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# Using Evaluation to Enhance Targeting of Chronic Disease Management Programs

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# Outline

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- Outcome evaluation
  - Primary outcome analysis: Benefits and limitations
  - Added value: Secondary analyses
    - Why?
    - How?
    - HARP evaluation examples
      - Diabetes
      - Pulmonary rehabilitation



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# Benefits of primary outcome evaluation

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- Group level investigation of changes in outcomes attributable to a program to assess program efficacy
- Provides evidence for continuation, growth and re-allocation of resources
- Contributes to evidence-based practice and policy



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# Limitations of primary outcome evaluation

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- Assumes “one size fits all”
- Does not identify who does and does not get “significant” changes
- Often lacks information required to make evidence-based program improvements



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# Secondary analyses

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- Retrospective analysis of data collected for another purpose
- Provides a quick and efficient method of generating hypotheses
- Widely used in clinical trial data
  - Controversial
    - Data mining
    - Low statistical power
- Potential to contribute to continuous quality improvement within disease management program

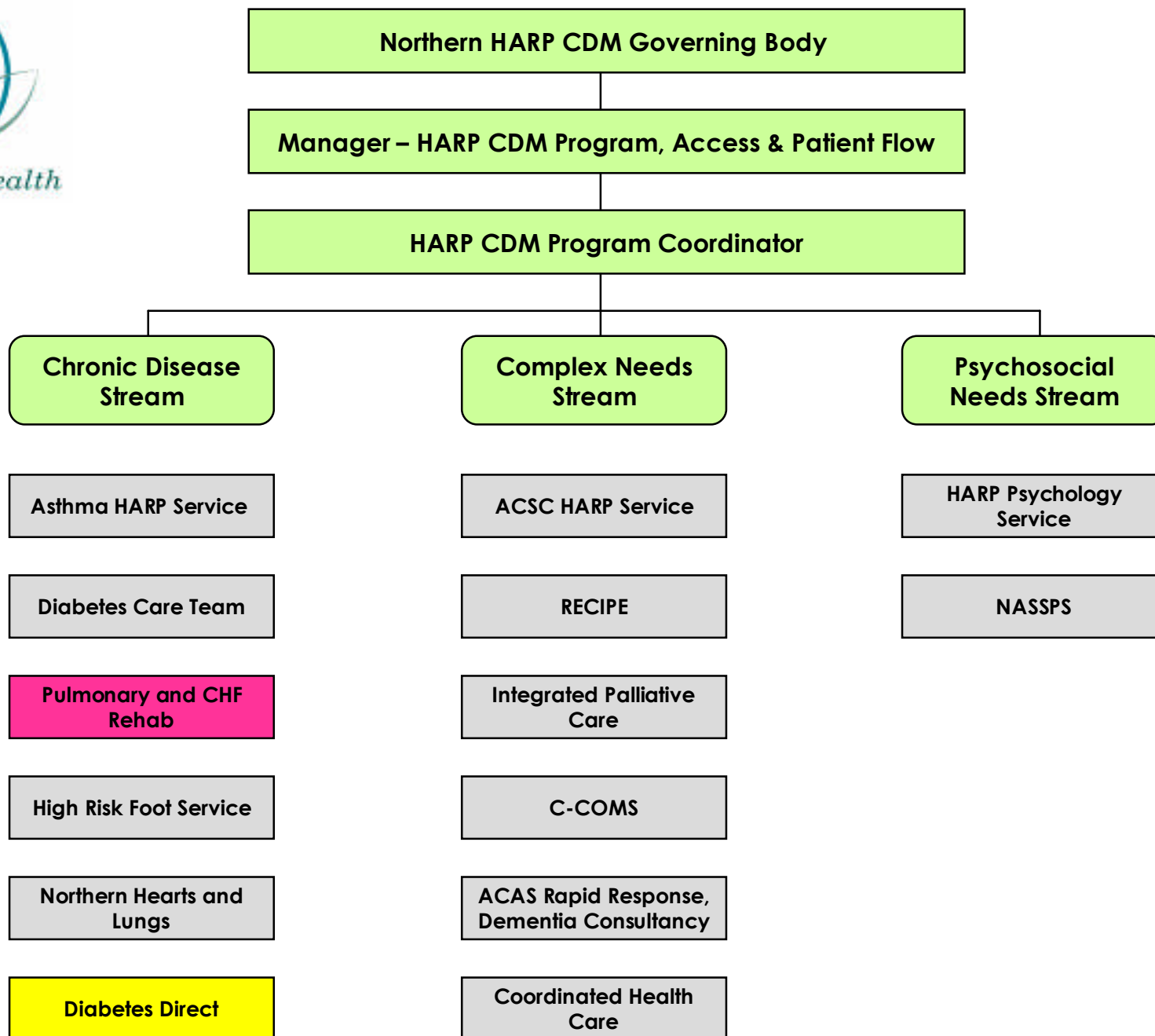


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# Have you ever wanted to know...

