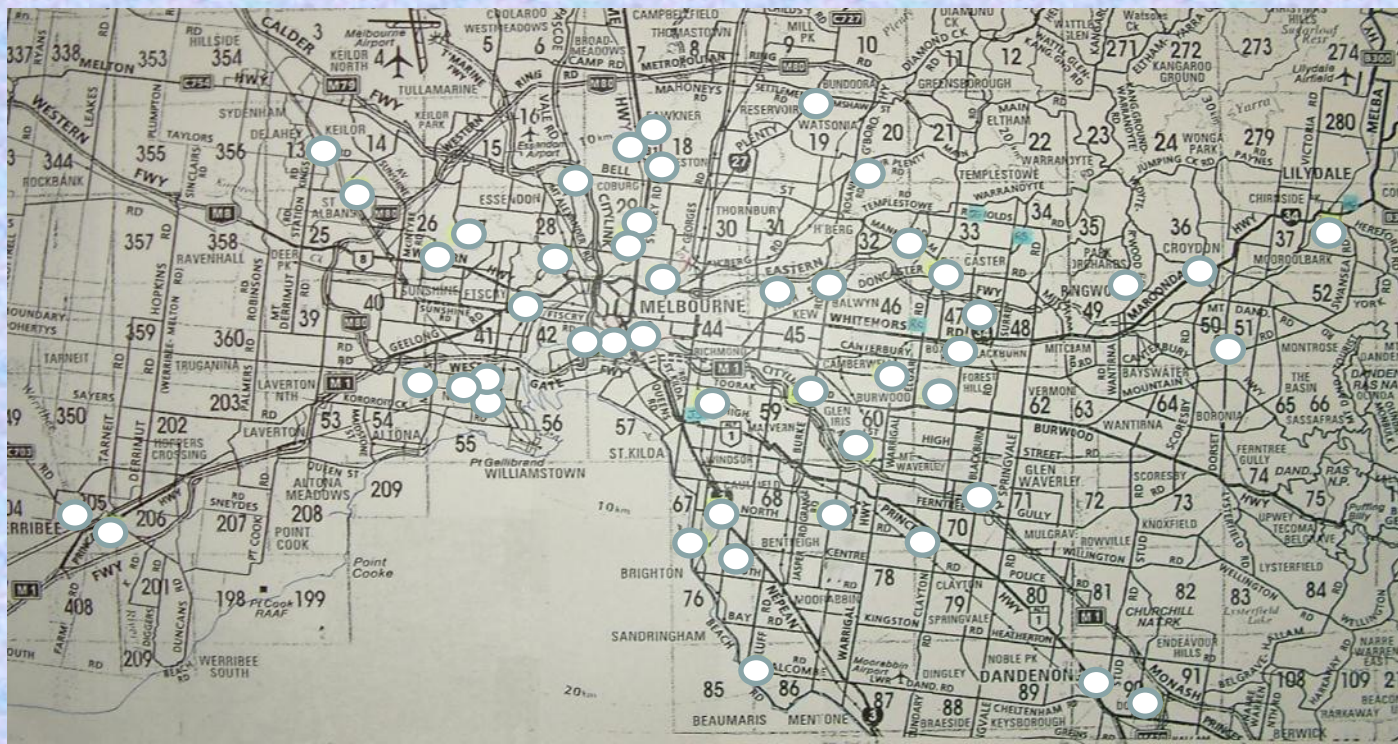
- Recorded and documented aspects of:
 - Pharmacy Demographics
 - Daily workload and staffing
 - Entrepreneurial orientation
 - Prescriptions dispensed
 - Pharmacist Demographics
 - Clinical skills
 - Job satisfaction
 - Clinical Intervention Parameters
 - Patient demographics
 - Drug involved and other drugs taken by patient
 - Type of problem
 - Action taken, Recommendation made
 - Acceptance of recommendation
 - Reactive or proactive
 - Time taken

Analysis

- **Frequency** and relationships
- **Drugs involved**
- Effect of
 - Remuneration,
 - Observation and
 - Intervention Prompt
- **Economic**

