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MODELLING SUCCESS: ARTICULATING PROGRAM IMPACT THEORY

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Abstract: This study was undertaken to articulate program impact theory for the Comprehensive Home Option of Integrated Care for the Elderly (CHOICE) program. The study showed that CHOICE combines elements found in a traditional health maintenance organization with elements and process components drawn from primary care and case management to deliver a broad range of home support, day program, and social and health services to its participants and their informal caregivers. In doing so, the program provides participants with a level of comprehensive, coordinated care not possible within the traditional community-based health and social service delivery system.

Résumé: Cet article décrit l'étude entreprise pour articuler la théorie des effets du programme Comprehensive Home Option of Integrated Care for the Elderly (CHOICE), qui montre que CHOICE combine des éléments d'une organisation traditionnelle de maintien de la santé avec des éléments et des procédés de la gestion des soins primaires et des cas pour la prestation d'un vaste éventail de soutien à domicile, de programmes de jour, de services sociaux et de santé à ses participants et à leurs prestataires de soins naturels. Le programme offre ainsi aux participants des soins complets et coordonnés impossibles à obtenir dans le système traditionnel de prestation de services de santé et sociaux communautaires

This article provides a detailed description of the process used to articulate program impact theory for the Comprehensive Home Option of Integrated Care for the Elderly (CHOICE) program. The study was undertaken to expand our knowledge of the "how to" of program theory articulation, and to provide timely information about CHOICE to program funders, developers, managers, and service providers. In doing so, this study was expected to

inform ongoing program development and future impact assessment, and to identify issues that might affect program reproducibility.

BACKGROUND

CHOICE is an innovative, publicly funded pilot program introduced in 1996 by the Capital Health Authority (CHA), one of 17 regional health authorities in the province of Alberta. The program is modelled after two American programs, On Lok and the Program for All-inclusive Care for the Elderly (PACE). CHOICE provides a full continuum of medical, rehabilitative, social, and supportive services to the frail elderly who may otherwise be admitted to a continuing care facility, and who are frequent users of acute care. The program is funded by CHA to reflect the census at each of the three program sites (typically from 75 to 85 people). The cost of providing care to participants is not expected to exceed $60/participant/per calendar day. In the 1998/99 fiscal year, the total budget for all three sites was $6.2 million.

CHOICE is expected to (1) maintain participants in their own homes and communities as long as possible, (2) reduce participants' use of facility-based in-patient and ambulatory acute care services, and (3) improve participants' health status and quality of life (CHOICE Program Description, 1998).

The program uses a multidisciplinary, case management team approach to deliver a comprehensive range of home support and health and social services in a day program setting. Each multidisciplinary team includes a program manager, centre supervisor, home support supervisor, social worker, physician, clinical nurse specialist, pharmacist, occupational therapist, physiotherapist, recreational therapist, registered nurses (RNs), licensed practical nurses (LPNs), and home support workers.

While at the day program, participants are encouraged to be involved in a wide range of recreational and social activities. Snacks, a midday meal, and bag suppers (if required) are provided. Participants may also receive personal services care (e.g., bathing, hair care or foot care) at the day program. Participants receive in-home services similar to those provided by home care (i.e., personal care, home making, and medication administration assistance).

Each day the program site includes a health and social services clinic. This clinic provides participants with a full range of primary medical, nursing, rehabilitation, pharmaceutical, and social services.

Twenty-four hour, seven days per week on-call access to a program physician and registered nurse is provided. Two of the three program sites also contain a small number of sub-acute treatment beds. LPNs staff these beds on a twenty-four-hour basis, with backup provided by an on-call RN and physician. Participants can use these beds to receive treatment for an episodic illness, upon discharge from acute care before returning home, for respite, or on occasion for palliative care.

There is no penalty (i.e., financial charge) if a participant decides to access medical services outside of those provided by CHOICE without first contacting CHOICE, but participants are discouraged from doing so. All participants carry a card attached to their Alberta Health Care card that identifies them as a CHOICE participant and outlines how to contact the program.

A pre/post "black-box" impact assessment of CHOICE completed in 1997 (*CHOICE Evaluation Project*, 1998) showed the program reduced participants' pharmaceutical claims by 86%, in-patient acute care length of stay by 55%, in-patient acute care admissions by 30% and cost by 55%, ambulatory care visits by 25% and total cost by 25%, billable medical specialist claims by 18%, and ambulance use by 11%. CHA is currently developing a fourth CHOICE program site to accommodate increased demand for the program, and planning a similar program for another target population known to be high users of health care services, those under 65 years of age suffering from chronic mental illness.