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- Which clients benefit most from your program?
- Which clients benefit least?
- Which components of the model are the most/ least effective?
- What are the risk factors for adverse outcomes?
  - Emergency Department presentation





# Example 1 – Diabetes Direct

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- Multidisciplinary model in GP setting
  - Specialist Endocrinology
  - Dietetics
  - Diabetes Nurse Education
  - Physiotherapy/ Exercise physiology
  - Podiatry
- 25-30 new patients per month
- Mean age 61; 48% male; ~60% born overseas



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# Diabetes Direct Outcome Evaluation

|                    | Baseline | 12 month review | Mean change (SD) | p-value |
|--------------------|----------|-----------------|------------------|---------|
| HbA1c (%)          | 8.5      | 7.2             | -1.3 (1.7)       | 0.00    |
| AQOL total         | 0.61     | 0.72            | 0.11 (0.24)      | 0.00    |
| Illness            | 0.26     | 0.29            | 0.03 (0.23)      | 0.00    |
| Independent living | 0.87     | 0.91            | 0.04 (0.19)      | 0.00    |
| Social             | 0.88     | 0.92            | 0.03 (0.09)      | 0.00    |
| Physical           | 0.93     | 0.96            | 0.03 (0.09)      | 0.00    |
| Psychological      | 0.79     | 0.86            | 0.07 (0.24)      | 0.00    |

n=400



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# The case for secondary analysis

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- Primary outcome analysis
  - Statistically significant reduction in HbA1c of 1.3%
- However 22% did not achieve target HbA1c at 12 months
  - Increased risk of diabetes complications and mortality
  - Decreased quality of life
- Secondary analysis: Who did not achieve target HbA1c?



# Who did not achieve target HbA1c?

Multivariate logistic regression (n=248)

| <b>Predictor variable</b> | <b>OR (95% CI)</b> |
|---------------------------|--------------------|
| HbA1c on admission        | 1.71 (1.37, 2.12)  |
| Months in program         | 1.06 (1.01, 1.12)  |
| Quit program              | 6.27 (2.40, 16.37) |
| Physical senses (AQoL)    | 0.66 (0.47, 0.92)  |



# Who does not achieve target HbA1c?

|                           | Data | Clinicians | Literature |
|---------------------------|------|------------|------------|
| Depression and anxiety    |      | ✓          | ✓ ✓        |
| Poor cognition            |      | ✓ ✓        | ✓          |
| Not ready to change       | ✓    | ✓ ✓        | ✓          |
| External locus of control |      | ✓          | ✓          |
| Low self-efficacy         |      | ✓          |            |
| Poor quality of life      | ✓    |            | ✓          |
| Severity of diabetes      | ✓    | ✓          | ✓          |



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# Prospective validation study

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- Hypotheses:
  - It is possible to identify those most at risk of poor outcome on admission to the service?
- Aim:
  - To determine the baseline patient characteristics associated with poor outcomes at 12 months for patients attending a comprehensive diabetes disease management program
- Sample:
  - 300 consecutive new patients to HARP diabetes services