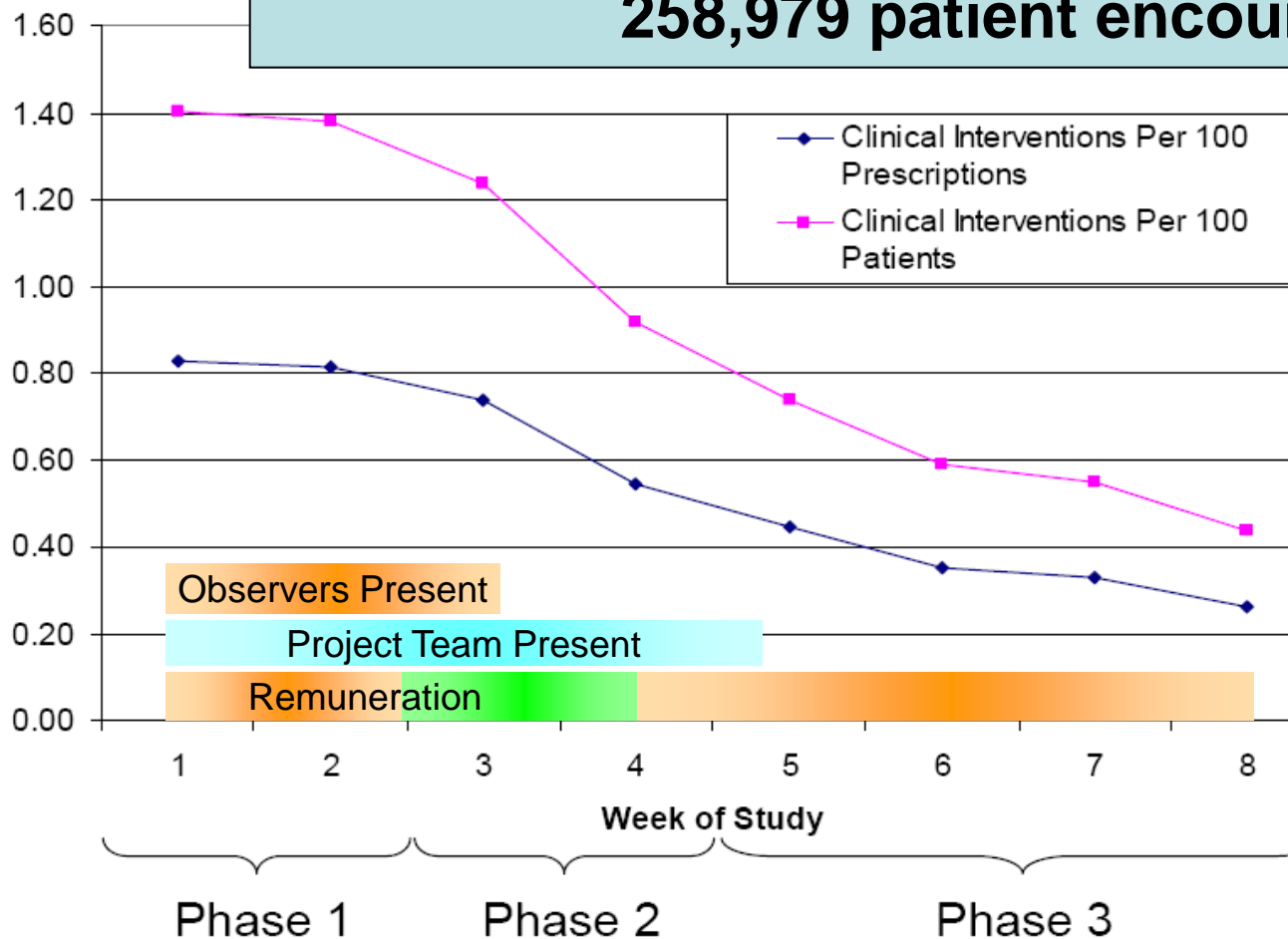
Pharmacy Recruitment and Enrolment

- 52 pharmacies in a 100km radius of central Melbourne
- Pharmacies were representative of Australian pharmacies



Results: Frequency of Interventions

**2396 interventions from 435,520 scripts and
258,979 patient encounters**



Average
**0.92 interventions
per 100 patients**
**0.55 interventions
per 100 scripts**

