ANNEX

Innovative Care for Chronic Conditions

Building Blocks for Action

GLOBAL REPORT

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This report was produced under the direction of JoAnne Epping-Jordan, Health Care for Chronic Conditions. It is the first key component of a three-pronged WHO strategy to improve the prevention and management of chronic conditions in health care systems. This strategy is overseen by Rafael Bengoa, Director, Management of Noncommunicable Diseases, and Derek Yach, Executive Director, Noncommunicable Diseases and Mental Health.

The three WHO Health Care for Chronic Conditions projects related to this strategy are:

✦ Innovative Care for Chronic Conditions (managed by JoAnne Epping-Jordan)
✦ Improving Adherence (managed by Eduardo Sabaté)
✦ Primary Health Care for Chronic Conditions (managed by Rania Kawar)

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Innovative Approaches for Care: The Evidence from Case Studies to Randomized Trials

As described earlier in this report, creative programmes to improve the management of chronic conditions are developing throughout the world. However, while programme development is vital, scientific evidence that supports the effectiveness of creative approaches of caring for chronic conditions is essential. Systematically acquired evidence allows the determination of whether an intervention, such as a test, therapy, or programme produces better outcomes than alternatives. Through such evidence-based determinations, health care is more effective, efficient, and less wasteful.

Evidence for innovative approaches in chronic conditions is in the early stages of accumulation and most programme evaluation projects have come from developed countries. Moreover, not all of the available evidence is considered equal: for example, case studies do not provide the same level of validity as do randomized trials. Examples from the literature on innovative programmes have been selected for presentation in this section. It is not an exhaustive review. Nevertheless, the data are convincing and everyone interested in improving care for chronic conditions can learn something from these studies.
Innovative approaches and new strategies for managing chronic conditions have a variety of positive effects across a range of outcome variables. Evidence demonstrates innovative programmes successfully:

- Improve biological disease indicators
- Reduce deaths
- Save money and health care resources
- Change patients’ lifestyles and self-management abilities
- Improve functioning, productivity, and quality of life
- Improve the processes of care

**Innovative Approaches Improve Biological Indicators**

**Blood Glucose is Controlled in Diabetes**

Self-management for diabetes is extremely challenging because there are numerous behavioural changes that patients must integrate into their daily lives. Self-monitoring of blood glucose levels, medication adherence and adjustments, regular checks for foot problems, and ongoing dietary and physical activity regimens become every day concerns. In fact, for this chronic condition, patients and families, as opposed to health care providers, are responsible for more than 95 percent of care.

Behavioural interventions to facilitate self-management skills have demonstrated efficacy across a number of biological markers for diabetes. Noted are reductions in glycated hemoglobin levels, dietary fat and overall calorie intake, weight, and blood glucose levels. Blood pressure control improves as well.

Danish general practices compared an innovative and comprehensive diabetes care programme to usual practice. The programme included providers receiving feedback about their performance, reminders for regular diabetes visits, decision support, and self-management support. After 6 years, patients in the intervention group had significantly lower glucose and cholesterol levels than did patients in usual care.


Blood Pressure, Heart Rate, and Cholesterol are Significantly Reduced in Cardiovascular Disease

Patients with cardiovascular disease usually can benefit from adherence to a prescribed regimen of daily medications, a consistent exercise programme, and treatment of the risk factors including high cholesterol, high blood pressure, smoking and excess weight. Each of these tasks requires patients to change behaviours and behavioural interventions are indicated. Overall, research indicates that behavioural self-management interventions are effective in helping patients meet these goals.

A 1996 meta-analysis examined the impact of behavioural or psychosocial treatment approaches on disease outcomes in patients with coronary artery disease. More than 3,000 patients (2024 treatment, 1156 control) across the selected studies yielded the following findings:

- Treated patients had greater reductions in systolic blood pressure (-0.24 effect size difference)
- Treated patients had greater reductions in heart rate (-0.38 effect size difference)
- Treated patients had greater reductions in cholesterol level (-1.54 effect size difference)
- Untreated patients had significantly greater mortality risk (1.70 odds ratio)
- Untreated patients had significantly greater cardiac recurrence risk (1.84 odds ratio).


