

BC Healthcare Proactive Environmental Remediation framework Evaluation

Program Basis

A recent study validates the connection between respiratory impacts and indoor environments from mold and dampness. The means to validate indoor environments in relation to health has been developed. Studies suggest that over 40% of asthmatic episodes are initiated or exacerbated by damp and moldy indoor environments where such episodes are reversed on removal of that environment. The cost of care for moderate to severe uncontrolled asthmatics exceeds \$10,000 per person per year and remediation of environments may not exceed \$ 4,000 in total. The cost savings and benefits to patients are significant. This program intends verify the cost savings and patient well-being benefits.

The health system is a significant expense to society. Cost saving programs are many with varying success rates; but all fall under the knife of cost cutting measures over the long haul in comparison to keeping beds open and doctors employed. To eliminate the chance of axing the program even with a superior internal rate of return requires a sustainability factor based on social contract, accountability, and continuous cost saving validation. The value measured in investment payback must be large enough to overcome reactive fiscal policy.

This program is a proactive health care measure whose implementation is rare in the industry. This proactive approach to health care will energize health care providers and create a culture of progressive thinking by stopping and reversing disease in chronic patients.

Incorporated into the program is an ongoing study to validate the program basis. The study will not only track the candidates who are enrolled, but candidates not enrolled as a comparative and potentially expose opportunities to expand candidate capture into a broader definition and other diseases. The study will attempt to validate and numerate confounding factors and adjust for study bias.

The framework is a composite of objective, methodology, and programming to provide a structure from which to undertake the program.

Evaluation Objective

The objective of this paper is to define a workable sustainable framework for the identification, remediation, monitoring, evaluating, and valuing of an intervention program for environmental based significant respiratory disease.

- A) The overall effectiveness of the program can be determined by:
 - 1) A marked decrease in the frequency of patient emergency care (number of visits)
 - 2) A marked decrease in the extent of emergency care (financial impact)
 - 3) The overall cost benefit of the program

B) Goal: reduce health care costs and increase well-being in patients

Specifically:

- 1) Achieve a 10:1 payback on investment
- 2) Capital payback in 2 years
- 3) Obtain a significant increase in well-being (>50%)
- 4) Increase candidate capture – efficiency
- 5) Increase candidates by expanding the criteria

C) Key tenets

The program must be:

- A) Rigorous – to withstand technical scrutiny
- B) Accountable – to withstand fiscal scrutiny
- C) Sustainable – to withstand internal cost cutting scrutiny

D) Existing program comparisons (real life examples)

Health care - asthma (and other respiratory disease) programs that reduce impacts and effects

ICBC – impact identification, CBA, approval criteria, payback verification, program validation

Evaluation methodology

The process of achieving the objective is through the mobilization of the Health Ministry, health region or specifically a hospital to develop a set of procedures and protocols that encompass the goals and tenets of the program within a sustainability envelope to ensure continuum of the program based on health care cost reduction with the added benefit of patient wellness improvement. The procedures will encompass preparing the organization to receive and identify candidates through a decision tree protocol common to front line emergency room doctors and the attending staff during a hospital emergency room visit.

The acceptable candidate will have a serious respiratory disease with an environmental basis (either directly or by eliminating the components of gender, race, age, ETS, genetics). The program initially will be based on the capture of environmentally affected moderate to severe asthmatics. A medical team approach will be applied to capture the health data of the candidate and monitor their progress within a format that inter-relates to the accounting and sustainability aspect. An environmental component is mobilized on confirmation of a candidate and their agreement to participate (social contract). Initially

the candidate's medical history will be important. Capturing the most affected will also expose high cost benefits to the health care system. It is logical to test program success against the highest impact patients.

The next phases of patient capture would consider the lesser affected and those affected by other respiratory diseases as long as the program goals are met. As well, a strong detailed medical history will be a better comparable to assess the future impacts and benefits of the program. A rigorous methodology and accounting function is essential to sustainability of the program against built-in medical cost cutting systems. Fiscal year analysis and agreement of the Health region to return all early savings back into the patient capture process will initiate the sustainability aspect of the program.