PROGRAM THEORY

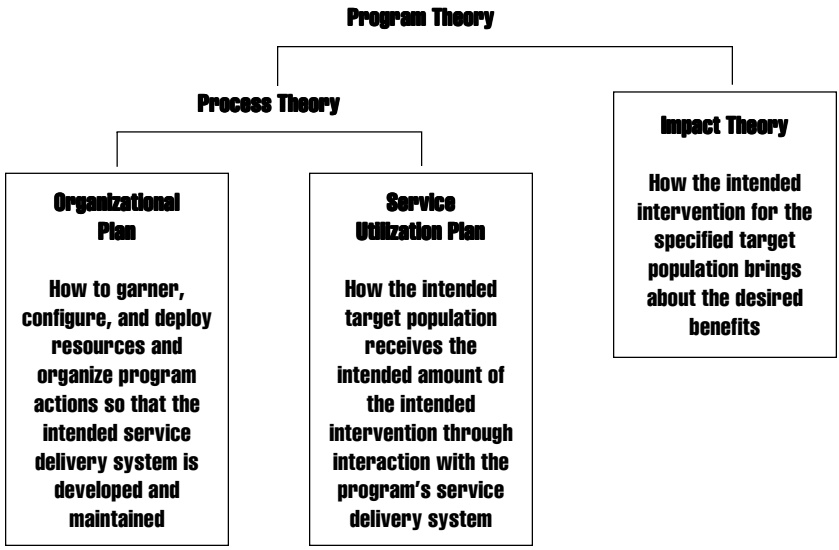
Despite the fact that the importance of program theory was first mentioned in the evaluation literature in the late 1960s and early 1970s (Fitz-Gibbon & Morris, 1975; Suchman, 1967; Weiss, 1972), efforts to articulate program theory have been relatively uncommon (Petrosino, 2000). As Figure 1 illustrates, program theory is composed of three interrelated components: the program's organization plan, service utilization plan, and impact theory (Rossi, Freeman, & Lipsey, 1999). The progam's organizational plan is based on a set of beliefs, assumptions, and expectations about how the program delivers services, and the service utilization plan on a set of assumptions and expectations about how the target population will make initial contact with the program, become engaged in the program, and move through the program. The program's organizational plan and service utilization plan together make up the program's proc-

ess theory. The third component of program theory, the program's impact theory, identifies and describes the chain of events that lead from program actions and activities to the program's intermediate and ultimate program outcomes. In some instances, program impact theory can be extremely simple and may include one single action and one single outcome. In other instances, program impact theory may be very complex and can include numerous program activities and actions, several sequential intermediate outcomes, and more than one ultimate outcome.

METHOD

Four different data collection strategies were used in this study: document review, field observation, stakeholder interviews, and literature review. These strategies, which were sequentially employed, gathered a broad range of information about program activities and actions, program outcomes, and the intervening links between the two. A successive iterative process similar to that recommended by Rossi, Freeman, and Lipsey (1999) was then used to develop a description and schematic model of CHOICE impact theory. Each of the data collection strategies and the iterative process used to describe and model impact theory are described below.

Figure 1
The Three Components of Program Theory (Rossi et al., 1999)



Document Review

The document review provided an opportunity to discover, in a fairly efficient manner, whether or not the program was based on an explicit conceptualization of program theory. Six CHOICE program documents were selected for review: *CHOICE: Resource Manual* (1998), *CHOICE Program Description* (1998), *CHOICE Procedures and Protocols Manual* (1998), *CHOICE Program Statistics for 1997* (1998), *CHOICE Evaluation Project* (1998), and CHOICE promotional flyers (1996, 2000).

A document review data collection sheet helped organize the document review process. Pertinent text in each of the documents that related to the target population, program goals, activities, and expected outcomes was identified and photocopied. The photocopied text was then sorted into four broad categories: target population, program activities/actions, program outcomes, and intervening links between program activities/actions and outcomes.

Field Observation

Document review was followed by a period of field observation. This provided an opportunity to view the program setting, observe the activities that took place in that setting, meet the people who participated in those activities, and determine the meanings of what was observed from those observed.

Field observation at all three sites was completed over a two-week period. Field notes and memos were used to direct observation and capture and summarize insights about the emerging program impact theory. Initial observation focused on a broad range of day program and health clinic activities. As the evaluation progressed, observation centred on interactions between the participants, between the participants and multidisciplinary team members, and between the multidisciplinary team members. Throughout the observation period a conscious effort was made to seek out and document incidents that supported or contradicted the emerging program impact theory. Field observation was terminated when no new or contradictory information was collected.