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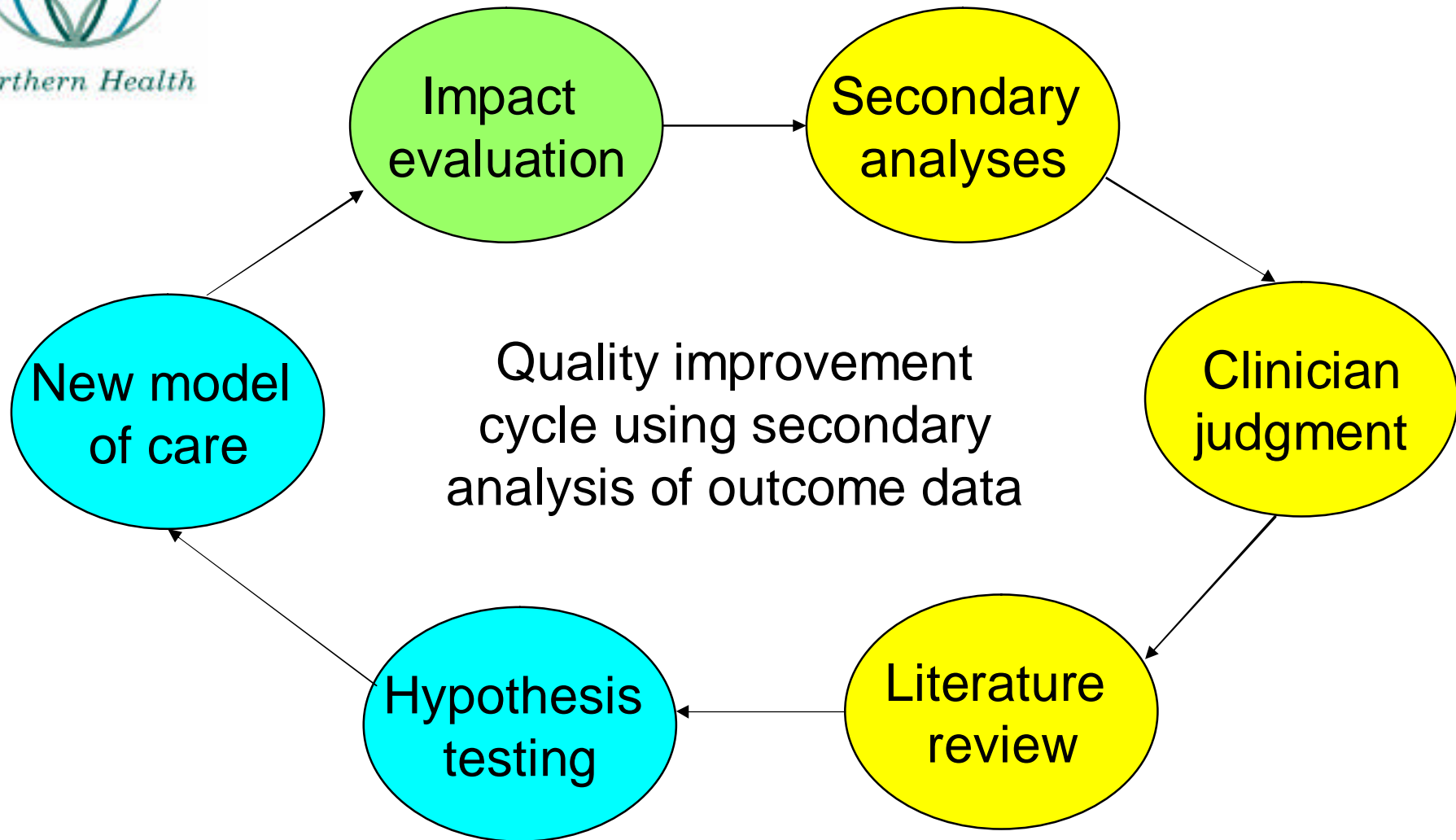
# Measures

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1. Hospital Anxiety and Depression Scale
2. Peyrot and Rubin Diabetes Specific Locus of Control
3. Diabetes Self-efficacy scale - Short form
4. Rowland Universal Dementia Assessment Scale (RUDAS)
5. Brief diabetes stages of change questionnaire
6. Severity of diabetes
  - Diabetes type, duration, hypo frequency, complications, medications
7. Demographics



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## Example 2: Pulmonary Rehabilitation

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- Outpatient physiotherapy group exercise class
  - Twice weekly sessions for 8 weeks
  - 60-90 minute exercise program
  - On completion referred on to community based maintenance program
- Mean age 69, 55% male, 51% born overseas



# Pulmonary Rehabilitation Outcome Evaluation

|                         | Baseline | Discharge | Mean change (SD) | p-value |
|-------------------------|----------|-----------|------------------|---------|
| ISWT distance (m)       | 249      | 287       | 38 (61)          | 0.00    |
| SGRQ Total              | 51.2     | 47.9      | -3.3 (12.0)      | 0.01    |
| SGRQ Symptoms           | 56.0     | 50.8      | -5.2 (18.8)      | 0.00    |
| SGRQ Activity           | 69.8     | 67.8      | -2.0 (14.6)      | 0.16    |
| SGRQ Impact             | 39.0     | 35.6      | -3.4 (15.9)      | 0.02    |
| AQoL total              | 0.48     | 0.52      | 0.04 (0.21)      | 0.04    |
| Social rel'ships (AQoL) | 0.78     | 0.82      | 0.04 (0.22)      | 0.03    |

n=117



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# Who are the non-completers?