Types of Problems Detected

Category		Subcategory	Number	% of Total	
D	Drug selection	Duplication	83	3.46%	22.7%
	Drug selection	Drug interaction	58	2.42%	
	Drug selection	Wrong drug	120	5.01%	
	Drug selection	Wrong dosage form	98	4.09%	
	Drug selection	Other drug selection problem	186	7.76%	
O	Over or underdose prescribed	Dose too high	178	7.43%	19.4%
	Over or underdose prescribed	Dose too low	169	7.05%	
	Over or underdose prescribed	Other Dose Problem	118	4.92%	
C	Compliance	Taking too little	117	4.88%	11.5%
	Compliance	Taking too much	48	2.00%	
	Compliance	Intentional drug misuse	12	0.50%	
	Compliance	Difficulty using dosage form	44	1.84%	
	Compliance	Other Compliance Problem	54	2.25%	
U	Untreated indications	Condition not adequately treated	97	4.05%	15.9%
	Untreated indications	Preventive therapy required	266	11.10%	
	Untreated indications	Other Untreated indication Problem	19	0.79%	
M	Monitoring	Laboratory Monitoring	15	0.63%	2.0%
	Monitoring	Non-Laboratory monitoring	23	0.96%	
	Monitoring	Other Monitoring Problem	9	0.38%	
E	Education or Information	Patient drug information request	87	3.63%	17.4%
	Education or Information	Confusion about therapy	120	5.01%	
	Education or Information	Demonstration of device	62	2.59%	
	Education or Information	Disease management or advice	89	3.71%	
	Education or Information	Other Education or Information Problem	60	2.50%	
N	Non Clinical (see elsewhere)				
T	Toxicity or Adverse reaction	Toxicity caused by dose	17	0.71%	11.0%
	Toxicity or Adverse reaction	Toxicity caused by drug interaction	87	3.63%	
	Toxicity or Adverse reaction	Toxicity evident	129	5.38%	
	Toxicity or Adverse reaction	Other Toxicity/Adverse Effect problem	31	1.29%	
Total			2396	100%	100%

Results: Drugs Involved- Numbers



ATC Code (L2)	DESCRIPTION		Clinical Interventions	
			Number	Percent
J01	ANTIBACTERIALS FOR SYSTEMIC USE	1	288	12.6
A10	DRUGS USED IN DIABETES	2	276	12.1
R03	DRUGS FOR OBSTRUCTIVE AIRWAY DISEASES	3	169	7.4
	AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM	4	148	6.5
N02	ANALGESICS	5	124	5.4
N06	PSYCHOANALEPTICS	6	123	5.4
A02	DRUGS FOR ACID RELATED DISORDERS	7	112	4.9
M01	ANTIINFLAMMATORY AND ANTIRHEUMATIC PRODUCTS	8	98	4.3
C10	SERUM LIPID REDUCING AGENTS	9	94	4.1
B01	ANTITHROMBOTIC AGENTS	10	78	3.4

Raw number of drugs involved with CIs only tell part of the story- drugs are more or less frequently dispensed