Innovative Approaches Reduce Deaths

Heart Disease Deaths Decrease by 41%

A review of 23 studies, involving more than 3,000 patients with coronary artery disease, found that patients who received behavioural/psychosocial interventions significantly lowered their risk of dying or of having a nonfatal heart attack. Specifically noted was a 41 percent reduction in cardiac mortality and a 46 percent reduction in nonfatal cardiac events.


Innovative Approaches Save Money and Health Care Resources

Exercise Training: Prolongs Life, is Cost-Effective

Patients with stable, but chronic heart failure participated in a 14-month, moderate exercise training programme. Compared with patients in a control group, patients in the exercise group lived an average of 1.82 years longer. Taking into account the cost of the training program, the cost savings from the reductions in hospitalization, and wages lost due to the training time, every life-year saved was at a cost of $1,773.

Unnecessary Testing Declines

Low back pain is one of the most frequent, costly, and disabling of all adult chronic health problems. Clinical practice is not in line with current recommendations for diagnostic testing and interventions resulting in health care service overuse. An innovative care program included telephone triage to reduce inappropriate visits and/or tests, non-surgical options, incorporation of 3-minute back exam, and consultation before ordering diagnostic tests. In addition, employers were encouraged to institute transitional work policies and physicians were encouraged to reduce bed rest recommendations and time off from work orders. Results demonstrated:

✦ decreased use of myelograms by 23 percent over one year
✦ reduced the number of standard views for plain x-rays from 5 to 3 and decreased use of plain films by 30 percent
✦ decreased ratio of early lumbar testing not followed by lumbar surgery from 4:1 to 3.4:1
✦ decreased the percentage of patients inappropriately receiving physical therapy by 30 percent

The Institute for Healthcare Improvement’s Breakthrough Series Collaborative on Providing More Effective Care for Low Back Pain.

Programme Saves $4 for every $1 Spent

Low-income asthma patients experienced improved health status and health care costs were lowered in an innovative programme that taught physicians new skills in communication and disease management. Emergency room visits declined 41% for the patients of physicians who participated in the programme. The cost-effectiveness analysis accounted for the cost of newly prescribed medications and the training of the physicians. The results were direct savings to the government health care fund (Medicaid) of $3 to $4 for every incremental dollar spent providing condition management information and support to physicians.


Treatment Costs and Hospital Admissions Decline

An innovative self-management training programme in India for patients with chronic asthma resulted in improvements in health status and reductions in hospital and emergency room use. Training consisted of four skills training sessions in addition to usual care. Patients were randomly assigned to two groups. Results follow:

✦ work days lost: 18 vs. 34 (self-management group vs. control)
✦ hospitalizations: 6 vs. 13
✦ emergency room visits: 12 vs. 22
✦ total annual costs: Rupees 5,263 vs. 6,756


The financial impact of an innovative asthma self-management programme is significant.
Components of the programme emphasized patient education and training in symptom management, medication adherence, and lifestyle modification. A cost-benefit analysis in 47 patients for one-year before and one-year following the intervention resulted in the following:

+ **Asthma related treatment costs** reduced $472 per patient
+ **Hospital admissions costs** decreased from $18,488 to $1538 per patient
+ **Lost income as a result of asthma** reduced from $11,593 to $4589 per patient
+ **The programme cost ($208) to benefit ratio** was 1 to 2.28


A multidisciplinary, nurse directed programme created to improve the management of patients with congestive heart failure consisted of patient and family education, diet regimen, medication review, and social service consultation. Outcomes were examined 90 days post intervention with the following findings:

+ **56.2% reduction** in hospital readmission for heart failure problems
+ **28.5% reduction** in readmission for all other causes
+ **Significantly smaller percentage** of patients with more than one readmission relative to control patients (6.3% vs. 16.4%)
+ **Lower costs of care** ($460 less per patient) relative to control patients


An innovative and comprehensive outreach programme for patients with asthma was evaluated. Programme components included: individual instruction in asthma management, a stepped care treatment programme (designed by a nurse, paediatrician, and allergist), and regular telephone contact by a nurse to ensure compliance with the treatment regimen. Results from 53 patients (ages 1–17) from 6 months to 2 year follow-up indicated:

+ **79% reduction** in emergency ward admissions
+ **86% reduction** in hospital admissions
+ **Approximately $87,000 savings** in annualised costs


Emergency Room Visits are Reduced

A three session educational programme created for patients seen in the emergency room with asthma-related problems yielded positive outcomes. The programme (implemented by a nurse) stressed medication compliance, methods to prevent attacks, smoking cessation, and relaxation techniques. One hundred and nineteen patients received the intervention and 122 patients received standard medical care. Over a 12-month period, patients who had participated in the innovative programme had significantly fewer emergency visits (68 per 100 persons) than control patients (220 per 100 persons). The cost of the educational intervention ($85/person) was offset by the reduction in emergency room charges ($628/person).

Innovative Care Helps Patients Change Lifestyles and Self-Manage Conditions

Patients Stop Smoking

A nurse managed, home based programme for coronary risk factor modification used inpatient hospital interventions for smoking cessation in addition to exercise training and diet-drug regimen for hyperlipidemia. Also included was home-based management via telephone contact. Results from an evaluation of 585 patients demonstrated that, relative to patients in a control group who received standard hospital care, patients in the innovative programme successfully modified targeted risk factors resulting in:

- 70% smoking cessation rates (vs. 53% in the control group)
- significantly lower plasma LDL cholesterol levels
- greater functional capacities (9.3 vs. 8.4 METS)


Patients Learn Self-Care

Innovative cancer programmes that include educational components (e.g., information about diagnosis and course of treatment) increase knowledge and promote better self-care practices among patients. Not only do these programmes diminish symptoms of anxiety and distress; they improve patients’ adherence to medical recommendations.


Patients in Peru and Haiti Self-Manage Complex Regimens

Individuals with little formal education and few material resources can successfully manage complex medication regimens for drug-resistant tuberculosis or HIV/AIDS when provided with self-management support and careful follow-up. In these innovative interventions, the patients’ role in management of his or her condition was emphasized and behavioural skills were taught.


Innovative Approaches Result in Increased Functional Abilities, Productivity, and Quality of Life

Patients can do More Activities

The chronic condition of arthritis has attracted a significant amount of interest from innovative programme designers and researchers. Results from a number of studies demonstrate the significant impact of self-management interventions for patients with this chronic condition. Consist-
ently, the following outcomes are achieved from innovative self-management programmes:
+ reductions in pain and fatigue
+ improvement in activity levels, aerobic capacity and exercise endurance
+ diminished levels of disability and functional limitations
+ improved self-reported health status


Patients Feel Better Mentally and Physically

Multifaceted interventions that include relaxation, coping skills training, visualization training, and problem solving components produce significant decreases in cancer related symptoms including anxiety, pain, fatigue, coughing, vomiting and nausea.


Lorig and colleagues examined the impact of a peer led Chronic Disease Self-Management Program (CDSMP) on patients with a variety of chronic conditions including heart disease, lung disease, stroke or arthritis. Peer leaders with 20 hours of training facilitated the programmes at community sites where each group had 10–15 participants. The programme was seven weekly sessions of 2.5 hours duration. The emphasis was on self-management skills including symptom control, health behaviours, emotional regulation, communication with health professionals, and problem solving skills. Results of the study indicated significant reductions in emergency room and outpatient visits, improved health behaviours, reduced symptoms, and improved health status. Reductions in service utilization and emotional distress are evident for at least two years following the programme.