Stakeholder Interviews

Stakeholder interviews followed document review and field observation. These interviews provided an opportunity to engage various stakeholders in careful reflection about how CHOICE "works." In-per-

son interviews were conducted with the chief executive officer of CHA, the manager of Continuing and Community Care Services, single-point-of-entry coordinator, implementation coordinator, site managers, and 24 multidisciplinary team members. Six participants and 13 informal (family) caregivers completed the sample. Multidisciplinary team members, participants, and informal caregivers were selected to represent all program sites. Interviewed participants and informal caregivers included people of both sexes, those employed or retired, and both spouses and children of functionally and medically frail CHOICE participants.

Selection criteria for individual stakeholders included (1) potential to provide information, and (2) potential respondent differences that might be expected to affect how the stakeholders experience the program. Interviews were conducted in the staff member's office, in a private on-site interview room, or in the participant's home. A total of 49 stakeholder interviews were conducted.

Prepared interview questions were used for the interviews but the order and exact wording of questions depended on stakeholder responses. Each tape-recorded interview lasted from 30 to 90 minutes. All interviews were transcribed and verified by the evaluator by comparing the transcript to the recorded interview.

Transcripts of the first three interviews and several subsequent transcripts were reviewed by three experts to ensure that the questions elicited the type of information needed for the study, and that the evaluator correctly identified and extracted text units from transcripts. Text units identified on the first three interview summary sheets provided a basis for provisional descriptions of the program activities/actions, outcomes, and identification of possible intervening links. Initial descriptions were transferred to 4"x 6" coloured cards and arranged on a cork wallboard. Arrows were added to illustrate potential causal pathways. The original text units associated with each card were placed in envelopes and pinned to the appropriate card on the wallboard for ease of reference. The research team frequently reviewed the text units associated with each of the cards.

Additional stakeholder interviews and further analysis of the transcripts then proceeded in an iterative manner (Rossi, Freeman, & Lipsey, 1999). As each additional interview was completed and transcribed, additional text units were identified, coded, and allocated to the appropriate envelopes and cards on the wallboard. The initial description of the program components captured on each of the coloured cards was updated on an ongoing basis to reflect this additional infor-

mation. Memos were used to capture insights about the cards and arrows, and their placement on the wallboard as the model evolved.

During this stage of the analysis, informal member checking was done (Guba & Lincoln, 1989). This involved sharing preliminary and subsequently more informed iterations of the developing program theory with stakeholders. For previously interviewed individuals, this was accomplished in an informal manner. For individuals not yet interviewed, this type of discussion was initiated at the conclusion of the interview. Information obtained through the member-checking process was captured in memos, which were later added to the appropriate card or arrow on the wallboard. Stakeholder interviewing and member checking continued until no additional information was obtained.

An additional check ensured that the wallboard schematic represented the information collected through stakeholder interviews and the member-checking process. This involved rereading all of the cut text units and memos attached to each of the cards and arrows on the wallboard, and then rereading the cut text units not linked to the wallboard model.

Literature Review

A substantial literature review was initiated after the first three stakeholder interviews were completed. The literature review was guided by the evolving identification and refinement of the wallboard model of CHOICE program theory. As hypotheses explaining the links between the program's actions/activities and outcomes were generated, pertinent literature was identified, retrieved, reviewed, and sorted by program component. The literature review included published and unpublished reports relating to On Lok and PACE, as well as a wide range of articles, journals, and books addressing managed care, case management, integrated health service delivery models, utilization review, home care, continuing care, day programming, primary care, caregiver burden, and quality of life.

DESCRIBING PROGRAM IMPACT THEORY AND BUILDING THE MODEL

The final step in the process was collating the information collected through each of the research strategies in order to describe and build the CHOICE impact theory model. Photocopied text from the document review, field observation field notes and memos, and litera-

ture review memos were reviewed and added to the appropriate card or arrow on the wallboard model. Information attached to each of the cards and arrows was reviewed, and areas of convergence and divergence emerged.

Information collected through the field observation and stakeholder interviews was easily integrated into a congruent plausible representation of program impact theory. Interactions observed between the participants, between the participants and multidisciplinary team members, and between the multidisciplinary team members complemented and supported the information collected during the in-person stakeholder interviews. No differences were found between what was seen and what the stakeholders said was happening. Nor were any differences found between the information collected from each of the stakeholder groups through in-person interviews, from program recipients (participants and informal caregivers), from multidisciplinary team members, and from management. All stakeholders provided similar versions of the same story.