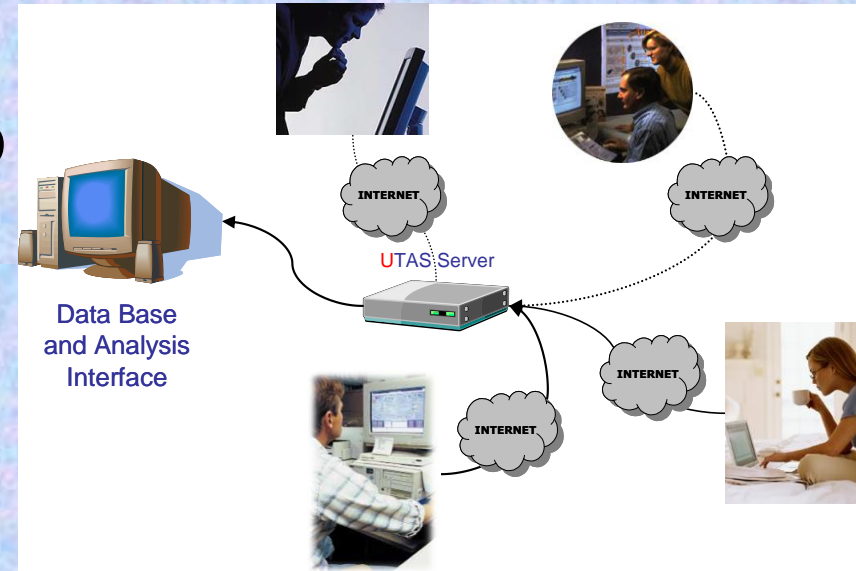
Results: Drugs Involved- Rates

ATC Code (L2)	DESCRIPTION		Clinical Interventions	Prescriptions	Rate
A10	DRUGS USED IN DIABETES	2	276	14730	1.87
A07	ANTIDIARRHEALS, INTESTINAL ANTIINFLAMMATORY/ANTIINFECTIVE		16	1096	1.46
P01	ANTIPROTOZOALS		32	2464	1.30
B03	ANTIANEMIC PREPARATIONS		15	1218	1.23
H02	CORTICOSTEROIDS FOR SYSTEMIC USE		48	5178	0.93
N04	ANTI-PARKINSON DRUGS		13	1409	0.92
R03	DRUGS FOR OBSTRUCTIVE AIRWAY DISEASES	3	169	20949	0.81
N03	ANTIEPILEPTICS		28	3585	0.78
C01	CARDIAC THERAPY		40	5198	0.77
M01	ANTIINFLAMMATORY AND ANTIRHEUMATIC PRODUCTS	8	98	13171	0.74
H03	THYROID THERAPY		11	1552	0.71
B01	ANTITHROMBOTIC AGENTS	10	78	11585	0.67
J01	ANTIBACTERIALS FOR SYSTEMIC USE	1	288	42911	0.67
M05	DRUGS FOR TREATMENT OF BONE DISEASES		29	4655	0.62
C03	DIURETICS		36	5828	0.62
M04	ANTIGOUT PREPARATIONS		13	2116	0.61

Unique data: Can also determine common types of intervention for each group of medications

Economic Methods: Determining the Value of Interventions

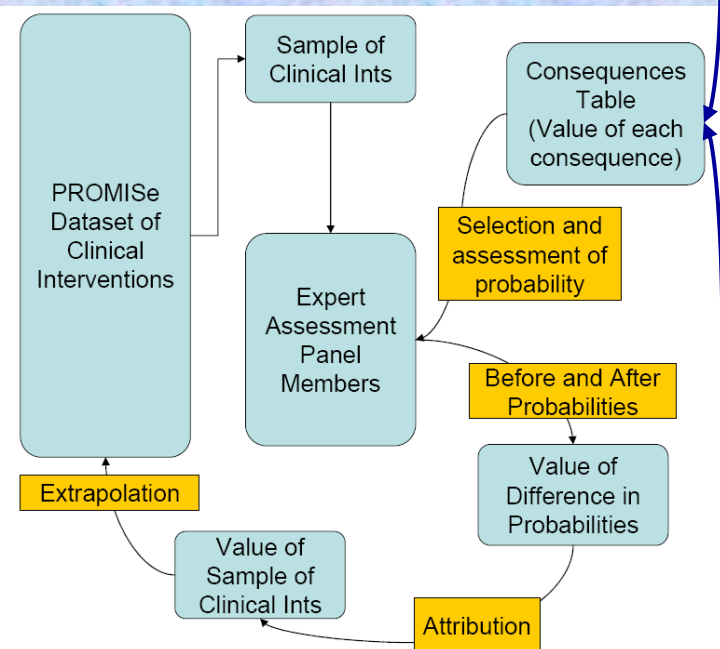
- Developed a unique system involving expert assessment of the **probability** of **both positive and negative** consequences, at **different levels of severity**, both **with and without the intervention**.
- Secure internet access to intervention details 16 Clinical Assessors in 4 virtual panels of 4
 - 2 physicians, 6 GPs, 8 pharmacists



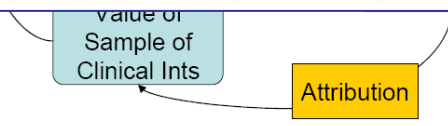
Economic Methods: Consequences Table

MDC Code	MDC heading	Sub-group Code	Subgroup	Sub-Group Severity Code	Subgroup Severity Description
5	circulatory system	5.02	Hypertension	05.02Mild	Mild signs or symptoms which resolve without intervention
5	circulatory system	05.02	Hypertension	05.02Moderate	Moderate elevation of blood pressure requiring modification of or commencement of medical management
5	circulatory system	05.02	Hypertension	05.02Severe	Acute injury to target organs (e.g. renal, ocular or cerebral) requiring prompt medical management
6	digestive system	06.01	Gastrointestinal bleeding	06.01Mild	Occult gastrointestinal bleeding likely to require medical management only if persistent
6	digestive system	06.01	Gastrointestinal bleeding	06.01Moderate	Overt gastrointestinal bleeding requiring medical management
6	digestive system	06.01	Gastrointestinal bleeding	06.01Severe	Overt gastrointestinal bleeding with haemodynamic consequences requiring admission to hospital and prompt medical management