Methodology Criteria

- A) Study protocol
 - a. Treatment groups
 - i. Moderate to severe asthmatics
 - ii. Respiratory disease
 - iii. Respiratory impacts not I or ii
 - b. Extent of study
 - c. Funding
- B) Candidate capture
 - a. Health records, doctor/ management team
 - b. Emergency room screening
 - c. Community outreach
- C) Residential environment verification (HHI > 30)
 - a. Remote site assessment – candidate questionnaire
 - b. Site verification
- D) Social contract
- E) Financial structure: Social cost benefit analysis based with achievement goals
 - 1) Cost payback 10:1
 - 2) Return on investment in 24 months
- F) Science behind mold induced health impacts
- G) Disease: Moderate to severe asthma as a surrogate respiratory disease(wealth of data, huge risk group)
- H) Sponsor: health region
 - 1) Management organization and medical decision trees
 - 2) Effecting change of culture
 - 3) Workforce buy in/transition
 - 4) systems development and accounting
 - 5) Decision making process
 - 6) Approval process – Ministry, Health region, hospital

F) Measurement methods and implementation; accounting

1) Candidate and environment

2) Health region investment

G) Sustainability

Program review

A) Challenges

- a. Medical and health safety authorities do not acknowledge mould as a causal impact on health
- b. Homes are private domiciles authorities can't transgress.
- c. Candidates historically require a motivation to participate
- d. Candidate involvement is time consuming and routine altering
- e. Patients can become accustomed and rely on medical emergency support
- f. Candidate may not meet the requirements of the social contract
- g. Validation of cause and effect of the program may be complicated/ complicating factors.
- h. No decision tree set up for emergency room staff to identify environmental cause
- i. Many confounding factors and study bias.
- j. Medical staff may initially impede reactive to proactive change in workplace

B) Opportunities

- a. Sustainable healthcare cost reduction
- b. Increase in patient well-being
- c. Program expansion into other diseases and health impacts
- d. Change reactive culture into proactive culture

C) Risk

- a. Healthcare management not interested
- b. Research missed key factors to success
- c. Program is cut prior to lifecycle return on investment

D) Threats

- a. Existing healthcare system is engrained – CEO Interior Health
- b. Public has no appetite for risk in contracting with patients
- c. Candidates have no interest in changing lifestyles

E) Benefits

- a. Healthier public through disease reduction
- b. Greater individual and societal wellbeing
- c. Lower healthcare and societal costs
- d. Cost reallocation to other diseases/ impact centres

Management Plan

- A) Initial funding
- B) Verification (prototype) study
- C) Choosing Health Region/ Hospital
- D) Finding candidates
- E) Verifying candidates/ residences
- F) Setting up social contract
- G) Candidate responsibilities
 - a. Living requirements
 - b. Housekeeping requirements
 - c. Journal keeping
 - d. Regular Medical assessments
- H) Health Region responsibilities
 - a. Personnel retraining
 - b. Systems development, feedback loop, monitoring
 - c. Accounting
 - d. Sustainability

Evaluation results

- A) Patient effects
 - a. Doctor/ emergency room visits
 - b. Direct health care costs
 - c. Family impact
 - d. Income impact
 - e. Well-being
- B) Health region effects
 - a. Program costs
 - b. Extent of reduction of patient health care demand (cost savings)
 - c. Cost benefit analysis results
 - d. Staff and doctor impact
 - i. Work regimen
 - ii. Income
 - iii. Well-being
 - e. Systems impact
 - f. Efficiencies
 - g. Effectiveness
- C) Societal effects

- a. Wellbeing translated into community involvement
- b. Wellbeing translated into reduction of service requirements

Program Summary

Criteria

- A) Identification of Candidates
- B) Verification of residential environments
- C) Social contract
- D) Set up program
- E) Schedule and milestones
 - a. Auditing program
 - b. Verifying/ validating program
 - c. Bottom line: cost savings
 - d. Benefit: putting money back into building the base