Missed Work/School Days are Reduced

A number of studies have demonstrated the impact of innovative self-management programmes on work and school productivity. Typically, learning and implementing self-management skills produce:
+ fewer missed days from school
+ less work absenteeism
+ higher productivity levels


**Workers Keep their Jobs**

A randomized controlled trial conducted by the RAND Corporation assessed Quality Improvement programmes for depression in managed care practices. The interest was whether these innovative approaches improved the quality of care, health outcomes, and employment in patients with depression. The intervention used local experts and nurse specialists to provide clinician and patient education. Nurses also provided medication follow-up or trained psychotherapists provided care. Because of this innovative programme, quality of care, mental health outcomes and retention of employment improved over a one-year period. Overall, medical visits did not increase.

Wells KB, Sherbourne C, Schoenbaum M, Duan N, Meredith L, Unutzer J, Miranda J, Carney M, Rubenstein LV


In a similar innovative project, a primary care-initiated quality improvement programme for depression was successful. Forty-six primary care clinics and 1,356 patients participated in this randomized controlled trial. The innovative approach consisted of special training for physicians and nurses, educational and assessment materials, and either nurse initiated medication follow-up or nurse initiated cognitive behavioural therapy. Results of the programme indicate that, relative to usual care, costs increased. However, 24 months following participation, patients receiving the new programme had significantly fewer days with significant depressive symptoms and they were employed a significantly greater number of days than patients receiving usual care.

Schoenbaum M, Unutzer J, Sherbourne C, Duan N, Rubenstein LV, Miranda J, Meredith LS, Carney MF, Wells K

Innovative Approaches Result in Better Processes of Health Care

Four Hundred Years of Waiting Time is Saved

The United Kingdom’s National Health Service (NHS) has made remarkable improvements in the continuity of care for patients with cancer. Two NHS goals are to promote excellent care and to support innovative redesign of care processes for the benefit of patients. Estimates are that the project has saved 400 years of waiting time for patients with breast, lung, bowel, prostate, and ovarian cancer. In addition, over 200 ways to improve services were identified and many of the improvements occurred with relatively few new resources.

Mayor S. Pilot projects show cancer treatment can be speeded up. BMJ 2001; 322:69.

Patients Get the Care They Need

A new approach for managing diabetes in an integrated health care system in the USA is highly successful in improving the access to essential education about the management of this chronic condition and quality of diabetes care, in general. The programme was comprehensive and involved both patients and providers. It consisted of practice guidelines, medical screening, provider reports, diabetes education, focused clinic visits, easy access to care and reminder systems. Results indicated significant improvements in preventive screening, improved access to diabetes education, and lowering of glyco-hemoglobin values.


Screening Rates Improve

A large HMO in the USA is using a population-based approach to improve outcomes for its 13,000 patients with diabetes. This innovative programme assists primary care teams to improve the delivery of diabetes care. Based on an integrated chronic care model, the programme includes an “on-line” registry of patients, evidence-based guidelines for routine diabetes care, improved support for patient self-management, and practice re-design that incorporates group visits. Results evidence improvements in the following areas:

+ retinal screening rates increased from 56% to 70%
+ renal screening rates increased from 18% to 68%
+ foot exam rates increased from 18% to 82%
+ glycosylated hemoglobin rates increased from 72% to 92%

Summary

Innovative approaches and creative programmes for improving the management and outcomes associated with chronic conditions have been developing around the world. These innovations in care range from education and self-management training to integrating volunteers and community lay persons to provide services. Creative programme developers have used innovative formats to deliver new programmes, including group visits, telephone follow-up, and home-based strategies.

The evidence, from case studies to randomized trials, is compelling even in the earliest stages of development. To date, many of the “building blocks” of the ICCC framework have been evaluated. However, the full framework (i.e., policy, organization/community, and patient levels) has yet to be tested comprehensively and many components of it have not been examined outside of developed countries. Local settings must begin to develop their own evidence base for caring for chronic conditions.