Subgroup	Health Status Impact	Dur'n of Health Status Impact	Duration of Admiss'n	Cost of Admiss'n	No. of GP Cons.	Cost of GP Cons.	Number of Specialist Consults	Cost of Specialist Consults	Investigation Cost
Hypertension 05.02Mild	1	360	0.00	\$0	3	\$113			
Hypertension 05.02Moderate	2	360	0.00	\$0	8	\$302			\$85
Hypertension 05.02Severe	3	90	3.65	\$2,381	4	\$151	4	\$320	\$85
Gastrointestinal bleeding 06.01Mild	1	180	0.00	\$0	2	\$76			\$35
Gastrointestinal bleeding 06.01Moderate	2	60	1.68	\$1,199	1	\$38	1	\$128	\$1,847
Gastrointestinal bleeding 06.01Severe	3	90	5.62	\$3,881	2	\$76	2	\$192	



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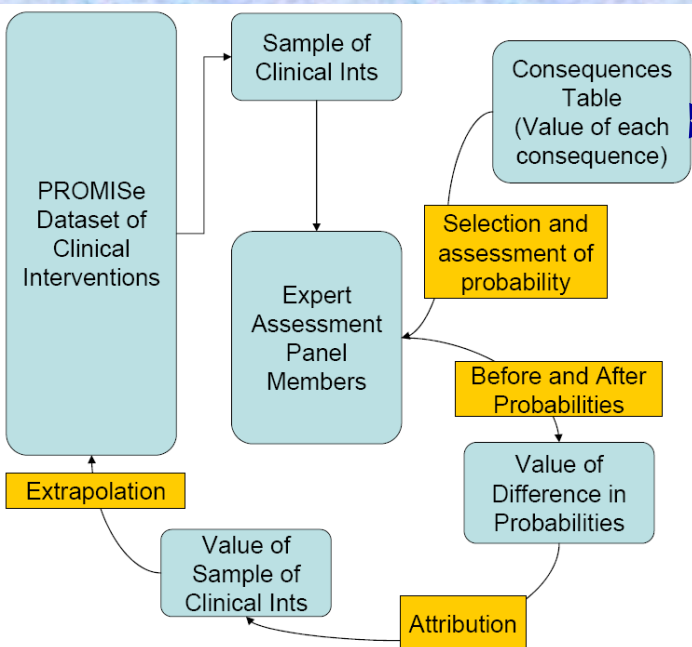
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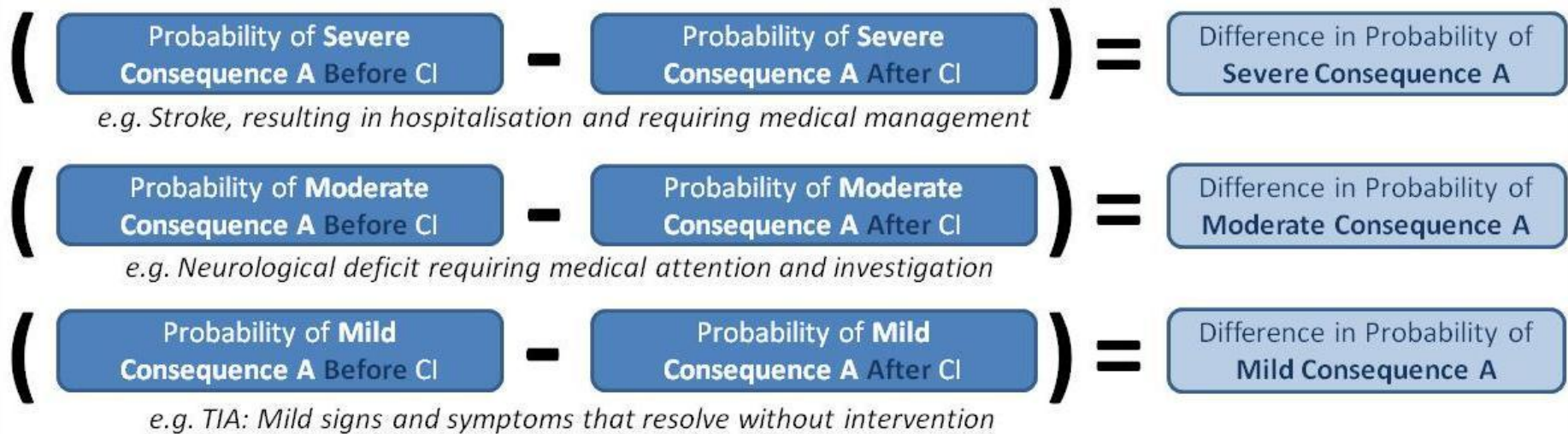
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Methods: Assessment of Value