Information retrieved through the literature review provided additional support for the emerging description and model of the CHOICE program theory. In many ways it played the role of devil's advocate. The literature forced the evaluator to think critically about each of the components and the intervening links identified in the evolving wallboard model from a deductive, as opposed to an inductive, perspective. Several of the text units selected from the literature and added to the wallboard model directly mirrored the links identified through field observation and stakeholder interview.

ADDRESSING DIVERGENCE

Divergence in this study centred on the information collected through the document review, specifically in relation to the program's target population and the program's outcomes. CHOICE (*Program Description*, 1998) identifies the functionally frail, the medically frail, those with chronic illness, and those with dementia as the program's target population. In reality CHOICE targets two of these groups, the functionally frail and the medically frail, and then selects from these two groups those willing to comply with the program as outlined, who have an available reliable, capable informal caregiver willing to partner with the program.

The program documents also indicated the goals of CHOICE are to (1) maintain participants in their own homes and communities as long as possible, (2) reduce participants' use of facility-based in-patient

and ambulatory acute care services, and (3) improve participants' health status and quality of life (*CHOICE Program Description*, 1998). The program theory developed from the field observation, stakeholder interviews, and literature review provided did not support this expectation. It showed that CHOICE has the ability to delay institutionalization for some select participants, but can in no way be considered a substitute for continuing care for the frail elderly population. In some instances the program acted as a bridge to continuing care. It did not prevent institutionalization, but facilitated it by providing primary caregivers with an opportunity to "let go" of their care-giving responsibilities.

Program documents failed to identify any intermediate outcomes achieved by the program. Critical components of CHOICE's success in achieving improved participant health status were absent from the program documentation. These included appropriate management of chronic illness and disability, rehabilitation, maximization of self-care potential, and risk management, and the ability to forge a therapeutic partnership with participants' informal caregivers. The program documents also failed to mention that the program produces a shift in service consumption, not an across-the-board decrease. The provision of comprehensive case management, 24-hour on-call availability, and sub-acute services diverts the participant's demand for the use of ambulance and facility-based ambulatory care services. This resulted in decreased use of inpatient and specialist services. However, this change caused an increase in the provision of non-fee-for-service primary medical and nursing care.

When divergence between the "official" program view and the "real" program view is found, Chen (1990) identifies three possible options: (1) accept that one view is superior to the other and base the program theory on that view, (2) accept that differing views cannot be reconciled and develop different descriptions and models of program theory than can be empirically tested to determine which view is correct, or (3) explore and explain the difference in order to create a "best fit" description and model of the program theory. Option 1 was chosen for this study. The description and model of CHOICE impact theory was based on the information collected through field observation, stakeholder interviews, and literature review.