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- 43% (89 patients) started but did not complete the program
- Self-reported reason for non-completion
  - Patient choice ~ 42%
  - Illness ~ 28%
  - Unknown ~ 30%



# Secondary analysis – Who are these clients?

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Multivariate logistic regression (n=176)

| <b>Predictor variable</b>                | <b>OR (95% CI)</b> |
|--|--------------------|
| Exercise capacity<br>(ISWT distance 10m) | 0.98 (0.95, 1.00)  |



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# Literature review

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- Barriers and associations with non-adherence
  - Depression/ anxiety
  - Lower education
  - Living far away
  - Transport difficulties
  - Poor health
  - Bad weather
  - Reduced social support/ living alone



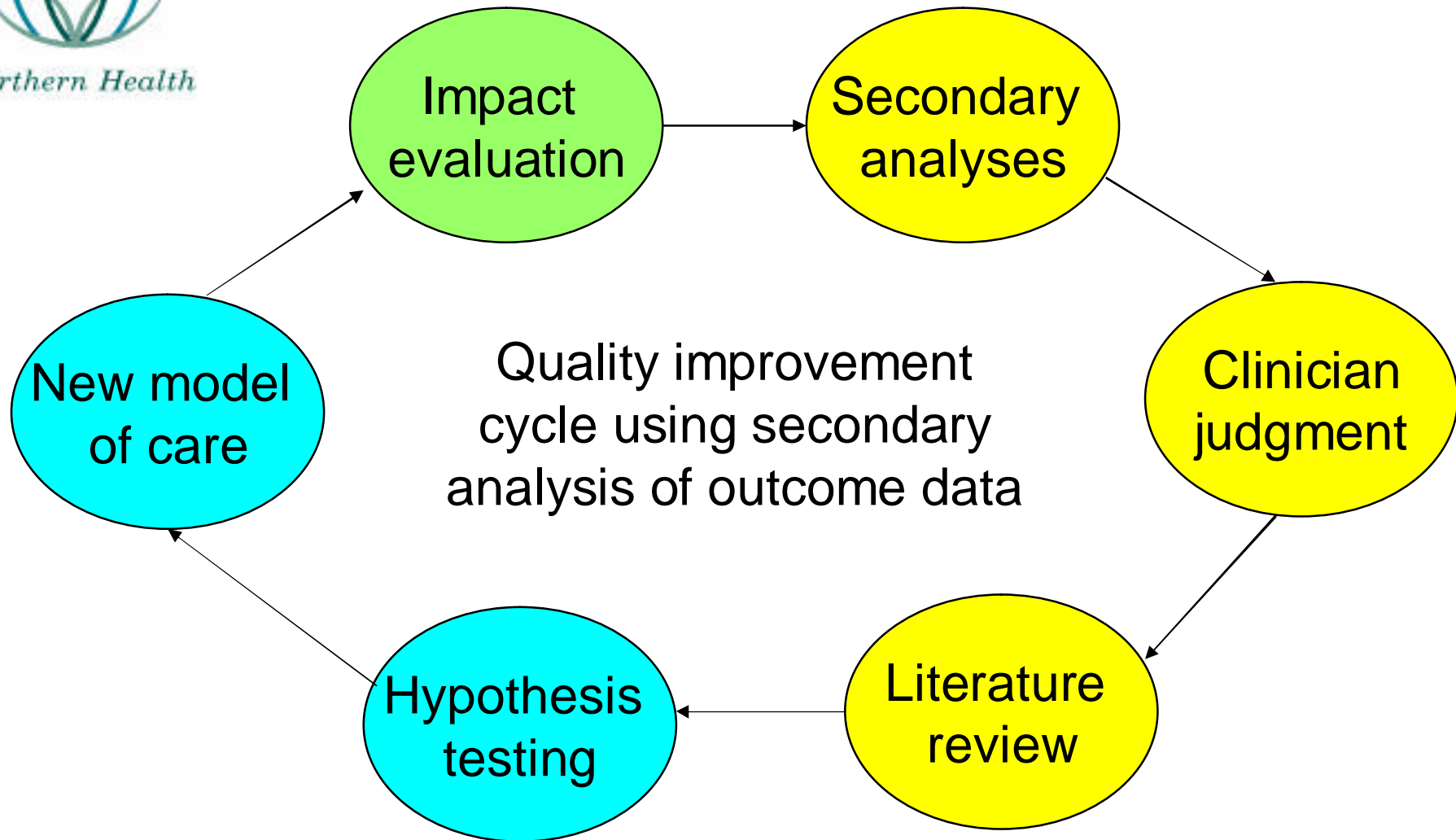
# Pulmonary Rehabilitation non-completer hypotheses

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- Patients of lower functional capacity are less likely to complete the program
- Many who 'drop out' do so because they find the program difficult
  - Stratify patients into lower and higher functional status groups
  - Offer transport
  - Alter scheduling



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# Summary

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- Primary outcome evaluation contributes to evidence-based practice and policy, and provides evidence for continuation, growth and re-allocation of resources.
- Secondary analysis is useful for generating hypotheses about a program, especially when combined with clinical judgment and the literature.
- Once tested these hypotheses have great potential to further improve the impact of a program.



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# Contact details

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