Multiple experts assign **before** and **after** probabilities for multiple different consequences (A, B,C etc.) at different levels of severity (Severe, Moderate, Mild)
Cerebrovascular event shown as an example of Consequence A



Methods: Assessment of Value

Reductions in probability for different levels of severity of different consequences are multiplied by the appropriate descriptive parameters to obtain a value. The values are summed to obtain a total value. This process can be repeated for each DRP identified.

$$\left(\text{Difference in Probability of Severe Consequence A} \times \text{Parameters describing Severe Consequence A} \right) = \text{Value of Difference in Probability of Severe Consequence A described in terms of parameters used}$$

+

$$\left(\text{Difference in Probability of Moderate Consequence A} \times \text{Parameters describing Moderate Consequence A} \right) = \text{Value of Difference in Probability of Moderate Consequence A described in terms of parameters used}$$

+

$$\left(\text{Difference in Probability of Mild Consequence A} \times \text{Parameters describing Mild Consequence A} \right) = \text{Value of Difference in Probability of Mild Consequence A described in terms of parameters used}$$

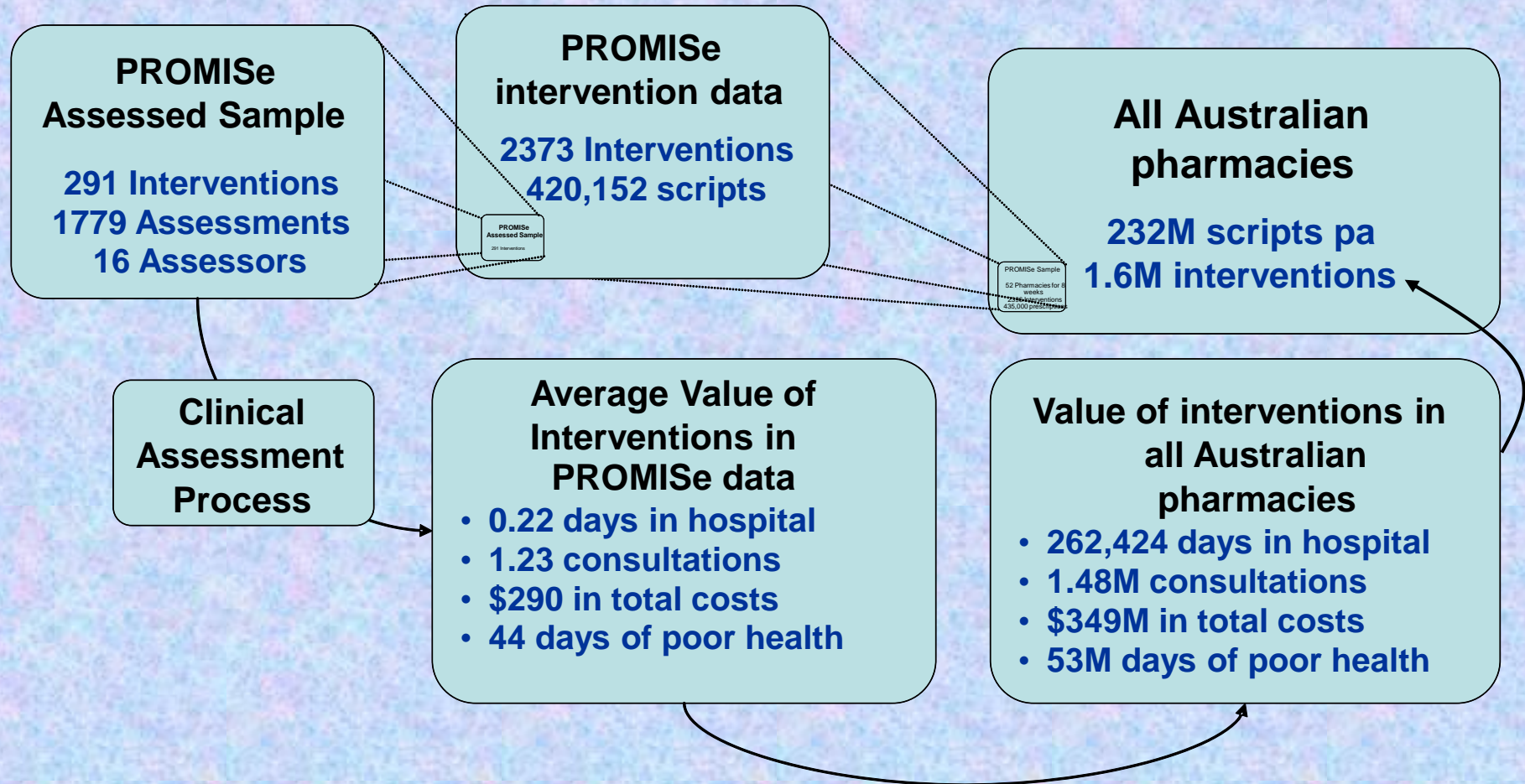
+

$$\left(\text{Difference in Probability of Severe, Moderate and Mild Consequences B, C, D etc.} \times \text{Parameters Describing Severe, Moderate and Mild Consequences B, C, D etc.} \right) = \text{Value of Difference in Probability of Severe, Moderate and Mild Consequences B, C, D etc. described in terms of parameters used}$$

Estimated Value of DRP
described in terms of parameters used

System allows multiple consequences to be selected

Economic Results: Main Value Results



Conclusions

- Clinical Interventions occur in community pharmacies in Australia at a **frequency above 1 in 200 prescriptions**
- Common types of interventions relate to **drug selection, dose problems and education**
- Drugs commonly involved in interventions are **antidiabetic agents, drugs for COPD and anti-inflammatory agents**
- The value of these activities is estimated at **~\$1M per day**, at the current level of interventions

Future Work

- PROMISe III
 - Grant received (>\$3M) for ~200 pharmacy study, across multiple states (trial phase planned for mid 2009)
 - Techniques to increase intervention frequency being tested