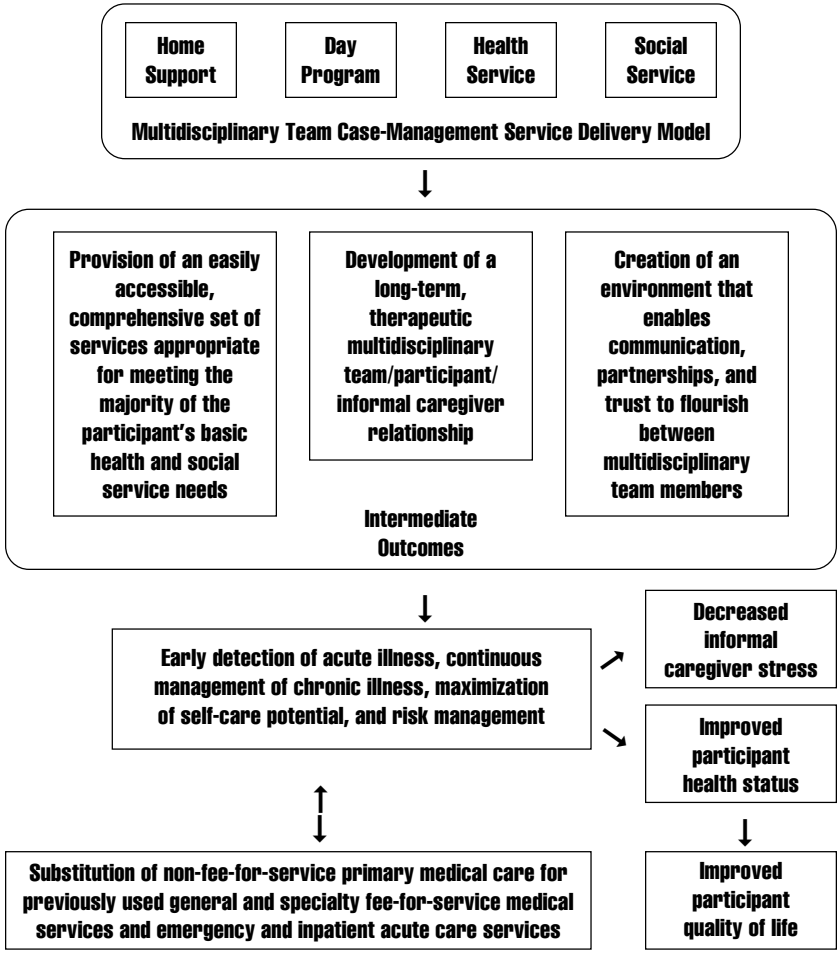
CHOICE IMPACT THEORY

CHOICE combines elements found in a traditional health management organization with elements and process components drawn from

primary care and case management to deliver a broad range of home support, day program, and social and health services to its participants and their informal caregivers. This enables the program to:

- provide program participants and their informal caregivers with an easily accessible set of comprehensive services appropriate for meeting the majority of the participant's basic health and social service needs;

Figure 2
CHOICE Program Theory Model



- support the development of long-term, therapeutic, multidisciplinary team/participant/caregiver relationships; and
- create an environment that enables communication, partnership, and trust to flourish between the multidisciplinary team members.

The overall outcome of the program is the provision of a level of care not possible within the traditional community-based health and social service delivery system. CHOICE promotes improvement in the early detection of acute illness, continuous management of chronic illness, rehabilitation, maximization of self-care potential, and risk management, all of which lead to improved participant health status and quality of life, and decreased informal caregiver stress. CHOICE also results in decreased reliance on facility-based emergency and acute care services, and decreased use of ambulance, diagnostic, pharmaceutical, and medical specialty services. At the same time, there is increased use of primary medical and nursing services.

CONCLUSION

This study was undertaken to expand our knowledge of the process, or *how to,* of program theory articulation and to provide the CHA with timely information about the way in which CHOICE produces a shift in participants' use of health care services. It accomplished both tasks, and in doing so highlighted the importance of program theory and the role it can play in the field of program evaluation. Program theory can provide valuable information for program planners and managers. Understanding how a program works allows program planners and developers to improve and streamline program delivery and identify program redevelopment and replication issues. It can also help evaluators wishing to accurately assess program impact by ensuring that they select the "right" outcomes to measure, the actual rather than the expected program outcomes (Petrosino, 2000).

It is, however, important to acknowledge that it is not appropriate to articulate program theory for every program. Efforts to articulate program theory are best reserved for large, complex, well-resourced pilot programs, like CHOICE, for which further expansion and/or replication is expected. In these instances, program impact theory has much to offer program funders, planners, and evaluators.

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REFERENCES

Chen, H. (1990). *Theory-driven evaluations*. Thousand Oaks, CA: Sage.

CHOICE evaluation project. (1998). Edmonton: Capital Health Authority.

CHOICE procedures and protocols manual. (1998). Edmonton: Capital Health Authority.

CHOICE program description. (1998). Edmonton: Capital Health Authority.

CHOICE program statistics for 1997. (1998). Edmonton: Capital Health Authority.

CHOICE Promotional Flyers. (1996, 2000). Edmonton: Capital Health Authority.

CHOICE: Resource manual. (1998). Edmonton: Capital Health Authority.

Fitz-Gibbon, C.T., & Morris, L.L. (1975). Theory-based evaluation. *Evaluation Comment*, *5*(1), 1–4.

Guba, E.G., & Lincoln, Y.S. (1989). *Fourth generation evaluation*. Thousand Oaks, CA: Sage.

Petrosino, A. (2000). Answering the why question in evaluation: The causal-model approach. *Canadian Journal of Program Evaluation*, *15*(1), 1–24.

Rossi, P.H., Freeman, H.E., & Lipsey, M.W. (1999). *Evaluation: A systematic approach* (6th ed.). Thousand Oaks, CA: Sage.

Suchman, E. (1967). *Evaluation research*. New York: Russel Sage Foundation.

Weiss, C. (1972). *Evaluation research: Methods for assessing program effectiveness*. Englewood Cliffs, NJ: Prentice-Hall.