 - National rollout intended in 2011, depending on results(!)
 - ~5000 pharmacies



The screenshot shows the website for PROMISe (Pharmacy Recording of Medication Incidents and Services). The header includes navigation links for Home, News, Contact Us, FAQ, and Members. Below the header, the website title and URL (www.promise.org.au) are displayed. The main content area features a recruitment notice for PROMISe III, which is currently recruiting pharmacies in NSW, VIC, and TAS. The notice lists benefits such as recording interventions, getting paid, earning CPE points, and furthering skills. It also mentions that the system uses Aquarius or FRED. A map of Australia highlights the participating states. On the right side, there are three informational boxes: 'Trial Information' (needing 210 pharmacies, starting June 2009, 3-month trial, requiring documentation training), 'What is a Clinical Intervention?' (any professional activity improving medicine use), and 'Want to learn to D.O.C.U.M.E.N.T.?' (designed system, training provided, and a related article in the Australian Pharmacist).

PROMISe
Pharmacy Recording of Medication Incidents and Services
electronic documentation system

Home News Contact Us FAQ Members
Welcome The Project About the People

www.promise.org.au

PROMISe III is recruiting **ENROL NOW!**

Want to ?

- ✓ record interventions ✓ get paid
- ✓ earn CPE points ✓ further your skills

If you use: *Aquarius* or **FRED**



only in: NSW, VIC, and TAS [Enrol Now](#)

Trial Information

- We need 210 pharmacies in NSW, Victoria and Tasmania
- The PROMISe trial starts June 2009 and runs for 3 months
- You will be required to DOCUMENT Clinical Interventions.
- CPD accredited training will be provided

What is a Clinical Intervention?

- Any professional activity by the pharmacist directed towards improving the quality use of medicines and resulting in a recommendation for a change in the patient's medication therapy, means of administration or medication-taking behaviour.

[See some EXAMPLES](#)

Want to learn to D.O.C.U.M.E.N.T.?

- The PROMISe team has designed their own drug related problem classification system. [View the D.O.C.U.M.E.N.T. system](#)
- Training will be provided, online and in workshops in each state
- Read the [PROMISe article](#) in the February *Australian Pharmacist*?

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